

ASREN 



Under The Patronage of His Excellency  
**Ahmed Aboul-Gheit**  
Secretary General of the League of Arab States

# Summary Report e-AGE 2017

7<sup>th</sup> International Platform on Integrating  
Arab e-Infrastructure in a Global Environment  
League of Arab States, Cairo, Egypt  
3-4 December, 2017



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*Main Office: Geothestraße 7 - 40237, Düsseldorf, Germany*  
*Executive Office: P. O. Box: 921100, Bldg. No. 45, Abdul Raheem Al-Waked Street,*  
*Shmeisani, Amman 11192, Jordan*

*[www.ASRENOrg.net](http://www.ASRENOrg.net)*  
*Contact: [info@asrenorg.net](mailto:info@asrenorg.net)*





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## 1. Overview

The Arab States Research and Education Network (ASREN) was launched in 2010 under the auspices of the League of Arab States and the UN Global Alliance for ICT and Development (GAID). ASREN is a legal not for profit regional Arab organization that aims to implement, manage and extend sustainable Pan-Arab e-Infrastructures dedicated for Research and Education communities and to boost scientific research and cooperation in the Arab countries through the provision of world-class e-Infrastructures and e-services.

### **Vision**

“To boost scientific research, innovation and education levels in the Arab countries to the highest world standards by uplifting efficiency and productivity of research and education communities, and by setting up pan-Arab collaborative research and education projects and activities through high-speed networks.”

### **Mission**

“To implement, manage and extend sustainable Pan-Arab e-Infrastructures dedicated for the Research and Education communities and to boost scientific research and cooperation in member countries through the provision of world-class e-Infrastructures and e-services.”

### **Objectives:**

- Build, maintain and consolidate regional e-Infrastructures dedicated to e-science and education across the Arab countries, by developing, managing and operating a regional network that interconnects the NRENs of the Arab countries.
- Create and sustain National Research and Education Networks (NRENs), by supporting them to implement leading-edge technological solutions while pursuing cost-effectiveness and favoring the exchange of expertise and best practices amongst NREN members.
- Facilitate collaboration and cooperation among scientists and educators in the Arab region by increasing the availability and accessibility of knowledge resources, promoting the development of content, facilitating knowledge exchange and transfer processes across the region and with relevant partners in Europe and worldwide.
- Promote the adoption and usage of e-Infrastructures and services among the scientific community, also through training and tutoring activities and strengthening regional partnerships and encouraging joint scientific research at all levels.



## 2. What is e-AGE all about?

Integrating Arab e-infrastructure in a Global Environment, e-AGE, is an annual international conference organized by the Arab States Research and Education Network, ASREN. Since the launch of ASREN in December 2010 at the League of Arab States, it was decided to organize e-AGE every year in an Arab country. e-AGE is in line with ASREN's major objectives that are related to dissemination and awareness, promotion of research collaboration and joint activities, and establishment of research networks in the Arab region and worldwide.

ASREN started concrete steps towards interconnecting researchers and academics across the Arab States by launching its first PoP in London. ASREN is working with its partners to establish new PoPs in UAE, Egypt and the Maghreb region. ASREN is also supporting the development of NRENs in some Arab countries. ASREN gives special attention and more focus on users and how the e-Infrastructure can support their needs in terms of services and applications. More sessions will be dedicated to the users to present their research and education activities and then to identify how these users can be better served by NRENs.

## 3. e-AGE 2017

e-AGE is meant to be the launching pad for Research and Education connectivity and cooperation. It brings together ASREN, EUMEDCONNECT, AfricaConnect, GÉANT, AfREN and INTERNET2 stakeholders and the region's foremost innovators, leaders, scientists, and businesses to discuss and debate new models of innovation, integration of research and education networks, policies for sustainable development in education, means of knowledge sharing and dissemination, capacity building programs, and region-wide e- infrastructure deployment to tackle today's crises in climate change, global economy, food, water scarcity, alternative energy, and environmental issues. The forum can lay the foundation for a dream of many of today's leaders towards a global e-infrastructure for R&E, based on real life inclusiveness beyond any political protocols.

In e-AGE 2017, the main focus has been on Intercontinental Connectivity, and how internetworking has contributed to Education, Science and Innovation. More discussions, sessions, meetings and workshops were facilitated to present and exchange research and education experiences and innovations. Therefore, the theme of e-AGE 2017 was "EDUCATION, SCIENCE AND INNOVATION".

### **e-AGE 2017 included the following events, workshops and meetings:**

- The main conference e-AGE 2017, 3-4 December 2017.
- The 10<sup>th</sup> Event on Euro-Mediterranean e-Infrastructure.

- The 7<sup>th</sup> Annual Meeting of ASREN.
- EUMEDCONNECT3 and AfricaConnect2 Project Meetings.
- Internet2 SIG Middle East Meeting.
- ASREN’s workshop on “Computer Security Incident Response Team (CSIRT).”
- AROQA 9<sup>th</sup> Annual Conference, 3-4 December, 2017.

## 4. Participants

As a Platform on Integrating Arab e-Infrastructure in a Global Environment, e-AGE 2017 was attended by more than 100 academics, network professionals, researchers, scientists, and high-level decision makers from governments, enterprises, NGOs, embassies, academia, and civil society. The e-AGE Platform became a very important venue for networking among experts and scientists from all over the world.

Representatives from many countries participated in e-AGE meetings including Algeria, Chad, Egypt, Greece, Iraq, Ireland, Italy, Jordan, Lebanon, Libya, Luxembourg, Morocco, Netherlands, Nigeria, Oman, Palestine, Saudi Arabia, South Korea, Sudan, Tunisia, the UAE, the UK, and the USA.

## 5. Highlights from the Opening Ceremony

### 5.1 Session (1): “Opening Ceremony and Welcoming Remarks”



*Salem Al-Agtash moderated the opening session of e-AGE 2017 jointly with AROQA 9<sup>th</sup> Conference*

Salem Al-Agtash commenced the opening ceremony of e-AGE 2017 jointly with AROQA’s 9th conference, he said: “Under the Patronage of His Excellency His Excellency Ahmed Aboul-Gheit, Secretary General of the League of Arab States, we begin today with the official opening of the 7th International Platform on Integrating Arab e-Infrastructures, and the 9th annual Conference on Quality in Education as unique platforms to create dialog, exchange ideas, and work together to build strong communities in universities, businesses and organizations and to create a sustainable bridge for research, education and technology with our partners in all over the world, and in the context of the European funded projects: EUMEDCONNECT3 and AfricaConnect2.



