

# Platform Approach for the New Energy Value Chain

Important enabling element achieving strategic aims in a secure and economic way



1

## The Need of New Strategic Capabilities

2

Smarter Analytics and Optimization

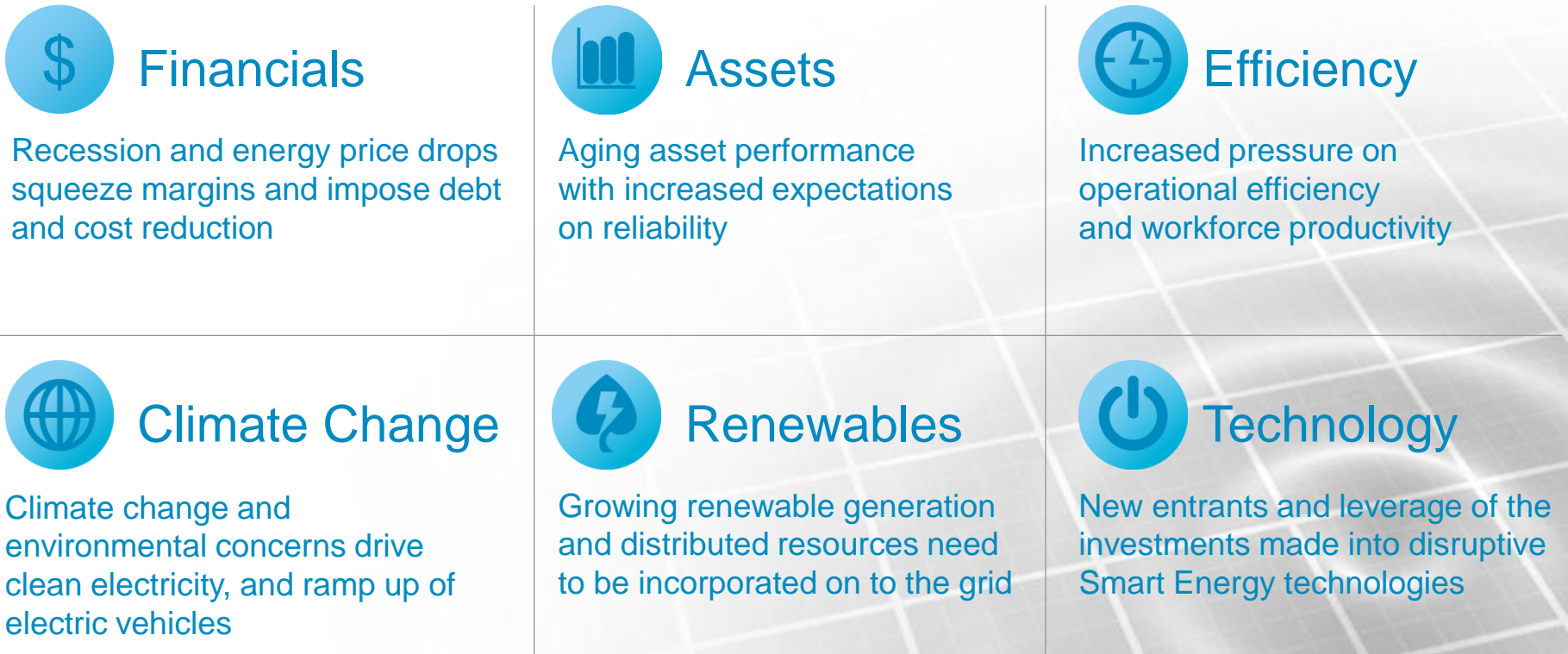
3

Innovation and Collaboration

4

Platform Approach for the new Energy Value Chain

## Basically there are six prevailing forces in European energy markets

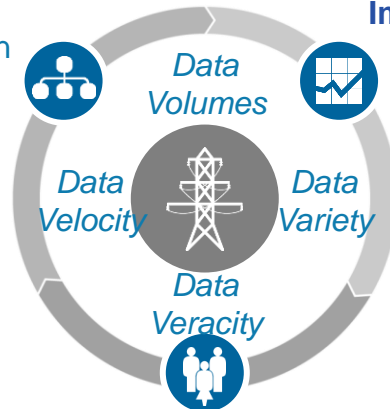


**These market forces are, collectively, forcing major changes within the utility business models and the relationships between participants in the value chain**

# Advances in renewables technologies and the “era of smart” drive major industry change and how the incumbents run their business

## Transform the Utility Network

- Distributed Generation Integration
- “New” Renewables Integration
- Predictive Asset Maintenance
- Distribution Grid Monitoring
- Demand-side Management
- Mobile Workforce Optimization
- etc.



## Improve Generation Performance

- Diverse Forecasting , e.g.
  - Weather
  - Prices
  - Demand & Supply
  - Distribution Load & Scheduling
- Intelligent Plant Lifecycle Management
- Unit Commitment & Fleet Optimization
- etc.

