

BroadMap

Final Stakeholders' Workshop

6 April 2017



Website: www.broadmap.eu

Transition Roadmap to next generation PPDR Mission Critical Broadband Services

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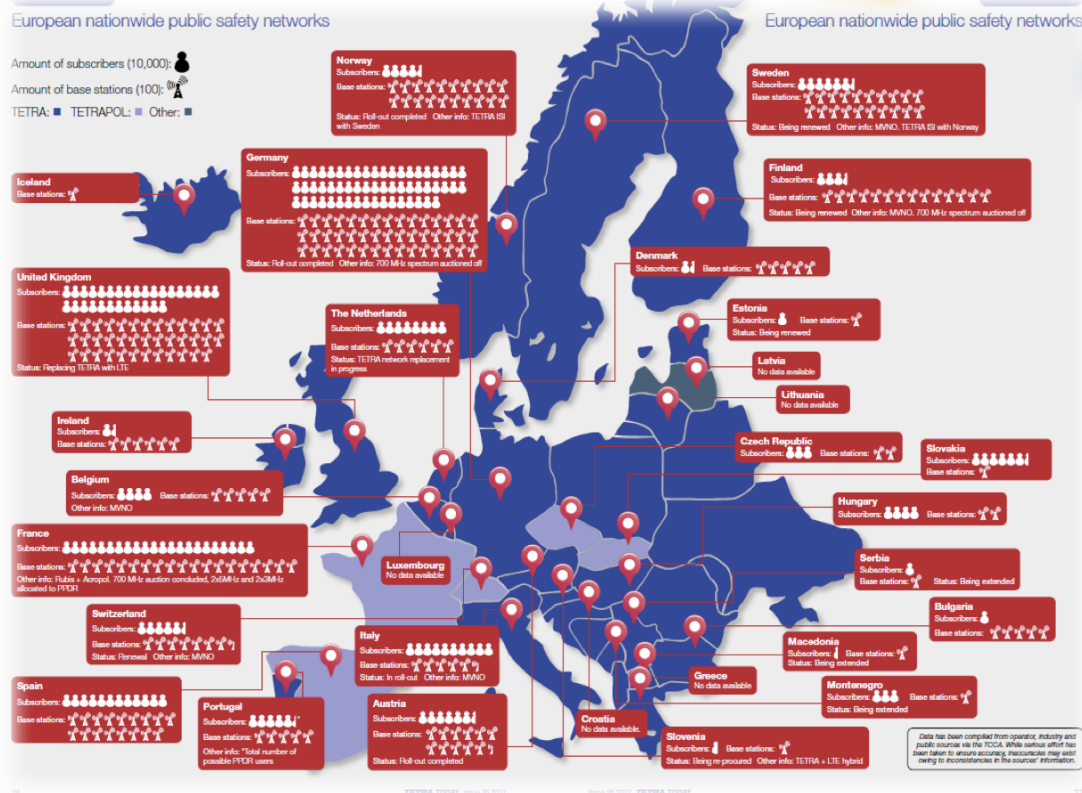
- Starting point – « As Is » situation
- Objectives to PPDR Mission Critical Broadband Services
- Transition from PPDR legacy systems to next generation Mission Critical Broadband Services
- SpiceNet - **Standardised PPDR Interoperable Communication Service for Europe**
- Legal aspects for Transition Roadmap and Public Procurement (PCP) – Ms. Soléne Penisson, DGFLA
- Technical aspects for Transition Roadmap – Etienne Lezaack, Belgian



Federal Police

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Starting point - "As is" situation



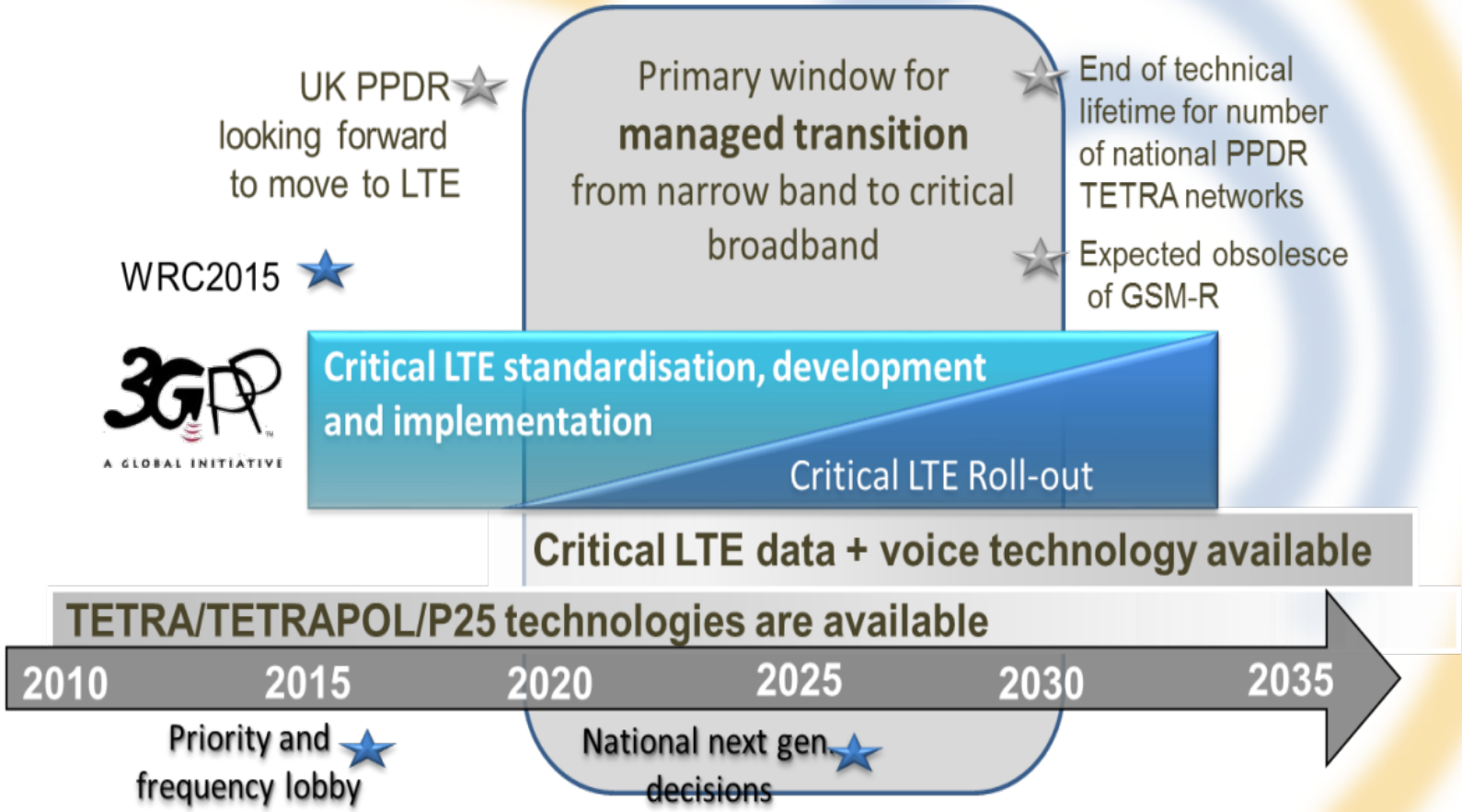
- Different starting points in each country
 - TETRA, TETRAPOL, P25, DMR, VHF
- No common EU agreement on allocating 700 MHz spectrum
 - Commercial
 - Dedicated
- Main use Voice (MCPTT)
- Criteria for coverage on PPDR legacy systems varies
- There has been capacity problems on legacy systems on certain special events
- Priorities and Pre-emption on commercial networks are rarely used
- Security – network algorithms used
- Interoperability – good national cross agency interoperability in general, but limited cross-border interoperability
 - ISI Norway-Sweden
 - DMO, MNO
- Devices are niche market
- Applications&Services
 - SDS, LIP, some IP
 - AVL
 - IP over Commercial Networks
 - Dual Mode (e.g.TETRA/Commercial)

