

Everything

Universal Drive Controller
System-on-Chip
MERCURY CA1 Zynq® streaming
USB 3.0 quick-start kits
Nios®
base boards
mars pm3
Linux DSP
hardware blcdc
Display
kintex™
SOFTWARE
test & measurement
Mars ZX3 DVI
ethernet
EMBEDDED PROCESSING
firmware
Profinet
microblaze™
pci express®
xilinx® soc
Mars MX2
Altera®
fpga modules
Windows®
ANDROID™
Lattice®
IP Cores

Android™
BLDC Software
mercury pe1 ethernet
Profinet
ARM®
FIRMWARE
Zynq®
solutions
Stratix®
Industrial
cyclone®
ip cores
fpga manager
easyIIR™
virtex™
mars mx1
Xilinx® hdl
POWERLINK
mars zx3 BLDC
Streaming
Microblaze™
MATLAB®
altera™
usb 3.0
smart vision systems™
PCI Express®
Mercury CA1
system-on-chip
ETHERNET
Simulink®
digital
embedded processing
mercury pe1
Display
easyIIR™
virtex™
Mars ZX3
Base boards
Lattice®
linux
Test & measurement

solutions
Motion & drive control
ethernet
Nios®
System-on-chip
Zynq®
mars mx2 soc
fpga design center
Altera®
PCI Express®
BASE BOARDS
artix™
Mars MX1
Windows®
software
Xilinx®
blcdc
Mars AX3
fmc dr2
ARM®
Mars PM3
FPGA Modules
mars zx3
Virtex™
soc
Industrial
Quick-Start kits
Mercury KX1
PCIe
lattice™
mars ax3
Android™
KINTEX™
universal drive controller
Cyclone®
mercury ca1
PCIe®
evaluation
easyIIR™

MARS ZX3
mercury kx1
Xilinx®
arm®
Mercury PE1
soc
PCIe®
Firmware
EtherCAT™
FMC DR2
kintex™
IP Cores
virtex™
IP Cores
hardware
USB 3.0
Mars MX2
Software display
dsp
PROFINET
LabVIEW™
Microblaze™
easyIIR™
pci express®
FPGA MANAGER
Artix™
Software-defined radio
Linux
motion & drive control
system-on-chip
embedded processing
Zynq®
Smart vision systems™
virtex™
easyIIR™
virtex™
IP Cores
industrial
Kintex™
Lattice®
Quick-Start kits
mars mx2
MATLAB®
Base boards



enCLUSTRA
FPGA SOLUTIONS



ABOUT ENCLUSTRA



The company was founded in 2004 by Martin Heimlicher, with the aim of providing comprehensive FPGA solutions, from design through to production.



We currently have more than 20 people in our team, of 7 different nationalities, and we're growing.



Our headquarters are located in the thriving Binz quarter in Zürich, Switzerland – an ideal location in one of the world's leading cities for technology and innovation.



In addition to our main office, we have sales and support offices Germany, USA and China.



Demand for our design services, FPGA modules and base boards is growing – our current customer base stands at over 250 customers in over 40 countries, and continues to expand.

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Everything from the drawing board.

FPGA DESIGN CENTER

Our design center offers design and support in all areas of FPGA-based system development, in a wide number of applications.

High-speed hardware, HDL firmware, embedded software, real-time operating systems – our expertise covers every stage of the design process, from specification up to industrialisation and manufacturing.

Everything off the shelf.

