PNTCRC – Position, Navigation and Timing Cyber Response Center

Final Presentation

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PNTCRC Objectives

- Development of a center capable of discovering, storing and distributing security threats, vulnerabilities and mitigations associated to PNT services

- Management of different types of threats:
  - Laboratory threats
  - On field threats

- A new approach to global PNT security covering all needs, from device testing to on-field detection

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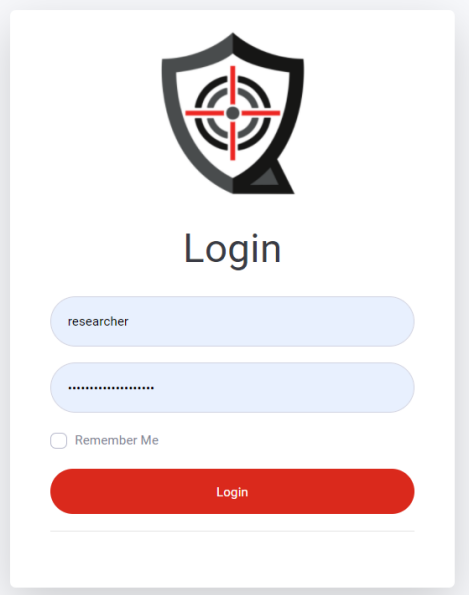
PNTCRC Services

1. Threat and vulnerability subscription
2. Mitigation subscription
3. Geographical reports & alerts subscription
4. GNSS Universal Threat Management



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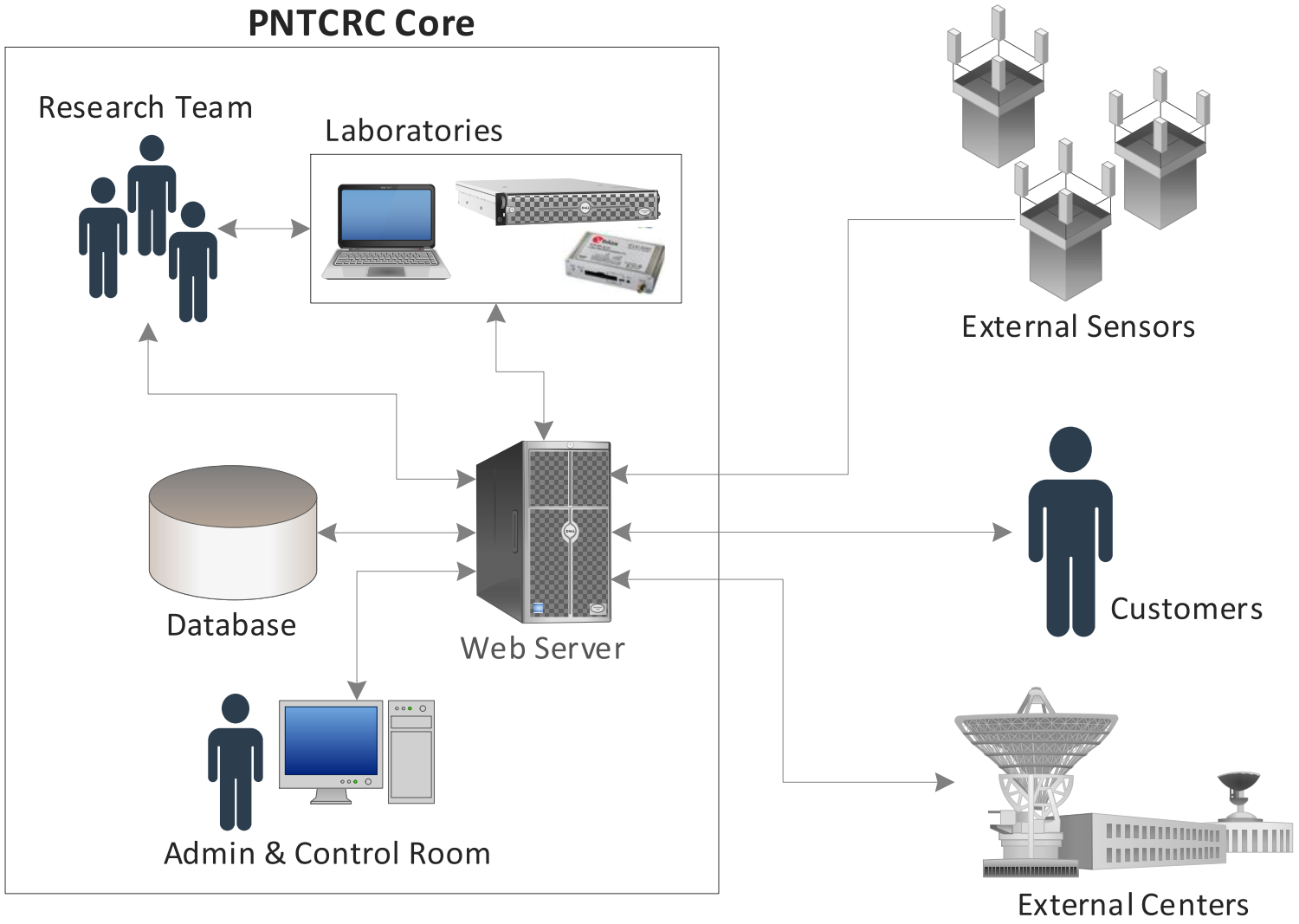
PNTCRC Architecture



