



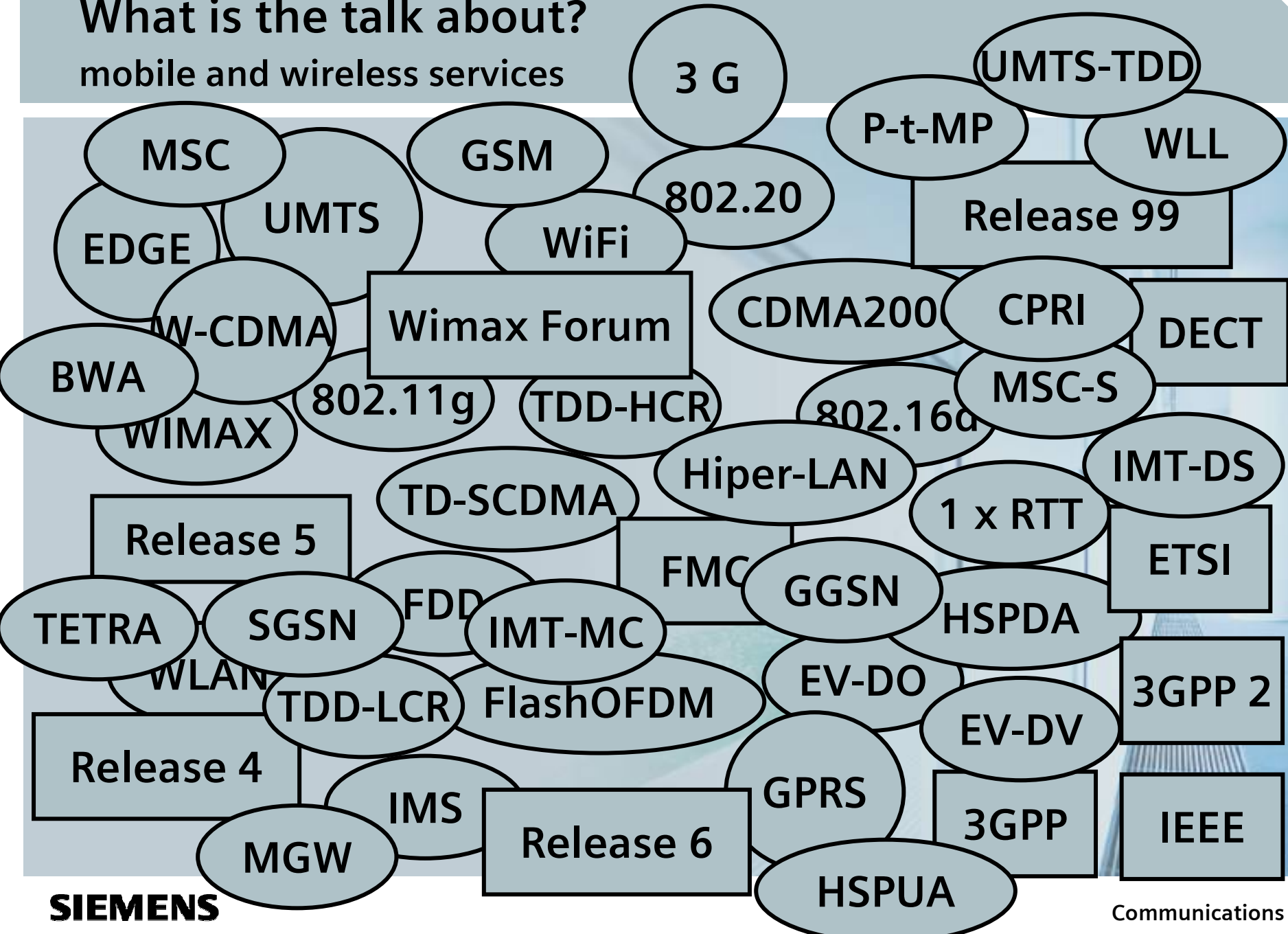
# Standardization

The jungle of standards – what is in the wild?