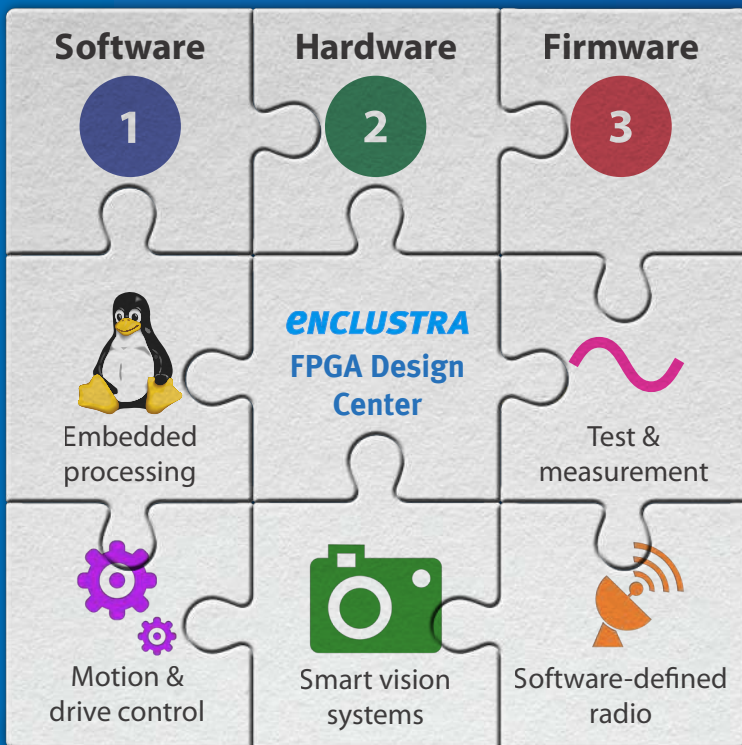
FPGA SOLUTION CENTER

We develop and sell our own FPGA and system-on-chip modules, based on Xilinx and Altera devices, for our customers to integrate into their own systems.

16 different modules, in 2 different families, compatible with 3 different base boards – the diversity of our products allows the customer to select exactly the features and they need, down to a fine grain.

We're vendor-independent, and we're design service partners of Xilinx®, Altera® and Lattice Semiconductor – this close communication allows us to be forward-looking in our design process, and remain on the cutting edge of the most advanced FPGA technology.





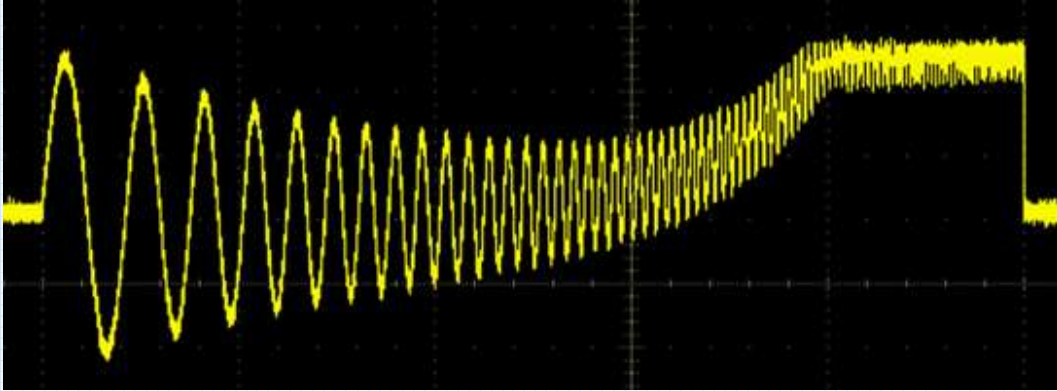
FPGA DESIGN CENTER

Our expertise spans a wide range of application areas; as well as HDL firmware, embedded software, real-time operating systems and hardware design, we also have a vast amount of experience in embedded processing, motion & drive control, smart vision systems, software defined radio, and test & measurement. Combined with our knowledge of production and industrialization, this allows us to take on complex design projects from the drawing board all the way to the finished article.

FPGA DESIGN CENTER

Example project #1

Signal Generator Afterburner



Abstract For a measurement device producer, we developed an extremely flexible signal generator during a previous project. After seeing the power and possibilities offered by FPGA technology, the customer came to us with further ideas to make the generator even more adaptable.

The features to be added to the existing system are best described by complex cyclical signal repetition and measurement of the wobble frequency of the generated signals.

Thanks to the modular VHDL code and the already existing unit and top-level regression tests, it was fairly simple to integrate the additional functionality and deliver a reliable system with stunning new features.

Employed Technologies Altera® Cyclone® III | DDR SDRAM | SRAM | VHDL

Involved Enclustra Services FPGA System Design | FPGA HDL

FPGA DESIGN CENTER

Example project #2

Five Cameras with One FPGA



Abstract The task was to develop a video frame buffer which simultaneously acquires pictures from five MIPI CSI-2 cameras and stores them in the memory of an ARM Cortex-A9 Processor.

Enclustra's Mars ZX3 SoC module featuring a Xilinx Zynq-7000 SoC device with attached DDR3 SDRAM has been selected for building a prototype system. The transfer of the acquired images into the DDR3 memory is handled by the Xilinx Video Direct Memory Access (VDMA) core, which has been properly configured and integrated into the programmable logic (PL) design.

