

ASREN



Summary Report

# e-AGE21

**e-Infrastructure for Science & Beyond**

*Virtual Conference  
13 - 15 December 2021*



**e-AGE21 HOST**

---

[eage21.asrenorg.net](http://eage21.asrenorg.net)

# TABLE OF CONTENT

---

**1. OVERVIEW**

**2. WHAT IS e-AGE ALL ABOUT?**

**3. e-AGE21**

**4. SESSIONS HIGHLIGHTS**

**5. COMMITTEES**

**6. SPONSORS**



# 1. OVERVIEW

---

## ASREN

---

ASREN, the Arab States Research and Education Network, is a nonprofit international organization, registered in Dusseldorf, Germany, on 3rd of June, 2011, under the umbrella of the League of Arab States. ASREN is the association of the Arab region National Research and Education Networks (NRENs), as well as their strategic partners, that aims 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.

---

## 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.

# 2. WHAT IS e-AGE ALL ABOUT?

---

**E-AGE PROVIDES A GREAT OPPORTUNITY TO STIMULATE DIFFERENT DISCUSSIONS TO DRIVE OUTCOMES AND CONCRETE RESULTS ON PRACTICAL STEPS TOWARDS DEVELOPING A REGIONAL E-INFRASTRUCTURE.**

---

e-AGE, is an annual international conference organized by the Arab States Research and Education Network, ASREN. 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.

e-AGE is a launching pad for Research and Education connectivity and cooperation. It brings together ASREN, EUMEDCONNECT, AfricaConnect, GÉANT, WACREN, Ubuntunet Alliance 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.

# 3.e-AGE21

A man in a dark suit is seen from behind, gesturing with his hands as he presents to a large, blurred audience seated in a conference hall. The scene is dimly lit, with warm ambient lighting.

e-AGE21, the conference's 11th edition, was held virtually during 13-15 December 2021.

e-AGE21 is the forum to share practices and experiences in openness to facilitate sharing of resources in science, research and education in today's unprecedented isolation. NREs and e-Infrastructures provide essential means to stay connected and to meet the new challenges of research and education, while openness facilitate collaboration and seamless access.

e-AGE21 discussed the role of open science as a mean to progress the achievement of the UN SDGs through engagement of communities in Science, Research and Education. Openness included elements of 'Open Access', 'Open Data', 'Open Educational Resources' and 'Open Science Clouds and Platforms'.

---

## **e-AGE21 CAME WITH 3 MAIN EVENTS:**

- 1• NRENS, E-INFRASTRUCTURES & SERVICES**
  - 2• ARAB REGIONAL & GLOBAL SCIENCE COOPERATION**
  - 3• FIRST ARAB EVENT ON OPEN SCIENCE**
-

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



### **HE Dr. Talal Abu-Ghazaleh, ASREN Chairman, Jordan**

HE Dr. Abu-Ghazaleh highlighted ASREN's outstanding achievements over the last 10 years in advancing the Arab e-Infrastructure towards enhancing education and advancing science and technology. He emphasized on the necessity of research for the purpose of innovation, and expressed his aspiration to become catalyst for innovation in the Arab region, by adopting the "Research for Innovation" approach and including it as a high priority in ASREN's future plans.

Abu-Ghazaleh called for the support and collaboration of the research and education leaders from around the world to make this vision a living reality.



### **HE Prof. Amr Ezzat Salama, Secretary General, Association of Arab Universities, Jordan**

In his talk, HE Prof. Ezzat emphasized on the cooperation between national and regional organizations and to join efforts. Open Science and Open Educational Resources (OERs) are essential for science, research, education and innovation, enhancing learning opportunities in line with the Education 2030 Framework for Action, and maintaining the continuity of learning in crisis and emergency situations.

The presentation gave an overview about the current state of (OER) in the entire Arab region including OER use in the Arab world, OER initiatives, OER challenges in the Arab region.

The presentation concluded with a number of recommendations calling for achieving social justice and facilitating the adoption and using of OER in the Arab region.

The presentation also took note of the main challenges facing Arab higher education and categorize the Arab countries into four different groups with regards to their progress towards the digital economy.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



**HE Prof. Hussein Hazeb, Minister of Higher Education and Scientific Research, Republic of Yemen (Represented by Mahmoud Abdulhak Alselwi, Advisor to the Ministry of Higher Education and Scientific Research )**

The emergence of new variants of the dangerous virus (COVID-19) in a number of countries of the world – at a time when countries have been suffering from it since 2020 – and the subsequent impacts of these mutations in the coming days, has put us in an encounter with great challenges.

This entails intensive efforts and preparations to face any potential problems or obstacles. It is also imperative to search for other means and alternatives that enable us to continue our normal life, maintain sustainable development and keep running the educational process in different educational institutions.

HE Prof. Hazeb extended their sincere thanks and appreciation to ASREN, represented by its Chairman, Prof. Talal Abu-Ghazaleh, which has considered this issue and sought with keen interest to raise awareness of it since last year. It also offered an opportunity for participation of many Arab and international organizations and institutions, academics, researchers, scholars, interested people, decision-makers and others.

HE Prof. Hazeb highlighted three key objectives that they seek to achieve through this conference:

- 1- Developing the Arab infrastructure for research and education and raising its efficiency.
- 2- Promoting scientific research on electronic infrastructures and their applications and enhancing their uses with a view to expanding and supporting research participation across these infrastructures and facilitating access to global computing resources and data.
- 3- Developing national, regional and global research and education networks, scientific computing, data-intensive electronic science platforms, among other objectives.

HE Prof. Hazeb concluded by wishing the conference a great success and to come out with important recommendations that will undoubtedly benefit greatly the Ministry and Yemen Center for Information Technology in Higher Education (YCIT-HE) to develop their programs and plans in this aspect.

# 4. SESSIONS HIGHLIGHTS

## SESSION 1.1: GRAND OPENING

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



### **HE Prof. Mahmoud Abu Mouis, Minister of Higher Education and Scientific Research, Palestine**

We in the Ministry of higher education believe in the role of Palestinian researchers in achieving the aspiration of our people towards freedom, independence and development in response to the Palestinian government's vision of achieving global development goals in 2030.

Therefore, to improve our higher education and scientific research huge and concrete efforts between Palestinian,

regional, and international institutions of higher education and scientific research provided by ASREN are needed, as well as the link among Arab and international researchers all over the world through high - speed data communication network .

Thus, we are looking forward to cooperating with ASREN to seize a golden opportunity to develop the quality of higher education and scientific research in Palestine, in addition to research and educational institutions as well as researchers, specially young ones.

It's our emphasis here in Palestine to merge more and more researchers within this network, and overcome obstacles faced to reach the best levels of interaction with Arab and international researchers.





# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



**HE Dr. Saif bin Abdullah Al Haddabi, Undersecretary for Research and Innovation at the Ministry of Higher Education, Research and Innovation, Oman (Represented by Najah Al Rashdi, Director General of Innovation Center - Oman at the Ministry)**

Recently, the Omani Research and Education Network (OMREN) conducted its annual OMREN Technology Summit (OTS) under the patronage and support of the Ministry of Transport, Communications and Information Technology, and

the Ministry of Higher Education, Research and Innovation. With more than 500 participants from 20 countries, featuring 26 speakers, the focus of the discussions was primarily on enhancing research and education through the development of a robust, sustainable and reliable research and education (R&E) infrastructure typically provided at the national level by the National Research and Education Networks (NRENs) and through Regional Research and Education Networks (RRENs) at the regional level.