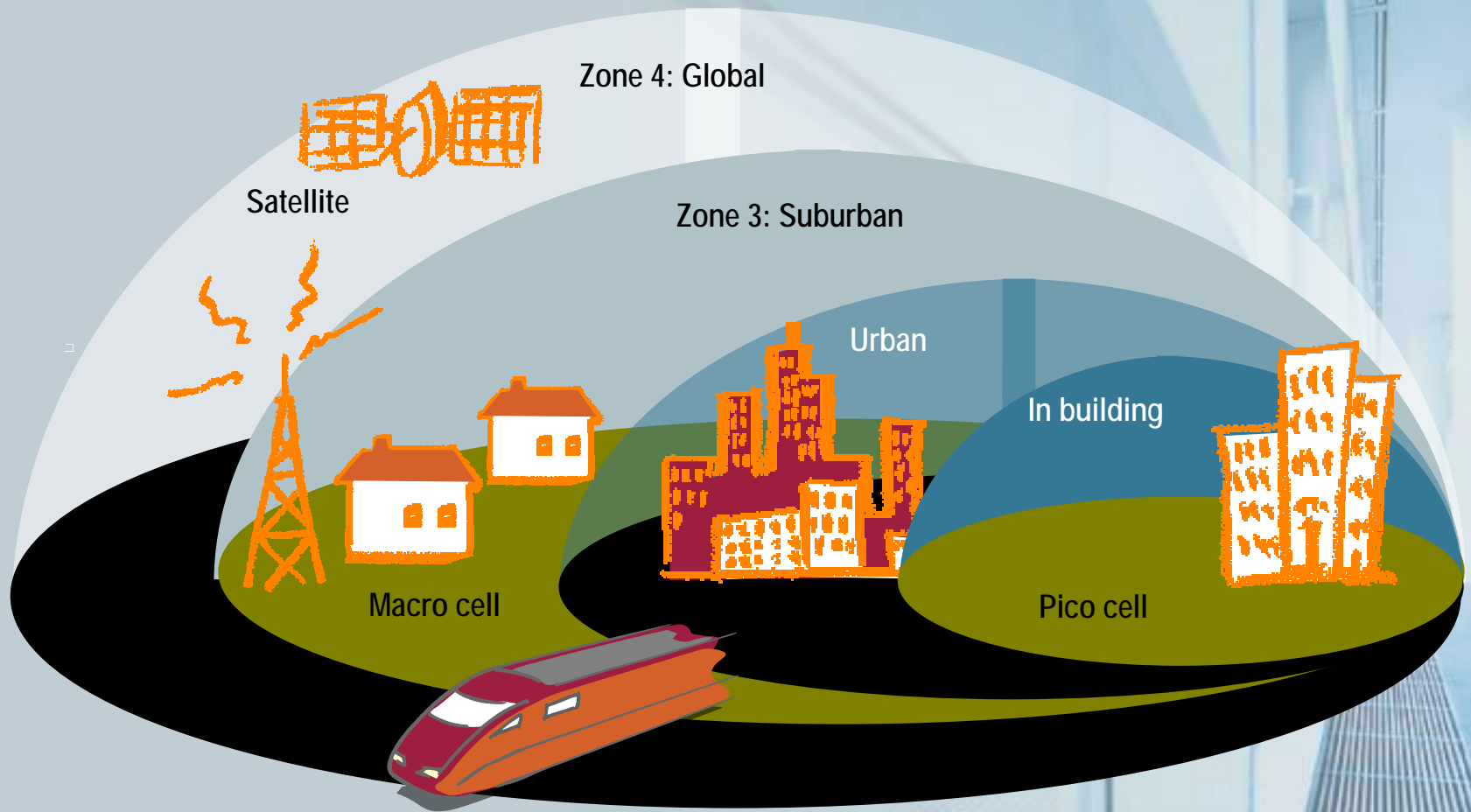
Torsten Soltmann – Siemens Moscow

# What is the talk about?

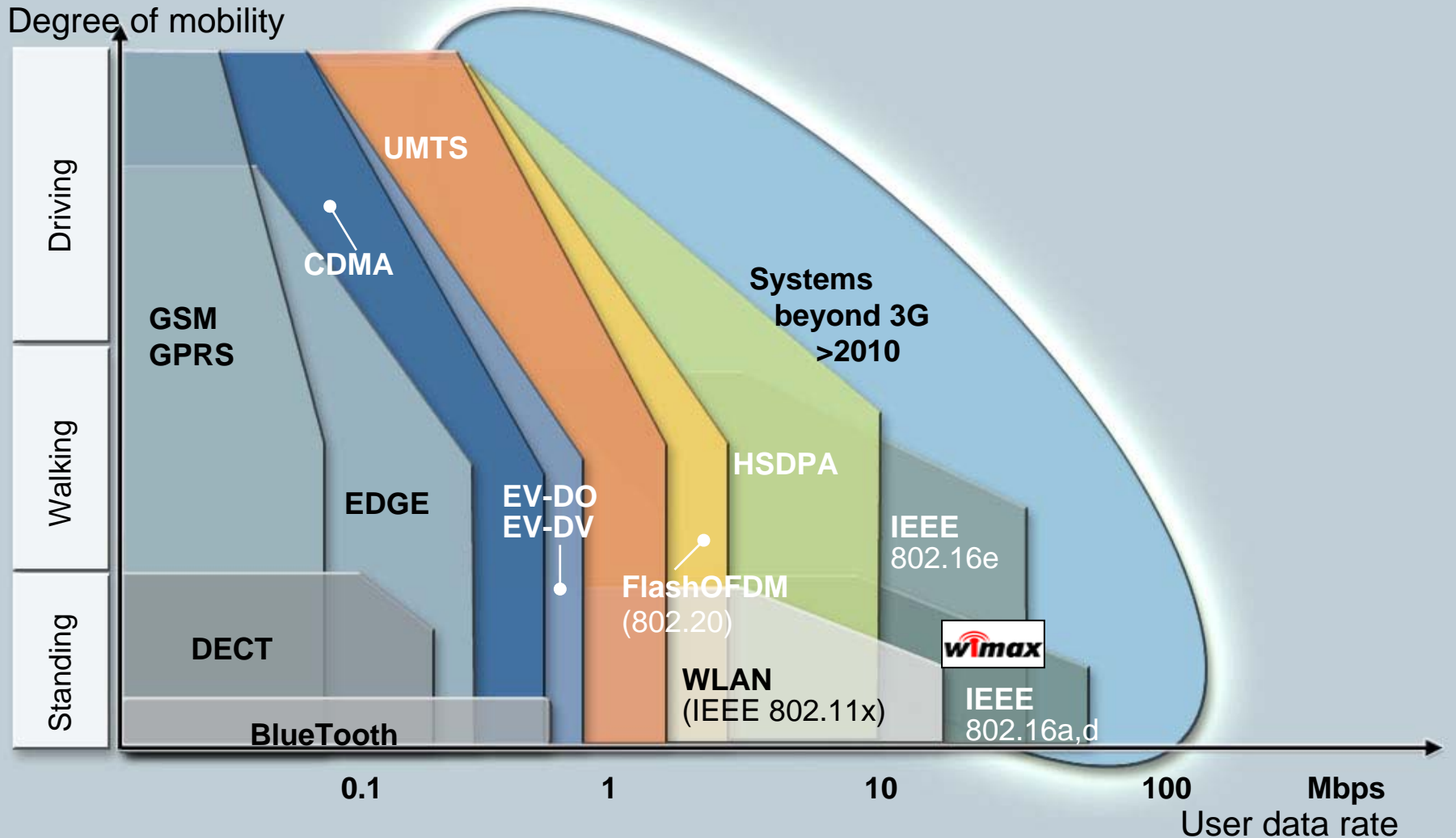
mobile and wireless services



# Wireless Technology Positioning



# Coexisting and complementary wireless access technologies for different use cases

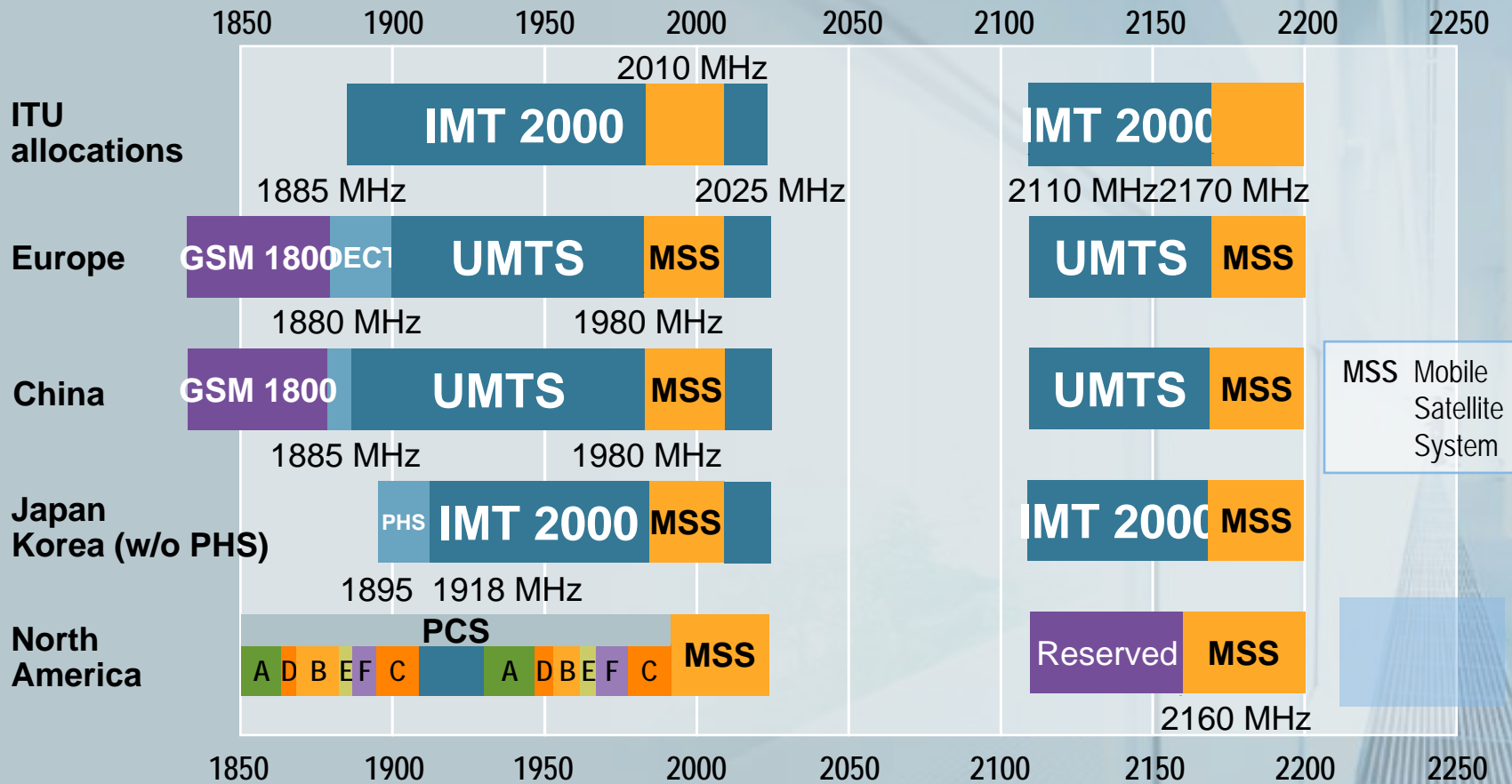


# Standardization Activities

## Main Radio Transmission Technology