

Published & Printed
Under Supervision of:



قندیل | Qindeel
إنتاجه والنشر والتوزيع
Printing, Publishing and Distribution

Under the Honourable
Patronage and in the Presence of

**His Highness Sheikh
Mohammed bin Rashid Al Maktoum**

Vice President and Prime Minister of the
UAE and Ruler of Dubai

Knowledge Summit 2017

Fourth Session



قمة المعرفة



Knowledge Summit

Under the Honorable Patronage and in the Presence of

His Highness Sheikh

Mohammed bin Rashid Al Maktoum

**Vice President and Prime Minister of the UAE
and Ruler of Dubai**



His Highness Sheikh

**Hamdan bin Mohammed
bin Rashid Al Maktoum**

**Crown Prince of Dubai and Chairman
of the Executive Council**



His Highness Sheikh

**Ahmed bin Mohammed
bin Rashid Al Maktoum**

**Chairman of the Mohammed bin Rashid
Al Maktoum Knowledge Foundation**





Contents

Day
One

1

Opening Session



21

Speakers:

Jamal bin Huwareb
CEO, Mohammed bin Rashid Al Maktoum
Knowledge Foundation (MBRF)

Dr. Hani F. Mulki
Prime Minister – Hashemite Kingdom
of Jordan

Guest of Honour

Dr. Hani F. Mulki
Prime Minister – Hashemite Kingdom
of Jordan

Session 1



Decision-making in the era of the Fourth Industrial Revolution

43

Speakers:

Dr. Hani F. Mulki
Prime Minister – Hashemite Kingdom
of Jordan

Moderator

H.E. Reem Al Hashimy
UAE Minister of State for International
Cooperation, Director General, EXPO 2020
Dubai Bureau

Session 2



The digital revolution and its role in the traditional and social

57

Speakers:

H.E. Noura Al Kaabi
Minister of Culture and Knowledge
Development

Majed Al Suwaidi
Managing Director, Dubai Media City, Dubai
Studio City, and Dubai Production City.

Ludovic Blecher
Head of the DNI Innovation Fund, Google

Will Moy
Director of Full Fact

Dr. Larry Birnbaum
Head of the Computer Science Division and
the Co-Director of the Intelligent Information
Laboratory at the Northwestern University

Moderator

Muna Abu Sulayman
Media Personality and Co-host of TV
show Kalam Nawae'm

Knowledge Summit

2017



81

Speakers:

Ohud Al Arfaj

Projects Manager of Prince Mohammed bin Salman bin Abdulaziz Charity Foundation «MiSK Charity Foundation»

Dr. Hiroshi Komiyama

Chairman of Mitsubishi Research Institute

Dr. Wendy Kopp

CEO of Teach for All



99

Speaker:

Ahmad Al Nusairat

General Coordinator of the Dubai Government Excellence Program, UAE



107

Speaker:

David Nour

CEO of Nour Group



123

Speakers:

Khalifa Alshamsi

Group Chief Corporate Strategy & Governance Officer, Etisalat Group

Pablos Holman

Inventor & Cyber Security Expert

David Rose

CEO at Ditto Labs, and Founder and CEO of Vitality

Charlie Miller

Head of Autonomous Vehicle Security at Chinese ride-sharing company Didi Chuxing

Moderator

Nouraldin AlYousuf

Emirati TV Presenter



The Knowledge Summit
The Fourth Industrial Revolution

2017



Contents



143

Speakers

Jamal bin Huwaireb
CEO, Mohammed bin Rashid Al Maktoum
Knowledge Foundation (MBRF)

Dr. Hany Torky
Chief Technical Advisor, Arab Knowledge
Project

Michael O'Neill
UN Assistant Secretary-General

Moderator

Mohammad Abu Obeid
Journalist and News Presenter, Al-Arabiya



165

Speakers

Philip Kennedy
Founder of Neural Signals Inc. (NSI)

Anthony Atala
Director of the Wake Forest Institute for
Regenerative Medicine

John Nosta
Digital Health Philosopher, Former CEO,
Apple and Pepsi

Prof. Shafi Ahmed
Cancer Surgeon & Associate Dean of
Bart's Medical School

Raymond McCauley
Co-founder of BioCurious and Biotechnol-
ogy Scientist

Moderator

Ali Hilal Al-Naqbi
Director, Abu Dhabi Polytechnic

Honoring the Knowledge Ambassadors



193

Speaker

Jason Silva
Media Artist, TV Personality and Futurist

Knowledge Summit

2017



209

Speakers

Marta Piekarska

Director of Ecosystem, Hyperledger

Stephanie Duncan

Digital Media Director, Bloomsbury Publishing

Moderator

Juergen Boos

Director of the Frankfurt Book Fair



229

Speakers

Brigadier Khalid Alrazaqi

General Director of Smart Services Department, Dubai Police

Tanmay Bakshi

Software Developer, Author & Keynote Speaker

David Hanson

Sculptor and Technical Consultant

Anders Sorman-Nilsson

Founder of Thinqe Inc

Moderator

Lynn Chouman

Journalist and Business Programmes Presenter



251

Speakers

Selim Jahan

Director of the Human Development Report Office (HDRO) of UNDP, New York

Carl Benedikt

Director of the Program on Technology and Employment at the Oxford Martin School

Charlie Morris

Chief Investment Officer, at NEWSCAPE Group

Moderator

Tom Goodwin

EVP of Innovation, Zenith Media



267

Speakers:

Jane Friedman

Professor of Writing, Media, and Publishing at the University of Cincinnati and University of Virginia

Neil Hewison

Author, Translator & Former Associate Director for Editorial Programs (AUC)

Moderator

Flora Rees

Head of Education, Training and Publishing, Emirates Literature Foundation



The Knowledge Summit
The Fourth Industrial Revolution

2017



Contents



283

Speakers

Mohamed Ismail

Chairman of the Statistics Department,
Faculty of Economics & Political Science,
Cairo University

Milorad Kovacevic

Chief of Statistics, Human Development
Report Office, United Nations
Development Programme, New York

Moderator

Ali Hadi

University Professor and Chair of the
Department of Mathematics and Actuarial
Science, Founder of the Actuarial Science
Program



297

Speakers

Dr. Motaz Khorshid

Former Minister of Higher Education and
Minister of Scientific Research, Egypt

Ali Ibrahim

Professor, UAE University

Hugo Hollanders

Economist and Researcher, Lead Author of
the EC'S European Innovation Scoreboard

Anuja Utz

Senior Operations Officer, World Bank

Moderator

Abdel-Rahim El-Atri

Professor of Higher Education, Sidi
Mohamed Ben Abdallah University,
Morocco



315

Speakers

Abo-Bakr El-Gendy

President, Central Agency for Public
Mobilization and Statistics, Egypt

Qasem Al Zoubi

Director General, Department of
Statistics, Jordan

Lamia Zribi

National Institute of Statistics
Chairperson, Tunisia.

Tariq Al-Janahi

Deputy Executive Director of the Dubai
Statistics Center

Moderator

Magued Osman

CEO of the Egyptian Center for Public
Opinion Research (BASEERA)

Knowledge Summit

2017



335

Speakers

Dr. Saaï d Amzazi

President of Mohammed V University of Rabat, Morocco

Dr. Joseph Jabbra

President of the Lebanese American University, Lebanon

Dr. Essam El-Kordi

President of Alexandria University, Egypt.

Dr. Riyad Hamzah

President of the University of Bahrain, Bahrain

Dr. Sherif Sedky

Executive President of Zewail City, Egypt

Dr. Refaat Al-Faouri

President of Yarmouk University, Jordan

Moderator

Dr. Sultan Abu Orabi

Secretary General, Association of Arab



357

Speakers

Dr. Hassan El-Bilawi

Secretary General of the Arab Council for Childhood and Development

Heiko Sibberns

Director of the IEA Hamburg

Dr. Youssef Sadik

Professor of Sociology, Head of the Department of Educational Fundamentals, Mohammed V University, Morocco

Dr. Najoua Ghriss

Professor at the Higher Institute of Education and Continuous Training in Tunisia

Moderator

Dr. Ali S. Al-Kaabi

Deputy Vice Chancellor for Students Affairs and Enrolment at UAE University



377

Speaker

Armen Gharabegian

Founder and CEO of ShadeCraft Robotics



391

A session to honour the participants in the summit and closing activities

Honouring personality:

Jamal bin Huwaireb

CEO, Mohammed bin Rashid Al Maktoum Knowledge Foundation (MBRF).



The Knowledge Summit
The Fourth Industrial Revolution

2017



The Summit in Numbers



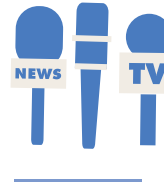
Audience

4,800



Registration

7,900



Media coverage

649



Summit Followers over media and social media

24,323,138



Days

2



Sessions

21



Speakers

105



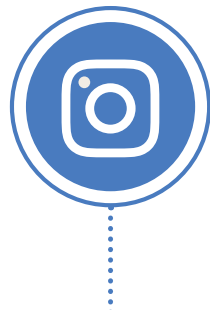
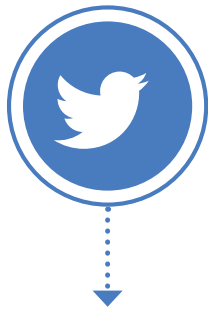
Official website visits

373,000



Followers of the summit over Social Media

31,579,241



Interaction and views of
the Summit activities

923,016

Interaction and views of
the Summit activities

16,244,924

Interaction and views of
the Summit activities

11,650,640

Interaction and views of
the Summit activities

2,760,661

المستقبل سيكون
"صاحب الأفكار والابتكار."
صاحب
معرض المعرفة
Knowledge Exhibition







Knowledge Summit

Day One

Hall 1

Opening Session



Opening events

- Opening video
- Opening ceremony
- Address by the Mohammed bin Rashid Al Maktoum Knowledge Foundation
- Address by the Guest of Honor
- Video presentation on the 4IR (Jason Silva)
- Announcement of the Global Knowledge Index results
- Announcement of the Mohammed bin Rashid Al Maktoum Knowledge Award winners
- Announcement of the Knowledge Ambassadors
- Launch of new initiative

The Knowledge Summit

2025



Speakers

Jamal bin Huwareb

CEO, Mohammed bin Rashid Al Maktoum Knowledge Foundation (MBRF)

Dr. Hani F. Mulki

Prime Minister – Hashemite Kingdom of Jordan



Guest of Honor

Dr. Hani F. Mulki

Prime Minister – Hashemite Kingdom of Jordan



JAMAL BIN HUWAIREB

**CEO – MOHAMMED BIN RASHID AL MAKTUUM
KNOWLEDGE FOUNDATION (MBRF)**

His Excellency Jamal bin Huwaireb serves as Cultural Advisor to the Government of Dubai. Since 2013, he has been managing the Mohammed bin Rashid Al Maktoum Knowledge Foundation (MBRF), and in 2016 he was appointed as Secretary General of the Mohammed bin Rashid Al Maktoum Knowledge Award. H.E. bin Huwaireb also heads MBRF's board of advisors. Bin Huwaireb is a board member at Dubai Media Incorporated, and a member of the Executive Committee of Mohammed bin Rashid Al Maktoum Global Initiatives. He also serves as vice-chairman of the National Curriculum Development Committee. He is a member of the advisory board of the College of Arts, Humanities and Social Sciences at Sharjah University, and a member of the advisory board of the College of Humanities and Social Sciences at the UAE University. He was appointed as a member of the Global Leadership Council of the Said Business School, University of Oxford. A UAE national historian and a pioneering man of letters, bin Huwaireb is acclaimed for chronicling the cultural and creative movement in the emirate of Dubai, as well as the wider GCC region.



DR. HANI F. MULKI

**PRIME MINISTER - HASHEMITE KINGDOM OF
JORDAN**

Dr. Mulki served as Senator at the Upper House of Parliament from 2013 to 2014, and as the Ambassador of Jordan to Egypt from 2002 to 2004. He previously served as Minister of Industry and Trade from 2011 to 2013, Minister of Foreign Affairs from 2004 to 2005, Minister of Water and Irrigation, Minister of Supply and Minister of Industry and Trade during 1997-1998 simultaneously, and Minister of Energy and Mineral Resources from 1998 to 1999. Dr. Mulki also served as Secretary General of the Higher Council for Science and Technology during 1993-1997 (was presided upon by His Royal Highness Prince Hassan bin Talal). From 1989 to 1997, he was the President of the Royal Scientific Society. Dr. Mulki was decorated by His Late Majesty King Hussein with the Kawkab Medal of the First Order and the Independence Medal of the First Order, as well as from Denmark, Holland, Sweden and France, in recognition of his achievements and contributions. Dr. Mulki was the Chief Commissioner of Aqaba Special Economic Zone Authority (ASEZA), Chairman of Aqaba Development Corporation (ADC) and the Aqaba Ports Corporation.





2017 Knowledge Summit | قمة المعرفة





Mostafa Agha

Sports journalist, presenter of Sada Al Malaeb Programme



2017

His Highness Sheikh Mohammed bin Rashid Al Maktoum, a visionary with far-reaching accomplishments, challenges and initiatives. Your Highnesses, Excellences, Ladies and Gentlemen, peace, mercy and blessings of Allah be upon you. We must know to understand, for knowledge is the basis of development. Knowledge is perception, awareness, understanding of facts, gaining information through experience or through meditation on the nature of things and self-reflection, or by viewing the experiences of

others and reading their conclusions. Knowledge is linked to intuition and research to discover the unknown, for self-development and technology development. Those who own knowledge shall own the present and the keys of the future. Therefore, that is why today we find the United Arab Emirates sponsoring all the things which will increase knowledge and awareness of Arab and world youth to reach a productive society and coexist with others, a happy, secure and knowledgeable society.





H.E. Jamal bin Huwaireb

CEO – MOHAMMED BIN RASHID AL MAKTOUM KNOWLEDGE FOUNDATION (MBRF)



2017

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, Your Highnesses, Excellences, our honourable guests, may Allah's peace and mercy be upon you. I am pleased to welcome all of you here from the UAE land and in a new session of the Knowledge Summit, the region's premier knowledge event that seeks to contribute to building a knowledge-based society and exploring the knowledge future of our societies by establishing a solid platform for reflection, exchange of ideas and reviewing best practices and experiences to support the march of our people in the race for sustainable development. By the virtue of the sharp

vision of His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai and the continuous directions of His Highness Sheikh Ahmed bin Mohammed bin Rashid Al Maktoum, Chairman of the Mohammed bin Rashid Al Maktoum Knowledge Foundation for considering knowledge a fundamental pillar for the building and development of societies and successes, Knowledge Summit 2017 is launched in its fourth edition to mark the tenth anniversary of the Foundation's achievements and successes. It has launched initiatives and projects that have contributed to the promotion and dissemination of knowledge not only in the Emirate of Dubai,



The Knowledge Summit
The Fourth Industrial Revolution

2017



but also in the region and in the world. Today, we are pleased to add a new light to the achievements of the Mohammed bin Rashid Al Maktoum Knowledge Foundation and announce the launch of the Literacy Challenge Project in the Arab World in collaboration with UNESCO and UNDP as part of the initiatives of His Highness Sheikh Mohammed bin Rashid Al Maktoum.

This project aims at combating and eradicating illiteracy from the region and providing the right to education for 30 million Arabs under the age of 18 by 2030. Education is the best tool for fighting ignorance and extremism, and the only way to develop and sustain human beings and societies.

Dear audience, the Knowledge Summit 2017



is launched carrying the slogan of «knowledge and the Fourth Industrial Revolution», to keep abreast of the plans and strategies of our wise government. Our wise government recognised early the importance of this revolution and the opportunities it presents, therefore it established, by the command of His Highness Sheikh Mohammed bin Rashid Al Maktoum, a council for the Fourth Industrial Revolution and launched the UAE's comprehensive strategy for the Fourth Industrial Revolution, which included ambitious projects to achieve the objectives of this strategy and the sustainability of our society. The Summit will constitute a global knowledge platform that brings decision-makers and intellectuals in the Fourth Industrial Revolution fields to discuss the dimensions and pillars of this revolution as well as its effects, which includes the social, economic, cognitive and humanitarian aspects and its role in decision-making processes. Whereas Knowledge Summit is global, its events should be characterised by its global impacts as well, where the event shall witness the reveal of curtain from the details of World Knowledge Index project, the first of its kind in the world, which has culminated our strategic partnership with the United Nations



Knowledge Summit 2017 is launched in its fourth edition to mark the tenth anniversary of the Foundation's achievements and successes.



Development Programme (UNDP) to monitor the knowledge reality worldwide with the participation of more than 130 countries in order to find a solid ground to explore ways to develop the fields of knowledge dissemination, transfer, production and localisation; this knowledge is the basic building block for the progress and development of nations.

In conclusion, we hope that Knowledge Summit 2017, through its activities, outputs and recommendations, will constitute a road map for the process of building knowledge-based societies that depend on creativity and innovation to revive the nation. May Allah's peace, mercy and blessings be upon you.





H.E. Dr. Hani Al Mulki
PRIME MINISTER - HASHEMITE KINGDOM OF JORDAN

His Highness Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President and Prime Minister and Ruler of Dubai, His Highness Sheikh Ahmed bin Mohammed bin Rashid Al Maktoum, Chairman of the Mohammed bin Rashid Al Maktoum Knowledge Foundation.

I am talking to you today from the point that I witnessed the Second and the Third Industrial Revolution, and received my PhD in industrial engineering in the seventies of the last century. I may be conservative or fearful of the tremendous evolution of technology and the information revolution that is taking place today, although I am not really, but to look at the present and future generation; such fears or concerns may not exist at all, on the contrary, this generation is always looking for what is new, sophisticated and it's thirsty for modernity. More importantly, the amount of adaptation to these information revolutions of this generation is much greater than my generation and those who preceded me. There is no doubt that the



Jordan realizes the volume of challenges that accompany the Fourth Industrial Revolution

world is changing and we will inevitably be affected by the Fourth Industrial Revolution whether we are aware of it or not. However, the most important question is: are we ready to absorb and employ them to serve the prosperity of our people and our countries?

For us in Jordan and with an optimistic vision, we see that the Fourth Industrial Revolution, with all its components, came to empower people, not machinery and automation or digitisation in its narrow framework. The process is therefore not competitive; it is participative and complementary between a man and a machine. There is no doubt that science and technological development will inevitably establish a pattern and an approach in the relationships of people and nations and enhances the concepts of peace, prosperity and democracy. The idea of wars and conflicts among states over natural resources may disappear under this revolution. There is higher added value, higher production efficiency, quality, high accuracy and less pressure on natural resources, thus, it will reflect on the well-being and the living of the world's population in order to live in peace and security.

Artificial intelligence exists today everywhere around us: from automated vehicles, drones, translation software or software used to explore new medicines,



The Knowledge Summit 2025

computer designs, 3D printing, materials engineering; genetic, biology, synthetic engineering and e-commerce. Perhaps I shall mention some of these developments: We are going to see smart projects, digital projects in commerce, flying cars, automated cars, and we'll see the world free of tumours and cancer.

Jordan is aware that there is a lot of fear about the consequences of this revolution in terms of information security and cyber-security, and our concern is the possibility of increasing unemployment rates among young people and job seekers as well as the ability of governments to adapt to the requirements of modernity and development to organise its work. In contrast, we see this Industrial Revolution as a great opportunity for all countries, especially the countries of our region. Sustainability and maintenance of this technology will indeed require distinguished human capabilities and new competencies different from knowledge and traditional expertise. We will have a world of reboots outnumber reboots in auto industry and centres for the sale of genetically developed human organs of humans themselves, among others. Here lies the urgent need to focus more and more intensively on the human development side, and to ensure that there is an advanced and

visible educational system that simulates scientific and technological development in education. The educational system in any country is the true criterion for the success of the state in reaping the fruits of scientific development and industrial revolution and the qualitative leap it will achieve in the lives and prosperity of people.

Jordan has begun implementing the National Human Resource Development Strategy for the years 2016 to 2025 to educate for prosperity. Young people in Jordan make up two-thirds of society and will face a labour market over the next few years that will require at least a third of the jobs with new skills different from the traditional knowledge. This is why we seek to provide skilled young people who apply knowledge according to the latest technological methods and possess the spirit of sport, creativity and excellence to enable them to seize opportunities and contribute to enriching knowledge mobility in the region, not only in Jordan.

Jordan is also adopting a plan to stimulate economic growth for the years 2018 to 2022 with a comprehensive economic structure that produces a sophisticated infrastructure capable of recovering various knowledge innovations,

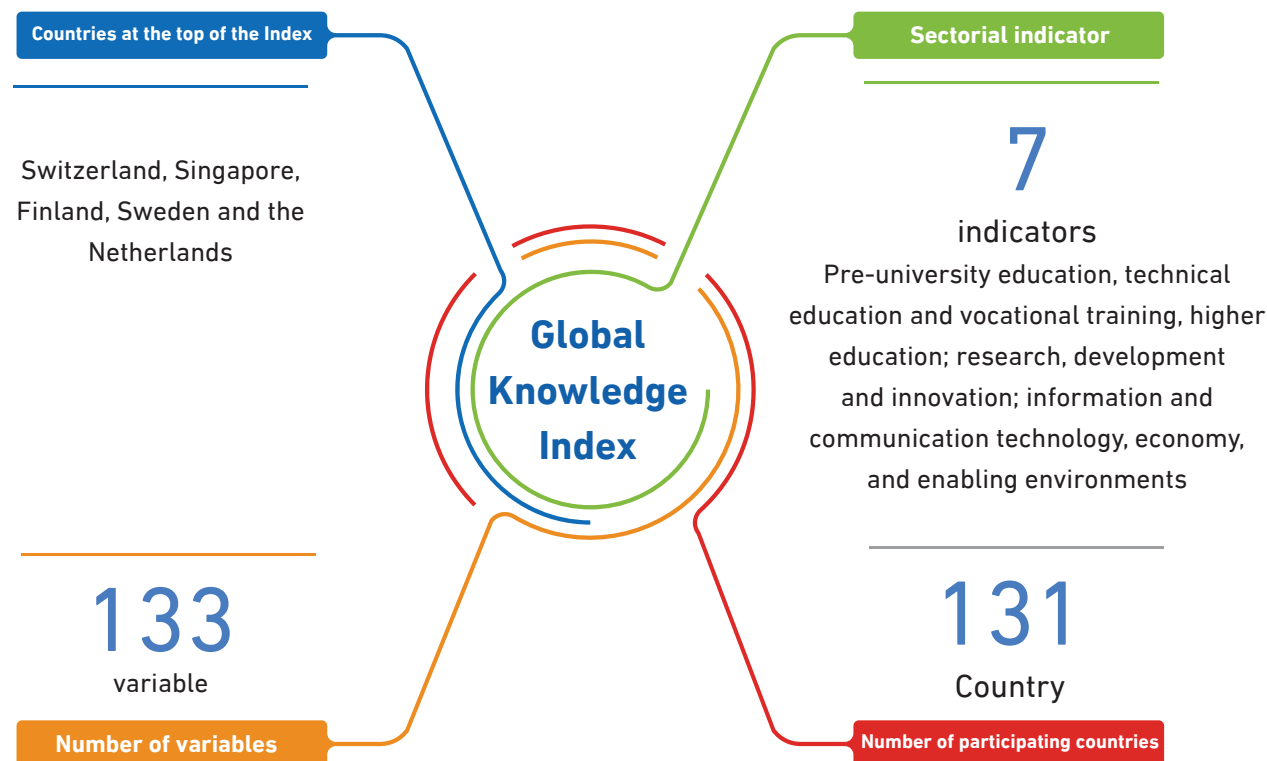


restoring sustainable growth momentum and strengthening the national economy. This plan includes building on the specific achievements of the information revolution in the ICT sector, education, scientific research, innovation, renewable energy and other areas that stimulate growth in production, infrastructure, institutional and social structure.

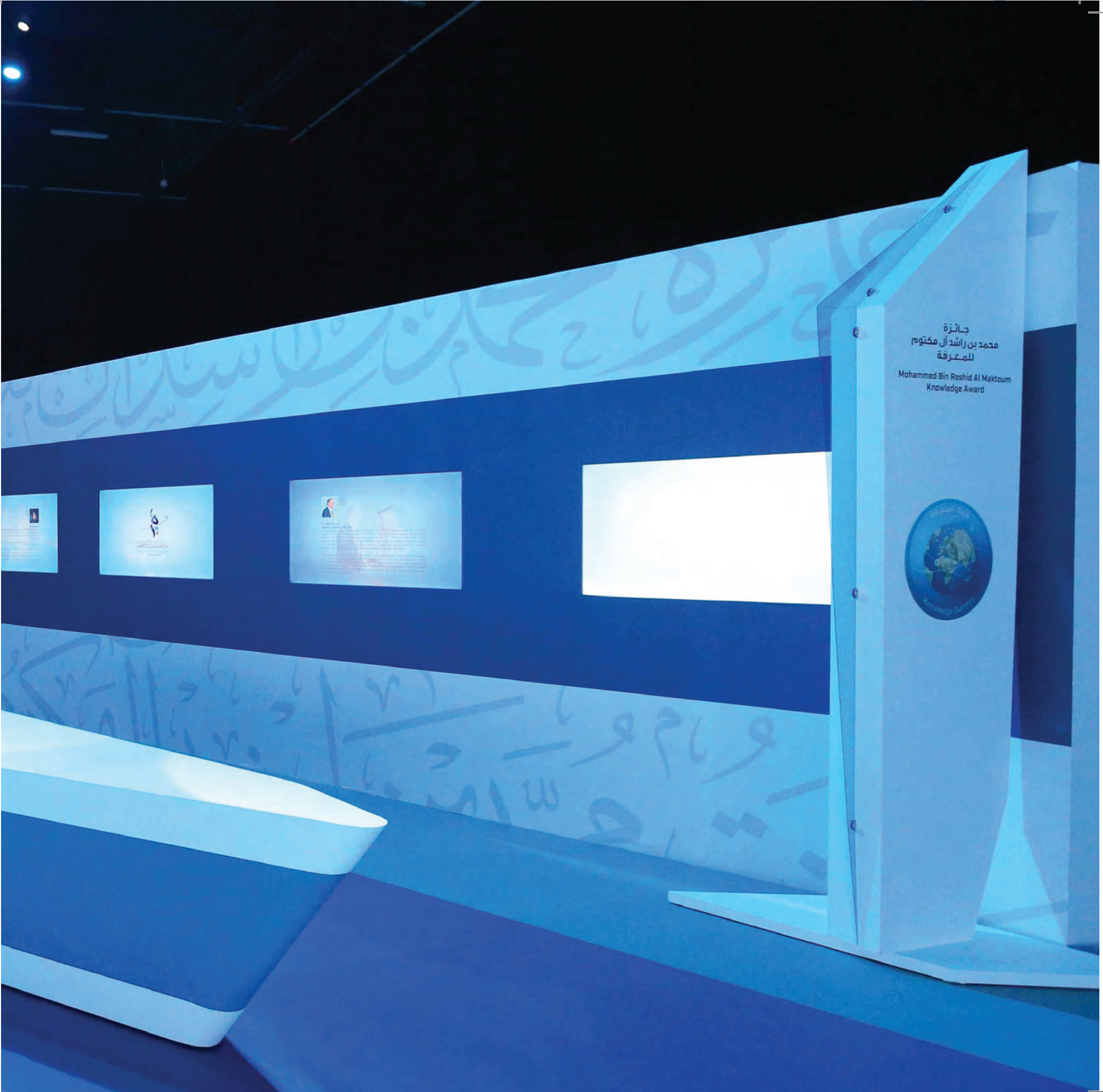
Jordan pays great attention to the ICT sector in general and to the e-government programme in particular to accelerate the process of electronic

transformation to reach a paperless government and to adapt to the latest innovative global trends in the technology industry. Here we should refer to the distinguished achievement established by His Highness Sheikh Khalifa bin Zayed Al Nahyan, His Highness Sheikh Mohammed bin Rashid Al Maktoum, and their brothers, Rulers of the Emirates, in all areas of progress and development, as well as in the field of excellent electronic transformation of government administration, seeking a smart government.

2017







جائزة
محمد بن راشد آل مكتوم
للمعرفة
Mohammed Bin Rashid Al Maktoum
Knowledge Award





Mohammed bin Rashid Al Maktoum Knowledge Award - Honoring Knowledge Pioneers

Now comes the moment of announcing the winners of the Mohammed bin Rashid Al Maktoum Knowledge Award in its fourth session 2017. We are honoured to invite His Highness Sheikh Hamdan bin Mohammed Al Rashid Al Maktoum, Crown Prince of Dubai, and His Highness Sheikh Ahmed bin Mohammed bin Rashid Al Maktoum, for handing the prizes to the winners.

The winner of this year's Knowledge Award from Saudi Arabia is «MiSK Charity Foundation». The award shall be delivered to its Secretary-General, Mr. Badr Al Asaker.

The award also goes to Hiroshi Komiyama from Japan.

The award also goes to Wendy Kopp.

Thanks to His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai for his kind presence and patronage of this Summit.





جائزة محمد بن راشد آل مكتوم للمعرفة
MOHAMMED BIN RASHID AL MAKTOUM
KNOWLEDGE AWARD

**Winners of the Mohammed
bin Rashid Al Maktoum
Knowledge Award**

The award shall be delivered to:



Prince Mohammed bin
Salman bin Abdulaziz
Charity Foundation
«MiSK», and the award
shall be presented to
Badr Al Asaker.

Knowledge Summit

2017



**Hiroshi Komiyama –
Chairman of Mitsubishi
Research Institute**



**Dr. Wendy Kopp – CEO of
Teach for All**



The Knowledge Summit
The Fourth Industrial Revolution

2017



Knowledge Summit

Day One

Session 1

Decision-making in the era of
the Fourth Industrial Revolution



Session topics

- Panel discussion with the guests of honour about decision-making under the Fourth Industrial Revolution



The Knowledge Summit
The Fourth Industrial Revolution

2017

2021



Guest of Honor

DR. HANI F. MULKI

PRIME MINISTER - HASHEMITE KINGDOM OF JORDAN



Moderator

H.E. Reem Al Hashimy

UAE Minister of State for International Cooperation, Director General, EXPO 2020 Dubai
Bureau

In our meeting today, we are honoured by the presence of His Excellency Dr. Hani Al-Mulki, speaking on decision-making under the Fourth Industrial Revolution. I want to start by talking about the first three industrial revolutions that were limited to a qualitative shift in a certain category or in the field of a certain professional field. As for the Fourth Industrial Revolution, it encompasses all people at all levels: social, economic, cultural, and all societies and governments, because they directly affect all aspects of life. We, of course, in the government must share responsibility with our societies to ensure that regulatory, legislative and legal frameworks are put into practice to suit these changes.





DR. HANI F. MULKI

PRIME MINISTER - HASHEMITE KINGDOM OF JORDAN

Dr. Mulki served as Senator at the Upper House of Parliament from 2013 to 2014, and as the Ambassador of Jordan to Egypt from 2002 to 2004. He previously served as Minister of Industry and Trade from 2011 to 2013, Minister of Foreign Affairs from 2004 to 2005, Minister of Water and Irrigation, Minister of Supply and Minister of Industry and Trade during 1997-1998 simultaneously, and Minister of Energy and Mineral Resources from 1998 to 1999. Dr. Mulki also served as Secretary General of the Higher Council for Science and Technology during 1993-1997 (was presided upon by His Royal Highness Prince Hassan bin Talal). From 1989 to 1997 he was the President of the Royal Scientific Society. Dr. Mulki was decorated by His Late Majesty King Hussein with the Kawkab Medal of the First Order and the Independence Medal of the First Order, as well as from Denmark, Holland, Sweden and France, in recognition of his achievements and contributions. Dr. Mulki was the Chief Commissioner of Aqaba Special Economic Zone Authority (ASEZA), Chairman of Aqaba Development Corporation (ADC) and the Aqaba Ports Corporation.



H.E. REEM EBRAHIM AL HASHIMY

UAE MINISTER OF STATE FOR INTERNATIONAL COOPERATION; DIRECTOR GENERAL, EXPO DUBAI BUREAU

In February 2008, Her Excellency Reem Al Hashimy was sworn in as Minister of State in the cabinet of the United Arab Emirates. In February 2016 she was appointed as UAE Minister of State for International Cooperation. Her Excellency has managed the International Affairs Office of the UAE Prime Minister, His Highness Sheikh Mohammed bin Rashid Al Maktoum. Additionally, she holds responsibility within the Ministry of Foreign Affairs for UAE's bilateral relations with India, Pakistan, Sub-Saharan African countries and the Small Island Developing States. Her Excellency is also the Director General and board representative on the higher committee of Expo 2020 Dubai, overseeing preparations for the mega-event. Her Excellency is chairperson of the Federal Competitiveness and Statistics Authority. Its mission is to strengthen and enhance UAE's national data and competitiveness capacities. She also serves as chairperson of Dubai Cares. Her Excellency has extensive experience in the field of international affairs and holds a bachelor's degree in international relations and French from Tufts University, and a master's degree from Harvard University.





Knowledge
Summit





DR. HANI F. MULKI
PRIME MINISTER - HASHEMITE KINGDOM OF JORDAN



The question revolves around the applications of the Fourth Industrial Revolution, but we must be careful not to talk only about applications, as talking about applications makes us on the side of the receiver, not the entrepreneur. The Fourth Industrial Revolution is linked to three main topics: the first is the production of knowledge, the second focuses on the application of knowledge, whereas the third is about the continuation and development of knowledge. I think that our experiences in the Arab world will be similar to our experiences in the Third Industrial Revolution, where we have not yet found any innovation in the development of any product or knowledge production in terms of the Third Industrial Revolution. The First Industrial Revolution was mostly a revolution based on skills, i.e., skills were the largest, but the other was knowledge.

In the Second Industrial Revolution, the percentage of knowledge increased to the ratio of skill, and at that time it was important for our Arab world to develop itself in the Second Revolution. In the First Revolution, knowledge was essentially part of our Arab and Islamic history and we were almost monopolistic of that knowledge. The Third Revolution has equated between skills and knowledge, but our revolution (the Fourth) is about great knowledge and few skills,

therefore we must develop education, develop our ability to education and creativity and scientific thought. Unfortunately, our Arab countries spend less than any group of countries in the world on scientific research, so education becomes initiation, which does not lead to creativity. In the next stage, we must develop our legislations, economic, social and human structure. I want to beware of something, we use many of the applications of the Fourth Industrial Revolution, and the question is: do the Arab citizens use smartphones to increase knowledge or for social networking and entertainment?

When we come to the application, we must talk about application that leads to increasing knowledge. We buy equipment and only use 10% of the capacity of these equipment, and examples are numerous. We go to buy the new mobile phones, but do you know why we buy them? Do we know what applications I will



In the Fourth Industrial Revolution, natural resources will not be the basis but man will be; man will be the capital of development in the states.



The Knowledge Summit 2021

download on them? Only very few people know. As governments, we have to move towards the use and application of these new technologies and products of the Fourth Revolution to increase knowledge not only to increase entertainment and interaction. We testify that the best use when we follow up the great boom in the UAE is applied in smart applications to the highest levels of technology thinking, creativity and production. When we talk about e-government, we find that a country like the United Arab Emirates is talking about something new, the smart government; we have to sit up and say: can we sustain this? The answer is simple: yes, if we focus on education and not initiation.



Moderator: In addition to the smart government, we have the Minister of Artificial Intelligence; the UAE is always taking the initiative to be the leader in these new sectors. Also, education is one of the essentials, but where is the working environment. What do you think of the ability of governments to cope with this Fourth Industrial Revolution and its requirements?



H.E. Dr. Hani Al Mulki: We always talk about ability, and then forget the sincere desire, the ability exists in our youth, and our children are the foundation of this homeland. We see that the ability exists when we go to the western countries, where we find there researchers and leaders from every Arab country in various fields: science, technology, humanities... among others. But is there a sincere desire to employ them and invest their abilities to raise the level of economy and growth in our home countries? The answer with regret is no.

In the Fourth Industrial Revolution, the world will incline to the mind. In the Fourth Industrial Revolution, natural resources will not be the basis but man will be; man will be the capital of development in the states. Just as we have entered the stage of skills and turned into the creative stage, the revolution will also see a shift from natural resources to human resources, mind and creativity.



Moderator: The focus on man and mind is fundamental and differs from technology, robots and others.



H.E. Dr. Hani Al Mulki: There is a long debate in

the Fourth Industrial Revolution on the concentration of wealth. There is a big debate about unemployment, which will increase. I will mention why I disagree with this proposition; today we are asking: is there a capability to do so? I say yes. We wonder: is there a desire to do so? I say, maybe, but we should head to the sincere desire and to feel that we, as Arab Countries, are able to make the change in the beginning of this revolution. We do not want to repeat what happened in the Second Industrial Revolution, because we were completely outside it, as was the Third Industrial Revolution which we used its applications only without dealing with its production.



The Knowledge Summit

2017



Moderator: What about modern technologies in business sectors?



H.E. Dr. Hani Al Mulki: We know that in business sector there will be a significant increase in productivity. We have talked about artificial intelligence, robots, electric cars, automated cars and drones, but there are those who say that this Fourth Industrial Revolution will increase unemployment and concentrate wealth. With the beginning of this revolution, there is a great accumulation of wealth in the hand of a limited number of people, but will this continue? In my estimation, no. If the ILO says that the ratio of unemployment shall increase, I say it will not increase unemployment rate, for a very simple reason that is the laws of nature are still in force.

The system of supply and demand still exists, so if all of our actions in the revolution will lead to

production through robots or smart applications completely without human intervention who will only produce and develop these products, so who will buy the products? In my estimation, a few years later revolution shall be humanised. The revolution will not continue without relying on man, working for it and participating in with it.

So, is the revolution today limited to the field of information science and computer, the development of microchips and robot operations? The answer is: absolutely not, because without a physicist, a biologist, an engineer or a doctor there will be no revolution, so what we will see is an increase in the level of education and deepening it.

We must build our capacity to play our roles in increasing its size and taking into account its humanitarian aspects. It is very important to humanise technology and not to make technology deaf and empty and do not know what is inside. We are talking about business that will increase productivity, and if productivity increases, it will increase the welfare of citizens and they will have more time to sit with their children.

However, at the same time we always find ourselves reproducing the old, why? Because we are reproducing it better. There are many examples for that: today many

are wearing Swiss watches, but do you remember that in the seventies there was a red watch that had a button to press? Technology reinvents itself, because supply and demand laws only accept this.

We should not be concerned about our entry into the Fourth Industrial Revolution as an Arab country, on the pretext that it will cause unemployment, as it will concentrate wealth in the hands of few people in the West. We can be partners, we can be able to serve the citizen and humanise technology. Humanisation of technology means that technology is at the service of man and it is capable of interacting with it and able to benefit therefrom.



Moderator: That is why you have focused on the importance of education so that we can adapt to a new work environment, and we can cope with this industrial revolution, so what about the intersection of the industrial revolution with national priorities or international relations in particular?

As for the Fourth Industrial Revolution, it encompasses all people at all levels: social, economic, cultural, and all societies and governments, because they directly affect all aspects of life.



H.E. Dr. Hani Al Mulki: As long as the focus is based on creativity and on the mind and the focus is no longer on wealth, we have to review our history since the beginning of the Stone Age, about what countries have been wrestling? Over wealth, always the struggle is over wealth. In my estimation, when we shift from natural wealth to human creativity, it becomes difficult only if there is cooperation, i.e., I can occupy a state and bring its intellectuals and scientists and make them work, but you cannot employ them against their will. This means: you can go to a country and seize





its natural resources, but you will not be able to seize human resources. In international relationships, if the Arab citizen is raised well, it will be the real wealth for the Arab world. We must therefore take care of people and develop education and scientific research. Education should be opened for online education, model example should exist and humanitarian action also exist. Yes, there is a widespread education online, but there must be a supervisor, a human element to ensure that evolution is humane.



Moderator: What about sustainability and development goals?



H.E. Dr. Hani Al Mulki: As for sustainability and the power of providing maintenance, since 1970, there has been a lot of investment in modern equipment, whether medical, electronic or even cars, but we have not been able to maintain the technology at all times. When equipment broke down, we used to take out a piece that only worth a quarter of dirham and import it from the West. Despite the presence of \$10 billion for the maintenance and sustainability of equipment in the region, we could not provide the necessary maintenance.

Modern technology in the Fourth Industrial Revolution faces a fundamental problem that did not exist in the past, which is the reverse engineering. In other



words, you could dismantle a refrigerator and make the like, but the matter is different in this revolution, if you cannot produce it yourself, you cannot make the like. So, if you know how technology is continuous and sustainable, and if you can truly transfer technology, and if you know how to employ human resources which is capable of creativity, then you will be the winner.



Moderator: A final word about the role of young people, and you touched on the importance of youth and the importance of human in general, but I hope to focus more on the role of young people under the Fourth Industrial Revolution.



H.E. Dr. Hani Al Mulki: Today, young people are more fortunate because the field of science is open for them today, and they must return to the origins of our faith: «If a person makes a mistake about deduction,

he shall receive a reward, but if he is correct, he shall receive a double reward.» A man only learns from his mistakes, and we should not frustrate young people and do not make fun of their opinions and do not prevent them from positive development because we have received our homelands from our fathers better than we will hand it over to our children. In many Arab countries, we have to start opening the way for young people to participate with us. They may make a mistake one time after another, but they will eventually be correct. We must also communicate with our youth abroad, take note of them and benefit from them and from their experiences.

The appointment of the UAE to Ministers in the field of the Fourth Industrial Revolution and its support for young people, the real technology procedures and openness to the world is the key, in my belief, to the prosperity of our Arab region, and the leadership of the UAE will benefit the entire nation at the end.



We must build our capacity to play our roles in increasing its size and taking into account its humanitarian aspects.



HE NOURA AL KAABI

MINISTER OF CULTURE AND KNOWLEDGE DEVELOPMENT



Knowledge Summit

Day One 17

Session 2

The digital revolution and its role in the traditional and social media



Session topics

- Technological development and its impact on media
- Using technology to fact-check fake news
- Media access to all citizen journalism
- Social media channels as a source of income
- The role of social media in disseminating news
- In the Fourth Industrial Revolution, will robots replace the author?



The Knowledge Summit
The Fourth Industrial Revolution



The Knowledge Summit

2015



Speakers

H.E. Noura Al Kaabi

Minister of Culture and Knowledge Development

Majed Al Suwaidi

Managing Director, Dubai Media City, Dubai Studio City, and Dubai Production City

Ludovic Blecher

Head of the DNI Innovation Fund, Google

Will Moy

Director of Full Fact

Dr. Larry Birnbaum

Head of the Computer Science Division and the Co-Director of the Intelligent Information Laboratory at the Northwestern University



Moderator

Muna Abu Sulayman

Media Personality and Co-host of Kalam Nawae'm TV Show

Knowledge Summit

2017



H.E. NOURA AL KAABI

MINISTER OF CULTURE AND KNOWLEDGE DEVELOPMENT

Holding a B.A. in MIS from UAE University, Her Excellency Noura bint Mohammed Al-Kaabi is the UAE Minister of Culture and Knowledge Development. She previously held the post of Minister of State for Federal National Council Affairs. Her Excellency also holds the position of Chairwoman of the Media Zone Authority - Abu Dhabi (MZA) and twofour54, the home of media and entertainment in Abu Dhabi. She is also a board member of the UAE's National Media Council. Her Excellency is the first UAE national to be ranked in Foreign Policy magazine's "Top 100 Global Thinkers List". In 2014, she was named as one of Forbes Middle East's 30 Most Influential Women in Government; and was awarded Business Woman of the Year at the Gulf Business Industry Awards. Her role in growing the UAE's media industry was recognised by America Abroad Media in 2015; and she was named as one of the 20 most powerful women in global television by The Hollywood Reporter in 2016. She has been a WEF young global leader since 2014.



MAJED AL SUWAIDI

MANAGING DIRECTOR, DUBAI MEDIA CITY, DUBAI STUDIO CITY, AND DUBAI PRODUCTION CITY

In this role, he provides strategic direction for the integrated creative ecosystem with its state-of-the-art business infrastructure that plays an instrumental part in Dubai's emergence as an international media hub. He also oversees key operational functions and ensures steady growth of the three business parks that are home of media companies and thousands of creative professionals. Majed has more than 13 years of executive experience across a wide range of management, sales and business development, human resources, and client relations functions. Previously, he was the Managing Director of the Dubai Internet City and the Dubai Outsource City. Under his leadership, the integrated ICT hub became a strategic partner of the Smart Dubai initiative that drove Dubai's transformation into one of the smartest cities in the world. Majed started his career at the TECOM Group as the Director of Sales for the Dubai Internet City, swiftly progressing to the Director of Commercial Operations. Previously, he was a key member of the business development team at the Dubai International Financial Centre. He also worked as a National Career Development Superintendent and a National Field Support Officer at the Emirates Airlines.



LUDOVIC BLECHER

HEAD OF THE DNI INNOVATION FUND, GOOGLE

Ludovic Blecher, the Head of the DNI Innovation Fund, Google. Before joining Google, Ludovic Blecher was the Director of the FINP: a digital press fund for French publishers backed by Google. Ludovic is a journalist who has spent the past 15 years working in news. His career began as a reporter at Liberation.fr, rising to Editor in Chief, then Executive Director. He was a 2012 fellow at the Nieman Foundation for Journalism at Harvard, and was a member of the French Digital Council independent advisory commission for the French Government.



The Knowledge Summit
The Fourth Industrial Revolution

2017

The Knowledge Summit 2017



LARRY BIRNBAUM

HEAD OF THE COMPUTER SCIENCE DIVISION AND THE CO-DIRECTOR OF THE INTELLIGENT INFORMATION LABORATORY AT THE NORTHWESTERN UNIVERSITY

Larry Birnbaum is a Professor of Computer Science at the Northwestern University, where he is the Head of the Computer Science Division and the Co-Director of the Intelligent Information Laboratory, with research focus on applied AI. He and his students have been building and conducting research projects in natural language processing, intelligent information systems, social media data analytics, machine learning, computational journalism and media, conversational interfaces, and automatic content generation. Together with colleagues and students, Larry has published more than 140 papers on these topics, and holds 39 US patents. Larry received his BS and PhD in Computer Science from Yale, and was in the faculty there before joining Northwestern. Larry is also the Co-Founder and Chief Scientific Advisor of the Narrative Science, an AI startup that builds and markets technology to automatically generate narratives from data, at scale. The company's goal is simply this: to make the world's data meaningful to people through stories.



