

BTG seminar 20 march 2019

Critical Mobile Broadband for verticals,
Need for enabling spectrum &
Emerging of new entrants & actors



'KMBG'



Koen Mioulet, enterprise wireless consultant ULWIMO

Agenda

1. Schiphol airport enterprise LTE
+ From PMR/Tetra to LTE
2. Mission/Business Critical mobile;
spectrum
3. Aggregation; (new) players
4. Towards a coherent strategy

Positioning business critical mobile; airport example

Functions:

ATC;
Safety
services

Ground
handling,
dispatching
Operations

Passengers,
visitors

ATC



'business critical'

MNO's



Convergence business critical wireless use to LTE



Analogue radio networks



Digital trunked radio's



DECT systems



Wifi private networks

Proprietary wireless systems

Private GSM networks

Mobile data subscriptions

Universal verticals & broad consensus



TCCA; from Tetra to Critical Mobile Broadband



TCCA =

- Tetra and Critical Communication Association
 - Mission Critical Communications: Public Safety
 - Business Critical Communication: “verticals”
- Historically very Tetra/trunking + public safety oriented

TCCA takes part in 3GPP:

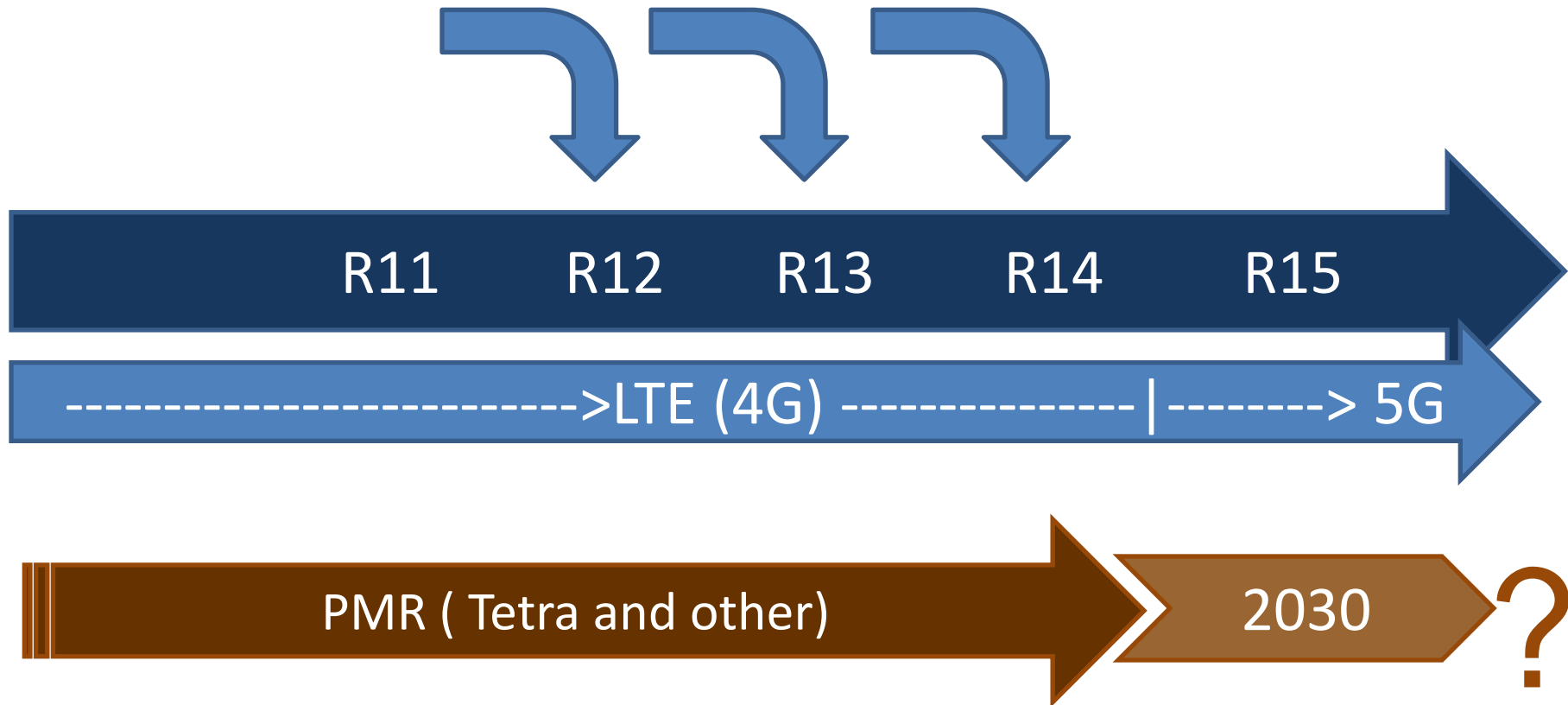
writing the standards for LTE to encompass trunking features:

- Group call
- PTT (push to talk)
- Direct Mode | handset to handset
- Priority & preemption



Mission/Business Critical functionality & LTE releases:

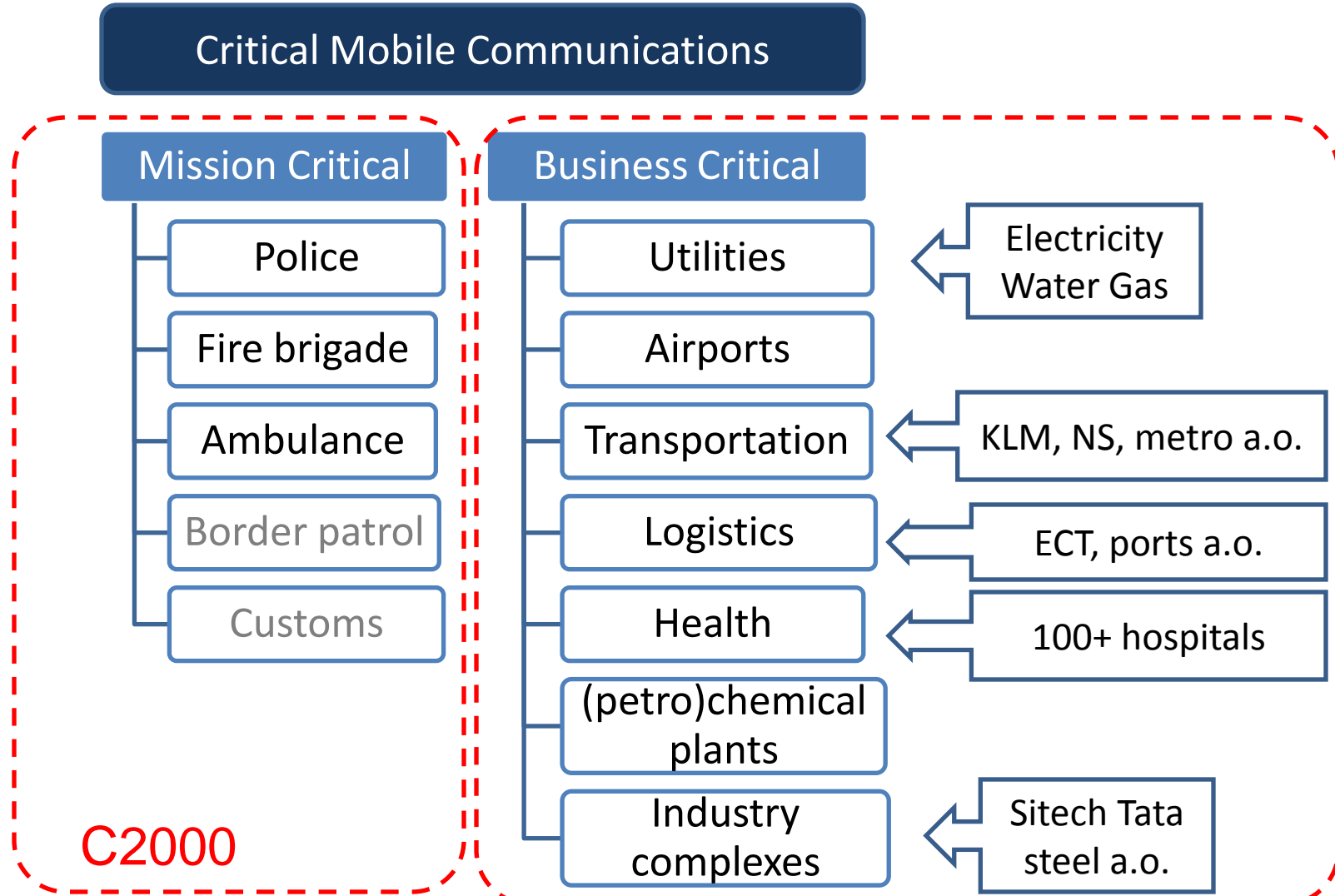
Trunking features into LTE



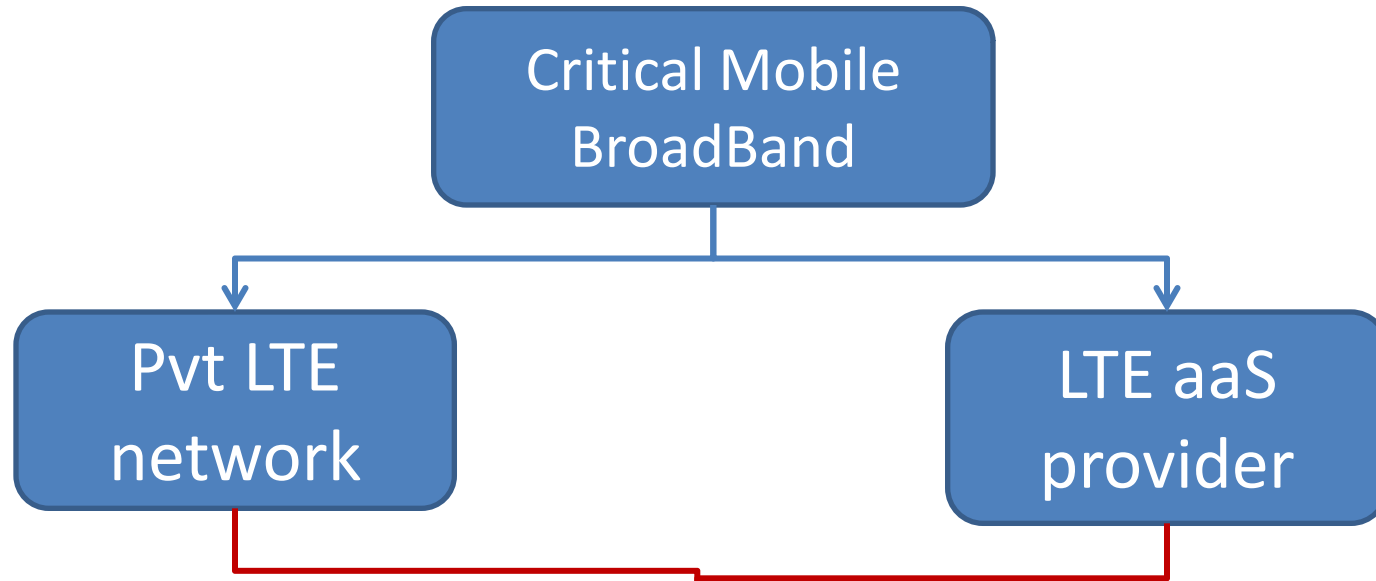
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Critical communications segments & 'double' fragmentation