Proposals



# IMT 2000 Worldwide Frequency Plans





# GSM – our “well known old” environment mobile cellular service

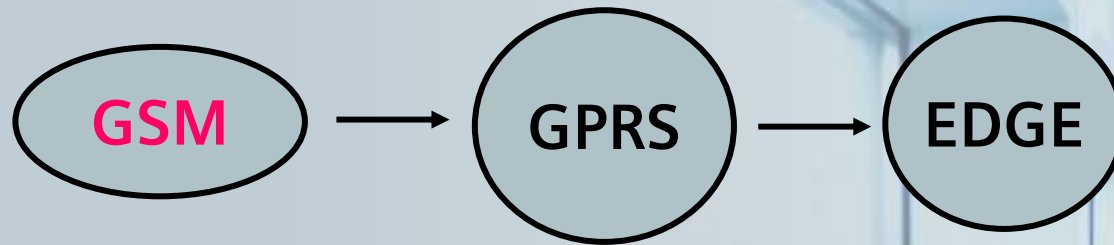
System:

Cellular - TDMA

Standard Body



Evolution



Voice

Voice

Voice

Data 9,6 kBit/s

Data: max 171 KBit/s

Data: max 411 KBit/s

HSCSD

Evolution-Core



# 3G UMTS FDD – our business for now and mid term mobile cellular service

System:

Cellular – W-CDMA

Standard Body

3GPP

Evolution

Rel' 99

Rel' 4

Rel' 5

Rel' 6

Voice  
Data max  
64/384 KBit/s

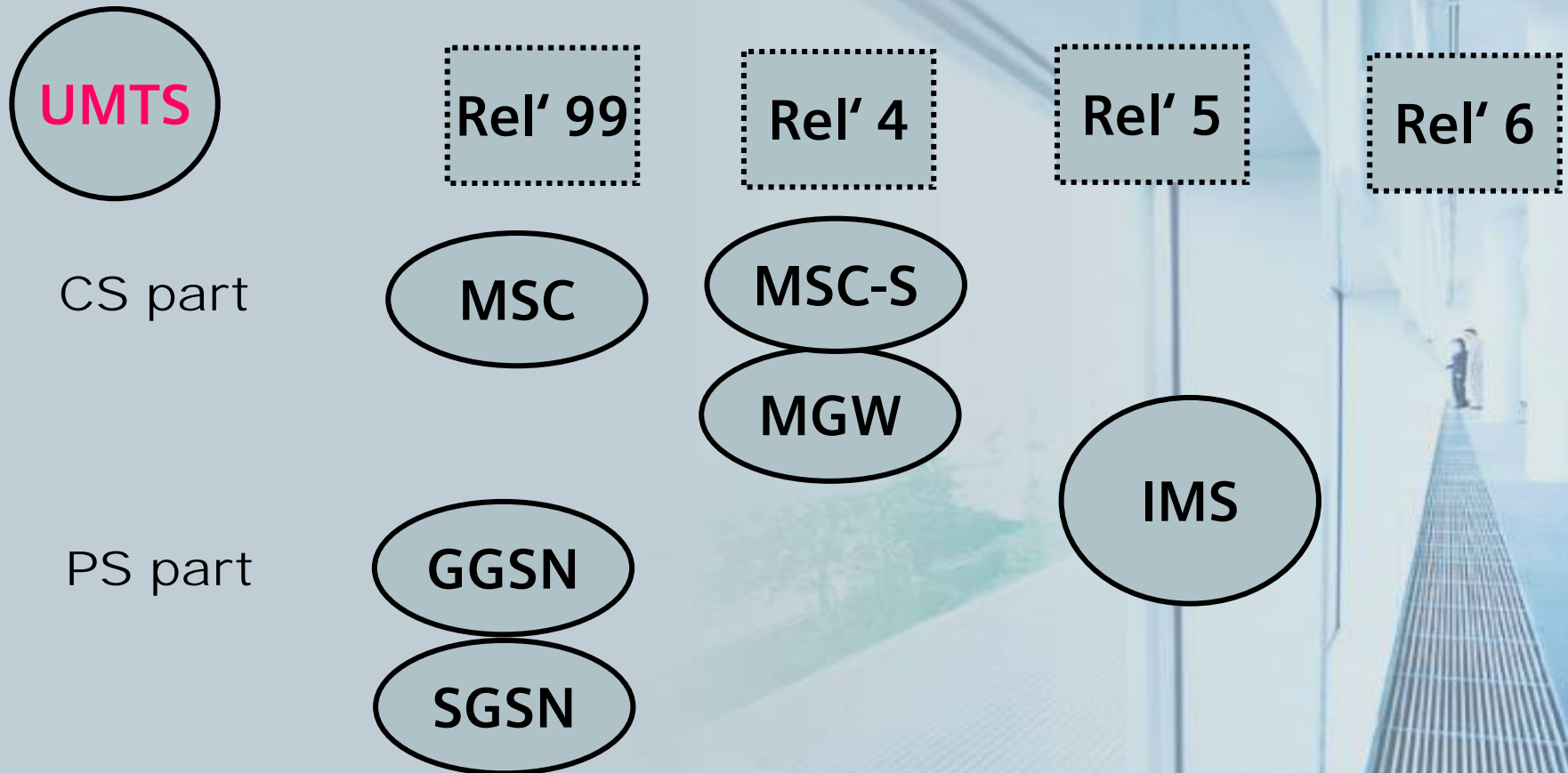
