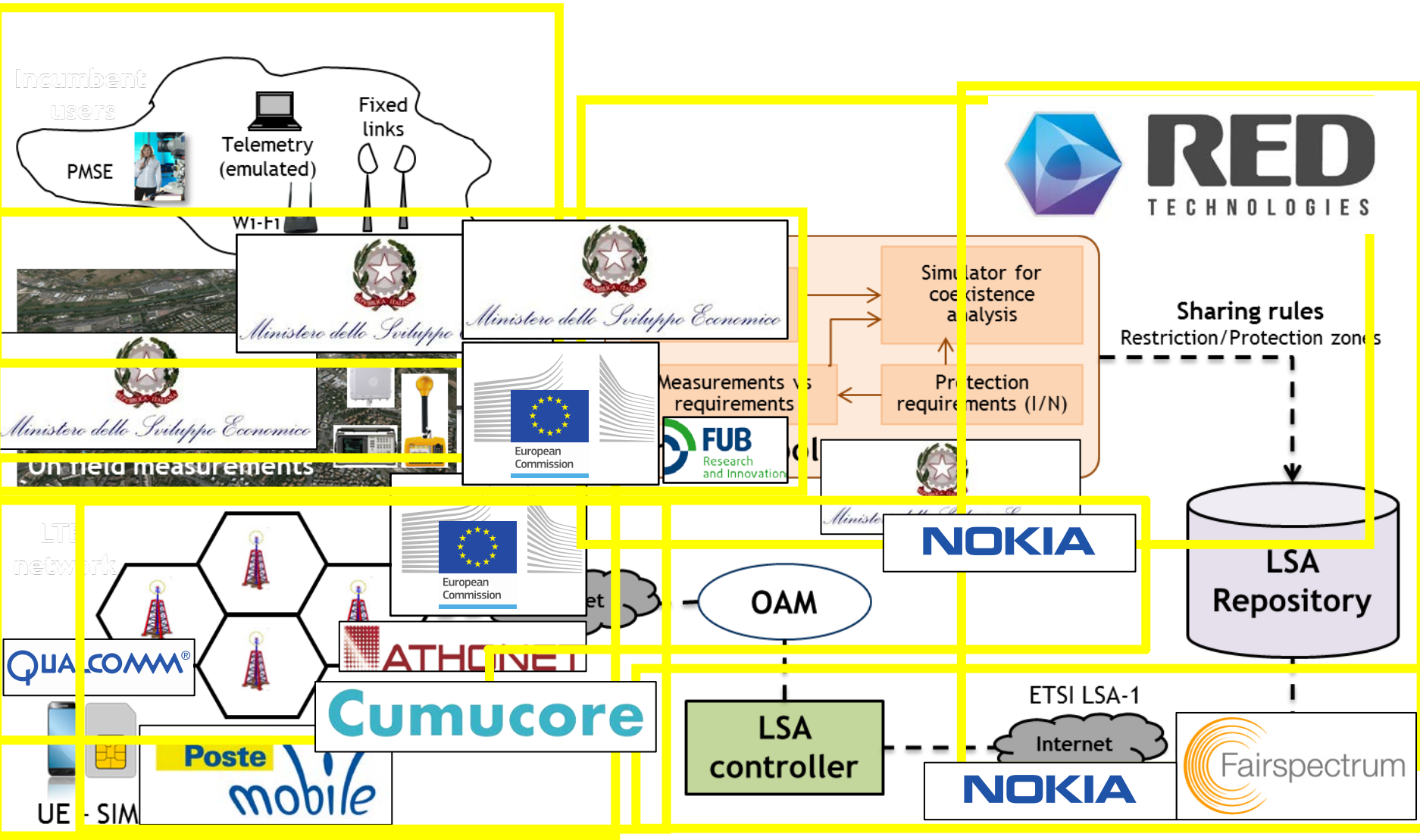


The Italian Pilot on the Licensed Shared Access in the 2.3-2.4 GHz band

E2E system functional description
latest standard updates

Enabling 5G through SHARED spectrum
Synergies between LSA (EU) and CBRS (US)

E2E system functional description



LSA Standardization - ETSI Status

SPECIFICATIONS

ETSI has finalized the following documents:

- ETSI TR 103 113 System Reference Document on “Mobile broadband services in the **2300 MHz -2400 MHz** frequency band under LSA regime”
- ETSI TS 103 154 “System requirements for operation of Mobile Broadband Systems in the **2300 MHz -2400 MHz** band under LSA” (**STAGE 1**)
- ETSI TS 103 235 “System Architecture and High Level Procedures for operation of LSA in the **2300 MHz-2400 MHz** band (**STAGE 2**)

ETSI currently develops

- ETSI TS 103 379 „Information elements and protocols for the interface between LSA Controller (LC) and LSA Repository (LR) for operation of Licensed Shared Access (LSA) in the **2300 MHz-2400 MHz** band” (**STAGE 3**)

WORKPLAN

Publication of ETSI TS 103 379 and completion of the 3-stages for the **2300 MHz-2400 MHz** band by January 2017

LSA Standardization - 3GPP Status

SPECIFICATIONS

3GPP has finalized the following study item on LSA:

- 3GPP TR 32.855 System Reference Document on “Study on OAM support for Licensed Shared Access”

3GPP currently develops:

- 3GPP TS 28.301 “Telecommunication management; LSA controller (LC) Integration Reference Point (IRP); **Requirements**” (STAGE 1)
- 3GPP TS 28.302 “Telecommunication management; LSA controller (LC) Integration Reference Point (IRP); **Information Service (IS)**” (STAGE 2)
- 3GPP TS 28.303 “Telecommunication management; LSA controller (LC) Integration Reference Point (IRP); **Solution Set (SS)**” (STAGE 3)

SYSTEM ARCHITECTURE

WORKPLAN

Completion of the 3 stages by March 2017 as part of LTE Release 14

Enabling 5G through SHARED spectrum

- 5G should get the most out of every bit of spectrum across a wide array of regulatory paradigms and bands

< 1 GHz	Massive IoT Supplemental DL ...	LICENSED spectrum (exclusive use)	SHARED spectrum (new spectrum sharing paradigms)	UNLICENSED spectrum (shared use)
> 1 GHz and < 6 GHz	Mission Critical Enhanced MBB ...			
> 24 GHz (mmWave)	Wireless Backhaul Extreme Bandwidths Small Cells, ...			

- SHARED spectrum should enable 5G to be unconstrained by the topology of the LICENSED part
- SHARED spectrum can open new business models to existing operators
- SHARED spectrum can provide an “entry point” for new players

Synergies between LSA (EU) and CBRS (US)

- Synergies between both approaches :
 - Similar nature of Incumbents
 - Agnostic to Radio Access Technologies
 - Easily transposable to other frequency bands
 - Implemented through STANDARDS : WInnForum and ETSI
 - Incumbent protection : CBRS can be seen as a potential LSA extension :
 - Exclusion zones > zones around sensors vs LSA exclusion zones
 - Protection zones > PPA vs LSA Protection zones
 - Protection are static and dynamic
 - Protection is based on radio propagation computation
 - PAL spectrum user vs LSA spectrum user are comparable, because both require a license to use shared spectrum and both enjoy the privilege to be protected against interference
 - Benefit from 4G fundamentals such as Carrier Aggregation, Carrier Anchoring, Self Organizing Networks or Neutral Host Network

CBRS referred to the “Citizen's Broadband Radio Service” defined by the FCC and encompasses the band of spectrum from 3550 MHz to 3700 MHz with a 3-Tier Sharing model