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# ETIP SNET

EUROPEAN  
TECHNOLOGY AND  
INNOVATION  
PLATFORM

SMART  
NETWORKS FOR  
ENERGY  
TRANSITION

## National Webinar Series

1st edition:  
SmartGrids Austria

"Interoperability of Data Exchanges  
in Smart Energy Systems"

18.01.2018  
15h00 – 16h00 CET





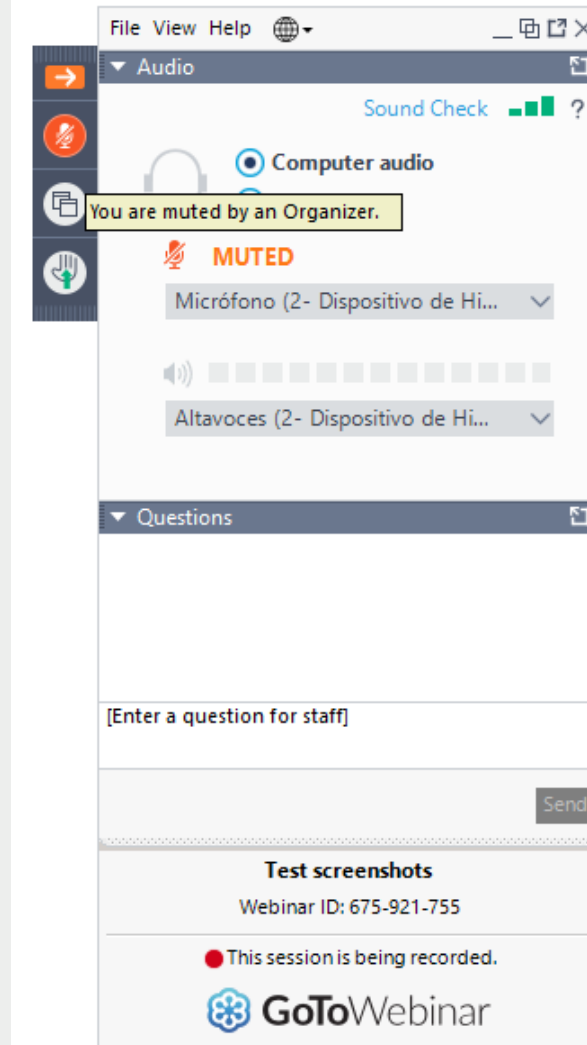
# National Webinar Agenda

- **Introduction and guidelines**, Rémi Landau, *ETIP SNET Support Team* (5 min)
- **Presentation of the ETIP SNET's scope and activities**: Nikos Hatziaargyriou, *ETIP SNET Vice-Chair* (10 min)
- **Presentation of Technology Platform Smart Grids (TPSG) Austria**: Valérie Reif, *Technology Platform Smart Grids Austria* (5 min)
- **Presentation of the “IES – Integrating the Energy System” Project**: Valerie Reif (*TPSG Austria*), Matthias Frohner and Stefan Sauermann (*UAS Technikum Wien*) (30 min)
- **Questions & Answers** (10 min)

# Guidelines (1/2)

The audio will begin automatically in listen-only mode.

Attendees are muted and only the organizer can give them permission to speak.



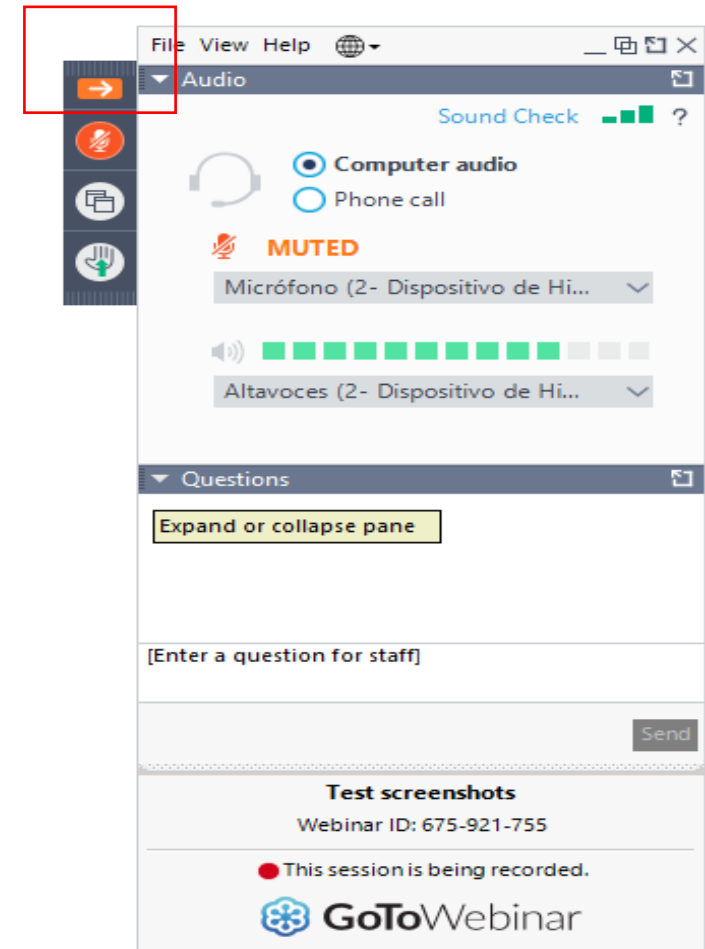


## Guidelines (2/2)

The Control Panel contains panels that can be expanded or collapsed by clicking the down arrow on the upper left side of each pane.

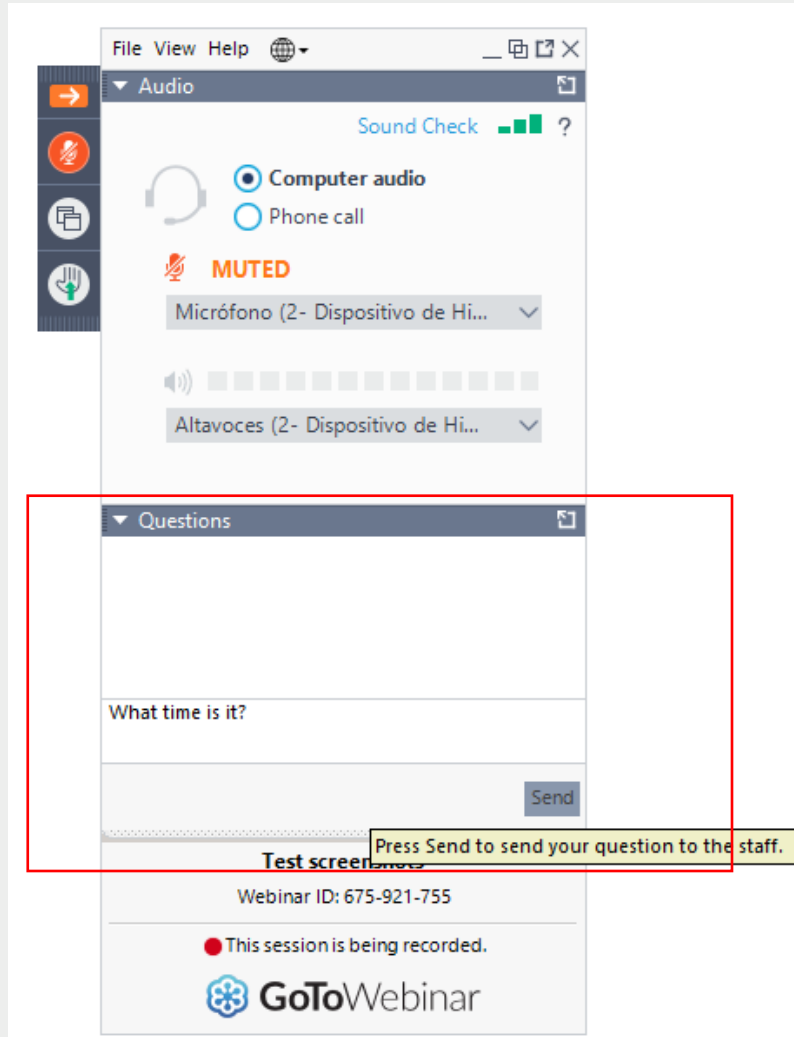
- **Audio pane:** displays audio format and Settings.
- **Questions pane:** allows attendees to submit questions and review answers (if enabled by the organiser). Broadcast messages from the organiser will also appear here.

If you cannot see the Control Panel, click on the orange arrow at the top.





# How to ask questions to the speakers? (1/2)



Attendees can ask written questions to the speakers by using the questions box.

Written questions will be answered at the end of each presentation.

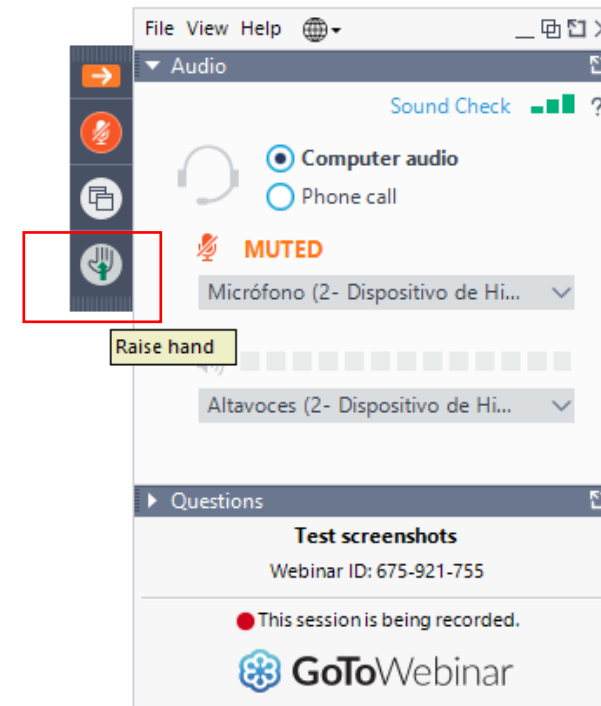


# How to ask questions to the speakers? (2/2)

During the Q&A section, at the end of the webinar, attendees will have the opportunity to ask questions directly to the speakers.

