

Training opportunity for graduates/young professionals from Switzerland

Reference	Title	Duty Station
CH-2020- TEC-ESN	Proof-of-concept of LEO PNT/GNSS technologies	ESTEC
<p><u>Overview of the unit's mission:</u></p> <p>The section is responsible for Radio navigation, positioning, timing systems and techniques for space/terrestrial segment. The section supports the development of the Galileo and Egnos programs and the design of their evolutions, as well as all ESA missions carrying the Global Navigation Satellite System (GNSS) technology on board (Earth Observation, GNSS to the Moon, etc.). The Research & Design activities performed by the section prepare the related technologies and concepts, and also contributes in shaping the role of GNSS in the evolving Positioning-Navigation-Timing (PNT) landscape, towards more performing and capable services for example: High-accuracy, sensor fusion, 5G positioning techniques, position security and assurance etc.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>As part of a dynamic team of experts in positioning technologies, you will work on challenging and exciting PNT R&D activities aiming the proof-of-concept of innovative solutions to augment GNSS using large Low Earth Orbiting (LEO) constellations (LEO PNT) in complement to the currently used Medium Earth Orbiting (MEO) constellations, inspired by the so-called "New Space".</p> <p>This could include the following:</p> <ul style="list-style-type: none"> • investigate and breadboard high-accuracy positioning algorithms relying on signals from LEO (e.g. advanced TDoA/FDoA and sensor fusion, mm-wave signals from 5G satellite networks). • contribute to design and breadboard critical functions of LEO PNT payloads (e.g. the GNSS transceiver concept, which combines a GNSS transmitter with a GNSS receiver, has been identified as a critical enabler to some concepts of LEO PNT). • investigate concepts to use LEO constellations as a distributed network of sensors for PNT, leveraging processing of signals received by LEO satellites and low latency connectivity using Inter-Satellite Links technologies (e.g. monitoring of GNSS signals, efficient positioning of satellite IoT devices, etc.). • in support of the above, investigate innovative processing strategies for the user or monitoring segments (use of Artificial Intelligence, cloud processing, sensor fusion, etc.) to enhance performances, coverage, efficiency, etc. <p>You will also have the opportunity to contribute to architecture related investigations (constellations scenarios involving number of satellites and their nature such as nanosatellites, coverage and availability trade-off, signals design, efficient monitoring and control strategies, etc.).</p> <p>The above activities involve R&D of very innovative concepts as well as hands-on activities, including developments, evolution of existing tools, simulations and testing through laboratory and field campaigns.</p> <p>You are encouraged to visit the ESA website: www.esa.int/esa</p>		
<p><u>Required education:</u></p> <ul style="list-style-type: none"> • Master-level degree in Aerospace or Telecommunication Engineering; • Knowledge of GNSS systems and algorithms, or alternatively, wireless positioning technologies used by terrestrial systems; • Good knowledge of Matlab and/or Python; • Good interpersonal and communication skills; • Ability to work in a multicultural environment, autonomously and as part of a team; • Fluency in English and/or French, the working languages of the agency. 		