We meet today with more than 200 participants representing businesses, universities and governments from all over the Arab region, Europe, North and Latin America and Asia in a frame work of panel sessions, workshops and presentations with more than 25 research papers on e-infrastructures and quality of education. With high-speed networks and quality of education, we bring great potential for creativity, innovation and opportunities to our citizens across the Arab Region“.

**The opening continued with the following opening keynotes:**

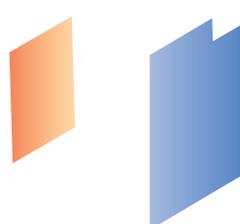
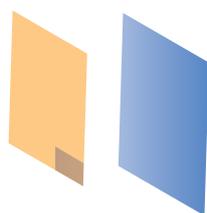


*HE Ambassador Dr. Badereddine Alali, Arab League Assistant Secretary General and Head of the Social Affairs Sector, League of Arab States, Egypt*

HE Dr. Badereddine commenced his speech by welcoming Ambassador Ivan Surkoš, HE Dr. Abdul Razak Al-Issa, HE Dr. Talal Abu-Ghazaleh, and the distinguished guests. He conveyed the greetings of His Excellency Mr. Ahmed Aboul Gheit, Secretary-General of the League of Arab States, and his wishes for successful and fruitful conferences, which will result to an Arab vision to promote and develop cooperation in the field of education and scientific research.

HE Dr. Baderddine also expressed his gratitude to the Arab States Research and Education Network (ASREN) for organizing this important event and for the continuous efforts to integrate the Arab e-infrastructure in a global environment, linking universities and research and education institutions in the Arab world, also for the Arab Organization for Quality Assurance in Education (AROQA) for its continuous efforts to enhance the quality of education in the Arab world.

By recognizing the importance of developing the status of education, the Arab countries has formulated policies and strategies and held conferences and symposia, which are consistent with the implementation of the fourth objective of sustainable development plan. Education is the cornerstone of a country that hopes to achieve prosperity and progress. The country that works to develop its educational system is the country that excels in all fields, at all levels, social, cultural or political, to reach a qualitative outputs of education capable of building and giving. Education is a comprehensive operation in its various aspects and dimensions, and a participatory responsibility between the government, the family, civil society and the private sector.





The Educational system in the Arab world faces great challenges resulting from rapid changes, information revolution, technical progress and the so-called knowledge society, especially as the rest of the world seeks to develop its educational systems continuously to reach the best outputs with the least effort and cost. Therefore, we must focus on boosting scientific research, innovation and education levels in the Arab countries to the highest world standards by uplifting efficiency and productivity of research and education communities and by improving the quality of education.

In conclusion, HE Dr. Baderddine asserted on the League of Arab States readiness to put in place its capabilities and expertise to contribute to the implementation of the outcomes and recommendations of these conferences.



***HE Ambassador Mr. Ivan Surkoš, Head of the Delegation, Delegation of the European Union to Egypt***

HE Mr. Ivan commenced his speech by expressing his sincere thanks to be in such a distinguished assembly, he continued: “it is events like these that provide unique opportunities for networking and matchmaking, for exchange of ideas, cooperation in education, research and innovation, and for new cooperation prospects between Arab States and also Europe. Your distinguished conference this year chose “Education, Science and Innovation” as the main theme for your 7<sup>th</sup> round. Fundamental changes have occurred both in the EU and in the Arab countries over the last few years. It seems to me that, despite the tormented evolution of our regions, and maybe precisely because of that evolution, a constant remains to persist, and this is scientific.”

HE Mr. Ivan highlighted that the European Union strongly believe that education, research and innovation are crucial in addressing the most urgent challenges the region is facing.

The South-Neighborhood is a strategic partner with which the EU entertains a long-standing relationship. Fundamental changes have occurred in the region in the last few years and I feel that precisely because of this rate of change scientific collaboration can provide consistent common ground. Scientific research has the ultimate goal of increasing knowledge and promoting sustainable development in the region at large; research can provide answers to major societal challenges, which affect all of us directly such as food security or water resources management.

In line with the EU Global Strategy, EU cooperation with the Southern Neighborhood countries takes place in the framework of the European Neighborhood Policy (ENP), which was reviewed in 2015 to respond to the new challenges of an evolving neighborhood. The review refocused the ENP to ensure a differentiated approach to partners, recognizing the different aspirations of each country, joint ownership, based on both partners’ needs and EU interests, and more flexibility in the use of EU instruments. The EU is investing a lot in economic development, resilience, security, democracy and the rule of law under the revised ENP. By using a tailor made approach of the ENP with each and every country, we seek to ensure it addresses most effectively the real needs and interests.



The new approach has been crucial in reenergizing the EU's relations with the ENP partner countries, including through the negotiation and adoption of new Partnership Priorities, where education, research and innovation cooperation was beyond doubt highlighted in the adopted PP as an area of mutual interest.

We strongly believe that research and innovation could be crucial in addressing the most urgent challenges the Arab States and well as Europe are facing. However, we need to work together and we need to create the enabling environment and tools for that to happen. There is a need for a reinforced interaction between all innovation stakeholders in the region-academia, public authorities, NGOs, and private sector.

HE Dr. Ivan concluded his speech by wishing a successful event and further collaboration under the EU programs and beyond.



***HE Dr. Abdul Razak Al-Issa, Minister, Ministry of Higher Education and Scientific Research, Iraq***

HE Dr. Abdul Razak commenced his speech by welcoming the distinguished guests, he also expressed his pleasure to attend this important international platform. He asserted that education is the beacon that guided the people to their way in life, that is why education and knowledge are essential in promoting prosperity and development of communities.

He added that we must focus on the quality of education in the Arab world for the improvement and development of outputs and the achievement of all requirements and the needs of society and community requirements.

He concluded his speech by saying “This event is an opportunity to consolidate our efforts together towards developing a better network infrastructure and a better quality education for a prosperous future of our young people”.



***HE Dr. Talal Abu Ghazaleh, Chairman of ASREN and AROQA, Jordan***

HE Dr. Abu-Ghazaleh commenced his speech by expressing his gratitude to HE Mr. Ahmed Abul-Gheit, Secretary-General of the League of Arab States, for his generous patronage to the 7th International Platform on Integrating Arab e-Infrastructure in a Global Environment and the 9th Annual Conference on Quality Assurance and Accreditation, which is considered as a strong support for the hosting of research and education activities and e-Infrastructure networks for the entire Arab region.

HE also expressed his gratitude to the European Commission for its continued support and generous funding for the development of research and education networks in our Arab region, and a special thanks to the Egyptian Universities Network and the Research Network for their sustainable contribution to the development of the e-infrastructure of scientific and knowledge projects.





