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MINISTÈRE DE L'INTÉRIEUR

Réseau radio du futur (RRF)
Preliminary ideas

ETSI – September 29th
Workshop National Case Studies

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MINISTÈRE DE L'INTÉRIEUR

Current state

Methodology

Strategic issues

Frequencies

Retro-planning

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Agenda

- Current state of FR PPDR networks
- Methodology
- Strategic issues
- Frequencies
- Retro-planning

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Current state of national PPDR networks
INPT and Rubis

- Two national networks
  - INPT : Police, firefighters, Customs, Justice
  - Rubis : Gendarmerie, Marine Nationale

✔ 170 000+ UE, 3000+ base stations

✔ Conception ~ 1990, Deployment 1995 – 2005

✔ All '90 PPDR requirements are met : resilience, capacity, services

BUT...

▶ **50+ M€/year**

▶ End of support by supplier ~ **2025**

▶ Old school UE, **leading users to prefer standard (commercial) mobile phone and data services and applications**…

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Methodology

A little piece of French Touch...

- Two main governmental think tanks – IGA (user needs) and CGEIET (technologies forecast) – lead a joint mission during 2015 to put down concepts and ideas
- A dedicated team is created January 2016, with one goal :

Identify and investigate arbitrations needed for the formal GO

- Four main thematics
  - Governance
  - Financial issues
  - Legal issues
  - Technical and functional issues

  Dot colour represents the perceived level of risk
- Expected planning
  First presentation : **Spring 2017** – Expected GO : Autumn 2017

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Thinking hard around the edges...

- Network architecture
- User needs and habits
- Governance of project and network
- Financial issues
- Legal issues (frequencies, MVNO issues, project organization support team...)
- Procurement strategy
- Building trust between project partners

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Standardization
RRF strategic backbone

- We need a new network which is :
  - Efficient, resilient (*add here as many wishes as there are different users...*)
  - Not too costly (*this is supposed to be an understatement*)
  - Able to adopt future technologies without a new overall rebuilding... and first of all 5G
- We believe in standardization
  - Let's think of standardization as a *mantra* for the RRF program
  - We are engaged in working with partners to enhance standards for them to better meet PPDR needs
- We want to engage RFOs only when we are convinced that sufficient level of competition between potential vendors is achieved.
- We want diversity within the network : different vendors for different segments, at different time, with different technologies (around LTE for the first years of the network), but a unified administration system and security policy.

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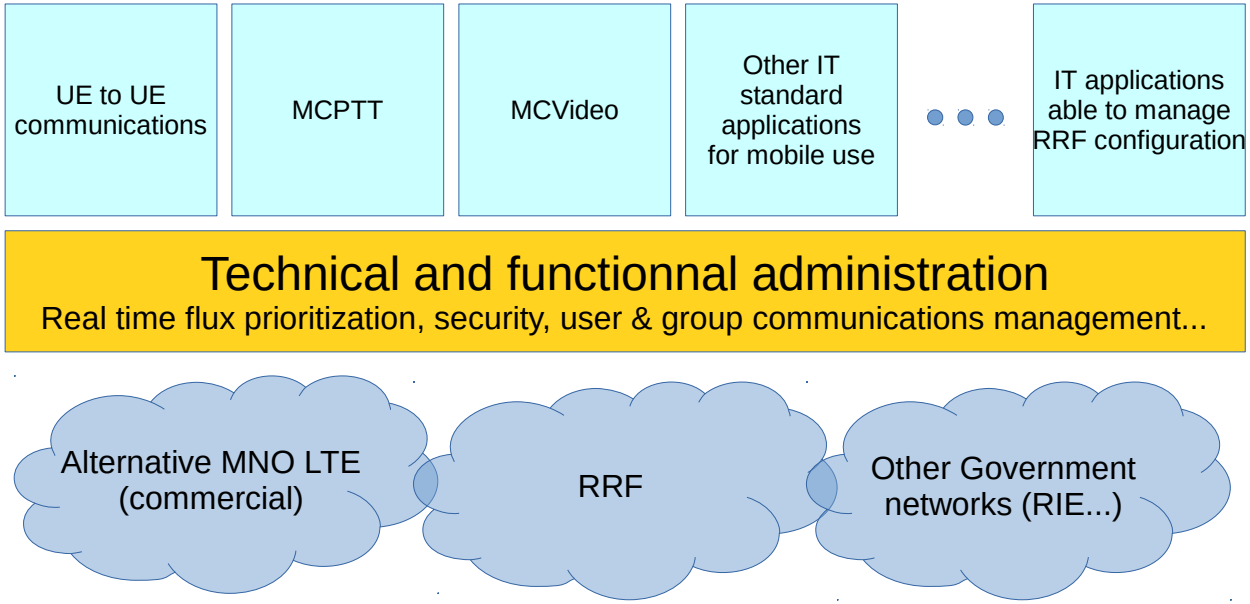
Network architecture
Simplified IT urbanization



