PLAN.
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ETIP SNET
EUROPEAN TECHNOLOGY AND INNOVATION PLATFORM
SMART NETWORKS FOR ENERGY TRANSITION

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

Introduction to R&I activities in the scope of the ETIP SNET; presentation of the R&I roadmap 2016-2025.

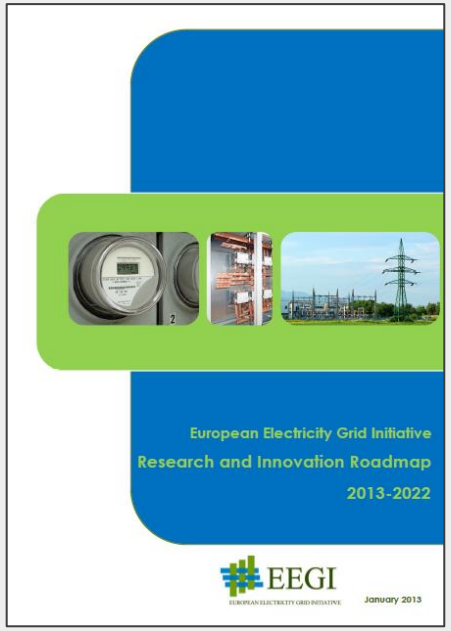
Third ETIP SNET regional workshop, Nicosia, 23 November 2017

Eric Peirano, Ph.D., TECHNOFI, COO

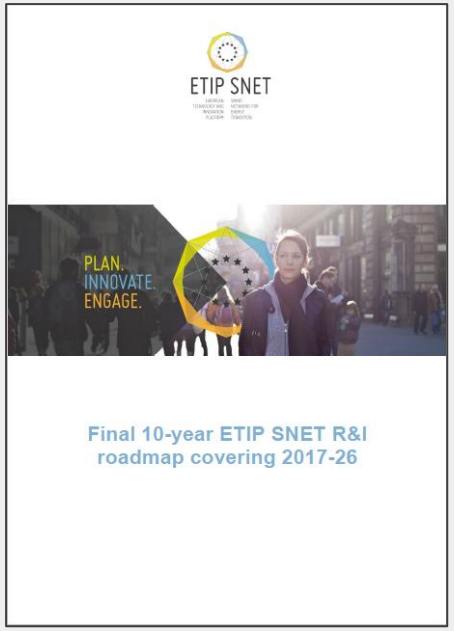
Outline

- The ETIP-SNET 2017-2026 R&I roadmap
- The 17-20 IP (implementation plan)
- The path towards the updated roadmap and next IPs
- Contribution expected from the workshop participants

Planning R&I activities: 10-year roadmaps



EEGI roadmap 2013-2022:
Focus on electricity system and integration of RES integration

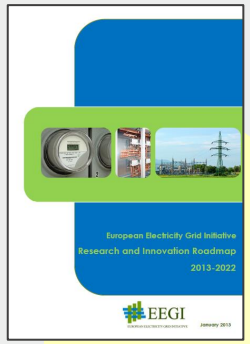


ETIP SNET roadmap 2017-2026:
Integration of storage + other flexibilities
Integration with other energy networks

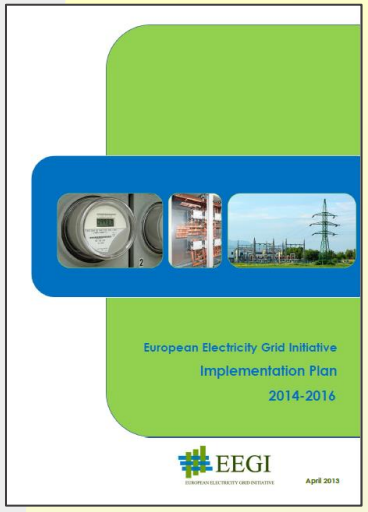
ETIP SNET roadmap 2020-2029:
To come by end 2019!
Integrated energy system

