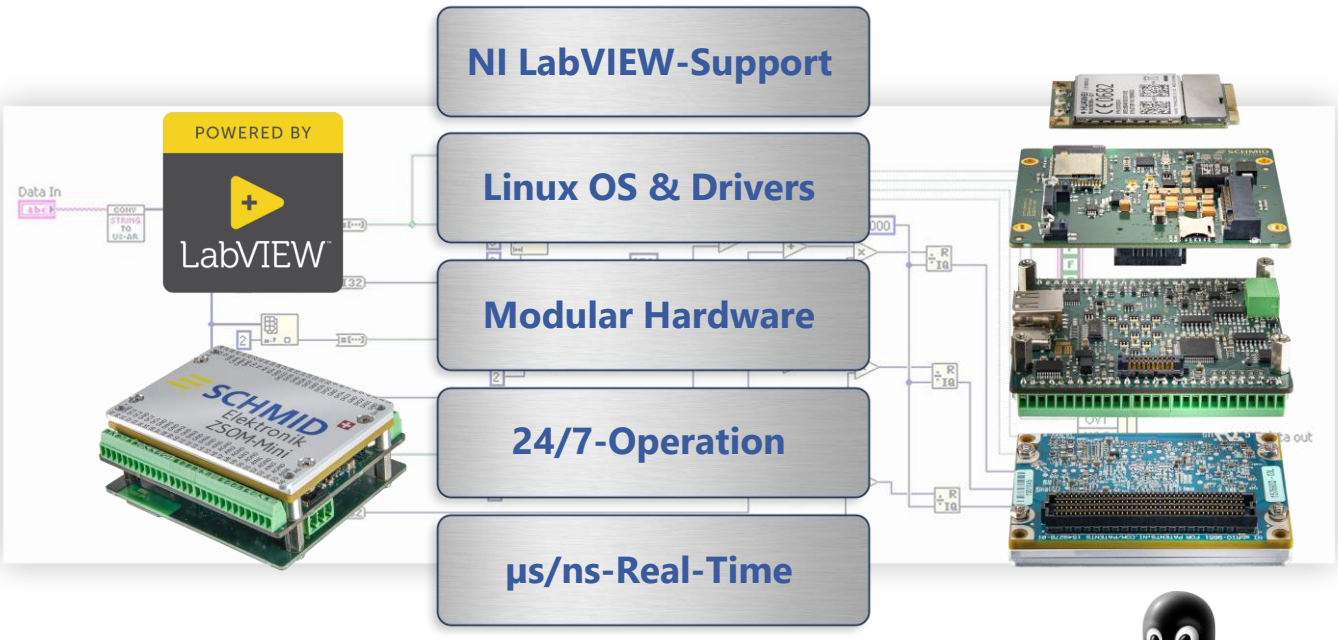
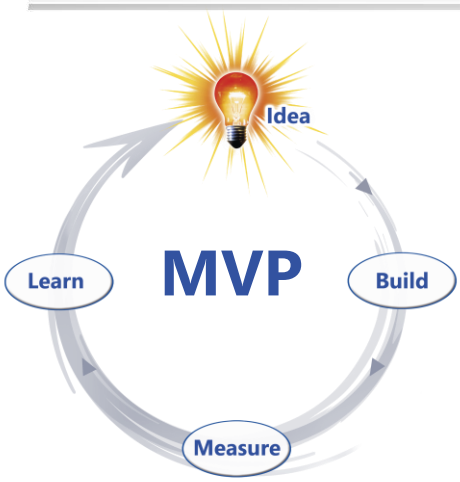
SCHMID Elektronik

Development Accelerator for **Minimum Viable Products MVPs**

4G/WIFI/GPS **IOT-Link** JSON/MQTT



method-, principle and process level
sensors und **actuators**



For fast-moving Minimum Viable Products (MVPs), new methods for embedded software development can help, such as high abstraction without losing touch with hardware, signals, and real-time. NI LabVIEW does just that.

