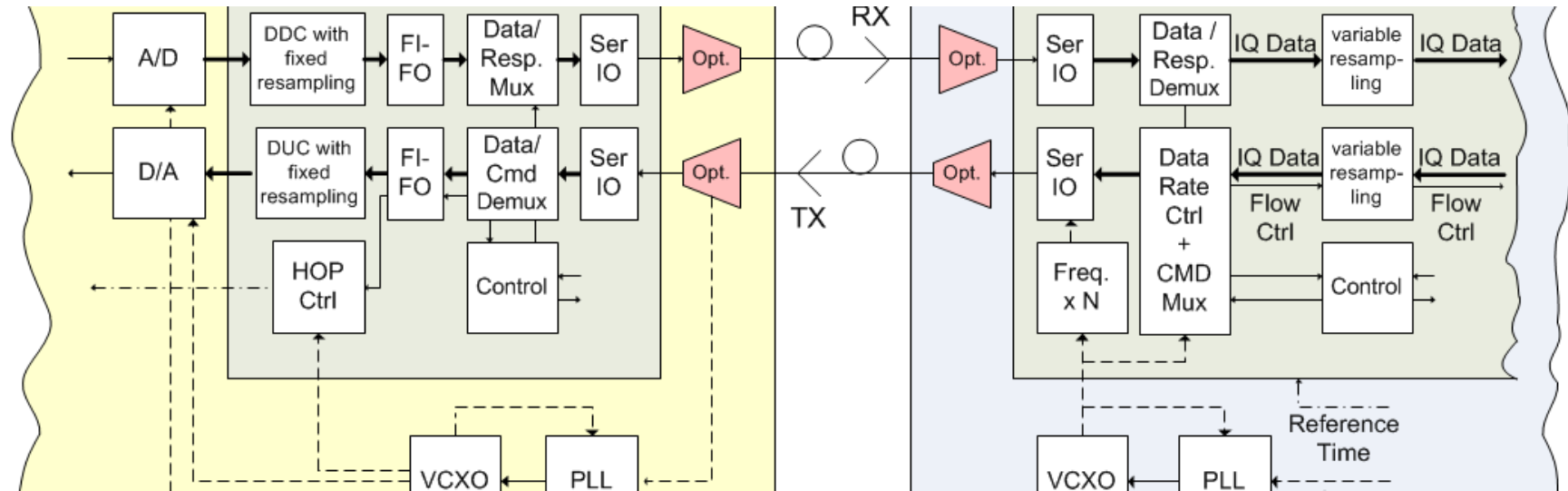


OBISS 2.0 – OPEN BASEBAND INTERFACE SPECIFICATION FOR SDR

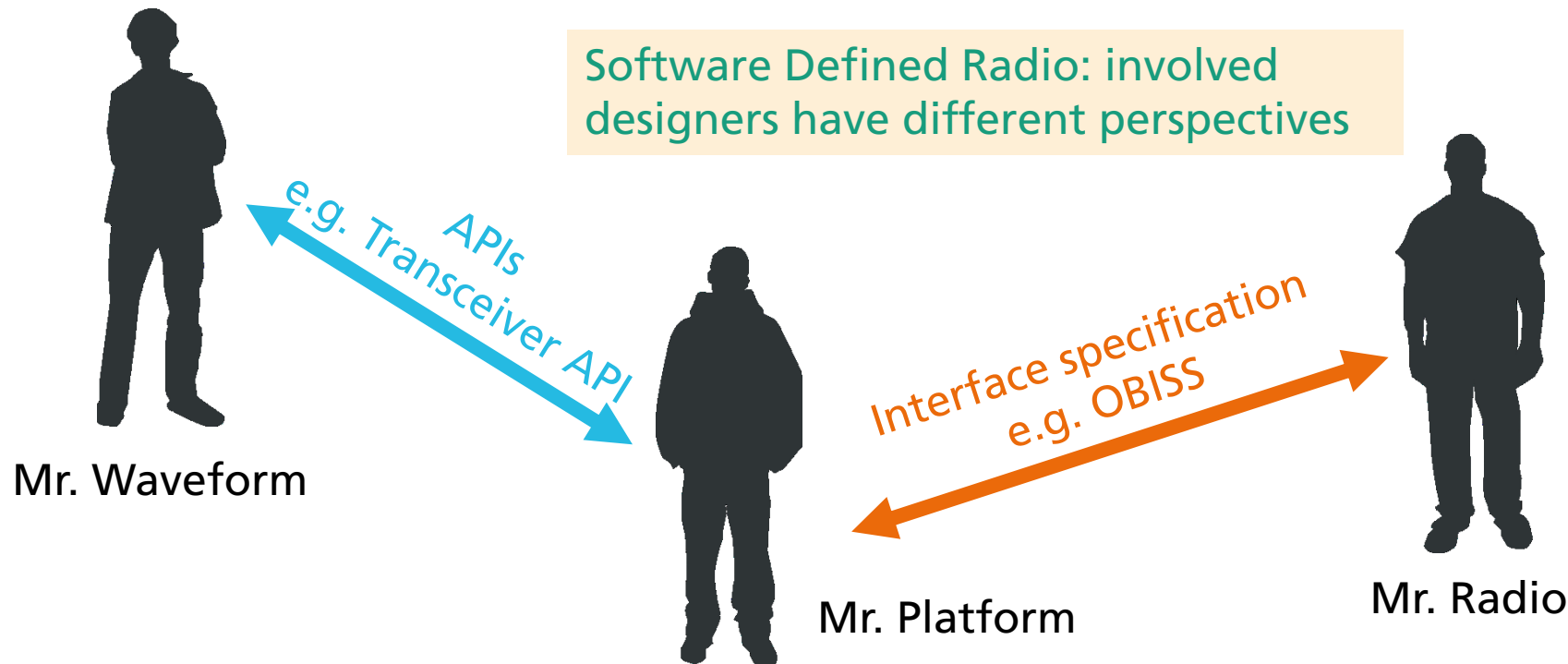
Gerald Ulbricht, Robert Koch, Gerd Kilian

