



Symposium on Interoperability and Data Spaces

Welcome

Agenda morning session



Welcome

- Keynote to the vision of digitalisation, Alexander Markowetz
- Activities on the European Level, Stavros Stamatoukos, DG Energy
- Introduction of activities in the energy sector: CETPartnership, HE project int:net

Data Space development and interoperability in the different sectors

- **Healthcare:** Cross-border MyHealth@EU Services
- **Agriculture:** interoperability through standards
- **Energy:** Project EDDIE, Project ENERSHARE, Project OMEGA-X
- **Transportation:** Project DeployEMDS
- **Public Services:** X-Road® 8 "Spaceship"

Behind the scenes tour (IHE) Connectathon test floor

Interactive Session on practical views to interoperability testing



Keynote

Alexander Markowetz



Activities on the European Level

Stavros Stamatoukos, DG Energy



Introduction of activities in the energy sector

CETPartnership

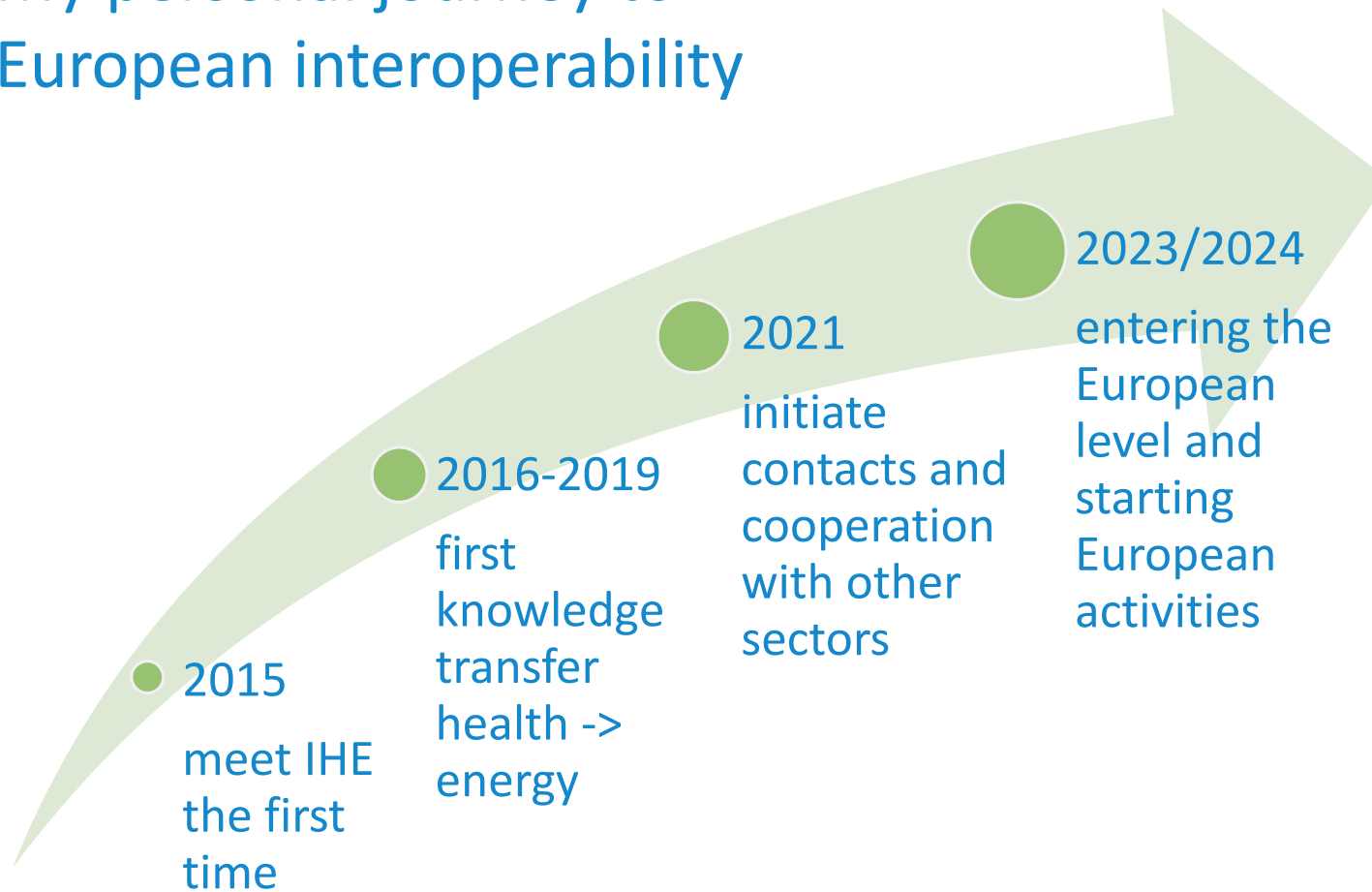
Angela Berger



CETPartnership and ERA Net Smart Energy Systems

European Collaboration Network for Interoperability Testing

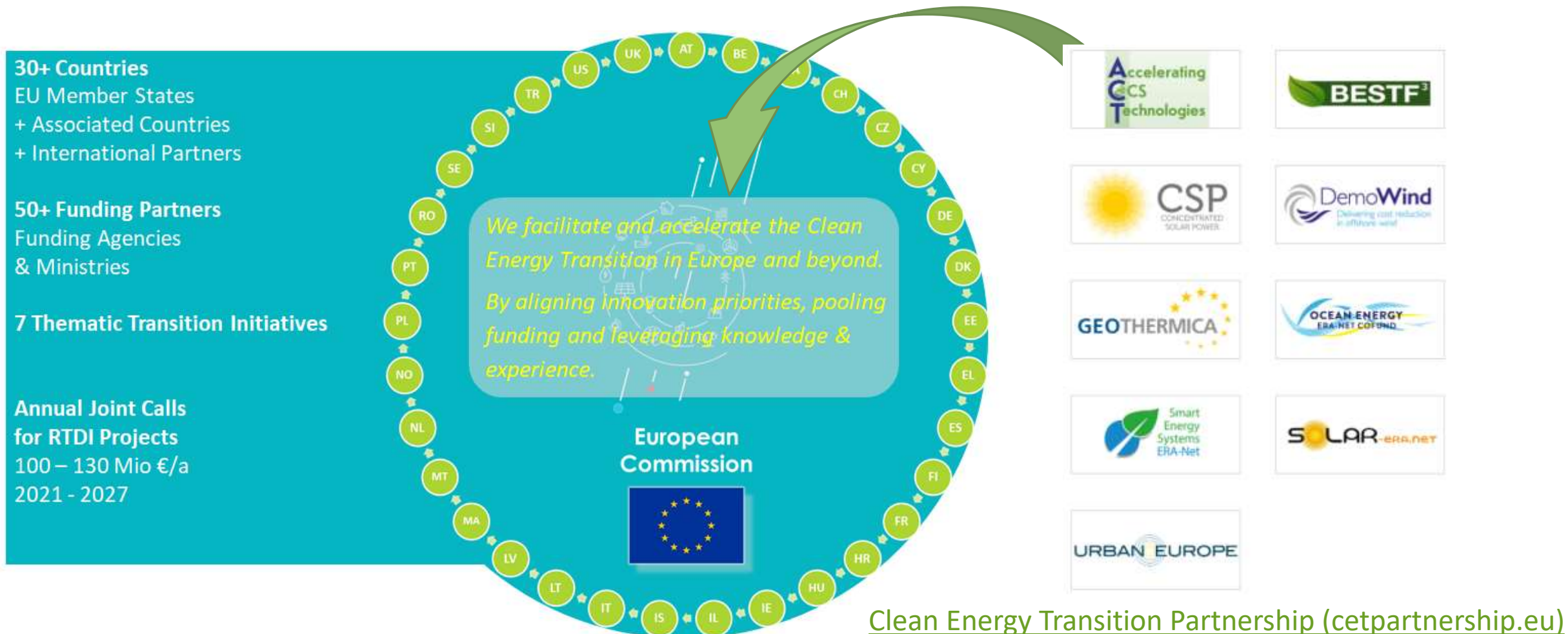
My personal journey to European interoperability



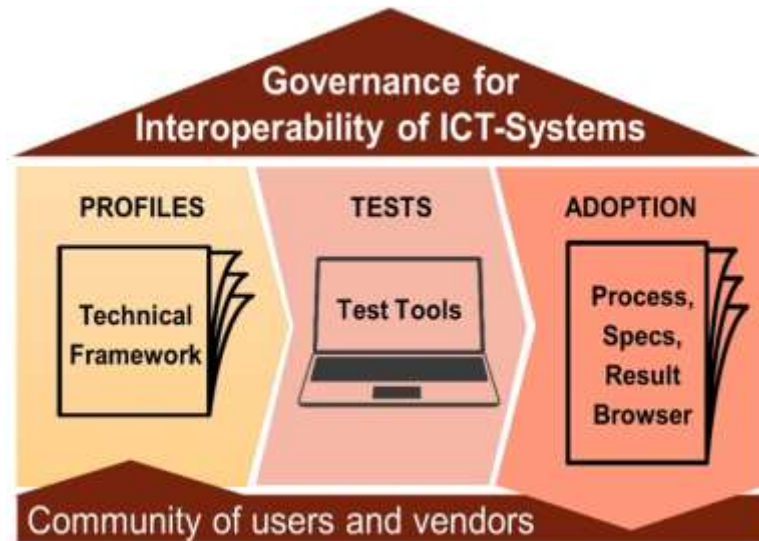
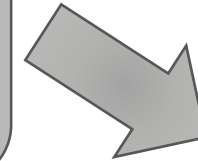
Three pillars process chain

The Clean Energy Transition Partnership

builds on 15 years of transnational cooperation in 9 energy ERA-Nets



The Collaboration Network as a joint activity for two target groups



- **connect** to European organisations and activities and policy makers
- initiate **cross-sector knowledge exchange**
- organize **European events**

Call to action

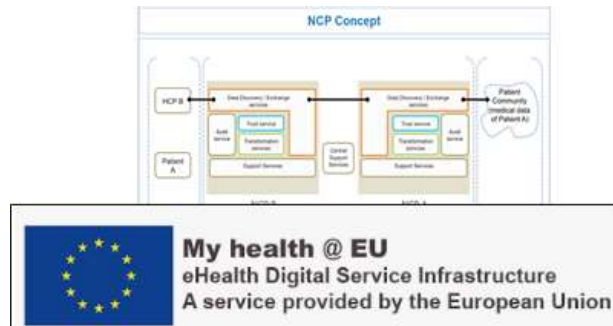
Knowledge Transfer for accelerating digitalisation

The European Interoperability Framework (EIF)

- Governance
- methodology
- Focus on use cases,
- decentralisation
- automated testing
- Community,
- Data Models
- technical standards (identity, privacy, security)
- basic architecture, available code



Source: European Commission



CETPartnership Call 2024 Call Module 01

Interoperability and Data Spaces



Find partners,
register in B2Match



Objective:

This Call Module will fund a pilot of an IT framework consisting of software services, which will enable the interoperable connection of data spaces at multi-lateral and cross-sector level. The pilot implementation should build on existing data spaces and initiatives and draw inspiration from best practices in other areas, such as:

- concept of myHealth@EU / eHealth
- concepts like eHealth Digital Service Infrastructure (eHDSI) or Napcore
- CEF, CEF building blocks, Once only principle / Once Only Technical System
- Gaia-X, SIMPL, ...

Expected outcome:

- Demonstrate of multi-lateral data sharing by using existing building blocks
- show the potential benefits and added value of a large-scale IT framework
- Example for a use case: communication in the charging infrastructure for electric vehicles, which enables the provision/request of ancillary services to/from the electricity grid through data exchange and integration, thus enabling a cross-sector connection of energy and mobility

Information: [Joint call 2024 | CETPartnership](#)

*“Interoperability needs the
collaboration of a community”*



Angela Berger

Clean Energy Transition Partnership, Integrated Regional Energy Systems
Lead European Collaboration Network for Interoperability Testing

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Introduction of activities in the energy sector