Spectrum pivotal role for Critical Mobile Broadband






Prerequisite;
licenced
or shared

(access to) Spectrum

Options &
autonomy

Licenced => MNO's
Unlicenced => Wifi
Shared access => NL:
1800, 3600 MHz
=> USA: CBRS

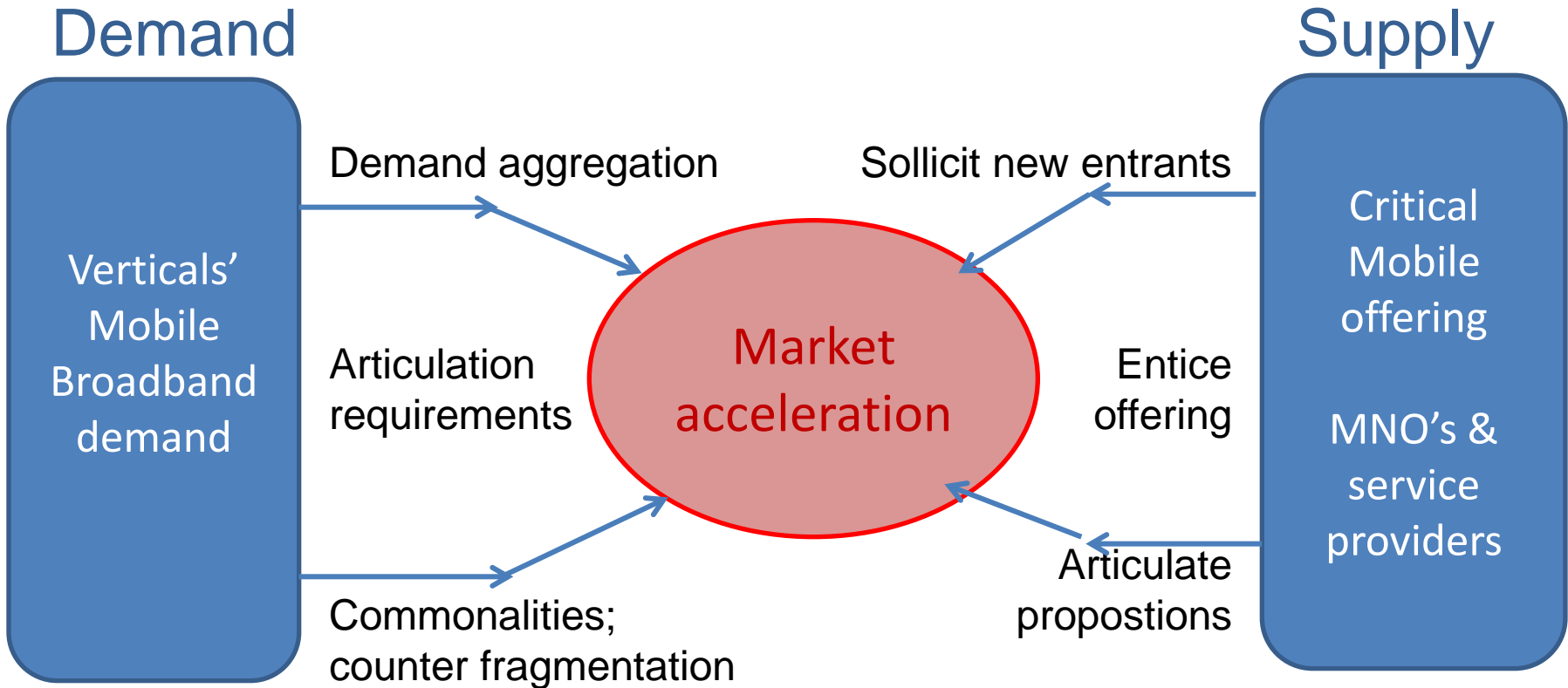
Enterprise LTE in Netherlands: large scale current projects/usage

