

EDEN ISS - Introduction to Project Partners

The consortium is led by the **German Aerospace Center (DLR)** Institute of Space Systems in Bremen, Germany and includes the following partners (see partner descriptions below):

- **DLR Institute of Aerospace Medicine in Cologne, Germany**
- **LIQUIFER Systems Group, Austria**
- **National Research Council, Italy**
- **University of Guelph, Canada**
- **Alfred Wegener Institute for Polar and Marine Research, Germany**
- **Enginsoft S.p.A., Italy**
- **Airbus Defense and Space, Germany**
- **Thales Alenia Space Italia S.p.A., Italy**
- **Arescosmo S.p.A., Italy**
- **Wageningen University and Research, the Netherlands**
- **Heliospectra AB, Sweden**
- **Limerick Institute of Technology , Ireland**
- **Telespazio S.p.A., Italy**
- **University of Florida, United States of America**

German Aerospace Center (DLR), Germany Institute of Space Systems (DLR-RY) Germany Location: Bremen, Germany

Website: www.dlr.de

Institute of Space Systems (DLR-RY) DLR-RY aims to investigate and evaluate complex astronautic systems in the context of space research with consideration of technological, economical as well as socio-political aspects. DLR-RY has competency in both Concurrent and Systems Engineering and uses them in combination in order to deeply investigate controlled environmental agriculture (CEA) technologies, their implementation in extra-terrestrial greenhouses and closed-loop habitation.

Institute of Aerospace Medicine (DLR-ME), Germany Location: Cologne, Germany Website: www.dlr.de

Institute of Aerospace Medicine (DLR-ME) DLR-ME deals specifically with life science problems concerning space flight, exploration, aviation and traffic. Research activities of DLR-ME are focused on medical, biological and physical research, e.g. development of countermeasures to protect humans from the effects of weightlessness, research under microgravity conditions and space microbiological aspects such as adaptation of life to extreme environments. From a microbiological point of view: projects focus on researching the viability and adaptability of living things to extreme environmental conditions as they occur in space or on other planets like Mars.

LIQUIFER Systems Group, Austria Location: Vienna, Austria Website: www.liquifer.com

LIQUIFER Systems Group GmbH (LSG) is a multidisciplinary task force comprised of a wide range of experts from the fields of systems architecture and engineering, robotics, human factors and science. LSG's project expertise focuses on space exploration prototypes, analogue simulation structures and scenarios and on Human Factors and Habitability. The composition of the company provides a unique environment for innovative research and product development.

National Research Council (CNR), Italy

Institute of Agro-environmental and Forest Biology (IBAF), Italy

Location: Porano / Monterotondo / Legnaro / Naples, Italy

Website: www.cnr.it

The general research fields of the institute are plant-environment interactions, control of plant physiology and biochemistry for food and biomass production (for the food market, for biorefinery and for phyto-remediation of polluted environments) and biological and evolutionary processes and mechanisms in plants in relation to their environment.

Institute of Food Science (ISA), Italy

Location: Avellino, Italy

Website: www.isa.cnr.it

The Institute of Food Science (ISA) is involved in the research, enhancement and technological transfer of composition and quality of food and its effect on human health. ISA is expert in the characterization and valorisation of foods typical to the Mediterranean diet; genomics, proteomics and bioinformatics as it applies to food science. The ISA research group has extensive experience in food biochemistry and microbiology, food safety and in the study of natural extracts used as antimicrobial products for health and agronomy.

University of Guelph, Canada

Controlled Environment Systems Research Facility (CESRF)

Location: Guelph, Canada

Website: www.uoguelph.ca

The CESRF at the University of Guelph, began as a Natural Sciences and Engineering Research Council Collaborative Research and Development funded project (NSERC-CRD) in collaboration with the aerospace and greenhouse sectors. It has since evolved into a research program that has state-of-the-art capacity in controlled environment studies and those related to biological life support for space exploration.

Alfred Wegener Institute for Polar and Marine Research (AWI), Germany

Location: Bremerhaven, Germany

Website: www.awi.de

The Alfred Wegener Institute for Polar and Marine Research (AWI) is one of the worlds' leading polar research organizations and delivers significant contributions to the international research on climate, marine and coastal issues. AWI is the national manager and implementation agency of the National German Arctic and Antarctic Programme and has the national level mandated by the German Federal Government to conduct research in both polar regions, mainly in the area of multidisciplinary environmental research; to support other German researchers and institutions; to manage and coordinate all German polar research activities; to advise the German government in all matters concerning the polar regions.

Enginsoft S.p.A., Italy

Location: Trento, Italy

Website: www.enginsoft.com

EnginSoft is a consulting company specialized in scientific IT targeted at the optimization of design and production processes. Operating in the field of computer aided engineering (CAE), EnginSoft provides

services in virtual prototyping, advanced simulation, process integration and design optimization (PIDO). Simulations include; mechanics, fluid-dynamics, fast dynamics and crash, metallurgy, process simulation, environmental engineering, off-shore engineering, acoustic analysis and more.

Airbus Defense and Space, Germany

Location: Ottobrunn, Germany

Website: www.airbusdefenceandspace.com

Airbus Defense and Space is a large, international company, employing over 17,000 men and women with locations in France, Germany, the UK, Spain and Netherlands. Airbus is a committed leader in space transportation, satellite systems and services. With Airbus's extensive portfolio and wide range of expertise, EDEN ISS will benefit from the company's in-house studies prepared for the development of automated, alternative space greenhouse concepts, focusing on the analysis of biochemical parameters and the positive identification of biological contamination on surfaces and of air borne contamination.