Objectives for PPDR MC Broadband



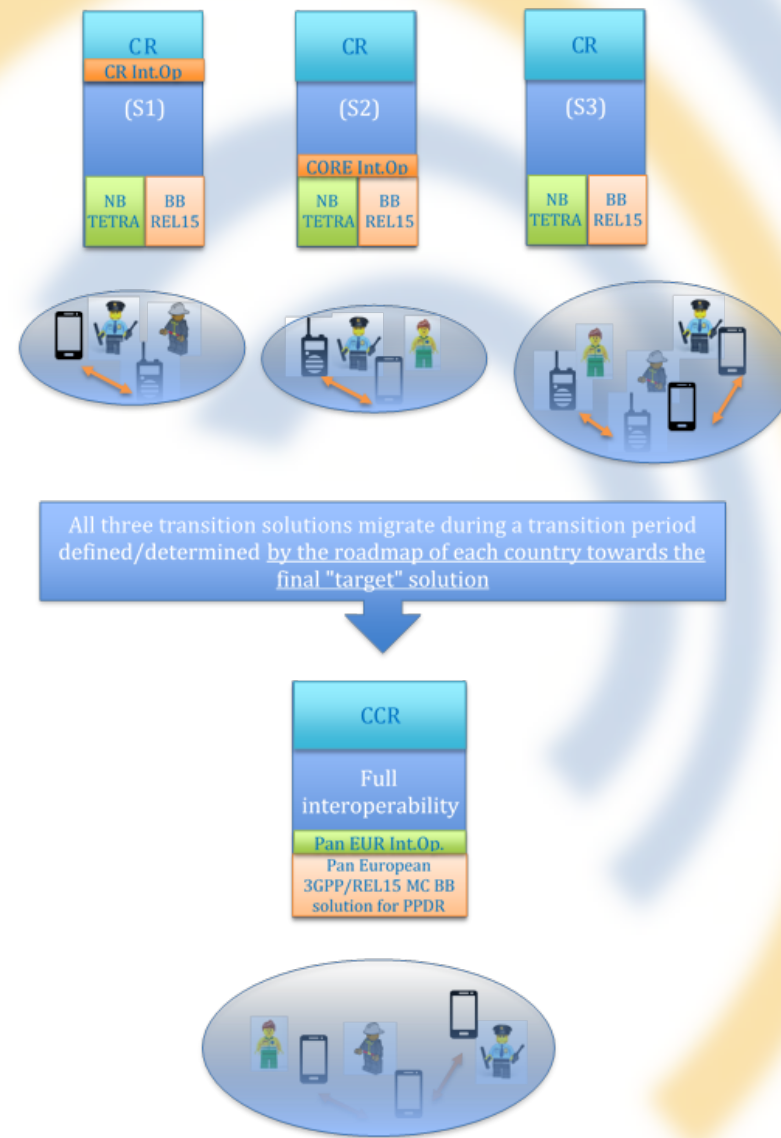
- **Interoperability:** Domestic and Pan European
- **Security:** Industry standards, EtoE encryption, Physical security, whitstand jamming
- **Availability:** Day-to-day routines – Major accidents, Coverage – Capacity – Priority – Resilience – Redundancy
- **System management:** 24/7 operation – full set services – Diagnostics
- **Device ecosystem:** From BYOD / COTS to specialized, hardened devices – support for application ecosystem
- **Application ecosystem:** Specific requirements for European PPDR's
- **Financial sustainability and marketplace:** 3GPP REL 15 critical standard. Development of cost effective common applications and devices must be ensured
- **System Documentation:** Available to operators and third parties (within regulated IPR restrictions)
- **Health, safety and environment:** In accordance with PPDR requirements regarding health, safety and environment

