PRESLHY

Project Kick-off Meeting

KIT CN, Karlsruhe, Germany, 17-20 April 2018

Pre-normative REsearch for Safe use of Liquid HYdrogen

Karlsruher Institut für Technologie

Air Liquide

HEALTH & SAFETY LABORATORY

hySafe INTERNATIONAL ASSOCIATION FOR HYDROGEN SAFETY

INERIS

ΔΗΜΟΚΡΙΤΟΣ

Pro-Science

Ulster University

WARWICK THE UNIVERSITY OF WARWICK

Agenda

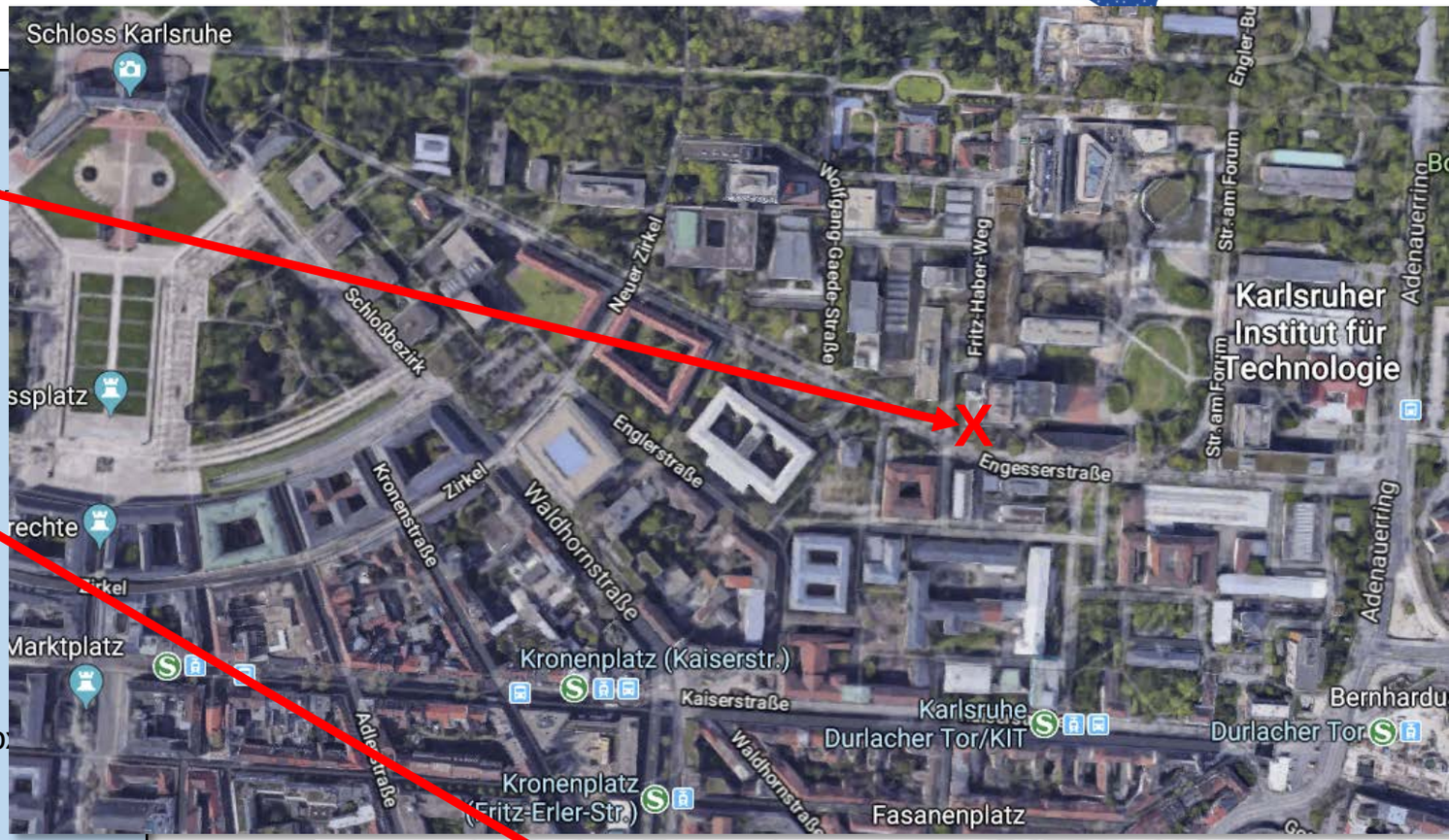
Starting time / date	Monday 16.04.2018		Tuesday 17.04.2018		Wednesday 18.04.2018	Thursday 19.04.2018		Friday 20.04.2018	
08:00					Pick-up at KIT Campus South (Shuttle Bus Station of University)				
08:30					Pick-up at KIT Campus North FTU				
09:00			**Welcome** Round table introduction	*Jordan*		**State of the Art Report (WP2)**	*Jallais*	**Advisors' Feedback**	*Advisory Board chair (to be elected)*
09:15			**Introduction to PRESLHY / Overview and some administrative issues, Advisory Board instructions (WP1)**	*Jordan / Jedicke*	**Visit DLR Lampoldshausen** Street address: Im Langen Grund 74239 Hardthausen www.dlr.de/dlr/desktopdefault.aspx/tabid-10259/ (Bus transfer from/to Karlsruhe city provided, schedule see above) 10:00 – 12:30 Visit of the exhibition *12:45 – 13:30 Lunch break* 13:45 – 15:00 Tour to the LH2 installations				
10:15			*Coffee/ tea break*			*Coffee/ tea break*		*Coffee/ tea break*	
10:30			**Experimental Program WP3 - Release and Mixing**	*Venetsanos*		**Phenomena Identification and Ranking Table PIRT (WP2)**	*Jallais*	**Consolidation of Experimental Program**	*WP3-5 leaders*
11:00			**WP4 - Ignition**	*Hawksworth*					
11:30			**WP5 - Combustion**	*Kuznetsov*					
12:00			**FCH 2 JU Administrative, financial issues**	*Ovcharova*					
12:30			*Lunch break*			*Lunch break*		*Lunch break*	
14:00			**Implementation Exploitation and Dissemination (WP6)**	*Cirrone*		**Workshop Optical & Electrostatic Measurement** - LH2 Metrology - Christophe Proust, Benno Weinberger (INERIS) - How to see and quantify hydrogen concentration using optical diagnostics - Ethan S. Hecht et al (SNL) - Background Oriented Schlieren (BOS) method for investigation of multi-phase objects - Natalie Kotchourko (KIT) - Shadowgraphy - Joachim Grune (Pro-Science) - Electrostatic field measurement - Philip Hooker (HSL) - Electrostatic measurements around a cryo-jet - Gottfried Necker (Pro-Science)	*Reinecke*	**Plan for data management**	*Razum FIZ / KIT*
14:30			**Description of Installations (WP2)**	*Jallais*				**Wrap-Up** - Actions - Next Meetings	*Jordan*
15:30			*Coffee/ tea break*			*Coffee/ tea break*			
15:45			**Status of RCS Regulations, Codes and Standards (WP2)**	*Tchouvelev*		**KIT Lab tours** Cryolab ITEP and Hydrogen Test Center	*Neumann / Jordan*		
17:30									
18:00	**PRESLHY Coordination Committee Meeting** incl. non hosted dinner at Brauhaus Kühler Krug; Wilhelm-Baur-Straße 3a, 76135 Karlsruhe; www.brauhaus-karlsruhe.com	*WP leaders*			Drop-off at KIT Campus North				
18:30					Drop-off at KIT Campus South (i.e. Shuttle Bus Station University/ City of Karlsruhe)				
19:00						**Invited Dinner** Restaurant Kesselhaus Griesbachstr. 10c; 76185 Karlsruhe www.kesselhaus-ka.de			