The OMREN Technology Summit recognized the importance of the development of research and education infrastructures in the Arab countries. This is motivated by the need for high-speed Internet connectivity to conduct research through Open Science, and to share data intensive computations, repositories and experiences among scientists in Oman and other countries in the Arab region, Europe, and the rest of the world and to ensure that the Arab region has a firm place on the global R&E connectivity map. The Arab States Research and Education Network (ASREN), which is the unifying voice of the Arab research and education networking community, and OMREN agreed to announce the “Muscat Declaration on Supporting the Development of National and Regional Research and Education Infrastructure”.

The main objective of this declaration is a call for action to recognize and foster the role of NRENs across the Arab region and to call National authorities, stakeholders and Regional organizations to support the development of the Pan-Arab regional research and education network.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



### **HE Dr. Dia Arafah, Secretary General, Higher Council of Science and Technology, Jordan**

The methods of practicing scientific research and its tools have changed drastically in the current era. Researchers and scientists who work alone and in isolation can no longer contribute effectively to technological innovation and social development. There is a need for cooperation between multidisciplinary research centers and educational institutions and the use of modern means in conducting scientific research, which consequently leads to the development of

industry and the increase of creativity and innovation, and then upgrading to knowledge societies and the knowledge economy.

The scientific infrastructure plays a major role in facilitating this cooperation and in enabling these institutions to launch and join a world that is globalizing and progressing. The same applies to education in terms of reliance on cooperation and collaboration between educational institutions and universities at the national, regional and global levels to provide the best academic content and present it to students through the best educational platforms and resources.

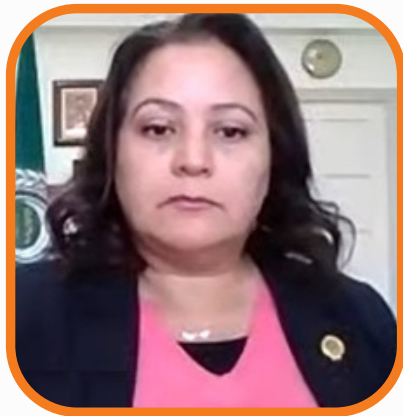
Thus, it became necessary to find a developed infrastructure to serve and facilitate such cooperation to promote the level of research and education. Most countries of the world have built high-performance national networks to be allocated to link universities and educational and research institutions at the national level in what is known as the National Research and Education Network (NREN), and then link these networks at the regional level to form the Regional R&E Network (RREN) to form what is known as the Global Research and Education Network.

Education and scientific research have become mainly dependent on open sources in order to share content and provide efforts in rebuilding and shaping these sources. It first found Open Source Software, then Open Educational Resources, followed by the so-called Open Access Data Repositories and Open Access. All of this was the reason for the transition from open education and open access to open science, which depends mainly on providing data, research, publications and applications to researchers, academics and students through special platforms for that. The United Nations has adopted the subject of open science through UNESCO, which in turn has carried out a study and a working draft for the United Nations to adopt in its general policies with regard to education and scientific research through several axes.

# 4. SESSIONS HIGHLIGHTS

## SESSION 1.1: GRAND OPENING

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



**HE Dr. Doaa Khalifa, Minister Plenipotentiary, Director of Education & Scientific Research Social Sector, League of Arab States, Egypt**

The Arab world face great challenges resulting from rapid changes, information revolution, the repercussions of the fourth and fifth industrial revolutions in the form of future jobs and the expected disappearance of many jobs; in light of technological changes and digital transformation, so the call now on young people to rearrange their priorities and develop

their skills to keep pace with the rapid changes in the level of future jobs such as artificial intelligence, renewable energy and information technology especially as the rest of the world seeks to develop its educational systems continuously to reach the best outputs at the lowest cost. so, the focus on the quality of education is essential.

LAS is now preparing an" Arab plan for education in Crisis & Emergencies" with the cooperation with Arab Organization for Education, Culture & Science & the Association Arab Universities. The Arab League has also paid great attention to the issue of intellectual property rights, and is keen to achieve the protection of intellectual property rights of researchers and inventors and the link between technology and access, in order to preserve society's right to access technology, particularly medical technology, and access to medical innovations and medicines, especially for those eligible from developing and less developed countries.

The strategy of open science and its aim to be obtain science to all so that science becomes more connected to society until research laboratories, data, software, scientific journals and educational resources are open and available to all, is a good thing. Therefore, the League of Arab States (LAS) recommend in the conclusions of the first regional forum on open science in 21 September hosted by Republic of Egypt that the preparation of the Arab strategy for open science to be an integral part of the LAS Arab strategy of scientific research, technology and innovation and attached to it with emphasis on ensuring intellectual property rights and the ethics of scientific research and setting up legislation governing it. The completion of these strategies and plans has taken many years of effort and all Arab specialized organizations concerned with scientific and technological research and innovation have participated in preparing them to reflect the reality and aspirations of Arab scientific research, which has been approved and adopted by Arab leaders as a method of joint action in this area, which invites us all to work on implementing the objectives of these strategies and building on what they say.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



### **Declan Kirrane, Chairman, Intelligence in Science, Belgium**

In his talk, Mr. Declan provided general observations in regards to science and open science in the region, speaking from the perspective of his experience as an advisor for governments and International bodies on strategy, policy, politics and regulation and their impacts on science, and from the perspective of the Science Summit at 76th United Nations General Assembly (UNGA76) outcomes, which was conducted last September.

Mr. Declan stressed the esteemed representatives at the e-AGE21 from the organizations representing science in the region to focus on the following issues which came very strongly from the Science Summit at the United Nations General Assembly:

- 1.To urgently focus on the issue of regulation on science, especially the regulations concerning data privacy and data protection, and to urgently develop a thorough process and a position on this.
- 2.To understand how the related regional and national policies can be enabled to support scientific research and collaborative scientific research regionally and globally.
- 3.To understand the importance of engagement through creating and enabling environments for not only sharing data, but also for building partnerships and collaborations to enable global collaborations.
- 4.To address the funding challenge in the region through the development finance bodies, as they have a huge role to play in a pandemic era and in a period of global stresses.
- 5.To recognize the huge contribution and importance of skills to all scientific endeavors, and this needs to be considered in tandem with issues surrounding science and research.
- 6.To contribute to the global discussion and dialogue around science and interact with stakeholders, especially within the context of the next SSUNGA77 meeting in September 2022 and the European Union-African Union Summit in February 2022.

