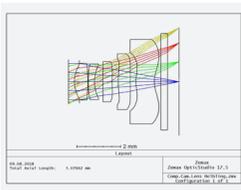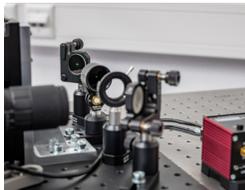# Optics, Embedded Vision and Sensor systems

Our service portfolio:

Optical Design and Calculations

Laser systems & beam shaping

Low-cost Sensor Systems & Modules

Optical Devices

Embedded Vision & Single-Board Computer

Image enhancement & ISP tuning

Camera & Camera Modules: Evaluation & Development

AI and computer vision algorithms

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helbling

Innovation together we do it

Founded in 1963, the Helbling Group operates internationally and combines engineering and consulting expertise. The Helbling Group is managed by 37 Partners and employs over 630 people at locations in Switzerland, Germany, Poland, the USA and China. The Helbling Group focuses on providing selected services in the areas of innovation and product development, management consulting, mergers & acquisitions, business turnarounds and financial performance management, IT, real estate and construction planning.

Helbling Technik is a division of the Helbling Group and currently employs over 500 professionals. Our vision "Innovation, together we do it" positions Helbling Technik as a trusted long-term partner within its clients' innovation network. Helbling Technik's highly qualified engineers, computer scientists, physicists and human factors experts use state-of-the-art development tools, processes, laboratories and tools to develop innovative and successful products and support clients around the world from idea to market launch.

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Shared innovation: Tailored Single-Board Computers for Embedded Vision

Efficient and cost-effective development of fully customized single board computers based on an existing reference design.
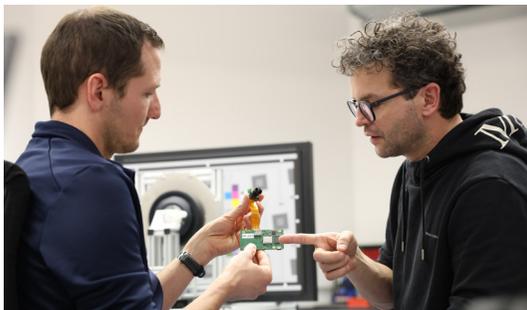

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Reference design for single-board computers

A variety of single-board computers and platforms for embedded vision applications already exists from different suppliers. Helbling has redefined the platform approach and developed a new, highly adaptive reference design. The reference design is the basis for tailored single board computers in customer projects and enables new innovations with manageable costs and short development times.

Some typical applications of single board computers for embedded vision include:

- smart cameras (AI)
- machine vision
- robotics
- video streaming and recording
- smart mobility and agriculture
- smart home and consumer devices
- autonomous monitoring and surveillance

Fully adaptable reference design.

Shared innovation for efficient and cost-effective developments

Your advantages:

- Shared innovation: The platform enables an efficient and cost-effective development of the hardware including the Linux OS.
- Fully customized design allowing a high degree of integration and low costs of goods.
- Fully adjustable performance, e.g., by exchanging or adapting processor, RAM, memory, interfaces or others.
- Integration of cameras, displays and more: Ensuring high-quality images even with cost-effective hardware.
- Manufacturer independent consulting and component selection.
- Free of license - fees.
- Complete knowledge transfer upon project completion.

Integration of an embedded image processing platform with two cameras and a laser system into a space-constrained device

Embedded vision application for detection of weeds in the field allows to reduce the use of pesticides.

From ideation to product

Additional services complete the portfolio of Helbling:

- Camera evaluation and/or development.
- Tuning of image signal processor (ISP) settings to enhance image quality.
- Display evaluation and integration
- Computer Vision and AI algorithms.
- Optical designs, e.g., to realize cost-optimized synchronous lightning.
- Integration into the housing.

At Helbling, all developments follow an established development process:

- Analysis of the task.
- Definition of requirements.
- Concept for platform adaptions.
- Development, implementation, testing, optimization and verification.
- Industrialization
- Support of market introduction and lifecycle management.
- Helbling is ISO9001/ ISO13485 certified.