

IEEE Powertech 2007, Lausanne, Switzerland

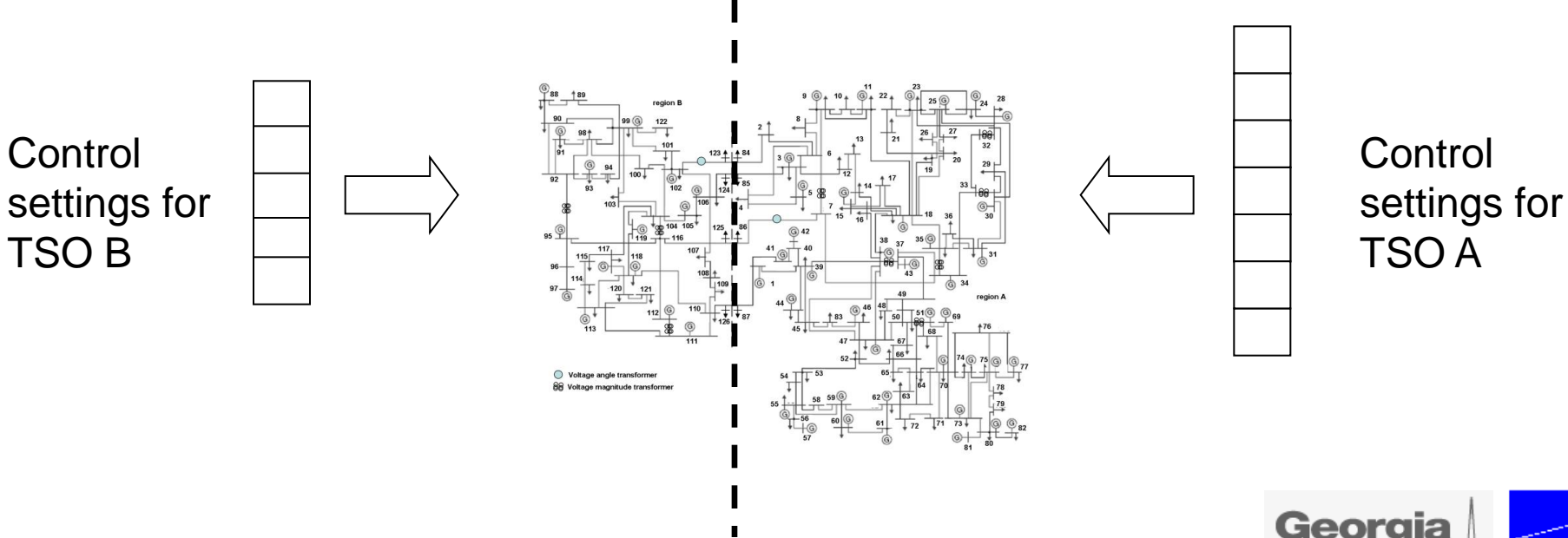
Session on Modeling I, 4 July 2007

External Network Modeling for MVar scheduling in Multi Area Power Systems

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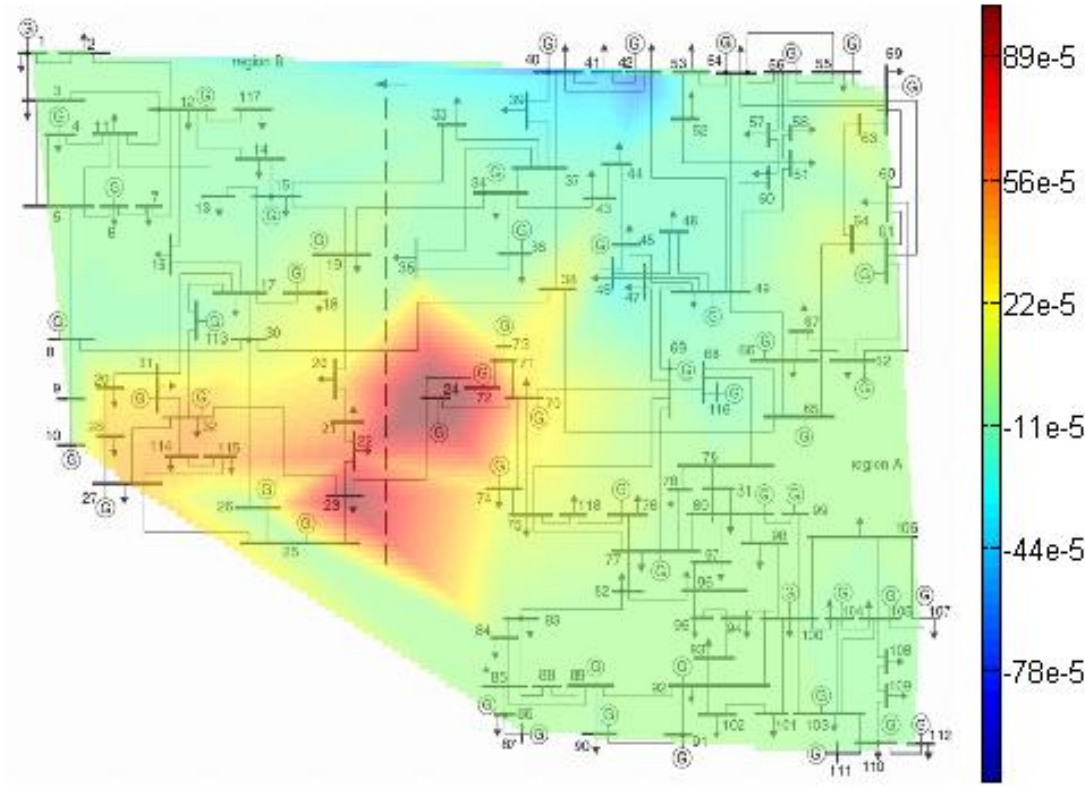
Decentralized optimization scheme (4/4)