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Network architecture

Potential and non exclusive scenarios

- ONE global communication system for government and local authorities PPDR teams
- Working over interoperability issues with energy and transportation enterprises operating their own PPDR LTE network and using PPDR frequencies
- Hybridation with commercial networks
  - Infrastructure-concerned : SON, LSA are not yet "on the field" proven technologies for MC users
  - User-centric : multi-roaming over commercial networks using RRF mission critical core (MCxxx)
  - Application-wise : all applications may be used over multiple networks
- Mutualisation with other government infrastructures
  - Using RIE (FR government IP MPLS national network) when relevant for backhauling and as backbone network
  - Operating RRF core within government Datacenters
- All these scenarios are first to be tested in real life
  - **We need vendors to demonstrate** ASAP the reality of **their commitment with SON and LSA**
- Some extreme scenarios are not yet formally excluded, but we are looking for such a decision within weeks
  - 100 % dedicated network **is too costly and lengthy to build** before 5G emergence
  - 100 % commercial network **doesn't meet the need to be autonomous during crisis**

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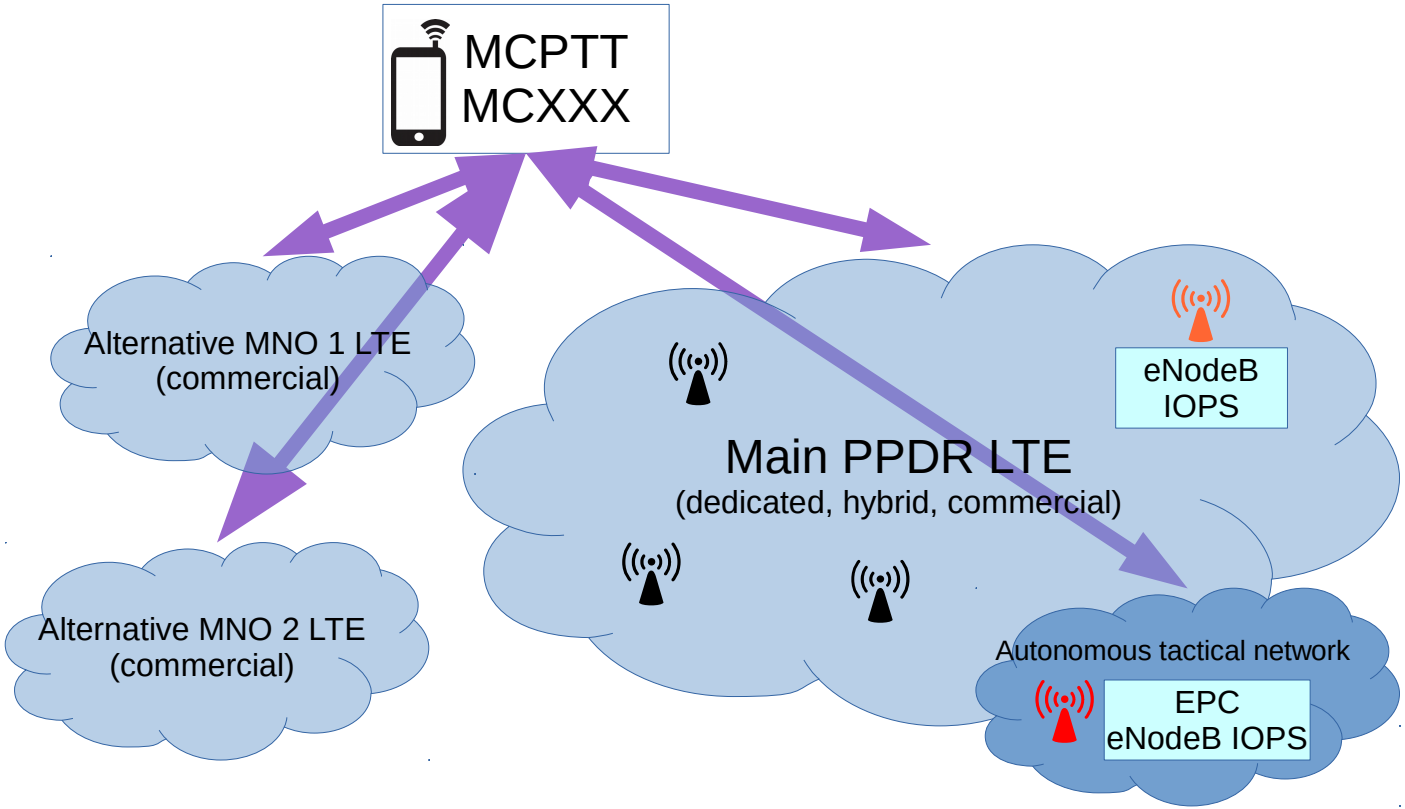
Network architecture

