



ETIP SNET

EUROPEAN
TECHNOLOGY AND
INNOVATION
PLATFORM

SMART
NETWORKS FOR
ENERGY
TRANSITION

PLAN.
INNOVATE.
ENGAGE.

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.**

Fourth ETIP SNET regional workshop, Riga, 7 December 2017

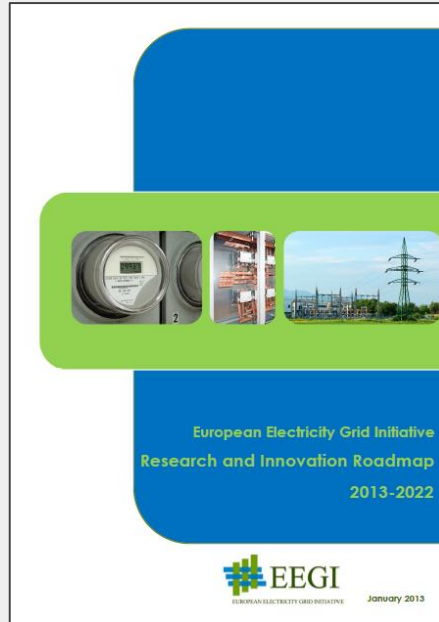
Eric Peirano, Ph.D., TECHNOFI, COO



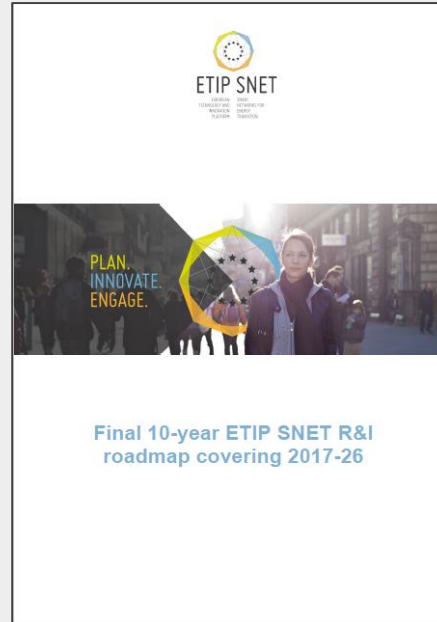
Outline

- ▶ **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**

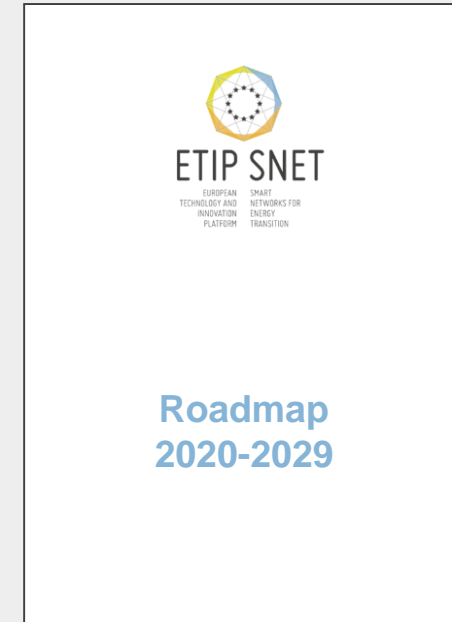
Planning R&I activities: 10-year roadmaps



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



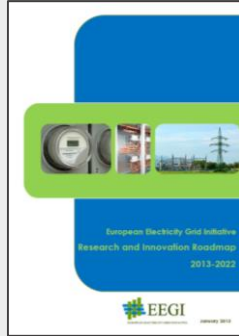
**ETIP SNET roadmap
2017-2026:**
Integration of storage + other
flexibilities
Integration with other energy networks



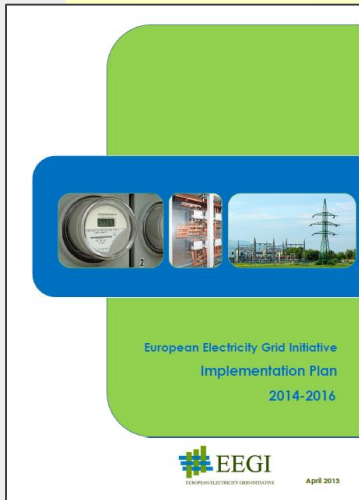
**ETIP SNET roadmap
2020-2029:**
To come by end 2019!
Integrated energy system

