



eltic-Plus⁺

Smart Connected World

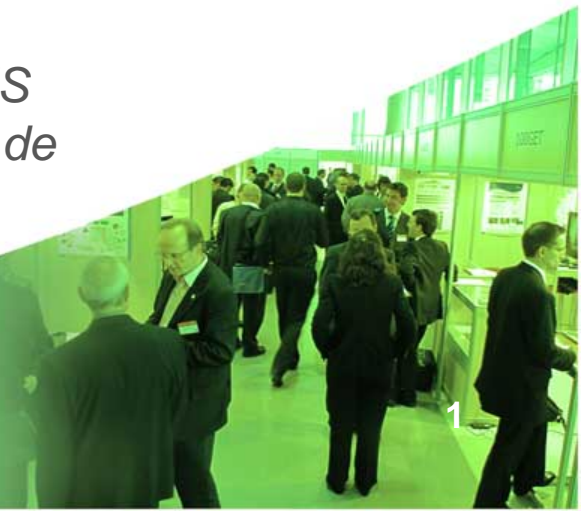


Webinar, 28 January 2015

Reliable Industrial Communication Over the Air - RelCOvAir



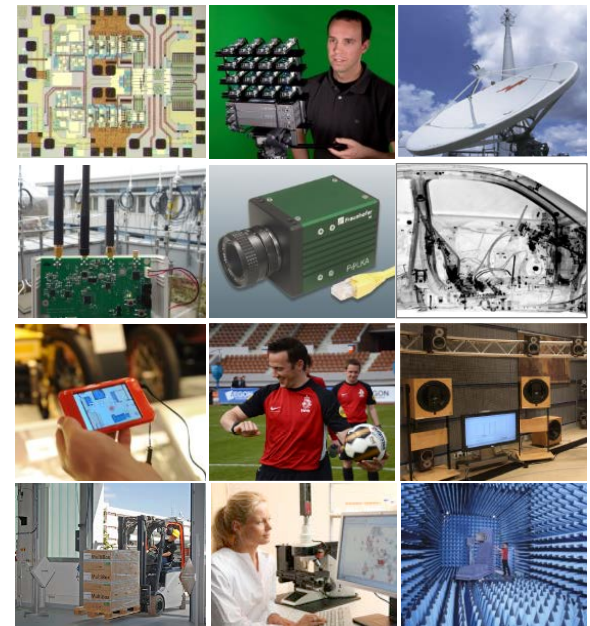
*Frank Burkhardt, Fraunhofer IIS
frank.burkhardt@iis.fraunhofer.de*



- Audio and Multimedia
- IC-Design and Design Automation
- Sensor Systems
- Positioning, Navigation, Localization
- **Communication Systems / Digital Broadcasting (80 persons)**
- Energy Management
- Nondestructive Testing
- Medical Technology
- Supply Chains
- Safety and Security Technologies



830 employees



Proposal Introduction

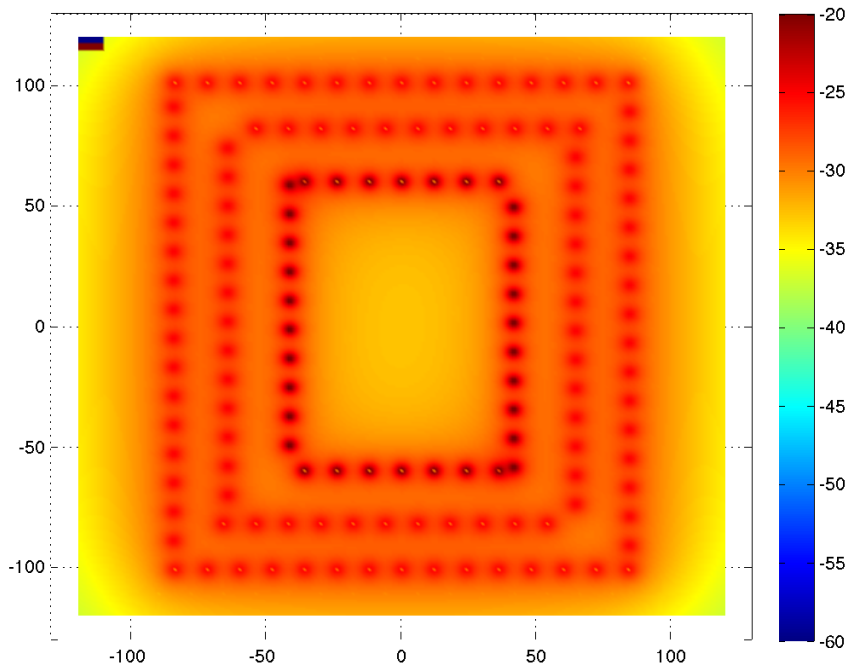
Wireless connections shall replace/complement the wired connections **in the industry.**