The acquired images are then processed by a Linux application, which runs on both ARM processor cores using a symmetric multiprocessor (SMP) configuration.

Employed Technologies Xilinx® Zynq®-7000 | ARM® Cortex™-A9 | DDR3 SDRAM | MIPI CSI-2 | VHDL | Linux | C

Involved Enclustra Services FPGA System Design | FPGA HDL | Embedded Software

Involved Enclustra Products Mars ZX3

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Example project #3

The FPGA is the PHY



Abstract We recently developed an FPGA-based 10/100/1000BASE-FX Ethernet PHY for one of our customers, as part of a fibre optic Ethernet link.

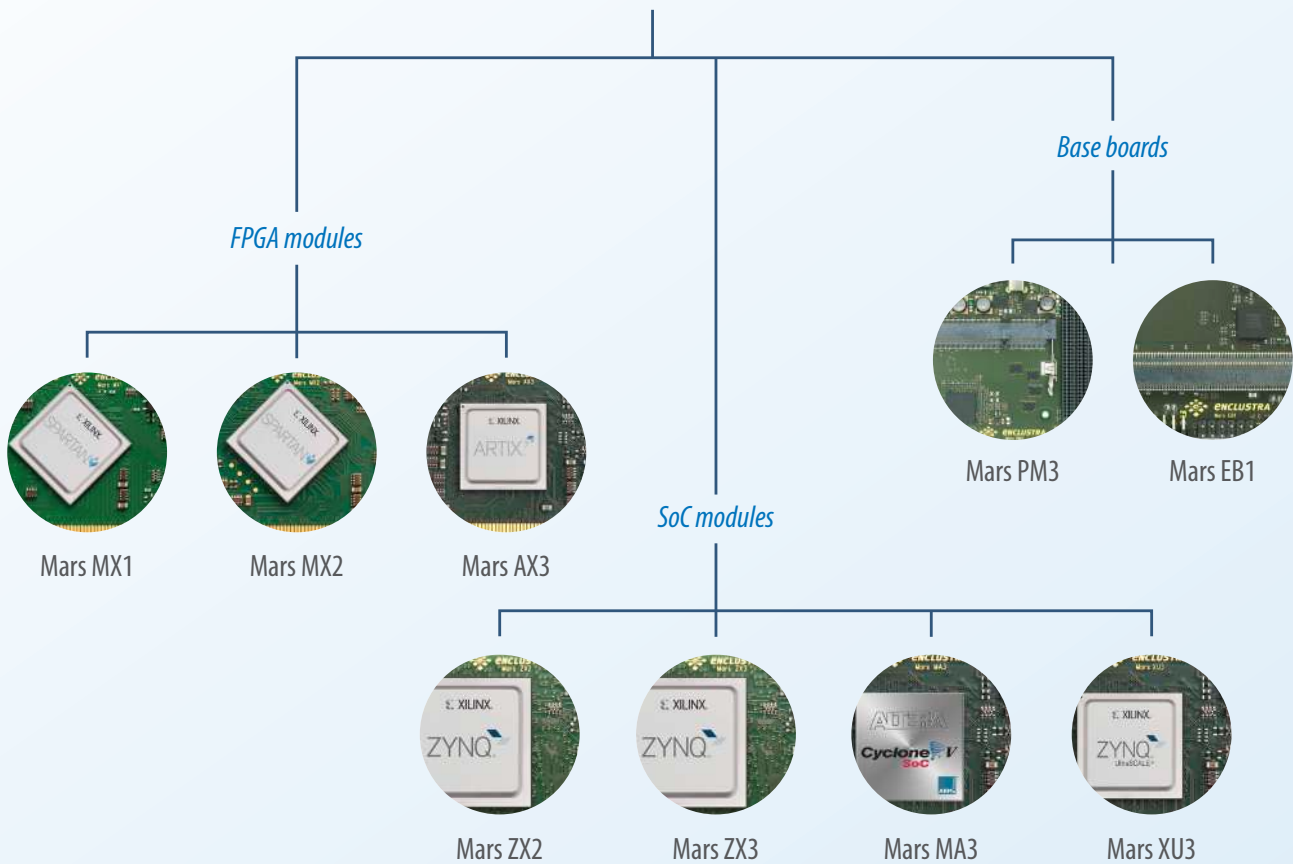
Implementing this in FPGA meant that both the financial and physical space costs of an extra, external PHY chip could be avoided, saving valuable space on the system PCB.

