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Ingenuity for life

IFACMMM2016 – Future Perspectives - Digitalization

Boosting Data Analytics with Digital Services at Siemens

Gerhard Engelbrecht, Siemens Austria

Powered by
Sinalytics

New business models in the Internet age –
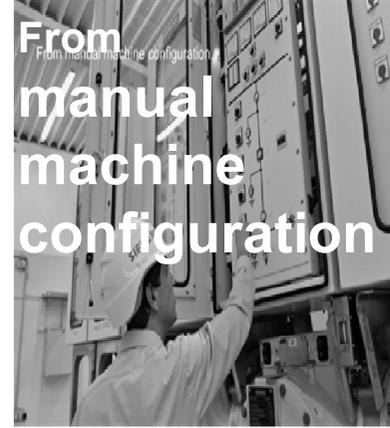# on the way to a user centric mindset

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From **bookstore**

amazon

to **e-book**

From **manual machine configuration**

to **virtual commissioning**

From **record store**

Spotify

to **streaming**

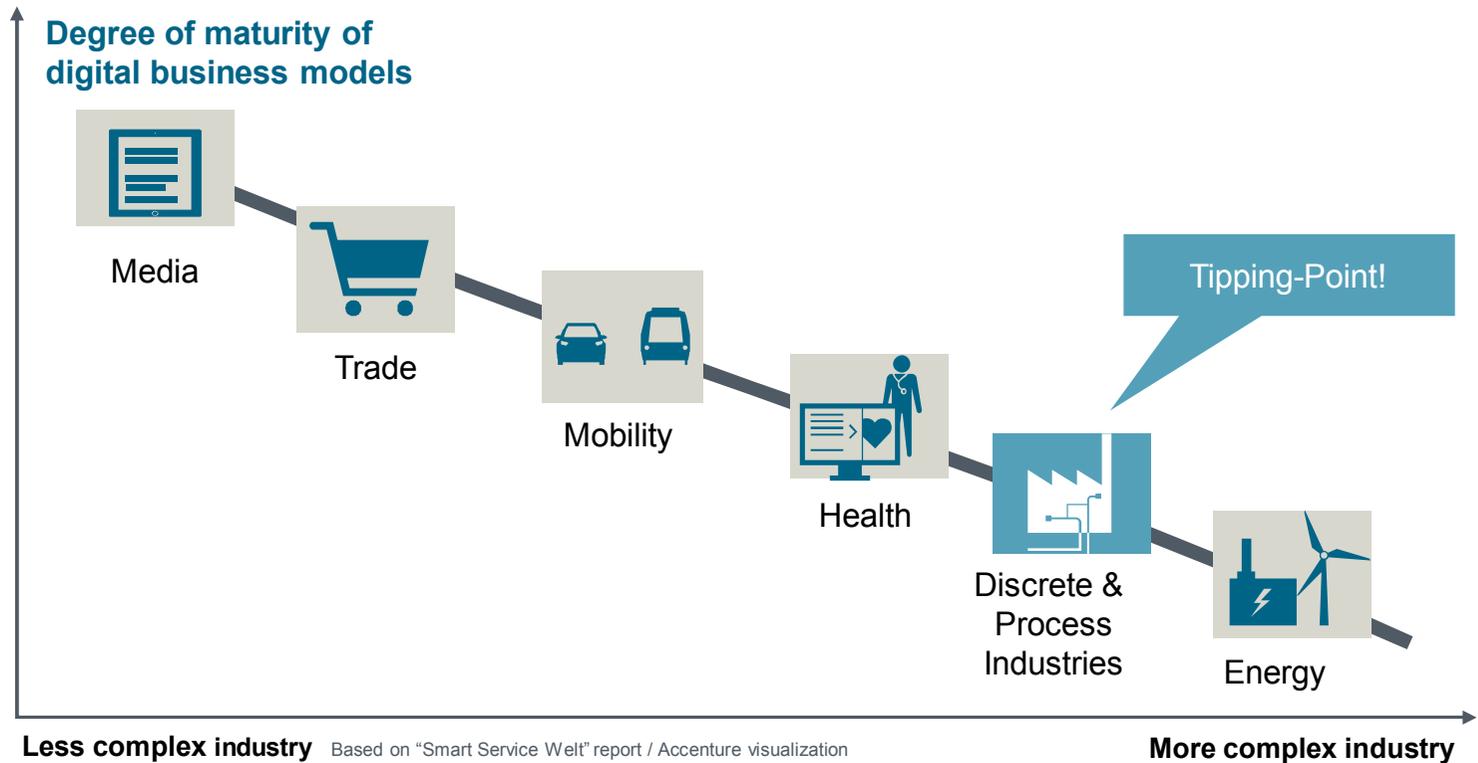From **fixed maintenance**

to **predictive maintenance**

Corporate Technology