WInnComm Europe 2015 in Erlangen, 8. October 2015



Motivation for OBISS

Need for interface specifications



Motivation for OBISS

Modularity of SVFuA

- SVFuA is a modular system with one baseband unit and up to three transceiver modules with serial optical link
- SVFuA is designed by different vendors
- OBISS 1.0 was ready BEFORE the design process
- Minor adaptations of the specification during the design phase
- Early availability of OBISS was an important milestone of a successful design phase of SVFuA



OBISS 2.0

Key features

- Instantaneous bandwidths up to >50 MHz
- >140 dB TX dynamic range and >200 dB RX dynamic range
- Definite point in time within 1 second (e.g. for HF communication)
- Accurate time synchronization of samples (< 10 nanoseconds)
- Capability of exact measurement of the round-trip delay
- Accurate time synchronization of actions related to samples
- Prepared for multiple transceiver (e.g. beam forming, MIMO)
- Monitoring & Control of the transceiver (e.g. event handling, SW update)

OBISS 2.0

Implemented and tested by different vendors

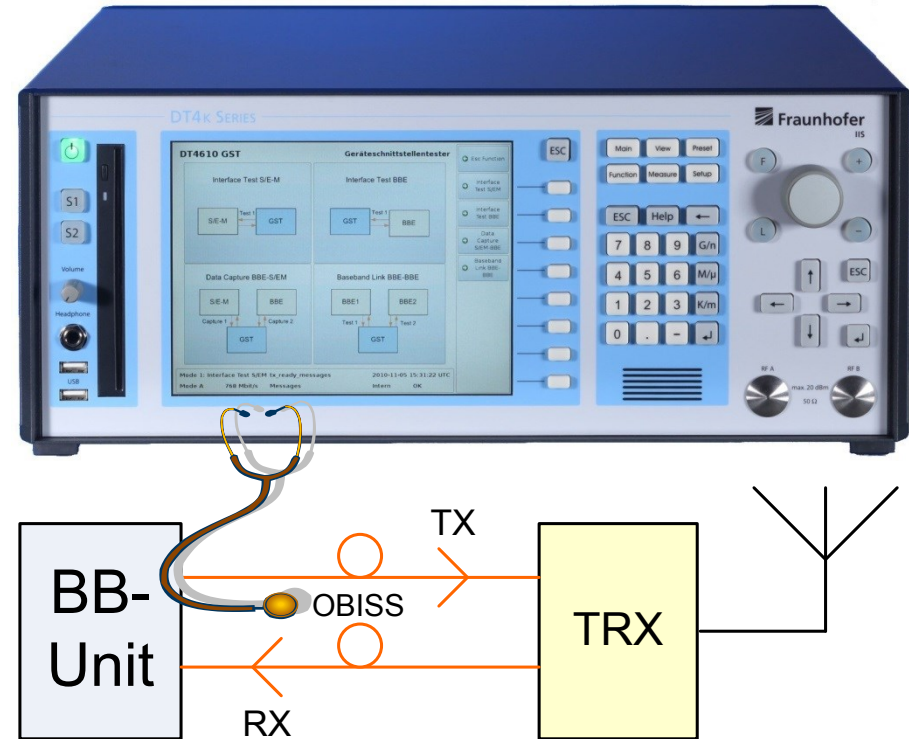
- OBISS is implemented on all hardware modules of SVFuA
 - baseband unit by Rohde & Schwarz
 - 3 transceiver modules by Hagenuk Marinekommunikation, Thales Deutschland and Airbus DS
- OBISS is implemented on the ETG by Fraunhofer IIS
 - The ETG is a rapid prototyping platform comprehending a high performance PC and a state-of-the-art FPGA
 - The ETG is used for Waveform Design e.g. High data-rate HF Waveform (HDR-HF)