He continued: “today, there is a growing interest in National Research and Education Networks (NRENs) in Arab countries to join the Arab States Research and Education Network (ASREN), as well as national research and education networks in Jordan, Morocco, Sudan, Egypt, Tunisia, Somalia, Iraq and Palestine.

Therefore, we are always looking forward for these NRENS in Arab countries to become a crucial part of ASREN as owners and contributors, to help support and promote the development of research and e-infrastructure in the Arab region.

We highly value ASREN’s continuous efforts to help the Arab region in the development of the National Research and Education Networks and to provide e-infrastructure connectivity among the Arab countries at the regional level.

We recognize now that the first steps involve linking a number of e-infrastructure in Jordan, Lebanon and Egypt with ASREN’s Point of Presence (PoP) in London. This PoP is currently linked to ASREN network and to other research and education networks around the world, and we are pleased to connect the European Network GEANT to all NRENs in the Arab region for research and education purposes and to access research and education resources available on educational networks from this exchange point.

We strongly believe that the continued work on the development of ARENS’s PoP in many Arab countries will contribute to the development of integrated Arab infrastructure.

We are here hoping to launch the Arab Connect Project, which aims to establish high-speed broadband networks linking neighboring Arab countries with regional research and education networks around the world, and to contribute to the development of tools for cooperation and sharing between scientists, researchers and students, and improve the quality of research and education.

Due to the challenges related to the financial cost differentials of intra-border connectivity in Arab countries and their high prices, and due to the lack of adequate investment, we have not yet been able to achieve the ambition of the Arab Connect project, which we hope that the League of Arab States will adopt and put in effect in the next phase.

This prestigious meeting and its outcomes will contribute to the expansion and development of the framework for the effective participation of Arab NRENs, linking them to the organization’s Points of Presence towards the development of an Arab e- infrastructure that contributes in enhancing the role of research and education communities in the Arab world.”



## 5.2 Keynote (1):



***Michael Foley, “NRENs: Access Pathways to Global Knowledge”, Former Lead Distance Learning Specialist at the World Bank, Ireland***

The presentation focused on the key aspects of the report of the World Bank on “The Role and Status of National Research and Education Networks in Africa”, which are applicable universally. The aim of this report, which is an open education resource, was to provide guidance to governments, institutions, and development partners on how to approach the provision of advanced information and communication technology (ICT) services to the higher education and research community in Africa. The premise of the report that the organization of ICT services and connectivity is best provided by a dedicated organization called the National Research and Education Network (NREN) is based on international best practice and is applicable worldwide.

Beginning with a brief overview of progress to date in all regions in Africa, including North Africa, the presentation dwelled more extensively on the important but often invisible role that NRENs play in the creation and the sharing of knowledge. NRENs not only provide the essential connectivity services to higher education institutions, but they do it uniquely within a global community that has its own rules and agreements for access and identity. In this way they provide customized services to the academic community that are not part of the offering of commercial Internet Service Providers (ISPs). The creation of an NREN in a country that is also connected to its neighbors and globally, is a vital step to break through the academic isolation that universities and colleges may have experienced in the past and it can be the catalyst to be invited to join international research consortia. Creating new knowledge through research is now a thoroughly collaborative global endeavor, but participation is limited to those with adequate connectivity. And teaching and learning itself, the ‘E’ in NREN, has moved beyond dependence on textbooks and local lectures to an exercise in independent learning based on researching multiple sources of knowledge, which are primarily in digital form and accessible through electronic networks.

The presentation outlined the case for the establishment of an NREN, along with the services that it may provide, with possible governance models, and the various ways it can be made financially sustainable. Finally, the trends in the use of ICT in higher education and how they might affect the operation of NRENs are discussed as a prelude to guidance on how to go about establishing or strengthening an NREN, with recommendations to the government, the private sector, institutions, and development partners.

While the World Bank’s World Development report of 2016; “Digital Dividends” makes the case that the Internet is a driver of economic growth, it warns that ‘analogue’ issues can impede its efficacy. So too with NRENs. While international best practice demonstrates that NRENs are the best vehicle to provide digital access to researchers and students, the networks themselves are not responsible for the policy environment that will ensure that they will have an impact. An enlightened policy for higher education, including support to researchers



and teachers, the encouragement of innovation, and a transparent regulatory system are the ‘analogue’ requirements that underlay a country’s goals for a quality education system. But without a well-functioning and sustainable NREN in this digital age, the attainment of these goals will be limited. Therefore, it can be argued that an NREN, while not sufficient in itself, is a necessary and key element in a higher education system that is fit for today’s world.

The Report concludes that the full benefits of the information and communications transformation will not be realized unless countries continue to improve their business climate, invest in people’s education and health, and promote good governance.

In countries where these fundamentals are weak, digital technologies have not boosted productivity or reduced inequality. Countries that complement technology investments with broader economic reforms reap digital dividends in the form of faster growth, more jobs, and better services.

*“Education is not the filling of a pail, but the lighting of a fire.”*

### 5.3 Appreciation and Recognition

In recognition and honor for their efforts and their role in the success of the e-AGE 2017 conference and activities, and for their continuing support to ASREN, HE Ambassador Dr. Badereddine Alali along with HE Dr. Talal Abu-Ghazaleh, have given the appreciation shields to the following:



*League of Arab States for hosting the event*



*Egyptian Universities Network, represented by Ahmad Hassan*



*Jordanian Universities Network, represented by Saleh Al-Sharaeh*



*Michael Foley, Former Lead Distance Learning Specialist at the World Bank, Ireland*



*The Internet Society as a Silver Sponsor*



*ICANN as a Sponsor*



*International Telecommunication Union as a Partner*

## 6. Highlights from the Sessions and Discussions

### 6.1 Session (2): “e-Infrastructures Developments in ASREN’s Region, NRENs Success Stories”



*Yousef Torman, co-Managing Director, ASREN, Jordan (Chair)*



*Ahmad Hassan, “Perspectives of Egyptian University Network”, EUN, Egypt*

During the past decades, many countries invested a lot of money and efforts to establish their national research and education networks (NRENs). These NRENs established several connections that connects Higher Education and Research Institutes with each other and with the Internet. These days, a new trend is emerging.



This new trend converts these national research and education networks to centers of excellence that provide several electronic and knowledge services to the participating institutes. These services include digital library services, preserving the intellectual properties of the participating institutes, building databases and repositories of existing equipment and allow resource sharing. These services are extended to allow management information systems and decision support systems, scientific data management, e-learning facilities, e-courses sharing and reusability, massive online open courses, and centralized virtual labs.

Ahmad Hassan provided a case study of extending the Egyptian Research and Education Network (Egyptian Universities Network) to the Electronic and Knowledge Service Center.



