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Ingenuity for life

Digitalization@PG

Solving business challenge with innovative AWS architecture and third-party software

Berlin | 18.05.2017 | AWS Summit 2017

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Power and Gas – Powerhouse in power generation

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Power and Gas Division

Oil & Gas

- Portfolio expansion through Dresser-Rand's acquisition
- Entry into growing LNG market

Power Generation

Decentral

Central

- Products and turnkey solutions
- Small decentral to largest utility applications

Power Generation Services Division

Service

- Game-changing service technologies
- Data-driven services
- Large installed fleet (7,800 gas turbines, 72,000 steam turbines, 44,100 compressors, 3,200 automation systems)

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Power and Gas – Global trends are creating our market's challenges

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Global trends lead to increased energy demand

Demographic change

9.6 BN

increase in the earth's population in 2050 from 7.3 billion people today. Average life expectancy will then be 82 years.

Urbanization

70%

of the world's population will live in cities by 2050 (2009: 50%).

Climate change

2013

Scientists measured the highest CO_2 concentration in the atmosphere in the last 800,000 years.

Digitalization

44 ZB

will be reached by the digital universe by 2020 – a 10-fold increase from 2013.

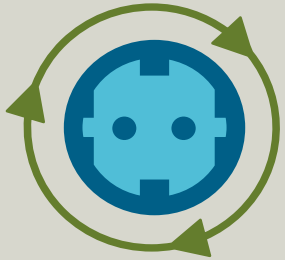
Globalization

2x

Since 2000, the volume of world trade has nearly doubled.

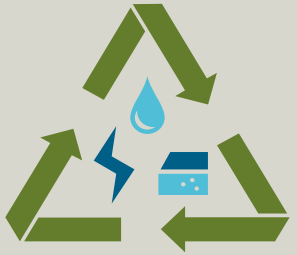
Lead to our market's challenges

Acceptance



Reliable power supply

Economic efficiency



Resource efficiency

Climate protection

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Egypt Megaproject – 14.4 GW H-Class power further national grid

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Customer
Egyptian government
Location
Beni Suef, Burullus, New Capital
Date
2017

> 60% net efficiency

24 H-Class gas turbines

14.4 GW total combined capacity

Challenges

- Outages and electricity cuts hamper industrial production and affect private households
- Energy demand is rising
- More electrification of urban and rural areas needed

Solution

- Three natural gas-fired combined cycle power plants including 24 H-Class gas turbines and 12 steam turbines
- Adds 14.4 GW to Egypt's national grid
- Provide training to future power plant workers and service personnel

Customer benefits

- Increased power generation capacity and reliability of power supply
- Reduced CO_2 emissions and diversification of the energy mix
- Supports economic growth
- Increases the number of jobs and benefits for education and training

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Change is
a Process
not an Event!

Why we did it

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Customers need solutions – not technical description and tools

PG is an engineering company – the staff needs an easy way to access and evaluate data