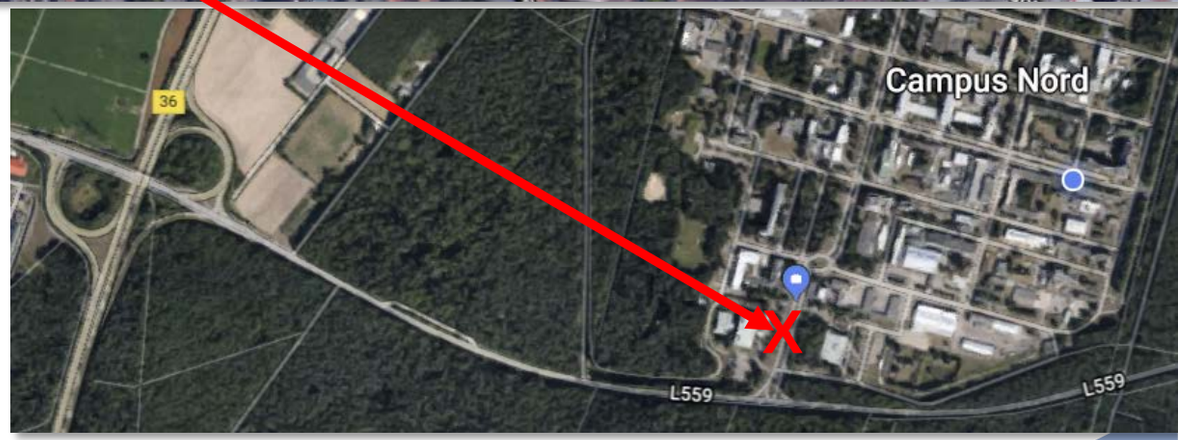
Agenda of Tuesday 17th April

09:00	**Welcome** Round table introduction	*Jordan*
09:15	**Introduction** to PRESLHY / Overview and some administrative issues, Advisory Board instructions (WP1)	*Jordan / Jedicke*
10:15	*Coffee/ tea break*	
10:30	**Experimental Program** **WP3 - Release and Mixing**	*Venetsanos*
11:00	**WP4 - Ignition**	*Hawksworth*
11:30	**WP5 - Combustion**	*Kuznetsov*
12:00	**FCH 2 JU** Administrative, financial issues	*Ovcharova*
12:30	*Lunch break*	
14:00	**Implementation** **Exploitation and Dissemination (WP6)**	*Cirrone*
14:30	**Description of Installations (WP2)**	*Jallais*
15:30	*Coffee/ tea break*	
15:45	**Status of RCS** **Regulations, Codes and Standards (WP2)**	*Tchouvelev*
17:30		