At the end, Mr. Declan stressed that we should take a global perspective where we're in this together, and to address more the global challenges so that we really understand responses to initiatives in terms of bottom-up collaborations that inform policy makers, deliver solutions and create an environment in which we can all collaborate together.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



**Fabio Di Stefano, Team Leader Economic Integration, Trade, Digital, STI, European Union Delegation, Belgium**

We have all witnessed how this pandemic has accelerated international scientific collaboration and made the boundaries between science, society and business increasingly blurred. COVID-19 has highlighted the relevance of digital tools and infrastructures and the need to facilitate the share and reuse of research data as rapidly, openly and effectively as possible. It is clear to all of us that these changes are here to stay.

Digitalisation has increasingly become one of the main priorities of the European Commission internally and in the frame of international partnerships. Starting from 2011 the EU has been supporting the creation and consolidation of Research and Education Networks in Africa and in Arab countries through the AfricaConnect and EUMEDCONNECT projects, by working closely with ASREN and UbuntuNet Alliance and WACREN and our European partner GEANT.

Together, we have achieved remarkable progress, enhancing access of education and research institutions to secure, adequate and affordable network infrastructures and tools. Looking forward, the European Union will engage even more in STI and Digital with its international partnerships, focusing on both infrastructure and governance aspects. The European Commission also launched open science as a policy priority with the intention to make Europe a world leader in the field of data.

Open Science is a key driver, not only of scientific progress, but also of economic and societal innovation and sustainable development. However, to harness its full value, many barriers have to be removed, including the lack of a clear structure and incentives for data sharing, lack of interoperability, and fragmentation of data infrastructures. The European Open Science Cloud is a clear step in this direction. Similarly, countries all over the world, have started to invest in elements of policy at national and regional level that facilitate open science. International cooperation on this matter will be crucial.

Since the inception of ASREN, the pan Arab research and education e-Infrastructures have significantly evolved interconnecting NRENs of the Arab countries. We applaud the great work conducted by ASREN in advancing quality education, science and technology and innovation capacity, and also for continuing to stimulate meaningful multi-stakeholder dialogue including on how to leverage science cooperation to address today's challenges and achieve the SDGs.

# 4. SESSIONS HIGHLIGHTS

## SESSION 1.1: GRAND OPENING

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



### **Haidar Fraihat, Senior Innovation and Technology Adviser, UN-ESCWA, Lebanon**

During the years 2000 to 2015, the United Nations was leading the world towards achieving The Millennium Development Goals (MDGs). By the year 2015, it was clearly acknowledged that the world needs to focus more on Science, Technology and Innovation (STI), in order to rid the world of its chronic problems such as; poverty and famine.

We have noticed that we need to advance the tools and the techniques that we are going to use to march successfully and

confidently into the 21st century. So, in 2015 there was an inauguration of something called the Addis Ababa Action Agenda (AAAA), which was the inception platform for the Sustainable Development Goals (SDGs). The SDGs are a collection of 17 interlinked global goals, which are intended to be achieved by the year 2030.

There are science and technology elements in each and every of the indicators of the SDGs, in poverty, health, education, the gender gap, science, labor, life on earth and life under the ocean. As for Goal 17, it has four components, one of the components is called the Technology Facilitation Mechanism (TFM), which is on how the world needs to utilize technology in order to achieve the SDGs.

The UN has formed several tools and resources to enforce this Technology Facilitation Mechanism, like the establishment of the Science, Technology and Innovation for the SDGs and the Interagency Task Team on Science, Technology and Innovation for the SDGs. Furthermore, the UN organizations have advanced and created The UN Innovation Network (UNIN) and a Technology Bank headquartered in Turkey. Furthermore, the Secretary General of the UN has put forward a Data Strategy to guide the statistical and the data part of how the UN is handling its data for the service of policy makers in the world.

We at the UN-ESCWA, stationed in Beirut and servicing 22 Arab countries, have established a center in Amman called the ESCWA Technology Center, which has produced a science STI Maps for the Arab countries, identifying the technology, science and innovation ecosystem in each country and assigns a national focal point for STI in that country.

The UN is putting forward many tools to help advance science, technology and innovation in the service of achieving the SDGs between now and 2030, but our efforts alone cannot make it, we need to collaborate and put a shoulder to shoulder, hand on hand in order to advance our cause of having STI chip in and advancing growth in the world and inducing economic and social growth.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



### **Fadila Boughanemi, Deputy Head of Unit, European Commission, Belgium**

Fundamental changes have occurred both in the EU and in the Arab States over the last few years. Despite the changes in our regions, and maybe precisely because of those changes, a constant remains to persist, and this is collaboration in the fields of education and science. The EU fully acknowledges the role Research and Innovation play in achieving a more resilient and inclusive growth and creating sustainable employment opportunities in the region. This is fully embedded in the EU's

new strategy with the Southern Mediterranean region and our cooperation with Africa. This is also fully reflected in the Global Approach for R&I communication. But we need to work together and we need to create the enabling environment and tools for that to happen. Just to mention few examples of our endeavors to support the cooperation between all research and innovation stakeholders in the region.

We supported the collaboration of researchers and innovators in the region through our framework programmes (FP7, H2020, Erasmus+ and HE). There are certainly still some margins for improvement, nevertheless, our progress is real: it has also evolved in recent years since cooperation in scientific projects and international networks towards the joint development of programs based on the principles of mutual interest, co-decision and shared benefits.

The diversity of EU instruments allowed our partners in the region to cooperate with their EU counterparts in various areas – and including engagement of various stakeholders including policy makers, CSOs, researchers, innovators and so forth. Our instruments support capacity building, R&I, supporting start-ups, as well as mobility of researchers and students. The EU did not fund R&I projects, but also projects aiming at R&I capacity building and connectivity in the neighboring regions.

We hope to see more engagement under our current programme HE, which remains open to our neighbours, and we hope to see further collaboration with Arab States under the programme.

We encourage ASREN to build on the EU funded projects they have been involved in, and continue to explore cooperation under various EU instruments including HE, Erasmus plus and NDIC, but also to seek synergies with existing initiatives in the region such as PRIMA and the foreseen innovation initiative about to be launched in the MED region.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*

The opening session featured goodwill messages from CEOs of Regional Research and Education Networks from across Europe, North and Latin America and Africa.



**Erik Huizer, CEO,  
GÉANT, Netherlands**



**Boubakar Barry, CEO,  
WACREN, Ghana**



**Matthews Mtumbuka,  
CEO, Ubuntunet  
Alliance, Malawi**



**Luis Eliecer Cadenas,  
CEO, RedCLARA, Chile**



**Howard Pfeffer,  
President and CEO,  
Internet2, USA**



# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*

The opening session also featured goodwill messages from SESAME, Network Startup Resource Center and Internet Society.



**Philip Smith, Senior  
Network Engineer,  
NSRC, Australia**



**Andrea Lausi, Scientific  
Director, SESAME,  
Jordan**



**Nermine El Saadany,  
Regional Vice  
President, Internet  
Society, Egypt**



# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.1: GRAND OPENING

---

*Master of Ceremony: Yousef Torman, Managing Director, ASREN, Jordan*



**Keynote I: Nazar M. Hassan, UNESCO Senior STI Regional Advisor for the Arab States, UNESCO, Egypt**

**"The Modified Dynamic Strategic Fir (DSF) Algorithm for Solving the Sustainable Development Goals Problem in Developing Countries"**

Devising a conceptual framework through which the 2030 Agenda can successfully end poverty and inequality, while addressing the fundamental social needs at any national level is but a daunting task. It becomes especially difficult to

achieve the above goal, when we add to the above tasks the mandate to safeguard the integrity of the earth's vital biophysical processes and the required ecosystem services.