Short-term priorities: 3-year IPs

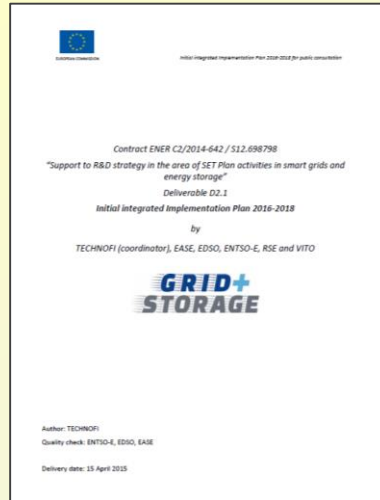
EEGI roadmap 2013-2022



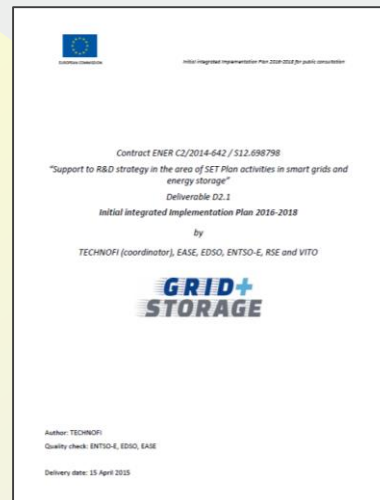
EEGI IP 2014-2016



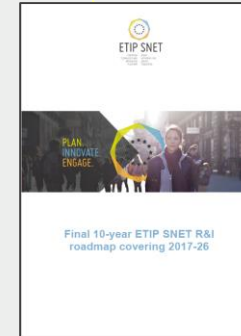
Grid+Storage IP 2016-2018



Grid+Storage IP 2017-2019



ETIP SNET roadmap 2017-2026