***Abdulmonem Al Kharusi, “Oman Research and Education Network”, The Research Council, Oman***

Oman Research and Education Network (OMREN) is a central part of a sustainable infrastructure that contributes to the emergence of an effective national innovation ecosystem. It provides the research and education community in the Sultanate of Oman with a common network and collaboration infrastructure dedicated and adapted to their needs.

OMREN was activated by mid-2016 during the financial crises using innovative financial module and strategic partnership with the private sector for quick kick off and sustainability. Key services such as MPLS high-speed connectivity between members, International connection to global NRENs, commodity internet, and important publications databases were precisely selected to increase the value propositions of collaboration, research capacity building and resource cost optimization. Partnership with the national communication provider shifts important services from being cost center to a revenue generator such as highly reliable data centers and existing mesh MPLS and Internet networks. Immediate gains for members were revealed and success stories were recorded. Universities meeting with their affiliated partners at GEANT and Internet2 with high-speed access to library systems, video conferencing and internet leverage member’s great satisfaction.



***Yousif Asfour, “AUB Contributions Towards Lebanese Research & Education Network”, AUB, Lebanon***

Building a traditional NREN in Lebanon is a challenge due to the costs and availability of high performance and reliable network services. Therefore, Instead of focusing on an impossible mission, we decided to flip the NREN concept on its head, and focus on providing research and collaboration services first, and utilizing the success of these services to drive the development of the network.

Yousif Asfour outlined the approach, successes and challenges thus far, he also outlined their goals for the next year, and how they plan to achieve them.



***Salem Al-Agtash, “ASREN Evolution”, German Jordanian University and ASREN, Jordan***

ASREN is a non profit organization registered in Germany and operates under League of Arab States, with shareholders: Abu-Ghazaleh GmbH, JUNET (Jordan), EUN (Egypt), CNRST (Morocco), SudREN (Sudan), CCK (Tunis). SomalREN (Somalia), PalREN (Palestine), and IraqREN (Iraq) will become new shareholders of ASREN. ASREN has been co- funded by EUMEDCONNECT, Africaconnect2 projects which are sponsored by the European Commission and participated in several other projects including MAGIC and OPEN. ASREN is meant to serve a potential of an estimated 200 Million youth with about 20 Million students studying in 1000 institutions in 22 Arab countries. ASREN is pushing a development of “Arab Connect”, that is mostly centered on interconnecting all Arab countries with dedicated high speed network to link to regional RENS in ASREN PoP in London PoP (AGE – OP). The PoP has 1 Gbps cross connect to Open GEANT, linking to GEANT, Internet2, RedClara, UbuntuNet. The main interconnections are now: JUNET 1Gbps link operational – SESAME, Lebanon AUB 800 Mbps operational, Algeria 2.6 Gbps link operational, and other international links from Egypt, Saudi Arabia, UAE, Qatar, and Oman.

ASREN has actively deployed platforms related to Science Gateway in Jordan, Morocco, and Algeria, and eduroam services in Jordan, Morocco, Saudi Arabia, Algeria, Oman, and Qatar. ASREN is also active in AfriGeoss and NEAAR projects and facilitates access to resources available elsewhere (GEANT, Internet2, RedClara, UbuntuNet, APAN). These included: Grid, HPC, and Cloud, Learning platforms (MOOCs: EdX, Coursera, OCW..), Scientific applications, and Data sources, content, and repositories. Furthermore, ASREN has organized important e-Infrastructure capacity building workshops and conferences and regularly publishes newsletters, reports, success stories, and case studies.



***Saleh Sharaeh, “Jordanian Universities Network: New Development”, JUNET, Jordan***

JUNet.net is a non-profit with Limited Liability Company, LLC. JUNet is registered in Jordan in July 2003. The JUNet has fundamental objective to implement and manage e-Infrastructure of official Jordanian University. Recently, a change to our company bylaws that will enable JUNet to add to its member private and semiprivate universities. In 2017, JUNet extended its services through ASREN to boost scientific research and cooperation in member countries through the provision of world-class e-Infrastructures and e-services.



## 6.2 Keynote (2):



***Karim Abdelghani, “ITU Measuring the Information Society Report 2017: Focus on the Arab Region”, Program Coordinator, ITU Arab Regional Office, Egypt***

In his presentation, Karim Abdelghani highlighted the main outputs of the latest edition of the Measuring the Information Society Report 2017. This annual report presents a global and regional overview of the latest developments regarding information and communication technologies (ICTs), based on internationally comparable data and agreed methodologies. It aims to stimulate the ICT policy debate in ITU Member States by providing an objective assessment of countries’ ICT performance and by highlighting areas that need further improvement.

The presentation started with an overview of the most important long-term trends as they emanate from ITU data collections. These trends are brought further into evidence by exploring the ICT Development Index (IDI). The IDI is a powerful tool for monitoring progress towards a global information society and is a core feature of this report. This year’s report analyses IDI developments over the past two years, both at the global level and at the regional level. The area of ICTs is very dynamic and another digital revolution is approaching, one which will transform business, government and society. Four emerging ICT trends which are at the heart of this revolution are analyzed in MISR 2017, namely the Internet of Things (IoT); cloud computing; big data analytics; and artificial intelligence (AI). Last but not least, the presentation also presented the findings of the report pertaining to the Arb region.

## 6.3 Session (3): “e-Infrastructures Boosting Education”



***Walid Karam, UOB, Lebanon (Chair)***

***Richard French, “Is the Global NREN Community Ready to Support Transnational Education?”, TNE Business Development Manager, Jisc, United Kingdom***

Transnational Education (TNE) is an area of significant growth across the globe, providing education developed in one country and delivered in another. For thousands of students across the Middle East and North Africa, TNE is offering opportunities that would have been hard to access even a decade ago. Where once students had to travel abroad to study at an overseas institution, now they can do it more affordably in their home country. The technology required to support TNE - virtual learning environments (VLEs), videoconferencing applications, online assessment platforms - relies on reliable, high-performance connectivity operating seamlessly between different countries and continents.



But is the global NREN community ready to provide the seamless intercontinental connectivity needed to support TNE?

For a number of years Jisc, the national research and education network (NREN) for the UK, has been working in partnership with NRENs and commercial internet providers around the world to improve the connectivity TNE students and staff depend on, helping them to reliably access services and learning environments hosted in the Europe, from both on or off campus.

Drawing on these recent experiences Jisc will highlight the services NRENs need to develop now to be ready to support TNE in their country, and identify what might be needed in the near future.

Jisc's work to date has emphasized the importance of strong NREN partnerships to provide the intercontinental connectivity needed to make TNE a success. To facilitate stronger NREN collaboration, in early 2017, working on behalf of GÉANT, Jisc helped establish the GÉANT TNE Special Interest Group (SIG-TNE) to act as forum for NRENs for address common challenges in supporting TNE.

