

A Traffic-Based Energy-Efficient Access Network

**Research & Development Center
Technology Division**

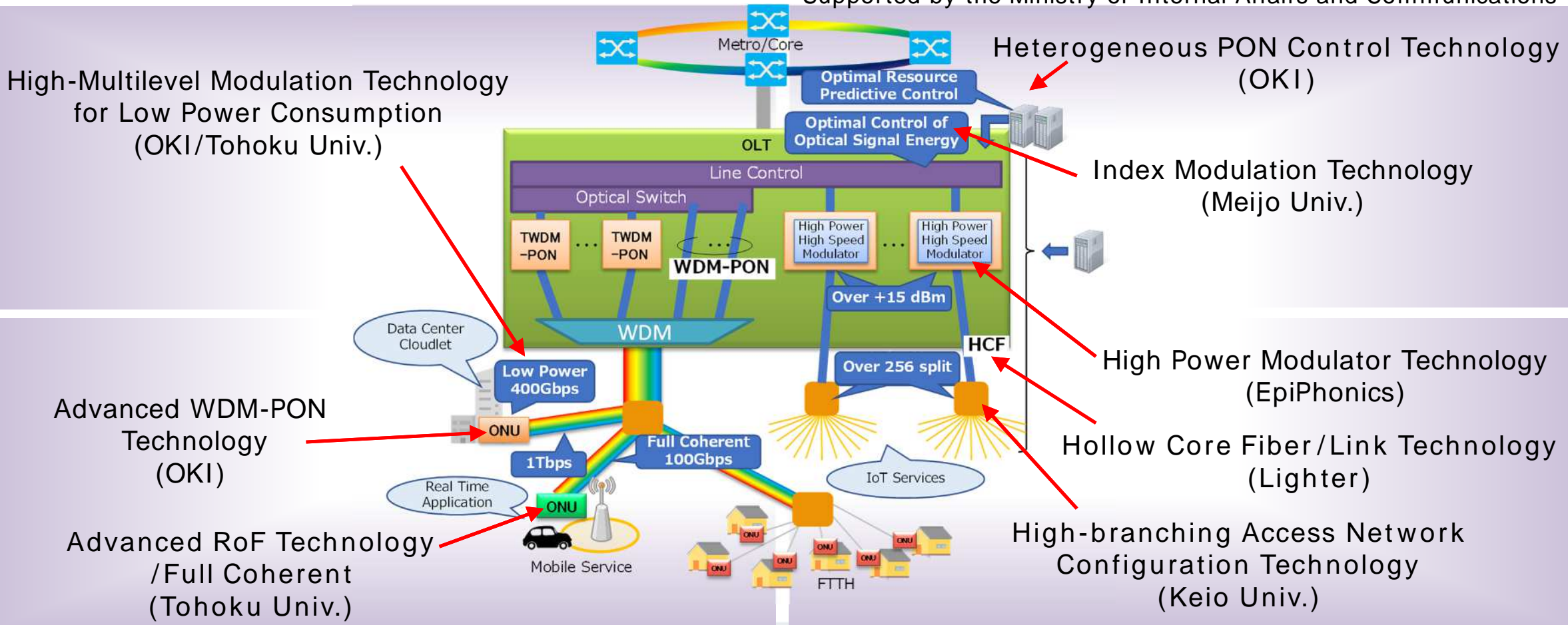
OKI Electric Industry Co., Ltd.

This research and development includes the results of the Ministry of Internal Affairs and Communications' "Research and Development of Advanced Optical Transmission Technologies Contributing to a Green Society (JPMI00316)."