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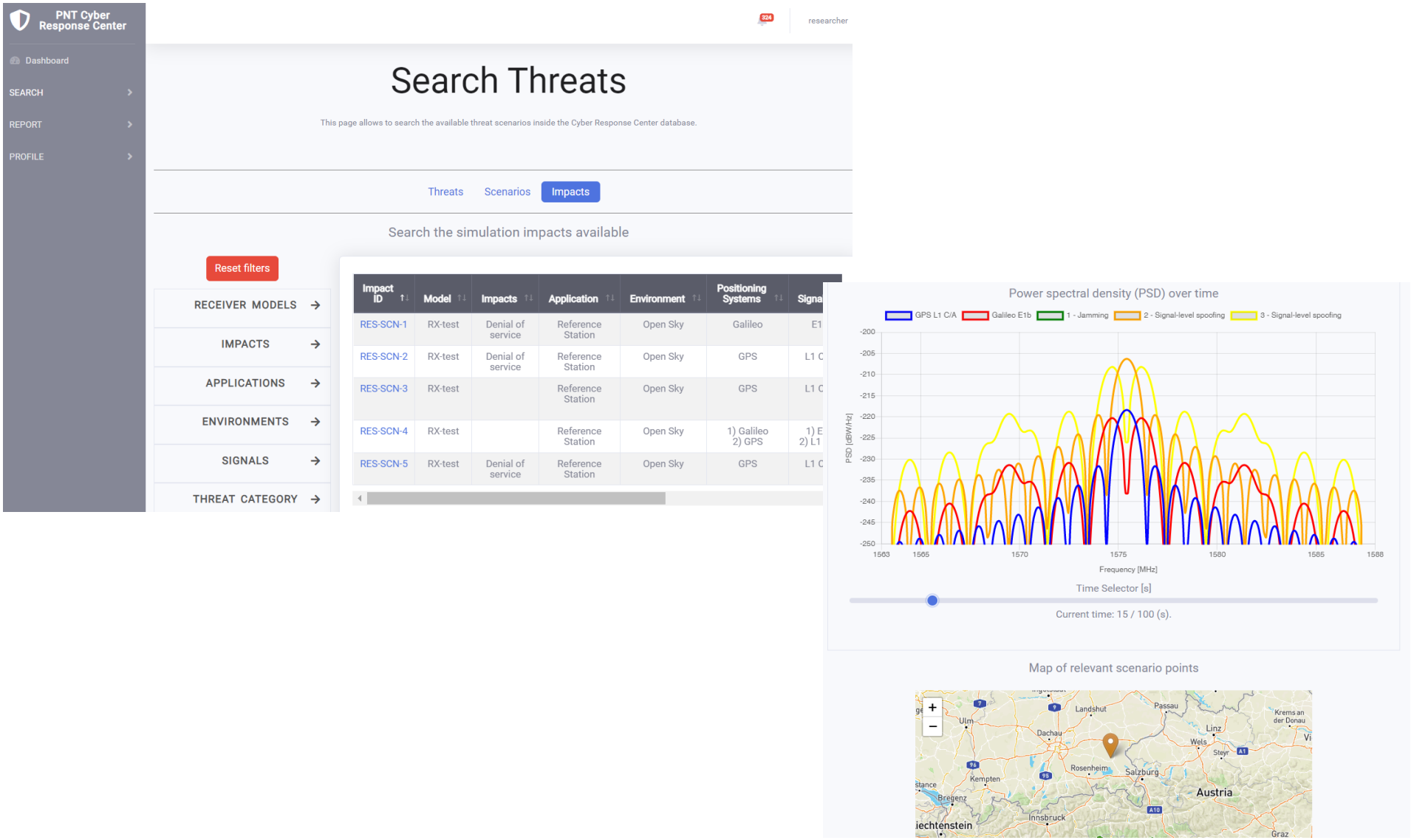
PNTCRC Website – Laboratory Threat