Consumers have changed towards digital businesses…
…Siemens drives digitalization for industry customers

1 **Technical Drivers**

Sensors, Connectivity, Bandwidth, Data Capturing and Storage, Clouds, Analytics, Knowledge generation…

2 **Business Drivers**

New Business Models, Ecosystem concept and Paradigm shift: From product-focused to user-centric mindset…

Degree of maturity of digital business models

Media

Trade

Mobility

Health

Tipping-Point!

Discrete & Process Industries

Energy

Less complex industry Based on "Smart Service Welt" report / Accenture visualization **More complex industry**
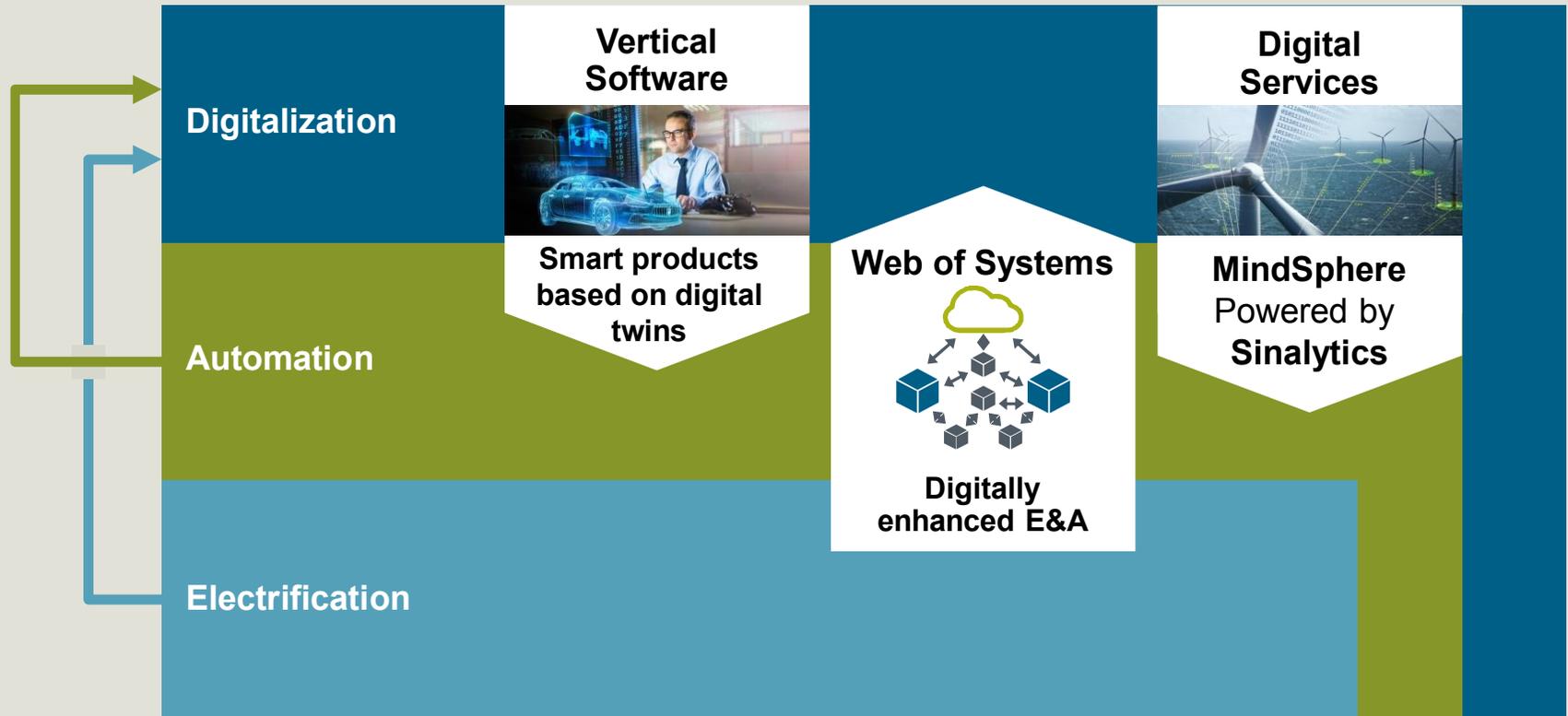
We see Digitalization in all our businesses

