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INNOVATION BOOSTER

Innovation Booster
powered by Innosuisse

Connecting Science and Industry for Collaborative Early–stage Innovation
- Project Examples from Switzerland's Innovation Booster Photonics

SWISSMEM

Outline of this talk

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Early-stage Innovation

- Challenges
- Opportunities
- Important Aspects

Photonics Collaboration Platforms in

- academia ↔ research
- platforms, ecosystems, competence centers

Innovation Booster Photonics

Project examples

- Bio
- Life-science
- Medtech

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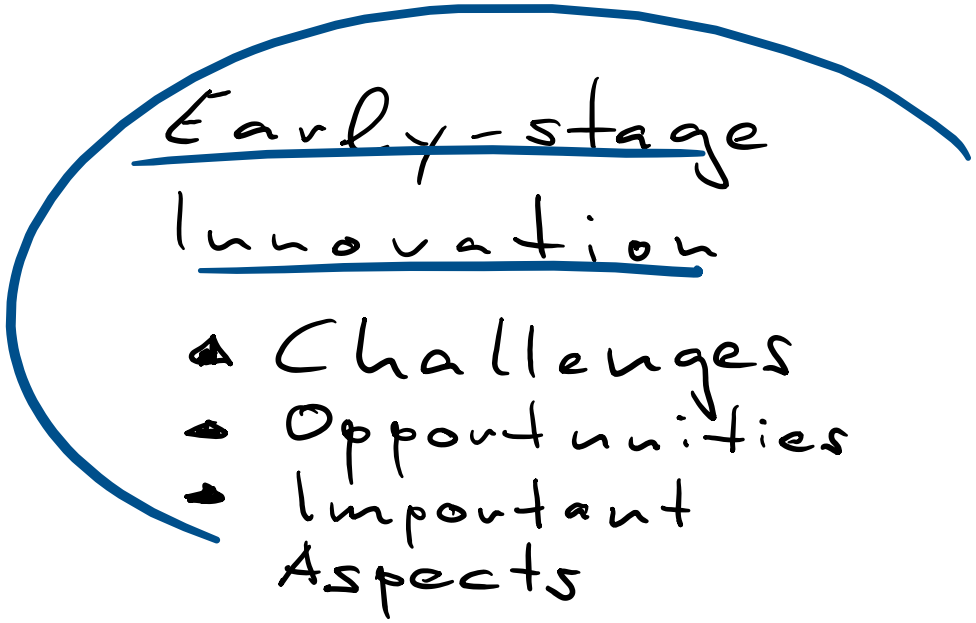
Early-stage Innovation

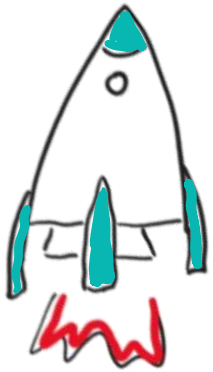


Problem?

- **Do you have a problem?**

Better: Let's call it a challenge

Even better: an **unmet need**!



Great!
Let's start the
innovation journey!

