



Choose certainty.
Add value.

Standardization Opportunities in Data Driven Water Markets

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Outline



- TÜV SÜD – the Company
- Smart Water – a Vision for 2020
- Current Smart Water Applications and Technologies, and Market Perspective
- Smart Water Business still in the Development Phase
- Inhibitors, Drivers and how to Foster Smart Water Business
- Smart (Power) Grid Activities for Fostering Business – Can we learn?

The Company At a Glance



1

One-stop technical
solution provider

150

years of experience

800

locations worldwide

1,700

million Euro in sales
revenue 2011

17,200

employees worldwide



The Company Services



Testing & product certification

Chemical, physical, mechanical, electrical and environmental testing and product certification.



Inspection

Product, system, building, plant and infrastructure inspection.



Auditing & system certification

Audits system certification in a variety of fields including quality, safety, energy, social compliance and environment.



Knowledge services

Safety, quality, risk, environmental protection and regulatory advisory.



Training

Training in work safety, technical skills, management systems and executive programs.

The Company Benefits



Increase

Market access



Productivity & profits

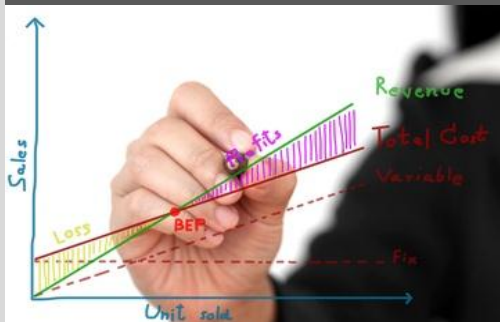


Brand reputation



Decrease