Use the hand-raising feature to ask a question to the speakers.

Remember to lower your hand once you are done, by clicking on the same hand icon.



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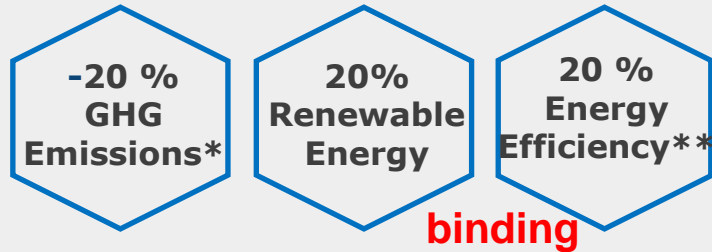
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## **ETIP SNET : for an innovative and successful European energy transition**

**Nikos Hatziargyriou**  
**ETIP SNET Chair**

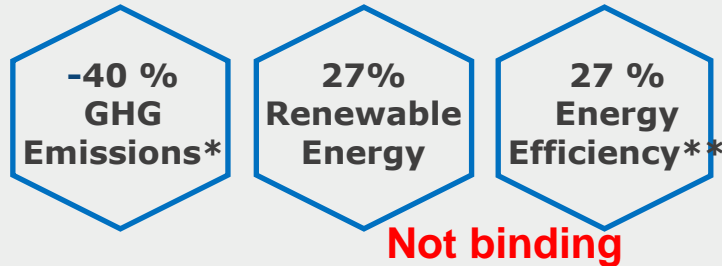
# European R&I energy policies

## ► 2008: The SET Plan



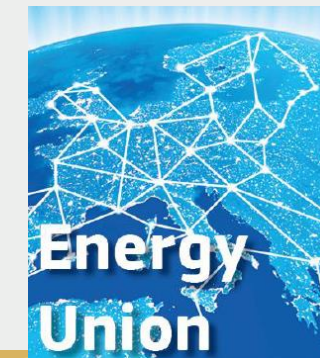
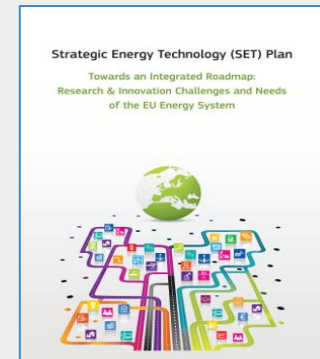
## ► 2014: Towards an Integrated Roadmap

- Individual Technologies → Energy system
- Policy challenges
  - Consumer at the centre
  - Energy efficiency (demand)
  - System optimisation
  - Technologies (supply)



## ► 2015: Energy Union – Priorities

- Energy security, solidarity and trust
- A fully integrated European energy market
- Energy Efficiency (EE) first: moderation of demand
- Transition to a low-carbon society: decarbonising the economy,
- **Research, Innovation and Competitiveness**







# SET Plan key actions



**1. Performant renewable technologies integrated in the system**

**2. Reduce costs of renewable technologies**

**3. New technologies & services for consumers**

**4. Resilience & security of energy system**

**5. New materials & technologies for buildings**

**6. Energy efficiency for industry**

**7. Competitive in global battery sector (e-mobility)**

**8. Renewable fuels**

**9. Set up R&I activities applying CCS and CCU**

**10. Maintain safety level & improve efficiency in nuclear energy**

# From a fragmented EU advisory to an integrated framework



A new focus on  
innovation /  
implementation and  
on sector coupling



Main objective is to address the innovation challenges in **energy system** and **market evolution** necessary for achieving climate protection and **renewables integration** with affordability and security of supply ... beyond smart electricity grids (whole energy system)



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# ETIP SNET's main objective

« EUROPEAN TECHNOLOGY AND INNOVATION PLATFORM  
SMART NETWORKS FOR ENERGY TRANSITION »...

... addresses the innovation challenges in energy system and market evolution necessary for achieving climate protection and renewables integration with affordability and security of supply

... beyond smart electricity grids



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# ETIP SNET Video: Understanding Energy Transition



<https://www.youtube.com/watch?v=U2dUwmXMLpw>



# ETIP SNET's mission

- ▶ **Set-out a vision for RD&I for Smart Networks for Energy Transition** and engage stakeholders in this vision.
- ▶ **Prepare and update the Strategic Research and Innovation Roadmap.**
- ▶ Report on the **implementation of RD&I activities at European, national/regional and industrial levels.**
- ▶ Provide **input to the SET Plan action 4** which addresses the technical challenges raised by the transformation of the energy system.
- ▶ **Identify innovation barriers**, notably related to regulation and financing.
- ▶ Develop enhanced knowledge-sharing mechanisms that **help bring RD&I results to deployment.**
- ▶ Prepare **consolidated stakeholder views** on Research and Innovation to European Energy Policy initiatives.





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# ETIP SNET's stakeholders



Transmission System  
Operators (TSOs)



Distribution System  
Operators (DSOs)



National  
Representatives



Research  
& Academia



Storage  
(technology and services  
providers)



Consumers  
(aggregated and  
not aggregated)



Thermal Generation  
(flexible)



Renewable Energy  
Sources Generation



ICT, Network and Software  
providers



Equipment  
manufacturers  
and suppliers (non-ICT)



Interface to Other  
Energy Carriers  
(Heat, Transport, Gas, ...)



Regulators



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# ETIP SNET's organisation



**Governing Board**

(30+ members representing key European stakeholders)

**Exco** (9 members)



**Experts coordination**

via Working Groups  
(5 permanent WGs)



**National stakeholders coordination**

(Ministry representatives,  
funding agencies, regulators,  
national platforms)



**ETIP SNET Secretariat**  
(Intensys4EU)\*

\* Intensys4EU is a coordinating consortium formed under the European Commission's Horizon2020 initiative which supports ETIP SNET in delivering RD&I monitoring reports, Roadmaps and implementation plans.



**WG1**

Reliable, economic and efficient smart grid system



**WG2**

Storage technologies and sector interfaces



**WG3**

Flexible Generation



**WG4**

Digitisation of the electricity system and customer participation



**WG5**

Innovation implementation in the business environment



**NSCG**

National Stakeholders Coordination Group



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# ETIP SNET's Working Groups: + 250 experts from around Europe



## WG1: Reliable, economic and efficient smart grid system

WG1 addresses business and technology trends contributing to the **overall energy system optimization at affordable investment and operation costs.**



## WG2: Storage technologies and sector interfaces

WG2 addresses the technological and market developments related to **energy storage solutions** to ensure the required level of flexibility for the transmission and distribution of electricity.



## WG3: Flexible Generation

WG3 considers the latest business and technology trends to **address the needs for flexibility** in the framework of an integrated energy system.



## WG4: Digitisation of the electricity system and Customer participation

WG4 addresses the use and impact of the **Information and Communication Technologies** as a pervasive tool along the entire value chain of the power generation, transportation and use.



## WG5: Innovation implementation in the business environment

Work Group 5 adopts a helicopter view on **R&I projects and promotes their uptake by the industry** so as to ensure Europe's energy transition.