ETIP SNET IP 2017-2020



ETIP SNET roadmap 2020-2029



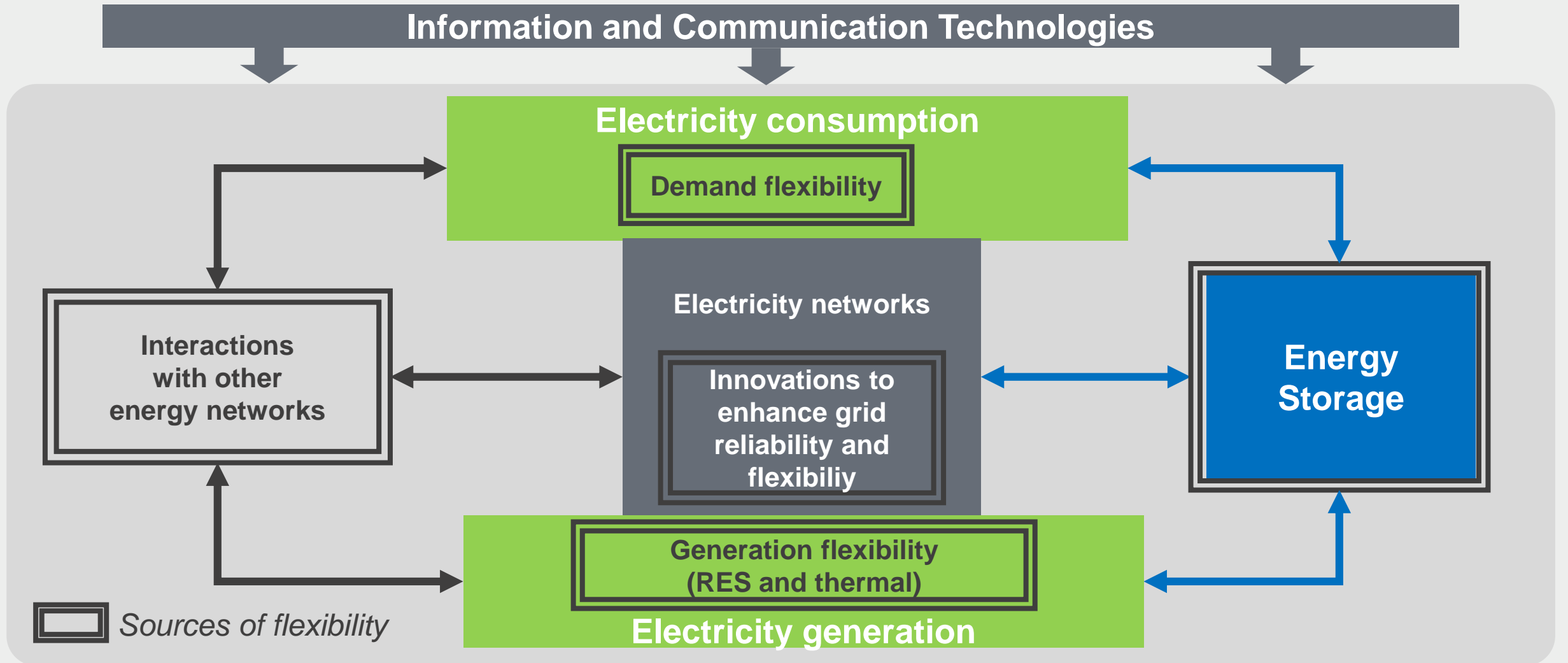
ETIP SNET IP 2021-2023



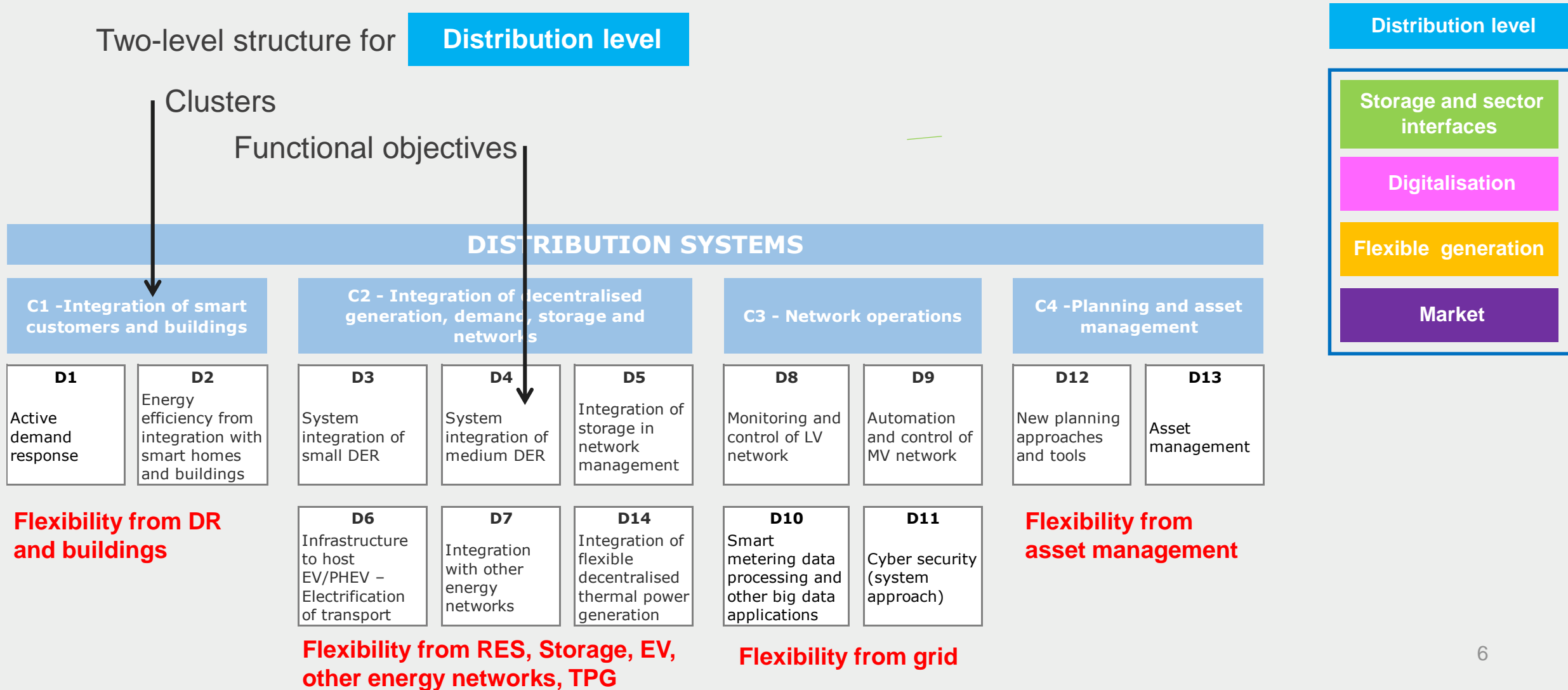


Electricity grid = backbone of energy system

Offers flexibility solutions and enables the integration of all flexibility means



