ROHDE&SCHWARZ

Make ideas real

ENHANCING SITUATIONAL AWARENESS WITH R&S®NESTOR AND R&S®TSMx

Countering terrorism and improving force protection

AT A GLANCE

▶ **Customer**: Undisclosed European Ministry of Defense (MoD) intelligence department

▶ **Task**: Situational awareness of the telecommunications environment before ground forces deployment

▶ **Challenge**: Handling of all carriers, bands and technologies simultaneously, receiving incomplete or incorrect data leading to gaps in the overall situational awareness picture

▶ **Solution**: The R&S®TSMx mobile network scanners in combination with the R&S®NESTOR cellular network analysis software give the customer a comprehensive picture of the network environment

▶ **Key benefits**: Small form factor, fully integrated or as payload, complete network environment picture

▶ **Key success**: Faster, comprehensive results, fewer/ shorter flights required to gather data leading to lower costs and higher efficiency

The customer
An undisclosed European country's MoD intelligence department was facing challenges gaining situational awareness in 2G, 3G, 4G and 5G telecommunications infrastructures, including geolocation and referencing of mobile radio cells.

Situation and requirements
The customer's redundant equipment only offered a limited view of telecommunications infrastructures in the area of operations, leading to knowledge gaps during mission planning and thus putting lives at risk. Most of the collected data was either incomplete or occasionally incorrect. Measurements were taken with a modified GSM trace mobile phone, which did not provide a view of all bands, operators and technologies.

To enhance situational awareness for pre-deployment force protection, the replacement solution needed to deliver sustainably reliable results. In addition to being discreet, the new solution had to quickly deliver comprehensive data and be easy to maintain with regular updates and upgrades.

Rohde & Schwarz solution
By combining the R&S®TSMx mobile network scanners and the R&S®NESTOR cellular network analysis software, the customer can now instantly characterize available resources and geolocate infrastructure. Furthermore, the customer can retrieve broadcast information for all operators, technologies and bands, and automatically collect data and generate data exports.

The compact, lightweight scanner can be fully integrated into a platform or used as a payload, depending on the mission: manpack, vehicular, airborne or UAV.
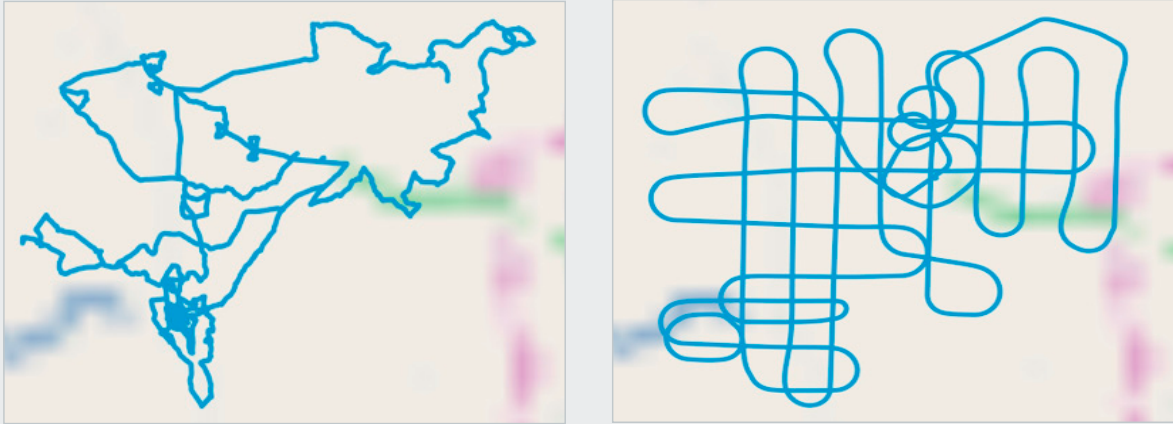
Because R&S®NESTOR is intuitive, easy-to-use software that is regularly updated and upgraded, the customer's equipment is always up-to-date.