Let's start with some theory
about early-stage innovation

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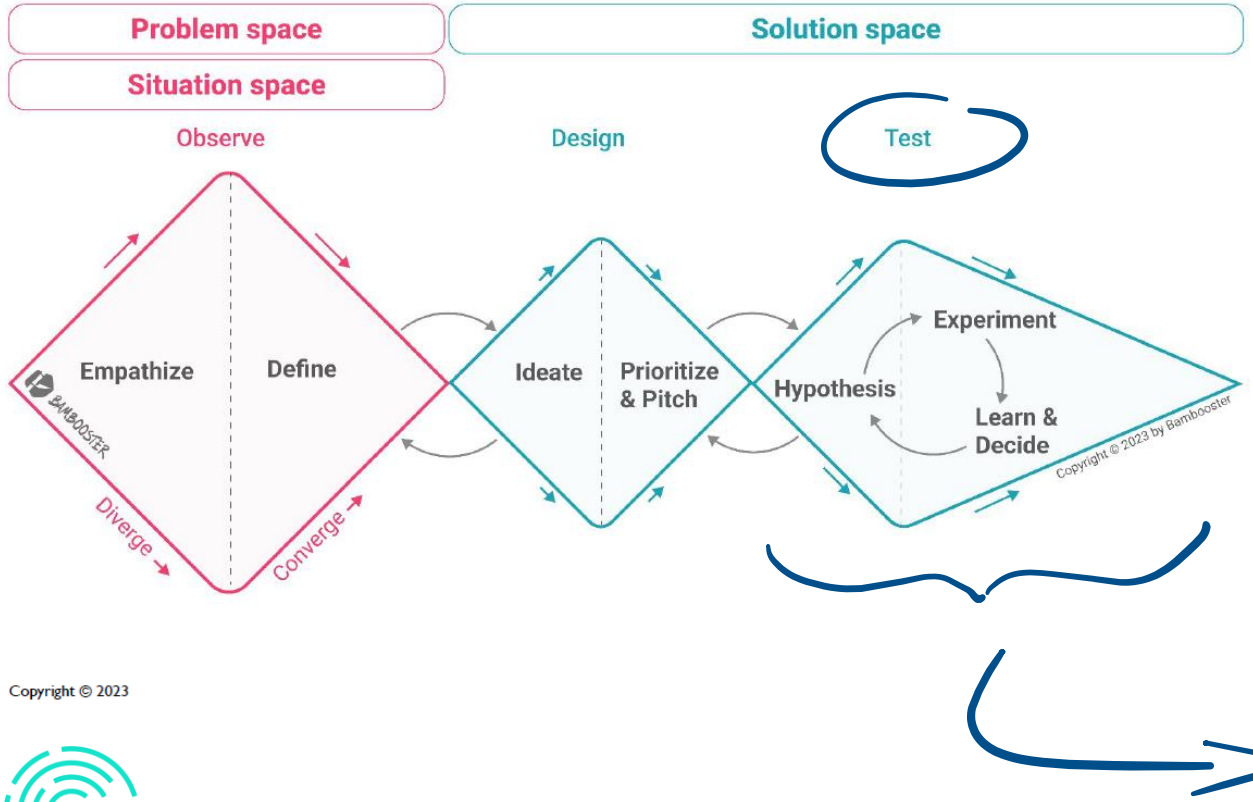
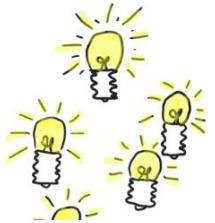
Design Thinking: Triple-Diamond Approach by *Bambooster*

Innovation Journey



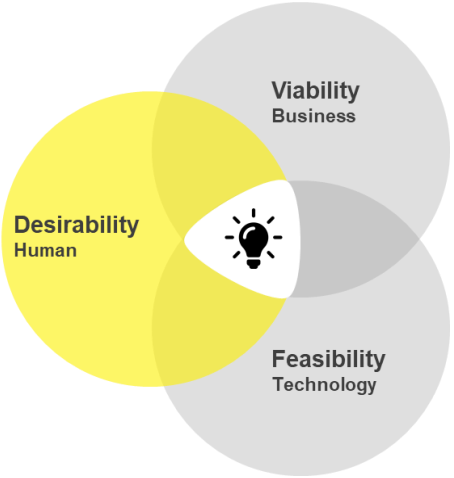
- Carefully analyze your problem from different perspectives

