

SOURCE:	ARIB (NTT)
TITLE:	Wiress LAN and Fixed Wireless Access in Japan
AGENDA ITEM:	GRSC-4 5.3
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**gsc11\_grsc4\_15**

# Wiress LAN and Fixed Wireless Access in Japan

ARIB

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# Contents



## Standards, Applications and Frequencies of

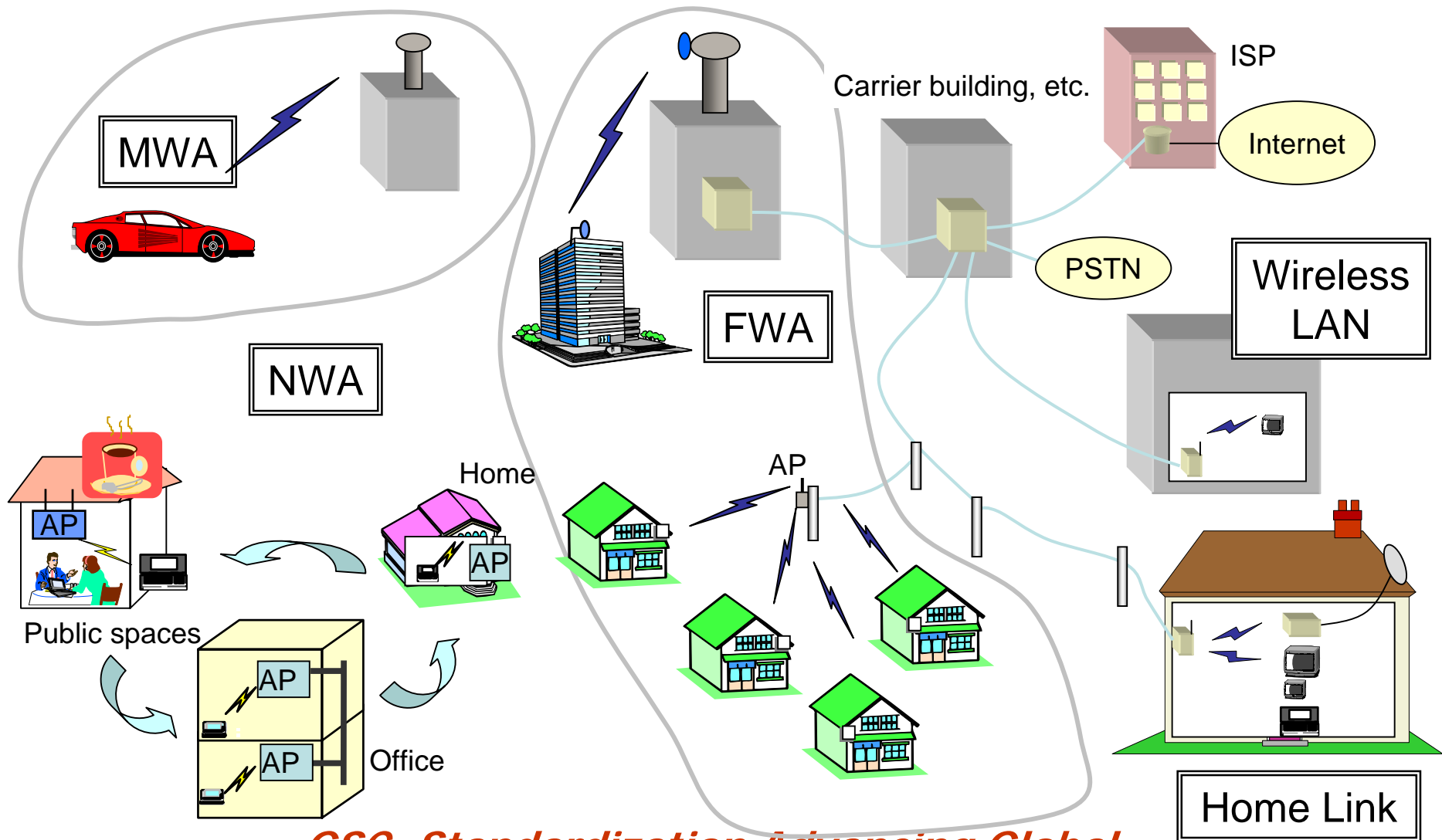
**Wireless LAN**

**Fixed Wireless Access**

**in Japan**

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# Wired Broadband Access and Wireless Access Systems



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# Overview of ARIB Standards for WLAN and FWA in Japan



