

Broadband Needs Narrowband

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Public Safety Communication (PSC) Europe Forum
Madrid 28th to 29th November 2017



of ...

- * e*Message Wireless Information Services Europe
- * European Mobile Messaging Association (EMMA)
- * Competence Centre for critical Infrastructre (KKI e.V.)
- * Forum “Future in Public Safety” (ZOES e.V.)

I. Narrowband

- * < 64 kbps
- * „Dispatch“ Services by MPT1327, TETRA
- * Alert Services by NP2M (a.o. Paging)
- * Internet of Things (IoT) SigFox, LORA, NB IoT (3GPP, LTE)

II. Broadband

- * Higher Bandwidth
- * More and lower Sites
- * Challenging Coverage
- * High Costs per m²

III. Assessment of (NB/BB) - Technologies

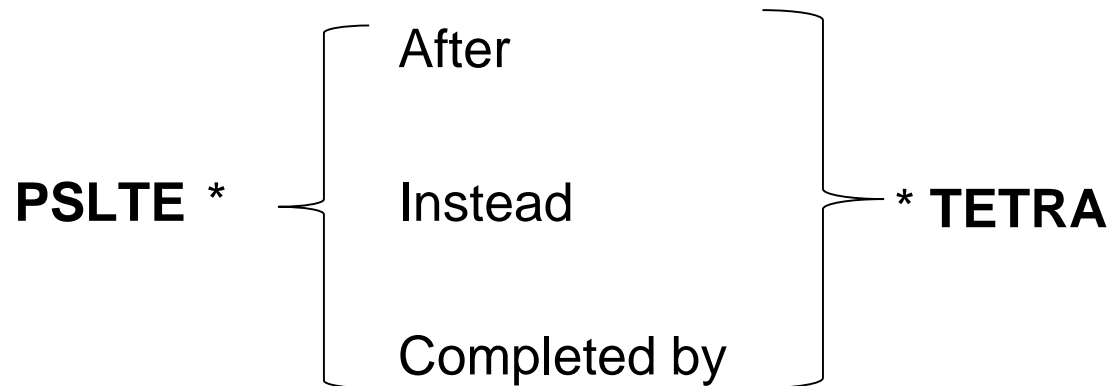
Fashion or Hype
And or Or
Economy or Need
... or ...

Old Fashion?

- * Analogue
- * Skirt
- * Electronical car **1839 R. Anderson**
- * Bicycle **1817 K. Drals**
- * Wood
- * Narrowband **2018 NBloT**
- * SMS **1996**

New Fashion?

- * Digital
- * Trousers
- * Fuel Car **1886 C. Benz**
- * Zeppelin **1898 F. von Zeppelin**
- * Plastic
- * Broadband **2008 LTE**
- * Paging **Strompager 2014**



Matter to think about. See approaches OFCOM (UK), BDBOS (GER)

Rebirth of Narrowband?

* 2009	SigFox	
* 2013	CEPT	NP2M
* 2013	LORA	(2008 US)
* 201X	3GPP	NB IoT

Narrowband partially more actual than Broadband

Paging and Narrowband Point-2-Multipoint

2010	ETSI EMTel	A2C
2012	ETSI SRDoc	nP2M
2013	CEPT Decisions WgFM	NP2M

One of the youngest wireless Activities
(Part of NP2M is Paging)

Criteria for Choosing Band

- * Need → Not there yet
- * Implementable → Technically
- * Fashion → Hype
- * Economy → Yes
- * Safety → And Security

Embedded Implemented

	NP2M	IoT
Application	Alarm. Alert. Warning. Downlink	Smart Home, Smart Safety
Possible Replacement	How? Which costs?	Yes, but costs?
Doable	Implementable, embeddable	Terminals: yes. Networks: hopefully.
Fashion Factor	Zero	Hype (decreasing?)
Economy	Low Frequency. 1250 sites GER/FRA, best coverage	Not fully clear, yet.
Safety	ONE-2-many (not All IP)	See #PSCEMadrid