The level of complexity of the problem in hand further increases exponentially when we additionally consider the demand of urgency to meet all 169 challenges (targets) of the 17 SDGs by 2030.

Developing countries in most cases have failed to successfully address each of the 17 goals one by one in separate silos, before the adoption of the 2030 Agenda in 2015 and until today! So, how will they be able to make sense of this extremely aspiring agenda and its intermixed 169 targets? This research utilizes both quantitative and qualitative analysis to devise a new conceptual framework that could facilitate a way of decoding the 2030 Sustainable Development Agenda and the agreed-upon 17 goals into a significant and effective set of actions at the national levels in developing countries.

Away from the call to analyze the +30,000 interactions that exist between the 17 SDGs and their 169 targets, this research presents a unique contribution in addressing the 2030 Agenda implementation utilizing well-known methodologies in problem-solving modelling, based on a new conceptual framework that ensures the development of a set of coherent STI policies as a necessary condition for successfully achieving the SDGs.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.2: NRENS, SERVICES AND FUTURE

---

*Chair: Ahmed Hassan, Dean, Nile University, Egypt*



**Mehmet Mirat Satoglu, Director, TUBITAK ULAKBIM, Turkey**  
**"e-Research Infrastructure & Open Science Infrastructure in Turkey"**

TUBITAK ULAKBIM is the national NREN as well national HPC Center, academic cloud provider and also academic information center, providing digital collection development and Open Science services to universities in Turkey.

In his talk, Mr. Satoglu talked about ULAKNET academic network and services on their network, their HPC facilities as well as Open Science infrastructures such DergiPark

(JournalPark) -hosting over 2000 academic journals, Turkish National Catalogue of Libraries, Aperta Institutional Repository+RDM, Harman (Harvester) of Institutional Repositories in Turkey and more.



**Eriko Proto, IT Consultant, ASREN, Brazil**  
**"ASREN Network & Services",**

In his presentation, Mr. Porto talked about the evolution of ASREN Network and Services over the second year of the AfricaConnect3 project. Passing through a recap of the first year of the project, regarding the steps to the establishment of ASREN NOC and the upgrade of the Slough Point-of-Presence, together with the implementation of the NOC functions for 'Performance Management', 'Incidents Management', and 'Requests Tracking System', and going over the second year of

the project, with the evolution of ASREN Network connectivity and the new links to Tunisia, Jordan and Morocco, and the development of new services delivered to the R&E community using the newly upgraded infrastructure.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 1.2: NRENS, SERVICES AND FUTURE

---

*Chair: Ahmed Hassan, Dean, Nile University, Egypt*



### **Mohamed Al-Hajri, Infrastructure Manager, OMREN, Oman** **"OMREN Successful Initiatives"**

Oman Research and Education Network (OMREN) is a national NREN for the Sultanate of Oman. It was established in 2016 as a strategic partnership between the government and private sector. After five years, OMREN has more than 52 members from research and high education sectors. Members receive 19 services including network and applications. During the journey OMREN accomplished great achievements. that was a

result of inspired leadership, teamwork, community involvement and collaboration with other NRENS.

Mr. Al-Hajri presented three successful initiatives at OMREN to show the power of collaboration and the community involvement. The three initiatives are Sarh service, which is a service provided to individual researchers and students. OMREN Taskforce is another example of collaboration between OMREN members, where technical support is provided to new and existing organizations. OMREN ambassadors is an initiative to enhance the marketing and awareness within the community.



### **Ezri Carlebach, Associate Partner, GW+Co., United Kingdom** **"How Can NRENs Meet the Challenge of AI?",**

In the past few years, the number of books, articles and news items about artificial intelligence (AI) changed from a trickle to a tidal wave. Every day there are new reports, numbers, claims and counter claims about AI's impact on every aspect of human life, from public policy to business innovation, health care to the arts, space exploration to social justice.

In his presentation, Mr. Carlebach reviewed some of the trends,

statistics and stories about AI and its implementation. He also presented a framework which NRENS can use when they are considering how to plan and prepare for AI, or how to continue using AI if they have already started. This is not a technical presentation, and no specialist knowledge is required. It is about being human in the age of artificial intelligence.

# 4. SESSIONS HIGHLIGHTS

## SESSION 1.2: NRENS, SERVICES AND FUTURE

*Chair: Ahmed Hassan, Dean, Nile University, Egypt*



**Gergana Petrova, RIPE NCC, Netherlands**

### "Certified Skills for Future"

During her presentation, Ms. Petrova talked about RIPE NCC's Certification program. RIPE NCC offers courses, exams and certifications in three categories: the RIPE Database, IPv6 fundamentals and IPv6 security. By taking the courses you can certify your ability to use best practices in line with RFCs, as recommended by industry experts. You can earn a digital badge, that can easily be verified by any third party like an employer or customer.



**Saoussen Krichen, General Director, CCK, Tunisia**

### "CCK - Al Khawarizmi Computing Center"

During her presentation, Ms. Krichan gave a brief introduction into El-Khawarizmi Computing Center (CCK), its mission, vision and strategic directions towards the digital transformation of the higher education and scientific research sector in Tunisia.



# 4. SESSIONS HIGHLIGHTS

---

## SESSION 2.1: SCIENCE COOPERATION AND UN SDGS

---

*Chair: Declan Kirrane, Chairman, Intelligence in Science, Belgium*



**Keynote II: Mohammad Herzallah, Founding Director, Palestinian Neuroscience Initiative, Al-Quds University, Palestine**

**"BUILDING BRAINS IN PALESTINE: Investing in Neuroscience Research Infrastructure"**

Palestine has few resources and almost non-existent 'borders'. In a global context, the mention of Palestine usually resonates with struggle, occupation, politics, war, and human suffering. This is further compounded by an epidemic of mental health

problems that puts Palestine on the top of the list of West Asian countries with the highest prevalence of clinical depression and anxiety. Despite the multi-faceted disaster these facts represent, this situation can be turned into a once-in-a-lifetime opportunity to help the entire world, starting with and from Palestine.

There is no shortage of bright young people in Palestine. In fact, Palestine can only rely on investing in its human capital, 65% of which is younger than 24 years of age. Due to the large numbers of patients who suffer from mental health problems in Palestine, the Palestinian population offers a very rare opportunity to understand these disorders in Palestine by Palestinians. Mental health represents the leading cause of disability and death worldwide. Understanding mental health problems in Palestine by Palestinians can put Palestine on the map of mental health and brain science as the nation that produces global solutions for the entire world. Thus, solving locally-relevant but internationally-applicable problems. The Palestinian Neuroscience Initiative is designed to do just that.

Since its inception in 2009 at Al-Quds University, the Palestinian Neuroscience Initiative aimed to establish viable infrastructure and create a powerhouse for neuroscience research in Palestine, train the next generation of Palestinian researchers, and help patients and their families receive the best possible quality of healthcare.