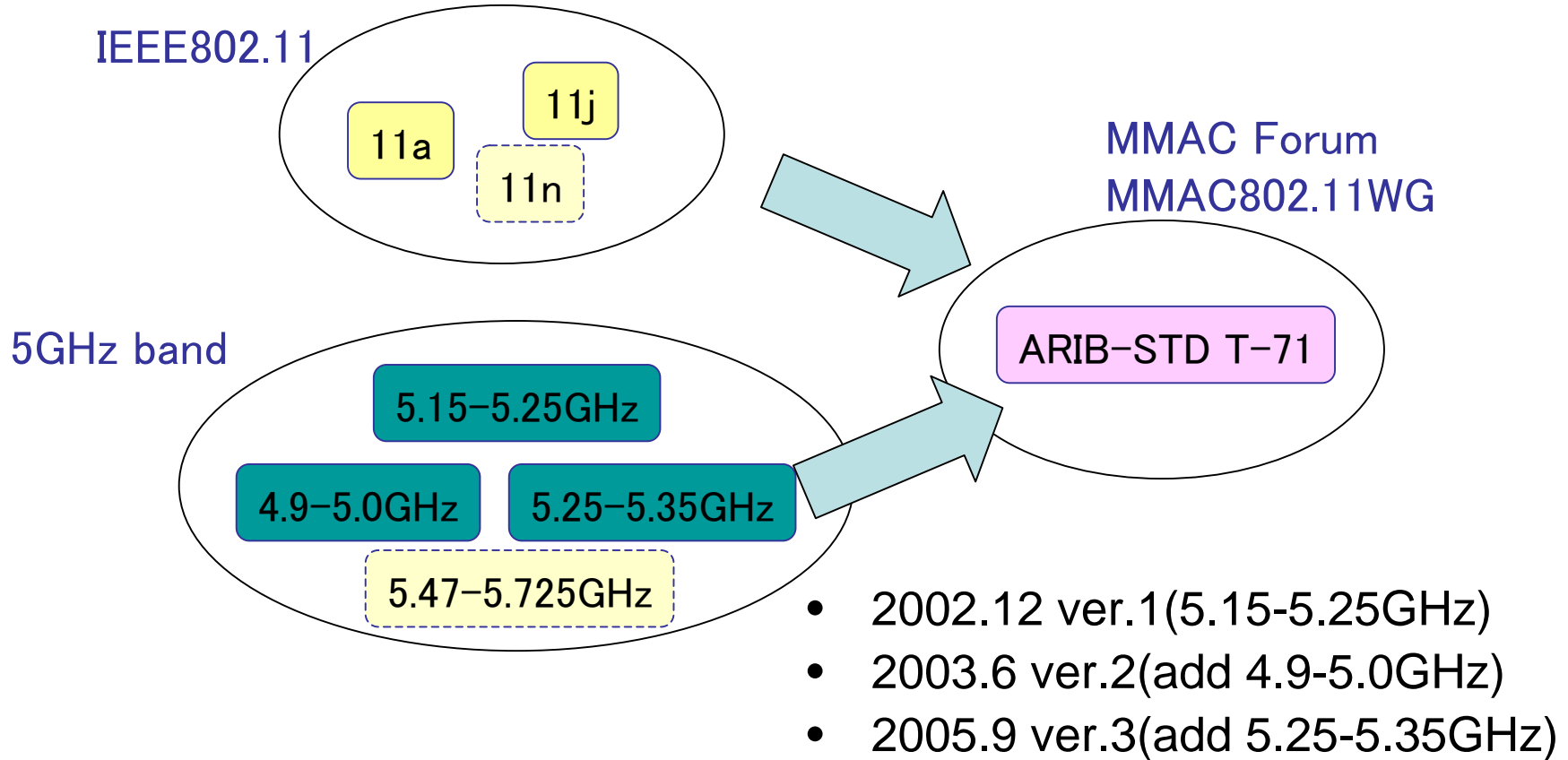
Standard Code (Enactment date)	Scope
STD-T33 (Feb.1999)	2.4GHz WLAN (802.11b)
STD-T50 (May.2002)	Infrared WLAN
STD-T58 (Oct.2000)	FWA (P-P, 22/26/38GHz bands)
STD-T59 (Mar.2000)	FWA (P-MP, 26/38GHz bands)
STD-T66 (Mar.2003)	2.4GHz WLAN (802.11b/g)
STD-T70 (Nov.2002)	HiSWANa (5GHz band)
STD-T71 (Jun.2003)	5GHz WLAN (802.11a)
STD-T74 (May.2001)	High speed WLAN(60GHz band)
STD-T83 (Dec.2002)	HiSWANb (25GHz band)

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# **Standards and Frequencies of 5GHz Band Wireless LAN**

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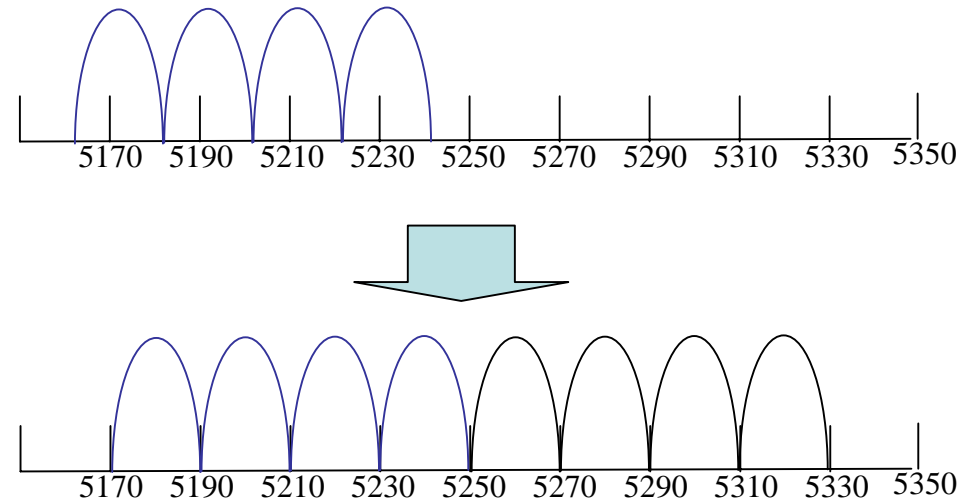
# ARIB STD T71