## Transform Customer Operations

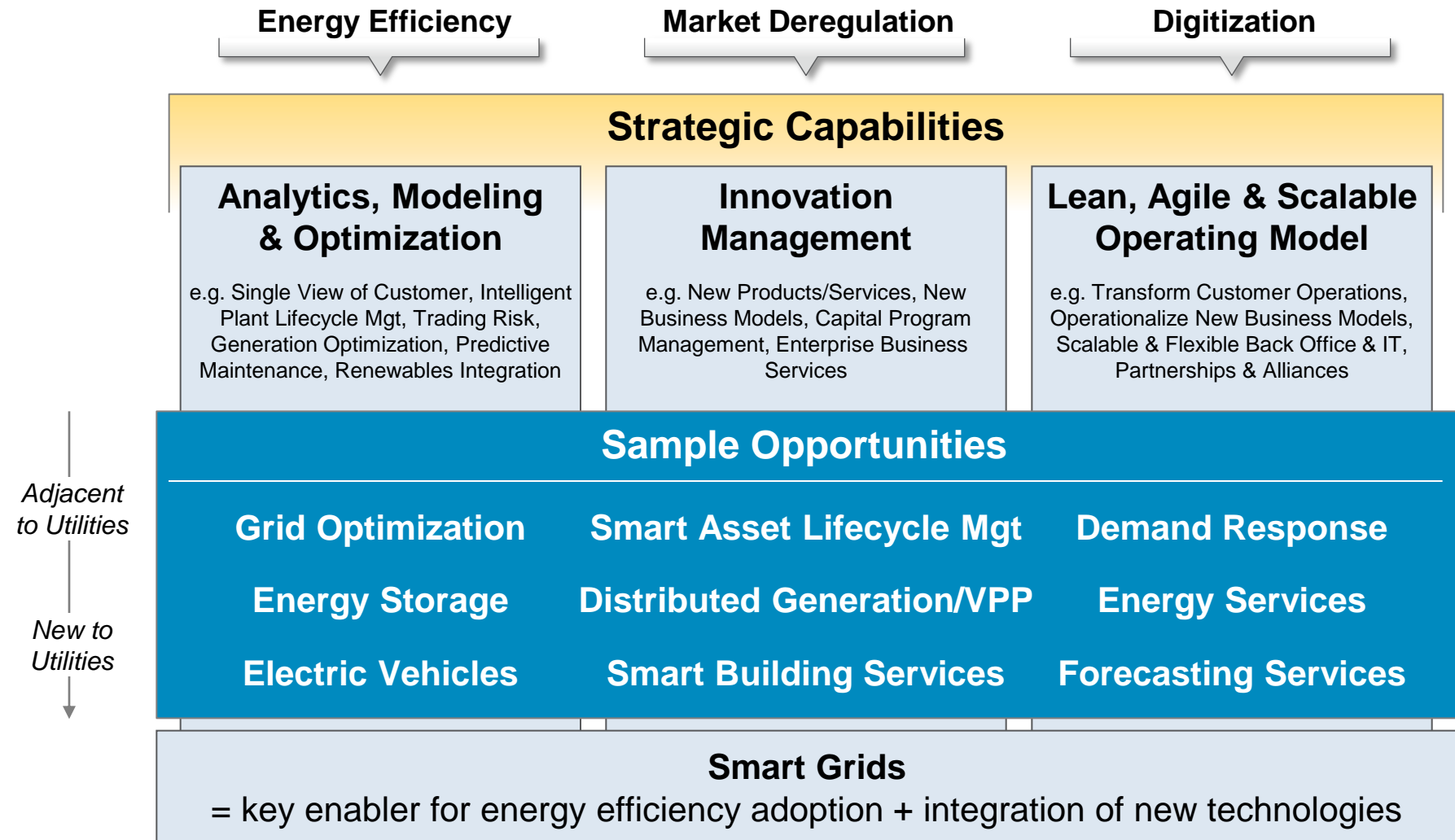
- Smart Meter Analytics
- Dynamic Pricing
- Customer Analytics & Insight (360° Customer View)
- Microgrid management
- Electric Vehicles (Usage Patterns, Charging Control, Roaming, Billing etc.)
- etc.



Utilities will need to excel in new disciplines adjacent to their traditional business: create business value from vast amounts of disparate data



In response, energy companies are about to develop a set of new strategic capabilities to take advantage of arising opportunities



1

The Need of New Strategic Capabilities

2

Smarter Analytics and Optimization

3

Innovation and Collaboration

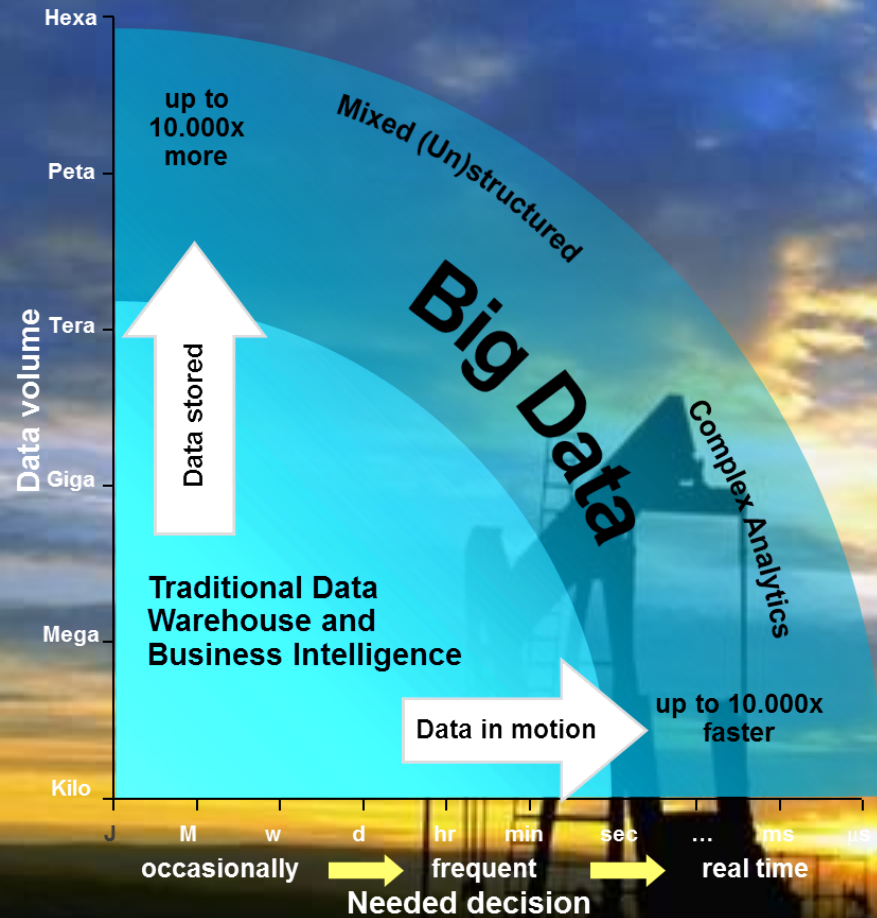
4

Platform Approach for the new Energy Value Chain



**“We have for the first time an economy based on a key resource ‘Information’ that is not only renewable, but self-generating.”**

John Naisbitt




*In the utilities industry, the number of connected devices – participants in the “Internet of things” – is growing exponentially:*

**45%**

*Compound annual growth rate, 2010-2015*

**“Data is the new Oil. Data is just like crude. It’s valuable, but if unrefined it cannot really be used”** *Clive Umby*



However,  
We face some  
Challenges

How to achieve the best outcome?

