



OFCNFOEC

2009

POF Home Networking Status, Standardization, and Outlook

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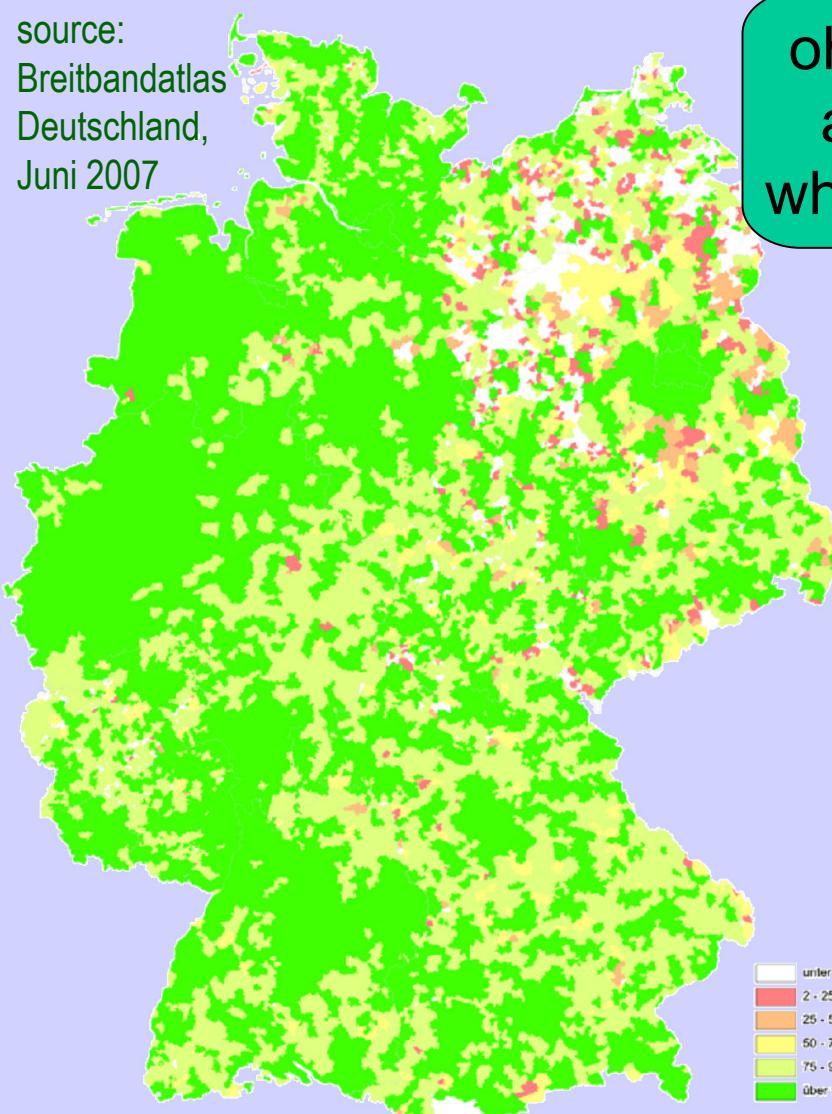
POF Symposium - March 24, 2009

1:15 p.m. - 1:30 p.m.

Germany's broadband initiative

source:

Breitbandatlas
Deutschland,
Juni 2007

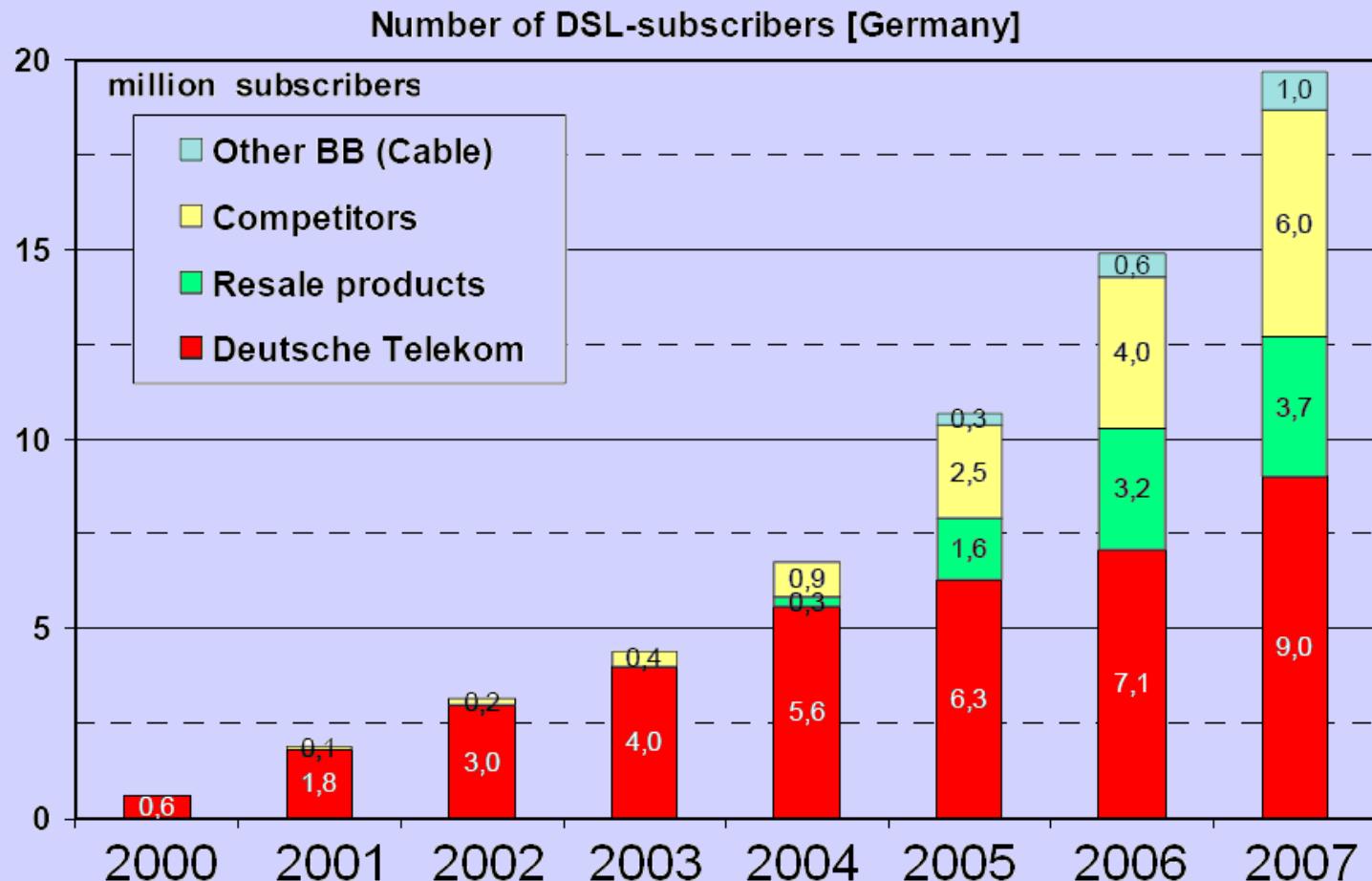


oh ! there
are still
white spots



- 1 Mbit/s for all households soon
- 50 Mbit/s for $\frac{3}{4}$ of households 2014
- 50 Mbit/s for all households 2018