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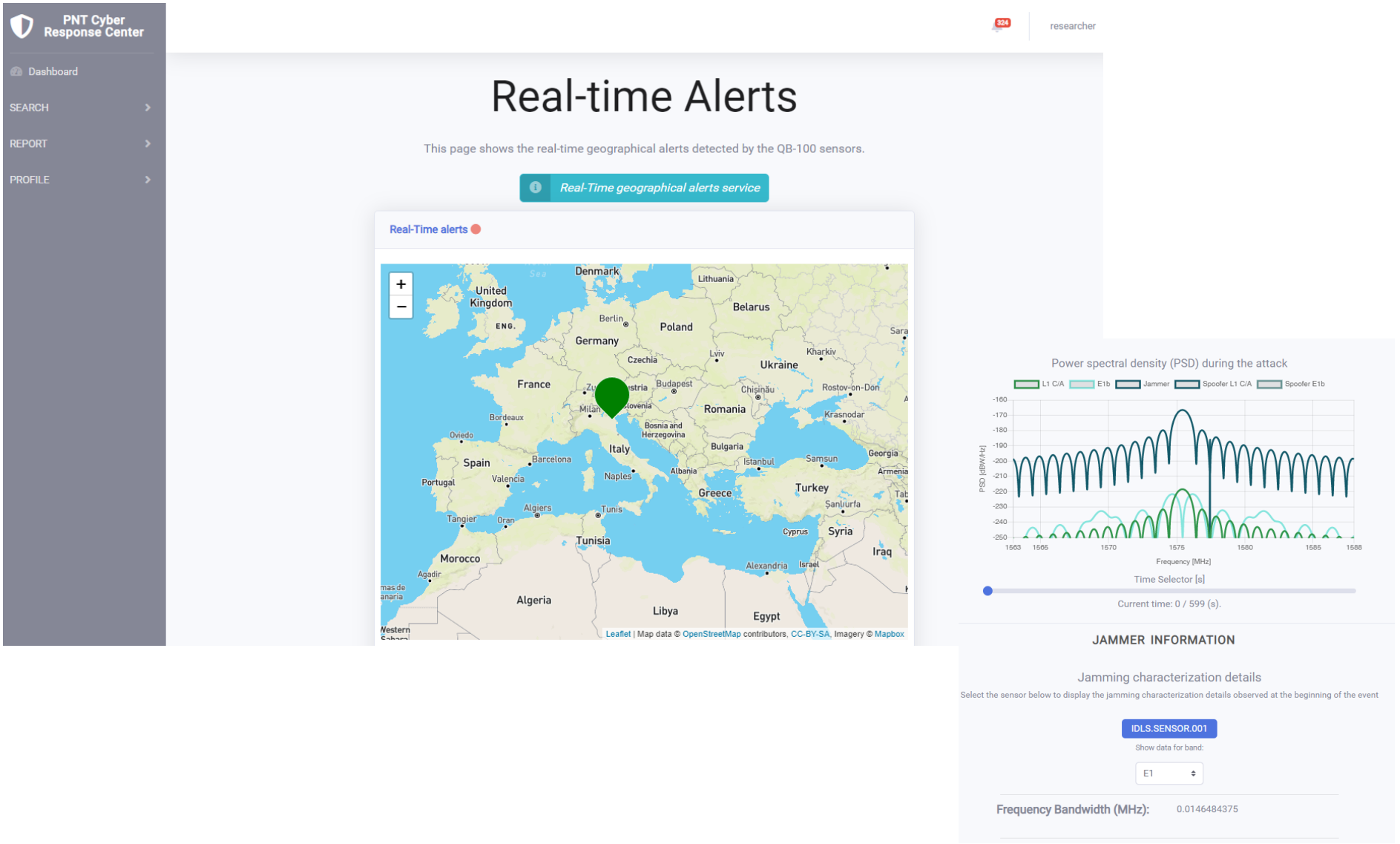
PNTCRC Website – Real-time Alerts