HE Project int:net

Ludwig Karg



int:net

Interoperability Network for
the Energy Transition

Tackling interoperability in the energy system

Ludwig Karg

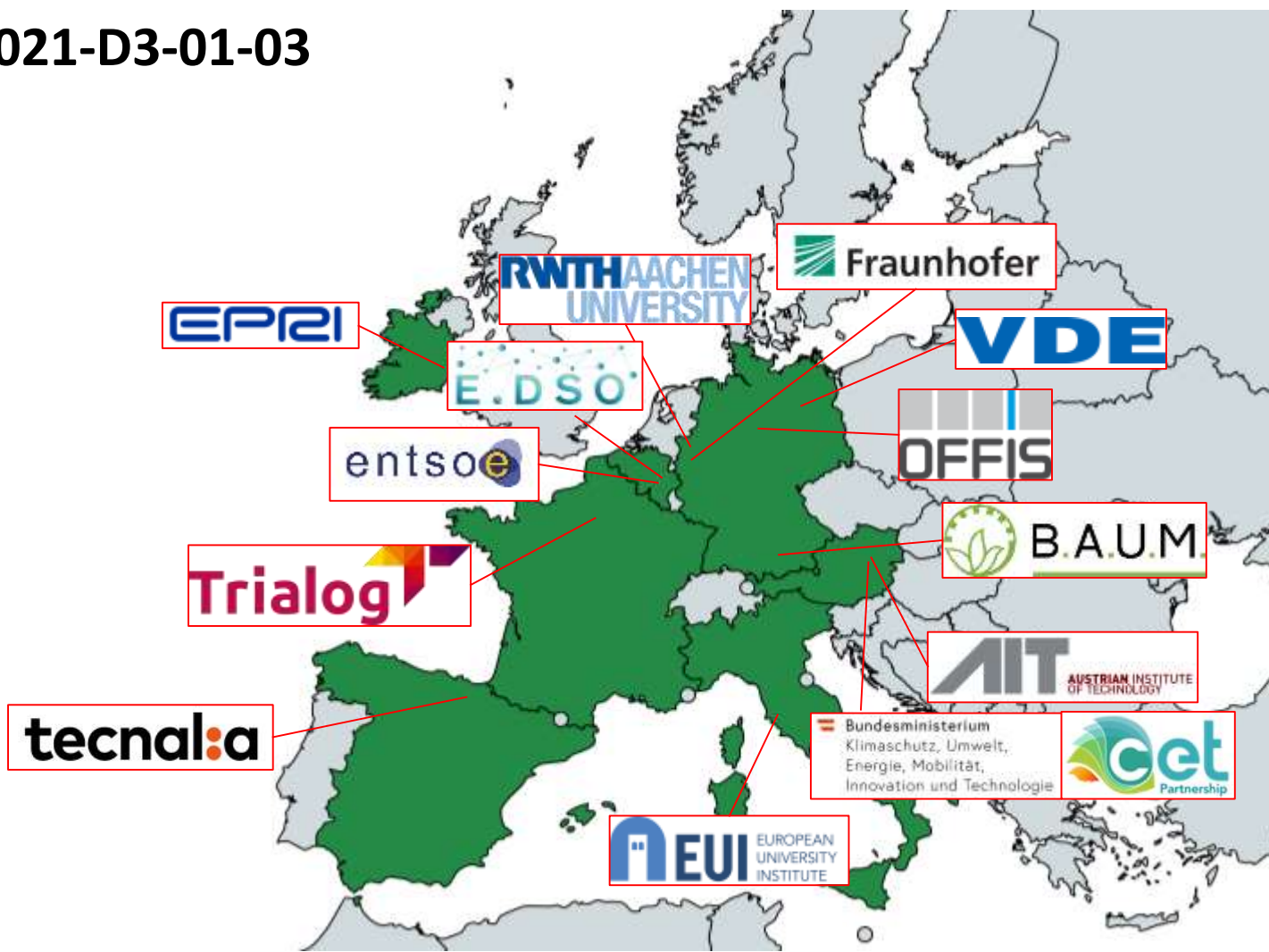
B.A.U.M. Consult München / Berlin

Trieste, June 6, 2024

int:net – general information

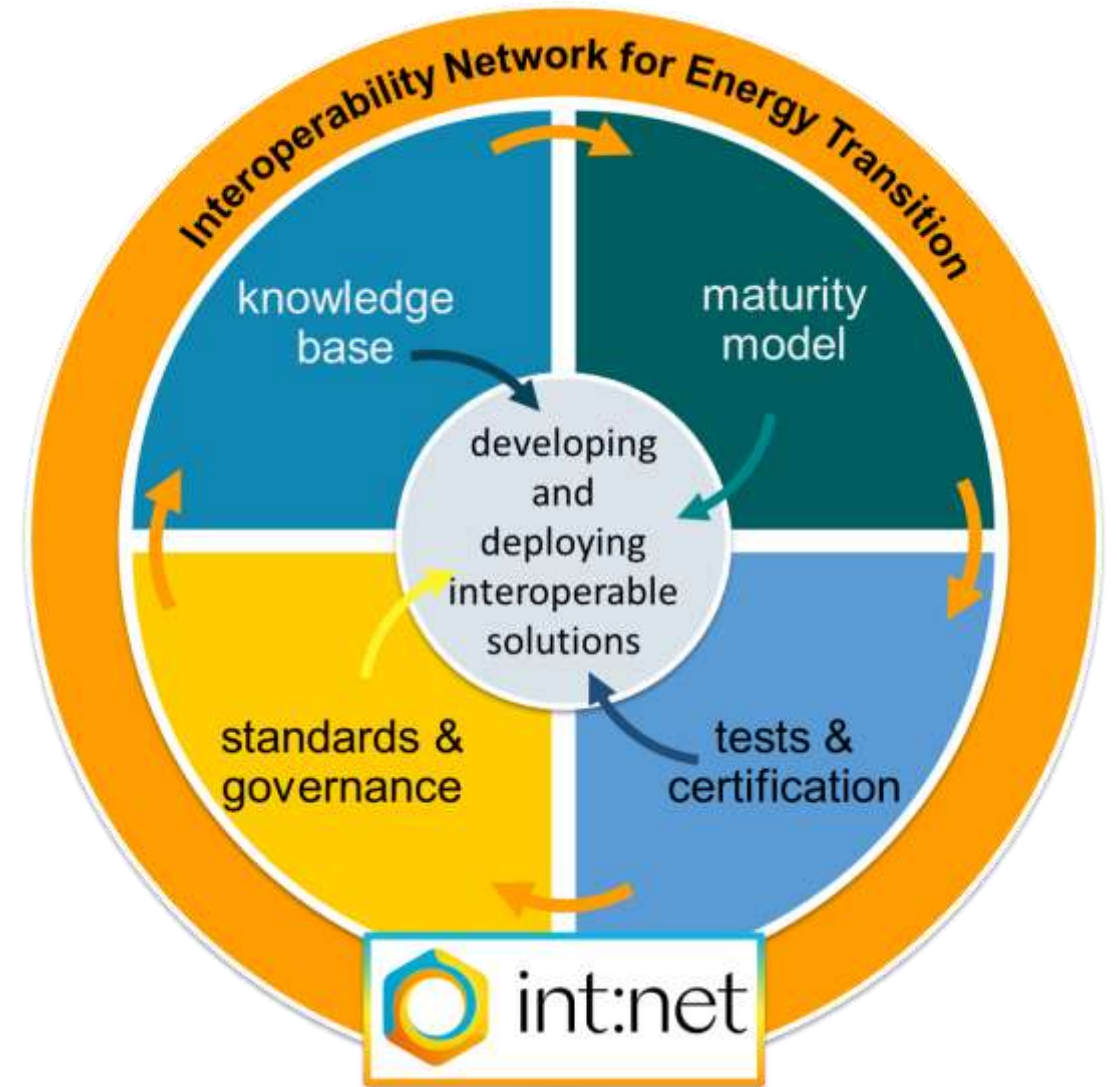
- **Horizon Europe call HORIZON-CL5-2021-D3-01-03**

- **Coordination & Support Action (CSA)**
- **Duration: 36 months**
- **Runtime: 01.05.2022 – 30.04.2025**
- **Consortium: 12 Partners**
 - 7 Countries
 - 1 **Associated Partner**
- **Budget: 5 M€**



int:net objectives

- Consolidating a **common knowledge base** for interoperability activities on energy services in Europe
- Developing a comprehensive and accepted **Interoperability Maturity Model (IMM)**
- Deploying a **framework for interoperability testing** in a network of interoperability testing facilities
- Fostering a **community network of standards and regulatory environment** for a European interoperability ecosystem



The Ecosystem

Energy Data Spaces Projects

DATA CELLAR

EDDIE
EUROPEAN DISTRIBUTED DATA INFRASTRUCTURE FOR ENERGY

Enershare

SYNERGIES

omega-x

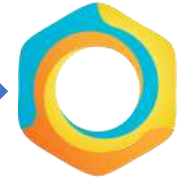
ODEON

HEDGE-IoT

TwinEU

interstore

BEGONIA



int:net
Interoperability Network for the Energy Transition



And other domains:



Energy Interoperability Task Force

INTERNATIONAL DATA SPACES ASSOCIATION

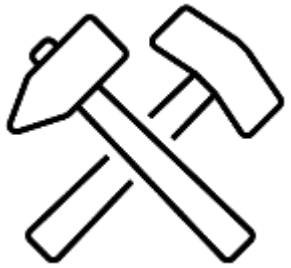
Data Management WG + other WGs

bridge

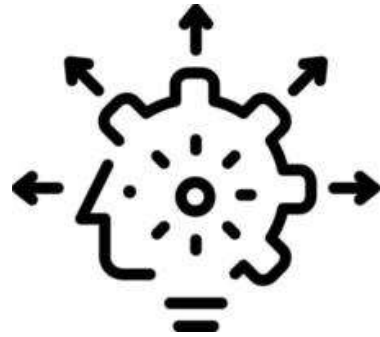




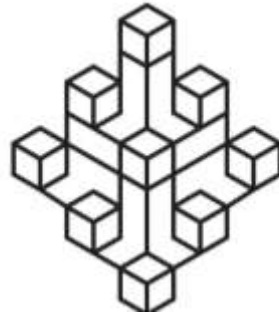
EMINENT (Evaluating the Maturity of INTERoperability for the ENergy Transition)



Provide Tools to Assess Interoperability



Improve Capability



Improve Interoperability



Tracking Interoperability maturity



Provide Guidance and Support

EMINENT allows organizations to assess and improve their interoperability capabilities over time, ensuring that they can keep pace with the rapidly changing energy landscape.

Community of interoperability testing facilities

IOP layers

IOP Testing Challenges

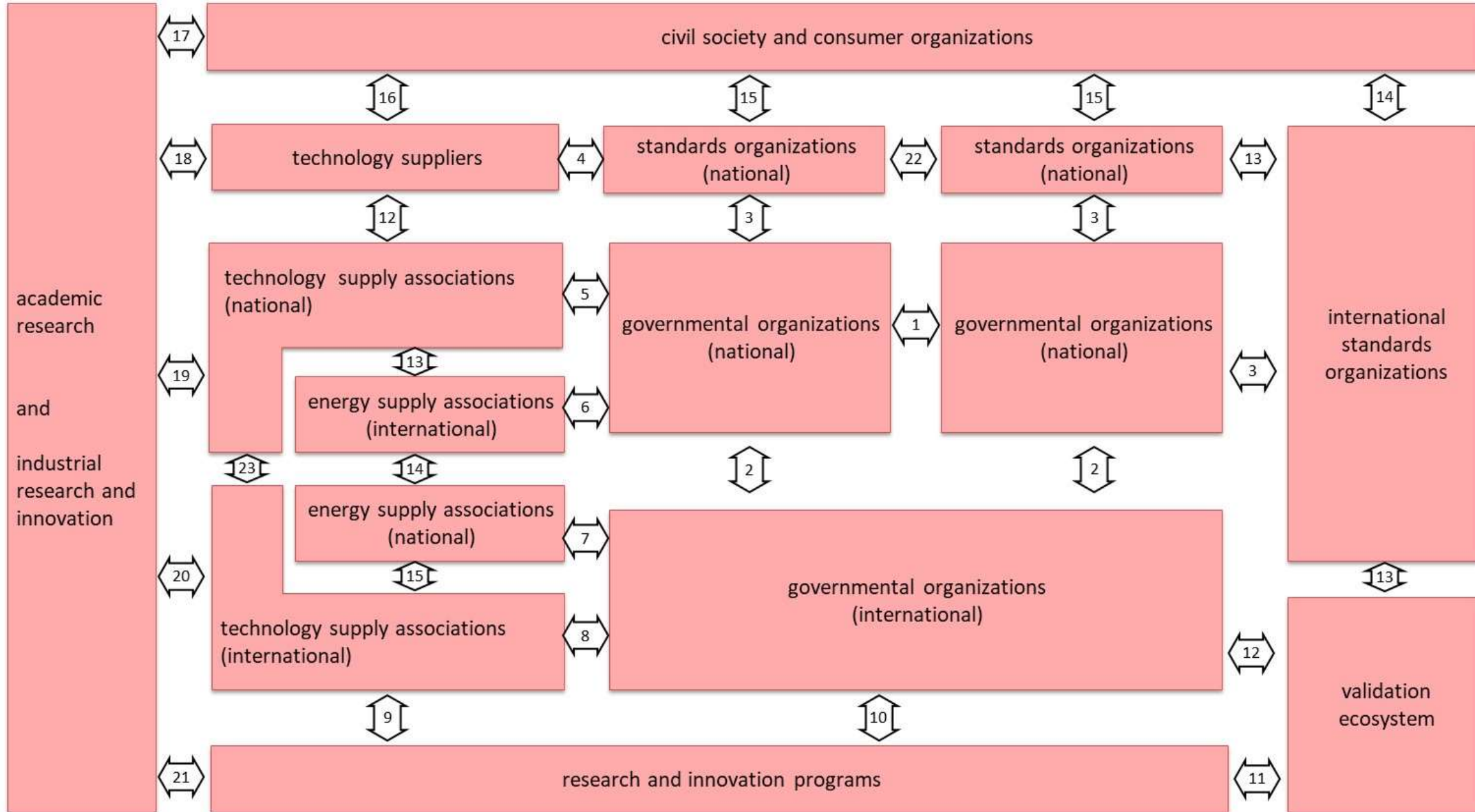
	technical	semantical	organizational	legal
Applications	open technology stacks	open interface standards	system-level functional testing user acceptance	regulatory sandboxes GDPR
Testing Infrastructure	lab dataspace open standards for HIL / digital twins	open domain ontologies	IOP testing community	labelling
Procedures	IOP testing frameworks	common IOP profiles inventory ontology	IOP testing methodologies connectatons	certification

“WHAT needs to be covered by IOP testing?”

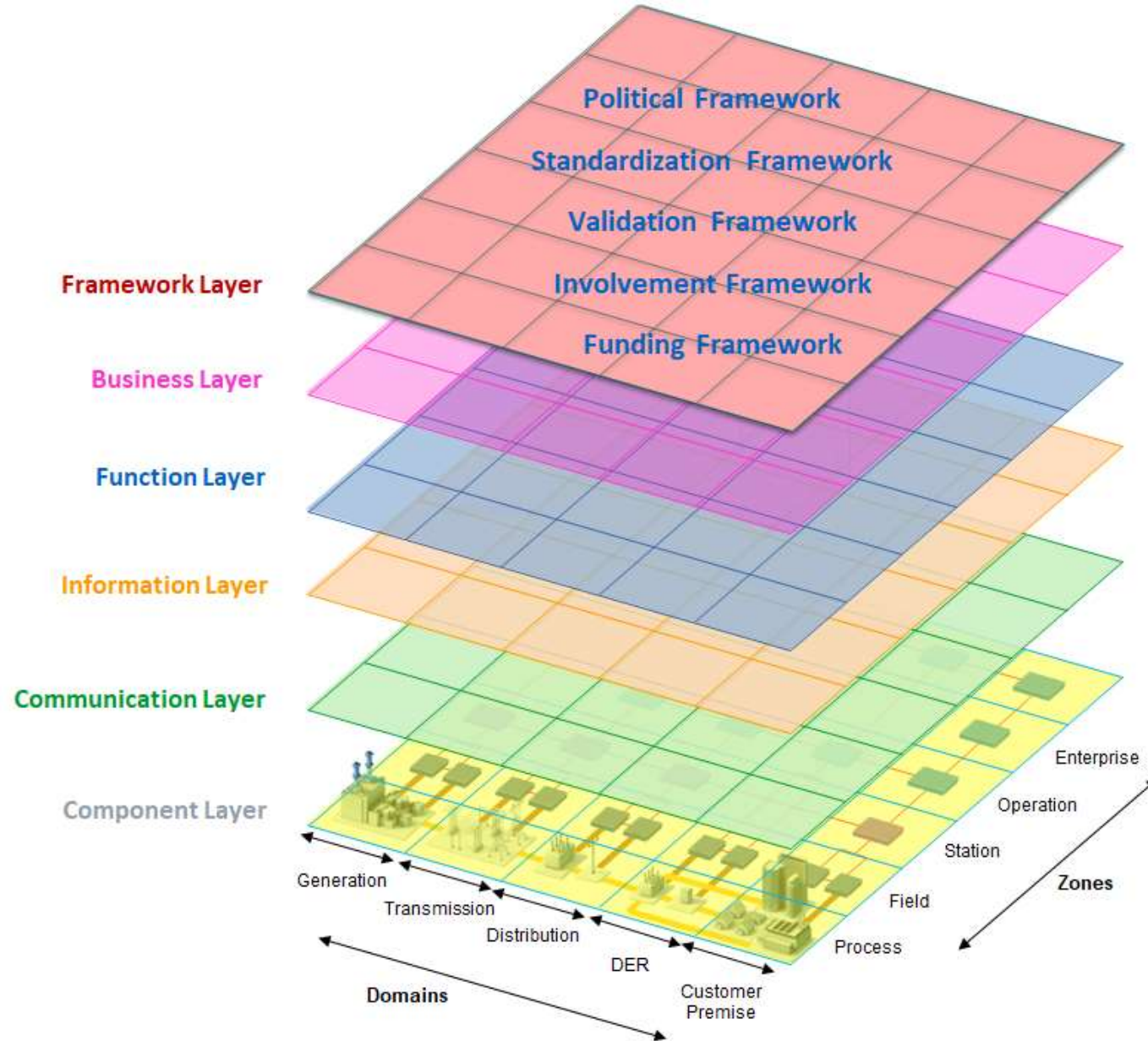
“WHICH testing infrastructure (physical/virtual) is required for IOP testing?”

“HOW should IOP testing be done?”