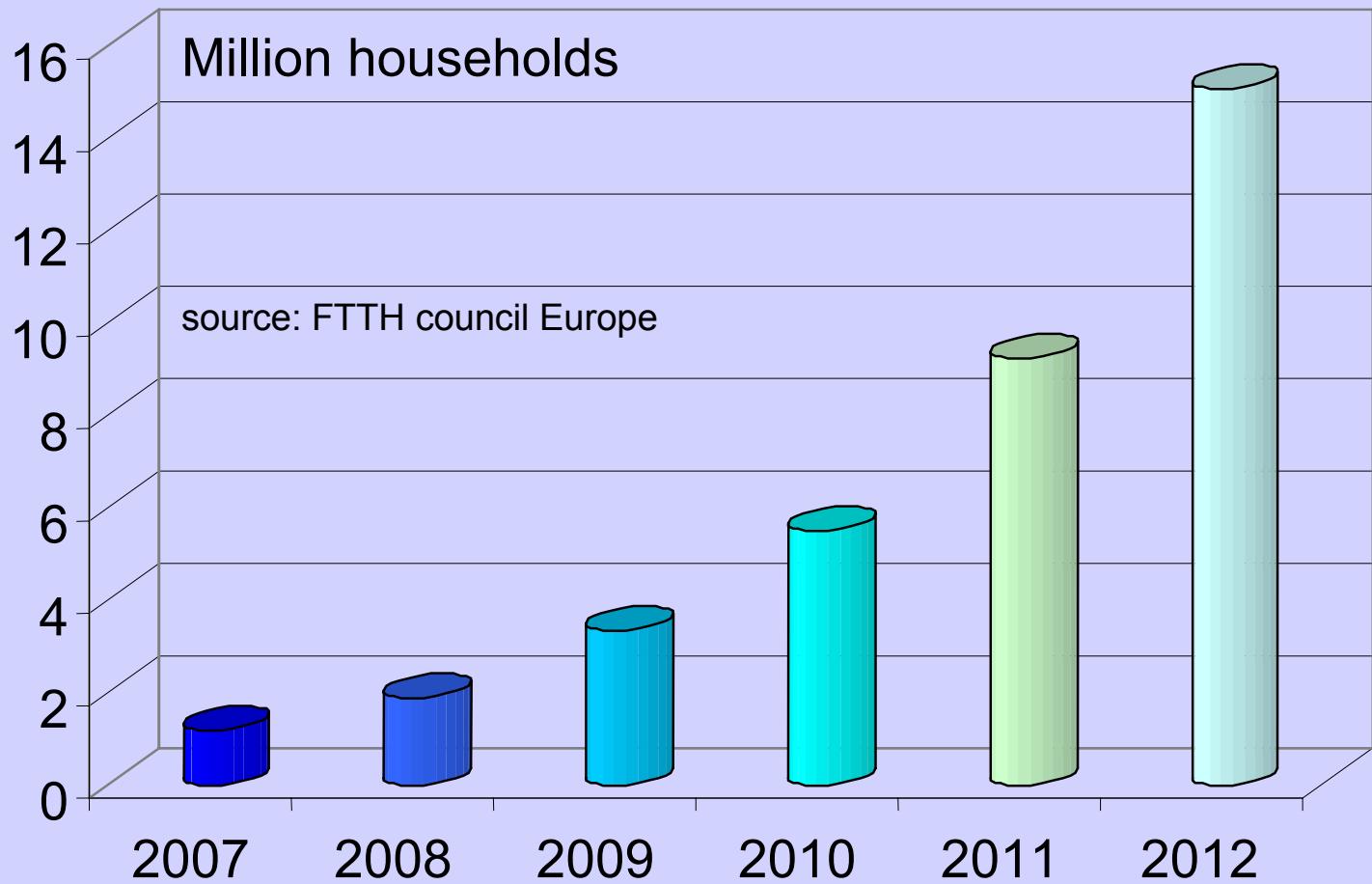
Germany's broadband use



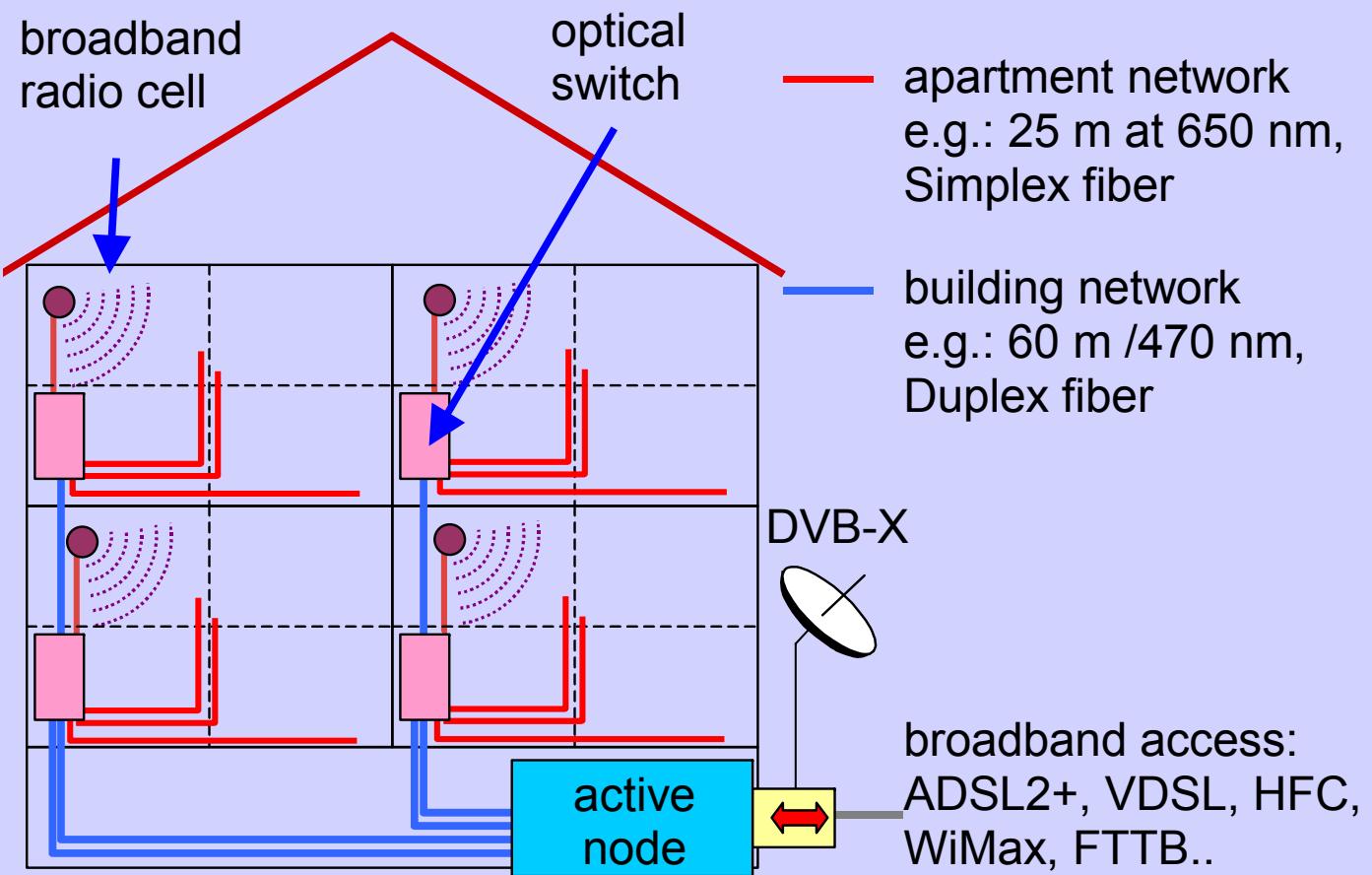
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24 Mio of 39 Mio households connected in 2009

