

# An innovative method for cooperative research – Introducing the DLR MIRO Innovation Lab

## Helmholtz Funding

The funding landscape is changing:

Opportunities are moving away from traditional research funding towards transfer initiatives, start-up grants and incubators.

In response, the Helmholtz Association (HGF) – Germany’s largest scientific organization – introduces a novel funding instrument with the Helmholtz Innovation Labs.

Funding supports the initial setup and establishment over five years of a collaborative lab space. The lab is expected to be self contained and financially independent at the end of the funding period.

Create enabling space for partners to iteratively develop, validate, and improve new technologies, services and business strategies

Enable serendipity and spill-over effects by bringing together players from various innovation and business fields

Involve SMEs and industry to increase knowledge transfer and develop new technology and business opportunities

Crystallization seed for national and international networks

Collaborative learning and R&D on a level playing field

‘Think and Do Tank’ involving potential users, aiming towards commercialization of solutions

Utilize access to resources, competences, and infrastructure of HGF research institutions

**Helmholtz  
Innovation  
Lab  
Goals**

## Miro Innovation Lab (MIL)

Robot-assisted interventional medicine is a dynamic growth sector.

Entry to market is barred by **hurdles** of high technological **complexity**, **closed systems**, and lengthy clinical evaluation.

The MIL strives to **remove obstacles** by offering professional **research and development support** utilizing know-how and technological facilities of a leading robotic research institute, clinical facilities through interdisciplinary clinical partners, and a network of industrial partners.

## Facilities

**The MIL** is situated, embedded, and strongly supported by the Institute of Robotics and Mechatronics (RM) of the German Aerospace Centre (DLR).

**Core competences** are sensors, intelligent mechanisms and robots, interdisciplinary design, computer-aided optimization and simulation, complex mechatronic systems and man-machine interfaces, control and intelligent programming.

Initially the following main **robotic components** and devices are available for the MIL:

- DLR MiroSurge robotic system and software framework
- Stereo endoscope and display
- Several ForceDimension omega and sigma devices
- Krypton K610 and ART optical trackers
- ATI nano17 / 43 force-torque-sensors
- Autoclave
- Medical phantoms for suturing and skill training, etc.