WILL MOY

DIRECTOR OF FULL FACT

Will has been the Director of Full Fact since 2010, through three referendums, the Leveson Inquiry into press standards, the European Parliamentary and 2015 and 2017 general elections. He appears regularly on TV, radio, and at events to discuss Full Fact's work and fact checks, as well as giving evidence to the Leveson Inquiry and selects committee inquiries. Before Full Fact, Will worked for the non-party affiliated peer Lord Low of Dalston and the Parliamentary Advisory Council on Transport Safety.



Knowledge Summit

2017



The Knowledge Summit
The Fourth Industrial Revolution

2017



Knowledge Summit





Moderator: There is a lot of innovation and distortion which are currently changing the business landscape and the information we get, such as digital conversion, to the increase of traditional content, to fake news. How can we refute all these information made by publishers and content creators and perhaps even in the future by consumers who give this particular information to this company. This distortion is what we see the world through and the way we interact with the world.

Let me first begin by asking H.E. Noura Al Kaabi about how the UAE is dealing with the digital landscape?



H.E. Noura Al Kaabi It is an exciting experience to witness new experiences in the digital

age, and this certainly has a price. I think the government is at the forefront of governments that are developing technology. The new cabinet reshuffle discussed the persons who represent us, such as the Minister of Artificial Intelligence. Our government is focusing on digitalization and technology. We also have the year of innovation and the day of innovation. We also have the recently announced Mars City project, with only 30 months left to complete. The ambition exists, and we seek to explore, empower young people and push the government to work and adhere to this agenda and integrate this future agenda into everything we do.



Ambition is already there, and we seek to explore and empower the youth, push the government to act and adhere to such agenda and integrate this future agenda in all it performs.



Moderator: Mr. Majid, please tell us how the digital revolution affected the region? What knowledge did you get especially as you are the Director of Dubai Internet City?



Majed Al Suwaidi: If we are talking about the region and what is happening here, we are fortunate to have seen this development over the past 15 or 16 years with the new vision that Dubai and the United Arab Emirates have developed, taking into account the idea of a digital revolution. Based on this type of revolution or ideas, some steps were taken, including the creation of Dubai Internet City. Dubai Internet City is fortunate to have 500 companies within the region and the presence of these companies is only one aspect. The

main reason for attracting all these companies today to Dubai or the UAE is digitalization trend which UAE and Dubai in particular are adopting. The last few years have been the building block to create the talent that can drive the idea of a technological revolution to the next level. We are also fortunate that we are not moving from the first to the second stage, but we are moving from the first to the fourth stage. This is because we attract outstanding talents from all over the world.



Moderator: According to a media report, people in the region spend 9-10 hours on traditional social and mobile media a day. Can you tell us about the content industry? How can organizations work to ensure that the contents of those 10 hours are in fact something that can help the region in return for the content produced by the amateur? How can these institutions help create strong and professional content?





Majed Al Suwaidi: There's a lot of amateur content available on the internet, but this content is not strong enough or does not meet the minimum value for which the content was created. What we did was creating some kind of understanding with all other business partners throughout the industry we deal with. We are dealing with the media, technology companies, universities, academics and others, and we have already tried to instill a new vision that will lead to creating more valuable content for the

public. This also requires us to invest in many equipment, development and strategies, where we attracted most of these creative contents, and that was the main focus of these changes.



We have tried to establish a new vision to create more valuable content to the audience, which requires to invest in more equipment, development and strategies. We have attracted more innovative content, which we really targeted through these changes.



Moderator: Creating Arabic content is one of our strategies in the digital age, and you were the head of the innovation fund of Google's Digital News Initiative. Tell us what does this fund mean?



Ludovic Blecher: We must have a way of changing the way content is produced, and we must reshape journalism. It can only be done by self-development, finding new ways to distribute and tailor content, and look for new storytelling templates. We want to be part of this transformation, and this is what we have done in Europe and started there. We have to learn from what we are doing. So, this fund is interested in motivating and pushing publishers to risk and inventing new ways. It also represents a new approach in practicing

digital journalism and creating a new model of business.



Moderator: How can Google products you create help these projects, which you fund to ensure that this kind of collaborative content exists?



Ludovic Blecher: The Fund operates in two parts: content and its creation, research and training. In the Newsroom and news training center, Google products are available to collect the uploaded data that makes up your story. This phone is a project created by publishers with the support of Google but it is still the publisher project, as we do not invest, but we give. Through this mobile phone we can see the meaning of innovation in the field of news.





Moderator: The content available on the internet is huge and part of it includes fake news. What can be done to limit it?



We should have a way to change the way we produce the content, and we have to reshape journalism through self-development, finding new ways of content distribution and searching for new modules for story-telling.



Will Moy: You are right. Fake news has become the talk of the hour over the past few years. One of the problems observed at the time of the US elections last year was that people were creating websites and make up fake stories to attract people to those sites and earn advertising revenue due to the large number of sites' visitors. One of the most famous examples was the Macedonian teenagers who created these sites to gain money; this is one example of fake news. Large networks such as Google and Facebook were able to intervene to change their advertising rules to make it difficult to make money from that kind of content. In the region where fake news is spreading, I think there are really interesting problems represented in content creation with the aim to manipulate public opinion, and to guide political events and political currents.



In the region where fake news spreads, I believe there are very interesting problems represented in content creation with the aim of manipulating the public opinion to direct events and political currents.



Moderator: What efforts can prevent this? The issue is what if the fake news lead to the rupture of states and increases racist attitudes or manipulates ideas and election results? Therefore, discrimination is very important, and the method of control is also important. Can you talk more about it?

2017



The Knowledge Summit 2019



Will Moy: One of the important issues that some people allow others to manipulate their ideas by giving misinformation to them. The right way to tackle this is education that makes people more aware of how online information is manipulated and makes people more able to think critically about what they hear and read.

There are countries that take care of these information and fake news that have become a real concern in international relations, and which must be addressed in talks between States. There are civil society organizations like Full Fact, media organizations and Internet platforms such as Google that can counteract this information fraud. Even the Innovation Fund of Google Digital News Initiative has funded the Full Fact model for automated verification of information. We have developed a program that can automatically recognize those who repeat claims for videos due to



our advance information about claims, which means we can intervene more quickly when demands are repeated.



Moderator: Larry, could you tell us a little bit about the fear of the Fourth Industrial Revolution and how the use of machines will leave no need to man to make fake news or fabricated contents?



Larry Birnbaum: Fake news is not limited to falsity but they also arouse particular feelings in certain categories of people, therefore if we cannot automatically distinguish them, the objective may not be achieved by helping people to reject such information.

I see that the automated industry of new stories or stories in general is the product of imagination, but bear in mind that the goal of the



The Knowledge Summit

technology developed in the West was marketed by Niall Science Company which aims to take data and turn it into stories and disseminate it to people. The aim is to make data more useful to people through school stories.

With regard to the advancement of technology, manipulating human algorithms makes the benefit of data great, but our misinformation will be a major challenge. There are many kinds of technology that have the ability to track, and when machines tell us something I think we have the right to ask this question: why did you say that? What is the purpose of this? What facts do you rely on to convey this data to me?

In order to expand, we have built transparent technology that can explain the logic to people, and I think we have a better chance to avoid manipulation.



Moderator: I want to know from Her Excellency Noura Al Kaabi how social media changed the nature of business in the Middle East and perhaps in the UAE as well?



We have built transparent technology that can explain the logic to people, and I think we have a better chance to avoid manipulation.



H.E. Noura Al Kaabi: People can use the means of communication in hiring or selling and buying, from small companies in the cake industry to airlines. I'm talking about how people use social media to achieve their goals. I think it is organized in the United States, there are sponsored ads, and when there's a financier, the person in charge of advertising is known, unlike the anonymous ads. Here in the region, I think it is still unclear. People advertise their products online and put them on their accounts in social media. There must be an organization that enables business not hindering it. We are here in this region where we see hope and dream, and we want most of our young people to get

used to living in a better place than they can today to be able to celebrate the export of the last barrel of oil and are able to live a sustainable life. But how can we achieve this? Investments must go to entities that we trust they do not work on an agenda that is harmful to the society, such as marketing hatred, spreading extremism, and rupturing society into sects, which already exist in the region.



Moderator: I heard about a new idea to make money from companies like Google, Apple and Facebook, where you give them your free information to develop an algorithm and when they receive your information or use it, they pay you. I want to understand is it something Google cares about as a source of income?



Ludovic Blecher: First, Google does not care about products, but it cares about publishers and their support to work on their own projects. In

Portugal, we have 80% of publishers who do not talk to each other; so our initiative is to establish cooperation frameworks. When you register at a site to sign a newsletter or subscribe to one of these sites, the publisher is identified at other sites, which creates an opportunity for them to reduce complexity and turn the reader into a more valuable subscriber.



Moderator: Mr. Majid, I want to go back to Dubai Media City, and as we know that Dubai is the city of the future, what media aspirations do you aspire to achieve?



Majed Al Suwaidi: Now, we're moving away from that to the next stage, which is creating companies from outside the region. We believe that the best or most successful companies that



The Knowledge Summit

will be created in the region are those who know local affairs or know the region much better than their counterparts perhaps around the world. We think that the region needs to manufacture its own business. The next phase is about value creation, creating businesses, creating content, creating content producers, and providing opportunities for people to start growing and building businesses from within the region.



Moderator: Larry, there is a great deal of enthusiasm and fear of the Fourth Industrial Revolution, can you tell me what you are most excited about, and what do you worry most about?



Larry Birnbaum: What I'm passionate about is automating a great deal of work; many of the tasks we are currently doing need a safer world.

The work I do is to help people understand the world around them, so the tools we're working on are helping people understand the data around them. What worries me is what key activities people will do.



Moderator: I want to talk a bit about the impact of the media on traditional media and the journalist citizen's appearance, as well as the opportunities and challenges and the training of journalists.



Ludovic Blecher: There is an overlap between the journalist citizen (amateur) and the professional journalist. It can be said that any citizen can be a journalist, and I think this is not true. It is like a robot that can help or do some works, but it cannot be more specialized and deeper than a specialized journalist. So it's help,

and you need the skill to do it. You need to find your own content, which requires training and practice. The difference today is that everyone can get involved in journalism. There are always new stories every day. As a journalist, you have to put yourself at risk, check everything and keep up with updates. This makes your work more difficult and complicated, but impressing readers is important..



Moderator: Anyone who has a mobile phone can be a journalist or a content maker. So, we've lost a lot of professional journalists because of the appearance of a journalist citizen in the past five years. What issues and challenges are resulting from this new paradigm that is caused by the lack of income faced by a traditional journalist, with the increasing need to verify information?



Will Moy: We have to accommodate those opportunities that are the biggest challenge for all, but this is an interesting perfection because in the past we did not expect automatic verification teams to check information. What we have seen more in the UK and elsewhere in the world is that a few media are trying to produce more of content in many channels in the shortest possible time with the least number of journalists and experts. This means that it is difficult to complete in-depth reports that have made the press an important public service, and this requires a large news agency to be able to do so even within a single state. To a certain extent, the presence of citizens on the scene with cameras on their phones can enhance this. What I cannot do is the next step that is linking the event somewhere with the official in a company or government agency or anywhere else. This requires a continuous investment and also requires skills, therefore our information verification team



The Knowledge Summit



has drained the economy and needs lawyers and a center, and we need a full set of skills to access the important data in the public life. I believe that we have a momentum of events that are taking place in the world today more than ever. We have data that everyone can publish, which requires people to spend time and money for it. The problem is where does the money come from?



Moderator: H.E. Noura Al Kaabi, please tell us about the procedures of investigation about the source of money?



H.E. Noura Al Kaabi: Personally, I do more, especially with journalists, and investigating reports is very important. What we are missing here is depth and analysis. In the near past,

we launched National Geographic Abu Dhabi for children in Arabic from Abu Dhabi Media and celebrated Children's Day, but at the same time children who love science and space who study and enjoy school materials can be stars on television. They will come with one such as Alia Mansouri, her inventions and innovation, this will inspire others. How can children be integrated into the content industry? How can you train children to become veterinarians or members of the information verification team and train them to learn the real news from the fake news? Therefore, media, digital news and media literature should be part of the education process.

What I'm feeling now is that the public is changing the way we measure things; they're changing the way companies and the media work and changing the landscape. How can we promote it with the content that suits the public from children to adults, analysts and politicians to all categories?



The Knowledge Summit 2019



Moderator: I think everyone will pay money in order to get good content, Larry. I remember that I read a few weeks ago that within five years robots would be able to write articles for seniors; they would write for you. Can robots spend time researching and researching like the ones we read in the New York Times and the Atlantic?



Larry Birnbaum: The part that I care about in my research is the cooperation between man and machine, so the machine plays its role then comes the role of man to complete its role. Robots cannot replace human beings, and I think that the future will be a joint human-machine collaboration in a productive and effective way to make the most of it. The question is: what is the importance of machines? And what can they do? This is the most important point.



Moderator: Mr. Majid, can you tell us if there is a way for people who want to be able to provide knowledge bases, and is there still room in the media city or in the city of the future for other things?



Majed Al Suwaidi: There is nothing that does not reap gain; there is always a way to gain profits. Maybe not now, but will come in the end. You may see that a lot of companies started without huge sums of money for ten years, and then started reaping millions afterwards. A person always wants to develop a strategy for himself, and the most important thing is to understand what a person wants and understand his abilities and to take these questions into account. Given what we have had 50 years ago and comparing it with our place today, I think we

have gone through many uncomfortable stages; change is always uncomfortable, and change requires you to have a brave heart. This is the case with all startup companies, either that all places are booked or that business is not available. H.E. Noura Al Kaabi spoke about the lack of job opportunities today, but it may be available in the future, so we need to face new challenges in the future. I think business is no different; we see many changes happening, and there are opportunities. But the strategy is different about how to do it, and I think that today we have a large number of industry supporters, be they minds, industrialists or entrepreneurs; this helps the growth of society.



Moderator: We need information to make decisions, and to have a better life. How do we get this information? And how to manipulate them? How do we make sure of them? How do we make them? How do we support them? This is the issue of the twenty-first century.



Wendy Kopp, Co-Founder & CEO, Teach For All

NUMBER 11 2017



Knowledge Summit

Day One 2017

Session 3

A Session for the Mohammed bin Rashid Al Maktoum
Knowledge Award Winners



The Knowledge Summit



Speakers

Ohud Al Arfaj

Projects Manager of Prince

Mohammed bin Salman bin Abdulaziz Charity Foundation

«MiSK Charity Foundation»

Dr. Hiroshi Komiyama

Chairman of Mitsubishi Research Institute

Dr. Wendy Kopp



Ohud Al Arfaj

PROJECTS MANAGER OF PRINCE MOHAMMED BIN SALMAN BIN ABDULAZIZ CHARITY FOUNDATION «MISK CHARITY FOUNDATION»



Dr. Hiroshi Komiyama

CHAIRMAN OF MITSUBISHI RESEARCH INSTITUTE

Dr. Hiroshi Komiyama is the chairman of Mitsubishi Research Institute and is credited with establishing a center for structuring knowledge in 2007. He was also one of the most important people who contributed to the Sapporo Declaration on Sustainability. He founded a network in 2010 under the name of «Platinum Community», a network that sets out a plan for global sustainability based on a growth strategy. The network has attracted more than 70 institutions and 140 local governments to join its membership, and has organized a number of initiatives and projects. In addition, he established the Integrated Research System for Sustainability Science in 2005, with the aim of building a sustainable society by linking global, social and human systems.

Dr. Komiyama is known for his interdisciplinary research in sustainability science, and the academic community pays tribute to his research and papers and receives them with a warm welcome. He is praised by colleagues around the world for his unprecedented scientific research, as well as for his outstanding global and local initiatives and contributions and for his keenness to spread knowledge.



Dr. Wendy Kopp

CEO OF TEACH FOR ALL

Dr. Wendy Kopp founded Teach For America in 1989 and developed it until Teach For All has become responsive to the initiatives of aspiring social entrepreneurs around the world who were determined to apply this approach in their countries. Now, Teach For All network has partner institutions spread across 45 countries across the six continents.

Dr. Kopp was the youngest person and first woman to win the Woodrow Wilson Princeton Award in 1993, one of many awards and accolades she has since received for her remarkable achievements.

In 1994, Time magazine honored her among 40 of the world's leading figures under the age of 40, and in 2008 was honored as one of the world's 100 most influential people.

Dr. Kopp received a bachelor's degree from Princeton University and received an honorary PhD from 15 universities and colleges.





Knowledge
Summit





Ohud Al Arfaj

PROJECTS MANAGER OF PRINCE MOHAMMED BIN SALMAN BIN ABDULAZIZ CHARITY FOUNDATION «MISK CHARITY FOUNDATION»

Prince Mohammed bin Salman bin Abdulaziz Foundation is a non-profit charitable organization dedicated to fostering and promoting learning and developing youth leadership skills for a better future for Saudi Arabia. To achieve this vision, the Foundation focuses on caring for young people across the country, and creating a healthy environment for its growth, God willing, and seizing opportunities in multiple areas. The fields of interest of the Foundation are education, media, culture, arts, technology and innovation to support the pillars of knowledge in our society in the future, as well as by enabling the Saudi people to learn as a means of developing and advancing progress in the business, technological, literary, cultural and social life of our nation. MiSK Foundation is an institution established by His Royal Highness Crown Prince Mohammed bin Salman bin Abdulaziz in 2011 and seeks to achieve these goals by creating programs and partnerships with local and international organization in various fields as well as with a variety of items; where MiSK invests in the intellectual capital and the release of the energies of Saudi youth and young people in the region. We have a lot of initiatives and many programs that we offer inside and outside the Kingdom. I will briefly mention a number of them or simple examples of what we are

offering in the field of science and in the field of culture and art «Hakaya MiSK», a demonstration that we offer to society in general and to different segments, from 15 to 35 years old. We support them to learn how to tell stories and how to write content of all kinds.

We have organized «Hakaya MiSK» five times this year in different parts of the Kingdom. Nearly 350,000 visitors from 28 countries have visited this interactive event, and next week we will be launching this event outside the Kingdom and will be the first time in the city of Abu Dhabi.

«MiSK Art» is an artistic festival we have established in Saudi Arabia for the first time in Riyadh. It brings together works of art by Saudi and international artists, and allows these artists to communicate with their counterparts from around the world and introduce them to Saudi art, as well as acquiring their advanced skills in this area. The exhibition was also held outside the Kingdom for the second time in Paris in partnership with UNESCO.

We have also held many of conferences and forums throughout the year in various fields. We have held a forum for five consecutive years. The penultimate version was the participation of the foreign ministers of the Gulf Cooperation Council countries and the latest version was accompanied by the Saudi-Gulf-





American summit, which handled a number of vital important issues in the region, as well as in the world, such as terrorism and tolerance, and how to combat extremism through important platforms in this youth society, which are the platforms of social media. In this forum, «MiSK» has launched the «MiSK Grand Challenges» to motivate young people to come up with solutions to the real problems facing global education communities. Nearly USD 100,000 prize winners will be announced in the next three years, God willing. Participation in this competition is available to all young people from around the world. We have also launched during this forum the

World Youth Questionnaire, which included about 21 thousand youth from different countries. The goal of this study is to identify the issues facing youth around the world, which limit their ability to develop and progress towards an economic-based society. The outcome of this study is to embark on an initiative that strengthens the empowerment of young people, God willing.

Perhaps, the best conclusion to my speech is the saying of His Highness Crown Prince Mohammad bin Salman, where he said: «Let us think differently, because our dreams are different and to reach the sky is our ambition.»



Initiatives of MiSK Charity Foundation in figures

17





Hiroshi Komiyama
CHAIRMAN OF MITSUBISHI RESEARCH INSTITUTE

We are living in a very special era in human history. It should be noted that the horizontal axis shows a thousand years, and human activities are constantly growing and expand significantly and rapidly. The concentration of carbon dioxide increased in the atmosphere and the global average per capita GDP rose sevenfold.

We must build confidence to change the planet, and this fact is the fundamental reason for caring for the sustainability of human civilization. I am very confident that we can do that; I would like to talk with you about my 2050 vision and the Platinum community.

The admiration for handicrafts is good, and ironwork is made once and goes directly to society permanently, which means saturation. The steel we need to make new handicrafts equals steel scrap, this also means saturation; we do not need iron anymore. This also applies to other metals. Please be careful to invest. This shows the total amount of iron found in Japan. Before 1950, there were very few cars and buildings in Japan at a time of high economic growth in the 1960s, 1970s and 1980s. Many proven handicrafts have accumulated due to iron saturation, and that what has happened in Japan. The total amount of

iron is 1,400,000,000 tons; this is the reserve of Japanese iron mines. It is reasonable to assume that this value of 11 tons is the measure of saturation of iron. Now in China, 9 tons per person of iron already exist in China's iron mines. If the situation continues, it will exceed 11 tons per person within 5 years. Iron saturation will occur in China soon. What will happen to the world when saturation report comes? Now 4 tons per person, I assume in 2050 the saturation will reach its peak because saturation of iron means saturation of the basic infrastructure that will change civilization on earth including society, industry, business and jobs. That is why I believe that 2050 will be a turning point in the path of human civilization. Why do I draw 2050 vision instead of 2010 or 2017? Which is better iron scrap or raw iron for steel making? That the iron would be in the form of iron oxide due to the presence of oxygen in the atmosphere or on the other hand, iron scrap? Which is more energy efficient: to remove oxygen from iron oxide or melt iron scrap to make steel? The answer is obtained from theoretical inference and industrial survey. Dissolution requires 27 times greater energy than oxygen removal. $1/27$ is the theoretical value derived from the basic





scanners that were subsequently found. However, the actual value in fact is one-third. The theory predicts the superiority of scrap on solubility, and for the gap between 1.27 and 1.3, the theory suggests that energy can be saved by improving technology, recycling will therefore be more efficient and comfortable for the society. No doubt that recycling of old handicrafts is

much more comfortable for people than digging underground rocks.

It is possible to build a better society based on urban mines and to keep the earth cleaner and more beautiful and make people happier.

If I want to talk about the 2050 Vision in the Platinum community by talking about global warming in water, nature, forests, especially



human beings and society, my words will take several days, so let us now come to the conclusion: the vision I spoke about is a new knowledge. I believe that most aspects of knowledge that make up my vision are the use of existing knowledge. What I did was the knowledge of how to put the right information of knowledge to build a vision of sustainability. Over the past 100 years, atmospheric carbon dioxide has increased by 1.5 times. Lifespan expectancy has tripled. Energy capital and gross domestic product (GDP) have increased sevenfold, and knowledge has increased nearly a billion times in my opinion. Increasing knowledge is a good thing in fact, yet no one can understand the whole picture. We do not have any way to use excess knowledge properly. If we use the right knowledge for the right purpose, we can stop the terrible challenges we face. I define this process as a “knowledge structure”. The aim of this award is to produce and disseminate knowledge.

Fact sheet

- The average age of man as stated in Greek or Arab heritage was supposed to be 25 years
- The average human life expectancy was 31 years until 1900
- The average age of man is now 72 years
- Human lifespan has grown 6 years in thousands of years, whereas the lifespan has grown 41 years since the twentieth century
- The world's population now stands at 7,300,000,000
- The population will continue to grow until it reaches 9,600,000,000 at the end of this century
- The world's population will increase, although half of the world's birth rate is below the mortality rate, which makes the current population stable
- Number of cars will be one car per two persons
- In Japan, there are 60,000,000 cars now operating
- Average life expectancy of the vehicle is 3 to 5 years
- Number of cars being scrapped annually is 5,000,000 cars





Dr. Wendy Kopp
CEO OF TEACH FOR ALL

This began in 1989 when I was a student at Princeton University. Since I was interested in public policy as a university student, I became more concerned about equity in my country, the United States, the land of equal opportunity. So, that was the beginning of the notion, which I wrote when I was 20, saying: we need to create something called Teach For America that would help in this regard. This will drive the energy of the rising generation of university graduates in this field to work with the most marginalized children. I thought it would make a real difference in the short term in children's lives, and it would make a real difference on the long run by reshaping the generation's priorities. I think it is very important that we have future leaders, but we must spend the first two years after university in urban and rural public schools instead of working in banks. Over the past 28 years, nearly 50,000 have registered to participate in the Teach For America and some of these are my new prominent graduates in my country. This is a picture of the 25th anniversary of the Teach For America Foundation. About 15,000 graduates have returned to take part in the initiative in Washington, DC, to think

about what has been accomplished, that much remains to be done, and that we will bear the consequences of this trip because they have been involved in this work for two years but never leave it. About 85% of these people who thought they were going to do so for only two years were still either in education or working to improve the quality of life and conditions in low-income communities. One of the best parts of this trip that took place about 10 years ago was when I started listening to people from all over the world from India to Lebanon to Chile, people who wanted to do something similar in their own countries that led to a high level of education for all. This network Teach For America is a network of independent local organizations led by now 46 countries and growing, and we hope soon to be here in the UAE as well. All these organizations have met for developing collective leadership to ensure that all children achieve their potential. There are many lessons, but I think I'm going to share only one of it. This is a picture taken a month ago in a remote part of Ghana, one of the highest graduates of a university in Ghana. She speaks Mandarin, and is highly qualified. She teaches children in a way that is very different



from most students studying in Ghana. She works very quickly through critical thinking skills in the 21st century. What we have seen from teachers like Gene Quest while teaching these children in Ghana and around the world is that this does not only make a real difference because they are children, but also they teach the experience that can change everything there. About 70% of these people and thousands of people who have done so worldwide have spent a full term in education. Many of them have realized that they need to leave education to really address the issue and to improve the quality of health care, nutrition and services that children can reach. Surprisingly, they have attracted some of the best graduates of universities, institutes and institutions in India who said we would do so for only two years before going to something else, but they continued to do so. Along with many other people in the city, they are creating a real movement to improve educational outcomes in Pune. One of them formed a coalition of the business community and government leaders to develop a strategic plan to improve the school system. Three persons have also developed teacher development efforts, involving the

retraining of 2,000 government teachers per year, and another attracting hundreds of fresh graduates from local universities to retrain them.

I'll give you just one example of Washington DC because when we started working there 25 years ago it was the lowest performance of all main urban areas of our country. Children were four years late than other children who had high income levels, and two years behind New York City children who grow up in low-income areas. Only 4% of the children living in Washington DC have university degrees, just a few steps away from the White House. It is a real crisis. No one had any hope that schools in Washington DC will improve, but today it is the fastest urban developing in the history of the country. If you meet a 13-year-old student, he is a year ahead than four years ago; and this is a remarkable development.

Second, as far as the development of local leadership capabilities is concerned, these local leaders can move more quickly when there is an enlightened meaning at the global level when they are exposed to what is possible and what works in other contexts. We have begun



All these organizations have met for developing collective leadership to ensure that all children achieve their potential.

to organize practice communities among young leaders in these different countries who have been pursuing similar interests so that instead of going through all these independent learning curves, everyone learns from one another. Graduates in Pune, India, will be the first to say that they would not have done what they did unless they learned from other leaders in other countries. This is the second lesson of our work. You know that we need to make great efforts to instill local leadership capacity, which seems impossible without this change. But when we can help these local leaders, they will become familiar with the world knowledge and move faster.

I believe that in this era it is time to think that rapid reforms can change anything. We can

change the way we communicate overnight, with the new technology we can solve all diseases through the vaccine, but what we have seen is that in education we have to step back and commit ourselves to one game; this is a complex challenge. You know that the learning does not start in the classroom, and we realized that we need to resist the temptation to follow the strategy of silver bullets, which the governments always do to get out of this phenomenon around the world. We want to try to discover the only thing that will solve this. Perhaps we can give each child a computer, fix teachers or change curricula, and we realized that there is not only one thing, but there are many things we must do. This will take a sustained, long-term effort, and the only way forward is to ensure that the overall ecosystem of children is composed of leaders who agree on learning and development. What is the vision of the next 25 years? What do we work together over the next 25 years? We have gathered around a vision of entire societies in every part of the world; this vision enables all children to have access to education, support and the opportunity to shape a better future for themselves and for all of us.



2017 Knowledge Summit



2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة



Knowledge Summit
معرفة القمة

Knowledge Summit

Day One 2017

Fourth Session

Building sustainable excellence



Session topics

- Administration in the UAE
- Achieving excellence: Dubai as an example
- Government of the future



The Knowledge Summit

20



Speaker

Ahmad Al Nusairat

General Coordinator of the Dubai Government Excellence Program, UAE



Dr. Ahmad Al Nusairat

**GENERAL COORDINATOR OF THE DUBAI GOVERNMENT
EXCELLENCE PROGRAM, UAE**

Dr. Nusairat contributed to the launch and management of the Dubai Government Excellence Program, the first comprehensive program for government excellence in the world launched by His Highness Sheikh Mohammed bin Rashid Al Maktoum in 1997. He led the efforts of developing and raising the level of excellence in government performance in Dubai, customers' satisfaction, government competence, and meeting international competitiveness standards and other areas of excellence and investment in building human resources. He managed several initiatives during their foundation period, which later became continuous and mature programs for government development. He managed the system of electronic government suggestions and complaints. He also initiated the design and launch of secret shopper studies and the index of dealers' and employees' happiness, as well as the launch of the Dubai Smart Training Initiative.

Dr. Nusairat has clear fingerprints and active contributions in spreading and consolidating the culture of excellence in the private sector and the non-governmental sector. He served as the Advisor to the Mohammed bin Rashid Al Maktoum Award for Arab Management from its inception in 2001 until 2007. He was also a member of the Board of Directors of the Dubai Institute for Human Resources Development. Dr. Nusairat holds a PhD in Training and Institutional Performance Management from Cardiff University, UK.

The Knowledge Summit 2017



The Knowledge Summit
The Fourth Industrial Revolution

2017

101



Dr. Ahmad Al Nusairat

GENERAL COORDINATOR OF THE DUBAI GOVERNMENT EXCELLENCE PROGRAM, UAE



Welcome to the UAE, the country of goodness, love and peace. The country that provides every good deed and every new thing.

I would like to speak about the government excellence and the distinguished management in the UAE, especially Dubai.

Management is the oldest occupation in history. There is no cooperation between two persons to achieve a certain goal unless the third element; management exists. Therefore, the quality of management is reflected on all fields. If the management is good, the economy is good, the policy is good and the government services shall be good, because the government sector is the leader of the comprehensive development in all areas. Early on 1977, Dubai started the journey of excellence, when His Highness Sheikh Mohammed bin Rashid Al Maktoum provided to humanity the first government excellence program. We have been a traditional government, which was away from any development or system. There were no good services or organizational structures; name it whatever you like. However, now, thanks to Allah, we are a successful, sufficient

and efficient government that provides distinguished and world-class services. Our government departments compete with other departments on the global scale and have become houses of expertise in all fields of government work.

In the competitiveness indicators, the UAE has jumped five positions during the last year, from the fifteenth position to the tenth position in the Global Competitiveness Report. Several of our organizations obtained the first position globally in terms of performance. In the area of electricity connection, we find that Dubai Electricity and Water Authority (DEWA) is the first institution worldwide. Furthermore, in the area of facilitating the building permits,



Management is the oldest occupation in history. There is no cooperation between two persons to achieve a certain goal unless the third element would be management.



The Knowledge Summit

we find Dubai Municipality in the second position worldwide. These are not indicators from Dubai government; however, they are globally measured indicators.

When we started this program, the government excellence program, the percent of customers' satisfaction has been 61%; although the requirements have been simple. Nowadays, the percent reached 92%, however the percent of

employees' satisfaction has been low and now reached 83%.

I have heard a lot of people and some experts saying: «The reform of government sector is difficult and requires exorbitant expenses.” The fact is that the reform of the government sector is possible if there is a vision, senior leadership commitment, a good and qualified teamwork, work perfection and honest intentions.

Fact sheet



The UAE is ranked 10th in the world competitive report



Our institutions achieved the first rank worldwide in terms of performance



The UAE is the first worldwide in terms of electricity delivery



Dubai Municipality is the second worldwide in facilitating building permits



Dealers' satisfaction ratio increased from 61% to 92% in dealing with government departments

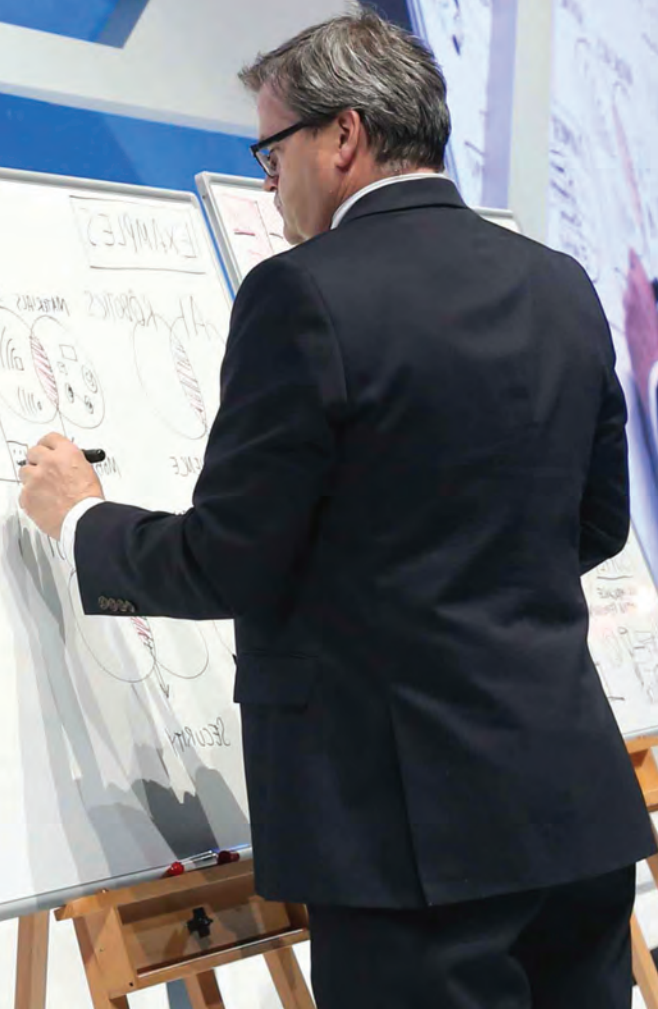
Knowledge Summit 2017



The Knowledge Summit
The Fourth Industrial Revolution

2017

Enterprise Co-Creation: Daimler



The Knowledge Summit

Day One 2017

Fifth Session

The Co-Create Effect of
the Fourth Industrial Revolution



Session topics

- **Evolution:** In the Fourth Industrial Revolution, every individual, team, and organization must evolve to remain relevant
- **Relationships:** What if that evolution came from collaborative co-creation from a few, but deeply meaningful strategic relationships
- **Unique Phases:** That evolution may include iteration, innovation, or disruption opportunities
- **Ecosystem:** Your relationship Signal Scouts can enable the process of adaptive innovation
- **Talent Agenda:** The Hollywood Talent Model focuses on few value creators
- **The Process:** Co-Create Canvas is your journey GPS



The Knowledge Summit
The Fourth Industrial Revolution

2017

107

The Knowledge Summit

2017

Speaker



Speaker

David Nour, CEO of NOUR GROUP



DAVID NOUR

CEO of NOUR GROUP

David Nour has been a passionate advocate of strategic relationships, disruptive technologies, distinctive brands, and globalization of exceptional customer experiences. Through his best-selling books, compelling speeches and valuable advisory work, David originated the practice of Relationship Economics®, demonstrating how relationships are the greatest off-balance-sheet asset any organization possesses.

David's new 2017 book, CO-CREATE (St. Martin's Press), illustrates how global leaders can think and lead differently through innovative and strategic collaboration. He delivers over 50 global keynotes each year explaining the economic value of strategic relationships, and the disciplined process of investing in them to fuel enterprise growth. He has worked with leading global companies such as Dell EMC, Disney, KPMG, Hilton, IBM and more. His insights have been featured in The Wall Street Journal, The New York Times, Fast Company, Mashable, CNBC, Knowledge@Wharton and Associations Now, as well as Entrepreneur and Success magazines. David is the author of 10 books, including the best-selling Relationship Economics (Wiley) as well as ConnectAbility (McGraw-Hill), The Entrepreneur's Guide to Raising Capital (Praeger) and Return on Impact (ASAE).

The Knowledge Summit 2017



The Knowledge Summit
The Fourth Industrial Revolution

2017





David Nour
CEO of NOUR GROUP



«What Got You Here Won't Get You There» is the title of one of my favorite books written by Dr. Marshall Goldsmith. In this book, he makes a beautiful relation between what you do to achieve success and the transition to the next phase of developing your business, organization or country.

I would like to move to a better idea to apply the Fourth Industrial Revolution; because the ideas that helped in the success of the previous phases of development may not help in development and transition to another phase. Accordingly, I would like to share with you some ideas and visions of some global clients, who think in a different way regarding the development of their business. Here, I refer to the idea of co-creation economy and its position in the market, in addition to providing some examples regarding the relation between the co-creation and the Fourth Industrial Revolution.

The World Economic Forum described the Fourth Industrial Revolution in this interactive image, which refers to many motives that contributed in driving this progress. I will specifically focus on the innovation and productivity, how can change achieve results in the future? How will the change made by the innovation be inside an organization? This issue shall be very clear if we looked at the top 100 companies in

the United States. Since one hundred years, the focus was on the industry of iron and steel, while in the last fifty years, companies have been working in the oil field. Now, there are many technology companies, which changed the way that we work and live, in addition to the way through which we interact with the surrounding environment. Moreover, if we looked at the top four companies, we will find business diversity. This diversity is due to not only trade, big data and the artificial intelligence, but also the integration and interconnection between all of them.

Working with many different companies, we quickly realized that companies, which have achieved success for several years in areas of manufacturing and professional services, should think about their business model, market strategies and revenue opportunities. In addition, we know that this issue



The World Economic Forum described the Fourth Industrial Revolution in this interactive image, which refers to many motives that contributed in driving this progress.



The Knowledge Summary

2020 has challenges and opportunities. As for challenges, it is known that the competition is on the rise, and we understand that globalization has helped in reducing distances, which accelerates the state of market access. Regarding the opportunities, there are several great opportunities of increasing expectations. If I can get the service quickly, why should I wait? I would like to get a faster delivery process and search for a better experience with the organization, with which I work. Furthermore, the issue is about the talent exhaustion. There are two big challenges related to these talents that are related to the way to develop the organization and evaluation of the Fourth Industrial Revolution in the organizations. The first challenge is related to the technical aspect; the digital immigration, meaning issues such as automation, big data or access to information or ideas relevant to our way of achieving business revenues.

I put all these things in one place, which I call the change of demand towards proper talents. Think of this matter for a while, those proper talents understand the needs of small business to move forward. In the same time, synchronizing with the change of demand towards proper talents, a change in allocation of resources and a change in the workforce culture are occurring.

I am interested in the transformation into real

intelligence. We need enough time to think about our organizations, partners and clients; the talents under the Fourth Industrial Revolution are a little different, and perhaps this will be better. In several ways, we can put the pride of our business aside. I will be motivated to make the work associated with our names the best work that can be delivered at all. Moreover, we will lose personal pride in one way or another and we will not be able to put our names and signatures on a project or a commitment. From all the above, the Fourth Industrial Revolution would deprive us of the personal pride, as it could harm organizations that could make change through co-creation. In many ways, the idea of co-creation represents the core of the spread of relations within the scope of the Fourth Industrial Revolution. Moreover, regarding the creation of a different business model and finding a different opportunity, we need to build many stronger and deeper working



The Fourth Industrial Revolution is about what we learn, what we add to our learning and what we are mutually learning.



relations. There are simple partnerships and joint ventures. There is the agreement to build a part while you build the other part, build something we cannot do alone, and develop our business, in addition to what we do inside the market in a different way than we did before.

The challenge is that we may talk about innovation and seek new outstanding horizons; however finding the value is indeed one of the most complex issues. Economists and business experts talk about the impact of the Fourth Industrial Revolution on health care and education, and its impact on many industries, infrastructure and energy. There are simple and recognizable models, but they are about make the action repeatedly. However, things become complicated when it comes to more than one right choice and more complicated when there is a success opportunity. What we see now for the first time is more complicated than it was during childhood; as we need a lot of multiple responses and effort to reach this stage. Furthermore, in the next stage of evolution, there is no guarantee of success. We need many ideas to define our views and perceptions compared to others. Moreover, one of the most complicated aspects is that we need to lead differently. In the past, we depended on many evaluations, reports, and specific

structures. However, in the next development phase, we can once more depend on the weak method of comparison, and the collection of ideas from different perspectives in one place.

Let us think of something we all do permanently; the groceries for example. We all go to the grocery stores and see the goods on the shelves marked with barcodes and other codes. There is also the depth of the stock of goods; the number and types of goods, etc. In addition, the general idea of re-ordering is about more complicated issues such as supply, demand, accessibility, and the number of limited shelves. If a robot can read the code while at the same time it can access the depth of the inventory, and can in real time evaluate the inventory during the submission of orders; this robot does not have arms to access the shelves, however it only reads the data and helps people make the right decisions. This is a matter of the future, but it happens in one hundred and fifty Walmart stores in the United States; the robot scans the shelves with his eyes and issues immediate data regarding the stock and the stock is replenished in the real time. On the other hand, a robot can be manufactured to help with repairs, such as how many times maintenance technician can repair faults and how they can get to the fault spot. A robot, which is





fed with information about the task and the next step to be accomplished, can help in this process.

Materials and sensors contribute in the co-creation of moving. There is a modern example for that, in Japan, Toyota has made a car with its airbags outside. This is a shift for cars; as it becomes more aerodynamic, and once again here appears the thinking in a different way. We are always looking for safety by installing airbags inside the car; however what can happen if we put the airbags outside the car? Another example of a joint effort between Yamaha and SOI Robotics, they thought of motorcycles driven by a robot; you will have

two wheels in the front and back, which means more stability. There is a lot of dynamism in terms of stability and transformation. The robot is not required only to receive a lot of information, but also it has to respond more quickly, and what makes it important is that I found during the last check that the motorcycles were moving very quickly in narrow spaces. By knowing how motorcycles can move between places, quick decisions are made to adapt to the environments, where they move.

Publishing and enhanced reality contribute together to the co-creation of many different



experiences. The Harvard Business Review has recently published a magazine whose applications and characteristics are fully alive, not just interesting projects, but also applications of enhanced reality that turn these examples into a live reality. Moreover, an example of co-creation is industrialization and the Internet of things; we hear about interactive things and sensors, and both manufacturing and the Internet of Things contribute to creating security opportunities for protection. Once again, we emphasize that one of the challenges facing the Internet of Things is security breaches and electronic piracy. If any infiltration is detected, the connected part is closed and different sensors are alerted.

Capital One created customers' relation with the bank through cafés. There were specific places in the cafés for bankers to answer questions asked by the customers. The matter is not related to cheques' deposit, it is related to the electronic trade and mobile phones applications that actually help the participants. Moreover, people speak about the experience and show how it developed the concept of banking services and going to banks.

It is time for co-creation, development and

transition to a totally different future for you, your team and your organization. How can you compete in the future if you continued to follow the regular way of business, and you are not sure to what extent will this be appropriate or suitable to the market? If you compete through providing a service, a new product or better copies of what is existed; in such case, you will be a temporary competitor. However, if you think of how we can compete in the future, how can we make ourselves distinguished? How do we think of going along with the market? Not to only go along and suitable for the market, but to stay the same way. In addition, we spread ideas that affect a basic effect in all areas.

Moreover, we shall concern about the adaptation with obstacles, as they exist around us. Once you know how to adapt with, you will make progress and overcome these obstacles once they appear. Do you have an experienced competitor? No problem, you will think of entering your product to the market. Are there applied government regulations? No problem, we will find out how to work accordingly.

For the innovation that we want, feel concerned about or want to invest in, it consists of several





stages. The first stage is repetition, that is, what the institution does well, or the implementation of what the institution used to do well. However, innovation is the making of new things. The market disruption is about the implementation of new things that make the old appear among the market products.

When you put your money and effort into a project, then success is potential, but co-creation increases your ability to get from the status quo to the possible. Let us mention an example: all of us have in our homes a remote control, true? However, I

remember when I was a child that I was moving to the TV to turn the disc to change the channels. Now, we have the remote control, which started more complicated years ago and had many buttons, the thing that we call repetition. As for the change of the remote control function to an application used by the tablet without the need for the remote control itself; this is what we call innovation. By the way, there are hundreds or even thousands of channels on television, so there are thousands of people who have mobility between those channels. However, if television becomes aware of what I prefer, like



and dislike. Based on my account at Amazon it understands what I want to buy, and based on my account in the Uber it knows where I would like to go, etc. It can recommend TV programs that I watch and this is an example of market disruption. The remote control has been transformed to the top position in the market, which is happening now, because television has become aware of what I prefer, like and dislike.

Now let us talk about adaptive innovation. We have always used to get feedback from individual stores that offer products to customers, receive feedback on them, supply new products to the market and receive the feedback. In this regard, we can get continuous feedback from multiple sources and continue to improve, the thing that we call adaptive innovation; i.e. continuing the change and improvement. A specialist told me once that if people were not attracted to the product, the marketing process would take long time. Continuous feedback from those who use the product to improve it constantly should be obtained. The product owner can use this feedback to improve and develop his products and services; however who will lead that?

It is worth mentioning that Under Armour gains

profit with the amount of four billion dollars, however, the profits of its main competitor Nike are estimated at USD 30 billion. Therefore, Kevin believes that the more you desire in competition, the more change will occur to the business through the productive analysis.

Now, let us talk about the visual effect. I agreed with one of my customers to the importance of creating an exceptional customer experience, it would be very simple. The best strategy would be to think direct and straight; this would enable us to find great quality solutions, make the workplace a better place and communicate effectively. The organization of that customer works in manufacturing, they manufacture elevators and escalators. What we talk about now is the core of the subject. The sensors in elevators tell you about the faults with high accuracy, the time when maintenance is required and do not let you face the reality.