The way: FTTH



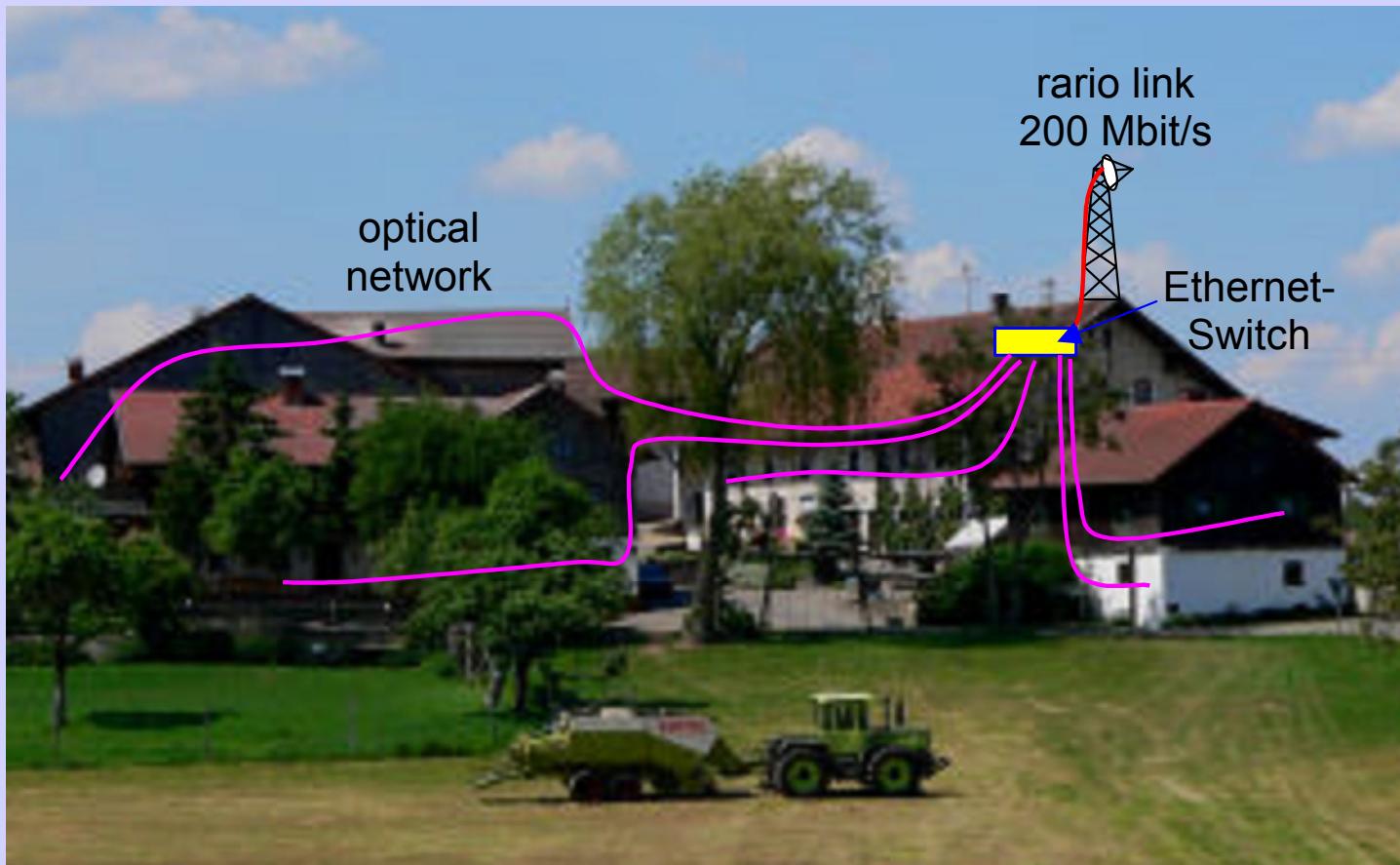
combination of radio and POF



Required steps

- Installation systems for end users needed (we plan the 1st European POF Product Show in Nov. 2009 in Munich)
- 100 Mbit/s is available from a number of manufacturers
- 1000 Mbit/s over 15 m is available
- 1000 Mbit/s over 50 m is possible
- better standards for fibers, cables, connectors, measurement devices, systems ...
- Design tools for developer of systems (Goal of the POF Simulation Center)

