

A highly flexible and scalable 5G small cell platform leveraging the paradigms of Edge Cloud computing and Small-Cell-as-a-Service

5G Edge Network Acceleration at a Stadium

Overall Description

5G ESSENCE will demonstrate a combined 5G-based video production and video distribution in a stadium.

- **Broadcasters** are looking for new ways to cover events, to offer exciting point-of-view perspectives to viewers, *but also to reduce production and delivery costs.*
- **Content providers** can have benefits from reduced latency and improved user QoE by “positioning” content on the mobile edge and can offer services by leveraging network information.
- **Network operators** “target” to increase the usage of their networks *resulting in lower OPEX*, as well as to: (i) *deploy new services*; (ii) *deliver directly to end-users higher QoE* and; (iii) *offer “Content-as-a-Service”, increased bandwidth and storage solutions* to content providers and venue owners.
- **Stadium owners** have a strong interest in making the visitors’ experience as pleasant as possible and to promote sponsors increasing side-revenues; *they can have benefits by capitalising live contents from cameras to spectators.*

Live content from cameras located in the playing field, replays, as well as additional contextual information on mobile devices is a strong use case for all the above actors.

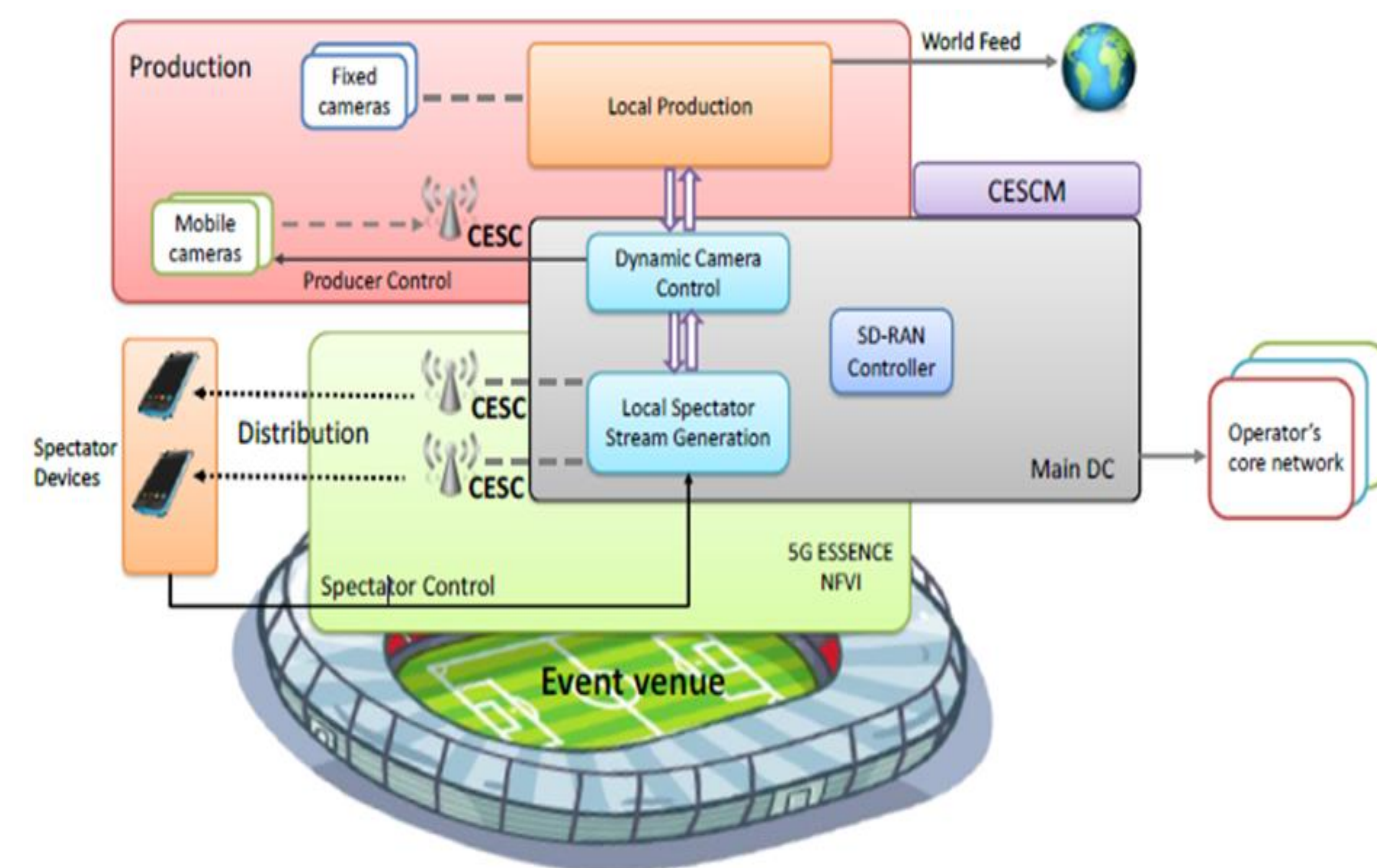
Main challenges:

- ❑ The delay in the delivery to be in the range of milliseconds rather than seconds.
- ❑ The considerable strain imposed on the backhaul network to be better handled.