Costs & inefficiencies



Time to market



Business risks

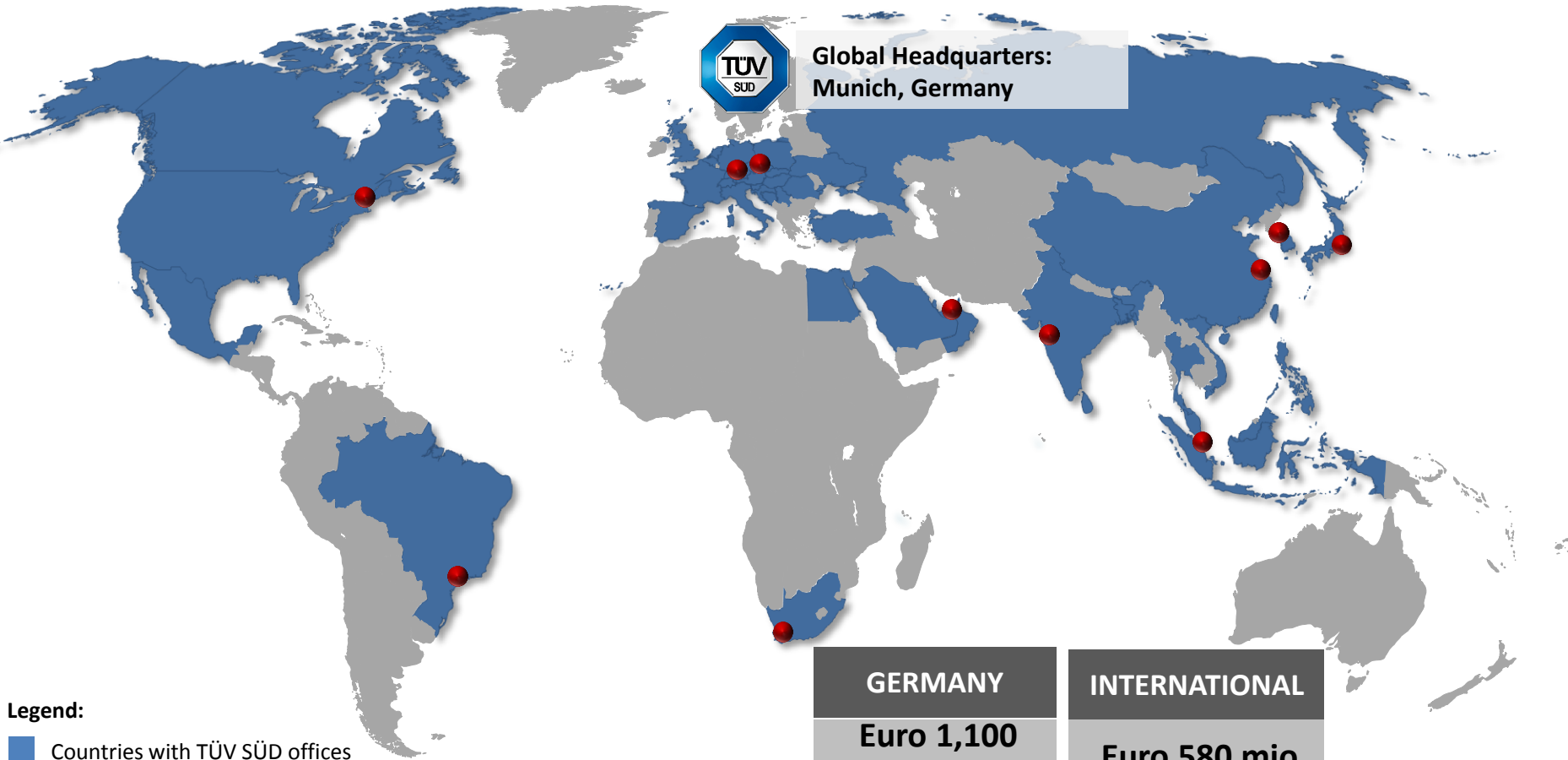


The Company

Global Expertise. Local Experience



Global Headquarters:
Munich, Germany



Legend:

■ Countries with TÜV SÜD offices

● Regional headquarters

GERMANY

Euro 1,100
mio
9,900 staff

INTERNATIONAL

Euro 580 mio
7,300 staff

Smart Water in 2020

The Vision



- Smart Solutions will be fully accepted
- Technologies will be integrated into total IT solutions
- Internet of Things will be reality, no proprietary communication system such as SCADA necessary anymore
- Components will be interchangeable (standardized)
- Market will be consolidated (selection by prevailing technology and solutions, M&A)
- Solutions will be highly automated
- Smart Water Grid will be interconnected with Smart Power Grid
- Water availability and water price will be a crucial aspect in economies and Smart Water Solutions will be a natural answer

Smart Water

Current Applications



Smart Combined Sewer Overflows: Efficient optimisation is achieved through intelligent management systems.

Source: greatlakes.org

Smart Irrigation and Agriculture: Commercial uses of water can be optimised to ensure sustainable use.



Source: agreenstarlandscape.com



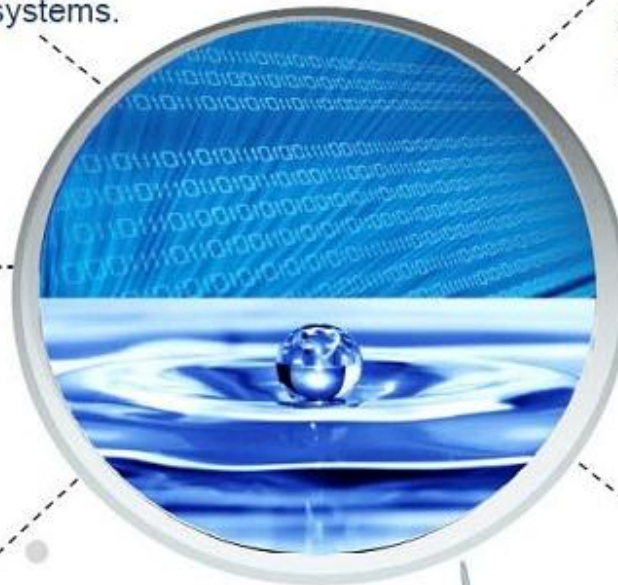
Smart Ultrapure Water: A series of sensors can ensure high water quality and monitor conditions in the system.