Siemens solutions combine Digitalization with Automation and Electrification

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Domain and product know-how for Digitalization

Digitalization

Automation

Electrification

Vertical Software

Smart products based on digital twins

Web of Systems

Digitally enhanced E&A

Digital Services

MindSphere Powered by **Sinalytics**

Corporate Technology

Siemens leverages the Internet of Things to the needs of our customers in industry and infrastructure

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Energy Management

Digital Factory

Process Industries & Drives

Healthcare

Web of Systems

Wind Power

Power and Gas, Power Generation Services

Mobility

Building Technologies
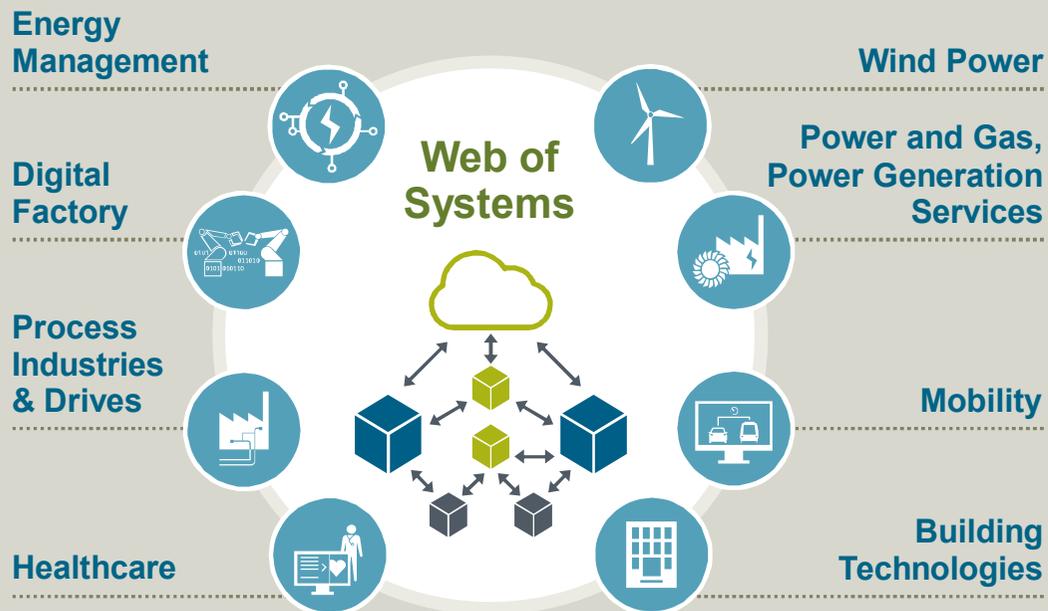
+ The Web of Systems puts devices, machines and their interactions in the center of digitally-networked industries

