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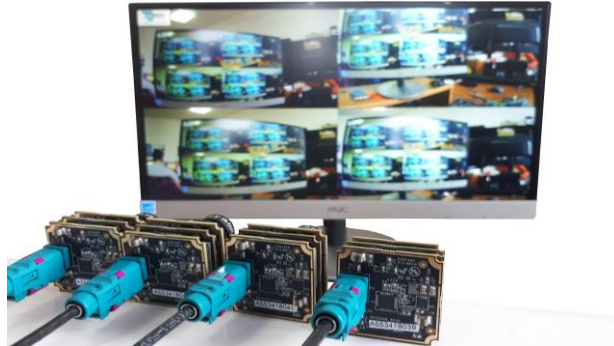


Figure 1: The Framework Provides Complete Multi-Camera-to-Display MPSoC Designs

Features

- Complete video design framework for embedded multi-camera vision applications
- Enables vision developers to quickly add their own algorithms to the provided infrastructure
- Jump-starts the development and saves valuable design time
- The reference design demonstrates video capture and display of four (4) video camera inputs
- Works with the next generation Maxim Integrated GMSL2 high-speed interface
- The design is fully compatible with Xylon's logiVID-ACAP Vision Development Kit prepared for use with Xilinx[®] Versal[™] VCK190 Evaluation Kit
- ACAP designs are prepared for Xilinx Vivado[®] Design Suite 2019.2
- Runs on Linux OS and includes logicBRICKS software drivers and demo applications
- Compatible with Xilinx PetaLinux tools
- Uses minimal resources (Table 1) and leaves room for very complex vision functions
- Includes licensed² Xylon logicBRICKS IP cores
- Input video resolution: 1928x1208@30
- Output video resolution: 1920x1080@60
- Full evaluation version available online
- Documentation and Tech support (e-mail)

Table 1: Reference Design Implementation Statistics

	Available in XCV1902-VSVA2197-1	Used Resources for FOUR-CAM
Look-Up Tables (LUTs)	899,840	~ 8.3%
Flip Flops (FFs)	1,799,680	~ 4.7%
Block RAM (36 kB BRAM)	967	~ 13.8%
DSP slices (MULT/DSP)	1,968	~ 1.3%

¹ The HDMI video input requires the Avnet HDMI Input/Output FMC module; part number AES-FMC-HDMI-CAM-G.

² Included 1-year Xylon Low-Volume IP Program (LVIP) seat licenses for used Xylon logicBRICKS IP cores.

Applications

- AD/ADAS, guided robotics, drones, machine vision, AR/VR and other vision applications

General Description

The logiREF-VDF-ACAP Video Design Framework enables Xylon logiVID-ACAP Vision Development Kit users to quickly utilize the provided hardware platform for the development of Xilinx' Versal Adaptive Compute Acceleration Platform (ACAP) based embedded multi-camera vision systems. The framework includes pre-verified logicBRICKS reference design for video capture from four Xylon video cameras and the display output under Linux OS.

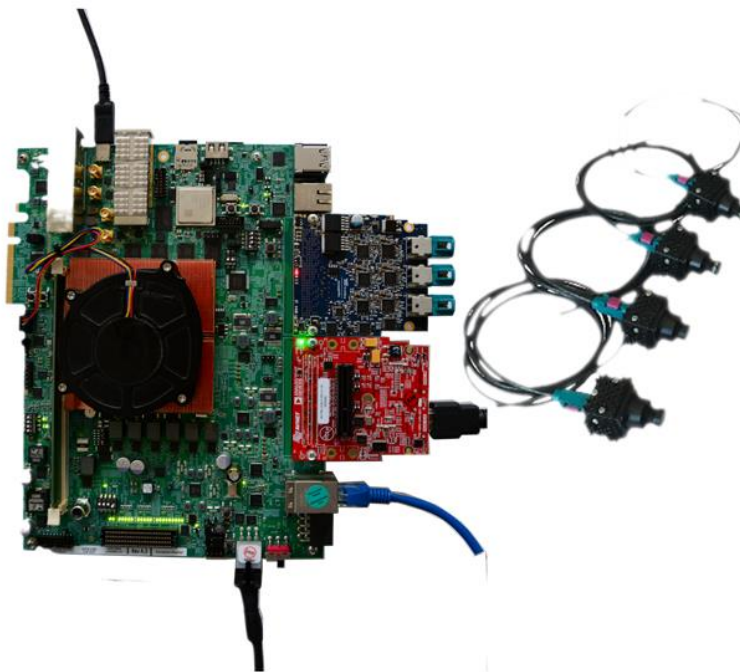


Figure 2: Xilinx VCK190 Evaluation Board with Xylon's logiVID-ACAP Kit* Attached



Xilinx Versal AI Core Series VCK190 Evaluation Kit must be purchased from Xilinx and distributors. logiVID-ACAP hardware components can be purchased directly from Xylon.

**Xylon delivers video cameras without heat sinks visible on the photo*

The complete camera-to-display ACAP design, which is prepared for Xilinx' Vivado Design Suite, uses just a fraction of available programmable logic (

Table 1) and significantly saves design time. Instead of starting from scratch and having to spend months designing and building a new design framework, users of the logiREF-VDF-ACAP design framework can immediately focus on specific vision-based parts of their next ACAP design. The logiVID-ACAP hardware platform can be installed on test vehicles (cars, robots...) and used in exhaustive tests, e.g. for testing and validation of new AD/ADAS developments in the test vehicle and in different road conditions.

