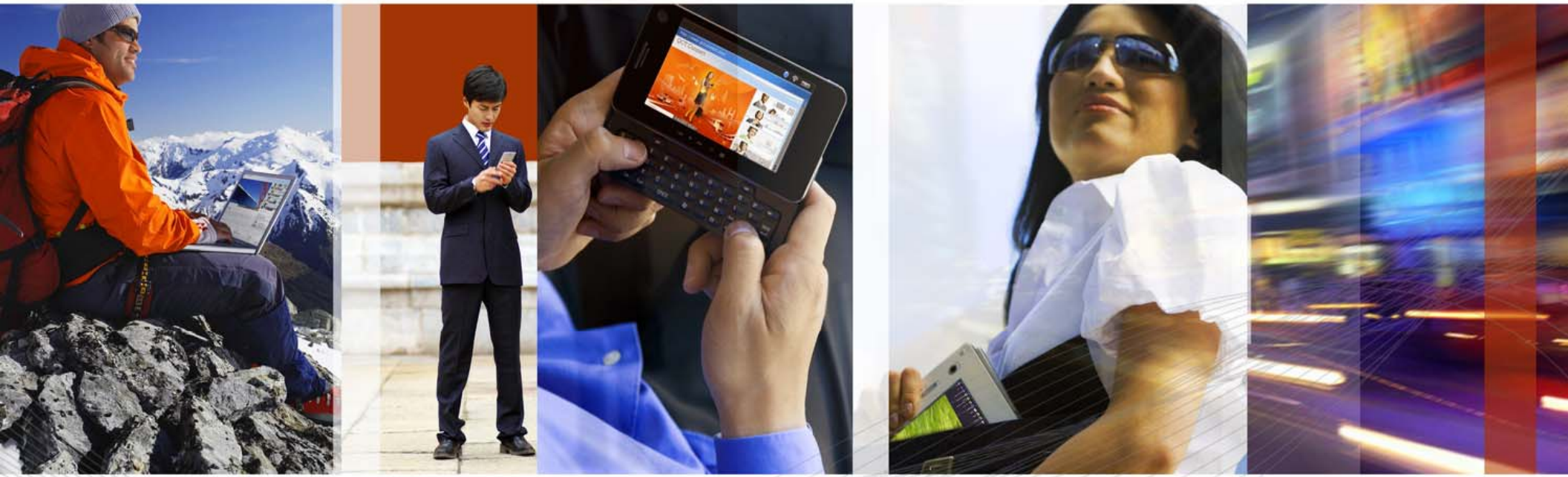

Licensed Shared Access Standardization: What and How?

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Presentation outline

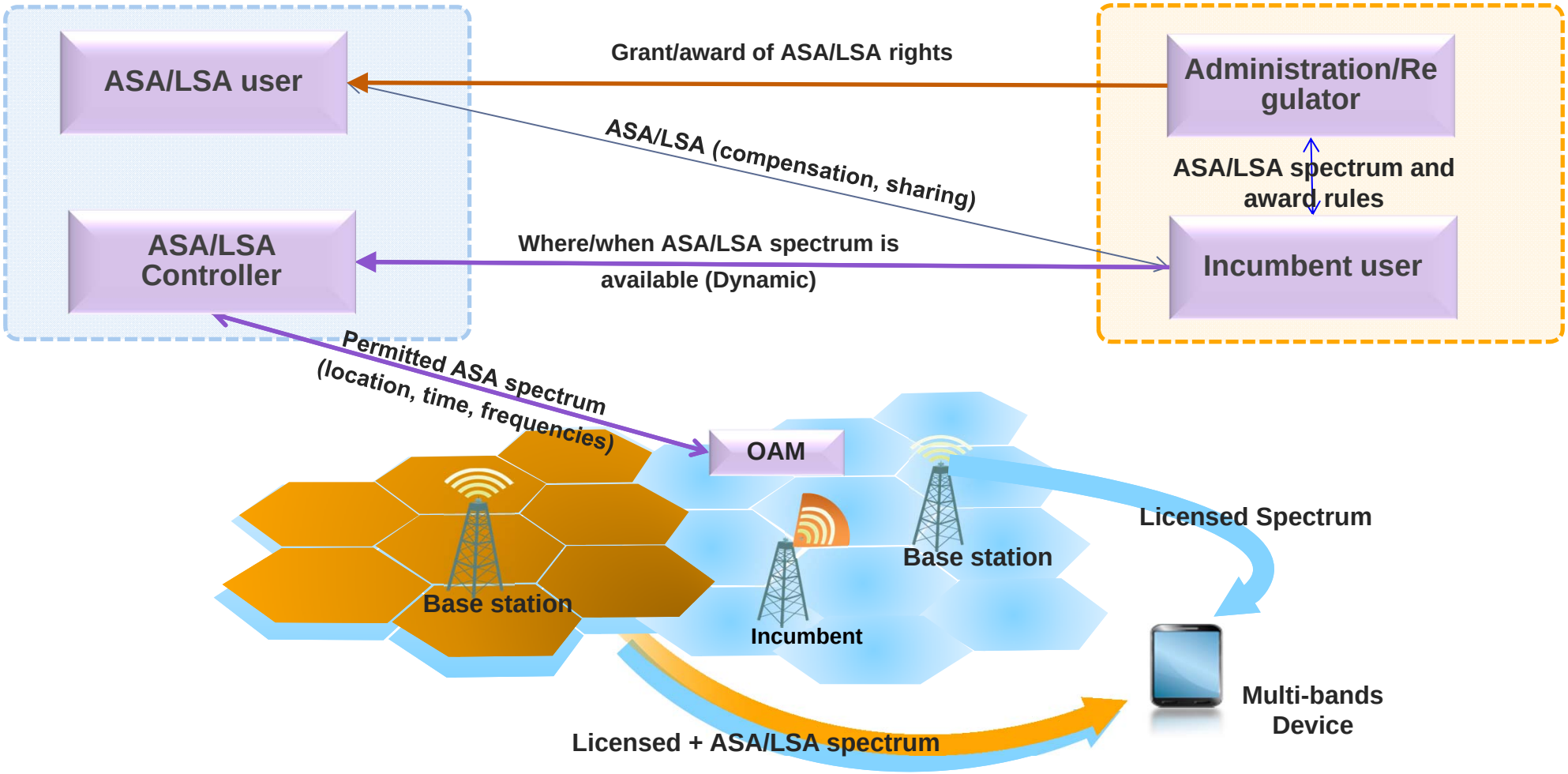
- What is Authorised/Licensed Shared Access (ASA/LSA)*?
- How Does ASA/LSA work?
- What is different with ASA/LSA in terms of standardization?
- What needs to be standardized for ASA/LSA?
- How ASA/LSA standardization should be done and in which fora?

