

## 5G E2E Slicing for Mission Critical Applications

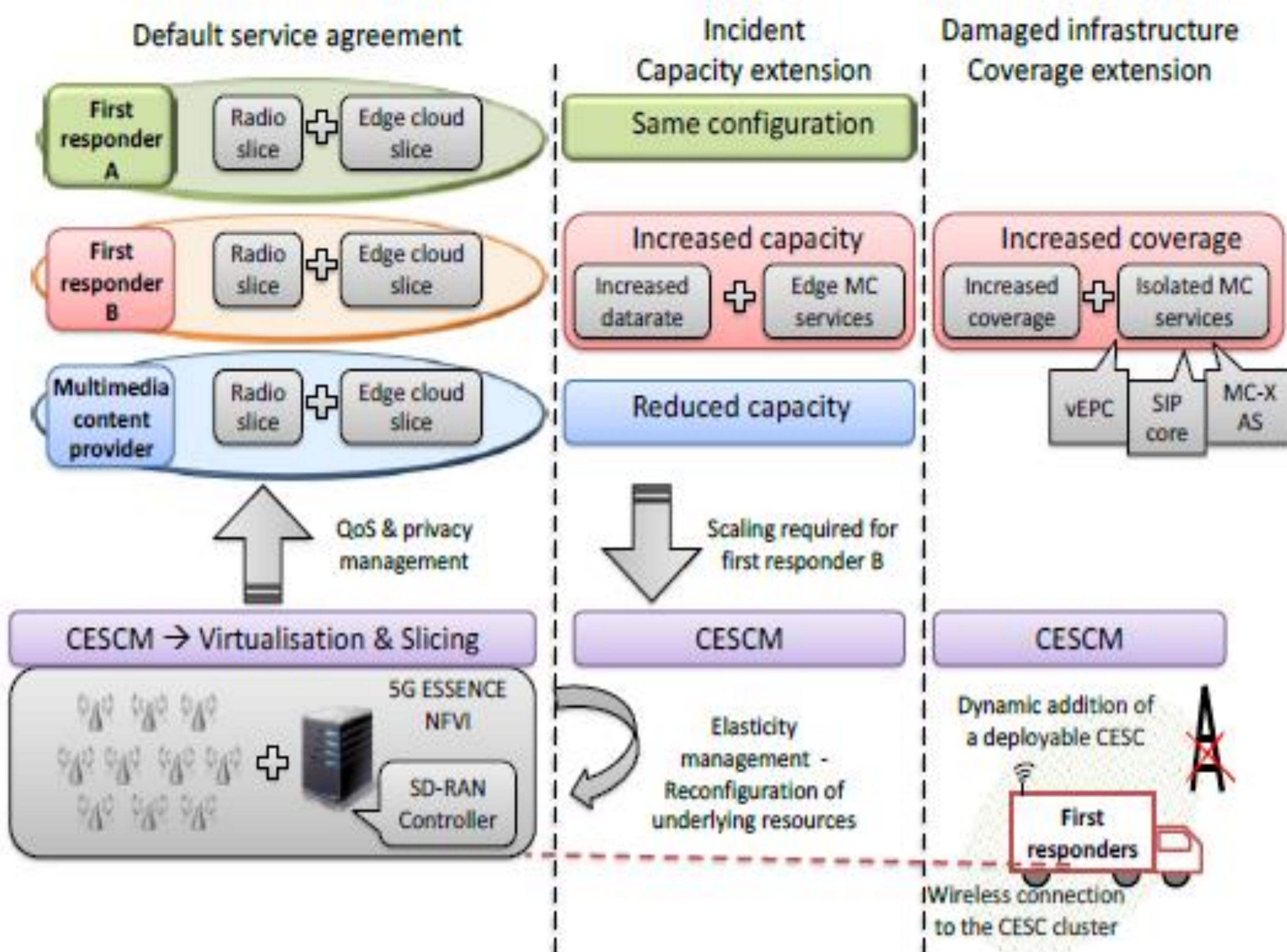
### 5G ESSENCE USE CASE

#### Use case description

- ❑ **Motivation:** Several latest 3GPP releases, address the “key requirements” expressed from the Public Safety (PS) domain for next generation broadband public safety networks.
- ❑ **Trends:** Different forms of network sharing models opposed to building out dedicated PS networks.
- ❑ **Innovations:** Common orchestration of radio, network and cloud resources will bring new tools to “share” both radio and edge computing capabilities in localised/temporary network deployments between PS and commercial users.
- ❑ **Challenges:** Allocating radio, network and cloud resources to actors who require prioritised and high quality services.
- ❑ **Business aspects:**
  - The PS operators “shift” their business model from a completely owned infrastructure model to one playing the role of an MVNO between multiple parties owning and operating mobile networks and PS end-users.
  - Reduced costs of buying, installing and maintaining dedicated infrastructures to serve provision of high-quality services.
  - Flexibility to adapt a variety of offering to the customers.

#### Involved actors

- ❑ A **legacy mobile operator** (Platform owner) offering its infrastructure to classical end-users, as well as to PS virtual operators.
- ❑ A **PS operator** that offers connectivity services with “strict” QoS guarantees to First responders.
- ❑ **First responder 1**, i.e. firefighters, are end-users exploiting the connectivity offered by a PS operator, through a dedicated slice.
- ❑ **First responder 2**, i.e. paramedics, are another set of end-users relying on the same PS operator or another slice coming from a different operator, in order to exchange chat messages, as well as pre-registered pictures for situation assessment.
- ❑ **Legacy end-users** constitute classical users that have subscribed to the legacy operator communication and Internet data offers. (They are not part of any First responder entity but exploit only the network of the legacy mobile operator, without any intermediary).



#### Three main stages for the Mission Critical (MC) use case:

- ❑ **Stage 1:** The 5G ESSENCE platform owner provides the required network slices to the different tenants. Each network slice is composed of an allocated data rate over a coverage area and an allocated of cloud resources. For the service of PS organisations, normal operations require a certain amount of access capacity and communications features supported in the area of the CESC cluster. *This requirement will be “mapped” to a number of KPIs in the CECs and the deployment of Group Communication service instances at the edge for multimedia and mission-critical Application Servers (AS) for voice with enhanced responsiveness.*
- ❑ **Stage 2:** In the case where there is an emergency in the area, the CESC will be able to react to the new service requirements. Based on pre-arranged or on-demand service scaling policies, the CESC will implement new elastic resource allocation schemes, *giving priority access to First responders and taking into account both radio and cloud resources.*
- ❑ **Stage 3:** In case that ICT infrastructure is damaged during a natural disaster or a terrorist attack, the first action should “address” the need for radio coverage extension. A deployable system to mitigate the damage in the macro base stations will be used. In order to better orchestrate the radio transmissions, the deployable system will be considered as a new CESC that can be dynamically integrated to the small cell cluster. *Thus, the enhanced 5G ESSENCE SON and RRM features can be applied to the coverage extension unit.*

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**Project Info:** Duration: 30 months ■ Start date: 01/06/2017 ■ Costs: 7.9 M€

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#### PROJECT CONSORTIUM