Research and Development of Advanced Optical Transmission Technologies Contributing to a Green Society

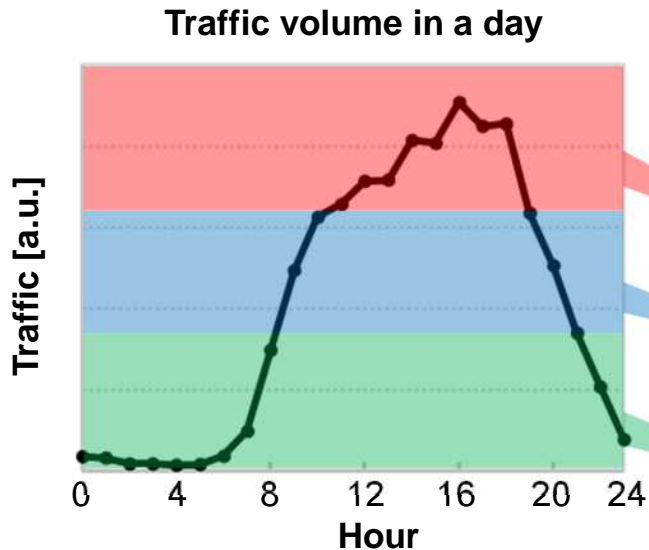
High-capacity, High-multiplex Optical Access Network Transmission Technology

Supported by the Ministry of Internal Affairs and Communications



- ✓ A high-capacity and energy-efficient access network for variety of network services.
- ✓ Expected peak rate is 100Gb/s per ONU, however that is not all time.
- ✓ Our proposing Heterogeneous PtP/PtMP selectable system can accommodate fluctuated traffic with high efficiency and low power consumption

