Optimizing a large number of assets with PI AF

migrating PI Module Database to PI AF

Presented by **Christian Benitz**

RWE
The energy to lead

RWE Generation is one of Europe‘s leading electricity producers

- Round about 40,000 MW of generation capacity
- In D, GB and NL

> Round about 18,000 staffers (production and administration)

> More than 70 locations

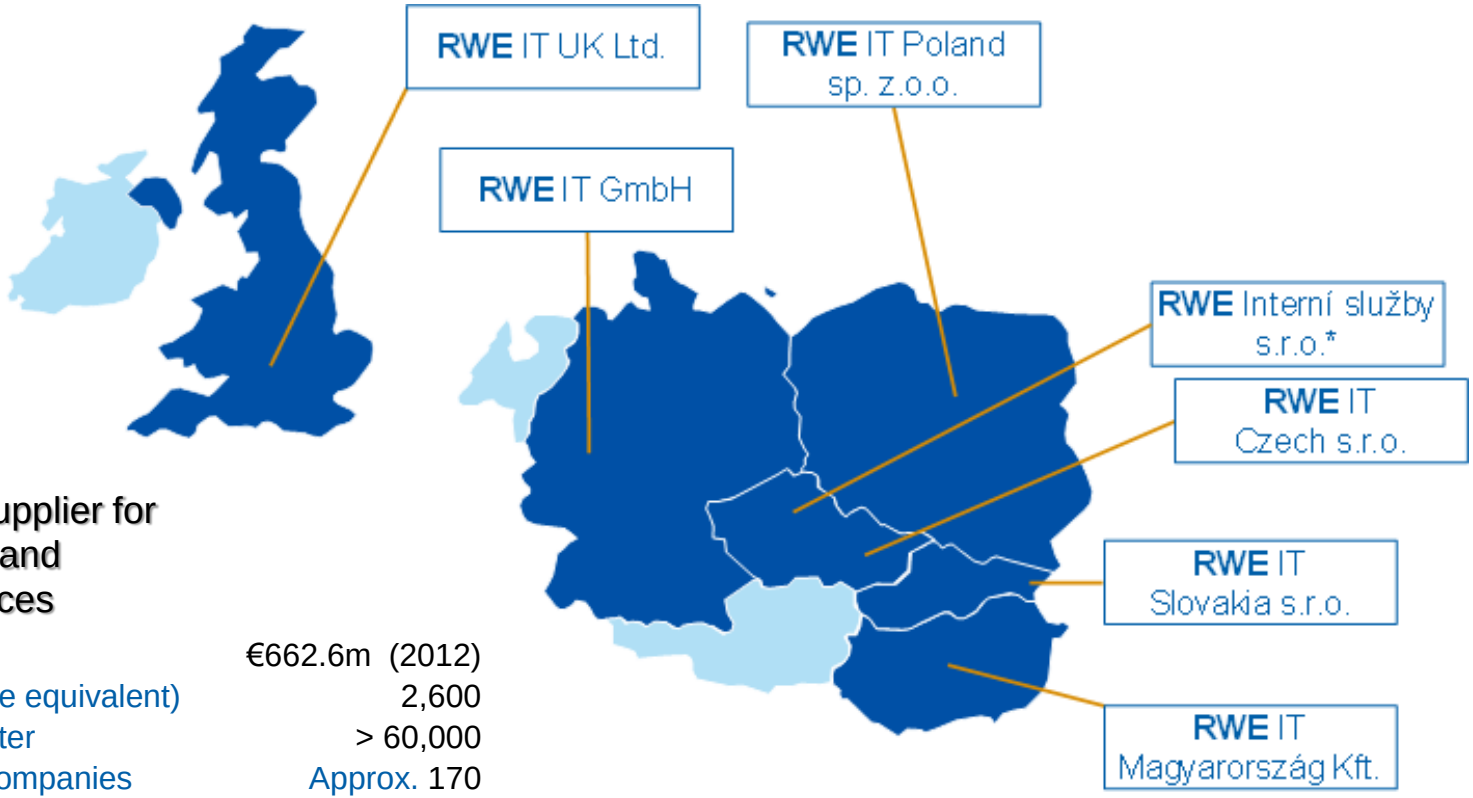
> 100-percent subsidiary of RWE AG

> Pooled know-how of Essent, RWE npower, RWE Power and RWE Technology

> Headquarters in Essen, Germany

> European incorporated society (Societas Europaea, abbrev. SE)