Local service and support from Rohde & Schwarz in the customer's native language means that customers can always get help from a reliable partner close by.
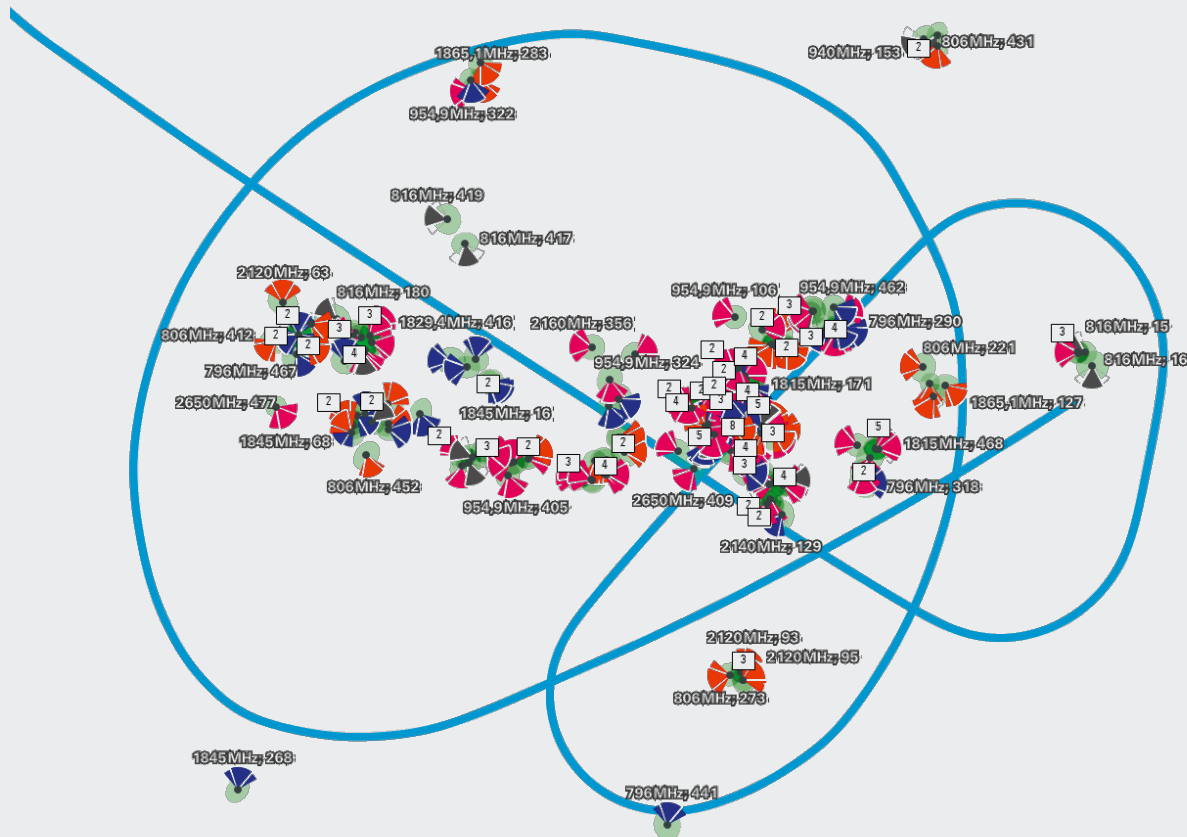
Geolocation and referencing of mobile radio cells

When areas cannot be reached easily, ground measurement (left) is supplemented by airborne reconnaissance (right)

Air evaluation results with estimated base station locations

R&S®NESTOR software solution (left) and R&S®TSMA6B mobile network scanner (right)

Results and achievements

Multiple assessments of a reference area of interest both on the ground and in the air were conducted with the customer. The results were compared with information from a local regulatory authority database indicating the position of base stations and their supported technologies as a reference dataset to quantify the solution's performance. All assessments delivered highly reliable and precise results in regards to both the location of the base stations and information on all of the carriers, bands and technologies they support.

These promising results have led to multiple orders in recent years with the different intelligence services and MoD SIGINT departments now the satisfied owners of more than 40 R&S®NESTOR setups. The customer is also looking into investing in a UAV payload option to further enhance situational awareness.

Learn more about R&S®NESTOR and R&S®TSMx

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