Organisation	Network	Frequency	Status
	Professional LTE for Business Critical MBB,	Tbd; pvt or aaS	Consultation held, RFQ next
	Enterprise LTE for vehicle control	3.6 Ghz	operational
	'Hyperconnect' business critical LTE for operations	aaS from MNO	awarded to KPN
Health and other verticals	pvtGSM in shared licence exempt spectrum	5 Mhz in 'guard band' 1.8 GHz	500-700 systems (source: EZK)
Miscellaneous applications	Pvt LTE in public surveillance, industry, WLL	100 Mhz in 3.6 Ghz	209 applications (source: AT)

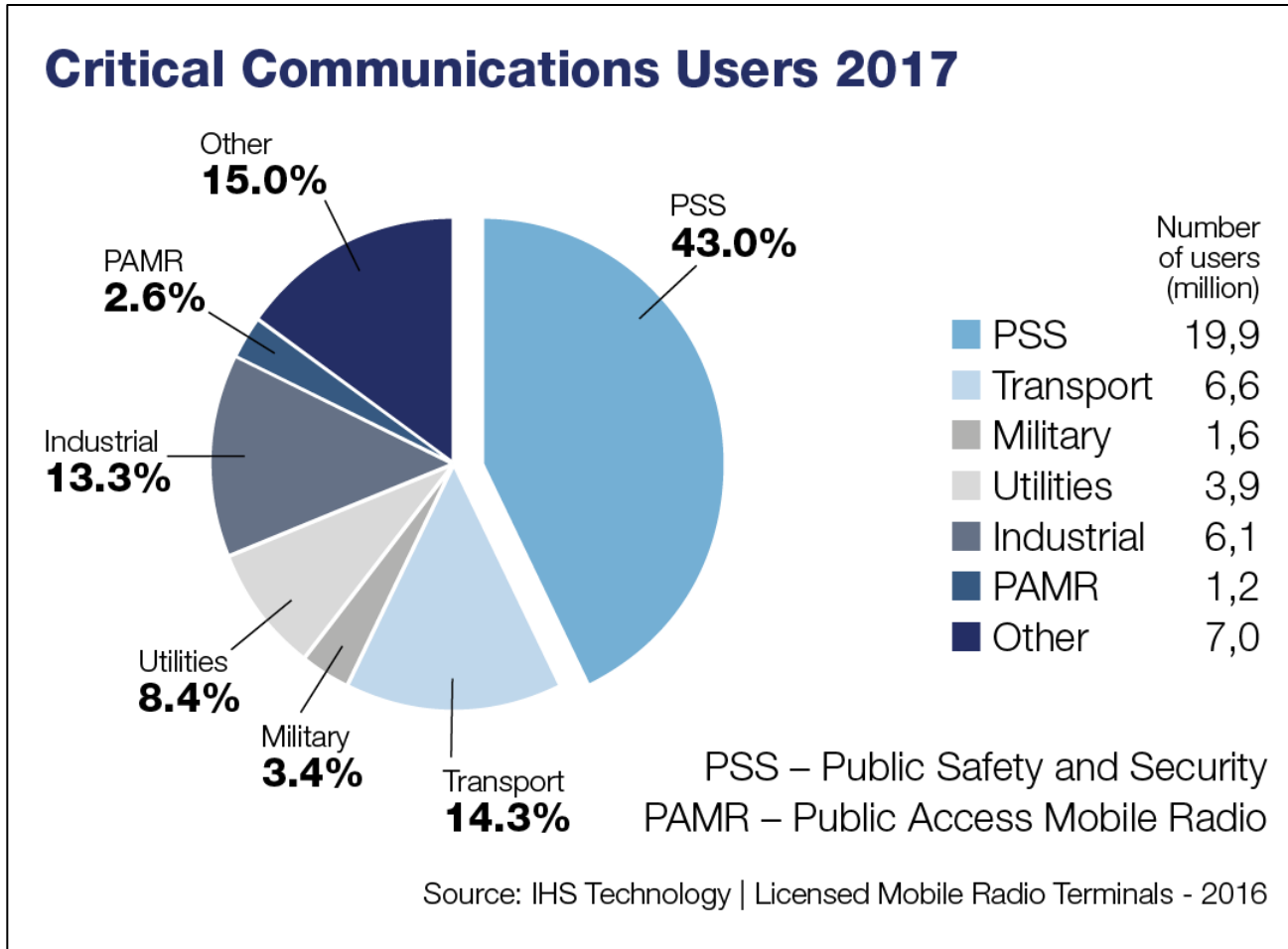
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Next on TCCA agenda: market development



