

PRE-SLHY

Expected impact and dissemination routes of outcomes

LH2 safety workshop, Bergen, 6th March 2019

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Pre-normative REsearch for Safe use of Liquid HYdrogen

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Areas of impact



State-of-the-Art

RCS analysis

PIRT analysis and
Research Priorities
Workshop



Identify the
knowledge gaps
and technological
bottlenecks

Identify the safety
critical areas where
specific international
standards are needed

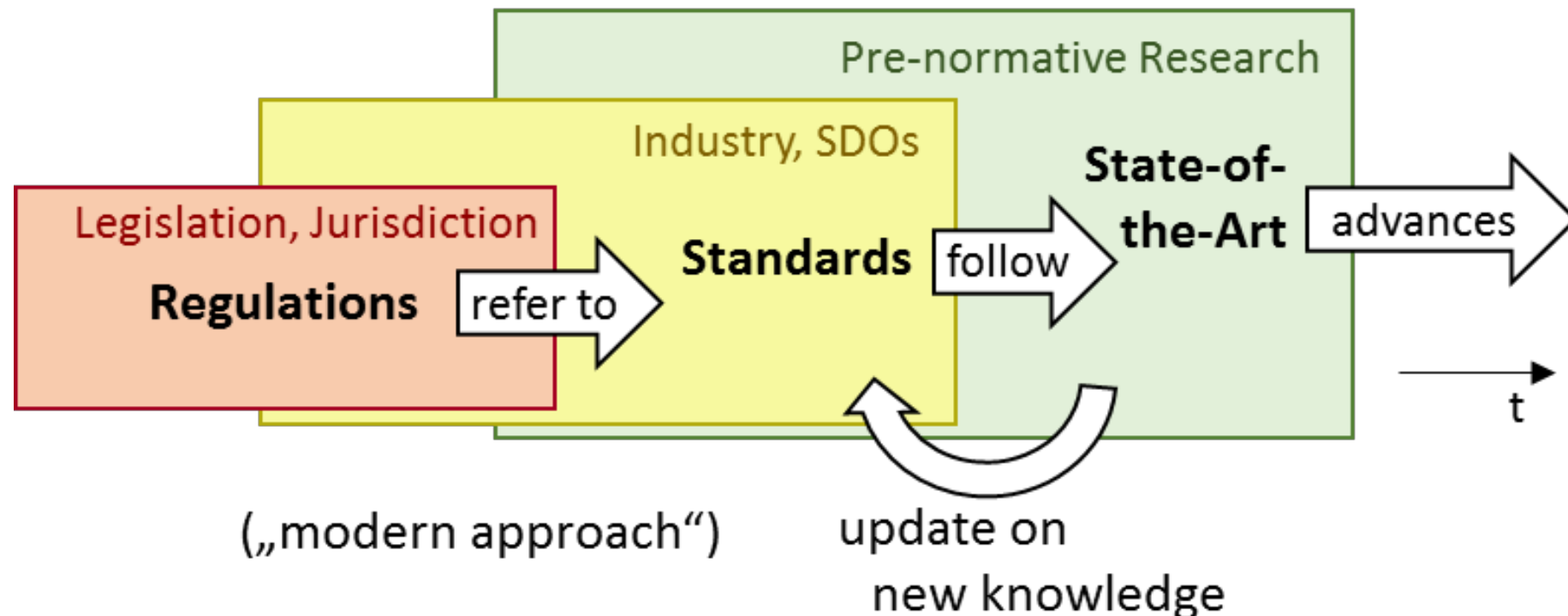
Highlight and select
the relevant
phenomena and key
accident scenarios



Define a targeted experimental work complemented by analytical and numerical studies to address the phenomena and scenarios with highest risk potential, least knowledge and lack of reference guidelines and standards