Agenda of Wednesday 18th April

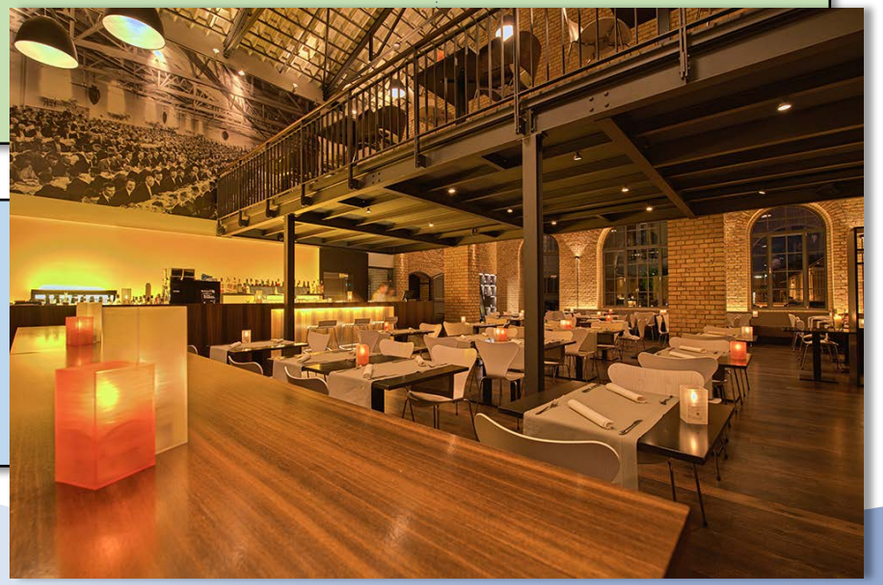
08:00	Pick-up at KIT Campus South Shuttle Bus Station
08:30	Pick-up at KIT Campus North FTU
	Visit **DLR Lampoldshausen** Street address: Im Langen Grund 74239 Hardthausen http://www.dlr.de/dlr/desktopdefault.aspx?tabid-10259/
18:00	Drop-off at KIT Campus North
18:30	Drop-off at KIT Campus South (i.e. City of Karlsruhe)
19:00	