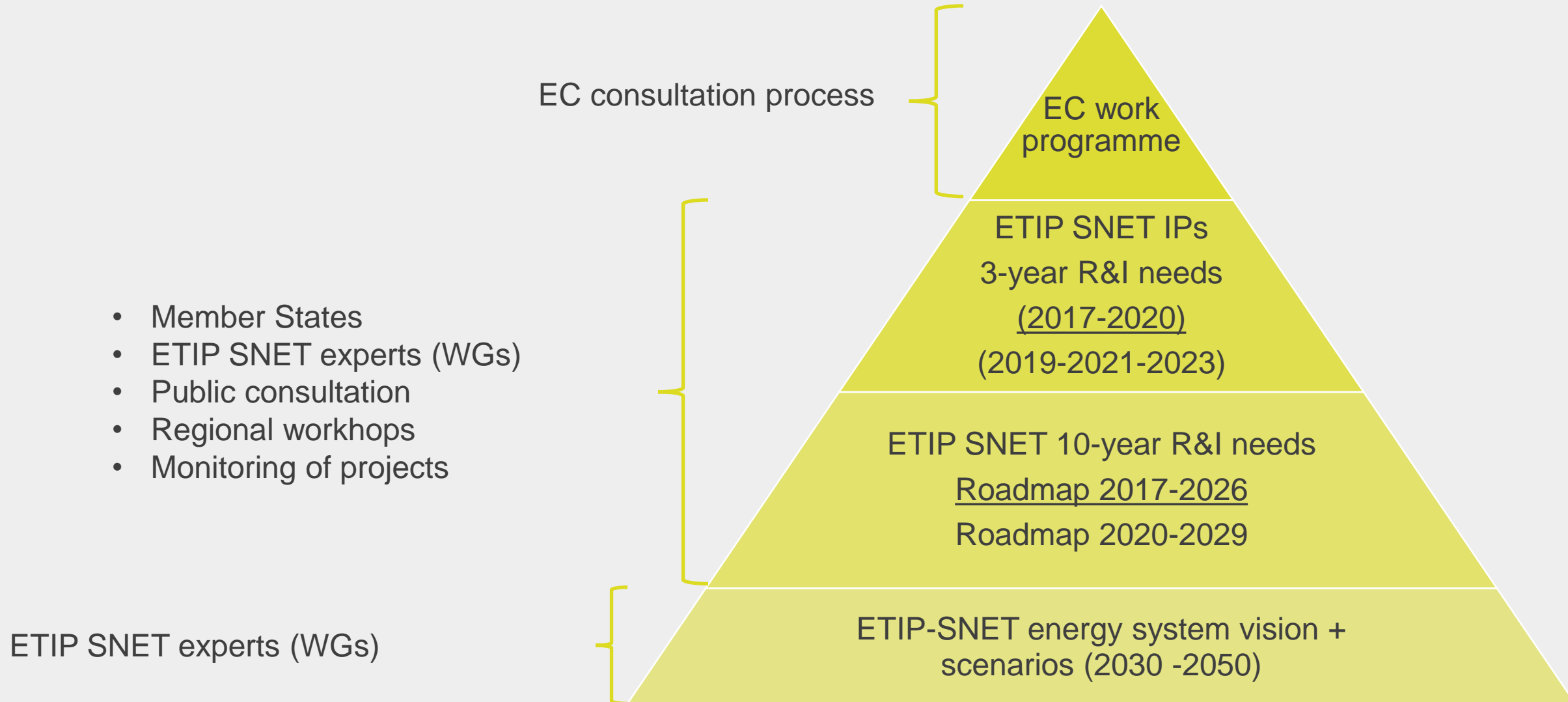


## NSCG: National Stakeholders Coordination Group

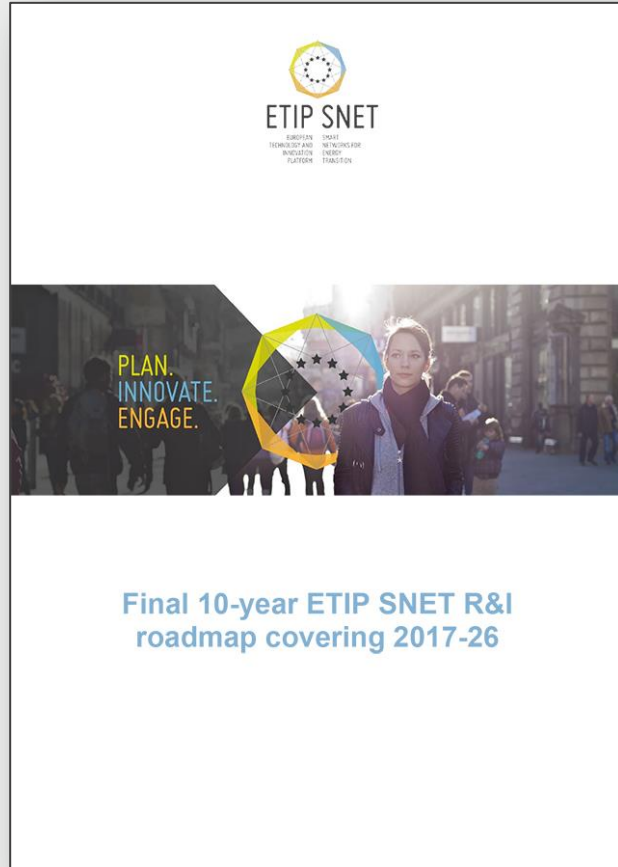
NSCG provides a sounding board and **exchange platform for national R&I stakeholders** in the area of energy systems and networks.



# ETIP SNET “deliverables” and how it can impact EU Research priorities



# Existing and future ETIP SNET deliverables



January 2017



October 2017



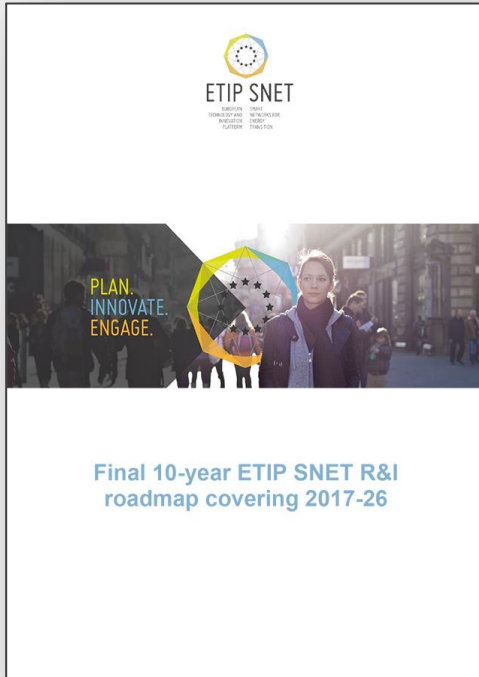
March 2018  
tbc



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# A new roadmap supported by workshops, public consultation and a monitoring exercise



January 2017

The 10-year (2020-2029 ) ETIP SNET updated R&I roadmap specifying the future R&I needs for the energy system will be drafted based upon,

- consolidated and balanced stakeholder viewpoints through “regional” workshops
- consolidated and balanced stakeholder viewpoints through public consultation
- a monitoring/review of national, European and international R&I activities

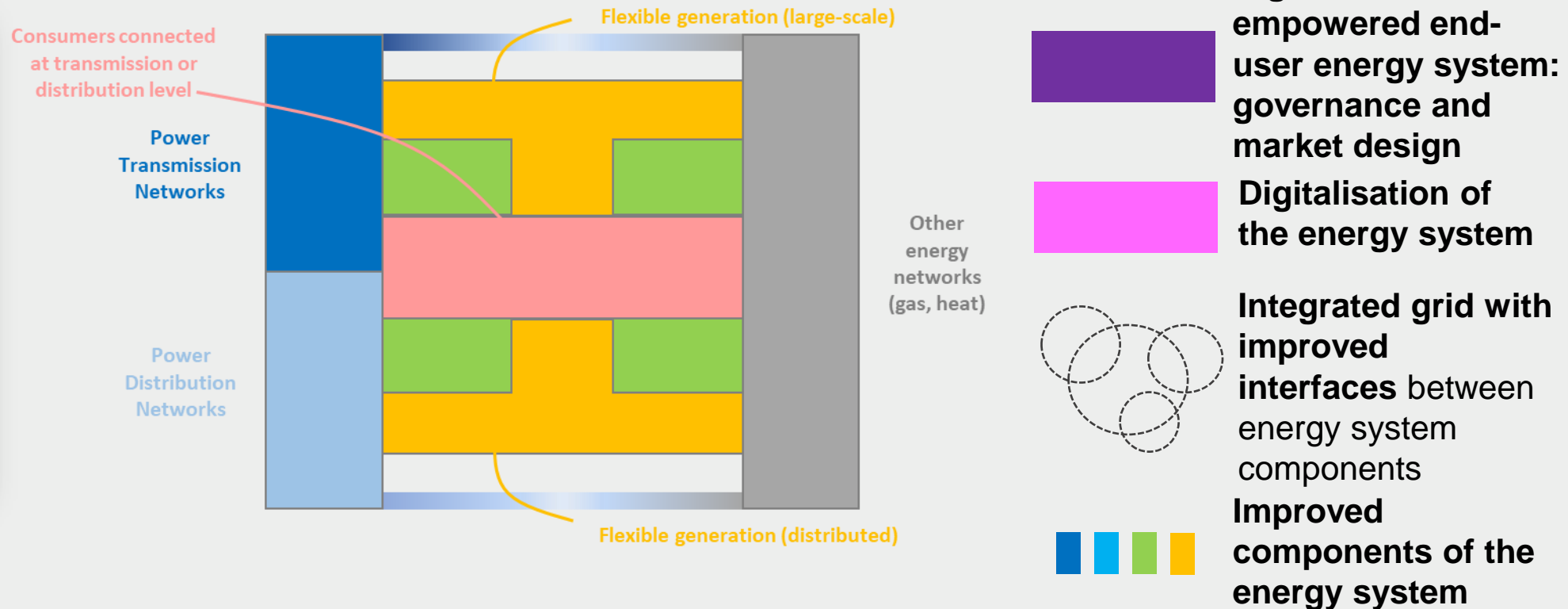
→ assess the coverage of the R&I activities by national and European projects

# A new Implementation Plan on short-term priorities according to the broaden scope of the ETIP SNET

## Final structure of the IP



October 2017



# ETIP SNET's collaboration with national stakeholders

## Objectives

- **Ensure consistency and complementarity** between European R&I and National R&I activities and priorities
- **Know more** about R&I activities carried out at national and regional level
- **Avoid overlaps** between national R&I funding at EU and national levels

## Activities

- **Creation, coordination and animation of the National Stakeholders Coordination Group**, providing a sounding board and exchange platform for national R&I stakeholders in the area of energy systems and networks.
- **Organisation of four Regional Workshops/year** (Aachen, Lisbon, Nicosia and Riga in 2017)
- **Monitoring of R&I projects** implemented at national level
- **Organisation of National Webinars**, in collaboration with national stakeholders

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# Thank you for your attention

More information:



[etip-snet.eu](http://etip-snet.eu)



[@etipsnet](https://twitter.com/etipsnet)