Over the past twelve years, the Palestinian Neuroscience Initiative trained more than 250 young Palestinian students and researchers; sent 50 researchers for advanced research training in Europe and the U.S., helped secure Ph.D. and clinical specialties in the U.S. and Europe for 17 researchers; helped more than 10,000 Palestinian patients with psychiatric and neurological disorders; engaged the collaboration of 40 Palestinian neurologists and psychiatrists; hosted 20 neuroscience colloquium talks and five international conferences at Al-Quds University, and more.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 2.1: SCIENCE COOPERATION AND UN SDGS

---

*Chair: Declan Kirrane, Chairman, Intelligence in Science, Belgium*



**Haidar Fraihat, Senior Innovation and Technology Adviser, UN-ESCWA, Lebanon**

**"Role of the United Nations in advancing e-infrastructure of STI"**

Science, Technology and Innovation (STI), both technological and non-technological, leads to economic growth by increasing productivity, reducing costs and increasing efficiency. STI also helps to address and alleviate societal challenges while finding effective ways to tackle environmental challenges.

Accordingly, the 2030 Agenda, unanimously adopted at the United Nations Sustainable Development Summit in September 2015, positioned STI as key means of implementation of the SDGs, and launched the UN Technology Facilitation Mechanism (TFM). The Annual Multi-Stakeholder Forum for Science, Technology and Innovation (STI Forum) has been the main fora for TFM to discuss topics of common interests of Member States and STI stakeholders in the context of the 2030 Agenda.

In the 2017 STI Forum, participants highlighted that the STI roadmaps and action plans are needed at the subnational, national and global levels, and should include measures for tracking progress. These roadmaps incorporate processes that require feedback loops, evaluate what is working and not working, and produce continual revisions that create a real learning environment.

One initiative in the Arab region was to create STI maps for several Arab countries. The objective is to help coordinate the STI efforts nationally and regionally. The initiative involves national organizations working on science, technology and innovation from government, NGOs, universities, and science and industrial parks. The ultimate objective is to create an Arab-wide STI map.

Through its SDGs roadmap, the United Nations acknowledges the role of science in achieving all of the SDG goals and targets. Science, Technology and Innovation are recognized as means of inducing growth, be it economic, social, political, cultural, or other arenas of growth leading to prosperity and improved quality of life to the citizens of the world. More future recognition of the STI role is sought. ESCWA as a regional UN organization is chipping resources to advance the role of STI in development.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 2.1: SCIENCE COOPERATION AND UN SDGS

---

*Chair: Declan Kirrane, Chairman, Intelligence in Science, Belgium*



**Yousef Torman, Managing Director, ASREN, Jordan**  
**"ASREN's Strategy on Science Engagement"**

In line with ASREN's vision, we are paying a great attention to encourage, promote and facilitate "Science Cooperation" as a key strategy to achieve and contribute to boosting the scientific research, innovation and education levels in the Arab region.

Our strategy comes in various dimensions, activities and calls:

- Science Cooperation for achieving UN SDGs through promoting Science as an instrument for the development of communities and raising awareness of the importance of SDGs to policy makers, students, researchers and academics and exploring means and tools towards achieving them. We encourage sharing and exchanging knowledge and activities by NRENs in other countries/regions towards these goals including policies and actions
- Open Science, Open Access, and Open Science Platforms: We are taking the lead to promote and disseminate UNESCO's recommendations on Open Science in coordination with relevant stakeholders and coordinate with similar efforts and activities by other NRENs/RRENs around. We are in the pilot level in implementing our regional Open science Platform following the European Open Science Cloud (EOSC)
- Science Communities and Communities of Practice: We are working on further engagement with Science Communities and now identifying regional and national research communities and promote the creation of research communities and communities of practice at national and regional levels. We also encourage Science Dialogue with researchers and communities of practice and provide these communities with collaboration tools and access to resources around the region and beyond

ASREN has been a very active player on this and recently participated in very important and high-profile events including Science Summit at the United Nations General Assembly 76, Climate Summit and COP26, Global Internet Governance Conference, Arab Internet Governance Forum, Internet Society Week and more. In addition to that, our annual conference e-AGE21 came with "Science" as a main theme of the conference.



# 4. SESSIONS HIGHLIGHTS

---

## SESSION 2.1: SCIENCE COOPERATION AND UN SDGS

---

*Chair: Declan Kirrane, Chairman, Intelligence in Science, Belgium*



**Luiz Ary Messina, Brazilian National Coordinator of the Telemedicine University Network RUTE, Brazilian National Research and Education Network RNP, Brazil**  
**"Constructing Health Collaborative Network for Knowledge Dissemination"**

RUTE the Brazilian Telemedicine University Network has served since 2006 as a health collaborative network, including 140 University and Teaching Hospitals promoting 50 Special Interest Groups in health specialties and sub-specialties with 2 to 3 scientific virtual sessions everyday. 15 years of experience has led to a consolidation of virtual activities which were crucial as the pandemic and its teleassistance demands took hold.



**Andrea Lausi, Scientific Director, SESAME, Jordan**  
**"Data Policy at SESAME"**

With the rapid development of high-performance computing, data science approaches, such as machine and deep learning, have the power to transform how data are generated, stored and distributed at large-scale facilities. Advanced computing technologies allow us to exploit unprecedented large-scale simulations and complex data to gain deep insights into new phenomena and structures and enhance results. Properly used, they can offer immense, possibly revolutionary opportunities for scientific discovery in a wide range of research areas such as physics, engineering, material and biological sciences and can potentially deliver enormous societal impact.

SESAME is committed to ensuring transparency in how Experimental Data produced using its facilities is owned, stored, accessed, and managed in ways that maximise public benefit.

# 4. SESSIONS HIGHLIGHTS

## SESSION 2.1: SCIENCE COOPERATION AND UN SDGS

*Chair: Declan Kirrane, Chairman, Intelligence in Science, Belgium*



**Hendrik Ike, Public Affairs Officer, GÉANT, Netherlands**

### "GÉANT and the Sustainable Development Goals"

GÉANT is a fundamental element of Europe's e-infrastructure, delivering the pan-European GÉANT network for scientific excellence, research, education and innovation. Through its integrated catalogue of connectivity, collaboration and identity services, GÉANT provides users with highly reliable, unconstrained access to computing, analysis, storage, applications and other resources, to ensure that Europe remains at the forefront of research.

Through interconnections with its 39 national research and education network (NREN) partners, the GÉANT network is the largest and most advanced R&E network in the world, connecting over 50 million users at 10,000 institutions across Europe and supporting all scientific disciplines.

The presentation provided the context and a brief explanation of the goals from a digital perspective, and then laid out what work GÉANT has already conducted in order to help realise the goals. With an insight into what work GÉANT is conducting as an organisation to meet sustainable targets, and an illustration of the problems and opportunities.



# 4. SESSIONS HIGHLIGHTS

## SESSION 2.2: SCIENCE COMMUNITIES AND NRENS

*Chair: Helga Spitaler, Project Manager, GÉANT, United Kingdom*



**Chris Atherton, Senior Research Engagement Officer,  
GÉANT, Netherlands**

### **"GÉANT Supporting User Communities"**

GÉANT is a fundamental element of Europe's e-infrastructure, delivering the pan-European GÉANT network for scientific excellence, research, education and innovation.

