

HARMONI Project: findings and recommendations

Removal EU Project Workshop
Brussels, 6th Nov. 2019



HARMONI's main goal



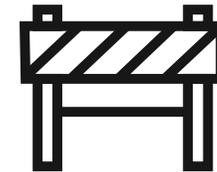
To set up an effective **collaboration** of all the relevant **stakeholders of the process industry** and together propose **solutions to overcome** problems that hamper innovation in the process industry and its market uptake:



REGULATORY
BOTTLENECKS



STANDARDISATION
NEEDS



OTHER
NON-TECHNOLOGICAL
BARRIERS

Specific objectives

1. To **identify and prioritize** the main regulation and standardisation needs and barriers to innovation
2. To develop a **collaboration network** among industrial associations in conjunction with:
 - EU regulatory authorities.
 - Standardisation bodies.
3. To provide **recommendations** to those bodies.
4. To support **transferability of solutions** across the **8 SPIRE sectors**.
5. To boost the deployment of technical solutions towards a more sustainable and competitive European process industry through **more adapted regulation and standardisation measures and good practices**



CHEMICALS



CERAMICS



CEMENT



WATER



STEEL



MINERALS



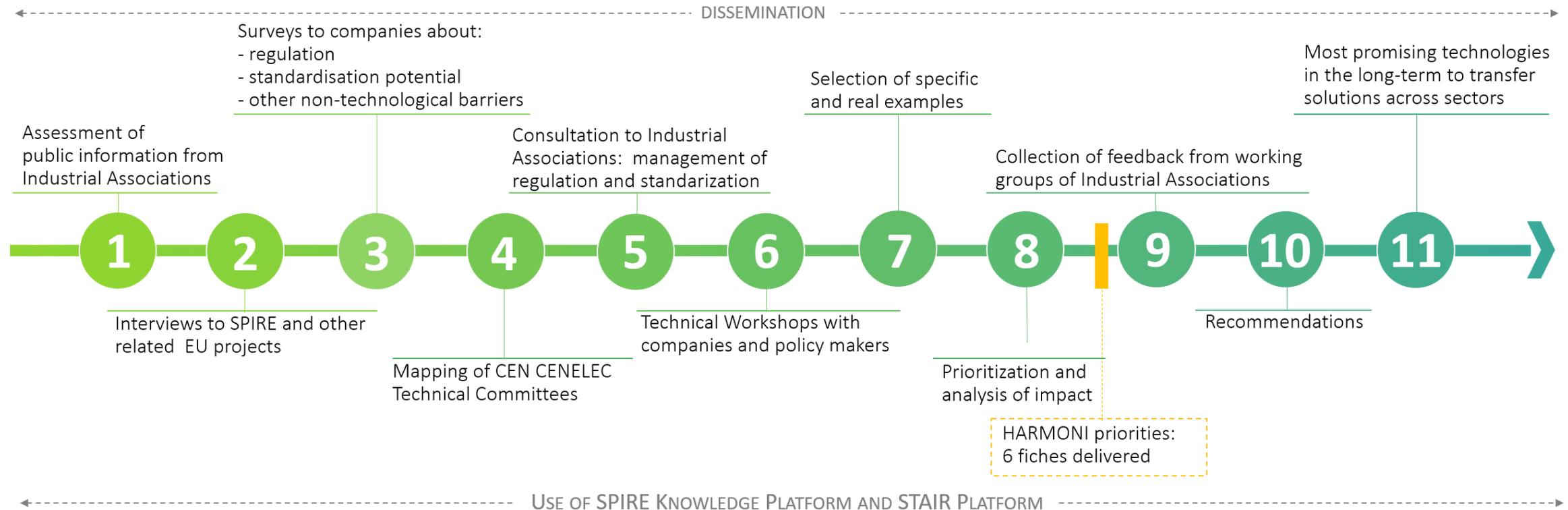
ENGINEERING



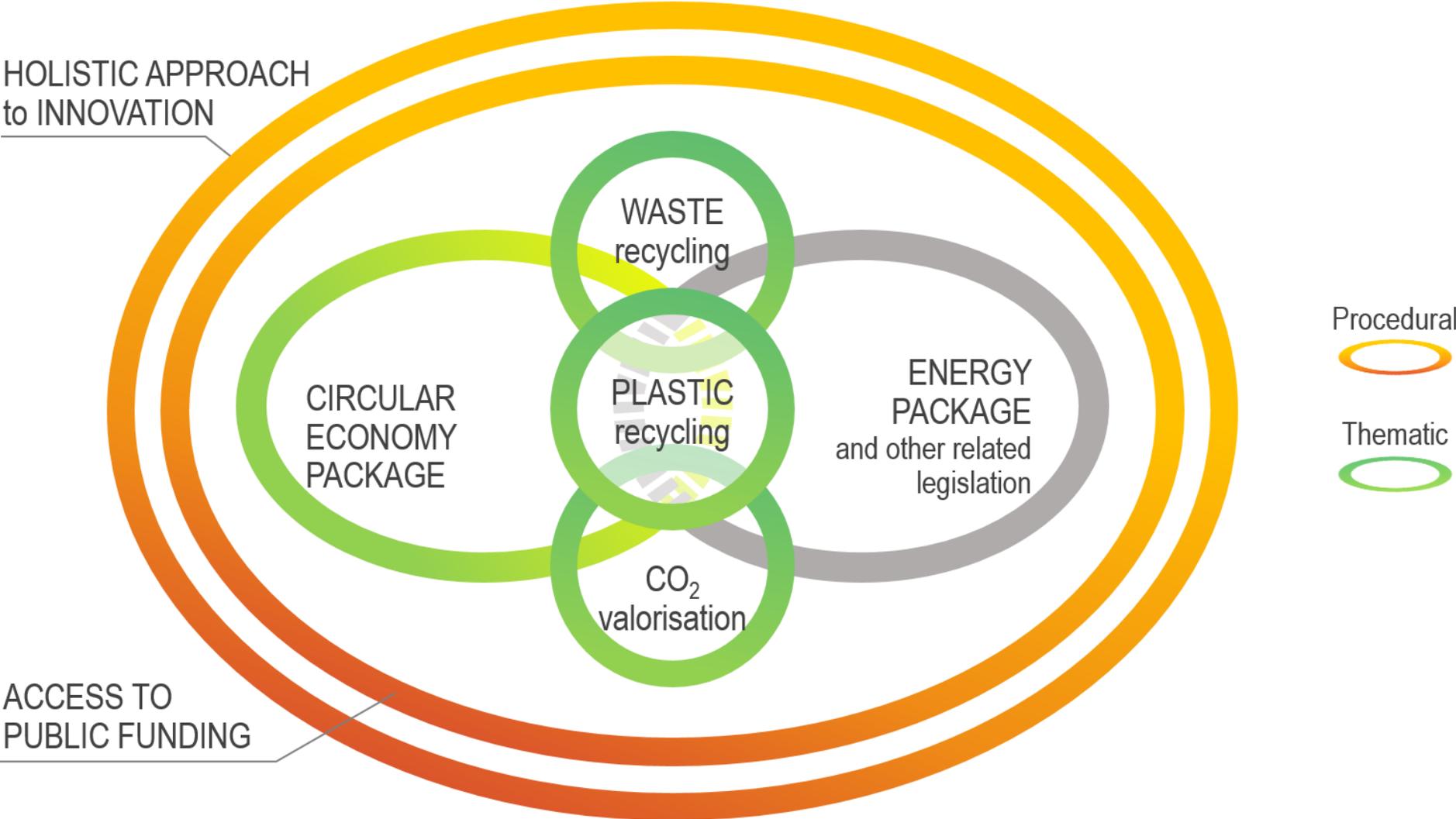
NON-FERROUS
METALS

Methodology

Analysis of non-technological barriers to innovation



6 HARMONI priorities



Removal case: waste vs by-product

EU legislation framework on waste	Waste management operations	Specific waste streams
Waste Framework Directive 2008/98/EC	Industrial Emissions Directive 2010/75/EC	Sewage Sludge Directive 86/278/EEC
Waste Shipment Regulation EC No. 1013/2006	Landfill Directive 199/31/EC	Batteries & Accumulators Directive 2006/66/EC
Regulations on EoW criteria: glass cullet (Reg. 1179/2012), copper scrap (Reg 715/2013), scrap metal	Waste Incineration Directive 2000/76/EC	Packaging & Packaging Waste Directive 94/62/EC
	Acceptance at Landfills - Decision 2003/33/EU	End-of-life Vehicles Directive 2000/53/EC
		Restriction of Use of Hazardous Substances Directive 2011/65/EU