Structure of the ETIP SNET Roadmap 2017-2026



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

T2

T5

T6

T7

T10

T11

T12

T15

T16

T18

T19

Optimal grid planning

Smart asset management

Grid observability

Grid controllability

Expert systems and tools

Storage integration

Demand response

RES forecast

Market-grid integration

Business models

Big data management

Standardization and data exchange

T3

T4

T8

T9

T13

T14

T22

T17

T20

New materials and technologies

Environmental challenges and stakeholders

Reliability and resilience

Enhanced ancillary services

Flexible grid use

Interaction with non-electrical energy networks

Flexible thermal power generation

Flexible market design

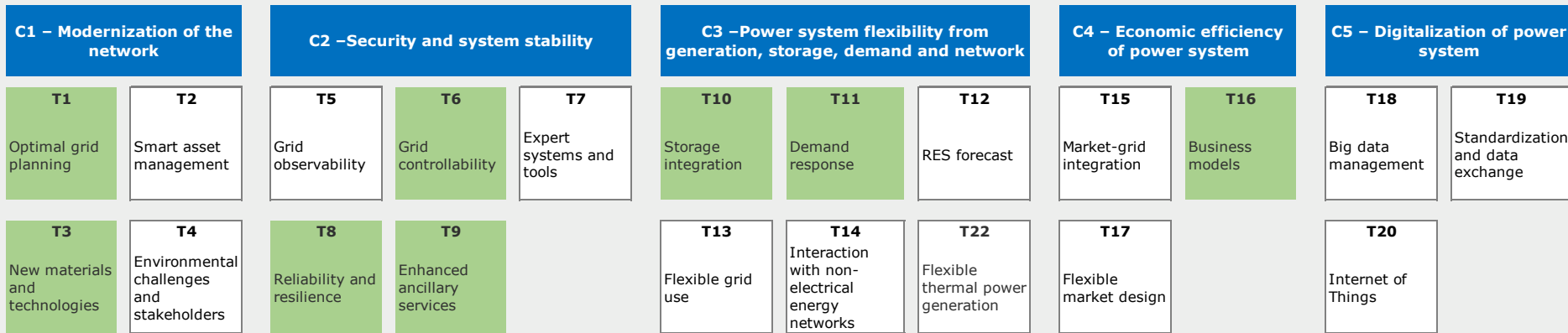
Internet of Things

Flexibility

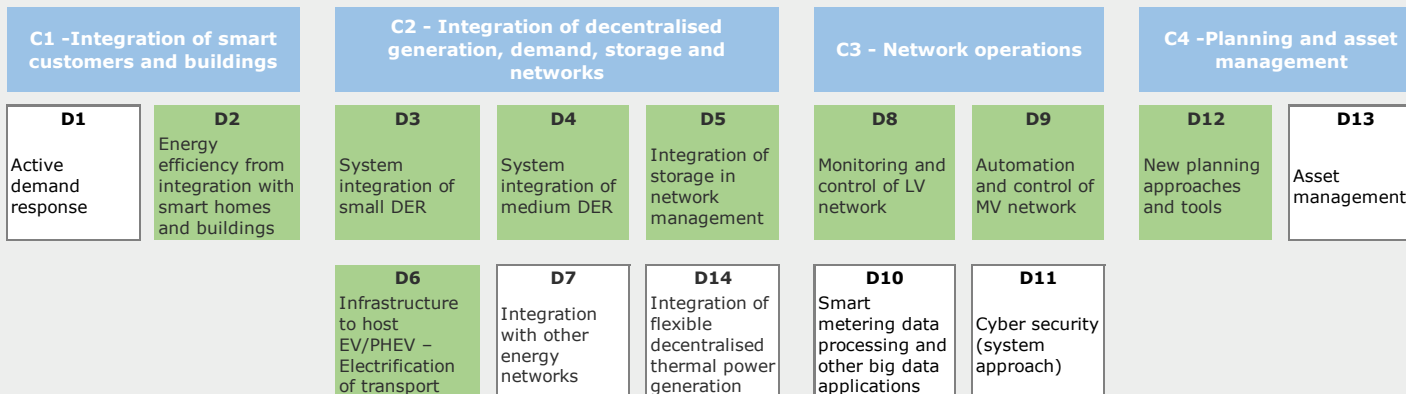


Structure of the ETIP SNET roadmap 2017-2026

TRANSMISSION SYSTEMS



DISTRIBUTION SYSTEMS

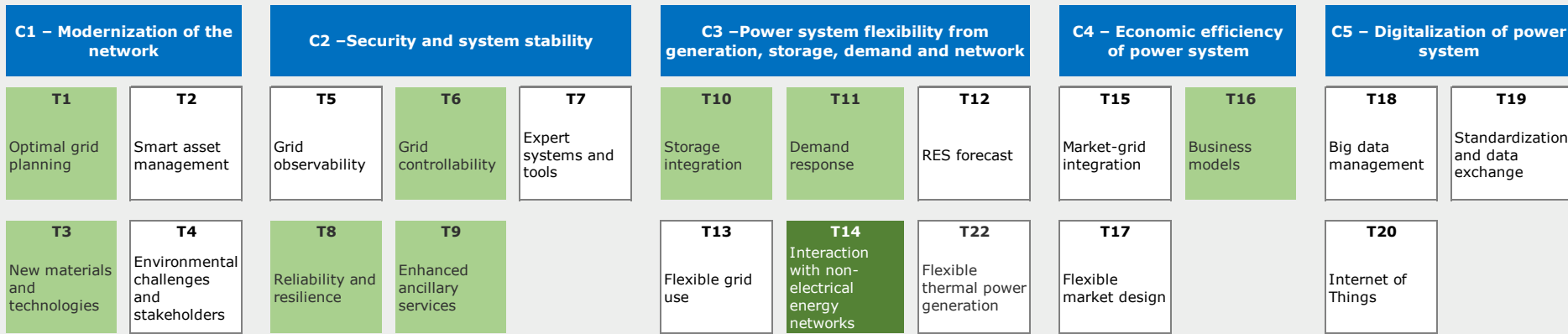


- Transmission system
- Distribution system
- Functional objectives with at least some aspects related to storage