# ARIB STD T71 ver.3 Background



- 2003.7 WRC03:  
5.15-5.35GHz and 5.47-5.725GHz

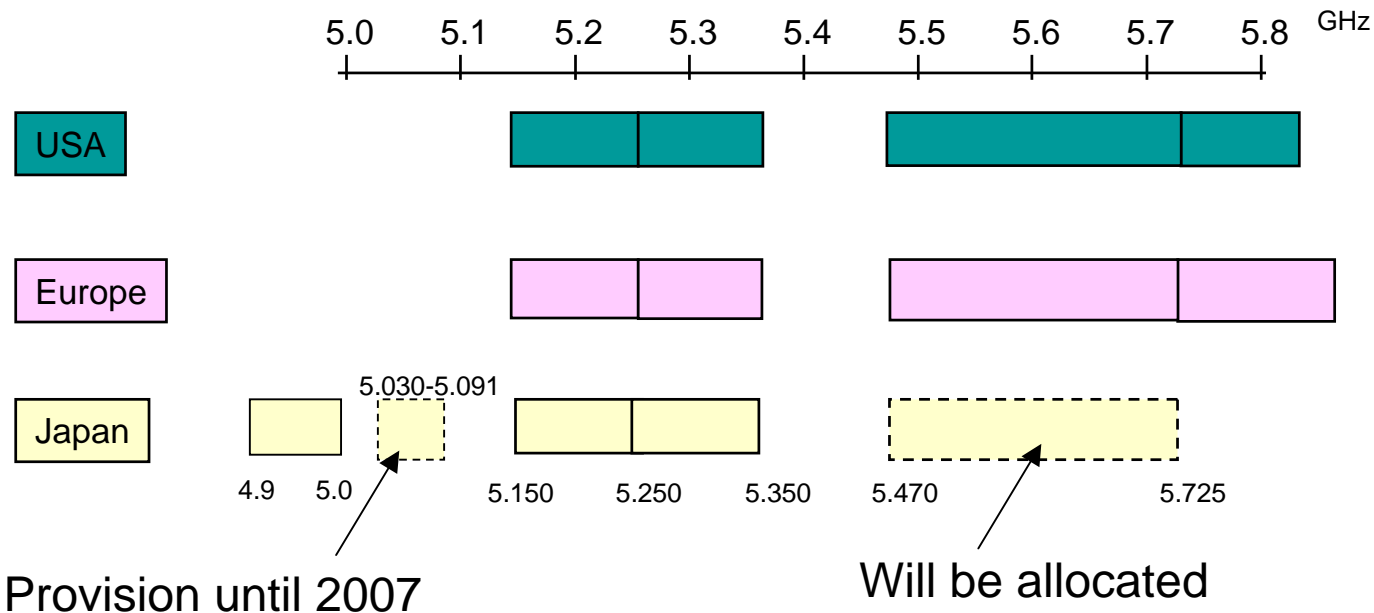


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# Frequency Assignment of 5GHz Band in USA, Europe and Japan



- USA : 5.15-5.35 GHz, 5.47-5.725 GHz, 5.725-5.825 GHz
- Europe : 5.15-5.35 GHz, 5.47-5.875 GHz
- Japan : 5.15-5.35GHz, 4.9-5.0GHz, 5.03-5.091 GHz