Transition Window

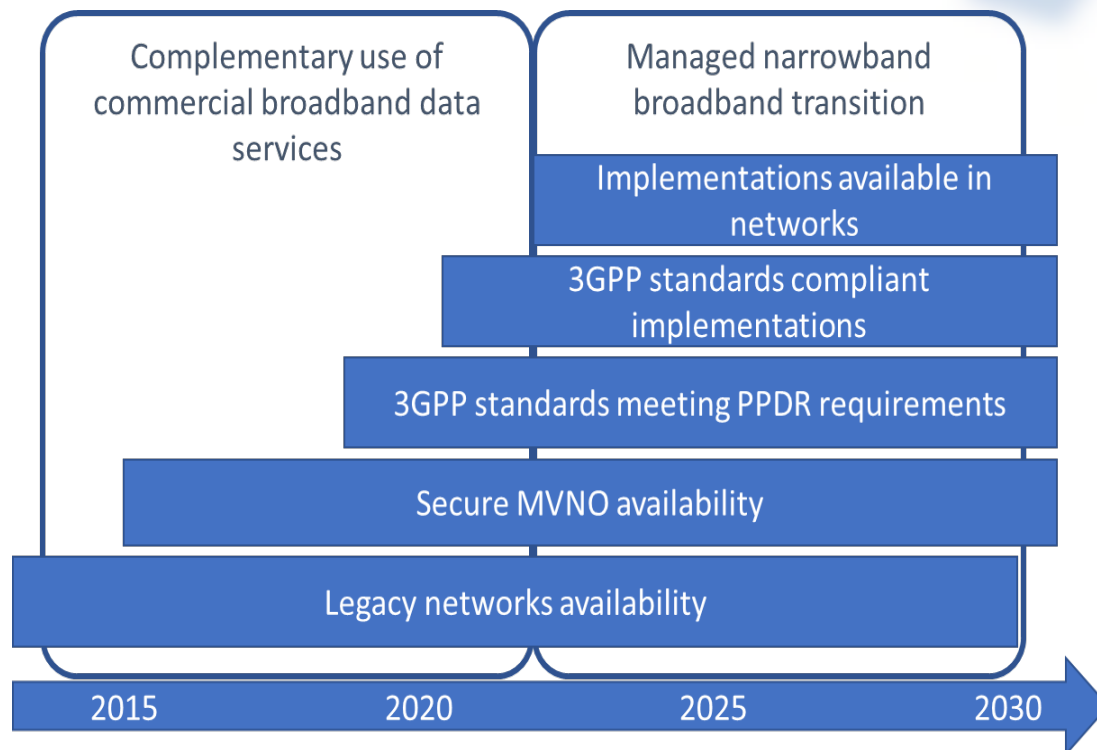


Transition from legacy systems

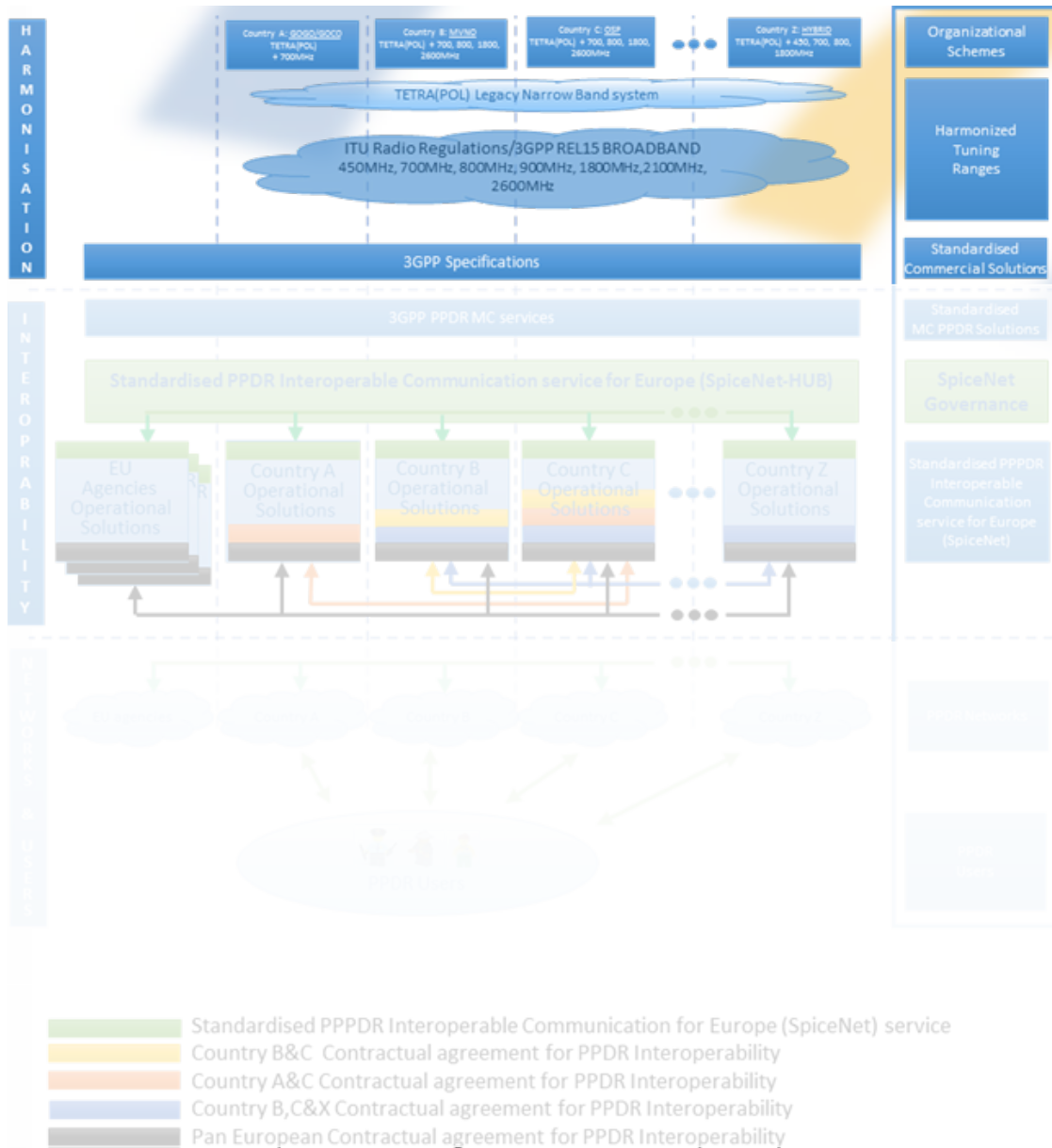
- The transition phase is highly dependent on legacy technologies and service organisations (eg. GOGO / GOCO) and on the chosen strategies and transition roadmaps of each country
- Undependent of legacy service organisations and used technologies it is possible to reach Pan European MC PPDR Broadband solution, which is based on 3GPP REL 15 and subsequent releases



Step by Step approach



- Starting point 3GPP REL15
- No harmonized EU wide strategy how to provide PPDR mobile broadband services
- To maintain high level PPDR services, a step by step approach from legacy systems to next generation MC broadband services is essential
- Also transition strategies are missing in several countries
- Transitions must be adapted to various national conditions



SpiceNet – Standardised PPDR Interoperable Communication Service for Europe

Three layers:

- The harmonisation layer enables own organisation schemes to provide PPDR services.
 - Flexible harmonisation is achieved by using 3GPP and other standardised technologies and commonly agreed harmonized tuning ranges .
- The interoperability layer defines **SpiceNet** (Standardised PPDR Interoperable Communication for Europe) as **a common PPDR Pan European cross-border interoperability solution**.
 - This enables each country to use a set of common services for pan-European interoperability.
 - For national interoperability countries have freedom to use their own operational solutions.
- The network and user layer enables common services provided by **SpiceNet** to be used in all participating countries. These common services can be further extended via agreements between nations.