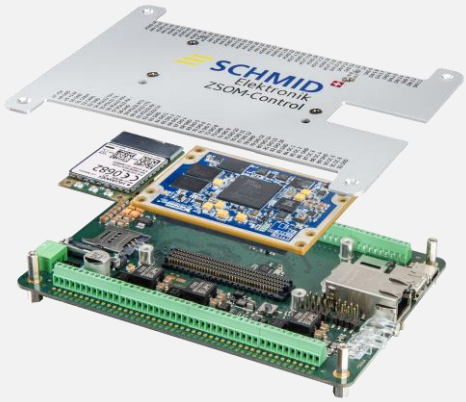
The graphical, data-flow-oriented programming language integrates C, Python and Matlab, runs in real time on embedded hardware, and connects effortlessly to the IoT.

Silver Partner
CompactRIO AND CONTROL

Modular Hardware

Standard NI Platform

- sbRIO
- cRIO
- PXI



Standard Hardware

- ZSOM-Control
- ZSOM-Mini
- ZSOM-Starterkit

+

Design- and Productionsservices

- Hardwaredesign
- Low-Level-Driver
- Linux, C/C++, Python
- Thermal Design
- Analog & Mixed Signal
- IP6x Packaging/Housing
- High Mix / Low Volume Production

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POWERED BY LabVIEW

Your own LabVIEW Hardware with Low-Level-Drivers and a VI-Palette

Z-BRAIN®

SCHMID Elektronik

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CompactRIO AND CONTROL

The Z-BRAIN® Product Family

ZSOM-Control

- **12x analog in**, 16 bit, ±5V or ±10V, 450kHz simultaneous, 4th order anti aliasing with fg=200kHz.
- **4x analog out**, 16 bit, ±10V, OVP, 100kHz simultaneous generation of all 4 channels.
- **16x general purpose high speed I/O**, configurable as digital input or output, 3.3V or 5V operation, speed in the MHz range allows to integrate high performance SPI devices.
- **10x rugged digital input**, 3-30V, OVP (DINX)
- **6x rugged open collector output**, max current: 200mA.
- **Communication**: 1x GigE, 1x USB Host/TypeA, 1x USB-device/TypeC, 1x CAN/Open, 1x SD-Card, 1x RS232, 1x RS422/RS485
- **IMU**: 9x axes IMU (Accelerometer, Gyro, Magnetometer)
- **IoT-Functions** (optional): 4G Modem, GPS, WIFI
- **Display** : 5.7" Multitouch (Optional)
- **Geometry** b/l/h: 100 x 146 x 10 mm
- **Power**: wide input Range 9-30V

ZSOM-Mini

- **6x analog in**, 16 bit, ±5V or ±10V, 450kHz simultaneous, 4th order anti aliasing with fg=200kHz.
- **10x general purpose high speed I/O**, configurable as digital input or output, 3.3V or 5V operation, speed in the MHz range allows to integrate high performance SPI devices.
- **4x rugged digital input**, 3-30V, OVP
- **4x rugged open collector output**, max current: 200mA.
- **Communication**: 1x USB Host/TypeA, 1x USB-device/TypeC for TCP/IP-Connection, 1x CAN, 1x SD-Card, 1x RS232, 1x RS422/RS485
- **IMU**: 9x axes IMU (Accelerometer, Gyro, Magnetometer)
- **IoT-Functions** : generic connector to add mPCIe Board that adds WIFI, 4G and GPS to the system
- **Geometry** b/l/h: 64 x 76 x 22mm
- **Power**: wide input Range 9-30V

ZSOM-Starterkit

$1450.00

Includes a ZSOM-Control Standard-Hardware

More information can be found on the product-WIKI: wiki.schmid-elektronik.ch/zsom