Where and how to invest?

Next best action?

What is our performance?

Can we trust  
these data?

**Uncertainty**

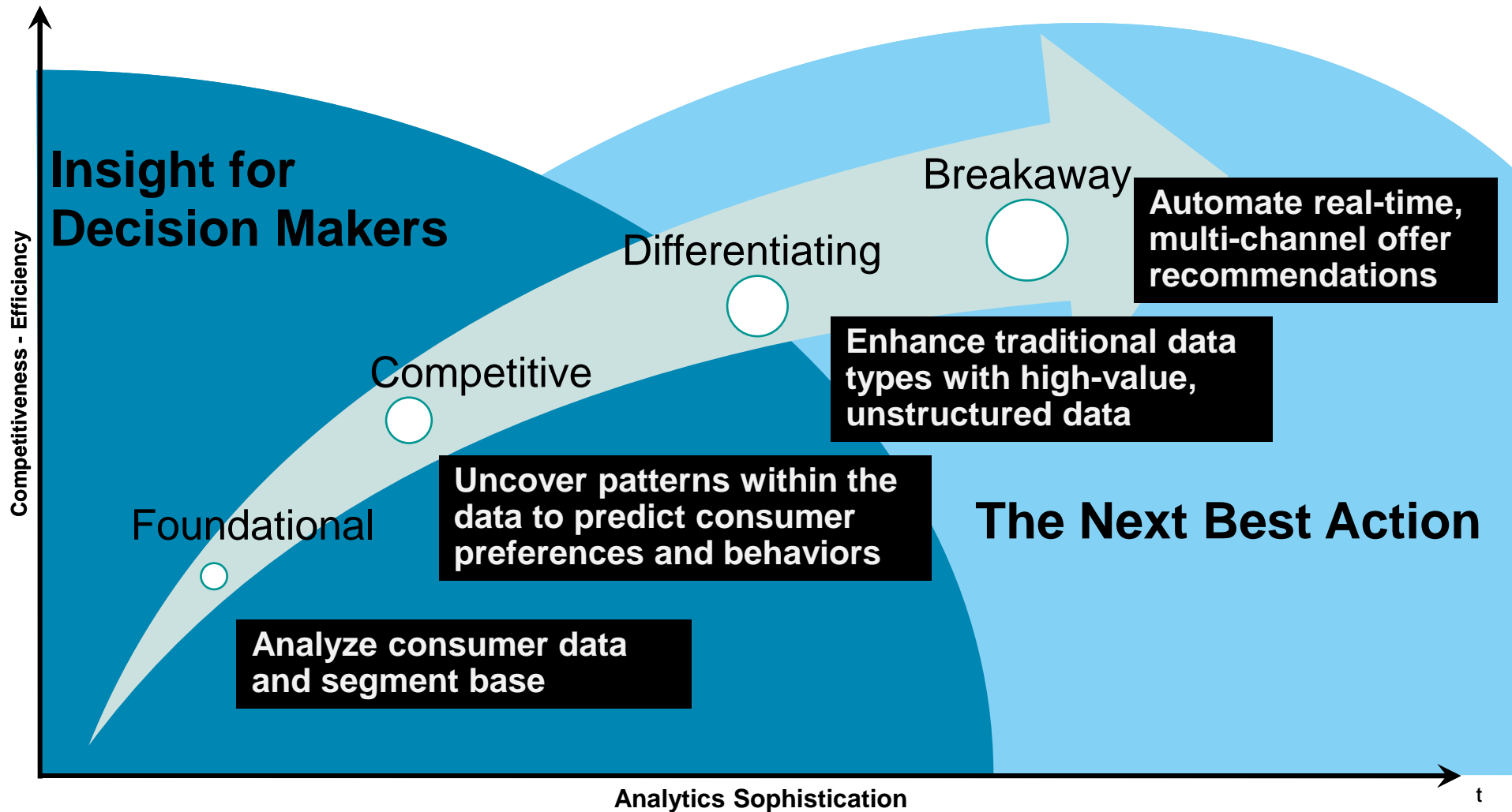
Which new services to offer?

What happened?

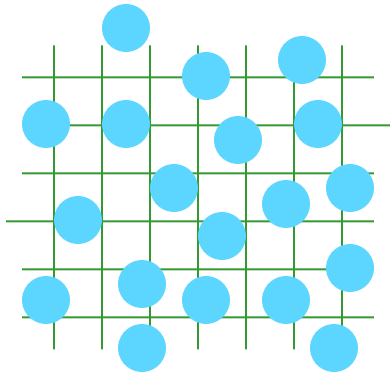
What is the trend of new renewables, e-mobility?



It is the ultimate goal to gain insights of the existing data to make informed decisions and to decide in almost real-time on the best next action.

