

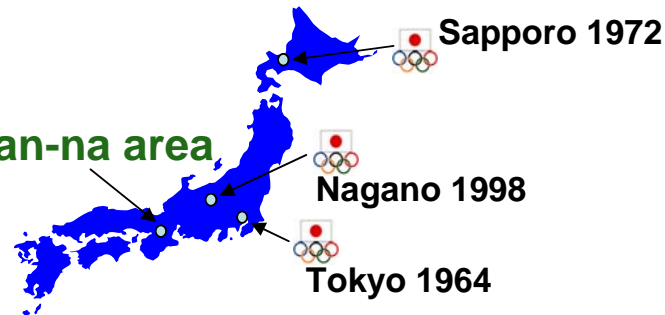
Kei-han-na Info-Communication Open Laboratory Overview

Kei-han-na is located over three prefectures in Japan Kansai area.

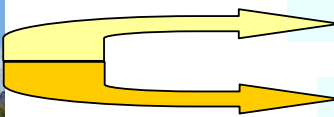
Kyoto, Osaka, and Nara

京阪奈

Kei-han-na area



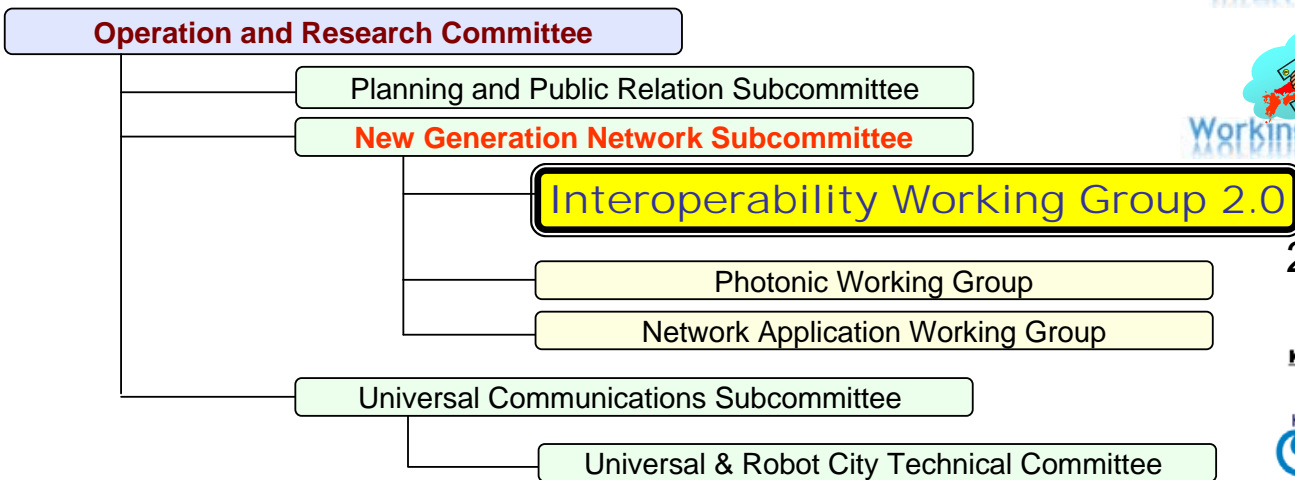
The **open laboratory** was established at 2003 with the objective of carrying out research and development based studies.



Creating new industries and services

Human resource development

Organization of the Research Promotion Council of Kei-han-na Open Laboratory



2006Q4 ~



New Generation Network Subcommittee Interoperability Working Group

Major activities

Project Code Project Name of the Research and Development

PJ21. 10GbE-LANPHY over OTN Interoperability

PJ22. GMPLS E-NNI technology & all-optical network control technology

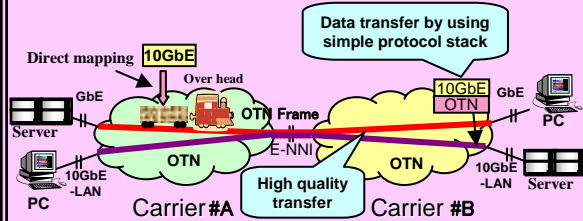
PJ23. New generation 100GE transfer / connection / control technology

Experiments

- 10GE-LANPHY over OTN testing with overseas carriers and vendors: PJ21
- GMPLS control of the GbE connection testing between carriers: PJ22
- L2SC Inter-Carrier Interface Interoperability Trial: PJ23(Demonstrating Now)

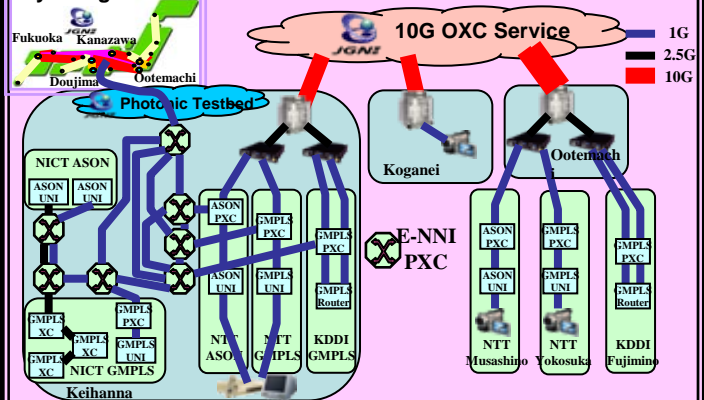
10GbE-LANPHY direct mapping technology over OTN

- "OTN (Optical Transport Network)" has been standardized at ITU-T as the next generation network architecture to realize "per wavelength" transfer functionality. The OTN frame has been designed to well adapt IP data transfer.
- It has enabled to provide simple and high quality transfer services by accommodating 10GbE signals directly into OTN without digital communication network devices such as SDH devices.