* LSA is used in the November report of Radio Spectrum Policy Group, whereas ASA is used in the final ECC FM report on ASA. They might be used interchangeably in the literature, in the context that ASA is the LSA concept when applied to mobile broadband service. We use ASA/LSA in this presentation to avoid any confusion.

ASA/LSA in a Nutshell

- Traditionally, two policies in Europe to authorise spectrum access and use for commercial applications
  - “Licensed”: Exclusive usage rights granted in time, frequency and geography to ensure predictable Quality of Service (QoS), e.g. spectrum for the provision of mobile services
  - “licensed-exempt”: Shared usage “rights” whenever and wherever based on pre-defined technical conditions without guarantying predictable QoS, e.g. 2.4 GHz band for Wi-Fi
- ASA/LSA a complementary policy to authorise spectrum access and use
  - Allows for a shared use of spectrum by applying cognitive radio techniques based on an individual authorisation of rights for the use of spectrum to ensure predictable QoS
  - The right granted is limited to utilising the spectrum unused by incumbent users whenever and wherever, subject to terms defined by the relevant authority and/or upon an agreement with the incumbent, while the agreed conditions could be
    - Static, e.g. fixed exclusion zones specified or specific time allocated for ASA/LSA operation
    - Dynamic, e.g. ASA/LSA operation with dynamic sharing in time or geographical domain.
  - In the “dynamic” case, the mechanisms for providing, updating and complying with the access conditions are needed to be specified.
- The big advantage of ASA/LSA: Enabling Timely Availability and Licensed Use of Harmonized Spectrum for mobile services with predictable QoS

High-level Functions Required for ASA/LSA to Work



ASA/LSA Standardization: what is different?

- Standardization for “licensed” spectrum
  - The spectrum granted to a few mobile network operators (MNOs) for exclusive use
  - Homogeneous stakeholders
    - (MNOs, equipment and terminal vendors, etc.)
  - A marginal role of administrations/authorities
    - Mainly taking care of protection of adjacent services by defining appropriate out-of-band (OOB) emission limits as input to the standardization work
    - Also in charge of mutual protection of adjacent frequency blocks licensed to different operators, however such protection is already taken care of in the course of standardization
- Standardization for spectrum granted under ASA/LSA
  - The spectrum granted to a few ASA/LSA licensees (generally MNOs) for exclusive use whenever and wherever unused by the incumbent user(s).
  - Heterogeneous stakeholders
    - Incumbent users (governments, etc.) , in addition to the traditional players
      - » Incumbents will play a crucial role in defining technical requirements and the manner (and potentially the content) of information exchange between relevant parties (incumbent, authorities, MNOs)
  - A stronger role of administrations/authorities
    - Non-technical requirements and conditions for spectrum use by ASA/LSA licensees
    - The architecture of controller given relevant regulatory and security considerations

ASA/LSA Standardization: what?

- First (and probably the most important) step: “to-get-all-around-the-table”
  - Create a link between already standardized mobile systems and the candidate ASA/LSA bands by defining the usage scenarios, compatibility and high-level requirements as well as functionalities required to implement ASA/LSA in these bands.
- Second step: follow the usual standardization path, although in a more complex constellation, by defining and specifying the details of
  - Requirements
    - Definition of technical and non-technical aspects required in the first stage by incumbent users, and relevant authorities and in the second stage by MNOs, equipment and device vendors
  - Functional architecture
    - Definition of different logical entities and their respective functionalities
    - Definition of interfaces between the standardized logical entities and the external entities
  - Protocols, security models and data content
    - Specifications for protocol details of the interfaces
      - Request/response models, push/pull mechanisms, underlying transport and network models, security procedures, etc.
    - Detail of the information elements carried on the interfaces
  - Conformance testing and certification
    - Test methodologies for the interfaces, certification of terminals

ASA/LSA standardization: how/where?

- Start with a Europe-centric approach, however keep a global perspective in mind, for extending the results achieved to other regions.
- Target ETSI TC RRS as the community for starting ASA/LSA standardization.
  - For the first step of previous slide, develop an ETSI System Reference Document for the ASA/LSA bands envisaged (e.g. 2.3 - 2.4 GHz as the first one) for contribution to the further work by ECC on setting the detailed regulations.
  - Build upon the outcome of ECC work for specifying detailed requirements and functional architectures.
- Decide on the most effective approach for developing standards for protocols, security models and data content.
  - E.g. delegate to or re-use work from other SDOs (e.g. 3GPP) based on expertise
- Use ETSI expertise for conformance testing and certification.
  - Network testing, e.g. ASA/LSA controller, potentially by dedicated STFs
  - Equipment and terminal certification, e.g. Harmonized Standards by ETSI TC RRS

Thank You!