Stakeholder Map for Interoperability in Governance

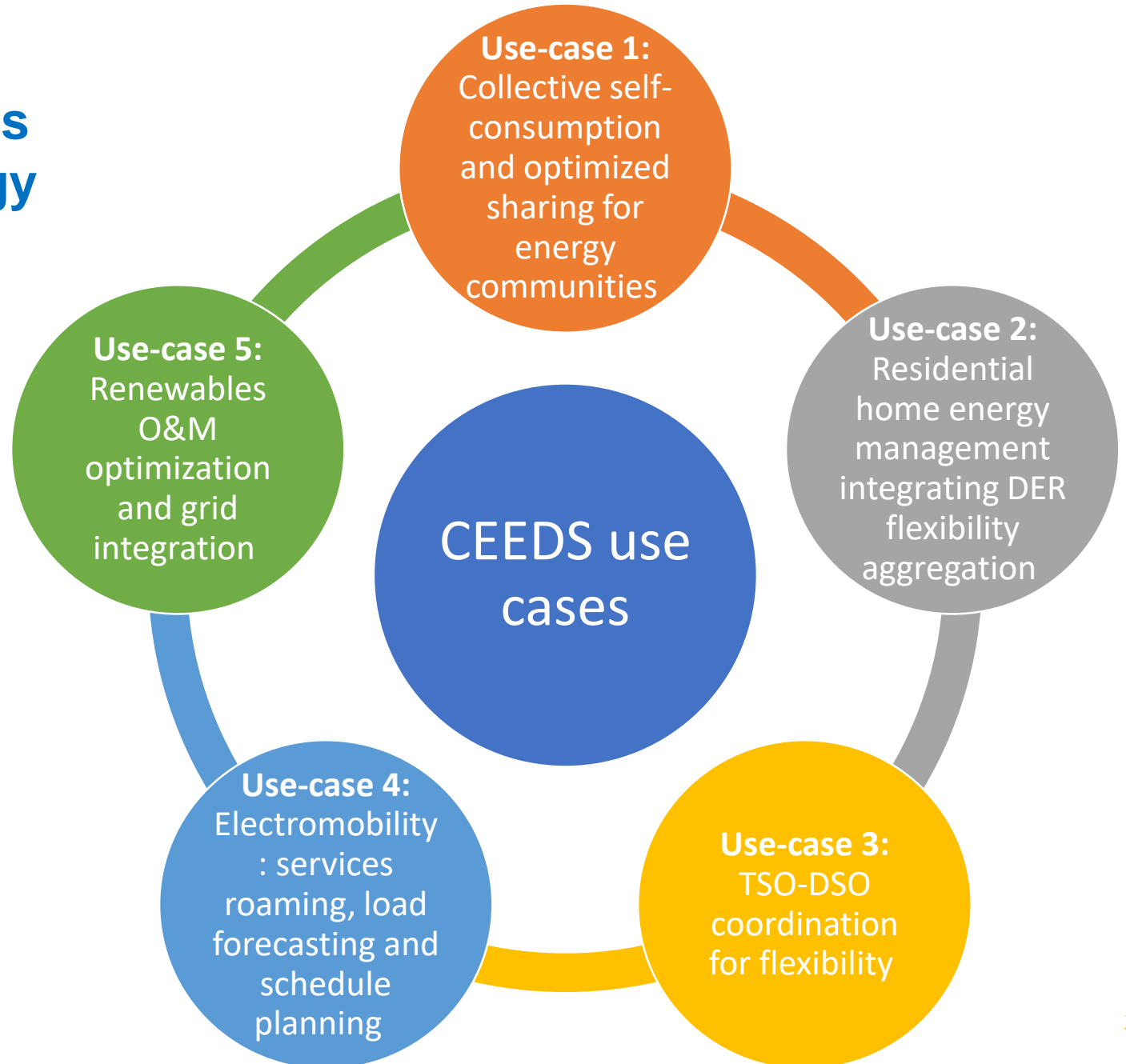


A 6th SGAM layer: Frameworks?

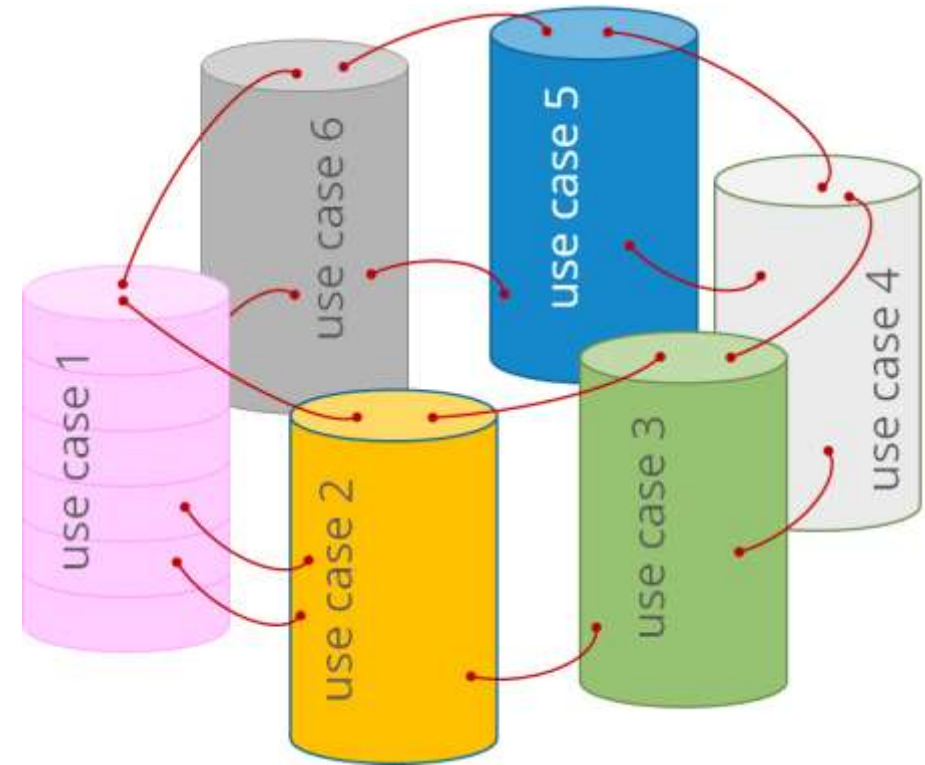
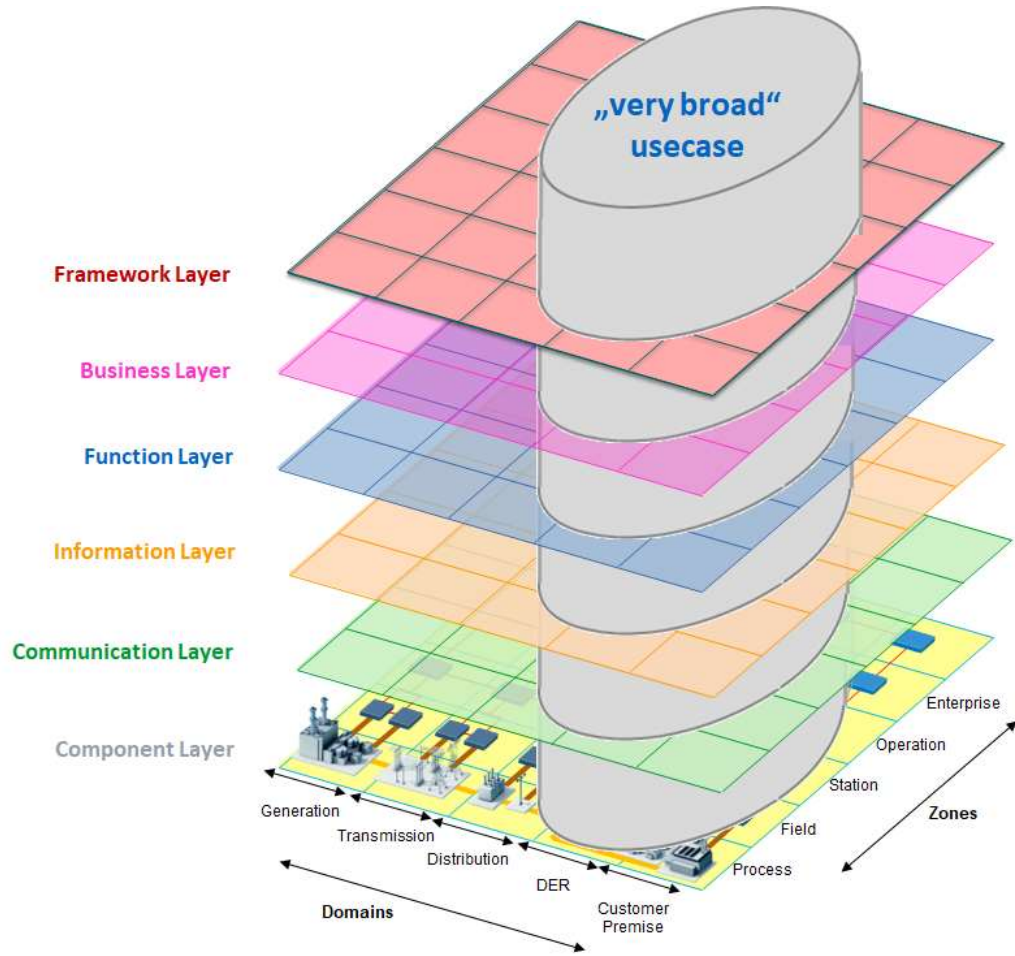


Identified reference use-cases for Common European Energy Data Space (CEEDS)

- Described with scenarios, actors and data sets
- Presented in the energy data spaces workshop (CINEA) in September 2023



The „tube in the cube“



Blueprint of the CEEDS

Published and now available in the int:net website:

<https://intnet.eu/resources/technical-resources>



Work on the Blueprint is in progress: updated version 2.0 planned in June 2024



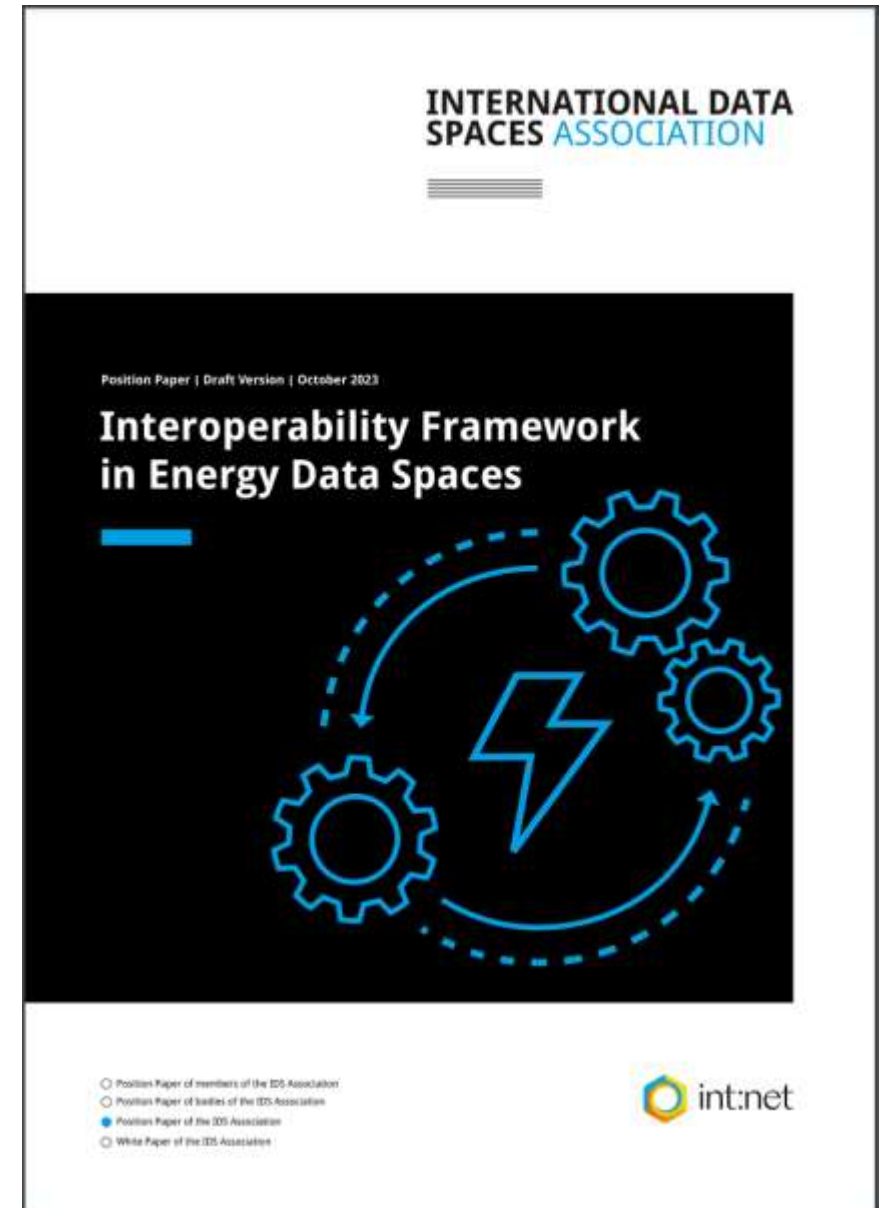
Blueprint of the Common European Energy Data Space

Version 1.0

March 2024

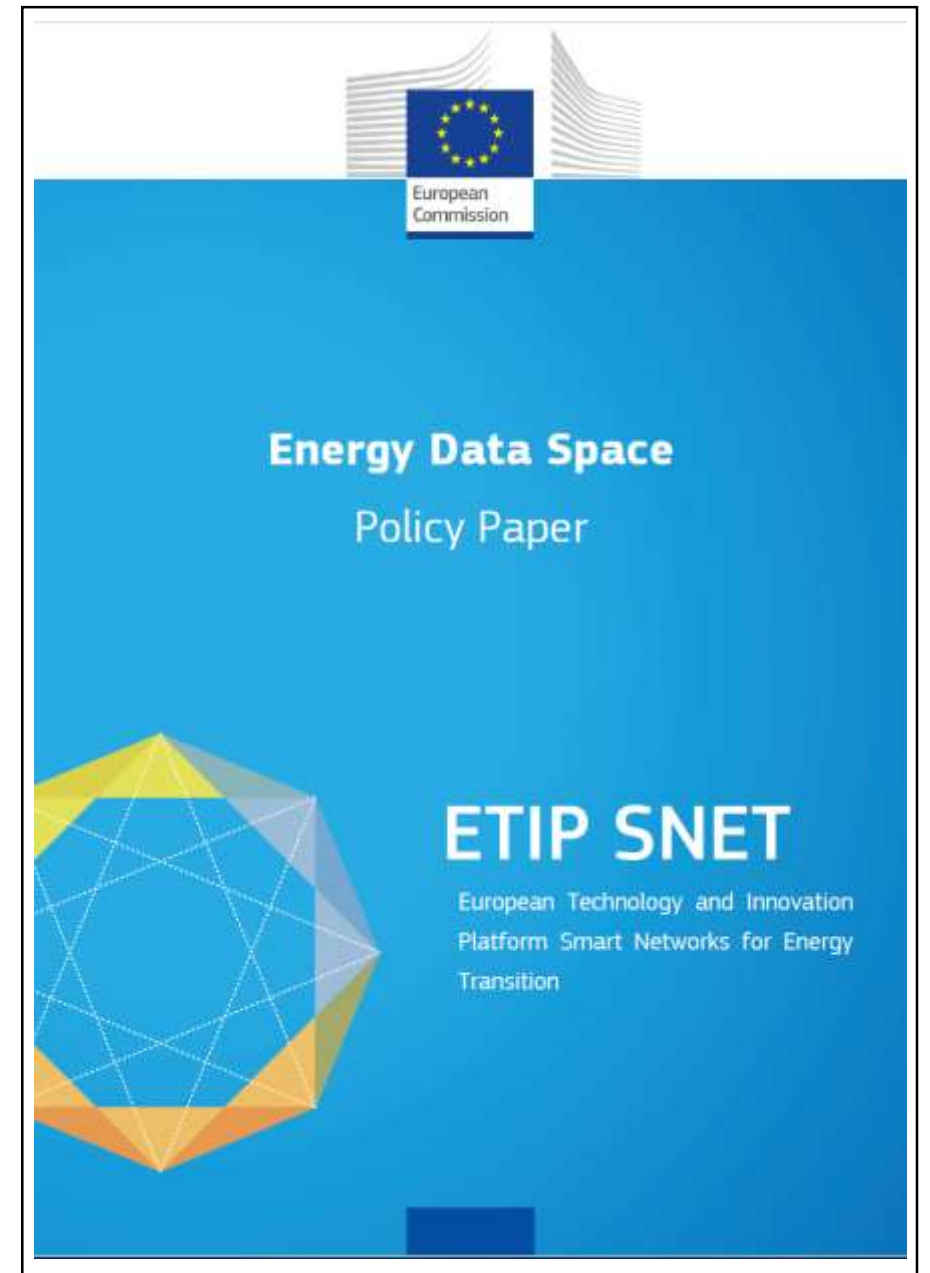
The Energy Interoperability Task Force

- Led by IDSA and int:net, involving all the energy data spaces cluster projects
- The first position paper, “**Energy Interoperability Framework**”, has been published in November 2023, an update is coming
- Content:
 1. State of the Art and Standards
 2. Data space governance and interoperability
 3. Definition of energy interoperability framework:
 - a) Technical interoperability
 - b) Semantic interoperability
 4. Existing interoperability tools and platforms
 5. Use case needs




ETIP SNET policy paper on Energy Data Spaces

1. Led by the ETIP SNET Working Group 4 “Digitalization of the electricity system and customer participation”
2. Scopes of the policy paper are:
 1. To assess the **current status** and **evolution** of energy data spaces
 2. To provide suggestions, in terms of policy and regulation, to facilitate the **large deployments in Europe**
3. Int:net coordinated with the Energy Data Spaces HEU projects to collect the **key challenges, policy and regulation recommendations**
4. Published in December 2023



Collaboration Events



European Collaboration Network for Interoperability Testing
Energy Test Event at IHE Connectathon 2024
Trieste (Italy), 4 – 6 June 2024

“Interoperability and sovereignty: sharing a European energy data space”



SUSTAINABLE ENERGY WEEK

 **13 June 2024**
 **16:00 - 17:30CEST**
 **Brussels & Online**



int:net
Interoperability Network for the Energy Transition



<https://community.intnet.eu/>

Int:net community platform





int:net

Interoperability Network for
the Energy Transition

Thank you for your attention

Ludwig Karg
B.A.U.M.



