

Active distribution network: Model city Mannheim



Dr. Britta Buchholz

Head of department Grid and Plant Planning

MVV Energie AG

EPRI Pre-conference workshop

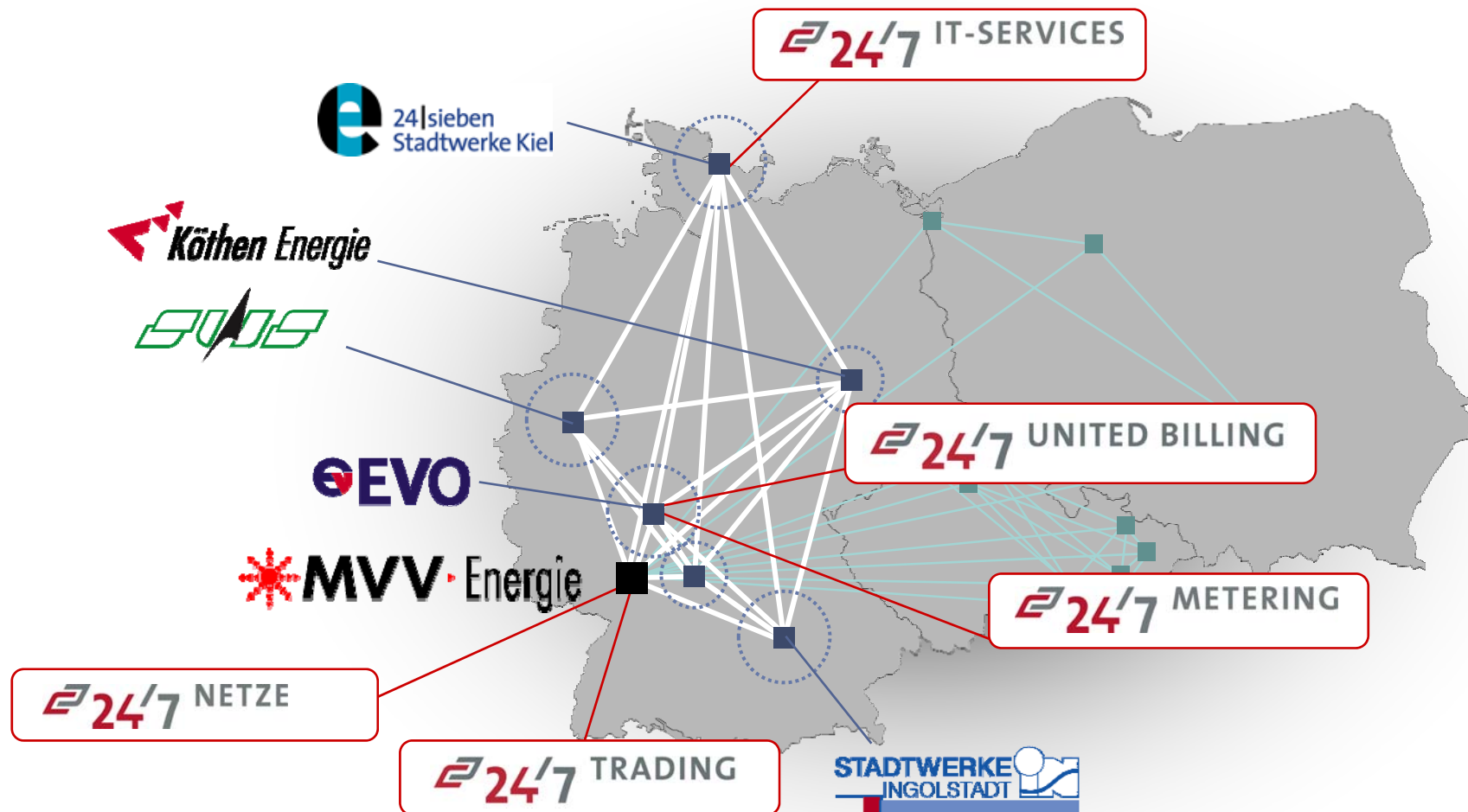
December 09, 2008

Nice, France



Shared-Services-Companies of the MVV Energie Group

R&D on microgrids in an unbundled world becomes complex



Strong market position of the MVV Energie Group



- ▶ Ranked No. 5 among German district heating utilities in terms of volume in 2006/07 FY
- ▶ Ranked No. 7 among German electricity suppliers in terms of volume of electricity sold to end customers
- ▶ Total of 1.15 million customer contracts in Germany and Eastern Europe for electricity, district heating and gas at the end of 2006/07 FY and 0.17 million in Germany for water
- ▶ Third-largest operator of incineration facilities in Germany (incineration capacity of 1.6 million tonnes of waste and biomass p.a. for the generation of electricity and district heating)
- ▶ With sales of Euro 263 million in 2006/07 FY, one of the three largest energy-related service providers in Germany

Very good framework conditions to play a leading role in the development of smart grids and microgrids among distribution system operators.

E-Energy Project „Model city Mannheim“



Or: An evolution from Homo Sapiens towards
„Homo Energeticus Mannheimensis“



Technology competition „E-Energy: ICT based energy systems of the future“



- ▶ New dimension for Smart Grids in Germany: more than 120 Mio. will be spent
- ▶ 60 Mio. co-funding by BMWi and BMU
- ▶ 6 large projects
- ▶ ICT as enabling technology
- ▶ co-operation with European Commission
- ▶ www.e-energie.info



Consortium



- ▶ **Consortium leader**
- ▶ Distribution System Operator
- ▶ Communication and Interfaces
- ▶ „CORE“ Plattform
- ▶ Research partners