Architecture principles (3GPP-based)



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Frequencies

- Prospective needs (ECC Report 199): **minimum of 2×10 MHz**
- 700 MHz band – France has allocated :
  - 2×3 MHz (band 28) – band already standardised for commercial LTE, it will be mainly used for tests and tactical networks
  - 2×5 MHz (band 68) – current works with standardization stakeholders to enhance usability of the UL
  - The main goal is to contribute to the building of the BB PPDR network on the largest national territory cover
  - Another goal is to give the possibility to some independent network operators (typically transportation and energy facilities strategic enterprises) to build network for their own needs and providing to public safety and relief services the means to accomplish their tasks gradually according the intensity of the crisis
  - Effective allocation from mid 2019, pending development of tactical solutions to meet the short term needs
  - This allocation is not sufficient to reply to all BB PPDR network requirements and the fragmentation in 2 bands increases the problem
  - It is not possible to directly use 2x30 MHz for additional BB PPDR spectrum
- Intermediate findings : *We are lacking spectral resources* ☹

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Frequencies

- Complementary strategies :
  - Getting more spectral resources :
    - One systematic claim : We are lacking resources (*Do I repeat myself ? My...*), so we are battling on all prospective options
    - Currently, the most active front is the 400 MHz range and it is a work in progress :
      - Request for 2×3 MHz in band 31
      - Number of PMR analog or digital NB/WB networks
      - Emergence of new LTE PMR needs
      - Need for rapid decision to allow the development of scenarios for departmental arbitrations
      - the refarming of the bands will be long but this additional need will be useful during intensive deployment of the future LTE PPDR network in 2022
  - Hybridation with commercial networks
      - PPDR upon commercial is the first choice
      - Two-ways if no operational impact can be guaranteed
      - 5G is a promising prospect, but we need more input from standardization bodies and vendors to build a strategy

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- 2030 INPT and Rubis switch off
- 2025 INPT TDM parts (include very sensitive areas) switch off
  World exhibition
- 2024 Olympic Games (still hypothetical)
- 2023 RRF switch on (Paris area)
- 2022 RRF switch on (metropolitan areas)
- 2021 RRF switch on (industrial deployment, but non sensitive areas)
- 2020 RRF pilot deployment
- 2019 RRF conception
- 2018 RRF RFO
- 2017 Political GO

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Thank you

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