<https://intnet-project.eu/>



Cross-border MyHealth@EU Services

Marcello Melgara



SYMPOSIUM ON
INTEROPERABILITY
AND DATA SPACES

JUNE
6TH
2024

Cross-border MyHealth@EU Services *....from eHDSI to EHDS....*

Sponsored by



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10/06/2024

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31

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3-4
JUNE 2024



Klara Jirakova (CZ)

MyHealth@EU

Chair of eHealth Member State Expert Group (eHMSEG)

CZ NCPeH Coordinator

CZ MoH/Vysočina Region (CZ) – IT dept. lawyer, eHealth project manager

jirakova.k@kr-vysocina.cz

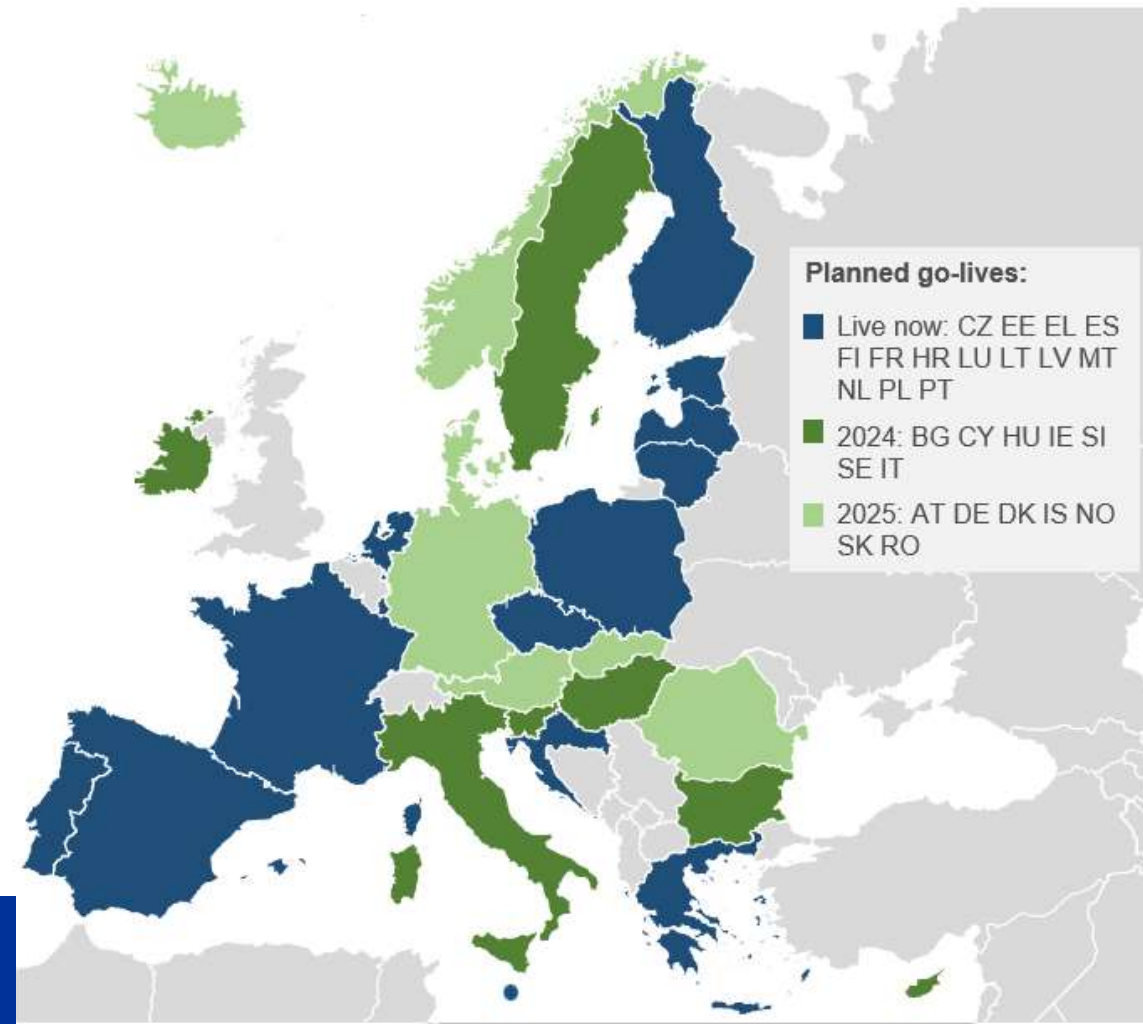


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MyHealth@EU (eHDSI)

- FUNCTIONAL, robust European health data infrastructure for cross-border eHealth services that currently connects several member states.
- Solid, functional foundation for EHDS services – primary use of health data.



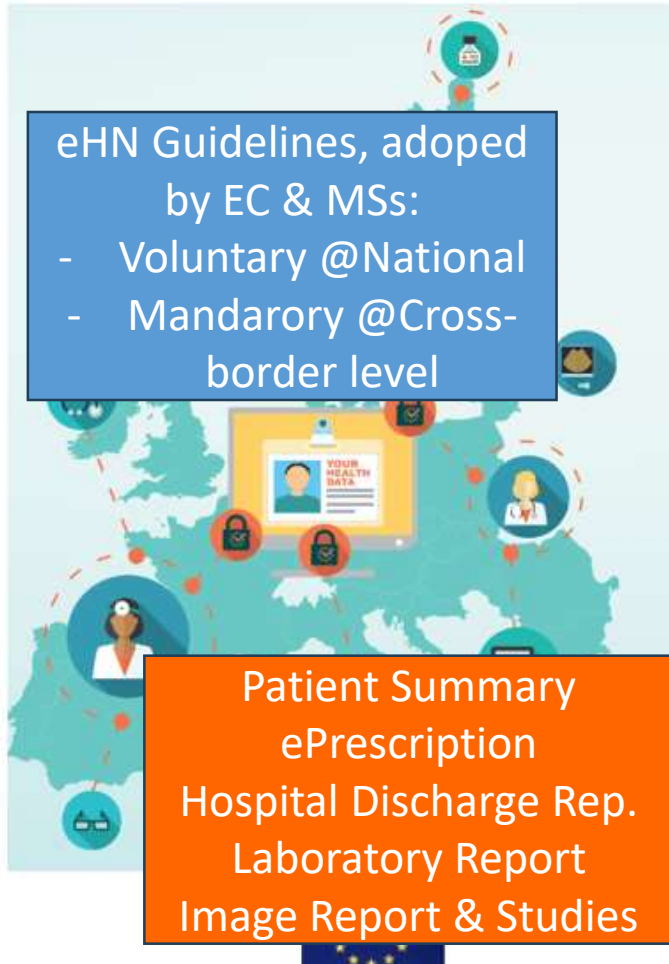
POLICY GOVERNANCE

POLICY OWNER
eHN - eHealth Network

- Representatives of MS
- Sets priorities and strategy for MyHealth@EU services

POLICY SECRETARIAT
DG SANTE

MS POLICY SUPPORT
Joint Actions



INFRASTRUCTURE GOVERNANCE

EC – DG SANTE – DSI owner

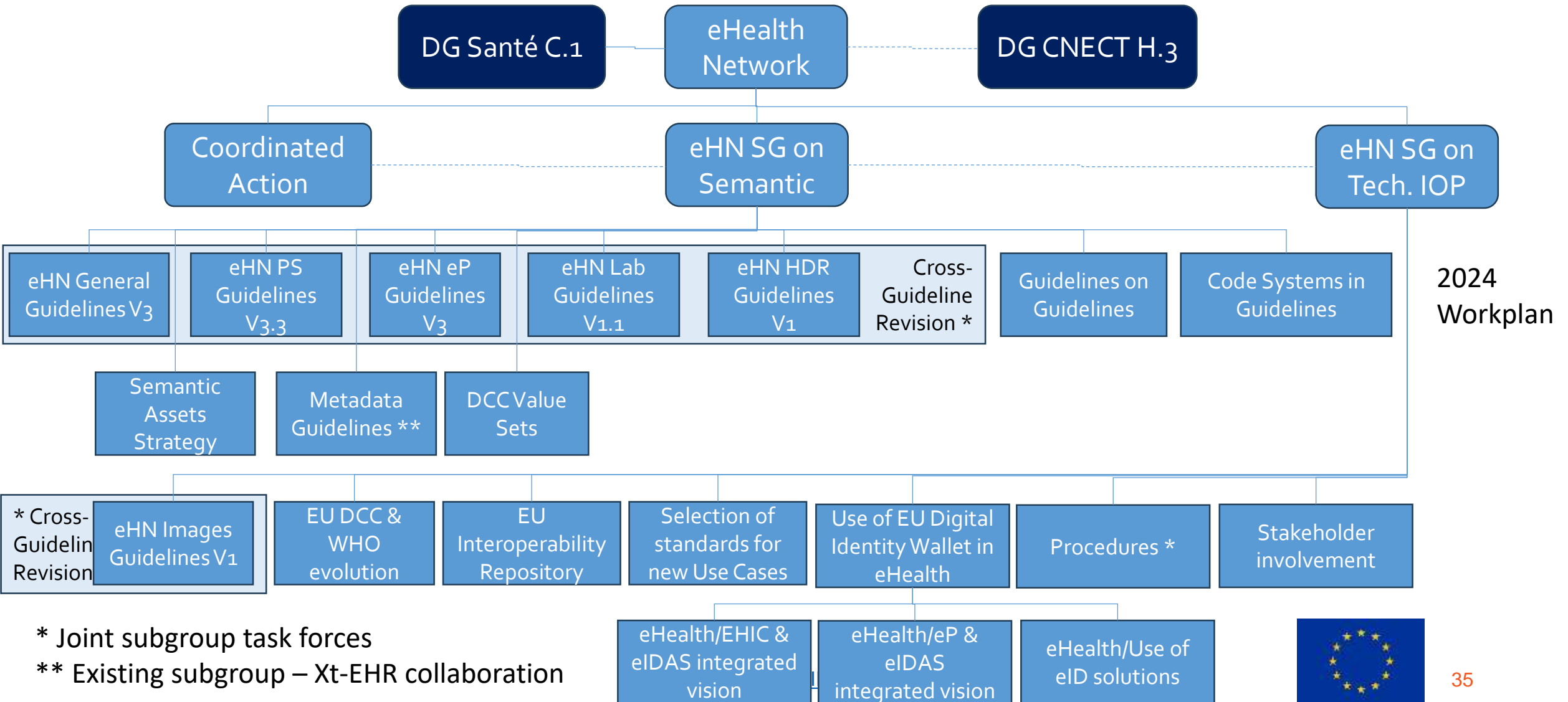
eHOMB – eHealth Operational Management Board
DG SANTE + eHMSEG chairs

eHMSEG

- Representatives of MS National Contact Points
- Implementation of cross-border services.

MS Operational Support
eHMSEG Communities

- Technical
- Semantic
- Legal
- Testing



2024 Workplan

* Joint subgroup task forces

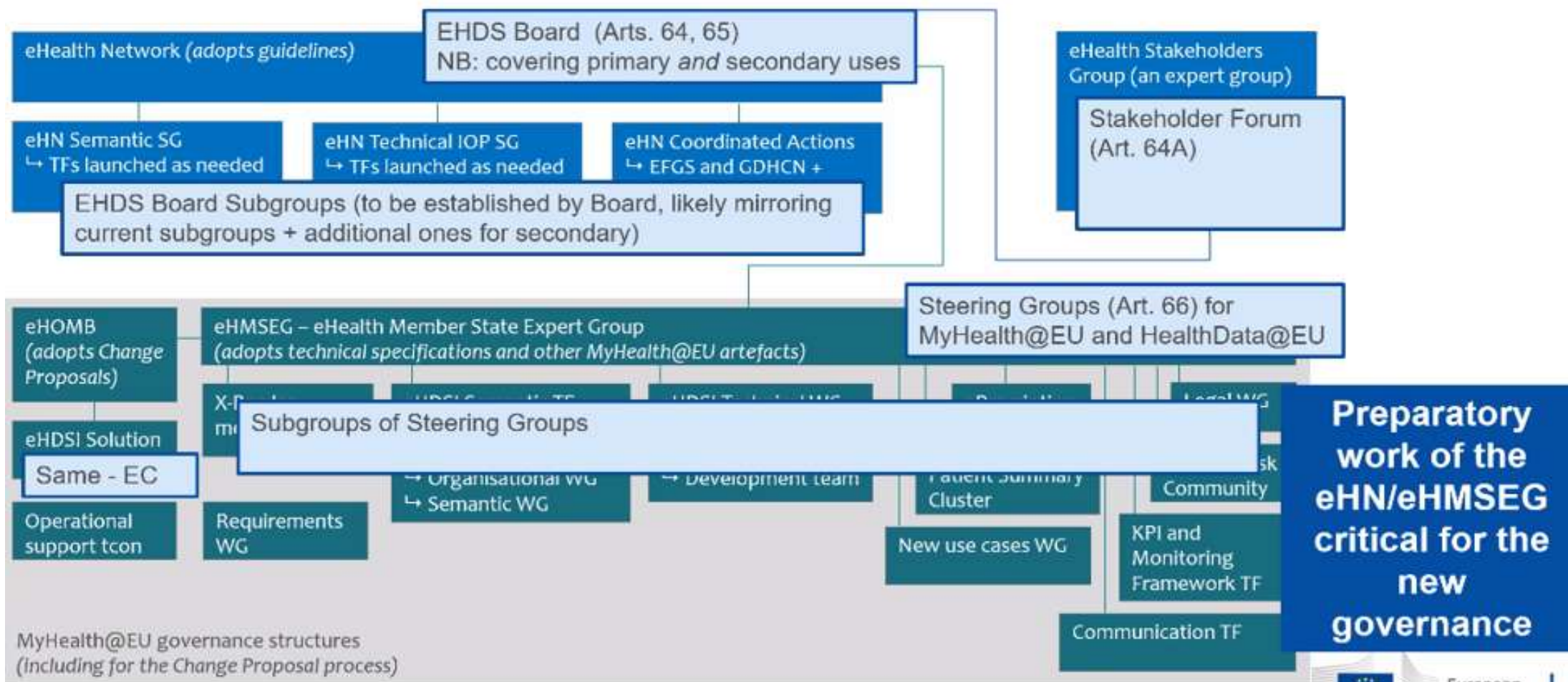
** Existing subgroup – Xt-EHR collaboration



- ISO/CEN IPS
- HL7/IHE IPS Implem. Guide
- HL7 ePharmacy
- HL7 Laboratory
- ISO/CEN IDMP EMA SPOR
- X-eHealth CDA/FHIR Igs & ValueSets
- UNICOM IDMP DataSet & ValueSets
- XpanDH FHIR Assets

Service Asset	PS	eP/eD	OrCD	Lab. Report	Lab. Summary	HDR	Image Report	Image Study Manifest
eHN Guidelines	✓	✓	✓	✓	✗	✓	✓	✓
Functional Requirements	✓	✓	✓	✓	🕒	✗	🕒 ✗	🕒 ✗
Implementation Guide	✓	✓	✓	✓	🕒	✗	🕒 ✗	🕒 ✗
MVC ValueSets	✓	✓	✓	✓	✗	✗	🕒 ✗	🕒 ✗
Metadata	✓	✓	✓	✓	🕒	✗	🕒 ✗	🕒 ✗
Technical Specs	✓	✓	✓	✓	🕒	✗	🕒	🕒
OpenNCP	✓	✓	✓	PoC	🕒	POC ✗	🕒	🕒
Display List & Document	✓	✓	✓	PoC	🕒	POC ✗	🕒	🕒
Testing strategy & tools	✓	✓	✓	✓	🕒	🕒	✗	✗
Monitoring KPI	✓	✓	✓	✗	🕒	🕒	✗	✗

...to pave our way into the EHDS future.....



