

## **Keynote Talk: The Next 10 Years of NRP**

*by Dr Frank Wuerthwein, Director, San Diego Supercomputer Center*

The National Research Platform (NRP) is part of a larger vision of an “Open Cyberinfrastructure for an Open Society”. It is horizontally and vertically open. Horizontally open implies that any academic institution may join hardware into NRP at a range of different layers in the vertical stack. Vertically open implies that people can build services on top of the Open CI in order to build more complex CI. We will describe this vision, how NRP fits into it, where we are at with regard to deployment and services, and where we see ourselves going within the next 10 years.

## **The Asia Pacific Research Platform in APAN & KRP: An Overview**

*by Dr Jeonghoon Moon, Principal Researcher, Korea Institute of Science and Technology Information (KISTI)*

This presentation is the current status and future plan of the APRP (Asia Pacific Research Platform) which is a collaborative effort among research/education networks and distributed computing resources in the Asia Pacific region.

Its goal is to facilitate collaboration among researchers and institutions by providing a high-performance, reliable, and secure network infrastructure and also distributed CPU/GPU-based computing.

The APRP project focuses on several key areas, including high-speed network connectivity, data storage and management, and advanced computing capabilities. The APRP network infrastructure and computing resources are designed to enable data-intensive research in a range of fields, including bioinformatics, genomics, climate science, earth science, AI science, and particle physics.

The project also includes efforts to develop human capacity and promote collaboration among researchers in the Asia Pacific region. This includes training programs, workshops, and other initiatives to help researchers build the skills and knowledge needed to conduct research using the APRP infrastructure.

Overall, the AP-RP project aims to support the development of a strong and collaborative research community in the Asia Pacific region and to position the region as a leader in global research and innovation.

## **The Global Research Platform: An Overview**

*by Prof Joe Mambretti, Director, International Center for Advanced Internet Research, Northwestern University*

This presentation provides an overview of the Global Research Platform (GRP), an international scientific collaboration creating innovative advanced ubiquitous services integrating resources around the globe at speeds of 100s of Gbps and terabits per second, especially for large-scale data-intensive science research. GRP focuses on design, implementation, and operation strategies for next-generation distributed services and infrastructure to facilitate high-performance data gathering, analytics, transport, computing, and storage among multiple science sites world-wide. The GRP partners are collaborating to customize international services, fabrics, and distributed cyberinfrastructure to support optimal data-intensive scientific workflows. Development areas include: a) Next-Generation Research Platforms; b) Orchestration Among Multiple Domains; c) Large-Scale Data Transport; d) High-Fidelity Data Flow Monitoring, Visualization, Analytics, Diagnostics, Event Correlation, AI/ML/DL; e) Data-Intensive Science and Programmable Networking; f) Networking and Communication Service Automation; and, g) International Testbeds for Data-Intensive Science.

## **SingAREN Open Exchange and GRP**

*by A/Prof Francis Lee, Secretary of SingAREN*

SingAREN Open Exchange (SOE) has become an important POP for both Singapore researchers and international partners. In 2021, SOE became a distributed POP providing more connection options and resilience. Going beyond connectivity, SOE has also provided services such as DB mirror, commonly used db in EU and USA are periodically copied to a server in Singapore and shared. Thus, helping researchers in the region to get data more efficiently and improving their research productivity. SOE is also supported major big science project such as LHCONE project. This talk will share some of the projects carried out at SOE as well as future plans to support researchers.

## **Australia Research Platform and the SKA**

*by Mr Andrew Howard, Associate Director Cloud Services, National Computational Infrastructure (NCI), Canberra Australia*

This presentation will cover the infrastructure and planning underway in Australia to support a national program to use Genomic Sequencing to match cancer patients with new drugs and personalised treatments.

This initiative is part of a pathfinder to the longer term implementation of a National Clinical Genomic program to securely deliver Genomic sequencing as a regular pathology element to health care providers and individuals to predict and treat diseases and to optimise the planning in hospital settings to respond to anticipated disease trends.