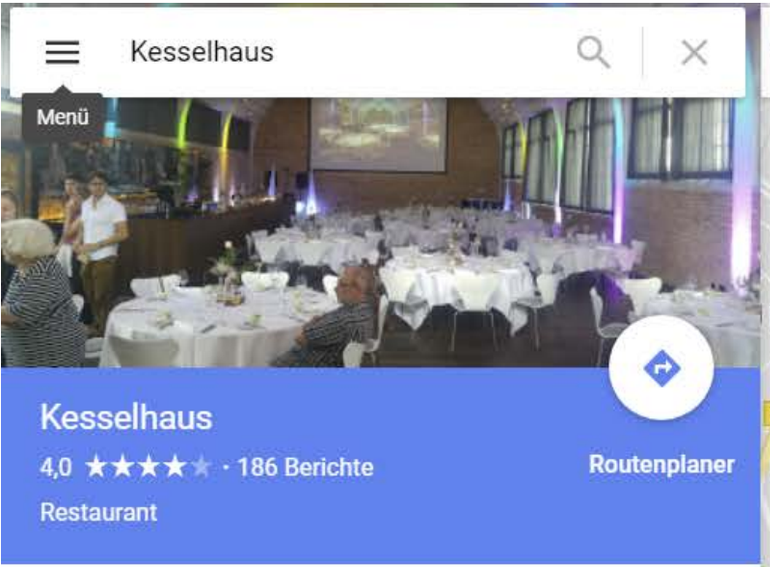


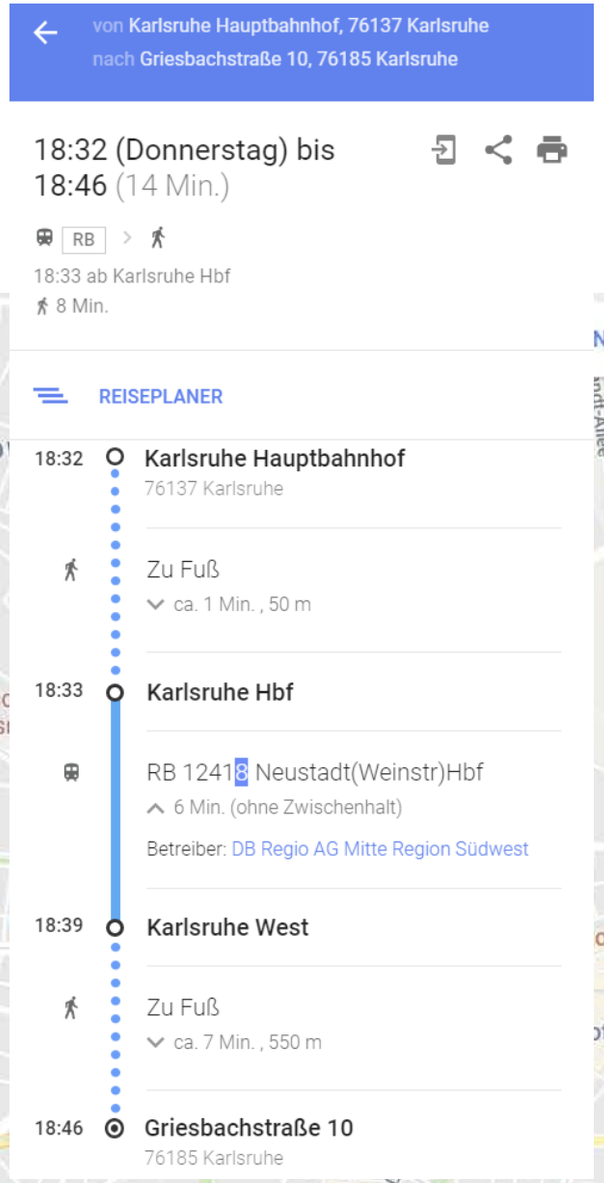
Agenda of Thursday 19th April

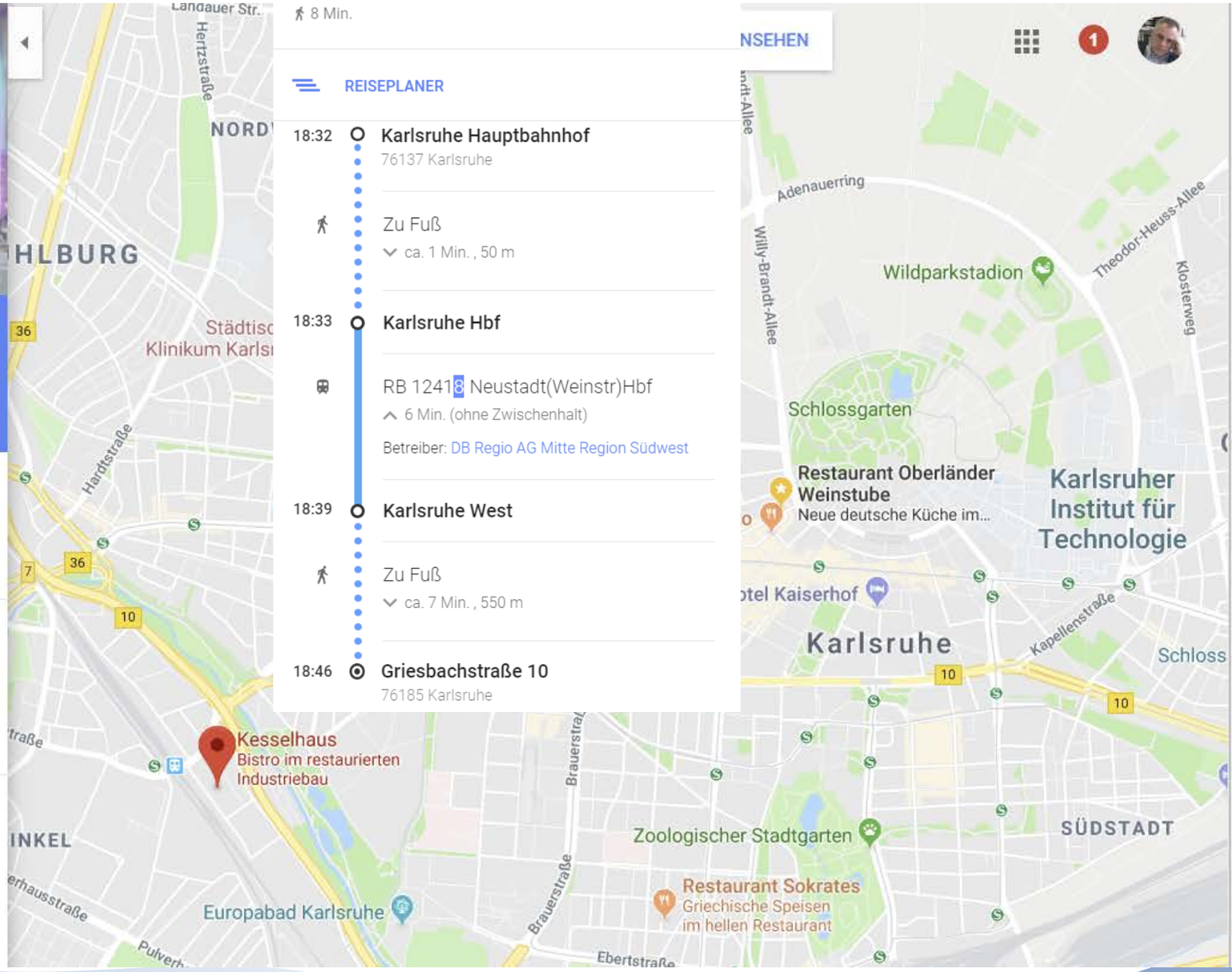
09:00	**State of the Art Report (WP2)**	*Jallais*
10:15	*Coffee/ tea break*	
10:30	**Phenomena Identification and Ranking Table PIRT (WP2)**	*Jallais*
12:30	*Lunch break*	
14:00	**Workshop Optical & Electrostatic Measurement** - LH2 Metrology - Proust, Weinberger (INERIS) - H2 concentration measurement using optical diagnostics - Hecht et al (SNL) - BOS method for investigation of multi-phase objects – N. Kotchourko (KIT) - Shadowgraphy - Grune (Pro-Science) - Electrostatic field measurement - Hooker (HSL) - Electrostatic measurements around a cryo-jet - Necker (Pro-Science)	*Reinecke*
15:30	*Coffee/ tea break*	
15:45	**KIT Lab tours** Cryolab ITEP and Hydrogen Test Center *Neumann / Jordan*	
19:00	**Invited Dinner** Restaurant Kesselhaus Griesbachstr. 10c; 76185 Karlsruhe www.kesselhaus-ka.de	



How to get there….