- **Application** of locally optimized controls
 - Controls are implemented in the interconnected system
 - a Load Flow with respect to active power exchanges assesses TSO costs in each area



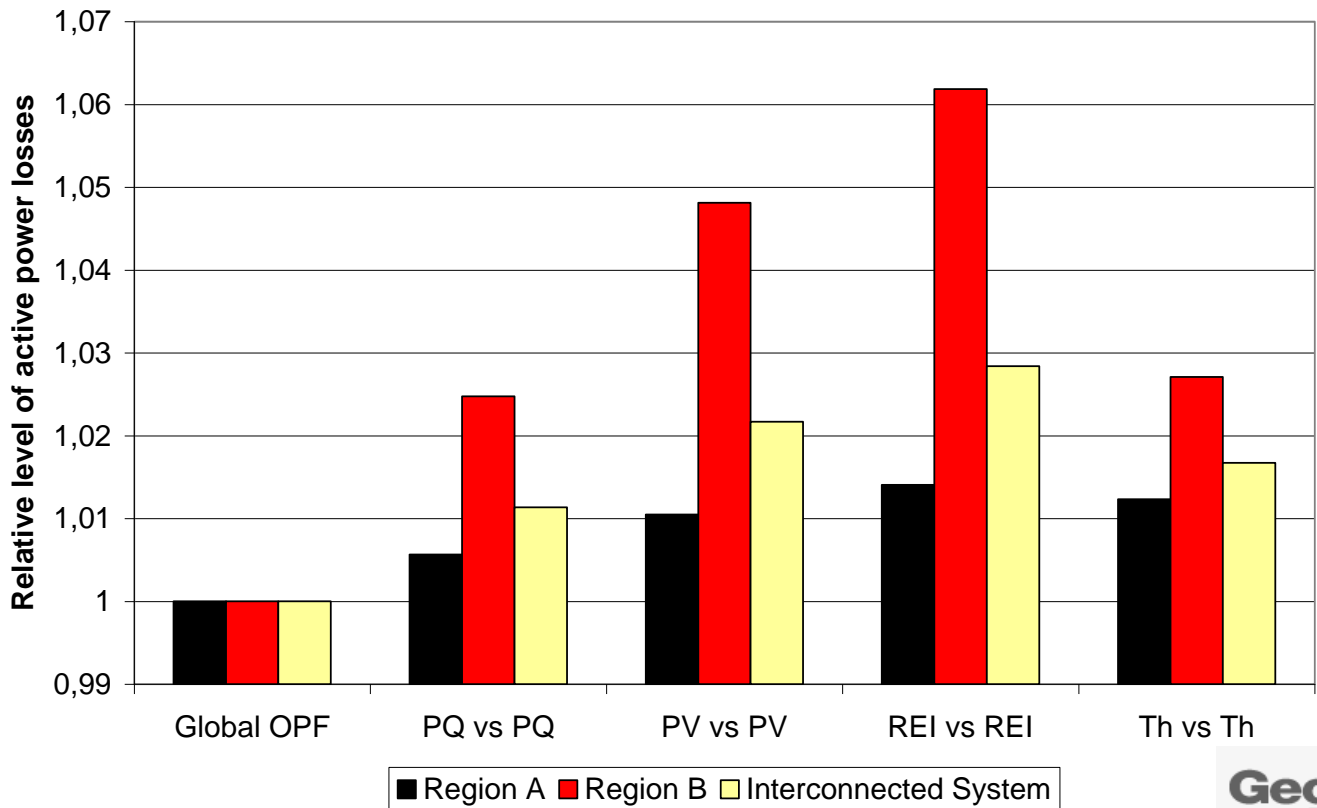
Some simulation results (1/3)