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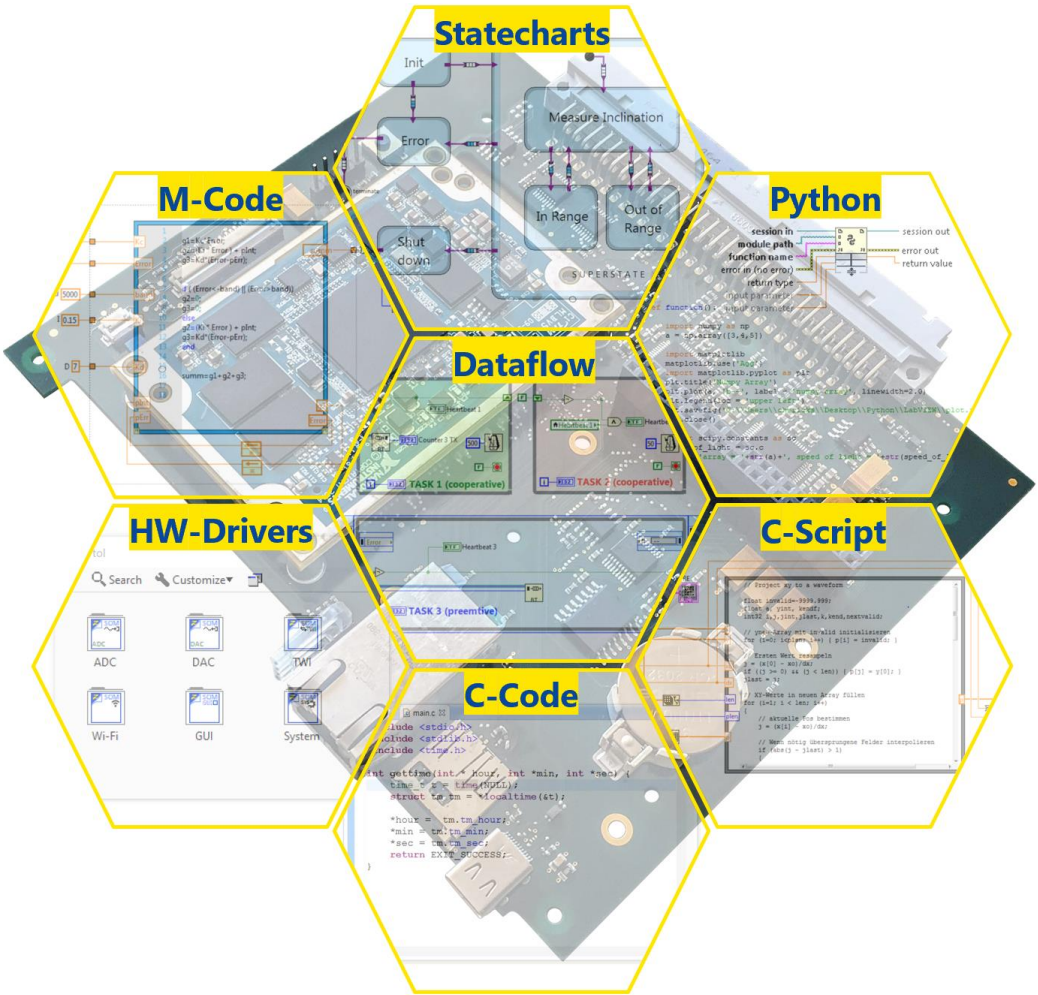
NI LabVIEW Support (RT, FPGA)

As a graphical, data-flow-oriented programming language, NI LabVIEW works with easy-to-understand block diagrams and thus supports the way scientists and engineers think. It grew up in the test environment with electrical signals and is therefore at home to the analog world.

LabVIEW works best when tasks are complex, time is short, development budgets are tight, and teams are small. And that makes this development accelerator a perfect fit for the world of fast-changing MVPs.

Moreover, its charm also lies in the fact that different programming languages and models can be incorporated in the development system and executed directly on embedded hardware in real time:

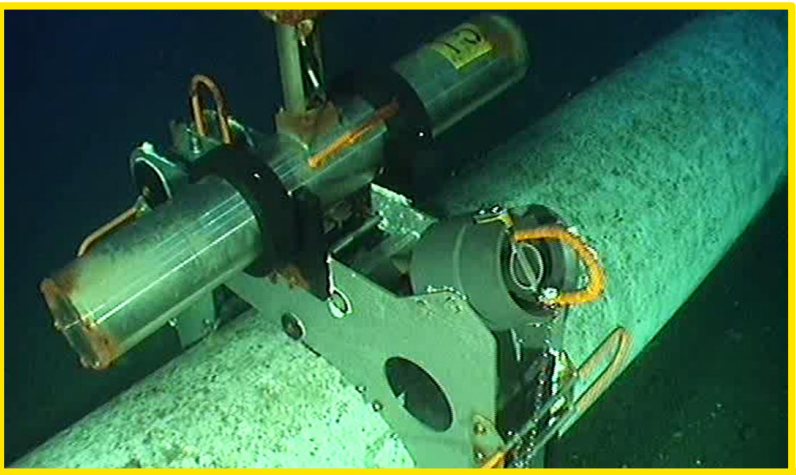


Even the first projects 15 years ago showed the way: high functionality realized in manageable time, fast boot times, scalable power consumption, micro- and nanosecond real-time, industrial 24/7 operation and compact form factors.

Today, startups as well as mid-sized companies and global players use graphical programming of embedded systems in several industries and application fields. From feasibility testing to prototyping to Minimum Viable Product (MVP), production device and testing.