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Thanks for your attention and continuous support!

Sponsored by





Data-driven agrifood systems - interoperability through standards

Johannes Lehmann

The logo consists of the letters 'DIN' in a bold, white, sans-serif font, centered within a white square. This square is positioned on a dark blue background that is part of a larger graphic overlay on the left side of the image.The main title is displayed in a large, bold, dark blue sans-serif font. It is centered over a photograph of a modern, multi-story office building with a glass and metal facade. The building has a 'DIN' logo on its upper left corner. The sky is overcast and grey. The text is arranged in three lines: '2nd Symposium on', 'Interoperability + Data Spaces', and 'Data-driven agrifood systems - interoperability through standards'.

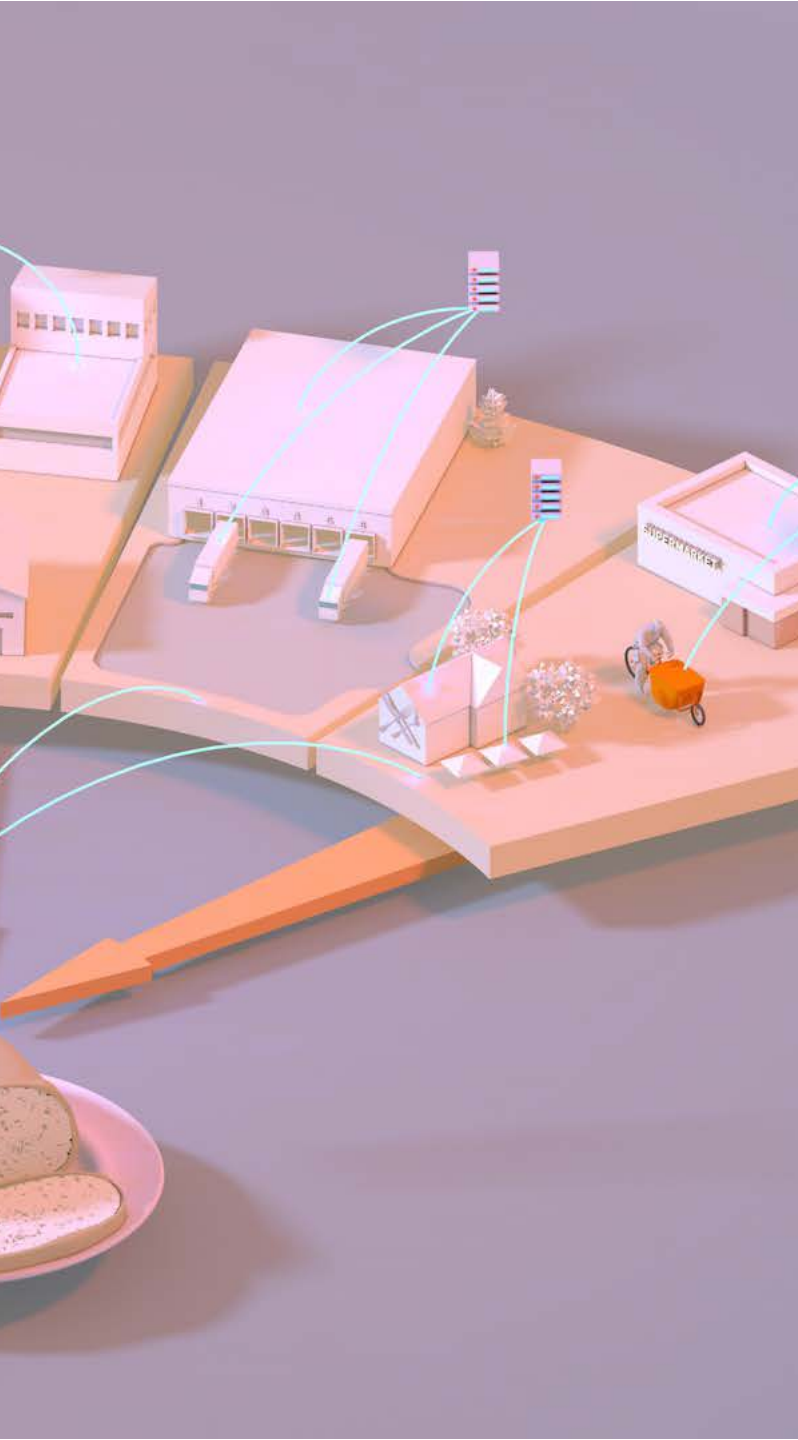
2nd Symposium on Interoperability + Data Spaces Data-driven agrifood systems - interoperability through standards

Johannes Lehmann - Head of Strategic Development Smart Farming,

06.06.2024

Agenda

- 1** The challenge of Smart Farming and interoperability
- 2** The roadmap of Strategic Advisory Group Smart Farming
- 3** IWA 47 on Reference Architecture for data-driven agrifood systems



How has agriculture developed in Europe over the last 100 years?

1920



1970



2010



Core statements

Retrospect:

- Farmers used to relate to their soil/external factors and adapted their management to heterogeneity.
- With increasing industrialization, productivity increased and the relation to soil and external factors was lost as a result of which production on farms functioned in a flat way.

Farming is getting harder

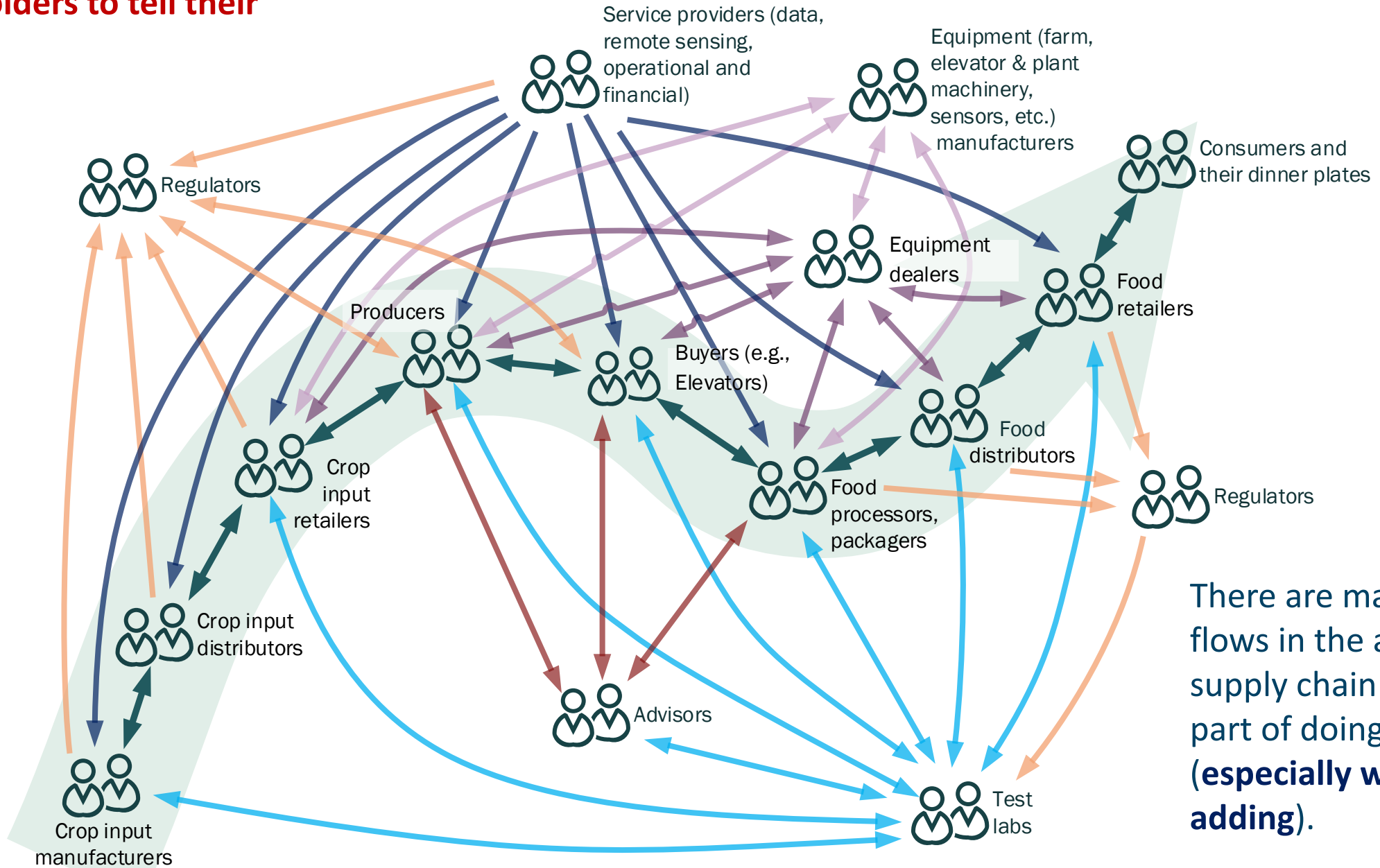
Agricultural production is a complex, adaptive process that involves hundreds of **decisions** per crop season.

- Complex regardless of farm size
- Smallholders*
 - more vulnerable
 - less access to inputs, advice, finance, risk management, etc.

In the past these decisions were often driven by traditional local customs. In this **rapidly changing world** (Climate change! Supply chain disruptions! Political unrest!), they must increasingly be made based on **data**.

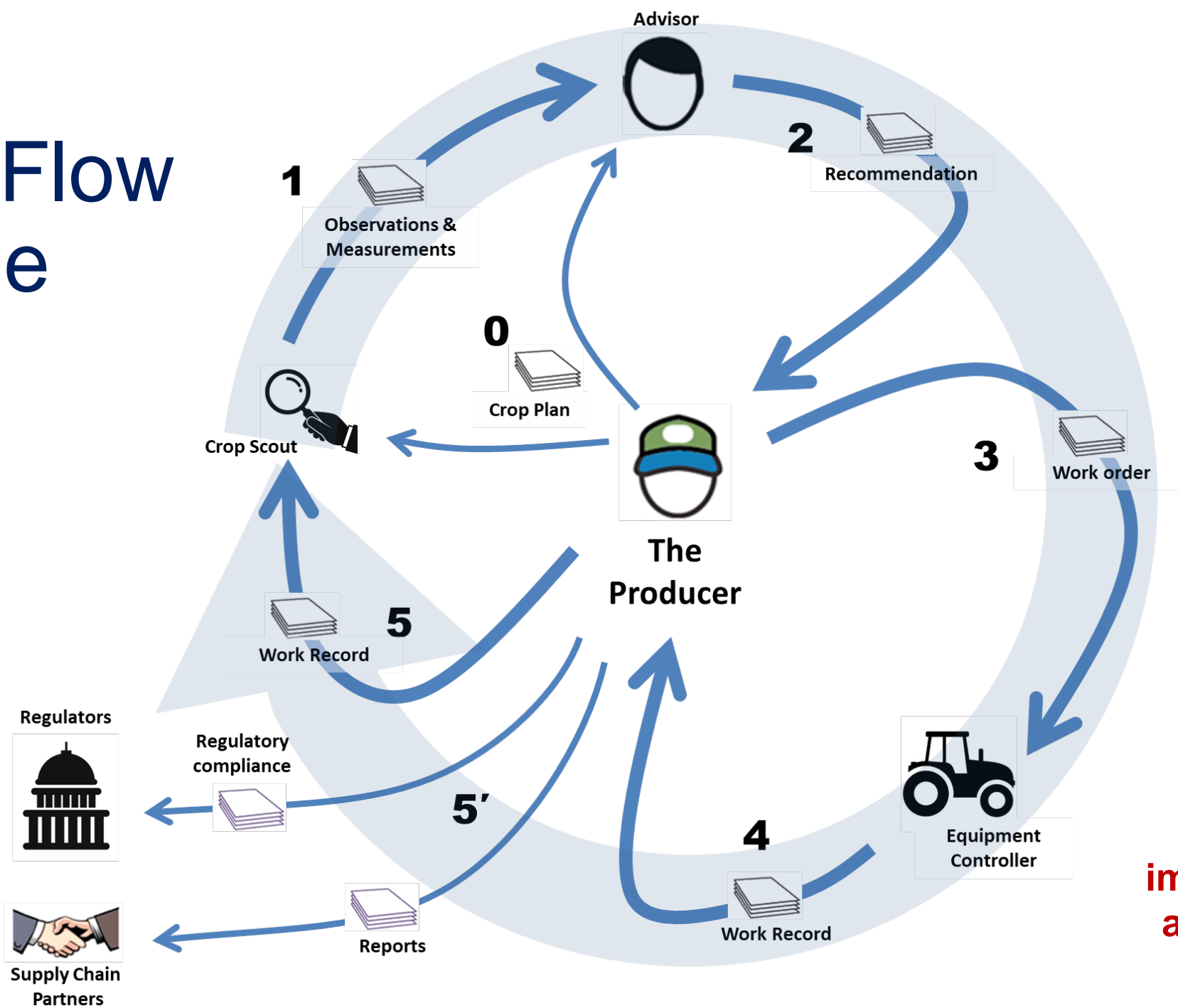
* Definition varies geographically; often using farm area (e.g., < 2 ha) as a metric ⁴

Data flows enable stakeholders to tell their stories

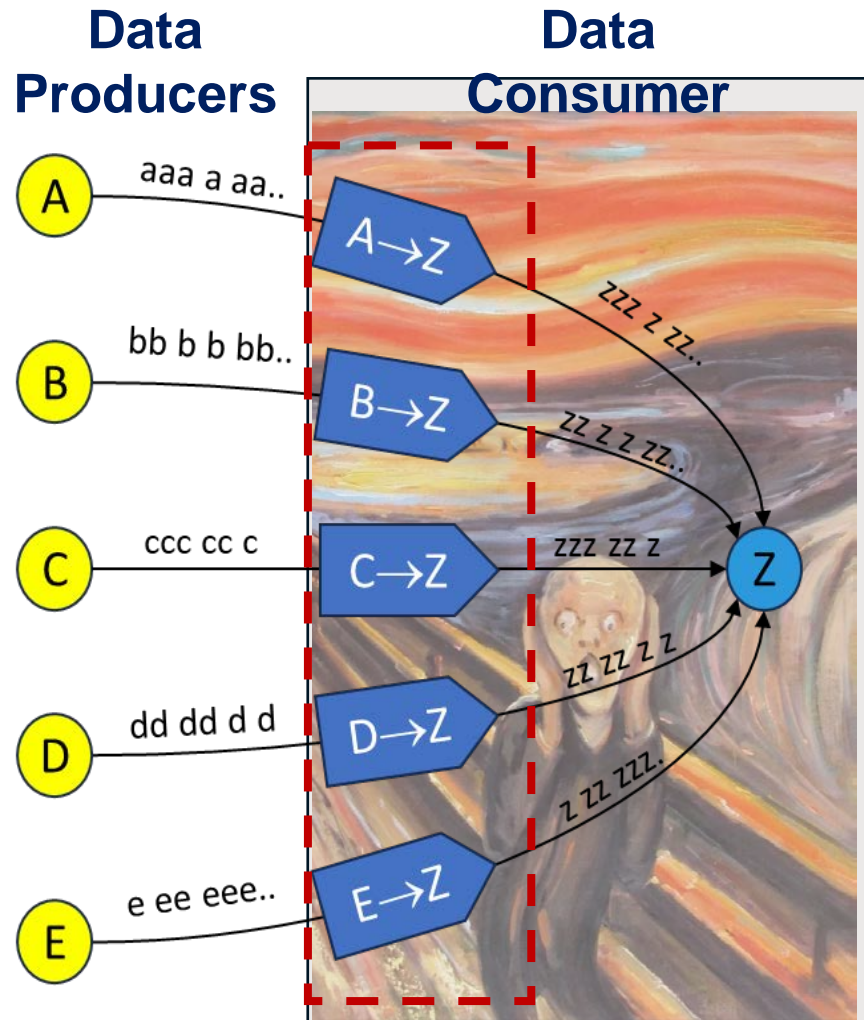


There are many data flows in the agrifood supply chain as a normal part of doing business (especially when value-adding).

