



How to open up space for services without compromising security

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SPACE

Space (satellite systems) act as enablers of various services. For example, weather and navigation satellite systems are already in widespread use and play a major role in our current economic activities. The future will see the introduction of more advanced satellite services for border control, agricultural and maritime purposes, among others. These kinds of paid/professional services come with an additional set of demands compared to current satellite services.

DEMANDS OF PAID/PROFESSIONAL SERVICES

To be commercially attractive, services must fulfil the following demands:

- They must be very accessible in order to attract more customers (service-oriented, app/web/5G compatible)
- They must be cost-effective/scalable (pay-per-use, virtualization/cloud)
- Time to market must be short (Scrum development, flexible)

These demands conflict with the requirements that are currently placed on security in space.

SECURITY IN SPACE

Current security requirements for space satellite systems are very conservative. These are the most important requirements:

- They must be designed for the coming 20+ years
- They must be reliable/proven for space
- They must be quantum-proof
- They still have to deal with legacy equipment

The implementation and verification of these requirements result in long development, test and (if needed) certification cycles. This leads to a contradiction between the current situation in space and service requirements - a contradiction that seems difficult to solve.

SGS BRIGHTSIGHT SERVICES

SGS Brightsight offers consultancy services during the product design process to ensure that your product meets the security demands in the domain that is of commercial interest to you. In addition to proving to your customers that the product meets the requirements, SGS Brightsight can help you to get the right certification.



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SGS Brightsight **space solutions**

CONTRADICTION BETWEEN SPACE & SERVICE REQUIREMENTS

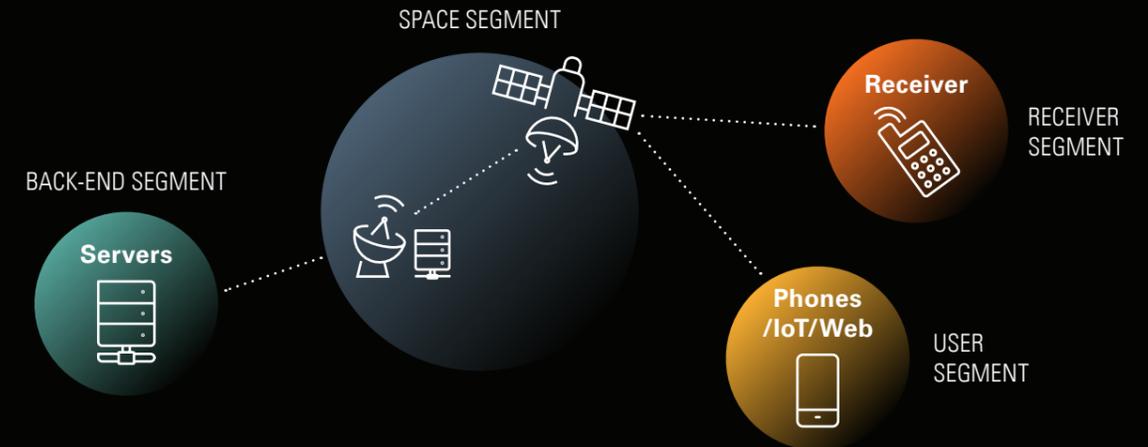
Developers in space have to navigate between two extremes. On the one hand, they must be agile and respond quickly to changes in the market and its dynamic requirements. On the other hand, the conservative requirements of space slow things down. The solution to this problem is smart domain grouping.



SMART DOMAIN GROUPING

The solution to make the requirements dynamic is as follows. Instead of setting one requirement for the entire system, the requirements should be split by domain. The strict space requirements should only apply to one