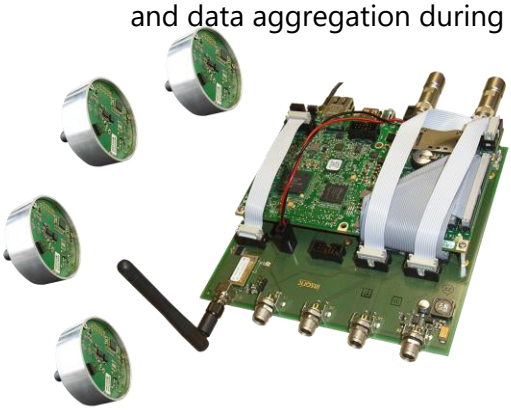
LabVIEW on Custom Hardware Projects

Ultrasound pipeline-monitoring network
1000 m below the waves



Elektrooptical Test System
for Energy-Inverter

Wireless rotation measurement of wheels
and data aggregation during Test Runs

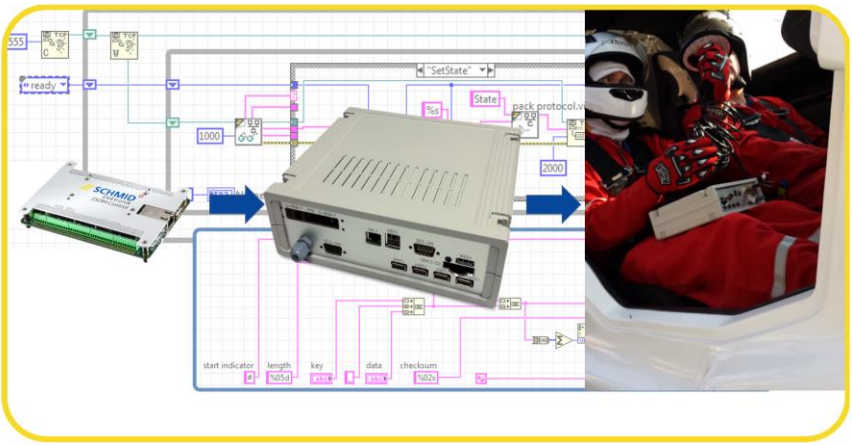


Measurement & Control of a
highly efficient (80%) solar power plant

Predictive Maintenance of critical
Outdoor-Assets with Laser Technology

Four tangible MVP Examples from the Field

Telemetry System with Energy Sensors

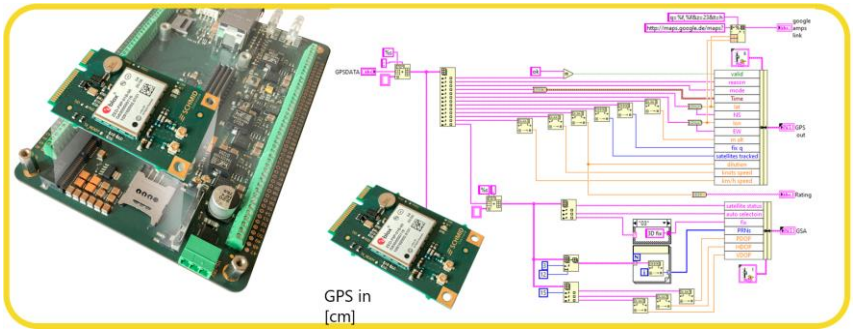


The MVP of a telemetry system connects to the engine compartment and cockpit of racing cars via sensors and actuators. It offered cross-team embedded software development thanks to graphically programmed microservices on ZSOM Control standard hardware. Just 8 weeks after the project started, it joined the start line...

Mobile, Battery operated Dashboard

The MVP of a dashboard provides live telemetry information to the driver. Thanks to high abstraction of the graphically programmable ZSOM control hardware with display, programming work is even possible in the field and thus fast build-measure-learn cycles.

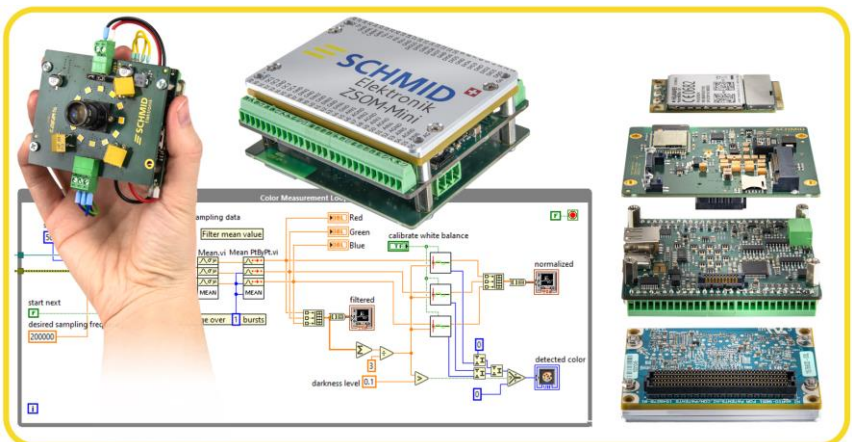
Highly accurate GPS-RTK-Module



The MVP of a GPS RTK module (Real-Time-Kinematic) consists of the standard hardware ZSOM-Control programmable with LabVIEW and a specific GPS RTK module in the miniPCIe slot. This makes it possible to obtain GPS data with cm precision during the measurement run, to record the position in real time and additionally to determine the speed

Intelligent RGB-Color Sensor

The MVP of an intelligent color sensor supports an automated detection of markings on the roadway. The LabVIEW programmable standard hardware ZSOM-Mini in cigarette box format is extended by a specific daughterboard with color sensor and illumination. The core is the simultaneous analog measurement value acquisition of the RGB signals with 200kHz with subsequent signal processing.



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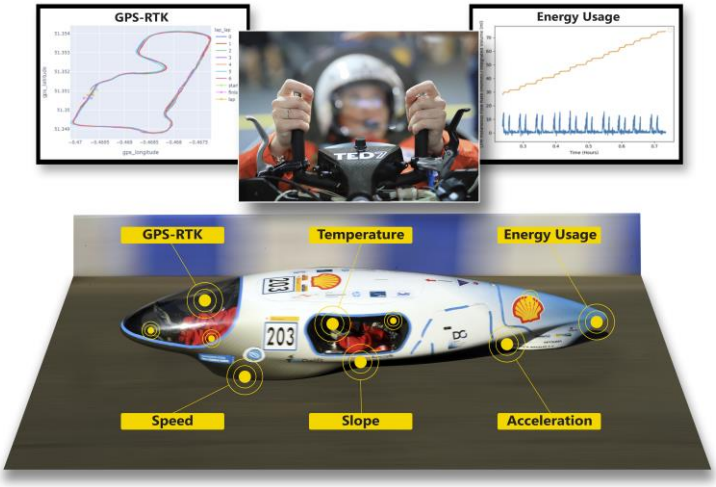
More technical Articles