[Info@etip-snet.eu](mailto:Info@etip-snet.eu)



[linkedin.com/groups/8208338](https://www.linkedin.com/groups/8208338)

ETIP SNET National Webinar on:

***Interoperability of data exchanges in smart energy systems***

## Technology Platform Smart Grids Austria

**Angela Berger, Valerie Reif**  
Technology Platform Smart Grids Austria

18.01.2018

- **Technology Platform Smart Grids Austria** (V. Reif)
  - Objectives & Activities
- **Integrating the Energy System - IES** (M. Frohner, S. Sauermann)
  - Interoperability of ICT systems as enabler for innovative services in the energy sector (SGAM/TOGAF)
  - Lessons learned from the healthcare sector: IHE methodology & organisation
  - Connectathon: unique interoperability testing events
- **The vision of IES Europe** (V. Reif)
  - Possibilities for engagement and participation

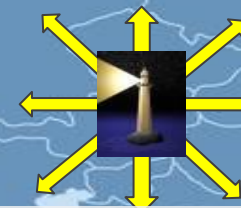


## The Technology Platform Austria ...

- connects industries
- promotes innovation
- has a systemic approach towards the power industry
- fosters Austria as an innovation and business location
- is technologically and vendor-neutral
- acts politically independent

### Platform members

- Technology suppliers
- Power industry
- Regulator
- R&D



*The **Technology Platform Smart Grids Austria** has become a competent and valuable partner for ministries, public authorities and international experts in recent years.*

# Members of the Technology Platform

## R&D



## Industry



## Power Industry



## National activities

### Position papers

- 01/2016 'Model region energy' (ger.)
- 01/2017 'Electric mobility in Austria' (ger.)
- 02/2017 'Battery storage in distribution (ger./engl.)

### Fact sheets

- 01/2017 'Network and Information Systems Directive' (ger.)
- 01/2017 'Data Protection Regulation' (ger.)
- 02/2017 'Smart Meter & Smart Metering' (ger.)
- 01/2018 'Energy Transition' (ger.)
- tba 'Blockchain in the Energy Sector' (ger.)

Participation in **consultation processes**

Participation in **strategy processes**

## International activities

### Conference contributions

- Smart Grids Week 2013-2016
- Smart Energy Systems Week 2017&2018

Member of **ETIP SNET**  
(European Technology and Innovation Platform Smart Networks for Energy Transition)

Exchange with  
**international projects**

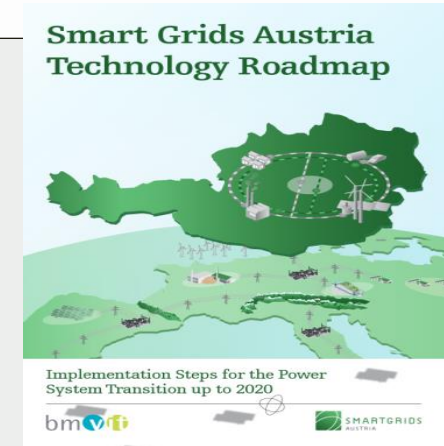


## Technology Roadmap Smart Grids Austria

- Technologies and implementation steps Austria

towards a smart grid in

→ [Download](#) the English version



## Reference Architecture for Secure Smart Grids in Austria (RASSA)

- Definition of a smart grid reference architecture for Austria based on international standards

→ [Project Homepage](#)



## Interoperability in the Energy System

- Development of processes to ensure interoperability energy sector

of ICT-systems in the

→ [Project Homepage](#)





ETIP SNET National Webinar on:

*Interoperability of data exchanges in smart energy systems*

## IES – Integrating the Energy System

**Matthias Frohner, Stefan Sauermann**  
University of Applied Sciences Technikum Vienna

18.01.2018

# Why Interoperability?

## IES objective

Deployment of processes to ensure interoperability of ICT-systems in the energy sector

## Interoperability

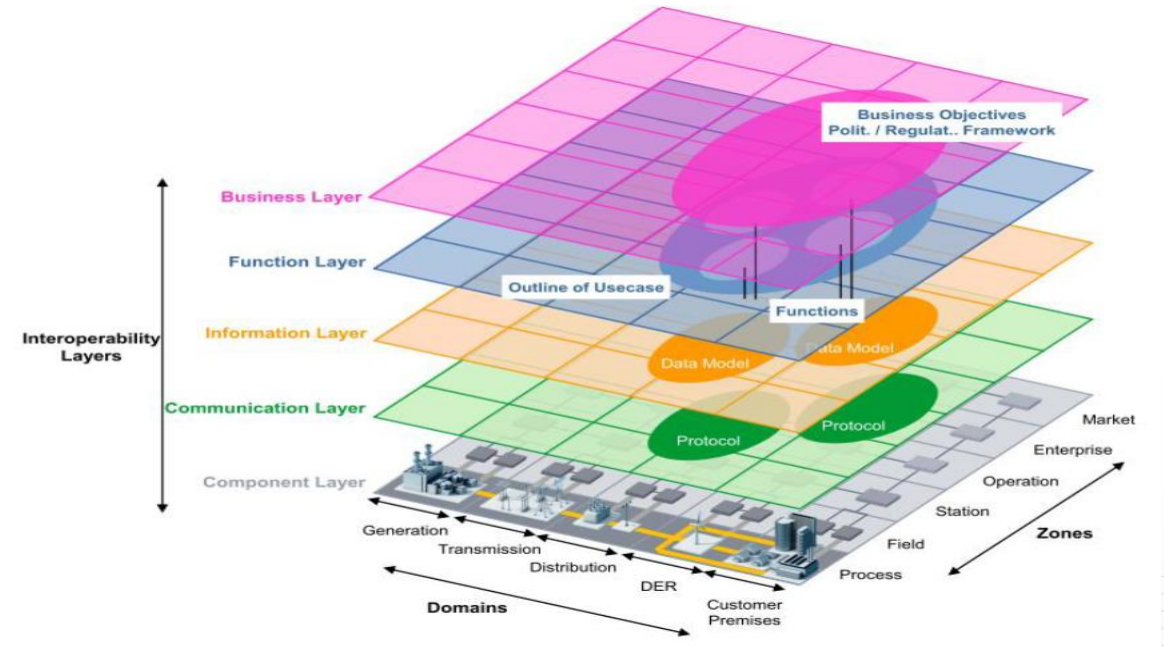
Ability of software and hardware on different machines from different vendors to share data

(www.webopedia.com)

## Semantic interoperability

enables

- automated
- further processing of data
- without additional manual effort
- at the receiving system



**SGAM - Smart Grid Architecture Model**

Fig. source: SG-CG/M490 (2014), *Overview of SG-CG Methodologies*, available at: [ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/SGCG\\_Methodology\\_Overview.pdf](ftp://ftp.cencenelec.eu/EN/EuropeanStandardization/HotTopics/SmartGrids/SGCG_Methodology_Overview.pdf)

# Best Practice Example: Health Care

## Motivation for Founding IHE: Radiology Workflows

- 1990s: DICOM is available
- Large implementation effort
  - DICOM reaches imaging workflows, good experience
- Adding admission, discharge, reporting, printing function
  - No interoperability
  - Vendors implement many different messaging methods
- What can we do?
  - “There is no single, agreed standard, there are many!”
  - “Let us sit together and get this straight!”
  - Positive, constructive approach
- We need a platform to fix this!
  - **IHE - Integrating the Health Care Enterprises**  
founded for radiology workflows

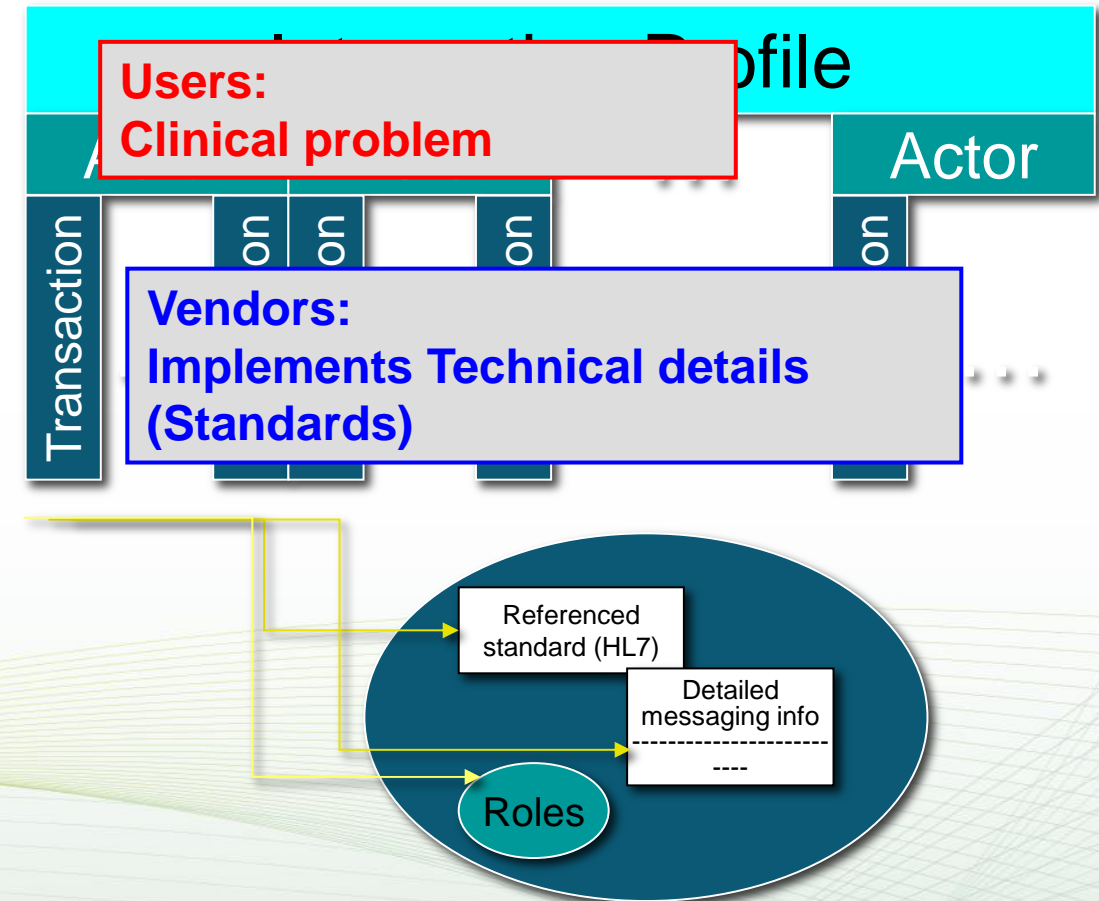




## IHE Concepts

Each integration profile is

- a representation of a real-world capability
- supported by a set of actors
- interacting through transactions