Optical Islands with POF



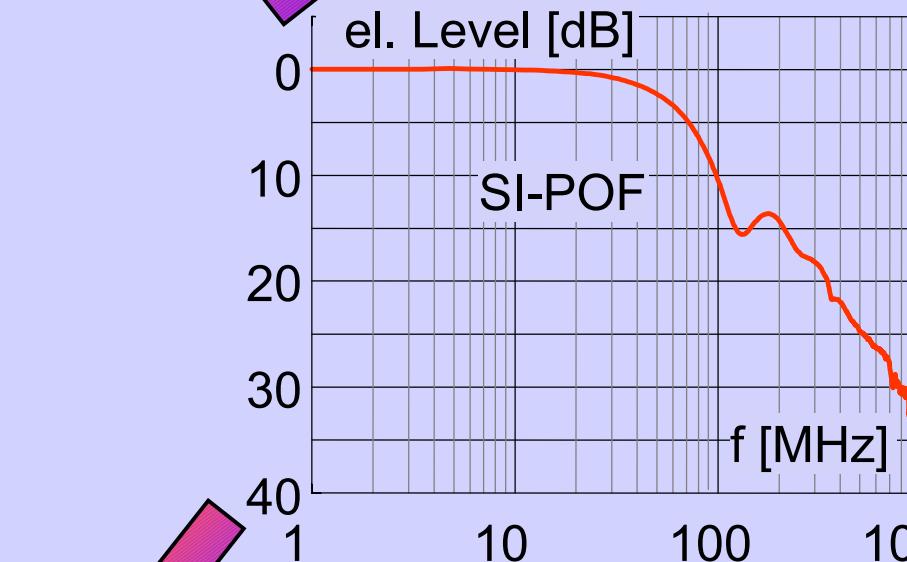
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possible solution for rural areas

- New **VDE/VDE working group** (fibers and cables, active and passive components, measurement techniques; optical interface)
- Foundation of the **POF Simulation Center**: should create a common POF design tool in the next years (see Juri's presentation)
- Investigation of **POF connector losses** (experimental, theoretically, Master thesis M. Marquart)
- Comparison of all methods for **Gigabit** transmission over SI-POF

passive
equalizing

multi level
coding



Multi carrier
coding (DMT)

digital filtering
(FFE/DFE)

