Research Promotion Council of Kei-han-na Info-Communication Open Laboratory

Open Optical Network Working Group

Open Optical Network WG (O²N WG)

- This O²N WG focuses on promoting interoperability testing and standardization as de fact for realizing “open” and “disaggregated” optical networks. Currently, the WG acts with collaborating the project of “Research and Development of Innovative Optical Network Technology for a Novel Social Infrastructure” Theme Ⅲ: High efficiency reliable optical access & metro network (HERO-NET) funded by the Ministry of Internal Affairs and Communications.

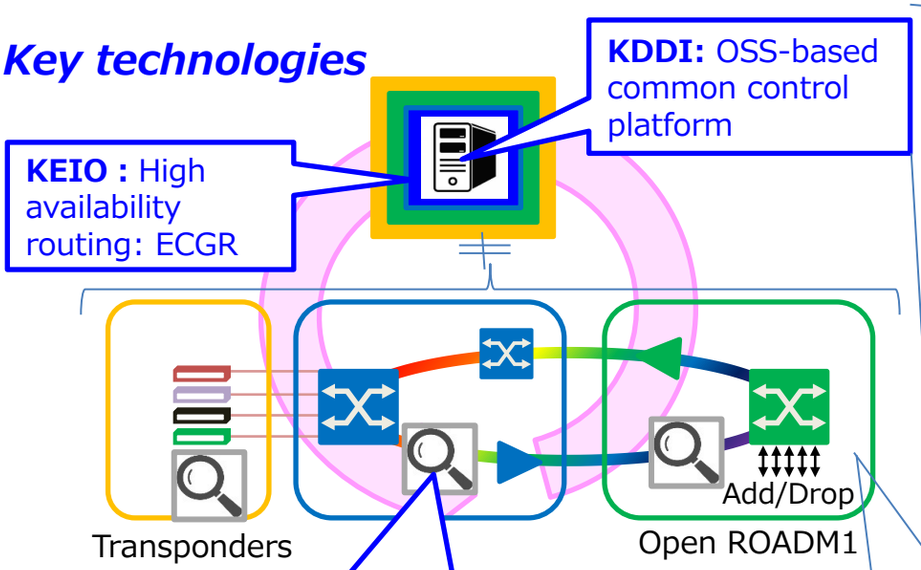
Chair : Takehiro Tsuritani (KDDI Research)
Vice chair : Emmanuel Le Taillandier de Gabory (NEC)
Members : Keio University, NEC, KDDI Research

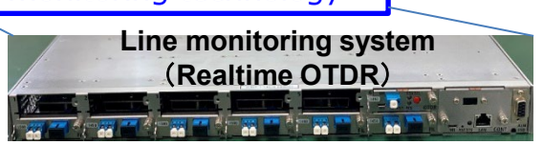
Motivation and goal

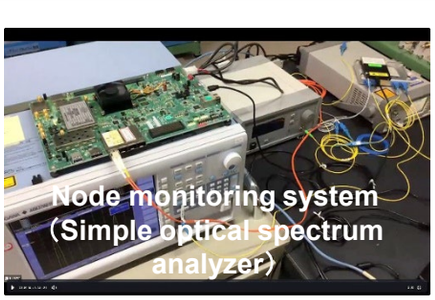
- Open and disaggregated optical networks would be capable of **CAPEX reduction** since each network module such as transponders and optical switches can be appropriately introduced in the right place at the right time. However, it might **increase OPEX** due to the complexity of network control and the difficulty of failure identification in multivendor environment. ***In order to perform highly-efficient and globally-optimized operations in such open and disaggregated optical networks, this WG promotes to develop interoperability technologies between all network modules by closely collaborating diagnosis, control/routing and analysis.***

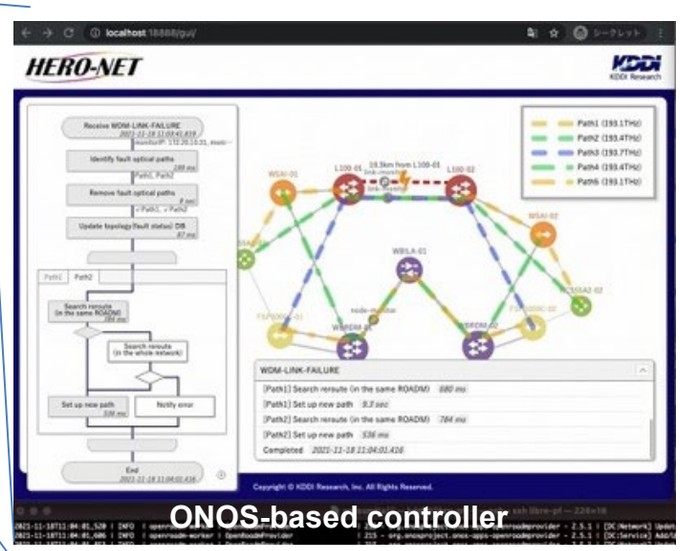
Developments and demonstration of O²N technologies

