

**“Laser Ranging to Galileo”, an ASI-INFN Strategic Project of the Italian Ministry of Research**  
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**Abstract**

Framework	<p><b>SPACE.</b> Specialized, innovative applications to and services for:</p> <ul style="list-style-type: none"> <li>• <u>Satellite Laser Ranging (SLR) to Laser Retroreflectors Arrays (LRAs) of Galileo</u> (the European global positioning constellation the main EU Flagship Programme)</li> <li>• EXCELLENT SCIENCE of HORIZON 2020: <u>PHYSICAL SCIENCE AND ENGINEERING (PE)</u>:</li> <li>• Standards and calibrations for the International Laser Ranging Service (ILRS), the network of ground laser stations tracking satellites and Moon</li> <li>• Advanced performance characterization of LAGEOS (LAsER GEODynamics Satellites), which fundamental for the definition of the center of mass of the Earth (geocenter), the origin of the International Terrestrial Reference Frame (ITRF)</li> <li>• HORIZON 2020: <u>COMPETITIVE INDUSTRY</u> for GNSS</li> </ul>
Prime: ASI Contact:	ASI-CGS. Sub-structure: Matera Laser Ranging Observatory (MLRO) Dr. Giuseppe Bianco (ASI-CGS) or other ASI person
Partner: INFN Contact:	INFN-LNF. Sub-structure: SCF_Lab Dr. Simone Dell’Agnello (INFN-LNF) or other INFN person
Brief description	<b>Optimized technological &amp; industrial services for precision and advanced laser tracking and characterization of Galileo &amp; other GNSS constellations</b>
Project objectives:	<ul style="list-style-type: none"> <li>• Infrastructure equipment upgrade of the MLRO laser ground station of the SCF_Lab dedicated to the characterization of the laser retroreflector payloads of Galileo and LAGEOS</li> <li>• Applications to GNSS (Galileo) and Space Geodesy (LAGEOS). Both at SCF_Lab and MLRO.</li> <li>• SCF-Test of SLR of large diameter LRAs of Galileo and LAGEOS</li> <li>• Tight synergy of SCF_Lab, MLRO infrastructures</li> </ul>

**Activities**

<b>Macro-Activity 1</b> Year 1 and 2	<b>Macro-Activity 2</b> Year 1	<b>Macro-Activity 3</b> Year 1	<b>Macro-Activity 4</b> Year 2	<b>Macro-Activity 5</b> Year 2	<b>Macro-Activity 6</b> Year 2	<b>Macro-Activity 7</b> Year 2
<b>MLRO-SCF_LAB Harmonization</b> Harmonization of MLRO and SCF_LAB upgrades and their integration	<b>MLRO Equipment Upgrade</b>	<b>SCF_Lab Infrastructure Upgrade</b>	<b>Upgraded MLRO:</b> Laser Ranging to LRAs onboard Galileo satellites	<b>Upgraded SCF_LAB:</b> Lab Characterization of Galileo LRA Flight Model <u>(on loan to LNF from ESA)</u>	<b>Upgraded MLRO:</b> Laser Ranging to LAGEOS	<b>Upgraded SCF_LAB:</b> Lab Characterization of LAGEOS Engineering Model <u>(on loan to LNF from NASA)</u>

LRA = Laser Retroreflector Array