In the long term, the aim of the group is to harmonies country approaches and NREN collaboration to ease the delivery of TNE globally. Jisc will identify some of the barriers to overcome to achieve this aim, including gaps in TNE data at a regional, national and global level; the lack of global connectivity policy to support TNE; and the challenges of interoperability between NRENs.

The Middle East and North Africa is already a hub for TNE partnerships with forecasts indicating activity is only set to increase in the near future. The increasingly globalized nature of education means institutions are demanding as a minimum fast, reliable intercontinental connectivity to support their teaching and learning. And this, in turn, relies on NRENs cooperating and working effectively in partnership. Are we ready to support the education institutions we serve to achieve their aims?

In his speech, Richard French shared experiences of working with NRENs and commercial providers to support TNE in other parts of the world, recommending approaches and operating models that can be adopted in the Middle East and North Africa, he also described which services NRENs will need to develop now and in future to effectively support TNE activity in their country. He concluded his speech by Identifying common challenges facing NRENs supporting TNE and highlight the ways NRENs can work together to overcome barriers.



***Yasser Dakroury, “EELU Innovative Learning Model to Qualify STEM Teachers”, President, Egyptian E-Learning University, Egypt***

The Egyptian E-Learning University (EELU) is developing an integrated diploma to qualify a new generation of STEM teachers in Egypt, who are capable to provide adequate and innovative teaching in Science, Technology, Math and Engineering-based subjects, embracing STEM philosophy and are capable to bridge the gap between the current school education



methodologies and the international best practices in the field of STEM education. This diploma will be delivered through the EELU innovative learning model using a blended approach that combines face-to-face lectures, video conference sessions, and virtual classrooms in an integrated educational model.



***Suzanne Samir, “The Role of Libraries: Dissemination of Technology in the Education Process”, Head of Educational Services Section, Bibliotheca Alexandrina, Egypt***

There is an increasing awareness about the prospective and important role of e-learning. It is a must not only in the elementary education but also in the continuing education for professionals and in applying innovative services in order to reach new communities. Implementing powerful e-learning strategies in librarianship, academic, and practical sectors makes us think about the libraries' call to action. This call to action urges information technology personnel to work on the infrastructure for connecting all available and needed platforms serving this area. E-learning is a noteworthy tool for education and training in general and especially for librarianship and information science fields. Nowadays, the Internet is the best tool of information production in general; the education field has experienced significant gains due to the wide connections offered by the Internet. It currently facilitates a variety of services ranking from a quick virtual lecture to a comprehensive course or program that can offer new perspectives for scholars, professionals, and community members. Libraries must have a great input in this regard and must provide complementary coverage of new techniques, infrastructure to respond to the new needs.



***Rami Zaki Iskander, “e-Learning in the Egyptian Public Universities: Overview and Future Prospective”, Director of National E-learning Center, Supreme Council of Universities, Egypt***

Rami Zaki commenced his speech by introducing an analysis of the current status of e-learning in Egyptian universities from 2009 till now. Also, he described the various strategies adopted in producing e-courses in the National e-Learning Center those years, with full statistics of students number and faculty members who use e-learning annually.

At the end, he provided a reference to the difficulties facing e-learning in the Egyptian universities and some visions and solutions proposed; with a proposed future strategy for e-learning application in Egyptian universities.



***Iman Abu El Maaly, “NRENs and Library Consortia: Towards an Effective and Collaborative Relationship”, Associate Professor, Electronic Information for Libraries (EIFL), Sudan***

EIFL (Electronic Information for Libraries) works with libraries to enable access to knowledge for education, learning, research and sustainable



community development. EIFL works in collaboration with libraries in 54 developing and transitional countries in Africa, Middle East, Asia Pacific, Latin America and Europe. EIFL works to expand access to knowledge in a cost effective and sustainable way by supporting the establishment and development of strong national library consortia.

Billions of people in developing and transition economy countries cannot benefit from the new opportunities knowledge provides due to factors such as the high cost of e-resources, legal barriers to accessing and using information, and poor telecommunications infrastructure. EIFL believes that Library Consortia and National Research and Education Networks (NRENs) share the same objectives for facing this challenge. They provide different means for researchers to access and contribute to knowledge and electronic information. NREN operates the national backbone that connects university campus networks to each other and to the global research and education network. The library Consortia mainly deal with resource sharing in digital or electronic format.

Iman Abu El Maaly provided suggestions on how library consortia and NRENs could work together; which NREN services could benefit library services or how library services could be provided to NREN community; how this collaboration could be achieved. She also gave examples of successful collaboration in practice between librarians and ICT professionals.

She also concluded ways for effective and collaborative relationship between NRENs and Library consortia.

#### 6.4 Keynote (3):



***Fahd A. Batayneh, “ICANN and Academia”, Manager, Global Stakeholder Engagement, ICANN, Jordan***

The use of digital technologies is growing quickly in the MENA region, driven by the increased use of local languages for digital communication and social media. For many people in this region, connectivity is either unavailable or unaffordable. Governments here need to accelerate network deployment and address affordability issues. Elsewhere, action is needed to make the Internet more relevant for local populations. Digital Government services and more use of the Internet by businesses are urgently needed. Business use of the Internet is hampered by a number of factors, including the ease with which domain names can be registered and the availability of local hosting services. Governments can support the digital economy by nurturing a business environment that is open for investment and innovation; investing in the development of the digital skills; ensuring a consistent, predictable and digitally-relevant rule of law; and coordinating and cooperating with neighbors and trading partners.

Fahd Batayneh concluded by shedding light on some of the challenges facing the Digital Economy in the MENA region, and provided some suggestions on way forward.

## 6.5 Session (4): “Research & Collaboration”



*Mohammad Mabrouk, Ankabut, UAE (Chair)*

*Islam Abou El-Magd, “Value of Earth Observation in the Decision Making Process for Socio-economic Development”, Head of Environmental Studies Department & International Relation Coordinator, NARSS, Egypt*

Egypt was one of the first developing countries in The Arab countries and Africa that used earth observation and remote sensing in various applications since 1970s. It has grown up in the last decades to build its own capacity in space science and technology that ended up by launching series of earth observation satellites.

At the same time, Egypt continued to develop the capacity in EO applications and contribute to the national development plans. In this domain NARSS, the governmental research institute that lead the EO and space applications in the country has completed many research and development projects in EO applications; for example, mineral resources exploration, coastal and marine resources, air quality, water resources management, food security, etc. Egypt has developed its own vision and agenda for sustainable development to align with the global 2030 agenda for sustainable development. To achieve the 17 SDG goals and 169 targets and 230 indicators, there is a need for efficient tool for source of information. EO is proved to be this tool that could contribute to achieve all of SDGs goals, targets and indicators.