		Electrical & Electronic Equipment Directive 2012/19/EU
		Waste from Extractive Industries Directive 2006/21/EE

The proven utilisation of BAT bauxite residue as an alternative raw material in cement and the steel industry, highlights the position of BAT bauxite residue **as a non-waste by-product for which specific end-of-waste regulations should be assessed and potentially applied.**



Waste vs by-product: HARMONI review

Challenge

The definition of end-of-waste criteria is not fully harmonized at EU level. Instead, each country applies its own end-of-waste criteria established in accordance with the Waste Framework Directive. Therefore, the uncertainty of classify a product as waste, or by-product, results in important restrictions for the waste shipping and re-processing.

CHEMICALS
Classifying valuable materials as waste discourages investments in business practices seeking to optimize the utilization of valuable resources: 1) Production residues which will be further used are not classified as waste. 2) By-products criteria are not open to varying interpretations by national authorities. (CEFIC; 2016)
CERAMICS
Harmonization across Europe of the waste or secondary raw material status and same legal treatment as primary raw material. (CeramicUnie, 2015)
CEMENT
Revising the Waste Framework Directive (WFD – Directive 2008/98/EC) (CEMBUREAU, 2015)
STEEL
Uniform definition and classification of ferrous slag in Europe (FEHS, 2012) EU's rules on end-of-waste are not fully harmonised, making it uncertain how waste becomes a new material and product. Rules to decide which wastes and chemicals are hazardous are not well aligned and this affects the uptake of secondary raw materials.
NON-FERROUS
Combat illicit shipment of waste of end-of-life vehicles. Introduce a risk matrix for controls at borders. (Eurometaux, 2016)

Waste vs by-product: HARMONI recommendations

BARRIER IDENTIFIED/CIRCULAR ECONOMY	SUGGESTED SOLUTION	ACTORS	TIMING	BENEFIT
REGULATORY OR PUBLIC INCENTIVES				