Agenda of Friday 20th April

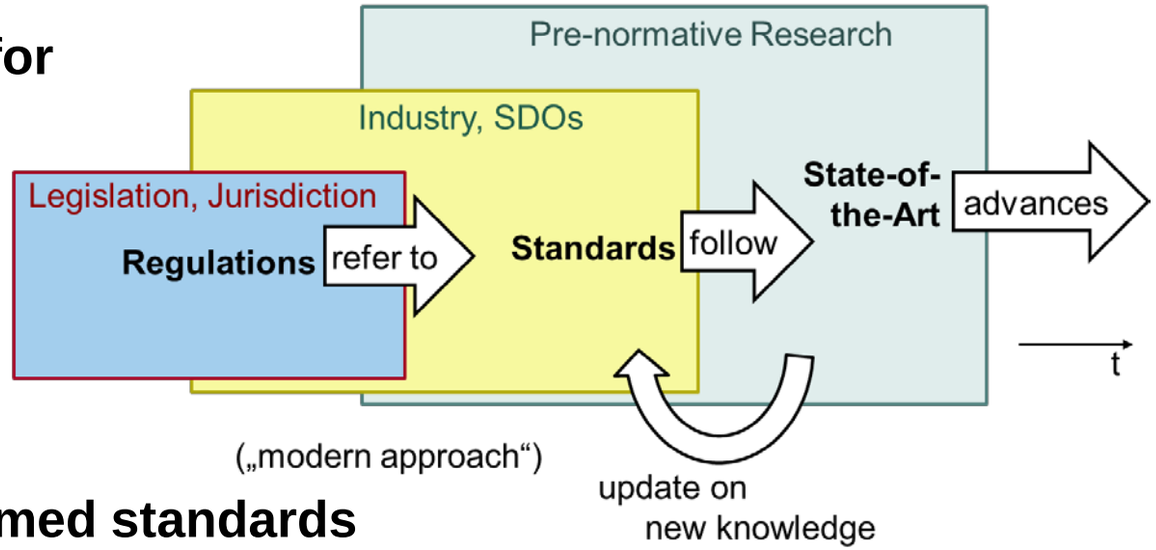
09:00	**Advisors' Feedback**	*Advisory Board chair (to be elected)*
10:15	*Coffee/ tea break*	
10:30	**Consolidation of Experimental Program**	*WP3-5 leaders*
12:30	*Lunch break*	
14:00	**Plan for data management**	*Razum* *FIZ / KIT*
14:30	**Wrap-Up** - Actions - Next Meetings	*Jordan*
15:30		

Introduction to PRESLHY

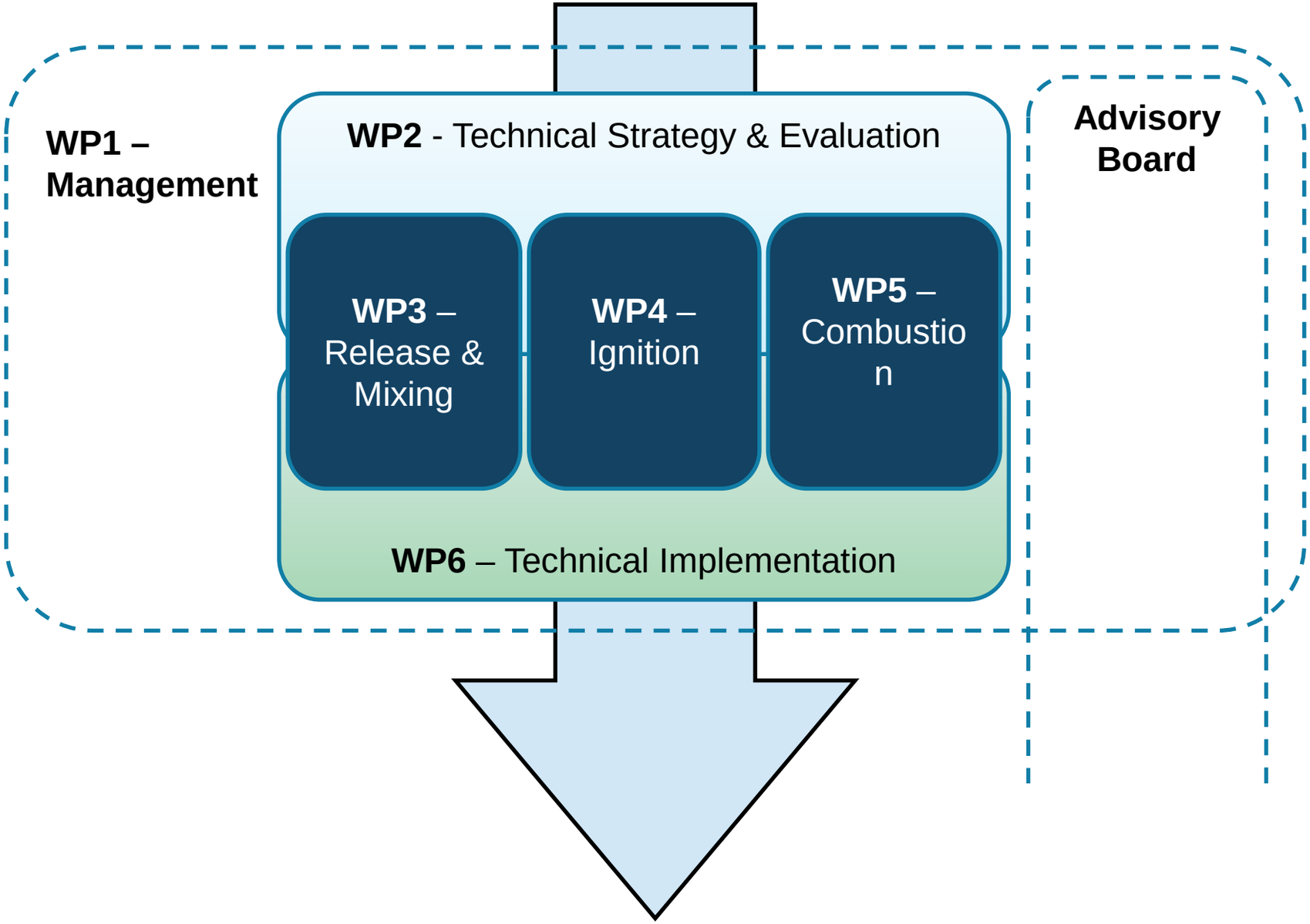
- Objectives
- General Approach
- Work Packages
- Governance