+ Devices process data locally and make decisions

+ Owners decide what happens with their data

+ Devices organize themselves and communicate with each other

+ New functionalities can be installed as with apps on smartphones

+ The installed base can be digitalized with the Web of Systems

+ Siemens delivers infrastructure and industry solutions characterized by:
  - **Reliability**
  - **Durability**
  - **Data security**

MindSphere powered by Sinalytics:
Our new platform for data-based services

Productivity

Energy efficiency

Energy Management

Wind Power

Digital Factory

Power and Gas, Power Generation Services

Process Industries & Drives

Mobility

Healthcare

Building Technologies

Availability

Security

Data analytics
- Data visualization
- Modeling/Analysis
- Data management
- Data integration

Cloud/Connectivity Cyber Security

We build on common technology platforms …

+ Latest technology for all Siemens businesses
+ Reduction of technical complexity in the company
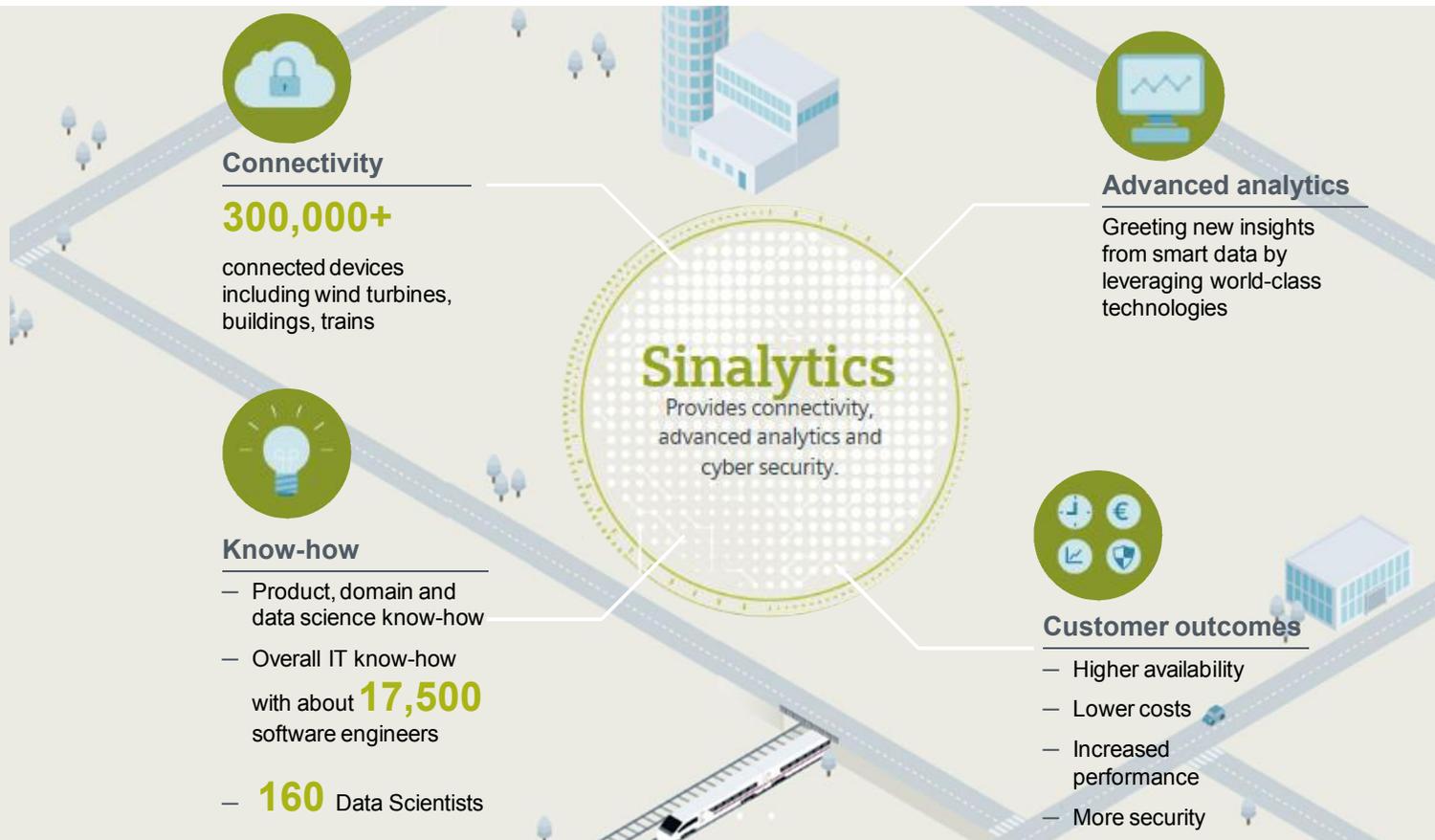+ Leveraging synergies through scaling
+ Faster development

