



EMBEDDED DEVELOPMENT

Services at Lemberg Solutions

/ ABOUT US

Lemberg Solutions is a tech consulting and engineering company that creates **IoT products, Digital experiences, and AI solutions**. Our clients rely on our full suite of engineering services and industry experience to build new products and bring digital transformation to existing systems.



300
clients in Europe
and North America

160
cross-functional
technical experts

800
projects delivered

15
years on the
market



EMBEDDED TEAM

20 highly skilled engineers have successfully delivered **more than 30 projects** for globally located customers.

Domain experience:

Agritech, Healthcare, Manufacturing, Automotive & Transportation, Smart Buildings, Consumer Electronics.

In-house **skills in multiple disciplines:** embedded software, device enclosure, electronics and boards, optics, hydraulics, embedded AI and computer vision.



EMBEDDED ENGINEERING

Build a product that combines state-of-the-art hardware and robust software with the help of our embedded engineering teams. We'll guide you through all development stages and provide a full suite of engineering services to bring your product to market fast.



LEMBERGSOLUTIONS.COM

/// Hardware Development

/// Firmware Development

/// Embedded Linux

/// GUI Development

/// IoT Cloud Integrations

/// Embedded AI



HARDWARE DEVELOPMENT

Design and develop your embedded hardware product starting with a proof of concept (PoC) and going all the way to a functional MVP with the support of our mechanical and electrical engineers.

Tech Stack





FIRMWARE DEVELOPMENT

Rely on our firmware development team to deliver robust, secure, updatable, and scalable software for your RTOS-based embedded system. Our expertise spans a variety of Arm-based microcontrollers (MCUs) and single board computers (SBCs).

Tech Stack





EMBEDDED LINUX

Leverage our team's expertise for any Linux-based development tasks, from tweaking the kernel to developing drivers to creating Linux apps. Our engineers have the know-how to design your embedded system from scratch and build a custom Linux OS that fits your unique product requirements.

Tech Stack





GUI DEVELOPMENT

Get a sophisticated embedded GUI for your IoT solution. Our team will advise you on popular frameworks such as Qt, TouchGFX, and custom Android ROMs and help you pick an option that best matches your customers' needs and product requirements.

Tech Stack



Touch**GF**X



IOT CLOUD INTEGRATIONS

Our embedded team has all the skills needed to integrate your embedded system with AWS, Microsoft Azure, Google Cloud, or a custom cloud platform. This includes implementing popular IoT communication protocols based on MQTT and REST API to securely connect authorized devices; collect, store, and analyze device data; and manage and update your devices remotely.

Tech Stack





EMBEDDED AI

Make your device smarter by bringing AI to the embedded system level. Our team can create machine learning models that will run on your IoT devices and ensure remote management and updates of models at the edge.

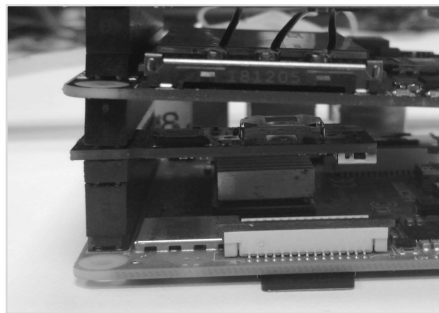
Tech Stack





CASE STUDIES

A healthcare IoT device for home-based patient monitoring.



TECHNOLOGIES

- Python
- PHP
- PostgreSQL
- MySQL
- Cosmos DB
- Microsoft Azure
- MQTT
- Angular
- Java
- Swift
- Bootpress

CHALLENGES

- Integration with Azure SDK back end, LTE modem/microphones drivers integrations

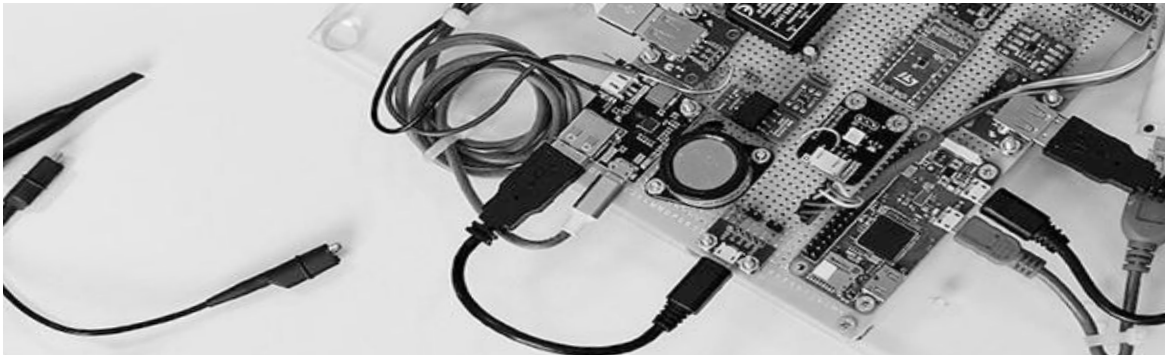


DAV IoT PLATFORM

CASE STUDY



An open source tracking and remote control IoT module for micro-mobility platforms.