In his presentation, Mr. Atherton provided the context and a brief explanation of some of the science communities that GÉANT supports, case studies of how GÉANT and its member

NRENS support those communities, as well as a look at some of the current and future work under way which supports specific research communities in the many subfields of Geo Science.



**Mustafa Jarrar, Professor of Artificial Intelligence, Birzeit  
University, Palestine**

### **"Arabic Natural Language Understanding as a Sustainable AI Research"**

Arabic is a low-resourced language, although it is the official language in 23 countries and is spoken by more than 420 million people, which is a big market. In his talk, Mr. Jarrar gave an overview of the importance of Arabic language technologies as sustainable Artificial Intelligence research and development,

and the required infrastructure and resources to support and enable it. Mr. Jarrar also presented the linguistic resources developed at Birzeit University and the experience of conducting high-tech research under occupation for sustainable development. Finally, Mr. Jarrar overviewed the Arabic Ontology, a large multi-lingual lexicographic database, Dialect corpora, and NLP tools for understanding both MSA and dialectal Arabic.

# 4. SESSIONS HIGHLIGHTS

## SESSION 2.2: SCIENCE COMMUNITIES AND NRENS

*Chair: Helga Spitaler, Project Manager, GÉANT, United Kingdom*



### **Andrés Enrique Gustavo Ruuth, IMiBio, Misiones, Argentina** **"Misiones - A Biodiversity Territory"**

The Misiones Biodiversity Institute (IMiBio) is a decentralized entity created by law, unique in South America, financed solely by the provincial government, and is dedicated to conserving, studying, and caring for all the Biodiversity of the Paranaense Forest. It is also a means to contribute to the solution of the global problems facing humanity.

The Institute is in the city of Puerto Iguazú, on the triple border (Argentina, Brazil, and Paraguay) and has incorporated the UN Sustainable Development Goals (SDG) as an integral part of its objectives, which are framed in four axes strategies that focus on Biodiversity and Science, Biodiversity and Health, Biodiversity and Society and Biodiversity and Genetic Resource Management in accordance with the Nagoya protocol.

IMiBio develops research on biodiversity per se (SDG 15), interaction with health (SDG 3) and knowledge transfer to society, targeting various United Nations objectives (SDG 1, 2, 3, 5, 6, 8 - 17). Generates knowledge in the areas of conservation and restoration of biodiversity for future generations and the promotion of sustainable development of biodiversity and wildlife (SDG 15.1-2; 15.5-9); sustainability and restoration of forests (SDG 15); sustainable food production systems adapted to the environment (SDG 2); and cities (SDG 11); freshwater monitoring (SDG 6. 6; 15.1); zoonoses following the "One Health" initiative, risks to human and animal health and the health status of wildlife (SDG 3); gender equality (SDG 5); decent and sustainable work (SDG8); the reduction of inequalities (SDG10); and processes that respect the environment and the climate (SDG 13).

In conclusion, provincial efforts have made it possible to protect the Paranaense Forest up to the present. The creation of IMiBio testifies to the continuous commitment of the Province of Misiones towards its Biodiversity and the planet where we all live.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 2.2: SCIENCE COMMUNITIES AND NRENS

---

*Chair: Helga Spitaler, Project Manager, GÉANT, United Kingdom*



**Nesreen Al-Malkawi, Systems Administration, German Jordanian University, Jordan**

### **"Benchmarking HPC in the Cloud"**

Cloud computing has been considered one of the most important buzzwords in the Information Technology and business industry in recent years and will likely remain so for the foreseeable future. It draws significant attention from researchers due to its widespread applications and substantial benefits.

Using the cloud, the resources are offered as a service, in this case, the user does not need to configure and maintain On-Premises IT infrastructure, the resources can be leased from the cloud service providers and used on-demand, furthermore, the user can allocate resources as needed then deallocate them as well, in a totally, it is an elastic environment. Virtualization technology is the main heart that enables cloud computing, using this technology the performance overheads on CPU, memory, networking, and the disk might be affected because of resource sharing.

High-Performance Computing (HPC) applications need super computation power, so, they might be affected by resource virtualization. When deploying an HPC cluster in the cloud, each node of the cluster is provisioned as a Virtual Machine (VM), this VM shares the other VMs and services the same cloud hardware resources which may lead to reducing the cluster performance.

In my research, HPC Clusters in the public cloud were evaluated. Three public clouds were chosen based on different hypervisor implementations (KVM, Xen, Hyper-V) and their Gartner report score, different Virtual Machine (VM)/Instance types, and specifications were chosen. The efficient MPI version was implemented on the HPC Clusters in the selected three clouds, and two HPC cluster locations scenarios were implemented. In terms of performance benchmarking, the implemented HPC Cluster scenarios were benchmarked using open source programs such as NAS Parallel Benchmarks, and HPL. The benchmark results were justified and analyzed to provide a guide to the next generation of High-Performance Computing as a Service.

# 4. SESSIONS HIGHLIGHTS

## SESSION 2.2: SCIENCE COMMUNITIES AND NRENS

*Chair: Helga Spitaler, Project Manager, GÉANT, United Kingdom*



**Anass Al Ksasbeh, Systems Administration Section Head,  
German Jordanian University, Jordan**

### **"Public Key Infrastructure in the Cloud: A Case Study"**

Storing personal and confidential data in the cloud is similar to storing money. Cloud computing security became one of the major research challenges. Using cloud computing, security is an important issue due to multi-tenancy, data confidentiality, online Virtual Machines (VM) access, remote storage security, etc.

A lot of users rely on free cloud storage as the main storage because of its availability to be used anytime by multiple platforms. These services offer connection protection to users' private data. But, free cloud storage providers have full access to user's files, so free cloud storage could not be used to store high-risk data, in this case, we could not trust the free cloud storage service providers, therefore there is a need to securely lock data in the remote cloud storage. This paper proposes a design for securing data storage in the cloud and securing Virtual Machines (VM) access based on Public Key Infrastructure (PKI) in all cloud deployment models. This design allows users and organizations to securely store their confidential data remotely at both storage types either object storage or block storage at no risk. To enable this proposed the strongest cryptography algorithms were used, Public Key Infra-structure (PKI) and vulnerabilities assessment were employed. The proposed design mainly in-cludes Public Key Infrastructure (PKI) levels, Certificate Policies (CP), Extended Key Usage (EKU), Certificate Authentication, Storage and Virtual Machines (VM) security planning, de-signing, implementation, and evaluation.



# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.1: OPEN SCIENCE – CONCEPT, POLICIES AND RECOMMENDATIONS

---

*Chair: Islam Abou El-Magd, Vice - President, NARSS, Egypt*



**Islam Abou El-Magd, Vice - President, the National Authority for Remote Sensing and Space Sciences, Egypt**  
**"Egypt's Policies, Strategies and Action Plans Towards Promoting Open Science"**

The basic definition of open science is it encompasses unrestricted access to scientific articles and access to data from public research. However, open science is more than open access to publications or data; it includes many aspects and stages of research processes. It is a broader concept that

includes, for example interoperability of scientific infrastructure, open and shared research methodologies (such as open applications and informatics code), and machine-friendly tools allowing for text and data mining.