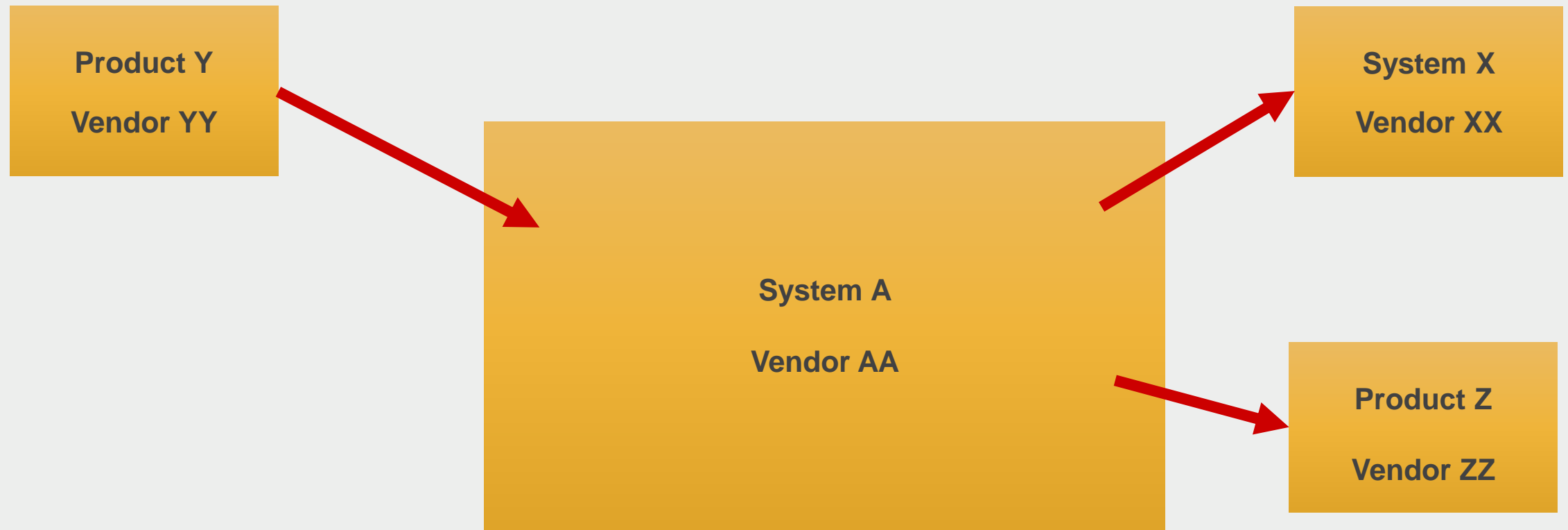




# Interoperability process

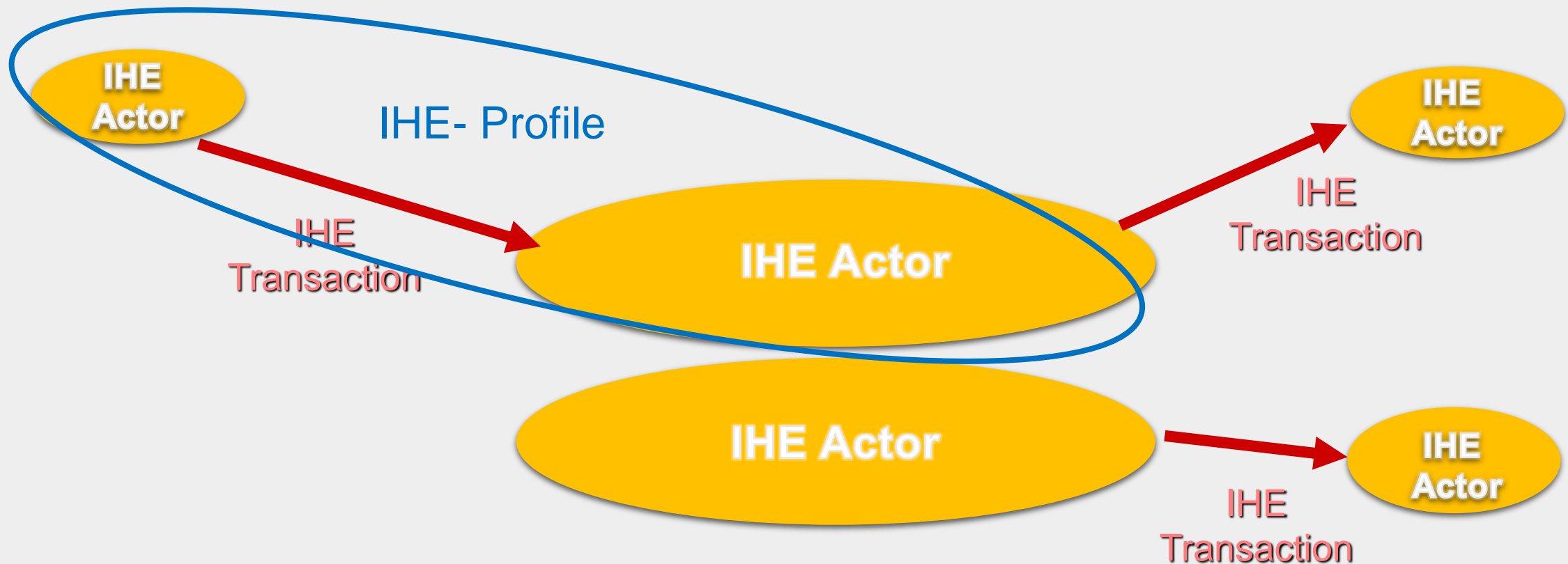
## The world of systems ...

Perspective on systems and products



# Interoperability process World seen from IHE (Health Care) ...

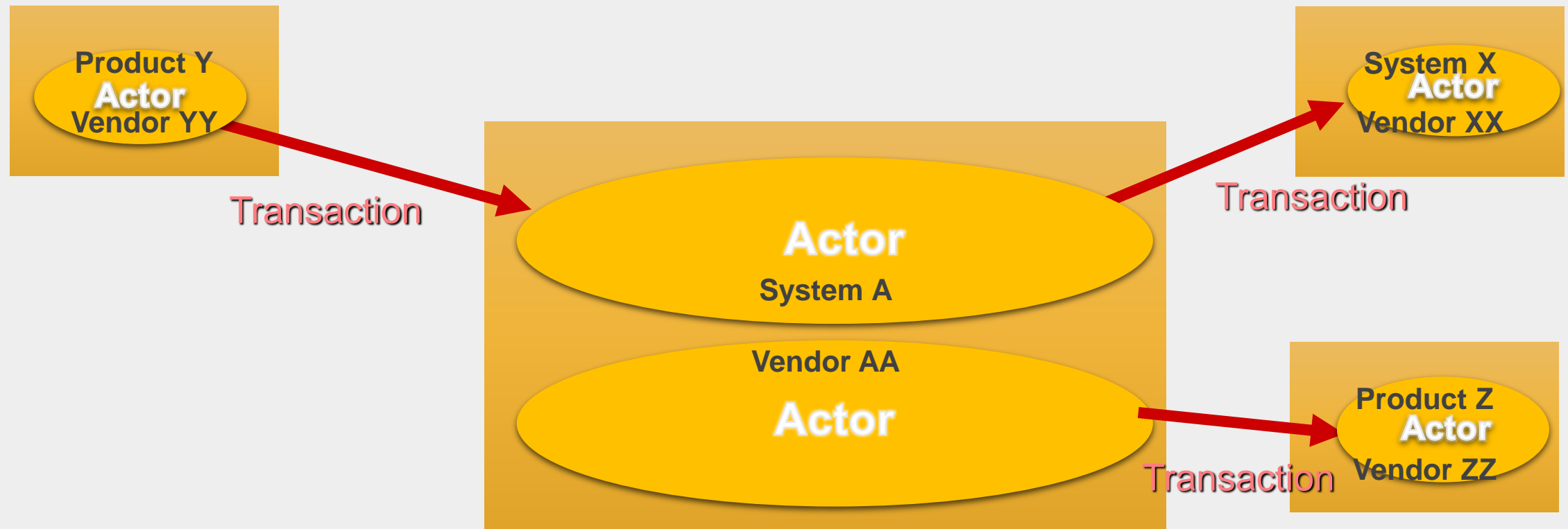
Perspective on profiles: IHE-Actors and IHE-Transactions