⇒ it must be guaranteed that a selected wireless communication system fulfils the relevant communication requirements for a given industrial application.

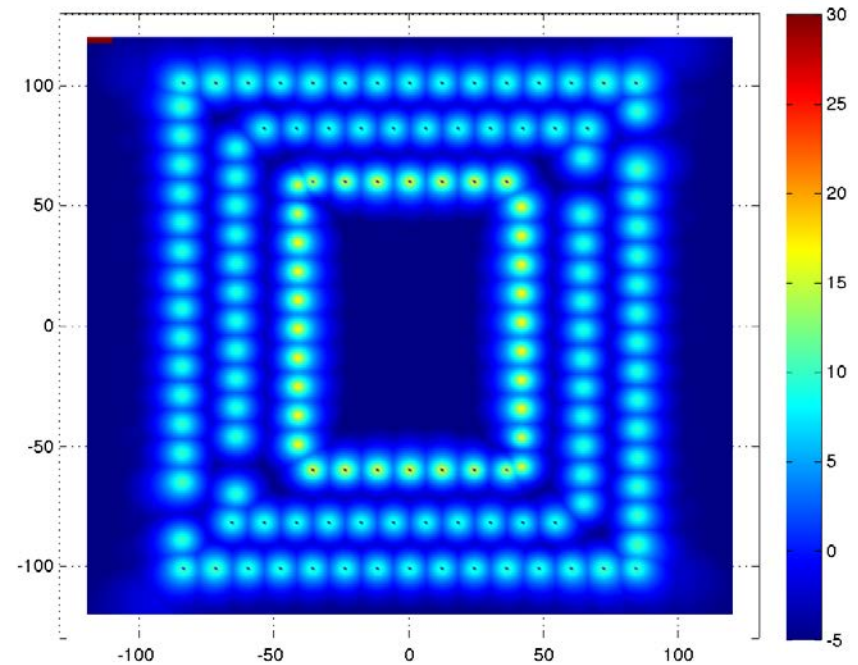
Standardized criteria and an associated test setup for the **validation of wireless systems** against these criteria is the prerequisite.



Power Map



SNIR Map



Example of WIFI with omnidirectional antennas

- *Power = -20dBm EIRP*
- *Large areas with SNIR < 0 dB (Interference!)*

Required SNR for error free WIFI transmissions: 10 dB

⇒ Reliability is not achieved by simply adding more power



Proposal Introduction

When transmissions fail: data is lost!

Alternatives:

- *Retransmission is initiated*
 - *Media Access delay occurs*
- ⇒ *Introduces **delay***

or

- *Forward error correction (FEC) compensates the loss*
 - *FEC delay is always introduced*
- ⇒ *What happens if the **FEC fails**?*

The reaction of wireless communication links to interference and channel characteristics is individual to each communication system.



Is the behavior inline with the requirements of the communication link?

