



The German National Smart Grid Standardization Strategy

CIM user group, June 16, 2010, Milan

Energie
Energy



Speaker on behalf of Johannes Stein

DKE (German Commission for Electrical, Electronic & Information Technologies):

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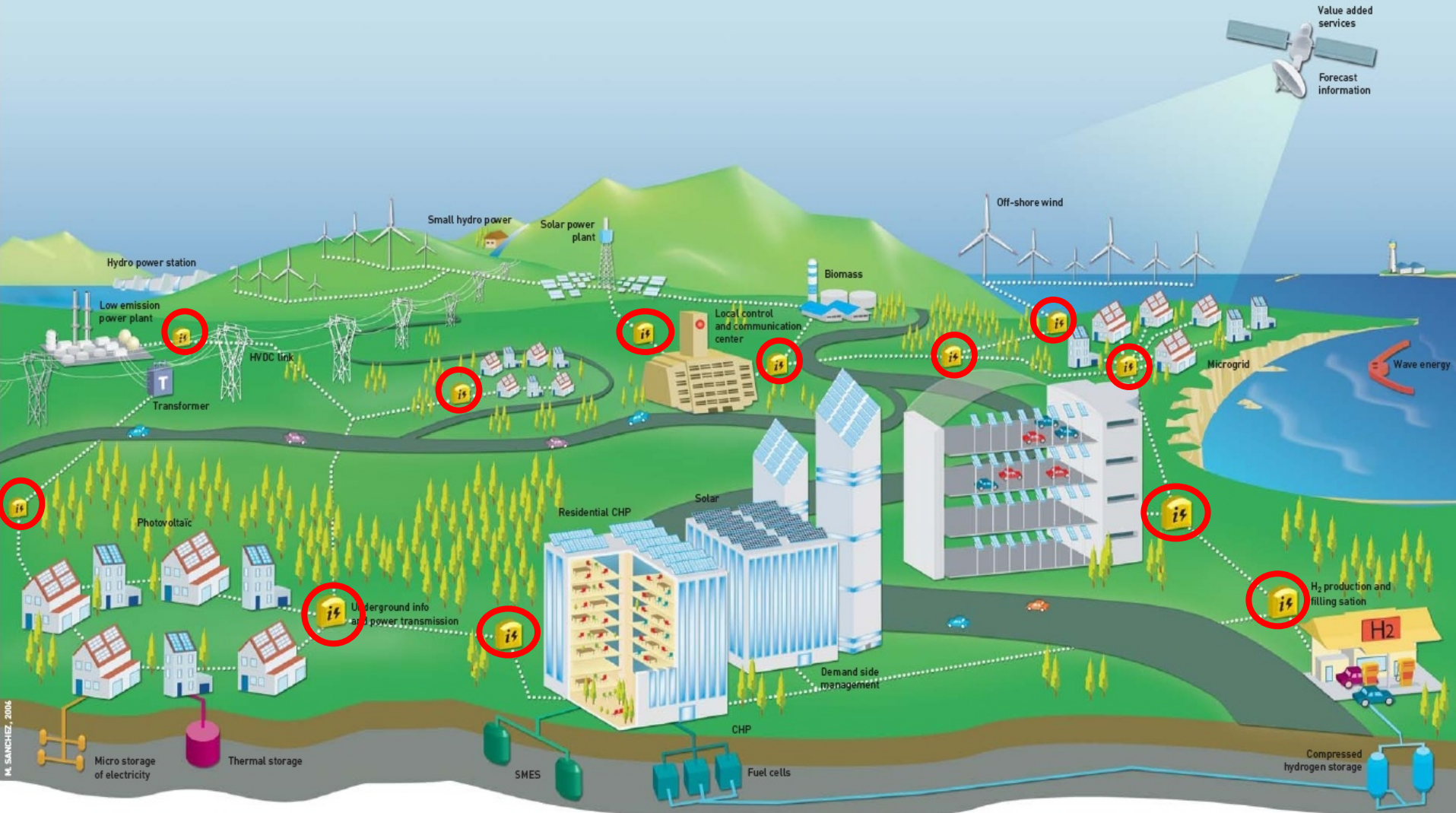
OFFIS R&D Division Energy