Lack of clarity for end-of-waste rules across the EU	Align interpretation of end-of-waste rules through EU-wide guidance + clearer definition of what is waste or by-product	Commission to initiate but Member States to be closely involved	Initiate work now	Facilitate access to waste as a resource and its circulation in the value chain
Not sufficient uptake of construction and demolition waste for recycling	Further promote the C&DW Protocol at national level through an ad-hoc PPP funded under HorizonEurope	Commission, industry + contractors	Initiate PPP after entry into force of HorizonEurope	Allow Member States to achieve 70% of CDW recycling rate and improve access to recycled waste for industry
Collecting, sorting, reuse and recycling costs higher than value of collected./recycled material/waste	Provide financial incentives through dedicated instruments (e.g. voucher system for taking back items to be recycled)	Member States/regional authorities	Initiate now	Products turning around in circular chain against economically acceptable conditions

Waste vs by-product: HARMONI recommendations

BARRIER IDENTIFIED/CIRCULAR ECONOMY	SUGGESTED SOLUTION	ACTORS	TIMING	BENEFIT
STANDARDIZATION				
Lack of sufficient criteria for traceability of waste streams	Develop traceability standards per waste stream	Standardization bodies	Initiate work now	More clarity and transparency of waste stream treatment / improve public acceptance
Lack of mass-balance approach based on waste based feedstock	Introduce such mass-balance approach	CEN	First explore with relevant industries.	
PUBLIC ACCEPTANCE				
Waste is not considered by the public at large as a resource/often associated with “dangerous”	Start EU wide campaign with key examples of waste being recycled/reused	Commission with industry	Early 2020 (after entry into force of new Commission)	Gain trust in circular economy projects
INDUSTRY EFFORTS				
Lack of data quality on waste streams;	Industry to set up cross-industry initiative to collect data	Industry + EU Commission under Horizon Europe funded initiative	After entry into force of HorizonEurope	Improved Access to and transparency of waste streams