Thales Alenia Space Italia S.p.A. (TAS), Italy

Location: Torino, Italy

Website: www.thalesaleniaspace.com

TAS Italia has more than 40 years of experience in the design, integration, testing, operation and commissioning of innovative space systems. The satellites and payloads designed by TAS Italia set the global standard for space systems that provide communications and navigation services, monitor our environment and the oceans, help us better understand climate change and drive scientific progress. TAS is a leading supplier to the International Space Station; having supplied half of ISS's pressurized volumes, including: Nodes 2 and 3, the Multipurpose Pressurized Logistics Modules (MPLM), the Cupola and the Pre-Integrated Columbus laboratory, as well as the Integrated Cargo Carriers (ICC) for the ATV spacecraft and the Cygnus Pressurized Cargo Module, that ferry supplies to the Space Station. The ISS Experimental Facilities for Columbus, Fluid Science Lab (FSL) and European Drawer Rack (EDR) are made by TAS Italia, now developing the advanced version of EDR Mark2.

Arescosmo S.p.A., Italy

Location: Aprilia, Italy

Website: www.arescosmo.com

Arescosmo provides products and services for the protection and safety of security and defensive forces, to support helicopters, aircraft and ground operations, using the best and consolidated mechanical, software, textile technologies and innovative materials. Areas of expertise include: Parachutes, Personal Protection Military Equipment, Military and Civil Collective Protection, Helicopters MRO, Safety and Rescue, Crashworthy and Self-Sealing Fuel Tanks Supply and MRO, Space Exploration and Exploitation. Arescosmo is experienced in shelter design that is modular and easily transportable with many features ensuring functionality in use for a wide range of applications.

Wageningen University and Research, Netherlands

Wageningen UR Greenhouse Horticulture of the Dutch Foundation for Agricultural Research (SDLO)

Location: Wageningen, Netherlands

Website: www.wageningenur.nl

The SDLO is a university research program comprised of undergraduate, graduate and post-doctoral students and staff dedicated solely to greenhouse horticulture. SDLO is committed to make long-lasting contributions to sustainable and competitive greenhouse horticulture. The group is a member of

international horticultural networks, and regularly carries out large research projects with partners in the EU, Mediterranean partner countries, Middle-East and several countries in Asia and South America. The group has an excellent track record on all greenhouse-related research fields, with access to modern laboratories for the development and testing of new transparent materials, sensor and control technology.

Heliospectra AB, Sweden

Location: Göteborg, Sweden

Website: www.heliospectra.com

Heliospectra is a Swedish based SME specialized in smart LED lighting for plant science and horticulture applications. The overall mission of the company is to create light systems that optimize and automate the light environment to provide more ecological, effective and economical methods for the cultivation of plants. The company is a manufacturer of several types of “intelligent” multi-waveband LED luminaries. Beside engineers, programmers and marketing experts HS employs a team of plant scientists working on the development of crop specific light regimes at the company’s research facilities located on the premises of SP Food and Bioscience (formerly the Swedish Institute for Food and Biotechnology) in Gothenburg. These crop specific regimes optimize the light spectrum for efficient photosynthesis while simultaneously triggering desired plant developmental and morphological responses.

Limerick Institute of Technology, Ireland

Location: Limerick, Ireland

Website: www.lit.ie

Limerick Institute of Technology is a 3rd level Institute based in Ireland. The Institute’s flagship research centre ‘Shannon Applied Biotechnology Centre’ (Shannon ABC) has an ongoing programme to explore natural products for novel bio-active substances of value to wide industry sectors. Natural products embrace a diversity of materials derived from waste streams, marine, plant, animal, mammalian and microbial sources. Shannon ABC focuses on developing, enhancing and commercialising biotechnology by collaborating with industry to promote product diversification and enhancement, increase market growth and aid competitiveness. Shannon ABC offers expertise in bio-processing, extraction, purification and screening of derivatives derived from natural products and waste streams.

Telespazio S.p.A., Italy

Location: Rome, Italy

Website: www.telespazio.com

Telespazio Naples (hosting MARS Centre) was established in 1989 and has recorded success in a number of scientific payloads flown in microgravity through the exploitations of several platforms ranging from parabolic flight aircrafts to sounding rockets, from Russian Foton Space Capsule to U.S. Space Shuttle. Telespazio Naples was commissioned by ESA to implement one of its Facility Responsible Centre (FRC), allowing the interaction among the onboard experiment Procedures (EPs), the FRC ground team, and the Science Team located at their User Home Basis (UHB). Telespazio has also conducted studies in the interaction between cosmic radiation and brain function and vision system; monitoring of radiation in the environment inside the ISS; microgravity effects on bone tissue, cardiovascular system, muscles.

University of Florida, USA

Department of Horticultural Sciences and Interdisciplinary Center for Biotechnology Research

Location: Gainesville, Florida, USA

Website: <http://ufspaceplants.org/>

The UF Space Plants Lab brings together expertise in molecular biology, biological imaging, and biotechnology to explore plant responses in spaceflight environments and planetary habitation analogs. The team has launched multiple spaceflight experiments, and has conducted experiments in extreme terrestrial settings, to evaluate the physiological adaptation of plants to the novel environments of space exploration. The team is primarily supported by competitive grants from the NASA Division of Space Life and Physical Sciences Research and Applications.

Scientific Advisory Board (SAB)

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