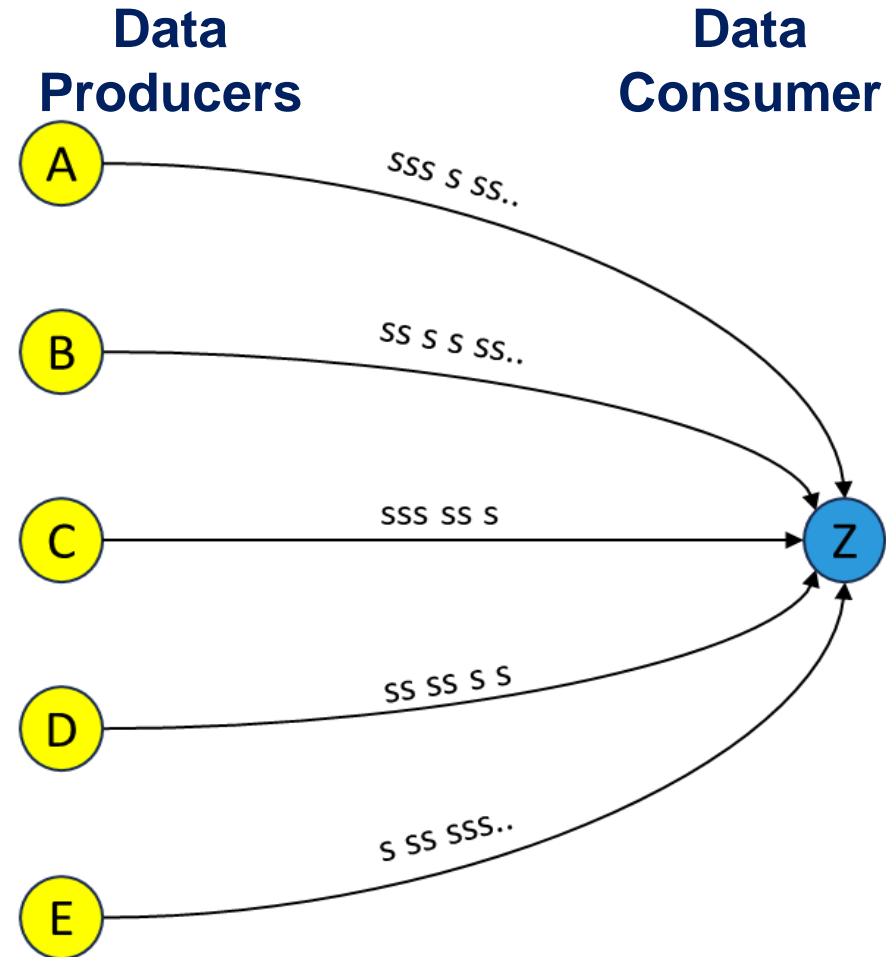
A Data Flow Example



This (iterative) process is impossible to do at scale without standards!



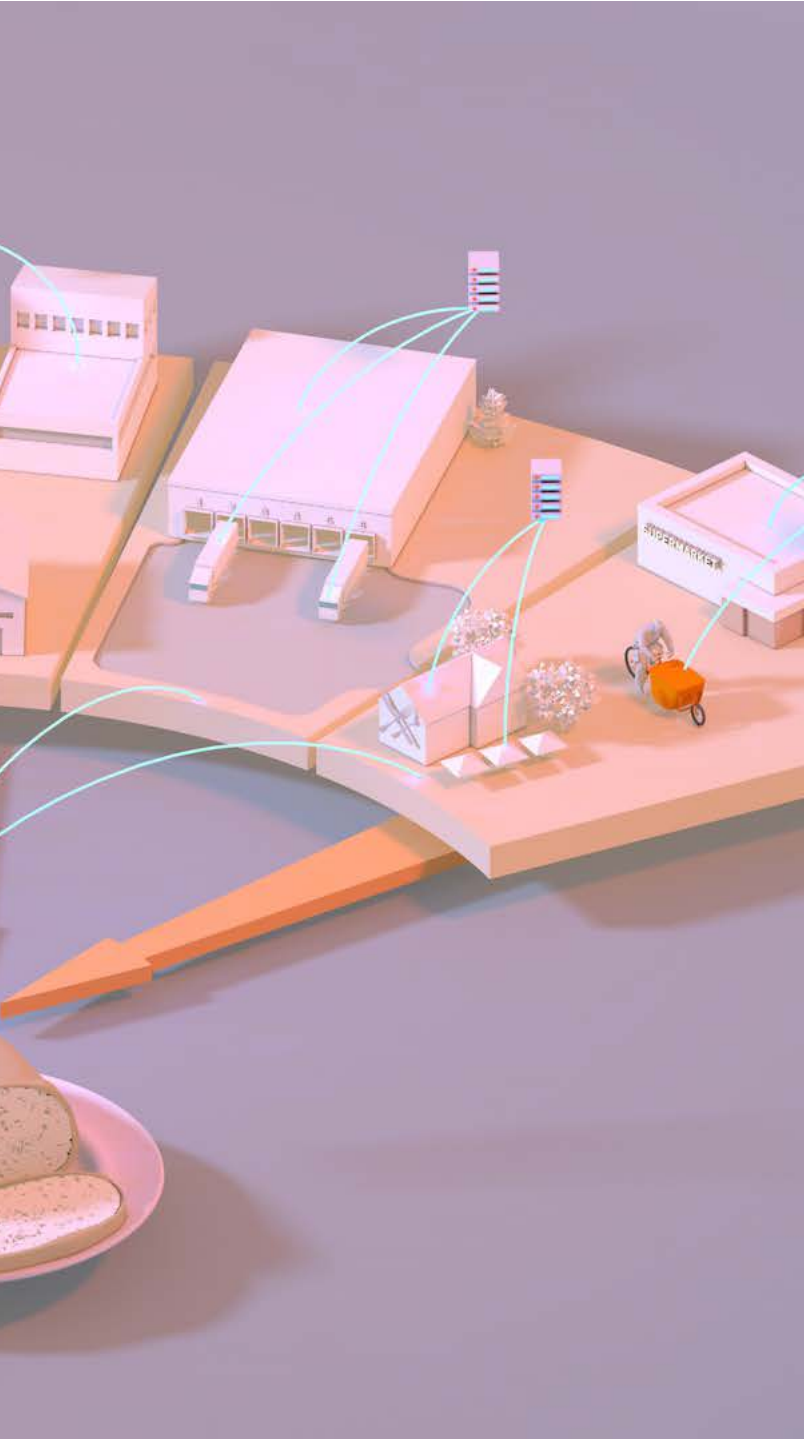
Not Using Standards:
Many translations to maintain →
large burden on data consumer's system



Using Standards:
No translations needed → creating data-driven tools is much easier

Agenda

- 1 The challenge of Smart Farming and interoperability
- 2 The roadmap of Strategic Advisory Group Smart Farming**
- 3 IWA 47 on Reference Architecture for data-driven agrifood systems



When you find yourself in a hole, stop digging

(Wordsworth Dictionary of Proverbs (2006) p 283)

The industry is in a bind: our standards aren't enough to support data-driven, decision-making needed to solve modern problems / the SDGs.

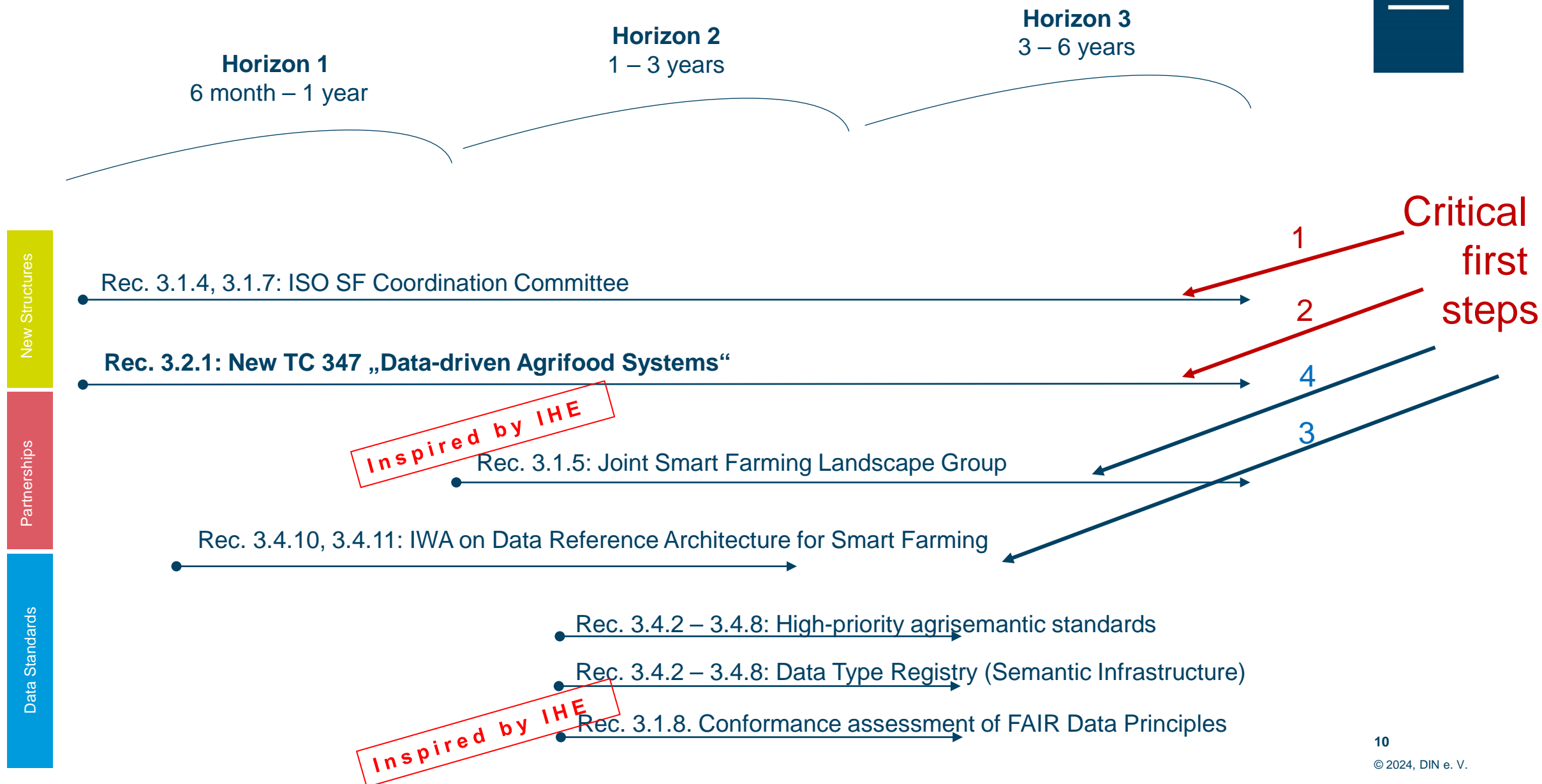
This emerges from the bottom-up growth of both the industry and its standardization efforts.

The **International Organization for Standardization (ISO)** realized this, chartered a Strategic Advisory Group for Smart Farming

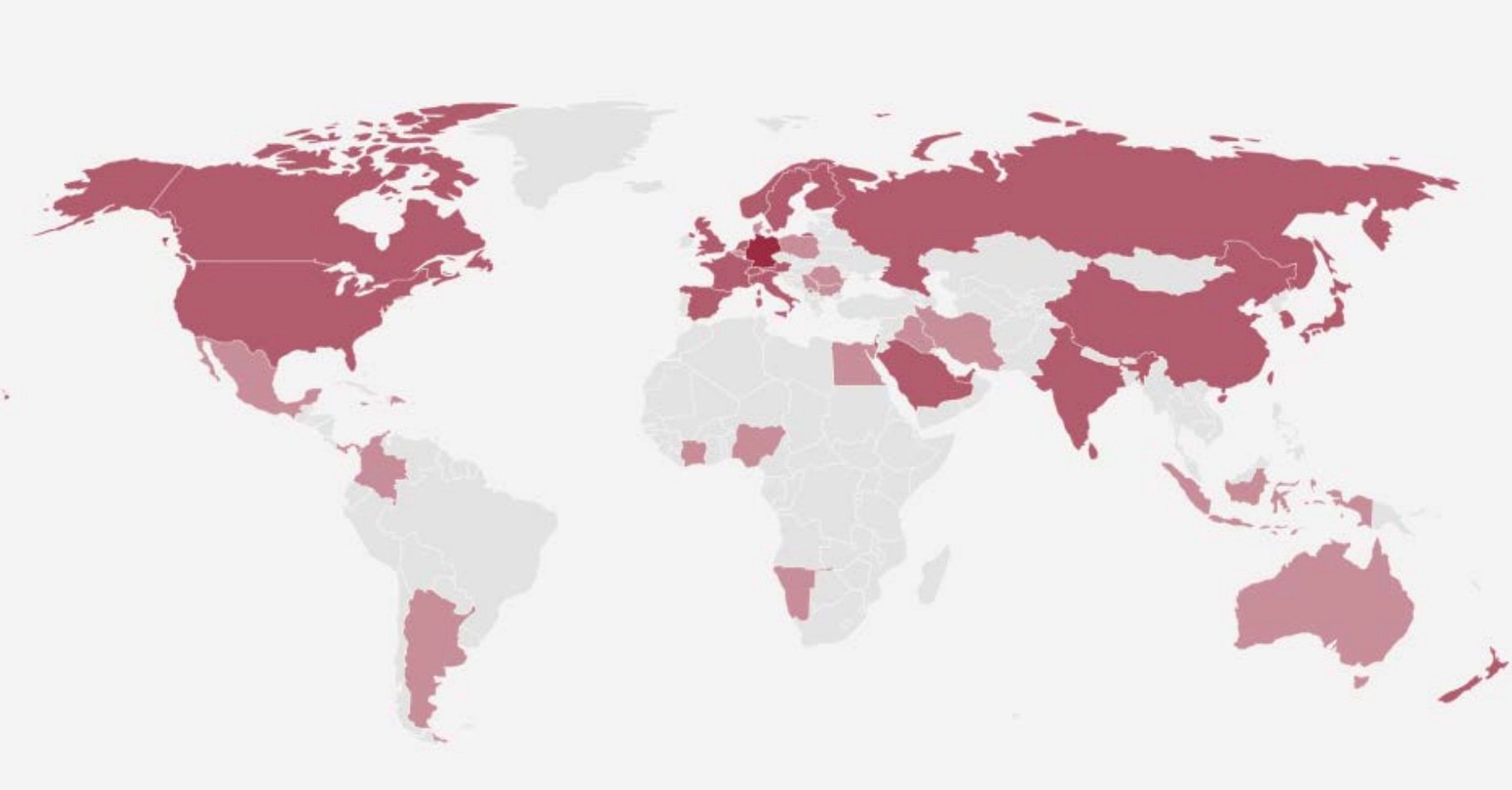
- 180 experts from 21 national standards bodies (NSBs)
- Mission: **develop a strategy** to **guide hybrid top-down, bottom-up action**.