HARMONI recommendations: role of standards

Challenges

It is often unclear and impeding Circular Economy if a resource is classified as a waste or as secondary raw material that can be reused.

Therefore, a clear distinction of the role of legislation compared to the role of standardization plus a solid and especially a specific, expedient definition of waste and of secondary materials is crucial for a Circular Economy in order to allow the reuse of resources.

Recommendations

Further, standards for recycled materials in the SPIRE sectors should be developed, defining the quality of the recycling output. A CWA could be a good instrument to create clarification in this context for quick support in specific areas.

On-going related initiative

TC 323 – Circular Economy ○ Ad Hoc Group 1 “Principles, Framework, Terminology, Management System Standards” - Scope: Develop in a first instance Principles, Framework and Terminology. Develop, in a second instance, a Management System Standard

HARMONI recommendations: role of standards

- ✓ A majority of standards work, to date, still has a focus on various aspects of waste management and prevention, rather than the Circular Economy per se.
- ✓ Often, processes are considered linearly instead of in a circular approach. Also, issues of material recycling, recoverability, re-use and re-manufacturing, are usually approached in the context of a specific industry and/or product group.
- ✓ Until today there are no formal standards which focus on the concept of the Circular Economy in its entirety.....but due to the high importance of the topic and the continuous insistence of the EC, standardization processes are gaining momentum
- ✓However it might not be necessary to launch new standards but rather agreed on sending relevant information subsequently to under development standards/on-going works in the field of

Overview of results



STANDARDISATION RECOMMENDATIONS FOR A BETTER STANDARDISATION FRAMEWORK

HARMONI releases recommendations for optimizing EU regulation for innovation in the consultations at NSB, ESO and EC level to improve the standardisation process.

From a standardisation point of view, it's important to preserve the balance of the following:

- Policy-makers should understand standards as a practical instrument of and for industry objectives.
- The New Legislative Framework has proven to provide a clear allocation of tasks between assessment within the European Union. European policy-makers should confine their product-related detailed work to the standardization experts.
- The high degree of consensus and the large number of stakeholders involved are desirable standards. The degree of consensus shall not suffer from any acceleration or excess process.
- A CWA is a compromise between speed and quality. It can be seen as a preparatory innovation and swiftly making them market-ready.

More into the intensive industries field, the following general procedural recommendations:

REGULATION RECOMMENDATIONS ON CURRENT REGULATORY BARRIERS

HARMONI presents some proposals to overcome the main regulatory barriers to innovation. From the 6 HARMONI priorities, the regulatory recommendations have been developed in 3 clusters, such as:

- FINANCING INNOVATION
- CIRCULAR ECONOMY, INCLUDING WASTE MANAGEMENT AND PLASTICS CIRCULARITY
- CO₂ VALORISATION

The HARMONI priority 'Holistic approach to Innovation' is horizontal and at the heart of all studied sort-list regulatory recommendations. The barriers identified are listed hereafter, including specific actions per barrier with clear indications about Who/How/When/Why. The list results in a comprehensive set of advices for policy makers mainly, both at EU and national or regional level, but also of relevance for industrial entities.

BARRIER IDENTIFIED	SUGGESTED SOLUTION	ACTORS	TIMING	BENEFIT
Reference to potential CCS projects (p.7 of Innovation Fund Regulation) requiring "full chain CCS Projects/Part chain CCS Projects with secured storage contracts"	As transport and storage will, contrary to capture, require involvement of Member States (infrastructure, permitting), project funding should allow for capture and Project partners need to engage with one or more Member States to present a long-term plan for transport and storage.	The Innovation Fund Experts Group needs to discuss the necessary coordination between projects and Member States for the interpretation of the "secured storage contracts" requirement.	Before issuing of the first calls under the Innovation Fund.	Capture technology will be funded and will allow faster commercialization if pilots and demonstrators are successful.

