

Spectrum Management With SAS

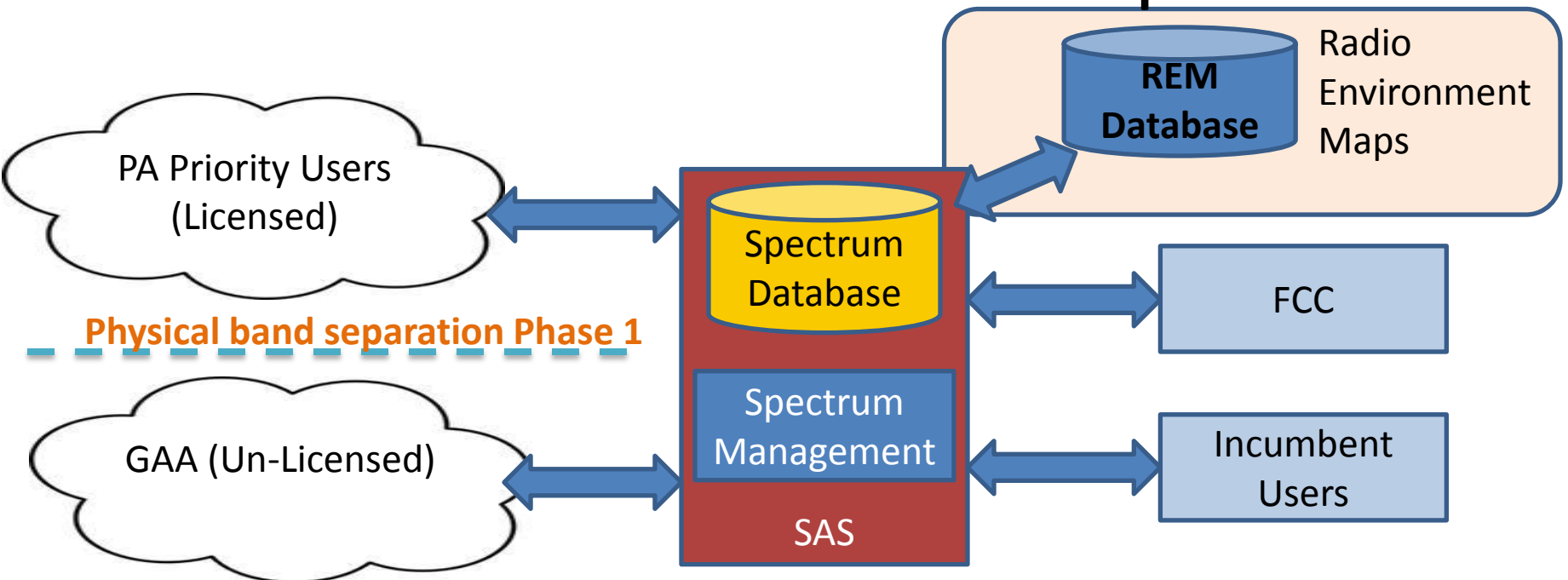
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SAS Architecture Assumptions



- Incumbent decides which spectrum to share and for how long
- Licensed and unlicensed spectrum have different spectrum management and monitoring needs

Spectrum Management: Spectrum Use Determination

- Incumbent has a-priori knowledge of spectrum use
- Spectrum sensing: susceptible to shadowing and other issues
 - For better accuracy sensing needs*
 - Complex algorithms beyond energy detection
 - Distributed sensing with cooperation
 - High density of sensing nodes
- Radio Environment Maps (REM) databases, Spectrum Cartography †
 - Cloud based database that collects interference and spectrum use information, performs analytics
 - Can provide channel recommendations for GAA users
 - May or may not be integrated with the SAS

* Please see references (1),(2)

† Please see references (3),(4),(5)



Interference and Misuse Detection

- Interference thresholds based on incumbent usage and FCC
- Allow all end user equipment to detect and report interference and misuse
- Incumbent
 - Interference and misuse detection in incumbent devices
- Cloud based REM databases
 - Collect data from various end users to generate interference/heat maps
- SAS
 - Combine information from incumbent, REM databases to locate source of interference



Interference Rule Compliance and Enforcement

- Different techniques needed for interference management for licensed and un-licensed users
- Licensed Spectrum
 - SAS sends message to coordinating entity or operator's OA&M to locate and shut down interfering device
- Unlicensed Spectrum
 - SAS stops allowing spectrum use to all users in the area affected by interference until issue is resolved



References

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