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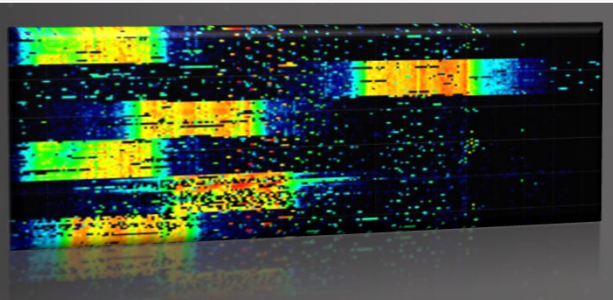
Spectrum sharing through LSA



Miguel Capela (ANACOM)

Spectrum Sharing for the Digital Ecosystem Towards 6G

Session 6: Regulator's perspective on spectrum sharing

8th June, 2021

Fairspectrum HUAWEI NOKIA MEO altice vodafone NOS RTP SIC tvi it

RADIO SPECTRUM AND AUTHORISATION

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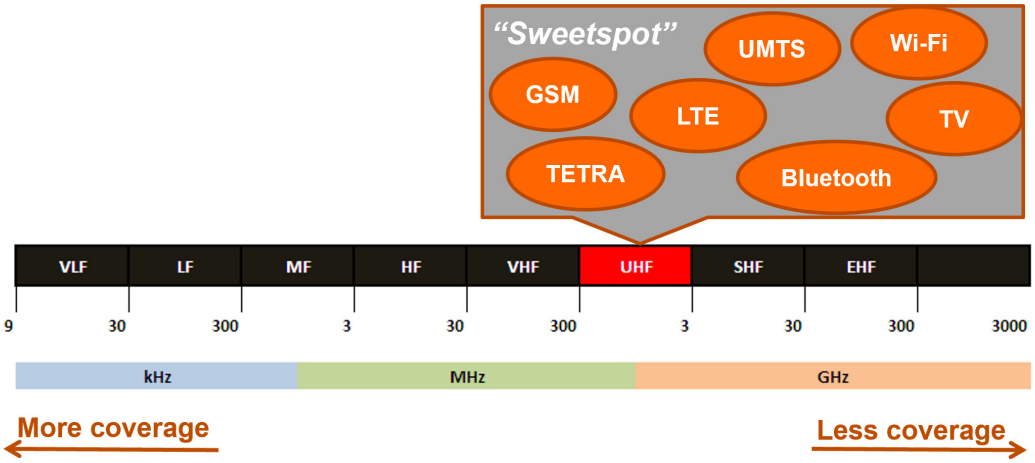