Source: organo.co.jp



Smart Water Supply Management: Water resources and environment can be managed to ensure sufficient supplies and quality.

Source: treehugger.com



Smart Wastewater Management: Wastewater can be managed to monitor quality and levels.



Source: usa.siemens.com

Smart Water Distribution Management: Water in utility grids can be monitored to optimise distribution and asset management.



Source: precisionmeters.co.za

Source: Google Images

Smart Water

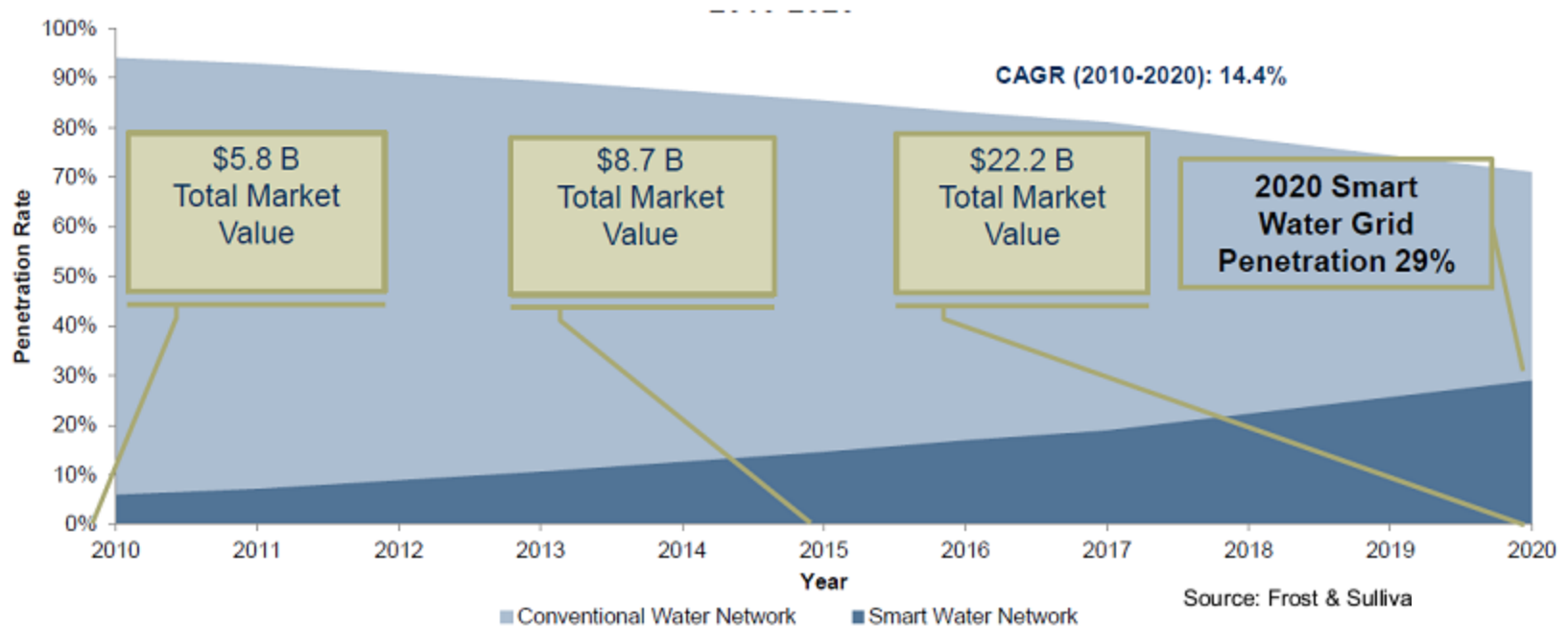
Current Technologies



- Sensors as enabler for smart solutions
 - water quantity and quality (phys/bio/chem)
 - asset related sensors
- Treatment as component of total system
 - WWTP, desalination plant, membrane module
- Analytics as new solution/service
 - leakage detection, pressure management, asset management, consumer information
- ICT as embracing component
 - For every application, there will be an IT solution

Combine conventional and new technologies to create new solutions

Smart Water The Market



By 2020, smart grids will account 29 % of water utility coverage. The ratio of infrastructure to analytical software will vary, as more advanced software may require fewer actual sensors/data points.