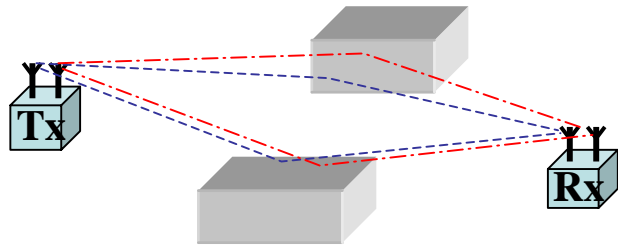
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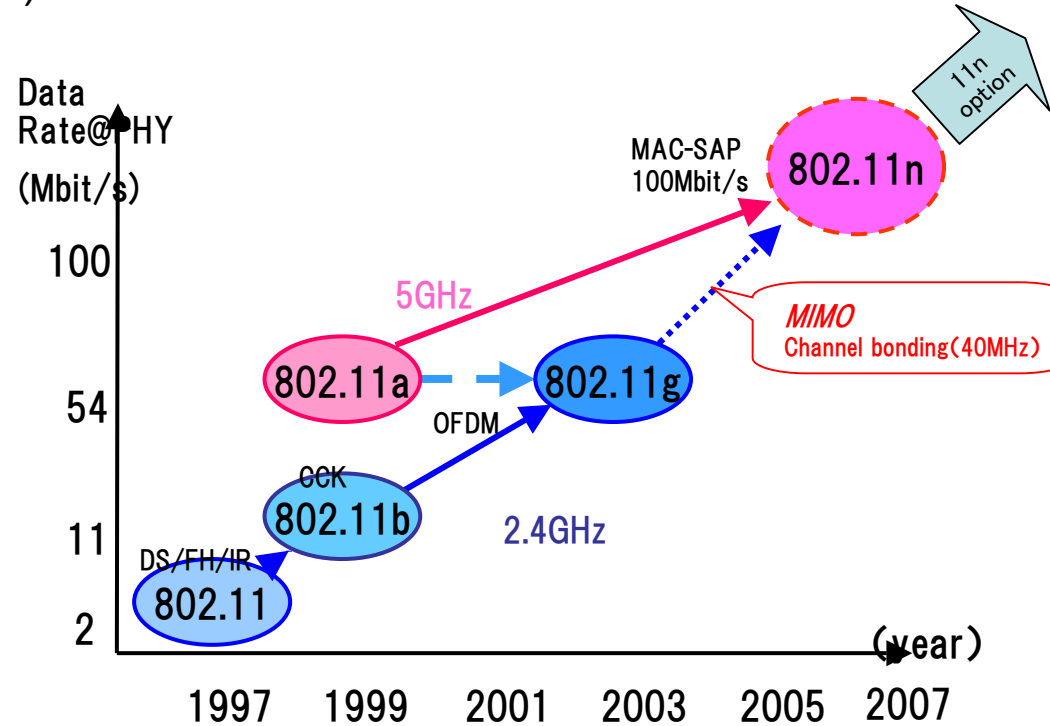
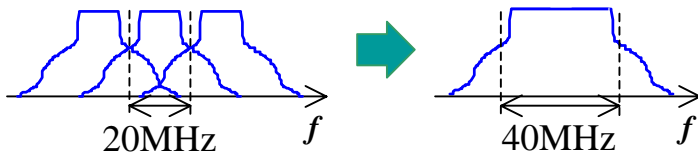
# New Concil



- Resumption from 2005.4
- 100Mbps system based on 802.11n
  - MIMO (Multi-Input Multi-Output) –OFDM

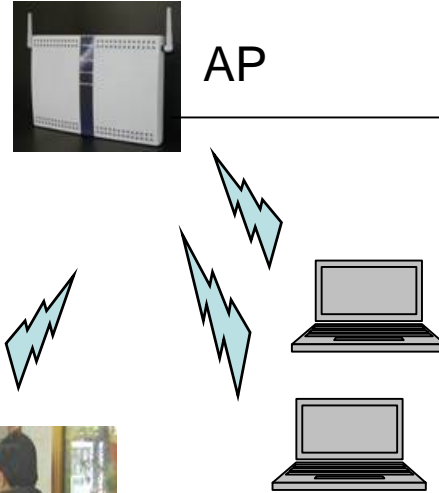
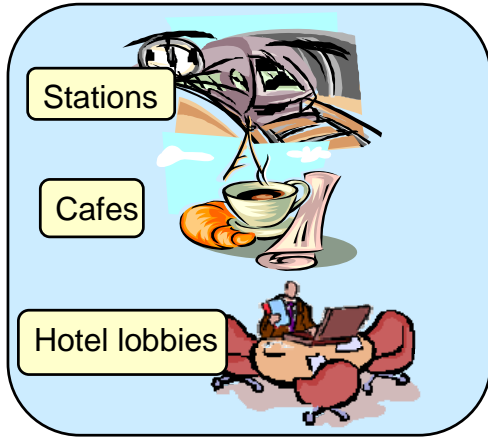


