



Outdoor Mm-Wave Channel Measurements

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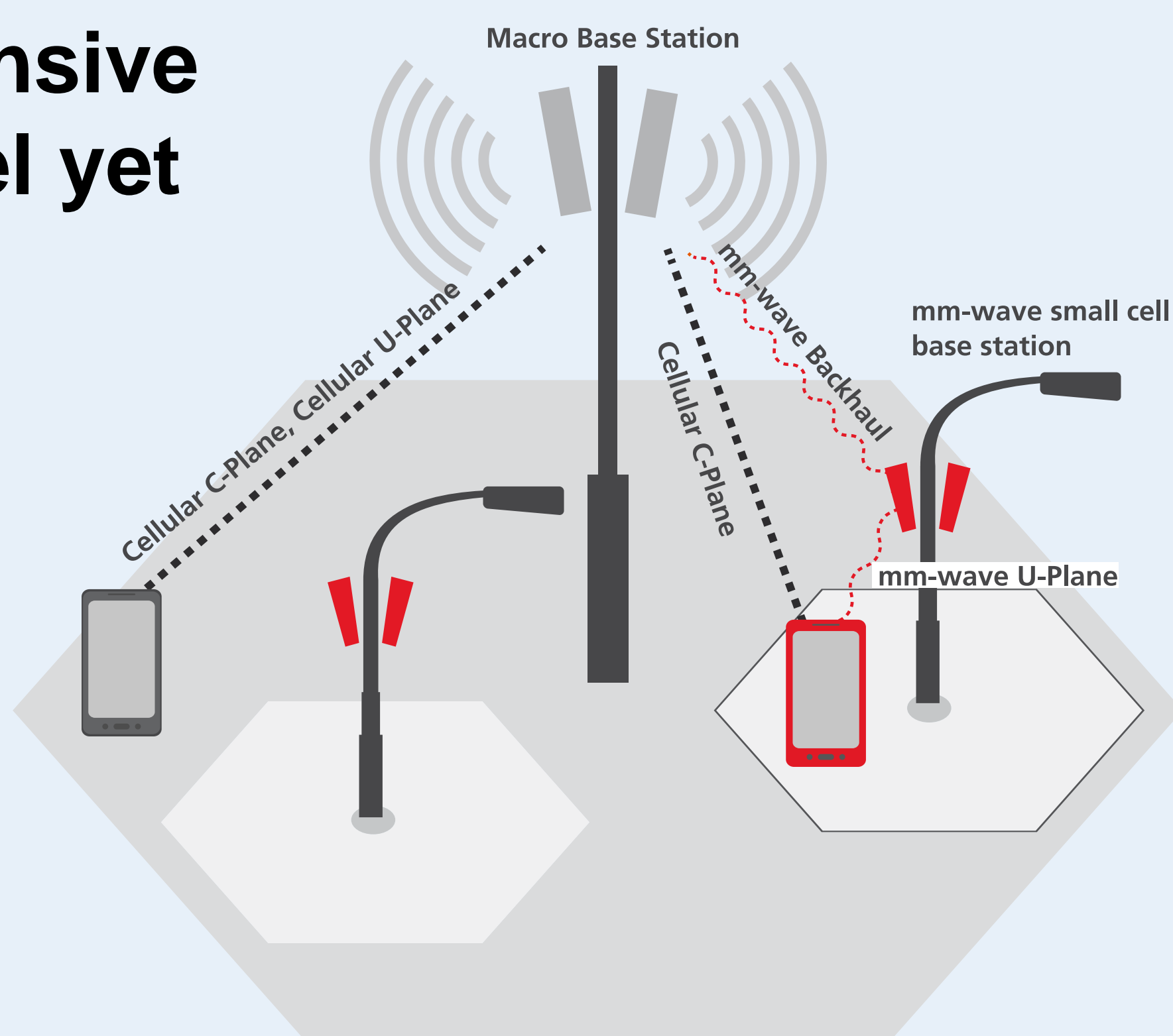
Fraunhofer Heinrich Hertz Institute, Intel Mobile Communications, Commissariat à l'Énergie Atomique, Orange Labs, Politecnico di Milano (EU)

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Project website: <http://www.miweba.eu/>

