

GigE FPGA Core

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Sensor to Image GmbH

Founded in 1989 as specialist for machine vision components, especially for custom specific imaging solutions

- Framegrabber
- Linescan cameras
- Smart cameras
- FPGA technology
 - FPGA based image processing
 - FPGA IP Cores (e.g. GigE Core)

Services

- customized variants of our standard products, but also complete new developments
- hard- und software development for smart components with operating system and networking connectivity
- design training and coaching

Slides

The slides of this presentation are available
online:

www.sensor-to-image.de

www.vdma.org/vision

Designing a GigE Device

- in house development
- integrate GigE components, e.g. communication modules

- new: integrate FPGA IP Core

In House Development

- + no cost for third parties
- + no dependencies on other companies
- + full flexibility

- time
- development cost

Integrate Third Party GigE Components

- + proven functionality
- + time
- + reduces development cost

- limited flexibility
- cost for components
- dependency on other company

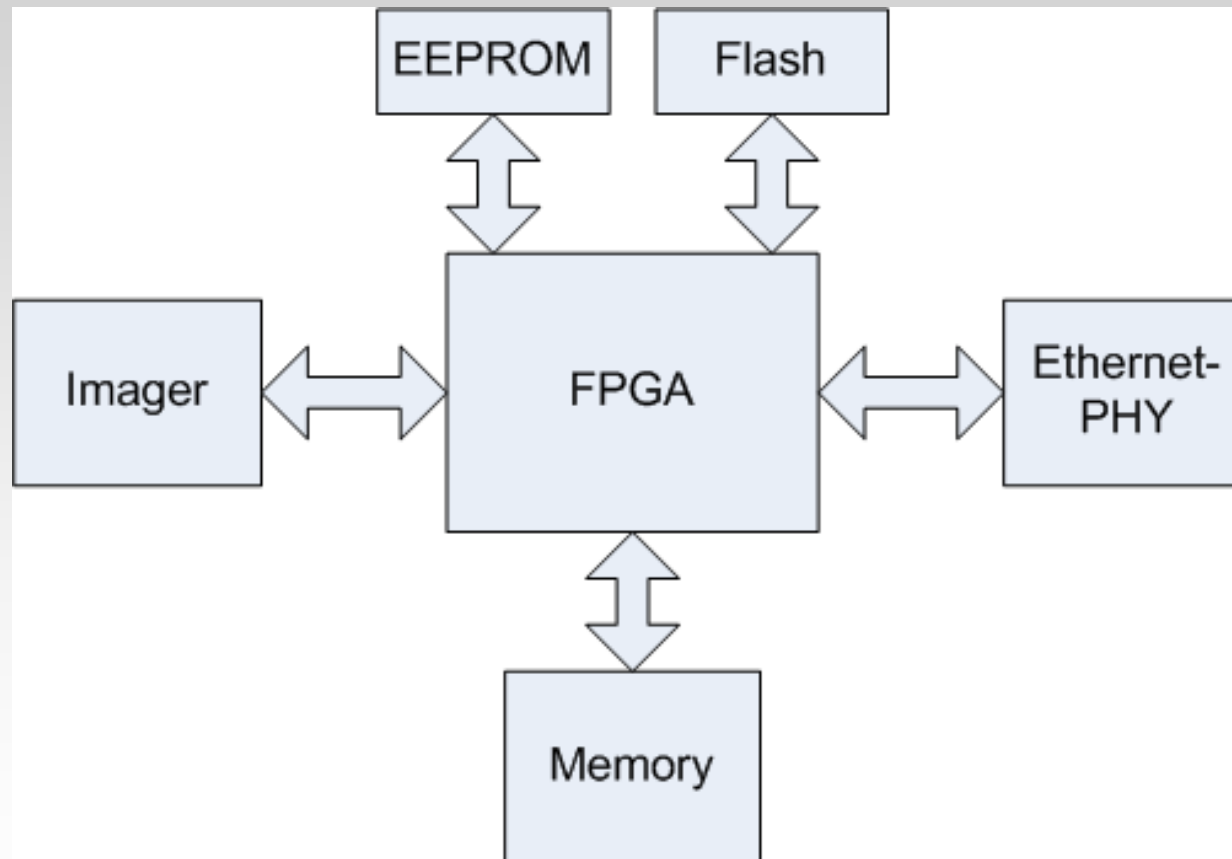
Integrate GigE FPGA IP Core

- + proven functionality
- + time
- + reduces development cost
- + full flexibility
- + low dependency on other company