# Interoperability process

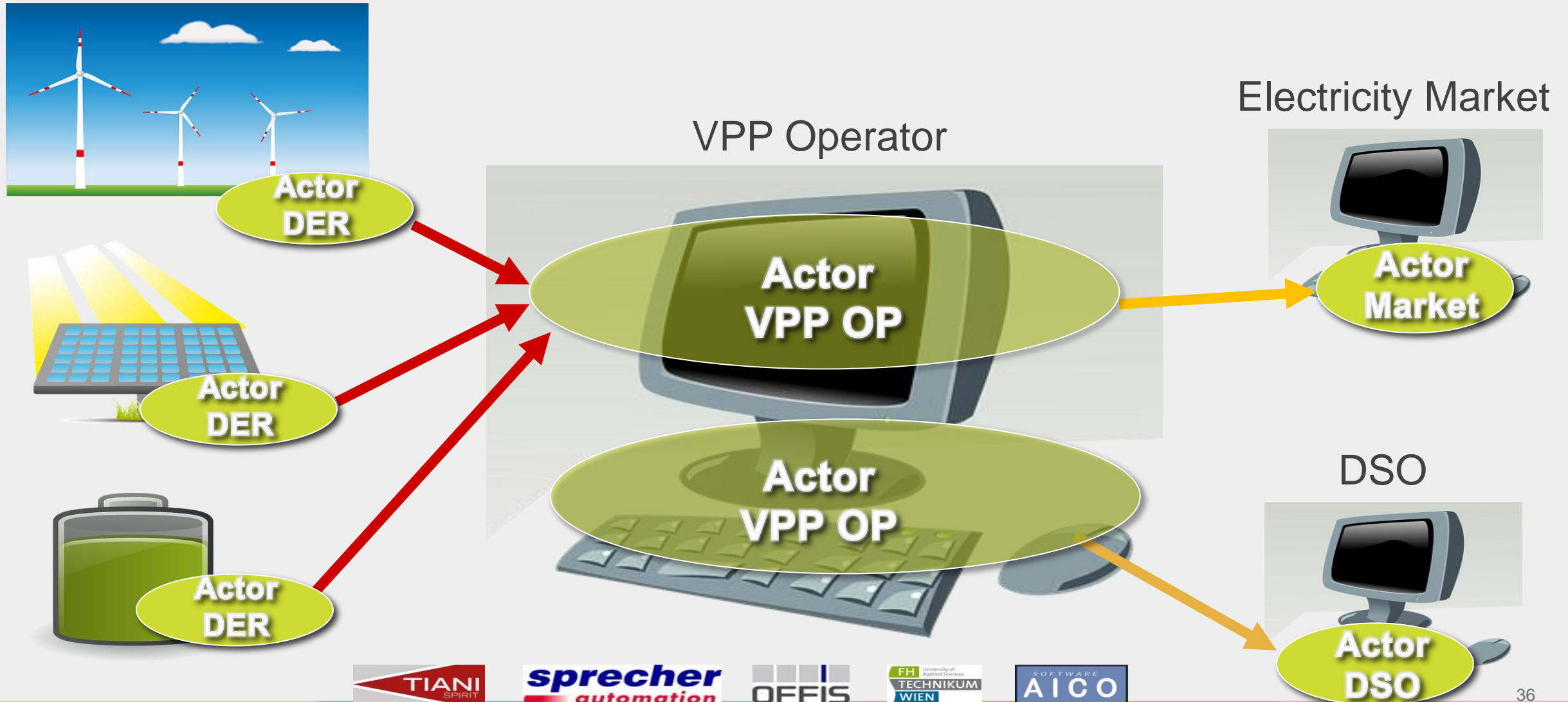
## The combined ideal world ...

Systems communicate via predefined profiles with actors and transactions



# Transfer to the Energy Sector

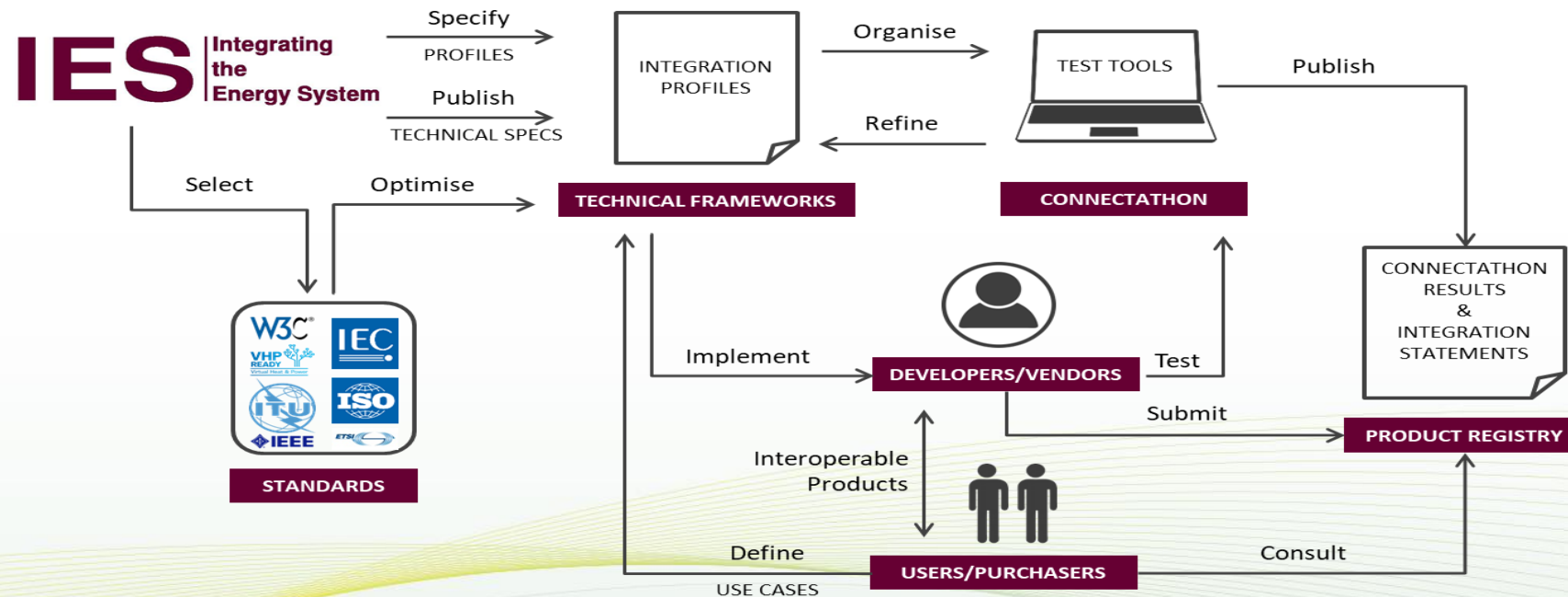
## Example: Virtual Power Plant



# The IES – Process

## IES - Integrating the Energy System

- Users & developers of (energy) information technology
- Annually recurring four-step process



IES process

Source: own figure, based on IHE, *IHE process*, available at [https://www.ihe.net/IHE\\_Process/](https://www.ihe.net/IHE_Process/)

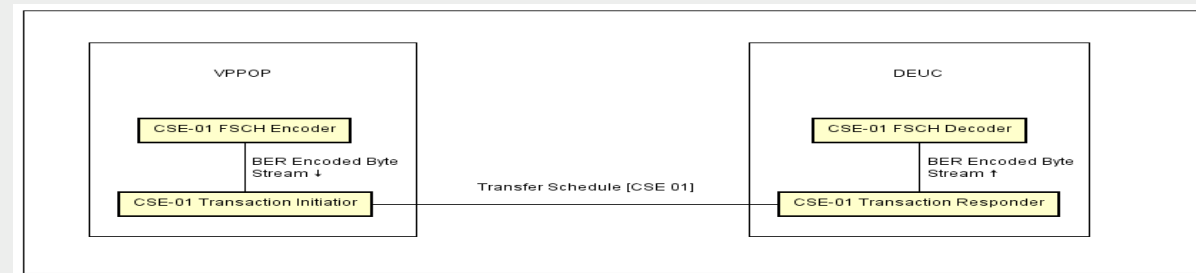
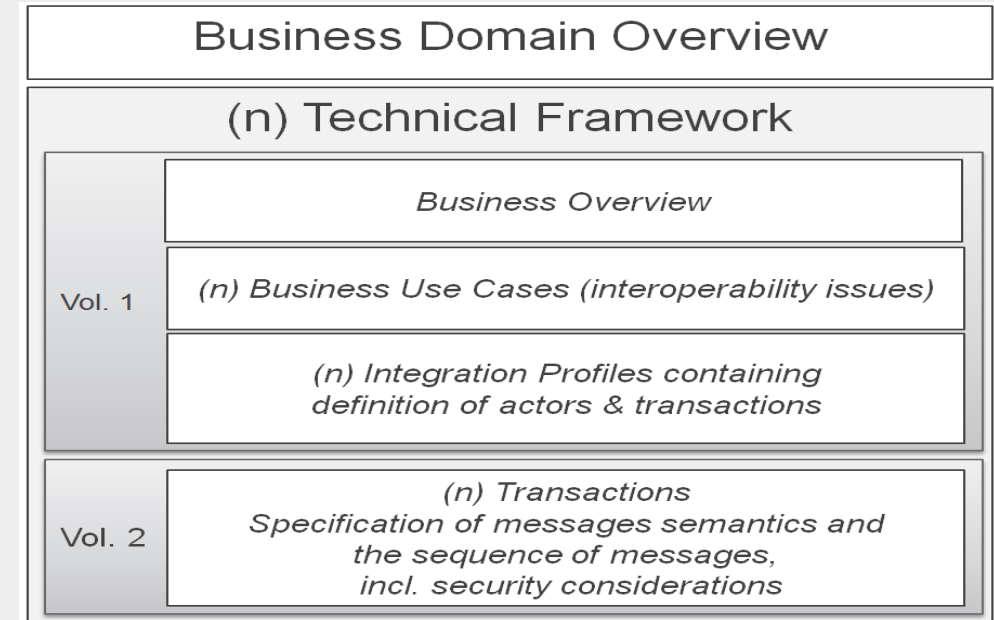
- Specification in Technical Framework