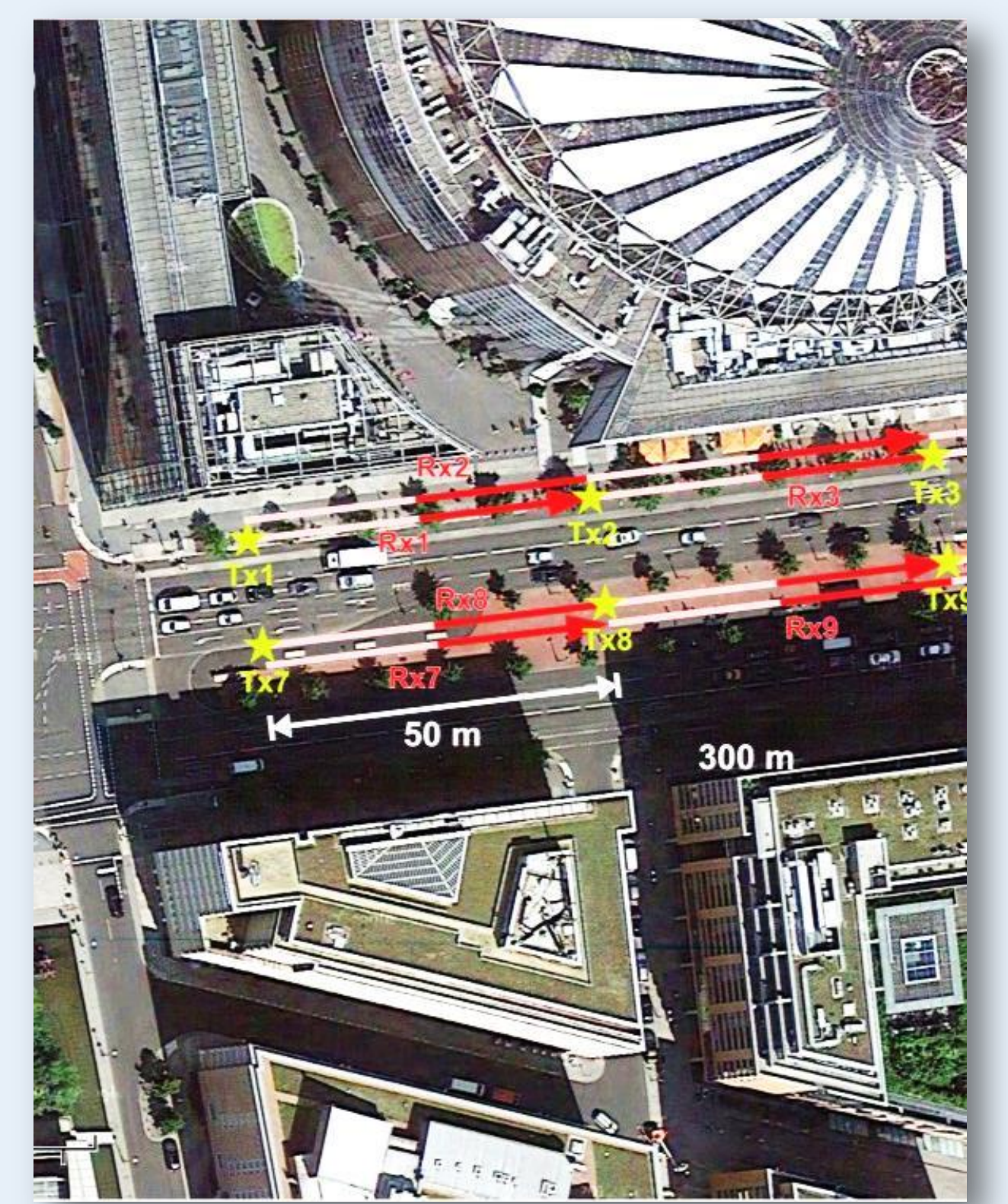
Introduction

- Millimeter-wave bands: candidates for future mobile radio networks
- Challenging propagation conditions
 - High pathloss
 - Oxygen attenuation (60 GHz)
 - Less penetration of buildings, etc.
- **No comprehensive channel model yet**