▶ 2 Agenda

- ▶ Motivation
- ▶ Approach and Results
- ▶ Summary and Outlook

Vision: Smart Grid

Source: EU SG ETP



5 German National Smart Grid Standardization Strategy

Overview

- ▶ **Initiator:** German Commission for Electrical, Electronic & Information Technologies (**DKE**) (German mirror committee of IEC)

- ▶ **Participants, experts from:** DKE, BNetzA (Federal Network Agency), BMWi (Federal Ministry of Economics and Technology), utilities, vendors, OFFIS (operational lead, pre-study), ...

- ▶ **Tasks**
 - ▶ Identification and analysis of several studies and initiatives
 - ▶ IEC SMB SG 3 Smart Grid Roadmap (IEC)
 - ▶ NIST IOP Framework (NIST / EPRI)
 - ▶ German e-Energy Standardization Roadmap (BMW i / OFFIS)
 - ▶ M/441 Mandate on Smart Metering (EU / CEN, CENELEC, ETSI)
 - ▶ ...
 - ▶ Pre-Study: was available for public comments and feedback was incorporated
 - ▶ About 50 recommendations have been worked out by the experts



General Recommendation

Regulatory Recommendation

Recommendation for Security,
Safety or Privacy

Recommendation for
Communication

Recommendation Active
Distribution grid

Recommendation
Smart Meter

Recommendation
Electric Vehicles

Recoemmdation
Storage

Recommendation Load management
and Demand Response

Recommendation Building and
Home Automation

Recommendation
Distributed generation

Recommendation
Architectures and SCADA

Recommendations

Previous studies on Smart Grid Standardization

	Approach	Recommendations
p 1.0	Approach	Generation
		Energy trading
		Sale
		Transmission
		Storage
		Distribution
		Measuring
		Application
		integration of business partners
		integration of applications
		integration of devices and plants
		security
		data management

Value Chain

TC 57 Reference
Architecture

7 Identified Core Standards for the Smart Grid of the Future

- ▶ IEC 61970/61968: Common Information Model (CIM) **semantic data model**
- ▶ IEC 61850: Substation Automation Systems and DER **integration of DER**
- ▶ IEC 62351: Security for the Smart Grid **IT security**
- ▶ IEC 62357: Seamless Integration Reference Architecture **reference architecture**
- ▶ IEC 60870: Transport protocols **legacy protocols**
- ▶ IEC 61400-25: Communications and monitoring for wind power plants **wind power plants**
- ▶ IEC 61334: DLMS (Device Language Message Specification) **communications to households (meters)**
- ▶ IEC 62056: COSEM (Companion Specification for Energy Metering)
- ▶ IEC 62325: Market Communications using CIM **market communication**
- ▶ All provided by the International Electrotechnical Commission (IEC) Technical Committee (TC) 57:
Power systems management and associated information exchange

8 Recommendations Overview

▶ Cross-cutting topics

- ▶ General recommendations (13)
- ▶ Regulatory and legislative recommendations (3)
- ▶ Recommendations on Information Security, Privacy and Data Protection (4)
- ▶ Recommendations on Communications (4)
- ▶ Recommendations on the areas of Architectures, Communications and Power System Management Processes (4)

▶ Domain-specific areas

- ▶ Recommendations for the area of Active Distribution Systems (2)
- ▶ Recommendations for the area of Smart Meters (5)
- ▶ Recommendations for the area of Distributed Generation (3)
- ▶ Recommendations on the area of Electromobility (3)
- ▶ Recommendations for the area of Storage (3)
- ▶ Recommendations for the area of Load Management / Demand Response (2)
- ▶ Recommendations for the area of Building and In-house Automation (6)

