E.ON | Gas Storage

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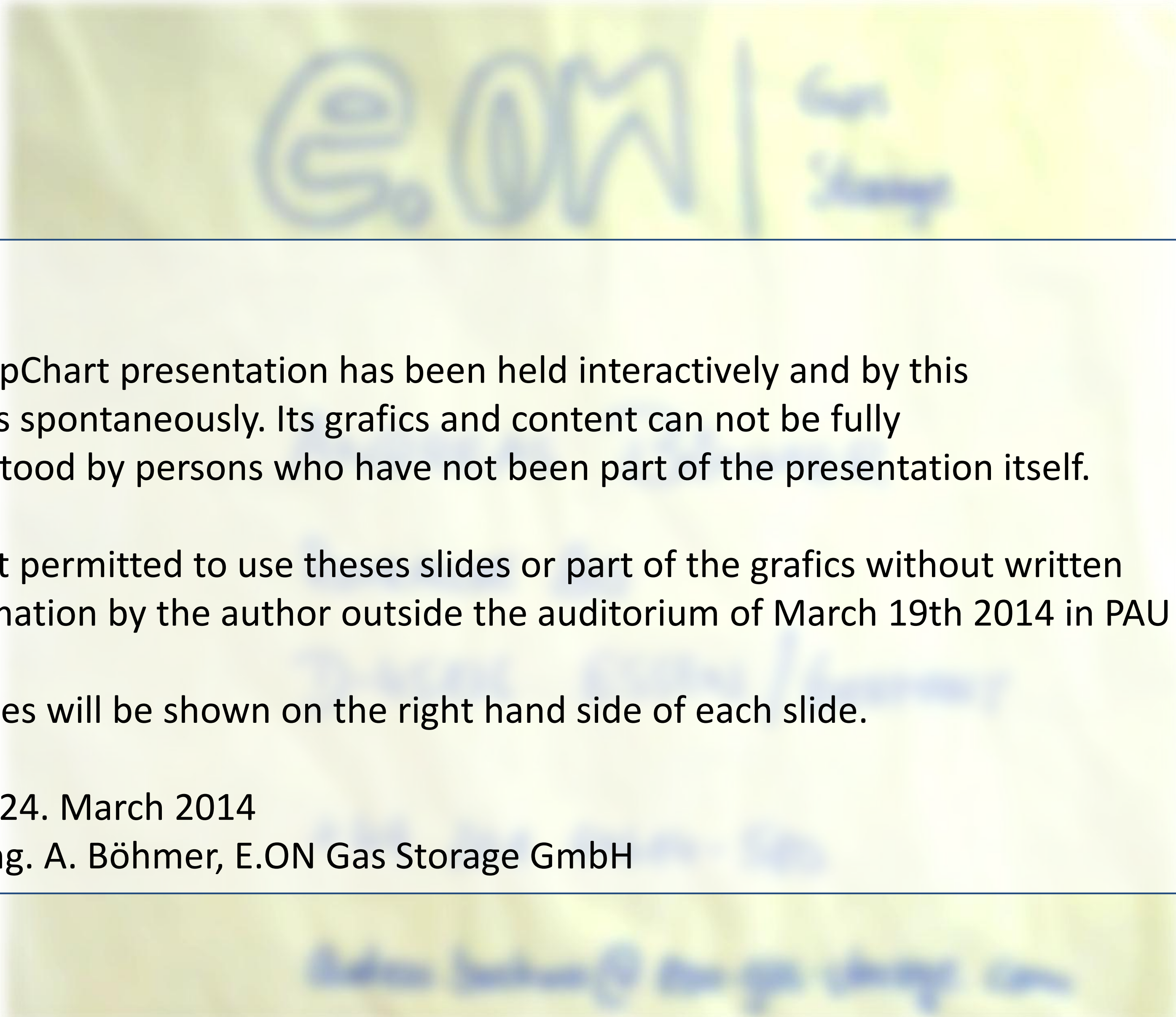
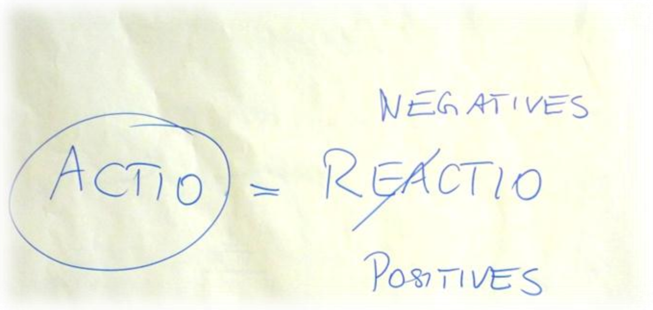


Note:

This FlipChart presentation has been held interactively and by this in parts spontaneously. Its grafics and content can not be fully understood by persons who have not been part of the presentation itself.