Our people should build the solution – they have the domain know how

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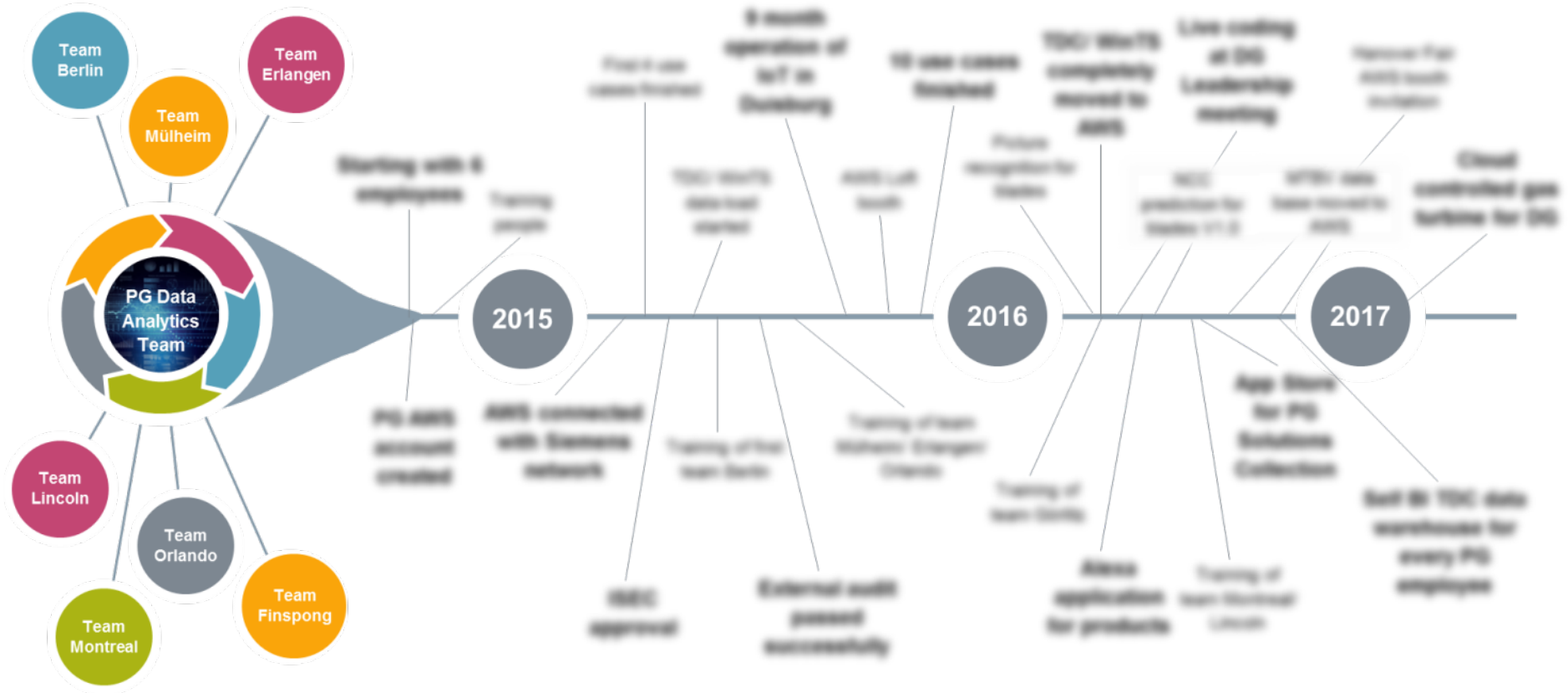
Digitalization@PG – Data Analytics and Cloud Solutions

What we are doing



Business value goes first

Serverless goes first

Build your solution, learn and extend

Stay cloud native

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And in some cases we will fail ….

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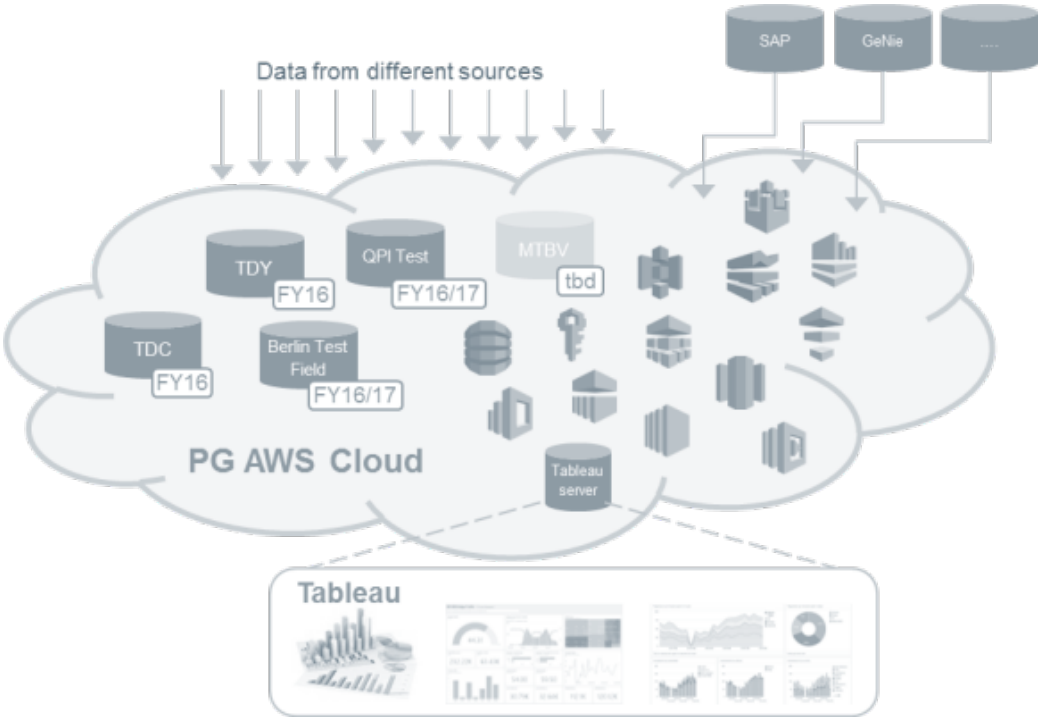
Cloud based infrastructure: starting fast by using what is out there – but what about ETL?