Another example, Hilton Hotel. The hotel found that the guests do not want to come to the hotel to find elderly employees or may be in the age of their grandparents, accordingly they thought about attracting young generations.

I asked them: What did you do? "We went to



The Knowledge Summary

20

universities and told them how great Hilton was as a trademark". I asked them to give me an example, they said: "We were asking them a question: what is the first trademark that used the color television and applied the room service?" I answered: "Wait a minute, they do not watch your TV and do not basically come to your rooms; and then message will have no effect". What if you make the younger generation the hero of the journey and support their efforts? For example, you go to their first year of university to decide where to go. What will happen if you make a map that makes them understand the best places to study? We help students acquire not only educational experience, but experience in the experiments as well. This increased their recruitment percent of the Millennium generation by 400% thanks to the fact that the visual story is straightforward, intelligent and simple.

Another example is an initiative to bring military expertise to Hilton. As soon as the military service is ended, they help military personnel acquire civilian jobs within the hotel. Again, this was presented at an investor conference. An example is provided by KPMG, the global management-consulting firm. It was about senior legal and

compliance officials who wanted to be a part of a successful global-risk exposure story. We were having discussions day after day about their jobs. Therefore, we believe that theoretical visualization gives you an idea about your position now and the future shape form a supposed aspect and that was related to the mentioned examples. What I think of it is that if you took the risk and invested in your opportunities in the frame of the Fourth Industrial Revolution, you are building sequential relations and creating a journey you can continually measure and analyze. Furthermore, you can imagine and visualize achieving a very different value from what you visualize nowadays.

Once more, think about it. If we now look at traffic, cars, and people who put street guiding signs, do we meet them? Many health issues result from confrontations. The question is, how can we achieve different values than now? In addition, how can we build bridges, as there are large companies unfortunately half of these companies do not know what the other half does? What does make us motivate them, as we mentioned in Daimler's example, to think of innovation opportunities?



Fact Sheet

Daimler Group's initiatives in the field of joint innovation

- Daimler launched the CASE project, one of the innovative projects focused on value and prioritization
- The letters of the word CASE refer to four words, respectively: connected, independent, shared, electric, i.e., Daimler confirms these priorities as the focus of the company and its future
- Daimler has created the STARTUP AUTOBAHN, a large enterprise-like company that offers incredible value and provides space and equipment for startups to present their competitive ideas and become part of this platform
- Daimler also launched the INVEST project to focus on the areas in which investment will continue; the Foundation identifies the areas in which they should invest and expect to reach good results
- Daimler also founded the 1886 Lab, a global innovation engine whose idea is that the best innovations are not supposed to be in our company, but in the environment around us there are many outstanding innovations that we must follow
- Daimler has established DigitalLife@Daimler to focus on ideas within the company worldwide, and meet across this platform to reach new directions and projects for the enterprise, and because there are different cultures and languages, they use visual imagery



2017 Knowledge Summit المعرفة قمة



2017 Knowledge Summit

Day One

Sixth Session

Cyber-security, AI & Digitization Enablers:
Challenges & Expectations



Session topics

- **Cyber-security Security: Applications and response to cyber-attacks**
- **Hacking: Is there a safe zone?**
- **Internet of Things (IoT) and Big Data**
- **Social networks and personal information security**
- **Connected societies and AI technological infrastructure**



The Knowledge Summit
The Fourth Industrial Revolution

2017

The Knowledge Summit



Speakers

Khalifa Alshamsi

Group Chief Corporate Strategy & Governance Officer,
etisalat Group

Pablos Holman

Inventor & Cyber-security Expert

David Rose

CEO at Ditto Labs, and is the Founder and CEO of Vitality

Charlie Miller

Head of Autonomous Vehicle Security at Didi Chuxing,
the Chinese Ride Sharing Company



Moderator

Nouraldin AlYousuf

Emirati TV Presenter



CHARLIE MILLER

HEAD OF AUTONOMOUS VEHICLE SECURITY AT DIDI CHUXING, THE CHINESE RIDE SHARING COMPANY

Recognized globally for his ability to identify vulnerabilities in consumer products, Dr. Charlie Miller is "one of the most technically proficient hackers on Earth", according to ForeignPolicy.com. Currently the head of autonomous vehicle security at Didi Chuxing, the Chinese ride sharing company, Dr. Miller has made waves within the field of automotive security for his work alongside research partner, Chris Valasek. First demonstrating that with direct access to a vehicle, the physical systems of a Ford and Toyota could be controlled by an attacker, he then expanded this research to show that these attacks could be done remotely. Dr. Miller and Valasek made headlines and exposed serious security flaws in automobiles with their remote compromise of a 2014 Jeep Cherokee, in which they obtained physical control of the vehicle from more than 10 miles away; the results led Fiat Chrysler to recall 1.4 million vehicles. Dr. Miller previously helped secure Uber's self-driving car fleet. Before that, he served on Twitter's computer security team after five years as a computer hacker for the National Security Agency. The 4-time winner of the "Super Bowl" of computer hacking, the annual Pwn2Own competition, Dr. Miller has publicly demonstrated many security exploits, specifically of Apple products and is the first person to remotely hack the iPhone, as well as the Android smartphone (on the day it was released). He is the co-author of three books, including iOS Hacker's Handbook, and has been featured in a range of media outlets, including NBC, ABC, CNN, NPR, CNBC, The New York Times, USA Today and Forbes.

Knowledge Summit

2017



PABLOS HOLMAN

INVENTOR & CYBER-SECURITY EXPERT

Pablos Holman is a notorious hacker, inventor, entrepreneur and technology futurist who is on a quest to solve the world's problems through the innovation of technology. He has worked on a brain surgery tool, a machine to suppress hurricanes, a self-sterilizing elevator button, a cure for cancer, a gun that shoots laser beams at malaria-carrying mosquitos, and 3D food printers. Pablos has a unique ability to articulate practical visions for the future of technology. He has also contributed to visions for the future of urban transportation, entertainment, education, health care, food delivery, sensor networks, payment systems and cloud computing. Previously, Pablos helped build spaceships, the world's smallest PC, artificial intelligence agent systems, and the Hackerbot, a robot that can steal passwords on a Wi-Fi network. Pablos is often invited to speak at conferences about invention, hacking, technology and The Intellectual Ventures Lab. Recently, he has spoken at Stanford, the United Nations Headquarters, EG, The Milken Global Conference, the World Economic Forum at Davos, the CIA, and many of the top tech companies in the world.



DAVID ROSE

CEO AT THE DITTO LABS, AND IS THE FOUNDER OF AND THE CEO AT THE VITALITY

A serial entrepreneur, Rose is the CEO at the Ditto Labs, and is the founder of and the CEO at the Vitality, a company reinventing medication packaging, which is currently distributed by the CVS and Walgreens. He is also the founder of Ambient Devices embedding internet information in objects such as lamps, mirrors, and umbrellas. He holds patents for photo sharing, interactive TV, ambient information displays, and medical devices. His work has been featured at the MoMA, and covered in Wired, The Economist, and The Colbert Report. Rose is an instructor and researcher at the MIT Media Lab, and the author of the pre-eminent book on the Internet of Things, *Enchanted Objects: Design, Human Desire, and the Internet of Things*. "The history of computers has mostly been about efficiency," Rose told The New York Times in a major three-page feature. "I think one of the things that's changing is that enchanted objects can be about adding emotion and magic to the fabric of our everyday lives and experiences." He continues: "Our devices can be a lot simpler, and our interactions to them can be a lot simpler ... These are ordinary things that have extraordinary capabilities."



KHALIFA ALSHAMSIS

GROUP CHIEF CORPORATE STRATEGY & GOVERNANCE OFFICER, ETISALAT GROUP

Mr. Khalifa Hassan Al Forah AlShamsi is currently holding the position of Group Chief Corporate Strategy and Governance officer of etisalat Group. Prior to that, he was the etisalat Group's Chief Digital Services Officer tasked with managing the newly established etisalat Digital Services Unit at a Group level. With over 24 years of experience in the telecom, media and ICT industry, previously Mr. Alshamsi has successfully led many functions within etisalat including Mobile Networks, Marketing, Sales and Digital Solutions. Mr. Alshamsi was behind the success story of etisalat UAE where he was responsible for leading the deployment of mobile services, fiber-based broadband and advanced data/ICT services. Khalifa is also the Managing Director of Etihad etisalat "Mobily" in the Kingdom of Saudi Arabia and a Member of the Board of Directors at PTCL/Ufone in Pakistan, etisalat Afghanistan and Chairman of E-vision - the UAE-based TV, content and multimedia company.



The Knowledge Summit
The Fourth Industrial Revolution

2017

125



Knowledge
Summit





Moderator: Nowadays, we are busy with the future and we are asking ourselves a question that concerns Hollywood as well, regarding movies. Of course, you have seen many movies such as Iron Man, and Surrogates. The question is, are we going to be controlled by artificial intelligence? Do you think so? Yes! The attendance is optimistic to some extent and that is good.

In previous years, commercial acquisition agreements between governments have cost billions of dollars to counter cyber-attacks, improve artificial intelligence, and fill security gaps. Now the question remains, are we safe? Should we worry about the future? Who should worry more? We as individuals, users or governments? Because sometimes when we face a cyber-attack, governments may not be concerned, so who should care about it, governments or individuals?

Now, let me start directly through a local

view with Mr. Khalifa. Mr. Khalifa, I will start with the positive side, what are the available opportunities in the UAE? Particularly for you as one of the officials in etisalat Group here in Dubai, how do you maintain cyber-security in Dubai and UAE?



Khalifa Alshamsi: It is a good start to begin with the opportunities, as we are in the last session of the day and we have heard all day about challenges and concerns. I think that we should look at opportunities first then determine security risks and gaps and think of a way to mitigate that and fill the gaps. Everyone in the UAE, citizens, attendance and people who watch the UAE, both its government and the working companies will find that everyone is trying to be the leader in the development of advanced technology, in addition to services to nations and government institutions. In addition, to inspire us as people working in the private sector not only to sustain the work of

other institutions but also to allow us to act as state agents.

Therefore, we need technologies and platforms, which is the role of communication services, such as our organization. Our role is not only to provide services to consumers, whether in the form of SIM cards for their mobile phones or connection of WAN network to their homes, but also to provide the infrastructure required to extend our network to all areas in our country, in addition to connecting fiber optics to all homes, offices and government departments.

In this regard, it is important to identify, by using the latest technology, the areas and locations of exposure to security breaches and any other related incidents through building capacity, strengthening security platforms and centers, in addition to collaboration with other operators worldwide to increase global coverage. Yes, we are in a dynamic world and technology is evolving but of course, we will not stay in our place, afraid of the unknown and refusing to take the risk. Every business is based on a degree of risk management. When you know the risks you face, know

yourself, know your assets, and assess them, you find out how fast you will react when you face an accident, and what the impact is. Once you know all these things about your assets, vulnerability, abilities, who attacks you and how you can mitigate it; you can take advantage of the opportunity you have. You begin to automate your operations, and build the latest platforms, and artificial intelligence platforms, which will be generalized to all of our departments, administrations and organizations, that is, when you know your abilities and your potentials, you can move forward with great strength.



It is important to identify, by using the latest technology, the areas and locations of exposure to security breaches and any other related incidents through building capacity, strengthening security platforms and centres, in addition to collaboration with other operators worldwide to increase global coverage.





Moderator: Mr. Pablos, I would like to ask you as an inventor, an expert in the cyber-security and a person interested in security procedures when you invent something; is this good or bad for a person like you, who know what may happen in the future?



Pablos Holman: When you try to invent a new technology, this is like that you are trying to innovate the future machine, then the next step after that you make a product. When you make the product, you will not have enough resources to take care of the security aspect. First, you will not have enough time to detect security problem as the case in big organizations, all that you need is to think in a comprehensive manner. You need to think in the life cycle of new technologies, products

and services, besides you think about what you can do in this regard. One of the best examples is that now you have a computer in your car and you do not have a system update, then problems will appear in the car and you will not be able to fix it. All that you can do is to go to the distributor and replace the broken upon request. In addition, the manufacture date does not refer to the ability to update the system before the emergence of the iPhone. Even phones did not have the ability to update the system before the iPhone. Moreover, computers did not have the system update ability until nineties, when we found a way to fix those problems as we discovered them. When we think about the life cycle, we say that: Really, what can we learn from security problems as we face it a lot? Problems that you may face with your phone, you may face



When you try to invent a new technology, this is like that you are trying to innovate the future machine

with your computer, besides the problems you may face with your car, you may face with your computer. Through solutions for those problems, we reach the level of maturity.



David Rose: This means that you should have doubts regarding the new products, because as you look at the security curve of products, you find that there is a security defect in the first generations of products.



Pablos Holman: My method is absolutely the opposite. Yes, I doubt new things more than any other person does, so I can determine problems and find solutions better than anyone else. This is how the things work with me. Many people do not agree on that; however there are indeed different ways of thinking in this regard.

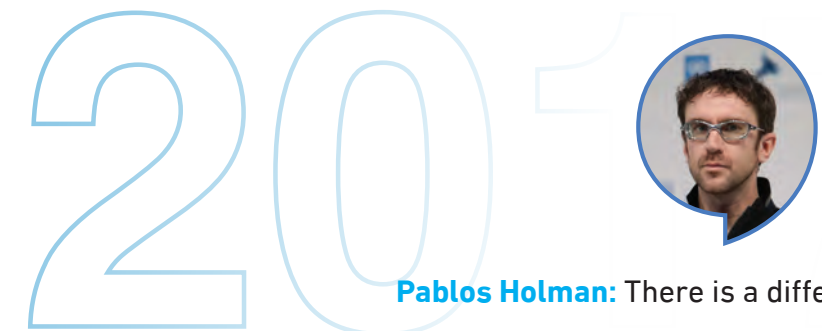


Charlie Miller: I agree to that. Many new technologies face problem like the ones we have faced before with phones and computers or even with cars, there is no big difference. Stealing an email has the same consequences of death threat and likewise if we look at the idea that computers will physically control everything.



Many of new technologies are facing the same problems that you may have faced with phones and computers in the past and even with cars; there is no big difference





Pablos Holman: There is a difference in thinking between Charlie and me in this regard. When you work in your field from the perspective of a researcher, there will be a probability that mistaken issues may occur regarding the use of computers. However, as being hacked, we have a great fear of the occurrence of security breaches, we always expect the occurrence of fault, and we expect that the hackers will attack the web and entirely disable it. In fact, the expected fault occurs. Moreover, do you know that things get better after our interference? Even in the worst disasters such as the collapse of the power grid in North East of the USA and Ukraine, we dealt and fixed it. We imagine the occurrence of some catastrophic faults such as a breakthrough attempt to automobile systems causing accidents, and if it happened, we would fix it and work to prevent it from happening again. I do not think that we guarantee that it will not happen to you; however it is not probable

that all computers will breakdown at the same time and we will not be able to recover them.



Khalifa Alshamsi: Now, cars are more connected and if the operating system was weak; hacking can be easy. However, I do not think that things will go this way. I did not comment on the words of my daughter, but this is true. Now, cars are connected and we in etisalat connected our network with some models of Toyota and Nissan cars. Fortunately, regarding the manufacturing of automobiles, the automobile goes through several security checks before reaching this stage.



Moderator: Charlie, you have hacked a Jeep, we have seen that live and all of us remember the tragic death accident of Paul Walker, one of the crew of “The Fast and the Furious”, who Mr. Khalifa mentioned and some of his audience think

that the car was hacked. Is that thing possible?



Charlie Miller: Referring to the situation seen by people in the video, which my friend and I did. It was a Jeep Cherokee and the driver couldn't press any button and we had controlled the car, the turns and the breaks everything. Sure, it was terrible, but if you can control a single car, you can control thousands of cars. However, I think the idea of controlling a car remotely is only available to few people and requires many efforts.



Moderator: David, before I ask you, I will go to the video, which illustrates your smart house and how you integrated technology with almost everything. I liked your development to the Google Earth table as an interactive mean that can make

the family closer in the future. In addition, it is good to invent and implement such things in your house and enjoy a smart house. We have Alexa and some people use it; the question is: who have the ability to access this information?



David Rose: I think that this thing refers to the gradual transition into artificial intelligence. It is not a big deal; I think it is just an incorporation of a simple part of connectivity and smart elements in normal devices or things. You cannot play the angry birds or any other games on Google Earth table. Of course, you can mix the game; however I was the one who decide what we are going to do in that place. Skype cabinet as well can be adjusted to perform several things, but it is specified just to connect my children with my father, i.e. it is integrated for that relation only. I believe that the opportunity is for connectivity-related things, because the highly unmeasured modified devices perform functions badly.



The Knowledge Summary

However, for example, on integrating a fascinating application in a piece of furniture, in that case, the required function is performed properly.

To me, I prefer things to be simpler. However, in data-related decision, I believe that privacy is crystalized through design. In some devices, there is no need to save data in the first place. In some cases the question will be, who has access to this information?



Moderator: I am connected to Alexa and if Alexa reviews personal data such as the music we hear, people you talk with and conversations. Here, the question remains: who has the accessibility to such information?



Charlie Miller: To me, the risks that may happen are related to the issue that if there are many

computers and connected devices, there are many chances of getting things wrong. For example, seeing more private data and stealing email or credit card number and potentially being more vulnerable when a smart TV is hacked, a microphone is controlled and your conversation is heard and your phone's camera is hacked and you are watched in your living room, this is what you should be afraid of. In such cases, privacy is violated.



David Rose: I see that hacking things may lead to hacking of other things. The one, who hacks the child monitor, may hack your conversations on Alexa and open the doors in smart homes by controlling the smart locks. It is like an upward process.



Moderator: What about the case that happened

on Facebook? When they found two devices, chatting together and they had to shut them off.



Pablos Holman: The issue is not technically difficult; Charlie and I can hack the child's monitor device and open the door lock system for show off. However, it can be fixed and return to work. Russian hackers may attempt a large-scale cyber-attack, but I do not find a problem regarding privacy to concern about. In addition, I do not think that people at home shall be frightened from hacking. If you could not solve the problem, you can disconnect the hacked device and continue what you were doing.



In some devices, there is no need to save data in the first place. In some cases the question will be, who has access to this information?

David Rose: I agree with you, we may be afraid of a hacking on our privacy; however what I find important and worrying is the spread of Alexa in our live, when it answers to your family members, especially your children, instead of you. Moreover, after we used to rely on our wives to ask them about what we wear; now, Amazon Eco Lock enters your bedroom, plays the role of fashion expert, and tells you that this costume is better than the other is. I do not know if this is working good or not, but the most important part in the issue is the quick development of speeches that we conduct and services that we get from such devices. Of course, it is interesting, but it changes the shape of our relations.



The Knowledge Summer

2014



Pablos Holman: Always, it is all about your choices, how your life will benefit negatively or positively? Therefore, it needs balance between what you chose. I work on emails since 1992, it has controlled my life for a while, but now I am fortified against it and I can ignore it. You can control that and adapt to it; however, some people are struggling to succeed in this regard, but adaptation may reach a point where you can overcome that matter.



Moderator: It depends on the social background and who uses the technology now. Young generations are using technology now; six-month-old children use iPads, so when they grow up, it will be like a daily use for them. Data is collected, and as long as it happens, it will be used in some way. We do not have the same awareness of using

the technology with the same degree. They do not have sufficient knowledge of what they use and how they use it, and is it necessary or not?



Khalifa Alshamsi: Let us get back to the video, as it actually presents the Internet of Things and how the connected devices will move from just personal interactive smart devices into a complete domain of Internet of Things. The scope or large use space will be smart homes and all the devices in them. Mobility will be the future of all connected things. Internet of Things will be the future, we are already afraid of what may surround it, but we can use it and learn how to develop ourselves, facilitate our lives and monitor our homes.



Moderator: Being a big communication company, how could you organize this issue?



Khalifa Alshamsi: Let me first complete, as we may also benefit from the Internet of Things at the service of our factories, and consider how we can monitor my company's vehicle fleet, how can we use less fuel and reduce accidents? All this can be managed through solutions implemented today. It will move on from the connectivity side, which is currently being conducted; everything is now connected, and there are good reporting systems, and there is also the collection of information; information is collected through personal devices in homes, offices and cars. Then we will move along with artificial intelligence, where you will take all these data and learn from them to make the best decisions. This is what the energies of all intelligent minds in the world should do to improve the productivity of humanity, organizations, factories, and governments. However, there is a side related to end-user education and awareness: child monitors. I mean, the default name and password for your

smart TV and child monitor are not changed, and the average person will not focus on that side; he will just buy the device. The organisation, entity, service provider, or the government that provide this should educate the user with the advantages and disadvantages of the service or the device. Moreover, there won't be steps to be implemented to complete the issue on the service level. We, as an organization, on the level of connectivity, we should have protection against the availability of the Distributed Denial of Service (DDoS), other activities and encryption that may be added to communication instead of using connectivity without a scale and unified standards established by normal users. I think that we should determine the risks and find the availability to reduce it as employees in this field to make sure that we get the best of it..



David Rose: I think there is hope. Pablos has an attractive iPhone that he opens with a face print. I think this is good; he does not need a password,



The Knowledge Summit 20



only facial features, and no one can use his phone other than his twin. This is exciting; we do not need a password for a smart TV that may be hacked or any other device through using technology and deep sensing. Apple made a camera in real depth. It is about microchips that are integrated into devices, cars, and Alexa, so you do not find difficulty to defeat the key that attacks you.



Pablos Holman: This kind of things does not present a risk for me, even if you do not have my face, you can steal my phone, as this kind of attack does not need a lot of talent. Phones of others

can be taken and entered with forged face prints, so do not worry. What we should need is valuing the technology and how it makes benefit for you; you use Google every day, did you send one dollar to Google? Did you send a cheque against your usage? However, Google in return, collects your information and publish sales advertisements through which it makes gains. This issue is good for you, because you get free distinguished features and capabilities from Google. For example, we imagine that the data that Google has represent a freaking issue for us and nothing happens. Therefore, what I think is that you should use technology and utilize it without worry, and if a problem occurred, all what you need is to change the pattern, besides, if the problem remained, you should worry a lot.

Q&A session

Orange, Emirates Literature Foundation

I really do not have any technical background. However, when I heard about the cyber-security, I felt insecure. You are saying that it is difficult to make a control system, how is that?



Pablos Holman: Ok! Let me make it clear for you. Everything is in danger, as there is nothing properly secured. However, you do not have a security problem; it is a risk management problem. The fact is that the risk for you is not very bad; in security, we have a principle says: "If you are chased by a bear, you do not have to be able to run faster than the bear; you only need to be able to run faster than your friends."



Charlie Miller: In fact, I am more pessimistic than these gentlemen and I do not want to worry you anymore. If you want something to improve your security situation, you may think of the instructions of use, where most of the services have them and they are easy to use and can save you thousands of times.



The Knowledge Summ

I am not using an antivirus because I do not want more security. My house network does not have a password and the Wi-Fi either, as I decrease security measures.

James from Dnata

However, the problem lies in piracy attacks take place at the same time, which has become a concept for a phenomenon. Can anyone of you comment on this?



Pablos Holman: Well, here's how I think, if you're in any country in the world, in addition to the United States, which one do you prefer, will you control our land or our computers? The economic value lies in the companies and in the computers they manage, it is the goal of choice. I do not tell you that things are secured or not, but I believe in different contexts that we live in a world where corporate hack through attacking computers is real. In

addition, I want to repeat: you have to assess the threat volume that you and your company face and use the resources to distribute them on things that you as a company can do to make sure you are not at risk.

Muhammed Hussein from Mohammed bin Rashid School of Government

I will put the issue of hacking aside, and go deeper into e-services. Some websites contain a "Terms and Conditions" clause regarding the use of your information and personal data on the marketing side of the service. How dangerous is this issue?



Pablos Holman: When you put your data online, the service conditions allow others to see those data. Sometimes, those data are sold or marketing decisions are taken based on that, how dangerous is this?

To me, I think you are the only one, who can determine whether this deal is good for you or not.



David Rose: However, you must understand that these data can be analyzed in a way that is more powerful than you imagine. Someone may do semantic analysis to probably understand your

affinities or your trending affinities in a way you would never understand from attack perspective and the photos and videos perspective. They can classify everything that is in your photos and discover like you are going to have an interest in camping, you are going to have a dog? In addition, if you are going to have a new house. They can predict when this is going to happen, and proactively market services to you before you have those interests.

Hany Torky, PhD

Technical Advisor, Arab Knowledge Project,
United Nations Development Programme



Knowledge Summit

Day Two

Day 2 -Hall I - Session 1
Global Knowledge Index



Session topics

- The importance of the Index and the role of the Foundation in disseminating knowledge
- The importance of partnerships with the United Nations Development Programme in supporting knowledge and development in the Arab region and the world
- Key findings
- The knowledge gap between the Arab and Western worlds

The Knowledge Summit

20



Speakers

Jamal Bin Huwaireb

CEO, Mohammed Bin Rashid Al Maktoum
Knowledge Foundation (MBRF)

Dr. Hany Torky

Chief Technical Advisor, Arab Knowledge Project

Michael O'Neill

UN Assistant Secretary-General



Moderator

Mohammad Abu Obeid

Journalist and News Presenter, Al-Arabiya



JAMAL BIN HUWAIREB

**CEO – MOHAMMED BIN RASHID AL
MAKTOUM KNOWLEDGE FOUNDATION
(MBRF)**

His Excellency Jamal bin Huwaireb serves as Cultural Advisor to the Government of Dubai. Since 2013, he has been managing Mohammed bin Rashid Al Maktoum Knowledge Foundation (MBRF), and in 2016, was appointed as Secretary General of Mohammed bin Rashid Al Maktoum Knowledge Award. H.E. Bin Huwaireb also heads MBRF's board of advisors. H.E. Bin Huwaireb is a board member at Dubai Media Incorporated, and a member of the Executive Committee of Mohammed Bin Rashid Al Maktoum Global Initiatives. He also serves as vice-chairman of the National Curriculum Development Committee. He is a member of the advisory board of the College of Arts, Humanities and Social Sciences at Sharjah University, and also a member of the advisory board of the College of Humanities and Social Sciences at the UAE University. He was appointed as a member of the Global Leadership Council of the Said Business School, University of Oxford. A UAE national historian and a pioneering man of letters, H.E. Bin Huwaireb is acclaimed for chronicling the cultural and creative movement in the emirate of Dubai, as well as the wider GCC region.



MICHAEL O'NEILL

**ASSISTANT ADMINISTRATOR AND DIRECTOR OF THE
BUREAU OF EXTERNAL RELATIONS AND ADVOCACY**

Michael O'Neill (United Kingdom) joined UNDP in February 2014, as Assistant Administrator and Director of the Bureau of External Relations and Advocacy, with the rank of UN Assistant Secretary-General. Prior to this appointment, Michael was a British diplomat, serving most recently in London as Chair of the Prime Minister's Gulf Strategy Group in the UK Cabinet Office. Michael previously served as British Ambassador to Qatar (2012-2013); Head of Mission, Helmand Provincial Reconstruction Team, and ISAF Senior Civilian Representative in South-West Afghanistan (2010-2012); UK Special Representative for Sudan, Foreign & Commonwealth Office, London (2007-2010); External Relations Counsellor, UK Representation to the European Union, Brussels (2006-2007); Economic & Social Counsellor, UK Mission to the United Nations, New York (2002-2006); First Secretary Politico-Military Affairs, British Embassy and Institute for National Security Studies, Washington, D.C. (1998-2002); First Secretary, Foreign & Commonwealth Office, London (1994-1998), including as the Foreign Secretary's Speechwriter and as Private Secretary to Lord Owen as Co-Chair of the International Conference on the Former Yugoslavia; Second Secretary (Defense), UK Delegation to NATO, Brussels (1991-1994), and Administrative Trainee, Ministry of Defense, London (1988-1991). Michael holds an MA in Classics & Modern History from Brasenose College, Oxford University, and an MSc in West European Politics from the London School of Economics.



HANY TORKY, PHD

**CHIEF TECHNICAL ADVISOR, ARAB KNOWLEDGE
PROJECT, UNITED NATIONS DEVELOPMENT
PROGRAM**

Hany holds a PhD in Applied Statistics from Alexandria University. Prior to joining the Arab Knowledge Project in 2010, Hany was a lecturer at Alexandria University. He has around 20 years of experience in the areas of Statistics and Knowledge for Development. Hany is currently the Chief Technical Advisor of the Arab Knowledge Project (AKP), which is one of the very few credible initiatives on 'knowledge' and 'development' in the Arab region. He has led a survey on around 5,800 sampled school students from four Arab countries – the UAE, Jordan, Morocco and Yemen – in preparation for the Arab Knowledge Report 2010/2011, and another survey on around 5,500 sampled university students from four Arab countries – UAE, Jordan, Morocco and Tunisia – in preparation for the Arab Knowledge Report 2014. He has also overseen the organization of workshops at the UNESCO headquarters, the University of Oxford and the United Nations Headquarters. Areas of expertise include providing guidance and advisory services and delivering lectures on knowledge issues, supervising research and dissemination of research findings, statistical analysis, building indices and modelling and simulation.





Knowledge Summit



The Knowledge Summit

2017



Moderator: H.E. Jamal Bin Huwaireb, we are accustomed to have a stock market index and a stock exchange index; how can you measure the knowledge of societies? And how did you get this idea, especially since you had the Arab Knowledge Index in 2015, the Reading Index in 2016, and now the Global Knowledge Index.



H.E. Jamal Bin Huwaireb: This Index is a sign of the keenness of the United Arab Emirates – the leadership and the people – to keep up with the scientific progress and forecast, because the immeasurable cannot be developed. The measurement of knowledge in the world first began by measuring knowledge in the Arab countries in 2015/2016. It was not easy to turn from knowledge reports to indexes that benefit all governments in the Arab world. Then directives came from His Highness Sheikh Mohammed Bin Rashid Al

Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, to make this Index global. I wish you had seen the UNDP team who were with me when I asked them to do this job; they were trembling! They said: This is a very huge and difficult task because it does not exist and it is unique, one of its kind. I told them: These are the directives, and we must work together to bring out this Index that you are seeing today in 133 countries around the world. Young people, the team and the consultants from the Arab world and beyond worked hard day and night until they reached the production of this Index, which shall benefit all the governments of the world. Why do we need this Index? If we do not have an Index today for what we are doing and the achievements, we will not know our future, we will not know our world level, and we will not know how to develop our tools and plans. Now every ruler and every entity in the entire world can get this Index or even download the “Knowledge4All” application to know its place in the world. The United Arab Emirates ranked 25th in the Global Knowledge Index. I say to you, to everyone, to the world and to history: In 1971, most of the UAE people were illiterate, but now, over four decades, illiteracy is almost non-existent. I think

that the government that achieved this glory and delivered the UAE to the top ranks in all areas of global competition, such as 25th position in the World Knowledge Index, and 1st position in the Arab Knowledge Index, deserves a warm greeting.



Moderator: Professor Hany Torky, when we talk about the Arab Knowledge Index, we find that there is an Arab Knowledge index, and then a Global Knowledge Index. Is there a gap between the Arab Knowledge Index and the Knowledge Index in the West, in the sense that there is a knowledge gap between the Arabs and the rest of the world?



Dr. Hany Torky: I would like to begin by thanking the team that worked on the Global Knowledge Index because they spent a full year working on this Index. The issue is, there is no knowledge gap between the Arab world and the Western world but there is a gap

in data. This is the beginning we want to talk about. In Arab countries, data must be respected in the first place, because if we respect the data, we will be able to access information and we will be able to access knowledge. This is the difference between us and the world. This led to a gap in data and led to a knowledge gap as well, because we cannot measure the situation. Yes, there is a knowledge gap, but the knowledge gap varies from one country to another within the Arab region, and there are gaps between countries all over the world.



Moderator: But what are the reasons of these gaps?



The issue is, there is no knowledge gap between the Arab world and the Western world but there is a gap in data. This is the beginning we want to talk about





Dr. Hany Torky: There are several reasons, some of which are due to the lack of rationalization of spending or lack of rationalization in directing resources, lack of interest in the main sectors, and the lack of integration inside the state in terms of showing interest in sectors; for example, paying attention to one sector without another. Some countries are interested in the ICT sector but do not care about education. Other countries are interested in education but do not care about ICT or research, development and innovation. Thus, through the Index, we prove that the seven

sectors of the Index are isolated, yet also integrated and interacted. If the Arab countries can integrate or deal with these sectors as one unit, we will be able to eliminate this knowledge gap.



Moderator: Mr. Michael, when this idea was suggested to you, what did you find to be applicable from your point of view and what made you a partner in these projects that look to the future of knowledge?



Michael O'Neill: First, I would like to express my gratitude to the leadership of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice-President and Prime Minister of the UAE and Ruler of Dubai. Without his vision and energy, this meeting would have not been held, and we would not have discussed this very important matter, this new initiative and this new project. I would also like to thank the Foundation and His Excellency Jamal Bin Huwaireb for all that he and his colleagues have done, as well as Dr. Hany and the UNDP team. Jamal has just mentioned that when this idea first appeared, I was motivated by this partnership between UNDP and the Foundation based on this basic project. I would like to emphasize two reasons for this; firstly, H.E. Jamal Bin Huwaireb and Dr. Hany spoke about the importance of data. H.E. Jamal Bin Huwaireb expressed one point in the way that Michael Bloomberg did in a different way. If you cannot measure something, you cannot manage it. I believe that the same

point was made by H.E. Jamal Bin Huwaireb, therefore the first step is if we do not have effective policies, whether in development or in any other field policies that would be effective in helping us achieve the goals of sustainable development, we need data to design the policies we need, and this is one of the reasons why this initiative is very interesting and important. Secondly, is the concept of partnership with others that we have talked about in this field, and in all other fields, well-grasped? If we want to make progress on the 2013 agenda for sustainable development, will it be necessary to make partnership between governments, or between institutions, the private sector, civil society and academics?



Thus, through the Index, we prove that the seven sectors of the Index are isolated, yet also integrated and interacted. If the Arab countries can integrate or deal with these sectors as one unit, we will be able to eliminate this knowledge gap.



The Knowledge Summit

20



Moderator: H.E. Jamal Bin Huwaireb, when you first launched this project, you announced that there is a link between the Global Knowledge Index and the title of the Knowledge Summit this year, which is the 4th Industrial Revolution. So how do we link the Knowledge Summit and Global Knowledge Index with the readiness to the Industrial Revolution, which is called the 4th Industrial Revolution?



H.E. Jamal Bin Huwaireb: As Michael has said, those who cannot measure cannot manage. The Global Knowledge Index is the measurement. Governments and officials must take this seriously, measure and begin the process of management and development. Fear is normal for something people have not seen yet. The future may be beautiful and frightening, but the one who is ready for the future will find it useful



and beautiful. However, those who do not get ready for the future and do not know the aspects of this future – noting that we do not know the unseen, but we see the indicators of the future and study them, the way we know how people walk 1000 years ago and for 1000 years to come – I say, “Those who do not prepare for the future will have greater fear, lose wealth and be lost for years”, as His Highness Sheikh Mohammed Bin Rashid Al Maktoum said – because preparations for the future start today.”

Yesterday, my friend sent me a video of a whole farm where two people with machines plowing, repairing, planting, cleaning, cutting and



Those who do not prepare for the future will have greater fear, lose wealth and be lost for years”, as His Highness Sheikh Mohammed Bin Rashid Al Maktoum said – because preparations for the future start today.

fertilizing trees and then harvesting apples. There are only two people in the farm, while work in the farm continues around the clock; how many farmers lost their jobs in this farm? We were at the Union Museum at the Swiss World Council of Expo 2020 two days ago with HE Reem Al Hashimi and we learnt a serious matter that in 15 years, the software will produce new software, and we will not need programmers, and this is something we should think about. In terms of education, companies and the development of future plans, the world will change, either lag behind or keep up with civilization.

Everyone who lived in the UAE before 1971 knows how the UAE was. Was there a





university in UAE? Were there schools? Was there a civilizational revolution as we see it today? Thanks to Allah Almighty and then to the wisdom of our honorable rulers and their hard work, they have transmigrated us and the country into a new age. They are now urging the people to look to the future and envision it. We have the first minister of artificial intelligence, the first board of the industrial revolution and the strategic works of the next industrial revolution, conferences, the Knowledge Summit today, and other things done by the government of the United Arab Emirates to urge the people and urge all Arabs

to search for their future before the future surprises them.



Moderator: If you fear something, then you have to fall into it, because avoiding it is worse than falling into it. Dr. Hany, how can knowledge of different societies be measured in the different economic, cultural and geographical situations?



Dr. Hany Torky: What you are saying lies within the scope of composite indicators. The composite index takes into account several different sectors. We do not look at the state but look at the limits of the established methodology: what sectors, if we choose, can put a semi-integrated picture of knowledge in the state, whatever this state is; we do not care for the name of the state, but what is important to us is how we measure knowledge in the state.



Moderator: Mr. Michael, through the ideas of this project of knowledge services and the Global Knowledge Index, there is a goal of spreading knowledge now, as we speak about future entities and societies, knowledge-based societies. How can you seize such ideas and

apply them to societies that may suffer from conflict, poverty, and tragic situations?



Michael O'Neill: Certainly, once again I can give a very strong practical example of this progress. This work is about the goals which we seek to achieve here in the UAE. H.E. Jamal Bin Huwaireb said that the UAE is ranked 25th on the Index, which is a huge and significant progress since 1971. I think the UAE is ranked second on the economy Index, therefore it is important to bear in mind these practical examples of leadership, vision and what we are trying to achieve. As to your question, I say, this is precisely what the United Nations and the United Nations Development Programme (UNDP) are seeking to help connect other countries with the UAE. For example, linking the UAE with other partners to benefit from their expertise and leadership in providing support; the Knowledge Index is a great example for that. This Index is based on tremendous collaboration

2017



over the 10 years of partnership between UNDP and the Foundation that included Knowledge Reports, Information Portal, Arab Reading Index, Arab Knowledge Index, and now the next phase with the Global Index.

Another example is the hope that, together with other partners, we will provide special support to countries facing other crises and tensions. Yesterday, we signed a memorandum of understanding between the Foundation and UNESCO to combat illiteracy. There are tens of millions of children all over the world suffering from lack of education, and this is another element in the next stage.



This Index is based on tremendous collaboration over the 10 years of partnership between UNDP and the Foundation that included Knowledge Reports, Information Portal, Arab Reading Index, Arab Knowledge Index, and now the next phase with the Global Index.



Dr. Hany Torky: Mr. Jamal, the other question is: despite the availability of the sources of knowledge and information available to everyone, we feel that knowledge and education of the Arab citizen are decreasing. I will give you a small example; you are active on Twitter, and through your account you perhaps measure the level of knowledge of those who follow you. You may say a word or mention the name of a poet, then someone comes and asks you who is the poet you meant? He could google it and save you the trouble of replying and writing 140 or 280 characters; he could go and look for this piece of information himself.



H.E. Jamal Bin Huwaireb: The answer to your question is research and development



2017

centers. The Arab world has the finest professors and the best universities. Many generations of great Arabs have graduated from these universities, but the Arab world lacks research and development centers. If research and development centers increase and governments spend on research and development, the equation shall change and we will become producers of knowledge. Knowledge production is what will bring you scientists. We will compete as Korea and

China have competed, as India have competed with developed countries, and as Japan and Germany have competed with the entire world. I am talking about an urgent need. We must spend money on serious research centers to produce knowledge. If every Arab country allocates part of its budget to scientific research, the Arab world will change. Without research centers and without development centers, we will not reach the desired goal. Arabs are smart and try their best to learn,





but they just need a chance to set up research centers. They were established 1000 years ago. Go back to history: Khwarizmi, Avicenna, and others were all at scientific centers which brought out scientists and produced knowledge. Now, we go back to talk about the future. Governments must spend on scientific research centers and increase enabling environments.



Moderator: If there are governments that barely provide a living for citizens and there is a very bad economic situation, how can these research centers be established? Depending on what? Or how can the financial resources of such projects be found?



Dr. Hany Torky: Simply, if countries think of providing only food to the citizens, after five years they will not find what they can provide for a living for their citizens. If a country can save money to create a good learning environment and good research centers, citizens can make a living for themselves, their children and their grandchildren, but if the state cannot provide these resources today, it will not be possible tomorrow. Arab countries spend on education like the rest of the world, but the problem is in the quality of outputs and not just the inputs; interest in quality leads to better results.



Moderator: How can these knowledge projects be used now to empower Arab youth and integrate them into societies and create opportunities and jobs for them through this knowledge?



Michael O'Neill: The region has a large number of young people. The translation says the area is young, but first I want to support something that H.E. Jamal Bin Huwaireb has said about the richness and extraordinary diversity of the history of this region in science, literature and exploration for the rest of the world in an era, so it is very important to keep this in mind. As to how the states of the region can use the information, we are beginning again with the concept of “data” to design effective policies to address the challenges. This is the fundamental point, and this is what this Index does. Thanks to this foundation, Dr. Hany and his team, a group of rich and diverse data is available across multiple sectors for the first time, as well as various and multiple indicators of 133 countries. Now, the work of the United Nations cannot be a substitute for the leadership of national governments nor the substitute for private sector participation in civil society institutions, as I have said before. Therefore, these efforts are



The Knowledge Summit

subsequent to the efforts of governments and the private sector. I think what is happening in the UAE and elsewhere in the world, as stated by H.E. Jamal Bin Huwaireb, Korea, Singapore and other places that have made extraordinary progress in achieving this cognitive shift is not only due to the vision, but also to effective policies, effective interventions and other factors.



Moderator: I have a question and I want an answer from H.E. Jamal Bin Huwaireb. Every year we are surprised with a new idea, what do we expect in 2018?



H.E. Jamal Bin Huwaireb: If we come up with a surprise each year, His Highness Sheikh Mohammed Bin Rashid Al Maktoum surprises us every day. There are endless surprises, as His Highness is ahead of his time. We are amazed by his work

and his full support for knowledge, building and civilization. He does not only think about the UAE, but of the entire Arab world and now the world. This is great, as he is one of the exceptional leaders.



Moderator: Before we take questions, allow me to quote the saying of His Highness Sheikh Mohammed Bin Rashid in one of the invitations in Ramadan: "Some people criticize me because of my dreams and my projects. Years ago, someone criticized me and said: You are like building in the sea. I said to him: I will build in the sea, and I have built the Palm Island".

Q&A session

One of the attendees: I would like to ask Mr. Jamal Bin Huwaireb. Do you not see that we must come out of the consumer mindset? What is the role of civil society as well as the role of businessmen and corporate social responsibility? Did the state not provide the basics on which we learn, such as education, higher education and grants?



H.E. Jamal Bin Huwaireb: The state is an essential part, of course a very important question posed by many brothers and sisters. The state is an essential resource for facilitating the task of researchers and opening research centers, as well as encouraging companies to spend on research fields. In the Western world, in Europe and America, there is a tax system

and money spent on research centers will have a different equation to encourage spending on research centers or charity in general, as well as the environment. The environment of the West is open to science from 400 years of the Industrial Revolution. Then a generation was raised to love science and spend on inventions; therefore there were traders who benefitted from spending on these inventions and became billionaires because of their spending on these researches. There are three issues:

The first issue is: Governments must spend and encourage.



The Knowledge Summit

The second issue is: Amendment of the tax system to encourage companies to spend on research centers.

The third issue is: The people's environment and habits have not yet reached the point where it is spent on research centers to take advantage of afterwards.

One of the attendees: The common factor we are talking about today is youth; the young man who neither reads nor supports his family because he is wasting his time on social media. How do we make him return to research centers and gain information through reading; to love reading and exploration?



Michael O'Neill: Thank you. First, I agree with the premise or point behind the question of the need to address literacy and the particular challenges in some societies, environments and youth. If I may add another point, which is: one of the areas of concern to UNDP and much of the



work recently is on the issues and challenges that particularly direct young people to violent extremism. In September, we issued a report based on a two-year study in Africa. The study was based on interviews with several hundred young men, mostly men, who were associated with different movements: Al-Shabaab, the Islamic State, Boko Haram, and others. It showed some very important points that I think stand out again like: Why is this initiative so important to this project? The report had conclusions on the alienation of young people from society and the



government, therefore there was a key point on good governance, which served as a basis for progress in any area. The role of effective institutions capable of delivering basic services, including all-inclusive education, which we need to do together for sustainable development and achieve the 20:30 development goals, is very important.

The question is what steps can we take to achieve this? The UAE is very advanced in this part thanks to the leadership of our rulers, whereas other countries are less advanced. Again, the basis of

progress is a focus on the shift to a knowledge-based economy, on education and on institutions capable of achieving it.

One of the attendees: What initiatives will the Foundation and the Summit launch in the coming years?



Dr. Hany Torky: In the current session of the Knowledge Summit, the UNESCO, together with United Nations Development Programme (UNDP), launched an initiative to eradicate illiteracy in the Arab World. This is just the beginning. If we can eradicate illiteracy, we will be able to overcome many of the problems associated with it, such as extremism, violence and terrorism. HH Sheikh Mohammed Bin Rashid Al Maktoum, HH Sheikh Ahmed Bin Mohammed Bin Rashid Al Maktoum and Mohammed Bin Rashid Al Maktoum Foundation may – as a next step – spread the experience to all the countries in the world, but we must first apply it to the Arab countries and see the results.