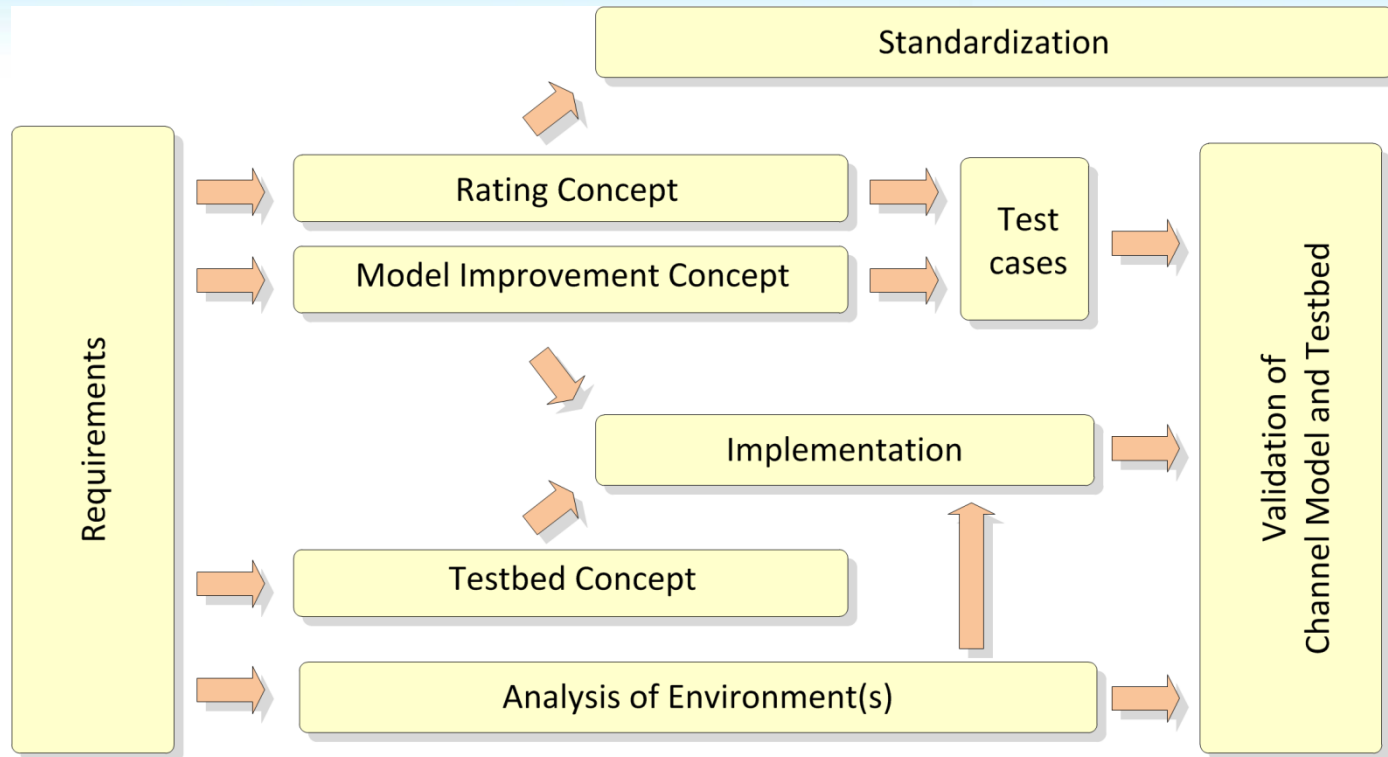
Therefore:

We, the Consortium of the RelCOvAir Project are developing an integrated testbed solution that allows industry to assess the transmission quality of wireless communication systems in industrial environment by validation (in simulation and hardware) against standardized criteria.

So you can:



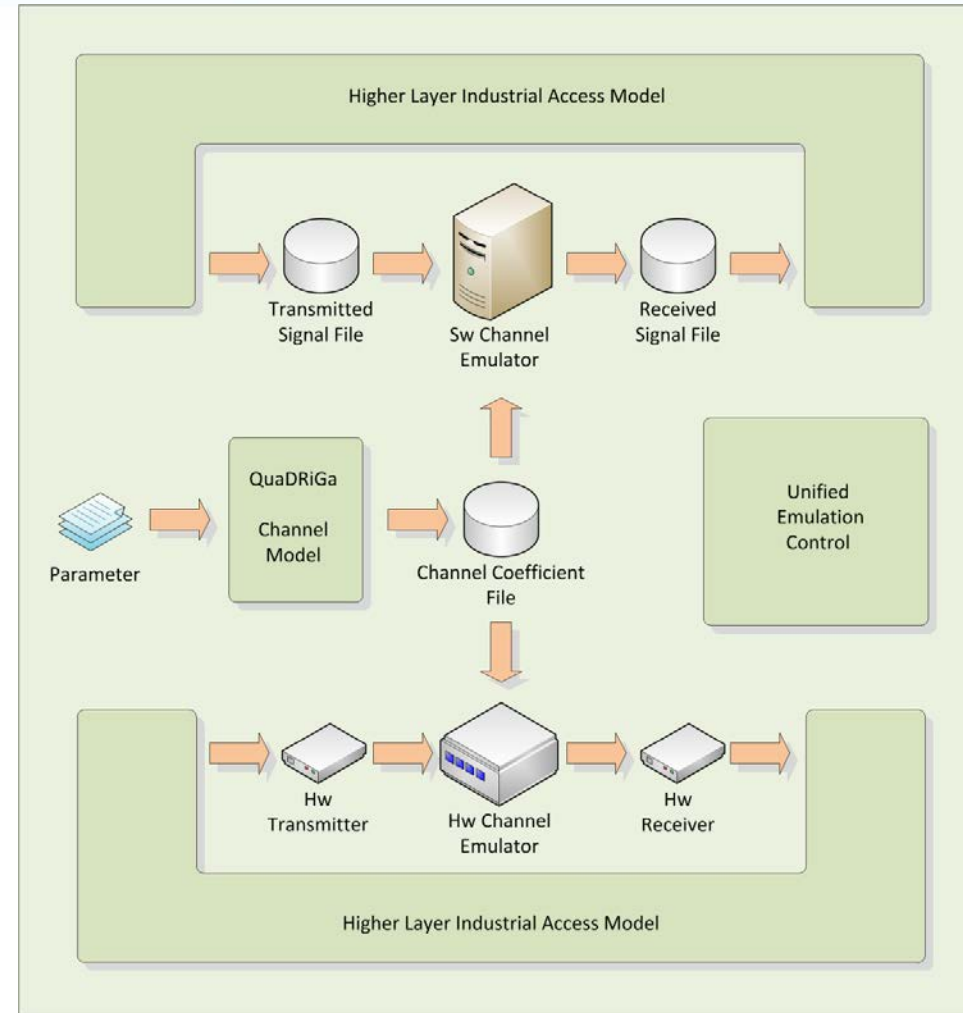
- Prove that your wireless communication system fulfils the necessary requirements*
- Select a suitable wireless system design & system parameters fitting to your requirements*



- *Analyse challenging scenarios of wireless industrial automation, derive requirements and develop test cases*
- *Perform measurements (different environments, frequencies)*
- *Update and validate channel model (QuaDRiGa)*
- *Implement emulation/validation environment (testbed)*
- *Standardization of test-cases and rating system*



- *Channel model for industrial environments*
 - *Emulation/validation platform for industrial communication (HW & SW)*
 - *Test cases contributing to European standardization bodies*
- ⇒ *Proven and qualified certainty of wireless communication systems for the industry*



Research Partners

Germany:



Finland:



⇒ *Research agencies with a strong communication background*



We have industrial partners that:

- *Develop Channel Emulators*
- *Want to verify and apply the product*
- *Provide industrial type interfaces*

We need further industrial partners for:

- *Knowledge on industrial communication requirements/scenarios*
- *Provision of industrial environments for measurements*
- *Implementation support for the emulation/validation platform*
- *Verification of emulation/validation platform with their own communication system (“1st user”)*



For more information and for interest to participate please contact:



Frank Burkhardt

Tel: +49 9131-776-6312

E-Mail: frank.burkhardt@iis.fraunhofer.de

Fraunhofer-Institut für Integrierte Schaltungen IIS
Am Wolfsmantel 33
91058 Erlangen

Web: <http://www.iis.fraunhofer.de>