Standard AWS account

Tableau Server located in AWS cloud



aws marketplace

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Use it!

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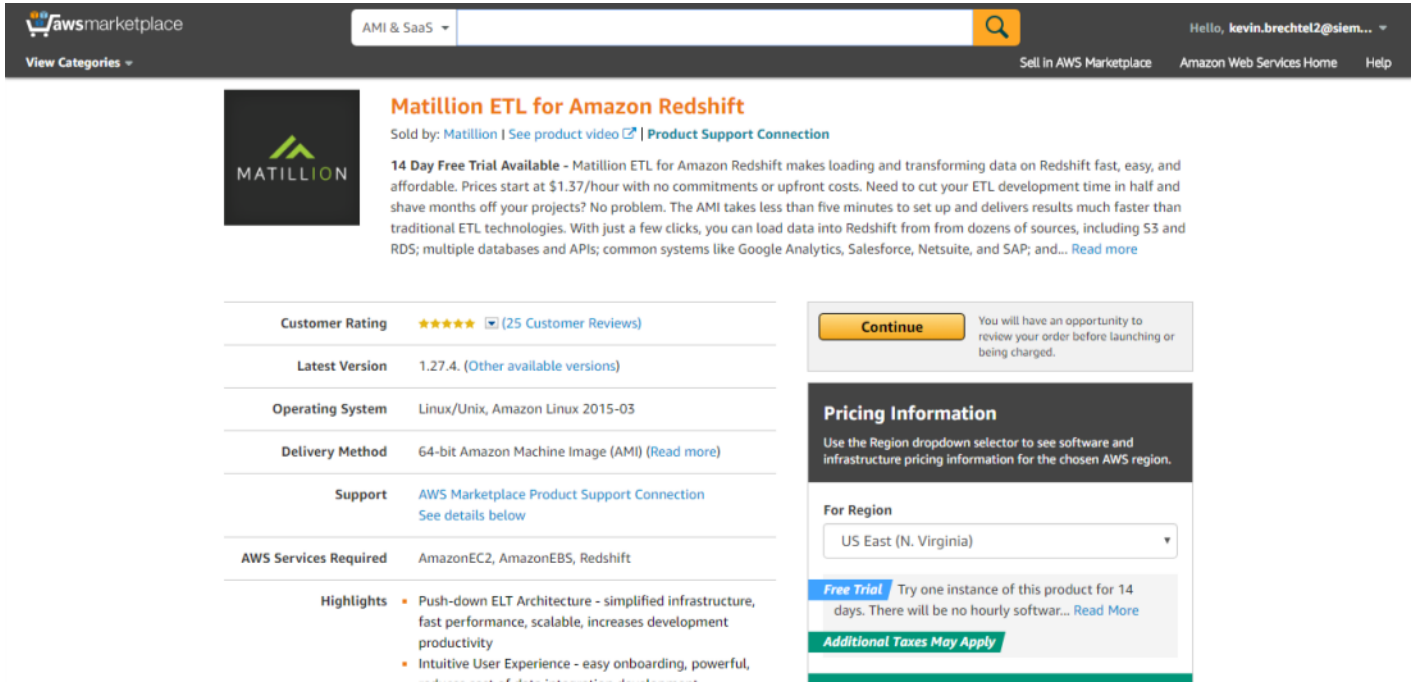

Easy to find but....