The PHY supports 10, 100 and 1000 Mbit/s connections including auto-negotiation, and is directly interfaced to an SFP transceiver.

Employed Technologies Xilinx Zynq-7000 | VHDL | Ethernet | SFP

Involved Enclustra Services FPGA System Design | FPGA HDL

THE MARS MODULE FAMILY



The Mars family of FPGA modules, system-on-chip (SoC) modules and base boards is optimized for digital signal processing and high-speed communications.

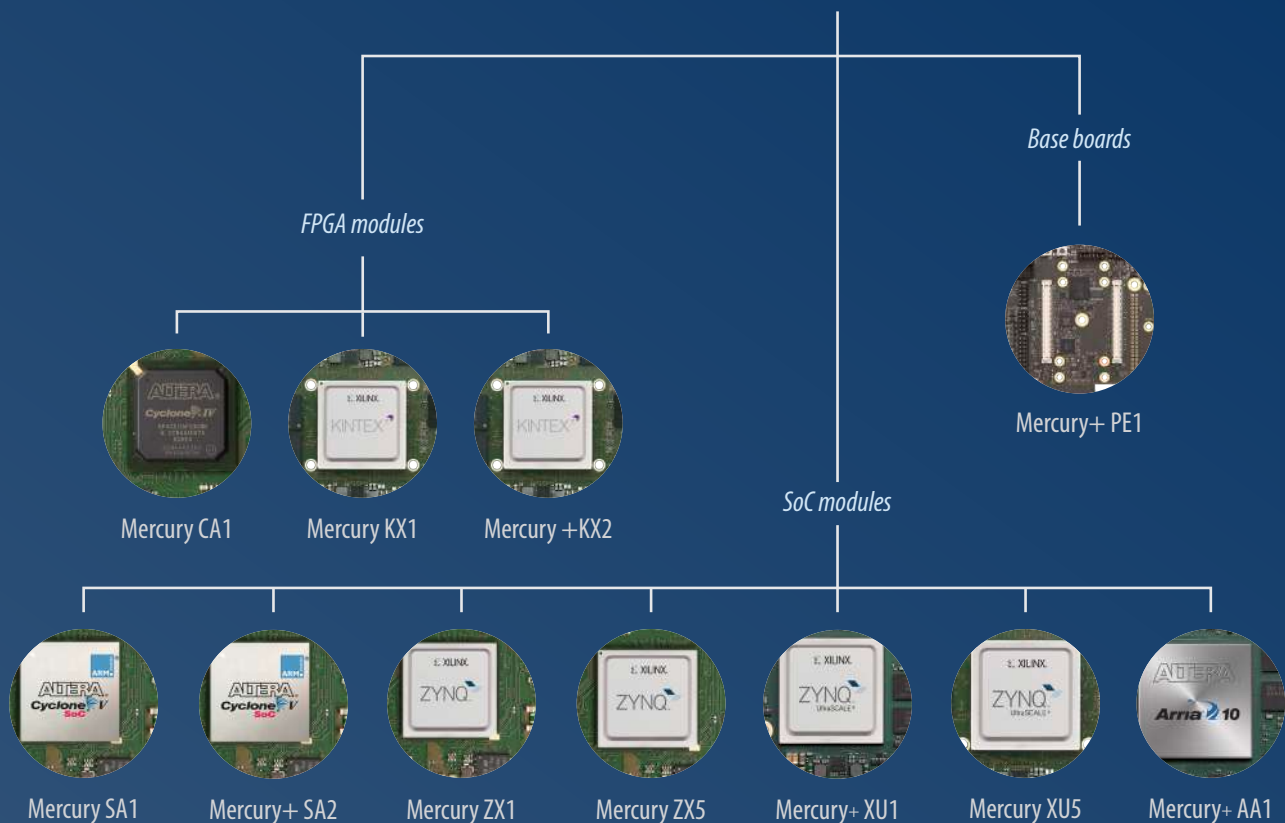
The modules offer powerful, low-cost FPGAs, high-capacity, high-bandwidth memory, and versatile user I/Os with on-board standard interfaces – using the compact, industry-standard SO-DIMM form factor (67.6 x 30 mm). With an expected availability of at least 10 years, our modules represent reliability in addition to performance.

For each module, a variety of standard configurations is available, offering different combinations of FPGA logic density, temperature grade and package, as well as different DDR memory, flash memory, and interfacing options.