STANDARDISATION STANDARDISATION GUIDE – INDUSTRY & RESEARCH PROJECTS

WHO IS WHO?

- International level**
 - International standardisation organization such as ISO, IEC
- European level**
 - European standardisation organizations (ESOs): CEN, CENELEC, ETSI
- National level**
 - National standardisation bodies (NSBs) such as DIN, AFNOR, BSI, etc. All members of ESOs
 - Contribution starts on national level
 - Stakeholder interest is considered on international and European level through delegations

WAYS TO CONTRIBUTE

- Industrial Companies**
 - Propose new standards
 - Comment on the draft
 - Participate at your local level
 - Through national trade associations
- Associations & Research Projects**
 - Associations & research liaisons with standardisation bodies
 - Propose new standards
 - Comment on the draft
 - Initiative CEN Workshop

HOW YOU CAN TAKE PART

Anyone can submit → Proposal for standards work

Make comments → Standards projects

Comment on draft → Draft standard

Take part in discussions →

Your local NSB will support you in finding the right path to your standard and give advice on the best way to participate in standardisation

INNOVATION TRANSFER AREAS WITH HIGH INNOVATION TRANSFERABILITY POTENTIAL

HARMONI has identified critical success factors for **innovation management** inside companies to foster the transfer of innovations, especially of technical solution. These success factors can mostly be assessed as self-explicated quantified indicators resulting in **10 key clusters** to assess innovation transferability, as follows:

- Integration of innovation transfer in the company's strategy
- Innovation culture and readiness
- Innovation- and Life Cycle Management, incl. agile methods
- Bureaucracy
- Monitoring incl. IP monitoring and indicators
- Skills and skill development
- Information management
- IT-based challenges and digital tools
- Management of external relations
- Funding, financing, investment decisions

In addition, HARMONI has analyzed and selected the technologies with high transferability potential for each of the SPIRE sectors and analyzed the state of the art of these technologies. The exercise is fully aligned with six innovation areas of the SPIRE Roadmap 2050 (draft version at the moment). The next figures illustrate these six innovation areas split in technologies and methodologies and indicate the application potential in the SPIRE sectors.

INNOVATION AREAS

SPIRE Priorities

- Energy Mix
- Electrification
- CCU
- Resource efficiency
- Industrial symbiosis
- Digitalisation

MAP LEGEND

SPIRE sectors

- Minerals
- Chemicals
- Cement
- Water
- Steel
- Non-ferrous metals
- Engineering
- Ceramic

Replication sectors

- Paper
- Power generation
- Food
- Glass
- Oil and Gas
- Plastic
- Bio-processes
- Foundry
- Buildings
- Textile
- Electronics
- Automotive

IP = Device, process or product | IM = Service or methodology

Policy making in Horizon Europe



Missions: definition

Art. 2 of the FP/RfP Regulation:

A portfolio of excellence-based and impact driven **R&I actions** across disciplines and sectors, intended to:

- Achieve, within a set timeframe, a **measurable goal** that could not be achieved through individual actions
- Have **impact on society and policy making** through science and technology, and
- Be **relevant** for a significant part of the European population and a wide range of European **citizens**.

Policy making in Horizon Europe



Art. 2 of the FP/RfP Regulation:

Missions: definition

R+D hand in hand with non-technological solutions

- A portfolio of excellence-based and impact driven **R&I actions** across disciplines and sectors, intended to:
- Achieve, within a set timeframe, a **measurable goal** that could not be achieved through individual actions
 - Have **impact on society and policy making** through science and technology, and
 - Be **relevant** for a significant part of the European population and a wide range of European **citizens**.

Thank you

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Visit us in: www.spire2030.eu/harmoni



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