OBISS test equipment available

GST DT4610

- GST was primarily designed for verification of a correct implementation of the OBISS protocol
- 3 test modes:
 - Mode 1: Interface Test TRX
 - Mode 2: Interface BB-Unit
 - Mode 3: Data Capture BBU-TRX
- GST is reference in case of malfunction
- Essential tool for implementation and verification of the SVFuA modules



GST DT4610

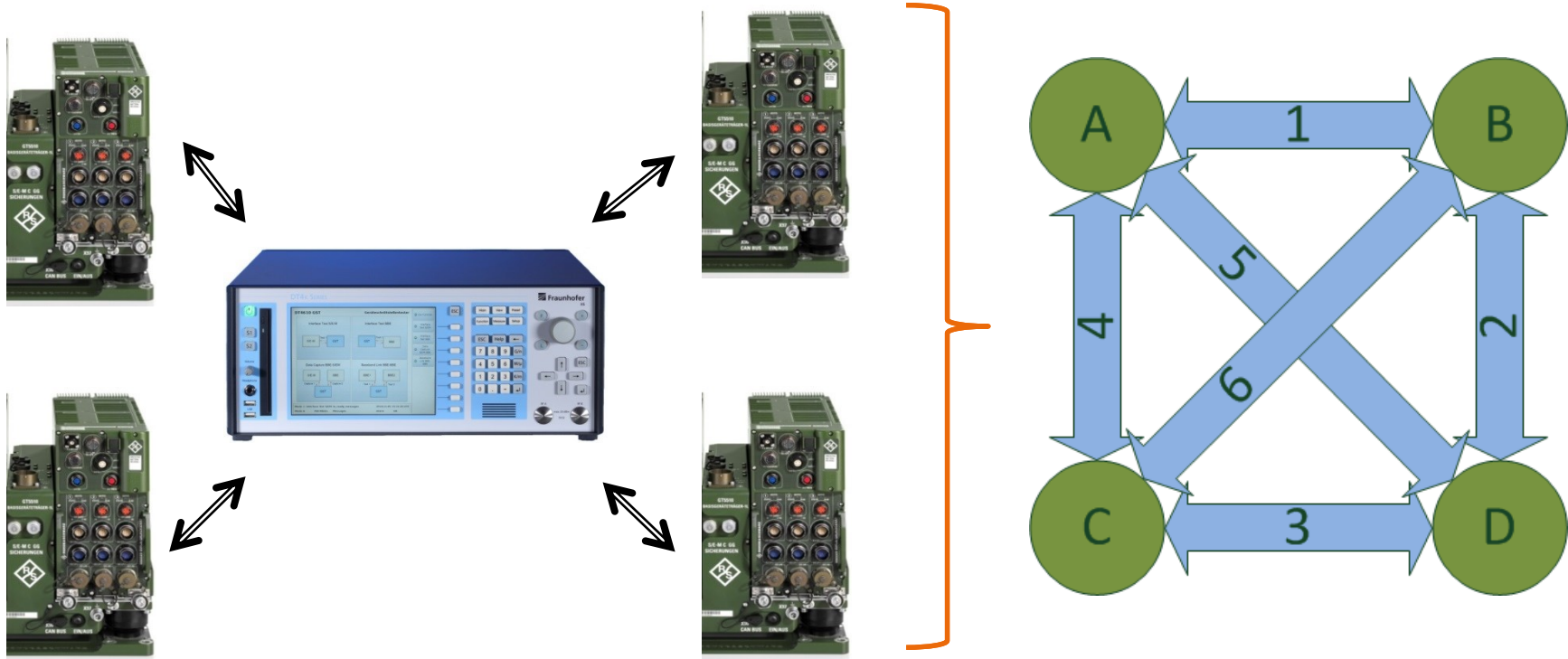
Extended functionality

- Mode 4: Baseband link BB-Unit to BB-Unit
- Emulation of the transceiver modules
- Enables the design, implementation and verification of waveforms without transceiver modules



Multi-channel OBISS Simulator – DT4640

“Pure digital” simulation for networking waveforms



OBISS 2.0

Conclusions

- The OBISS 2.0 specification is published at the WInn Forum and free from third party rights
- OBISS provides a comprehensive functionality for the transceiver interface
- OBISS is multiple implemented and tested
- The availability of IPs and test equipment facilitate a straightforward implementation
- OBISS in combination with test equipment provides assistance for waveform design and implementation

Thank you for your attention!

Questions?

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