RWE IT Group in 6 countries

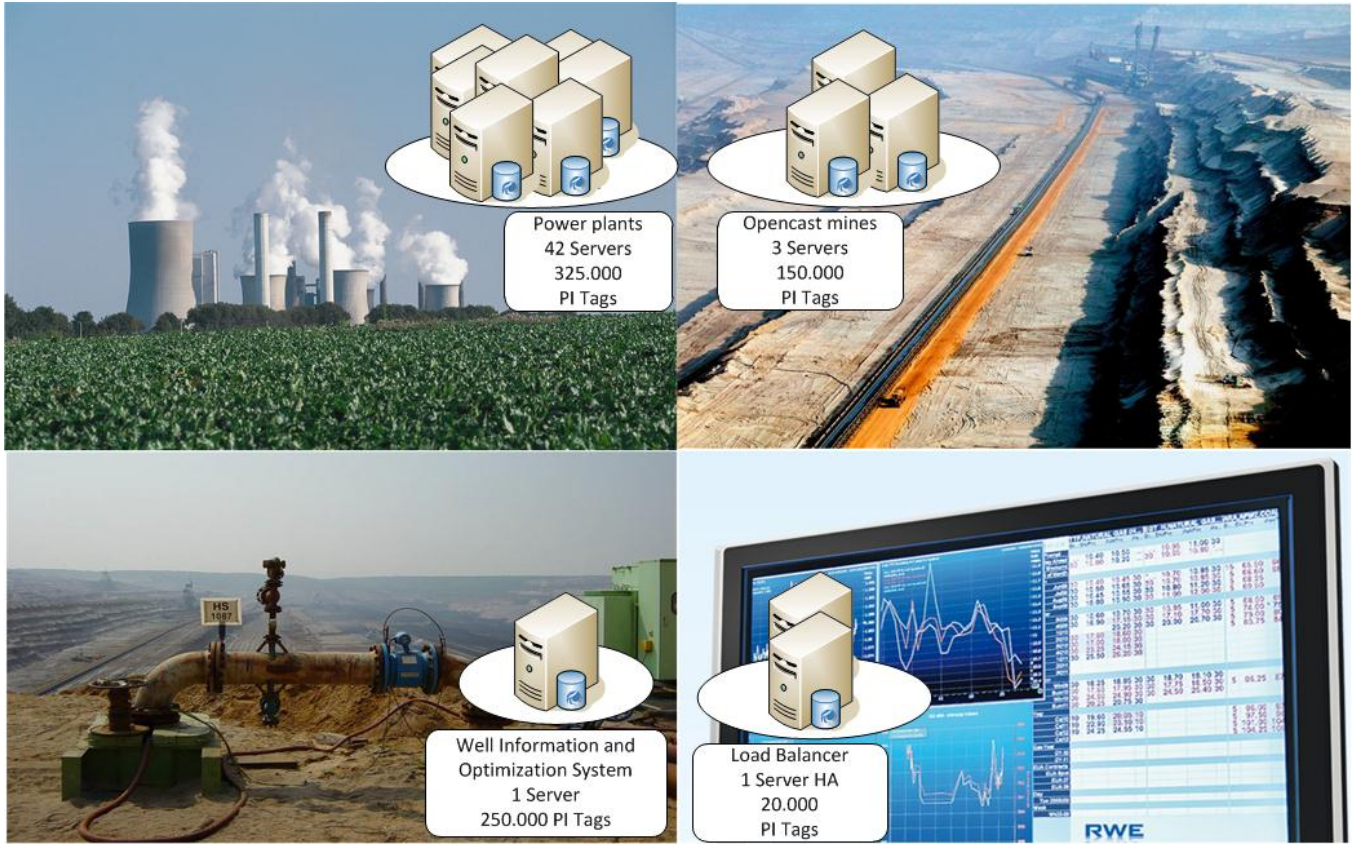


RWE IT –
the internal IT Supplier for
IT infrastructure and
application services

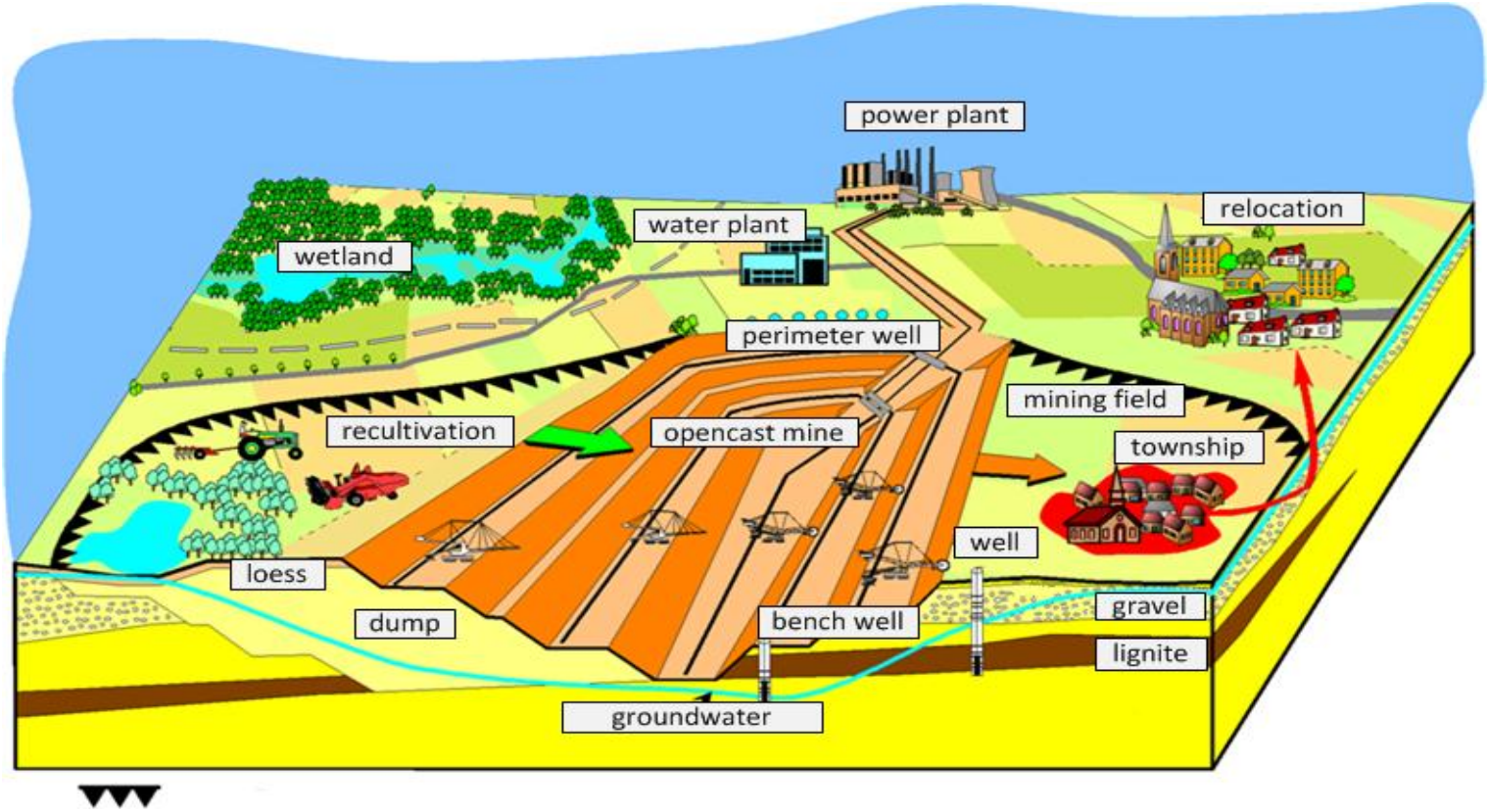
Turnover	€662.6m (2012)
Employees (full-time equivalent)	2,600
Supervised Computer	> 60,000
Supervised RWE companies	Approx. 170

- *The responsibility for " Interní služby" a subsidiary of RWE Transgas is at RWE IT.

