PROJECT EO4SECURITY

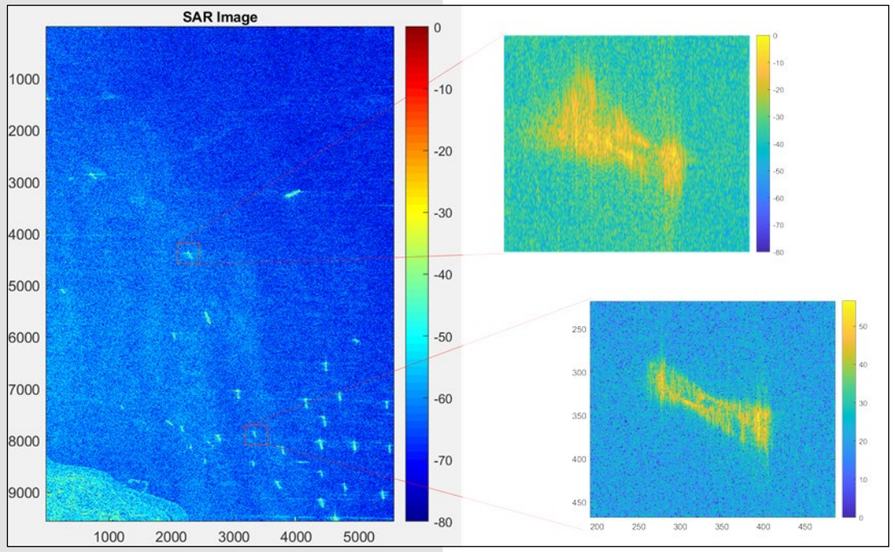
Innovative SAR processing methodologies for security applications

The project aims to design, implement, and verify an innovative solution utilizing ISAR (Inverse Synthetic Aperture Radar) technology to achieve detailed characterization of moving objects using spaceborne SAR (Synthetic Aperture Radar) data. It involves conducting an in-depth review of the current ISAR state-of-the-art (SOTAR), including preprocessing and post-processing steps, to clearly define its components and specifications.
A critical phase is the review of operational needs, collaborating with security, defense, and intelligence stakeholders to identify gaps in SOTAR and establish key parameters for use cases.
The project also focuses on selecting the most suitable algorithm, defining the validation methodology, and creating reference datasets to support its implementation, validation, and performance assessment. To deliver a complete solution, an end-to-end ISAR chain will be implemented and assessed, which includes algorithm deployment, integration into an operational value chain, execution of use cases, and the definition of a clear operational strategy.

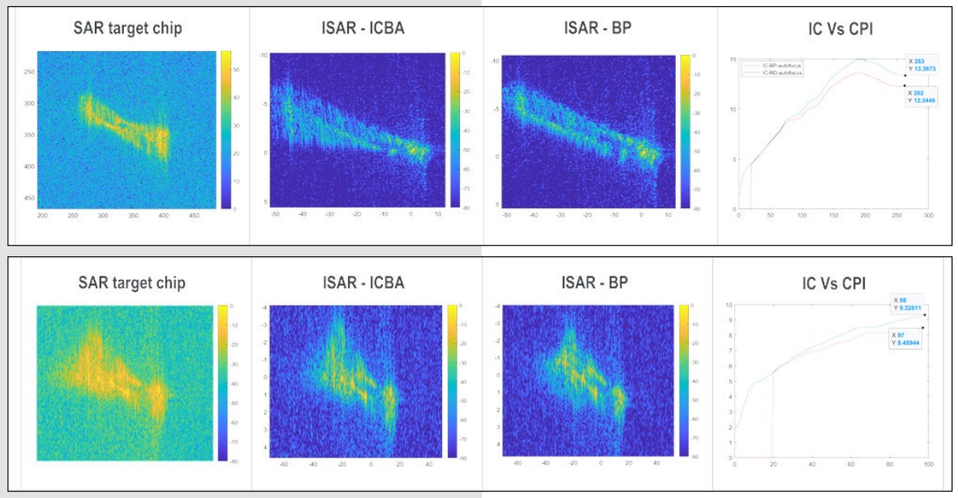
This approach ensures that the developed ISAR solution meets operational requirements, addresses technical challenges, and delivers validated performance for real-world applications in defense and security contexts.

Keywords: ISAR, SAR

Technical Sheet
Funding institution:
ESA
Project partners
E-GEOS, CNIT, Aresys
Project duration
September 2023 - September 2024
Involved countries
Italy



(a) Original SAR image and selected targets



(b) Analysis of the proposed approach onto two targets extracted from COSMO-SkyMed (CSK) SAR images.