choice is required

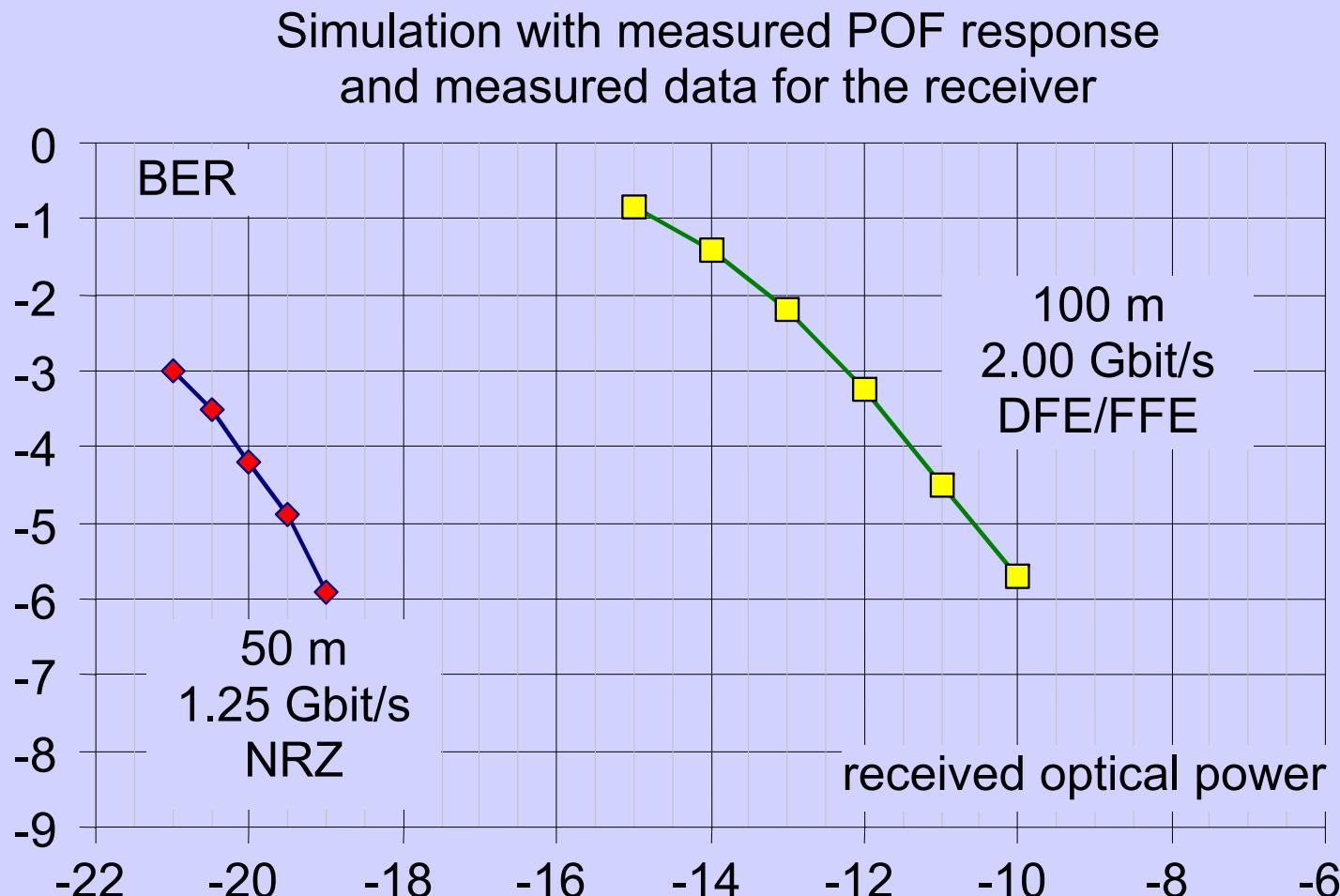
the definition of one of these transmission schemes
is required for a standard POF interface !

what are the open questions:

- what is the best method (probably all similar)
- what is most flexible (bit rate scalable)
- what is the electronics price
- what is the power consumption
- can we profit from other technologies (WLAN,
PLC: using OFDM)
- which method support low cost components (e.g.
LED transmitter with DMT)

no answer, but my impression is:
DMT is most flexible and bandwidth efficient

example for simulations



Fiber coupled power

- in the experiment: +7 dBm
- for a product (incl. ageing, temperature): 0 dBm

Sensitivity (BER = 10^{-9})

- measured in the experiment: -16 dBm
- with optimized equalizer calc.: -18 dBm
- for a product (integrated receiver ?): -22 dBm