This design implements four parallel video inputs from Xylon video cameras and the display output with RGB overlay. All video inputs are stored in the video memory, and by mean of on-board push buttons, the user can select each of them for the single camera or all cameras full screen display output.

All logicBRICKS IP cores are supplied with bare-metal and appropriate Linux software drivers. The provided video capture and display demo applications run in Linux OS.

To download the evaluation version of the logiREF-VDF-ACAP Video Design Framework or to purchase it, please visit our online catalog: <http://www.logicbricks.com/Products/logiREF-VDF-ACAP.aspx>.

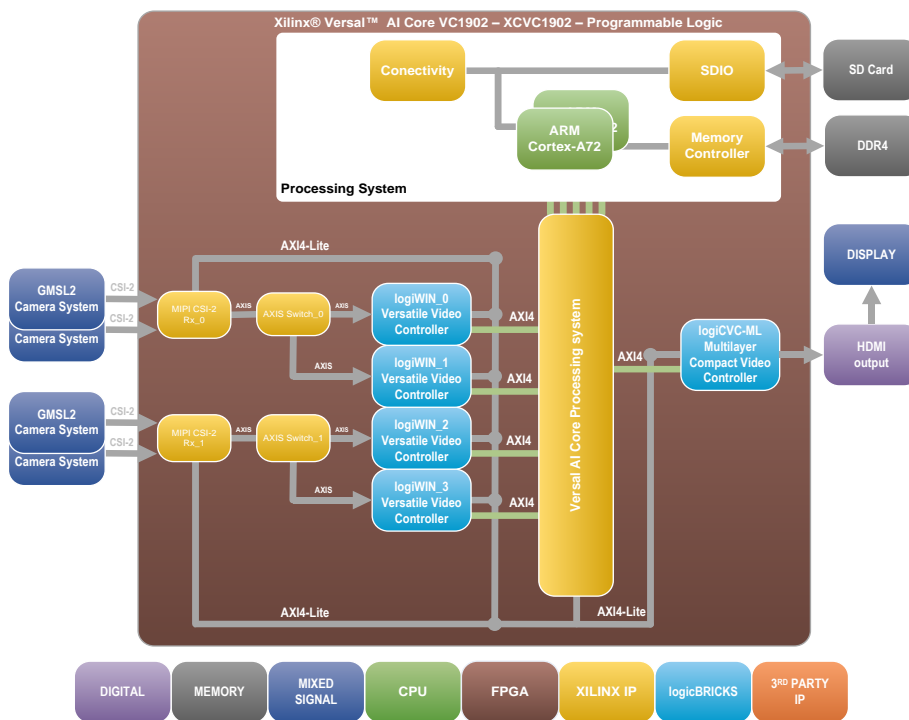


Figure 3: FOUR CAM SoC Design

Framework Content

Hardware Design Files

- Configuration bitstream file for programmable logic and hardware export of design that allows for instant design check-up and software changes
- Reference design prepared for Xilinx Vivado Design Suite
- Xylon logicBRICKS IP cores:
 - logiCVC-ML Compact Multilayer Video Controller
 - logiWIN Versatile Video Input
 - logiI2C I2C Bus Master Controller
- Xilinx evaluation IP cores:
 - MIPI CSI-2
 - MIPI RX PHY

Software

- Linux application with usage examples
- Demo application sources

Binaries

- Linux binaries:
 - boot.bin
 - PLM (Platform loader and Manager)
 - Universal Boot Loader
 - FPGA bitstream
 - image.ub
 - kernel image
 - device tree blob and sources
 - minimal Root File System
 - Four Camera demo

Recommended Design Experience

Users wishing to make changes to the provided designs should have experience in the following areas:

- Xilinx design tools
- C programming
- Embedded hardware and software design

All logicBRICKS IP cores provided with the design framework are fully compatible with Xilinx' implementation tools and their use does not require any particular skills beyond general Xilinx tools knowledge.

Related Xylon Products

The logiVID-ACAP Vision Development Kit provides system designers with tools necessary for efficient development of multi-camera vision applications on Xilinx Versal ACAP devices. The kit includes four GMSL2 Xylon 2.3MP automotive video cameras, a 12-Ch GMSL2 video input FMC card, and the Avnet HDMI video input/output FMC card and cabling. The logiVID-ACAP kit can be attached to Xilinx' VCK190 Evaluation Kit and immediately run the logiREF-VDF-ACAP Video Design Framework. To learn more about this product, please contact Xylon or visit our website:

Email: support@logicbricks.com

URL: <http://www.logicbricks.com/Products/logiVID-ACAP.aspx>

The logiADAK Automotive Driver Assistance kit is a great programmable platform for upcoming automotive ADAS/AD applications. The kit comes with a full set of user-customizable demo applications, advanced software for quick setup on any vehicle, documentation and skilled Xylon technical support. The provided hardware platform is appropriate for quick test vehicle installations and rapid engagements in proof-of-concept or demonstration projects:

Email: support@logicbricks.com

URL: <http://www.logicbricks.com/Products/logiADAK.aspx>

Ordering Information

The product is available directly from Xylon. Please visit our web shop or contact Xylon for pricing and additional information:

Email: sales@logicbricks.com

URL: <http://www.logicbricks.com/Products/logiADAK-VDF-ZU.aspx>

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Related Information

Xilinx Programmable Logic

For information on Xilinx programmable logic or development system software, contact your local Xilinx sales office, or:

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Revision History

Version	Date	Note
1.00	01.04.2020.	Initial public release.