Short-term priorities: 3-year IPs

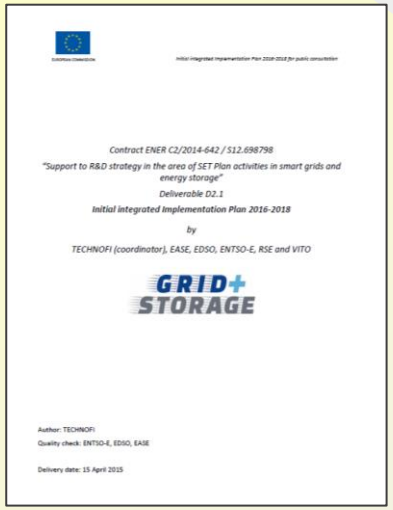
EEGI roadmap 2013-2022



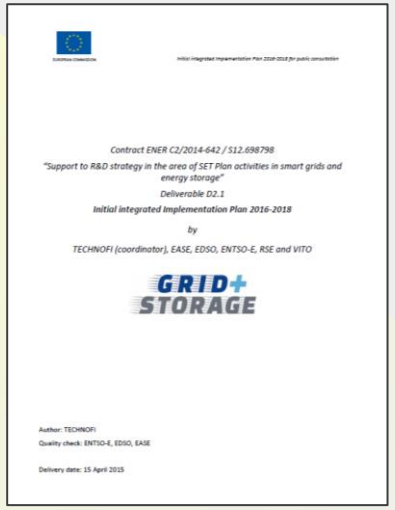
EEGI IP 2014-2016



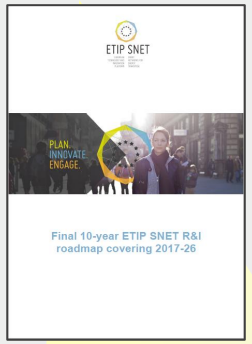
Grid+Storage IP 2016-2018



Grid+Storage IP 2017-2019



ETIP SNET roadmap 2017-2026



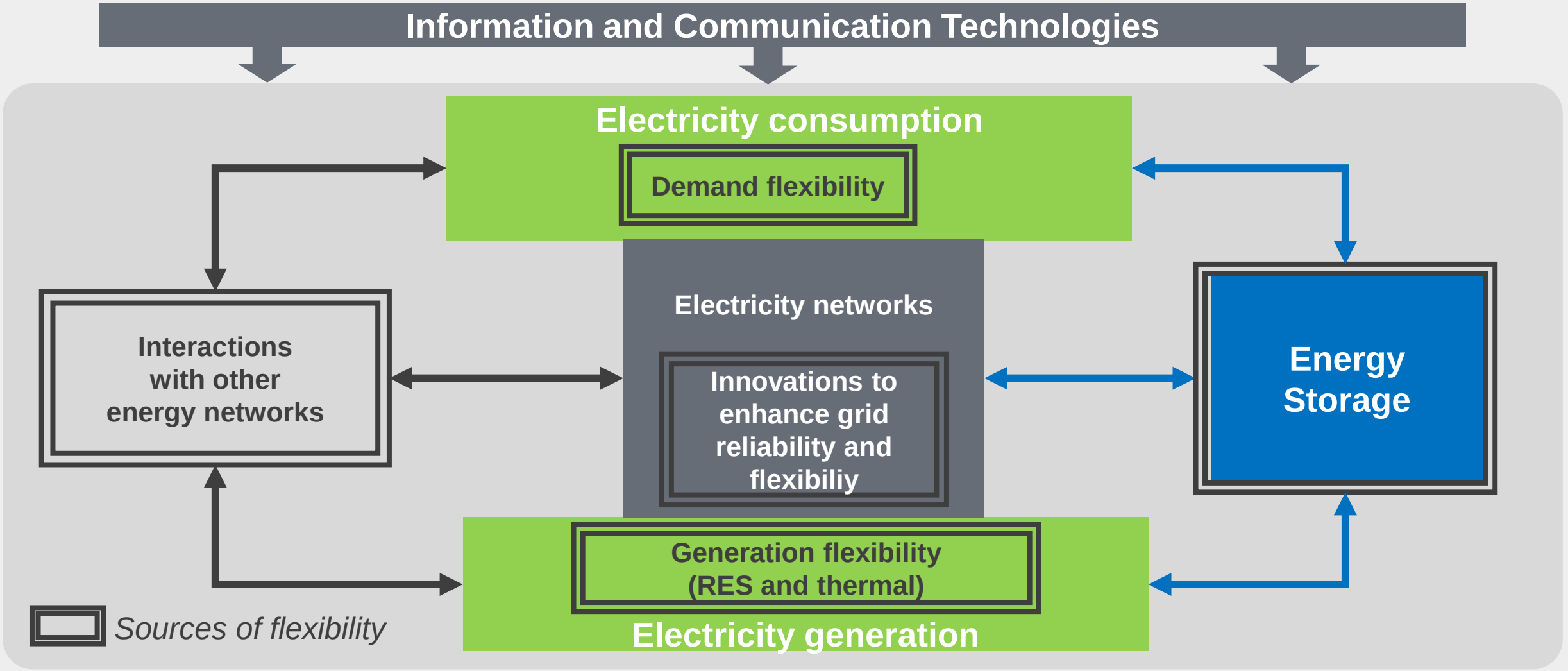
ETIP SNET IP 2017-2020

ETIP SNET roadmap 2020-2029

ETIP SNET IP 2021-2023

Electricity grid = backbone of energy system

Offers flexibility solutions and enables the integration of all flexibility means