… and use the customer proximity of our operating units to develop applications

+ Know-how regarding large installed bases of products and systems
+ Deep know-how of customer processes and challenges
+ Many existing applications that already generate value for our customers

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Mindsphere powered by Sinalytics
is the driving force for Siemens Digital Services

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Connectivity

300,000+

connected devices including wind turbines, buildings, trains

Know-how

— Product, domain and data science know-how

— Overall IT know-how with about **17,500** software engineers

— **160** Data Scientists

Sinalytics

Provides connectivity, advanced analytics and cyber security.

Advanced analytics

Greeting new insights from smart data by leveraging world-class technologies

Customer outcomes

— Higher availability

— Lower costs

— Increased performance

— More security

https://www.**youtube**.com/watch?v=LXWhMcRXSwI
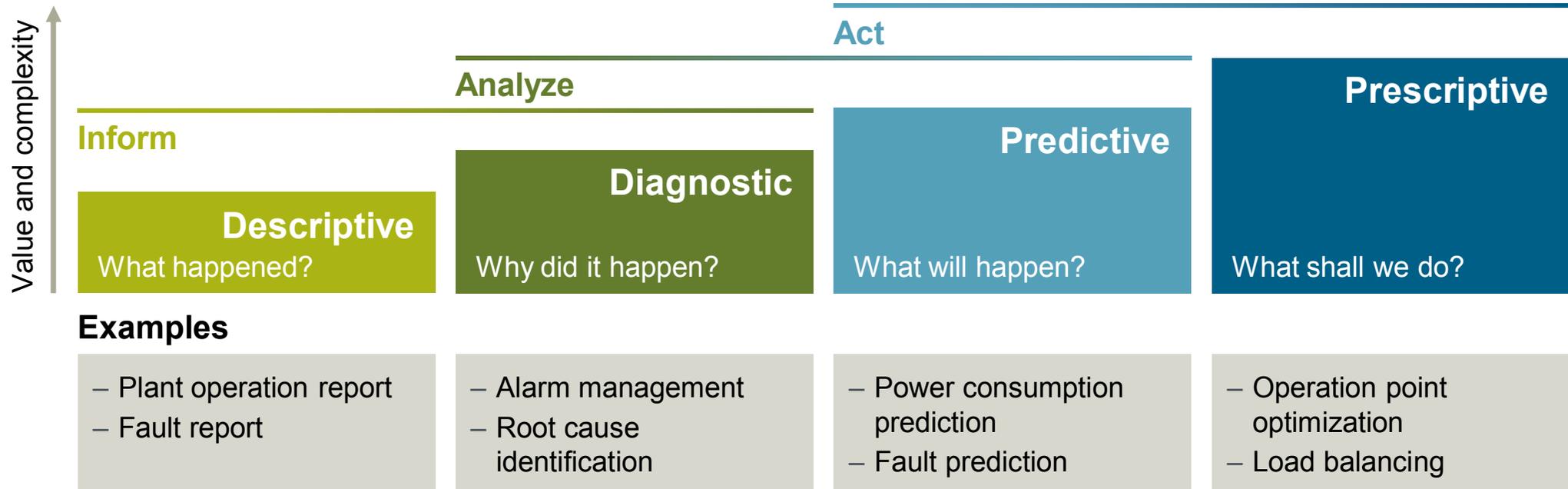
Corporate Technology

