



Background and introduction. Throughout its more than 60 years history the Swedish Institute of Space Physics (IRF) developed and manufactured more than 60 space instruments to study all corners of the solar system. Addressing complicated fundamental science questions of space physics and planetology requires advanced instrumentation, which in turn requires complex test and calibration facilities. IRF thus started building a unique laboratory infrastructure, SpaceLab, to be used not only for fundamental science but also for advancing space technology in all sectors. The time has come to build a national space test facility open for users from commercial companies and academia working on space projects with high relevance for the society.

Benefits for the society and region. Technical and political (both international, national and regional) benefits for establishing SpaceLab at the IRF in Kiruna include:

- SpaceLab will be an element of the overall national space infrastructure in Sweden ensuring its sustainability: “no test, no flight”;
- SpaceLab will allow advanced tests of all kinds space-related hardware, including small satellites that are to be launched from SSC / Esrange;
- SpaceLab will open great opportunities for regional development and strengthening of the upper Norrland as Sweden's space region;
- SpaceLab will deepen and further develop collaboration between research, industry and academia and contribute to the development of a space cluster in upper Norrland.

Current status. The importance of Space Lab has been already recognized and the initial funding from external sources (Tillväxtverket, Vetenskapsrådet) received. That allowed making SpaceLab an institutional facility. The conventional funding sources can not support any more further development. Our ambition is to bring SpaceLab to the national and international levels that requires next level of support.

Development plans and needs. Development plans includes:

- Purchase of new facilities, for example, advanced climate tanks, EMC test facilities, radiation tests systems;
- Development of Multi Source System (MSS) to expose space systems simultaneously to various factors of space environment, UV, radiation, plasma, temperature, vacuum. MSS would be a unique facility with no analogues in the world;
- Establishing an organization structure including test engineers and managers to manage, develop, and market Spacelab nationally and internationally.
- In the future a dedicated building will be constructed to host SpaceLab facilities and provide working space for external customers and development projects.

Esrange: We launch! SpaceLab: We test!

Time plans: 2023 – 2026. New building construction starts 2028.

Estimated budget: around 25 mkr for 2023 – 2026.

Project host organization (“Projektägare”): Institutet för rymdfysik, Kiruna, Sweden

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