Why mission- and business critical to cooperate ?

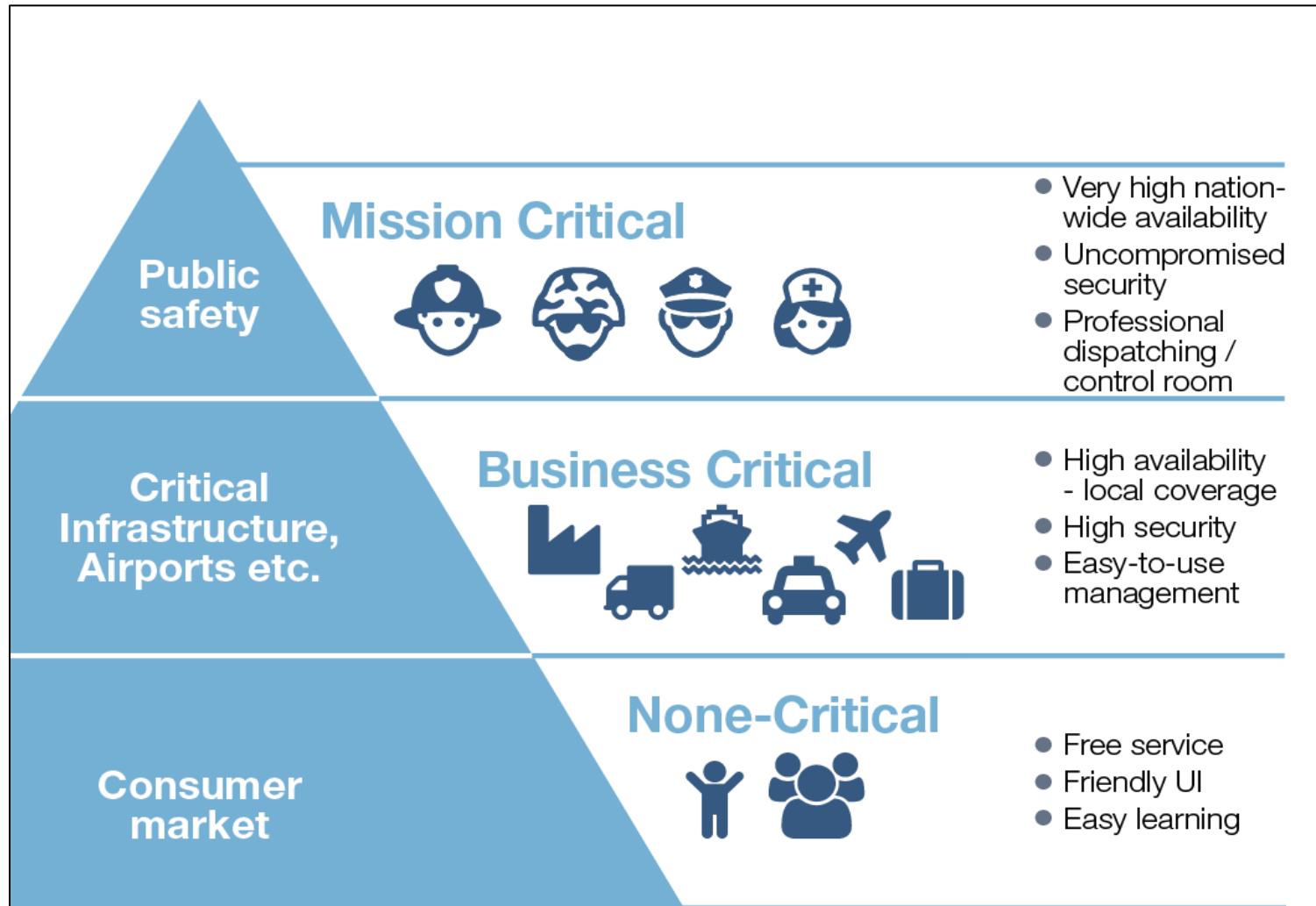


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Cooperate ? =>
 Sheer numbers
 Scale; cost/user
 Mainstream
 development;