Key part of the **proposed strategy**: create a **permanent home** for **standards** specific to data-driven agrifood systems. This is now Technical Committee 347 (TC 347).

Recommendations – ISO SAG SF



Participation in TC 347



Joint Smart Farming Landscape Group



- Develop and maintain a comprehensive **Smart Farming standards landscape document**
- Including initiatives, standards, and terms / definitions maintained by each organization
- Promote **cooperation and coordination** across organizations developing relevant global standards and **make recommendations**
- Increase the efficiency due to a closer collaboration

In the spirit of IES “We need a community, to ensure interoperability in data exchange of ICT systems in a cooperative and transparent process, involving users, vendors and researchers”

Reference Architecture

- We propose a reference architecture (RA) as an early step toward enabling data-driven capabilities in agrifood systems.
- This architecture will define a **conceptual model**, a **reference model**, and various **architectural perspectives** aligned with industry best practices.
- It will lay out a structured approach for building data-driven agrifood systems and serve as a framework to guide architects in creating such systems.
- It will also provide a clearer understanding of these systems for stakeholders such as device manufacturers, application developers and retailers.
- Work will begin in early 2024 starting from clause 4.3 of the SAG-SF final report.

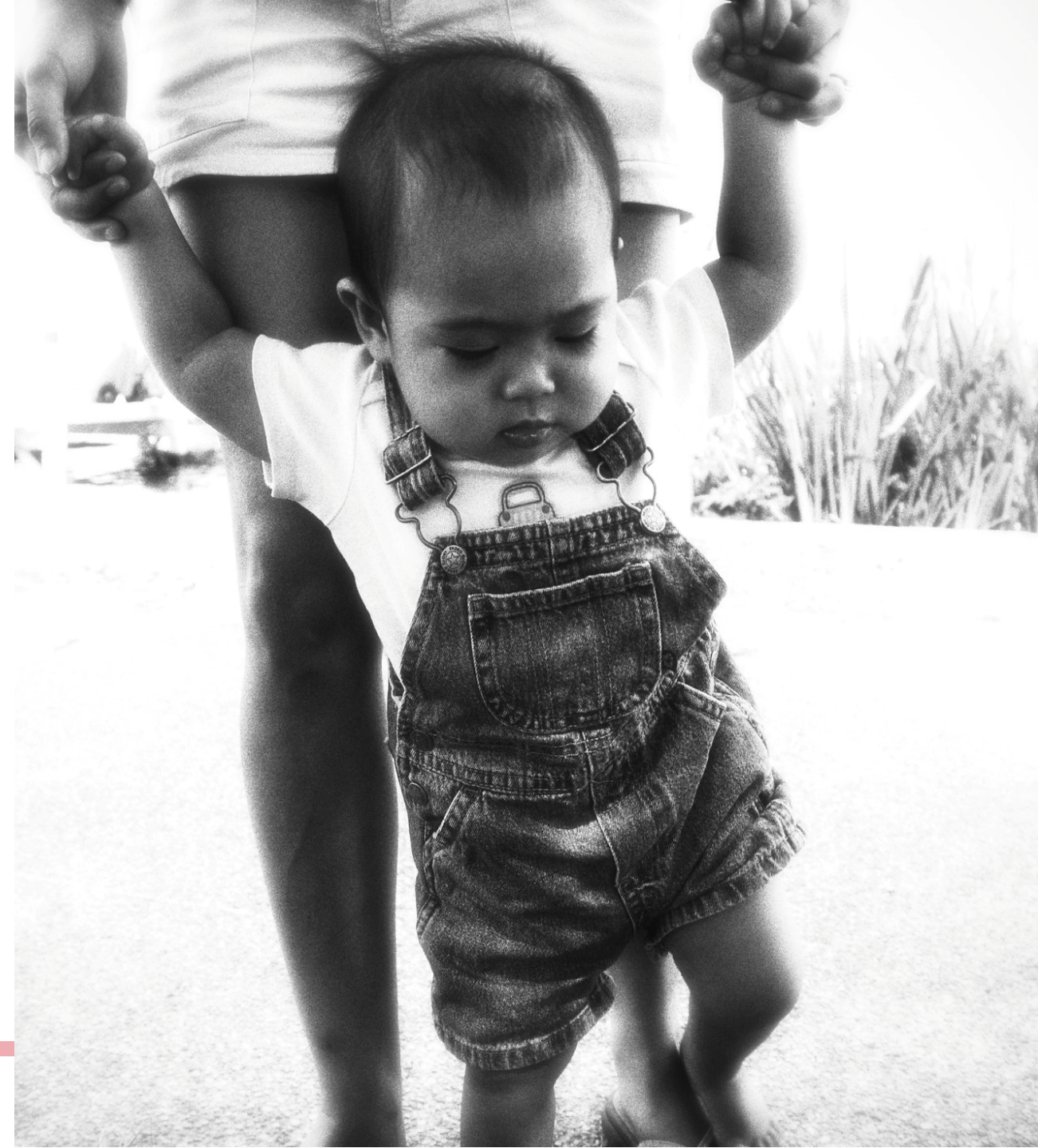
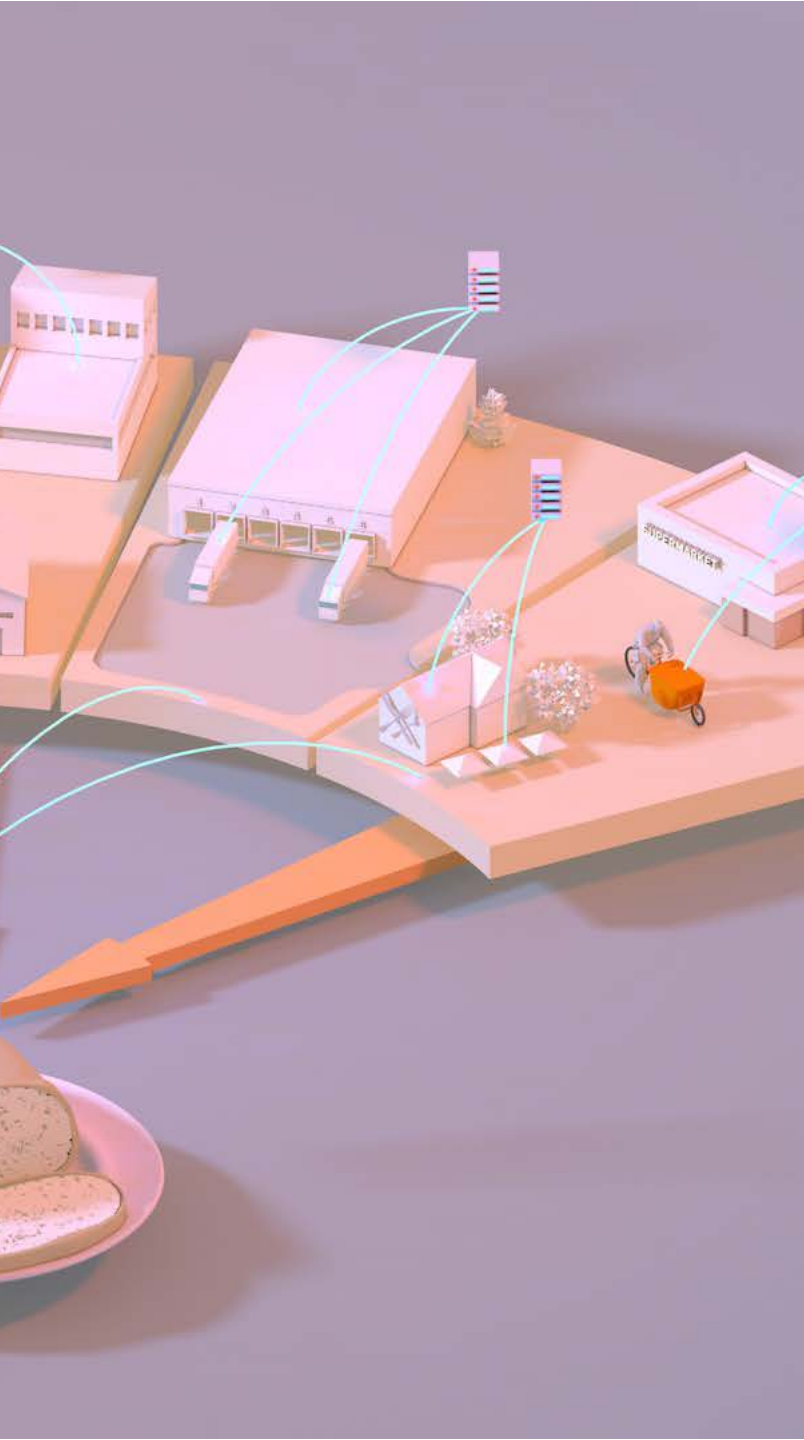


Photo: <https://www.flickr.com/photos/telachhe/3342173731>

Agenda

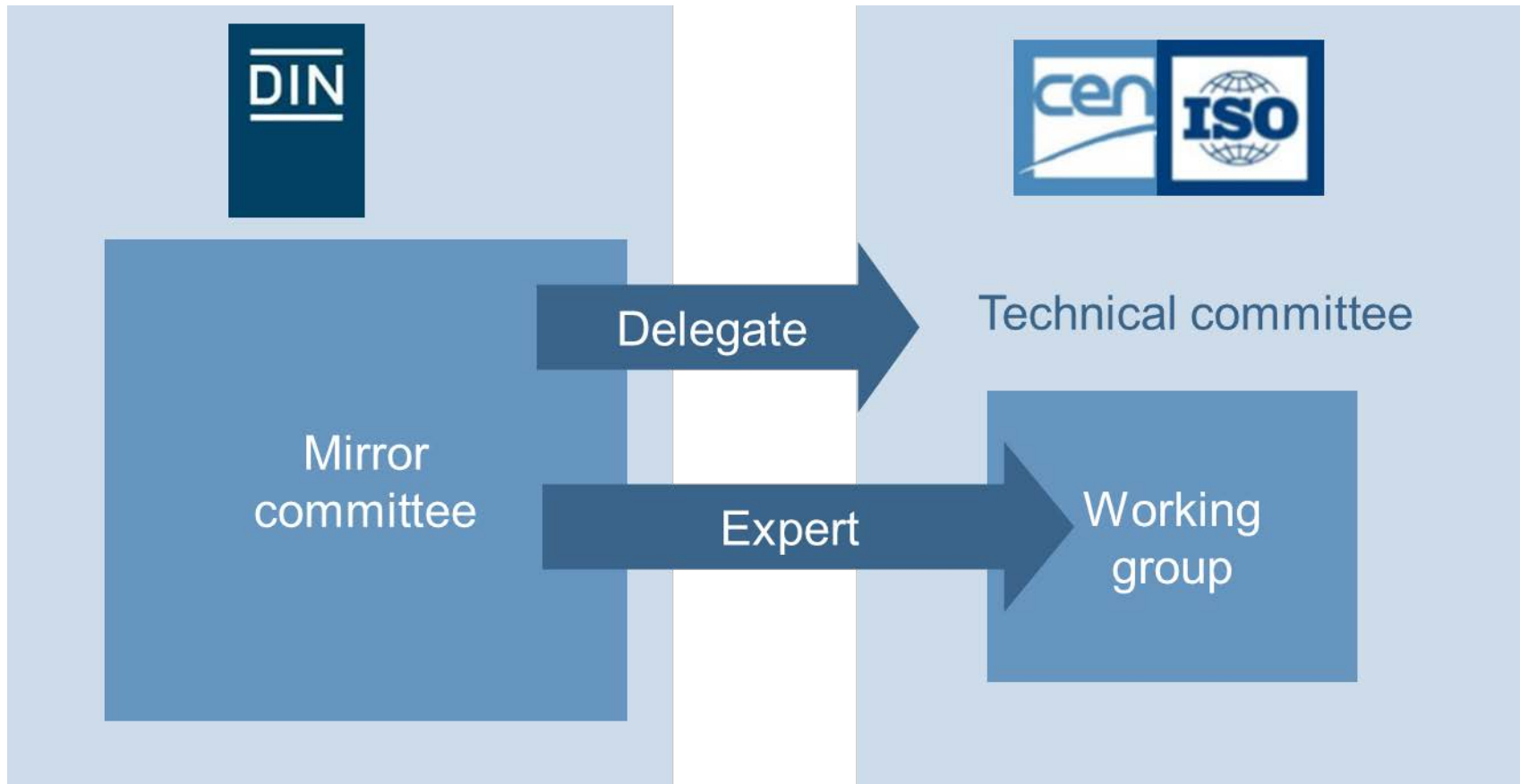
- 1 The challenge of Smart Farming and interoperability
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- 3 IWA 47 on Reference Architecture for data-driven agrifood systems**



Introduction to ISO



Activity in international standards committees

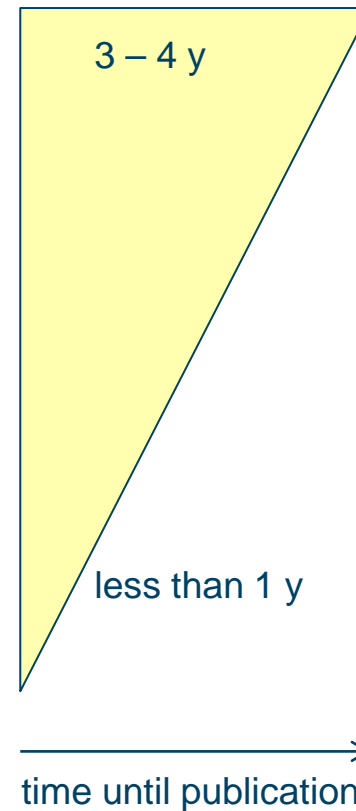


Introduction to ISO



Differences in the type and duration of the development process and the normative character of the document:

ISO	International Standard
ISO/TS	International Technical Specification
ISO/TR	International Technical Report
PAS	Publicly Available Specification
IWA	International Workshop Agreement
Guide	



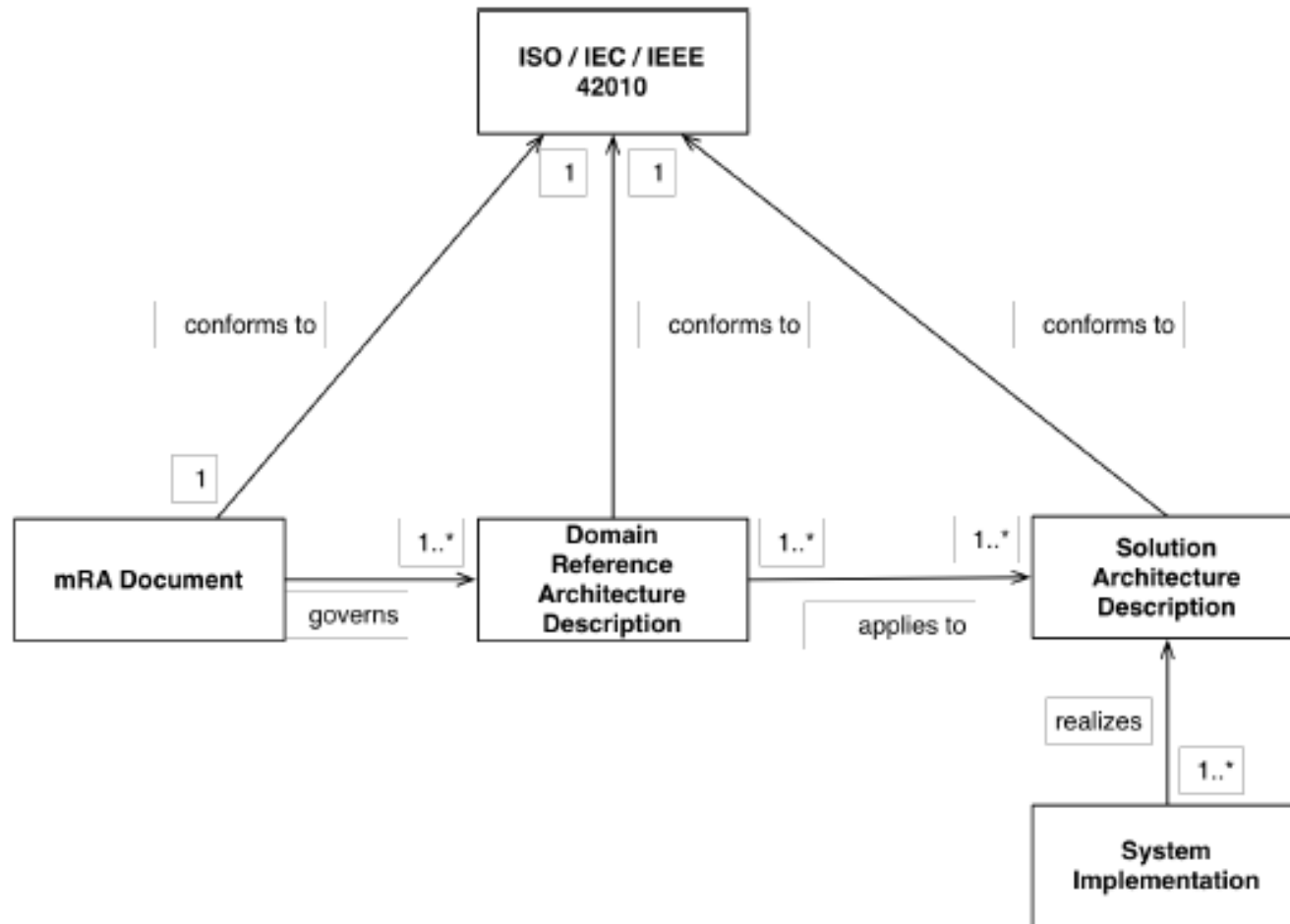
International Workshop Agreement (IWA 47) on a Reference Architecture for Smart Farming



Why we use an IWA?