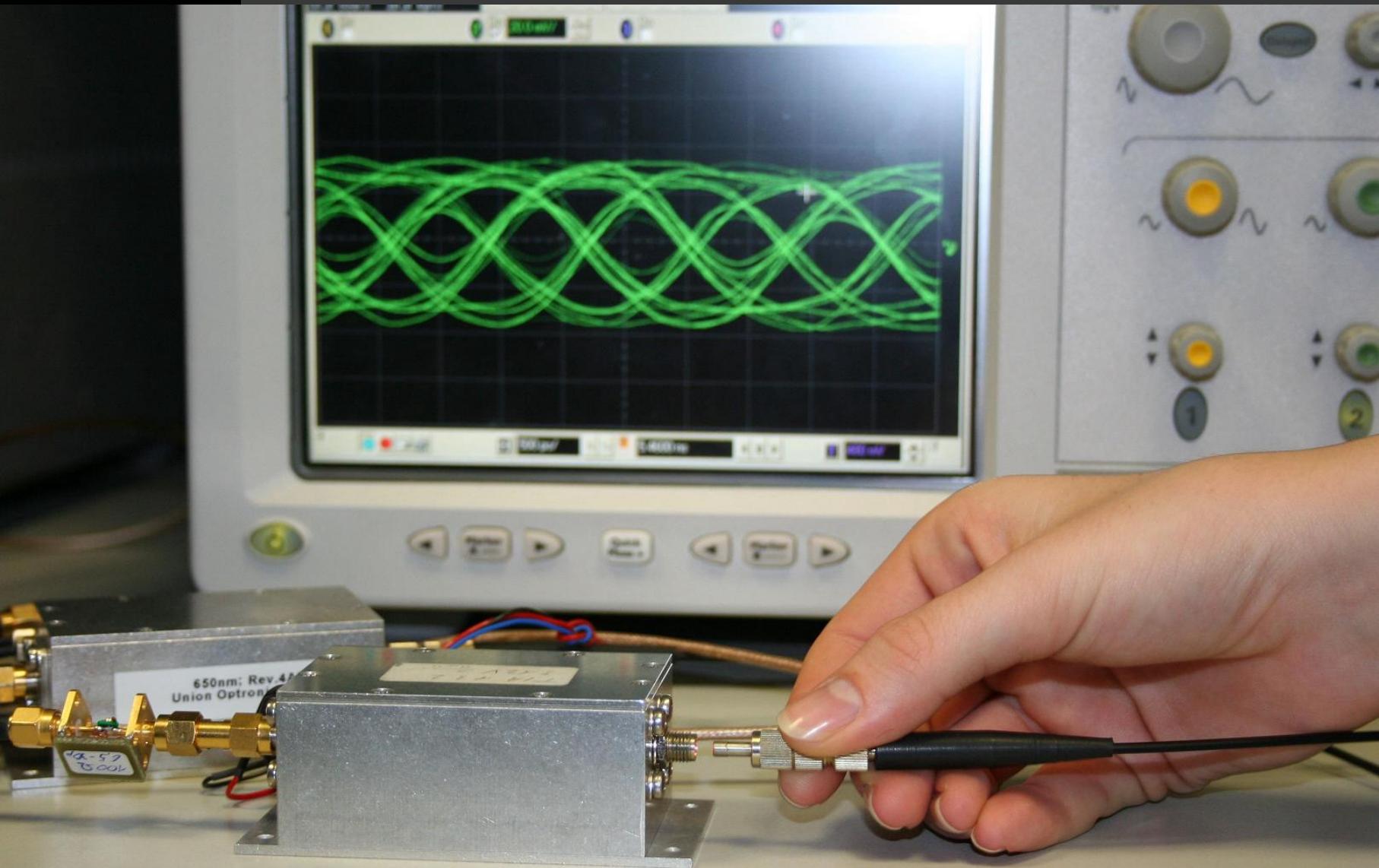
POF-loss at 640..660 nm, 50 m is 8 dB

- Marin for bends, connectors: 8 dB
- expected with integrated receiver: 12 dB

very robust systems possible !