TECHNOLOGIES

- Python
- MQTT
- Google Cloud IoT
- Raspberry Pi

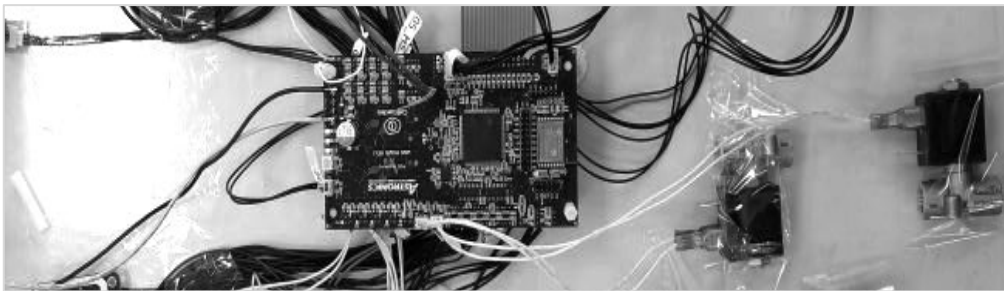
CHALLENGES

- DAV Foundation wanted to create an open source and easy-to-build IoT module for micro-mobility platforms
- This module would help set up, configure, maintain, and track micro-mobility vehicles from the cloud



CELL GARDEN

A smart hydroponic system for growing microgreens at home with autonomous lights, watering, and remote control.



TECHNOLOGIES

- C
- C++
- FreeRTOS
- HTML CSS
- AWS
- Altium Designer
- SolidWorks
- STM32
- ESP8266

CHALLENGES

- Selecting electrical and mechanical components
- Updating OTA firmware functionality through the web interface

CASE STUDY

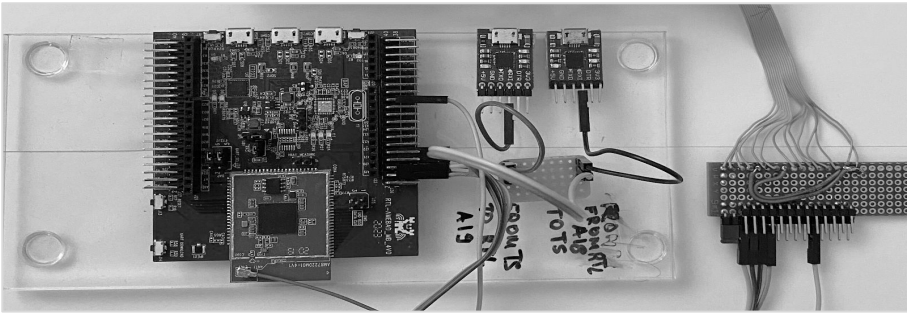


SMART WI-FI THERMOSTATS

CASE STUDY



Lemberg revised hardware and developed embedded software for a smart Wi-Fi thermostat that had been approaching its end of life.



TECHNOLOGIES

- C
- Python
- FreeRTOS
- lwIP
- WPA3
- Wi-Fi 6
- MQTT

CHALLENGES

- Firmware legacy code porting to Realtek SOC, ThredX migration to FreeRTOS, NetX migration to lwIP
- Lack of clear documentation



QUALITY CONTROL FOR GREENHOUSES

CASE STUDY



A graphical user interface for their device that could evaluate plant growth with the help of a stereo camera and an algorithm.