In this regards, NARSS has developed an operational system to monitor the national cash crops using EO information and forecast the yield to enable for decision ahead for deficit. Other system that integrates modelling and EO data is to monitor air quality and identify its impact on human health. EO too is the future enabler for developing countries to promote socio-economy development in a sustainable manner.



*Mohamed Yasser Khalil, “SESAME Lights the Middle East and Neighboring Countries”, Director of Administration, Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME), Jordan*

SESAME is a unique project and research center in the Middle East. Mohamed Khalil reviewed briefly the history of SESAME from dream to reality. He also shed light on the impact of SESAME on education, scientific research and technology development. Since SESAME beamlines will produce tremendous amount of data, the connectivity of SESAME to high performance computing facilities is necessary.

In his presentation he stressed on the efforts done and being made to connect SESAME to dedicated networks to enable cross border research groups and communities transfer their data out and do research remotely.



***Elisabetta Zuanelli, “Pragmema Cybersecurity Ontology Platform (POC)”, Professor, University of Rome, Italy***

POC (Piattaforma Ontologica della Cybersecurity) developed by Pragmema, a cybersecurity ontological platform on Liferay technology. POC is the first ‘tool’ capable to represent cybersecurity data and correlations (events, incidents, etc.) as needed for cyberattacks analytics, prevention and resilience. POC is also meant for cybersecurity risk assessment and evaluation as mandatory activities for companies and institutions, according to recent EU legislation. The presentation recalls and comments briefly on general approaches to ontology development and cybersecurity domain ontologies in present literature on the subject; it recalls examples of taxonomies and classifications as developed in the international context, that need further classification and representation in a shared ontological perspective; and, finally, it motivates methodological solutions designed and realized in the POC platform for application purposes. On the grounds of linguistic and cognitive theoretical assumptions in the field of linguistics as applied to AI different levels of ontological representation and logical semantic relations including a pragmatic cybersecurity ontology, are presented as the POC solution.



***Mazin Qumsiyeh, “Research, Education, and Conservation in Developing Countries in a Networked Global Ecosystem”, Professor and Director, Palestine Institute of Biodiversity and Sustainability, Bethlehem University, Palestine***

Our species faces twin threats of nuclear war and climate change. To meet challenges that are global require global integrated responses. The UN 2030 six key sustainable development goals addressed the need and committed to act collectively. To translate these lofty plans into action requires practical steps. We explore how we can respond in the areas of environmental conservation and sustainability by “thinking globally and acting locally”. We demonstrated effectiveness with a case study from Palestine. A Palestine Institute of Biodiversity and Sustainability (PIBS) quickly connected (plugged in) globally and locally managed to achieve success in less than three years since it was founded. PIBS promotes research, education, and conservation. We highlight six key successes of PIBS and six key reasons for achieving these successes in such a short time even under difficult situation of colonization and economic deprivation. We highlight the tools for leveraging information technology (such as ResearchGate and scholar.google.com), the importance of involving people of various backgrounds including local regional, and global networking. Lessons learned from our successes can be applicable to other developing countries. The tools and methods are easily learned and are applicable for fundraising, getting donations in kind, research publications, environmental education, innovation, conservation of natural resources, and improving local economies (by permaculture and ecotourism among others). We offer these experiences learned sometimes with trial and error to fellow Arabs interested in a more sustainable development in line with the UN’s millennial goals, Arab Development goals, and local sustainable development in villages and towns throughout the Arab World.

## 6.6 Session (5): “Cross-Border Collaboration”



*David West, GEANT, UK (Chair)*



*Louis Hyunho Choi, “Introduction of Asi@Connect Project for Collaborations in the Field of ICT”, Senior Administrative Manager, TEIN\* Cooperation Center, South Korea*

Asi@Connect provides a dedicated regional high capacity and high quality Internet network, Trans-Eurasia Information Network (TEIN), for research and education collaboration in the Asia-Pacific region and leverage the e-infrastructure developed for public service projects. It connects Asian researchers to each other and with their counterparts in Europe via direct links to the pan-European GÉANT network. Operating at speeds of up to 10 Gbps it currently connects twenty countries/economies in the Asia region.

Asi@Connect is the successor of the TEIN project, which started in 2001 with direct link between Korea and France, and has developed as the leading Asian regional R&E network through its project phases (TEIN1, TEIN2, TEIN3 and TEIN4). Asi@Connect aims for fulfilling a number of Sustainable Development Goals (SDGs) through improved access to education and research resources. The project focus is on assistance to Least Developed Countries (LDCs) whilst also providing products and services applications to network users and promoting research collaboration in line with the SDGs.

Louis Choi concluded his speech by giving a brief on their main activities which are: Network Procurement and Management, Capacity development of developing country NRENs, Research and Education Network Design & Operations and associated capacity development, Deployment of specialized network products, services and applications and associated capacity development, Promoting AsiaConnect-enabled research and education collaboration for societal benefit, and Helping to bridge the digital divide in developing countries.



*Omo Oaiya, “WACREN - Connecting West and Central Africa to the Global R&E Network”, CTO, West and Central African Research and Education Network (WACREN), Nigeria*

Connectivity costs for Research and Education in West and Central Africa are amongst the highest in the region if not globally and NRENs have emerged in response across the region to address this amongst the heads of member institutions and policymakers unfamiliar with the purpose and potential of R&E networks. These NRENs lead the effort to provide fiber connectivity to higher education institutions in their different countries.

The West and Central African Research and Education Network (WACREN) was incorporated to provide a platform for collaboration amongst the NRENs, regional interconnectivity and a gateway to global research and education. There are currently 12 NREN members with on-going initiatives in 4 countries.



Participation in the European Union supported ‘AfricaConnect2’ project has enabled WACREN to roll out the first phase of its 10G regional backbone which links Ghana and Nigeria to GÉANT at the Open Exchange in London. Complementary procurement for access links to the NRENs and an extension of the backbone to Côte d’Ivoire is on-going.

In the ‘Networks for European, American, and African Research (NEAAR)’ project, a Global Open Exchange Point (GXP) will be established at the WACREN PoP in Lagos. This is focused on intercontinental and regional exchange of traffic and is likely to encourage other REN entities to install circuits to support science activities in the region.

Sensitizing NREN membership, governments, regional authorities and funders about these projects, especially AfricaConnect2, has created opportunities to increase support for NREN connectivity in the region and close some of the awareness gaps.