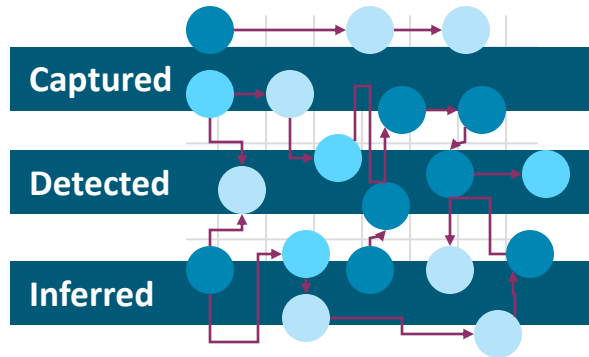


# The industry is applying advanced analytics to improve decision making in order to redefine their value chain



Use **structured** and **unstructured** Data


- Numeric
- Text
- Image
- Audio
- Video



Made consumable and accessible to **everyone, optimized** for their specific purpose, at the point of impact, to deliver **better decisions and actions** through:

Analytics Sophistication →

Analytics Sophistication →		
What happened?	What could happen? <i>Simulation</i>	How can we achieve the best outcome? <i>Optimization</i>
How many, how often, where?	What if these trends continue? <i>Forecasting</i>	How can we achieve the best outcome and address variability? Stochastic Optimization
What exactly is the problem?	What will happen next if? <i>Predictive Modelling</i>	
What actions are needed?		
<b>Descriptive Analytics</b>	<b>Predictive Analytics</b>	<b>Prescriptive Analytics</b>



# Vestas optimizes capital investments based on 2.5 Petabytes of information

## Need

- Model the weather to optimize placement of turbines, maximizing power generation and longevity


## Benefits

- Reduce time required to identify placement of turbine from weeks to hours
- Reduces IT footprint and costs, and decreases energy consumption by 40 % -- while increasing computational power
- Incorporate 2.5 PB of structured and semi-structured information flows. Data volume expected to grow to 6 PB

Reduced turbine placement identification from weeks to hours

**Vestas**<sup>®</sup>





FlexLast proofed that with prescriptive analytics it is possible to provide balance power from industrial loads

### Need

- Explore new Demand Side Management Options
- Investigate how freezer storage houses can provide balance power

### Benefits

- Proofed technical feasibility to use freezer thermic flexibility as source to provide any kind of balance power

Use of freezer storage to provide balance power by applying predictive analytics with more than 1.7M sensor readings per day

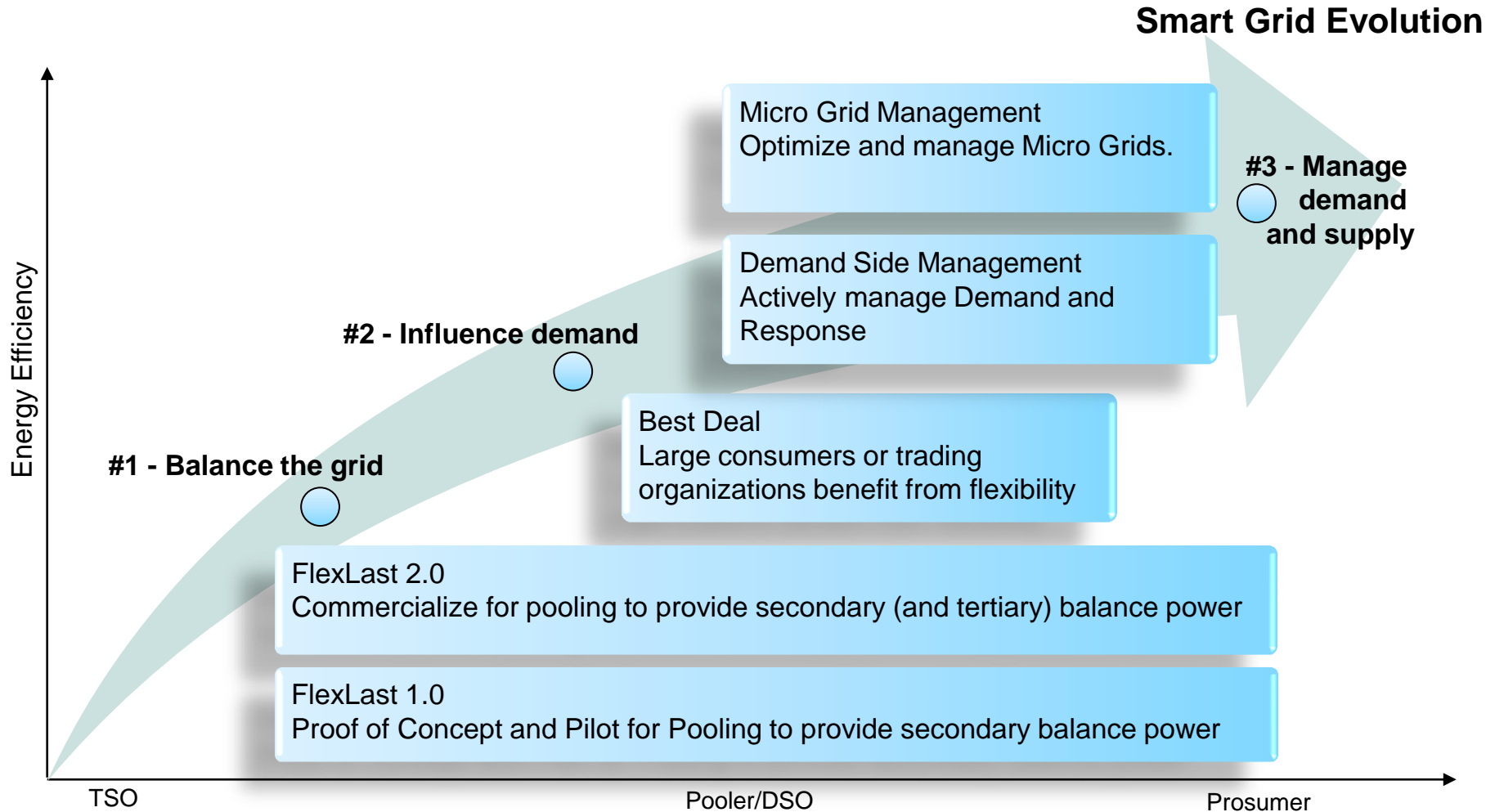
**MIGROS** **swissgrid**

 **BKW**®

**IBM**



We see an evolutionary path for the way forward implementing the *Energiewende*. Utilities will establish new services in order to grow.