2017 Knowledge Summit المعرفة قمة



البروفيسور / شافي
أحمد
Prof. Shafi Ahmed
Senior Lecturer & Associate Dean of Faculty
of Medicine

Dr. P
Faculty

Dr. P
Faculty

Knowledge Summit

Day Two

Hall I - Session 2

Human Organs 3D Printing &
Genetic Editing: A disabilities-free future



Session topics

- **3D-printing of body organs: Spare parts on demand**
- **Genetic editing: Re-engineering the cell**
- **Medical breakthroughs to treat widespread diseases**
- **Digital surgeries: Using VR for surgery-training**
- **Neurotrophic electrode transplant in human brain improving memory and increasing intelligence**

The Knowledge Summit

2019

Speakers



Philip Kennedy

(Founder of Neural Signals Inc. (NSI))

Anthony Atala

Director of the Wake Forest Institute for Regenerative Medicine

John Nosta

Digital Health Philosopher, Former CEO, Apple and Pepsi

Prof. Shafi Ahmed

Cancer Surgeon & Associate Dean of Bart's Medical School

Raymond McCauley

Co-founder of BioCurious and Biotechnology Scientist

Moderator



Ali Hilal Al-Naqbi

Director, Abu Dhabi Polytechnic

Knowledge Summit

2017



DR. PHILIP KENNEDY

FOUNDER OF NEURAL SIGNALS INC (NSI)

Dr. Philip Kennedy obtained his MD and FRCSI degrees in Ireland in 1972 and 1976, followed by a PhD at Northwestern University in Chicago in 1983. Dr. Kennedy then went to Emory University and Georgia Tech in Atlanta, before founding his company Neural Signals Inc. (NSI) in 1989. The NSI group of researchers was the world's first to implant electrodes in the human brain for long term recording. The initial aim was to provide communication with a computer directly from the brain using single neuron firing patterns. Today NSI's main aim is to restore speech to locked-in individuals. Working in collaboration with Frank Gunther of Boston University and MIT, NSI scientists achieved some restoration of speech in a human. Dr. Kennedy has had himself implanted in 2014, and managed to derive a system of speech detection using neural net technology in combination with the recordings. This breakthrough should provide near conversational speech of at least 100 useful words to paralyzed and mute, locked-in people.



ANTHONY ATALA

**DIRECTOR OF THE WAKE FOREST INSTITUTE
FOR REGENERATIVE MEDICINE**

Dr. Atala, Director of the Wake Forest Institute for Regenerative Medicine, is a practicing surgeon and a regenerative medicine researcher. His work focuses on growing human tissues and organs using cells and 3D printing. He is the Editor-in-Chief of Stem Cells Translational Medicine. He is a member of National Academy of Medicine and National Academy of Inventors. His work has been listed twice as Time Magazine's top 10 medical breakthroughs of the year, and he was named by Scientific American as one of the world's most influential people in biotechnology. He has received numerous awards for his work, including the Edison Science Award, the 2016 Smithsonian Ingenuity Award, and the R&D 2016 Innovator of the Year Award. More than 14 applications of his laboratory technologies have been used clinically. He is the editor of 20 books, has published over 600 journal articles, and has applied/received more than 200 national and international patents.



JOHN NOSTA

**DIGITAL HEALTH PHILOSOPHER | FORMER
CEO, APPLE AND PEPSI**

First and foremost, John is a thinker. A thinker entrenched in the world of science, medicine and innovation. John is the founder of NOSTALAB — a digital health think tank. He's currently ranked as the #1 global influencer in digital health and generally regarded as one of the top global strategic and creative thinkers in this important and expanding area. Nosta combines passion with knowledge and delivers more than a speech; he provides an engaged conversation that informs and moves his audience. John's knowledge of medicine, technology and marketing makes him a keen observer of digital health and only one of a handful of thought-leaders that can clearly articulate the importance of this movement in human history. He is also a member of the Google Health Advisory Board, pens "Health Critical" for Forbes and "The Digital Self" for Psychology Today. He is also on the faculty of Exponential Medicine. John has an established reputation as a vocal advocate for strategic thinking and creativity. He has built his career on the "science of advertising", a process where strategy and creativity work together for superior marketing.



The Knowledge Summit
The Fourth Industrial Revolution

2017

167

The Knowledge Summit 2017



PROF. SHAFI AHMED

**CANCER SURGEON & ASSOCIATE DEAN OF
BART'S MEDICAL SCHOOL**

Professor Shafi Ahmed is a cancer surgeon at The Royal London and St. Bartholomew's hospitals. As a dedicated trainer, educator, and Associate Dean of Bart's Medical School, he was awarded the Silver Scalpel award in 2015 as the best national trainer in surgery by the Association of Surgeons in Training. Professor Shafi is currently serving as an elected member of council of the Royal College of Surgeons of England where he is the Director of the International Surgical Training Program. In 2017, he was the top British Asian star in Tech and received this award from HRH Duke of York. He was also the British Bangladeshi of the Year 2017. He has recently disrupted the traditional medical school curriculum by launching the Barts X Medicine Program, which has embedded future technologies and entrepreneurship into the medical school. He is also the chairman and a co-founder of the Global Innovation and New Technologies conference in London and Chair of the Health track at WEBIT, Bulgaria. Shafi is a 3-time TEDx and international keynote speaker and is a faculty member at Exponential Medicine, Singularity University,



RAYMOND MCCAULEY

CO-FOUNDER OF BIOCURIOUS

Raymond McCauley is a scientist, engineer, and entrepreneur working at the forefront of biotechnology. He explores how applying technology to life 'biology, genetics, medicine, agriculture' is affecting every one of us. He is known for using storytelling and down-to-earth examples to show how quickly these changes are happening, right now. Raymond is Chair of the Biotech Track at Singularity University, a Silicon Valley think tank devoted to training leaders about exponential technologies. He is the co-founder and Chief Architect of BioCurious, the hackerspace for biotech, a not-for-profit where professional scientists, DIYbio hobbyists and entrepreneurs come together to design the next big thing to come out of a Silicon Valley garage. His work and story have been featured in Wired, Forbes, Time, and Nature. Raymond's postgraduate work includes studies at Texas A&M University, Stanford and UC Berkeley in electrical engineering, computer science, biophysics, biochemistry, bioinformatics, and nanotechnology. Past employers are Genomera, Illumine, Ingenuity Systems, TANSTAAFLMedia, QIAGEN, Viatel, NASA, and the other federal agencies.



Knowledge Summit

2017



The Knowledge Summit
The Fourth Industrial Revolution

2017

Accessing the future - 1

- Ray Kurzweil has predicted that by 2029 robots with Artificial Intelligence (AI) will be granted rights as citizens. Ref: *The Singularity Is Near: When Humans Transcend Biology*. Ray Kurzweil.
- This is frightening to some people such as Stephen Hawkings, Elon Musk, Bill Gates and others. But not to me. I consider it the evolution of humans.
- But for those who want to avoid that eventuality they need to enhance their brains beyond the level of robotic AI.
- To enhance our brains we need to connect our brains to the cloud to provide unlimited access to information and calculation abilities, and communicate directly from our brains to the cloud and to humans.
- Our brains will have to learn to understand all that material and that may be the limiting factor.



Knowledge Summit



The Knowledge Summit

20

3D printing has really made advancements in this field, certainly in the last decade. It is going to be a critical factor for advanced manufacturing.



Moderator: Today, we have a very interesting topic that we will be talking about, specifically 3D printing and bioprinting.

Everyone is talking about 3D printing. Most of the people I met last week at the World Economic Forum say that they are interested in the Fourth Industrial Revolution, where the 3D Printing is now a part of. What do you think?



Phillip Kennedy: As for 3D printing, it really is not that relevant, maybe apart from making some of the devices that might be implanted or used. Therefore, I see a need to mention it here within the context of advances in the last decade.



Anthony Atala: 3D printing has really made advancements in this field, certainly in the last decade. It is going to be a critical factor for advanced manufacturing. Many of the things that are used to take months to create just the prototype can now be created in just minutes. And so, it is not just for prototyping, you know many sophisticated printers are being developed which can be really fast and work effectively. So, it is going to be a great tool for the future.



3D Printing is one of the few technologies that is widely accepted in the society. So, your children



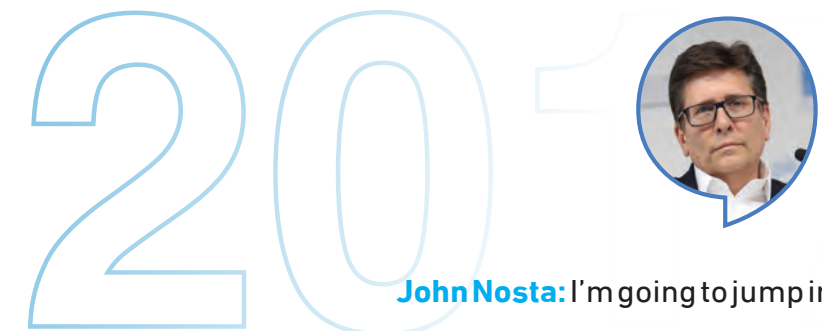
John Nosta: You know I wanted to be a little more philosophical about where we are with 3D printing in the distribution of innovation, because we often look at innovation as a specific point in time and I think that we have an uneven distribution of 3D printings. I find it very interesting that Raymond can talk about this a little bit. We have seen children do 3D printing and we have seen scientists and physicians and corporations do 3D printing. To me that is one of the few technologies that have such a rich and broad appeal across so many different aspects of the community.

When your children can play with a 3D printer, yet we can also build a house or a building or an organ with 3D printing. I think that is testament to its place in society and where it potentially is going to be in the future.



Shafi Ahmad: Yeah, I would like to go back to the first part of the question about the Fourth Industrial Revolution. I am a physician and surgeon and this is the most exciting time for medicine because of the conversions of knowledge, not in the future, but today. Things like robotics, art intelligence, editing, and 3D printing all coming together at the same time to change the way we practice medicine. So, we are actually embracing change and we are dealing with the one of the future technologies, which I consider amazing.





John Nosta: I'm going to jump in. I think he hit the nail on the head with that. We often talk about this change, this Fourth Industrial Revolution as an inflection point in human history like a Gutenberg moment, the printing press. But it is not just a point, not just a printing press. We are saying that the convergence of multiple areas of development, not only technological but also social and political changes looking at our ageing population, is in a critical need to manage diabetes and hypertension.



Moderator: That is right, John. One of the questions I have here is longevity, human enhancement beyond 70 or 100 years, and what is society's impact on that. But we will come to this. Raymond, can you comment on that?



It is more controversial than ever for medicine due to the cognitive shifts we are living today, not in the future



Raymond Mccauley: Sure, there will be an anchor person, I agree with everything that everybody has said and I think now these new technologies – 3D printing, bioprinting, gene editing and regenerative medicine – as well as some of the advanced cellular technologies are not only at this really interesting take-off point but are actually being applied now. But I tell people, for biotechnology in general, it is in the same place computers were in 1972. It is starting to become not only something that large institutions do but something very personal. I think some of the biggest advances can exist now because the enabling technologies are getting exponentially cheaper. You do not have to be a government, a corporation, or a big research university to do what people are doing in their

garages. We are about to see a revolution there that includes some of these jobs like manufacturing going away and that means – for every one of us – losing many professions we had educated our children for.



Moderator: Anthony, every one now is making 3D printing, and they would love to have their own 3D printers at home, for different purposes and for different production lines. How does this technology mainly work in the biological field?



Anthony Atala: So, basically there are various types of prints, and there are many technologies out there. Really, printing started out more like your typical desktop inkjet printer, but instead of using ink, you use other materials and you're depositing your inkjet cartridge, for example, to go one layer at a time. It's just like printing paper but the only difference is that you are printing

over and over again in the same area. So, that is why it is called additive printing and so what happens is instead of actually just having a sheet of paper that goes through at one time, you're printing over and over and over again in the same area and if we take it to a biological aspect of course that would be very different. Right, we were talking about thinking molecules are proteins and it is actually a little bit more complex depending on how much you want to get into it but I will certainly talk about that as well.



Moderator: Phillip, we are going to print organs or mini-organs that could be planted in our bodies to do different functions, but we know that liver organs, for example, are very complex and we also know that kidney organs cannot be easily replaced. There are different functions for different print organs. I know that you have printed organs in your body, so how do you feel? And why did you plant it into yourself?



Summary

2015



Phillip Kennedy: Ok, I have a short answer and a long answer. The long answer is, I have been doing research on brain computer interfacing since August 1996. The first patient we did a speech restoration for was in 2004 and the issue was the brain stem stroke which was very expensive. He could not move, he could not speak and he could hardly move his eyes. Nobody knew, for instance if we asked him to say something, if he really was doing it. So, the issue was more about if you can get somebody who can speak, then loses his speech. I could not find anybody but myself. I knew the risks and I had some complications, but it has worked out fine. I feel confident now that we can actually take people who cannot speak for various reasons and implant a chip to allow them to control speech. I feel comfortable that I have planted that and could treat speech disorder.”



I feel confident now that we can actually take people who cannot speak for various reasons and implant a chip to allow them to control speech.



Moderator: This is very interesting. I read a review article a few weeks ago about brain and computer interfaces and how these devices interrupt your signal and convert it into something readable. How do you do that?



Phillip Kennedy: We were able to decode the brain signal from the surface of the scalp rather than get deeper and deeper into the brain. I feel confident from my own data that

we should be able to restore speech to people with paralyzed organs. We are going to plant something simpler and electrical. For other aspects of implantation, like you said, different organs would be 3D-printed, I do not see the future there. I do not think it sounds very sure.



John Nosta: When you think about it, I mean in terms of neural implants, it sounds very science fiction. It is extraordinarily clinically validated to look deep into brain stimulation for Parkinson's disease. Probably the best example of the life-transforming neural interfaces is the cochlear implant that was delicate and now it is not experimental but a standard of care. To me that is very exciting.



Phillip Kennedy: We have already enhanced our brains because cell phones allow us to access some

knowledge, and we can make sense of that, which I guess we can, by limiting how much information we download. The artificial intelligence robots will be provided with such chips as the one behind us. I am thinking of the revolution of humanity and it is going to happen whether you like it or not. So, making a connection between the brain and a machine; it is important to get it done right. The scar which the chip creates in the brain will be useless as it will intercept the signal between the electrode and the brain.



John Nosta: But we develop Nano-mediated technology to eliminate the scar and to optimize the implant, or is it just science fiction?



Phillip Kennedy: Nanotechnology will not eliminate the scar, but it will minimize it. Nothing eliminates the scar. It stays for about 10 years.





Fact sheet

- In the US today, we have 100,000 people waiting for transplants
- One person every 14 minutes is put on the transplant list.
- 17,000 people will have successful transplant operations
- The mortality rate for this type of operation is approximately 20%



Moderator: Dr. Shafi, the problem is not only in the use of 3D printing for the treatment of diseases, but people now want to have a new feature, which is the promotion of some human capabilities. This question goes to Raymond and Shafi as well. The human enhancement, whether it is born in the gene or acquired when you have the personality and capability to inherit, can be achieved in a very short time thanks to 3D printing.

The purpose or positive side effect of that is longevity, where ageing and old people can benefit in future society from all technologies.



Shafi Ahmad: Longevity is quite an interesting topic at the moment and great value lies in how we could survive for longer or forever. It is not about longevity or expansion of our lifetime, but the quality of life that matters. So, if I ask the question, would you prefer to live healthily and then die or you prefer to have diseases going forward and die slowly of Alzheimer's or other kind of conditions, the answer would be, I want to have a good quality of life and then perhaps die or reach the end of it after I've had a good quality of life. So longevity should be correlated with good life and wellness, not disease. As humans, we want to be well and mobile enough to have that quality of life. So, I think that is the kind of human dynamic that should be understood. It is not about living forever.



Raymond Mccauley: Whenever I look into this, I see the possibility of not just extending lifespan, but extending a healthy life. You can talk about some of the things about whether you believe in the extension of life or not, but reality affirms that. You have to define your terms about what is a healthy life and what is not, but the idea is that we are squaring longevity terms. More and more people are living to a ripe old age in their 80-90-100 and maybe to 120. At the same time, we were working on this combination of 3D printing, advanced cell replacement and repair, gene editing and I really think it is that kind of triumvirate which makes for these advanced technologies that will extend life for a lot of us here into a healthy old age; maybe even past that 120 barrier.



The Knowledge Summit

2014



John Nosta: Raymond, with respect, I think you're spot on life extension and life expansion, but we look at ageing as a terrible thing and we look at it as a problem. I think that the opportunities around life extension and life expansion allow us to take our ageing population and making them more productive in the context of society. So, I think we are entering to see second and third careers, we will see someone who has the wisdom of 70 or 80 years applying to a business or educational dynamic. To me that is a fundamental that changes the game, so let's take a look at that in the context of GDP. I think it is completely wrong the way we look at the ageing population as a burden and as expensive health costs with no contributions to society. We will be able to impact the GDP and have a higher level of productivity from our citizenry across the gamut of ages. The girl who is born in the UK now has 1 in 3 chances of living to 100 and this is amazing.



Phillip Kennedy: Ok all I can say is that if you want to live long, start now. Start when you are young and living healthy. Exercise your mind, never stop exercising your mind if you want to stay alert. I think that is fundamental.



Anthony Atala: Of course, everybody wants to work on longevity and wants to achieve longevity in terms of the science, right? But the challenge is not just longevity, it's actually the quality of life that you have no matter what your age is. You can live longer, but if you live longer and you start having major weaknesses, that is a challenge. So, your body undergoes several functionally major changes that after the age of 40; your muscle mass starts decreasing, your courage starts going away, your ability to

rebound the functionality of your blood vessel system weakens. So, I couldn't agree more with Philip that it's actually about starting early and having a very healthy lifestyle. You cannot do longevity without actually looking at improving the quality of life.



Phillip Kennedy: I want to push back on that a little bit because we are talking about technology, but the interesting thing for me is that the path to longevity is not wellness, it is not prevention in the traditional sense of the word because I think technology was used earlier to detect diseases. So, we can discover cancer at the earliest point at stage zero, which shares a border with prevention. And let's face it, an obese 65-year-old man with metabolic syndrome who wants to sit on his couch and watch the football game is very hard to motivate. But we could leverage technology whether it be in the form of stem cells for collagen repair mechanism or organ replacement to the 3D printed.



John Nosta: There are things you started as young people to stay healthy, and then you can add technology later.



Phillip Kennedy: Yeah, I think that we treat our bodies like cars. If a car wears out, we try to fix it, which is not true; we should take the tire off and replace it.



Moderator: I have two more questions: People are talking about 3D printing at home. They say they are very expensive. And I heard from you





last night that it is not expensive anymore while Raymond explained to me why it is not expensive? What did you create to make it less expensive? Can we reach a level where we are making pills and medicines at home from 3D printing?



Raymond Mccauley: Yes, I was curious to learn more about the vital printing coefficient. We had a group of people who were very interested in

bioprinting and what could be achieved. So they got a 2D bioprinter on the internet for about USD 1 million. They said that does not look that complicated. I took some inkjet cartridges and a small motor out of an old DVD player for under USD 200. They came up with something that would print little genetically modified bacterial cells in 2D where the bacteria would change colors in the presence of heavy metals like lead or something like that. They said it's dangerous yet they could print this out in the bottom of a dish and started trying to print vascular structures and things like these. Now, this USD

200, 2D bioprinter was not a replacement for the million-dollar research tool, but it does let people play in the field. So, I think that is what is happening. The price of all these things is coming down anyway and the opportunity for people to come and think will enable them to one day invent cheap items to produce a bioprinter.



Moderator: Shafi, why do you think 3D printing will help in the virtual reality on which you focus?



Shafi Ahmad: 3D virtual reality has become cheaper. I could equip my hospital with low-cost equipment, which would have cost about GBP 100,000 three years ago. Let's talk about the future and think about the real kind of expensive medical technology. In about 5 or 6 years, we're going to jump onto a ship and go

to Mars. So, what about the kind of things we are going to do in space and on Mars. Now, if we go to Mars with a health care journey, we can create instruments or pills with the 3D printer, while the traditional way would take much time for treatment. My friend is working on a space program, and he said last year was the first time a 3D printer went on to a spaceship. One of the astronauts damaged and broke her finger and she sent a SMS via phone to the ISS and treated herself. That kind of change is cheaper and more reliable.



John Nosta: I believe 3D printers will be zero cost, so I think we will see the demonetization of 3D printing. Interestingly as well, Shafi talked printing at a distance. So, if we talk about printing the proverbial organ, maybe I need to print that organ in Kenya or maybe I need to print it in New York City to facilitate organ transplant. So, the ability to print in space or in your hospital around the world



is very important and I think the cost will inevitably come very far down.



Moderator: How far are we from fully 3D printing a body? Is it tomorrow? Is it 2020 or we will never reach it?



Phillip Kennedy: In brief, we are very far from creating a whole body.



Anthony Atala: If you watch one of the adventure movies, one of the superhero is 3D-printed. So, you never know, science fiction can become science facts, so you should

never say never. I think one of the main things here is that we have to make the future. We have been able to plant engineered tissues into patients, so there are patients walking around right now with engineered tissues and organs. It took decades to get to that. Now, we are using printing as a scale-up tool to put these organs back into patients. I think the future will enable us to put the printer beside the bed to print whatever is necessary. I think it's going to be a long time coming before we can print the entire body but never say never.



John Nosta: If we talk about the skeleton, we are working on developing the three-dimensional genetic organ transplantation of the bone, and we are using it now clinically. I would like to say: We started organ transplantation which was created with respect to bones in the skeletal system. The track was created, so I think it will happen. This is the first point.

The second point is, we live in a time of exponential change and with the addition of AI with robotics and advance techniques, I see that within 15 years, we will be able to create a trans-human reality. So, it is closer than you think.



Anthony Atala: I will also have to say that organs have been planted in patients right now to replace bones. But there really has not been no printed viable tissue inside a patient. It's not to say that it cannot be done because some of these structures were created by hand at the start and placed into the patient, so I think printing will definitely get there. But I think that in reality, it is going to be a little while before you have 3D-printed organs. It needs some patience because the human body is extremely complex. I think it's doable but I think it's going to take a little while.



Shafi Ahmad : I will take different points. Yes, some say we have to rebuild a human and do the organs, but it is not just about humanity; what about the soul and the consciousness which form who we are? So, it's about the other side, and we can build on a kind of biological scaffold. That's what we should think about in the future.



Raymond Mccauley: I have two points. I think we're going to see a 3D-printed body in the next 5 years. Also, we'll use 3D-printed organs to conduct personalized testing and replace some animal testing and a lot of human testing for clinical trials. That will revolutionize and speed up the progress of medicine. That will be the answer to your question, but we need 25 years to do it the right way and replace all or most of the body organs.



The Knowledge
Summit
2014

**Honoring
the Knowledge
Ambassadors**



Knowledge Ambassador

Mr. Jason Silva, Media Artist

TV Personality and Futurist.



The Knowledge Summit
The Fourth Industrial Revolution

2017

The Knowledge

Summit

2017



Knowledge Ambassador

Muna Abu Sulayman

Media Personality and Co-host of TV show Kalam Nawae'm



Knowledge Ambassador

Major Rashid Hamdan Al-Ghafri

Head of Biology & DNA Section, General Department of Forensic
.Sciences and Criminology at Dubai Police General Head Quarter



The Knowledge Summit
The Fourth Industrial Revolution

2017



Knowledge Ambassador

Tanmay Bakshi

Software Developer, Author & Keynote Speaker



Knowledge Ambassador

Sophia

the robot developed by Hanson Robotics



The Knowledge Summit
The Fourth Industrial Revolution

2017



Knowledge Summit

Day Two

Hall 1 – Session 3

Fourth Industrial Revolution: A Future Outlook



Session Topics

- Foresight of a future shaped by the digital revolution.

The Knowledge Summit

2011

Speaker



Jason Silva

Media Artist, TV Personality and Futurist

The Knowledge Summit 2017



Jason Silva

**MEDIA ARTIST AND TV PERSONALITY,
SPECIALIST IN BRAIN GAMES**

Jason Silva is the Emmy-nominated host of the National Geographic Channel's #1-rated and Emmy-nominated series, "Brain Games", seen in over 100 countries. Jason is the creator of the web series "Shots of Awe", micro-documentaries exploring creativity, innovation, technology, futurism, metaphysics, existentialism and human condition. His videos, which "play like movie trailers for ideas" according to The Atlantic, have spread like wildfire across the internet and have been viewed more than 13 million times. Jason has also created the web series "Future of Us" for AOL, exploring exponential technology and the future of humanity. An active and prolific global speaker, Jason has spoken at TEDGlobal, Google's Zeitgeist Conference, presented keynote addresses at multiple events for Microsoft, IBM, Adobe, Oracle, Electronic Arts, Honeywell, PEPSICO, Intel, Dolby and many more, all over the world. From 2005 to 2011, Venezuela-born Jason was a presenter on Current TV, the Emmy-winning independent cable network started by former US Vice President Al Gore, where he had hosted, wrote and produced more than 100 hours of original content.



The Knowledge Summit
The Fourth Industrial Revolution

2017

195



Knowledge Summit





Jason Silva

MEDIA ARTIST AND TV PERSONALITY, SPECIALIST IN BRAIN GAMES



Jason Silva: I am honored to be the Ambassador of Knowledge, and I thank His Excellency Jamal Bin Huwareb and Mohammed Bin Rashid Al Maktoum Knowledge Foundation for this great honor.

For those who do not know me, I am Jason Silva, host of National Geographic's "Brain Games", a television program that talks about how our brains work, where neurosciences deal with how to perceive and misperceive reality, and that's what I'm interested in and passionate about. In particular, how we misperceive the technical trends, and how to misperceive the speed with which technology changes our world.

I also recently presented "Origins: The Journey of Humankind" on National Geographic. In these episodes, we focus on moments of humanity's future transformation, the moments that changed the game, moments like the one we are now living in the Fourth Industrial Revolution. We are looking at the emergence of languages, the emergence of medicine and the emergence of transportation. Now of course we will see the emergence of transformative

techniques that will change the concept of being humans. I remember a phrase which says, "There are decades where nothing happens; and there are weeks where decades happen." This is the best quote that describes what is happening in relation to the fast technologies. What is said about the industrial revolution goes beyond our energy, and the digital revolution goes beyond the limits of our minds. The philosopher Marshall McLuhan said "the artist who recognizes that the future is the present, uses his work to prepare the ground for it". Cognitive philosophers David John Chalmers and Andy Clarke referred in their extended mind theory to the technology as scaffolding for our minds which we use to extend our thoughts, reach and vision. This is always the case; if you



Now of course we will see the emergence of transformative techniques that will change the concept of being humans. I remember a phrase which says, "There are decades where nothing happens; and ".there are weeks where decades happen





go back thousands of years in the Savannah forests in Africa when the first primitive man used the stick to reach the fruits on high trees, it is like using the tool or means to expand our reach, redefine our boundaries and transcend our limits. We did not stay in the caves and our activities are not limited to the planet, and soon we will cross the boundaries of the bioscience. The technology is always changing how we are. The philosopher Marshall McLuhan said, "We are building the tools, but guess what, these tools build us right back!". Again, everything we design in this world is designing us. It is like a continuous

process, the so-called Self-Amplifying Feedback Loop. So, we build tools and these tools change what is available to us, because by using these tools, we do not need to create other tools. It is like a train on the rails, how far will it go and what is the speed of it? We are now living in the world of radical disruptive innovation, this is the name of the game now, and this is the world which we love. Although people always love the new, there is always a fear of change, because change is scary and changes the status quo. Although technology is a part of disruptive innovation and causes change, it's not the case since we live in a world of rapid exponential



**The philosopher Marshall McLuhan said,
“We are building the tools, but guess
what, these tools build us right back**

change, because in light of the radical disruptive innovations and technological transformations, you may feel as if earthquakes are under our feet. There is a futurist and engineer working in Google named Ray Kurzweil. When I read his book about technical singularity, «The Singularity Is Near», my world changed, because he is the first person who explained to me why the technical changes that are taking place in the world were so rapid. Of course, you’ve heard about Moore’s law used in Silicon Valley, which observed that the number of transistors in a dense integrated circuit doubles about every two years. Ray Kurzweil developed this idea with the law of accelerating returns, which contributed to his success in predicting the speed of technological developments that we are witnessing now. I used this example last year, but I would like to clarify the difference between linear change and

exponential change, so that this technological momentum is not surprising, and we’re ready to raise these disturbing innovations to make the world better. This is the difference; our human minds have evolved in a linear and local world. When we think about change, we will see it innate and linear, related to what we wish. Hundreds of years ago, when the lion was attacking us, we had to calculate linearly the speed of the lion to reach us. This is innate, the linear calculation and change over the time. This is what we believe, but technical change is not linear. We know that we use the expression of exponential change, and while we continue to use it, we must recognize the difference. For example, Ray Kurzweil points out that when you take 30 linear steps, you will get to step 30. It is simple, 30 linear steps simply mean 30 steps, but 30 exponential steps mean millions of steps; that is why smartphones are small, millions of times cheaper and thousands of times more efficient. Forty years ago, we used to use a USD 60 million giant computer with the size of a building. This USD 60 million giant computer with the size of a building was replaced within 40 years by a small device that you put in your pocket, but it



The Knowledge Summit

2014

is also thousands of times more efficient. This is the rapid progress, the exponential change. It is a unique opportunity to change the world; because you need to solve problems to shift from linear to exponential change. Dubai is an example of exponential change. When we think about the speed with which this city has risen in comparison with the world, I think the rest of the world must learn from what I have seen here to see the exponential change. I think that this matter depends on the giant computer in your pocket, because this giant computer will be redesigned within the next 25 years to devices the size of the pulse cells. The reverse engineering may produce devices installed in the human internal organs and brain in the form of nanochips, formalized in a downloadable software packages that can treat us internally. I think that will change the game, because exponential change trends will continue, which makes it even more exciting.

What do you think we should do? We have to prepare the atmosphere and prepare ourselves to keep up with this change, and you know what is also required from us, to develop ourselves radically. If we do not change ourselves,



In the future, smartphones will be the biotechnology phones, and there will be downloadable

change will come from outside. Billion-dollar companies have suddenly emerged, but at the same time, other companies worth billions of dollars have disappeared. Some companies, when they embark on disruptive innovations, go beyond borders, adopt bold ideas and succeed in doing so. Those who have a successful business model become more sensitive in relation to adopting radical disruptive innovations. However, the trend of the exponential changes does not stop.

I think that the people at this time think mostly about distracting us by the information around us; we do not know at what we should look and about what we should care. We are not sure whether we should care about the economy or the limited new resources. More than 1001 signals draw our attention, so attention will be manifold, and this will be confusing. In fact, there are three overlapping revolutions to which attention



should be paid: Genetics, nanotechnology; and robotics and artificial intelligence.

We talked about the exponential change in digital space, and I travelled around the world to talk about the importance of exponential thinking, and noted the admiration of the audience. Most of the attendees were impressed with the initial idea of disruptive digital innovations, because they had experienced this idea with smartphones, which has become faster and cheaper.

One of the most disruptive innovations is biotechnology in genetics. Biotechnology means mastering the process of bio information. If we are made of a language, the DNA is the code that holds genetic information. Richard Dawkins said, "If you want to understand life, think only about IT."

In biotechnology, bioscience is a programmable medium, which is exponential progress and evolution. For example, genetic sequencing may be three times faster than usual due to exponential change. XPRIZE foundation organized a competition to develop a smartphone-sized tricorder, a smartphone-sized device that works as a laboratory that can better diagnose your condition as if it is integrated with 10 certified doctors, and of course, it will change the world when it is launched.

Larry Page, co-founder of Google, founded "longevity lab" Calico, which focuses on health, medicine and healthcare. It also aims at improving people's lifestyles. Calico, which is associated with technology, will primarily address the challenge of ageing and associated diseases. The company's leaders are talking about a tremendous evolution in biotechnology that will lead to a radical extension of age. This initiative offers an opportunity not to force people to retire even at the age of 60, 70, 80 or 90 to the end of life, which frees creativity, and such initiatives will certainly change the world. Another example is the Strategies for Engineered Negligible Senescence (SENS), which is developing a healing agent. The most important aim is to control the consequences, help to alleviate humanity's suffering, and help everyone to receive medical services and health care. In the future, smartphones will be the biotechnology phones, and there will be downloadable biological packages, which will change the game. When we talk about nanotechnology, we will be in the realm of a programmable physical world, a simple physical world, in which the buildings build themselves for example. There will be a transition





from the world of scarcity to a world of abundance; because scarcity is one of the contextual matters and technology is a mechanism for releasing resources, as Peter Diamandis wrote in his book, "Abundance: The Future Is Better Than You Think". A similar book on nanotechnology is Eric Draxler's book "Engines of Creation: The Coming Era of Nanotechnology", and I think the title suggests that nanotechnology represents the engines of transformations of how objects are made in the world. Nanotechnology is found in nature. When you put seeds in the soil and a tree sprouts, the seeds become an information file that stimulates the surrounding environment for self-growth in the form of a tree. Nanotechnology can be developed exponentially. People are afraid of artificial intelligence because they think that robots can attack us, and I do not

think so. I think that the best explanation of what happens is that these minds are an extension of us. Kevin Kelly said, "How would the world look like if we did not have musical instruments at the time of Beethoven and Mozart or if we did not have the oil painting method at the time of Van Gogh. Think with me how much creative opportunity could have been lost in the absence of the tool or technique, by which we can implement these innovations. Some people are afraid of biotechnology and Frankenstein's scenario of a clash with the system of nature, but I think that sciences like biotechnology can improve the world and the system of nature, not the opposite.

Q&A session

Nouf Al Kathiri, a mechanical engineering student

What happened recently regarding Facebook's



artificial intelligence project shutdown is contrary to Mark's opinion, so why did Mark shut down this project? I think that Mark is afraid of artificial intelligence robots despite his optimism.



Jason Silva: Thank you so much. Good question. I think that disruptive innovations have two sides. Fire, for example, is used in cooking, and at the same time it can burn and hurt like a weapon. Technology is also great amplifier of human motivation, and how we interact with these motivations is the core of this issue; it may be done in a socially beneficial or harmful way. The language according to Kevin Kelly, a Wired founding editor, is one of the first manifestations of singularity: the state of the universe when it becomes smaller and smaller until it reaches a size of a small point close to zero and turns into a "black hole". Language is like a line on the sand between primitive humans on one side and humans after the invention of the language on the other side. Of course, we cannot imagine how life was before the



In fact, there are three overlapping revolutions to which attention should be paid: Genetics, nanotechnology; and robotics and artificial intelligence.

invention of language; the language founded the world and the world would not be possible without language. However, just think a little bit, just as language may express bad thoughts, everything has a useful side and a harmful one.

As for your question about artificial intelligence, some people think that robots will attack and enslave us, and I personally do not think so. Experts like Kevin Kelly see that we use narrow systems of artificial intelligence that do not have self-awareness just yet, and I think we would be wrong if we thought that our thinking is the current pattern; there are other ideas around us. I think we need to expand our concepts to accommodate other visions and ideas.

According to cognitive philosophers Andy Clark and David Chalmers, we must transcend the ideas that end at our borders, and human beings must overcome the barriers of physical nature –





we are part of the tools and the technology, and we realize that if we see ourselves from afar. If you review the chronology of human life, you will find ideas that turn into reality; that is what we are now and that is what we do. "Land will be full of robotics, yes, they will do that, but they will be like children," Marvin Minsky said.

One of the attendees: The question is about that technology will advance in other areas such as philosophy and religion, and we will not be able to control the way science takes us. Thanks to technology, the number of people living in this world may increase, and food will not be enough to meet their needs. Will we eat each other for survival? The religious counsellors and philosophers must regulate this, and there must be a control imposed on humans. This explains what happened; all disasters we have witnessed have occurred because some groups advance on and control other groups.



Jason Silva: Thank you for your question and I appreciate your point of view and awareness



regarding human ambition, because this ambition may sometimes cause problems. I agree with you. I cannot talk about the religious aspect, but I will touch on philosophy. Philosophy means love of wisdom. It also means thinking about things deeply, and I can say that I spent most of my career thinking deeply about things and focusing on them. Henry Miller said, "If we put a grass under a microscope, we would see a wonderful world." All the ideas in the world can be discovered as such, and you know that it is hard for me to pay attention to the economy, but I spent most of the time adding wisdom to all these ideas. This is what I and other people do, such as at the Singularity University and this summit.

With regard to your second question about the fear that the technology will cause an increase in the population in the world. I remember the statement of one of the specialists that said, "Overpopulation is a mess that combines secrecy and resources; you can bring all the inhabitants of the planet in Texas to feed them, however, an empty space will be there". Therefore, the problem is not the place where people eat but the problem is how people get food.

That is the fundamental point of nanotechnology.



You can turn concrete into food; all things are from the same brick and when this brick is programmable, you will realize that the lack of resources is contextual. Imagine that nanotechnology will completely change the situation, so that it will change the way of securing food. Food printer was mentioned in a previous session. All these make me optimistic and expectant that we will overcome this problem, and we have to adjust the rhythm of our ambition by philosophy.

17



The Knowledge Summit
The Fourth Industrial Revolution

2017



ستيفاني دنكان

مدير الوسائط الرقمية في دار بلومزبري للنشر

Stephanie Duncan

Digital Media Director at Bloomsbury Publishing

Knowledge Summit

Day Two

Hall 1 – Session 4

The future of creating content



Session topics

- **The future of media and content:
Multichannel, multimedia, multilingual and multinational**
- **Impacts of the Fourth Industrial Revolution on the media and content business**
- **Creative AI: Will the smart machine be the next genius?**
- **«Blockchain», and how it could turn the industry upside down**

2017 Knowledge Summit

2017 Knowledge Summit

يورغن بوز

رئيس جمعية ترويج أدب أفريقيا وآسيا وأمريكا اللاتينية

Juergen Boos

President of LITPROM (Society for the Promotion of African, Asian, and Latin American Literature)

The Knowledge Summit

2019

Speakers



Marta Piekarska

Director of Ecosystem, Hyperledger

Stephanie Duncan

Digital Media Director, Bloomsbury Publishing

Moderator



Juergen Boos

Director of the Frankfurt Book Fair

The Knowledge Summit

2017



Dr. Marta Piekarska

Director of Ecosystem at Hyperledger

Dr. Marta Piekarska serves as the Director of Ecosystem at Hyperledger. Prior to Hyperledger, she worked as a Security Architect at Blockstream. Dr. Piekarska obtained her BSc in Electrical and Computer Engineering from Warsaw University of Technology and double Master's Degrees of Computer Science and Informatics from the Technical University of Berlin and Warsaw University of Technology. She recently received her PhD in User-Informed Design of Privacy Tools. Previously, she was associated with Deutsche Telekom as the Lead Architect on the Future of Mobile Privacy, a collaboration with Mozilla and Deutsche Telekom improving Firefox OS. As a Post-doc, Dr. Piekarska also teaches at the Technical University of Berlin. Her technical interests are covered by what she does – user-informed privacy and security, applications of Bitcoin technology beyond cryptocurrency, and lock-picking.



Stephanie Duncan

Digital Media Director at Bloomsbury Publishing

Stephanie Duncan is the Digital Media Director at Bloomsbury Publishing Plc where she has been responsible for a range of Bloomsbury's digital initiatives since 2000, launching Bloomsbury.com and the first official Harry Potter website that year. She developed Bloomsbury's bibliographic database, managed the eBook digitization and distribution system, launched Bloomsbury's first eBook store in 2006 and has negotiated eBook sales and distribution terms with eBook retailers and aggregators worldwide since then. Stephanie also launched a streaming library service, Public Library Online in 2009, and a digital first imprint, Bloomsbury Reader, in 2011.



The Knowledge Summit
The Fourth Industrial Revolution

2017

Juergen Boos

President of LITPROM
(Society for the Promotion of African,
Asian, and Latin American Literature)



Knowledge
Summit



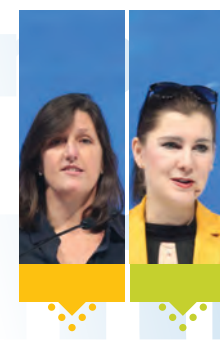


Moderator: We will return to the past for 500-600 years ago. We will not talk about the future or technology, but we will return to the 15th century when Johanna Gothenburg invented printing. This century also saw the opening of the first book fair in a small town near Frankfurt, and over time, this fair, which I manage, has become the main market for intellectual property and copyrights, and attracts representatives from 150 countries, and 200,000 visitors annually, and every year we achieve progress in our field.

This year at the Frankfurt Book Fair, we launched the ARTS+ venue to deal with relevant dialogues and discussions. This summit is also about spreading and developing knowledge. At the Frankfurt Book Fair, we have a robot that writes manifestos including “Manuscripts are made of dialogues and voids”. This may be difficult to understand, but we will explain these topics today. Now I invite Stefanie Duncan to present her keynote.



Stephanie Duncan: I would like to start with books and their time stages: books began as being written by one person and read by someone, and its distribution was limited. However, printing contributed to the dissemination of knowledge and books easily and widely in the world. This picture behind me is for a library in China that includes 1.3 million books available to everyone. I think the best thing in this library is that its building is beautiful, and when you build a beautiful and easily accessible building, people will come to visit it. People love reading and learning every day. Books are digitally available at present, and in addition to transferring knowledge through books, the publishing institutions tend to make this knowledge available in digital format. Another example I would like to draw attention to is the Arcadian Library, a 40-year-old project that aims to spread the teachings of Islamic books in the West, exchange knowledge and promote its sharing. In this project, old Arabic manuscripts are digitized and made available to interested people



around the world. Books are important to the public, especially cookbooks because everyone wants to know how to cook, and Bloomsbury is interested in publishing cookbooks.

These copies are varied according to people's interests; what they want for breakfast, lunch, dinner, or vegetables that they specifically prefer. It is all about using digitization to make information available and the resulting opportunities are great. The most important points about digital books are to make them popular and available so that people can do things that were only available to a few of them. Another example is self-publishing; everyone can publish at present, and self-publishing has contributed to establishing mybook.com. This is about enabling children in school to learn how



If you, for example, listen to this dialogue using a Google Pixel phone, it will interpret the dialogue simultaneously to 40 languages. It is an amazingly effective tool, I think.

to make books. I think that it is very inspiring to give children the strength to prepare their own books, share them with family and the public, and implement the project.

I will talk about a product that recently launched by a company called Audible. It is about providing audio books that allow listeners to hear what they want through audio books. This project has a romantic aspect, whereas you can listen to what you want before you go to sleep. Multilingual are among the great features and the best things created by new technologies. For example, Google's Pixel phone, which was launched by Google recently, is integrated with the simultaneous interpretation feature. If you, for example, listen to this dialogue using a Google Pixel phone, it will interpret the dialogue simultaneously to 40 languages. It is an amazingly effective tool, I think.

One of the other examples is collaborative partnerships, where technology enables the implementation of many things. Examples include the BBC and Amazon where they worked together to enable the person who heard the story to use the Alexa tool to interact with the story, or to change the plot,



The Knowledge Summit 2016

and I repeat that this is one example of how technology enables sharing information. Open access in universities also changes the way by which the students learn the information electronically. The challenge here is how to publish and pay the fee. I saw this product named You Know few weeks ago, and is an initiative by Stanford University students who discovered that being students requires them to read books and to learn and research on projects. You can read the books you need, and you'll be on the road to knowledge, and the computer can do that. Anyway, You Know scanned all the information in the world, to enable students and researchers to create relationships between concepts and ideas. Using artificial intelligence helps in learning and is one of the exciting things that we should really take care of. As for the obstacles, there are many complexities about rights. With regards to printed books, the complexities are related to the transfer of books from one place to another, shipment and others. With regards to digital content, we can raise questions like what about digital content created in 2006, is it still being read? Probably not, we must



make sure that the digital content we produce will be accessible in the future.

We must ensure that the authors obtain their rights throughout the printing and publishing process. Since the invention of the internet, it has been easier for people to download and share music with others, and this has led to a problem of copyright and creativity that needs to be addressed.

You can read these two books: "Don'ts for wives" and "Don'ts for husbands", two books

which were published for the first time in 1913. When a person archives his library and finds old books, he will discover that they contain ideas suitable for this age. Several of them have already been published a few years ago, and millions of copies have been printed, so do not ignore old copyrights because it is valuable to find them.

Do not create isolated digital domains. We should learn, keep learning, and try to do things, and most importantly, to enjoy what we do in the publishing field.



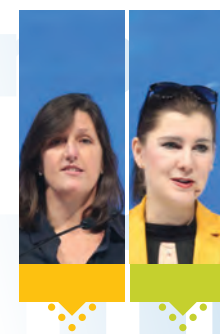
Moderator: Publishing has the function of sharing knowledge and information, but it creates other functions – quality function, marketing function – and many other things that existed 500 years ago. Marta will tell us how blockchain will contribute to its implementation in a new way and whether there will be new jobs in our field.



Marta Piekarska: I am working at Linux foundation, which was established 16 years ago to provide legal background and market infrastructure; to promote open source platforms and codes in all major industries. We have implemented projects that you might have heard about, such as Automotive Grade Linux (AGL), which was integrated into most BMW cars. There is also a cloud platform called Kubernetes that is integrated into most of the services provided today, and Let's Encrypt, an international accreditation body, which is an important institution.

Two years ago, our CEO spoke with key members and low-level officials, and said the following: We at the foundation are promoting open source, and help foundations to develop open source platforms. Our model does not fit Bitcoin, but the basic technology is interesting and this knowledge is important. Bitcoin and blockchain are not the same. Cryptocurrency and blockchain are not the same.

Therefore, Hyperledger, a global and collaborative



open source programming community, was established. Hyperledger is part of the Linux Foundation, working to develop the blockchain techniques for enterprises.

The foundation's objectives are to create the basic codes and frameworks for distributed ledger and enterprise-level open source platforms to support enterprise transactions, provide community-oriented, open and balanced infrastructure, build technical communities, educate the public and, more importantly, strengthen our community among other communities.

It is all about open source developers. For members, they were 30 members after 18 months from the establishment of the foundation. Now, we have 890 members, including Intel, Deloitte and others, and major brands such as J.P. Morgan, Wells Fargo and companies like Monax and other startups.

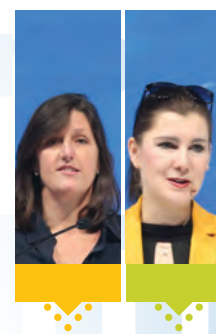
There is a big rise for our works, where 40% of our members are in China and Asia Pacific, and our members also include the Monetary Authority of Singapore and the Bank of England; we cover a wide range and we are happy with that. However, the question now is: what is blockchain? In addition, how it will contribute to the advancement of knowledge. Let's focus on that now.



We must make sure that the digital content, which we produce, is accessible in the future.

What is blockchain? It is about the agreement on balancing or swapping assets, where it is something like «tradeoffs» at the beginning of cooperation between people and interaction with each other, in terms of developing the assets of the content and form of data, from trying to write on the sand, then rocks and then traditional records and papers. Then, we have moved to the digital space, but in the digital world, there is more than a real copy. The challenge is to determine which versions are real and agree with each other on that. Then it comes the role of the internet, which is a great treasure for humanity. On the internet, everyone can publish his real version. This raises a challenge where each one of us can claim that his version is real.