Based on a defined document structure:

- Informative description of use cases and definition of actors & transactions  
(Vol.1)
- Specification of transactions, i.e. how existing communication standards shall be used  
(Vol. 2)
- **Not defining new standards**

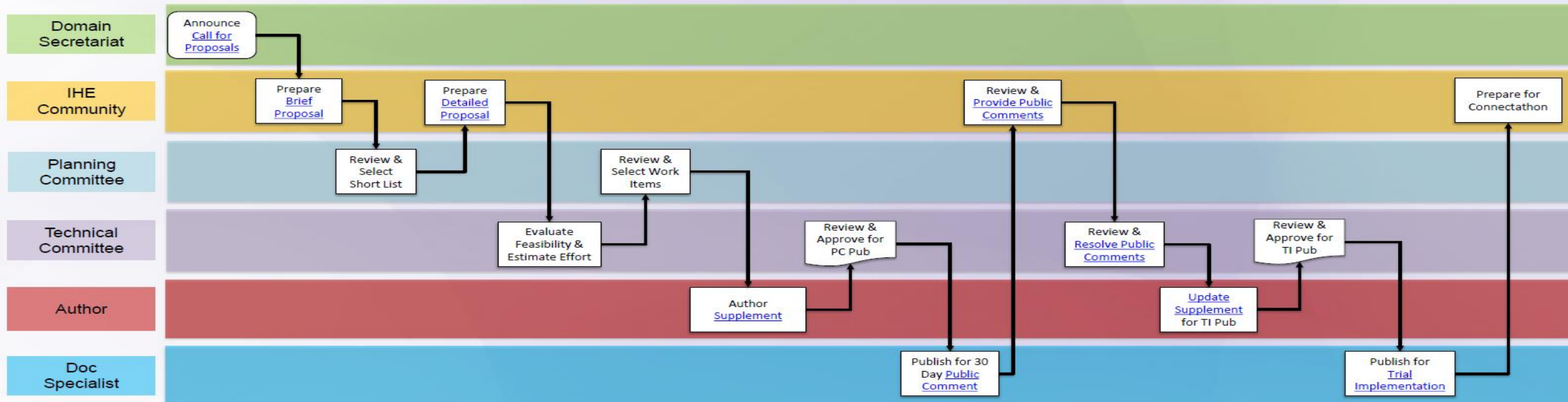
- Defines data exchanges by

- Actors
- Transactions





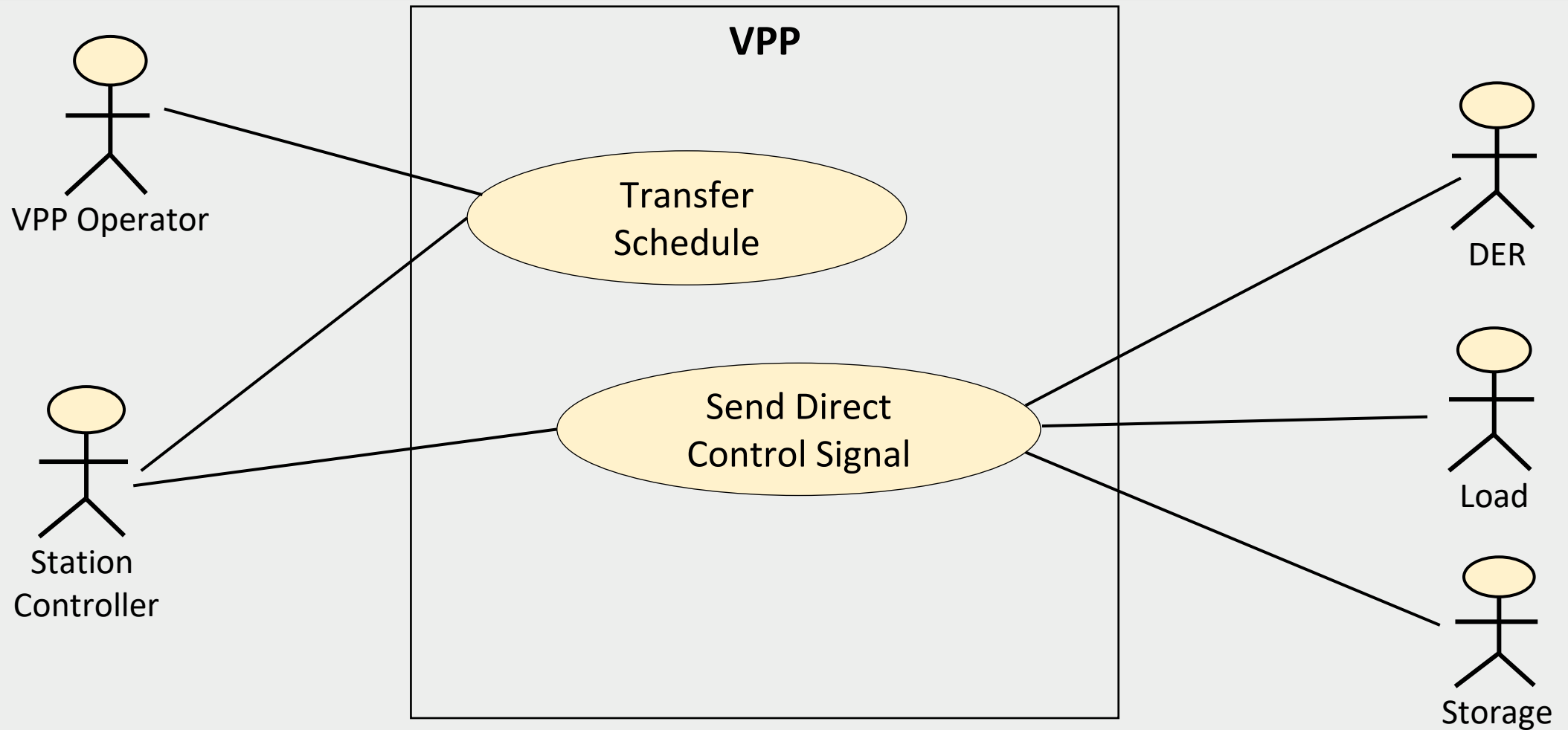
# Technical Framework: Publication Process



Publication Process for New Supplements – Call for Proposals through IT Publication

Source: IHE Wiki, available at: <https://wiki.ihe.net/images/d/dc/NewSupplPubProcess.pdf>

# Example: Use Case Diagram 'Send Schedule'







### Interoperability Test Events

- Yearly events (Europe, Asia, USA, Japan)
- Interoperability testing of prototypes
  - Participants are the vendors
  - Debugging with top-level experts
  - Team & network building