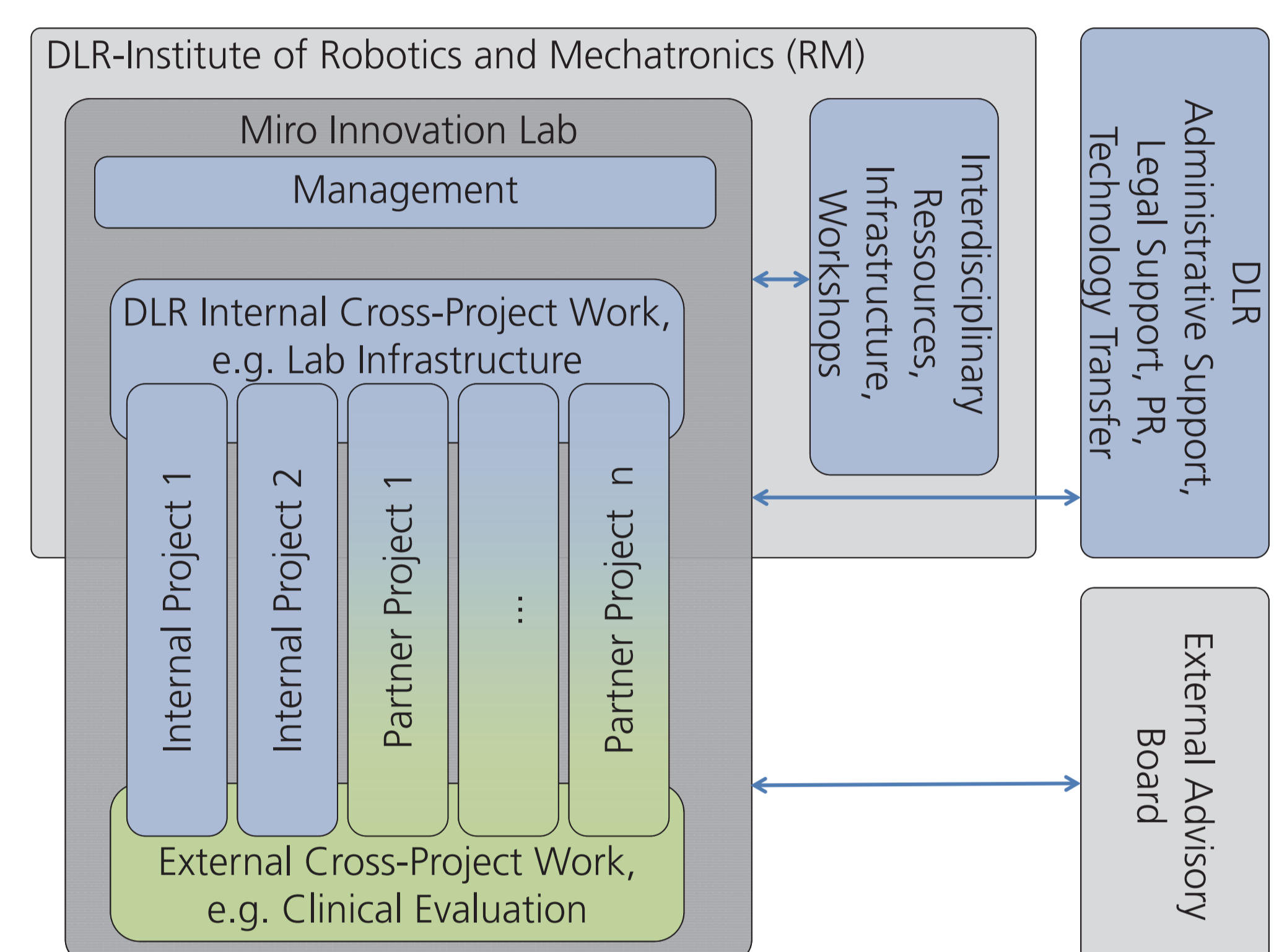
Due to licensing restrictions the MiroSurge system is available as ‘black box’ only using wrappers for mechatronic and software interfaces. Additional hardware will be added as required.

**Strong clinical partners** are closely integrated (especially the Minimally Invasive Interdisciplinary Therapeutical Intervention Group, MITI, of the Klinikum rechts der Isar, Technical University of Munich), offering full clinical research facilities.

## Cost and Funding Opportunities

The Helmholtz Innovation Lab initiative is aimed towards establishing commercially viable and **financially independent** innovation labs. Users will have to cover the costs of R&D support and equipment use.

However, the costs to the partners can be covered by (joint) grants from third parties. The MIL may **participate** as partner in national and international research, as well as SME **grant applications**.



**Organization of the MIL, embedded in DLR-RM and supported by DLR infrastructure.**

## Areas of Research

The main focus of the lab is on **robot-supported interventional medicine**.

However, related fields in the broadest sense can be topics of research, e.g.:

- mechatronic tool and manipulator design
- image-guided navigation
- novel diagnostic applications
- innovative tissue manipulation
- feedback modalities, augmented reality

The MIL will **support** users in realizing their **own innovative ideas** or in **adapting** own **conventional products** to the new field of robotic interventions.

Identifying new needs and generating new product ideas, as well as testing them in realistic pre-clinical scenarios will be an integral part of the work in the lab.

IP usage and licensing will be individually agreed on between each user and the MIL.

Already, renowned companies in the fields of endoscopy, robotics, medical technology, or camera technology and image processing are participating.

## Invitation to Participate

Interested parties are invited to find out more about the MIL. Possible collaborations will be discussed and organized on an individual basis.