- Collaboration with data and IT experts currently lacking in existing structures
- Lower barriers for participation, especially for experts from global south
- Awareness for the tool of standardization and engagement with experts not yet involved in standardization

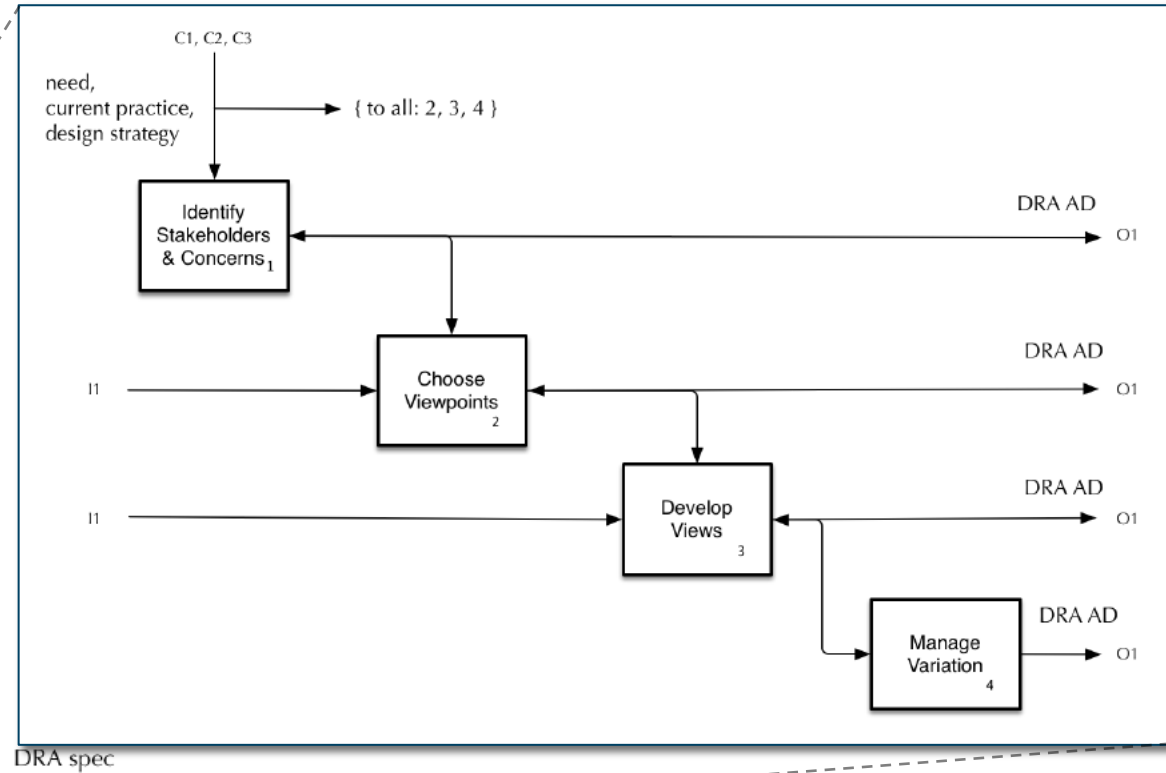
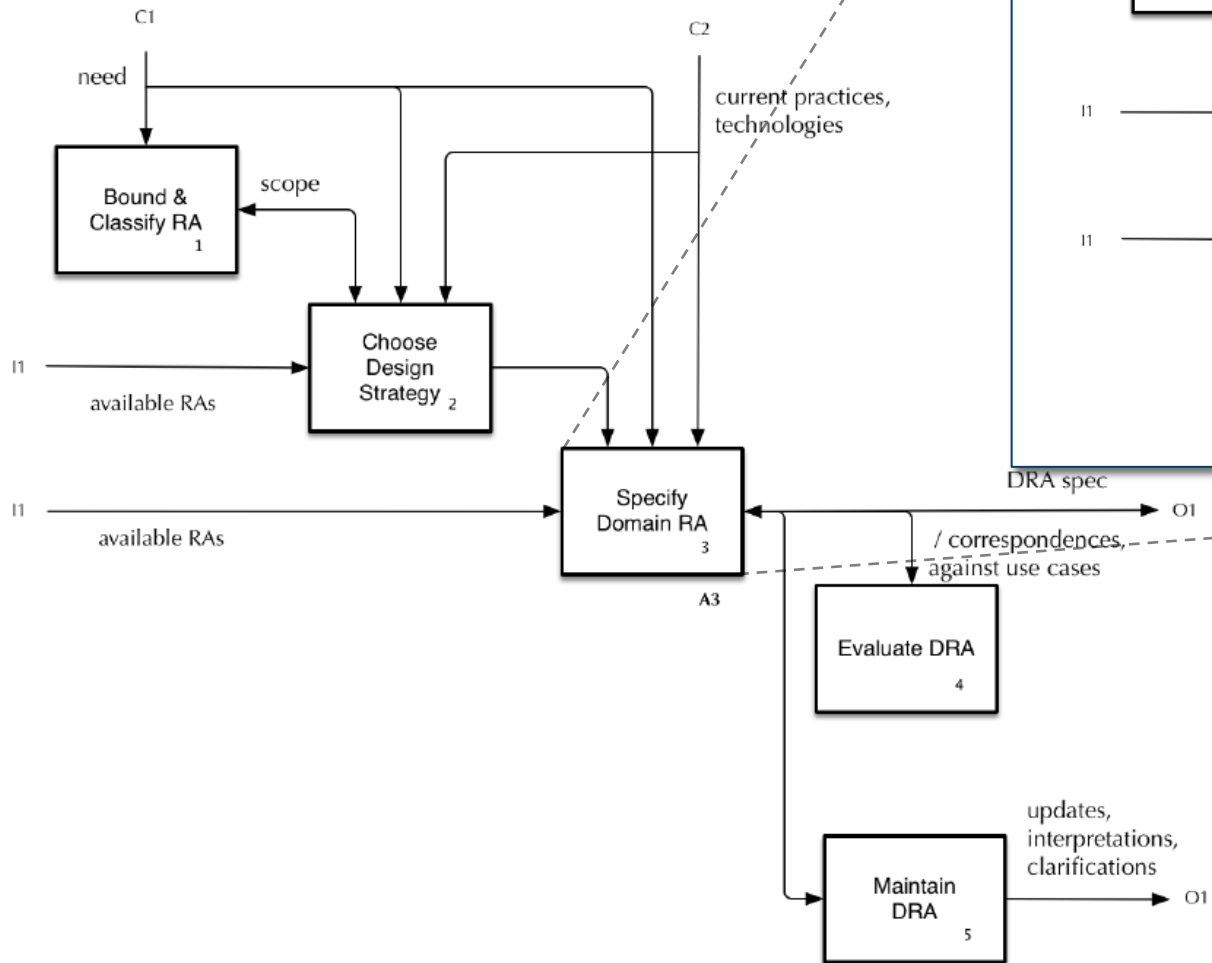
Guiding principle of the IWA 47



The guiding principles of the IWA 47 are:

- To build on existing standard ISO/IEC/IEE 42010 and a meta reference description of ISO/IEC JTC1//SC 41 - Internet of things and digital twin
- Generate consistence and conformance to the existing

Structure follow by ISO/IEC/IEE 42010

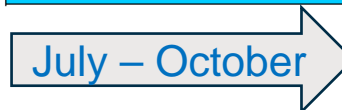


NOTE: This process model uses the conventions of IDEF0 or SADT. Boxes depict *activities*, which can be hierarchically refined. An activity (box) transforms *inputs* (left-side arrows) into *outputs* (right-side arrows). Activities take place under the influence of *controls* (top-side arrows). *Feedback* situations are depicted with double-headed arrows. Activities are implemented using *mechanisms* (bottom side arrows).

IWA 47 – Project plan



Step 1	Step 2	Step 3	Step 4	Step 5
Make the proposal	Get ISO/TMB approval	ISO/CS circulates the details of the workshop	Hold the workshop and agree the document	Publish the IWA
<p>Approach ISO Central Secretariat or any ISO member with your proposal.</p> <p>Your proposal should include:</p> <ul style="list-style-type: none"> ✓ Purpose and justification ✓ Relevant documents ✓ Lists of organizations that may be interested ✓ Indications of any ISO member body willing to act as Secretariat ✓ An estimate of the number of meetings if more than one is envisaged ✓ Details of any proposed special arrangements for distribution of the IWA <p>Note: a form is available to facilitate submitting your proposal for TMB approval.</p>	<ul style="list-style-type: none"> • ISO/CS then circulates your proposal to the ISO/TMB for approval (checking any proposed distribution arrangements with the ISO/Sec-Gen). • The TMB will also formally assign / confirm the ISO member body who will be your secretariat for the project. • The ISO member body works with the proposer to decide full details of the Workshop: <ul style="list-style-type: none"> ✓ Price (if any fee) ✓ Time/Date/Venue ✓ Format ✓ Background ✓ Doc supply ✓ Process ✓ Chair 	<ul style="list-style-type: none"> • A notification – with the full details agreed at Step 2 – is circulated to all ISO members (by ISO/CS) • ISO member bodies can then circulate the proposal as widely as possible in order to publicize it to potentially interested parties. <p>Note: Any organization or company or individual is allowed to attend.</p>	<ul style="list-style-type: none"> • At the meeting the Chair (nominated in advance) will be confirmed. • During the whole IWA process, the Chair must be impartial and seek to ensure the maximum amount of consensus possible has been achieved. • Document is drafted and circulated to the workshop participants. • This can be repeated until the Chair believes that the best possible consensus has been obtained. <p>Note: One possible mechanism is that the workshop participants work online on a dedicated Web site.</p> <p>Note: Multiple meetings can take place if necessary.</p>	<ul style="list-style-type: none"> • The final draft of the IWA is sent by the secretariat to ISO/CS. • ISO/CS formats the document – giving it the relevant ISO cover page / logo. • ISO/CS then supplies the document to all its member bodies who can supply it as they see fit. • Any special arrangements for the distribution of the IWA should be put in place here.
Start - ISO/CS will normally take less than one month to process your proposal	Maximum of three months	Three months (90 days) advance notice is required before holding the workshop.	This stage depends on the scope of the IWA. However, aim to finish in three months or less	One month



Building on the IWA 47 agreement, standardization work on the reference architecture will begin in TC 347

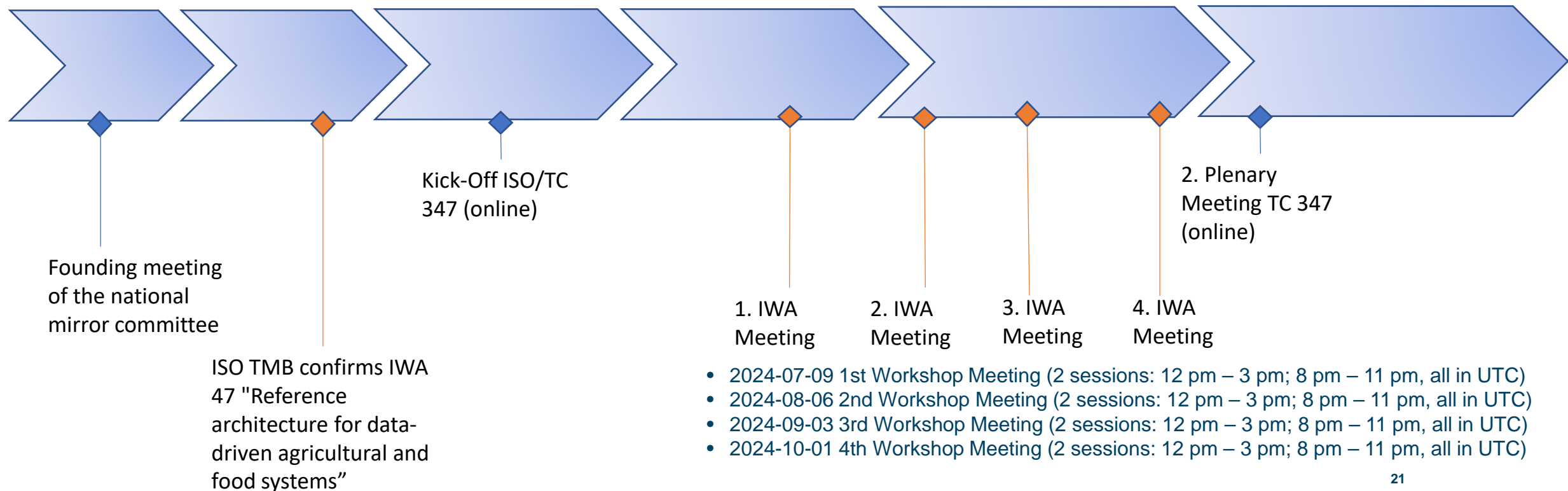
Timeline and Outlook



2024

2025

Januar Februar März April Juni Juli August September Oktober November Dezember



Wrap up & Call to action

- The challenge in data-driven agrifood systems are similar to the healthcare and energy sector:
 - Lack of collaboration and communication within the multi- stakeholder system
 - Lack of collaboration of international standardization institutes
 - Missing Conformance assessment
- Most of the recommendations of the roadmap of the SAG Smart Farming and their implementations will happen in the ISO TC 347
- Bring in your expertise in the IWA 47 “Reference architecture for data-driven agrifood systems”
- We need to investigate if the testing methods of IHE could be integrated when it comes to assessing the conformance of data, data exchange, and data exchange processes to the principles of findability, accessibility, interoperability, and reusability (FAIR)
- We need a governance model for the Joint Smart Farming Landscape Group, which could perhaps be modeled on the one of IHE

Further information

- The final report of the ISO SAG Smart Farming <https://bit.ly/3olkd8x>
- The new established ISO/TC 347 “Data-driven Agrifood Systems” <https://www.iso.org/committee/9983782.html>
- Registration for IWA 47 “Reference Architecture for data-driven Agrifood Systems” <https://bit.ly/3THCV7k>
 - Please contact Melodie Kelebek for additional information about the IWA 47
- Information on creating an IWA <https://www.iso.org/deliverables-all.html#IWA>





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