

Interoperability Working Group

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...

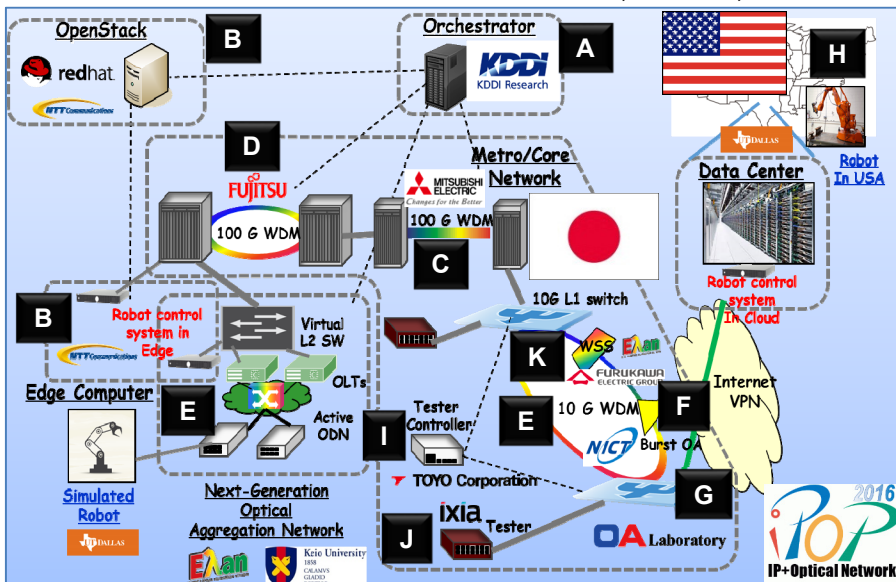
Testing/ Demonstration

1. World's First Successful Demonstration of Multi-Vendor Equipment Interoperability in Transmitting 100 Gigabit Ethernet Signals over OTN in Dec. 2011 (PJ31)

- ◆ OTN network interoperability field trial including 90 km optical fiber transmission had been demonstrated with multi-vendors for OTU4 interface carrying 100 Gigabit Ethernet signal.
 - 4 participants: Anritsu, Fujitsu, NEC, Hitachi

2. Successful Remote Control of Industrial Robot by Employing SDN-based Optical Network and Cloud/Edge Computing Technology at iPOP2016 (PJ32)

- ◆ Open demonstration of the optimized remote control of industrial robot by employing SDN-based optical network and cloud/edge computing technology (Figure 1).
 - Configuring a traffic flow across the several transport network domains and a virtual machine creation on the edge compute node.
 - Edge node assists a robot to reduce latency and minimize the data traffic volume.
 - 11 participants.
 - KDDI Research, Mitsubishi Electric, Fujitsu, NICT, Keio University; WG members
 - NTT Communications, RedHat, OA Laboratory, UT Dallas, TOYO Corp., IXIA



Key Technologies

- SDN orchestrator (OdenOS) by KDDI Research
- DC/Cloud controller (OpenStack, virtual machine) by NTT Communications and RedHat
- 100Gb/s-based WDM equipment by Mitsubishi Electric
- 100Gb/s-class packet optical transport equipment by Fujitsu
- Elastic optical access network equipment by Keio University
- Burst mode optical amplifier by NICT
- 10G-based Layer1 switch by OA Laboratory
- Industrial robot system by UT Dallas and SwRI
- Integrated, vendor-independent test automation system by TOYO Corp.
- Traffic generator by IXIA
- Wavelength-Selective Switch by Furukawa Electric (Special guest)

Figure 1 iPOP2016 Showcase Network and Key Technologies.

Standardization

- ◆ Contributed to the documentation of G.Sup43 "Transport of IEEE 10G Base-R in Optical Transport Networks (OTN)" in Oct. 2006, and updated in Dec. 2008
- ◆ One of the over clock mapping of 10G Base-R into ODU2e described in G.Sup43 was promoted to the client signal of OTU4 as a document of Revised G.709 in December 2009.
- ◆ RFC 6205 "Generalized Labels for Lambda-Switch-Capable Label Switching Routers" in March 2011

YouTube

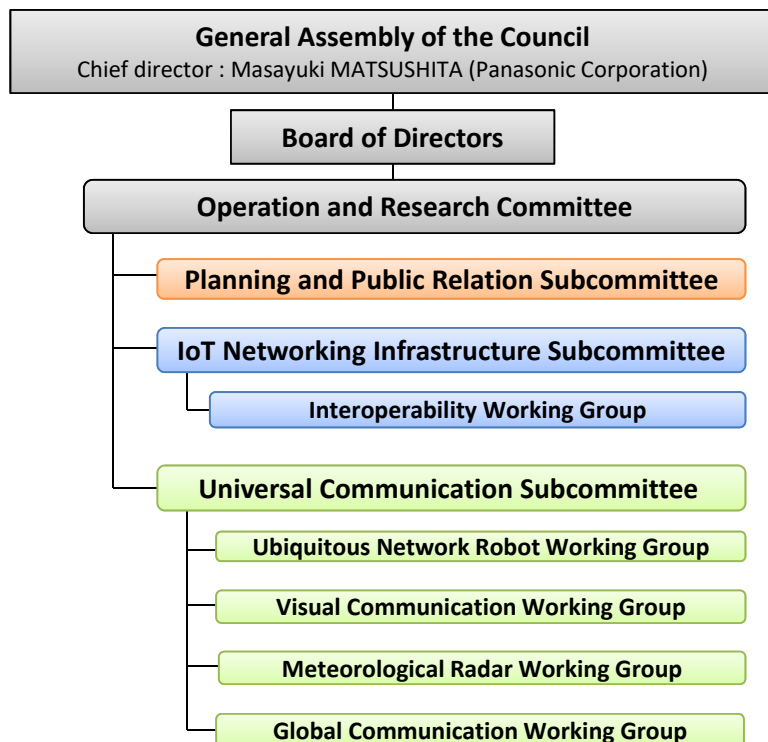
You can watch the demo movie on Kei-han-na OpenLab YouTube channel.

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

Established to promote effective use of the Kei-han-na Open Info-Communication Laboratory by encouraging research and development in the related research field of the laboratory through collaboration between industry, academia and government, and to develop new technologies, human resources and new industries, thereby fulfilling the Kansai region's role in developing the world's leading ICT economy and revitalizing the Kansai economy.



Organization



Activities

•Seminar/ Workshop



•Symposium



Website

- **Website** URL: <http://www.khn-openlab.jp/en/>
- Kei-han-na OpenLab **YouTube** Channel URL: <https://www.youtube.com/channel/UCx4GMZCaascVMbYFhUuIDuw>