The use of smart water grids is set to overtake that of conventional water grids before 2030.

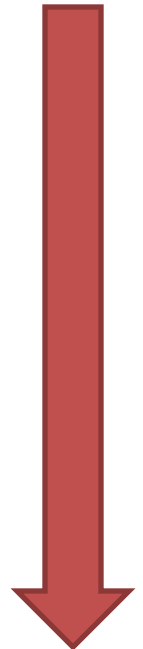
Smart Water Business

Still in the Developing Phase



- Opportunities of smart solutions often not known
- Water market is conservative, often government driven, reluctant to adopt new technologies and business models
- Numerous small companies/start-ups with special solutions
- Highly fragmented market
- Not clear, which business partner will survive (essential for long-term oriented clients)
- Not clear, what solution will prevail for the different requirements
- Replicability of implemented smart solutions not clear
- Long-term benefit of smart solutions not clear
- Biggest breakthroughs in smart metering (← Smart Power Grid)
- Risk of new technologies not clearly addressed

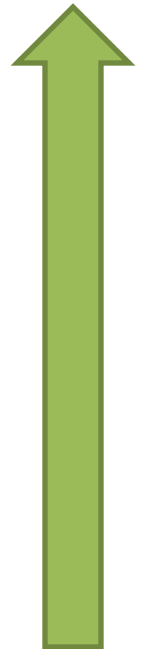
→ **We have a business problem, not a technology problem**



But, there are Drivers!



- Strong cost pressure. Less investment required compared to conventional infrastructure measures
- Water scarcity becomes more serious, conventional technologies and business models are not sufficient anymore
- Renewal of conventional infrastructure cannot catch up with speed of urbanization/industrialization
- Available technologies suggest benefits and new solutions, and sets utilities under pressure (e.g. early warning system for drinking water networks)
- New Services offer better customer satisfaction (reputation of utilities/industries)
- More convincing smart solutions, reference projects
- Smart solutions prove to be economic



How to Achieve the Vision?

- Extend activities in forums such as SWAN. Only if benefits and risks are known, they will be implemented.
- Bring numerous smart solutions into structured framework
- Develop KPIs for the assessment of SWT
- Define methodology for assessing a SWT
- Establish accepted best-practices (best solutions for different problems)
- Address business and technical risks
- Establish guidelines and norms (→ e.g. ISO 50000)
- Set up strong partnership between relevant stakeholders (utilities/clients, technology providers, independent certifiers) and lead with best practice projects

Smart Water

Can we learn from Smart Grid?