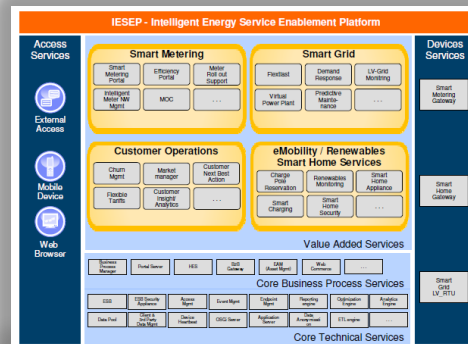
# A data swivel plate allows applications beyond smart grid to be developed and enterprise wide integrated, and with this enabling new business models

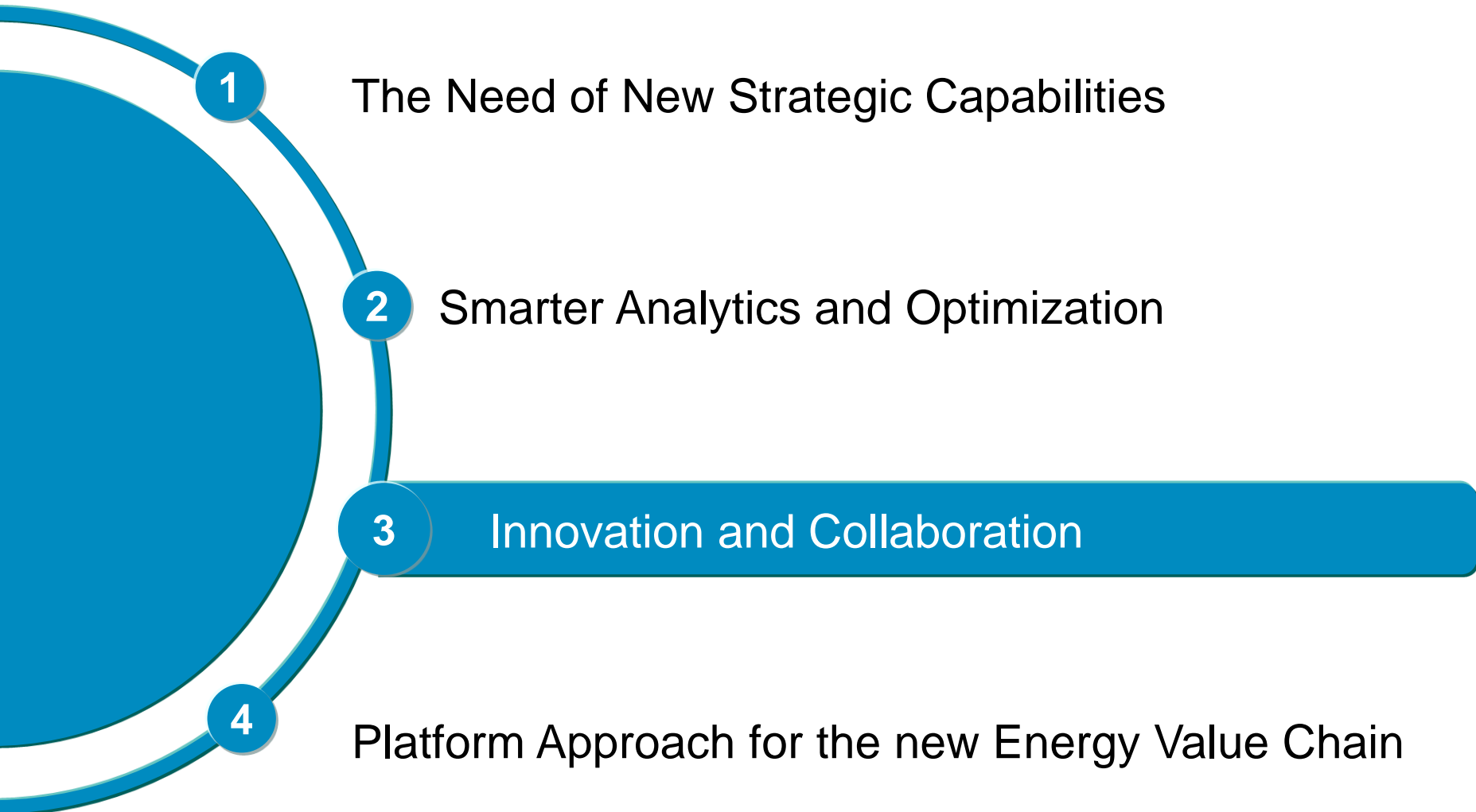
## Common denominator / core components of majority of solutions enabling smart grids

- Load modeling
- Flexibility Optimization
- Aggregation
- Business Process Management
- Visualization and Reporting
- B2B and OT Integration

## A standard platform accelerates the convergence of various domains

- Re-use → shared investments, reduced risks
- Platform as a service
- Benefit for markets: roaming, clearing, auditing
- Robust and scalable for future data volumes
- Secure & agile to comply with regulatory policies





The ability to manage fundamental change is key to growth. That's easier said than done. Innovation is the only sustainable way.