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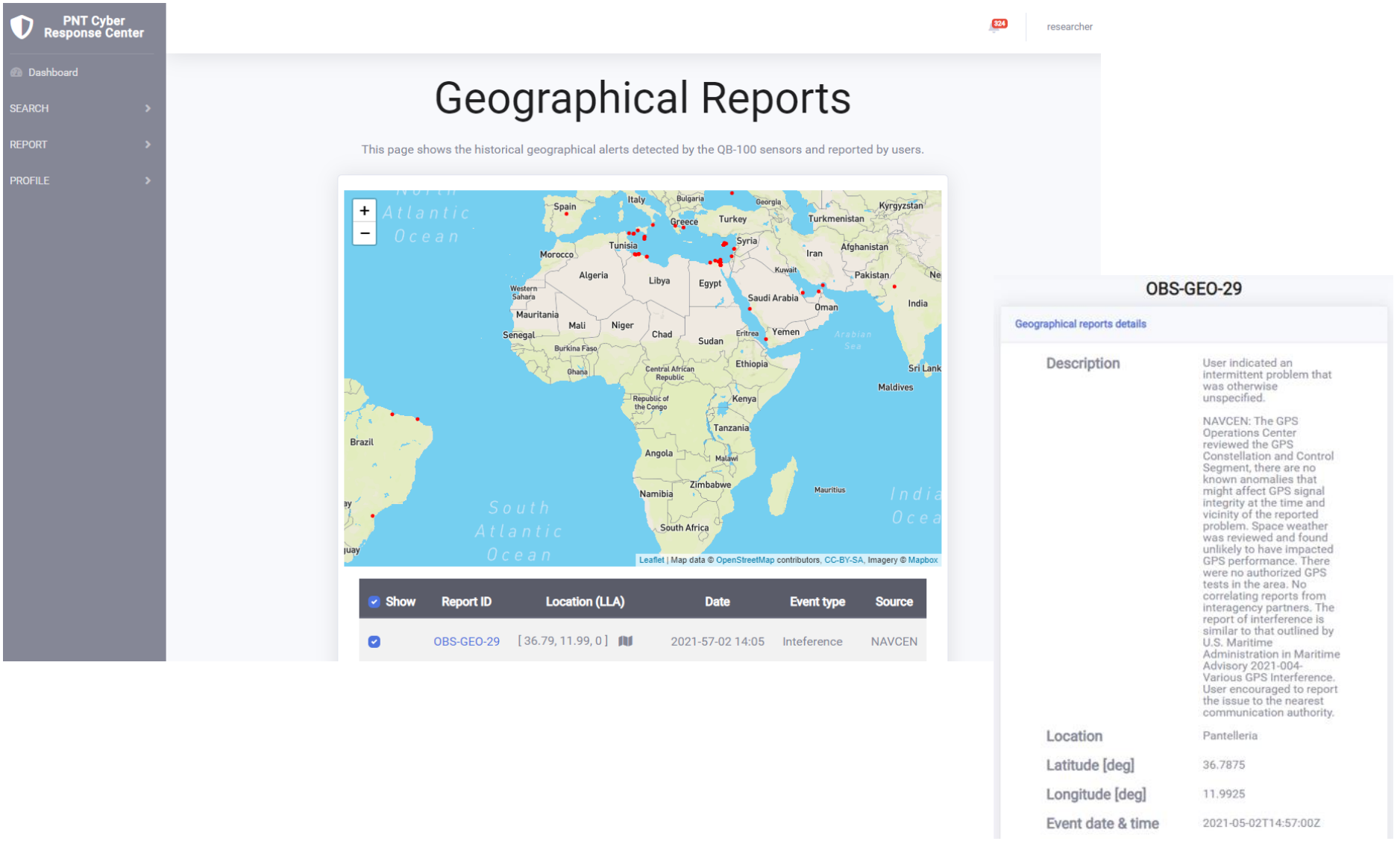
PNTCRC Website – Geographical Reports