Keynotes will be shown on the right hand side of each slide.

Essen, 24. March 2014
Dipl.-Ing. A. Böhmer, E.ON Gas Storage GmbH



Starting thesis for interactive discussion:

- Unbundling is a part of deregulation efforts, starting in 1998 in most over Western Europe

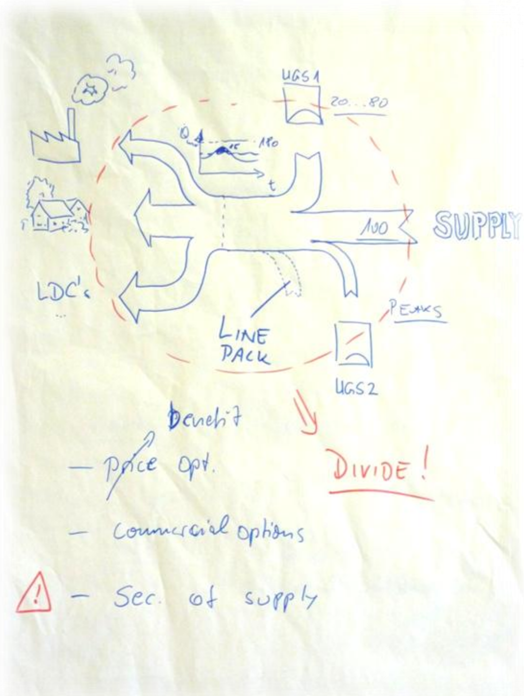
- Main motivations have been:
  → Strengthen competivive markets gas / power
  → Open networks for 3rd party access
  → Abandon hidden cross-subsidization
  → Fight natural monopolism
  → Implement non-dicriminatory offers via WWW
  → Establish stock oriented market for commodity gas / power

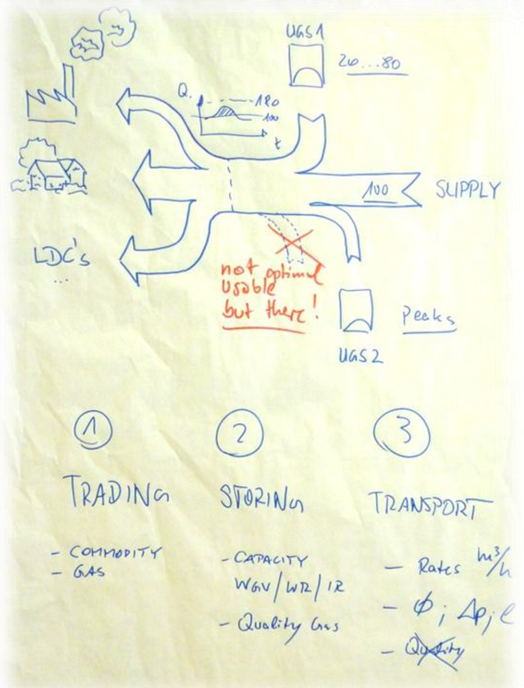
- Even if this motivation can be seen positive, the „reaction „ in existing business harms for example efforts to optimize operations and environmental footprint

Not part of this interactive discussion:

Unbundling has brought positive effects – theses are not mentioned in this presentation.

Here it was target to emphasize effects on the op. gas business and the possibillity to reduce op. costs and environmental footprint. Today often semi optimal processes have to be run just because of lost integrity in the physically joint or for this business not designed system.





Former Integral Business:

- Supply / Transport / Storage out of one hand
  → integral optimisation possible
  → All contributors have same customer (gas consumer)
  → Line Pack as part of internal optimisation
  → Storage as alternative/add on to supply contracts and Peak-Shaver

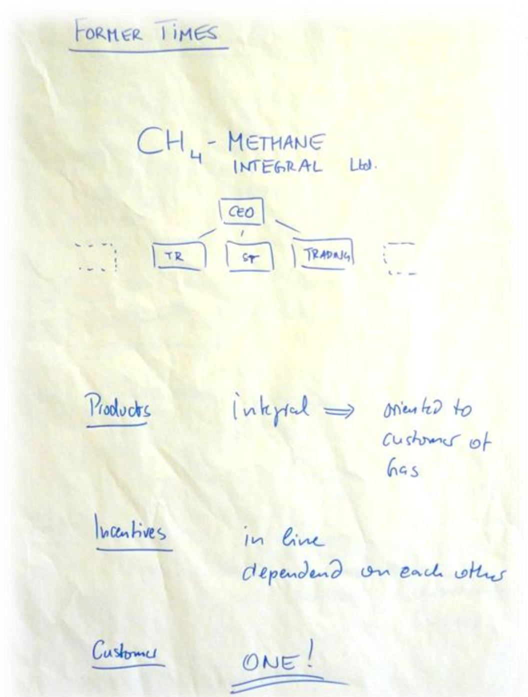
- Different „products“ of Departments follow one target:
  „Customers Supply“