Suitable ONU selection
 Reduction of unnecessary
 power consumption



Heterogeneous
 PON ONU

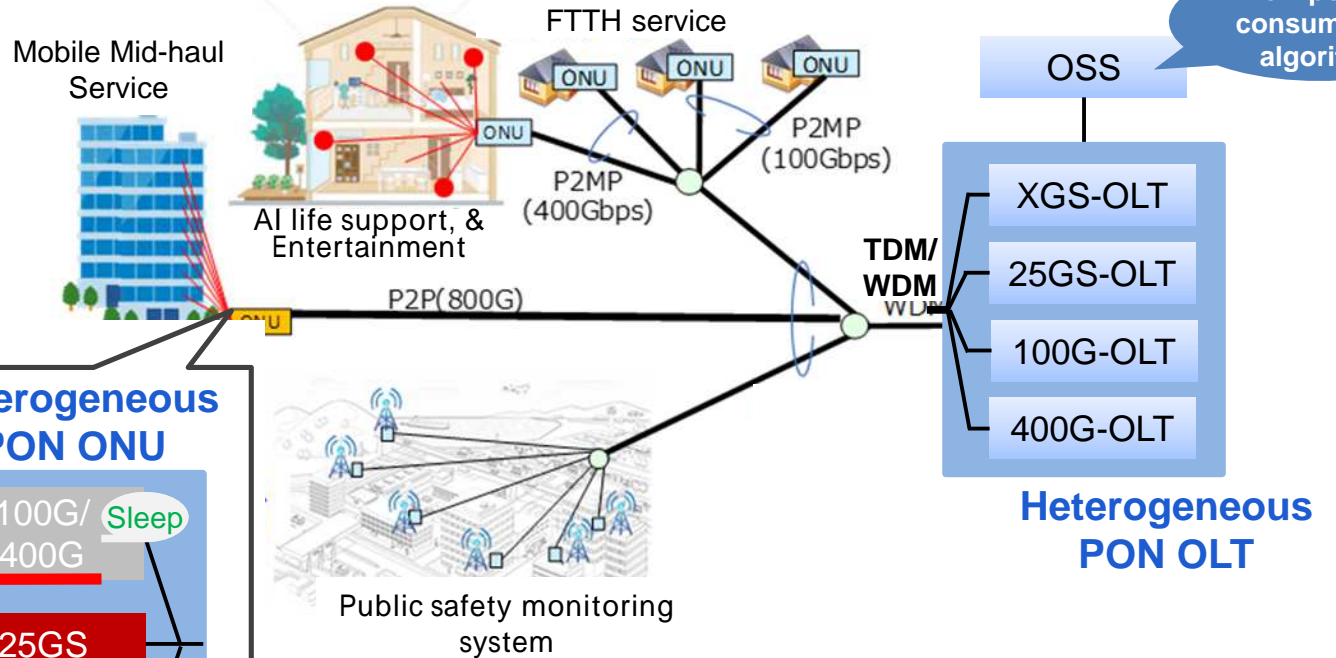
100G/
 400G

Sleep

25GS

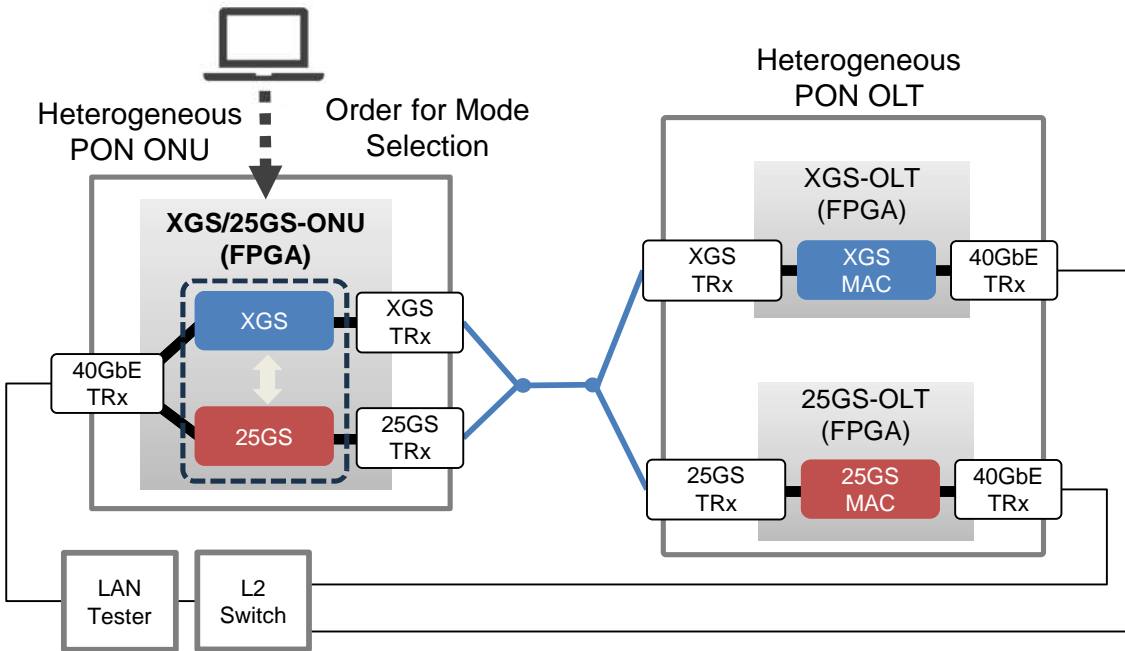
XGS

Sleep



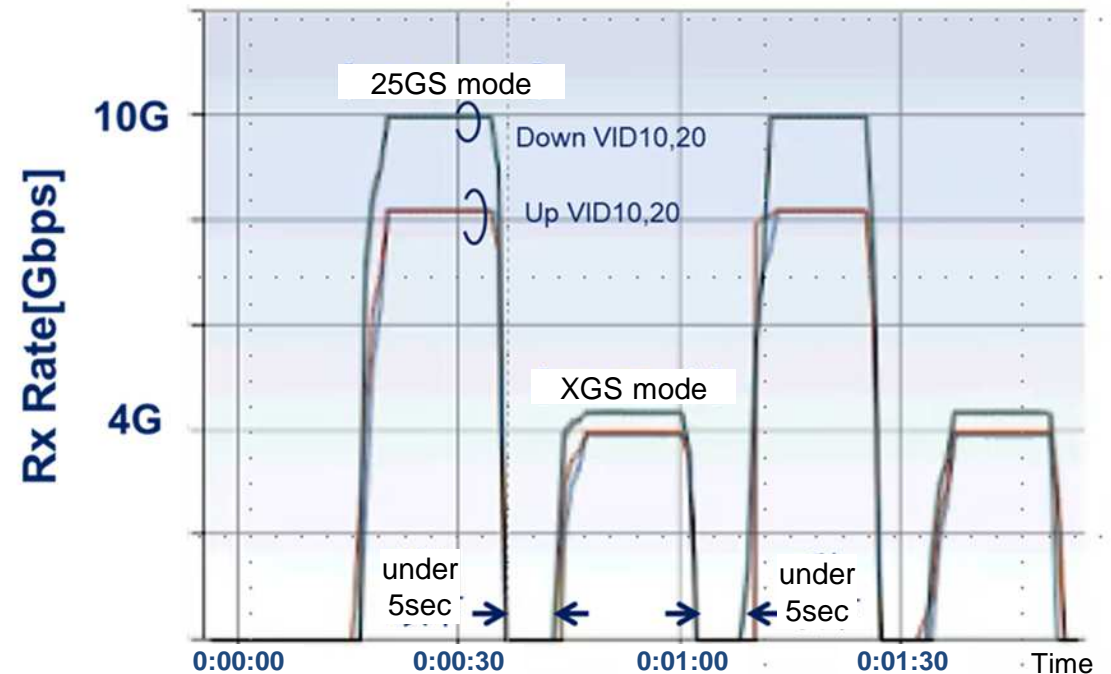
- ✓ XGS and 25GS switchable PON ONU on an FPGA evaluation board.
- ✓ XGS/25GS signals from 2 ONUs are coexist on the same ODN via WDM.
- ✓ From the console, XGS/25GS modes are changed under 5 seconds

Configuration of our test-bed



XGS-TRx : Up 1260-80nm Down 1575-80nm
 25GS-TRx : Up 1284-88nm Down 1356-1360nm

XGS/25GS mode change



x2 speed

XGS/25GS - ONU Console

```

To print log of TC trace:
tctrc exec show 100

To show the log file of app:
tail -f /tmp/ponrsc.log

```

HH:MM:SS.mSS	SFC	125usCount	action	UM#	DN#	ONU-ID	prn#1	prn#2	prn#3	prn#4	prn#5	prn#6
0505:08:14.411	0000000000	0000000000	DSYNC	-	0	-			01.1	01.2		