- Develop potential solutions

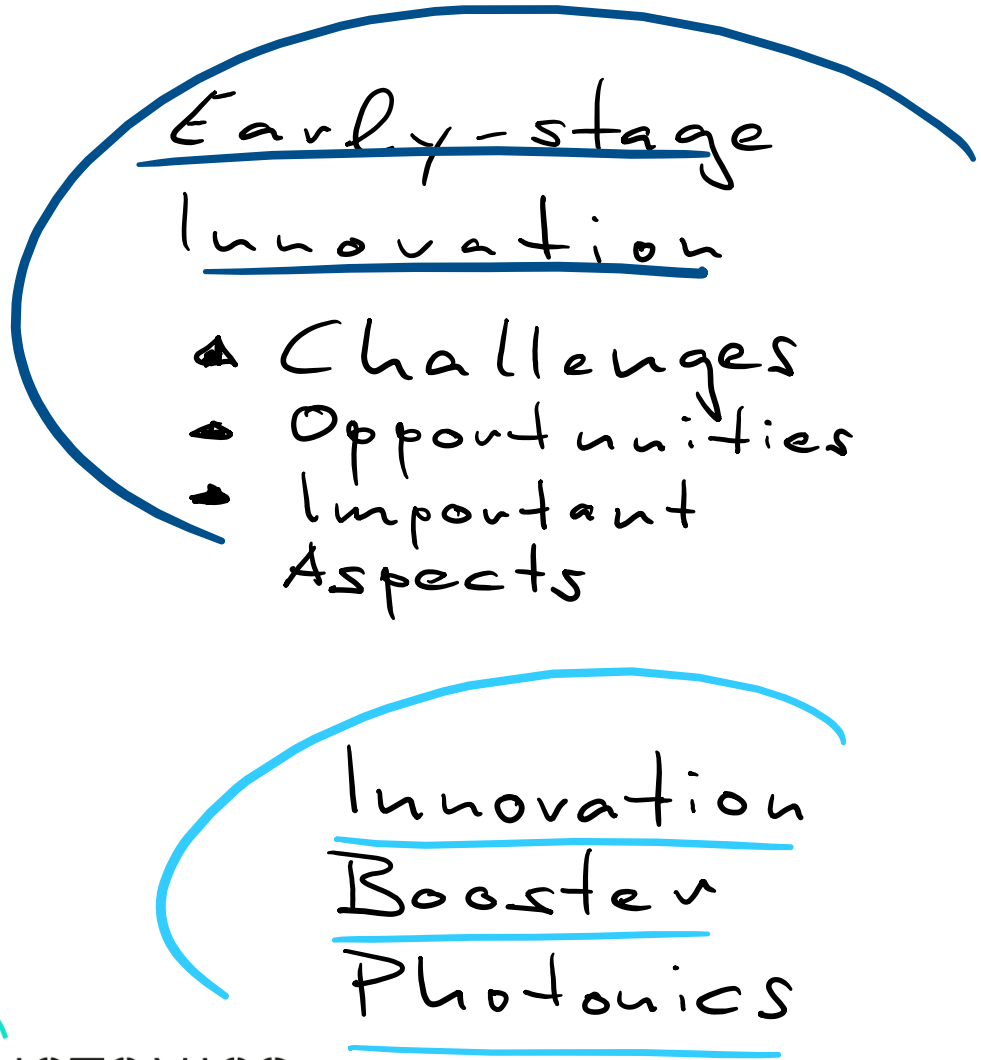


- At this stage: don't fall in love with your solutions, fall in love with the problem!

- Stay critical, reflect on the problem and test your idea:
  - Feasibility ?
  - Desirability ?
  - Viability ?



Innovation Booster Photonics



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Innovation Booster Photonics

- How do we implement this theory in our early-stage innovation program?

We boost radical ideas in Photonics:

- **bring together players** from research, business and society
- **interdisciplinary** teams, **co-operate** with partners along the entire value chain
- Create **open innovation** culture
- address **customer needs** from start – **end user** is part of the team

Powered by:

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Innosuisse – Swiss Innovation Agency

With the leading house:

SWISSMEM

❖For early-stage innovation: observe, design & test phase
❖Other funding programs available for the implementation phase!

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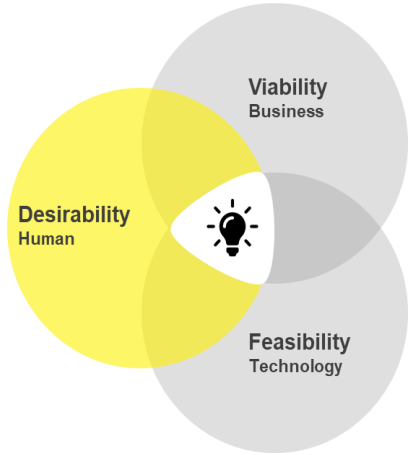
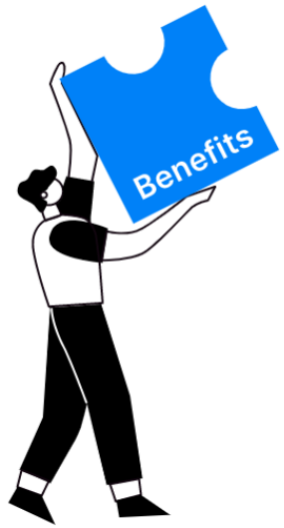
Booster Projects



- Do you have an identified unsolved challenge?
- Build teams to test and verify innovation ideas!
  - Test the desirability, viability and feasiblity of the idea
  - With an interdisciplinary team with an academic partner and an implementation partner / end-user involved

Grant up to CHF 25’000



Expert support ⓘ

Matchmaking support ⓘ

Methodology support ⓘ

Funding ⓘ

Simple, fast, little administrative effort

Applications from SMEs, startups, large companies, etc. are highly welcome!