Minimum Viable Products (MVPs) in Practice: A Key for Product Development and New Business Models

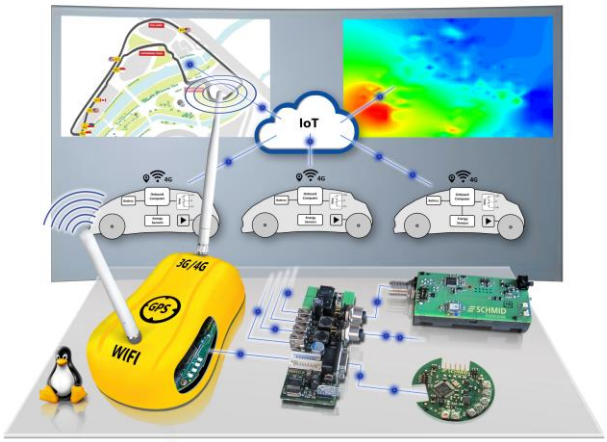
On the road to data, information and knowledge with IoT-connected mobile devices, Minimum Viable Products (MVPs) accelerate product development and market launch. They also reduce financial risk.

Appeal to engineers, innovators and entrepreneurs: Let's go to new shores!

Feeding the digital twin with data and fueling Digital Transformation with information, knowledge gained from data and information can become the superpower for the knowledge age and trigger inflection points. Available Q3/2021

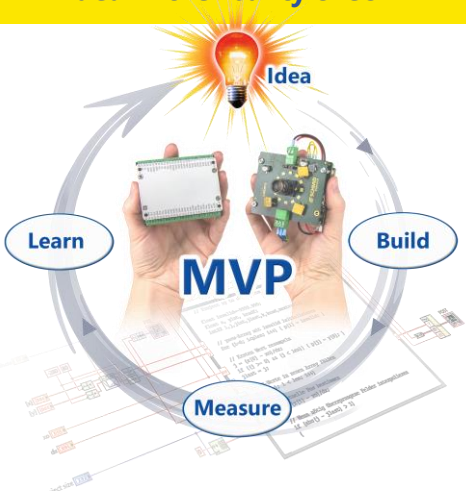


From the cockpit to the cloud How does that actually work?



This article shows hands-on how data points in mobile devices are created thanks to embedded systems, how they get to the cloud server via the IoT, and how they can be used for live visualizations or for data science. At the neuralgically interesting points, we also reveal tricky hardware and software tricks at times. Available Q3/2021.

Minimum Viable Products (MVP) An idea in the reality check



The crucial questions in development are: Does the market need my product and are customers ready for it?

This white paper explains the problem, theory, practice and examples.

Schmid Elektronik is a family-run, Swiss technology SME for embedded systems and industrial electronics. Customers are supplied with feasibility studies, prototypes, pilot series, minimum viable products (MVP), batch size 1 as well as small and medium series. Market services include hardware and software engineering, products for LabVIEW on customer-specific hardware and production services (EMS). One of Schmid Elektronik's specialties is Internet-of-Things things.

The ZBrain product family from Schmid Elektronik consists of hardware platforms for embedded systems that are graphically programmable with NI LabVIEW (RT, FPGA). With this Schmid Elektronik completes the NI platform (sbRIO, cRIO, PXI, SLSC) and enables its customers to run LabVIEW on their own hardware. Be it in prototypes, MVPs or products.

Since 2007, Schmid Elektronik has been one of the NI Alliance Partners, achieved Silver status and holds the CompactRIO AND CONTROL Specialty certificate. Thus, the focus is on embedded sbRIO hardware, customized cRIO modules, specific FlexRIO and SLSC boards.

Schmid Elektronik is an official partner of the Shell Eco-marathon and part of its Data & Technology Team. Schmid Elektronik has been providing development and production services as well as products and on-site services for the telemetry system since 2015.

Services include webcasts, jury in awards and physical as well as virtual, technical vehicle inspection. The Swiss family-owned SME thus joins the ranks of companies such as Altair, Dassault Systemés, SolidWorks, HP, NISSAN and Microsoft, which are also partners in the program.

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