Legal aspects

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Summary

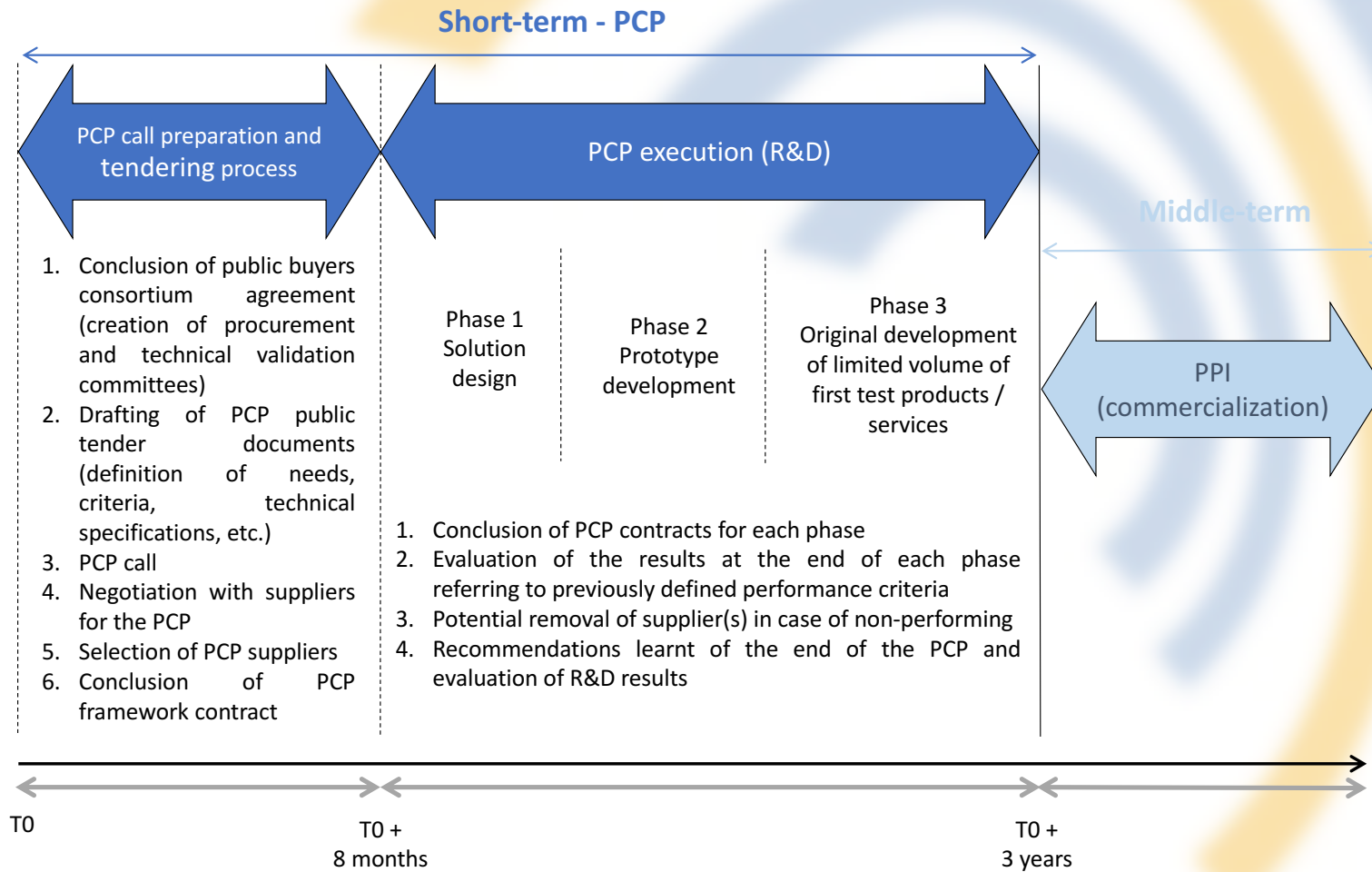
1. Timelines to procure a new generation of PPDR communications systems
 - 1.1. PCP at short-term
 - 1.2. PPI(s) at middle-term
 - 1.3. European PPDR communications entity at long-term

2. Organization for public joint-procurement on PPDR communications
 - 2.1. Contractual relationships between public authorities
 - 2.2. Relationships with industrial and other EU / national end users and organisms
 - 2.3. Global figure