– Channel Bonding-40MHz/ch



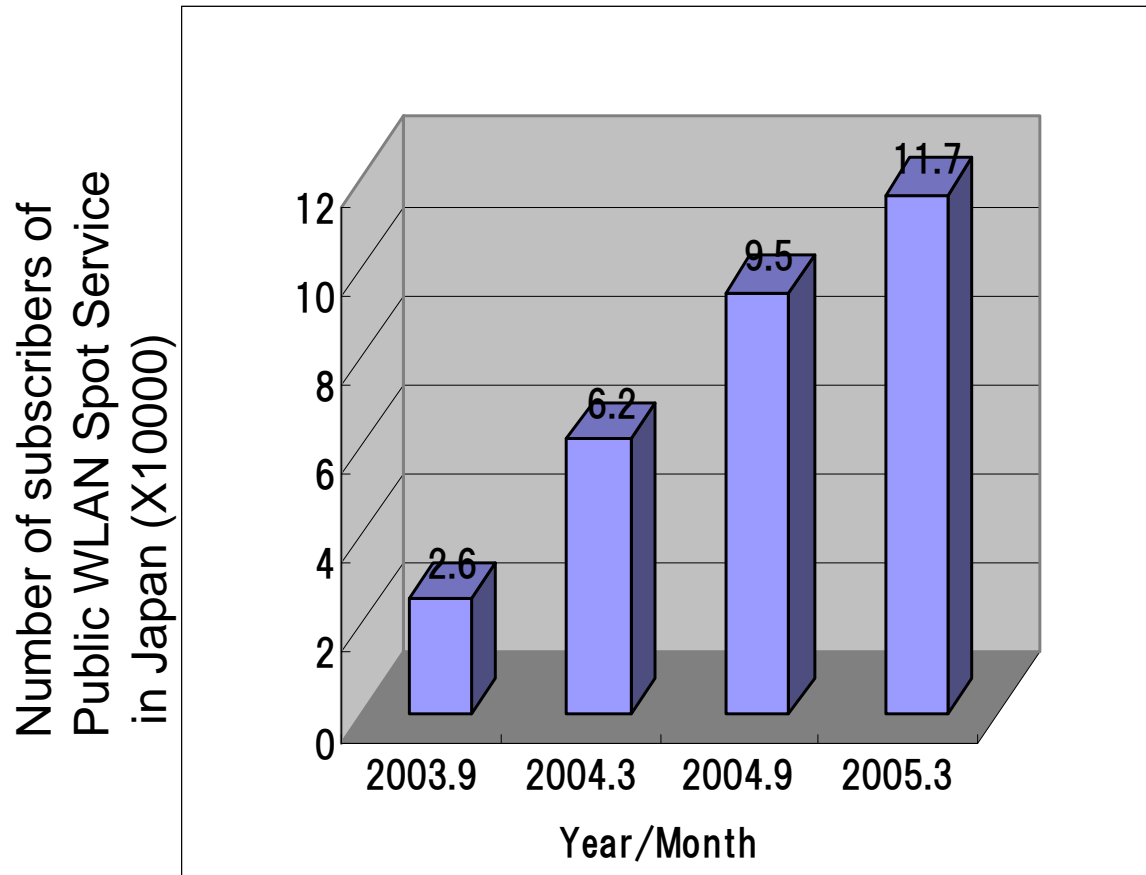
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# NTT Group's Service -HOTSPOT, Flet's Spot, Mzone-



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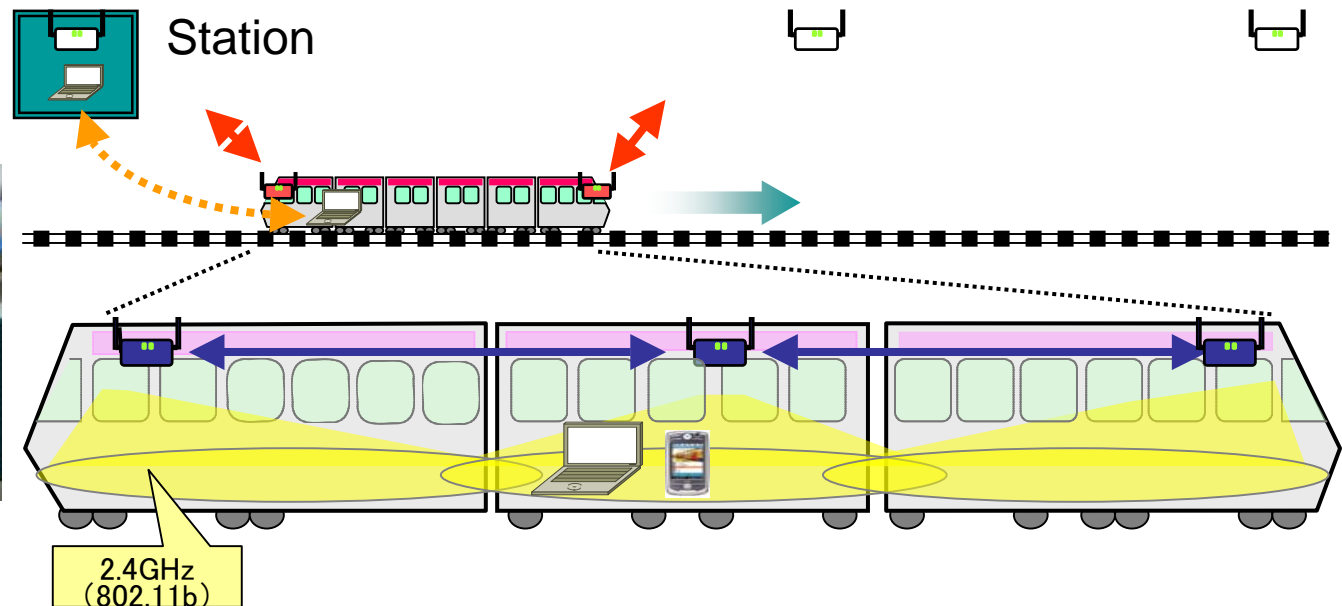
# Subscribers of Public WLAN Spot Service in Japan