## Organic

*Organic methods provide necessary but incremental growth*

- Gains are often hard-won and therefore not always profitable
- Successes are easily copied making gains short-lived
- Already more than accounted for in stock valuations

## Acquisitions

*Acquisitions have historically failed to create value*

- Gains are elusive at best
- Takeovers have destroyed more than \$200 billion in shareholder value in the US over the past 20 years

## Innovation

*Innovation is the best opportunity for sustainable growth*

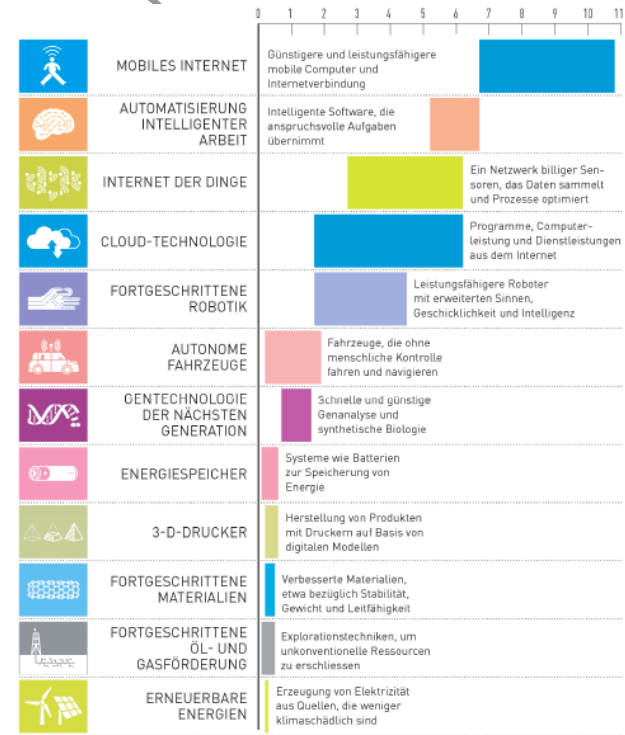
- Gains are more profitable and longer lasting
  - Sustainable advantage
  - Differentiation
  - Pricing power

» **“Innovation distinguishes between a leader and a follower”**

- Steve Jobs, Co-Founder and CEO, Apple



# Innovation matters



Die ökonomische Bedeutung bezeichnet hier nicht nur den Geschäftsnutzen der Technologie, sondern insbesondere auch die sogenannte Konsumentenrente. Diese ist ein Maß dafür, wie sehr der Konsument von der Technologie profitiert über das hinaus, was er dafür zahlen muss.

SDI Creative, Grafik: Pflanzky

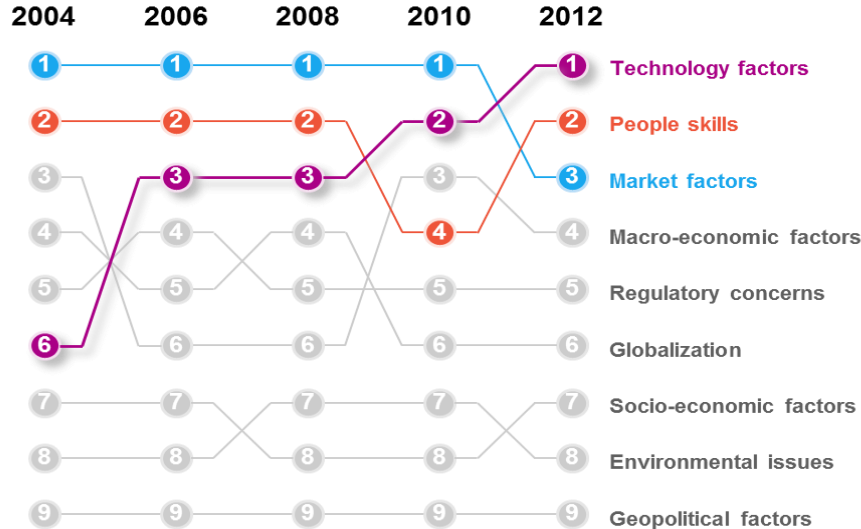
# However...

\* Article in SonntagsZeitung (June 9, 2013).

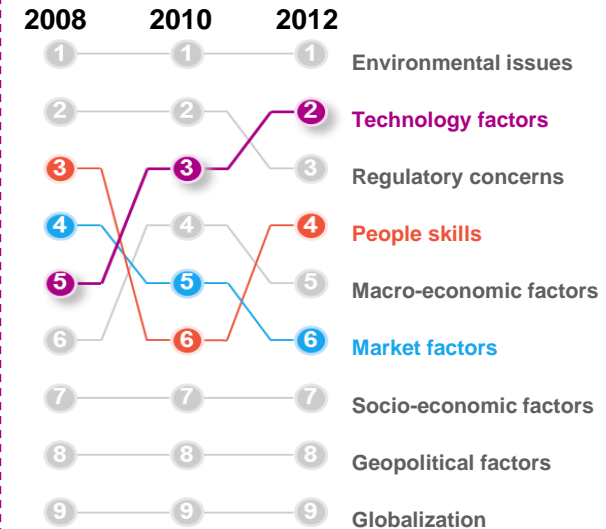
# Technology factors are affecting the business.

## External forces that will impact the organization

Global



Energy and Utilities



Increasingly, leaders are looking to partner outside of their organizations to acquire additional skills and expertise

# CIOs

65% are partnering extensively to change the mix of skills, expertise & capabilities

# CEOs

69% are partnering for innovation

# CMOs

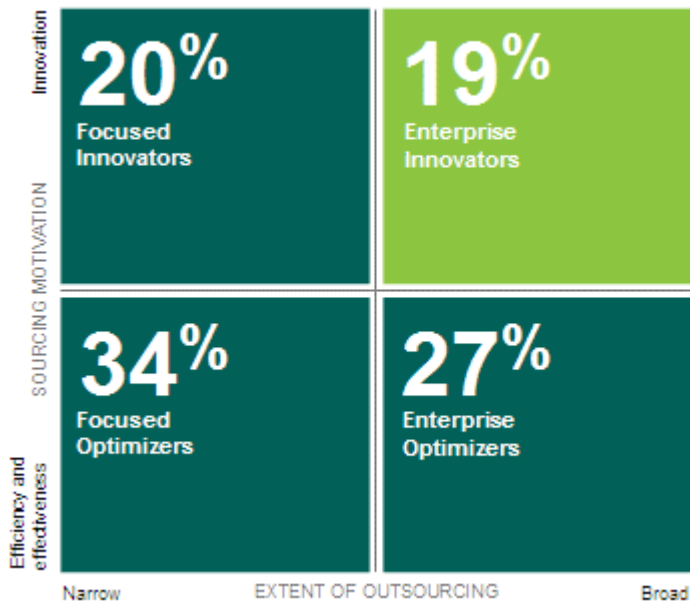
92% to increase external partnerships for customer & data analytics

# IBM market research identified new partnering strategies with substantive business benefits. The combination of innovation and broader partnering correlates with the strongest financial performance.