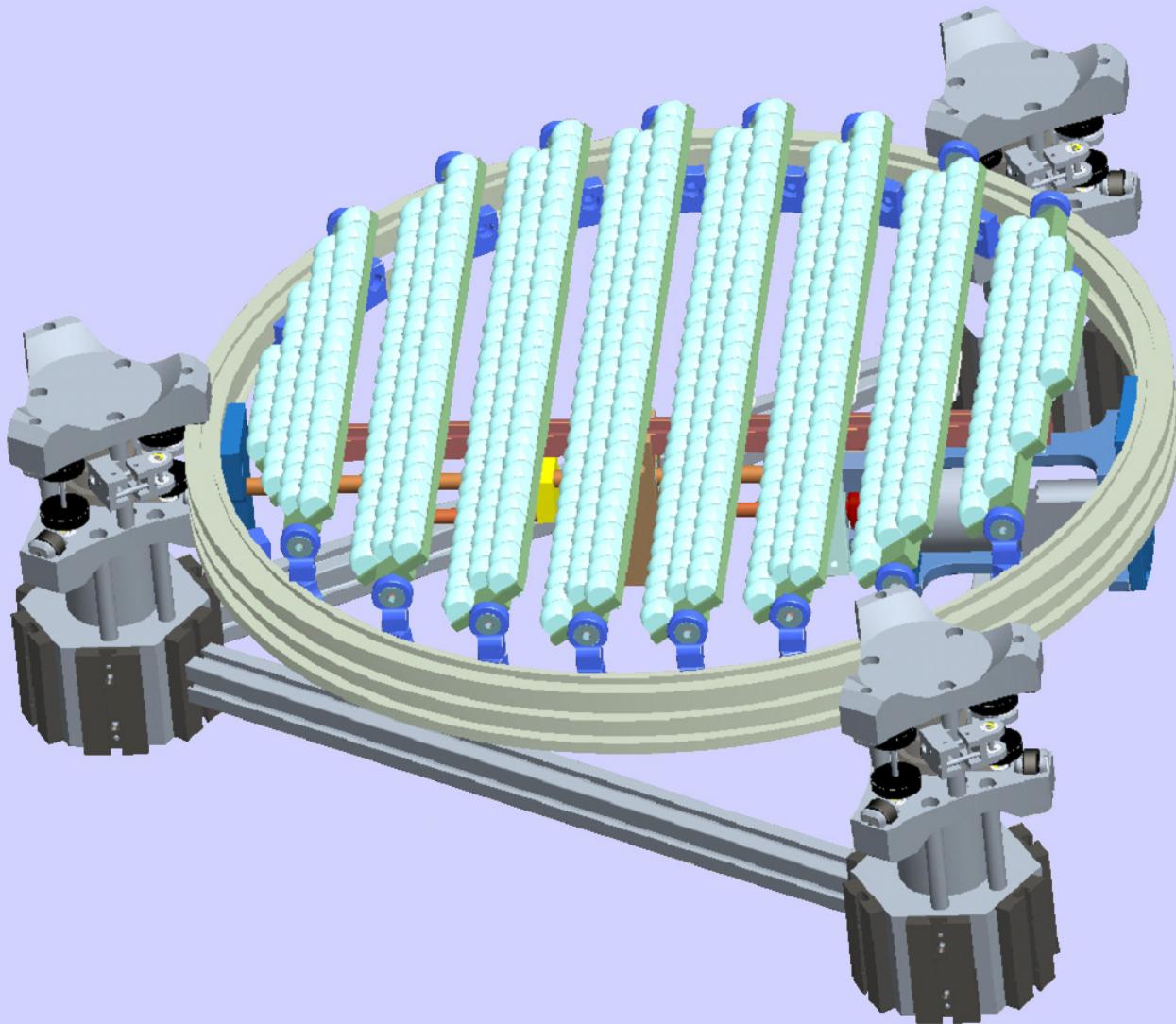
and this works

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Illumination (the Sollektor)

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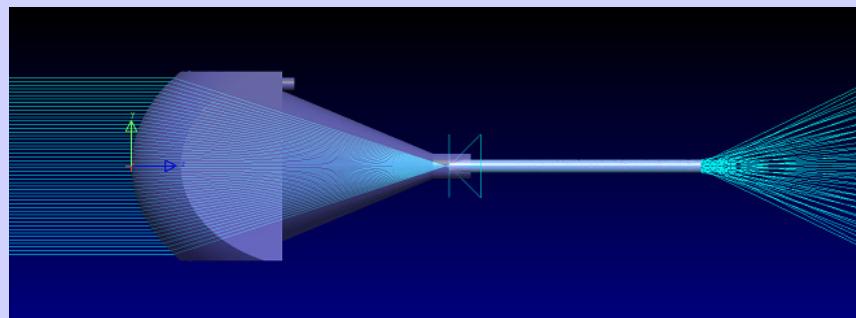
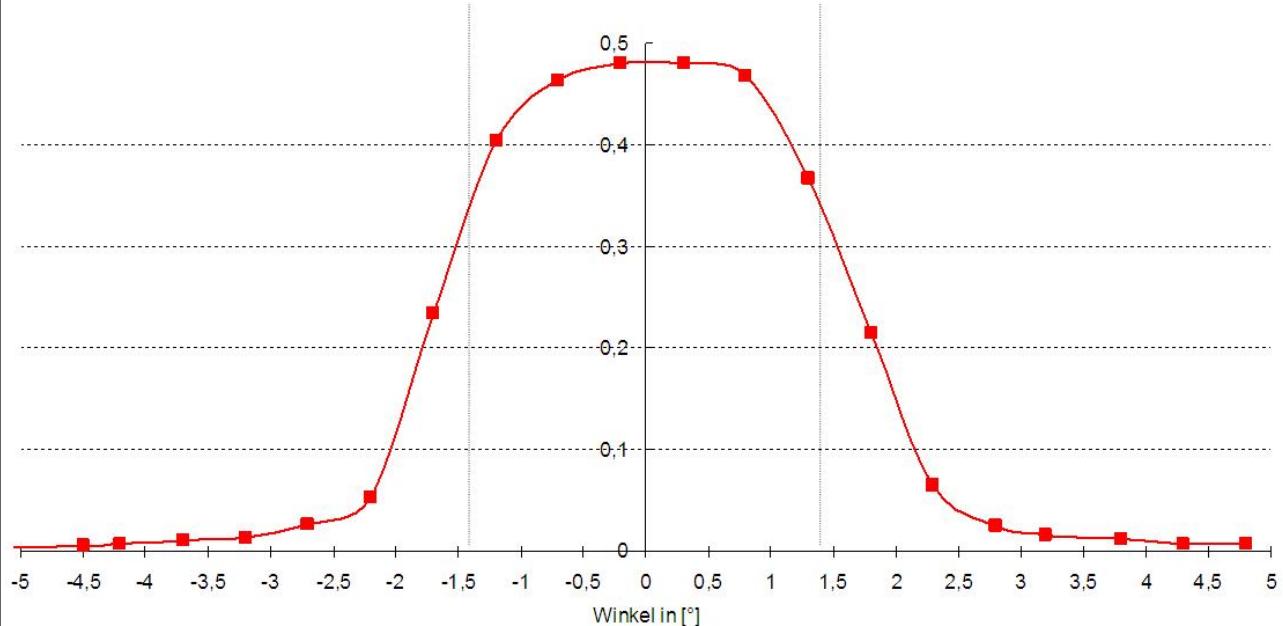


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Principle of the concentration

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Winkelakzeptanz des Faserkeils



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