



SXVPU unveiled - A Deep Dive into Smart Vision

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+ solectrix GmbH

- + founded in 2005 as a R&D company for embedded systems

+ solectrix systems GmbH

- + founded in 2008 as a production and sales company

+ Holding contains of multiple companies

- + R&D: Solectrix GmbH (Fuerth, Germany)
- + Production & Sales: Solectrix Systems GmbH (Fuerth, Germany)
- + EMS Manufacturing: ASSDEV (Forchheim, Germany)
- + Hardware Development: AST-X (Forchheim, Germany)
- + ~250 employees in Q2 2025



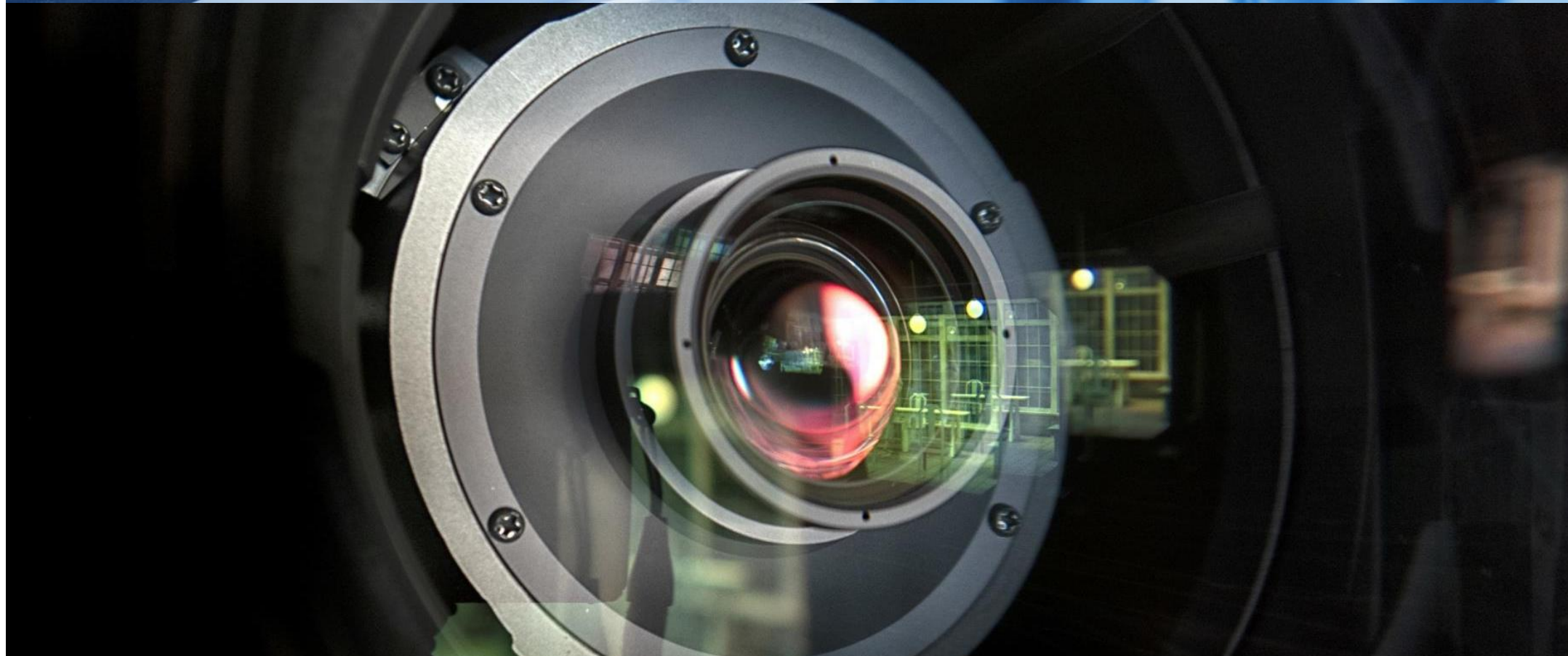
Medical Devices



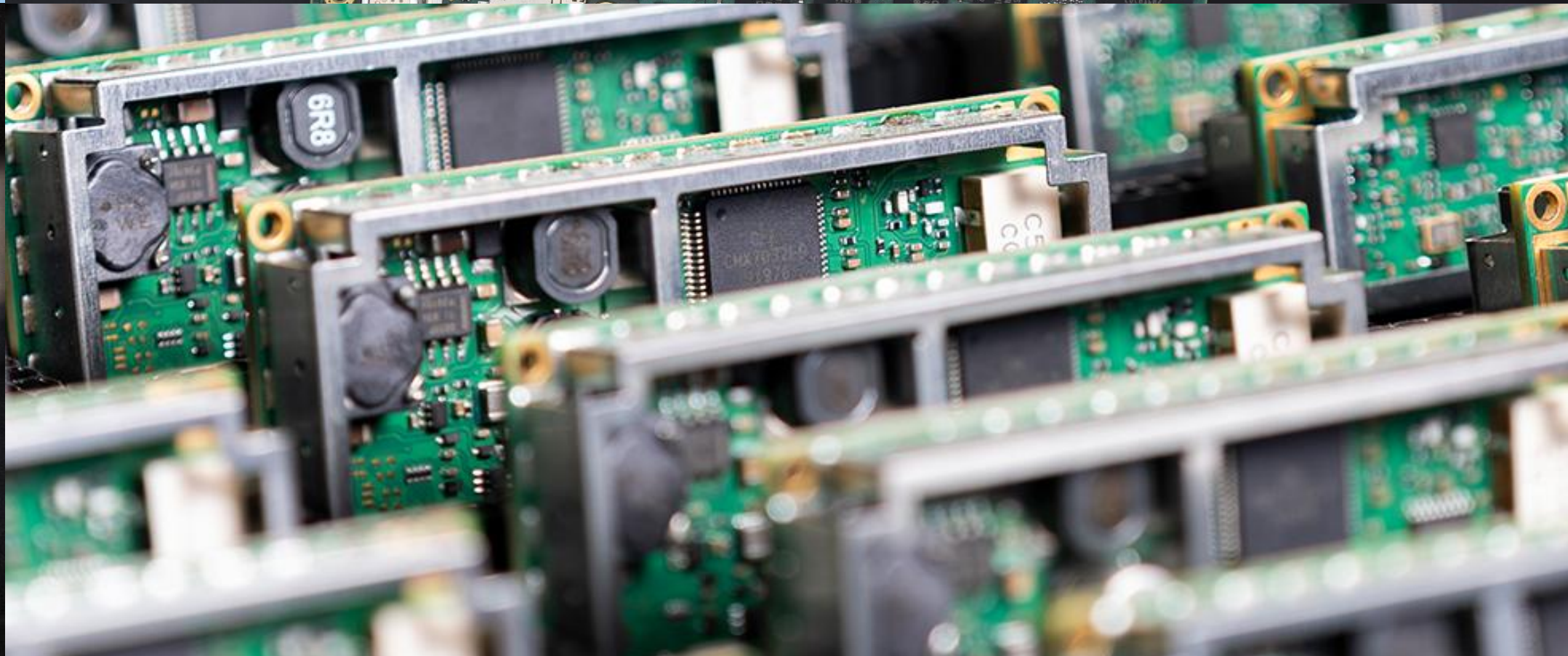
Advanced Electronics



Embedded Vision

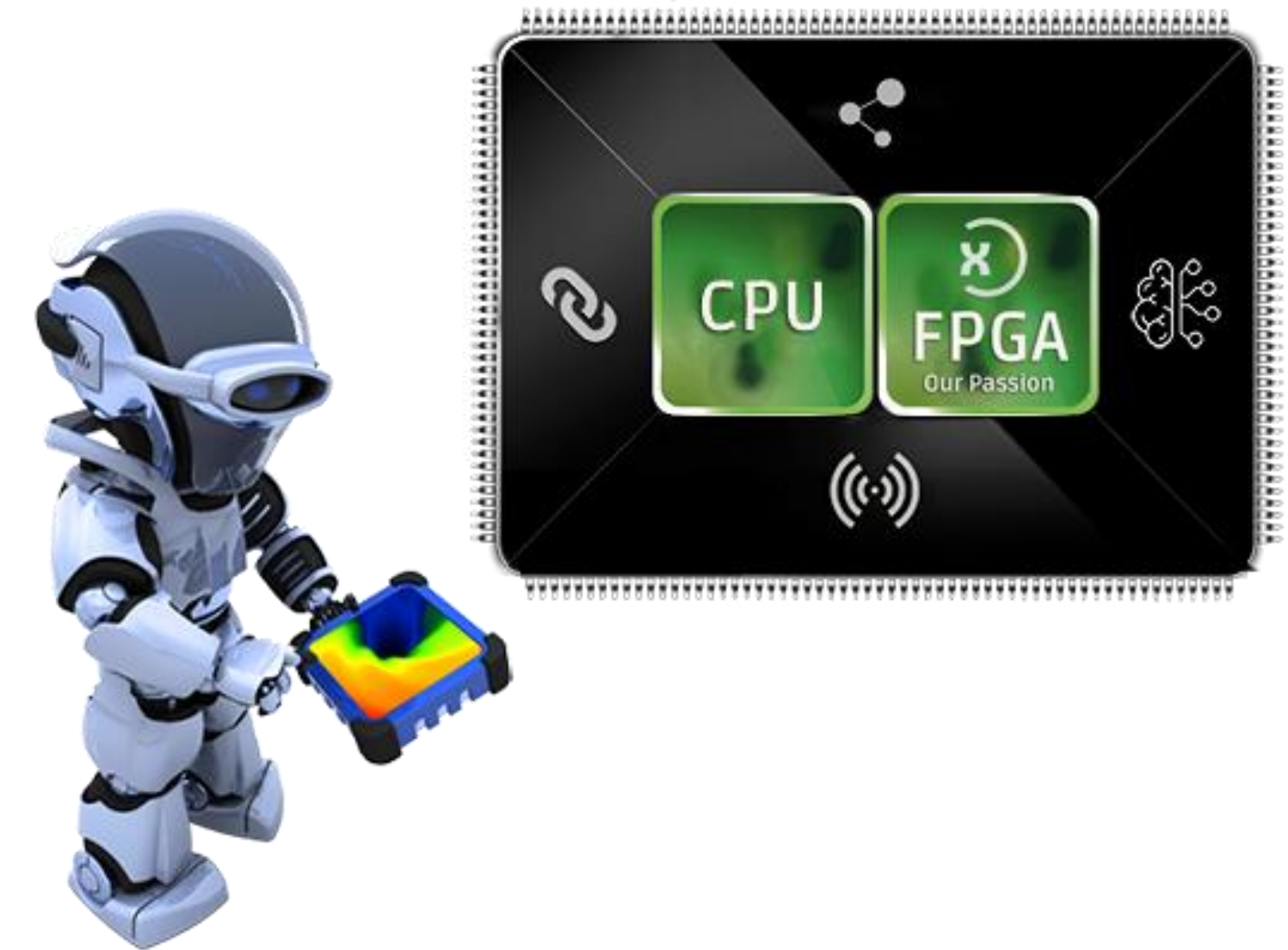


Manufacturing Services



Solectrix in a Nutshell

- + Highly experienced, technology-driven design house for embedded systems
- + Reliable, flexible and customer-orientated team of qualified engineers (FPGA, SW, HW)
- + Approved design and verification flows for high quality standards
- + Specialized in high-end electronics in harsh environments
- + Strong focus on camera systems and mobile technologies



Challenges

- + Edge-AI performance
- + Functional safety

Edge-AI performance

+ Challenge:

- + Implement resource hungry AI applications from prototype to target platform
- + Reach low latency on the whole data path
- + Bottleneck of AI accelerator performance is sufficient and flexible post processing capabilities
- + Hard real time requirements for camera stream
- + Power consumption