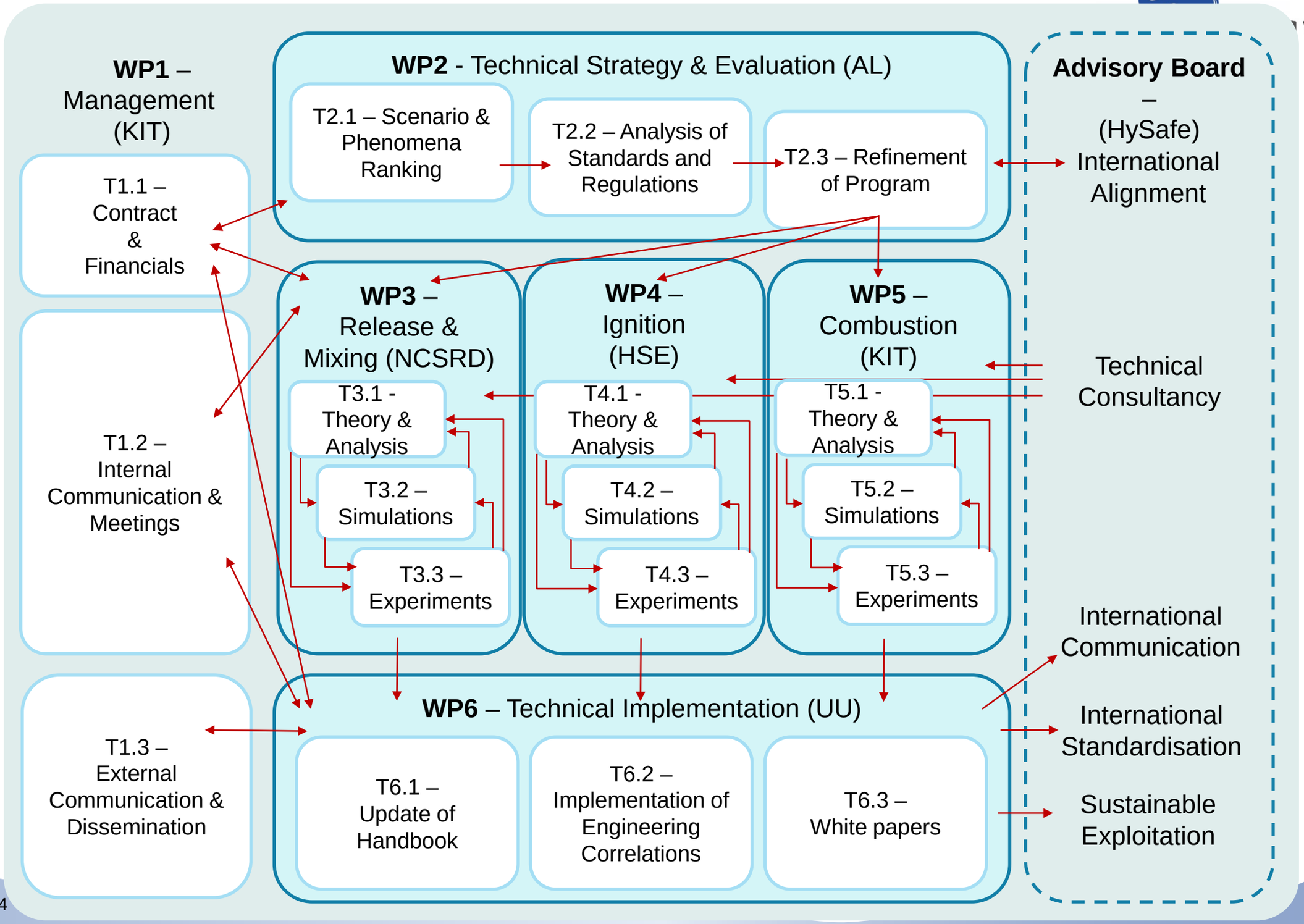
Objectives

- Report on the **initial state-of-the-art and knowledge gaps** with priorities related to the envisaged use of LH2
- Execute adjusted **experimental program** addressing release, ignition and combustion phenomena with highest priorities
- Document and publish detailed, aggregated and interpreted data in a FAIR way
- Develop **suitable models and engineering correlations** and integrate them in a suitable open risk assessment toolkits
- Provide **enhanced recommendations for safe design and operations** of LH2 technologies
- **Support international SDOs** in
  - **updating of existing standards** or
  - developing of **new international performance based and risk informed standards**
- Document and disseminate the **enhanced state-of-the-art**