INDIVIDUAL AUTHORISATION

Radio license

Protection against interferences

With license costs

E.g. PP links, mobile services

LSA

GENERAL AUTHORISATION

License exempt

Non-protection non-interference basis

Shared spectrum, non exclusive

Without license costs

E.g. Bluetooth, Wi-Fi, PMR446

RSPG DEFINITION OF LSA

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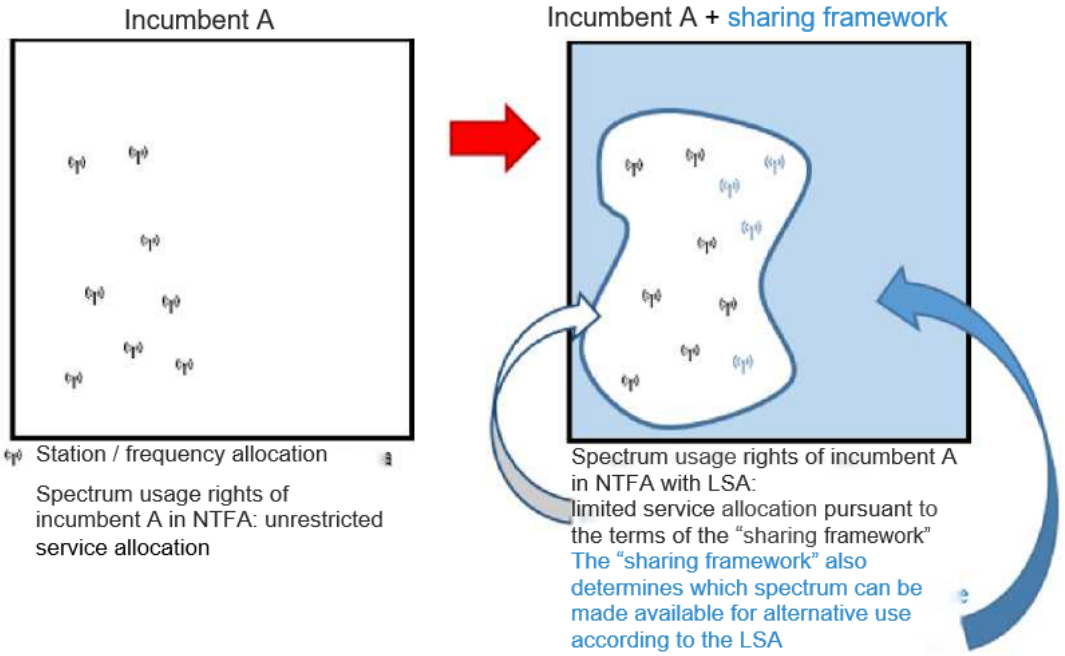
- "*A **regulatory approach** aiming to facilitate the introduction of **radiocommunication systems operated by a limited number of licensees under an individual licensing regime in a frequency band already assigned or expected to be assigned to one or more incumbent users**. Under the LSA framework, the additional users are allowed to use the spectrum (or part of the spectrum) in accordance with sharing rules included in their rights of use of spectrum, thereby allowing all the authorized users, including incumbents, to provide a certain **QoS**".*



LSA FUNCTIONAL BLOCKS

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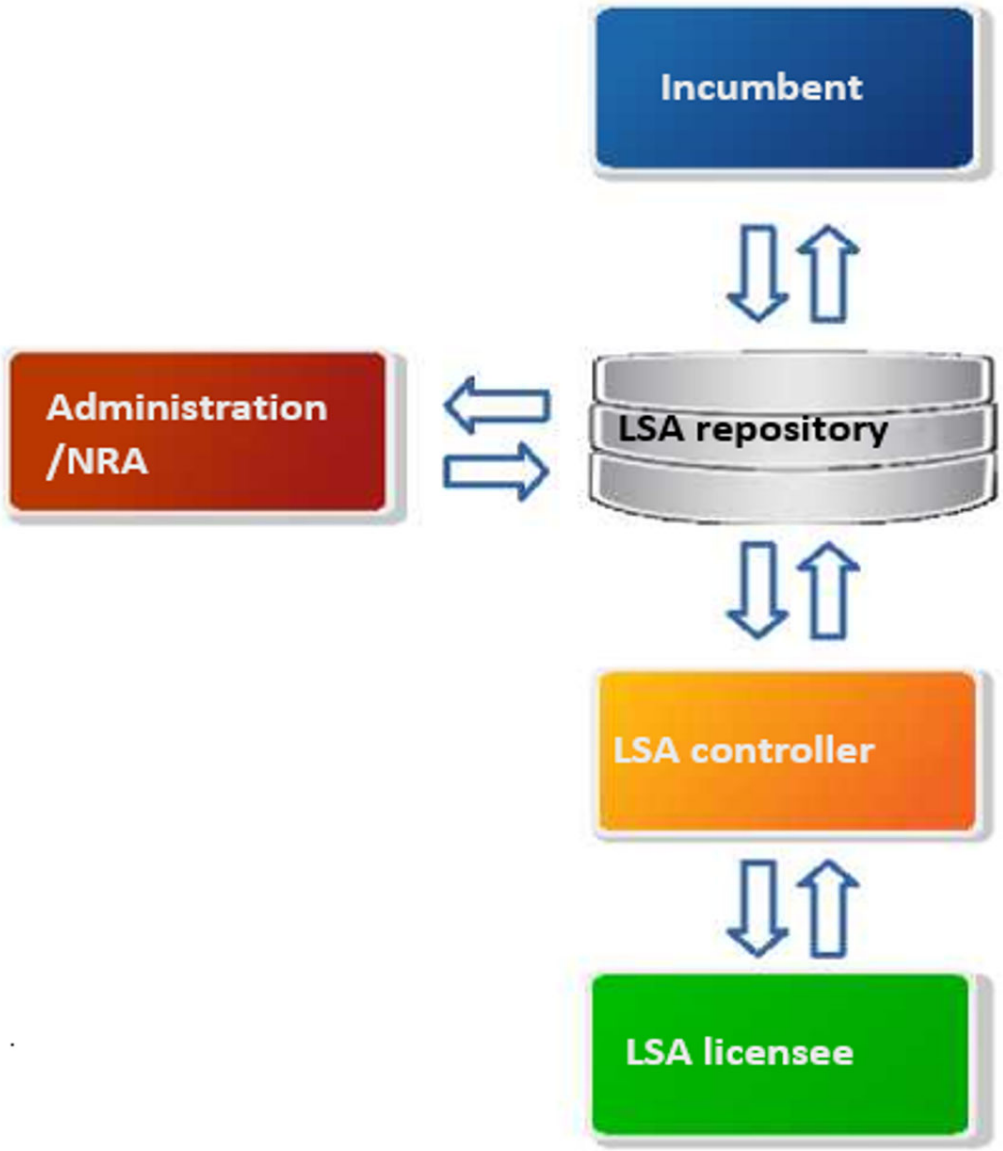