Structure of the ETIP SNET Roadmap 2017-2026

Two-level structure for **Distribution level**

Clusters

Functional objectives

DISTRIBUTION SYSTEMS

C1 -Integration of smart customers and buildings		C2 - Integration of decentralised generation, demand, storage and networks			C3 - Network operations		C4 -Planning and asset management	
D1 Active demand response	**D2** Energy efficiency from integration with smart homes and buildings	**D3** System integration of small DER	**D4** System integration of medium DER	**D5** Integration of storage in network management	**D8** Monitoring and control of LV network	**D9** Automation and control of MV network	**D12** New planning approaches and tools	**D13** Asset management
Flexibility from DR and buildings		**D6** Infrastructure to host EV/PHEV – Electrification of transport	**D7** Integration with other energy networks	**D14** Integration of flexible decentralised thermal power generation	**D10** Smart metering data processing and other big data applications	**D11** Cyber security (system approach)	**Flexibility from asset management**	
		Flexibility from RES, Storage, EV, other energy networks, TPG			**Flexibility from grid**			

Distribution level

- Storage and sector interfaces
- Digitalisation
- Flexible generation
- Market

Structure of the ETIP SNET Roadmap 2017-2026

Two-level structure for **Transmission level**

Clusters

Functional objectives

Transmission level

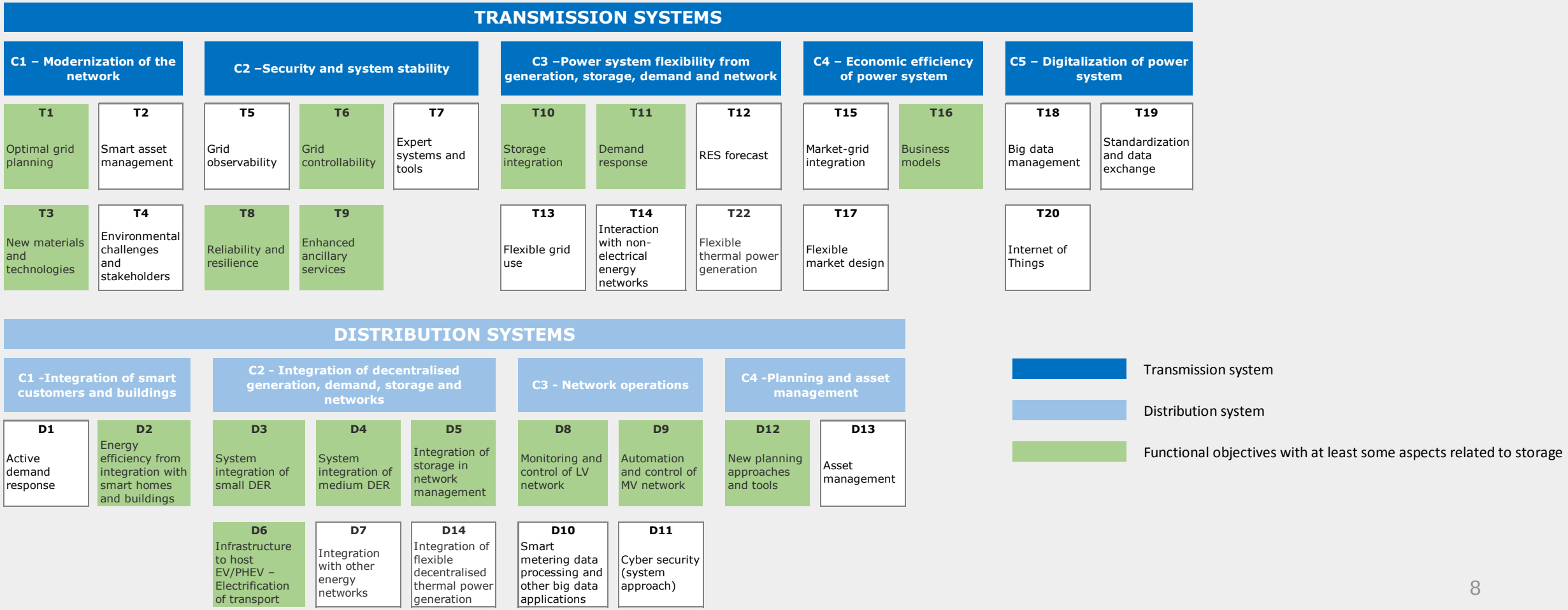
- Storage and sector interfaces
- Digitalisation
- Flexible generation
- Market