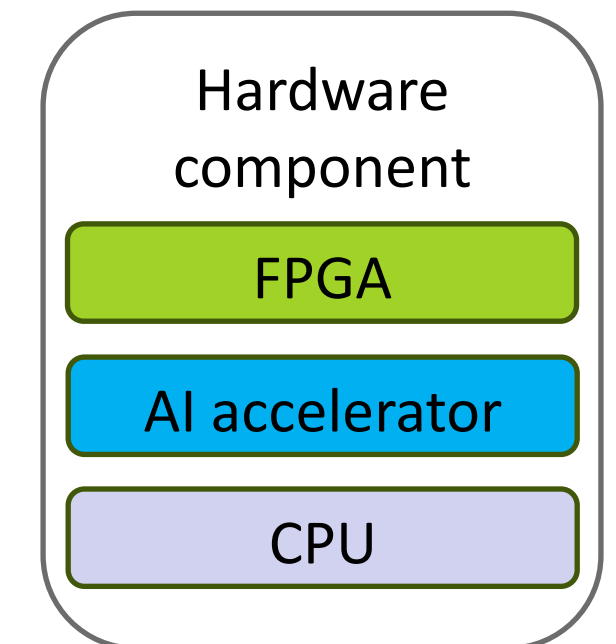
+ Approach:

- + Combine AI accelerator and FPGA technology

Compare architectures

+ Current platforms:

- + Low performance because post processing is often done on the CPU
- + Less flexible AI applications because post processing can hardly be adjusted



+ New approach:

- + High performance because post processing is done on the FPGA
- + More possibilities for AI applications because the FPGA can be adjusted even on runtime



Functional Safety

+ Challenge:

- + Safety goals for vision-based systems require a very good understanding of the image pipeline
- + No delayed or frozen image, guarantee to show the reality
- + Market provides “magic” SoCs with promising features, but are lacking detailed information and flexibility to the customer needs
- + How to declare AI applications as safe?

+ Approach:

- + Design a system with full control of your components
- + Learn from the automotive industry



The graphic features a dark green background with a network of glowing green lines and dots. In the upper right, the **solectrix** logo is displayed with the tagline "high end electronics solutions". To the left, the text "SXVPU" is written in large, bold, white letters, with a green semi-circle underlining the "U". Below this, the text "Smart eXtensible Vision Processing Unit" is written in a smaller white font. On the right side, a detailed illustration of a microprocessor chip with numerous gold pins is shown. At the bottom, a horizontal row of seven white line-art icons represents various industrial vehicles: a forklift, a crane truck, a dump truck, a construction site with cranes, an excavator, a flatbed truck, and a dump truck.

SXVPU
Smart eXtensible
Vision Processing Unit

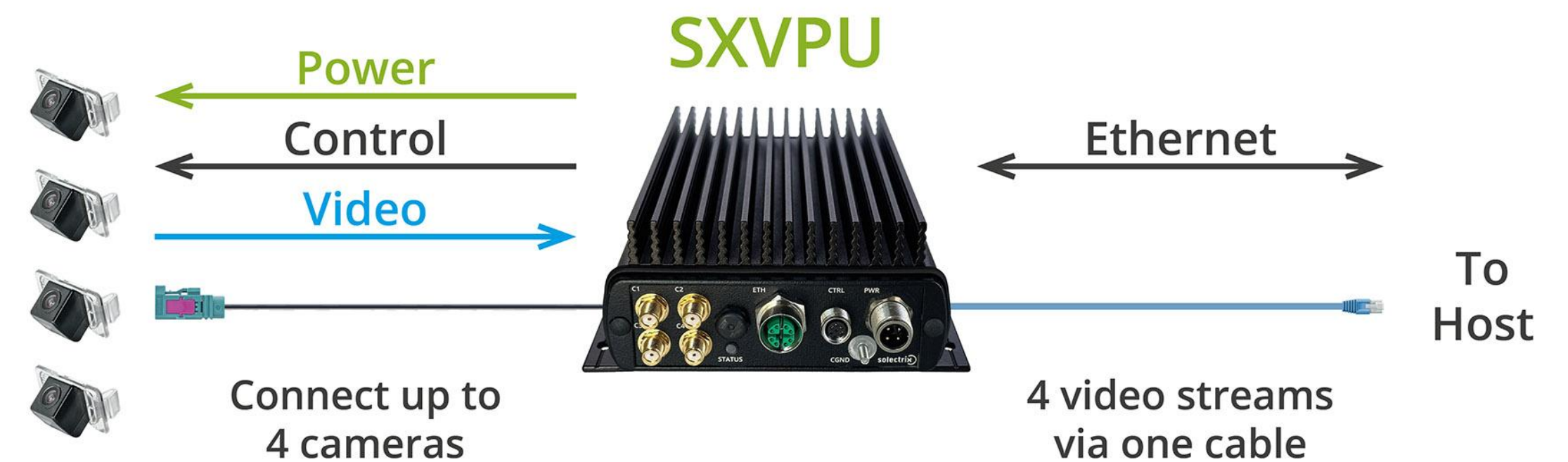
solectrix
high end electronics solutions