LSA IN THE 2.3 – 2.4 GHz

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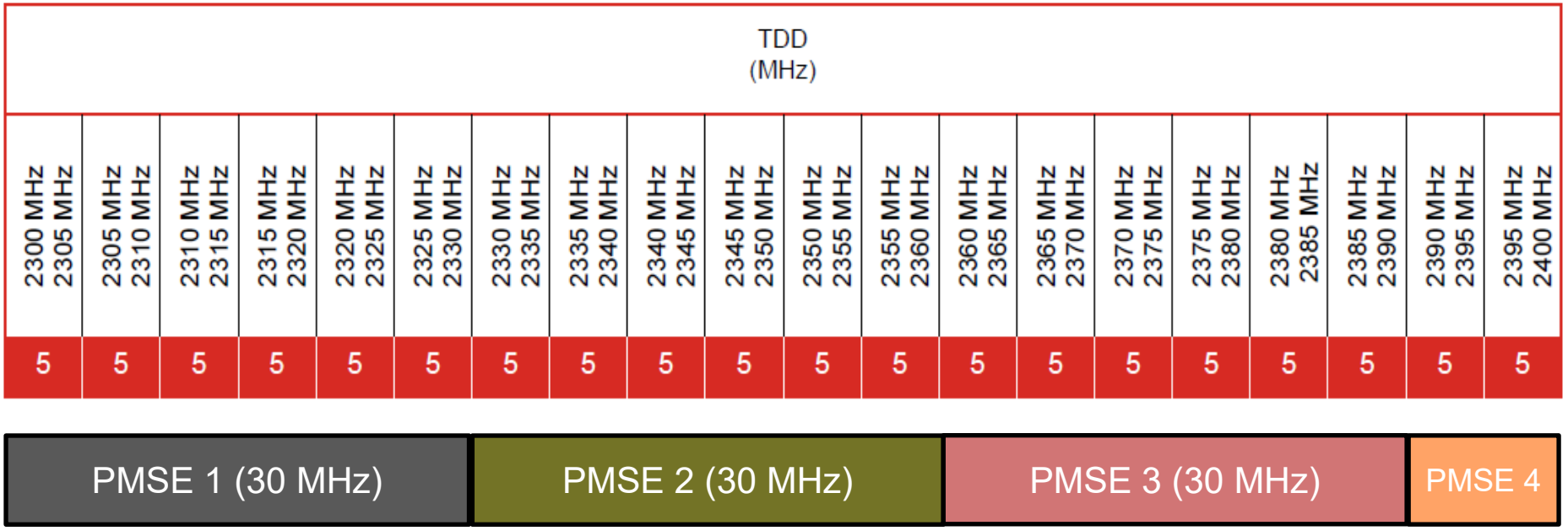
- **Decision ECC (14)02**, *"Harmonised technical and regulatory conditions for the use of the band 2300-2400 MHz for Mobile/Fixed Communications Networks (MFCN)"*