Source: TCCA

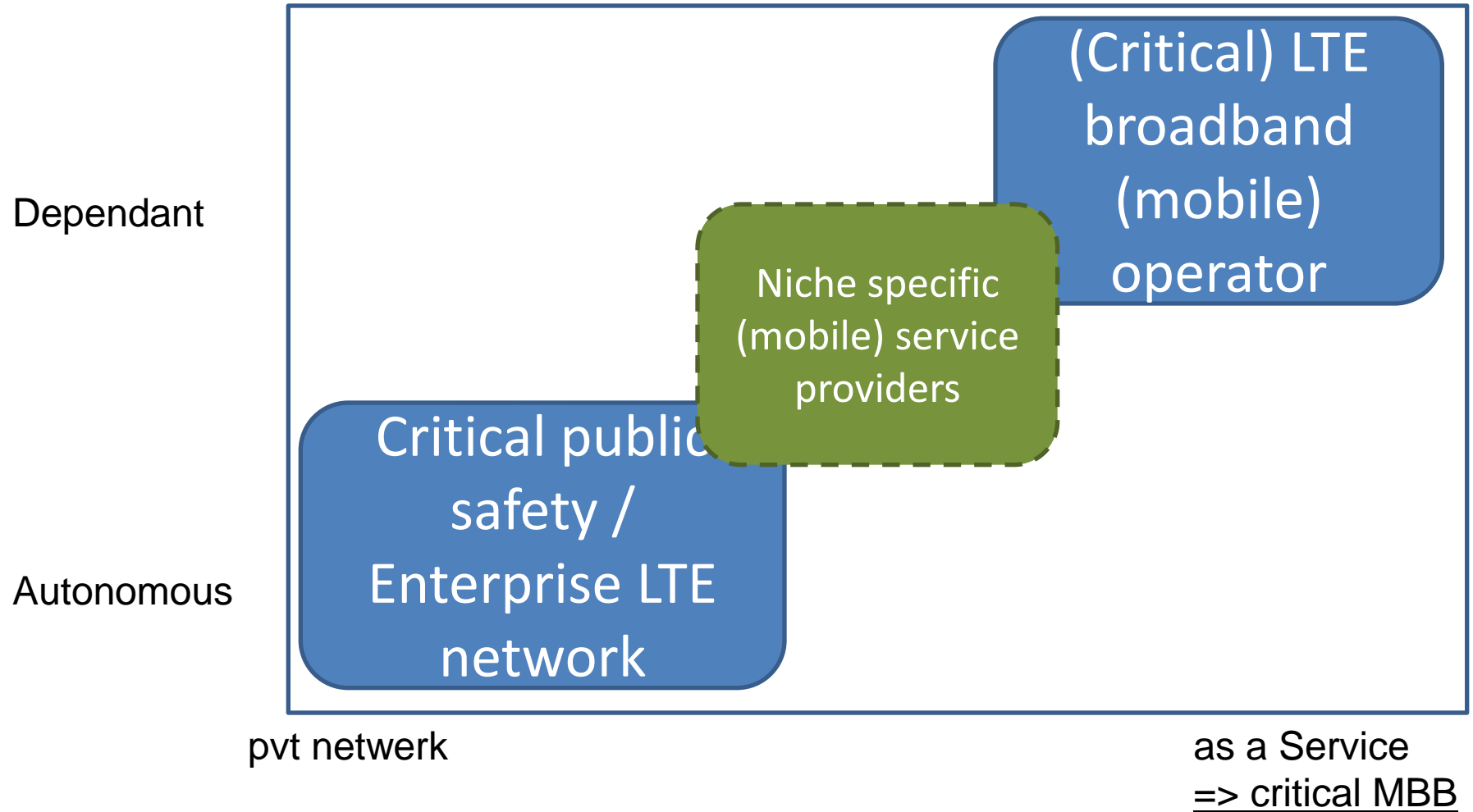
'stacking' requirements



Source: TCCA