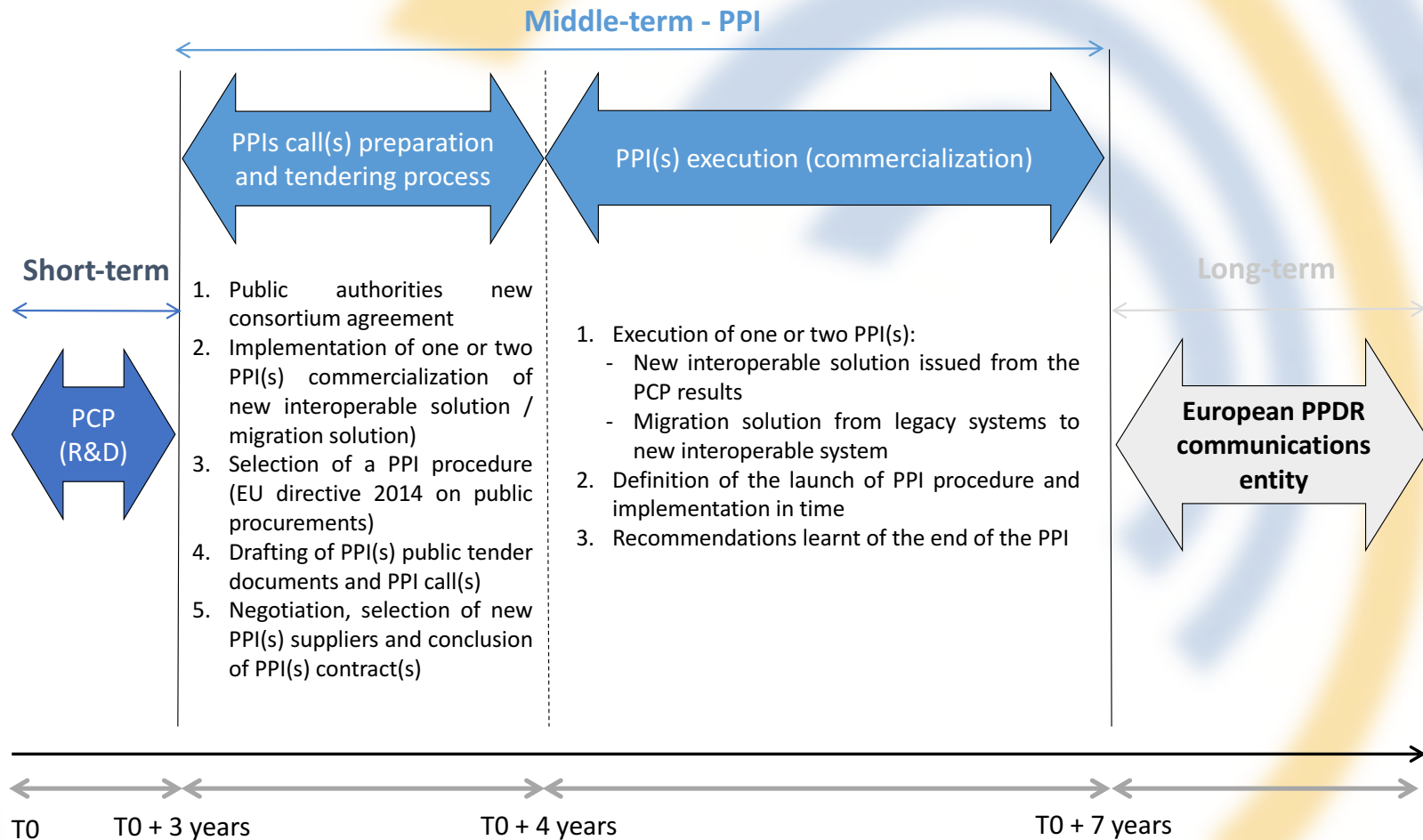


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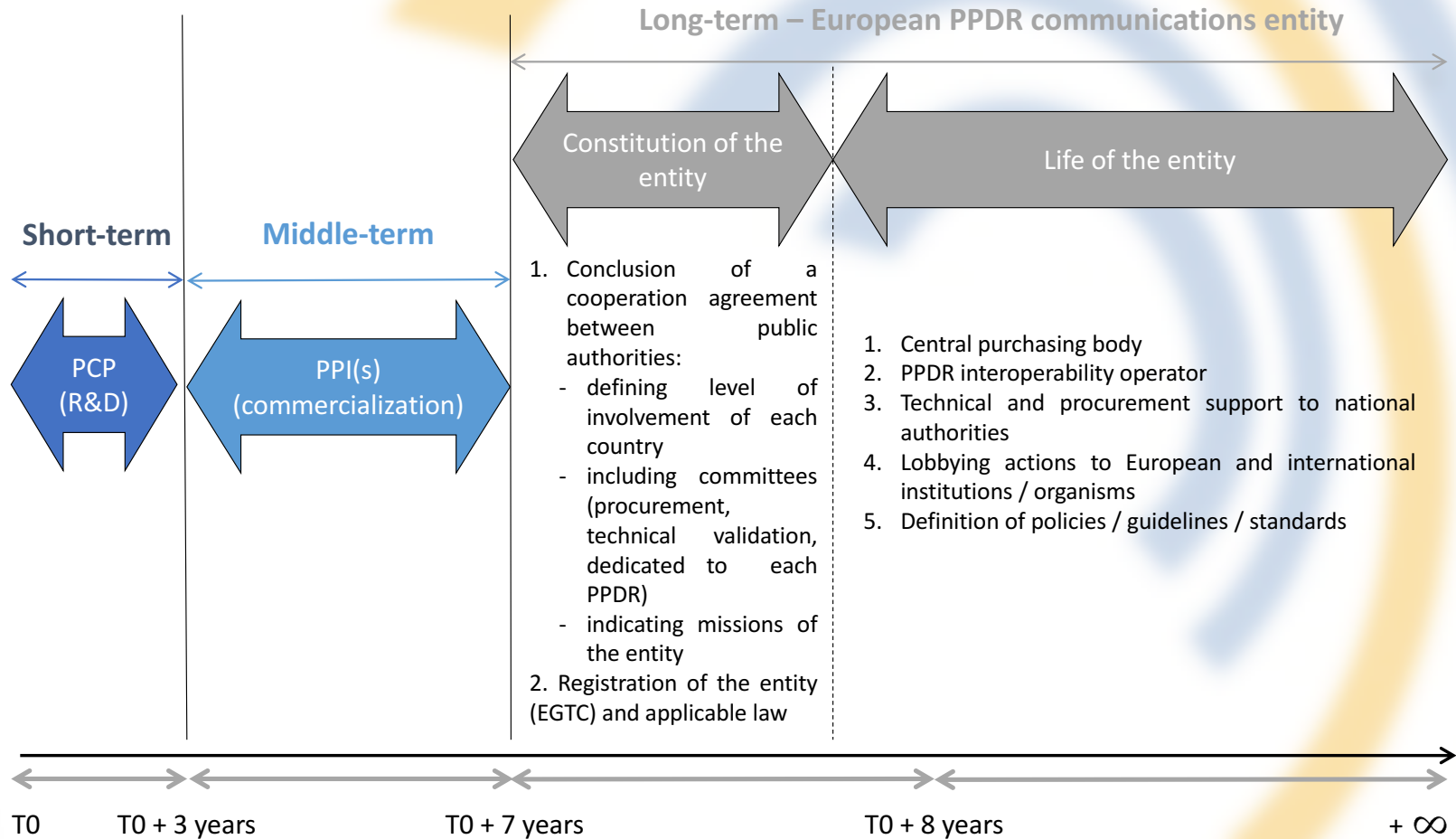
1. Timelines to procure a new generation of PPDR communications systems (1/3)