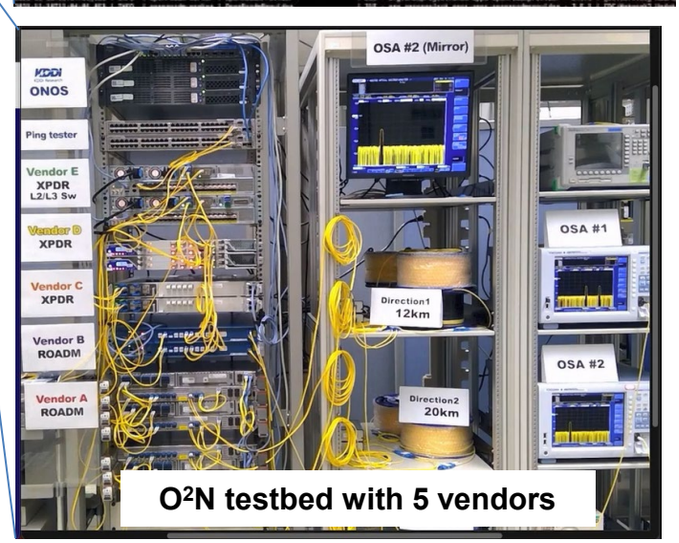
Key technologies











YouTube

*You can watch the demo movie on **Kei-han-na OpenLab YouTube channel**.*

Research Promotion Council of Kei-han-na Info-Communication Open Laboratory

Interoperability Working Group

iPOP2022 Interoperability Working Group VII

Projects

PJ31: Ethernet over OTN Technology

- 400Gigabit Ethernet -LANPHY Transmission Technology etc…

PJ32: Multi-Technology Transport Network Control Technology

- Multi Layer/ Multi Domain Network Control Technology
- SDTN (Software Defined Transport Network) etc…

Chair：Naoaki YAMANAKA（Keio University）

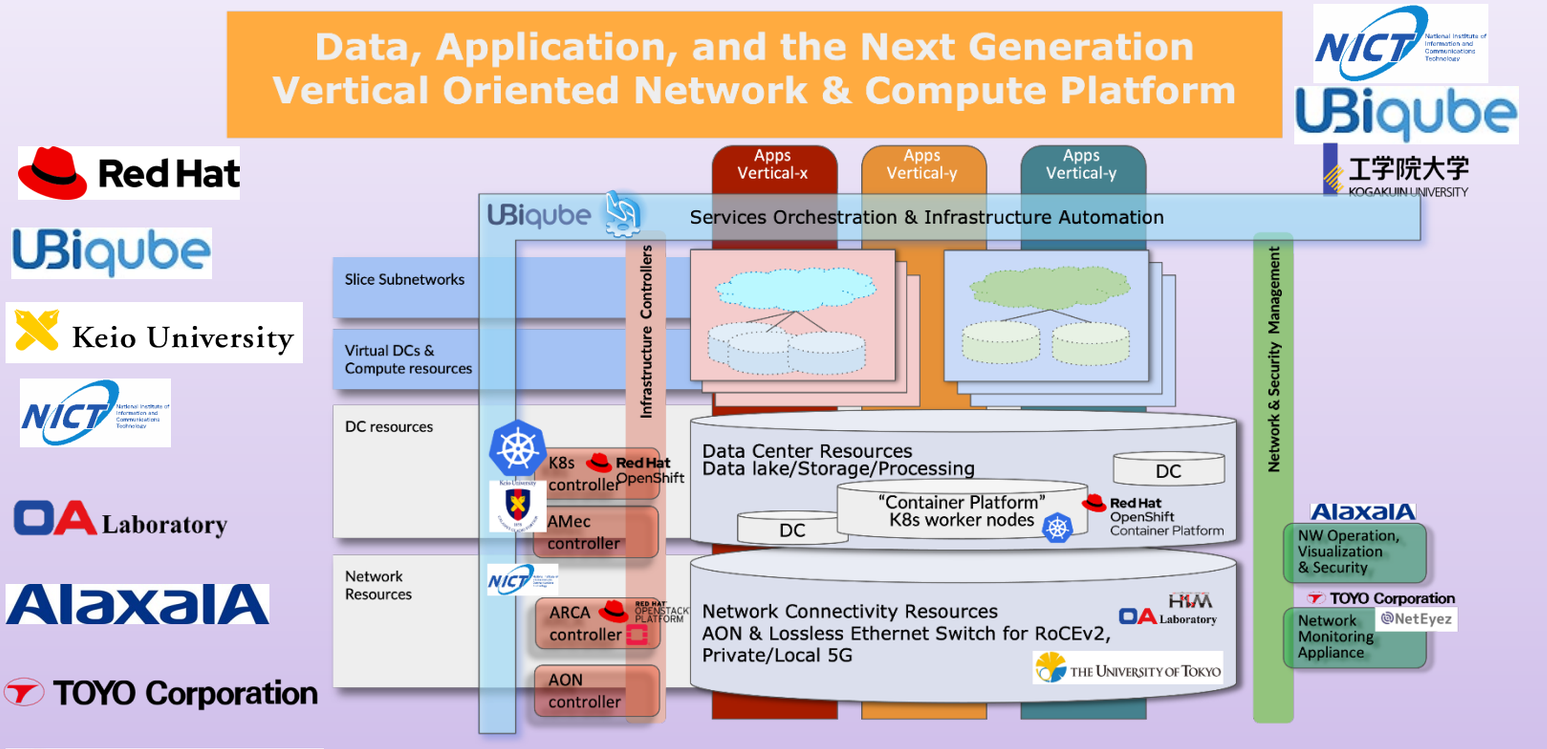
Vice chairs：
Hirotaka YOSHIOKA (NTT)
Satoru OKAMOTO（Keio University）
Masatoshi SUZUKI（KDDI Research）

