struck innovative systeme

Special Release
Low Level RF Workshop 2022
9-13 Oct 2022, Brugg-Windisch, Switzerland
PSI
CERN

Board Level Electronics

Serving the Physics

Community since 1998

Research-Industry

Cooperation Example

Dr. Matthias Kirsch

A great opportunity to visit Hamburg during the time of „Christmas Markets"

11th MicroTCA Workshop
6 - 8 December, 2022
DESY, Hamburg

The workshop is planned as an in person event with the option of remote participation, our first hybrid workshop.

The **main topics** of the workshop are:

- Applications in research facilities
- Applications in industry
- New Products
- New Technologies
- Future of standard and interoperability
- Software and firmware
- Industry Exhibition – presentation of modules and systems from industry and research

DESY-Struck MTCA.4 LLRF Development as Research-Industry Cooperation Example

Development of the SIS8300 125 MSPS MTCA.4 Digitizer
in parallel to the final standardization steps

BMBF (ministry of research) supported with DESY as
research and Struck as industry partner

Initial focus LLRF of the European XFEL

First MTCA.4 Digitizer AMC → SIS8300 (2010, Virtex-5)
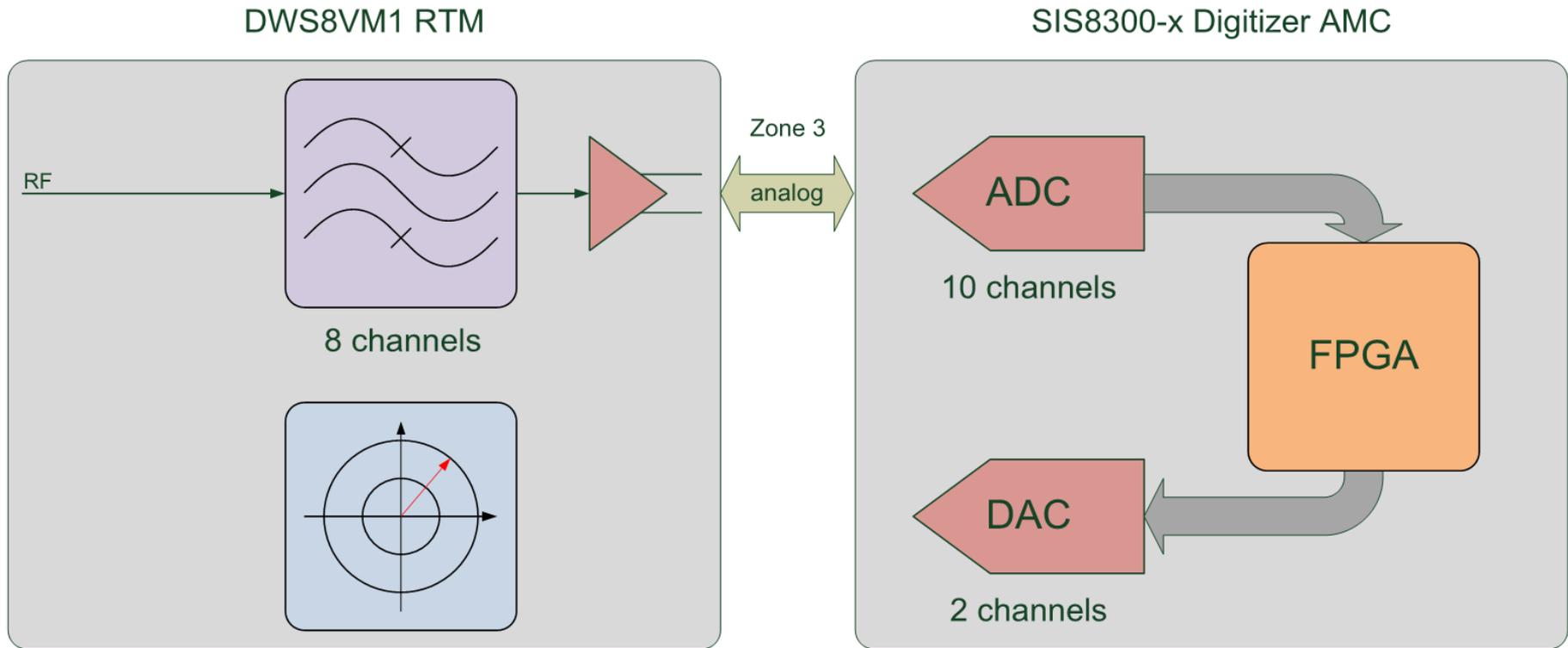First MTCA.4 Direct Sampling RTM → SIS8900 (2011)

125 MSPS Digitizer Evolution
SIS8300-V2 (2011, Virtex-5 > 340 boards in field)

SIS8300-L2 (2014, Virtex-6 > 1100 boards in field)

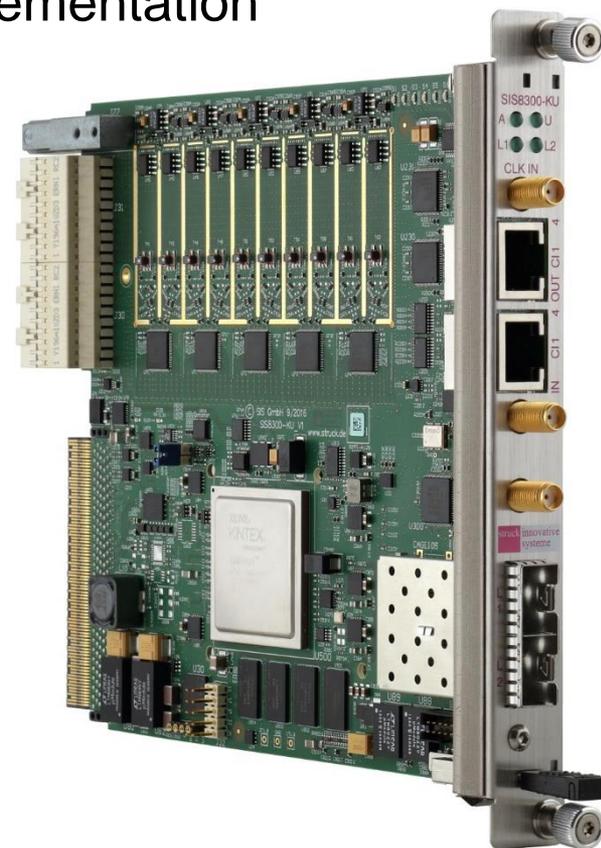SIS8300-KU (2016, Kintex Ultrascale > 400 boards in field)

SIS8300-x/DWC8VM1
as single cavity LLRF solution
covering 350 MHz to 6 GHz

Current combination: SIS8300-KU Kintex-Ultrascale Digitizer and DWC8VM1

SIS8300-KU Digitizer AMC

- 10 Channels 125 MS/s 16-bit or 250 MS/s 14-bit ADC
- Two 16-bit 250 MS/s DACs for Fast Feedback Implementation
- XCKU040-1FFVA1156C Kintex Ultrascale FPGA
- MMC1.0 under DESY license LV91
- Vivado Project for Custom Firmware Development

DWC8VM1
8 Channel Downconverter
One Channel Vectormodulator*

Model	f_{min} in MHz	f_{max} in MHz
DWC8VM1LF	350	500
DWC8VM1	500	3500
DWC8VM1HF	3500	6000
DWC8VM1 Overview Table		

*under license from DESY

System Integration Examples
(open standard platform, multiple vendors)

Questions/Discussion