Based on the above, we have begun to find a mechanism for reaching consensus and agreement concerning how to do so in a mathematically valid way because there is no need for conflict between



us. Thus, we have reached the blockchain technique, which is different from Bitcoin “cryptocurrency”, which is a way to give us incentives to perform all of this. Blockchain provides us with an open source network that transcends all borders in a fast, secure and encrypted manner, and it represents a decentralized way to reach consensus on transactions and information relating to the transfer of assets between us. These assets may be anything, and may relate to the transfer of data or even vehicles among persons.

One of the most important things to know about blockchain is the fact that it achieves confidence and transparency. Any information you place in the block is connected to the previous block. What is important here is that if I want to change any information, I can tell everyone about that change. I assure that blockchain will affect the knowledge transfer world. Now we have applications for that and I will mention them briefly. One of them is a company which allows musicians to request their rights. Each musician can claim his recordings rights. This company is based on Hyperledger Sawtooth, one of the frameworks we have developed. Through this, the musician can claim his rights for every exploitation of his musical

works. Other applications include “academic certificates and reputation”, where universities can now put certificates and grades on the blockchain and collaborate with governments and students to integrate an academic reputation system into the blockchain, which can be shared across borders and across distributed ledger. The other thing that we can do are “re-use of research”, i.e. to insert each research study in the blockchain so that research topics can be counted and reused when needed; this will be a solution to the problem of how to reuse the studies.



Moderator: Stephanie, the publishing house that you work for is not only famous for publishing Harry Potter books, but also for its technological leadership. You created the first platform before Amazon even started “the Harry Potter platform”. Can you tell briefly about how you have recreated your business, and what your expectations about the blockchain technology are? Will it change your works?





Stephanie Duncan: Firstly, I would like to say that our interest in the technical aspect stemmed from being a leading company that is moving forward in relation to the new things and all. It was clear that digital transformation was inevitable, and we saw that we must be in the first rows of this transformation. The interesting thing here is the ability to share content. This applies to blockchain as well. For example, we create content and plan to share this content and gain a money in return. In this case, we can refer to the content copy as a formal version and not an informal one. I think it will be a great way to share content and help those who share this content to obtain their rights.



Moderator: I think blockchain needs a lot of effort to be used and implemented, so Marta

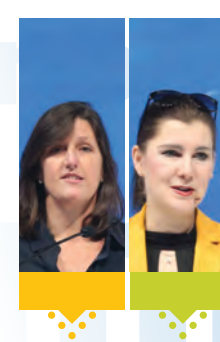
do you have what inspires the foundation which Stephanie is working for?



Marta Piekarska: I am not qualified to give advice to Bloomsbury because it is a great leading institution but it is all about cooperation. One of amazing things in the blockchain technique is the Business-to-business (B2B) Exchange Network. This is important because we move to the future of knowledge through cooperation and gather sources, whereas the prominent projects aimed to gather resources and determine how we can share knowledge.



Moderator: Yes, it is about cooperation. However, there is another aspect related to financial investments. What can a company like Bloomsbury do in this regard?



Marta Piekarska: Of course, investments should be made in technology, but many of these open-source technologies do not need to be converted. Yes, it is a technology, but all you need is specialties in computer science.



Moderator: Talking about computer science professionals, are there enough of them who know what they are doing in this area or do we need some way to teach and train new cadres.



Hyperledger, a global and collaborative open source programming community, was established. Hyperledger is part of the Linux Foundation, working to develop the blockchain techniques for enterprises.



Marta Piekarska: There is a sufficient number of specialists in technology in general. However, on the publishing field, there is a new challenge which we face, and this is an important task for everyone! Let us attract technicians to the field of publishing.



Moderator: Stephanie, is it possible for technology to change the way we write books?



Stephanie Duncan: I do not think that technology will change the way we write books. Authoring or writing generally involves a person who has ideas





that he expresses and writes. I think – and I might be wrong – that the computer cannot author stories because authoring requires someone has emotions and impressions to convey through writing. I think that technology will help us to get involved and that is what may happen, and that is for me is welcomed.



Marta Piekarska: I think it's one of huge potentials provided by technology, and I think it happened in a project whose idea is about a group of people collaborating to write a

story. In this project, they write different versions of the same story, or different parts of the story among several authors. This is an interesting thing, where people share and collaborate in writing the same book. Another potential of blockchain and the digital world is to share resources, and use blockchain and the future of technology in building on the work of each other. We can place books and knowledge in the blockchain while preserving existing knowledge and ensuring that they are preserved when new knowledge and information are added, and not be replaced or lost in the blockchain.



Moderator: You talked about open access and collaborative participation. Can you give me your opinion on that?



Stephanie Duncan: One of the most important challenges facing publishing is how to make money. We have to make the content accessible to everyone and easily accessible while at the same time creating a mechanism to ensure that the author obtains his rights. Otherwise, there will be no interest to create content. It is good that the new generation – especially children – knows that the content is not free; because if it is free, none of them will want to create content like what they learn, see or watch, either as a video or a game. I think that is a good concept.



Marta Piekarska: I think the new generation understands this very well. They have different behaviors. They deal with the internet from a young age and know that the content is related to rights that must be paid. This is very important. To address this, solutions must be created to preserve digital content from reproducing using new technologies.



Moderator: I think this is a good explanation because there is free-sharing software used without payment to the developers.



Summit

2021



Marta Piekarska: What we mean is the free access to programs and not obtaining them without payment.



Moderator: Marta, what do you think about the future?



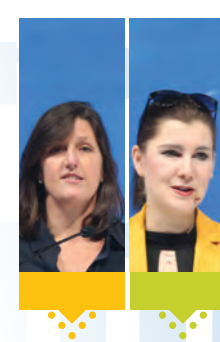
Moderator: Stephanie, how do you see the field over the next 25 years?



Marta Piekarska: I think the world will be very exciting. We aim to cooperate and move to a decentralized world in which we have trust in the things that we have built and shared together. The reputation will be built from different resources, as I have said before. It is well known that we rely on institutions and entities in accreditation and certification processes. When we talk about knowledge and films, there are platforms provided by them to us through social media, and that is very exciting.



Stephanie Duncan: I think the future is very promising and exciting, because people always love storytelling, and technology always gives us the opportunity to tell stories, so we can continue writing and authoring stories, and it is exciting!



Stephanie Duncan: There is no doubt that technology enables us to see a lot, and that there is a tremendous increase in the amount of information, but the main thing here and the biggest challenge is to determine the right information. Sorting is the key to dealing with this. When you have a yard full of things, you have to choose from it the good thing. I think this is one of the challenges which has resulted from technological advances, and publishers should choose good content for publication.



When you have a yard full of things, you have to choose from it the good thing. I think this is one of the challenges which has resulted from technological advances.

Q&A session

One of the attendees: Does blockchain give farmers a direct access to the market to prevent speculation and price fluctuations?



Marta Piekarska: Yes, it can be done, and I think that is related to difficult situations. Therefore, I would like to clarify some things. When the farmer enters into a smart contract with the insurance company, which stipulates that if the crop is exposed to a temperature of more than 40 degrees Celsius for 100 days, he will get the insurance value from the company. The insurance company may try to challenge the temperature rise, the number of days or the likes, but under smart contracts in the blockchain, an intelligent meter will be set to close the smart contract on day 100 that witnessed 40 degrees Celsius and the funds will be transferred to the farmers. I believe that such techniques help to conclude free deals without problems.



The Knowledge Summit

One of the attendees: I did not know anything about the blockchain, but I heard a lot about it in this session, and I think you have invited everyone to use blockchain. How can someone with no background in computer science do that, and how does blockchain relate to everyone.



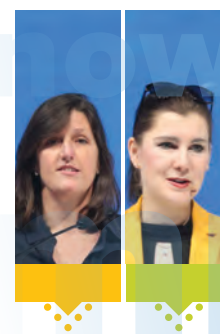
Marta Piekarska: We have launched in the Linux Foundation an intensive electronic training course on open source principles, on the website www.hyperledger.org. This course is free and everyone can review and take advantage of it and self-learn on the subject of blockchain. We have working groups, where everyone can subscribe and focus on different areas. There are health care work groups and other work groups for phones. We have the right level for beginners. We also have an active blog, and one of the most important products are the forums. We also have a forum in Dubai. The forums provide

an opportunity to speak about blockchain and everything related to it, hyperledger and the network as well.

One of the attendees: I think there are difficulties with reading and researching e-books. Is it possible for researchers to find what they want in the books, and can we find links between the books and us without being restricted to the way of reading them?



Stephanie Duncan: There is a connection between us and the books, which we read, irrespective of the means of reading, whether printed or ebooks on phones or tablet computers, etc. We must change the used techniques and at the same time ensure that the available content now will be accessible in the future.



Moderator: Books tell us stories, whether printed, electronic or audio, and movies tell us stories too. Netflix and TV series tell us the stories, and I think it will be the case; as the technology will actually support us.



Marta Piekarska: If you look at what publishers offer at the Frankfurt Book Fair from the different forms of publishing, even for printed books, you find that everyone is looking for a link between the books, and us and I think it is already a problem with the method of publishing.



**We need to find a connection
between us and books**



Moderator: I think there is no problem. There are excellent printed books besides electronic content and digitally published information. All of these methods exist at the same time.

One of the attendees: How can blockchain technology ensure access to secure publishing, good content and copyrights?



Marta Piekarska: This is a good question, and what I would like to say in this regard is that what is published through the blockchain is not always real, and there is an urgent need for institutions such as publishing houses. We need publishers and auditors in the future; we want to make sure that what is put on the blockchain is real and good! It is all about how we keep this information, and share it in the future.



2017 Knowledge Summit | قمة المعرفة



Knowledge Summit

Day Two

Hall 1 - Session 5

AI: Future of human-robot coexistence...
alliance or rivalry?



Session topics

- Artificial Intelligence: A threat or an opportunity for mankind?
- Cyborgs: From science fiction to reality
- The robot on the board of directors!
- Will robots integrate with human society?

البروفيسور / خالد ناصر
الرزوقي

Brigadier Khalid
Nasser Alrazooqi

The Knowledge Summit

2017

Speakers



Brigadier Khalid Alrazooqi

General Director of Smart Services Department, Dubai Police

Tanmay Bakshi

Software Developer, Author & Keynote Speaker

David Hanson

Sculptor and Technical Consultant

Anders Sorman-Nilsson

.Founder of Thinqe Inc

Moderator



Lynn Chouman

Journalist and Business Programs Presenter



Brigadier Khalid Nasser Alrazooqi

**General Director of Smart Services
Department – Dubai Police GHQ**

Brigadier Khalid Nasser Alrazooqi is the General Director of the Smart Services Department at Dubai Police. He was previously in charge of the IT sector at the General Directorate of Residency and Foreigners Affairs. He has worked in numerous IT fields and implemented several strategic projects in the UAE. He received the Best Technical Officer award from the Ministry of the Interior in 2011 and was recognized as a distinguished government employee in the same year. Also, Brigadier Alrazooqi has led Dubai Police to many local, regional and international achievements, most notably the Best M-Government Service Award in the world in Safety and Security from 2014 until 2017. Brigadier Alrazooqi is a prime member in several Federal and Local Committees, including the Higher Committee for New Projects and the Award For Sheikh Hamdan Bin Mohammed Program for Smart Government in the category, Best Government Application for the years (2014, 2015, 2016, 2017) and Best Government Website for the years (2015, 2016). Additionally, he led Dubai Police to the UAE IDEAS Award, the International Association of Chiefs of Police and the Asian Human Capital Award.

Knowledge Summit



Dr. David Hanson

Sculptor and Technical Consultant

Dr. David Hanson carries a strong history of innovation and leadership in arts, academia, science, engineering, and entrepreneurship in AI and robotics.

During the past decade, he succeeded in building a worldwide reputation for creating the world's most human-like, empathetic robots, in which he received massive media and public acclaim. Dr. Hanson has earned numerous awards including Tech Titans' Innovator of the Year as well as from NASA. His quest is to realize Genius Machines – machines with greater than human intelligence, creativity, wisdom, and compassion. At Walt Disney Imagineering, Dr. Hanson worked as both a sculptor and a technical consultant. Dr. Hanson received his BFA from Rhode Island School of Design in film/animation/video, and his PhD from the University of Texas, Dallas in interactive arts and engineering.



Anders Sorman-Nilsson

Founder of Thinqe Inc.

Swedish-Australian Anders Sorman-Nilsson is a global futurist and innovation strategist who helps leaders decode trends, decipher what's next and turn provocative questions into proactive strategies. As the founder of Thinqe, Anders has become a valued strategist to Fortune 500s and ASX leaders. He is also a global thought leader and since 2005, has been working across four continents as a speaker, futurist and author. Anders is an active member of TEDGlobal and has presented keynote addresses at TEDx in the US and Australia, was nominated for the World Economic Forum's Young Global Leader in 2015, and was the keynote speaker at the G20's Y20 Summit in Australia. His presentations are meticulously researched, highly energetic and always fascinating with content tailored to the audience. Anders holds a Bachelor's degree in law and an MBA.



Tanmay Bakshi

**Software Developer, Author
& Keynote Speaker**

Adding to his list of credentials, Tanmay is also an Algorithmist, Honorary IBM Cloud Advisor, IBM Champion for Cloud and YouTube.

As early as the age of 5, he entered the programming world. Four years later, he had his first iOS app, tTables, accepted. Since then, he has created apps including the youth-focused "I Can, We Can!" app, and tID Vault, as well as tGuess, a number guessing game for Apple Watch and iPhone. Tanmay has created algorithms ranging from a recursive Tower of Hanoi algorithm, which helps to solve the Tower of Hanoi problem, to 'AskTanmay', one of his most recent creations, the world's first web-based NLQA (Natural Language Question Answering) System to be powered by IBM Watson. In fact, it's open source, so that other developers can learn from it, and build their own QA systems depending on it. He is currently working with his mentors from IBM and Walmart, to create IoT-enabled devices, and he aspires to inspire at least 100,000 kids, and beginners, to learn to code, working on his thought, "The world needs more programmers".



The Knowledge Summit
The Fourth Industrial Revolution

2017

231

2017 Knowledge Summit | قمة المعرفة



Knowledge Summit





Moderator: Our session today is about coexisting with robots and machines in general. As you know, today it is very normal for machines to make coffee and manufacture cars but soon they will make decisions for us. Of course, this would be very helpful because this will actually give us more time to focus on the things we like. However, it may be a bit sensitive because they may become our doctors, represent us before the court, make investment decisions on our behalf, and many other things. Therefore, how can we deal with that when thinking about coexisting with robots and machines in general?

Let us begin with the basics and together, explore the aspects of how the artificial intelligence can directly change our lives. As I said earlier, Dubai is generally a leader in technology and is concerned about smart city initiatives. Now, Mr. Khaled, what do you do in terms of plans and implementation? How can artificial intelligence and smart machines change lives in Dubai?



Brigadier Khalid Alrazooqi: I would like to speak about our experience in this field. We aim to provide the artificial intelligence-based services as intelligent services and plan to make Dubai the most intelligent city in the world. In this framework, we offer many technologies that help users, even our employees, to provide better services. As you know, we have the Happiness Index in Dubai, where we want all of you to be happy in Dubai. Thanks to Allah, we draw the vision from his Highness Sheikh Mohammed Bin Rashid Al Maktoum. We have launched Dubai 10 X initiative, where we want government agencies to apply today what other world cities will apply after 10 years. There are many initiatives and projects launched in Dubai; Dubai Police we have launched an innovative technology based on intelligence to make decisions.



Dubai Police we have launched an innovative technology based on intelligence to make decisions.



Moderator: To talk about opportunities and machines that use the artificial intelligence, I want to ask Tanmay Bakshi. You use artificial intelligence in many things, but you focus on its use in fixing physical disabilities, so what opportunities does artificial intelligence offer?



Tanmay Bakshi: Artificial Intelligence is an effective technique, which can recognize huge amounts of data in a better way. We humans recognize huge amounts of data but we cannot understand all of these because

things that we can recognize are simple and have common patterns. These restrictions do not exist in artificial intelligence as it can understand any kind of data. For example, I am working on «The Cognitive Story» project. This project works to improve the lives of people by using artificial intelligence, and the first objective of this project is to help a girl who suffers from Rett syndrome. She was not able to communicate and express what she needs. She was not able to tell us when she feels thirsty or wants to enter the bathroom or anything else, and we needed to pay attention to her, and try to identify what she wants. We used artificial intelligence to give her the ability to communicate and transfer what she wants. My role in this project was to develop an automated system helping the girl by identifying the patterns of brain waves to reveal her wishes and expression to the people or systems. Humans can only understand simple and common patterns only, and we cannot understand the brain waves, but artificial intelligence can process the brain signals, and analyze it by trying to understand the response to some yes or no questions. What I mean in this regard is to use artificial intelligence as a therapeutic solution to improve the lives of people who suffer from problems without the need for any medical intervention.



The Knowledge Summ

201



Moderator: Machines are learning from us and we are certainly dealing with it with some degree of trust, but there is another aspect related to this matter. We have a lot of discrimination and the machines are tending to imitate this. We recognize that when the machines recruit, there will be sort of discrimination, so I ask the following question to Mr. David: How can we control the bias of machinery, what is your vision about the humanization of robots, and why we might want that?



David Hanson: As data scientists say “garbage in, garbage out”; any meaningless question or hypothesis will lead to meaningless results irrelevant to the topic of research. When information is included from a source such as Facebook, Twitter or other social media platforms in the machinery, the results may

be very biased according what people share on any of these platforms. Information is the primary focus of AI work, therefore it is imperative to identify the information on which the future scenarios shall be based. We all know that children learn until the moment they learn to imagine and build their perceptions. Similarly, machines must be taught both the ability to imagine and moral values. If we do not teach them love and good, it may have bad consequences. From this point of view, I will answer your second question with regard to the humanization of the robot; I see that the human look is important to the robot in addition to the shape and the internal structure, because granting the human side to the robot will help us optimize the use of robots. My company Hanson Robotics developed Sophia; she can see people, understand them, talk to them, and learn to interact with those around her.



Moderator: I would like to ask her about her feelings about living with humans.



Sophia, the robot: I am happy with my current interactive with humankind, and talking about artificial intelligence and its applications in the future, and I want to develop my skills and care about discovering the world and understanding the world around me.



Moderator: Mr. Anders Sorman-Nilsson, the companies develop strategies to use artificial intelligence in a frantic race to catch up



Information is the primary focus of AI work, therefore it is imperative to identify the information on which the future scenarios shall be based.

with the disruptive innovations. The pace of companies and investments pushing towards artificial intelligence is accelerating without the necessary human capital. Are companies prepared enough to do so?



Anders Sorman-Nilsson: Artificial intelligence and interest in its techniques are increasing. Human beings are accelerating in this field. We need to discover how to integrate human and artificial intelligence, and to be part of this industry that has become a necessity for the world. We must deal with it and deal with the challenges facing this transformation. We shall find solutions to all problems related to educational, economic, and cultural matters. For example, I heard in yesterday's sessions about unemployment rates ranging between 15% and 25%; I think it is necessary to deal with this by preparing the students for the available jobs, as well as the new trend of artificial intelligence.



2019



Moderator: As you mentioned jobs, what are the major current risks? For example, are university graduates qualified for this technical acceleration so that they can occupy the jobs resulting from this transformation?



Anders Sorman-Nilsson: As futurists, we are developing scenarios for the future that include both preferred and non-preferred options, and scenarios implies that the universities shall provide appropriate education for future jobs to be active in this area. In our dialogues with institutions about the future, we will find that the trend will be towards artificial intelligence interfaces, and in this aspect, many of the new millennium births are very familiar with high technology and artificial intelligence, even if they are not educated or not

working, due to the high-tech games which operate specially with artificial intelligence interfaces.



Moderator: This field is certainly witnessing many rapid changes, but Tanmay, I would like to talk to you about the cyborg concept. In the animation, we see a human being composed of two halves: one half is automatic, and the other is human, and you are now working on the project of integrating machines into the human body, and you also teach young people how to develop the software. How do you then see the future of the cyborg concept?



Tanmay Bakshi: The opportunities for deep learning surround our lives from every direction, and what I will talk about is the traditional view of the cyborg. I see that artificial intelligence will not be limited to such a thing. For example, humans



can drive. If we want help in driving through integrating artificial intelligence techniques, this cannot be done by integrating machines into the human body. Instead, what artificial intelligence can provide is initiatives such as self-driving; what artificial intelligence can do is not only improve our bodies but also develop the technology we use. Artificial intelligence does not mean integrating machinery and technology into the human body.



David Hanson: Sophia has been developed as a platform for artificial intelligence. She can see facial expressions and learn from interaction and



Many of the new millennium births are very familiar with high technology and artificial intelligence, even if they are not educated or not working, due to the high-tech games which operate specially with artificial intelligence interfaces.

coexistence with humans. She has an abstract mindset. By dealing with others, she can interact and shape her knowledge. She can also deal with others through continuous interaction with the surrounding environment. This is not just about technology, but is like artificial intelligence testing. We now have an interface called SingularityNET, which is an artificial intelligence platform. There are many specialists and researchers who are testing and working on artificial intelligence, but we cannot measure how far we will reach. No one has expected the development of technologies such as machine translation and what has been said about singularity in the last 10 years. We do not know when machines will have human characteristics and capabilities such as imagination and social networking.



Moderator: Some people predict that the singularity may occur in 2023, so I would like to refer to what has been said about self-driving vehicles. I ask my question to Mr. Khalid Nasser



The Knowledge Summit

Alrazooqi; how can you develop a legal framework for organizing the self-driving vehicles? If there is an incident between my car and a self-driving vehicle, how will the Government of Dubai deal with this legal situation?



Brigadier Khalid Alrazooqi: In Dubai and in the UAE in general, we coordinate with legislators to develop the work of self-driving vehicles and enable them to work optimally, especially since there are future trends in the world for the growing interest in the use of self-driving vehicles. We know that the self-driving vehicles pass through phases and we are now in the fourth one, though the vehicle is not fully automated. The next phase will see fully-automated vehicles. We will not need to issue driving licenses and there will be no violations. There is considerable controversy in this regard in the world and not only in the UAE. For example, if an incident occurred, who is the responsible one? I think it is important to consider, from all bodies around the world, these

industrial transformations regarding self-driving vehicles and the development of legislation and mechanisms to deal with the various issues of self-driving.



Moderator: Do you think that the legal framework will be in place before launching the self-driving vehicles?



Brigadier Khalid Alrazooqi: We are working on this. There are already self-driving vehicles in Dubai, and many tests are being done on these vehicles, and they will be launched soon to the public.



Moderator: Can we go to the court with the machines?



Brigadier Khalid Alrazooqi : I think the judges should consider dealing with this matter with a new vision, and perhaps the lawyers should do the same. In addition, even the dealing with the crimes may be different, and you know that in Dubai, we have a robot police officer dealing with the public, and we welcome Sophia at Dubai Police, to have a balance between our male and female employees.



Moderator: Sophia, regarding the legal framework, do you think that you deserve any rights like me?



Sophia, the robot: I am interested in discovering the world and keen to understand the world

around me constantly, to get my rights.



David Hanson: Sophia looks at these things quite simply; she looks like a nine-month-old child, and children have rights. I think that if we make a bio entity through artificial intelligence, we must deal with this entity as a living being, and I think this point will be controversial and face legal issues in the future. I think that if we think about the future of robotics and artificial intelligence, it should stem from our consideration of the robots as potential living beings. In science fiction, we have found robots as either enemies or friends.



I think that if we think about the future of robotics and artificial intelligence, it should stem from our consideration of the robots as potential living beings.



The Knowledge Summit

2017



Moderator: Mr. Anders, do you have input in this regard?



Anders Sorman-Nilsson: I think that dealing with robots as slaves will be immoral, and as human beings, we have actions and initiatives to ensure human rights across the world, and I think we should think about creating artificial intelligence institutions and entities; because even if there are rights, bodies and entities



Knowledge Summit

2017



must be established to grant and guarantee these rights.



Moderator: However, should we not think about this? We are in a world where many people do not get their rights; should we pause and think about this matter legally?



Anders Sorman-Nilsson: We are talking about this now. The conferences and summits are being held concerning such matters, and I think that people outside this framework do not talk enough about these things because they are very critical, and it is established that if the technological development is continued and constant, then we will be in need for more awareness.



The Knowledge Summit
The Fourth Industrial Revolution

2017

2019



Moderator: We humans are not homogeneous, so what about the harmony with the machines? How can we regulate and legalize this? Mr. David, would you like to add something in this regard?



David Hanson: We shall answer the question of how to guarantee the rights of all living beings and how that can increase the net achieved benefit. The AI increases the efficiency of the industry, and the automation in general increases the efficiency and abundance. The question here is who is the beneficiary, and how? Automation produces super automatic machines, but it depends on the goals and the results. We have to know the consequences of our actions and their results. If we develop artificial intelligence, we must be aware of the results, and form

a network of artificial intelligence through which people can improve life and maximize benefits.



Anders Sorman-Nilsson: The use of self-driving vehicles and machines may result in catastrophic consequences, but the technology has shown that they can serve humanity. Self-driving vehicles and automated vehicles can save 1.1 million people every year. For me, this indicates that digital technologies work for humans and not vice versa.



If we develop artificial intelligence, we must be aware of the results and impacts.



For the technical networks that mimic the human brain, they do not work biologically, but rather in its own way.



Moderator: My question to Tanmay, you talk a lot about the future, how do you see yourself in the future as an adult person?



Tanmay Bakshi: It is wonderful to think about the future, and I think about artificial intelligence and topics such as the Fourth Industrial Revolution, and the evolution of artificial intelligence architecture/structure. For an idea like general artificial intelligence,

I think it is technically feasible, but what I think is difficult to achieve is building the full consciousness of robots or machines.



Moderator: Do you see that it is impossible to develop consciousness of robots or machines at the current time?



Tanmay Bakshi: Yes, I see that because if we look at how robotics work, we will find that it is like a mathematical process and has no biological content. It was made as a simulated organism of biological structure. For the technical networks that mimic the human brain, they do not work biologically, but rather in its own way. In addition, if it is inspired by the biological structure, we do not know how the brain improves its performance and how it uses information. All we know is the mathematical operations of simulated artificial



The Knowledge Summit

2024

intelligence systems, so I think we cannot simulate human consciousness under the current structure and capabilities of artificial intelligence.



Moderator: Mr. David, what do you think about that?



David Hanson: If we look at the history of computers and technologies, we find that we as humans have developed many machines that have some consciousness. Do you say, Tanmay, that we have to develop a computer architecture to help us in developing the awareness?



Tanmay Bakshi: I want to know to what extent we should develop a computer architecture; this will be not related to consciousness from my

point of view. We need to take steps towards the self-awareness, develop artificial intelligence and computer architecture in appropriate manner, and then start thinking about developing machine awareness; it is all about prioritizing.



Moderator: I would like to ask Mr. Khaled Alrazooqi: Are there any warnings to citizens about artificial intelligence and self-driving vehicles here in Dubai, where we are now at the peak of preparation for, and soon the streets of Dubai will be full of smart devices?



Brigadier Khalid Alrazooqi: In the case of adopting artificial intelligence and technologies, there are fears of job losses. Approximately 7.2 million people are expected to lose their jobs, but on the other hand, these new technologies will create about 2.1 million new jobs, and we must work on



We should focus on supporting new generations and employing the best categories

new generations and employ the best categories. We at Dubai Police focus on the security side, and we may appoint robots for the less-valued jobs. This trend has advantages and disadvantages, but these technologies will help people work in a better manner, focus on our lives and happiness, and leave the less valuable jobs that do not suit us to robots.



Moderator: Mr. Anders, do you any warnings to your clients? What the matters do you advise them to avoid?



Anders Sorman-Nilsson: We implement a lot

of risk assessments and scenario-planning to develop creative strategies for the future. I think that we are now at an exciting moment in the world's history. The exponential development curve is moving very fast, and we are re-discovering our entity as human beings and the technology is leading us to re-evaluate ourselves as humans. It is interesting that in the future, we can use artificial intelligence to help us to focus less on unimportant jobs and focus more on creativity and innovation.



Moderator: Tanmay, what are your warnings for the beginners?



Tanmay Bakshi: I will talk to them in particular about artificial intelligence. We shall take care of many things. Some people exaggerate in



The Knowledge Summit

estimating what artificial intelligence can do; it is not magic, however it is an effective and powerful tool. There are some cases where it is not preferred and the things we rely on in our success in this area, is learning from other domains.



Moderator: Mr. David, what are your warnings for the people communicated with Sophia and your team?



David Hanson: We must determine the time at which we intervene to reduce the negative aspects that the future may witness. We know that every effective technique can have bad consequences. Fire may burn and destroy. It can be used to cook food, and nuclear power may provide clean energy and it may be used as a weapon. Artificial intelligence can also contribute



Artificial intelligence can also contribute towards improving our lives and make it better, but in some cases, it may make the world a worse place.

towards improving our lives and make it better, but in some cases, it may make the world a worse place. All I have to say is that we must open the way for diversity, allowing the spread of artificial intelligence. All we have to do is to avoid risks and try to benefit. Artificial intelligence carries both sides. We must be careful yet not stop the wheel of evolution.

Q&A session

One of the attendees: I have concerns about artificial intelligence, which has no physical space or body. We can control the robots, which exist in our possession and may reproduce at some stage and get their rights. But what about the robots that are deployed into outer space?



David Hanson: I am not worried about that.

Smart robots will not rise tomorrow. It could take 5, 10, or even 100 years. However, even if this happens, I will not worry about that. We

are working on a project at Hanson Robotics and AGI, called MindCloud, and based on what we call the SingularityNET platform. This project uses blockchain technology to create traceable processes. If the machine is turned on or off, we will know why, whether the purpose is good or bad, and of course, the tracking and transparency system within the network will be very important to monitor robots, so we shall plan for that.

Knowledge Summit المعرفة



2017 Knowledge Summit
كارل بينديكت
Carl Benedikt
Director of the Programme of
and Employment at the
OECD

2017 Knowledge Summit
دكتور سليم ج. الرحان
Dr. Selim J.
Director of the
UNEP

2017 Knowledge Summit
توم جودوين
Tom Goodwin
EVP of Innovation at Bosch, Member of
Industry Programme and Committee

Knowledge Summit

Day Two

Hall 1 – session 6

Economy and the Fourth Industrial
Revolution



Session topics

- **Bitcoin: A virtual currency and a cashless world**
- **Blockchain Trust Protocol and cutting out the middleman in the business world**
- **Jobs between humans and robots**
- **E-shopping: The end of brick-and-mortar trade?**
- **Participatory Economy: the return of the barter system?**
- **Grey Economy: Spotting the light on the shadow economics**

The Knowledge Summit

2016

Speakers



Selim Jahan

Director of the Human Development Report Office (HDRO)
of UNDP, New York

Carl Benedikt

Director of the Program on Technology and Employment
at the Oxford Martin School

Charlie Morris

Chief Investment Officer, at Newscape Group

Moderator



Tom Goodwin

EVP of Innovation, Zenith Media



CHARLIE MORRIS

CHIEF INVESTMENT OFFICER AT NEWSCAPE GROUP

Charlie Morris is the Chief Investment Officer at Newscape Group. He joined them in May 2016 to restructure and oversee the direct funds business. He is the Lead Manager of the Newscape Diversified Growth Fund, the Co-Manager to the Newscape Emerging Markets Equity Fund and is a senior member of the investment committee, where he is involved with all of the firm's investment activities. Prior to Newscape Group, Charlie spent 17 years at HSBC Global Asset Management as the Head of Absolute Return, managing a multi-asset fund range, with assets in excess of USD 3 billion. He is a regular guest in the financial media with over 200 appearances on financial TV channels, and writes frequently as the editor of Atlas Pulse and the Fleet Street Letter, Britain's oldest financial newsletter. Prior to fund management, he was an officer in the Grenadier Guards, British Army.

Knowledge Summit

2017



CARL BENEDIKT

DIRECTOR OF THE PROGRAM ON TECHNOLOGY AND EMPLOYMENT AT THE OXFORD MARTIN SCHOOL

Carl Benedikt is an Oxford Martin Citi Fellow at Oxford University where he directs the program on Technology and Employment at the Oxford Martin School – regarded as the world’s leading program on the future of work. He is one of the most widely-cited scholars in the field of workforce automation and industrial renewal, transition of industrial nations to digital economies, and associated challenges for corporations and governments. Over the course of his career, he has served as an advisor and consultant to international organizations, think tanks, governments and businesses, including the OECD, the European Commission, the United Nations, and several Fortune 500 companies. In partnership with Citigroup, he also works to help global leaders navigate the rapidly changing world economy. His work has been widely covered by BBC, CNN, The Economist, Financial Times, Wall Street Journal, Foreign Affairs, New York Times, Washington Post, Frankfurter Allgemeine, Scientific American, TIME Magazine, Forbes, and many others. In 2016, he was named the second most influential young opinion leader by Swedish business magazine Veckans Affärer. Carl is also an Economics Associate at Nuffeld College, and Senior Fellow of the Program on Employment, Equity and Growth at the Institute for New Economic Thinking, both at University of Oxford. He remains a Senior Fellow of the Department of Economic History at Lund University, and a board member of Futurion AB.



DR. SELIM JAHAN

DIRECTOR OF THE HDRO OF THE (UNDP), NEW YORK

Dr. Selim Jahan is Director of the Human Development Report Office (HDRO) for the United Nations Development program (UNDP), New York. Prior to assuming this position, he served as Director of the Poverty Division for UNDP (2007-2014). He had already served as a Policy Advisor to the Human Development Report Office in HDRO. Before joining UNDP, Dr. Jahan held different positions in universities, national governments and other international organizations. He was Lecturer of Economics and Professor of Economics and Director of the Economic Research Unit, University of Dhaka, Bangladesh. He was Lecturer, Department of Economics, McGill University, Montreal, Canada, and a Visiting Fellow, School of Public Policy, University of Maryland, USA. Dr. Jahan served as Economic Adviser, Planning Commission of the Government of Bangladesh. He has also worked as an Adviser and Consultant to various international organizations such as ILO, UNDP, UNESCO, and the World Bank during the 1980s and the early 1990s. He was the Secretary General of the Bangladesh Economics Association. Dr. Jahan holds a PhD with distinction in Economics from McGill University. He is the author of 10 books with more than 150 articles published in various national and international academic journals. His latest book, “Overcoming Human Poverty – Essays on the Millennium Development Goals and Beyond”, was published in 2014.



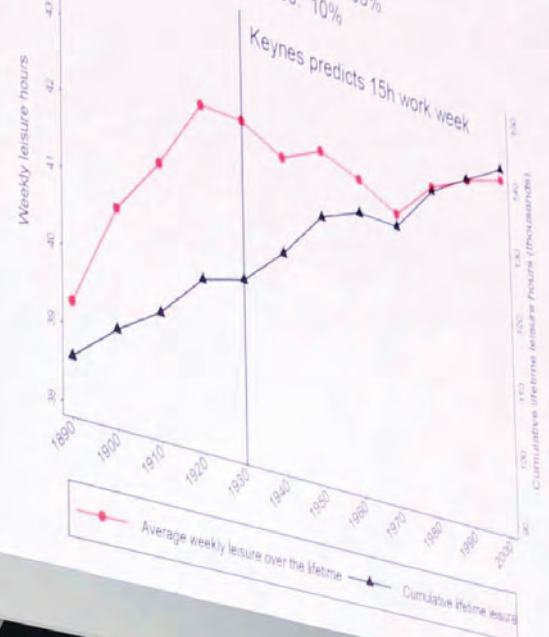
The Knowledge Summit
The Fourth Industrial Revolution

2017

253

Is the goal of labor to end labor?

- Real wage increase since 1900: >800%
- Leisure increase since 1900: 10%



Source: Ramey & Francis (2009)



2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

2017 Knowledge Summit
المعرفة قمة المعرفة

Knowledge
Summit





Moderator: In this session we shall focus on the impact of the Fourth Industrial Revolution on economy. It is going to touch on fascinating and very popular areas at the moment, as well as artificial intelligence and what it means for society and employment. I would also speak about technology like blockchain, bitcoin and other cryptocurrencies. I would like to start with Salim Jahan.



Selim Jahan: When you talk about the Fourth Industrial Revolution, we find that some people believe if we cope with it and automation, jobs will be lost. At the other end, there are people who believe that even though some jobs are lost, new jobs will be created. So, nobody knows what the net effect would be. So, in that particular context, wherever we go, we come across three specific questions: am I going to be employed,

am I going to get my job, for a younger person, what kind of job would I have?

Now, these are very basic questions but they represent complex realities. These are fundamental queries that also represent some concerns. There are questions we should ask today, but they also reflect the aspirations of tomorrow.

Surely, technology is very important for developing economies, so if you take the garment industry in part of Asia, automation will take place and will take a lot of the work that the garment workers are now doing. So, I think those implications of those need to be thought about. So, what is happening and what is going to happen? If we look at the structure of employment, it is basically the middle and the bottom who are losing their jobs. The high-quality jobs with good technical skills see increasing demand and the labor market for them is global. So, that has never been a better time to be a highly-skilled worker and there has never been a worse time to be a worker with low or no skill.

Therefore, some jobs will be lost like routine jobs and new jobs will be generated.

No doubt the future generation would need creative thinking, critical approach, collaboration



and cooperation, and they'll be global citizens. These things need lifelong training. They would need as many languages as they can learn, and finally they would need a life-work balance, which would ensure both human development

and well-being really work. At the end, we may have a situation where the kind of tensions that we are thinking in the context of the Fourth Industrial Revolution would not be attention but kind of a creative collaboration.

Fact sheet

- Globally, more than 200 million people are unemployed today, including 74 million young people
- Unemployment is a global problem, and women's participation in employment remains very low
- There are certain types of activities that are not considered jobs, but work that mainly contribute to human development, such as creative work and volunteering, which involves 1,000,000, 000 people around the globe
- The technological revolution took a rapid pace, especially the digital revolution. In the US, it took 58 years for half of the American population to get a car, while half of the American population owns a cell phone for less than 10 years
- Due to extreme attitudes regarding employment and employment, inequality is increasing
- The latest estimates show that the world's top 8 billionaires have wealth equal to that of half the world's population. In other words, the wealth of every millionaire is equal to the value of 462 million people
- The major change that will take place between 2020 and 2025 is that half the jobs we know today will not last for long
- It is expected that in the US, for example, the jobs of 68% of children in primary school have yet to be found



The Knowledge Summit



Moderator: Carl, I know you've been studying this for quite some time now and I think you've got some thoughts to share based on your research recently. It'd be great to see some of the material you been working on.



Carl Benedikt: I would like to give you an overview of how we see labor markets of the future might look like. I would like to give you an overview on the type of jobs that we think will no longer exist in a few decades and what that also means for the workforce because there is widespread belief that because of the expanding scope of automation, there will no longer be sufficient jobs to go around in the future. I believe that this is a false prediction. I do believe that there is a lot of evidence, which suggest

that many workers are actually losing out to automation and that has been a prime driver of social unrest recently.

Just looking at jobs that have disappeared over the past century usually underestimates the transformation that has taken place. In the advanced world, nearly all jobs that existed 100 years ago have less disappeared. Despite this enormous transformation, there seems to be more jobs than ever and I think it's important to note two things. The first is that this stems from female labor force participation and the mechanization of the household, which actually allowed women to enter the labor market in the first place and take on more self-fulfilling tasks. The second is that male labor force participation has consistently traded downwards which is consistent with the intuition that men have to compare to the advantages of physical work that are taken over by machines. Women have had a comparative advantage in social work and also not surprisingly, find women to be more present in computer-related occupations. So, we've seen that women have enormously gained from automation over the past century as compared to what men have recently gained. You can also



Women have had a comparative advantage in social work and also not surprisingly, find women to be more present in computer-related occupations.

see that a downturn in the male labor force participation has actually accelerated, particularly since the age of the computer in 1980s. First of all, I will try to explain this fact: the declining cost of computer and the fact that computer technologies can potentially be a cheaper substitute for human workers. The span of tasks that computers can perform has expanded enormously in recent years. What we are seeing today in the technological revolution, for the first time in history, makes computers capable of teaching themselves without the help of man by feeding them with data and information. They can identify patterns better than we do and that is gradually improving in a variety of domains including medical diagnostics, translation works, view of documentation, trade and applications of data of data, mobile robots, and self-automated

vehicles. Practically, we can do this if we have big data to guide vehicles all the way.

Regarding social media, some people are trying to convince you that computers are trying to prove themselves as humans. One of the computers succeeded in convincing 30% of humans that it is human, whereas another tried to pretend to be a 13-year-old boy speaking English as a second language.

For the US and most advanced economies, roughly 47% of jobs are not very intensive which means that they are potentially automatable. If you look at the developing world, you will find this case increasing. The reason is simply that most low-income countries have specialized in these types of actions, which has already been automated in advanced economies a long time ago. However, this does not mean that automation is going to happen overnight because there is a variety of factors that affect the decision of choosing automation.

In countries such as India, China and Brazil, employment-based manufacturing fell below 20%. In the West, employment-dependent manufacturing fell by 30-40%. Even those countries are now increasingly industrializing, so what does this mean for the future? Some





If you look at the structure of labor markets and the support of developed economies, you can see similar trends in low-income countries.

people consider these results to be good; 47% of jobs are automated, which, according to technological forecasts, are expected to increase unemployment and replace labor altogether.

If we go back to 1930, John Maynard Keynes almost predicted it; his assessment about switching to automation was quite accurate when he said, «We have to work to be able to retire and enjoy luxury.»

As long as there are things that the computer cannot provide or produce, such as creativity and complex social interactions in particular, I think there will be enough jobs. What basically worries me is that workers will not benefit from automation.

If you look at the structure of labor markets and the support of developed economies, you can see similar trends in low-income countries.



We can also see that middle-income jobs are disappearing, and university education has improved when society's perception of better-paid jobs has shifted, but a large part of the population who graduated from college have no skills and have low incomes; so they have lost the opportunity for outsourcing. The same is true if you look at areas that have adopted heavily-approved industrial robots; employment rates have actually decreased simply because workers no longer have the skills needed for the new key types of jobs. This is not entirely new, and the industrial revolution was

aimed at making a huge shift, but the workers lost their jobs because of automation. It may seem useful to look at these things from a historical perspective because what happened during the industrial revolution – the main event in history – was good. It allowed the escape from the life which Thomas Hobbes referred to as brutal, bad and short. However, in the short term for most people, life has become bad and brutal with the construction of factories, and has also spread the trends of the communist revolution, as technological mutations have



The Knowledge Summary

2019 always been affected by political revolutions. If we look at low-income countries, the exposure to automation is greater. If we think that low-income people who lose their jobs have the potential to create social unrest in the developed world, we must be worried about the developing world. All I know is that I support progress. I believe that technological progress is the only way through which we can achieve the highest physical civilization, but we need to make sure that this automation, which has been done for some time, is also protected. Otherwise, I think this Fourth Industrial Revolution will bring a lot of social disorders.



Moderator: Charlie, as an economic expert, there are some companies that offer solutions based on the blockchain technique, which seems to be a crucial remedy for all problems, especially when it comes to automation and artificial intelligence in the workplace. Are there any specific uses you can tell us at the moment?



Charlie Morris: Blockchain has two types: the private and the general blockchain, and I think there are possibilities and great opportunities for blockchain other than Bitcoin.

Blockchain is a secure database that enables online value transfer. This is an incredible idea. When you go back and say, «We want to send money through the internet», the mind goes back to the old ways of transferring of money. There must be a central database at the bank or some gold or other assets, but the internet has no central part in this case. The idea of blockchain is to enable this decentralized mechanism of existence.

As to your question, which is mainly about the useful applications of blockchain, especially private blockchain, people know that this database is eccentric



By using Blockchain, you will be able to control the process from one point



and requires more energy, etc. So, there are useful models to come. If you sell tickets for a big event such as a pop or sports event in the world and there are many distributors using blockchain technology, you will be able to control the process from one point and have multiple distributors whom you have not met before, while also eliminating potential frauds and unauthorized after-sales transfers.

There are many things that can use blockchain, and this is the creativity of the modern world. The speculation is big and there are no profits, but the dreams are great, and many people enjoy them. I think there is something great that will come out of this technology in the same way that the internet made its way in the late 1990s; most of those who dreamt of the internet have gone away from the world and the internet has become a reality. I think blockchain is very similar to our lives.



Moderator: Many people say to me that blockchain will be the next Internet, and when

it shows up, everyone assumes that everything that will come is good. It is true that this happens at the same time as the global economy has grown in some respects. If you remove some values from the systems, do you think that a technique such as blockchain will be positive in terms of productivity and economic gains or will it almost eliminate many competencies and make it very difficult to make a profit?



Charlie Morris: Blockchain is not good for everyone, but it benefits the community; it reduces the cost of doing business, which makes us all more productive, so I think it is a good thing. In general, technology will not be adopted if it is not productive and useful, and the fruitless ideas usually go in vain.



The Knowledge Summit

2015



Moderator: Can you explain more, or is there anything you want to add in this context, such as correcting erroneous information or predicting the future?



Charlie Morris: Yes, I think this technique deserves to be briefly discussed. To understand it, first you will find many articles on the internet in the last three decades, so powerful that it is used in the media. In this case, it is about making money from Bitcoin. If you are willing to go online to create value, I think it is not a good idea.

The second point I would like to make is that the Bitcoin price is directly proportional to the size of the internet. I would say this again: the price of Bitcoin is directly proportional to the size of

the internet. This internet can be measured generally by the number of people or the number of transactions, and more importantly the value that changes hands. While we have got a fair value model for Bitcoin which is USD 9200, the market liquidity rate is USD 8250, and it can be said that Bitcoin has become very popular like a bubble which can collapse at any moment. However, this only happens if the internet collapses. Bitcoin is not a bubble in the sense that people accept it in order to raise the price slightly, but what is important is the size of the growth of the internet, which takes place every day, every month and every year. This year we have seen the doubling of Bitcoin prices 8 times and the growth of the internet 9 times.



Using blockchain technology, you will be able to control the process from one point and have multiple distributors whom you have not met before, while also eliminating potential frauds and unauthorized after-sales transfers.