- FPGA knowledge needed
- cost for core

Device Design - Hardware

(Example camera)



Review: GigE Vision

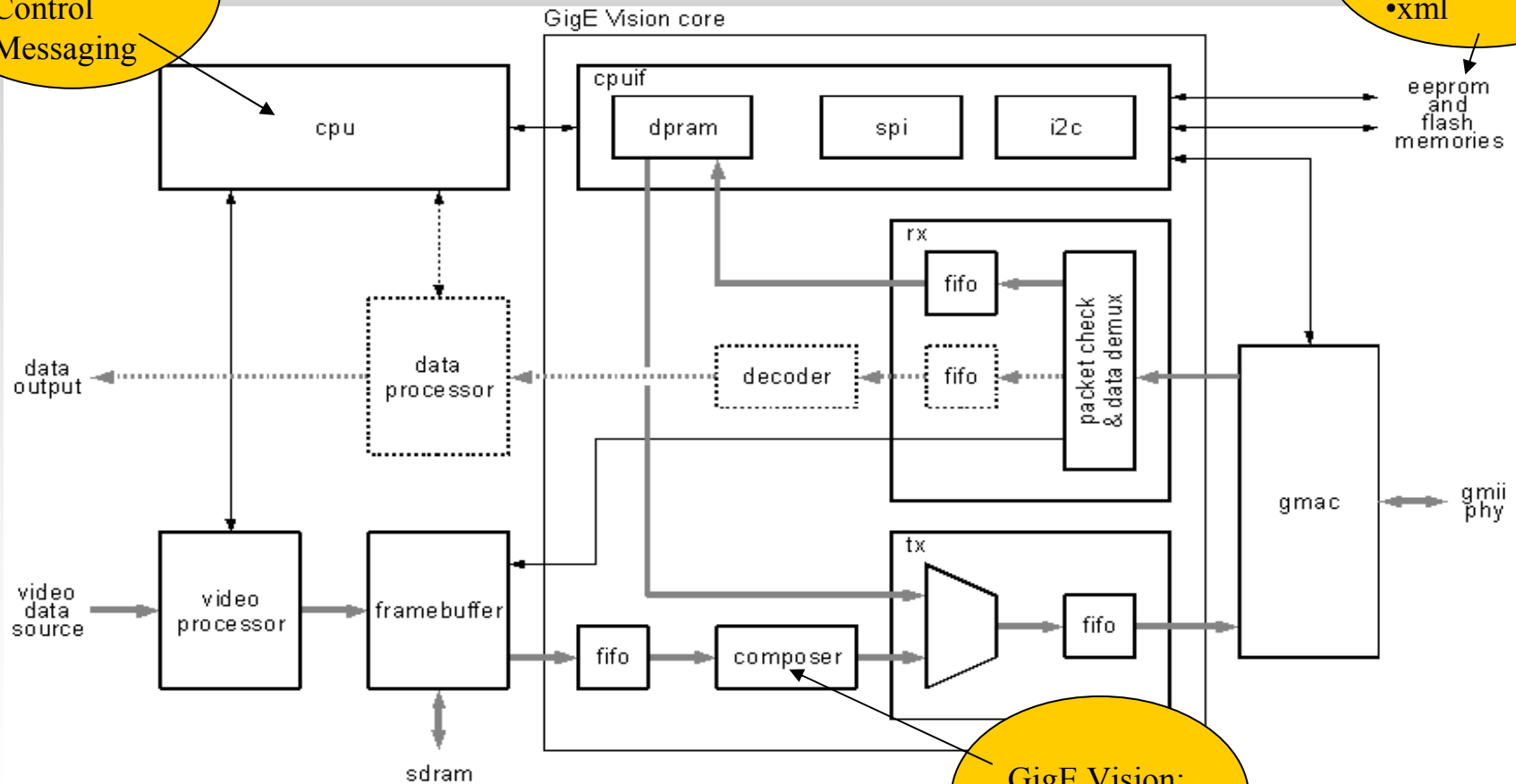
- Discovery
- Control Protocol
 - Register based access
- Messaging Protocol
- Streaming Protocol
 - Packet Resend
- xml-File