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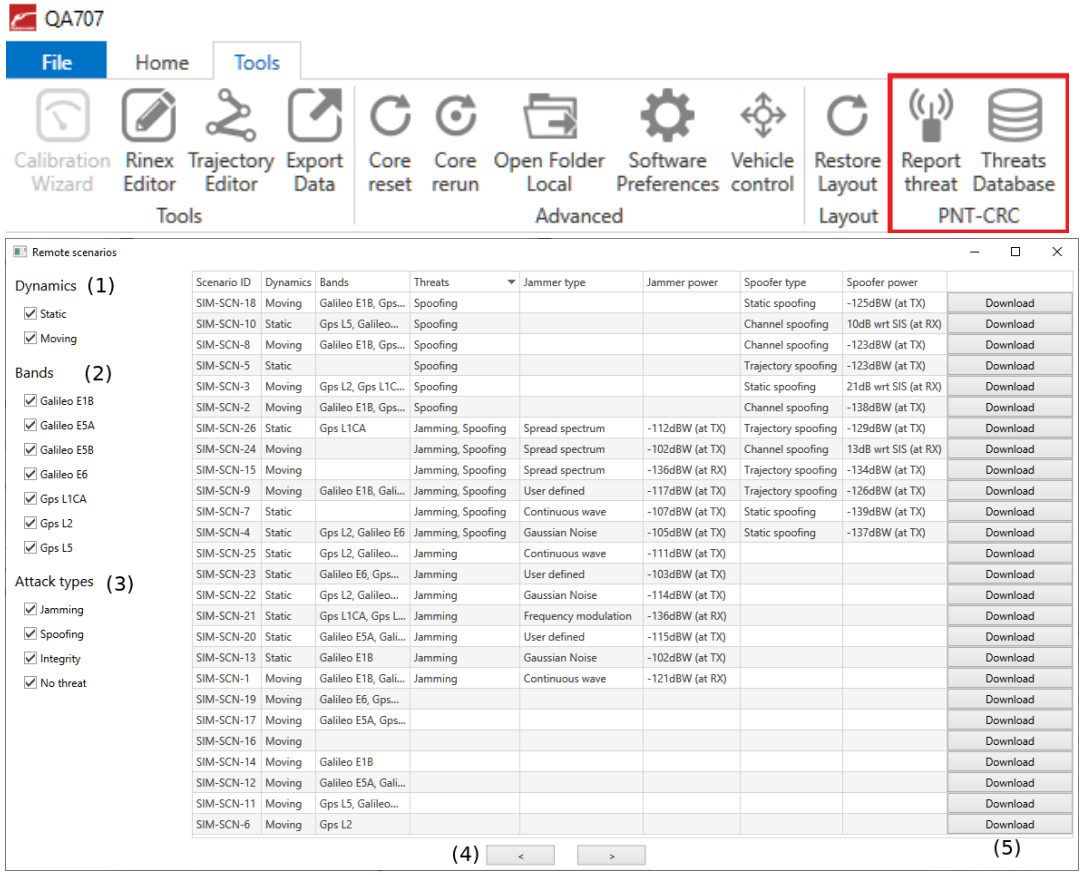
PNTCRC Plugin for GNSS Simulator QA707

- QA707 is the RFCS of Qascom, allowing to design and assess threats (e.g., jamming and spoofing) on GNSS receivers