E-NNI ASON/GMPLS wide area interworking experiment

- NTT (Musashino, Yokosuka, Keihanna), KDDI Lsbs(Fujimino, Keihanna), and NICT(Koganei, Keihanna) were connected by using JGN II. In addition, they were connected to GMPLS network by using JGN II Photonic Testbed.



Conference Presentations

- **June 2006 iPOP 2006**
"Kei-han-na interoperability demonstrations on interworking of inter-carrier ASON/GMPLS network domains"
- **July 2006 OIF Workshop**
"Inter-Carrier ASON/GMPLS Network Domains Interworking Trial in Kei-han-na Open Lab"
- **Sep. 2006 APOC (Korea)**
"Interoperability Activities for Photonic Networks in Japan"
- **Sep. 2006 ECOC Workshop**
"Field Trial of Signaling Interworking of Multi-Carrier ASON/GMPLS Network Domains"
- **Oct. 2006 MPLS2006 (Washington D.C.)**
"Issues on GMPLS Inter-carrier E-NNI and a Prototype Node based on Linux"
- **June 2007 iPOP 2007**
"Inter-carrier photonic networking developing project in Japan"
"Development of GMPLS inter-carriers E-NNI prototype node based on Linux"
- **Aug. 2007 PS2007 (San Francisco)**
"Interoperability Activities for Photonic Networks in Kei-han-na Open Laboratory Interoperability Working Group"
- **Oct. 2007 MPLS2007 (Washington D.C.)**
"L2SC Inter-carrier Interface Interoperability Trial"

Standardization Activities

- Contributed to the documentation of **G.Sup43 "Transport of IEEE 10G Base-R in Optical Transport Networks (OTN)"** in Oct. 2006, and updated in Feb. 2008

Members

- Chair: Naoaki Yamanaka (Keio University)
 Sub chairs: Masatoshi Suzuki (KDDI LABS)
 Takeshi Akaike (NTT)
 Satoru Okamoto (Keio University)
 Members: NTT, KDDI Labs, NEC, HITACHI, Fujitsu, Mitsubishi Electric, Anritsu, Keio University, Oita University, NICT

Photonic Inter-Carrier Consortium @ Kei-Han-Na

Kei-han-na Consortium

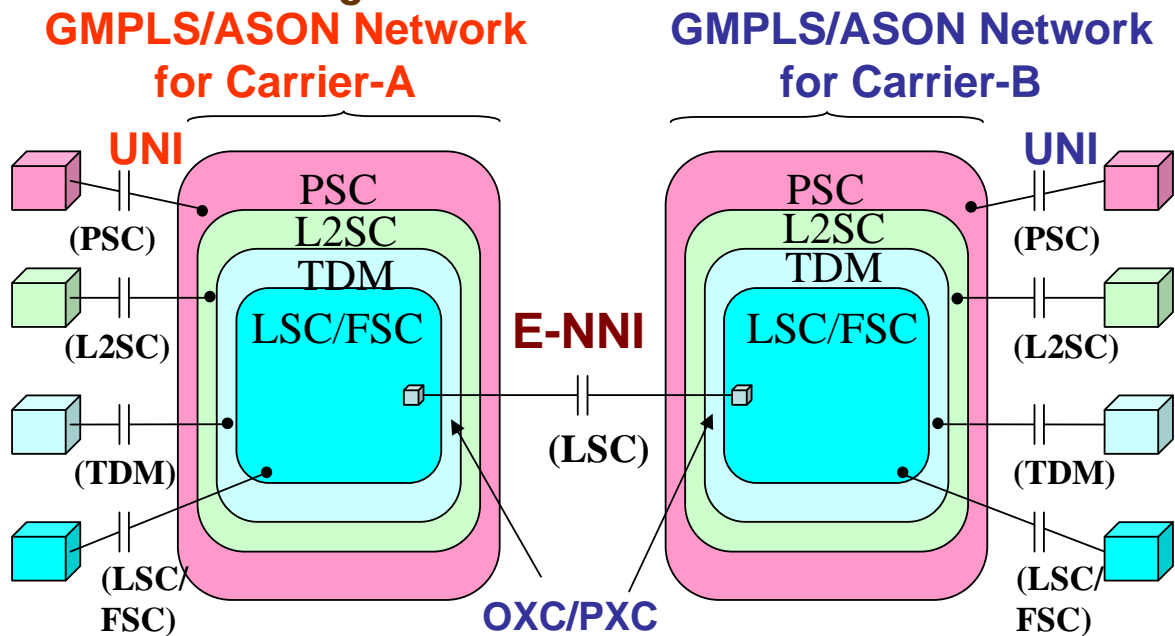
**Keio University,
NTT Laboratories
KDDI R&D Laboratories
NICT (National Institute of Information
and Communications Technology)**



Supported by the SCOPE program of the Ministry of Internal Affairs and Communications (MIC) Japan.