PI System Tags at RWE Power Germany



Opencast mine



All well information out of a single location

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monitored values
- runtime
- level
- temperature

event window
- outages
- deviations

measured values
- currents
- levels
- power

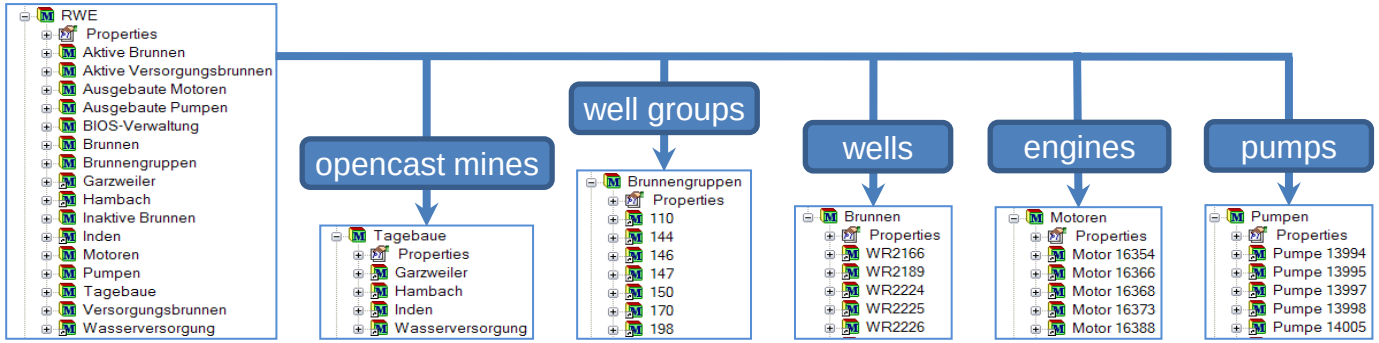
notifications
- high consumptions
- deviations
- alarms

master data
- name
- manufacturer
- model

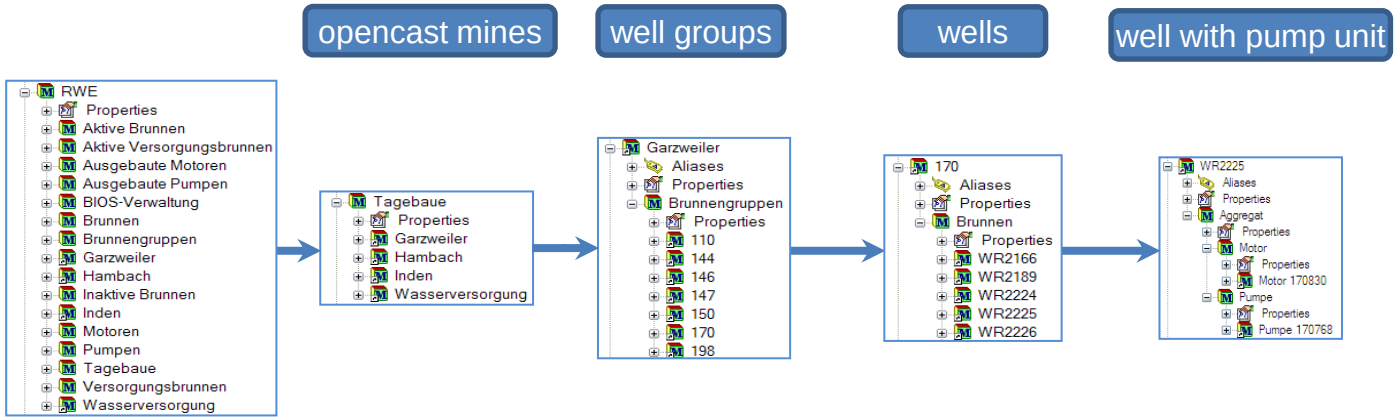
external databases
- master data
- interruptions & downtimes
- service data & intervals