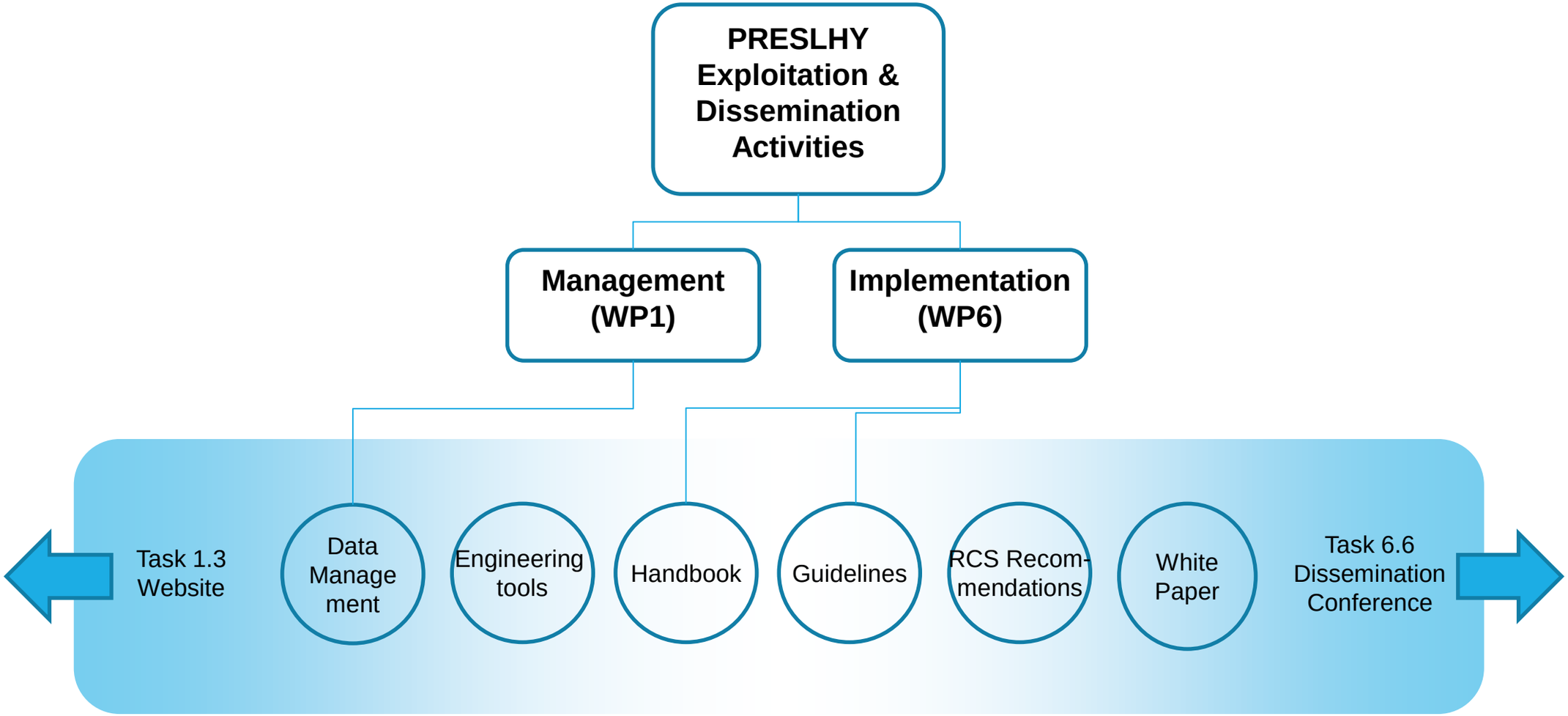


General Approach

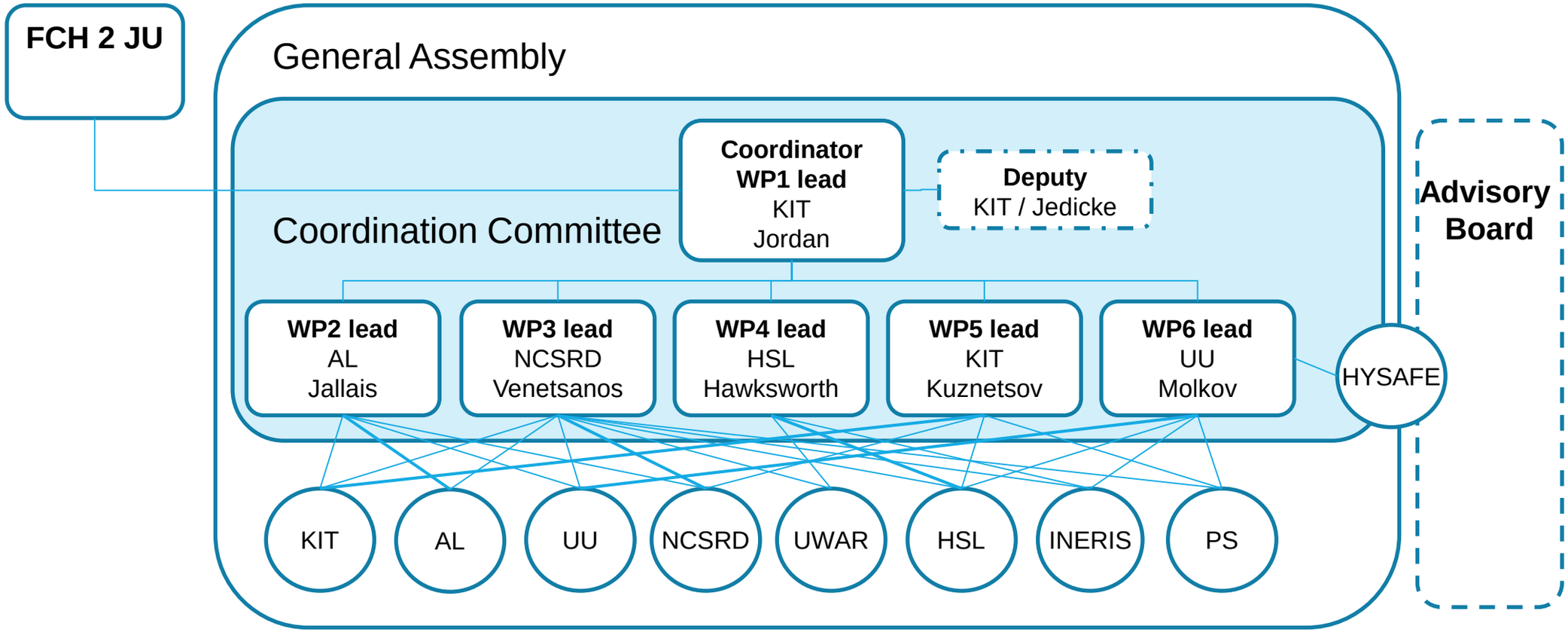



WP1 – Management (KIT)
T1.1 – Contract & Financials
T1.2 – Internal Communication & Meetings
T1.3 – External Communication & Dissemination
WP2 - Technical Strategy & Evaluation (AL)
T2.1 – Scenario & Phenomena Ranking
T2.2 – Analysis of Standards and Regulations
T2.3 – Refinement of Program
WP3 – Release & Mixing (NCSRD)
T3.1 - Theory & Analysis
T3.2 – Simulations
T3.3 – Experiments
WP4 – Ignition (HSE)
T4.1 - Theory & Analysis
T4.2 – Simulations
T4.3 – Experiments
WP5 – Combustion (KIT)
T5.1 - Theory & Analysis
T5.2 – Simulations
T5.3 – Experiments
WP6 – Technical Implementation (UU)
T6.1 – Update of Handbook