Submissions possible at any time – no fixed deadlines

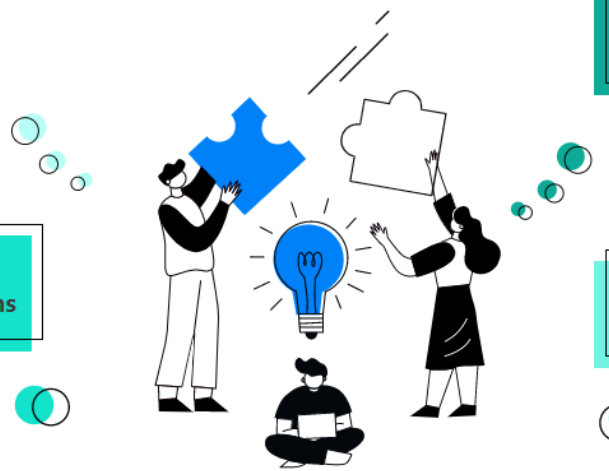
How Projects are started

How do you get involved?
How are potential challenges and ideas identified?
How are teams formed?

And collaboration with various Photonics platforms in Switzerland:

virtual platform
Web-based Ideation

Individual, bottom-up
Direct Ideation-Applications



Workshops
Physically Presented Events

Webinars
Virtual Ideation-Workshops

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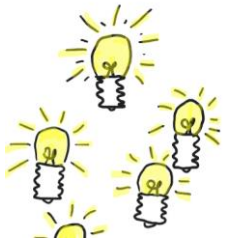
Summary Important Aspects esp. Early-Stage Innovation

- Carefully analyze your problem from different perspectives

- Develop a broad range of potential solutions



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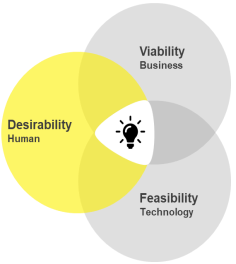
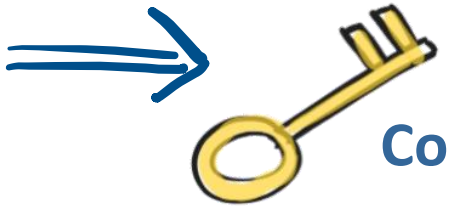


- Interdisciplinary team - co-operate with partners along the entire value chain, create open innovation culture, with:
  - players from research, business and society
  - Methodology, Technology, Implementation and Application (End user) Experts involved



Collaborations!!!!

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Innovation Booster Photonics

Innovation Booster Photonics network and collaborations

Innosuisse
Swiss Agency for Innovation Promotion

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Innosuisse – Swiss Innovation Agency

Innovation Board
30 representatives from industry & academia

SWISSMEM
Leading Industry Association in Switzerland

Innovation Booster Management Team and Board of Directors

Project Experts
Project evaluation & support (methodology, expertise, etc.)

Partners

- Other Innovation Boosters
- Universities, UASs
- Other organizations (Swissphotonics, EPIC, etc.)