- Centralized optimization vs decentralized optimization (PV equivalent)



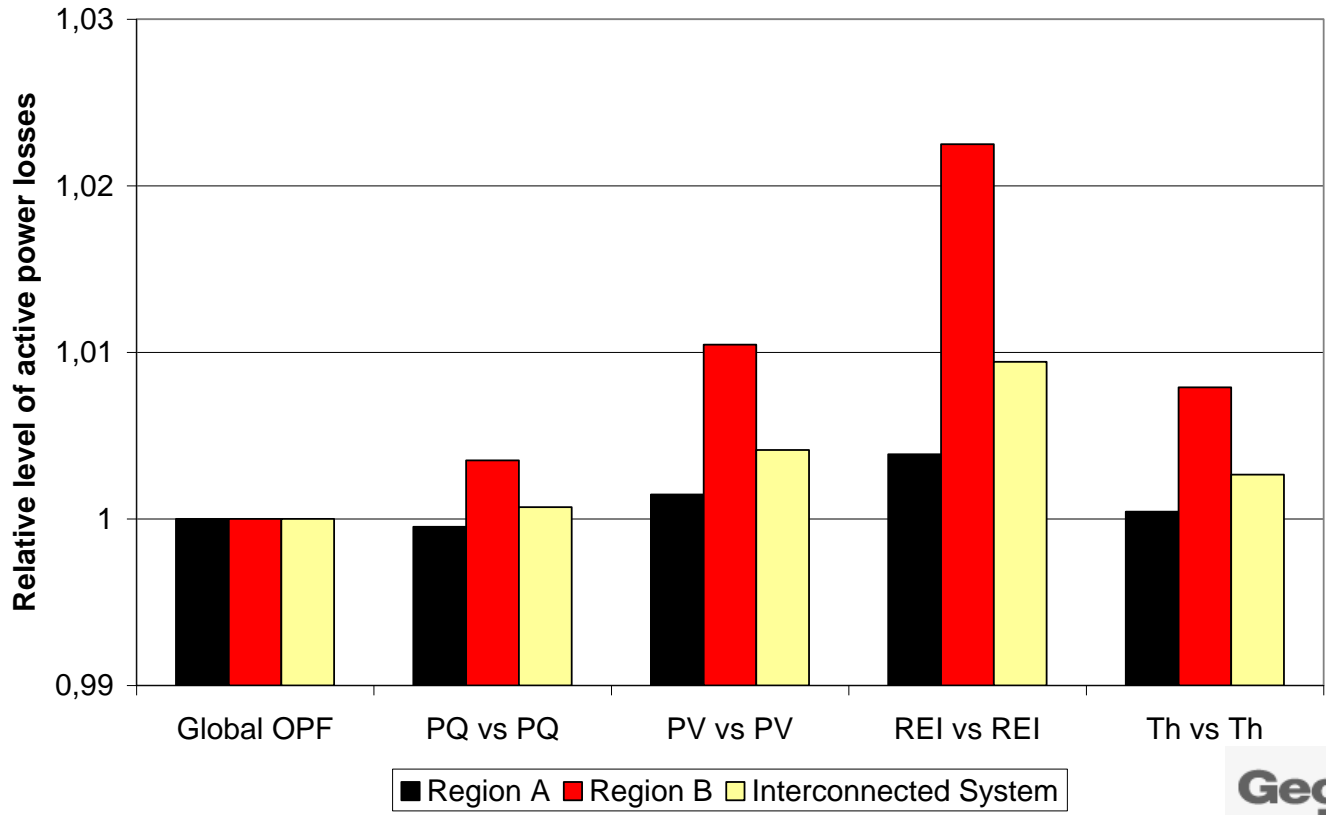
Some simulation results (2/3)

- Randomly defined most recent measurements



Some simulation results (3/3)

- Nearly optimal most recent measurements



Analysis of the results

- **The decentralized control scheme proves satisfactory performances**
- Clear hierarchy between equivalents:
 - PQ allows a lower suboptimality
 - REI induce low performances
- Similar results with other objective functions:
 - Maximisation of reactive power reserves
 - A combination of both criteria
- The impact of the set of most recent measurements must be considered

Conclusions and further work

- Need for a **coordination of objectives (IEEE PES General Meeting 2007)**
- Need for a **suitable choice of models of equivalent interconnections:**
 - PQ equivalents look more suitable
 - An iterative decentralized control scheme is explored, showing promising results
- Conditions for real-time application of coordination strategies are still to be defined in connection with:
 - dynamics of the power system
 - Identification of the parameters of equivalent interconnections