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# WLAN spot in trains

- Tsukuba Express:
- New Train (2005.8) 58.3km 45min
- Tokyo(Akihabara)-Ibaragi(Tsukuba)
- NTT BP (Broadband Platform)



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# **Standards and Applications of Fixed Wireless Access**

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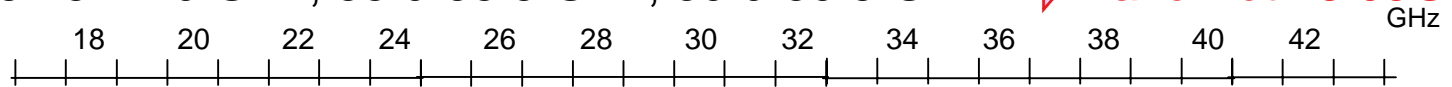
# Frequency Assignment of 18 - 40GHz Band in USA, Europe and Japan



USA : 17.7-19.7 GHz, 24.25-24.45 GHz, 25.05-25.25 GHz, 27.5-28.35 GHz, 29.1-29.25 GHz, 31.0-31.3 GHz, 38.6-40.0 GHz ➤ Bandwidth: 5.1 GHz

Europe : 17.7-19.7 GHz, 24.5-26.5 GHz, 37.0-39.5 GHz ➤ Bandwidth: 6.5 GHz

Japan : 17.7-18.72 GHz, 19.22-19.7 GHz, 22.0-22.4 GHz, 22.6-23.0 GHz, 25.25-27.0 GHz, 38.0-38.5 GHz, 39.0-39.5 GHz ➤ Bandwidth: 5.05 GHz



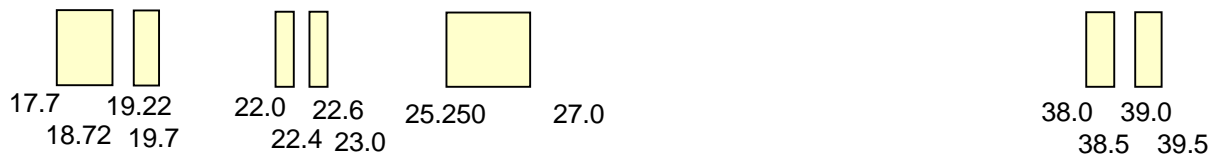
USA



Europe



Japan



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# Technical Requirements for Quasi-millimeter and Millimeter FWA