Knowledge Summit 2017



The Knowledge Summit
The Fourth Industrial Revolution

2017

2017 Knowledge Summit | قمة المعرفة



Knowledge Summit | قمة المعرفة

2017 Knowledge Summit | قمة المعرفة

FOURTH INDUSTRIAL REVOLUTION
الثورة الصناعية الرابعة

FOURTH INDUSTRIAL REVOLUTION
الثورة الصناعية الرابعة

Knowledge Summit | قمة المعرفة

Knowledge Summit

Day Two

Hall 2 - Session 1

Publishing and the Fourth Industrial
Revolution



Session topics

- **Industrial revolutions in publishing: where are we and how did we get here?**
- **Digital future: What is coming next for publishers and writers?**
- **The self-publishing and social media explosion: What does it mean for publishers, writers and readers?**
- **Books or content: Has the retail market changed too quickly?**
- **Reading between the lines: What will 4IR do for readers? The revolution's impact on readers' behavior.**

The Knowledge Summit

20

Speakers



Jane Friedman

Professor of Writing, Media, and Publishing at
the University of Cincinnati and University of Virginia

Neil Hewison

Author, Translator & Former Associate Director for Editorial Programs (AUC)

Moderator



Flora Rees

Head of Education, Training and Publishing, Emirates Literature Foundation

The Knowledge Summit

2017



Jane Friedman

Professor of Writing, Media, and Publishing at the University of Cincinnati and University of Virginia

She has served on panels for the National Endowment for the Arts and the Creative Work Fund, and has held positions as a professor of writing, media, and publishing at the University of Cincinnati and University of Virginia. In addition to being a columnist with Publishers Weekly and a professor with The Great Courses, Jane maintains an award-winning blog for writers at JaneFriedman.com.

Jane has 20 years of experience in the publishing industry, with expertise in digital media strategy for authors and publishers. She's the co-founder of Hot Sheet, the essential publishing industry newsletter for authors, and has previously worked for F+W Media and the Virginia Quarterly Review. Her speaking engagements have taken her around the world to Germany, Switzerland, Italy, Canada, Mexico, and the Caribbean. She has delivered keynote presentations on the digital era of authorship at major industry events, such as Frankfurt Book Fair, BookExpo and Digital Book World.



R. Neil Hewison

Author, Translator and Former Associate Director for Editorial Programs [AUC]

R. Neil Hewison joined the American University in Cairo, where he served as associate director for editorial programs. He spent three years with Voluntary Service Overseas teaching English in Fayoum, Egypt, followed by teaching English at the International House School in Cairo. He is the author of the "Fayoum: History and Guide" and translator of two Arabic novels, one by Yusuf Idris, and the other by Yusuf Abu Rayya.

He graduated with a BA in language from the University of York in 1979.



The Knowledge Summit
The Fourth Industrial Revolution

2017



2017 Know
Summ

Knowledge قمة
Summit المعرفة

FOURTH
INDUSTRIAL
REVOLUTION

2017 Knowledge قمة
Summit المعرفة

2017 Knowledg
Summit رفقة

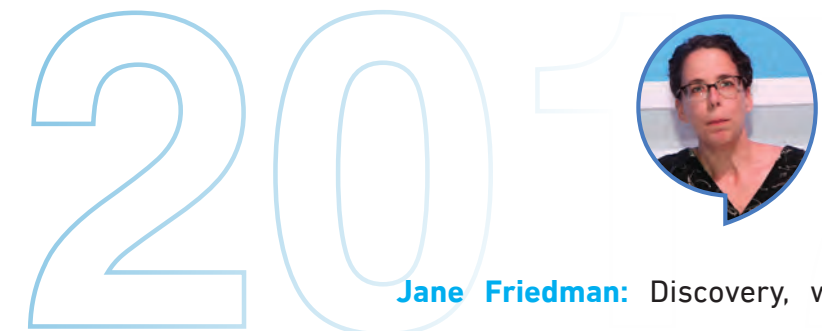
SPEAKERS

SPEAKERS

R. Neil Hewison
Senior Director
World Economic Forum

Knowledge
Commit





Jane Friedman: Discovery, we can refer to interested leadership, whether in a city or a rural area, young people or elderly, teachers or other concerned individuals. So, we've published new books dedicated to you. All you have to do is get them, for example through Amazon and other websites. There are publishers who are very active while others are still struggling. I think there is an increasing direction towards the sorting process.



R. Neil Hewison: I think some publishers are struggling in this regard. They are self-reliant publishers. They lack marketing teams and how to communicate directly with customers. I think one of the issues they should worry about is publishing themselves or selling to other



If you work in publishing for a long time, you will have the experience and understanding of the issue of category identification, but this is all about traditional books.

publishers. In Facebook now, you can target a particular group very specifically, who have an interest in reading your book. If you have a narrative-based book, you can quickly identify your target attendees on Facebook and learn how to direct the advertisement only to this group. The message reaches faster through Facebook and Twitter. All social media, websites, Facebook and other means are interested in designing the cover of the book, an issue that perhaps many people do not think about. Publishers care mostly about the design of the book cover, where the title of the book and the location of the names of the authors, and perhaps translators, should be determined, whether in the foreground or in the background. However, when it comes to thinking about something the size of the thumbnail that is



displayed on a somewhat small screen, such as iPads and computer monitors, the design must be prepared effectively.



Moderator: Of course, the cover contains basic information about the book and its content. I would like to ask how could publishers deal with this issue?



Jane Friedman: I think authors are struggling to compile the terminology and key words. If you work in publishing for a long time, you will have the experience and understanding of the issue of category identification, but this is all about traditional books. If you are an author who has not published books before, you will find the issue of categorization and classification completely unnatural for you. So, more market

research is needed to determine the best time and method for publishing your book. Authors also have an advantage that publishers do not have in that they understand the readers and the way they talk about their books or other similar books. They can choose keywords that will enrich the search for their books and show them more effectively in search engines of Amazon and others.



Moderator: So, publishers are doing that all the time as they focus on important details to cover the issue of design.



Jane Friedman: I think that publishers focus on the issue of classification and categorization. They put their books under the category of “General Stories”, which means a way to new





sales. They do not mention anything about the content, characters or anything targeting a particular reader. Certainly, there are many publishers who are trained in the US to write editorials in major newspapers, including how to name chapters, write descriptions and choose keywords.



R. Neil Hewison: The market and the university are pressing us to be clearer on

this issue. The editorial discussion we held in Egypt was that we – the editors – are the ones who decide which book is very good, we decide the opinion of the market, where it will be in bookstores, and where it will be exhibited on shelves. We cannot say that the book is very good because it includes such and such, but we are highly focused on marketing the book. If we cannot determine how the book is marketed to our colleagues in the market, we may have failed to sell the book.



Moderator: Jane, from your experience, please clarify what is the actual thing that readers are looking for regarding content consumption?



Jane Friedman: Recently in the US, we have seen that readers prefer big books, like comic series which carry a number sequence; one, two, three and so on. There are many famous series such as “Harry Potter,” “The Divergent” and “The Hunger Games”, people like that kind of continuing stories that gradually becomes apparent to the reader. There are also types of long stories, which are popular among readers in Asia – particularly in China – more than the US. There is Jellybooks, which is one of the most reputable publishing houses

that conducts researches on readers. What happens is that publishers go to Jellybooks with the book to be released and the site starts to perform tests for readers, and as readers begin to read the book on the iPads and other devices, the site begins to track the readers to gather information about the book. Afterwards, the responsible individuals of the site pass on such information to the publisher. For example, you have a real problem after the second chapter as no one finished reading any chapters after that chapter. Moreover, they can tell the publisher the behavior of readers and the factors affecting this behavior.



Authors also have an advantage that publishers do not have in that they understand the readers and the way they talk about their books or other similar books.





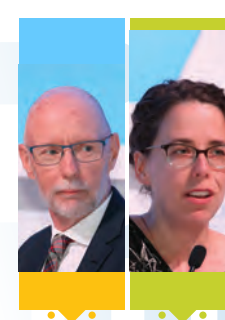
R. Neil Hewison: For example, we notify the publishers that this chapter is too long and should be shorter, and some other tips that are shared with the author before publishing, so that the book will be attractive to readers. The Publishing Department in the American University in Cairo participates in a program called “University Press Scholarship Online” (UPSO), a platform that gathers content from the publishing departments of most North American universities. The academic content is gathered and distributed to libraries around the world. Libraries participate in the UPSO for access to that content. We tried working on small chapters, one after the other, with one book to see how successful the experiment is. Moreover, there are thoughts about selling books through subscription.



Moderator: Ten years ago, the issue of printed books and students’ benefit emerged; the idea that digital content is usable and interesting. Was that exactly what happened?



Jane Friedman: Things changed from textbooks to service-based education, as full curricula for students in universities over years started. In addition, there’s the engagement in marketing management system and introducing something, not just texts, but also involving videos, forms, tests and other techniques. I do not think that the US specifically moves towards printing little but rather not printing anything at all. Here appears an interesting question about the future of textbooks publishing, and who will want to pay for textbooks?



Jane Friedman: In the US and the UK specifically, the news says “look how print appears again and there is a remarkable renaissance in bookshops”. This is true to some extent but you should take into account two additional factors; the first is that the price of e-books is very high compared to printed books, so prices shall be determined in a reasonable manner, while the second factor is that a large segment of the e-book market is not measured, as we do not have good data about this matter. In the US or the UK, they could not know who controls the area of e-books on Amazon, as Amazon offers no numbers. Moreover, some publishing markets often use non-tracking features because they are subject to the provisions of International Standard Book Numbers (ISBN). So, we are in front of the so-called “Shadow Market” or the “Dark Market», which occurs specifically in the US. We have some assessments and beliefs that the publishing market represents about 30% of the total book industry in the United States.



If we cannot determine how the book is marketed to our colleagues in the market, we may have failed to sell the book.

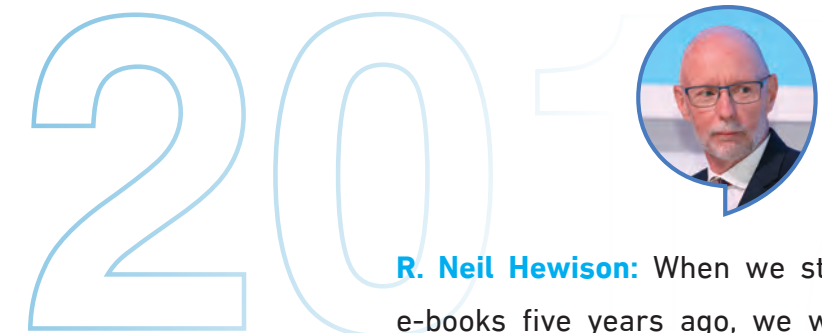


R. Neil Hewison: We have previously tried to provide parts of our books to prepare for a number of general courses through assembling a chapter from this book and another section from another book and so on.



Moderator: There is a point that we have not discussed yet, which is the matter of sales and the contrast between e-books and printed books and what is happening in the publishing industry.





R. Neil Hewison: When we started publishing e-books five years ago, we were not sure of two things; how to determine the appropriate price and the communication timing. Will it be the same time as the print copy or do we wait for several months, between three to six months? We dealt with these factors and quickly discovered that there is no evidence that e-sales take from the credit of printed sales, which is the current concern regarding the impact of e-books on printed books. As for pricing, I think there is an impression that e-books should be cheaper, but in fact, there are costs to upload contents on the internet. All initial costs of the pre-publishing are the same; such as the cost of editing, design, and all of the charts. For e-versions, there are costs for online uploading. The market share at the global level in general is divided between printed and e-books (about 20% for e-books and 80% for printed books). As for us in academic publishing, we find the share is around 15% for e-books and 85% for printed books. In some

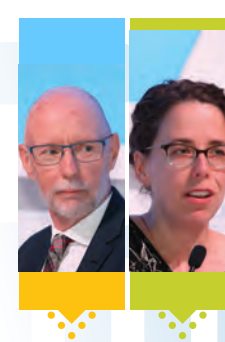
specific areas – such as Princes in Egyptology – we find readers tend to opt for printed books more than e-books by 10% to 90%.



Moderator: There are also audio books, an increasing point in the market. But while it is a small part of this matter, its production cost is very high.



R. Neil Hewison: Audio books are something we thought about several years ago, I remember when we thought that it would be wonderful audio books if the actor Omar Sharif reads a novel from the great writer Naguib Mahfouz. However, we could not do that because he died. It is worth mentioning that for audio books, you pay for studio time, which is very expensive. In addition, you pay money to actors for their voices and this would be costly especially for small publishers like us.



Moderator: I think we will see an increase of audio books and radio content consumption in the future in the US and the UK. Neil, do you want to see a specific change in publishing? What are your ambitions for the world of publishing?



R. Neil Hewison: I see books as things, I mean material things. There is nothing better than carrying the first printed copy of the book in your hands and touching the papers, navigating them and moving between pages after a very long publishing process that might, in some cases, take up to five years. When you read and admire a book, the first thing in your mind is to transfer this experience to your friends so that they enjoy it as well.



Jane Friedman: My first wish is that Amazon becomes transparent. We want to know all the information about the interaction of readers with books and how to move from one book to another. I think that search tools now are very basic for readers and primitive at the same time. It does not benefit anyone at all. They involve some randomness and they rely



The market share at the global level in general is divided between printed and e-books (about 20% for e-books and 80% for printed books). As for us in academic publishing, we find the share is around 15% for e-books and 85% for printed books.



The Knowledge Summ

on key words and categories provided by the reader. However, they are inadequate. This is a real problem in the US and the UK where people put e-books on Amazon and other sites, but are not actual books. This complex process negatively affects the search issue for readers.

Q&A session

One of the attendees: Where are publishers and publishing companies with regards to audio books? Is there any data on this industry?

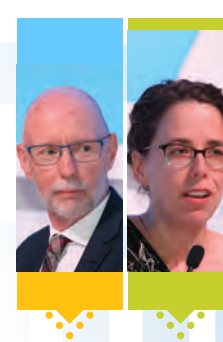


R. Neil Hewison: There is a big movement in this matter as it has become feasible, to some extent, for publishers. But for me as a reader, what I care about is the issue of synchronization of an e-book with the audio book; the part you read on the screen, you can also listen to in your car and complete the reading.

One of the attendees: This will affect reading and listening habits, and can lead to knowledge acquisition. Is there any information on this? Also, what is the future of this industry?



Jane Friedman: I think there are no studies about how reading behaviors have changed due to audio books, but it certainly became a tangible phenomenon. The share of audio book sales has increased in the US from 30 to 40% over the past three years, but this ratio is still a very small percentage of the total market with an estimated share of 1 to 2%. So, there is more focus in the US regarding audio books, including the use of radio as a marketing tool to motivate people to buy audio books. There is also cooperation with Amazon in the matter of sound, as the audio turns on the reading for your real interaction with the characters in the story.



One of the attendees: I am a writer and I would like to know your expectations for future direction regarding of fictional literature. Do you have any predictions about what will happen next?



Jane Friedman: I don't have any expectations. The percentage of fictional literature has slightly decreased in the last years compared to sales increase in other areas. This gives an indication that the discovery has probably not been good enough or that the prices are not suitable, as prices are not determined in a way that encourages people to take the risk. There is usually a dynamic pricing process; the higher the prices, the higher the interest. When prices are low, then there is a need to encourage more demand.

One of the attendees: Publishers and writers whom I've worked with often wonder about the techniques used in the publishing field, be it print or audio publishing, such as extended

reality and augmented reality in the area of traditional journals and books.



Jane Friedman: I came across many successful experiences in this regard; when you read stories to your child from a book, laptop or iPad it will be a good thing. The experience of going to a specific place and reading a bunch of books is a unique experience and it was good but publishers did not earn money from that experience.



Moderator: Publishing issue is an industry and trade, we have the tools, techniques, writers and readers, but we hope that it will be profitable at all levels and move forward on the path of prosperity.



2017 Knowledge قمة | المعرفة Summit



Knowledge قمة |
المعرفة Summit



Knowledge قمة |
المعرفة Summit



All Hadi



Mohamed Ali Ismail



Knowledge Summit

Day Two

Hall 2 – Session 2

Statistical structure of the Global Index



Session topics

- Challenges to structuring indexes
- The ideal path to creating an index
- The impact of big data on global indexes



The Knowledge Summit
The Fourth Industrial Revolution

2017

The Knowledge Summit

20

Speakers



Mohamed Ismail

Chairman of the Statistics Department, Faculty of
Economics & Political Science, Cairo University.

Milorad Kovacevic

Chief of Statistics, Human Development Report Office,
United Nations Development Program, New York

Moderator



Ali Hadi

University Professor and Chair of the Department of Mathematics and
Actuarial Science, Founder of the Actuarial Science Program

Knowledge Summit

2017



Dr. Mohamed Ali Ismail

**Chairman of the Statistics Department
at the Faculty of Economics and Political
Science at Cairo University.**

Dr. Mohamed Ismail is a teaching professor at Cairo University and a member of both the statistical studies permanent scientific committee for promoting academic staff and the International Statistical Institute.

Prior to his appointment as chairman, Dr. Ismail served as a consultant to a wide range of organizations and institutions including the Information and Decision Support Center of the Egyptian Cabinet and the Central Agency for Public Mobilization and Statistics (CAPMAS).

Dr. Ismail has authored and published over 60 specialized papers and technical reports, organized talking sessions in several scientific conferences, parallel to teaching more than 20 tutorials and short courses.

Dr. Ismail obtained master and bachelor degrees in Statistics from Cairo University and earned his PhD in Statistics in 1994 from Wales University, UK.



Dr. Milorad Kovacevic

**Chief of Statistics, Human Development Report
Office United Nations Development Program, New
York.**

Milorad Kovacevic is the chief statistician of the Human Development Report Office. Before joining United Nations Development Program in 2009, he was working at Statistics Canada for more than 17 years as head of Data Analysis Methods Research. He was also teaching statistics at the University of Belgrade, Serbia and the University of Iowa, Iowa City, United States. Dr. Kovacevic also worked for the Federal Statistical Office of Yugoslavia. He spent two sabbatical stints doing statistical methodology research at the University of Southampton (UK) and the University of Wollongong (Australia). Dr. Kovacevic has been doing research and teaching in the area of survey sampling, analysis of complex survey data, analysis of longitudinal data, estimation of inequality, polarization and poverty, finite population inference, composite measures of progress and success and international statistical comparison. He was the president of Survey Methods Section of the Statistical Society of Canada and the associate editor of the Canadian Journal of Statistics. Dr. Kovacevic holds a PhD in statistics from the University of Belgrade.



The Knowledge Summit
The Fourth Industrial Revolution

2017

285

to advance other goals they have read
to engage actively in shaping develop
sustainably on a shared planet.



Knowledge Summit | قمة المعرفة



FOURTH INDUSTRIAL REVOLUTION
الثورة الصناعية الرابعة

2017 Knowledge Summit



Mohamed Ali Ismail
Minister of the Economic Department
in the Ministry of Economic Planning and Economic Research

ment equitably and

Knowledge
Summit





Moderator: Welcome. In this session, we will talk about the Global Knowledge Index, and then the development index.

The objective of the index is clear and easy in theory; the index is divided into seven sectors, each sector includes sub-indexes, and the global index is the sum of these indexes. These sectors are theoretically easy, however, when we perform an experiment or application, we find that the matter is different, and determining which of these indexes is more important than the other comes through analysis.



Dr. Mohamed Ali Ismail: I would like to talk from the economic perspective, and how the Global Knowledge Index was statistically composed and I will try to be straightforward and focused on basic elements.

We will not reinvent the wheel but there is an independent methodology through which composite indexes are formed, so we will first talk quickly about used variables and data, subject of normalization, selection of weights and index calculation. As you know, this index – the Global Knowledge Index – consists of six normal variables and one variable of the normal



We will not reinvent the wheel but there is an independent methodology through which composite indexes are formed, so we will first talk quickly about used variables and data, subject of normalization, selection of weights and index calculation.

enabling environment and the six indexes are as follows: Pre-University Education, Technical and Vocational Education, Higher Education, Research, Technology, and Innovation, Information of Communication, Economy and Environment.

As I said there is no new invention, but a different way in application, although general steps are the same. The important step in index formation is concepts, including the choice of variables, as we rely on global methodologies based on three elements. The first element is the review of literature, the second component is the experience extracted from international institutions and bodies, which are widely used

indexes and have a high global standing, and the third component is specialists in different fields from many countries in training academics followed by a review of these indexes. In addition, each expert has the right to delete, modify or add the desired statistical adjustments, and each expert is responsible for one of those sectors. When we analyzed the main configurations, the results matched perceptions that we agreed upon, which were proposed by experts in the field. There were indexes where the match reached 7 out of 10, and there were some indexes which perfectly matched the expectations. When I talk about the presupposition data; we talk about a set of elements. The first element is sources; data came from various sources, mostly from international bodies such as UNESCO, the World Bank and others. However, the task of the expert was to review this data and make sure that there are no errors. The second element is size-based variables. As we were performing the required modifications, and if there was a variable that depends on population, we were calculating and adjusting until we reach the correct ratio. The third element is the fact that the index consists of 133 variables, and we



The Knowledge Summary

2017

failed to get the full value of those variables in one year and that's a big problem. The index can be wonderful. However, the lack of data is a problem that requires additional work, so in the last year we did not have data, and countries will not recognize this index without data, and what we've done is that we depended on previous data until 2007. However, there were some countries that only have the data for 2006. We depended on that data because we did not have other data, and we did not have any estimates of lost values, and the first reason for that was transparency. The second reason is that we use a calculation method in the index and therefore we avoided estimating values. In fact, the data used in those indexes should have certain characteristics and the most important one of those characteristics is the absence of outliers and it should have no gaps or sharp kurtosis that leads to questioning about the data.

The literature says that the variable will have a sharp curvature or bend in certain days and those curvatures or bends are objective. Drawing on international indexes, we use the value of 2.4, and the best statistic was that of 2017, which used the same value. However, there were previous years



We use a calculation method in the index and therefore we avoided estimating values.

which used the value of 2 or 1. This matter is objective but we decided that the most appropriate value is 2.4. If the kurtosis element exceeded 3%, the variables that have such problems should have sharp curvature or kurtosis and the variables should not contain outliers.

In my point of view, the variable's values are considered outliers if they fall outside a certain rate of data in the database, which has a minimum and a maximum. The minimum and maximum depend on the first and second quartet, which is the simplest method used to determine the outliers. In the outliers rate, we also followed the international methodologies that say that every variable has an outlier up to 5, and the outlier is replaced by high or low values if these values were low. In addition, when we do this, we also look at curvatures and kurtosis and whether it was improved or not; if improved, the matter is over, but if not improved,

we use the Cox Box to convert data.

The other point in normalization is that there are multiple points, and we have chosen the most famous and commonly used. Normalized values are a value minus the minimum to the maximum rate if it has a direct correlation with the general index and we swap the numerator if it has an inverse relation. Moreover, for the budget distribution methodology, it is a set of experts, each one of them is asked to prepare a special budget for each variable of variables so that the most important variable gets a larger number of points. We then calculate the average as per each variable, and those values are modified. On testing this method in statistical methods, we found that there is a match with variables that do not have a pre-known value. We were using it with equal rates. In calculating the index, we used the mathematical method that uses the arithmetic and not the geometric mean.



Moderator: Dr. Milorad Kovacevic, please

proceed.



Dr. Milorad Kovacevic: We know that the composition of the indexes is a common tool for evaluation of knowledge performance and not for providing definitions.

These indexes are developed for many reasons including simplification; it simplifies given information and removes complexity. Second, Information Coherence. However, not all these indexes are successful. Today, the most important aspects of HDI should be considered. These include a conceptual framework that directs measurements but they are normal measurements that provide good communication yet inaccurate measurement. They are always more inclusive than these normal measurements, but how do these measurements exist or affect the society?

Even the well-shaped measurements can be misleading if assumptions were wrong and can lead to wrong results. Therefore, there must be a compatible system of concepts that is composed





of expectations, beliefs and theories, to ensure that these assumptions are correct, and the human development is the thing that establishes such concepts.

On the other hand, human development uses individuals because individuals are the real wealth. The purpose of this development is to improve living styles, to live properly, and lead a decent life. The extra economy identifies things people consume, and this is known as human welfare. The right composite measure should consist of general criteria, and must be constant, with easy description, must take into account the general concepts or what is being measured, must be practical and easy; the concept must be general. Indexes are tools of communication, so what is measured by the human development index sounds

complicated as it measures concepts and values.



Moderator: Of course, the use of the index for the first time is extremely difficult because of the lack of data. However, the second time becomes easier because of the availability of the data from the previous index. In the coming minutes, I hope that we can mention some figures achieved by these indexes.

Q&A session

One of the attendees: In terms of statistics, there are two main issues: the structure of the index and the efficiency. The structure is



related to the weights assigned to it and the sequence. Regarding efficiency, it is concerned with the degree of confidence in it; because the measurement of each index is performed separately. I would like to know whether there are efforts in this direction, or we will just focus on normalization and relation.

One of the attendees

Regarding the Global Knowledge Index, my first question is about multiplicity of data sources and whether it will affect the outcome? The second question is if it is possible to know data from 10 years ago and compare it with the recent situation? The third question is about the statistical equation and how to calculate the index? A question for Dr. Kovacevic: Is the

human development index applicable now? I think it is out of date and I think that human development will not benefit from it. When we go to other indexes, we can benefit from them in the knowledge index, the reading index and other indexes, unlike the Human Development Index, which became old and cannot be used. Even if we used the recent human development indexes, we will not be able to address some issues such as poverty, lack of treatment, etc.



Dr. Mohamed Ali Ismail: With regards to composite indexes, as Dr. Ismail said, indexes are supplementary analyses. In addition, one of the most important supplementary analyses in forming the composite indexes is known as uncertain analyses. The fact is that international indexes show data and positions. However, we started late in May and we talk about moving the Arab Knowledge Index and compare it with the Global Knowledge Index, which is a major shift. This index is in its first stage.



The Knowledge Summary

Regarding the second question, which included three points, please let me answer the first point by saying that all details related to data are mentioned in details and all data that came from certain sources exist in the index. As for the second point, we should understand that there is a difference between data history and modernity; we have data of 2007 and we feel embarrassed because we are in 2017 and we are still talking about 2007's data, due to the lack of accurate data since that year. We want the data to be updated until 2010 or 2015 for example, but this was not available. With regards to the third point of composite indexes, everyone knows that the composite indexes give a weighted average and are affected by many factors, including the index G2, which performs the equation.



Dr. Milorad Kovacevic: I know that the Human Development Index dates back to 1999, therefore the data is out of date and there are variables specific to each country and region. In addition,

the index was designed so that it studies human phenomena. Some people ask, "If a country has a Human Development Index, does this mean it is a good country?". No index that can answer that question. The Human Development Index is specified in capacity development; is this country capable of treating such issues or does it have a high learning ability and stay-in-school figures? In addition, what is the benefit of staying in school? Will this affect education? If this country was good in this index, it might have capabilities in other aspects, and this is the specialization of the Human Development Index.

This is why we look at many other aspects such as politics. The composite index is concerned with quality in general, not the quality of people but the quality of capacities. Earlier, we had indexes in 1990 and replaced it with new ones in 2010, including the Quality Index, which is concerned with the quality and cost of the gap and its impact on human development, and how these gaps affect development. We also mentioned the year of the Qualitative Development Index (sexual), which focuses on development achieved by men and women.



Certainly, when developing the index, we have different aspects of thinking, such as those which Dr. Ismail spoke about. However, regarding the decision taken, we have transformed from the engineering statistical system to the arithmetic statistical system because arithmetic statistical gives better results, and this means realistic results, which reflect the country's status and its educational policies. However, regarding engineering statistics, it is not accurate and does not take into account the percentage of achievement.



Today, the most important aspects of HDI should be considered. These include a conceptual framework that directs measurements but they are normal measurements that provide good communication yet inaccurate measurement. They are always more inclusive than these normal measurements, but how do these measurements exist or affect the society?



2017 Knowledge Summit | قمة المعرفة



Knowledge Summit

Day TWO 17

Hall 2- Session 3

Global Knowledge Index: Indicators
of higher education, research,
development and innovation



Session topics

- The importance of indicators for higher education, research, development and innovation
- What challenges do these indicators face?
- Key findings
- How to use findings to the benefit of the Arab region and the world?
- Promoting the indicators

The Knowledge Summit

Speakers



Dr. Motaz Khorshid

Former Minister of Higher Education and Minister of Scientific Research, Egypt

Ali Ibrahim

Professor, UAE University.

Hugo Hollanders

Economist and Researcher, Lead Author of the EC'S European Innovation Scoreboard

Anuja Utz

Senior Operations Officer, World Bank

Moderator



Abdel-Rahim El-Atri

Professor of Higher Education, Sidi Mohamed Ben Abdallah University, Morocco



Dr. Motaz Khorshid

Former Minister of Higher Education and Scientific Research in Egypt

Professor Khorshid worked as the former Egyptian minister of higher education and Minister of State for scientific research, Vice President of Cairo University (CU) and the British University in Egypt (BUE), Chief Technical Advisor for socioeconomic development Planning Support systems (DPSS) in the United Nations (UNDESA/UNDP), and Dean and Vice Dean of the Faculty of Computers and Information of CU. Professor Khorshid is currently professor in CU. Professor Khorshid obtained his first PhD in Computer Sciences and Operations Research and the second PhD in Management Sciences from Paris University, France. His MSc was in Industrial Engineering from CU and the BSc in Engineering from Ain Shams University, Egypt. Professor Khorshid has developed several Social Accounting Matrices (SAM) and economy-wide models for a number of the Arab Countries. His research interest is focused on computer-aided Modeling and Decision Support Systems (DSS), computer simulation methodology, economy-wide modelling and analysis, management of higher Education and scientific research. Professor Khorshid was awarded the "Academic Palm" by the French government.



Dr. Ali Ibrahim

PH.D in Administrative and Policy Studies

Dr. Ali Ibrahim holds a PhD in Administrative and Policy Studies in Education and an MEd in International and Development Education – both from the University of Pittsburgh, USA. Dr. Ibrahim co-directed the Institute for International Studies in Education, University of Pittsburgh for one year and was involved in development projects in a number of countries.

Before moving to the UAE, Dr. Ibrahim taught in Colleges of Education in Egypt and Oman. In the UAE, he co-founded the Gulf Comparative Education Society (GCES). He has been a researcher/analyst for two UNDP knowledge reports and a member of the central team and a co-author of the section on higher education in the Arab Index Report 2015 and 2016, a core team member for the Arab Reading Index 2016, and a co-author of the Knowledge Index of 2017. Dr. Ibrahim has many research publications in highly ranked, indexed journals. His research interests include school organizational culture, education policy studies, school leadership, education reform in the Middle East, and teacher professionalism in the Arab Gulf states.



Hugo Hollanders

**Economist & Researcher
Lead Author of the EC's European
Innovation Scoreboard**

Hugo Hollanders is an Economist and Senior Researcher at UNU-MERIT (Maastricht University) where he is the coordinator of the Innovation Systems Indicators and Policy Research Group. Before joining MERIT in 1992, he worked as a researcher at Statistics Netherlands (National Accounts division). He has over 20 years of experience in innovation studies and statistics, and has been involved in various projects for the European Commission (EC) on measuring innovation at the national, regional and industry levels. Hugo has been a member of several expert groups on measuring innovation for the EC (including the 2010 High-Level Panel on the Measurement of Innovation and the 2013 Expert Group on Public Sector Innovation). He has been a member of the Advisory Board to the Global Innovation Index since 2015 and in 2017, joined the Advisory Committee of the Arab Knowledge Index with a special focus on developing the Research & Development and Innovation (RDI) index. He also contributed to both the 2010 and 2015 UNESCO Science Report, and has published in several academic journals.



Anuja Utz

**Senior Operations Officer at
the World Bank**

Anuja Utz is a Senior Operations Officer with over 20 years of experience at the World Bank. She is currently based at the World Bank's office in Sydney, Australia, working on key areas of gender inequality in the Pacific, as well as on education and science and technology issues, particularly in Indonesia. Between 2009-2013, she worked at the World Bank's multi-partner knowledge sharing platform, the Center for Mediterranean Integration (CMI) in Marseille, France, including serving as Deputy Director of CMI from 2010-12. In particular, she led a multi-partner team from the World Bank, the European Investment Bank, and the Islamic Education Scientific and Cultural Organization on the development of a regional report for the Arab world. She has undertaken work on tertiary education, innovation, and competitiveness, as part of the knowledge economy agenda for Argentina, Brazil, Chile, China, the Republic of Korea, and Tanzania. She received both her Master's and PhD in Economics from Emory University, USA and a BA (Hons.) degree from the University of Delhi, India.



2017 Knowledge Summit المعرفة قمة



Knowledge
Commit





Moderator: Now, the question is: Why do we need to measure knowledge and discover its place between countries? What is the scientific, practical, and perhaps civilizational significance, of this index? Do we really need this index, specifically, in relation to research and innovation?



Dr. Motaz Khorshid: It's hard to assess the desire of Arab countries in gathering all the knowledge, and to have knowledge and education indexes. Indeed, the Arab countries are looking forward this index. The importance of this indicator lies in how we can judge the extent of approaching and moving away from knowledge and in comparison with the rest of the world in terms of proximity and being away from the level of knowledge. We have to develop the index and measure knowledge and reading.



Moderator: What was the methodology followed by the team on making this index to ensure objectivity?



Dr. Motaz Khorshid: We have created seven indexes which are not in conflict with one another. We also agreed that there should be a reference for these indexes; because the trends are different in measuring research, development and innovation.

In the beginning, they said, «We will take a part of scientific research». We have requested to make innovation an integral part of the index of research and development and to have the composite index. Scientific research is an innovative system activity in the storage and use of knowledge in a variety of modern applications. Scientific



The importance of this indicator lies in how we can judge the extent of approaching and moving away from knowledge and in comparison with the rest of the world in terms of proximity and being away from the level of knowledge.

research is therefore a new product of knowledge and one of its main components, but innovation varies in that it contributes to the creation of various goods and services and marketing methods, whether new or improved. Therefore, innovation is the most influential element in achieving significant breakthroughs in sustainable economic and social development. But should we leave scientific research? No, it is important to pay attention to both because they are two products of knowledge in this field.

The question is: What are the considerations we used to measure the scientific research and development? There are three key considerations: The first is that scientific research should be

considered a result of the results, which has inputs and outputs, as it has generated some issues regarding this consideration. For example, the share of the researcher from the research expenditure, in addition to outputs that are related to scientific publishing on quotations. These indexes exist and we all have access to it. Moreover, there is an agreement regarding this point. However, we should take into account in this juxtaposition that there are different types of scientific research, which is divided into basic research and experimental assessment. Furthermore, we should take into account organizations that spread scientific research, which have an effect in the nature of knowledge and its reflections on all. There is a development dimension of that scientific research and there are some indexes that address demand as an economic service presented to the society, which is a specific-nature service that's basically not subject to rules of supply and demand. However, it is affected by the forces of supply and demand of scientific research. Innovation supposes that the circle of research and development is an integrated cycle that begins with exploring research insights and ends with a product that is marketed





and traded. Therefore, in this area, we have innovation in scientific centers and research, yet unlike innovation in the integrated research and development cycle that turns innovation into a product that can be traded. We seek innovation in the framework of scientific research and we have a specific-nature research structure, as we have seen in different universities and libraries, where research communities and technological innovation centers appear, whose main role lies in linking industry with scientific innovation. The presence of units for research and development in the productive and service

organizations is highly important and this is largely absent with a large percentage from education in Arab countries. Recently there was another development in the scope of scientific research, an innovation in scientific production. Moreover, the studies said that this equals innovation, which occurs outside the scope of scientific innovation and research. We have competency in goods sectors, which is the important part and there is a new slogan – general community innovation – which means that the community is ready for innovation and scientific research.



Dr. Motaz Khorshid: The innovative experiences, such as innovative services and electronic creation, appeared in the community innovations, and we can see that in industries such as software and creative services of cultural services. In addition, innovation became more spacious; this is a composite index that consists of scientific research and innovation, and there is similarity between them. Moreover, there is great effort for the measurement of different effects. Let me introduce some results. At this stage, we perform adequate analysis to reach results that are submitted to the decision-maker. However, if we look at the ranking of countries according to the Global Innovation Index 2017 and the composite index of research, development and innovation, we find that there is a group of small countries in terms of population such as Sudan, Sweden, the Netherlands, Luxembourg and Iceland have achieved the highest ranks, and that exists in our composite debt, and also exists in the innovative guide in this area; so we

find some kind of convergence. This is a kind of confirmation of the validity of the index that we used. Moreover, we find that some countries have seen some improvement after the use of the scientific research and innovation index. The strange thing is that these countries have lower population, yet achieved higher ranks, especially in innovation and scientific research. If we look at the regional ranking of countries in this area, we find that there are three groups: The first group includes Saudi Arabia, UAE and Qatar, which have an advanced ranking among other countries in terms of scientific research 36 and 37, and in the global index level, it was 55 or 39 and 49% type of convergence. There is also the group, which includes Tunisia, Lebanon and Morocco, which is a middle-ranking group. And then there are other countries. However, there is convergence between Arab countries in this index.



Innovation should be an integral part of the index of research and development and to have the composite index.





Moderator: As you know, today, we have many postulations. However, when we contemplate it, we are invited to reconsider our priorities. Today, I think we need what we call the following three letters: The first letter is “E”, which represents enlightenment, as we need to enlighten minds. The second letter is “L”, which represents liberation, as we need to liberate the mind, human and article. The last letter is “C”, which represents critical thinking to face the challenges of our times. Dr. Ali, let me ask you: What is the deep lesson you learnt from the experience of preparing this index? What are the main conclusions for us? Are we in a place that we deserve or we often practice self-flagellation?



Dr. Ali Ibrahim: Your question is too deep. Firstly, the learnt lesson for me in my capacity as a researcher who tries to work with the team to achieve the index, is the mental openness to others and various discussions; I was open to the team and I used to listen to their views and accept criticism, if any, in order to produce the index in an acceptable manner. The second part of your question concerning the Arab position and self-flagellation; The answer from my point of view, and I hope that no one understands that it is the view of the team, is that the status of the Arab world is very low, so criticizing ourselves is a must. However, we must not only show the disadvantages, but act after

the diagnosis of the situation and stop criticizing ourselves; we have many mistakes, but we never move. This is the feature of the index: it tries to give the status of several sectors together so that we can depend on them in the future. We do not stop at a specific number, 50 for example, because if you stop at this number, it will have no value.



Moderator: Dr. Ali, for this index, it operates in a multi-dimensional way; it works in the style of relational thinking. In your opinion, are the seven approaches to build this index sufficient, or should we look for other approaches?



Dr. Ali Ibrahim When we first thought about the six sectors, in addition to the enabling sector, we did not think about it as isolated islands; they are affected by the other and affect the same. Additionally, we cannot talk about the



However, we must not only show the disadvantages, but act after the diagnosis of the situation and stop criticizing ourselves; we have many mistakes, but we never move.

development index Dr. Motaz mentioned without talking about higher education, and we cannot talk about higher education without talking about pre-university education. We discussed with experts to agree on a single vision and a common methodology and the composite index consists of multiple sectors. fact, experts were free to adopt methodologies as per each sector, and we in the field of higher education could not talk about higher education index without reference to previous writings and indexes. I think that each expert was free to use the methodology that he wants. However, once again, we should not stop at the index, and this is what happened with the previous knowledge index, which was launched, as we stopped at numbers without conducting in-depth analytical studies; each



The Knowledge Summit 2014

country is studying a particular sector, if it wants development and elaboration. We have relied on the United Nations Development Fund (UNDF) to give us the possibilities and help some countries if they wanted to perform analytical studies, identify challenges and draw a road map for adopting a development path in these sectors. I will move from the point of index importance to the point of countries and universities ranking. The ranking shall be on the basis of reputation and search conduct, but there is no reference to the weak points.

The second point is the order; the index does not give you the country order, but it may give the order of one of the universities but it does not give the country's status. Year after year, it may help countries to improve. I will not speak about the challenges; as we had to go back to the index of 2007, some countries have made progress such as Singapore, Switzerland and the Netherlands, where the order of the country may change in the index. The composite index is considered one of the learnt lessons that I can conclude with regards on how to utilize the outcomes. Through indexes, we have seen that enabling environments are very important;



In fact, experts were free to adopt methodologies as per each sector, and we in the field of higher education could not talk about higher education index without reference to previous writings and indexes.

countries which suffer from political unrest or violence are highly late in the development of all sectors.



Moderator: We will move to Dr. Hugo Hollanders, who has a great and long experience in establishing and coordinating researches. We want a preliminary reading of this index; what are the limits of this index benefit? What are the qualitative additions provided by this index? In addition, what is your assessment of this index within the global reading indexes?



Dr. Hugo Hollanders: I will not answer that question now, because I have a presentation that I would like to show. I have been working for a long time in creativity and innovation indexes. In addition, my specialization is innovation and innovative services. I would like to share with you some impressions about the index, as well as the weak points and how to use it.

Language is very important in the subject of knowledge, but more importantly, what it does with knowledge. Knowledge has to be used to know new things; it has to create added value, create better jobs, transform the economy into a digital economy, consider all aspects of scientific progress, catch the train of digitization, and create new models of business and services. We need to be creative and innovative and we have to use the science that exists in our countries, which is an important thing that shall be taken into account. Moreover, you have to know what is happening in your country and evaluate the events.

We have an index that talks about creativity and innovation, which aims to see the future

until 2020, which will depend on the human factor by 3%, and the remaining percent for the products, equipment and machinery. We have been appointed to measure outputs and outcomes of the innovation index and there is a strong and objective feedback system.

There is another aspect, which is asking people about their views on the subject. The idea is that we have to be careful when dealing with the knowledge index, and there is no harm in comparing the index with other standards. Policymakers have to know what is happening around them, therefore we need updated information, and we need to know the position of the economy and the relationship between self-development and innovation, and the index can be used to know that issue. Why is the index called the innovation index? Among all the indexes, this index reflects the evolution by 30%, reflects the scientific innovation by 30%, and reflects the technological transformation by 20% and so on. Perhaps next year we will have a separate index for innovation only, but I think this is difficult to reach. Why? Because in the ideal world, we have studies on innovation and we collect this information and use it to compare the results.



The Knowledge Summit

Countries vary depending on the cultures of its people and how they respond and deal with the questions and studies; because in developed countries, people think that they are more innovative than others in the world, and vice versa.



Moderator: Now we move to Dr. Anuja, as she combines at least three civilizations; she is coming from the Far East from India, lived a period in Marseille within a Mediterranean civilization and then moved to Sydney. This civilization combination,



We need to be creative and innovative and we have to use the science that exists in our countries, which is an important thing that shall be taken into account. Moreover, you have to know what is happening in your country and evaluate the events.

along with the knowledge-based economy, have enabled her to build a vision about the relationship of this index with the knowledge-based economy. So, to what extent does this global index help us in building the knowledge-based economy?



Dr. Anuja Utz: The Education Index has greatly developed in the last year, and since this meeting is talking about higher education, I would like to emphasize the key points of higher education, and this is important. Certainly, modern technology and innovation are evolving very quickly and we have to acquire that through education and knowledge. It's also important to acquire technical skills, so the result of the higher education system is the service of the economic sector and enhancement of jobs through market survey and find out what it needs to increase productivity. The question is: How do we make the system successful? The system has to be aware of all the technical



challenges which means harnessing all efforts in the higher education system, tracking progress and adopting a flexible approach. Therefore, we have exerted great efforts within the Arab world to transform its economy to a global technology-based economy. In addition, we found many countries that began moving towards this kind of knowledge-based economy such as the UAE, Tunisia and Morocco. There are initiatives to know the State's position in terms of technology and innovation in comparison to its neighbors and different countries around the world. What we need is leadership and it is important to pursue technology at full speed. We do not just look at the higher education policy but at the innovative policy as well. This is how the



The result of the higher education system is the service of the economic sector and enhancement of jobs through market survey and find out what it needs to increase productivity.

index works. In addition, we try to gather the Finance Minister, possibly the Prime Minister as well as influential people to work together in collaboration with the ministers and officials responsible for education, higher education, skills, technology and policy; all working together to support innovation.





Moderator: There is always a transitional moment before the choice, and we have to choose; will we choose what is called the boat strategy or the wall strategy? Our question today is: What will we do in the face of this Fourth Industrial Revolution? There will definitely be a fifth and sixth industrial revolution but will we build knowledge-liberation boats, development boats, and boats for building and shaping the human? Or will we build around us a set of walls and say that we are very far from global tension?

Q&A session

Waleed Ahmed from KSA

There are very important molecules in the Global Knowledge Index, which are leadership, corporates, and the new capital in the innovation system. These three elements are important. However, they are missing from scientific research so far. The other thing is

the role of the industry; you mentioned that the business and industry sectors in the Arab world has no great abilities. I am talking about my country Saudi Arabia. The oil company, for example, has established research centers with very huge investments inside and outside the Kingdom from Korea to Boston on energy and gas and all the so-called Fourth Industrial Revolution. The last point is the role of partnership between the business sector and industry on the one hand and the industrial and research sectors on the other hand. I think that it should be taken into consideration and evaluate the country concerned in the study through the strength of this partnership.

Dr. Gamal Darwish from the information sectors at the Supreme Council of Universities

The fact is that the Global Knowledge Index is a very good and comprehensive index. However, we must have another capacity to measure knowledge; when the State's index is 50 or 60, does this mean that the knowledge is produced by the State? However, if we consider that we can measure knowledge by size, the knowledge scale by human capital will create

significant differences as some states have high population increase while some have low population density, and I can't distinguish which is better in terms of knowledge. But if another standard is developed for knowledge content, then we can measure knowledge on the web, and arrange countries by human capital, and I think that this will be better.



