

ELECTRICAL, ELECTRONICS AND COMMUNICATIONS ENGINEERING

DM 630/Qascom - Study and development of advanced satellite navigation techniques

Funded By	MINISTERO DELL'UNIVERSITA' E DELLA RICERCA [P.iva/CF:97429780584] QASCOM SRL [P.iva/CF:03179630243]
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Context of the research activity	<p>The research topics addresses the study of advanced satellite signal processing techniques for positioning and navigation applications, aiming to improve performance in terms of accuracy and reliability of the solution.</p> <p>Progetto finanziato dal PNRR a valere sul DM 630/2024 - CUP E14D24002420004</p>
Objectives	<p>The research theme will address the design of reconfigurable receivers capable of operating in challenging signal propagation environments, aiming to develop innovative solutions for satellite radio positioning. Starting from the latest results in the field of signal processing, innovative solutions will be studied to overcome the current major limitations for high performance in difficult environments (such as urban areas), including multipath, the presence of radio frequency interferers, and other types of signal disturbances. Additionally, the study of software and software-defined radio implementations will enable the reconfigurability of the receiver according to the environment through the implementation of intelligent algorithmic solutions. The activity will be carried out in collaboration with Qascom, a high-tech company operating in the Space and Defense sector. It offers engineering products and services, developing technologies in the fields of satellite navigation and cybersecurity. The R&D unit of the company is dedicated to feasibility studies and the development of new technological applications, staying updated on the state of the art and proposing cutting-edge solutions. In the field of satellite navigation, digitalization involves the advanced use of signal processing techniques from satellites to improve performance even in critical environments (such as urban areas). Such solutions enable many services of the Space Economy, ranging from</p>

autonomous mobility (drones, vehicles) to the management of critical infrastructures (telecommunications and energy distribution networks) or the provision of timing services. The proposed activity combines the theme of digitalization and downstream space services by developing solutions that create added value in terms of knowledge and innovation in one of the future development sectors of the Space Economy.

Skills and competencies for the development of the activity

Knowledge of statistical signal processing, Satellite navigation and radio positioning, Electrical communications.