Members： Keio University, NTT, KDDI Research, Anritsu, OKI, Mitsubishi Electric, NEC, NICT

Demonstration Concept

■ ***"Data, Application and Next Generation Vertical Oriented Network & Compute Platform" at iPOP2021-Showcase. (PJ32)***

◆ ***This concept of iPOP2021-Showcase focused on the elemental technologies such as telemetry, ultra high speed / flexible / secure connectivity, dynamic/distributed resource management, integrated orchestration.***



Thanks to Alaxala Networks for providing 100GE Routers

AMec: Access Metro edge compute
ARCA: Automatic Resource Control Architecture
AON: All Optical Network
RoCE: RDMA over Converged Ethernet

Figure iPOP2021 Showcase Network.

Publications

- Shinya Nakamura, Kohei Shiomoto, Hyde Sugiyama, Yusuke Hirota, Noboru Yoshikane, Kentaro Sugawara, Masatake Miyabe, Tomotaka Eguchi, Satoru Okamoto, Masaki Murakami, Takahiro Hirayama, Ikuo Sato, Thomas Roux, ``First Demonstration of End-to-End Network Slicing with Transport Network Coordination and Edge Cloud Applications in 5G Era," 24th OptoElectronics and Communications Conference/International Conference on Photonics In Switching and Computing (OECC/PSC 2019), No. PDP-4, July 2019.
- M. Shiraiwa, N. Yoshikane, S. Xu, T. Tsuritani, N. Miyata, T. Mori, M. Miyabe, T. Katagiri, S. Yoshida, M. Tanaka, T. Hayashi, H. Sugiyama, I. Satou, M. Mikuni, S. Okamoto, N. Yamanaka, B. Jeong, Y. Awaji, N. Wada, "Experimental Demonstration of Disaggregated Emergency Optical System for Quick Disaster Recovery," IEEE/ OSA Journal of Lightwave Technology (Invited), August 2018.
- M. Shiraiwa, N. Yoshikane, S. Xu, T. Tsuritani, N. Miyata, T. Mori, M. Miyabe, T. Katagiri, S. Yoshida, M. Tanaka, T. Hayashi, H. Sugiyama, I. Satou, M. Mikuni, S. Okamoto, N. Yamanaka, Y. Awaji, and N. Wada, "First Experimental Demonstration of Disaggregated Emergency Optical System for Quick Disaster Recovery," in Proc. Optical Fiber Communication Conference (OFC2018), San Diego, CA, USA, Th2A.29, March 2018.

YouTube

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