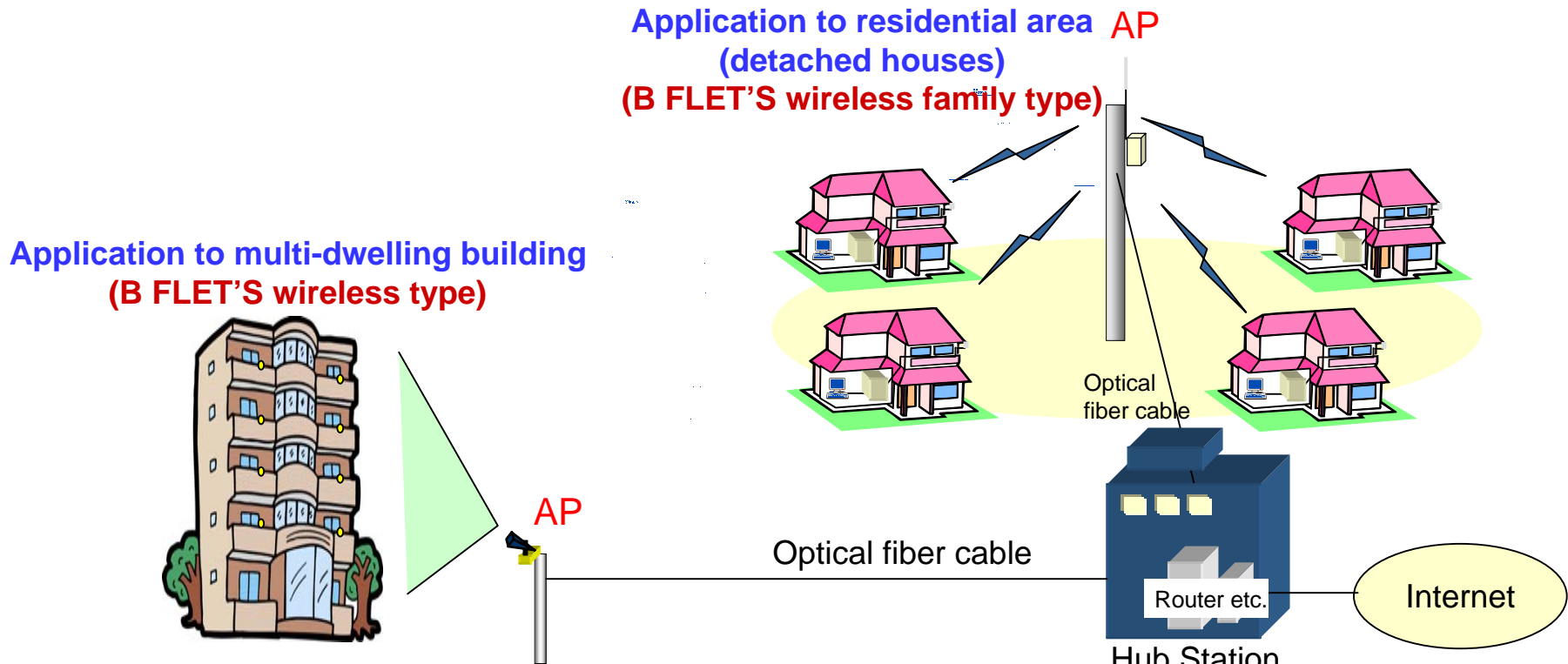


System Configuration	Point- to-point (ARIB STD-T58)	Point- to-multipoint (ARIB STD-T59)
<b>Target</b>	Corporate User	Residential User
<b>Frequency Band</b>	22, 26, 38 GHz	26, 38 GHz
<b>Duplex</b>	FDD	FDD, TDD
<b>Access</b>	————	TDMA, FDMA
<b>Modulation</b>	4PSK, 4FSK, 16 QAM or higher	GMSK, 4PSK, 16QAM or higher
<b>Transmission Speed</b>	~156 Mbps	Not specified
<b>Transmission Power</b>	~ 0.5W	

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# System Configuration

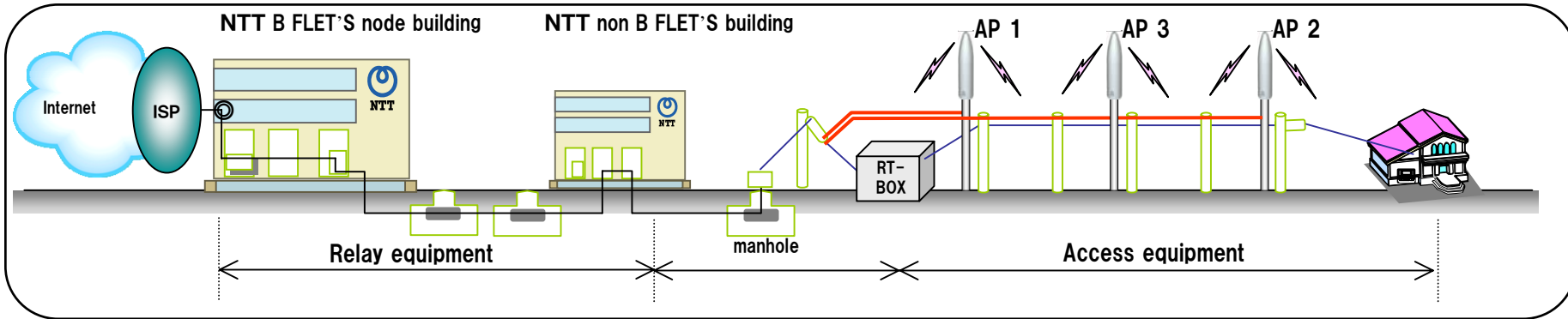
- ❑ 26-GHz band wireless access system
- ❑ Throughput: 46 Mbps (16QAM) and 23 Mbps (QPSK)



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# Deployment example of “B FLET’S Wireless Family Type”



