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NTT Corporation, Japan

IMPORTANT KEYS FOR OPTICAL ACCESS NETWORK

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NTT

Innovative R&D by NTT

Important Keys for Optical Access Network

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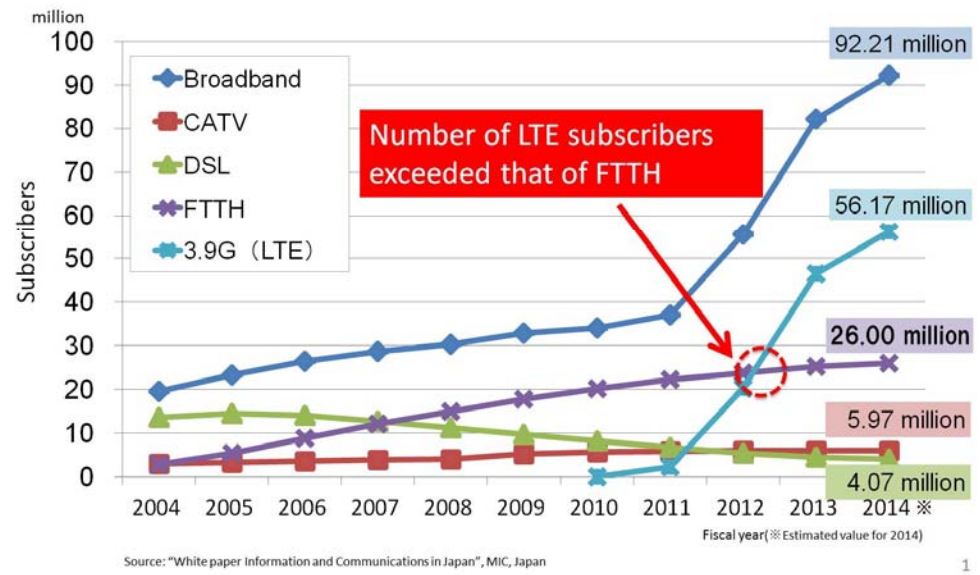
Number of broadband subscribers in Japan



Source: "White paper Information and Communications in Japan", MIC, Japan

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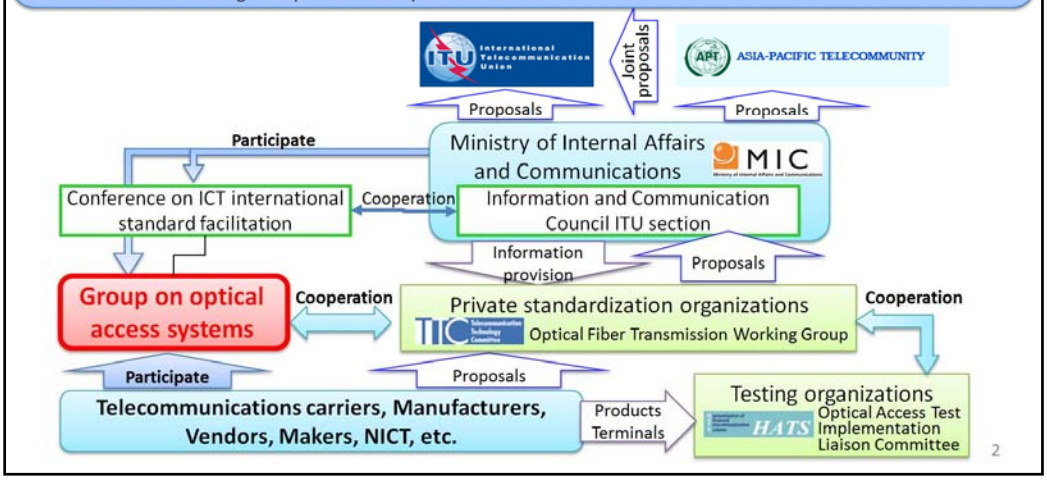
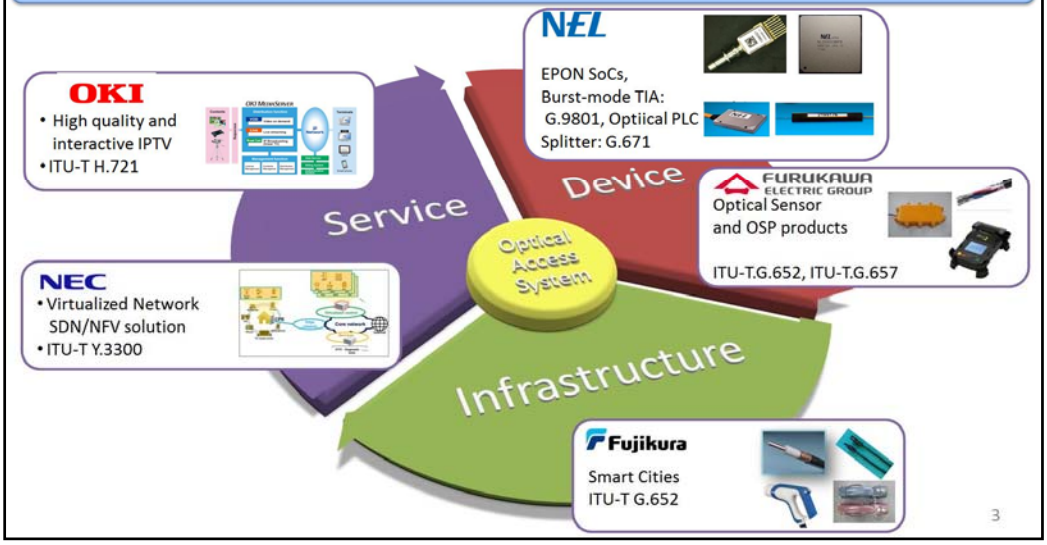
Standardization and Development Activities of Optical Access Systems in Japan