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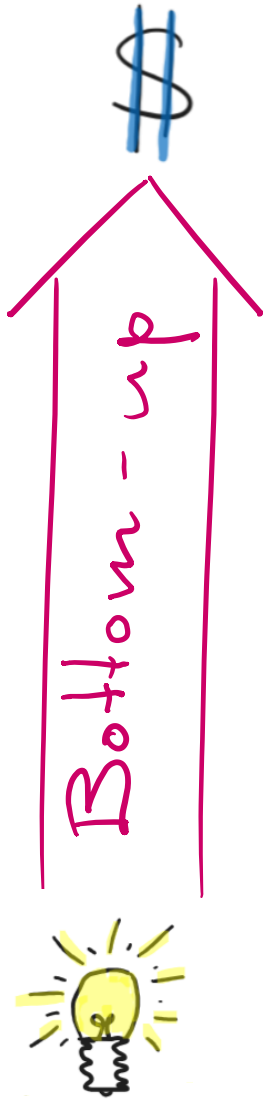
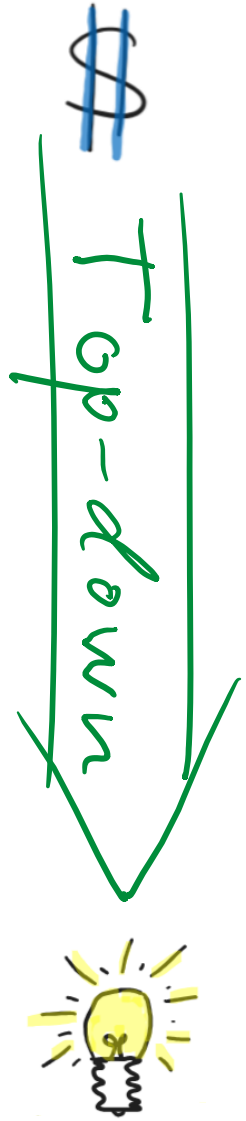
Innovation Promotion in Switzerland vs. EU/USA



- **Bottom-Up Approach:** Swiss innovation begins with industry-defined needs, not government directives.
- **Collaboration Teams:** Industry and research partners collaborate, applying for tailored project funding.
- **Emphasis on Industry:** The Swiss model highlights industry's role in shaping innovation.
- **Driving Force:** Industry needs drive Swiss innovation, fostering demand-driven innovation.

Result & Key: Dynamic Innovation Ecosystem



Photonics platforms in Switzerland for collaborative approaches

Technology providers:

Universities / ETH / EPFL

UAS – Universities of applied sciences

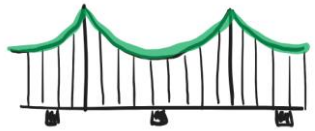
Needs providers:

Industry

Organisations / Associations:

Swissmem

CSEM



EPIC, etc.

Swissphotonics

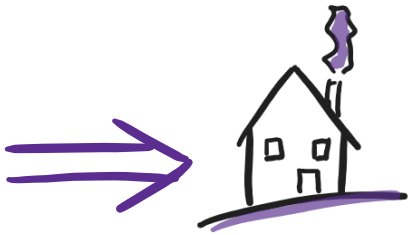
Financing:

Innosuisse

Eu-Funding

Photonhub, etc.

Innovation Parks:



e.g. Park Innovaare

- Infrastructure: Offices, labs, cleanrooms, prototyping workshops
- Tech Transfer Centers - SwissPIC
- Industry Clusters & Competence Centers
- Ecosystem integration with relevant Industry, Academia, Risk Capital & Government
- Support Services

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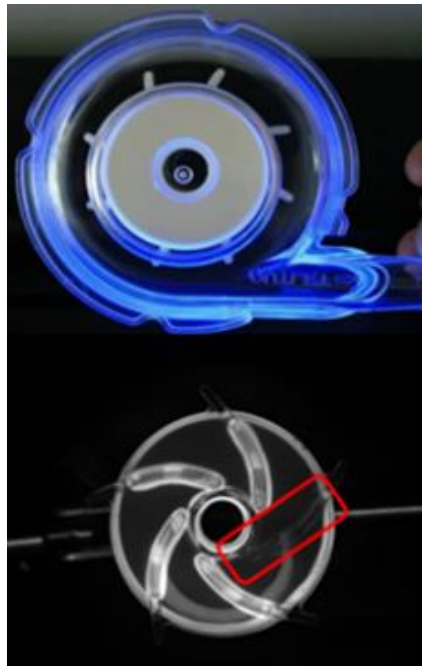
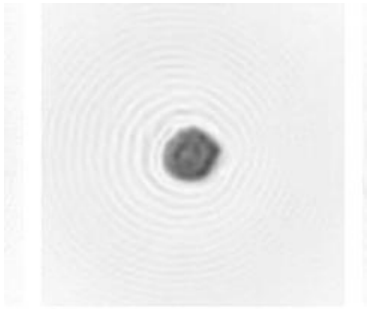
Project Examples from Bio/Medtech/Life Sciences