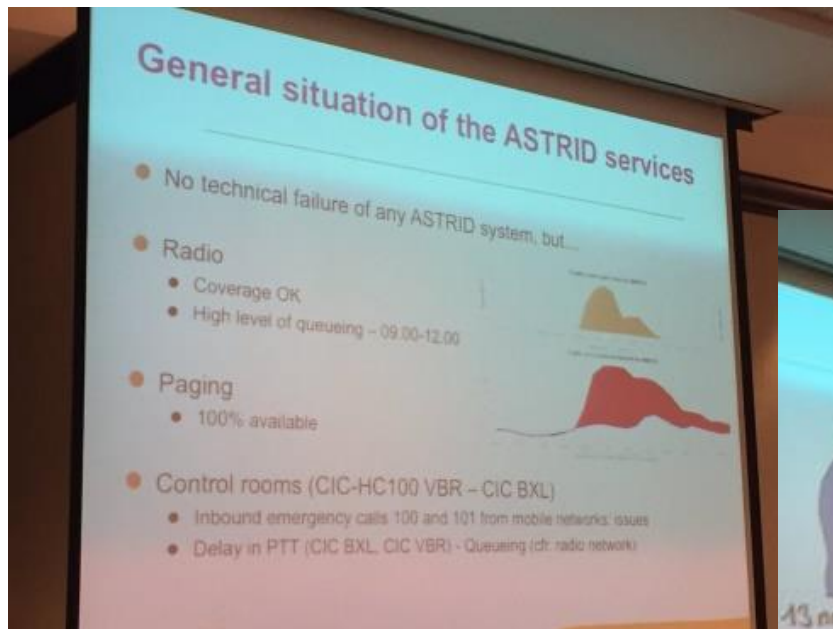
Infrastructure and Economy – Some Pieces

- * Revenue T-Mobile Germany 8.000 Mio Euro p.a. (43 Mio User
 - * Basis for running costs and investments including for Broadband and possible NBloT vs. Tetra25 PubSafety Network User Nb << 1 Million
- * Building special 2nd Infrastructure (e.g. Railways) can kill economy
- * Careful with renewal intervals of infrastructure (see Railways)
- * Promise x.000 Mio Euro cost to get okay from financing minister and being after n times more expensive will not solve the problem

Means

- * Use existing infrastructures, combining and developing them almost only realistical way of high functionality everywhere network

IV. More Arguments for Narrowband and 2ndInfra



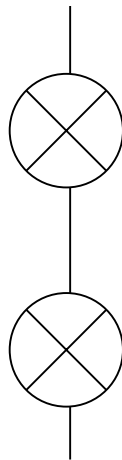
Only NP2M (Paging) w/o
Problems all 9 am – 5 pm