TRANSMISSION SYSTEMS

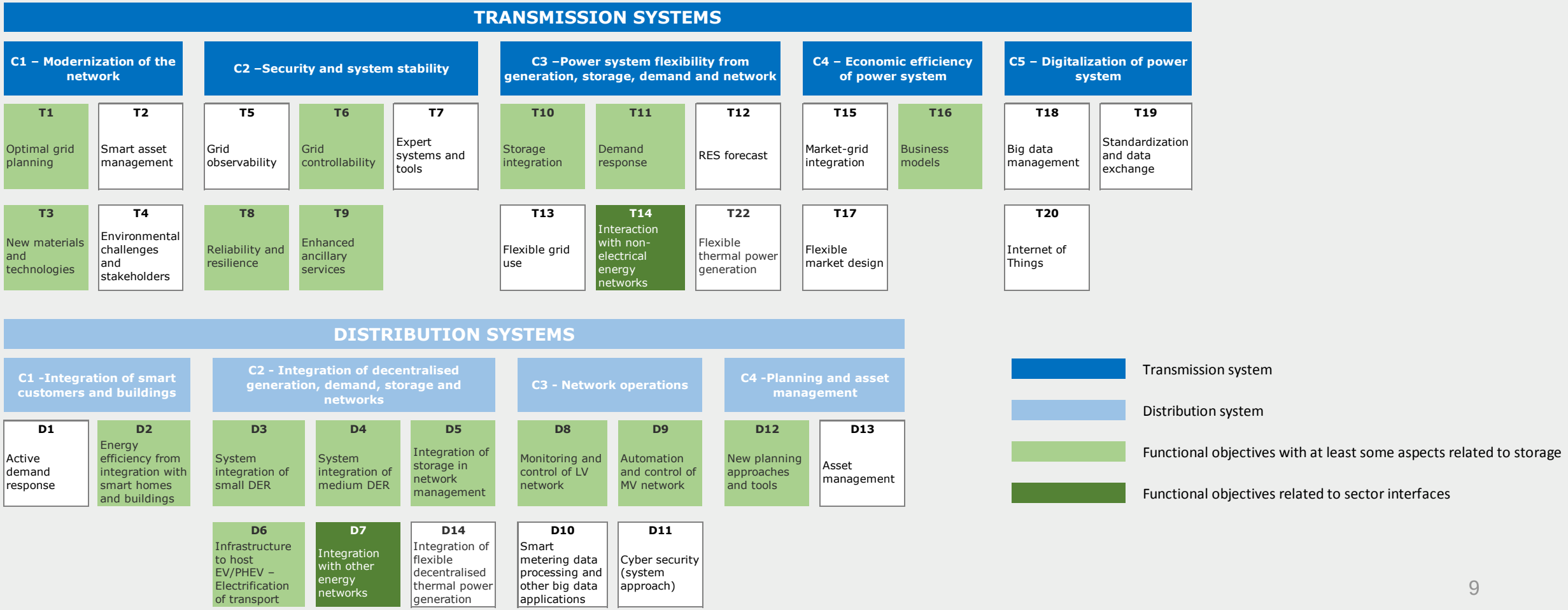
C1 – Modernization of the network		C2 –Security and system stability			C3 –Power system flexibility from generation, storage, demand and network			C4 – Economic efficiency of power system		C5 – Digitalization of power system	
T1 Optimal grid planning	**T2** Smart asset management	**T5** Grid observability	**T6** Grid controllability	**T7** Expert systems and tools	**T10** Storage integration	**T11** Demand response	**T12** RES forecast	**T15** Market-grid integration	**T16** Business models	**T18** Big data management	**T19** Standardization and data exchange
T3 New materials and technologies	**T4** Environmental challenges and stakeholders	**T8** Reliability and resilience	**T9** Enhanced ancillary services		**T13** Flexible grid use	**T14** Interaction with non-electrical energy networks	**T22** Flexible thermal power generation	**T17** Flexible market design		**T20** Internet of Things	