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Use it!

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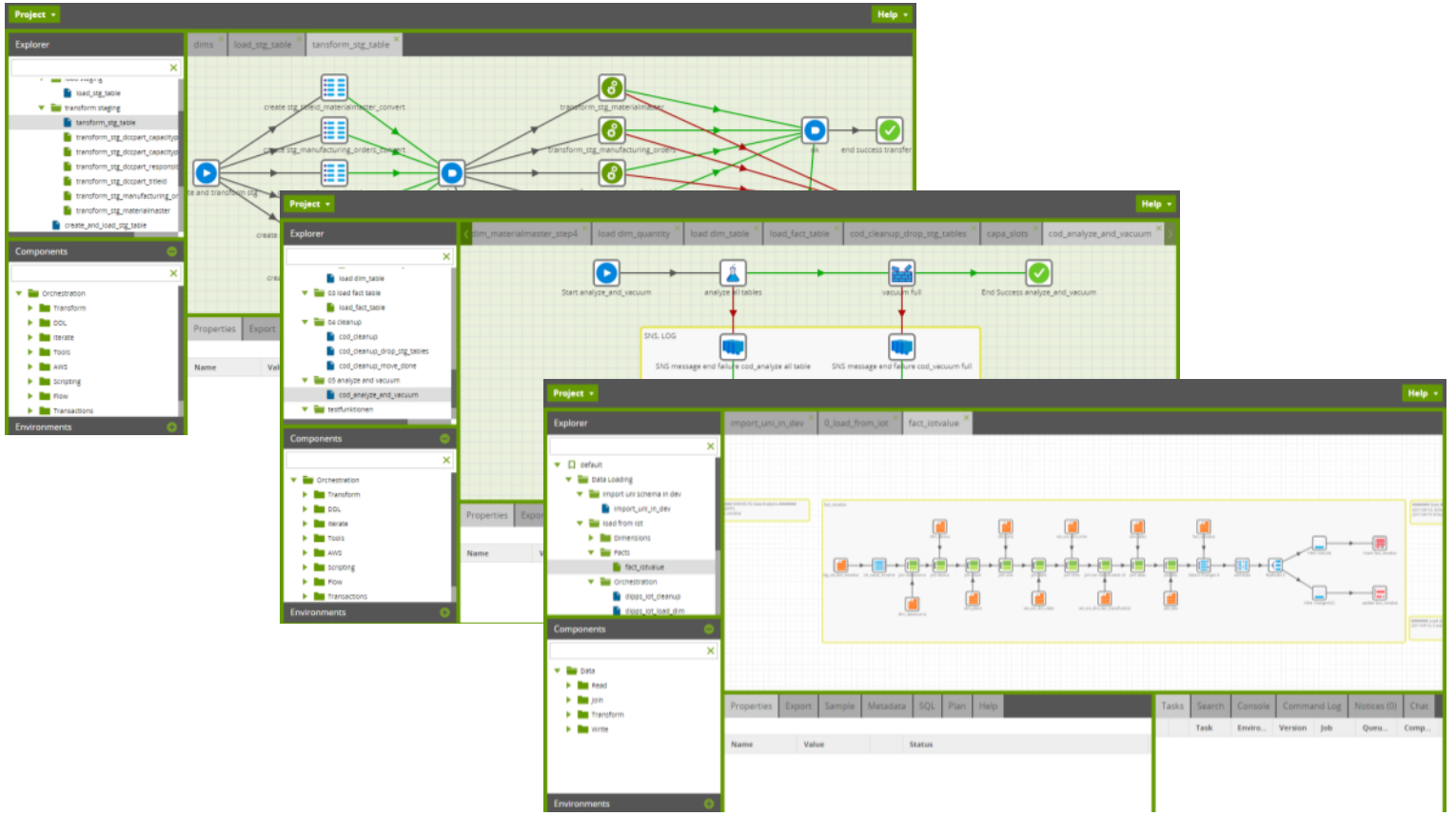

What happens to

our existing jobs

with other tools?