The significant data volumes from regular sequencing presents interesting challenges in the development of secure networks, secure data storage and secure access methods.

## **KAUST Update for AutoGOLE**

*by Mr Alex Moura, Senior Network Engineer, KAUST*

The presentation will describe the KAUST current status and plans to have AutoGOLE and further integrate with the GRP.

## **Evolution of ESnet - A Changing Landscape in Scientific Networking**

*by Mr Guok Chin Peng, CTO, ESnet*

The Energy Sciences Network (ESnet) is the high performance network of the US Department of Energy Office of Science (DOE SC). DOE SC is the largest supporter of basic research in the physical sciences in the US, consisting of 6 programs (i.e., Advance Scientific Computing Research (ASCR), Basic Energy Sciences (BES), Biological and Environmental Research (BER), Fusion Energy Sciences (FES), High Energy Physics (HEP), and Nuclear Physics) that support a variety of experiments across its 28 facilities, including international partner collaborations. Over its 36-year span, ESnet has evolved to meet the requirements of ever changing scientific workflows. This presentation will provide a brief history of ESnet's generational changes and highlight the capabilities of its current generation network ESnet6.

## **NICT's Integrated Testbed**

*by Dr Hidehisa Nagano, Director, ICT Testbed Research, Development and Operations Laboratory, National Institute of Information and Communications Technology (NICT)*

The NICT ICT Testbed Research and Development Promotion Center provides the NICT's Integrated Testbed as a verification platform for integrated promotion of technical and social verification in the ICT-field. Since 2021, we have been developing the "Beyond 5G/loT Testbed with High-reliability and High-elasticity", in addition to the " High speed R&D Network Testbed (JGN) and "Large-Scale Computer Environment (StarBED)", in order to contribute to the realization of Beyond 5Gsystems. We will sequentially provide environments that enable various R&D and technology validation by linking each layer of network, middleware, and platform. In this talk, I introduce the "Beyond 5G/loT Testbed with High-reliability and High-elasticity" and our demonstrations on SC22.

## **SCinet, NRE Program, and OFCnet**

*by Mr Rodney Wilson, Chief Technologist, External Research, Ciena Corporation, R&D Labs, Ottawa Canada*

The Research and Development team at Ciena has a long established reputation for creating world class networking products and solutions. Many of the company's technology advancements in computer communications technologies originated through collaboration with universities and partnerships with the global R&E community. For over two decades, as active collaborators and participants in R&E events, NRP, GRP meetings and research industry trade shows, Ciena has brought it's emerging product technologies to this community to create shared success. In this talk, Mr. Wilson will present a retrospective summery from SC22 (America) as exhibited via the SCinet facility, and Network Research

Experiment focus demonstrations. He will also present OFCnet, a new live demo network feature of the Optical Fibre Conventions exhibition being held in San Diego California March 5-7 2023

### **Accelerated ONION based on DTN Experience**

*by Dr Susumu Date, Associate Professor of the Cybermedia Center, Osaka University*

He has worked on the administration and management of supercomputing systems at Osaka University. Also, through the international collaboration, he has experienced of using DTN. This talk will introduce one of science DMG project in Osaka University based on the experience of using DTN.

### **Supporting International Partnerships in Science: The Role of International Networks at Indiana University**

*by Ms Brenna Meade, Network Engineer, International Networks at Indiana University*

This presentation by International Networks at Indiana University will highlight how science drivers including international science collaborations and distributed big science instruments are shaping the development of infrastructure services, architecture, and design, including initial efforts to upgrade TransPAC to 400G. The discussion will then showcase collaborative efforts between IN@IU and other research communities, including support for experiments at the annual Supercomputing Conference, SC Asia, and the data mover challenge (DMC). The aim of the presentation is to demonstrate the importance of international collaboration in enabling cutting-edge research and showing the role that International Networks and our partner organizations in Asia play by providing both infrastructure and engineering support.