1. Timelines to procure a new generation of PPDR communications systems (2/3)

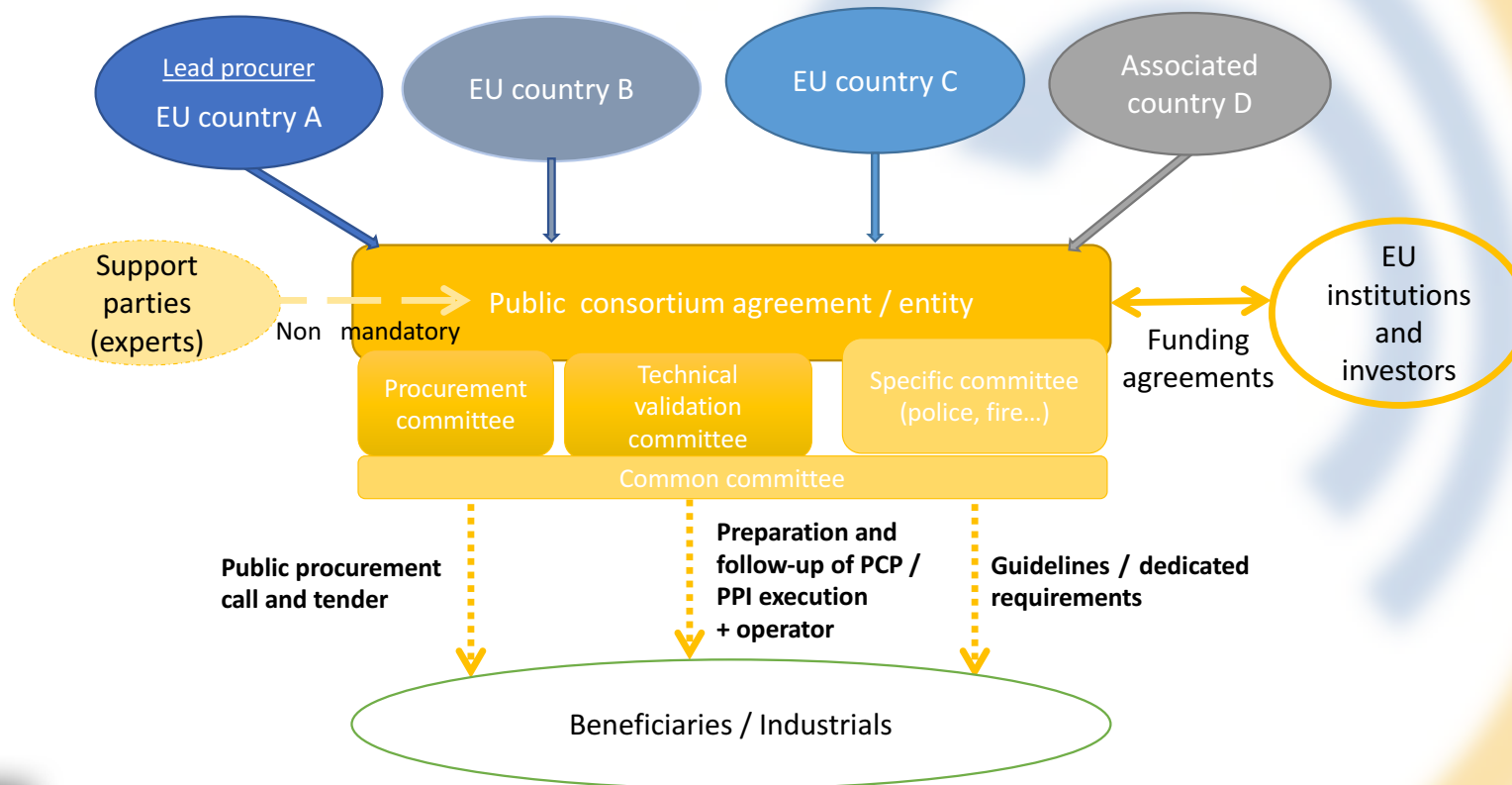


1. Timelines to procure a new generation of PPDR communications systems (3/3)



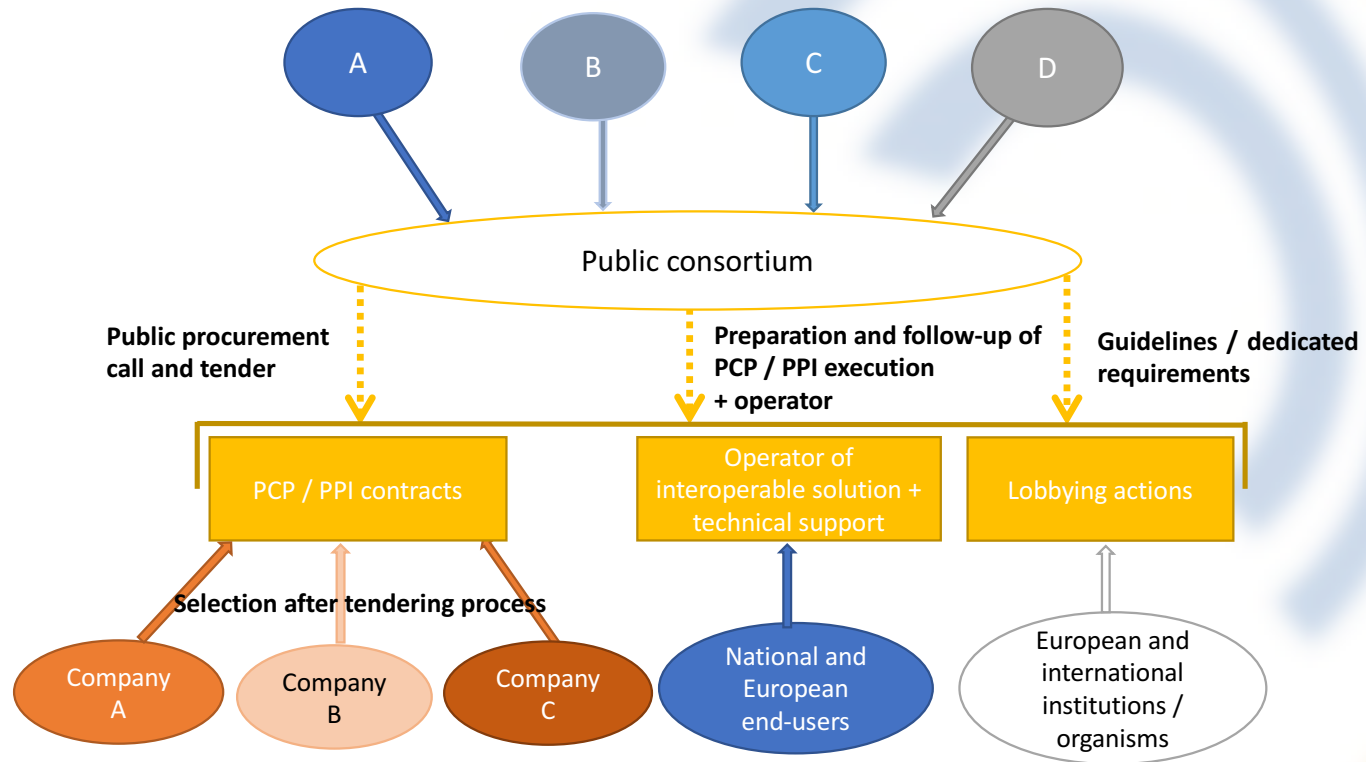
2. Organization for public joint-procurement on PPDR communications (1/3)