Flexibility

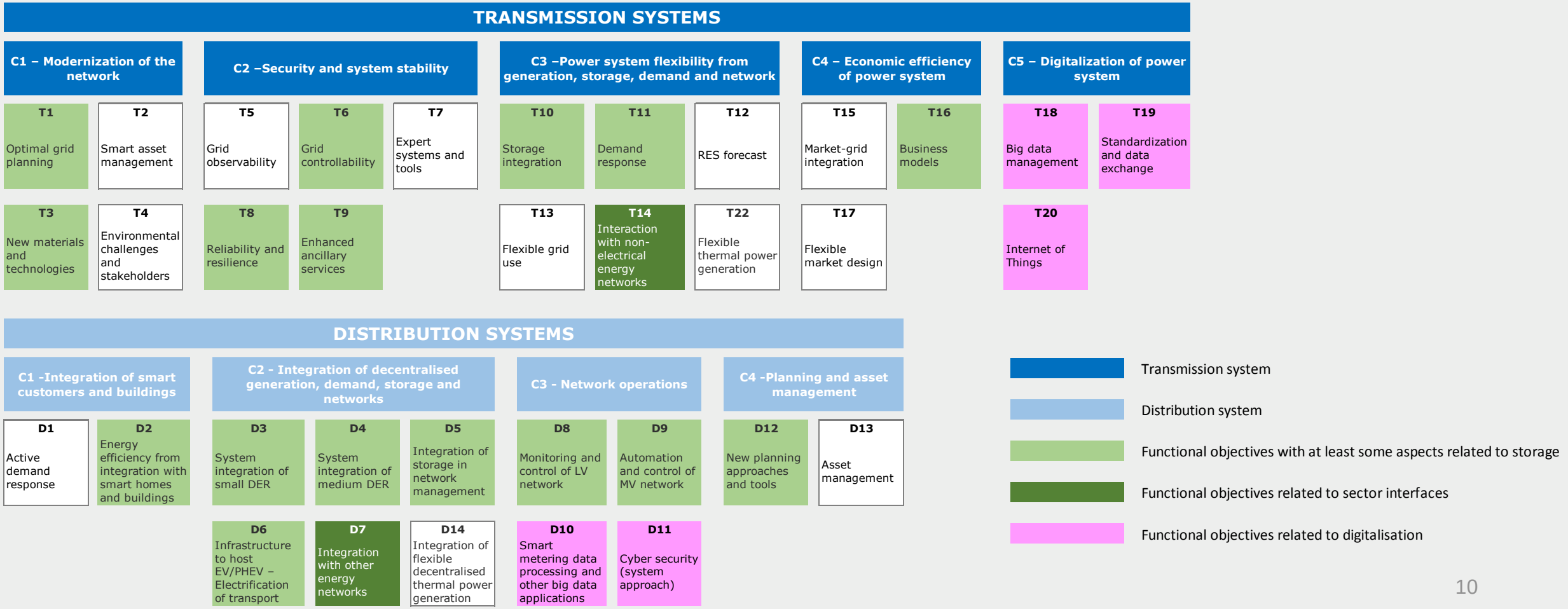
Structure of the ETIP SNET roadmap 2017-2026



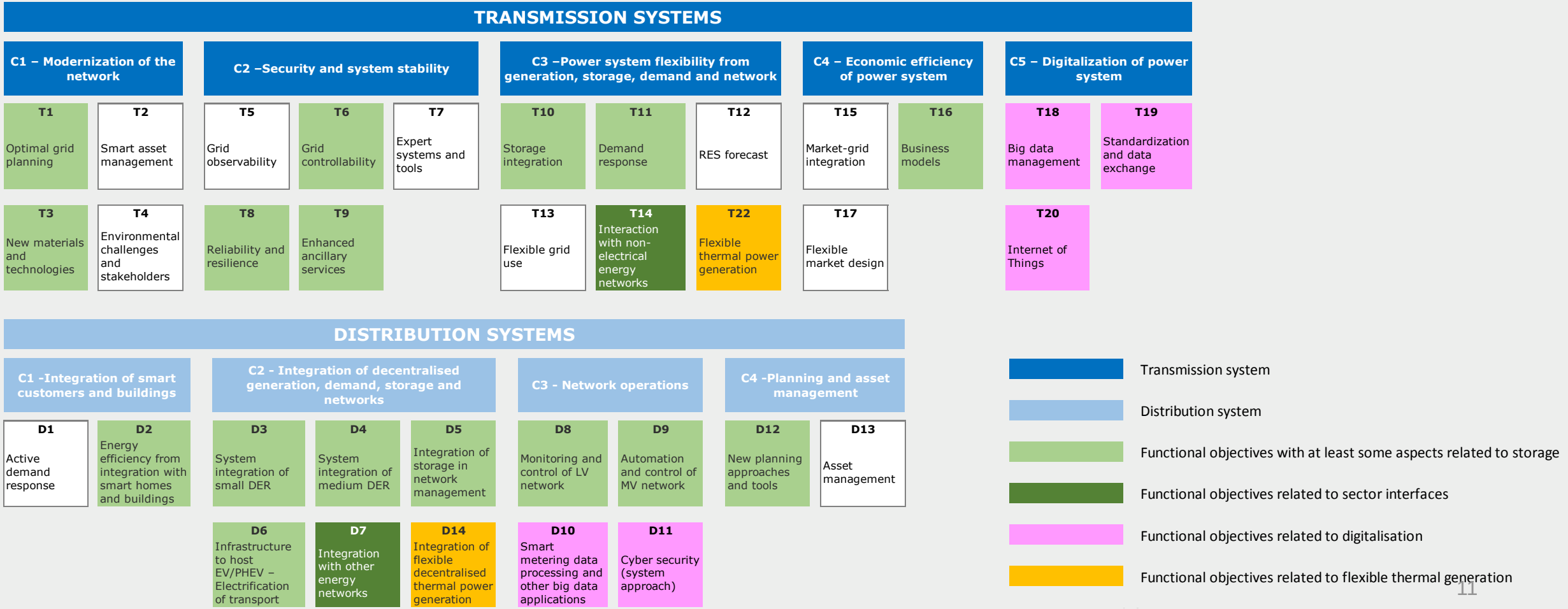
Structure of the ETIP SNET roadmap 2017-2026