Large crowd in a stadium creates bursts in network traffic! 5G ESSENCE solutions shall offer benefits to:

- Media producers and Mobile Operators can optimize operations by deploying “key functionalities” at the edge (i.e.: evolved Multimedia Broadcast Multicast Services (eMBMS) or local network services like real-time analytics together with multitenancy support from small cells).
- End-Users can enjoy a highly interactive experience.

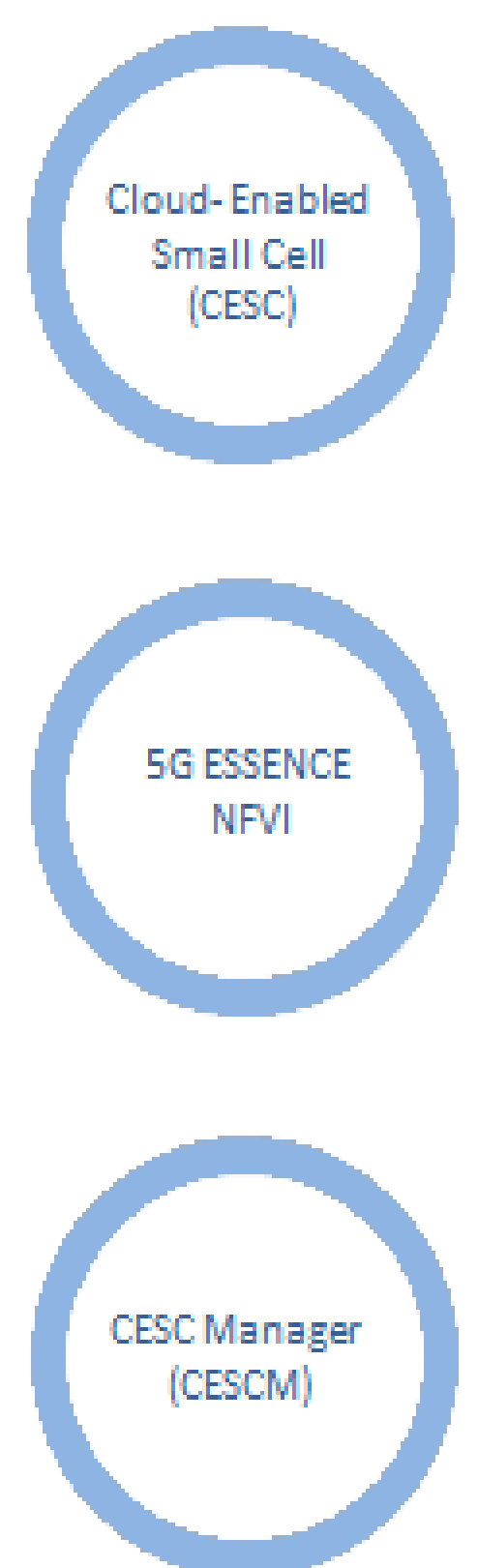


The 5G ESSENCE Approach:

- ❑ Leverages the benefits of small cell virtualization and of the radio resource abstraction.
- ❑ Optimizes the creation of network embedded clouds.
- ❑ Eases the coverage and capacity pressure upon the multimedia infrastructure.
- ❑ Increases security, *since content remains locally.*
- ❑ Supports lower latency, *due to shortening the data transmission path.*
- ❑ Maintains the backhaul capacity, *due to playing out the live feeds and replays locally.*

Actors involved

- **Small Cell Network Operator (SCNO):** Owner of the infrastructure deployed in the stadium.
- **Virtual Small Cell Operator (VSCNO):** Users of the infrastructure available in the stadium to provide services to the end-users.
- **End-Users (EU):** Users of the networking services.
- **Mobile Operators (MOs):** Actors responsible of bringing the network and the communication services to the stadium.
- **Service Providers (SPs):** Companies providing some of the Virtual Network Functions to the SCNO, for example: Football/sport society, Live event organizer, Municipality, Video/content provider.
- **Spectrum Owner (SO):** In the licensed spectrum case, stadium which leases the spectrum from an operator, or a mobile operator that offers a service.
- **Mission Critical - Public Safety (MC-PS):** Public or private organizations in charge of performing, when needed, mission critical actions for the public safety (i.e.: video surveillance, monitoring, autonomous local network).



5G PPP The European path towards global next generation communication network

PROJECT CONSORTIUM



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

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