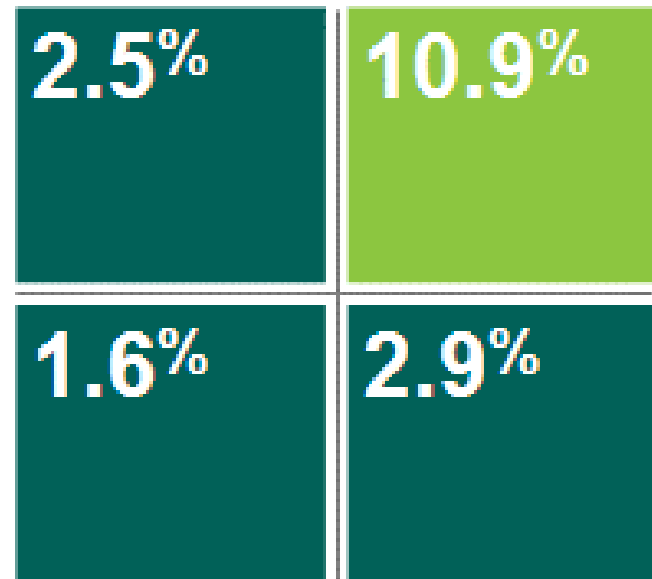
*When we looked at both sourcing motivations and the extent of sourcing, four partnering strategies emerged...*

*Enterprise Innovators outperform all other segments...*

Respondent distribution by partnering strategy



Gross profit growth by partnering strategy

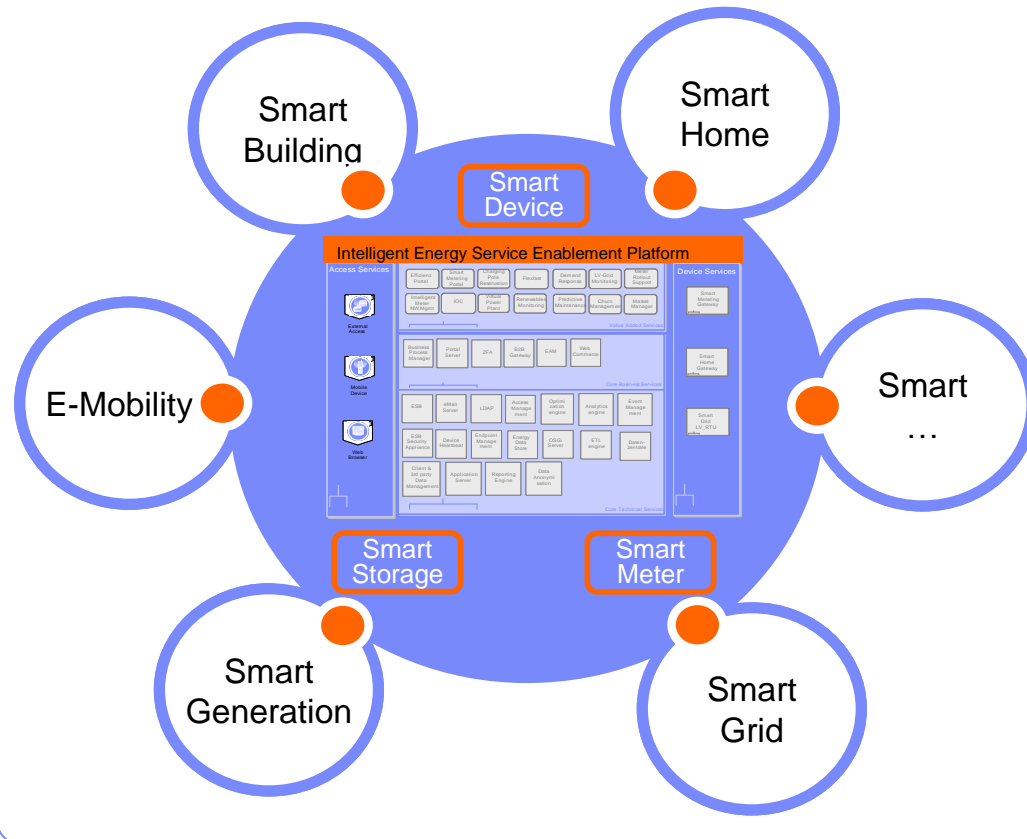


3 Year CAGR %; FY 2011

"Why partnering strategies matter" – an IBM Center for Applied Insights global study based on input from 1,351 sourcing decision makers.

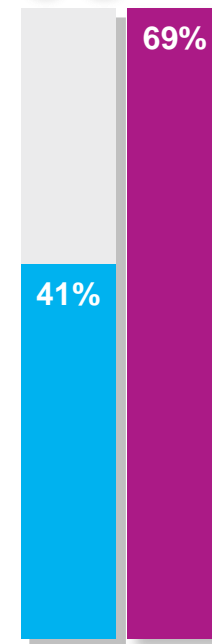
The CIO office is naturally mandated to drive the innovation agenda, as the ones will succeed in new Energy Value Chain who are able to optimal integrate technology into their business model

**The new energy value chain integrates a variety of different business domains and technology**



**Outperformers integrate business and technology for innovation**

68% more



Underperformers Outperformers

Source: IBM CEO Study 2012; QE "To what extent has your organization integrated business and technology to innovate?" (n=623)





## Need

- Enhance deployment and management of smart meters, simplify the integration of renewables, and provide innovative services, while at the same time maintaining a high level of customer service.