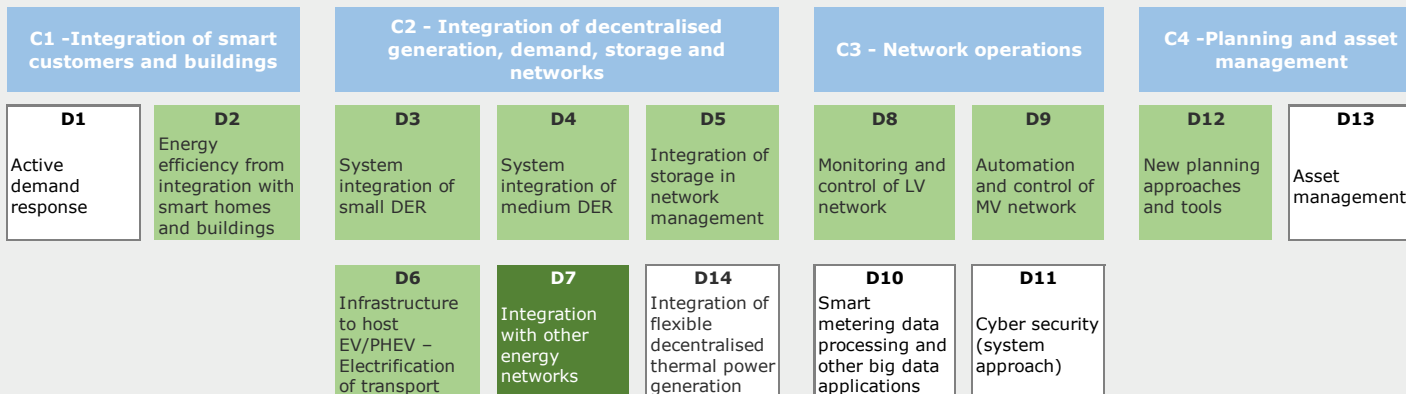


Structure of the ETIP SNET roadmap 2017-2026

TRANSMISSION SYSTEMS



DISTRIBUTION SYSTEMS

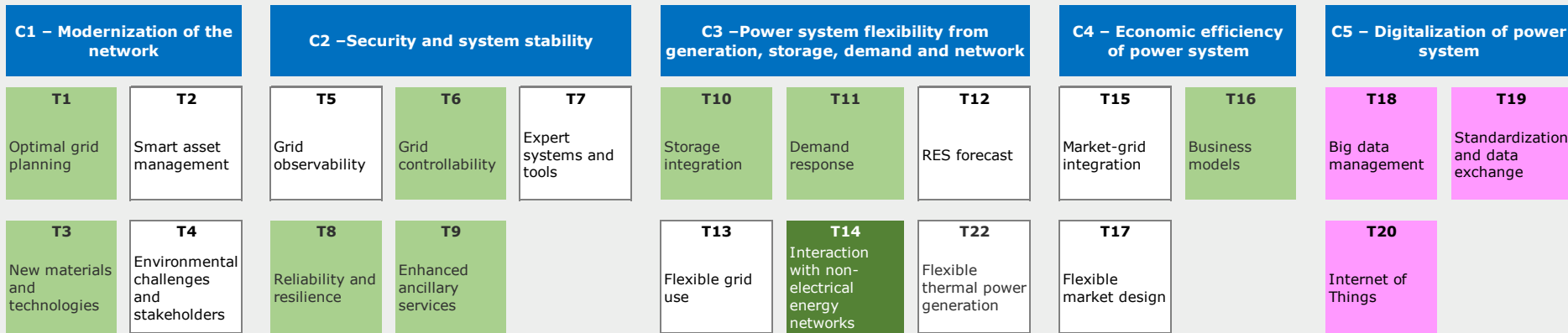


- Transmission system
- Distribution system
- Functional objectives with at least some aspects related to storage
- Functional objectives related to sector interfaces

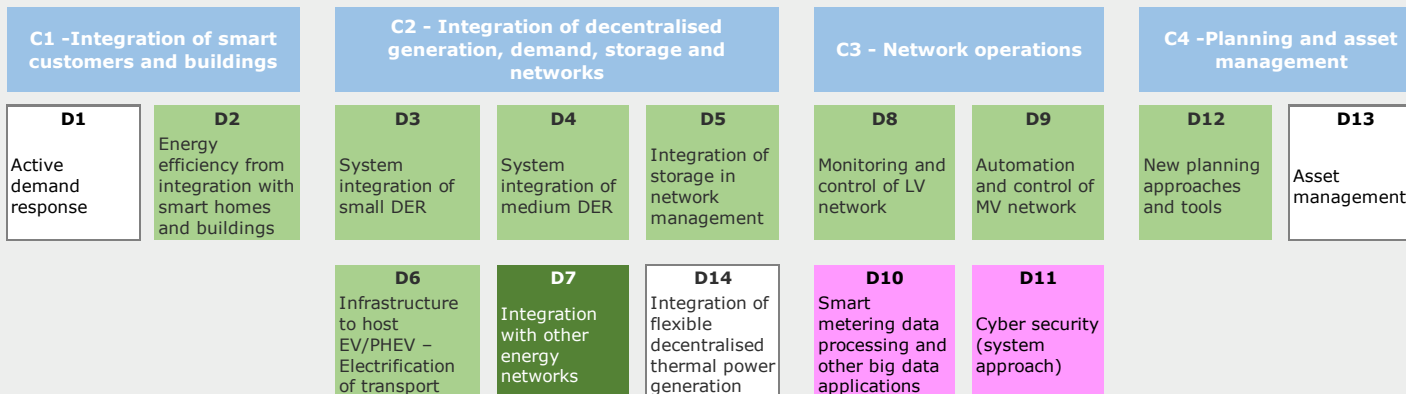


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TRANSMISSION SYSTEMS



DISTRIBUTION SYSTEMS

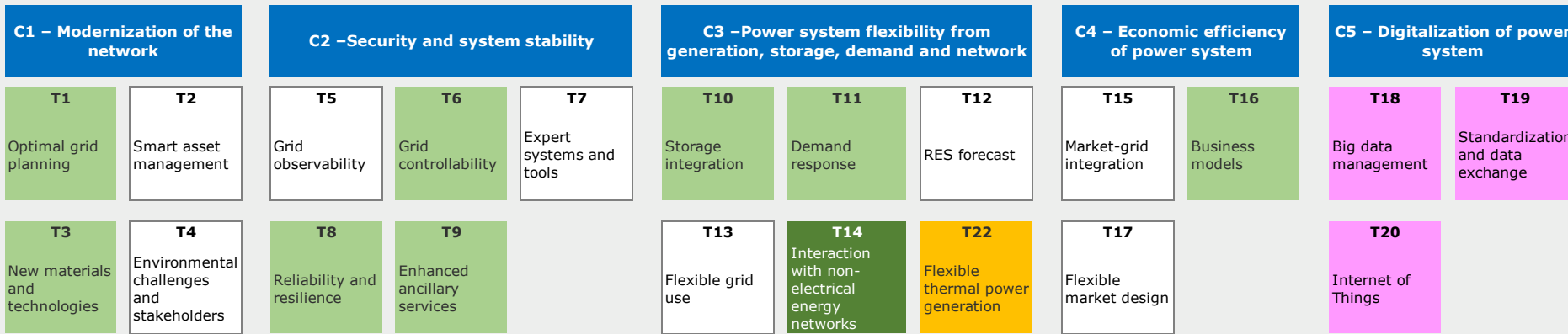


- Transmission system
- Distribution system
- Functional objectives with at least some aspects related to storage
- Functional objectives related to sector interfaces
- Functional objectives related to digitalisation