Developing

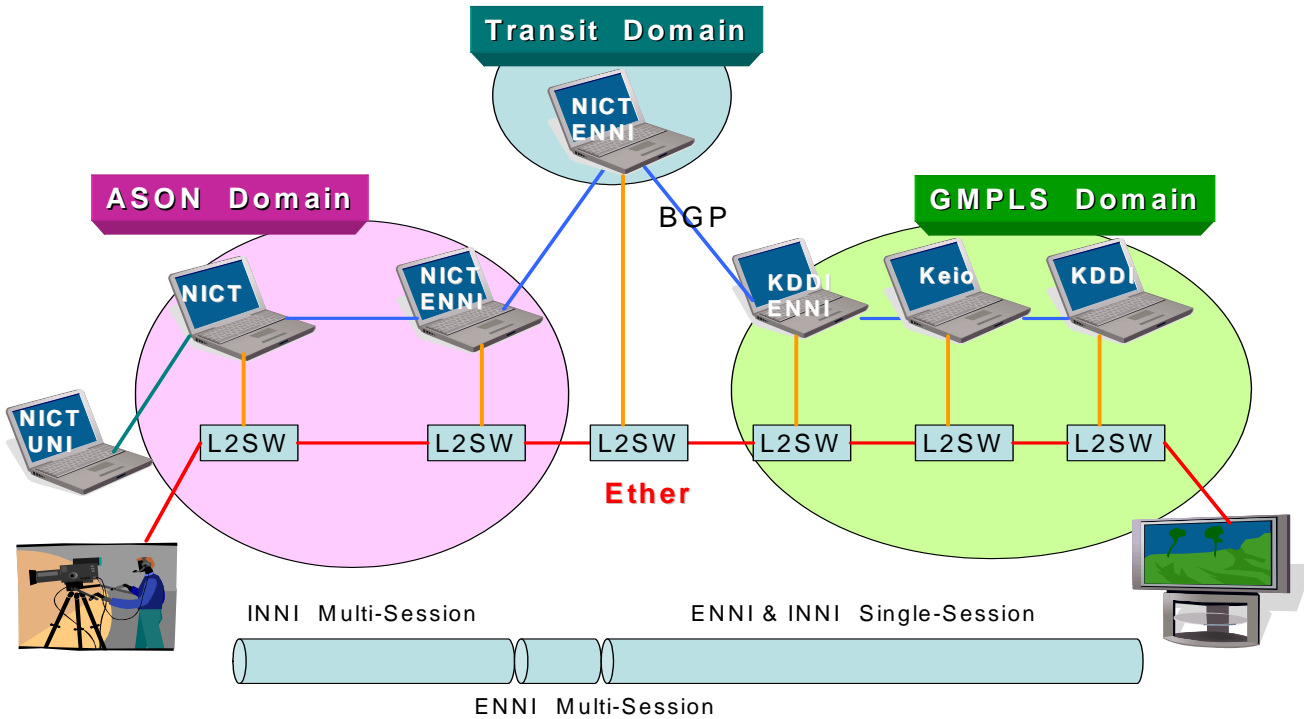
- **GMPLS based inter-carrier E-NNI protocols.**
 - Multi-layer E-NNI architecture.
 - BGP extension.
 - ASON/GMPLS network domain interworking.
 - Interworking between ASON UNI and GMPLS UNI.





L2SC Inter-Carrier Interface Interoperability Trial

Demonstration Network



Network Configuration

Node ID	NICT UNI 10.10.10.10 TNA 10.10.10.1	NICT Edge 1.1.1.1	NICT ENNI 2.2.2.2	NICT ENNI 3.3.3.3	KDDI ENNI 4.4.4.4	Keio 5.5.5.5	KDDI 6.6.6.6
IP(INNI)	172.17.1.10 /24	172.17.1.1 /24	172.17.1.2 /24		172.16.2.4 /24	172.16.2.5 /24	172.16.2.6 /24
IP(ENNI)			192.168.0.2 /24	192.168.0.3 /24	192.168.0.4 /24		
AS	3002			3003	3001		
IFID		201	201	201	201	253	201
	202	202	202	202	202	254	
LABEL		00010500	00030500	00100500	00010250	00030250	00010250
	1000	00020500	00040500	00110500	00020250	00040250	
SW Port		NICT SW 1 L2SW	NICT SW 1 L2SW	NICT SW 2 L2SW	KDDI SW 1 L2SW	Keio SW L2SW	KDDI SW 2 L2SW
		1	3	1	1	3	1
		2	4	2	2	4	2
		172.17.1.13 /24		192.168.0.16 /24			