View of service area from an AP



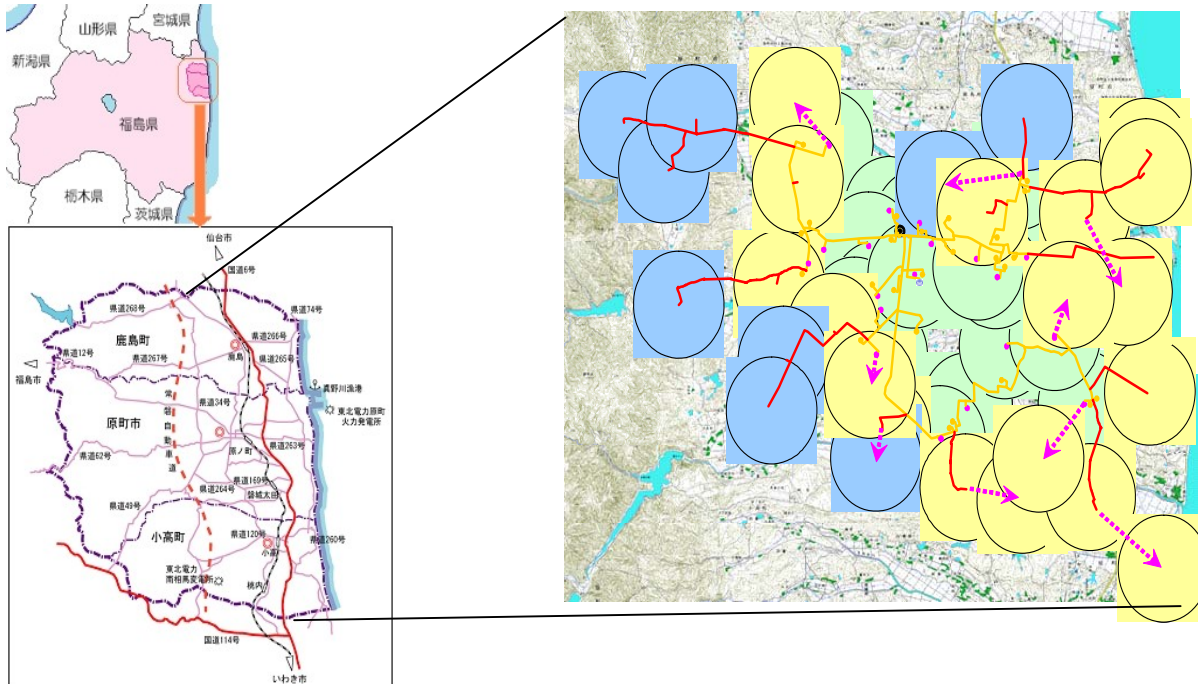
AP on an electrical pole

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# Deployment example of local government specified area



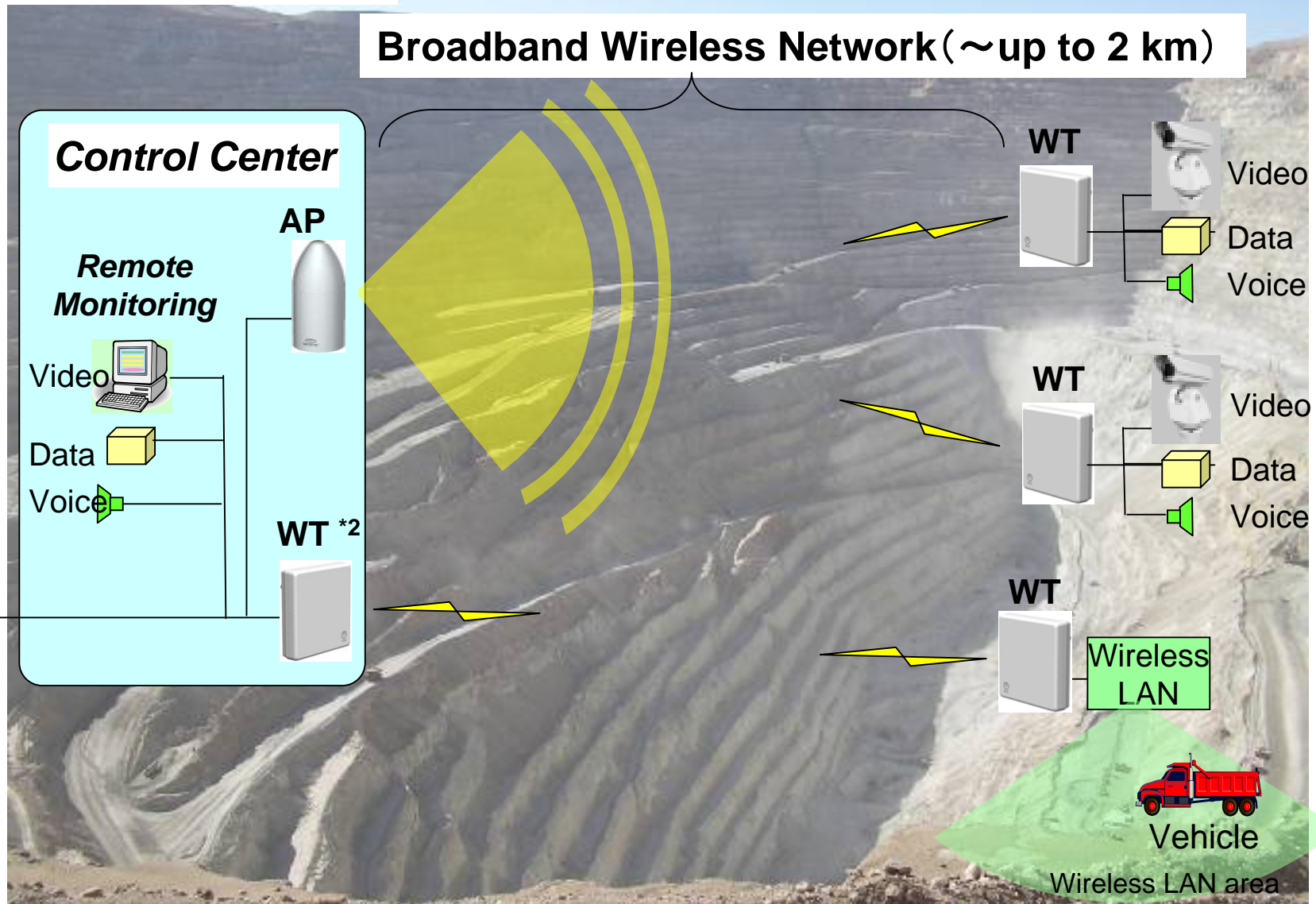
Since July 2003, Haramachi City\*, Fukushima Prefecture, has been providing a broadband service for its residents by combining the municipal intranet (optical fiber core network) and WIPAS.



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# Example of providing ICT service on mines by using WIPAS

Open Pit Mine in Chile



**Thank you for your attention**



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