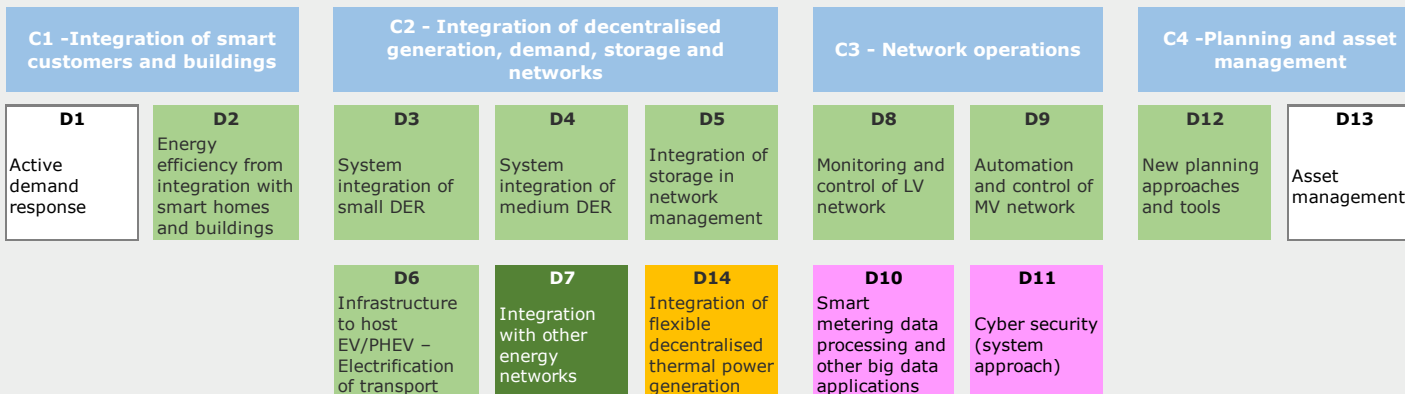


Structure of the ETIP SNET Roadmap 2017-2026

TRANSMISSION SYSTEMS



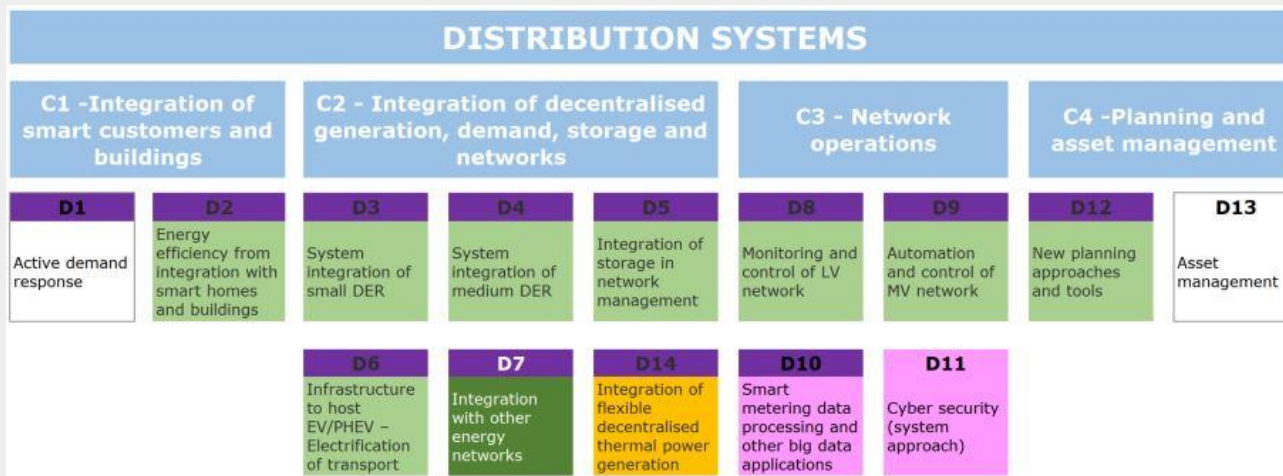
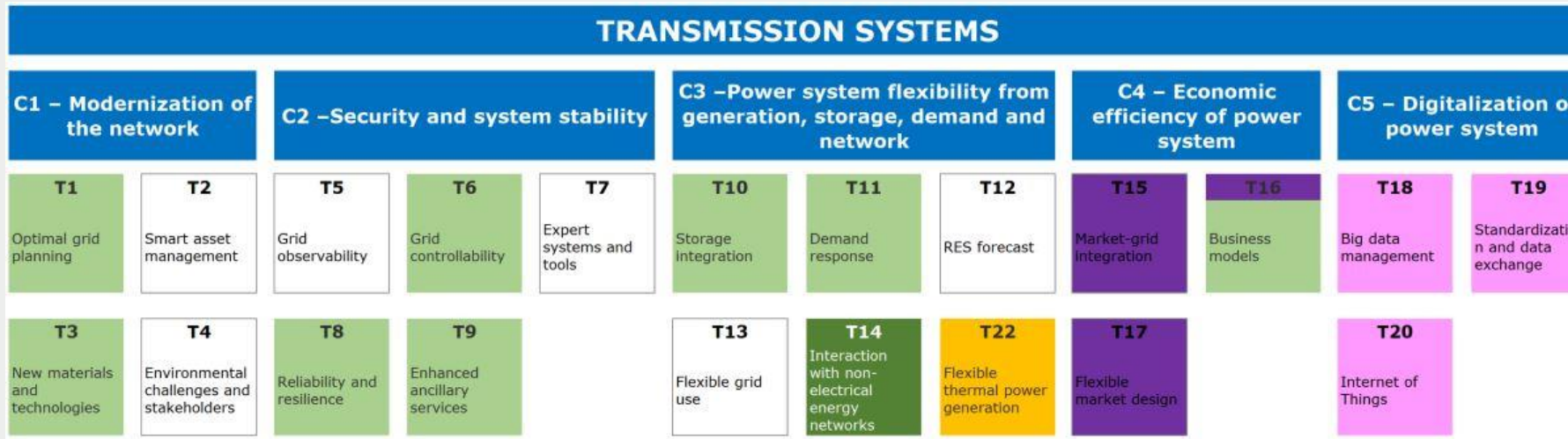
DISTRIBUTION SYSTEMS