9 CIM Related Recommendations I

▶ General recommendations

- ▶ **SG-AE-3:** Importance of involving the German experts in international standardization

▶ Recommendations on regulatory and legislative changes

- ▶ **SG-RE-1:** Further development of market communication

▶ Recommendations on communications

- ▶ **SG-K-2:** Semantics of object models and relationships between object models
- ▶ **SG-K-3:** Seamless integration for improved interoperability
- ▶ **SG-K-4:** Use and development of the IEC TC57 models, also for non-electrical media

▶ 10 CIM Related Recommendations II

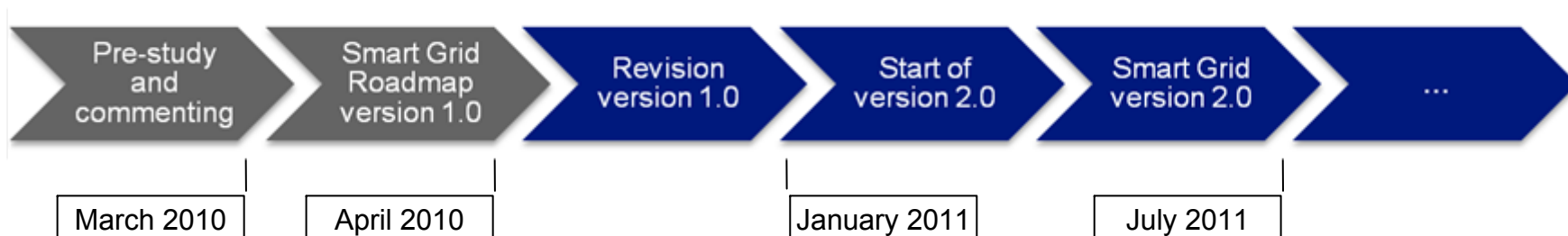
- ▶ **Recommendations on the area of electromobility**
 - ▶ **SG-EM-3:** Price and tariff data models
- ▶ **Recommendations for the area of distribution system automation**
 - ▶ **SG-AV-1:** CIM in the area of distribution system management
- ▶ **Recommendations for the area of Smart Metering**
 - ▶ **SG-SM-2:** Cooperation between TC 13 and TC 57
- ▶ **Recommendations for the area of architectures and power automation**
 - ▶ **SG-ANLT-2:** Harmonization of the data models of IEC 61970 and IEC 61850
 - ▶ **SG-ANLT-3:** Standardized naming of objects
- ▶ **Recommendations for the area of distributed generation and virtual power plants**
 - ▶ **SG-DER-3:** Distributed control and modelling of decentralized systems and virtual power plants

▶ 11 Executive Summary

- ▶ **Use and marketing of existing standards**
Many of the necessary standards already exist. These will have to be used and promoted accordingly.
- ▶ **Coordination and focus**
Inter-domain cooperation and coordination.
- ▶ **Further development of standards**
Linking the established domains.
- ▶ **Support for innovation**
Focus on interoperability and avoid specification of technical solutions.
- ▶ **Speed / International orientation**
Different national and regional standardization concepts exist. Rapid implementation of the results achieved in Germany (Europe) in standards is therefore essential.
- ▶ **Involvement in standardization**
Increased participation in standardization activities on national, regional and international levels.
- ▶ **Political support**
Close dovetailing cooperation of research and development, regulation and the legal framework with standardization is necessary.
- ▶ **Conclusion:** International standards are important, but regulatory, technical, political and organizational aspects must also be considered

► 12 Summary and Outlook

- ▶ Standards for the Smart Grid of the future are available
 - ▶ Provided by the IEC TC 57 working groups
 - ▶ Enhancement and integration is needed
 - ▶ Changes within regulatory, technical, political and organisational aspects are needed for the Smart Grid
- ▶ Next Steps (planned)



- ▶ Version 1.0 of the Roadmap is available in English and German at www.dke.de/KoEn

► 13 Thank you for your attention!

Questions?



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