calculations
- power calculations
- KPI's
- matlab calculations

PI Module Database structure



Assets



Hierarchy

46 well groups
2700 wells
3600 engines
3400 pumps

PI Module Database - Synchronization

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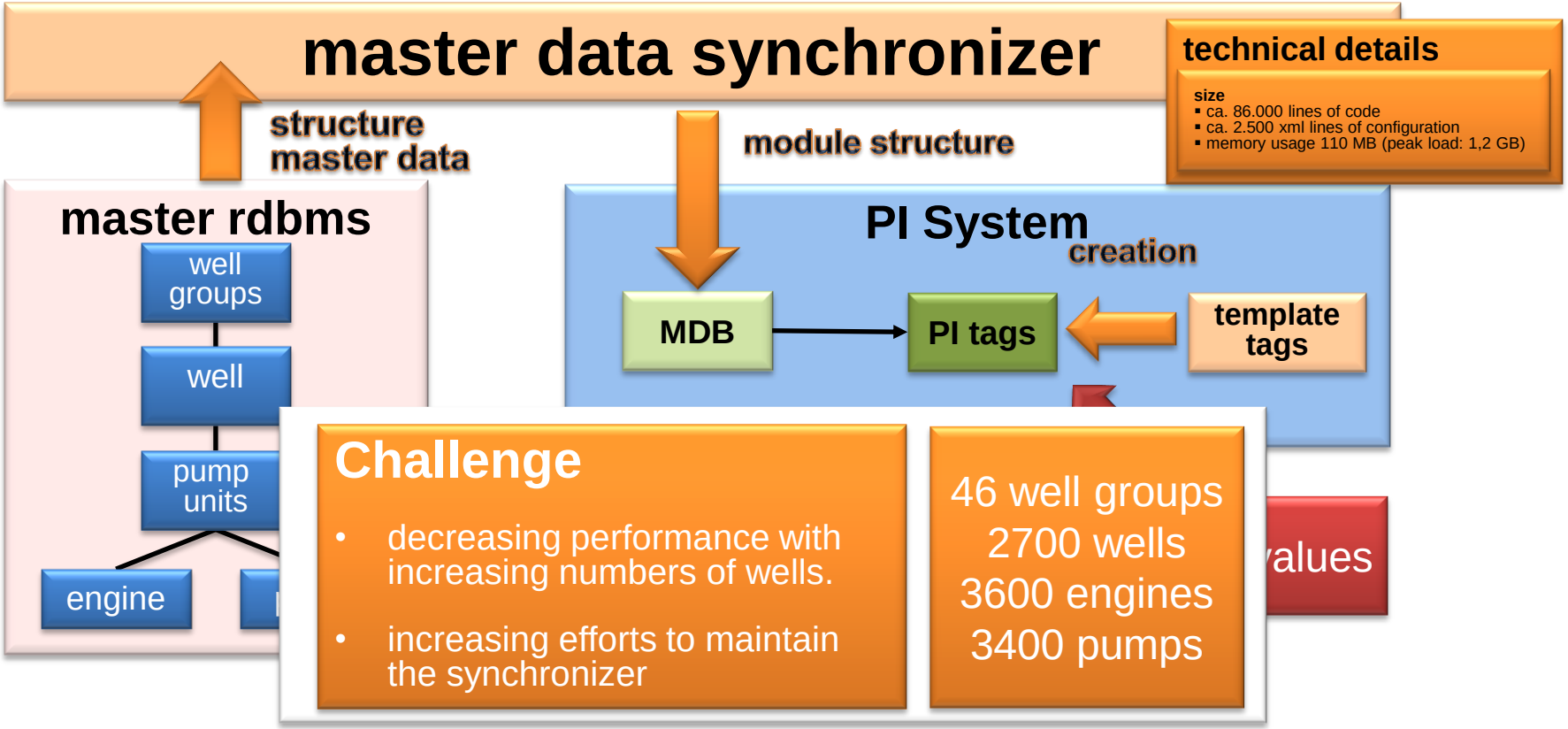
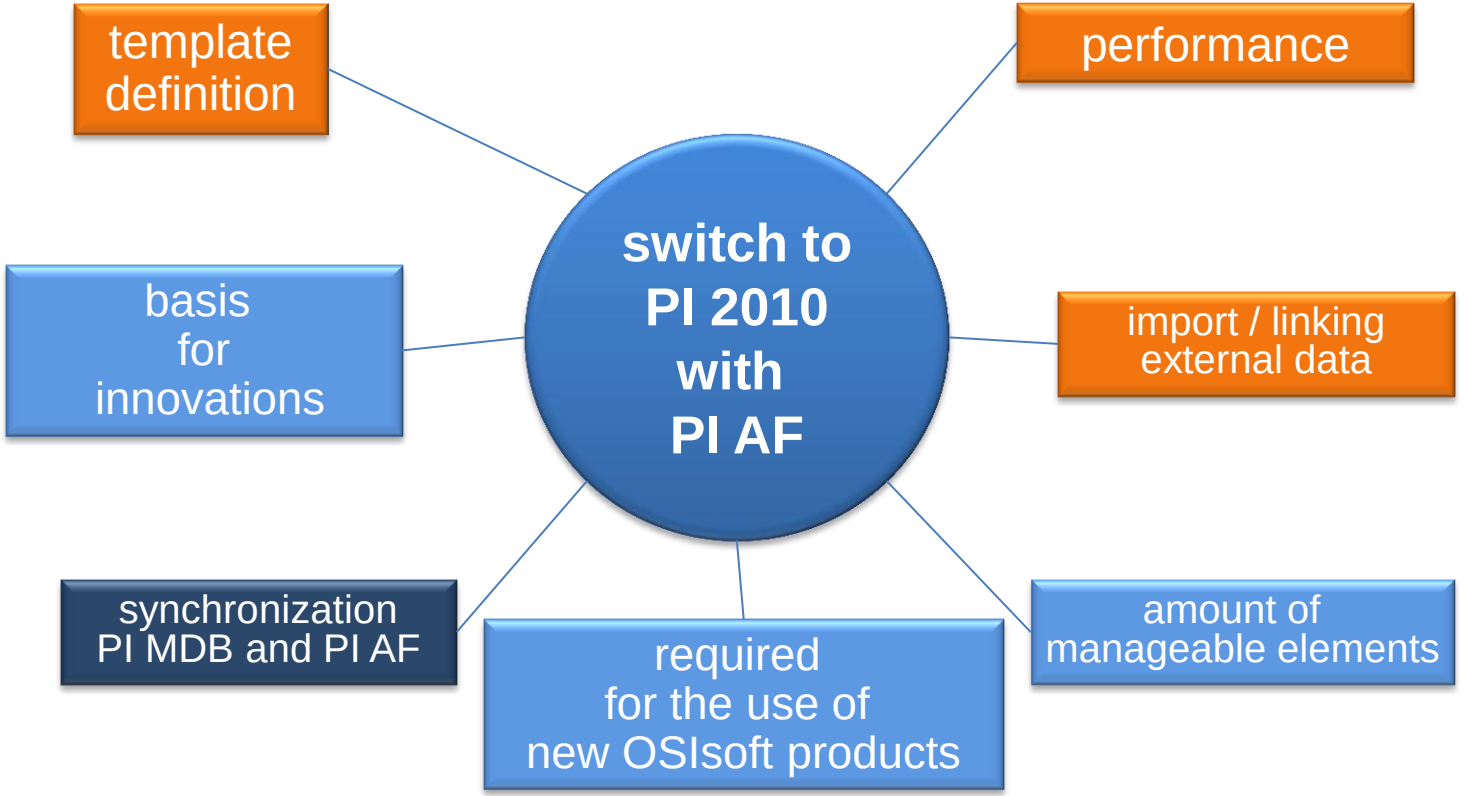
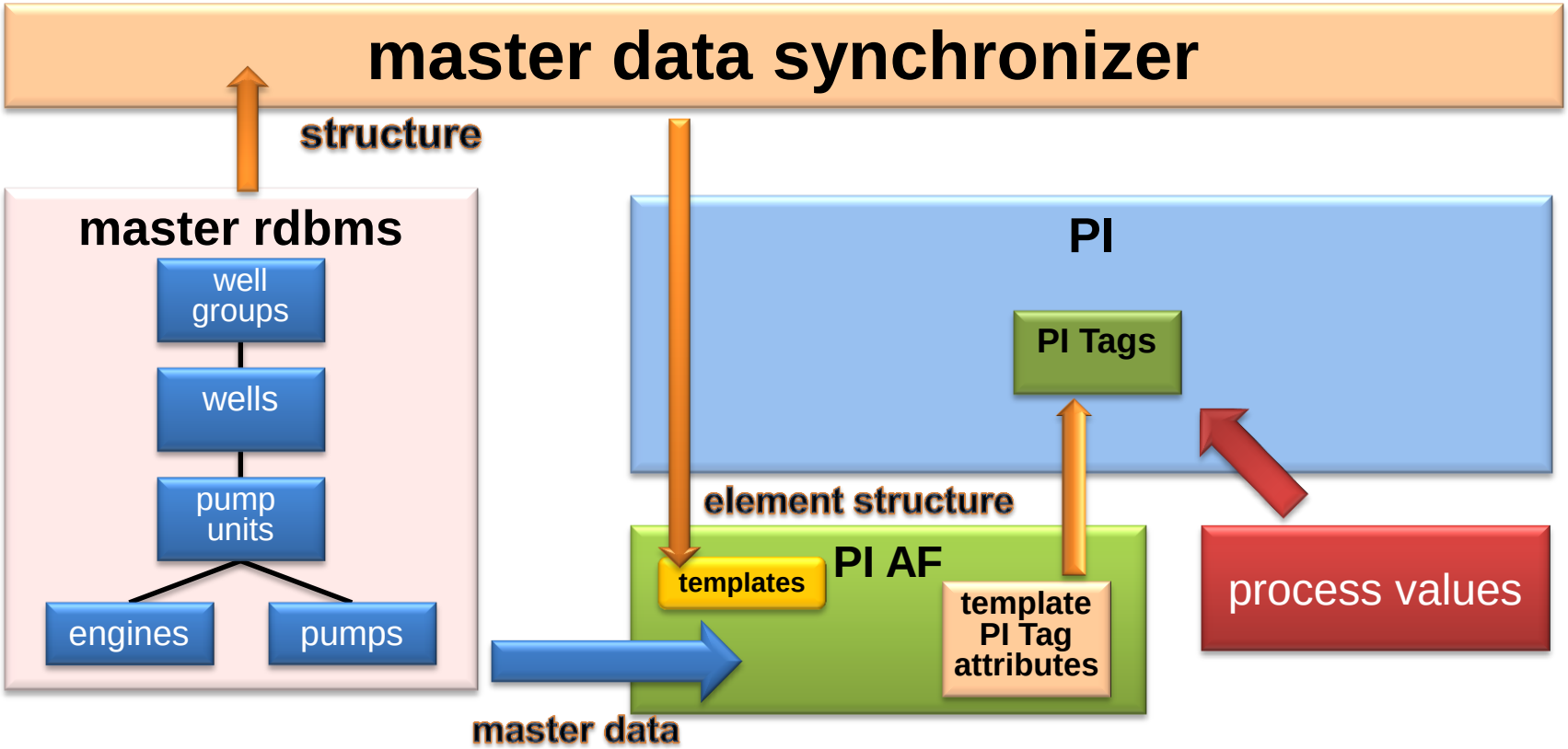