- Transmission system
- Distribution system
- Functional objectives with at least some aspects related to storage
- Functional objectives related to sector interfaces
- Functional objectives related to digitalisation
- Functional objectives related to flexible thermal generation



Structure of the ETIP SNET Roadmap 2017-2026



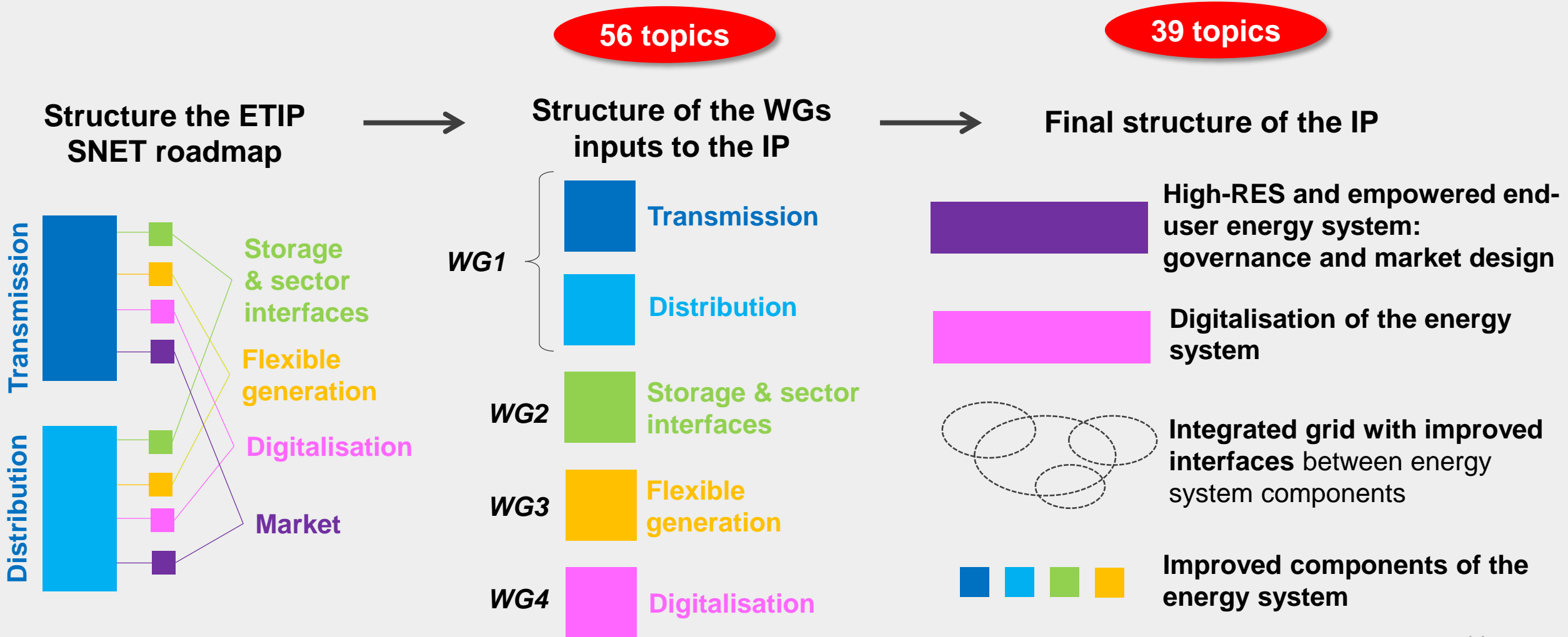
- Transmission system
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- Functional objectives with at least some aspects related to storage
- Functional objectives related to sector interfaces
- Functional objectives related to digitalisation
- Functional objectives related to flexible thermal generation
- Functional objectives related to markets



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Structure of the IP 2017-2020