1 Contractual relationships between public authorities

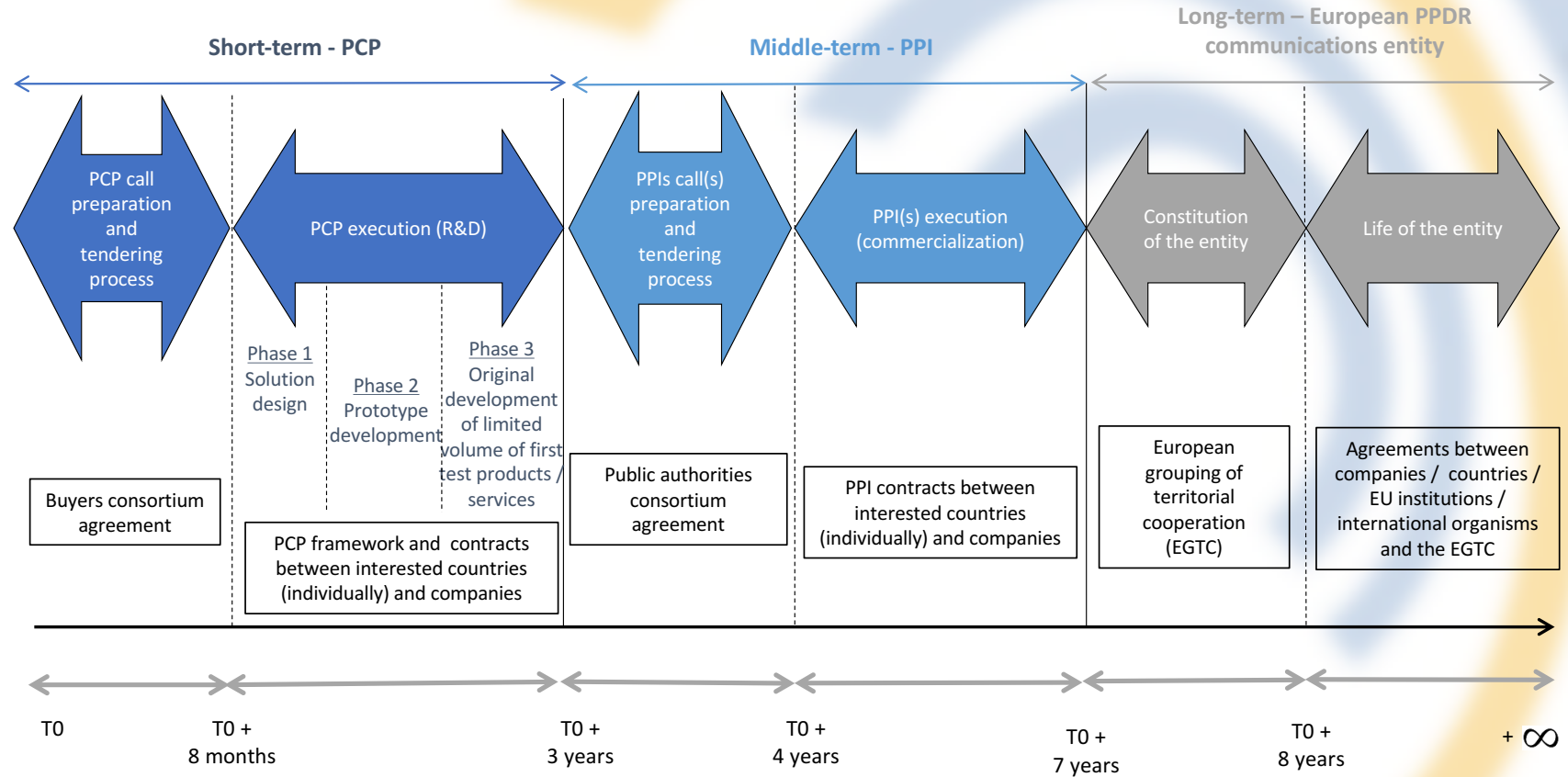


2. Organization for public joint-procurement on PPDR communications (2/3)

2 Relationships with industrial and other EU / national end users and organisms



2. Global figure (3/3)



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Thank you for your attention

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Interoperable Next Generation of Broadband Radio Communication
System for Public Safety and Security

WP5
Technical aspects of the transition roadmap

BEMOI

EC review – 5 April 2017 – Brussels
2nd Stakeholder Event – 6 April 2017 - Brussels



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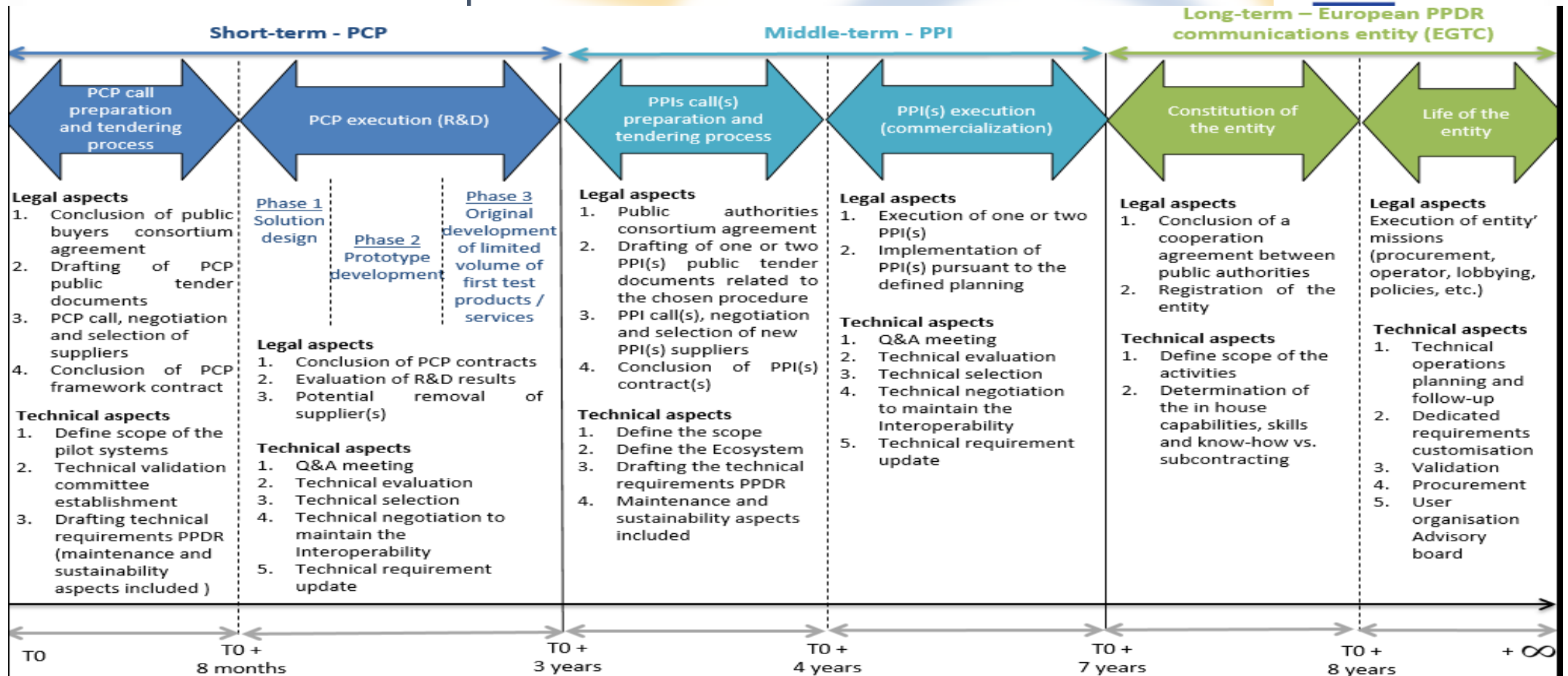
Summary