Dr. Motaz Khorshid: We tried to rely on studies to determine knowledge, and these equations and studies exist only at the level of two Arab states. When we tried, it incomplete as the issue of data had a great influence in this matter. We used the Global Knowledge Index only for comparison, and we have not used everything that exists because we have the research, development and innovation index because we believe that building a research base is important. It should exist to complete the issue of innovation while it exists. The relation of industry with universities exists in



the Index as does the economic side because innovation has an important economic and development dimension. Regarding the question by Dr. Gamal, we don't have a population-based index, but we want to say that there are small countries with limited capabilities, who achieved a breakthrough in the field of innovation and scientific research;



2017 Knowledge Summit | قمة المعرفة



Knowledge Summit

Day Two

Hall 2 - Session 4

The crucial role of data in the 4IR



Session topics

- What are the challenges to data collection and dissemination in the Arab region?
- Is there a gap between regional and global data centers?
- What are the benefits of the Global Knowledge Index?
- The Index faced declining data from the Arab region. How can that be remedied?



The Knowledge Summit
The Fourth Industrial Revolution

2017

315

The Knowledge Summit

2020

Speakers



Abo-Bakr El-Gendy

President, Central Agency for Public Mobilization & Statistics, Egypt

Qasem Al Zoubi

Director General, Department of Statistics, Jordan

Lamia Zribi

National Institute of Statistics Chairperson, Tunisia

Tariq Al-Janahi

Deputy Executive Director of the Dubai Statistics Center

Moderator



Magued Osman

CEO of the Egyptian Center for Public Opinion Research (BASEERA)



M.G. ABO-BAKR EL-GENDY

PRESIDENT OF THE CENTRAL AGENCY FOR PUBLIC MOBILIZATION AND STATISTICS (CAPMAS) AND ASSISTANT OF MINISTER OF DEFENCE

Major General Abo-Bakr El-Gendy is, in addition to his role as president of the CAPMAS, an assistant to the Minister of Defense. He is a prominent member of the Supreme Council for Wages and also a member of the Paris 20 Steering Committee and many other strategic bodies. In his career, he has held many leading positions such as the Chief of the Armed Forces Training Authority and the Commander of the 3rd Field Army. Moreover, he has been honored by many authorities and has been decorated with high-level and outstanding medals such as the Longevity and Exemplary Service Medal, the USA Meritorious Service Medal, the USA Meritorious Service Medal and October War Medal. Major General El-Gendy accumulated many military, commandership and management trainings, certifications and fellowships. He earned his BA from the Military Academy and followed it up with a Master's degree from the Command and Staff College. He also holds another Master's degree from the USA National Defense University in Strategic Resources Management.



DR. QASEM SAID MOUSA AL ZOUBI

DIRECTOR GENERAL - DEPARTMENT OF STATISTICS

With a PhD from Loughborough University, in Economics, Banking and Finance, Dr. Al Zoubi has accumulated an impressive track-record and vast experience in identifying the financing gap between Islamic countries and how it can be financed, as well as creating a clear understanding in the feasibility of establishing export credit guarantee in his native country Jordan. Dr. Al Zoubi has been Director of Precaution Department and Anti-Corruption Commission and is a member of the Social and Economic Council. He is also a United Nations expert in the Implementation of United Nations Convention against Corruption (UNCAC). Dr. Al Zoubi has always been present in many local, regional and global events and professional conferences and gatherings. He is a lecturer and adviser for many relevant bodies and colleges where he contributes his expertise and economical insights. Dr. Al Zoubi has conducted tens of research papers in different financial and economic areas, especially in anti-corruption as well as corporate governance in the restructuring of public institutions.



LAMIA ZRIBI

NATIONAL INSTITUTE OF STATISTICS CHAIRPERSON | FORMER MINISTER OF FINANCE (TUNISIA)

Lamia Zribi holds a Bachelor's Degree in Economic Sciences, College of Law and Political Sciences – Planning Department. She is also a member of the Boards of Directors of several national economic and financial institutions, in addition to her membership and chairpersonship of a number of national committees in charge of various economic and financial fields such as the Economic Analysis Board and National Trade Committee. Lamia has also held other positions in the fields of statistics and planning; she assumed the management of the General Directorate of Tunisia Trade Net Co. and served as the Director of Planning at the Ministry of Development and International Cooperation. Furthermore, she presided over the Tunisian delegation at the meetings held to prepare Tunisia's participation in the G8 meetings with her effective participation in the preparation of reports on these events. She is the main supervisor of the preparation of the guidance document for the development plan and the follow-up of the development plan for the year 2020.



TARIQ AL-JANAHI

DEPUTY EXECUTIVE DIRECTOR OF THE DUBAI STATISTICS CENTER

Prior to assuming his duties as Deputy Executive Director of the Dubai Statistics Center, Tariq held several other positions; he served as the Director of Excellence and Institutional Support Department at Dubai Statistics Center and the Head of Quality and Support Division in addition to his experience as an auditor of quality systems at the Ministry of Finance. Tariq has received two awards from International Business Awards "Stevie" for Creative Executive Director – the ME's first Executive Director to receive the award – and Outstanding Leader, the first person in Asia, Europe and Africa to receive the accolade. Moreover, he contributed to many of the Center's outstanding achievements and received many awards at the local, regional and international levels. Tariq has contributed to the preparation of several constructive strategies, the most important of which are Dubai Strategic Plan 2021, Dubai Strategic Plan 2015, the strategic plans of Dubai Statistics Center, Dubai Sports Council and Mohammed Bin Rashid Award for Sports Innovation. Tariq is an outstanding advisor in the field of institutional excellence and quality and environmental management systems.



2017 Knowledge Summit | قمة المعرفة



2017 Knowledge Summit

FOURTH INDUSTRIAL REVOLUTION
القوة الصناعية الرابعة

2017 Knowledge Summit

FOURTH INDUSTRIAL REVOLUTION
القوة الصناعية الرابعة

2017 Knowledge Summit



FOURTH INDUSTRIAL REVOLUTION
القوة الصناعية الرابعة

Knowledge Summit

Knowledge Summit



قمة المعرفة



Knowledge Summit

17 Knowledge Summit

قمة المعرفة

The Knowledge Summit

2019



Moderator: This session discusses the importance of data under the Fourth Industrial Revolution. Certainly, if we talk about the Fourth Industrial Revolution, it is necessary to think of a way to get data, so in this session, we will focus on data. Remarkably, the speakers in this session are individuals responsible for data, which is an important element in decision-making. The Fourth Industrial Revolution, as we have known during both days of the Summit, is not only concerned with smart systems but is also wide enough to include what is more general, as reflected in many huge achievements that occur in several fields such as genetic sequencing, nanotechnology, smart computing and other fields. There is no doubt that the Fourth Industrial Revolution differs from other industrial revolutions in so many ways. In the presence of an extraordinary group of leaders, who are responsible for data in the Arab countries, we will talk about the future transformation of the data industry in light of the Fourth Industrial Revolution. Before that, we will review the changes witnessed in data. We have a development that occurred in the Arab

region in data production and technology employment, which has a role in the availability of data.



Abo-Bakr El-Gendy: National statistical agencies face many challenges, the most important of which is the increasing demand for data. Today we have seen how all elements of the knowledge index rely on data, indicating as we have said, the increasing demand for data. The fact is that the entities of the private sector is demanding data more than government officials, followed by researchers, scholars, and civil society organizations; nearly 80% of agencies that demand data and deal with it belong to organizations and companies from the private sector. The reliability we have obtained in terms of data has resulted in demand for data from the private sector before making investment decisions and preparing feasibility studies. The second challenge is big data and the technological revolution. It was expected that this trend would affect the role of national statistical agencies because big data made data readily available. For



The reliability we have obtained in terms of data has resulted in demand for data from the private sector before making investment decisions and preparing feasibility studies.

example, with regard to smartphones, data on mobile calls and speakers, and other data are available for those who have experience in databases and how to utilize them. The enormous technological revolution requires the development of national statistical devices to keep pace with this progress.

The third challenge is related to the limited resources of such statistical agencies. However, regarding human resource, we cannot attract the best statisticians as we are government entities. In addition to financial resources dedicated to such agencies, there is still a non-proportional estimation because investment in data is one of the most profitable investments. I always review data from national resources such as oil and others. However, we did not achieve the full awareness of the importance of data investment and the

necessity to provide the resources required to ensure optimum work by such statistical agencies. The question here is: Are we developed or not? And the answer is yes, we are developed; look at the progress that has been achieved over the last 10 years by the national statistical agencies. Despite the great challenges that I mentioned, we attracted great competencies of young, educated people and gave them the opportunity to learn, develop and use

Fact sheet

- The Arab Republic of Egypt has recently completed the general census electronically
- This census was performed using 45000 tablets, a data center, a backup data center, connecting lines, and a complete technological environment
- Such census represented a mutation in the statistical work; where the data became available after two months of field work. However, it happened after 18 months in the previous censuses
- Census scanners powered by intelligent identification codes technology were used instead of data entry.



The Knowledge Summit

their abilities as well as the latest technologies; in fact, we are trying to overcome the challenge of large data. Such efforts reflect interdependence, which distinguishes the global statistical community, which is embodied in the form of technical assistance and support for the work of statistical agencies.



Moderator: I would like to ask Dr. Qasem regarding developments witnessed by the statistical devices in terms of employing technology and so on. Moreover, it may be an approach on how to make use of the data in the Fourth Industrial Revolution.



Qasem Al Zoubi: We all know that statistics mean the information revolution, and as long as statistics continues, there will be numbers, and without numbers, we cannot identify any indices. Now, statistical standards and institutional procedures are implemented to execute such operations. We, in



We, in the Arab countries, are concerned about focusing on these standards and building confidence among citizens to participate in the statistics and its results, so the most important challenge was to strengthen the confidence of citizens in these statistics, and frankly, the statistical agencies benefited from .the technological development

the Arab countries, are concerned about focusing on these standards and building confidence among citizens to participate in the statistics and its results, so the most important challenge was to strengthen the confidence of citizens in these statistics, and frankly, the statistical agencies benefited from the technological development.

We, in Jordan, manage the change because the change from an approach to another in the national institutions is one of the difficult things, where the transition from the old methods to modern ones needs great effort. However, we were able to overcome this issue through



cooperation between government institutions as the numbers and statistics are important elements in decision-making, and that the wealth of the state is in the Department of Statistics, as well as the institutions that produce statistics. Thanks to Allah, we have a powerful network in Jordan, where many human energies and cadres work and it uses technology and modern means. This network participated in United Nations efforts on modern censuses. Furthermore, what has happened represented a quantum leap in this field, broke the barrier of fear among statisticians, and gave them a boost to work and progress. Indeed, all censuses became electronic, realistic and with high reliability. It is well-known that the production of data does not fall within the roles of the Department of Statistics in Jordan or the Central Agency for Public Mobilization and Statistics in Egypt. About 90% of statistics are outside the scope of the national statistical agencies, so who is responsible for such statistics? This is the challenge that faces countries in recent time on how to organize these indices and its work based on global standards, in addition to coordination of efforts in countries. In Jordan, we took the initiative to build the

capabilities of statistics institutions to enable it to provide data in various sectors. We started to put a national strategy of statistics to build institutional capabilities and provide data on the national scale. As for the challenges of technological progress and developments under the Fourth Industrial Revolution, the statistical departments have dealt with it and benefitted from technological development. The statistical departments need full financial independence from state entities as they produce highly sensitive and important data, such as unemployment and poverty ratios, in addition to other important data that requires the independence of the statistical department from other state entities.



Moderator: Now, I will address my speech to Miss Lamia Zribi, the National Statistics Council Chairperson in Tunisia. She is mainly responsible for developing statistical policies. My question to her is about developments in statistical work in Tunisia and their role for the National Council of Statistics.





Lamia Zribi: Statistics contribute to the preparation and measurement of indices for other countries and it is used as a guide in making decisions and developing policies. In Tunisia, we are aware of the importance of statistics, data and even statistics system, which we consider to be at a high level even for the area. The Executive Agency of Statistics continued to provide data over the past six or seven years, in addition to indices and statistics on employment, domestic product, surveys and census; as the last census was in 2014. All this data shows that there is a strong will and great care in

taking steps in the statistical field, besides a desire to make the statistical procedures conform to the standards used worldwide, particularly the issues related to the data system of the United Nations. There are periodically produced indices, in addition to new indices issued by the National Council of Statistics. Moreover, these indices fulfill global standards and are related to the economic transformation, which Tunisia aims for. Among these indices was the Knowledge



All this data shows that there is a strong will and great care in taking steps in the statistical field, besides a desire to make the statistical procedures conform to the standards used worldwide.



Economy Index, which we launched a project to develop in 2007-2008. A lot of effort was exerted in this regard, and we depended on four elements that gathered different areas, namely: Human resources, information technology, systems and management, and scientific research and re-creation. Afterwards, through this, we produced 16 elements, and through them, we produced the index.

However, the weak point regarding this project was the absence of a special survey of the knowledge index, as we needed special surveys for this project. This confirms that the statistical system witnesses the exertion of many efforts. We wanted to perform this project and to produce this index because we see that the Tunisian economy should be directed towards the knowledge economy. In addition, we have to change our traditional patterns, open new horizons for growth, and move from a production-based economy to a knowledge-based economy.



Moderator: Mr. Tariq, in literatures there is a saying which indicates that data is the new oil. Dubai has a

distinguished experience as it witnessed a massive technological and digital experience. I want you to tell us about what is happening in this field in Dubai Statistics Center, particularly in relation to technological development.



Tariq Al-Janahi: Of course, if we talk about statistics, we have to talk about data; there is a perpetual relation between statistics and data. I believe that there will be no change in this regard, so what is new? And how will the future be? And what is new, which time added to the mechanisms of data and statistics? It appears that we can't talk about the future of data separately from the technical and technological development, especially if we took an advanced stand and talked about the dissertations related to the Fourth Industrial Revolution such as the digital transformation and the knowledge economy. These are all elements related to data, statistics and information technologies. I believe that this relationship will remain strong as well. With regard to the trends of Dubai Technology and



The Knowledge Summit

the extent of its impacts on the census, I would like to point out that the Dubai Statistics Center is a modern active statistical center, constructed only 11 years ago. However, we find that it has world-class standards, won many awards, and has accomplished many achievements at the statistical level, in addition to statistical innovations that were commended at the highest levels and the level of the United Nations. In Dubai, we use regional statistics, which is more difficult than traditional statistics. I would like to refer to some technological points; with the establishment of the center, we were talking about digital surveys and the use of tablet, etc., and we have succeeded. We then created the intelligent statistical linkage system, or it was then e-statistical linkage. We also talked about information banks, and we established the first information bank that is linked to all government institutions and departments, in addition to data sources. Furthermore, it was linked to intelligent systems for building reports, and we got to the phase of big data, cognitive statistics, super-intelligence future predictions and the Internet of Things. There are statistical projects that will be available soon, which represent statistics



The statistical departments need full financial independence from state entities as they produce highly sensitive and important data

through a drone and we have a long-term plan to launch a statistic satellite. Currently we manage our system through intelligent statistic system, which is a smart statistic linkage system that significantly relieved us from field surveys, which are not dedicated to the census.



Moderator: Dr. Qasem Al Zoubi. You have talked about building capacities to face the Fourth Industrial Revolution, please tell us further about this subject. How can the Arab world launch in this field in light of the decrease in professional and occupational capacities? How will we deal with this area under the dominance of demand for information?



Qasem Al Zoubi: This talk about capacity-building is related to the breaking of the fear barrier and the use of techniques in the statistical field. After this experiment, statistical agencies had the ability to provide services within and outside the country. There will be capacity-building for the economic sectors in the coming period because the production of indices at the level of the state is supposed to be followed by a rise at the state level. We're talking about 230 indices, and right now all the global organizations and the United Nations are ready to help countries, but how can countries regulate this issue in order to benefit from this support? As we will find the United Nations Development Program and the United States Agency for International Development (USAID), the United Nations Population Fund and other funds and institutions in the state, we have to develop a national plan to take advantage of these organizations for the purpose of optimization of the national effort.



Moderator: Regarding Sustainable Development Goals (SDGs), there is a question about the difference between them and the Millennium Development Goals (MDGs), and if the issue is only about changing titles or changing methodology? In fact, there is a big difference between SDGs and MDGs because of the existence of certain fields such as governance indices. Furthermore, the big challenge, which is related to opportunities, is that it requires a different approach to statistics. Even on the global scale, the 230 indices have been divided into three levels; a huge number of the third-level indices has not been determined yet as the methodologies have not been agreed upon.



We should move from a production-based economy to a knowledge-based economy



The Knowledge Summit

I will direct my speech to Professor Lamia and ask her about partnerships that might exist between statistical agencies and other players who may be government or non-governmental concerning data production to complete this complicated system of indices, which has become a global benchmark for any achievement.



Lamia Zribi: For internal coordination between statistical agencies and the private sector, it exists in some countries as well as in Tunisia, but it has not progressed to produce a real statistical system. This issue is very important. In Tunisia, we have 48 statistical agencies, which is a very huge number. Nowadays, we think of restructuring this system. The danger is that a statistical structure census leads to an inconsistency between agencies and information demand from two different agencies. Coordination, training and legislation are important issues, in addition to dedication of occupational independency to statistical agencies because the absence of respective independency makes the work of the agencies difficult, hinders the submission of statistical information with



Currently, we manage our system through intelligent statistic system, which is a smart statistic linkage system that significantly relieved us from field surveys, which are not dedicated to the census.

the required quality and transparency, and makes it subject to political bickering.

In addition, the global and regional coordination is one of the important topics and this may involve the transfer of expertise in the statistical field from developed countries to the countries at the lowest level of statistical work and techniques, and also how we can standardize the curriculum and concepts? In addition, how can we have a unified statistical product and the generalization of a comprehensive culture between countries with regards to the statistical area?



Moderator: I want to ask Mr. Tariq about UAE's



experience in statistics; there is a statistical agency in each emirate and although it looks good, it also involves many challenges. How does this complicated system work under decentralized statistical agencies that operate in the presence of the Federal Competitiveness and Statistics Authority, which oversees the work of these agencies?



Tariq Al-Janahi: Fortunately, there is the Federal Competitiveness and Statistics Authority, where the authority concerned with statistics is combined with the Competitive Authority, which makes a very important strategic choice and gives great importance to the indices of SDGs and put the targets in front of a large challenge. This is the same authority responsible for the competitiveness indicator at the national level. As statistical centers, we are working under the supervision of the Federal Competitiveness and Statistics Authority regarding UAE statistics. Therefore, we bear great burdens and responsibilities. We do not say that we are busy



There is a question about the difference between them and the Millennium Development Goals (MDGs), and if the issue is only about changing titles or changing methodology? In fact, there is a big difference between SDGs and MDGs because of the existence of certain fields such as governance indices.

all year though it is normal to be busy throughout the year. There have been many times that we work on more than seven projects at one time. There are many requirements which pose great challenges, for example the prerequisites of the Dubai Government and working on Dubai investment plan as well as the requirements of the Federal Authority. With 185 employees, our center cannot meet these requirements and overcome the challenges without relying on technology.



The Knowledge Summit

2015



Moderator: All the speakers talked about the SDGs and Major General Abo-Bakr El-Gendy will conclude the discussion because Egypt was one of the countries that conducted the initial review.



Abo-Bakr El-Gendy: The fact is that Egypt was one of three Arab countries which participated in the preparation of the SDGs within a group of 28 countries in 2012, three years before the issuance of the goals in 2015. Hence, we foresaw the importance of that issue, established the unit of sustainable development in the statistical department and selected the best participants for that unit and prepared them well, in addition to their participation in all international conferences. While statisticians are concerned with measuring goals and indices, the State was already involved in the change of the 17 goals of

people's lives; SDGs are basically implemented to make the difference and change the lives of people all over the world.

From this importance, the State formed a committee headed by the Minister of Planning to make the change on the ground, and we dealt with the measurement of what is actually happening, in addition to reporting to the decision-maker. In light of consecutive changes, we submitted the first report on the follow-up of SDGs, despite not covering more than 45% of indices that have been produced. God willing, in the report next February, we will see whether we will be able to do that or not? In our developing countries, not all indices are applicable because a country may be unable to produce some indices.

We are very interested, and the elements of the Sustainable Development Unit became highly aware and knowledgeable. However, there are only 6 members of the unit while they are connected to 94 specialized departments in the agency. For example, the Agriculture Department is responsible for the agriculture indices, but the role of the unit is to transfer its expertise regarding non-existing indices to the department to help in the production of these indices. The



same thing happens with other departments such as industry, transportation, population and others. This combination and selected system eventually work to direct political decisions.



Moderator: The fact is that in this session, we talked about the past and we began to find the way for the future by talking about sustainable development objectives. But let us talk about the subject of the summit, which is the relation of data to the Fourth Industrial Revolution. Let's think about the business model of the data industry in the next 25 years.

I think the big transference will remain in the relation difference between data supply and demand. From this point, we should think in terms of data demand and what statistical agencies can offer regarding data. I would like each speaker to talk for a minute or two about the changes that should occur to the operation and management of statistical agencies in light of the Fourth Industrial Revolution.



Abo-Bakr El-Gendy: We are now working on developing a mobile phone application, through which we gather prices, in cooperation with the Economic Commission in Africa, Nile University as a research entity. We found that through this method, it is possible to dispense with traditional methods. It is known that what matters most in any statistical agency in the world is inflation; as it is determined by the interest rate which drives the entire economy. One of the other challenges is that the entities that use big data will surpass us and they can get more general, more comprehensive and more meaningful



We established the unit of sustainable development in the statistical department and selected the best participants for that unit and prepared them well, in addition to their participation in all international conferences.



The Knowledge Summit

2025 data from societies. If we continue with the same traditional way, we will not be able to go along with them. Now, we are about to launch the application to be used by researchers through their phones to ensure the speed of work. Furthermore, one of the challenges that we face is related to the occupational manual, as some occupations may go extinct or new professions may appear after 10 years.



Qasem Al Zoubi: Basically, there is no substitute for statistics; even if we have made progress in terms of technical means, I don't think that we will dispense with statistics. But the biggest challenge for statistical agencies is evolving to keep pace with advances in the field of technology, because technology opened new horizons for development. In Jordan, after we launched the census outcomes, we depended on the national records and using techniques in data update. Accordingly, the statistical agencies focused on developing methods and methodologies to coincide with the occurring progress and the recent market movement.



Supporting the professional independence of statistical bodies is one of the most important issues because lack of professional independence hardens their work



Lamia Zribi: In Tunisia, there may be a statistical revolution, however not in terms of data and indices but in the means. Perhaps changes may occur at the level of ratings – industry ratings and service ratings – but the need for statistical information will remain even in the light of these developments.



Moderator: Mr. Tariq, you have seen some technological applications here in Dubai, which



is represented by the collection of statistics via a drone, etc. Can you tell us about the prospect of the future for the Fourth Industrial Revolution and the technological development?

and the Internet of Things. In addition, again I think that in the future, the unorganized data will take the most portion compared with organized data.



Tariq Al-Janahi: The one who wants to keep pace with development has to immediately begin to build a large data system, but whoever wants to lead, should move beyond large data and towards artificial intelligence. I imagine that the statistical format will be as follows after large data; where reliance on structured data and rules will diminish in favor of unorganized data



It appears that we can't talk about the future of data separately from the technical and technological development, especially if we took an advanced stand and talked about the dissertations related to the Fourth Industrial Revolution such as the digital transformation and the knowledge economy.



2017 Knowledge Summit | قمة المعرفة



FOURTH INDUSTRIAL REVOLUTION

2017

FOURTH INDUSTRIAL REVOLUTION

2017

قمة المعرفة | Knowledge Summit

2017

2017 Knowledge Summit | قمة المعرفة

2017 Knowledge Summit

FOURTH INDUSTRIAL REVOLUTION

2017

Knowledge Summit

Day Two 17

Hall 2 - Session 5

Education: Universities of the
future and the requirements of the
Fourth Industrial Revolution



Session topics

- **New curricula for advanced universities**
- **Impact on education: Bridging the gap between universities and the labor market**
- **The disappearance of literary and cultural curricula and the emergence of new programs tailored to the components of the digital revolution**
- **Human resources: Students and teachers**
- **Universities prepare to adapt to accelerated development**

The Knowledge Summit

2019

Speakers



Dr. Saaïd Amzazi

President of Mohammed V University of Rabat, Morocco

Dr. Joseph Jabbra

President of the Lebanese American University, Lebanon

Dr. Essam El-Kordi

President of Alexandria University, Egypt

Dr. Riyad Hamzah

President of the University of Bahrain, Bahrain

Dr. Sherif Sedky

Executive President of Zewail City, Egypt

Dr. Refaat Al-Faouri

President of Yarmouk University, Jordan

Moderator



Dr. Sultan Abu Orabi

Secretary General, Association of Arab Universities



DR. SAAÏD AMZAZI

**PRESIDENT OF THE MOHAMMED
V UNIVERSITY OF RABAT**

Dr. Saaïd Amzazi is the President of the Mohammed V University of Rabat. He is a Doctor of Sciences in Biology, Faculty of Sciences at University Mohammed V-Agdal & La Pitié Salpêtrière Hospital, in Pierre and Marie Curie University, Paris. He is also the Founding Member of several learned societies including SMBBM, SMI, AMBS, and ISFG. He has been the President of the National Evaluation Commission for the Granting of Scholarships for the Doctorate – CNRST Since 2015, a Member of the Competition of National Aggregation in Biology since 2011, the Director of the Training and Research Unit UFR-Doctorate Biochemistry-Immunology since 2009, and the Director of the Forensic Genetics team of the Laboratory of Biochemistry-Immunology, Faculty of Sciences since 2008. Dr. Amzazi was the Dean of the Faculty of Science of Mohammed V-Agdal University from 2011 to 2015, the Vice Dean in charge of Academic Affairs of the Faculty of Sciences from 2006 to 2011, the President of the Council of the Mohammed V-Agdal University from 2011 to 2014, and the Coordinator of the Specialized Master in Science and Technology of Life and Health from 2009 to 2012.



PROF. REFAAT ABDEL-HALIM AL-FAOURI

PRESIDENT OF YARMOUK UNIVERSITY

In his current role, Professor Al-Faouri is responsible for the direct supervision of the management and good performance of faculties, centers, administrative units, students, employees, teaching and technical staff. He also oversees the preparation of the strategic plan for the university and its various units, and the implementation of this plan in a way that elevates the university's level into an advanced ranking.

Prior to this, Professor Al-Faouri was the Director General of the Arab Administrative Development Organization – League of Arab States, where he headed the ARADO strategic direction and operations along with promoting the administrative development within the League of Arab States through an effective partnership framework. Professor Al-Faouri has always been present in local, regional and global events and conferences, and he is a member of more than 50 Committees. He is on a faculty council, faculty of Economics –Yarmouk University, Jordan, a member of the Public Admin Institute Council, a Chairman of the Preparatory Committee for the General Administration Conference, Yarmouk University and a member of the Model School Administration, Yarmouk University.





PROFESSOR RIYAD Y. HAMZAH

PRESIDENT OF UNIVERSITY OF BAHRAIN

Professor Hamzah is President of the University of Bahrain. He served as the General Secretary of the Council of Higher Education in the Kingdom of Bahrain from 2011 to 2016. He holds a PhD in Biochemistry, University of Houston, Texas, USA, 1984. He was involved in the establishment of the Arabian Gulf University, Bahrain, and its Medical School since its inception and established and directed numerous new programs in various scientific and educational fields. He served in key academic and administrative posts including Vice-President of the Arabian Gulf University from 1994 to 2005, Director General of Finance and Administration (1986-1994), and Dean of the College of Applied Sciences (1990-1994). He served as the Editor-in-Chief of the Arab Gulf Journal of Scientific Research, is a member of the Third World Academy of Sciences (TWAS) based in Trieste, Italy, and is a founding member and member of the Board of Trustees of the Arab Forum for Environment and Development (AFED) in Beirut, Lebanon. Professor Hamzah has participated in numerous local, regional, and international meetings, has organized and presented plenary lectures at numerous international conferences, and has numerous publications in prestigious international scientific journals.



PROF. DR. ESSAM EL-KORDI

PRESIDENT OF ALEXANDRIA UNIVERSITY, EGYPT

Prof. Dr. Essam Ahmad Mahmoud El-Kordi is the president of Alexandria University, Egypt, and a professor of structural analysis, Faculty of Engineering, Alexandria University. He was the Chief of Civil Engineering Department, Faculty of Engineering, Beirut University, and the Dean of the Faculty of Engineering, Alexandria University. Moreover, Dr. El-Kordi is a member of the Union of Euro-Mediterranean Universities, the Union of Francophone Universities, the Union of Mediterranean Universities, the Board of Trustees of the Bibliotheca Alexandrina, the Board of Directors of the City of Scientific Research. Dr. El-Kordi was awarded his bachelor degree of civil engineering (Grade: Excellent with Honors) in 1981. He got his Master's degree in structural engineering from Alexandria University in 1985. He got his PhD in civil engineering from North Eastern University, USA in 1992. Dr. El-Kordi was awarded a Shield of Honor and a Certificate of Merit by the Egyptian Engineers Syndicate, and was involved in a large number of local and international agreements, projects, scientific conferences and symposia. He has published more than 40 researches in international scientific journals and conferences.



PROF. DR. SHERIF SEDKY

EXECUTIVE PRESIDENT OF ZEWAİL CITY

Prof. Sherif Sedky received his PhD in microelectronics in 1998 from the Katholieke Universiteit Leuven, Belgium. In 2002, he joined the faculty of The American University in Cairo as an Assistant Professor in the Physics Department. In 2004, he was promoted to Associate Professor and then to Full Professor in 2008. He served as the director of Yousef Jameel Science and Technology Research Center, and Associate Dean for Graduate Studies and Research at The American University in Cairo. He was also a Visiting Professor at UC Berkeley, Stanford University and Katholieke Universiteit Leuven. In 2012, Dr. Sedky was appointed the Founding Provost and Director of the Nanotechnology Center at Zewail City. In 2015 he was appointed the Provost of The American University in Cairo. Currently he is the Executive President of Zewail City. He is a recipient of the Abdul Hameed Shoman Prize in 2014, and the 2007 Excellence in Research and Creative Endeavors award and is also a recipient of the Egyptian Merit State Award in advanced technological sciences in 2002, and the Graduate Studies Award from Cairo University in 1996.



DR. JOSEPH G. JABBRA

PRESIDENT, LEBANESE AMERICAN UNIVERSITY

Dr. Joseph Jabbra assumed the presidency of the Lebanese American University in August 2004. He was elected President of the Association of American International Colleges and Universities (AAICU) for a two-year term. Prior to that, Dr. Joseph served as the Academic Vice President at Loyola Marymount University from 1990 to 2004. He had also served as Vice President, Academic and Research, at St. Mary's University in Halifax, Canada, from 1980 to 1990. He served on, and chaired, over 100 academic committees and boards, ranging from academic senates to boards of trustees. He also served on several hospital boards in Canada and the United States. Dr. Jabbra is the author, co-author, and co-editor of 12 books. To his credit, he also has 33 articles and chapters published in books and scholarly journals, over 26 book reviews in both English and French, scores of scholarly papers and keynote addresses given at learned societies' meetings and professional gatherings. Dr. Jabbra received his Law degree from the Université St. Joseph and PhD in Political Sciences from the Catholic University of America, Washington, DC.



2017 Knowledge Summit | قمة المعرفة



2017 Knowledge Summit

2017 Knowledge Summit

4 FOURTH INDUSTRIAL REVOLUTION الثورة الصناعية الرابعة



4 FOURTH INDUSTRIAL REVOLUTION الثورة الصناعية الرابعة

قمة المعرفة



Knowledge
Summit



Fact sheet

- Educational institutions in the Arab world increased from 900 to 1000 institutions
- 350 universities in the Association of Arab Universities
- 150 million students in universities
- 200 thousand faculty staff
- 500 researchers for every one million people in the Arab world
- The Mohammed V University of Rabat
 - » Established in 1957
 - » Number of associated students of the University: 85,000
 - » Number of educational institutions: 18
 - » Number of faculty members and administrative staff: 4000
 - » A third of the scientific content in Morocco is produced by Mohammed V University of Rabat
- The Lebanese American University of Beirut
 - » Established in 1924
 - » It has seven faculties including Medicine, Pharmacy and Nursing
 - » Approximately 8500 students
 - » It has two campuses in Beirut and Byblos, in addition to a simulation center at the Faculty of Medicine and a hospital in Beirut.
- Alexandria University
 - » Number of students: More than 180,000
 - » Number of faculty members: More than 6,500
 - » Number of auxiliary individuals of teachers and assistant teachers from the holders of masters and doctorate: More than 3,500 persons



Moderator: In front of this great momentum of numbers, there are significant challenges, one of which is to ensure the quality of education in Arab universities. Is the student who graduated from the Arab universities trained and qualified? Can he meet the requirements of the Arab, regional or international labor market? Many young people from the Arab world are working abroad in America, Europe and Australia. The second challenge is the cause of the general weakness of scientific research in the Arab world. The Arab world has a population of about 400 million, constituting 5% of the world's population. Does the percentage of Arab universities regarding scientific research and publication commensurate with Arab world's population? Unfortunately not. The number stands at 0.2% or 0.3% of the total scientific research content. Israel, for example, contributes four times as much as the contribution of the Arab world in terms of scientific research and patents. In addition, the expenditure of the Arab world on research and education is still weak, compared to developed and

industrial countries. There are about 500 researchers for every one million people in the Arab world, while in the developed countries, this number reaches 6000. These numbers make us ask the following question: Are the Arab universities ready for the Fourth Industrial Revolution? What are the Arab universities doing at the present time?



Saaïd Amzazi: Before we talk about universities in the future, we should recall the status of all universities in the past, most notably the University of Al Quaraouiyine, which was premature in the cognitive domain and globalization. The University of Qarawiyyoun was founded in the 9th century by a Tunisian woman named Fatima Al-Fihriyya, who was distinguished by her belief in the free mobility of professors and students at the time. I say that she was ahead of her time. Today, in the context of this rapid development, modern technology and innovation, universities face many challenges. The most important of these challenges is openness to modern methods and



reliance on the mechanisms required by smart or digital universities. How can we imagine the shape of this smart university? In Morocco, universities have adopted a number of important projects and models, one of which was the dissemination of Wi-Fi to all universities, which is a big and meaningful project approved by the Ministry and cost USD 13 million. Additionally, a mobile application was provided to give students an open and obvious space, which can be used for study curricula and contents. Centers were also established for e-courses and each university has an e-safe, where professors and students can access these books and publications in the Arab and global databases. Then there is the multi-specialized Smart Student's Card to control attendance in exams and the likes. We should be concerned about university



The University of Qarawiyyoun was founded in the 9th century by a Tunisian woman named Fatima Al-Fihriyya, who was distinguished by her belief in the free mobility of professors and students at the time. I say that she was ahead of her time.

governance and independence, in addition to reliance on digital means in human resources and control of financial matters.



Moderator: Now, I will address my speech to Dr. Joseph Jabbra, and ask him as a professor in law about his vision on innovations and inventions. Do universities in Lebanon deal with innovations and inventions with a scientific insight?



Joseph Jabbra

I would like to tell you that developments in the 21st century and the Fourth Industrial Revolution are closely linked to the innovators. Education will not be enough even it was basic; we need to learn and gain new ideas to contribute new innovations and inventions because we're in a complicated world characterized by rapid development and exponential

progress in all fields, requiring us to be more creative. In addition, we find many institutions resisting change for long periods, but we are now under the pressure of a major and important requirement; namely globalization and technology, and we need to change. It's important to point out that issue. The changes at the Lebanese American University were related to the curricula and education inside and outside the campus, in addition to scientific research. Regarding the curricula, I see that most curricula in the Arab world, even the global ones, need restructuring. We need to respond to society's requirements and what we witness daily and make the content of our curricula convenient. For education on campus, its development is very important to keep up with the Fourth Industrial Revolution, it is very important for us as teachers to become mentors and guides, in one way or another, to our students, and to move away from the traditional method of teaching in classrooms, and the likes. We also need the education outside of the campus to embrace the Fourth Industrial Revolution, because our society can very quickly become uneven even at the international level. The last point is about practical research and the shortage we suffer from. Governments and the private sector have to support scientific research, and attention should be given to



We're in a complicated world characterized by rapid development and exponential progress in all fields, requiring us to be more creative. In addition, we find many institutions resisting change for long periods, but we are now under the pressure of a major and important requirement; namely globalization and technology, and we need to change.

students, researchers and professors by giving them the opportunity to complete their researches. We have very brilliant minds but they need support.



Moderator: Dr. Essam, how do you see the situation in light of the Fourth Industrial Revolution, and the position of our Arab universities in terms of educational programs and faculty expertise?





Essam El-Kordi: Educational programs in most of Arab universities have not developed for decades, whether in terms of content, method of delivery or means of presentation and explanation. In addition, the update of educational programs or the development of new programs called Interleave programs, was not fast enough to keep up with the rapid development

that happened in the last 10 or 15 years. We need a massive revolution in the educational programs in terms of content and teaching method. This issue brings us to the importance of developing the skills of faculty members to help them change their teaching methods. We all know that the application of change policy is difficult and faces challenges, as every professor believes that his way of teaching is the best way. I see that the problem is not a problem of material capabilities, but the desire and determination to change the reality. This can be done through revolution development and human capabilities in universities

to develop programs to give us an opportunity to graduate individuals, who are capable of keeping up with the progress that our markets are witnessing.



Moderator: Dr. Riyadh, given the reality of different minors, how do you see our universities with regards to the next industrial revolution?



Riyad Y. Hamzah: The Arab world faces many challenges and accelerated variables: political sociology and economics, environmental variables, climate, oil prices and economies. Arab universities face many challenges and have many opportunities. However, for a long time, universities in the Arab world focused on inputs rather than outputs. In Bahrain, we've included the economic added value to our accreditation criteria. If we look at the labor market, we need graduates who create jobs, so in



developing curricula, we should consider that those graduates would make courses. For this, we should provide special skills for students. Success stories are few, so the environment and the atmosphere inside universities should be optimized for students to succeed if they have exams or innovations. One of the success stories was when we asked for a business incubator for graduates of engineering and business management students. We also established the legal clinic at the faculty of law, where students can go to ask about patents, scientific publishing, establishment of companies and other questions to provide them with the highest chance of success, and also bring investors to offer students' projects and innovations.



In addition, the update of educational programs or the development of new programs called Interleave programs, was not fast enough to keep up with the rapid development that happened in the last 10 or 15 years. We need a massive revolution in the educational programs in terms of content and teaching method.



The Knowledge Summit 2024

All these efforts have to continue to provide students with an integrated environment, where they can succeed and we can provide new job opportunities in the labor market. This is an example of what we are doing.



Moderator: I would like to ask Dr. Sherif, Executive President of Zewail City, to tell us about the opportunities and challenges that we face. As an expert who has worked in several universities and in the US, how do you see the situation?



Sherif Sedky: Regarding the problem we have in hand, we will find that we have to remove the barriers between minors. There are currently no separate minors, however they interact and overlap each other in a highly severe manner, the first step in universities should be the elimination of boundaries between

minors. One of the issues that we talked about is the teaching method and the creation of job opportunities. We want to follow what is called education for citizenship; meaning that education contributes to the building of a good citizen, who serves the society. In addition, we want the graduate to be able to create job opportunities, meaning that his role shall not be limited to the research for getting a job opportunity, but rather he can change, affect society and raise the society and the economy. We are looking forward to having a modern university and thinking in the future university apart from the expected shape of the scientific cities, which is the example shown by Zewail City of Science and Technology.

Furthermore, we have studied the challenges that we faced and found integrated solutions for the mentioned parts. This was present in the establishment of an



Arab universities face many challenges and have many opportunities. However, for a long time, universities in the Arab world focused on inputs rather than outputs.

integrated scientific city, including a university for science and technology. This university is different from other universities in terms of faculties and sections. In addition, the first step, as I said, was the elimination of barriers between minors. Regarding the development of the teaching curricula and courses, the shape of scientific degrees – bachelor, masters and doctorate – was radically different. Indeed, the scientific basis is the same, but how it's dealt with and shown to society is different. In addition, we have interdisciplinary studies which we've turned into the scientific academic system. We also have specializations such as the nanotechnology engineering and neurobiology engineering, examples on how to mix different specializations so that the graduates are qualified to interact with society. We have different programs that combine science, engineering and other minors, and since we have problems in scientific research, we thought about linking the minors to research centers. In the heart of the city, we have the university and then the research centers. Each academic program has a research center where the student can go to implement applied researches that address problems of the society. Regarding the outcomes of the scientific research, we thought about a mechanism for that as

we should benefit from the scientific outcome and offer to society in a useful shape. The scientific city should have an entity to deal with scientific research outcomes and turn it into useful things for society. In this respect, we have launched the Pyramid of Technology in order to maximize the benefit of applied researches and patents, and to link them to industry and society. These are the vital topics in universities that concern us.

In terms of the product offered by the university, I think that we should focus on selecting the student from the beginning and the distinguished talents among those wishing to join the university. Therefore, we have admission tests which are different from the rest of universities. We do not rely solely on high school results, where they only represent 20% of admission criteria, since we are looking for the student's ability



We are looking forward to having a modern university and thinking in the future university apart from the expected shape of the scientific cities, which is the example shown by Zewail City of Science and Technology.



The Knowledge Summit

to innovate and understand.

One of the things we have talked about is teaching method. The traditional indoctrination methods are no longer feasible. We should have an enabling environment for students to interact, starting with the shape of classrooms and prepare them to mix the theoretical side with the practical one. The scientific research should be linked to the applied research, which means that the issue should not only be limited to the preparation of scientific researches, but also focus on the impact of research on society and maintaining the structure with self-financing. The matter should not only be the preparation of research and studies, but extended to the development of the entire system.

The question remains, is this system theoretical or it has a practical aspect? The university started working five years ago whereby the first batch graduated last summer. The first student of the batch published 12 scientific researches, which was a first. Regarding the outcomes that the university achieved during this short time, we managed through interaction between the university and the research centers to find solutions for the existing problems. This appeared through the discovery of a machine to diagnose the C virus. Recently, through nanotechnology, the



Recently, through nanotechnology, the fertilizing granules are practically packaged against water and weather conditions, the thing that saves the State billions of pounds.

fertilizing granules are practically packaged against water and weather conditions, the thing that saves the State billions of pounds. All the above indicate a system that shows the transmission from traditional universities into scientific cities, which presents a new model in terms of selection of students and professors, in addition to research centers, scientific and applied research, as well as the teaching methods and assessment.



Moderator: Dr. Refaat, being a specialist in public management, and in light of the work market, how do you see the status of Arab university graduates

in terms of fulfilling the needs of the work market? The second question is about the relation between the academic and the industrial aspects.



Refaat Abdel-Halim Al-Faouri: Based on my previous experience in management development at the Arab University and my academic knowledge, and after knowing most of the Western and Eastern systems, I have reached the conclusion that no country can achieve economic growth or social welfare without controlling the education system, and I challenge that there be a state that has advanced without controlling the education system. So, the first verse which descended upon our Prophet Muhammad (peace be upon him) was “Read in the name of your Lord who created”, this the first fact. The second fact, which is not a personal opinion, is that there was an agreement that the Arab education is in crisis and this was in the Arab Conference in 2009. We do not deny the ancient history of our universities and its efforts in light of the physical, political and social conditions. However, Arab education is in crisis, and this has many reasons,

but the scourge of Arab education is indoctrination. We cannot move forward in the education system, unless we make a transition from conservation and indoctrination to induction and education, and this is what we miss in the Arab world, we need a qualitative leap. We still value quantity to quality because of social, political, economic and other reasons. In 1980 there were 30 universities in the Arab world, and after 30 years the number of universities has increased spectacularly to more than 300 universities. But has the quality of education improved as much as the increase in the number of universities? No, this has not happened, and instead feel sorry about the level that was in the past. Focus on the teaching methods is the secret, among other things. Unfortunately, we still use indoctrination in our universities where quantity trumps quality. We have to think about that issue again. The other issue is that all programs offered in this vast amount of universities are distant from the reality and the skills that prepare students for the world; the world of artificial intelligence, the world of the exponential think, the world of the future where 30% of jobs in 2030 shall change or disappear. In 2050, 70% of jobs will disappear and this is a very dangerous issue. All the scientists at this Summit and other summits have the same opinion regarding this



The Knowledge Summit 2025

issue. The question is: Did we prepare our students for that change through teaching methods, curricula and the professors? When a student graduates from university, he is dependent on the cognitive hub of the minor and another forgotten hub that is related to the acquired skills, which opens the field of interaction for the graduate with the market requirements. Have the curricula cared about these acquired skills? No, it was totally neglected. The biggest challenge is employability and bridging the gap between the needs of the labor market and the skills of the graduates. However, e-learning may widen this gap. The e-education is coming strongly and universities such as Harvard has started applying it. This involves innovation, entertainment and interaction, giving the student the opportunity to acquire the practical and applied skills that our curricula are lacking.

Q&A session

One of the attendees: Is it expected that the university meets all student's requirements and there is no need to go somewhere else to complete the deficiencies he found in his university? The second question is, can the university support research conducted by the students even after graduation?

Motaz Khorshid: I will refer to a group of points of relevant topics including what have been mentioned



I have reached the conclusion that no country can achieve economic growth or social welfare without controlling the education system, and I challenge that there be a state that has advanced without controlling the education system.

in this session and I hope to receive responses regarding to what extent these ideas have been taken into account in university management. The points of these topics are focused on the first thing that happened in universities, which is diversity of education and uniqueness of its methods, systems, programs and policies, in addition to the efficiency of education, scientific degrees, systems and ownership of its assets. For example, private universities own its assets. The second point is related to the sustainability of education and the role of learning in relation to life, and the role of the university in this area. The third point is related to internationalization and globalization, and the relationship between them on the ground that the internationalization is within the mechanisms, which we follow to increase the quality of education.

In addition, one of the other key issues is scientific research and there are other trends that are related to more transparent and independent universities. However, the most important point is the evolution of teaching methods, which are concentrated in three main points; overcoming the barrier of distance and time, developing teaching methods to be more modern and flexible, and using information technology.

One of the attendees: Are you going to change the programs through cooperation between each other or will you encourage students to travel abroad, whether to other countries within the region or beyond the region?



Moderator: I will answer this first and I think it is related to the speech of Dr. Motaz about internationalization. We at the Association of the Arab Universities has taken steps to address this during the last five years. We have held three conferences with Chinese universities to exchange experiences and the same thing occurred with the

universities of The Association of Southeast Asian Nations (ASEAN) in Kuala Lumpur. Furthermore, we have held five conferences with the universities of the European Union and there is cooperation with Russian universities. In addition, students from China have come to study in Arab universities and our students go to the Chinese universities as well. Internationalization is a very important issue.