- Established panel on the international standardization of the passive optic network system in October 2011. The Group on optical access systems panel consists of Japan-related companies.
【Panel】Telecommunication carriers、Vendors、Makers、Research Institutes、SDO（TTC）、MIC
- Standardized G.epon technology (G.9801) based on 10G-EPON in ITU-T in cooperation with the optical fiber transmission Working Group of TTC in September 2013.



Overview of the Showcasing from Group on optical access systems

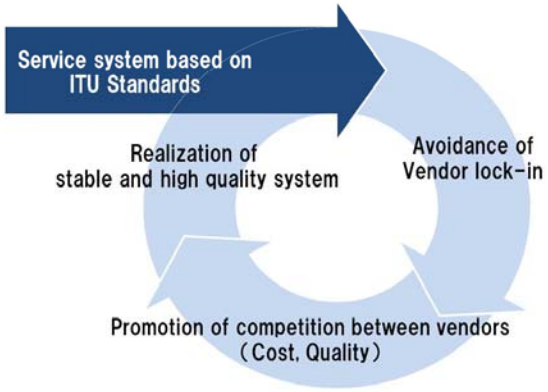
- 5 companies from Group on optical access systems participate in this showcasing.
- Products based on ITU standards will be shown.



Merit of infrastructure construction based on ITU International standards

- C&I Testing and Showcasing aims promotion infrastructure construction based on International standards by showing the merit of the product based on ITU standards.

Why you should construct infrastructure based on ITU standards?



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Summary of the Showcasing from Group on optical access systems

Showcasing from Group on optical access systems

	Theme	Related ITU standards	Summary	Exhibition company
Device	Optical Sensor and OSP products	Optical fiber spec • ITU-T.G.652 • ITU-T.G.657	• Optical sensor • Fusion splicer & other tools • Optical cable samples	Furukawa Electric
	Components for Broadband Access Networks	• G.9801 • Optical PLC Splitter: G.671	• EPON OLT/ONU MAC LSI • 10G/1G Burst-mode TIA • Optical PLC Splitter and other photonic components	NTT Electronics
Infrastructure	Smart Cities	• ITU-T G.652	• Open Space Wi-Fi • Optical Fiber Perimeter Intrusion Detection System • WBLCX System for Wireless LAN / HVSC System • Mega Solar device / Quick Charger for EV	Fujikura
Service	Virtualized Network SDN/NFV solution	• ITU-T Y.3300	• Transport SDN Solution • virtualized Customer Premises Equipment Solution	NEC
	IPTV	• ITU-T H.721	• High quality and interactive TV services. • Video on demand (VOD) services • Linear TV services • 2k / 4k	OKI

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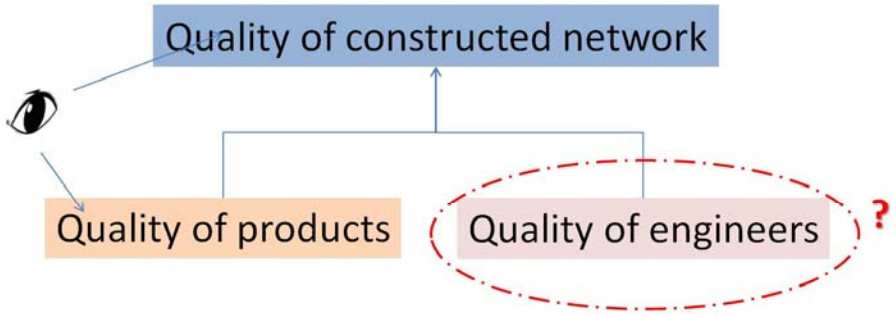
Quality of constructed network



The quality of engineers is not viewable.