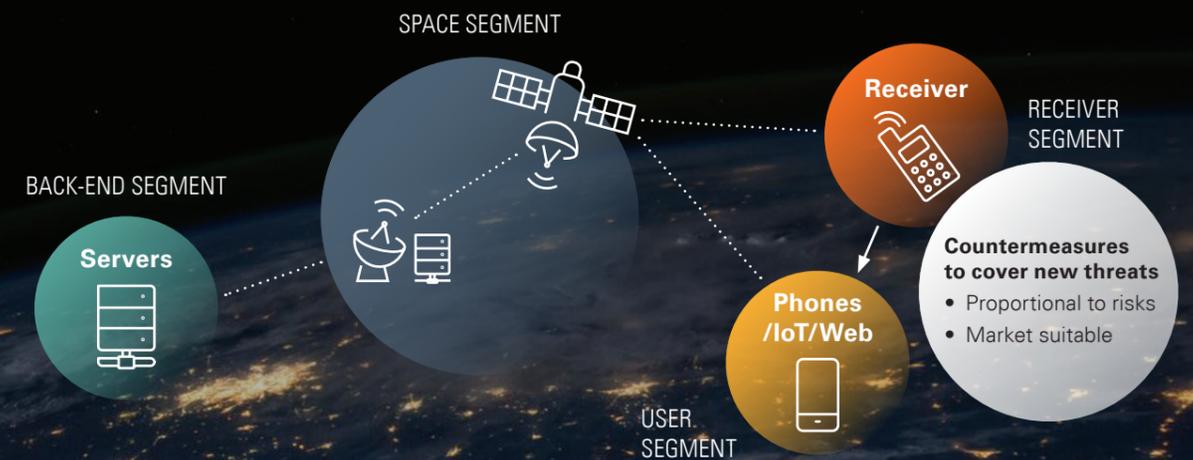
as-small-as-possible part of the system: the part that is crucial to the functioning of the system. The other parts of the system should adhere to requirements that are fit for market purposes and correspond to the selected domain.



RELOCATION TO MAKE SERVICES POSSIBLE

Once each part of the system has been analysed in its own security domain, the system can be re-engineered. This requires the following question to be asked: how many additional security measures are needed to switch to a more commercially interesting domain? Take, for example, a receiver that is currently a fully offline device. Returning

the device to the factory is the only way to add new keys. But what if the receiver is enhanced with a Wi-Fi connection and brought online? A proper security analysis can help determine whether the newly designed security features are fit for purposes in the new online domain.



"SGS BRIGHTSIGHT HAS A SIGNIFICANT AND DEDICATED SPACE TEAM. ITS MEMBERS HAVE BEEN SCREENED TO WORK WITH EU CLASSIFIED INFORMATION AND OTHER HIGHLY SENSITIVE DOMAINS."

SGS Brightsight space team

SGS Brightsight has more than 15 years of experience with space security pre-evaluations, evaluations, certifications and recertifications. We have performed more than 8 full security evaluations and over **35 delta evaluations within the Galileo programme**, the global navigation satellite system (GNSS) built by the EU in cooperation with ESA.

Although we are accredited by various government security schemes, most of these certifications were performed under the Netherlands Scheme for Certification in the Area of IT Security (NSCIB). Over the years, this has led to an efficient and predictable evaluation- and certification process.

SGS Brightsight has a significant and dedicated space team. Its members have been screened to work with EU classified information and other highly sensitive domains. We have dedicated facilities certified by the Dutch General Intelligence and Security Service of the Netherlands for holding classified information.

The SGS Brightsight Space Team is specialised in secure telecommunication, network management and key management in order to evaluate the products against the relevant standards or requirements.

The team has expert knowledge of technologies such as quantum-proof key generation and distribution, anti-jamming, anti-spoofing, cryptography and threat simulation, and secure and robust telemetry. In addition to the specific expertise of our Space Team, SGS Brightsight has extensive experience in many other security evaluation techniques such as crypto, side channel and perturbation attacks.

Predictability and time to market are key for our customers in the space industry. To avoid any unexpected security issues during an evaluation, SGS Brightsight offers services to assist in the developer's design and implementation phase from an evaluation perspective. This way, security can be built into the product from the beginning. It also increases the efficiency of the evaluation process, reducing time to market.

SGS Brightsight adds value to security-related activities in space applications through our expertise in the field of IT security, which covers hardware and software components and devices, technical aspects as well as the evaluation and certification process itself, and all levels of security assurance, from the basic to the highest levels.



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