Voice  
Data max  
64/384 KBit/s

Voice  
Data max  
1,5 / 14MBit/s



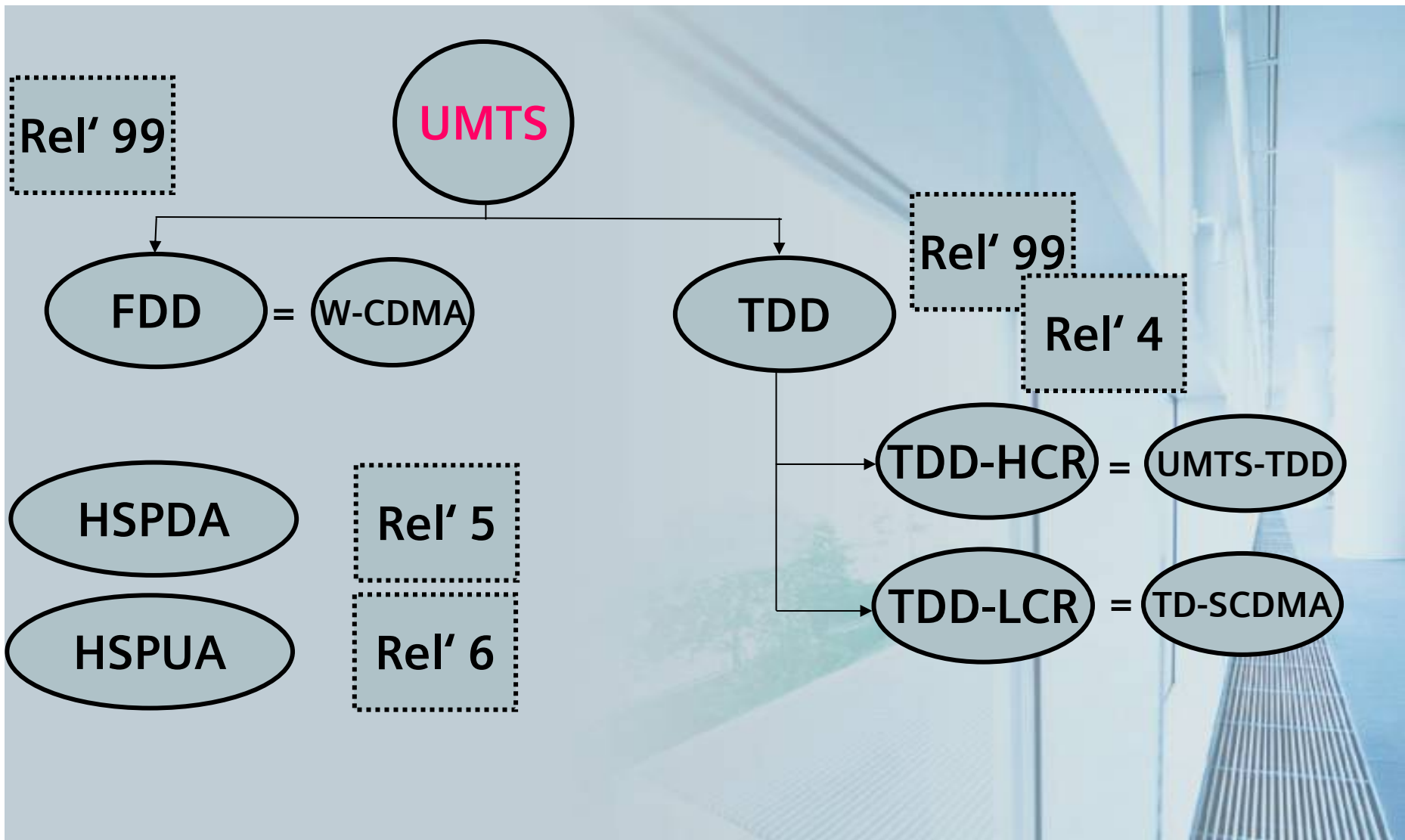
# 3G UMTS– What belongs to it? (1/2)