Scenario ID	Dynamics	Bands	Threats	Jammer type	Jammer power	Spoofer type	Spoofer power	
SIM-SCN-18	Moving	Galileo E1B, Gps...	Spoofing			Static spoofing	-125dBW (at TX)	Download
SIM-SCN-10	Static	Gps L5, Galileo...	Spoofing			Channel spoofing	10dB wrt SIS (at RX)	Download
SIM-SCN-8	Moving	Galileo E1B, Gps...	Spoofing			Channel spoofing	-123dBW (at TX)	Download
SIM-SCN-5	Static		Spoofing			Trajectory spoofing	-123dBW (at TX)	Download
SIM-SCN-3	Moving	Gps L2, Gps L1C...	Spoofing			Static spoofing	21dB wrt SIS (at RX)	Download
SIM-SCN-2	Moving	Galileo E1B, Gps...	Spoofing			Channel spoofing	-138dBW (at TX)	Download
SIM-SCN-26	Static	Gps L1CA	Jamming, Spoofing	Spread spectrum	-112dBW (at TX)	Trajectory spoofing	-129dBW (at TX)	Download
SIM-SCN-24	Moving		Jamming, Spoofing	Spread spectrum	-102dBW (at TX)	Channel spoofing	13dB wrt SIS (at RX)	Download
SIM-SCN-15	Moving		Jamming, Spoofing	Spread spectrum	-136dBW (at RX)	Trajectory spoofing	-134dBW (at TX)	Download
SIM-SCN-9	Moving	Galileo E1B, Gali...	Jamming, Spoofing	User defined	-117dBW (at TX)	Trajectory spoofing	-126dBW (at TX)	Download
SIM-SCN-7	Static		Jamming, Spoofing	Continuous wave	-107dBW (at TX)	Static spoofing	-139dBW (at TX)	Download
SIM-SCN-4	Static	Gps L2, Galileo E6	Jamming, Spoofing	Gaussian Noise	-105dBW (at TX)	Static spoofing	-137dBW (at TX)	Download
SIM-SCN-25	Static	Gps L2, Galileo...	Jamming	Continuous wave	-111dBW (at TX)			Download
SIM-SCN-23	Static	Galileo E6, Gps...	Jamming	User defined	-103dBW (at TX)			Download
SIM-SCN-22	Static	Gps L2, Galileo...	Jamming	Gaussian Noise	-114dBW (at TX)			Download
SIM-SCN-21	Static	Gps L1CA, Gps L...	Jamming	Frequency modulation	-136dBW (at RX)			Download
SIM-SCN-20	Static	Galileo E5A, Gali...	Jamming	User defined	-115dBW (at TX)			Download
SIM-SCN-13	Static	Galileo E1B	Jamming	Gaussian Noise	-102dBW (at TX)			Download
SIM-SCN-1	Moving	Galileo E1B, Gali...	Jamming	Continuous wave	-121dBW (at RX)			Download
SIM-SCN-19	Moving	Galileo E6, Gps...						Download
SIM-SCN-17	Moving	Galileo E5A, Gps...						Download
SIM-SCN-16	Moving							Download
SIM-SCN-14	Moving	Galileo E1B						Download
SIM-SCN-12	Moving	Galileo E5A, Gali...						Download
SIM-SCN-11	Moving	Gps L5, Galileo...						Download
SIM-SCN-6	Moving	Gps L2						Download

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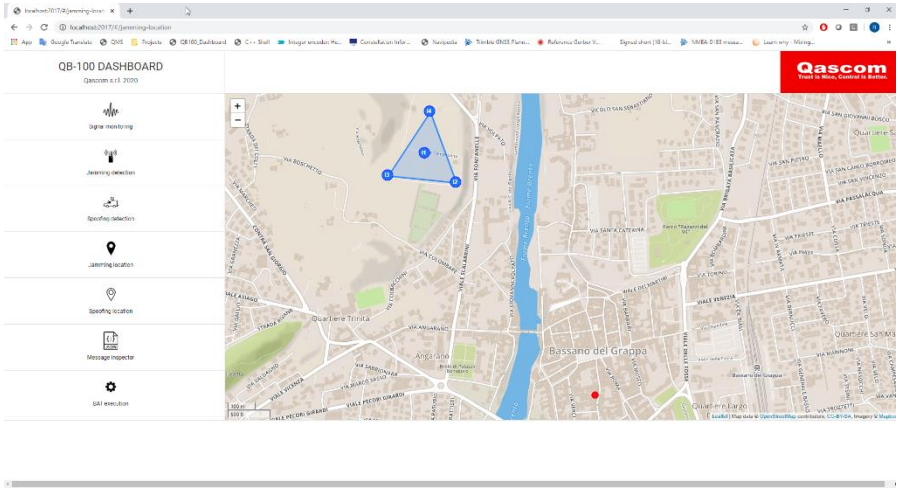
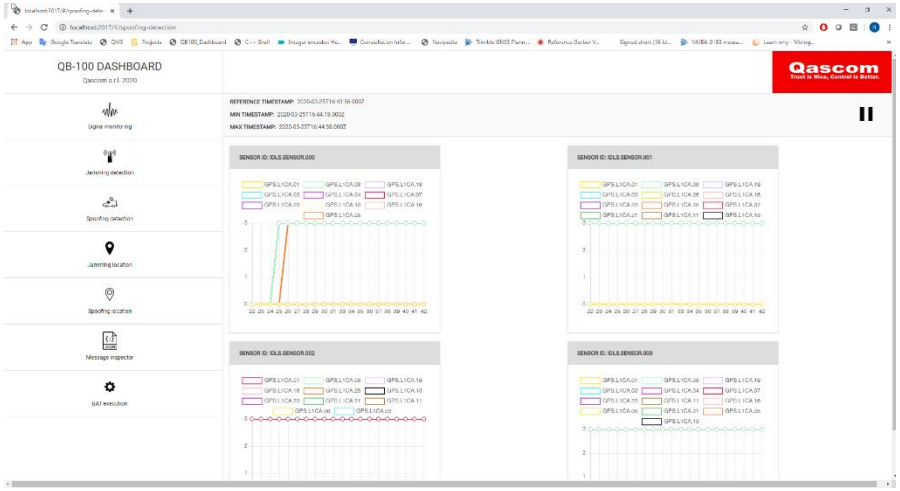
PNTCRC Interface for Interference monitoring - QB100