MVV Energie AG

MVV Energie and DREWAG

Power PLUS Communications,
Papendorf

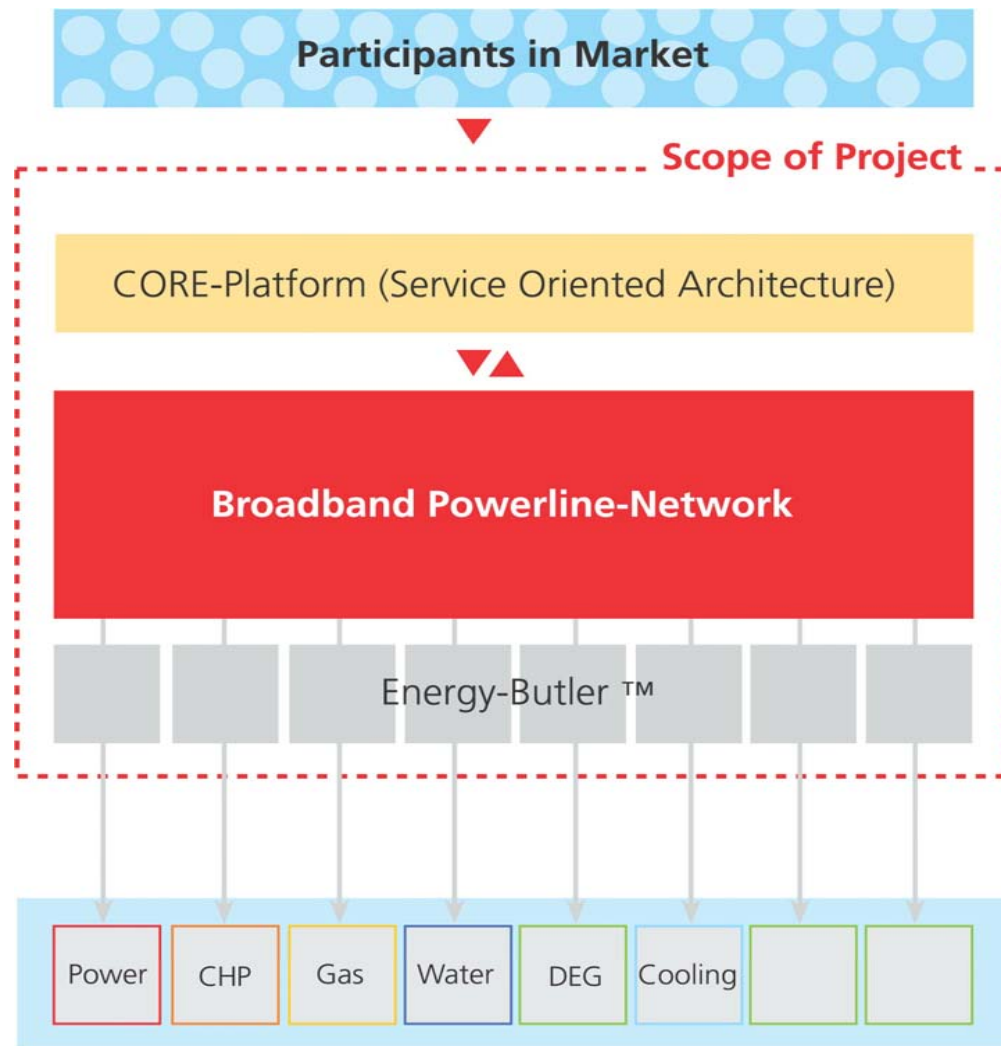
IBM

Uni Duisburg-Essen,

ISET, ifeu, IZES



Model City Mannheim- our thorough approach towards a Smart Grid



Distribution Network of
Mannheim within
Metropolregion
Rhein-Neckar



Mannheim has already been a first mover in decentralized energy supply for the past years.



Electricity net with active segments



Power

CHP

Gas

Water

DEG

Cooling



Field test with 20 micro CHP devices in Mannheim and public buildings



Decentralized generation: CHP with WhisperGen™



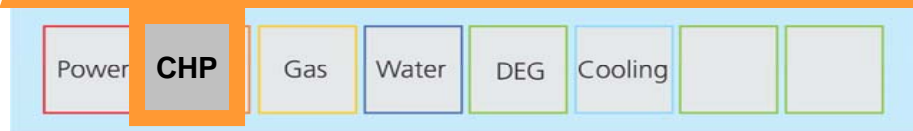
Today already over 300
PV Systems and CHP plants



Mannheim's district heating net offers a unique model of interaction with small and large CHP



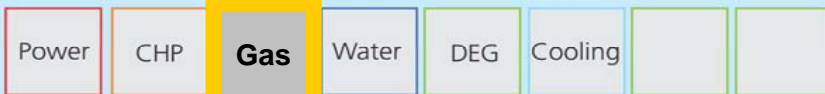
District heating networks with electric meters, compact-house stations/pumps.



In the BMWi project „ Smart Metering“ innovative meters are already under development



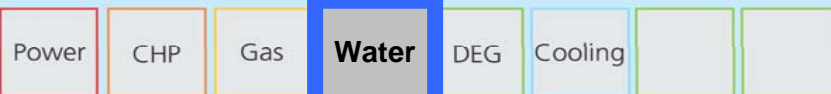
Gas supply



Multi-utility approach implicates synergies and is the base for a sustainable structure.



Multi-utility approach integrates all segments



Distributed cooling loads form a big
"virtual storage".



Interaction of decentralized storage
and production on a marketplace.