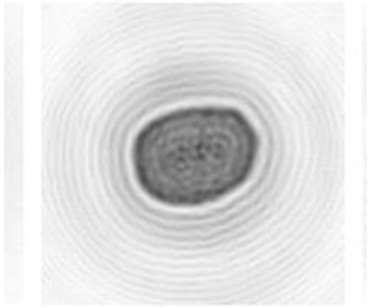


Automated visual inspection of a life-supporting blood pump

- *Thoratec Switzerland GmbH, part of Abbott Laboratories with ZHAW Zurich University of Applied Sciences, OST Eastern Switzerland University of Applied Sciences*
- Sensor technology for a visual inspection of the transparent Thoratec blood pump
- The visual inspection will be fully integrated into an automated assembly process which includes a quality decision with a zero tolerance for wrong pass-fail decisions.

Project Examples from Bio/Medtech/Life Sciences


Fraxinus excelsior


Fagus sylvatica

Adaptation of Pollen Classifier to Local Flora

- *Swisens AG with FHNW, HT*
- Sensors based on holographic imaging and fluorescence spectroscopy measures pollen concentrations in the air. The determination of the type of pollen is achieved by a deep learning-based classifier which has been trained on a large, annotated dataset.
- Adapting their system to new regions should be simplified so that the expensive collection and annotation of data with local pollen can be largely avoided.

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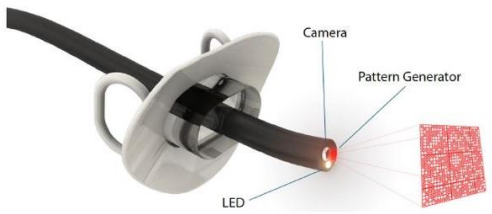
Project Examples from Bio/Medtech/Life Sciences

Solubility is made practically easy

- *Oryl Photonics with CSEM Neuchâtel and CSEM Landquart*
- Measurement of the solubility of substances from small molecules to proteins, peptides and macromolecules
- with a light-scattering solution that saves days of repetitive work, minimizes the use of compounds, chemicals and consumables at the same time, maximizes cost and time savings

Project Examples from Bio/Medtech/Life Sciences



A miniaturized device to measure premature babies' palate and clefts

- *Ostschweizer Children's Hospital, Feinwerkoptik Zünd with OST-IMP, Machine Vision Group, OST-IMP, Optics and Optics Manufacturing Group*
- Miniaturized measuring diagnostic system for cleft palate of babys or prematures in a very small space of the oral cavity, ideally in a pacifier to support doctors and hospitals for non-invasive testing
- The measurement system is based in triangulation combined with endoscope technologies

Project Examples from Bio/Medtech/Life Sciences

Monitor Platform for Digital Workplace Health

- *Vivior AG with academic and implementation partners*
- Platform to improve vision, vitality and performance and thus to manage digital eye strain caused by the growing amount of time people spend with all types of digital devices.
- innovative approaches to reduce asthenopic discomfort and sketched guidelines for the further development and redesign of our monitor using SLAM and LIDAR technologies

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Project Examples from Bio/Medtech/Life Sciences

What can photonics contribute to monitoring the medical use of cannabis?

- *Swissqueen GmbH with FH OST – OnkOS and ESA and IMP, clinics, health professionals, patients*
- Medical use of cannabis products in the therapy of various symptoms and indications. For their use, easy-to-use and cost-effective methods for dosage and effect monitoring are required.
- study to investigate whether and how photonic non-invasive technologies can contribute to photonic monitoring methods, evaluation by users.

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Innosuisse – Schweizerische Agentur für Innovationsförderung

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University of Applied Sciences and Arts of Southern Switzerland SUPSI
FHGR Fachhochschule Graubünden University of Applied Sciences
FH Berner Fachhochschule Haute école spécialisée bernoise
csem FACING THE CHALLENGES OF OUR TIME
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n|w Fachhochschule Nordwestschweiz
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PAUL SCHERRER INSTITUT PSI
SWISS PHOTONICS
EPFL
Empa
OPTICA
IMES Institut für Mikroelektronik und Embedded Systems
haute école arc ingénierie
ETH zürich