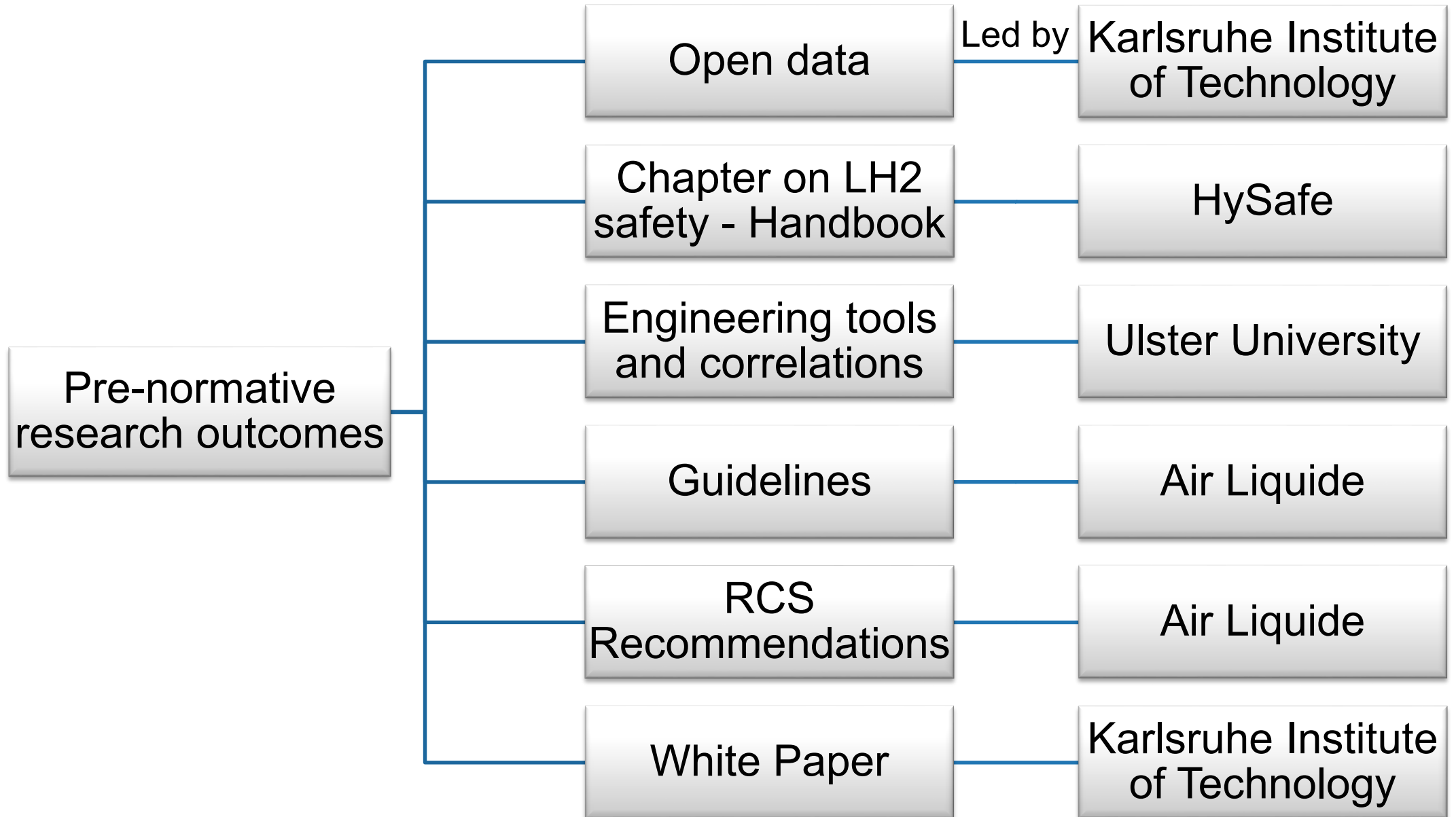
Expected impact

The main impact of the project will be achieved by the implementation of the pre-normative research outcomes, i.e. advancement of knowledge beyond the state-of-the-art, into performance-based Regulations, Codes and Standards



Impact areas and connections among PRES�HY pre-normative research, standardisation and regulation

Dissemination and exploitation routes



Open and accessible data

- The project will generate unique experimental data, which will need to be preserved and stored in digital format
- PRESLHY participates in the Pilot on Open Research Data in Horizon 2020
- Data will fulfil the requirements of being findable, accessible, interoperable and reusable (FAIR)
- Open access to the research community or any interested party for review, verification and validation of analytical and numerical models, etc...
- Data will be accessible via the RADAR Research Data Repository or the KIT open Research Data Repository

The generated knowledge will be gathered and disseminated as a chapter on safety of liquid and cryo-compressed hydrogen, which will complement the Handbook of Hydrogen Safety

Aim of the chapter is to underpin the LH2 safety science and provide up-to-date knowledge on:

- State-of-the-art of LH2 technology
- Phenomena relevant to safety of LH2 systems and infrastructure, including the key experimental results, developed models and engineering correlations
- Safety measures and engineering solutions
- Regulations, Codes and Standards

Engineering correlations and tools



The unique experimental data generated throughout the project duration will be employed to:

- Develop and validate analytical and numerical tools
- Generate empirical and semi-empirical engineering correlations

Aims and impact of the engineering correlations and tools:

- Quantify the consequences of possible accident scenarios
- Calculate the associated hazard distances
- Support the inherently safer design of LH2 and cryo-compressed hydrogen systems
- Support the evaluation of innovative risk mitigation concept and techniques

Guidelines



The guidelines for safe design and operation of LH2 infrastructure:

- Focus on practical aspects of the commissioning, operation and maintenance of LH2 systems and infrastructure
- Address the areas where specific RCS have not been established yet or are not suitable for use in public space
- Include the innovative strategies and engineering solutions developed throughout the project following a structure and format resembling established standards

Recommendations for RCS



- The project results will further the development of performance based, risk informed and internationally harmonised standards
- The relevant parts of the developed guidelines, including the engineering correlations, will be extracted and expressed in concise language for use by SDOs
- ISO TC 197 “Hydrogen technologies”: set up of a new Preliminary Working Item (PWI) with the title “Safe use of LH2 in non-industrial settings”

White paper



The White Paper will analyse LH2 systems and infrastructure's:

- Role and deployment in the FCH sector, particularly with regards to the mobility sector
- Potential benefits
- Aspects of general economics and safety, paying attention to comparisons with CGH2 systems to highlight LH2 advantages where relevant

Aim and impact: affect policy making process and influence the development and spread of FCH technology employing liquid or cryo-compressed hydrogen

Stay tuned...



- For the news and updates on our research activities, please visit the website:

www.preslhy.eu

- **Workshops** dedicated to special measurement technologies, experimental and numerical procedures and tools
- **Newsletter** containing the project key results and progress achieved up to date
- **Dissemination conference** → 2020

Thank you for your attention!

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