WACREN will officially launch the network at its upcoming annual conference, WACREN2018, holding in Lome, March 15-16 2018 and continues to solicit and welcome collaboration towards better engagement with global R&E.



***Ognjen Prnjat, “Supporting Open Science in the Eastern Mediterranean and Southeast Europe: VI-SEEM Project”, European and Regional e-Infrastructure Manager, The Greek Research and Technology Network (GRNET), Greece***

VI-SEEM is a collaboration between researchers from 14 countries including North Africa, Middle East, and Europe, connected via their NRENs, ASREN and GEANT which provide the basic connectivity platform. VI-SEEM is a Virtual Research Environment (VRE) which unifies the value-added services on top of the network: the existing regional High-Performance Computing, Cloud and Grid Computing resources, data management services, software and tools, as well as application specific on line software services, and delivers to cross-border communities an integrated platform for high-quality research.

This VRE aims to support the scientists and researchers by enabling full lifecycle of research: accessing and sharing relevant research data, using it with codes and tools to carry out new experiments and simulations on large-scale e-Infrastructures, and producing new knowledge and data. VI-SEEM focuses on 3 high-impact regional communities to enable the launch of new collaborations and support ongoing collaborative activities which require the use of shared e-Infrastructure resources. Digital Cultural Heritage community deals with tools and techniques for new understanding of the past and more accurate interpretations of historical interactions between human actors, agency and the rich heritage of regional cultures. Life Sciences community deals with services for understanding disease mechanisms in the populations of the region. Climate Science community predicts global and regional climate change, weather extremes, and related impacts.



The Service Catalogue offers a set of services in the areas of compute resource provisioning, data services provisioning, datasets provisioning, software and scientific workflow provisioning as well as domain-specific applications provisioning, available at <https://services.vi-seem.eu/>. End-user access to services and resources is provided via VRE portal: <https://vre.vi-seem.eu>. Data services are provided to all users via unrestricted free access, if data sets have creative commons or similar license. Access to application-specific services, and read access to the code and tools repository is provided for free, subject to fair usage policy. Access to large amounts of computation and storage resources for performing scientific simulations and storing large amounts of data is provided to excellent research projects from the region via the open calls. Calls are open once a year, addressed to scientists and researchers that work institutions in the region.



***Kevin Sale, “From Science DMZ to a Global Research Platform”, Networks & Communications Manager, King Abdullah University of Science & Technology (KAUST), KSA***

In his presentation, Kevin Sale outlined the science DMZ concept and how KAUST approached their deployment of a Science DMZ infrastructure and explains how other regional institutions can build their own on a budget. He also outlined the Global Research Platform initiative of interconnected Science DMZ’s facilitating data-intensive scientific workload collaboration around the world underpinned by strong regional Research and Education Networks.

## **6.7 Session (6): “Technologies and Trends”**



***Johnathan Chapman, Internet2, USA (Chair)***



***Enrique Gomez ,”European Open Science Cloud (EOSC)”, Program Officer, European Commission, DG Connect, Luxembourg (Remote Participation)***

The European Open Science Cloud (EOSC) is a vision for a trusted, federated, globally accessible, multidisciplinary environment where researchers, innovators, companies and citizens can publish, find, use and reuse each other’s data, tools, publications and other outputs for research, innovation and educational purposes.

Today, scientists and researchers use e-Infrastructures as an access mechanism to resources that are sponsored and operated at a national or regional level, however, the landscape of e-Infrastructures is a fragmented one resulting in same kind of services offered by different access channels, thus creating an un-managed overlap of services, which are not necessarily interoperable.

The EOSC objectives account for making a unique entry point for the access to all those resources; to expose all those resources in the form of a catalogue of services (that will lead the



evolution to a market place). Services should remain free at the point of use for the researcher, but the EC and other funding agencies will use the EOSC as a funding support mechanism based on usage and other metrics. EOSC should broaden the scope of services available to HPC resources and provide access to commercial services too.



***Edward Moynihan, “The NEAAR Collaboration: Developing Networking and Human Expertise in Support of International Science”, Principal, Indiana University, USA (Remote Participation)***

The Networks for European, American, and African Research (NEAAR) collaboration, led by Indiana University and GEANT in partnership with the UbuntuNet Alliance, WACREN, ASREN, SANReN, and TENET, is building a dynamic platform for connecting researchers in the US with their counterparts in Europe, Africa, and the Middle East. By providing bandwidth, targeted education and training, and pro-active end-user engagement, NEAAR, funded by the US National Science Foundation, is significantly improving connectivity for existing science collaborations while also enabling new collaborations to take advantage of the growing global research and education networking infrastructure.

Since launching in late 2016, the NEAAR project partners have made significant progress towards achieving the project’s year 1 goals. A 100 GB circuit between New York City and London has been installed, adding 100GB of transatlantic connectivity and increased resiliency to the Advanced North Atlantic (ANA) collaboration. The NEAAR partners have also started working to deploy an Open Exchange Point in Africa that will enable additional peering and resilience for connecting RENs.

Finally, the NEAAR partners have begun working on a human capacity building program that is supporting regional perFSONAR workshops, one-on-one consultations, and other targeted training opportunities for NRENs and campus staff.

Edward Moynihan provided updates on these and other NEAAR year 1 developments and explored how the NEAAR partners can work more closely with ASREN in support of international science. He also provided an overview of lessons learned to date, and a brief look into what to expect in year 2.



***Kevin Meynell, “MANRS: Mutually Agreed Norms for Routing Security”, Content and Resource Manager, ISOC Internet Society, Netherlands***

There are over 60,000 networks comprising the Internet that exchange reachability information using the Border Gateway Protocol (BGP). Routers build a “routing table” and pick the best route when sending a packet, using Autonomous Systems Numbers (ASNs) to identify themselves.

The problem is that BGP is almost entirely based on trust, with no built-in validation of the legitimacy of routing updates. This causes many problems such as IP prefix hijacking, route

leaks, and IP address spoofing, and there have been a growing number of major incidents in the past few years. There are solutions to address these issues, but securing one's own network does not necessarily make it more secure as it remains reliant on other operators also implementing these solutions too.

The Mutually Assured Norms for Routing Security (MANRS) initiative (<https://www.manrs.org>) therefore tries to address these problems by encouraging network operators to subscribe to four actions including filtering, anti-spoofing, coordination and address prefix validation, and has developed resources to help them implement these. This includes the MANRS Best Current Operational Practice (<https://www.manrs.org/bcop/>) which is a technical document providing step-by-step instructions, along with a set of online training modules.

By implementing these actions, network operators are promoting a culture of collaborative responsibility, and are improving the security of the global routing system. NRENs are particularly key to this, as they have historically led new Internet initiatives whilst needed to distinguish themselves from commercial ISPs. MANRS is an opportunity to demonstrate they are committed to a secure Internet and by setting an example to other network operators.