mobile cellular service – Core technology



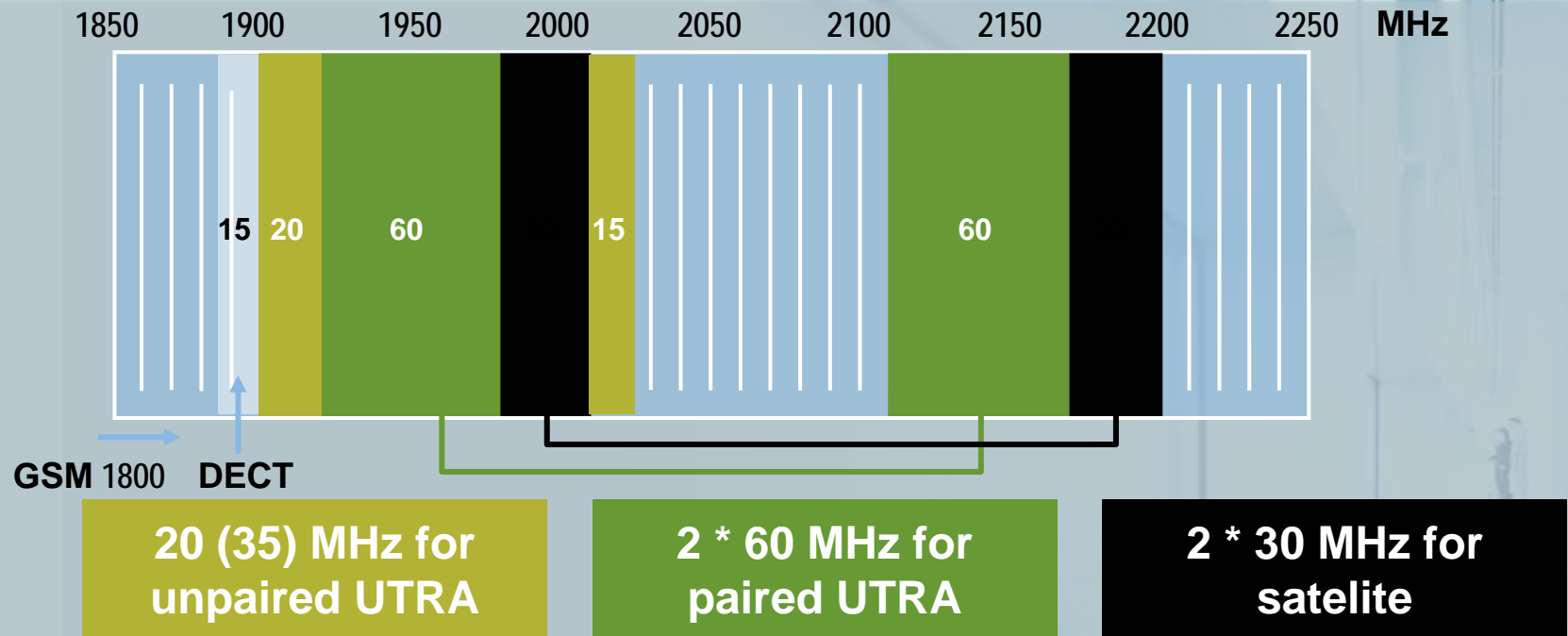
# 3G UMTS– What belongs to it? (2/2)