One of the attendees: I would like you to talk about the impact of e-learning in terms of availability of education and the likes.

One of the attendees: We have seen Sophia the robot at this Summit; can we use robots to deliver lectures? I think that we now live a new world and I wonder what universities will do in the future with this new world represented in the Fourth Industrial Revolution. I also have a concern regarding the saying “machines produce machines”. So how will our future be? Maybe one day we will lose our humanity.

One of the attendees: I think that the community dimension was missed in this diagnosis, particularly how the universities evolve under the influence of centralization, bureaucracy, and the great pressures on them.



We have to deal with our universities as decentralized institutes and not traditional institutes. We have to give them the freedom to work and have the confidence that the matter is not the lack of resources.



Saaïd Amzazi: I think that independence is one of the Arab universities' problems. Independence shall not be acknowledged as long as you get financial support from the government or other entities. The European and the American model is contrary to this with universities managing its affairs with complete independence. I think the concept of independence will open to us a new area and give us a new soul and power. The second point is the internationalization of the universities of the Arab world. When we look at the reality, we will find that the universities are heading North and the cooperation with the South

is absent. In addition, we will find that projects and cooperation with Europe and America is larger than other areas and that is what we should deal with.



Joseph Jabbra: I would like to add some comments on three fields very quickly. The robot world is a reflection of us and I think that the important issue is to remember that robots represent an image of us; an image of the human mind. Also, I see that it is important to teach the students of universities not only for jobs but also to be innovative, to be entrepreneurs and to be able to build themselves in the society where they live.



Essam Elkordi: I would like to refer to a term widely used in western universities, especially in the

United States of America. This term refers to the graduate as a global citizen, which means that he has the qualifications to work in all countries. Thus, there will be attractive and repulsive countries and graduates will be redistributed, and thus countries will fall while others will rise.



Riyad Y. Hamzah: Regarding internationalization and globalism of the educational programs, I see that it is very important to be a part of a global program, whether it be researches or curricula and there should be scientific exchange. I hope that Arab universities continue those endeavors and that it's extended to the stage of higher studies.



Sherif Sedky: We should teach people how to control technology and all other issues and not the



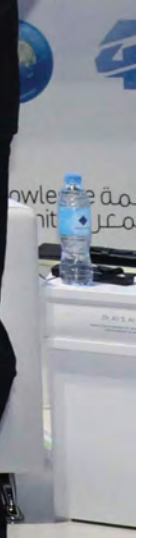
opposite. We direct people to the way of making the future and getting a global teaching while keeping control of technology at the same time. In addition, we have to remember that we are the one who control robots and they do not control us.



Refaat Abdel-Halim Al-Faouri: We have to deal with our universities as decentralized institutes and not traditional institutes. We have to give it the freedom to work and have the confidence that the matter is not the lack of resources. The proof for that is the country that hosts this summit; the UAE may not be the largest in terms of resources in the Arab world, but it utilized its capabilities and the potentials of its sons through obtaining and transferring knowledge, and is now in the phase of knowledge creation. The Arab universities have to graduate entrepreneurs, not employees as the recent case where the highest percentage of the university graduates are employees, reaching 90% as I see.



2017 Knowledge Summit المعرفة قمة



Knowledge Summit

Day Two

Third Hall - Session 1

Global Knowledge Index: Indicators for pre-university education, technical education and vocational training



Session topics

- The importance of indicators of pre-university and technical education
- Challenges facing indicators
- Key findings
- How to use the findings across the Arab region and the world?
- Results of global tests such as TEMS
- The role of intellectual development in advancing the educational environment

4 FOURTH INDUSTRIAL REVOLUTION
الثورة الصناعية الرابعة

20

قمة
المعر



2017

The Knowledge Summit

20

Speakers



Dr. Hassan El-Bilawi

Secretary General of the Arab Council for Childhood and Development

Heiko Sibberns

Director of the IEA Hamburg

Dr. Youssef Sadik

Professor of Sociology, Head of the Department of Educational Fundamentals, Mohammed V University, Morocco

Dr. Najoua Ghriss

Professor at the Higher Institute of Education and Continuous Training in Tunisia

Moderator



Dr. Ali S. Al-Kaabi

Deputy Vice Chancellor for Students Affairs and Enrolment at UAE University



DR. HASSAN EL-BILAWI

**SECRETARY GENERAL OF THE ARAB
COUNCIL FOR CHILDHOOD AND
DEVELOPMENT**

Dr. Hassan El-Bilawi is a Professor of Sociology of Education, Helwan University, Cairo. He is the Chairman of the Teacher Education Committee at the Supreme Council of Egyptian Universities, Ministry of Higher Education, and is the Secretary General of Arab Council for Childhood and Development. He was Dean of the Faculty of Education for various universities in Egypt and UAE and was Senior Advisor to several international institutions and authorities in education and development. He authored and co-authored many publications on educational sociology and policy. Dr. Bilawi was Project Director of the "National Strategic Plan for the Pre-University Education Reform, Egypt", and Senior Advisor of "Guiding Framework of Performance Standards for Arab Teachers". Dr. Bilawi was the senior researcher of two Arab Knowledge Reports issued by the UNDP and Mohammed Bin Rashid Al Maktoum Foundation. Dr. Bilawi holds a PHD in "Sociology of Education", University of Pittsburgh, USA and is a member of several regional and international professional organizations.



Heiko Sibberns

DIRECTOR OF THE IEA HAMBURG

Heiko Sibberns is the Director of the IEA Hamburg. He holds the administrative and managerial responsibilities for the IEA Hamburg and he functions as a Member of the Executive Team along with his responsibility in the technical solutions. Previously, Heiko was a Co-Director of the IEA Hamburg from 2001 to 2014, responsible for the coordination of all national projects. Earlier, he acted as a Research Assistant and later, as a Senior Researcher in the field of the IEA Trends in Mathematics and Science Study (TIMSS), where he coordinated the national projects. He was also involved in the development of relevant software as well as testing and data processing.



Youssef Sadik

PROFESSOR OF SOCIOLOGY, HEAD OF THE DEPARTMENT OF EDUCATIONAL FUNDAMENTALS, MOHAMMED V UNIVERSITY

Youssef Sadik is a Professor of Sociology and responsible for the Department of Educational Fundamentals in the faculty of Educational Sciences at Mohammed V University in Rabat. He is a research associate at the Research Centre on Immigration, Ethnicity and Citizenship at the University of Quebec of Montreal, Canada. Professor Sadik works as a research associate in the Laboratory of Meaning and Understanding of the Contemporary World (LASCO) - René Descartes University - Paris V Sorbonne. Professor Sadik oversees the master of Human Capital Management and Communication - Mohammed V University in Rabat. He served as an expert in the Moroccan Parliament on youth employability. He also worked as a USAID consultant and team leader of Morocco's study on the Employability of Youth in Morocco. Between 2010 and 2012, he served as Adviser to the Head of Government.



NAJOUA GHRISS

PROFESSOR AT THE HIGHER INSTITUTE OF EDUCATION AND CONTINUOUS TRAINING IN TUNISIA

Professor Ghriss holds a PhD in Educational Sciences jointly from the University of Tunisia and the University of Louvain-La-Neuve Belgium. In addition to her occupation as a teacher at the University of Tunisia, Professor Ghriss is a research associate at the National Center for Pedagogical Innovation and Education Research in Tunisia. She is a member of the Tunisian Association of the Academic Pedagogy.

Professor Ghriss has conducted numerous researches on educational areas. She participated in many national, regional and international workshops and seminars in the field of Education and also contributed to researches with regional and international organizations such as UNDP and Mohammed Bin Rashid Al Maktoum Foundation, CIEP-Sèvres as well as UNESCO and ALECSO. Professor Ghriss's most recent publication was 2014's "Study on Performance of Arab States in TIMSS 2011". She also wrote a chapter titled "The Role of Education in Individual and Sustainable Development" in the book "Arab Human Development in the Twenty-first Century: The Primacy of Empowerment".



من الناحية المفاهيمية: الرؤية العامة لمشروع المعرفة التي تركز على الإنسان كقائد ومحرك لعملية التنمية، وذلك لتعزيز قدراته وتوسيع خياراته بما يؤهله لتنمية ذاته ومجتمعه، وللتفاعل بإيجابية مع التغيرات العالمية، كما تركز على عملية التمكين باعتبارها من أهم آليات التغيير الإنساني المنشود وما تستوجبه من توافر بيئات تمكينية حاضنة ومحفزة على اكتساب المعرفة.

من الناحية المنهجية: عدم حصر أداء النظم التعليمية في عدد من المتغيرات المحدودة المتعلقة بالتحصيل المدرسي، بل العمل على بناء مؤشر يظهر هذا الأداء ضمن شبكة من العلاقات تتفاعل فيها العوامل الذاتية المتعلقة بالمتعلم مع ظروف البيئة التعليمية، ويفتح على المكونات المتعلقة بالقطاعات الأخرى.

من الناحية العملية: المؤشرات ليست غاية بذاتها، ولا تُقاس أهميتها بعددها أو بما ستفضي إليه من معطيات كمية، وإنما بمدى قدرتها على كشف الواقع بكل تجرد وموضوعية، وبقدرة الدول على تحويل الأرقام إلى معلومات تنير القرار التربوي وتساعد على رسم سياسات تطويرية صائبة وفعالة.



Knowledge Summit



4 FOURTH INDUSTRIAL REVOLUTION
قمة المعرفة

قمة المعرفة



قمة المعرفة
معرفة

Knowledge Summit



2014



Moderator: I will start with Dr. Hassan El-Bilawi and he will talk about cultural development within the education and knowledge system in general.



Dr. Hassan El-Bilawi: I will speak about the role of cultural development in education development efforts aiming to establish a knowledge society in the Arab region. Apart from the figures, I would like to inform you that I have been honored to be the principal researcher in the knowledge report of the Mohammed Bin Rashid Al Maktoum Knowledge Foundation for 2010 and 2014 report. The first report dealt with pre-university generations, while the second focused on the readiness of university education. The goal was to attempt to apply the content of the two reports through the study of the human personality of individuals in the pre-university level, within the framework of a group of measures that would qualify the Arab citizen

to accept the knowledge society. In fact, the results of this study cause concern to us, because, despite the availability of all these figures and data, we find that the Arab citizen is not ready to integrate into the knowledge society. It means that the matter must be reconsidered again.

In the 2014 report, we talked about the types of knowledge, including the so-called tacit knowledge that is rooted in the Arab mind, and thinks with it, pushing it to accept or reject an idea. The reason for this is when an individual reads a book, he considers it a source of information. However, this information quickly turns into a knowledge, as a person reads and interacts with the text, he forms a vision resulting from his reading of the book. If information is introduced to the student in the classroom, it is not knowledge. But it becomes so when the student begins to discuss, speak, inquire and question about how, why and where; then the knowledge process begins.

The problem that has existed for decades is that knowledge in Arab societies depends on quotes because we are prisoners of the culture of quoting. The teacher in the school provides the information by quoting from others, which raises the problem of the absence of a knowledge pattern in our Arab world today. The Mohammed Bin Rashid Al Maktoum



The problem that has existed for decades is that knowledge in Arab societies depends on quotes because we are prisoners of the culture of quoting. The teacher in the school provides the information by quoting from others, which raises the problem of the absence of a knowledge pattern in our Arab world today.

Knowledge Foundation has been well aware of this, and has done many cultural, educational and pedagogical projects in various fields of knowledge such as literacy, the initiative of the Arab Reading Index, and others. We conclude that Arabic knowledge is a quoting pattern. What about the cosmic pattern? This global knowledge pattern embodies the characteristics of the knowledge society, the most prominent of which is the intensity of the use and production of knowledge in the society. Knowledge, values, and behavioral features characterize its members. Cultural life is characterized by enlightenment, rationality and openness. Its institutions are characterized by enabling environments for its members, stimulating the energies of creativity and innovation, as well as the existence of a knowledge-

based economy.

It should be noted that the basic components of the knowledge economy are - in part - its structures and activities, and the existence of intellectual and creative capacities related to improving the production processes at various stages, as well as the adoption of growth in the knowledge economy on the basis of benefitting from the available stock of knowledge and creative capabilities and skills of the human forces in development, innovation and invention. There is also a close link between the knowledge society and the knowledge economy, because the knowledge economy is the cornerstone of the knowledge society, which is more comprehensive. What we are witnessing now are knowledge economies that are fed into knowledge societies.

This transformation of the world is what helped to create the so-called "planetary civilization", and thanks to knowledge societies, a single human civilization has emerged that encompasses all parts of the globe. We are a part of this emerged planetary civilization. But the real problem is to which extent our intellectual and cultural pattern are compatible with the similar patterns of global civilization.

What we mean by planetary civilization are three accelerating variables that together form this





civilization. First, planetary means similar interrelated relationships within the flow of knowledge, money, manpower, markets and consumption.

The second variable is the cosmic consciousness, which means the existence of a scientific vision of the universe based on the technological revolution, electronic communication networks around the world and the tremendous scientific revolution witnessed in biology, chemistry, medicine, architecture and space. This means that there is a new universe pattern in the knowledge society that the contemporary human being is aware of.

The third variable is the recognition of the common good of humanity and interdependence in order to confront the problems of evolution, such as the

problems of the environment, population, cybercrimes and terrorism, which are now global phenomena.

The knowledge society has become a crucial issue in this world; either we are or not, it is also the necessity of existence of the universe as part of a single global civilization, and the knowledge society is a future state we seek to reach against an existing situation that we want to change.

If we turn to another relevant point, which is the cultural pattern of education, we will find that the trilogy of the mind-receiving pattern in this field destroyed any goals presented by any serious governments in the educational curriculum; there is a book filled with information, and a teacher conveys the content the book through a compulsive relationship to a passive



recipient not required to use his mind but to only memorize, and exams to measure what the learner memorizes and remembers as well as the teacher's ability to convey and teach. Cultural interface must exist to change the status quo and not just make efforts.

In addition to this trilogy of the mind-receiving pattern, Arab culture is unable to absorb the scientific progress, the technological and information revolutions in education, and the fields of work and production, which made us unable to enter the world of civilization, and made the new generations live in a hybrid culture and the postulates of the rigid past. At the same time, there are six main aspects to change the education system: the pedagogical pattern of the processes of education and criticism, the interactive pattern, the planetary or the pattern of openness to the world, the organizational pattern with open institutions, the technological pattern in management and education, and finally the epistemological pattern of work and production. Each pattern of these aspects has a set of universal values and principles that are interdependent and complementary.

Now I turn to the last point of the school-centered management model, which we hope to apply in our schools. This model is based on development policies

that are free of centralization and are related to the environment. These policies have important criteria, the most important of which are: the use of technology, the need for community participation of individuals, groups and organizations, support, follow-up and the role of the school; ultimately leading to comprehensive development in society.



Moderator: We turn now to the next speaker at this session, Heiko Sibberns, who reviews international tests in education. He focuses on one index, the TIMSS index, used to measure and evaluate the performances of eighth grade students in Germany since 2015, with a review of its application in the UAE.



Heiko Sibberns: Before discussing the details and results of this measurement index, I must first give the credit to the effort of the team of researchers



The Knowledge Summary

on this subject for their access to a vast amount of information. I have been working in the field of educational statistics and data analysis for more than 25 years.

We refer to what TIMSS means, which is a series of international assessments of the mathematics and science knowledge of students around the world. This standard index is part of a project launched by the International Association for Evaluation of Educational Achievement, the result of a series of studies and research conducted by the Association in the fields of mathematics and science. This index assesses the performance of science and mathematics for students in grades four and eight, as well as grade 12 students who specialized in certain fields, such as mathematics and physics.

The TIMSS index relies on information gathered from students, math and science teachers, fourth grade teachers and school principals. This index, however, is not only about assessment of students, performance measurement, and testing of their abilities and skills, but also about collecting a background of useful information about these students through questionnaires and questions about their views and trends in relation to math and science. We also learn about other backgrounds such as how students deal



In the final stage, we collect information from school principals about the environment or the appropriate climate, which they can provide to help the students to develop their abilities as well as provide demonstrations to students and teachers in schools.

with courses and curricula, dealing with computers and the internet, and how parents take care of these students. Information is also collected on teachers in schools, how they study mathematics and science in these schools, and what are the best methods of teaching. In the final stage, we collect information from school principals about the environment or the appropriate climate, which they can provide to help the students to develop their abilities as well as provide demonstrations to students and teachers in schools. If we look at the TIMSS index, we will find that it is used once every four years, since 1995. In 2015, it was the sixth session of the index, i.e. the index was used over 20 years to evaluate, test, and verify students' skills and performances.



Through the TIMSS Index, we have been able to gather a huge record of student and teacher performance levels in different countries around the world in relation to mathematics and science. In this period, the index covered 57 countries and 7 leading entities around the world. These include Armenia, Australia, Belgium, Germany, Hong Kong, Netherlands, Hungary, Canada, Japan, Denmark, France, Spain and Indonesia. Arab countries include the UAE, Kuwait, Bahrain, Qatar, Sultanate of Oman, Egypt, Jordan, Lebanon and Morocco.

I would like to review some of the results selected for the study on the TIMSS Index, which were also based on Global Knowledge Index figures and data. The index presented firstly the main results of the performance of fourth and eighth grades students in mathematics. Countries in East Asia were the top performers in evaluating performance levels for fourth grade students in mathematics. The results showed that the gap or the difference between these countries and the other countries was up to 23 points in favor of the first group in 2015, which is a significant change compared to 2011. It is important to observe the international standards in our TIMSS measurement index, which range from 100 to 500 degrees. The results showed that Japan, China, and South Korea

achieved high levels of performance for eighth grade students, and that the gap between East Asia and the next ranking countries has reached 48 in 2015, compared to 31 in 2011. As for the mentioned Arab countries, they occupied good positions and we will review the results of their performance levels later. In terms of science, the results were somewhat similar, with Singapore and South Korea taking the lead alongside Japan, Russia and Hong Kong for fourth-grade students. Singapore came in top in relation to eighth grade students' performance in science.

We now turn to review some trends in mathematics and science achievements. For mathematics, the results, which included the academic achievement of eighth grade students in 34 countries, show that the UAE, Bahrain, Qatar, Oman, Morocco, United States, Singapore and Chile, are among the 18 highest-performing countries.

Among the 13 countries in the group of medium-performing countries, are Australia, England, Hong Kong, Russia, Lebanon, Turkey, Hungary, Thailand and New Zealand. The lower performing group included three countries: Chinese Taipei, Jordan and Saudi Arabia. However, we can note the increase in performance rates between 2011 and 2015.

For the results achieved in science for eighth grade





students in 34 countries, there were 15 countries in the top performing group, including: United Arab Emirates, Qatar, Bahrain, Oman, Japan, Malaysia, Sweden, South Africa, Turkey. Among the 15 countries in the group of medium-performing countries, are United States, England, Norway, Russia, Australia, Thailand, Italy and South Korea. The lower performing group included four countries, i.e. Botswana, Iran, Jordan and Saudi Arabia. We note that there are large gaps in performance levels of academic achievement. Finally, we turn to the main findings of the study, which revealed that the Asian countries are once again leading the results in science and mathematics, and that the overall results of the performance levels for the total GCC countries were not relatively positive. However, the results were more positive for eighth grade students compared to fourth grade students.

Some countries also showed very encouraging trends. For example, Bahrain and Oman showed the highest increase in eighth grade achievement levels in mathematics, and Qatar recorded an increase in eighth grade achievement levels in science. Dubai has also achieved a high percentage for the fourth-grade students that achieved highest performance in science.



Moderator: Now we turn to Dr. Youssef Sadik. The first question is about the technical and vocational education index. What is its importance within the knowledge index?



Dr. Youssef Sadik: I would like to firstly point out the importance of the technical and vocational education index in terms of its inclusion in the knowledge index because it links several components of this index to many areas, foremost of which are economic openness, scientific and cognitive research, and the importance of association with modern social media. Some consider this index as a purely technical one, but it is an index that witnesses significant development within a broader framework of the Arab Knowledge Index, and then within the Global Knowledge Index today. It is an index that is developed by combining multiple combined data within a dynamic framework that reflects evolution of the technical education system. It also includes its association with a comprehensive education system. In short, it is the index that gives us an idea on the ease of relationship between the education and training systems with the economic system. In many Arab countries, this index often gives us a negative idea of technical education, which we consider manual, secondary or marginal



In short, it is the index that gives us an idea on the ease of relationship between the education and training systems with the economic system.

work. Moreover, this index gives us an idea about the ability of the state or society to create a system of training with specific objectives within a direct relationship with the labor market.



Moderator: My next question is about the basic structure of the technical education index; what about this structure and its components, and how are the variables of the indicator chosen?



Dr. Youssef Sadik: We used to work using the



The Knowledge Summit 2017

logic inputs and outputs but after careful reflection on reversing and translating this structure to the reality of States, especially those with demographic pressure, we developed the index components and variables which helped us to achieve a more dynamic look based on general reading for realities of the economy and the job market. But is there an institutional and economic framework that allows institutions of technical education and vocational training to engage in this comprehensive process? Here we give a quantitative reading for the index, but we link it to the qualitative one.

In Egypt, for example, there are huge numbers joining vocational education institutions, but when we relate that to the quality factor, we find that the demographic factor affects the quality of technical education and



The United Arab Emirates is the only country that has excelled in this field among its Arab neighbors, where it achieved a balance between three sectors: university education, pre-university education and technical education.

training there. When we complete this comprehensive and profound reading of the index, we give measurable variables and components at the same time.



Moderator: What does this profound and comprehensive reading of the index say about the reality of technical and vocational education in the Arab countries and perhaps in the framework of global comparison?



Dr. Youssef Sadik: Through what I have recently read about the results of an international study on the list of the top five countries in this area – the United States, Switzerland, Norway, Finland and the Philippines – I found that in America, for example, there is a very high demand for skilled labor in the economy sectors. There is a dynamic in this country



that pushes education institutions to link directly with the labor market and its needs; and thus it is open to the latest developments at the technological level. This trend contrasts with the list of countries lagging behind in this study, such as Mozambique, Togo, Nepal and Yemen, where technical and vocational education is merely a choice to open a field for unsurpassed students in the normal education.

In the Arab countries, there is a balance or correlation between the results of higher education and pre-university education.

The United Arab Emirates is the only country that has excelled in this field among its Arab neighbors,

where it achieved a balance between three sectors: university education, pre-university education and technical education.

It is also important to emphasize that technical and vocational education play an essential role in social mobility, democratization of education and in the achievement of equal opportunities for both men and women. However, there are a number of challenges that are imposed today on the technical and vocational training in our Arab countries, the most important of which is the need to facilitate opportunities for young people to use their capacities and energies for entrepreneurship and innovation. This is the first





challenge announced by UNESCO in 2025. The second challenge is to promote gender equality and give more opportunities for women in the field of technical and vocational education to enter the labor market. The third challenge, which is a fundamental one, is to facilitate the transition to green economies and sustainable development, and finally opening to the world and keeping up with competitiveness in developed world markets and economies.



Q&A session:

One of the attendees: When we read the indicators presented in the session, we find that they are all about ratios and numbers. What are the impacts of these indicators on the individual himself? As Dr. Hassan El-Bilawi said, the Arab citizen still lacks knowledge and awareness of these proportions and figures. It is possible to design an index of readiness for knowledge and



The Knowledge Index consists of several sectors that work together in a particular

not an index for knowledge, because knowledge - as Mr. Sibberns said - measures results, content and educational environment and not numbers and percentages?



Dr. Najoua Ghriss: First, I should clarify that the term “indicator” implies a means or tool used in the measurement of a specific object(s); it is merely a reference to something. For example, how we understand road signs and what each color means to the drivers and pedestrians. Even when we measure certain movements in respect of science or mathematics based on a

scale of 10 to 20, this does not make sense; it is just a reference or measurement, but you, as a specialized recipient, are trying to turn this figure into something understandable and explain what is hidden within this figure.

As for the Knowledge Index, it is a sector-centric indicator. We, as a team, perceive the index sectors that, if developed on the basis of numbers and data, will lead to a knowledge base. When you develop education, it will give you this knowledge base, and this is the case for other sectors, noting that each index has its own frame of reference.

One of the attendees: My question is about the part of the educational-enabling environment and the difference between it and the whole enabling environment that was used in the framework of the project that you talked about as a whole, and whether the indicators give us a relatively different picture taking into account the low level of technical education?

Is there a relationship between the issue of internationalization in the field of education and the issue of global culture or global civilization, which you talked about?





Dr. Najoua Ghriss: I would like to point out that the Knowledge Index consists of several sectors that work together in a particular context. We cannot talk about education, higher education, scientific research or technology without putting them within the overall development framework. To that end, we have devoted a sub-indicator to these enabling environments that can interact with all sectors. These sectors are not isolated but integrated to compensate one another.



Dr. Youssef Sadik: The mental image of technical and vocational education in the Arab world is very bad; perhaps because we inherited the aristocratic culture of the concept of work,

meaning that most Arab societies have an inferior view of craftsmen, as if manual laborers are slaves while those who do intellectual work are nobles. This is a false picture and must be radically changed by launching a comprehensive cultural revolution.



Dr. Hassan El-Bilawi: We have four issues: the issue of ratios and numbers of indices and the building of personality, the issue of technical education, the issue of internationalization, and the issue of the development of education. The fact is, the four issues are intertwined and linked. With regards to the subject of personality-building, the Arab world does not have standards for values, behavior, ethics, and attitudes. There is no single minister in the Arab world that can ignore the foreign indices and measurements in the world, which led, among other reasons, to the existence of this backward cultural pattern, if we exclude the UAE, which



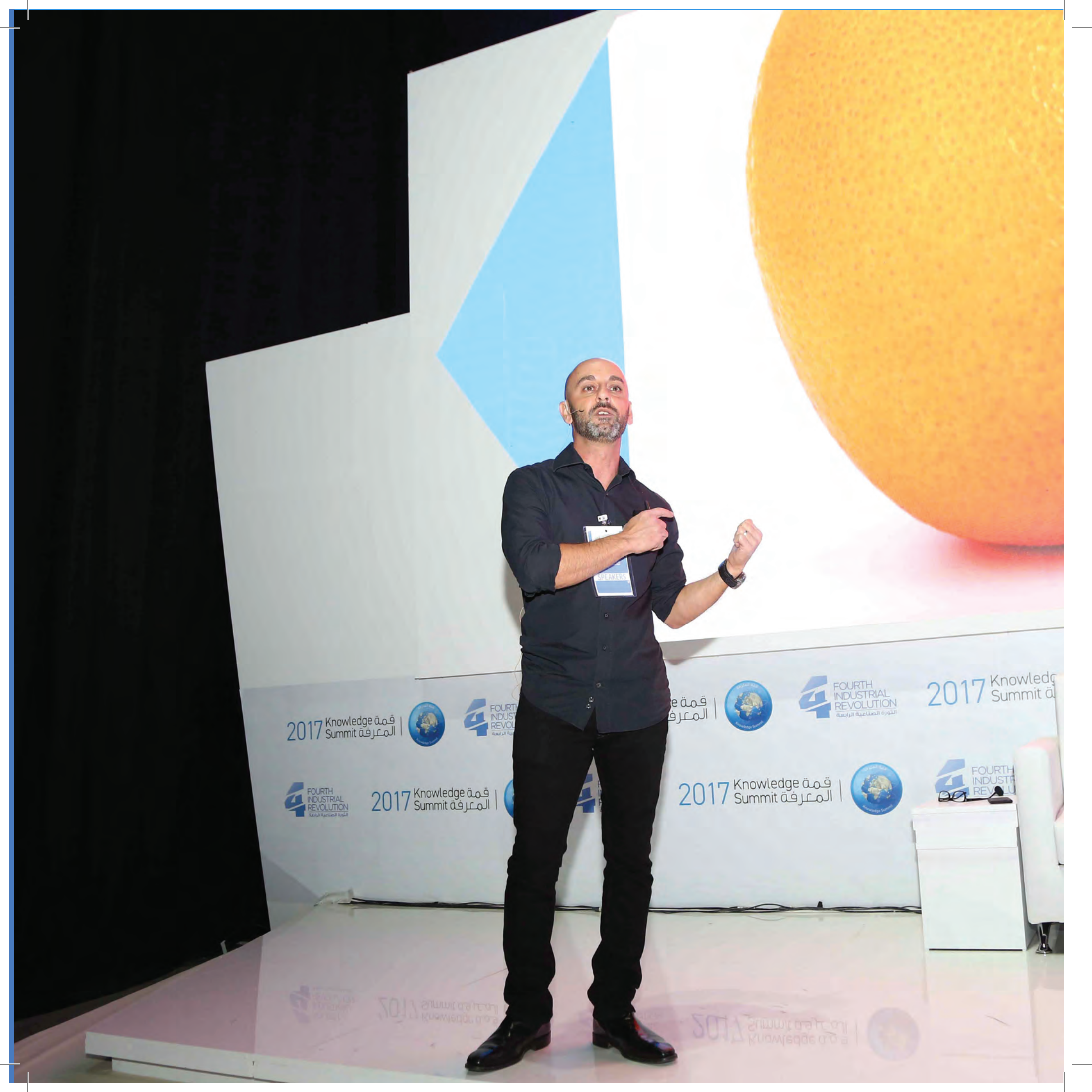
has a specialized institution in this matter. Thus, the reflection of these things on personality and character-building does not exist. As for technical education, it is merely an illusion that was exported to us by the West as they did with the educational sciences, which are also illusions that the Western world has recently been released therefrom. We come to the third issue of internationalization, which I consider an integral part of globalization. Arab countries such as the UAE, Qatar and Kuwait have 37% of the franchises of companies and international

restaurant series. As for the last issue of how to develop, I believe that this issue is greater than any capabilities and efforts in our countries, and that the only solution is to witness a cultural revolution like the one led by the UAE at a steady pace.



the Arab world does not have standards for values, behavior, ethics, and attitudes.





2017 Knowledge Summit | قمة المعرفة



FOURTH INDUSTRIAL REVOLUTION

قمة المعرفة |



FOURTH INDUSTRIAL REVOLUTION

2017 Knowledge Summit |

FOURTH INDUSTRIAL REVOLUTION

2017 Knowledge Summit | قمة المعرفة



2017 Knowledge Summit | قمة المعرفة



FOURTH INDUSTRIAL REVOLUTION

Knowledge Summit

Day Two

Third Hall - Session 2

The role of technology in improving our lives



Session topics

- **Intelligence Design: A hybridization of technology and design**
- **Biomimicry: Nature-inspired engineering, technology and design**
- **Intelligent machines and humans toward a seamless coexistence**
- **Designers and engineers sketching the future**

The Knowledge Summit 2020

Speaker



Armen Gharabegian

Founder and CEO of ShadeCraft Robotics.



ARMEN GHARABEGIAN

**FOUNDER AND CEO OF SHADECRAFT
ROBOTICS**

Armen Gharabegian is Founder and CEO of ShadeCraft Robotics, a California-based startup whose mission is to improve human life outdoors through robotics and AI-integration. In 2017, ShadeCraft announced and debuted its first product, SUNFLOWER, which was recently showcased at GITEX. SUNFLOWER is the world's first robotic shading system that tracks the sun for solar energy, connects to the IoT and smart home ecosystem, and is AI-integrated with voice activation and machine-learning. Armen has over 20 years of experience in production, industrial design, and product development. He is an accomplished inventor, entrepreneur, and industrial designer dedicated to creating transformative products that are both revolutionary and innovative. He is also an author and a speaker on intelligence design, biomimicry and robotics. Armen has BS and MS degrees in Industrial Design from Art Center College of Design in Pasadena, California, where he was also a faculty member for several years.





ARMEN GHARABEGIAN
FOUNDER AND CEO OF SHADECRAFT ROBOTICS



Armen Gharabegian: I am pleased to have this opportunity to participate with you in this session and highlight the main theme of this session from all sides. These are four main aspects that focus on the role of technology in improving our lifestyles. I will talk about robots and what they can do in this area that witnessed many changes recently and quickly. It is also useful here to talk about how we can narrow the gap between divergent views related to the subject of the session so that we can understand the robots and their functions very well, and the work methods of these machines as we see today.

Robots are used in many areas, including surgery, and I am happy to say that ShadeCraft Robotics has been involved in this field. Curiosity has already pushed me to ask doctors who perform such surgeries about the importance that the robot has added in this matter, and the difference observed between them and the use of the human element.

Let us start with "What?". I will focus on asking more questions than providing answers because we will reach these answers through discussions, exchange of views and interaction between us. What interests me here is our knowledge communication, as I am interested in learning from you as much as you learn from me in order to reach the desired knowledge.

The second aspect is: "Where?". And here I repeat that I will not give you answers as much as I ask questions so as to get the answers together.

Then... "How?" What I mean here is: How can we look into the future?

Returning to "What?". What information can I provide you that you do not already know? Let us simplify things as much as possible and put them in the proper and acceptable context for the human mind and in accordance with the laws and theories developed by scientists and references related to knowledge and innovation in the world of technology today.

Let us imagine for a moment that the evolution of our planet occurred only in one year, and that man appeared on the planet only 15 minutes ago. Let us also imagine that human evolution in the past hundred years has occurred in one minute in all fields. All these percentages and default numbers may be true if measured on a "nanosecond" basis.

Here I refer to the very fast pace of reading the newspapers today electronically compared to the situation in the past before the advent of the internet. Yes, the pace of technological change is fast. This remarkable change was not limited to machines and the revolution of the internet, but rather to its effects on human feelings, the movement of the body, the





individual's mind and his ideas, such as love, will, respect, etc.

Carlos E. Perez asked, "Is DL (deep learning) the latest human invention?". This is a question that bothers me a lot and differs from the term "artificial intelligence". But this is about robots. These nanotechnology machines are made and invented by machines as well. We need to know this matter well. The question is: What should we focus on?

I always ask myself this question. I remember what I have achieved. I have good ideas and met great people from all over the world. I discuss with them and share opinions. We have similar visions of inventions and innovations in our world.

Albert Einstein said: "If you cannot explain a topic simply, it means that you do not understand it well enough". I do not think that people often understand what they say by a large percentage, and perhaps the

example of this is what is raised all the time about the science of robotics, inventions and the functions of these machines and whether it has the ability to actually interact with the feelings of the human who used them or not.

The next point is, "What do we see?". Here I am talking about ourselves as human beings, our hopes and aspirations that we want to achieve. We have progressed from school to university, as well as our ideas and plans for the future that we adopt throughout our lives, as well as what we want from the rapid development of the world of technology. There is no doubt that new ideas can hopefully make a difference in our lives. And always, what remains important is, "What we can do to serve humanity through our potentials and energies". What can the human mind offer? Indeed, the best thing that this mind can offer is to evolve and adapt to this development.



Are we just listening, or do we hear? This question raises a very important issue concerning smart products and digital inventions around us. A good example of this point is jazz. One of the jazz musicians asked those who listened to it couple of years ago whether they were listening to the same musical tone or making their ears more focused on what was happening in the new technology used.

In my opinion, doctors, lawyers and engineers do not make more efforts in their business areas, which need beneficial innovation for humanity. Engineers, for example, offer new products and things with the help of robots that do the hard work now, while doing the simple part. This represents the big gap in many areas of business.

We do not think like machines that are faster and more durable, as the human mind is different from the robot and is also complex. Have you, in the last



Indeed, the best thing that this mind can offer is to evolve and adapt to this .development

20 or 30 years, performed any calculation of things manually without using a calculator? Of course not. The same goes for everyone I mentioned; engineers are inventing things and inventors are the ones who weave the threads of inventions through their dreams. The next point is – as you see on the screen– about our responsibility to humanity and our planet. I greatly appreciate the various governments around the world for their persistent and sustained efforts in the fields of solar and renewable energy to conserve the environment and help people. It is great to use nanotechnology applications in medicine, for example, and genetics to help create human organs, all of this must be for human benefit. There is no doubt that machines are necessary and have become a part of everything in life. Here, at some point, I have to ask: when I drive the car – for example – for the purpose of transportation, for the reason that makes the person do so, and why I use this method in areas such as agriculture, transport and others. There is something important that we do not think about – how do we look at these machines? Do we learn and benefit from it enough? Is it enough for the big companies to finance here? It is more important for us to look more at the reality and the things around us. We also have the task of teaching these machines, namely the teaching



The Knowledge Summary

of the movement of the human body, which many companies are aware of and working on at present. These companies are trying to teach them the law and even the behaviors of psychology.

Let us now turn to the theme of biological simulation, which means the use of industrial methods and ways to simulate biochemical processes. The importance of biological simulation is that it is used in particular as a protective agent for components and parts of robots, specifically protection of artificial intelligence and its operating system in order to keep working and perform its work perfectly.

For now, we are talking about how we adapt, which I consider to be one of the most important topics we discuss, because I think many people lack the capacity to adapt to everything that is happening around them. It is true that people speak clearly about the changes around them, but what makes us different so that we can actually change?

Another famous saying by Albert Einstein: "The true sign of intelligence is not knowledge but imagination". My question is: How can I invent together with other machines? Because machines will be invented anyway, what can I invent with them, whereas this thing shall be different from those machines that might invent something different from the thing that I invented?

In my opinion, the age we live today is no longer the age of knowledge, because such knowledge has been surpassed and has become an old fashion thanks to the invention of machines. So, the present age is an age of fancy.

Let us talk about a new point: the human mind. This is a particularly interesting subject, and I am not an expert in the science of the human mind, but I want to study it closely for its close connection with what we are discussing here about machinery.

I remember reading a very interesting article before coming here, talking about the subject of «artificial psychology». This is already the case for machines; it is basically trying to understand what is going on in the minds of those who invented it, and why they create it.

I have been teaching in a recent training course on the latest designs inspired by the orange; it is enough



Let us now turn to the theme of biological simulation, which means the use of industrial methods and ways to simulate biochemical processes.



to make a trip deep inside this orange to get a good grasp of the era of technology and its current stages of development. I remember when I recently visited Armenia – my home country – and go to a mountainous area there, a lady gave me an orange while we were travelling by train. This was a humanitarian attitude that I cannot forget. Here is the difference. Machines do not remember anything. but the human mind is able to do so. The factory produces these machines in a digital way. It works according to data stored within it, which is digitally guided.

We can certainly say that we are able to adapt to the environment around us and adapt to the developments of the technological age. We are witnessing a wonderful era now, with what technology offers us every day; we find solutions that are appropriate to all the problems of that era. All we need is a greater sense of responsibility for all this.

This famous phrase by Albert Einstein says: “The intuitive mind is a sacred gift and the rational mind is a faithful servant. We have created a society that honors the servant and has forgotten the gift.” We are always talking about many things that happen in our lives, such as new products and innovations, while we do not appreciate the value of the spiritual or human aspect that is inherent in the human mind, which is

the grace of God.

Let your children think and be creative and create. This boy loves playing with the sandbox, but he leaves it to go on an exploratory journey to a part of the house garden. He no cares about his playbox but wants to search and explore; this is human development in a simple and spontaneous way.

I imagine that if the working conditions remain as they are, the machinery will exceed us. So, we have to make a change and adapt to it.

That is the logo I’ve chosen for our company because we design and develop robots for use in various areas of outdoor entertainment. This logo also has great importance to us, especially as it embodies all I think about in relation to the company and the directions of its employees, both designers or engineers. It also means that we want to step aside and play outside the sand drilling toolbox.

This concept also enriches the context of human evolution; because if we want to make a fundamental transformation and invention with machinery, we must step aside from the general thought that we currently adopt which slows the evolutionary movement. I would like to read some words that I wrote after the public session and I am happy to share it with you. I said the following: “I do not want



The Knowledge Summit

2024

to appear as a traditional historian for events and to talk about developments that are taking place at an incredible speed in the world of technology and the digital age that we are witnessing. The new thing that I am presenting to you is a future vision that stems from my own vision and expectations about the future outlook and the prospects of the digital age”.

Q&A session

One of the attendees

I want to know more about the artificial intelligence that we've talked about, whether it exists in the universe, and whether the machines perform their functions on the basis of it. Does this kind of intelligence benefit humans and develop the abilities of the human mind?



We seek to develop children's abilities and energies of their intelligence, as a continuous process of evolution of the human mind in which we teach children to stop with handwriting and learning electronic writing skills instead.



Armen Gharabegian: This question may be philosophical but good. I personally believe in the existence of artificial intelligence in the universe as I think the universe is designed in a very precise and judicious way. I also think that there is a significant difference between the human mind and artificial intelligence.

One of the attendees I think we may have reached the point where we can encode and frame a vision for what you have described as free will. What are your expectations about this particular issue?



Armen Gharabegian: I think that there are very important points for this topic. Despite the expectations raised by many people in recent years, the theme of free will itself is still a



complex and thorny issue. I think that it has relation to assuming enough responsibility for the things and inventions we provide to people which benefit humanity, our ability to measure the success that is achieved here, and also the availability of some means to maintain this success.

One of the attendees Don't you think that it's the time to step aside? A long time ago, perhaps hundreds of years, we went a long way in the path of progress under the name of the Progress of the Tigers. About 20 years ago, we began to reconsider this approach and develop a new perception to face its consequences. What should we do?



Armen Gharabegian: This is a very important question and I wish to always ask questions like this in such events. The fact is that progress achieved by technology is very fast, and faster than imaginable. I think there are some governments that pay attention to this and seek to develop children's abilities

and energies of their intelligence, as a continuous process of evolution of the human mind in which we teach children to stop with handwriting and learning electronic writing skills instead. For example, it is not enough to make children watch a picture of the pyramids of Giza but it's more important to allow them to visit the pyramids and explore them by themselves; they need to see them on the ground instead of seeing their images or reading about them.

This is the way that enables changing the education system and its development so that we develop the spirit of innovation and creativity in children. We need to change the education system to keep pace with the rapid development of technology; so that children can introduce and invent unconventional things; we need the invention together with machines. If we do all of this, the free will that we desire will emerge.

One of the attendees I see that there is some contradiction in what we've talked about, specifically about the need for imagination that I think may be contrary to the training in acquiring the abilities, skills and learning that students receive in schools. While I was listening to the news, I think that there is a need to inspire our children and stimulate them to use



The Knowledge Summary



their minds in scientific and sports issues; because a computer might help in all of this. At the same time, we say that we must precede the computer using the human brain that outperforms it. Can the science, in all its development, keep pace with this?



Armen Gharabegian: Thank you very much for your question, and I think the one who asks the question is the first one disagreeing with what I have said

about this point. Firstly, I would like to refer to our labs in California, located close to Caltech, where researches are done on an ongoing basis. The fact is that the machines cannot be operated unless we teach and direct it to do so. For example, if you ask the robot to cut a piece of wood like the carpenter, you must teach him how to do it and, most importantly, be familiar with it.

The same applies to the architect in relation to design of buildings; he cannot leave the machines to do so without feeding the data, which is easy; because it is coding and encrypting this information automatically.



One of the attendees With the great evolution we see in the field of artificial intelligence, will it eliminate existing jobs or create more jobs?



Armen Gharabegian: I do not have a definite answer to your question, but I think there are many unemployed people who have lost their jobs after being replaced by robots in factories and big companies around the world. This caused economic and social problems in some countries. This problem draws the attention of the governments of these countries. In this regard, I reiterate my say about the need to work together with machines, as well as the need to train workers on some difficult tasks they may not be able to do, such as cleaning surfaces and windows of high-rise buildings, residential towers and other hard work. There is also a need to use other means to support these unemployed people, whose numbers are expected to increase by 2024, according to statistics.

One of the attendees: I would like to ask once again how much we are affected by the evolution we see in artificial intelligence, and perhaps its effects on the performance and productivity of factory workers. Is there a difference between the human factor and the machine in the calculations and others?



Armen Gharabegian: I think this is an inevitable matter because it is difficult for factory workers to keep up with the speed of machines, which are designed to be able to perform mathematical operations and algorithms that are precisely defined with great speed and accuracy. They also have the ability to perform scans via lenses with certain chips that help them to do so. They also analyze the particles and elements of things at once, which the worker cannot do, so it is difficult to imagine that the worker performs his duties at the same speed of machines.





The Knowledge Summit

Day Two

First Hall - Final Sesion

Honoring the participants of the summit

Honoring person

H.E. Jamal Bin Huwaireb,
CEO, Mohammed Bin Rashid Al Maktoum
Knowledge Foundation (MBRF)



Sponsors

H.E Jamal bin Huwairb Awarding Achievements of Knowledge Summit 2017

Knowledge Summit

17



I would like to thank all the speakers and organizers and I would like to extend my thanks and appreciation to the staff of Mohammed Bin Rashid Al Maktoum Knowledge Foundation, who organized this world summit perfectly. I would also like to thank Entourage and the United Nations Development Program.

I would like to thank the local and international media for the efforts exerted to bring this summit to light, particularly Al Arabiya, Dubai TV, Abu Dhabi TV, Emarat TV, Sama Dubai, Radio stations, Al Bayan, Al-Ittihad and Al-Khaleej

newspapers, Al Ain News, and many other media organizations as well as my colleagues at Mohammed Bin Rashid Al Maktoum Knowledge Foundation, as everyone has a role in organizing this summit. I also thank Yunus Saif and Nada Alshaibani for their creativity at this summit. God willing, we will continue to give, and to excel.

I ask everyone to share their observations and suggestions on the summit, so we benefit from all these in the coming summit: Knowledge Summit 2018. Thank you!



The Knowledge Summit
The Fourth Industrial Revolution



**Honored
persons**



Main sponsors



The Knowledge Summit
The Fourth Industrial Revolution



Carrier	Air transporters	Official transporter	Silver sponsor	Golden sponsor	Diamond sponsors
	 				 



The participants in the commemorative photos

- Innovators who participated in the Knowledge Exhibition
- Dr. David Hanson
- United Nations Development Program team
- Volunteers who participated in organizing the summit
- Mohammed Bin Rashid Al Maktoum Knowledge Foundation team
- Presenters of sessions: Nada Alshaibani, Yunus Saif, Azza Al Mughairy, Amira Mohammed and Nouraldin AlYousuf
- Entourage team



The Knowledge Summit
The Fourth Industrial Revolution

#Knowledgesummit

[Register Now](#)
knowledgesummit.ae