## 7. Session (10): “Joint Closing with AROQA”

The organizers have acknowledged the role of each institution and member who has contributed to the success of the conferences, workshops and meetings. It was a hope that they successfully served as effective medium in attaining a convincing environment towards achieving their goals in developing stronger technology, research, and education communities in the Arab region and beyond.



## 8. ASREN Workshop



### *“Workshop on Computer Security Incident Response Team (CSIRT)”*

Serge Droz and Jaap van Ginkel have delivered this two-day workshop, the workshop targeted new and potential CSIRT personnel who wish to gain a solid understanding of the main aspects of working in an incident handling and response team. It offered experience and expertise in Operational, Organizational, Legal and Technical areas, which form knowledge basis for CSIRT personnel.

The workshop offered the participants a unique opportunity to mix with their peers and discuss security issues in a secured and trusted environment, whilst being tutored by seasoned experts of the European CSIRT community. The course was opened to individuals working for a CSIRT or network security related organization, and those with bona-fide interest in establishing a CSIRT. Applications were also welcomed from commercial, governmental, law enforcement and military organizations, as well as national research and education networks (NRENs) and research and education institutes.

## 9. AROQA 9<sup>th</sup> Conference



The importance of AROQA annual conferences arise from the sense of responsibility towards the future of education in the Arab world. Such a future requires raising the level of awareness among Arab educational institutions on the importance of accreditation and quality assurance, and working together towards building and enhancing the Pan-Arab educational systems and structures.

AROQA has developed quite well to ensure quality in education among its priorities as well as the development of accreditation in coordination with the national quality and accreditation agencies in the Arab countries. It is important that for the cooperation to be enhanced with international quality assurance and accreditation organizations.

AROQA's Ninth Annual Conference entitled "Quality Assurance and Accreditation: Challenges and Prospects" served as a platform for the promotion of quality in education. It has brought together academics, policy leaders, representatives of quality assurance and accreditation agencies and quality experts. It aimed to provide platform for researchers, academics and experts to share their experiences and offer scientific research and experiments on the quality of education and accreditation. In addition, to discuss the challenges and prospects that will contribute to raise the level of education and strengthen its role in development and economic well-being.

The Conference held five sessions, in addition to the opening and closing sessions, and annual general assembly meeting. The technical sessions of AROQA 2017 have been designed with twenty-eight research paper contributions from universities in Algeria, Egypt, Iraq, Jordan, Lebanon, Libya, Palestine, Saudi Arabia, Sudan, UAE and Yemen on topics related to:

- Standards and Frameworks of Quality Assurance and Accreditation Systems in Education
- Quality Assurance and Accreditation in School Education, Higher Education, and Vocational Training
- Quality Management and Accreditation Theories
- Models and case studies in educational institutions
- Quality Assurance Programs

## 10. e-AGE18

It was decided to have the Eighth International Platform on Integrating Arab e-Infrastructure in a Global Environment, e-AGE18 in Amman, Jordan during 2-3 December 2018.

## 11. ANNEX

### Organizers and Partners

The Platform is organized by Arab States Research and Education Network GmbH, in cooperation with:

- EUMEDCONNECT3 and AfricaConenct2 Projects.
- GEANT.
- US Internet2 Special Interest Group Middle East (Internet2).
- Talal Abu-Ghazaleh Organization (TAG-Org).

### Program Committee

- Ahmed Hassan, Egyptian Universities Network (EUN), Egypt.
- Boubakar Barry, West and Central African Research and Education Network (WACREN), Senegal.
- David West, GEANT, UK.
- Federico Ruggieri, GARR Consortium, Italy.
- Florencio I. Utreras, UTTICA, Chile.
- Helga Spitaler, GEANT, UK.
- Johnathan Chapman, Internet2, USA.
- Pascal Hoba, UbuntuNet Alliance, Malawi.
- Salem Al-Agtash, German Jordanian University (GJU), Jordan.
- Yousef Torman, Arab States Research and Education Network (ASREN), Jordan.

### Organizing Committee

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- Hayam Alsallal, League of Arab States (LAS), Egypt.
- Majid M. AlSadek, Egyptian National Scientific and Technical Information Network, Egypt.
- Mohamed Samir, Talal Abu-Ghazaleh Organization, Egypt.
- Sherine El-Maghraby, Talal Abu-Ghazaleh Organization, Egypt.
- Yasmeeen Al-Kouz, Arab States Research and Education Network (ASREN), Jordan.
- Yousef Torman, Arab States Research and Education Network (ASREN), Jordan.

### Scientific Committee

- Ahmed Dabbagh, Emirates College of Technology, UAE.
- Ahmed Hassan, Egyptian Universities Network (EUN), Egypt.
- Boubakar Barry, West and Central African Research and Education Network, Senegal.
- David West, GEANT, UK.
- Enrique Arias Antúnez, Universidad de Castilla-La Mancha, Spain.
- Federico Ruggieri, GARR Consortium, Italy.
- Florencio Utreras, UTTICA, Chile.
- George Ghinea, Brunel University, UK.

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- Habib Yousef, CCK, Tunisia.
  - Ibrahim Fathy Moawad, Ain Shams University, Egypt.
  - Johnathon Chapman, Internet2, USA.
  - Khalid Elbadawi, Sudan Research and Education Network, Sudan.
  - Majid M.AISadek, Egyptian National Scientific and Technical Information Network, Egypt.
  - Markus Baumann, Asia Pacific Advanced Network, Australia.
  - Ognjen Prnjat, GRNET, Greece.
  - Pascal Hoba, UbuntuNet Alliance, Malawi.
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  - Rami Iskander, SCU, Egypt.
  - Roberto Barbera, University of Catania, Italy.
  - Salem Al-Agtash, German Jordanian University (GJU), Jordan.
  - Walid Karam, Balamand University, Lebanon.
  - Yousif Asfour, American University of Beirut, Lebanon.
  - Yves Poppe, APAN/ A\*Star, Singapore.

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Founded by Internet pioneers, the Internet Society (ISOC) is a non-profit organization dedicated to ensuring the open development, evolution, and use of the Internet. Working through a global community of chapters and members, the Internet Society collaborates with a broad range of groups to promote the technologies that keep the Internet safe and secure, and advocate for policies that enable universal access. The Internet Society is also the organizational home of the Internet Engineering Task Force (IETF).



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## Contacts

Arab States Research and Education Network, ASREN

Tel: +962 6 5100 250 Ext: 4306

Email: [info@asrenorg.net](mailto:info@asrenorg.net)

[asrenorg.net](http://asrenorg.net)



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