….can we manage to implement it?

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From a todays point

- Changing the tool was possible – and it was easy too
- Fully integrated into cloud environment makes working easy and flexible
- Training of team members is essential
- Matillion is now the first choice for our work
- Fully scalable with every new team without requiring massive changes, licenses or extra effort
- Excellent support for every issue and topic

Matillion offers great support making our work much more easy

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To invent you have to experiment, and if you know in advance that it's going to work, it's not an experiment.

Jeff Bezos

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Data Analytics and Cloud Solutions – Some Examples

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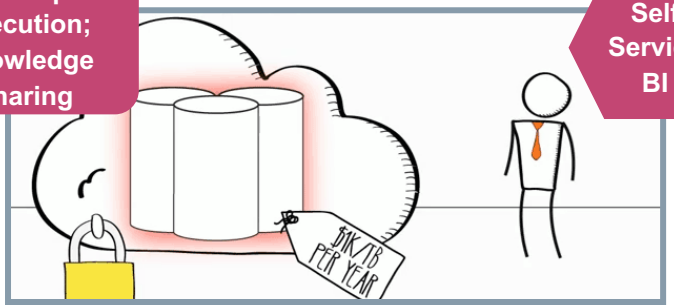
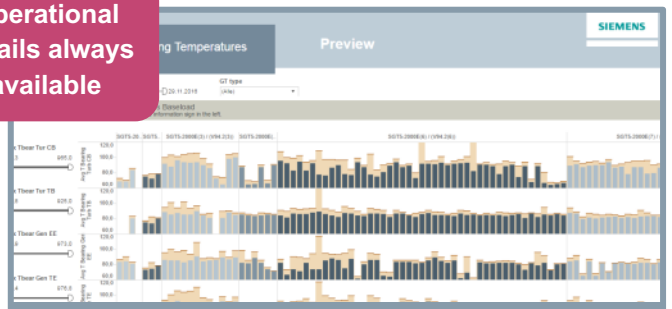
Speed up of execution; knowledge sharing

Self Service BI



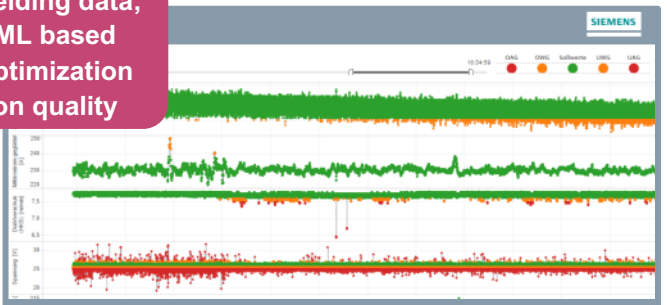
Easy access to operational data at a central data warehouse for every PG/ PS member

Operational details always available



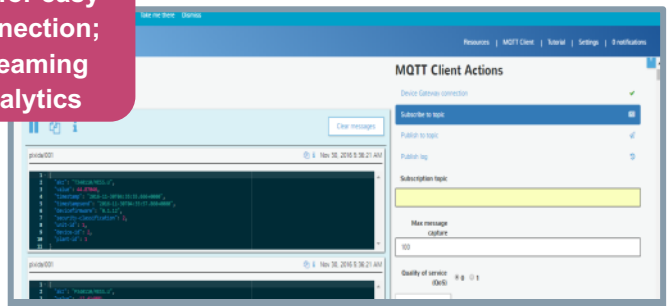
Operational data evaluation (>40 different views via Tableau dashboards)

Welding data; ML based optimization on quality



Data evaluation during welding to avoid failures and reduce quality testing

IoT for easy connection; streaming analytics



Internet of Things connectivity to gather data from manufacturing and field

Web based information search

Evaluation of supplier and sales information

New cloud based customer offering

Digital twin of e.g. boiler to evaluate operational performance on the fly

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All told: It is not possible…but then someone came not knowing this and simply did it

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