- 26 high-speed trains at Renfe Spanish Rail Company (Madrid-Barcelona-Malaga)

- Performance contract with availability guarantee

- Passengers are reimbursed for delays >15 mins

- On-time rate of 99.9%

- 60% passengers switched from aircraft to train

Corporate Technology

Powered by Sinalytics

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Value and complexity →

Act

Analyze

Inform

Descriptive	Diagnostic	Predictive	Prescriptive
What happened?	Why did it happen?	What will happen?	What shall we do?

Examples

– Plant operation report – Fault report	– Alarm management – Root cause identification	– Power consumption prediction – Fault prediction	– Operation point optimization – Load balancing

Current penetration across all industries (according to Gartner 2013)

99% Adopt by vast majority but not all data	**30%** Adopted by minorities	**13%** Still few adopters	**3%** Very few early adopters

Corporate Technology

Six step innovation approach "Smart Data to Business" turns data into customer & Siemens value

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Six step innovation approach

"Smart data to business"

Technology   **Business**   **Customer**

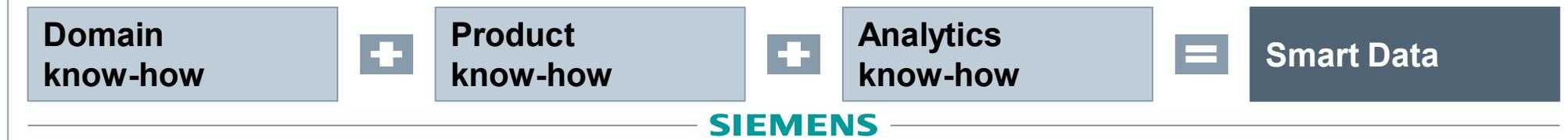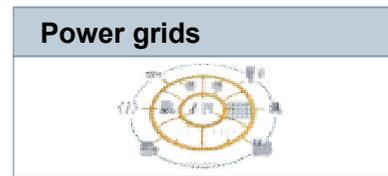| Processes & Physics | Data Assets | Data Analytics | Business Intelli-gence | Business Models & Ecosys-tems | Value Generation |

Benefits

Customer value
- Performance increase
- Energy saving
- Cost reduction
- Risk avoidance/ security

Siemens value
- Product optimization
- Process performance
- Sales optimization

Power plants

Power grids

Factories

Hospitals

| Domain know-how | + | Product know-how | + | Analytics know-how | = | Smart Data |

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Source: Smart Data to Business

Smart data to business example:
Smart City Research Aspern, Vienna

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Joint Investment
City of Vienna/Siemens:
Close to € 40 mil.

Objective:

"My clear goal now is to become the greenest city in the world."

Michael Häupl, Mayor of Vienna

City infrastructure

- **Market drivers**
- **Customer needs**
- **Power networks**
- **Building technology**

Smart Grid / Smart building

- **Electrical engineering**
- **Power storage**
- **Smart meters**

Smart City Cockpit

- **Integration of smart grid, smart buildings, water and mobility**
- **Analytics dashboard**

Domain know-how + **Device know-how** + **Analytics know-how** = **Smart Data**

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Thank You !!!

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