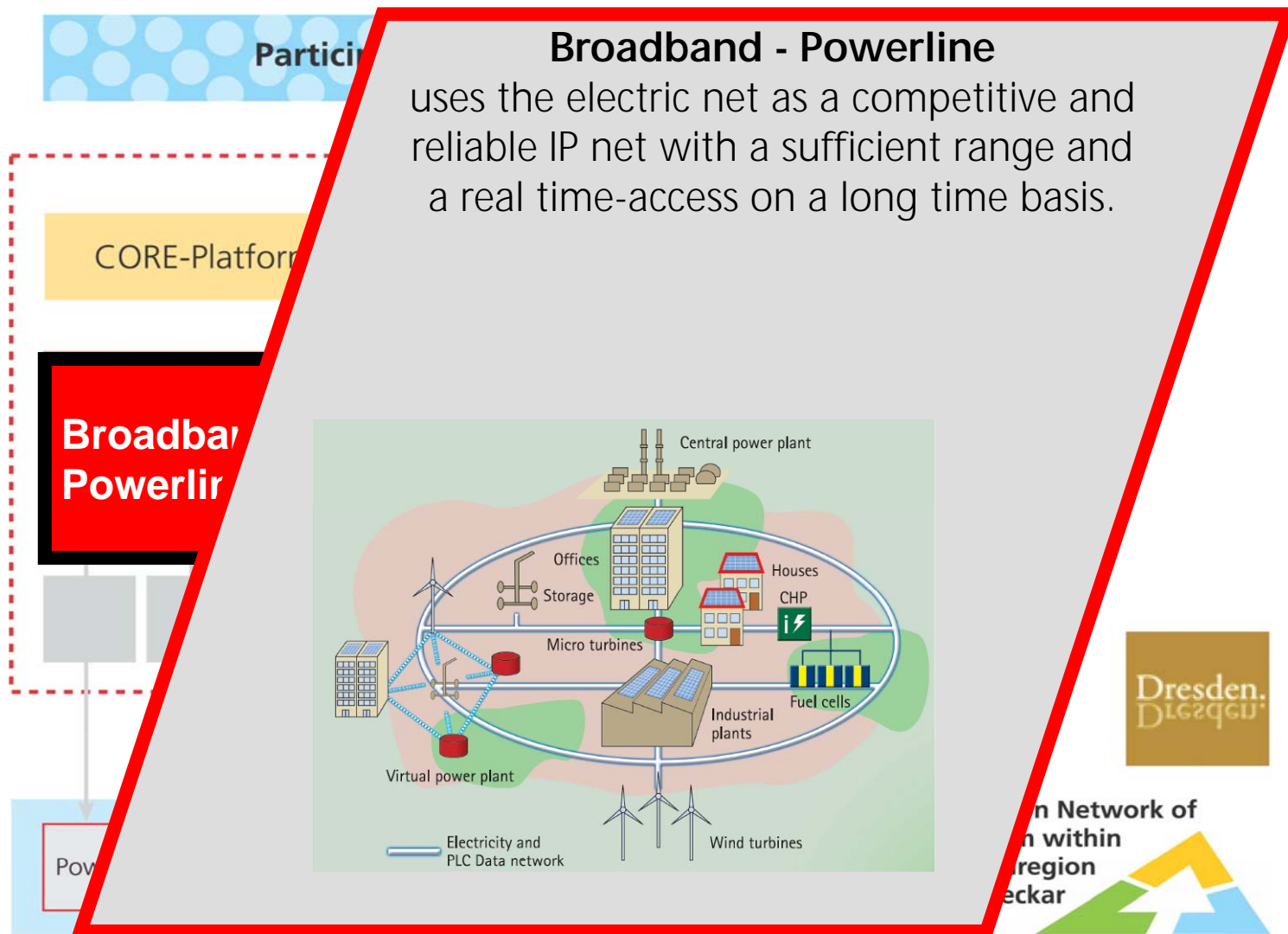
Cooling devices plants
in Mannheim