Structure of the ETIP SNET roadmap 2017-2026



Structure of the ETIP SNET Roadmap 2017-2026



Outline

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- **The 17-20 IP (implementation plan)**
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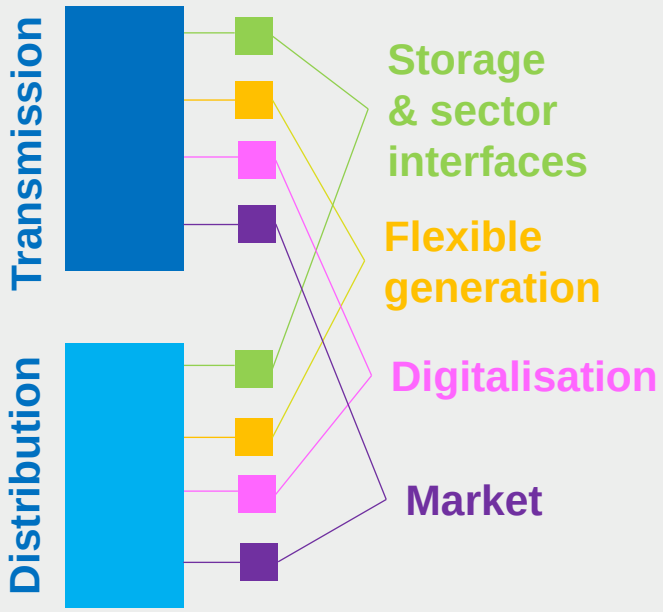
Structure of the IP 2017-2020