Open Science policies as those strategies and actions aimed at promoting Open Science principles and acknowledging Open Science practices. Those policies are usually established by research performing institutions, research funders, governments or publishers.

The open science ecosystem is multidimensional including government ministries, universities, research centers, researchers, policy makers, private scientific publishers, business, libraries, repositories and data centers, research funding agencies, and private no profit organizations and foundations; hence a successful strategy needs to take into account this diversity of open science ecosystem and react accordingly. Developing nations are still not yet getting into the promotion mode of open science, however there are few steps and trials. Egypt has taken steps towards education, since and technology and increased the budget to ensure high quality of education system and scientific research. It also taken steps towards promoting open sciences and issued some policies and strategies that support open science.

In his presentation, Mr. El-Magd highlighted all these policies, strategies and steps towards promoting open science in Egypt and the region.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.1: OPEN SCIENCE – CONCEPT, POLICIES AND RECOMMENDATIONS

---

*Chair: Islam Abou El-Magd, Vice - President, NARSS, Egypt*



**Sarah Jones, EOSC Engagement Manager, GÉANT, Netherlands**

**"How NRENs and Universities are Supporting Open Science"**

In her talk, Ms. Jones introduced Open Science and the support services being offered by NRENs and research performing organisations to assist researchers with managing and sharing their data. The presentation reflected on some of the key challenges being faced across the sector and ways in which

cross-institutional approaches or national providers such as NRENs can assist with these. Practical examples were also given on existing work to help inspire further support in the Arab region.



**Ana Persic, Programme Specialist, UNESCO, France**

**"UNESCO Open Science Recommendation: International Policy Framework for Open Science"**

Recognizing Open Science as a true game-changer in addressing the pressing planetary and socio-economic challenges, UNESCO led a global dialogue with the aim of developing the first international standard-setting instrument on Open Science in the form of a UNESCO Recommendation. The UNESCO Recommendation on Open Science, unanimously

adopted on 23 November 2021 by 193 UNESCO Member States defines shared values and principles for Open Science and identifies concrete measures on open access and open data, with proposals to bring society closer to science and commitments to facilitate the production and dissemination of scientific knowledge worldwide. If adequately implemented across the world and by different open science actors, the Recommendation has the potential of significantly advancing science that is more accessible, collaborative, transparent, inclusive and more responsive to the needs of society.



# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.1: OPEN SCIENCE - CONCEPT, POLICIES AND RECOMMENDATIONS

---

*Chair: Islam Abou El-Magd, Vice - President, NARSS, Egypt*



**Omo Oaiya, Chief Strategy Officer, West and Central African Research and Education Network (WACREN), Ghana**  
**"LIBSENSE - An African Framework for Sustainable Open Science"**

LIBSENSE is a Pan-African initiative instituted in 2017 to foster Library/NREN collaboration around the provision of digital services for African libraries, specifically, those in research and higher education and particularly around Open Science. After a successful pan-African survey and workshop series in

AfricaConnect2, founding members WACREN, Ubuntunet Alliance and ASREN, in collaboration with three other core partners (COAR, EIFL and University of Sheffield Information School), have undertaken new activities in 2020-2021. To strengthen and stimulate action under its three pillars of infrastructure support, capacity building and policy development, LIBSENSE in AfricaConnect3 has instituted some working groups, namely: Infrastructure - open access journals, repositories for publications and data, and open discovery services; Policies - open science policies, governance and leadership; Capacity Building - communities of practice and training; and region-specific and language-specific initiatives - Arabic (North Africa) and French (West and Central Africa).

LIBSENSE envisages these activities to form part of a sustainable framework for engaging with open science at institutional, national, regional and eventually continental levels. Rather than the top-down imposition of policies and principles, this initiative focuses on contingent, bottom-up and grassroots programmes of action initiated by its community. Examples are 12 workshops under capacity-building endeavours, with two focusing on skills development and the others on open access publishing, research data repositories and repository interoperability, persistent Identifiers, engagement with faculty and support and training.

LIBSENSE has also engaged with the UNESCO Open Science Partnership and adopted Open Science Africa: Principles and Actions for Global Participation. Furthermore, LIBSENSE is developing National Open Science Roadmaps to roll out open science policies and infrastructure in African pilot countries. At the institutional level, targeted workshops are planned for the executive leadership of HE institutions and policy-makers across Africa. On the infrastructure side, plans are also underway to develop shared platforms at the national level.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.1: OPEN SCIENCE – CONCEPT, POLICIES AND RECOMMENDATIONS

---

*Chair: Islam Abou El-Magd, Vice - President, NARSS, Egypt*



**Nabil Ksibi, Engagement Lead, ORCID, South Africa**  
**“Adopting ORCID to Maximize Impact of Research Contributions”**

The presentation aimed at building avenues of collaboration with and between Arab speaking region NRENs, researchers and research institutions, to implement FAIR principles best practices and to align with the UNESCO recommendations for Open Science, to also link in persistent identifiers with the wider trust & identity mission.

During the last 10 years ORCID as a persistent identifier, demonstrated significant improvement in researcher identification and discoverability as well as connecting systems and contributions around the world. ORCID aims to invite all research contributors and research institutions to participate in building communities of practices within the ASREN network. That would be a great insight for those looking to draw Open Research roadmaps, and drive adoption and best practice use of the different APIs, Open Access systems and interoperable registries.



**Iryna Kuchma, Open Access Programme Manager, EIFL, Lithuania**

**"Implementing Open Science at Institutional and National Levels"**

In her talk, Ms. Kuchma outlined how institutions and countries are implementing open science, building on the UNESCO Open Science Recommendation - the first-ever international standard for open science. The presentation also highlighted EIFL and LIBSENSE resources that could help institutions and countries to move forward.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.2: OPEN SCIENCE - PLATFORMS, INITIATIVES

---

*Chair: Raed Al-Zoubi, Director of the Centennial Library, JUST, Jordan*



**Raed Al-Zoubi, Director of the Centennial Library, Jordan University of Science and Technology, Jordan**

**"Academic Libraries Role in Open Science Era"**

Academic Libraries role is always to support education and research in several aspects, this role (traditionally) was to avail/maintain 'publications' (physical or digital) and make them discoverable to users.

In Open Science/Open Access Era dependence on resource procuring is getting less priority and Academic Libraires role is

dramatically changing to be enabler and facilitator to the education and research. In his presentation, Mr. Al-Zoubi highlighted the Academic Libraries future role, Competencies/Skills needed and the entities that can support Academic Libraries in their mission.