- Unbundling „devided“ this unit into separate pieces

Unbundled Business:

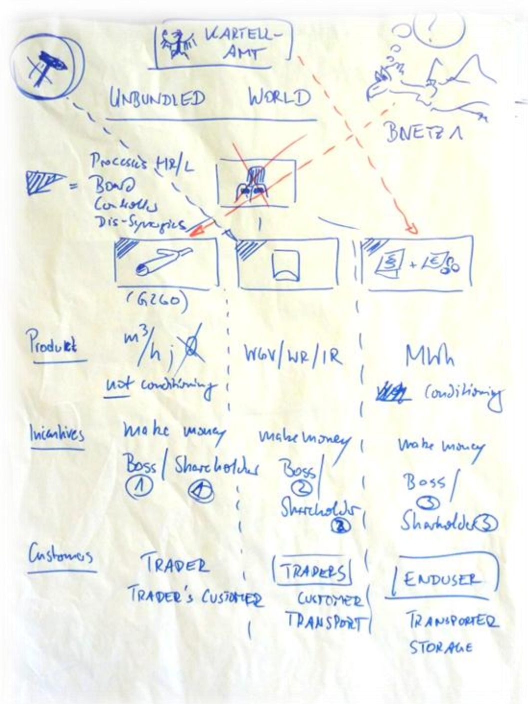
- Supply / Transport / Storage
  → follow different strategies
  → have different customers / stakeholders / shareholders
  → can‘t optimize each other since every seperated product is part of non-discimінatory offers via WWW
  → Not every product is able to stand as a seperate in the market
  → Storages stand alone (at the flange, not at the hub)
  → Line buffer not optimal usable since it „kills“ a product of Transport
  → have different products
  → former contracts have been sliced into smaller pieces (MinFlow!)

- Who‘s doing „Versorgungssicherheit“ (Security of Supply)?
  Who will pay whom for that?



Former Integral Business:

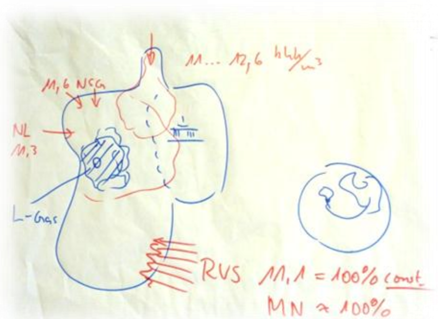
- One Board acts integrally with departments Storage, Transport, Trading
- All act for secure delivery of gas to the one customer of the integral unit
- Disadvantages and benefits summarise under one roof
  --> incentives in line even in case of semi optiomal contribution of
  one department e.g. using Line Pack for intraday peak-shaving
- „whatever helps and is economically feasible" in the unit is evaluated positive

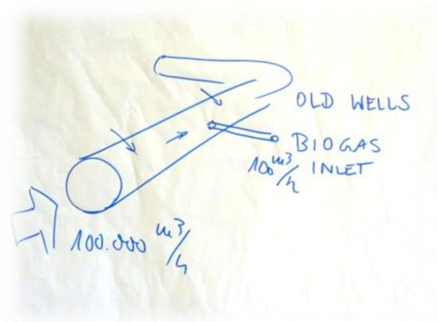


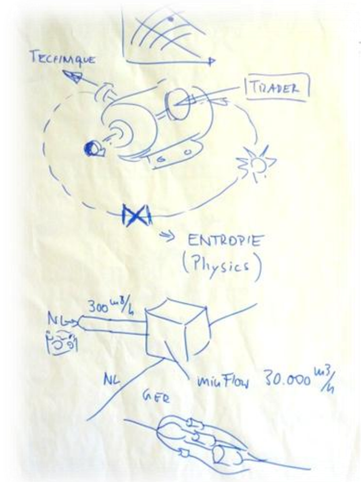
Unbundled Business:

- No integral supervisor
- Different authorities (BNetzA, Kartellamt, Mining Auth.)
- „egositic" behavior of the units separated
- No intergal potential accessable, since it has no price or is not available in the markets (e.g. Line Pack)
- Different products, customers
- Incenitves of units not in line
- „Versorgungssicherheit" (Sec. of supply is „second row")
- Much more interaction on a formal level
- Much more mgmt. / boards / reports … → can't really be cheaper!
- Operational diversity / inconstancy
  → harms environmental fooprint just because of non-integral driving
  → „no chance" to overcome for the units

Additional FlipCharts







Referring to Quality zones in Germany (Mixing, Conditioning)

Referring to „Off Spec Gas“, even if big streams would be able to do conditioning.

Referring to „MinFlow“-problematic (aggregation of sliced streams or small stand alone nominations cause op. problems in the system (Compressor loops, measurement devices, increment of valves, …))

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