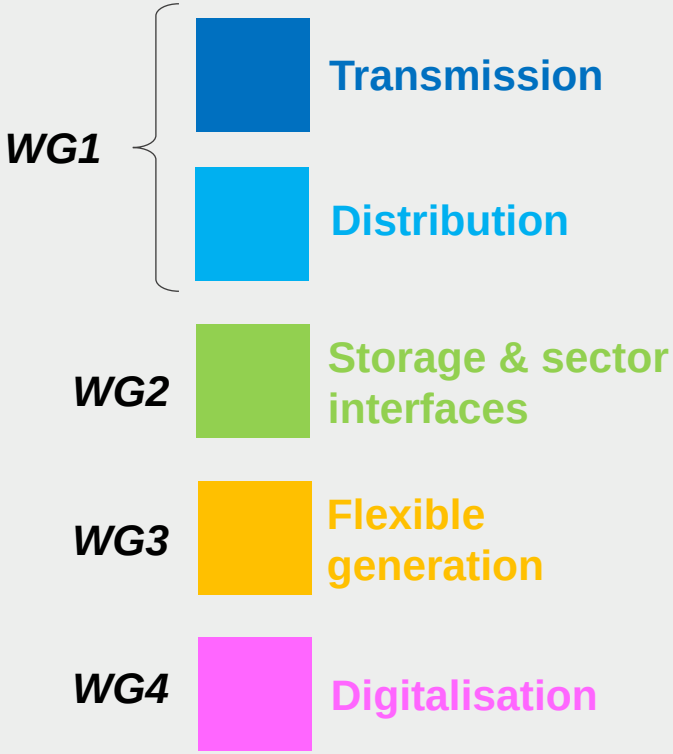
56 topics

39 topics

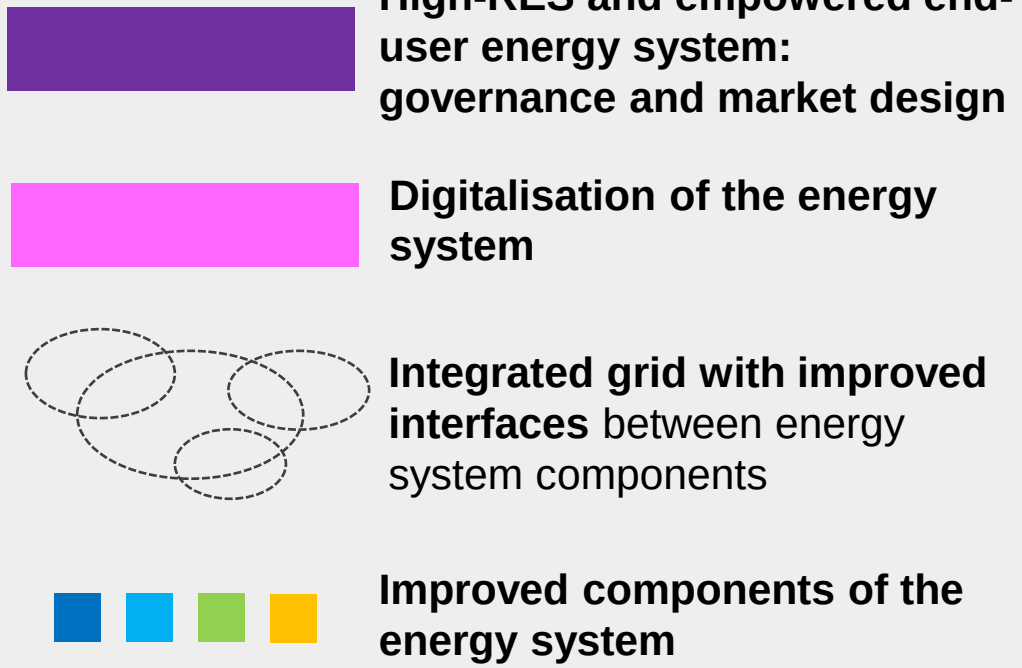
Structure the ETIP SNET roadmap



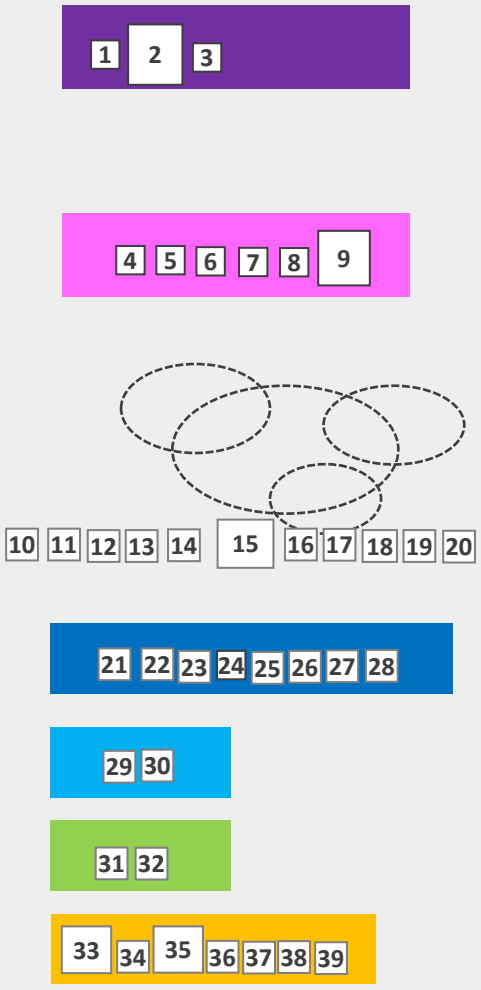
Structure of the WGs inputs to the IP



Final structure of the IP



Topics of the IP 17-20



2 **Market design for trading of heterogeneous flexibility products**: *develop a flex market concept that allows the trading of 'heterogeneous' flexibility products (coupling electricity, heat and gas markets, both at the wholesale and retail level), taking into account the specific capabilities of each resource;*

9 **Cybersecurity of critical energy infrastructures**: *assess in depth cybersecurity issues and propose solutions so as to maintain the system robust against possible cyber threats*

15 **Multiservice storage applications**: *demonstration of bulk storage integration options in the transmission system aimed to valorise the multi (ancillary) services offered by these technologies.*

33 **Developing the next generation of flexible thermal power plants**: *to achieve a robust, sustainable, flexible and efficient TPG fleet, able to meet the future (electricity) system needs at an affordable cost.*

35 **Improved flexibility and service capabilities of RES to provide the necessary ancillary services in scenarios with very large penetration of renewables:** *design RES generators able to ensure all needed ancillary services for system reliability when reaching 100% RES penetration;*

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Possible high-level structure for the next roadmap – based on current state of play