Device Design - FPGA

(Example camera)

GigE Vision:
•Discovery
•Control
•Messaging

GigE Vision:
•configuration
•xml



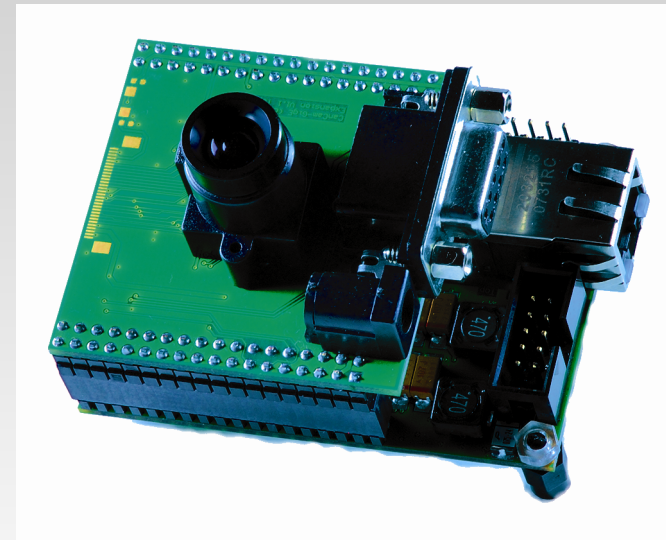
GigE Vision:
•Streaming

Evaluation

Evaluation – Kit:

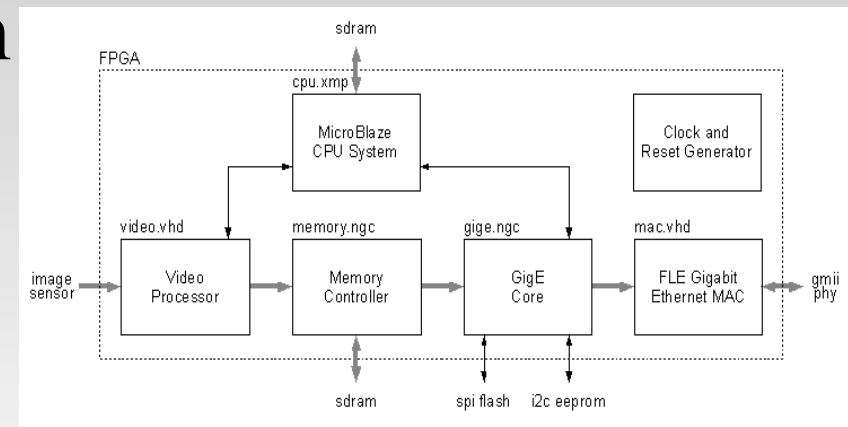
- Reference Hardware
 - Spartan3E based communication-module
 - camera module
- Reference FPGA Design
- Software
 - Stemmer Imaging's „Image Manager“
Part of CVB and contains GenICam
transport layer for GigE Vision

Ref. Design for receiver available too



FPGA Reference Design

- VHDL top-level design
- VHDL video module
- Memory Controller
- GigE Core
- MAC Core
- EDK MicroBlaze design
- Application software for MicroBlaze in „C“



Demo

FPGA Design Environment/Resources

www.sensor-to-image.de



Summary

- Several possibilities to design MV GigE devices
 - each with advantages and disadvantages
 - new: FPGA core based approach
- GigE Core gives maximum of flexibility without the need to reinvent the wheel

smart components
for
smart solutions

www.sensor-to-image.de