## Benefits

- The platform's scalability and low start-up and operation costs due to a cloud-based service model will provide the flexibility for future growth in European market place and beyond.
- The capabilities of new analytics and management tools will allow to provide higher-value-added data services for customers i.e. ability to view their usage profiles for information about time-of-use-rates and changes in use patterns that can be compared with historical data.

E.ON and IBM Deliver Innovative Service Offerings to Customers with New Smart Energy Solutions

1

The Need of New Strategic Capabilities

2

Smarter Analytics and Optimization

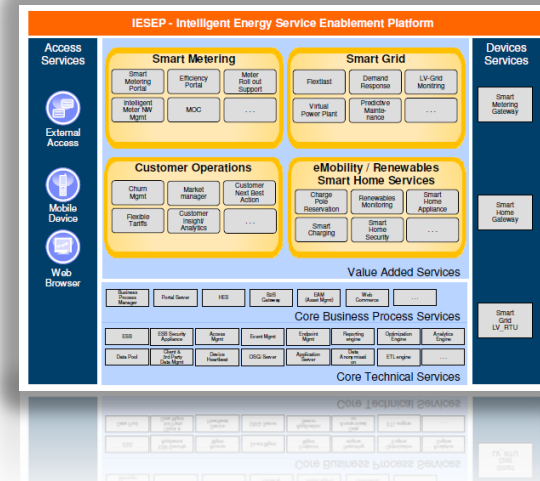
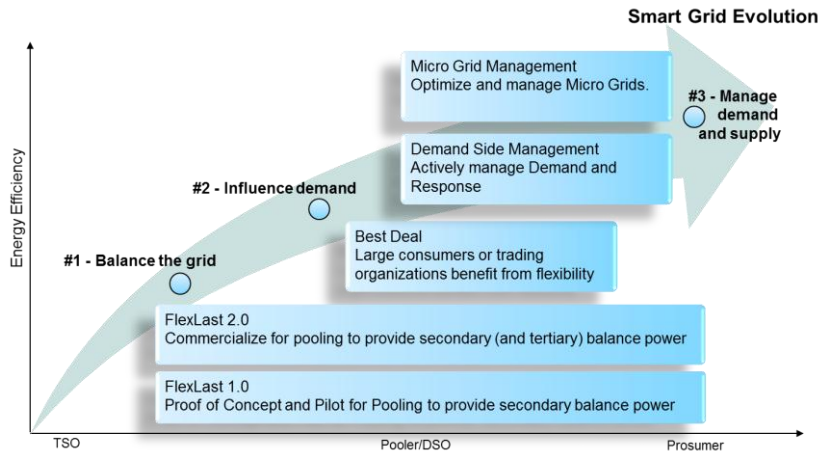
3

Innovation and Collaboration

4

Platform Approach for the new Energy Value Chain

# Recap: A platform approach allows applications beyond smart grid to be developed and enterprise wide integrated, and with this enabling new business models



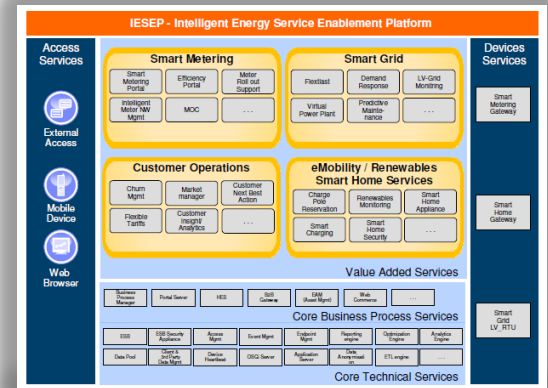
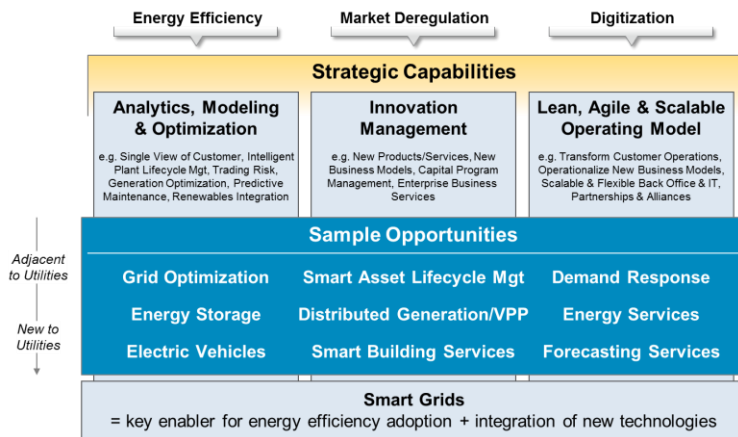
## Common denominator / core components of majority of solutions enabling smart grids

- Load modeling
- Flexibility Optimization
- Aggregation
- Business Process Management
- Visualization and Reporting
- B2B and OT Integration

## A standard platform accelerates the convergence of various domains

- Re-use → shared investments, reduced risks
- Platform as a service
- Benefit for markets: roaming, clearing, auditing
- Robust and scalable for future data volumes
- Secure & agile to comply with regulatory policies

Further on, anticipating the market, every energy company is about to develop new strategic capabilities and investigates in new disruptive business models. A platform approach enables these strategic aims.



## Strategic Aims

- **Financial flexibility**  
Operational efficiency
- **Growth, Leadership & New Services**  
Innovation; Smarter Analytics
- **New Renewables**  
Effective M2C; right architecture

A platform approach is the enabling element by providing

- Lean Operation and Scalable
- Process Automation
- Big Data and Optimization
- Rapid Innovation; Innovation Platform
- Integration of IT and OT
- End-to-End Security



# Let's build a smarter planet!



***“Innovation occurs at the intersection of invention and insight. It’s about application of inventions to solve problems”***

Sam J. Palmisano