0505:08:14.449	0000000000	0000000000	recv PLOAM:System_Profile	-	0	-			01.2	01.2		
0505:08:14.455	0000000000	0000000000	recv PLOAM:Channel_Profile	-	0	-			01.2	01.2		
0505:08:14.461	0000000000	0000000000	recv PLOAM:Burst_Profile	-	0	-	0		01.2	01.2		
0505:08:14.467	0000000000	0000000000	recv PLOAM:Burst_Profile	-	0	-	1		01.2	02-3		
0505:08:14.585	0000000000	0000000000	SN grant	0	0	-			02-3	02-3		
0505:08:14.585	0000000000	0000000000	send PLOAM:Serial_Number_ONU	0	0	-	4f4b495f	41424331	02-3	02-3		
0505:08:14.585	0000000000	0000000000	recv PLOAM:Assign_ONU-ID	0	0	45			02-3	02-3		
0505:08:14.585	0000000000	0000000000	send PLOAM:Registration	0	0	45			02-3	04		
0505:08:14.588	0000000000	0000000000	recv PLOAM:Ranging_Time	0	0	45	00114029		04	04		
0505:08:14.588	0000000000	0000000000	send PLOAM:Acknowledge	0	0	45			04	05.1		
0505:08:14.699	0000000000	0000000000	recv PLOAM:Assign_Alloc-ID	0	0	45	0		05.1	05.1		

Measured Throughput