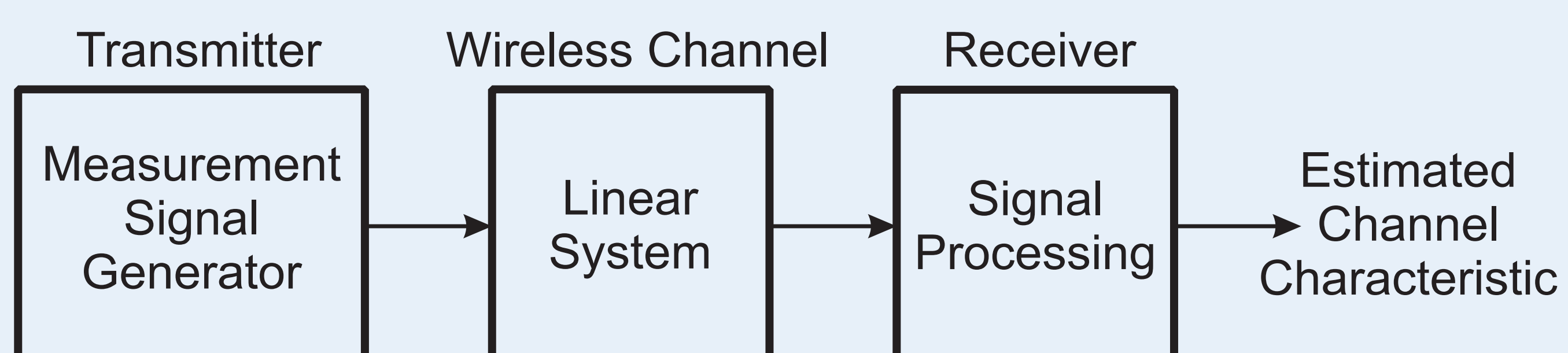
Measurement Scenario

- Street canyon urban access scenario considering lamp post small cell deployment
- Potsdamer Straße, Berlin, Germany: modern office buildings, 51.5 m street width
- Focus: investigation of path loss and time variance
- 800 μ s temporal snapshot separation (0.4 mm spacing)
- > 5 million channel snapshots taken
- Distances up to 50 m