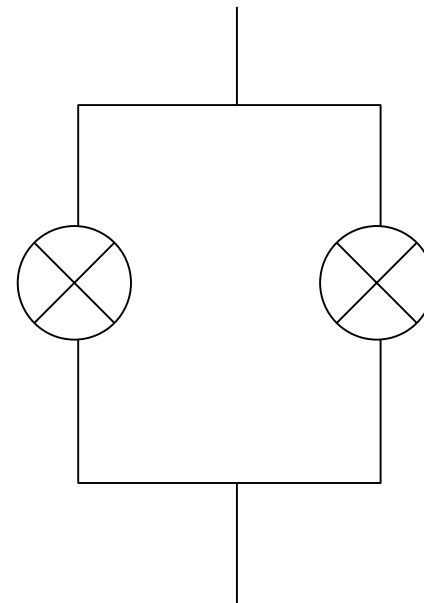
Brussels Attacks 16/03/22

More Arguments for Narrowband and 2ndInfra

Same Infrastructure

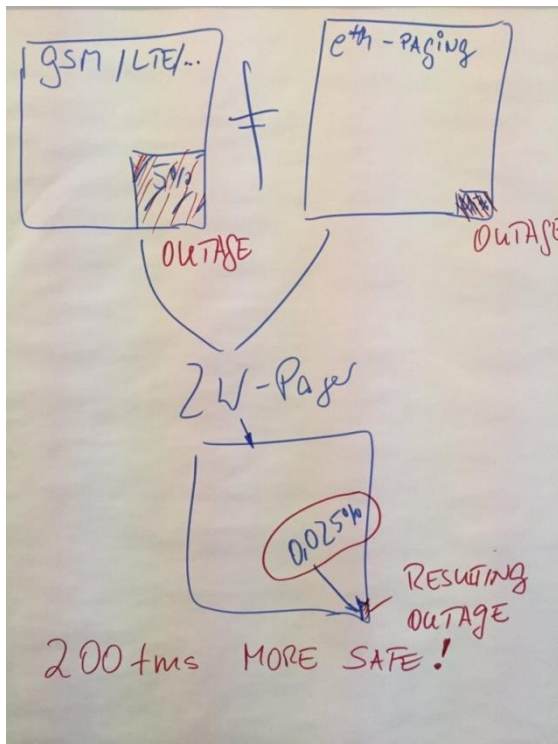


Different Infrastructure



$$X \% \leftarrow \text{Lack of Availability} \rightarrow \frac{X\%}{100+}$$

More Arguments for Narrowband and 2ndInfra



V. Conclusions

- * No economy of broadband if not narrowband
- * No high functionality if not narrowband, see Firemen Alert by Paging and IoT Safety Applications
- * Less coverage if not narrowband
- * Not financable if not narrowband (safety seen as entirety)
- * Less reliability if not narrowband
- * Less trust in readyness of publicsafety and more question how to realise in the future if not narrowband
- * Complementary usage of narrowband and broadband is reality, see embedded IoT/NP2M-solutions and LTE+(PSLTE)+Tetra+Paging (e.g. in Belgium)

Conclusions

- * It seems easier to explain that the future is new and everything should be (e.g.) broadband
- * It seems difficult to explain that 2nd Infrastructure makes composed solution 100 tms more reliable
- * It seems easier replacing concrete (difficult, technical, probabilistical, ...) explanations by hyping claims
- * „It seems“ is not „It is“
- * More examples, demonstrations, cooperations, socialmedia for „Combining NB AND BB“ and against „One thing will solve all“ (or- as somebody says „Single point of failure“)



Broadband Needs Narrowband

Follow and Discuss in Social Media



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@e_Message_de

@2ndInfra

critical messaging

future public safety

alternative wireless NP2M

2nd alternative infrastructure

@PSC_E

and many more

OUR association



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Thank you

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(18th April 2018 Sarlat SW of France)

Appendix

Difficult to convince?

ONE (improved) infrastructure vs. TWO (independent) infrastructures

Comparison of the Availability

I. Only one mobile network

P_{RV}

data preparation
access systems
other risks

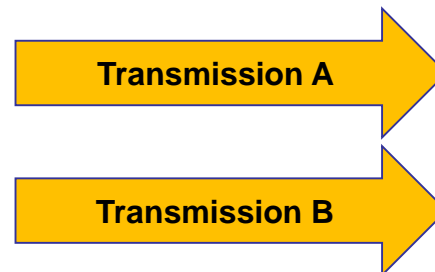


$P_{ÜA}$

II. Two of them (#2wayS)

P_{RV}

data preparation
access systems
other risks



$P_{ÜAB}$

Comparison of the Availability

Comparison of availability I. + II.

$$\text{I. Outage}_{\text{I.}} = P_{\text{RV}} * P_{\text{ÜA}}$$

$$\text{II. Outage}_{\text{II.}} = P_{\text{RV}} * P_{\text{ÜA}} * P_{\text{ÜB}}$$

$$\frac{\text{Outage}_{\text{II.}}}{\text{Outage}_{\text{I.}}} = \frac{P_{\text{RV}} * P_{\text{ÜA}} * P_{\text{ÜB}}}{P_{\text{RV}} * P_{\text{ÜA}}} = P_{\text{ÜB}}$$

Comparison of the Availability

- * The probability of outage will be less if you add another independent mobile network.
- * It doesn't matter how the probability was before.

Comparison of the Availability

Means:

Add Narrowband to Broadband. Build #2wayS solution. The outage probability of resulting solution is 100+ times lower.

Mathematics only. No sales. No politics.

Main Point. Repeat: 2nd way, not 2way. #2wayS, not #2way