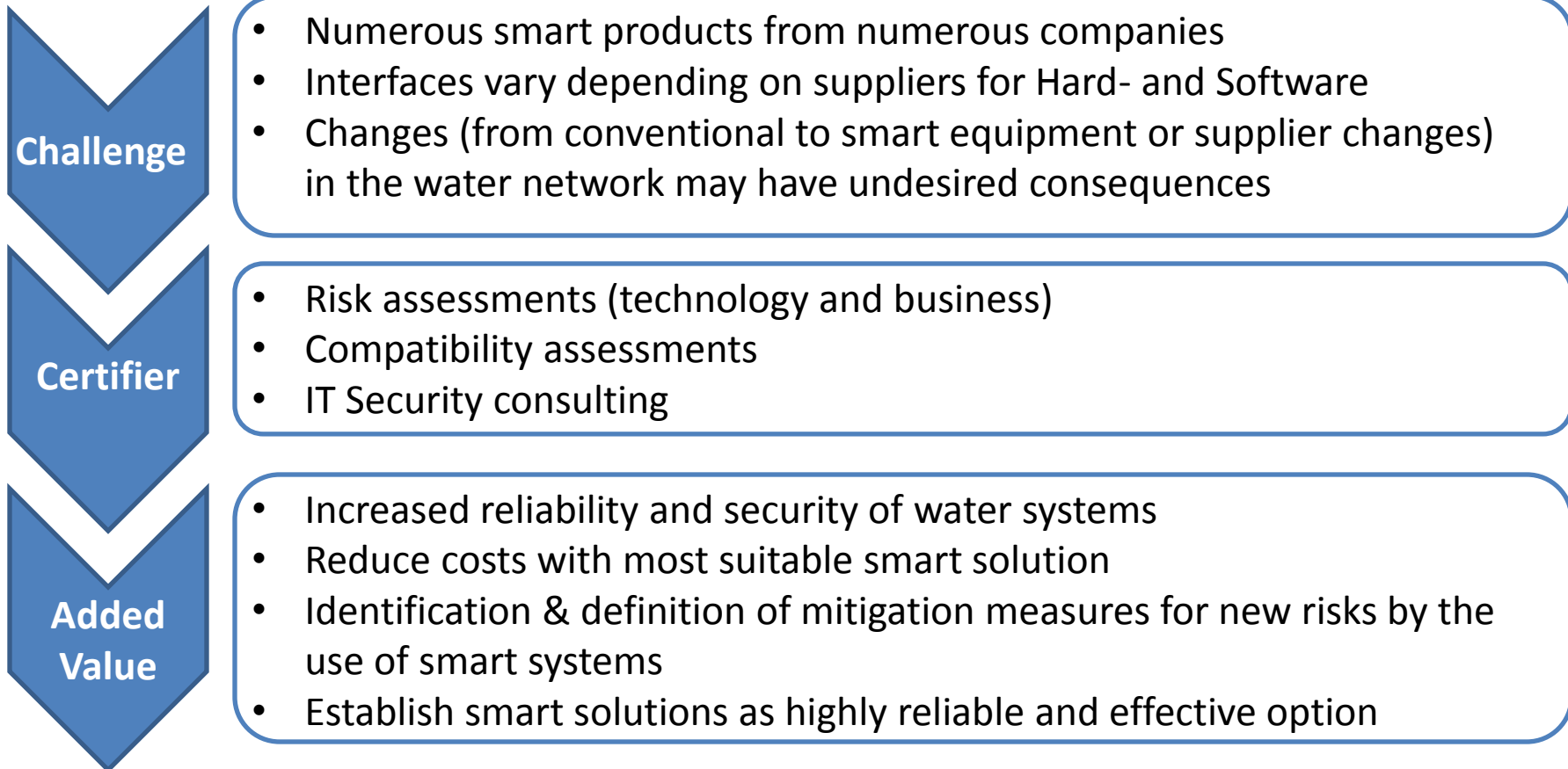


- Standards play a key role in the development, deployment and operation of smart grids worldwide.
 - safeguarding interoperability
 - enabling the different components of a grid to **exchange information** and to mutually **understand the information** exchanged. This is of particular importance, as the smart grid vision brings together technologies and paradigms of two, formerly distinct, sectors: utilities and ICT.
- European Commission Task Force on Smart Grids:
Objective to identify and produce a set of regulatory recommendations to ensure EU-wide **consistent, cost-effective, efficient** and **fair** implementation of Smart Grids
Key issues:
 - **Cost of Smart Grids deployment**
 - **Benefits of Smart Grids deployment**
- National Institute of Standards and Technology
 - **Smart Grid Interoperability Standards Project**
“primary responsibility to coordinate development of a framework that includes **protocols** and **model standards** for information management to achieve **interoperability** of smart grid devices and systems...”