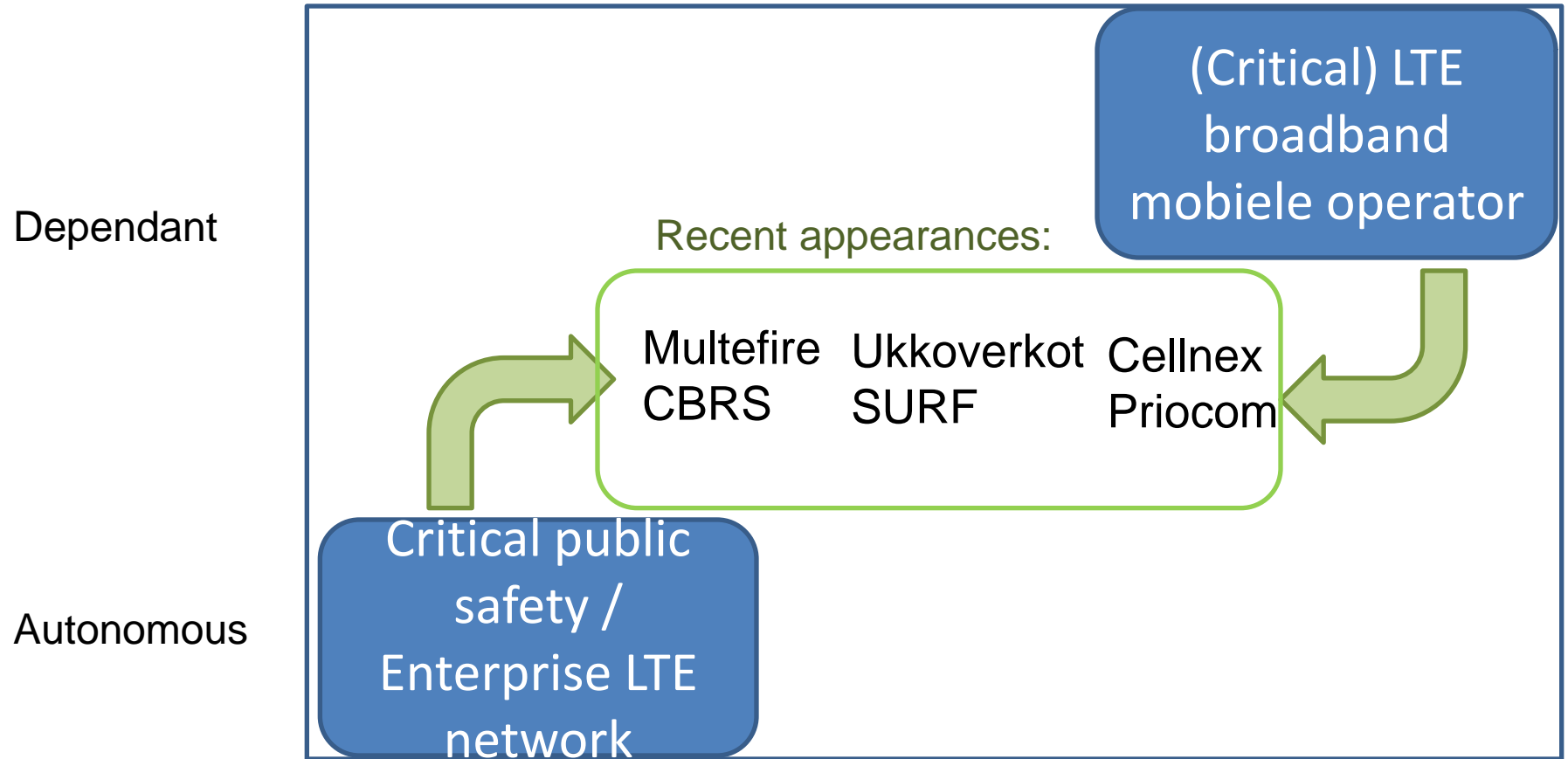
Emerging (new) business critical mobile service providers

