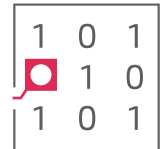


# From lab prototype to deployable product ...

... customized embedded system solutions for challenging photonics applications



## MPSI

MEMBER  
of EPIC

### Your laboratory setup

- Optical table enabling rapid prototyping and allowing for frequent setup changes
- Power-consuming, expensive "all-rounder" instrumentation such as signal generators, oscilloscopes, lock-in amplifiers, etc.
- Workstation running proprietary control software (e.g. LabVIEW) or instrument-specific application with dedicated platform-specific (e.g. Windows) user interfaces
- Single use case of extracting one-off raw data, to be processed manually, e.g. for scientific publications



### Your product

- Constrained system in terms of dimensions, budget, power consumption
- Enhanced requirements for reliability and durability
- Seamless user experience ("one device look & feel") mandatory
- Ease of integration (hardware & software) a key selling point
- Expensive software licenses prohibited

### MPSI Technologies' offering

- Design of custom state-of-the-art mixed-signal hardware with advanced technologies such as FPGA's and high-speed ADC's
- Development of powerful, easy to maintain, embedded software with web-based user interfaces and M2M communications capabilities - using our signature WhizniumSBE and WhizniumDBE developer tools
- Knowledge transfer to your in-house developer team

### WhizniumSBE & WhizniumDBE

*MPSI's innovative tools providing model-based source code generation for embedded systems:*

*„Quality code for your project, generated at lightning speed“*

- Linux, Windows, MacOS targets
- Multi-Threaded C++ executable
- Attached SQL database
- Multi-locale HTML5 user interface
- API library for simplified integration
- IIoT protocols: OPC UA, DDS
- Preferences, access control, managed file archive
  
- FPGA and microcontroller based hardware targets
- Hardware-specific command sets
- Implementation as VHDL/C state machines and C++ host library counterpart

### References

#### The ICARUS sensing device ...

- Robot-mounted integrated system for autonomous SAR application
- Stereo vision and thermal imager
- Sensor fusion with 8x8 pixel MWIR module
- Manual operation (web-based UI) and M2M robot interface



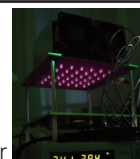
#### ... and its 8x8 pixel QCD array module

- 8x8 pixel 4.4µm QCD array (III-V) bonded to custom read-out ASIC, packaged into hermetically sealed TO-8 housing
- FPGA-based control PCB
- Control of multiple voltage sources and thermoelectric cooler



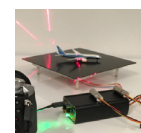
#### Solar panel tester

- Quality control of mass-produced solar panels
- Adjustable high-power IR-LED emitter
- Precision load for fine-grained IV-curves
- Quick result validation in standalone controller
- Cloud-connected host software to accumulate statistics



#### Tabletop 3D laser scanner workstation | embedded | FPGA

- Onboarding vehicle for Whiznium
- Toradex / Digilent hardware
- Turntable, camera and modulated line lasers



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