We can also produce custom modules when a customer requires a more specialised configuration.

All modules are compatible with the Mars base boards, which allow you to get a complete system up and running within minutes.

THE MERCURY MODULE FAMILY



The FPGA and SoC modules in the Mercury family are optimized for digital signal processing, rapid prototyping and high-bandwidth I/O. The modules feature powerful FPGAs/SoCs – both Xilinx® and Altera® platforms are supported – as well as large memory with high bandwidth, LVDS I/Os, and Gigabit Ethernet and USB 2.0/3.0 high-speed interfaces. Up to 3 Hirose 168-pin connectors allow for a large number of I/Os and maximum flexibility.

As with the Mars family, all Mercury modules are compatible with the Mercury family base boards, to allow the quickest possible system setup, and have an expected availability of at least 10 years, giving long-term dependability.

The Mercury PE1 PCIe® card base board is as well-suited to prototype development as it is to being an end-format for serial production, and with user I/Os available over USB, mPCIe, mSATA, FMC, Anios und Pmod™ connectors mean that it's compatible with literally thousands of peripheral devices. The Mercury Starter base board rounds out the collection



UDP/IP Ethernet

Communicate with other subsystems via Ethernet, using the UDP protocol, at 10Mbit, 100 Mbit and full 1 Gbit/sec wire speed.



Display Controller 2D

Supports display resolutions up to 3840 × 2160 pixels, with interfaces to HDMI, DVI, LVDS or LVCMOS displays .

IP CORES

Our FPGA-optimised IP cores enable quick, easy addition of desired functionality to any FPGA design, with minimal resource usage and minimal design cost.



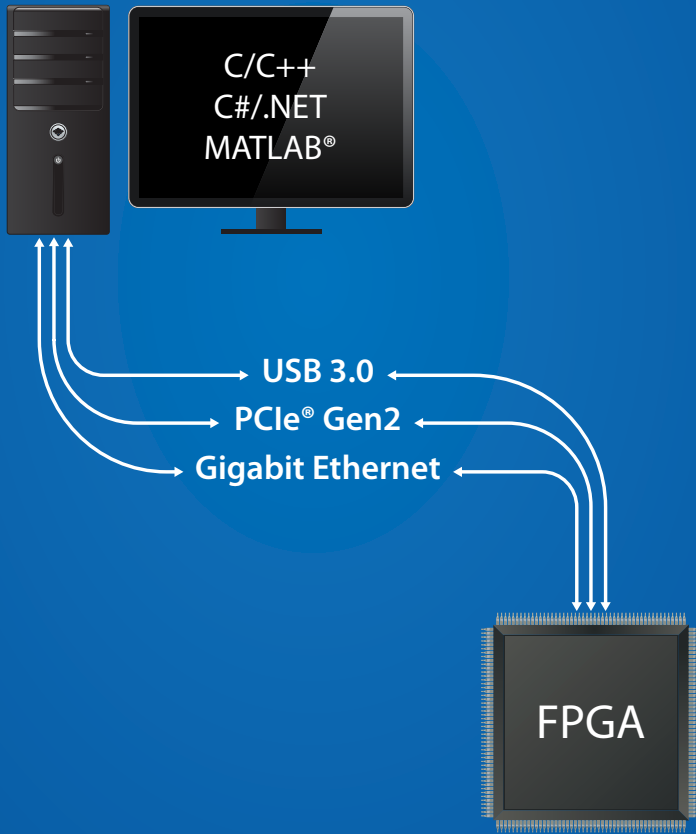
Universal Drive Controller

Control up to 8 DC, BLDC, 2- and 3-phase stepper motors – without a separate drive controller chip.



Stream Buffer Controller

Efficiently transfers up to 16 data streams to and from external SDRAM memory.



FPGA Manager.

Streaming,
made simple.

One tool for all FPGA communications.

Transparently stream up to 16 data streams between FPGA and host, without needing to know the underlying protocols. PCIe Gen2, USB 2.0, USB 3.0, and 10/100/1000 Mbps Ethernet links, with Xilinx® or Altera® FPGAs – all with one single API. Also supported are FPGA-in-the-loop applications, and memory-mapped access.



📍 **Enclustra GmbH**
Räffelstrasse 28
CH-8045 Zurich
Switzerland

☎ +41 (0)43 343 39 43
✉ info@enclustra.com

www.enclustra.com