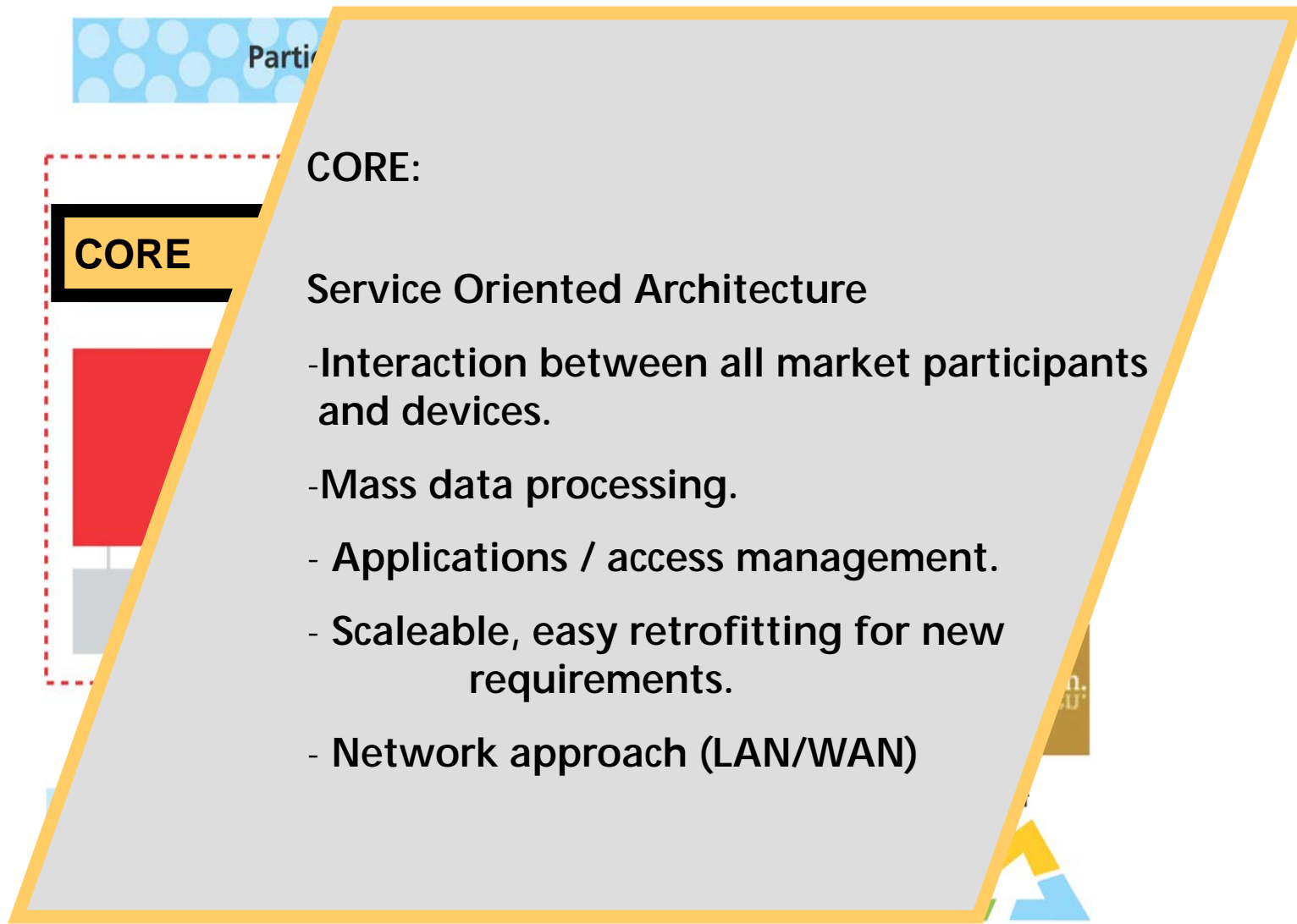
End customers prepare to become responsible market participants