High-RES and empowered end-user energy system: governance and market design

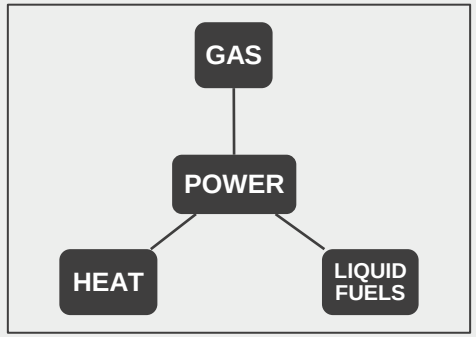
Digitalisation of the energy system

Integrated grid with improved interfaces between energy system components

Improved components of the energy system

Demand response

1. **Energy carriers interfaces**



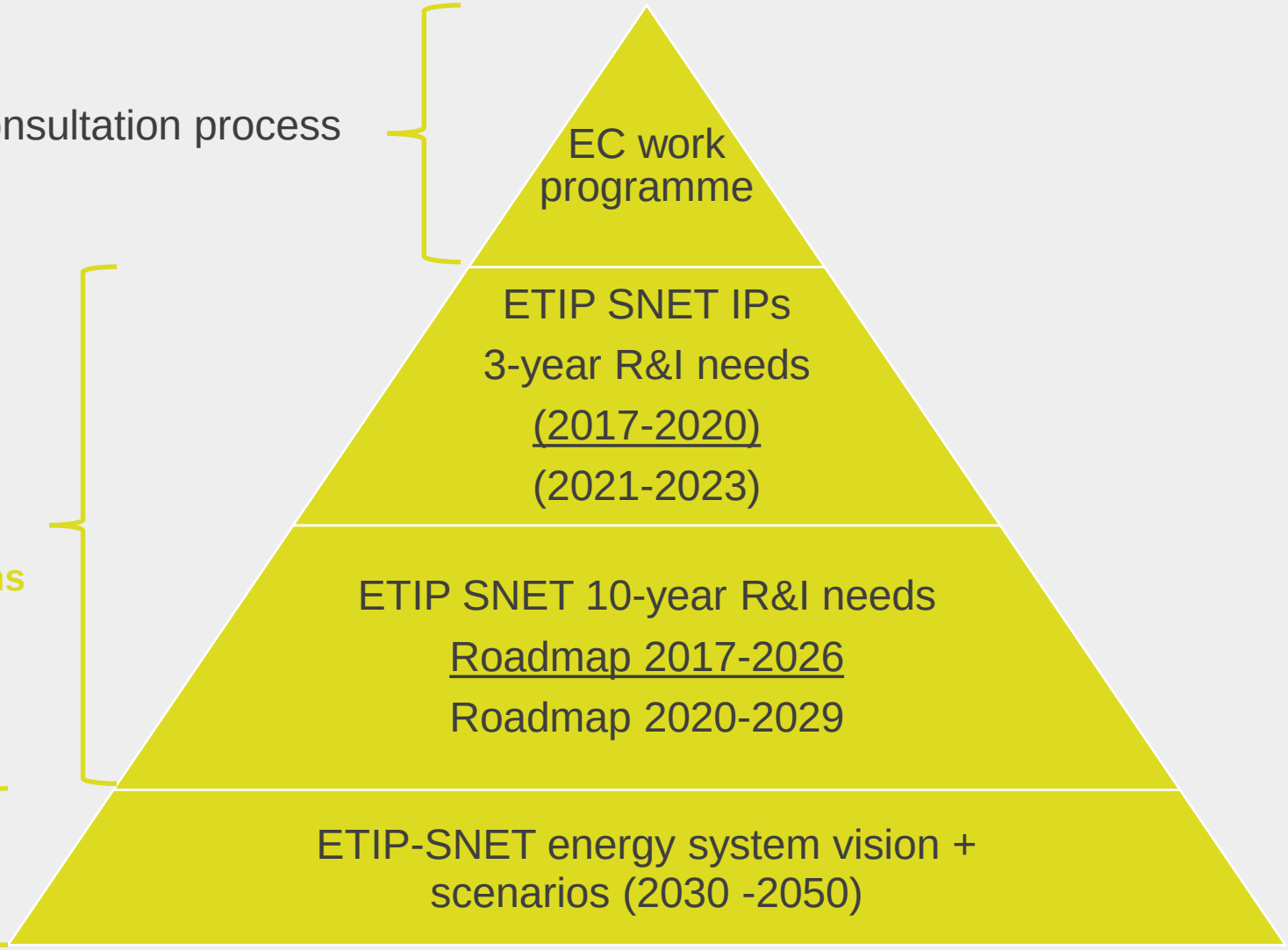
2. **Energy components interfaces**

ETIP SNET process hierarchy

EC consultation process

- Member States
- ETIP SNET experts (WGs)
- Public consultation
- **Regional workhops**
  - **Lessons learnt**
  - **Needs for further specific R&I activities**
  - **Implementation plans for the innovations**
  - **Barriers to innovation deployment**
- Monitoring of projects
  - assess the coverage of the R&I activities **by national** and European **projects**

ETIP SNET experts (WGs)



Outline

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Contribution expected from the workshop participants

- To foster networking and exchange of positive and negative experiences between projects at EU and national/regional levels.
- To help the ETIP SNET detect national projects with strong EU added value and feed the monitoring process to appraise the coverage of the existing knowledge.
- To help the ETIP SNET identify the need for further specific R&I activities to be specified in the updated roadmap and next IPs.
- To help the ETIP SNET identify barriers to innovation deployment.
- To inform the ETIP SNET about good practices gained in pilots and demonstration activities (monitoring process).
- To inform the ETIP SNET about the implementation plans for the innovations so as to support knowledge transfer to all stakeholders.

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Thank you for your attention

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