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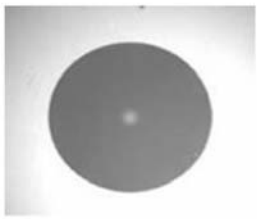
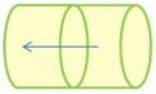
What would happen if engineers are less skilled?

Work by skilled engineers

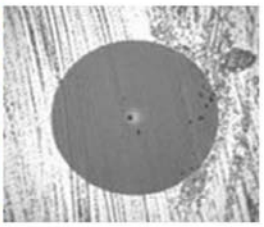


Clean surface

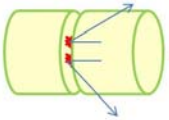


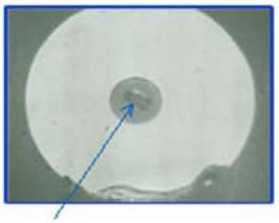
Little reflection on surface without dirt

Work by inefficient skilled engineers



Leaving finger oil traces on surface





Finger oil was exposed by high power laser and core has melted

- Dirt causes diffuse reflection on surface

(source: NTT-AT)

We should consider quality of enginners from the beginning.
Because it's very hard to repair whole FTTH network after growth.

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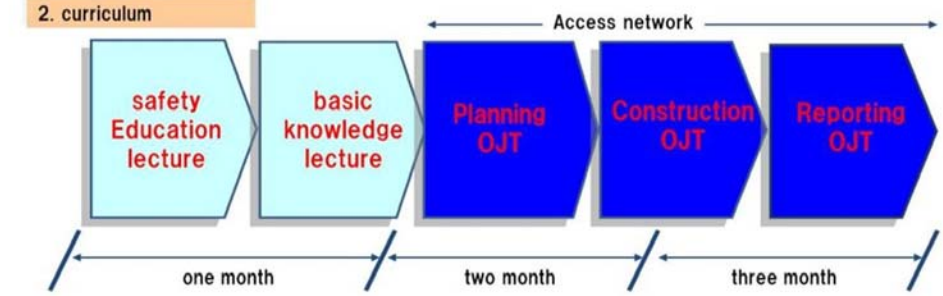
Example1
"EG (Engineering) course" Internal Training of NTT-East

1. Outline of the course

Course name	Number of trainees of FY2013			
	1Q	2Q	3Q	total
basic engineering course	5	7	9	**21**

Target objective
To get essential skill as a construction manager

2. curriculum



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Example2
"Optical Fiber Splicing Training course" (NTT-West in AP)

Ensure the quality of FTTH construction for nationwide deployment
- Held the FTTH training program for contractors of NBN in Singapore, collaborate with FOA (Local consulting Co.) and Kyowa Exeo in July 2010.
- Provided lectures including Japan's advanced technologies.
- Up to 70 trainees from Singtel, OpenNet, and contractors attended (expected 64).

Lectures cover technologies which support the FTTH services, and also appealing NTT's state-of-art technologies of construction and maintenance in optical communications.

Trainees with practical experiences commented about the practical followed by lectures : "it is worthwhile to experience the whole process at once."

According to the questionnaire gathered from the trainees, the training received high evaluation: "the training on advanced technologies were worthwhile to attend."

(Source: NTT West)

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Presentation from Exhibitors

Report of Broadband Access network showcasing (NTT Electronics) NEL

Report of Smart City showcasing (Fujikura) Fujikura

Report of Optical Sensor showcasing (Furukawa Electronic) FURUKAWA ELECTRIC GROUP

----------Coffee Break----------

Report of IPTV Testing and showcasing (OKI) OKI

Report of SDN/NFV showcasing (NEC) NEC

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Conclusion

1. FTTH is already matured in Japan. More than 26 million subscribers with stable and high quality network.
2. We should construct infrastructure **based on ITU standards**...
   to avoid vendor lock-in,
   to realize stable and high quality system,
   and to promote competition between vendors.
3. Standardized **G.epon technology (G.9801) based on 10G-EPON in ITU-T in** cooperation with the optical fiber transmission Working Group of TTC in September 2013.
4. FTTH quality depends on **quality of engineer** largely and it should be improved from the beginning. It's almost impossible to re-build whole FTTH network after growth.
5. NTT group has experience to provide **training** and **consulting** to other carriers.

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