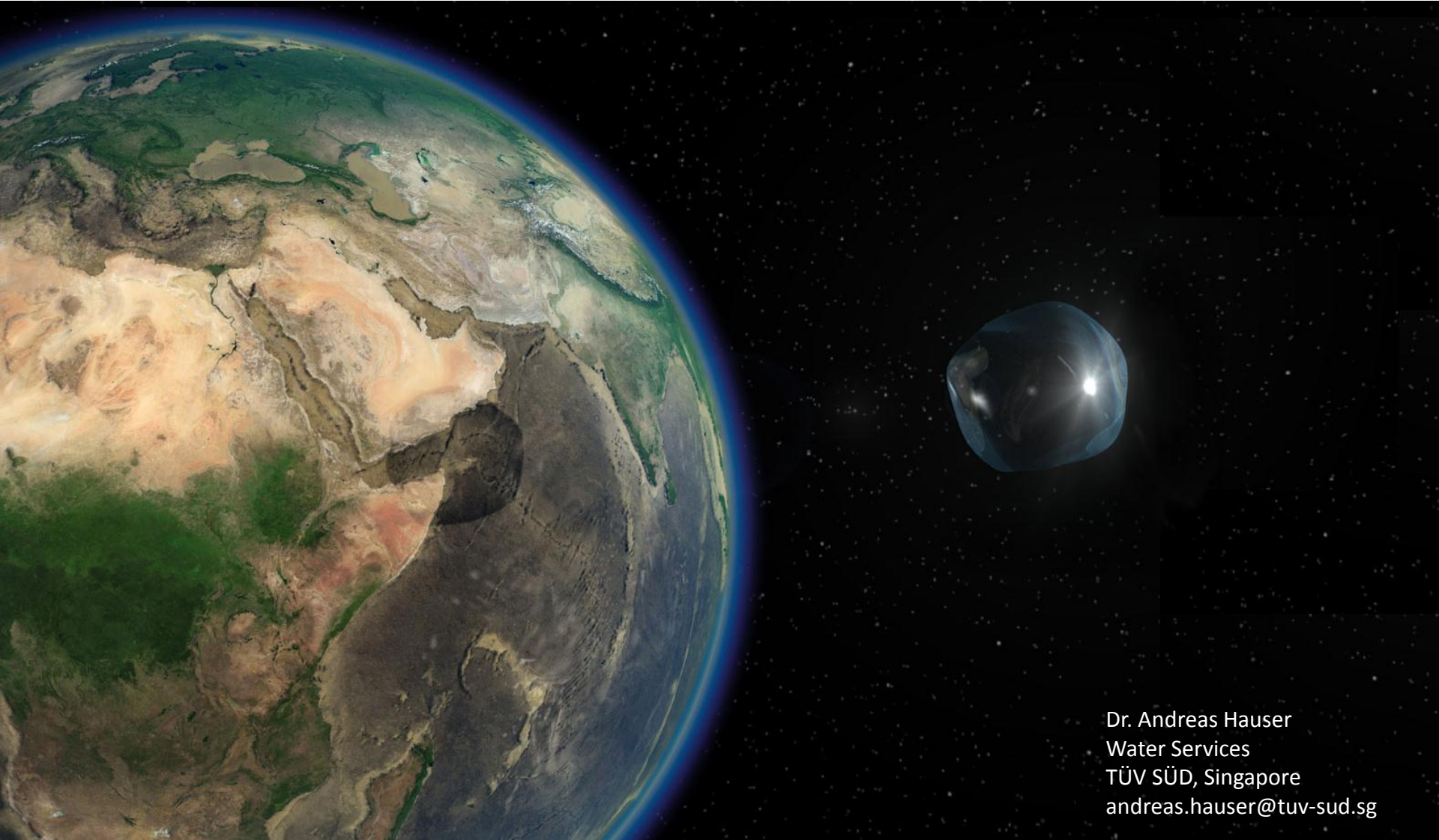
Source: **Activities in Smart Grid Standardization**, Repository (Version 1.0, April 2010), ITU Telecommunication Standardization Bureau Policy & Technology Watch Division

The Company

Smart Water Business



Thank you !



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