Expected advantages using PI AF



PI AF - Synchronization

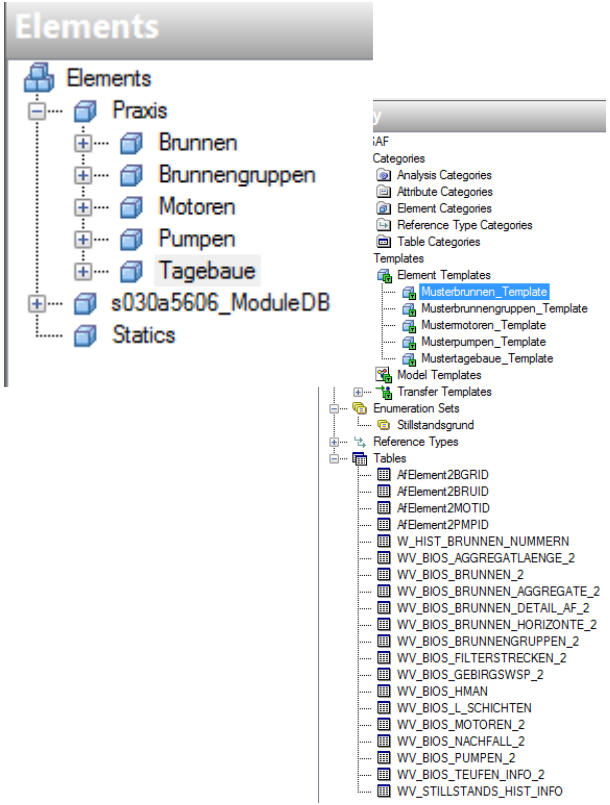


Migration Approach

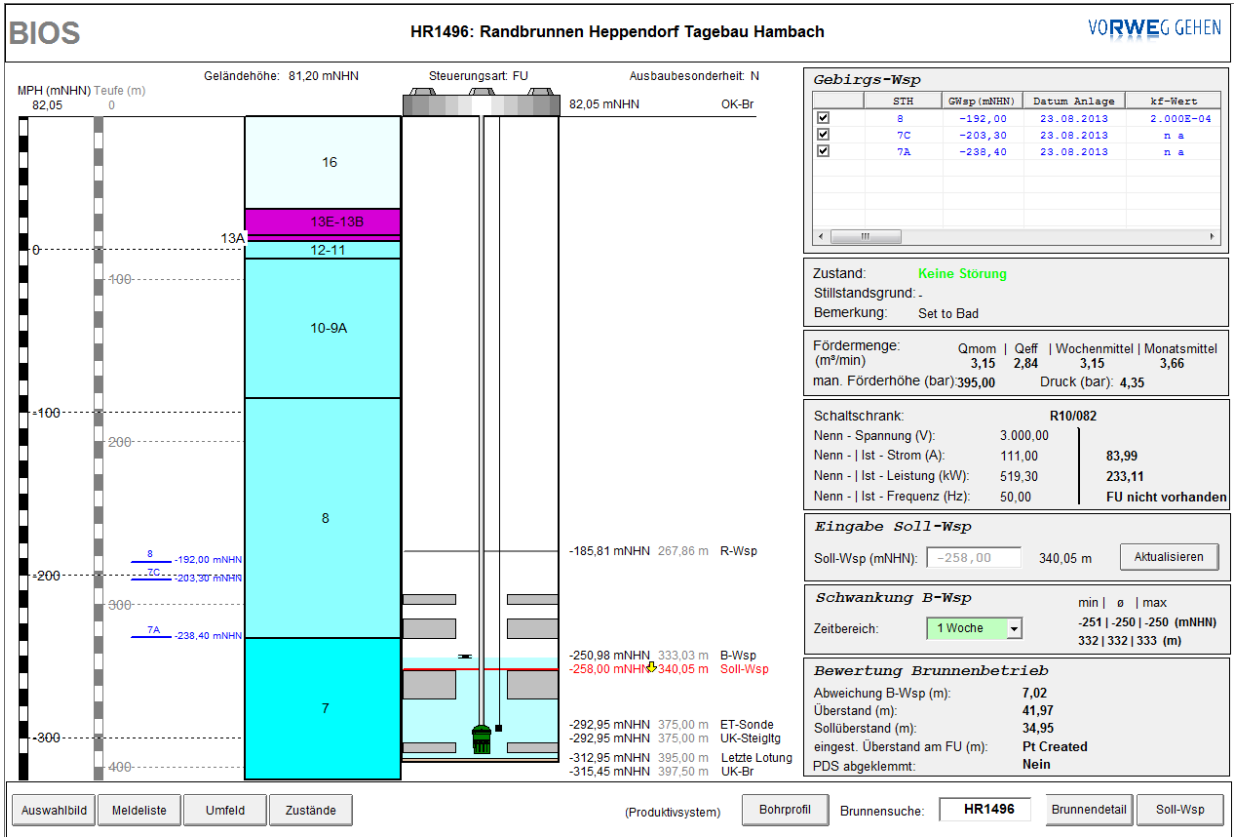
- Creating a test system, developing an architecture concept for use of PI AF and get experience in developing with PI AF SDK (30 person days)
- Modify the running PI System so that PI Module Database - and PI AF based applications can be used. (30 person days)
- Migrating existing applications from PI Module Database based technology to PI AF (estimated 60 person days)
- Reducing the functionality of master data synchronizer (estimated 20 person days)

Initial steps

- Updating the PI Server to Version 2010 in order to use the PI AF sync mechanism
- Creating linked tables to external master RDBMS
- Creation of PI AF templates for wells, pumps engines, well groups and opencast mines.
- Linking the information to the PI AF attributes
- Creating a PI AF plugin for dynamic linking PI AF attributes
- Building a new PI AF hierarchy beside the PI Module Database sync tree



PI ProcessBook Display – Well information



First completely PI AF based ProcessBook display

Technologies

- **E**lement **R**elative **D**isplay
- VBA code
- AF wrapper (based on vCampus version)

Lessons learned

- Direct access from PI ProcessBook to PI AF using VBA is not possible.
- Performance advantage is not as expected yet (reason identified and solution in progress)
- PI 2010 combined with PI Module Database requires PI AF sync
- Easy to install
- Easy creating templates
- … and we would do it again

Conclusion

- Using PI AF provides good options for future developments without an increasing effort to develop, maintain and test individual synchronization modules.

- The effort to migrate depends on the complexity of additional code and number of existing modules and functions where you have to change to PI AF structure instead of MDB.

Future plans and next steps

- Step by step switching applications from PI Module database to PI AF technology
- Minimizing the functionality of the synchronisation application

- Final goal:
  - Stopping the usage of the PI Module Database

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