Details:

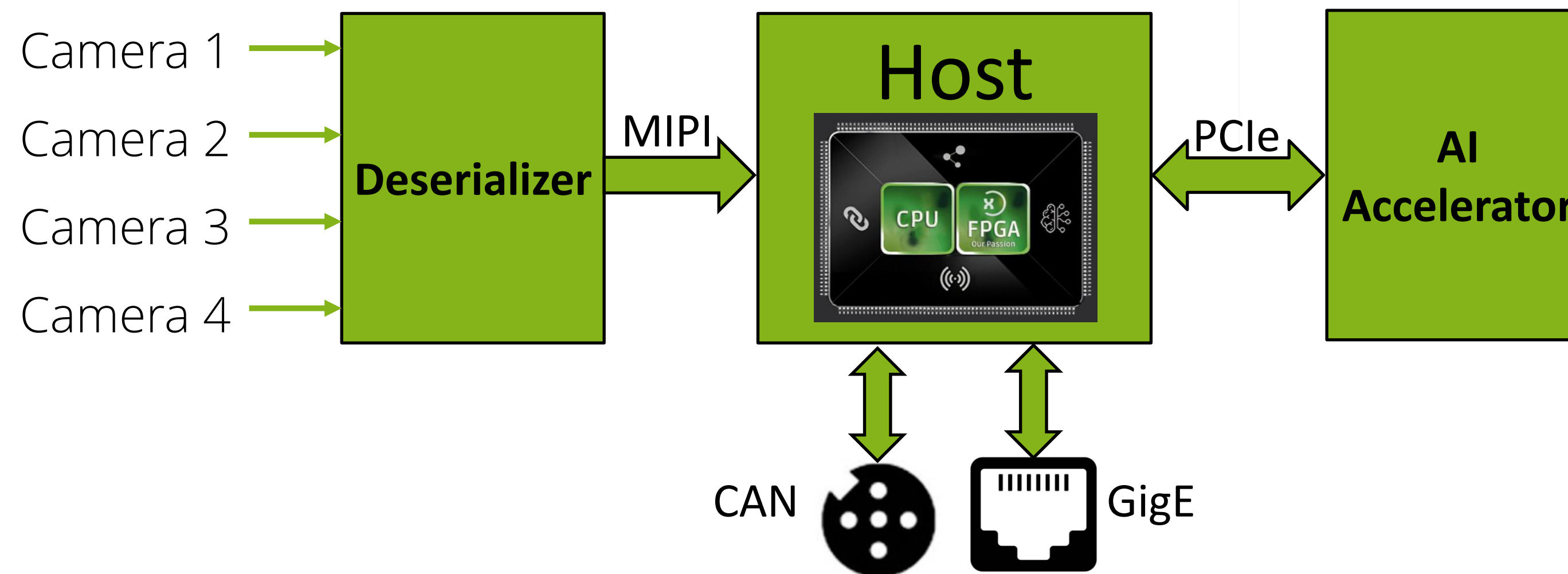
- + High performance image streaming platform
- + Up to 4 camera streams
- + AI accelerator

Features:

- + Low latency < 1 frame (glass to network)
- + Scalability with seamless neural network integration (**about 26 TOPS**)
- + H.264/H.265 codec up to 4K video streaming via Ethernet
- + Robust **IP65/67**
- + Functional Safety ready
- + Customer adaptable soft- and hardware



SXVPU Block Diagram



+ 1-Step Product Solution

- + Replace the sample neural network with your specific neural network for the target application

+ Benefits of the SXVPU

- + Faster time to market without development risks
- + Solectrix is the trusted partner in the industry for state-of-the-art embedded vision solutions.

Demo

- + 4 cameras with 30fps >FullHD (1920x1536)
- + One YOLOv8 network per stream
- + Glass-to-net latency ~60ms

What is your solution
for the upcoming
challenges?



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