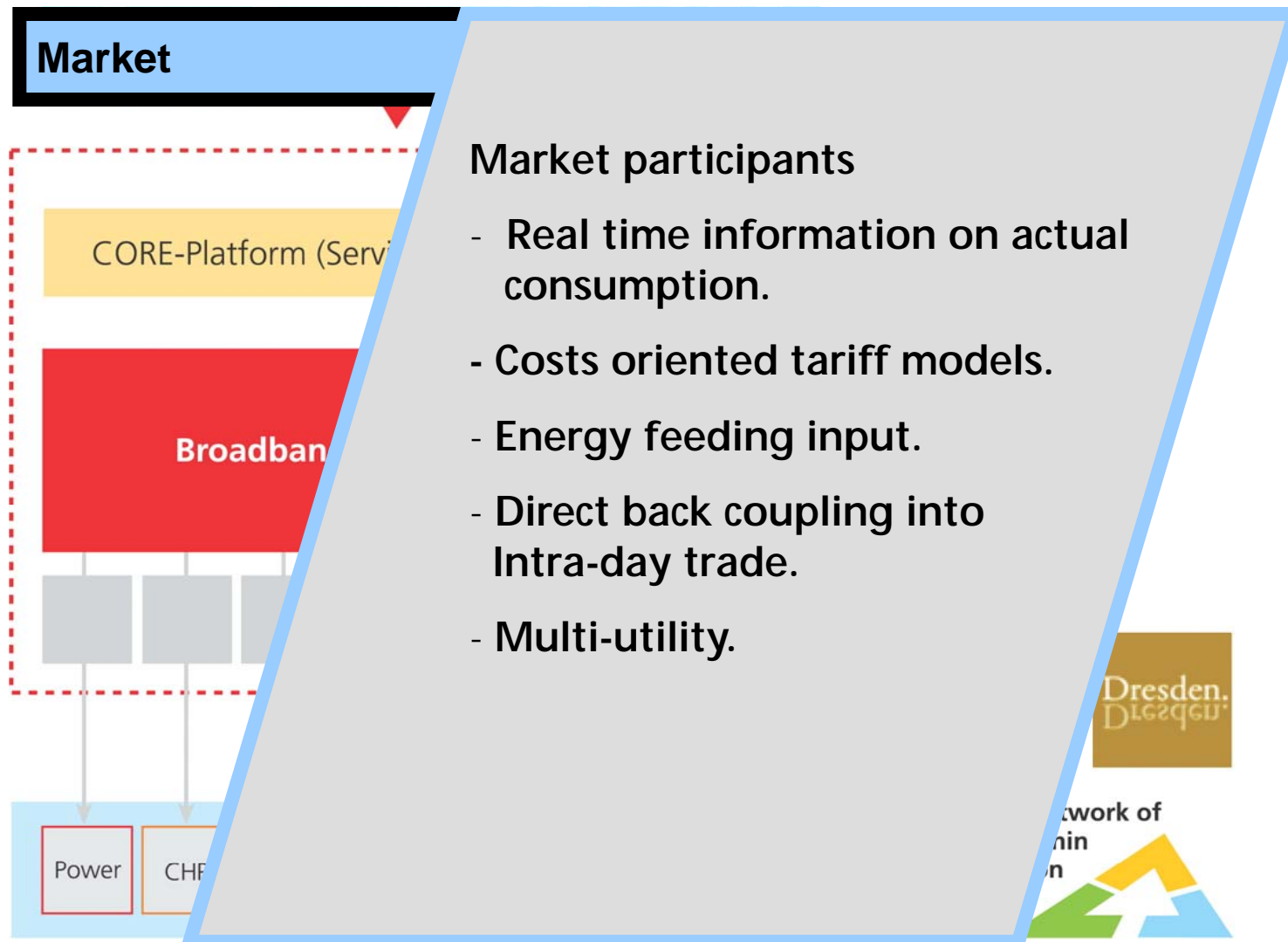
Broadband-Powerline allows real time data transmission at every place of the energy net



Modular architecture for different „services“ with open interfaces



Field tests with more than 3,000 participants "Prosumers"



Conclusion:
Active distribution networks in
an unbundled market are more
complex than they appear...



But: The evolution from Homo Sapiens towards „Homo Energeticus Mannheimensis“ has already started!



**Thank you for your
attention!**



Dr. Britta Buchholz

Head of department
Grid and plant planning

Phone: +49 621 2903404

E-Mail: b.buchholz@mvv.de