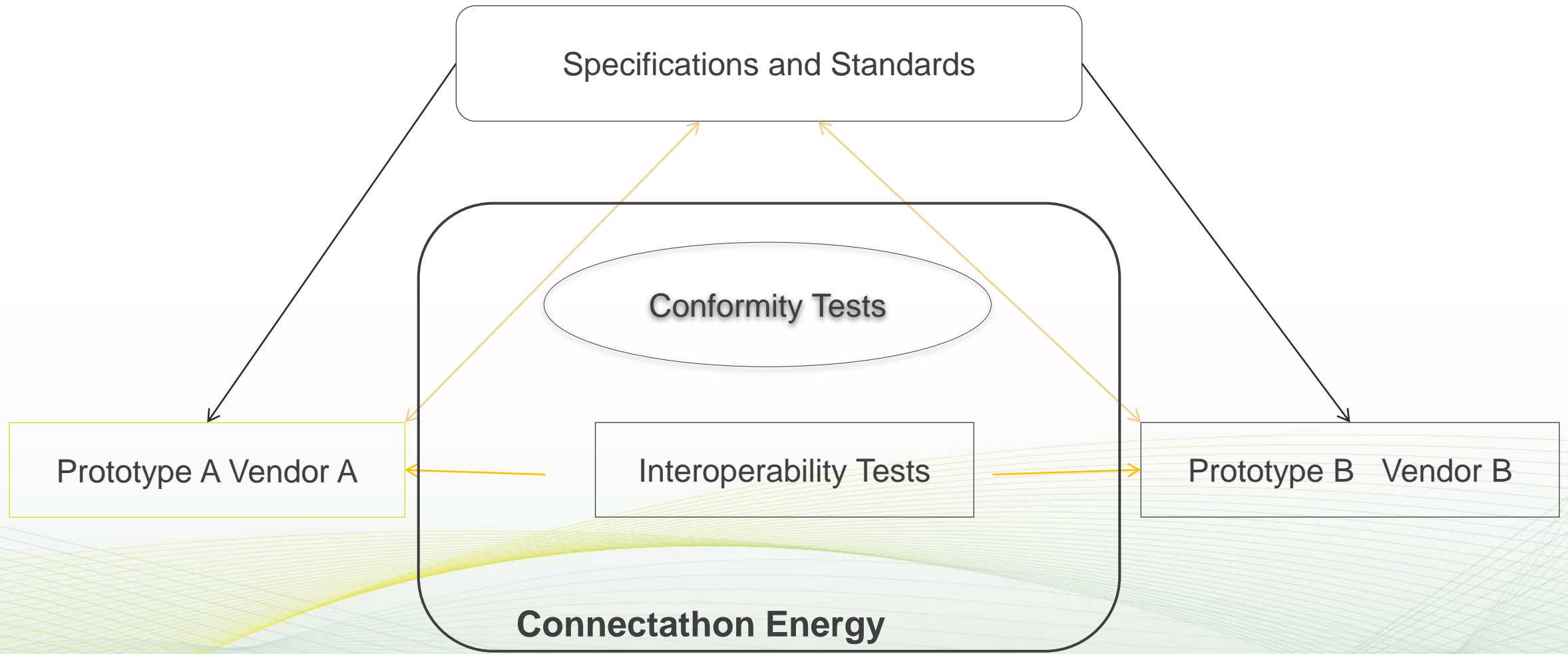


Testing at IHE-Connectathon, Vienna 2009



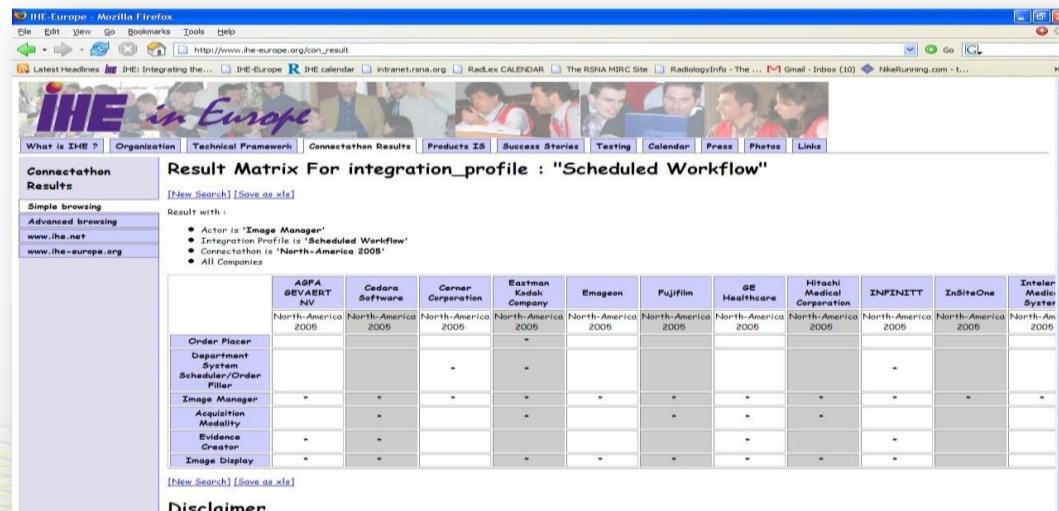
Testing at IHE-Connectathon, Vienna 2014

# The IES Test Process





- No communication of failures
- Results are communicated at the company level
  - No published information about system success at the Connectathon
  - Vendors publish «**integration statements**» to declare the conformity of their products to the profiles



The screenshot shows the IHE Europe Connectathon Results Browser interface. It features a navigation bar with tabs like 'What is IHE?', 'Organization', 'Technical Framework', 'Connectathon Results', 'Products ID', 'Success Stories', 'Testing', 'Calendar', 'Press', 'Photos', and 'Links'. The main content area displays a 'Result Matrix For integration\_profile : "Scheduled Workflow"'. This matrix lists various vendors and their support for different IHE integration profiles. The vendors listed are AGFA GEVAERT NV, Cedara Software, Cerner Corporation, Eastman Kodak Company, Emageon, Fujifilm, GE Healthcare, Hitachi Medical Corporation, INFINTT, InSiteOne, and Intel Medical Systems. The integration profiles listed are Order Placer, Department System Scheduler/Order Placer, Image Manager, Acquisition Modality, Evidence Creation, and Image Display. The matrix cells contain either a '+' sign indicating support or are empty.

Connectathon Results Browser

IHE Integration Statement			
Vendor	Product Name	Version	Date
Technikum Wien GmbH	HIO_GP_Module	1	4/18/13
This product implements all transactions required in the IHE Technical Framework to support the IHE Integration Profiles, Actors and Options listed below :			
Integration Profile	Actor	Integration Profile Option	
Audit Trail and Node Authentication	Secure Application	None	
Consistent Time	Time Client	None	
Cross-Enterprise Document Sharing	Document Consumer	None	
Cross-Enterprise Document Sharing	Document Source	None	
Internet address for vendors IHE information : <a href="http://www.technikum-wien.at">http://www.technikum-wien.at</a>			
Links to Standards Conformance Statements for the Implementation			
HL7			
DICOM			
Link to general information on IHE : <a href="http://www.ihe.net">www.ihe.net</a>			

Example for an Integration Statement



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# IES goes IHE-Connectathon 2018

powered by 

## IHE-Europe Connectathon

Interoperability testing event

[connectathon.ihe-europe.net](http://connectathon.ihe-europe.net)

**IHE**  
EUROPE

Integrating  
the Healthcare  
Enterprise

**CONNECTATHON**

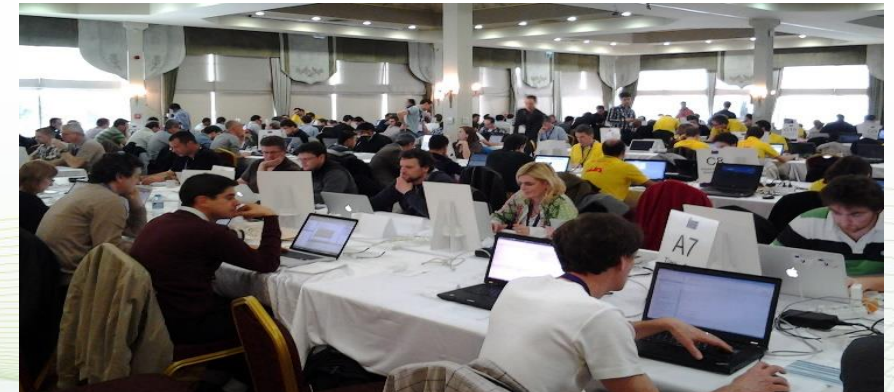
**THE HAGUE**  **APRIL 16-20 2018**

## Connectathon Energy

Testing of data exchanges within a

Virtual Power Plant based on IEC 61850

**IES welcomes all interesting parties  
to join us in The Hague in April '18!**



Testing at IHE-Connectathon, Istanbul 2013

© Georg Koch, Tiani Spirit GmbH



- **What we aim for**

- Establish an independent European organisation
- Use synergies with existing European interoperability initiatives (EIF, EIRA, ISA<sup>2</sup>, eIDAS, ...)
- Foster cross-border & cross-sector activities

- **What we offer**

- Procedural expertise (IES-process, development of integration profiles)
- Contacts to IHE Europe
- Organisational management & support

- **What we need**

- Early-adopters (industry, vendors, tech providers) to share their pain and work with us
- IES-contact people in other European countries
- Opinion leaders to multiply the vision



- Join us in The Hague at **Connectathon 2018**

## Techies

- Test your prototype and receive your first integration statement

## Management level

- Find out how interoperability can increase cost-effectiveness and flexibility

## Regulatory authorities, energy market experts

- Evaluate options to foster the Digital Single Market & the Internal Energy Market

- Tell us about YOUR **interoperability challenge** and
- Support us in **developing new profiles** that fit YOUR needs




Thank you for your attention!





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Managing Director  
Technology Platform Smart Grids Austria  
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 @SmartGridsAT

**Stefan Sauermann**  
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Program Director

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Research & Development

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T: 0043 1 333 40 77 354

## IES project links

- Integrating the Energy System Webpage  
[www.iesaustria.at](http://www.iesaustria.at)
- Technical Framework Virtual Power Plant  
[https://www.smartgrids.at/files/smartgrids/Dateien/Dokumente/IES%20Dokumente/Technical%20Framework%20VPP\\_V00.017.pdf](https://www.smartgrids.at/files/smartgrids/Dateien/Dokumente/IES%20Dokumente/Technical%20Framework%20VPP_V00.017.pdf)
- Frohner, M., Gottschalk, M., Franzl, G., Pasteka, R., Uslar, M., Sauermann, S., **Smart Grid Interoperability Profiles Development**. IEEE International Conference on Smart Grid Communications; Dresden, 10 / 2017
- CEN CENELEC on Smart Grids  
<https://www.cencenelec.eu/standards/Sectors/SustainableEnergy/SmartGrids/Pages/default.aspx>

## Examples from Health Care

- IHE Integration Statement template
  - <http://tinyurl.com/62ymvtc>
- Link to IHE Product Registry
  - <http://product-registry.ihe.net>
- Documentation Gazelle
  - <http://gazelle.ihe.net/content/product-registry>
- Support Gazelle
  - <http://gazelle.ihe.net/jira/PR>

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# Questions & Answers

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