- QB100 is the RF monitoring sensor of Qascom, allowing to detect, characterize and locate RF threats on GNSS bands





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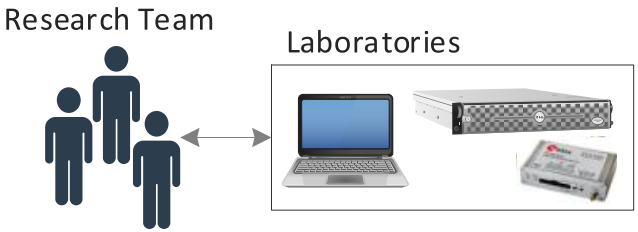
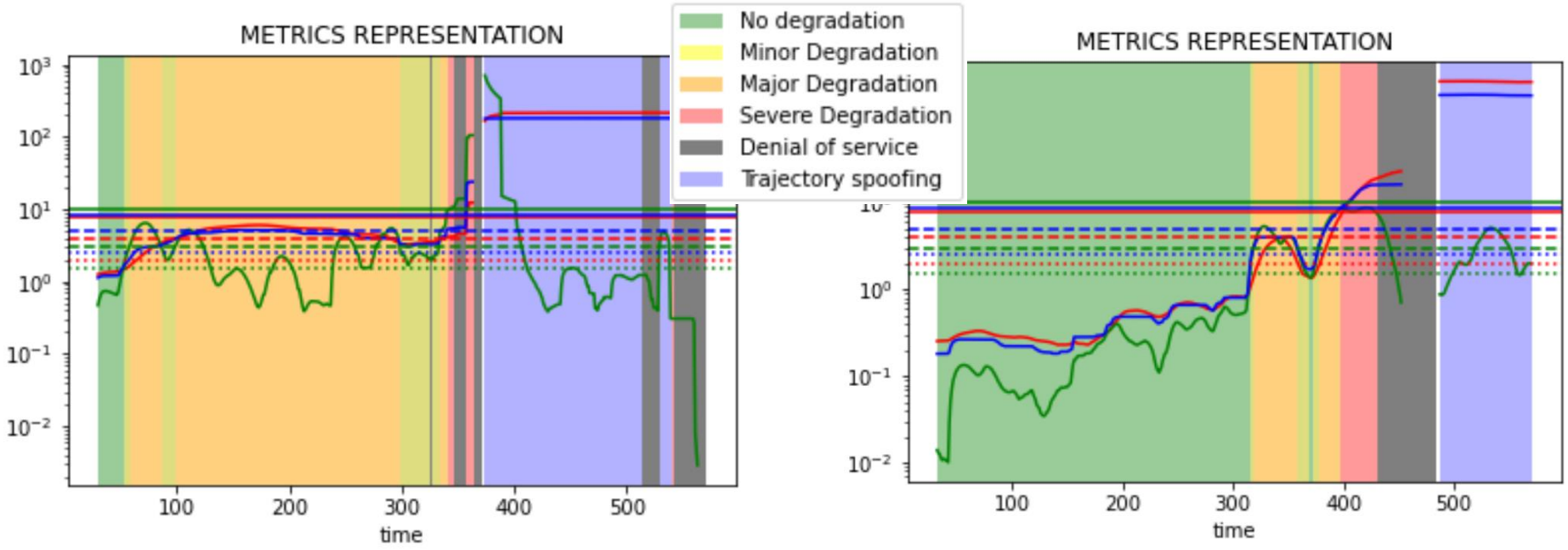
Experimentation phase

- RF threats have been designed and assessed with laboratory equipment





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Thank you!

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