Topics of the IP 17-20

1 2 3

4 5 6 7 8 9



10 11 12 13 14 15 16 17 18 19 20

21 22 23 24 25 26 27 28

29 30

31 32

33 34 35 36 37 38 39

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

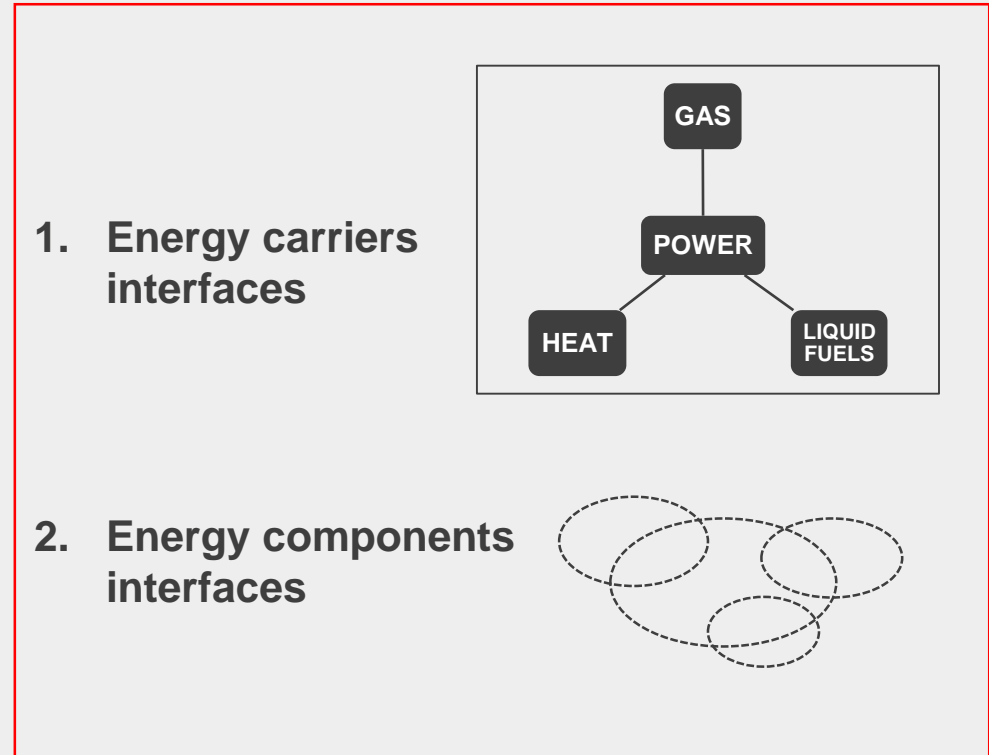
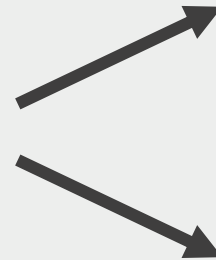


Integrated grid with improved interfaces between energy system components



Improved components of the energy system

Demand response

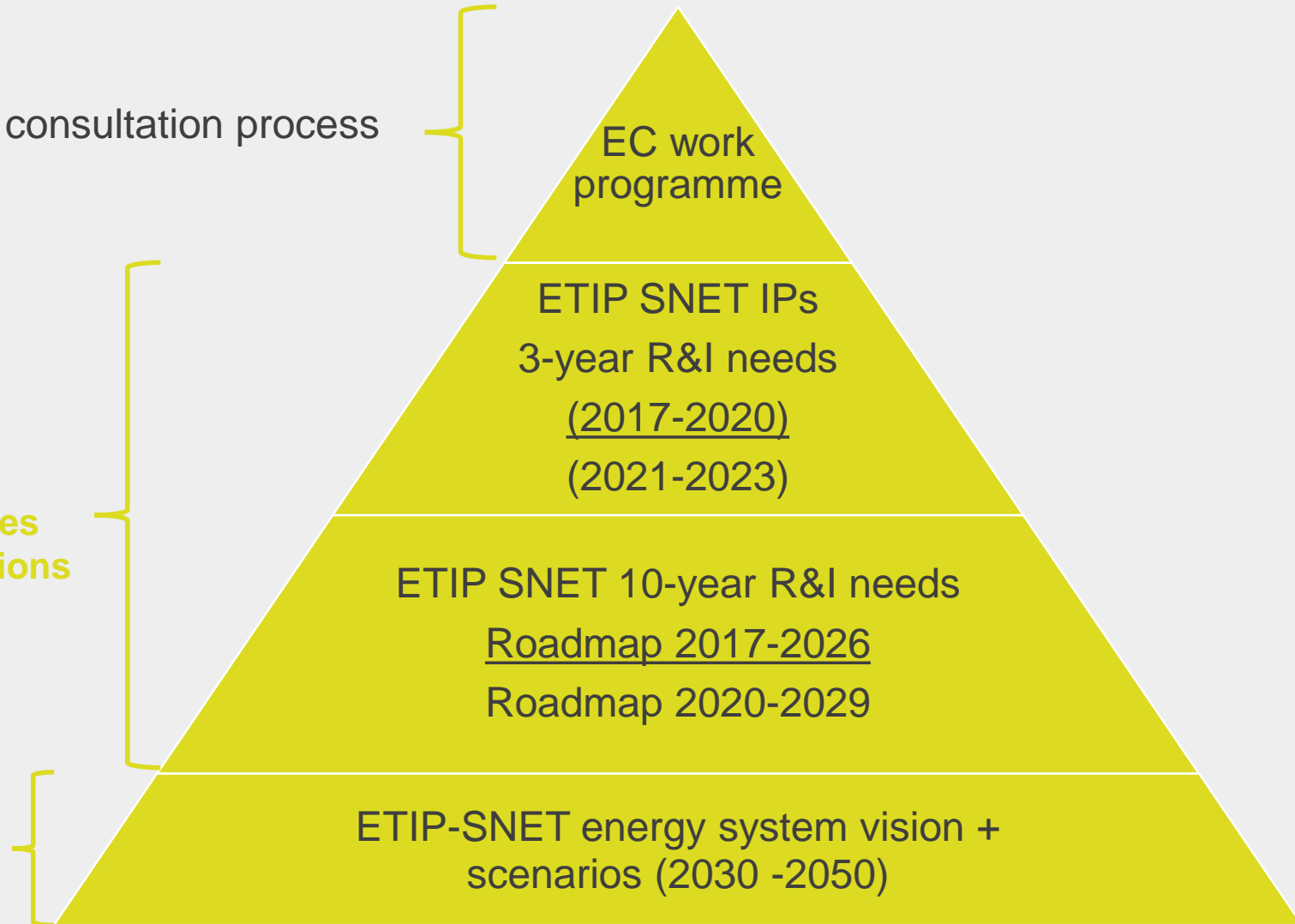


ETIP SNET process hierarchy

EC consultation process

- Member States
- ETIP SNET experts (WGs)
- Public consultation
- **Regional workshops**
 - **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)





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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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