- Timeline to procure a new generation of PPDR communications systems including technical aspects
- PCP and PPI scope (technical key functionalities)
 - Security
 - Full devices/systems interoperability
 - Service continuity roaming
 - Priority and pre-emption
 - Location based MC features
 - Direct Mode Operation
 - Multilateral agreements implementation standardisation
 - Analysis for a SpiceNet EU MC BB roaming HUB
- PCP setup recommendation



Timeline including technical aspects



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PCP and PPI technical key functionalities



- Security

- An end-to-end solution on top of constituent parts is needed to provide user confidentiality and integrity
- This solution has to be transparent for the end users and simple to support and manage
- Different levels of trust domains should be defined and adapted following the agreements
- Secret cryptographic algorithms is to be avoided



PCP and PPI technical key functionalities



- Full devices/systems interoperability
 - The communication capabilities (voice, video and data, the whole via individual, group or broadcast call), all their related features (speech items queuing, priorities, status & short messages management, emergency targeting process, combining of Communication Groups (CG), DGNA...) and all the applications developed in the SpiceNet ecosystem, which are programmed in and/or used by air- or line-connected devices, shall be usable over the different networks in accordance with the multilateral agreements
 - Agreements determine the capabilities of devices in the SpiceNet area, not technical interoperability limitations



PCP and PPI technical key functionalities



- Service continuity roaming
 - Device settings will allow manual or automatic roaming
 - Automatic roaming shall ensure the service continuity: the systems and/or devices will choose the right moment to switch between the networks so that the first responder shall not suffer from any noticeable operational damage when crossing a border
 - For safety reason, when a first responder crosses a border, the area of his/her selected national Communication Group (CG) shall be automatically extended, if so agreed (CG roaming)



PCP and PPI technical key functionalities



- Priority and pre-emption
- Location based MC features
- Direct Mode Operation
- Multilateral agreements implementation Management Workstation (Mgt WS) interface standardisation
 - Each country has the full control on the implementation of its network interconnections. For example, creating a multinational Communication Group (CG) shall require an operation from each concerned country
 - Therefore, logical common objects (e.g. multinational CGs), visiting subscribers rights definition etc. shall be modelled and managed on a similar way by all the networks' Mgt WS
 - A global monitoring of the national programming of the international functionalities shall be possible by a dedicated PPDR communication entity (EGTC) to ensure the global consistency



PCP and PPI technical key functionalities



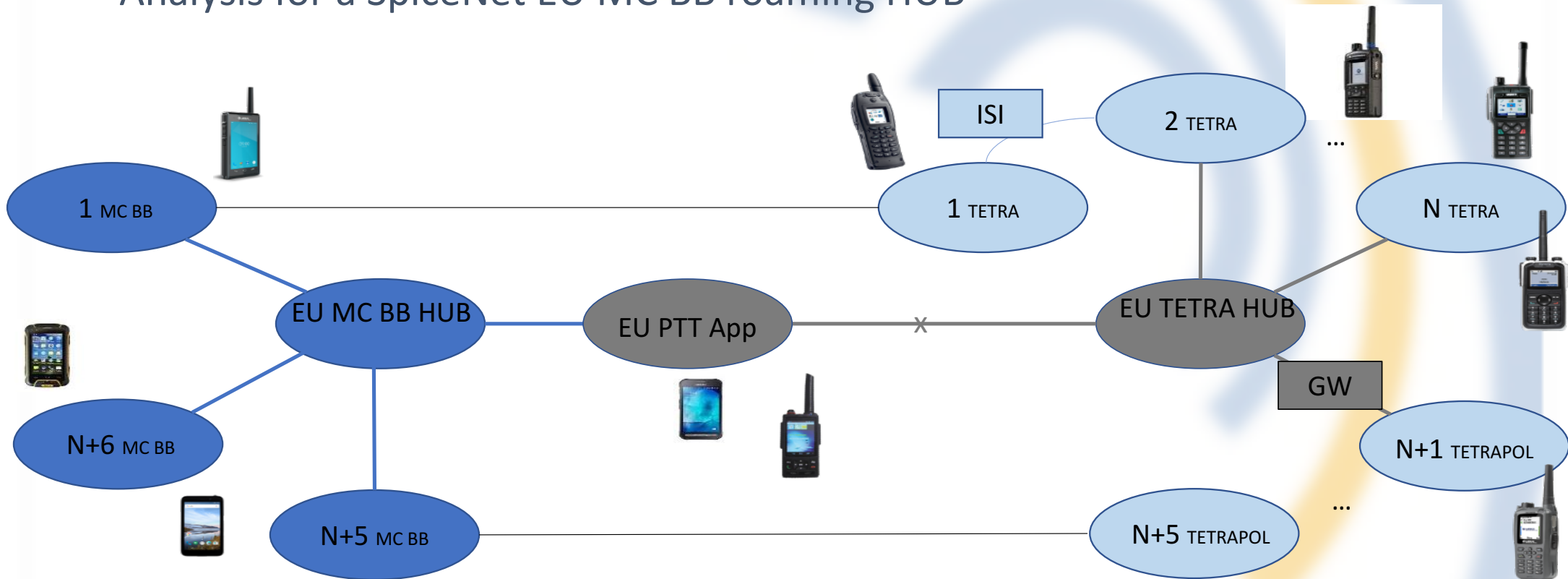
- Analysis for a SpiceNet EU MC BB roaming HUB
Expected advantages:
 - Allows rapid data transmission between MC BB national servers
 - Allows reliable monitoring and control of the interconnections
 - Simplify the physical links implementation



PCP and PPI technical key functionalities



- Analysis for a SpiceNet EU MC BB roaming HUB





PCP setup recommendation

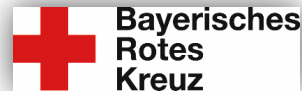


- Impact of the key functionalities on the PCP setup
 - At least 3 pilot systems should be implemented with a common radio coverage zone
 - The pilots can be located on 3 different places while the overlapping zone obtained thanks to remote base stations
- Vivid simple test example
 - Comparing how a device running a video stream application (like Skype) roams between two commercial networks with how a similar device roams between two MC BB pilot networks



Thank You for Your Attention!

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