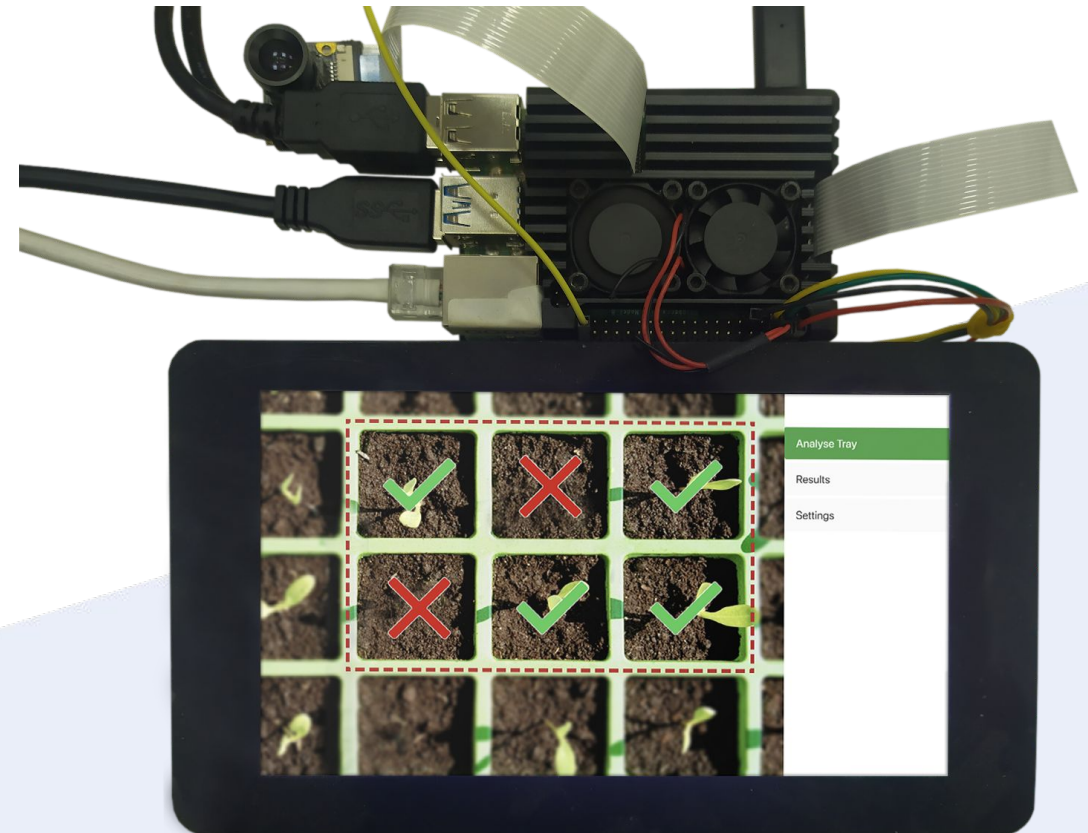


TECHNOLOGIES

- PySide2
- Python
- Qt5
- Computer vision

CHALLENGES

- Video cameras selection
- Datamatrix and QR codes processing, customer object recognition library integration
- UI development
- Code processing optimization



Embedded system development for professional performance-enhancing fitness equipment.



TECHNOLOGIES

- C++
- Embedded Linux
- Phoenix SDK
- Qt

CHALLENGES

To raise sufficient funding, Speede had to verify their concept before committing to full-scale development. With an extremely tight deadline of three and a half months, they needed a tech vendor who could develop a complete system fast.

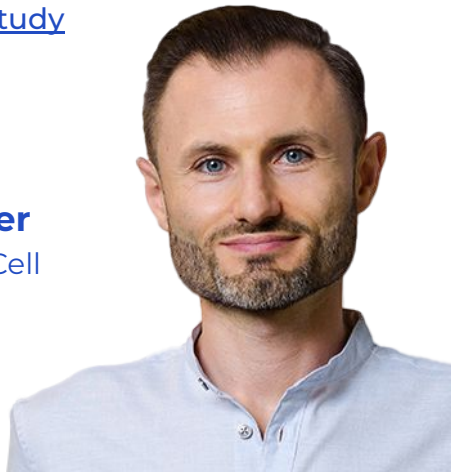


“

Working with Lemberg was very pleasant and professional for us. Every meeting and every work step was transparent and clearly documented. They are fully involved in the project and proactively use their skills. We look forward to further joint projects in the future.

[Read full case study](#)

Alexander Lier
Co-Founder of Cell
Garden



“

Having many years of experience working with development agencies, Lemberg is one of the best. They are well organized, well staffed, and have the communication skills needed to work through ambiguity. We have been quite pleased with their work and their approach.

[Read full case study](#)

Daniel Young
Managing Director
and Co-Founder,
Carepath Technologies
GmbH



“

One of the most impressive things about Lemberg Solutions is their communication and the fact that they take ownership of the product. They truly not only understand what it takes from an engineering perspective, but work with the customer to understand what the business needs are as well.

[Watch full video testimonial](#)

Addison Merchut
Co-founder at Hatch



/ CLIENTS



ASTRONICS

RHINO



CAVAMO

 **Carepath**



 **senzoro**


CellGarden®
NATURAL GOURMAKERY



selco

SPEEDE

/ READY TO TALK?



To learn more about the services we provide at Lemberg Solutions, visit our [website](#) and check out our [case studies](#).

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Get in touch

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EMBRACE THE CHALLENGE