**Lautaro Julian Matas, Executive and Technical Director, LA Referencia, Spain**

**"LA Referencia: Latin American Network of Open Science Repositories"**

The Federated Network of Institutional Repositories of Scientific Publications, or simply LA Referencia, is a Latin American network of Open Science repositories. Through its services, it supports national Open Science strategies in Latin America through a platform with interoperability standards,

sharing and giving visibility to the scientific production generated in institutions of higher education and scientific research. The presentation covered the present and future challenges and the opportunity of enhancing the collaboration between Latin America and Africa.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.2: OPEN SCIENCE - PLATFORMS, INITIATIVES

---

*Chair: Raed Al-Zoubi, Director of the Centennial Library, JUST, Jordan*



**Roberto Barbera, Professor, University of Catania, Italy**  
**"Science Reproducibility and Reusability with FAIR-compliant Frameworks"**

FAIR-principles compliant digital repositories (DRs) and distributed computing infrastructures (DCIs) are key enablers of Open Science. In his presentation, Mr. Barbera reported about the work done in the last years to deploy standard-based digital repositories across Europe and Africa and presented an example of science reproducibility and reusability using such

DRs in conjunction with a Science Gateway framework interfaced to DCIs.



**Yasmeen Al-Kouz, Senior Communications Officer, ASREN, Jordan**

**"ASREN's Efforts on Open Science"**

In her presentation, Ms. Yasmeen highlighted ASREN's Efforts and activities to support Open Science in the Arab region. ASREN has always shown the commitment towards achieving an Open Science platform for the Arab region and highlights the activities in this perspective.

These activities and efforts includes; contributing to the LIBSENSE initiative, collaboration with DataCite, ORCID, an MoU with LA Referencia, contributing to the UNESCO Recommendation on Open Science, collaboration with the European Open Science Cloud, an MoU with the Association of Arab Universities and catalysing the Arab Science Cooperation to achieve United Nations Sustainable Development Goals.

# 4. SESSIONS HIGHLIGHTS

---

## SESSION 3.2: OPEN SCIENCE - PLATFORMS, INITIATIVES

---

*Chair: Raed Al-Zoubi, Director of the Centennial Library, JUST, Jordan*



**Abdullahi Bihi Hussein, CEO, SomaliREN, Somalia**

### **"Leveraging the Power of Community for Open Science"**

The collaborative networks that make open science possible are made of the people and organizations who actually produce and also consume open science. This is basically the essence of community and it has a far more significant potential than it seems to capitalize on. The continuity of the efforts to boost open science rests on strengthening the sense of community among the scientists and within the institutions.

Three perspectives on the issue are presented in this discussion. The community as the foundation or platform for driving open science adoption perspective calls for the strategic structuring of communities in a hierarchically-organized manner but with less red-tape to not discourage innovation agility; the community as a producer-consumer perspective focuses on putting into effect rules and protocols for exchanging open science artefacts within the community modeling open source licenses; and the community as the incubation grounds for young scientists perspective calls for implementing support group strategies that encourages more young people to engage in science and contribute to the open science efforts.

Exploiting the power of community effectively has the potential of keeping more senior and young scientists engaged in the open science efforts. The research and education networks need to look beyond connectivity and nurture communities from their end-user communities to empower them to create open science and knowledge.



# 5. e-AGE21 COMMITTEES

---

## SCIENTIFIC COMMITTEE

---

- Ahmed Dabbagh, STRIP, UAE
- Ahmed Hassan, Nile University, Egypt
- Ala' Khalifeh, GJU, Jordan
- Amjed Alfahoum, HTU, Jordan
- Boubakar Barry, WACREN, Senegal
- David West, GEANT, UK
- Edward Moynihan, Indiana University, USA
- Enrique Arias Antúnez, UCLM, Spain
- Federico Ruggieri, GARR Consortium, Italy
- George Ghinea, Brunel University, UK
- Habib Yousef, Tunisia
- Ibrahim Fathy Moawad, EUN, Egypt
- Johnathon Chapman, Internet2, USA
- Khalid Elbadawi, SudREN, Sudan
- Majid M.AISadek, ENSTINET, Egypt
- Markus Baumann, APAN, Australia
- Matthews Mtumbuka, UA, Malawi
- Mowaffaq Ottom, YU, Jordan
- Ognjen Prnjat, GRNET, Greece
- Rainer Herpers, H-BRS, Germany
- Roberto Barbera, UNICT, Italy
- Salem Al-Agtash, ASREN, Jordan
- Walid Karam, UOB, Lebanon
- Yousif Asfour, AUB, Lebanon
- Yves Poppe, APAN/ A\*Star, Singapore

---

## STEERING COMMITTEE

---

- Boubakar Barry, WACREN, Senegal
- Dale Smith, NSRC, USA
- David West, GEANT, UK
- Eriko Porto, ASREN, Brazil
- Fahem Al Nuaimi, Ankabut, UAE
- Federica Tanlongo, GARR Consortium, Italy
- Federico Ruggieri, GARR Consortium, Italy
- Habib Yousef, Tunisia
- Helga Spitaler, GEANT, UK
- Ibrahim Fathy Moawad, EUN, Egypt
- Johnathon Chapman, Internet2, USA
- Luis Eliecer Cadenas, RedCLARA, Spain
- Matthews Mtumbuka, UA, Malawi
- Mohammad Mabrouk, Ankabut, UAE
- Redouane Merrouche, MARWAN, Morocco
- Salem Al-Agtash, ASREN, Jordan
- Saoussen Krichen, CCK, Tunisia
- Yousef Torman, ASREN, Jordan

---

## PROGRAM COMMITTEE

---

- Hadia Arafat, ASREN, Jordan
- Raed Alzoubi, JUST, Jordan
- Sara Halahleh, ASREN, Jordan
- Yasmine Al-Kouz, ASREN, Jordan
- Yousef Torman, ASREN, Jordan

# 6. SPONSORS



## Internet Society

---

**LEVEL 2 SPONSOR**

---

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).

[www.internetsociety.org](http://www.internetsociety.org)



# RIPE NCC

RIPE NETWORK COORDINATION CENTRE

---

## LEVEL 3 SPONSOR

---

The RIPE NCC is an independent, not-for-profit membership organisation that supports the infrastructure of the Internet through technical coordination in Europe, the Middle East and parts of Central Asia. The most prominent activity of the RIPE NCC is to act as the Regional Internet Registry (RIR) providing global Internet resources and related services (IPv4, IPv6 and AS Number resources) to members in the RIPE NCC service region. The RIPE NCC also provides services for the benefit of the Internet community at large.

As part of our mission, we support capacity building efforts in the areas of IP address management, IPv6 transition, network security, routing security and more.

We offer certifications and training support through the RIPE NCC Certified Professionals programme to network operators, regulators, governments, and educational institutions.

Through its presence in the Middle East, the RIPE NCC hopes to meet increased demand for region-specific support in an area experiencing continuous growth in the Internet and related fields. The Dubai office has a growing team that will help the organisation engage effectively with its members, as well as industry representatives and government bodies in the region.

[www.ripe.net](http://www.ripe.net)



# e-AGE21

Virtual Conference  
13 - 15 December 2021

e-Infrastructure for Science & Beyond

## SPONSORS

Virtual Level 2



Virtual Level 3



## PARTNERS



**Arab States Research and Education Network**

For More Information, Please Contact Us:

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



This content has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of ASREN and can under no circumstances be regarded as reflecting the position of the European Union.