mobile cellular service – Radio technology



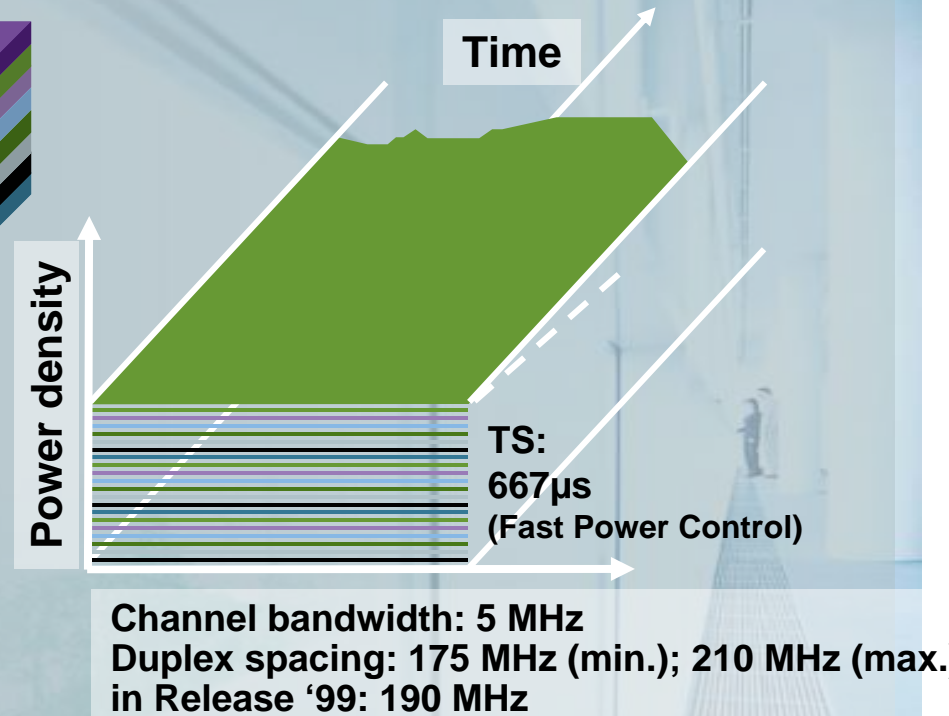
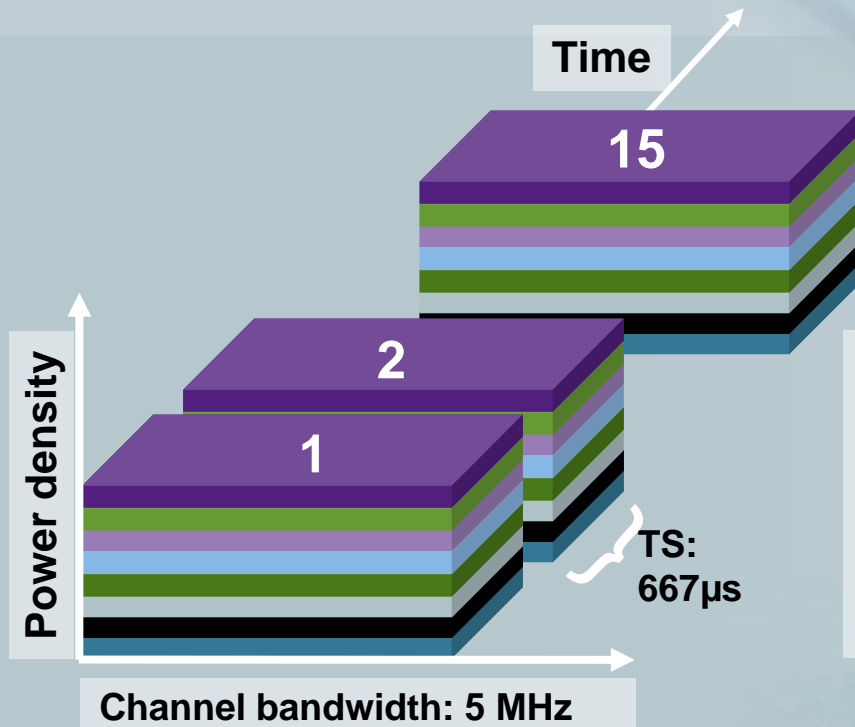
# UMTS

## European Spectrum Allocation for UTRA



- Free allocation of spectrum gives flexibility to operator & bodies.
- 4 - 5 Operator scenario recommends ( 2x15 + 5 resp. 2x10 + 5) MHz.
- Licensing policy will drive operator´s UMTS business.

# UTRA Modes



**TDD mode**

**FDD mode**

**Both with harmonised bandwidth, chiprate, and pulse shape**

# 3G CDMA2000 – another solution

mobile cellular service

System:

Cellular – CDMA2000

Standard Body

3GPP-2

Evolution

1 X

1xEV-DO

1xEV-DV  
Rev C

1xEV-DV  
Rev D

1xEV-DO  
Rev A

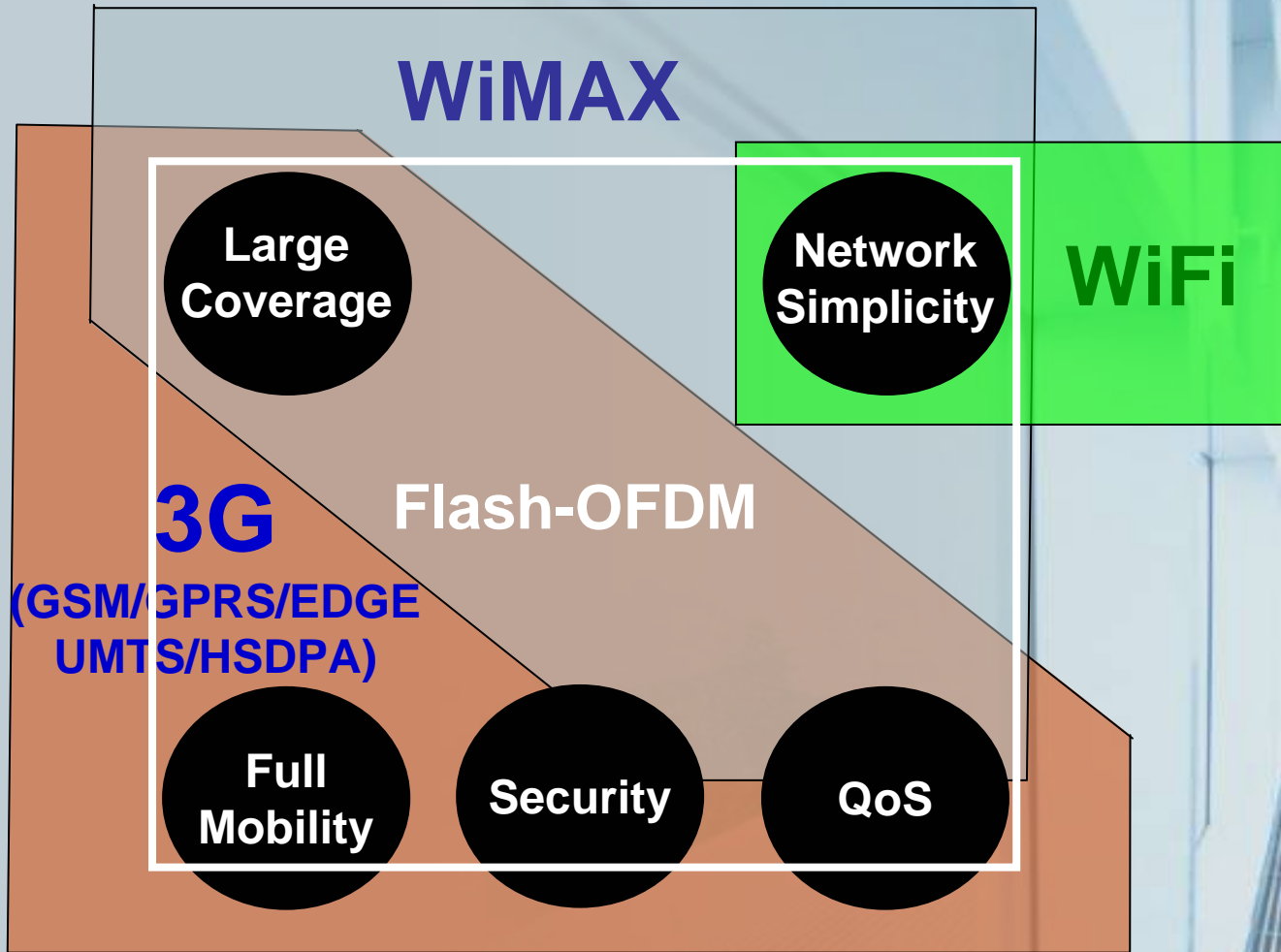
Voice  
Data max  
153 KBit/s

Data max  
2,4 MBit/s

Voice  
Data max  
3,1 MBit/s

Data max  
3,1 MBit/s

# Mobile / Nomadic BWA Technologies





# WIMAX – just upcoming mobile cellular service

System:

BWA – FDD/TDD/OFDM

Standard Body

Wimax-Forum

Evolution

802.16a

802.16d

802.16e

prestandard

standard

standard

Data max

Data max

Data max

20MBit/s

20MBit/s

20MBit/s

nomadic

mobile

# Qualitative Comparison of Radio Technologies: Design

	W-CDMA HSDPA	TDD LCR	TDD HCR data only (IPWireless)	WiMAX	Flash OFDM (Flarion)
<b>Value proposition</b>	Cellular	Cellular	<b>Fixed / nomadic</b> Data and possibly VoIP system with higher peak rates (1.5 Mbps DL)	<b>Fixed / nomadic</b> Wireless broadband internet access (incl. mobility variant)	<b>Cellular</b> High speed, wideband data mobility; packet switched air interface, TCP/IP "core"
<b>Mobility</b>	Global < 250 km/h	< 250 km/h	< 200 km/h	Limited < 100 km/h (16e)	Global < 250 km/h
<b>Peak data rate</b>	~14 Mbps DL ~1.5 Mbps UL @ 5 MHz paired	2 Mbps DL/UL @ 5 MHz	1.5 Mbps DL 900 kbps UL @ 5 MHz	Up to 70 Mbps UL/DL @ 20 MHz (bandwidth scalable)	3 Mbps DL 800 kbps UL @ 1.25 MHz paired
<b>Spectrum</b>	IMT-2000 FDD	IMT-2000 TDD (5MHz)	IMT-2000 TDD (5MHz)	Licensed & exempt < 6 GHz NLOS (2.5, 3.5 / 2.4, 5.8GHz)	Licensed bands <2.5GHz; currently not allowed in IMT2000
<b>Standardization status</b>	3GPP Rel.5	3GPP TD-SCDMA	3GPP TD-CDMA	802.16d: complete 802.16e: Q2 2005	802.20 draft proposal (opposition by major players)
<b>Technology</b>	CDM, FDD CDMA / TDMA	CDM, TDD CDMA / TDMA	CDM, TDD CDMA / TDMA	OFDM, FDD or TDD; TDMA / OFDMA	OFDM, FDD OFDMA



Thank you for your kind attention

Any questions ?????

Torsten Soltmann

+7 095 737 1993 (office)

+7 095 737 2259 (fax)

Torsten.Soltmann@siemens.com