Channel Sounder

- Wideband time-domain channel sounding with multitone sequence

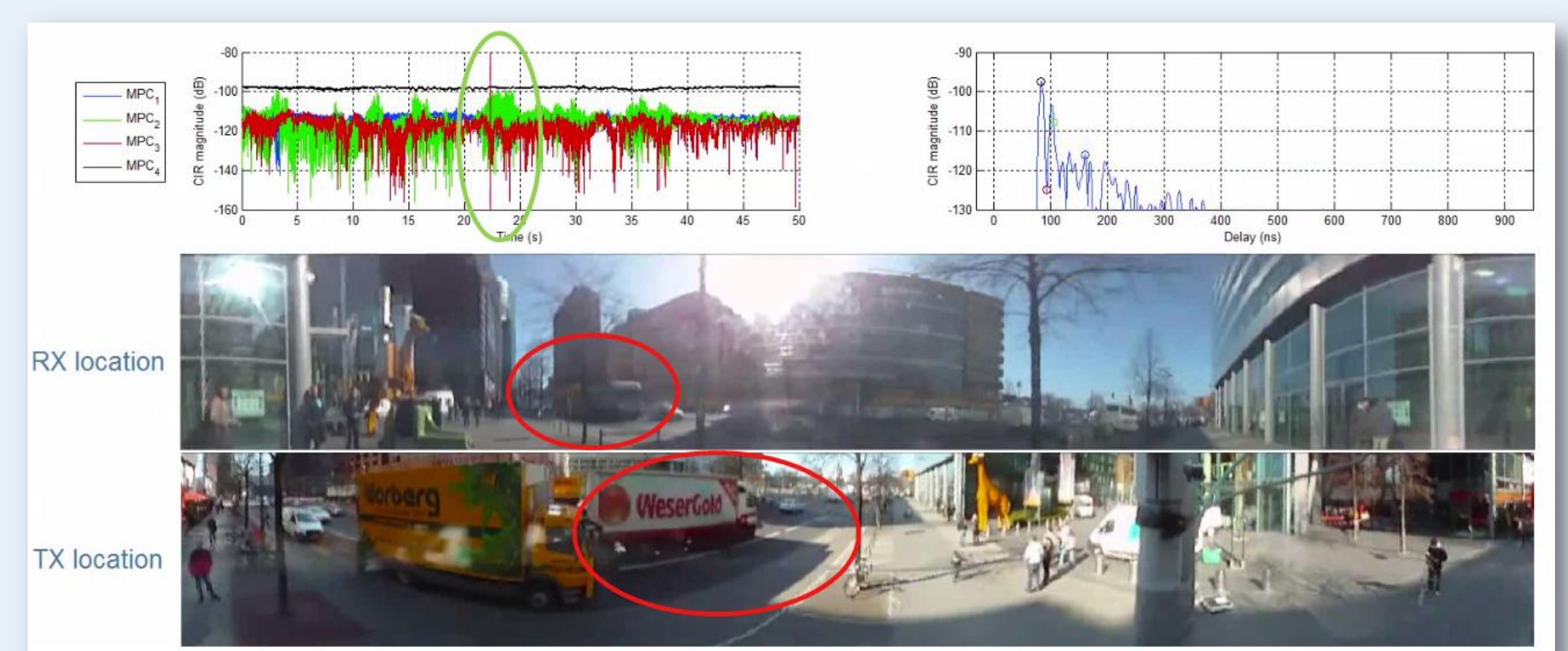


- FPGA-based hardware platform
- 250 MHz bandwidth
- 60 GHz frontends
- Static transmitter
- Mobile receiver
- Omnidirectional antennas

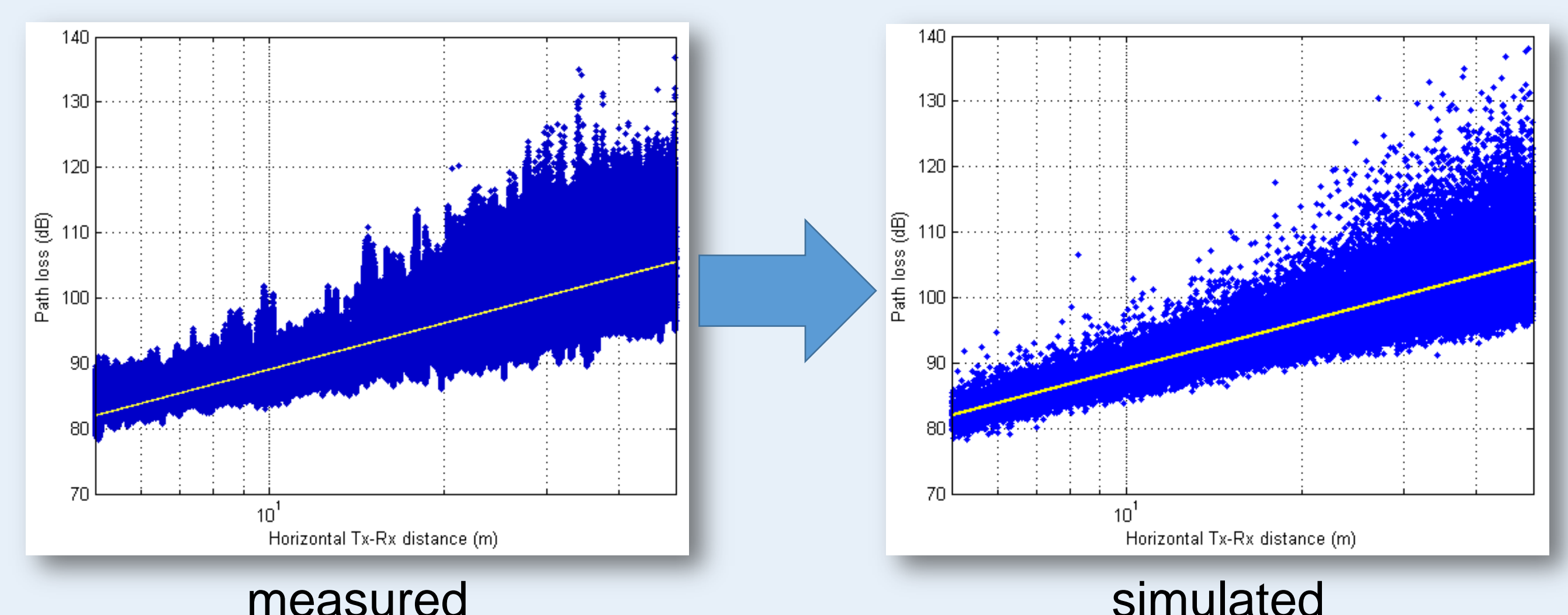


Results

- Time-resolved measurement of multipath components



- Significant propagation paths besides LOS
- High time variance and blockage effects
- Path loss model



- Input to channel model (see other poster)