at any time and in any place, within the national territory

underused spectrum

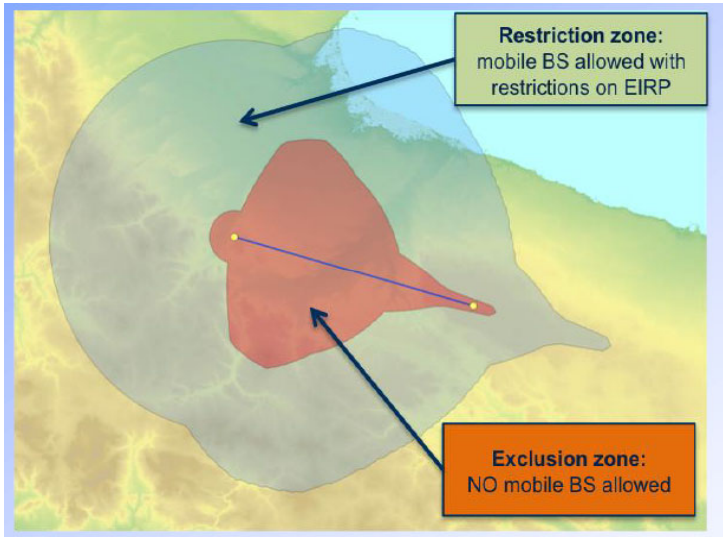
IN CEPT

- In CEPT countries, the band 2300-2400 MHz is used by:
  - Telemetry (both terrestrial and aeronautical telemetry);
  - Other governmental use (e.g. Unmanned Aircraft Systems (UAS));
  - Programme making and special events (PMSE) applications (SAP/SAB video links);
  - Amateur, as a secondary service.

- The requirements to be defined for access to spectrum through the LSA will necessarily have to be **adapted to the reality of each country**, taking into account incumbent uses

- E.g. : Italy LSA project

(protection of fixed service)



LSA PILOT IN PORTUGAL - PARTNERSHIP

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MEO altice | NOS | vodafone

Mobile Operators

RTP | SIC | tvi

TV Broadcasters

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Industry/Manufacturers

Fairspectrum | HUAWEI | NOKIA

R&D/Academia

it

LSA WARNER

- To optimise this spectrum utilisation, **without compromising the incumbent services**, it would be very interesting and useful **to identify**:
  - Where
  - When

  } Incumbent services are being used in the frequency band 2.3 – 2.4 GHz

- Better, if this could be done automatically and transparently to the user

- **LSA Warner**
  - Geo-location
  - Spectrum sensing and detection
  - Connection with the LSA Controller

