TECHNOLOGY INCUBATION | CZECHINVEST

Case Study: TECH4LIFE HUB

A technology that sees more than the eye can: How MAIA Labs is changing colonoscopy and reaping successes abroad

The ambition of the startup MAIA Labs is to improve the quality of colonoscopies, reduce the administrative burden on doctors and help save lives. Its ColoMaia solution uses artificial intelligence directly in the course of examinations: it detects lesions in real time, reduces cognitive stress on doctors and automatically generates structured reports. Technology Incubation helped to accelerate the development of the technology and prepare it for clinical deployment in collaboration with Mayo Clinic, one of the most highly regarded hospitals in the world.

The founder of MAIA Labs, Lukáš Loun, observed how difficult it is for doctors to maintain complete focus during a colonoscopy and detect all possible lesions, while also keeping accurate records. *"They often work more than 200 hours a month, which requires a high level of personal commitment. Due to inefficient tools and systems, they also spend a lot of time on paperwork associated with examinations,"* Loun explains.

This is a serious problem – according to statistics, even an experienced doctor may overlook more than 25% of lesions that could develop into colon cancer. Furthermore, attention declines with each subsequent examination and fatigue reduces the success rate of detection by up to 14%. At the same time, colon cancer is becoming increasingly common, with one European dying from it every three minutes. *"This involves one of the slowest-growing types of cancer cells in the body – if examinations are performed correctly, cancer won't occur at all,"* Loun adds.

The aim was to create a tool that would ease the difficult work of doctors and enable them to focus on the actual examination, thus removing the burden of paperwork and taking notes. Lukáš Loun combined his technological experience with medicine and began collaborating on the project with experienced researchers in the area of AI.

- Entry into incubation: **2024**
- Product: **AI Tool** for improving the diagnosis of lesions during endoscopy
- Type of incubation (support regime): **Plus**
- Market segment: **B2B**

AI in real time: From detection to reporting

Thus arose the **ColoMaia** system, which combines artificial intelligence, voice commentary and automatic generation of structured medical reports. **Unlike most diagnostic solutions, which work only with static images, ColoMaia analyses images in real time directly during a colonoscopy.** This approach is highly innovative: AI responds to live images, detecting even minor lesions that could otherwise go unnoticed. Unlike competing technologies, it also generates significantly fewer false positive signals – therefore, doctors are not overwhelmed by flashing alerts and thus have both their hands and their mind free for the examination itself. It is similar to learning a complex skill, when a few seconds of video can provide much more information than dozens of static images. By way of comparison, Lukáš Loun states: *"It's like trying to learn how to ski only by looking at photographs – you will grasp it much faster when you see the whole movement on video."*

The system directly connects detection with automated reporting – based on the course of an examination, it can generate a structured medical report, thus significantly reducing the administrative burden on doctors and increasing the efficiency of the entire process.

The demanding MedTech environment

The path to developing this solution was not easy. In terms of the required capital and expertise, MedTech is an extraordinarily demanding environment in which top-level technological development comes up against strict regulatory and clinical requirements. *"Without external support, we wouldn't have been able to engage experienced experts in the areas of AI and language models, who helped us advance to a level that corresponds to medical standards,"* says Lukáš Loun. The support enabled them to accelerate development, reduce technological risks and prepare the product to fulfil regulatory and clinical requirements. **This phase is critical in an environment where a mistake can lead not only to a financial loss, but also potential harm to patients.**



MAIA Labs device.

In such a demanding field, the quality of the team and its ability to combine technological development with business development are also crucial. *"In the Czech startup environment, especially in the MedTech sector, we often see founders who are strong with respect to technology, but they are only just acquiring business skills. In the case of MAIA Labs, however, the situation is different. The founder is strongly focused on business development while maintaining his understanding of technology, which is a major advantage when establishing cooperation with prestigious healthcare institutions and intro-*

ducing innovative healthcare solutions to the market," says **Sofie Deliu, Technology Incubation project manager.**

Technology Incubation accelerated development and advanced the product to pilot deployment

The MAIA Labs team joined the Technology Incubation programme with a clear objective: to complete the development of a module for speech-to-text conversion and automatic generation of medical reports from colonoscopy examinations. *"We wanted to make it so that doctors wouldn't have to write anything down during examinations, instead only speaking, and the system would automatically create a structured, clinically usable report. At the same time, we needed to bolster our strategy for further technological development and product validation for the international market,"* Loun explains.

According to Deliu, the main strength of the MAIA Labs team is its ability to connect technological development with the preparation of the initial clinical references. *"Thanks to the incubation, the team succeeded in significantly advancing the product, creating a functional prototype of the device, developing key AI modules and preparing the infrastructure for licensing and for setting up monitoring of the system, which is essential for obtaining MDR certification. In parallel with that, they are progressing with clinical verification and regulatory preparation, which is essential for future commercalisation in the healthcare sector,"* says Deliu.

The support provided to the startup included not only funding, but also room to focus on development without the excessive paperwork that usually accompanies larger grant programmes. Thanks to this combination, the startup was able



Lukáš Loun during the collaboration with Mayo Clinic, where the MAIA Labs team tested ColoMaia.

to complete a key module for automated reporting, more clearly define the product's path forward and advance more quickly to pilot projects. This significantly reduced the time needed to reach the next phase of development. *"Technology Incubation gave us room to fully focus on development. It helped us to complete the reporting module and accelerate the steps leading to clinical practice including, among other things, projects such as the collaboration with Mayo Clinic,"* Loun says.

International recognition and further growth

The deployment of the technology at the Mayo Clinic in the United States, one of the most widely respected and highly rated hospitals in the world, ranks among the startup's most significant milestones to date. The clinic, which annually conducts thousands of clinical studies and has long been a global leader in medical research, offered the startup a place in its accelerator programme. The programme is open to only a few dozen select technology companies from around the world every year and enables them to collaborate directly with Mayo Clinic doctors and researchers and utilise their clinical data.

The startup has also presented its solutions at prestigious events such as **UEG Week**, received the **Golden Aesculapius** award for innovative use of AI in clinical practice, won the **Central European Startup Awards** competition, and was the winner of the **Czech DIGI@MED Award** and the overall winner of the **Vodafone Idea of the Year 2023** competition, of which CzechInvest is a long-term partner. The MAIA Labs project was also a **Global Startup Award** finalist.

MAIA Labs has the ambition to become the global leader in endoscopy. The company's future plans include expansion of its clinical partnerships in Europe and the US (it is newly preparing a collaboration with Orlando Health and the University of Miami) and further development of reporting and workflow automation. It also intends to gradually expand its operations into other areas, such as gastroscopy, bronchoscopy and urology, while striving to reduce mortality from preventable diseases through more accurate and accessible diagnostics over the long term.

www.maia-labs.com



MAIA Labs wins Vodafone Nápad roku 2023.

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– Lukáš Loun, co-founder of the startup MAIA Labs