Dependency 3^{rds}



Emerging (new) business critical mobile service providers

Dependency 3rds



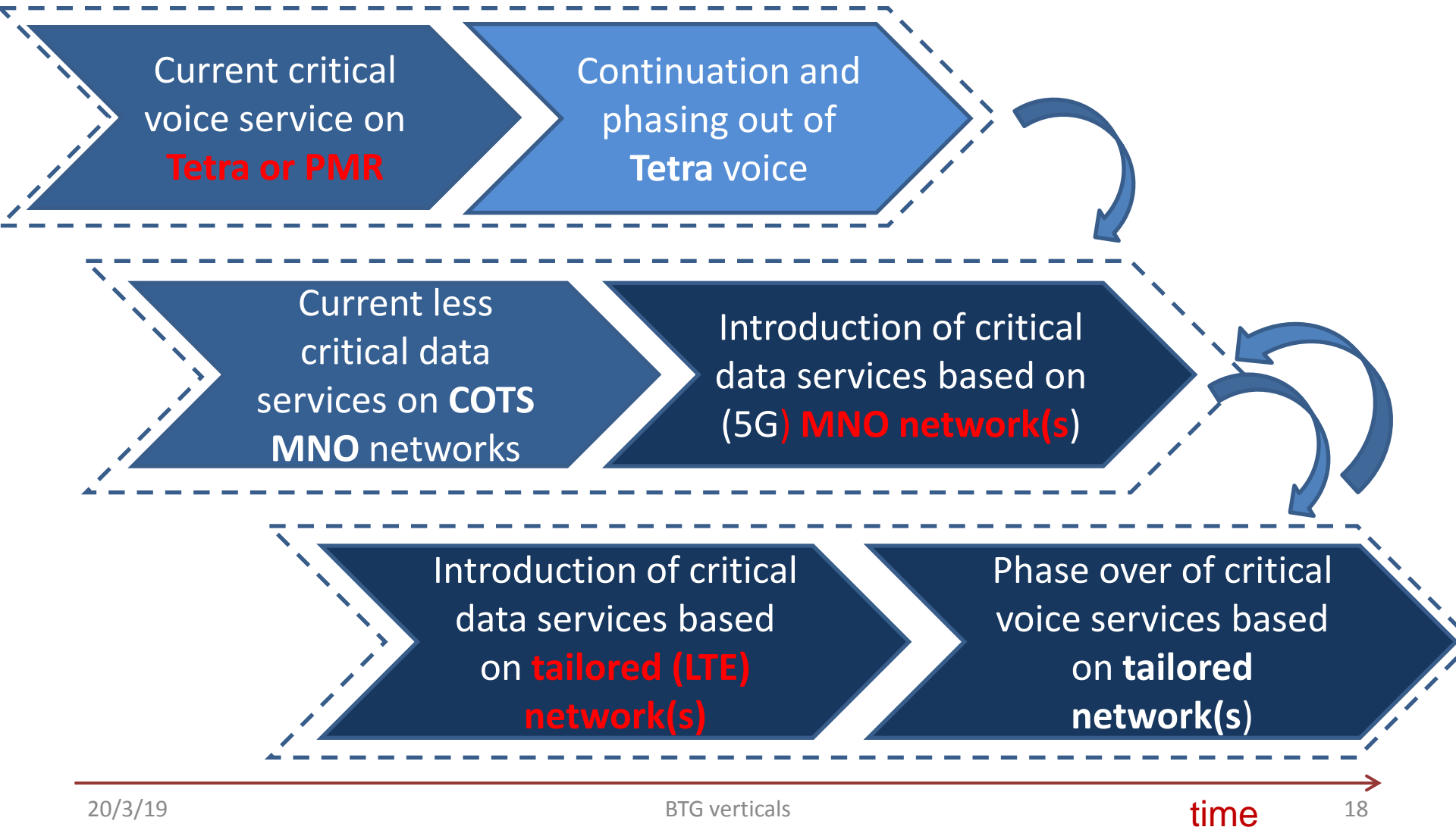
pvt network

as a Service
=> critical MBB

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Typical example migration strategy



Conclusion

On roadmap:

- LTE/5G convergence is evident
- Tetra/PMR still there for years/decades
- Long & hybrid transitions towards LTE, 5G
- pvtLTE and aaS offerings; hybrid solutions

On vertical markets:

- Convergence of Mission- & Business critical
- Aggregation of verticals desirable:
 - Create volume & Solicit offering
- 3rd party service providers for verticals emerging

Spectrum (access) is key

More: TCCA white paper launched at CCW Berlin in May '18 !



May 2018

<https://tcca.info/tetra/tcca-news-and-resources>

Hard copy =>

Critical Communications and Mobile Network Operators

Options for new revenue streams and new
market segments