PROOF OF CONCEPT

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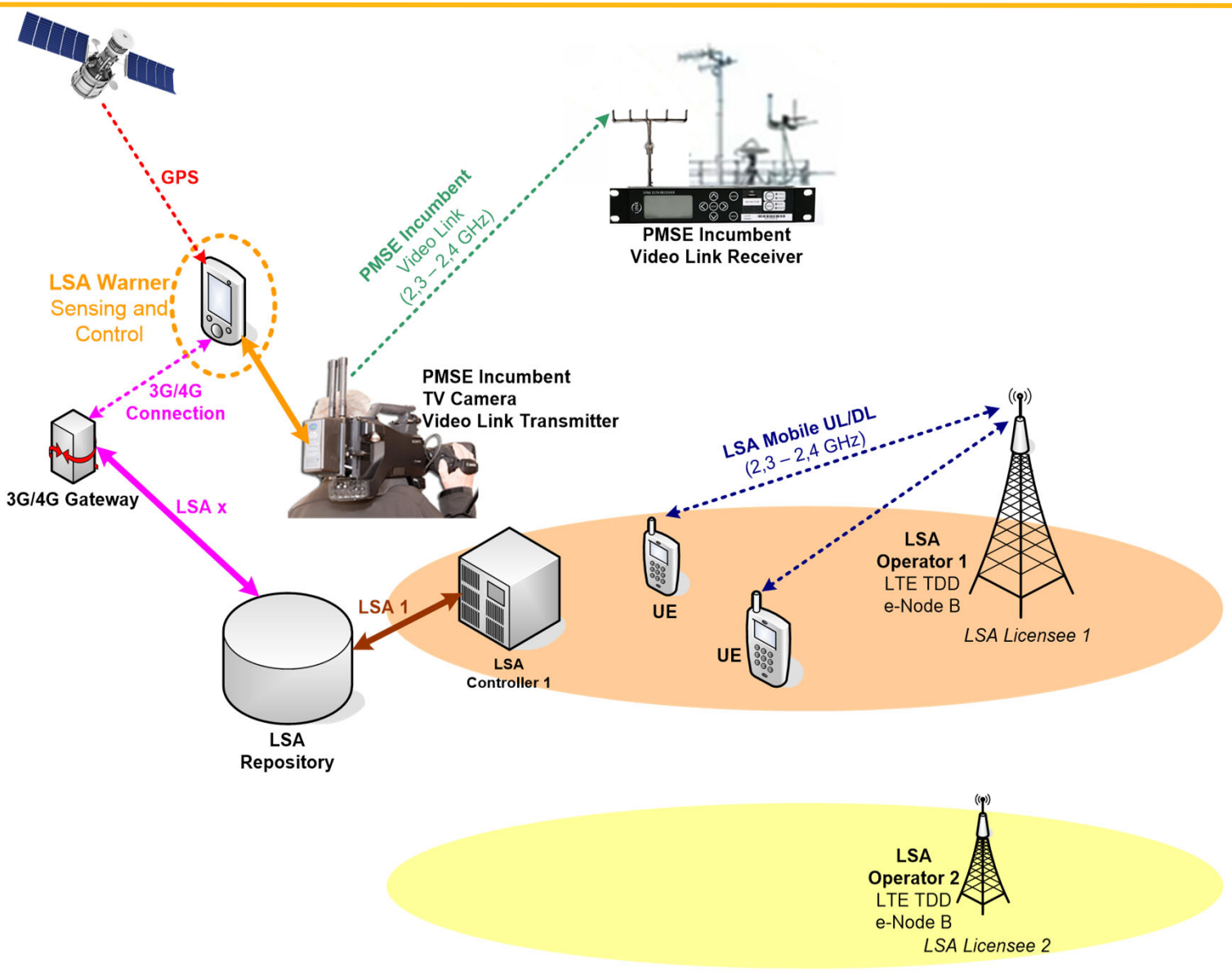

Main conclusions

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- The LSA Warner detected LTE TDD signals and activated control mechanisms, responding as desired to the LTE eNodeB (functioned successfully)
- LTE TDD and PMSE signals (DVB-T and LMS-T) are not compatible, regardless of the signals' bandwidth
- The LSA controller was able to communicate both with the LTE eNodeB and with the LSA Warner
- From a technology standpoint**, the LSA concept was validated and enable sharing of the spectrum, in the 2.3 – 2.4 GHz band**, without further constraints on the conditions considered
- **There are areas for improvement** in a potential deployment of the LSA model in Portugal
- Detection and actuation time **~50 seconds** (evacuation time)
- Re-establishment time **~50 seconds** (recovery time)
- **Study on the Licensed Shared Access (LSA) spectrum sharing model in Portugal (final report)**

The Project Team

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Thank you

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