T6.2 – Implementation of Engineering Correlations
T6.3 – White papers
Advisory Board – (HySafe)
International Alignment
Technical Consultancy
International Communication
International Standardisation
Sustainable Exploitation

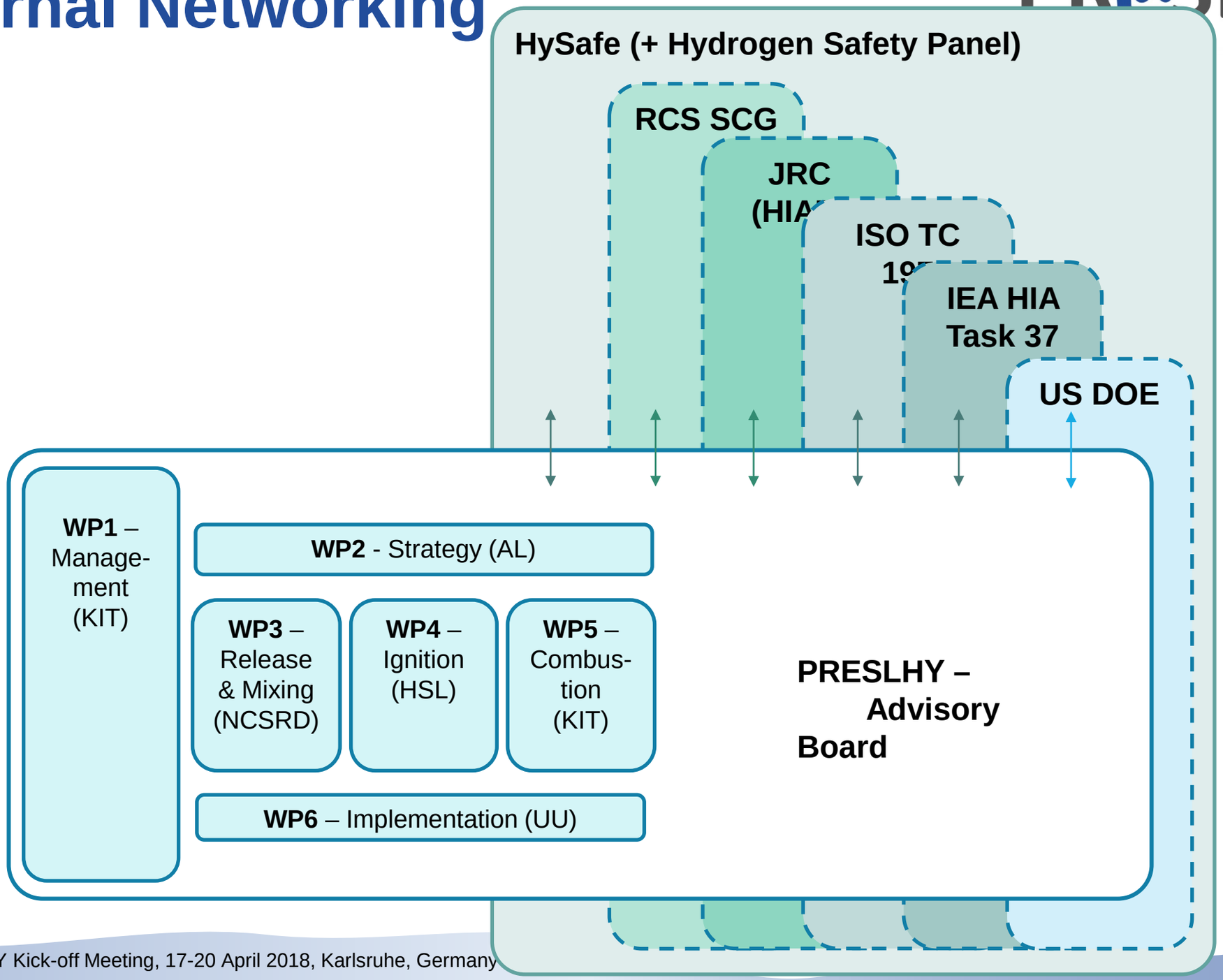
Outreach


PRESLHY Exploitation & Dissemination Activities
Management (WP1)
Implementation (WP6)
Task 1.3 Website
Data Manage ment
Engineering tools
Handbook
Guidelines
RCS Recom-mendations
White Paper
Task 6.6 Dissemination Conference

Governance


FCH 2 JU
General Assembly
Coordination Committee
Coordinator
WP1 lead
KIT
Jordan
Deputy
KIT / Jedicke
WP2 lead
AL
Jallais
WP3 lead
NCSRD
Venetsanos
WP4 lead
HSL
Hawksworth
WP5 lead
KIT
Kuznetsov
WP6 lead
UU
Molkov
HYSAFE
Advisory Board
KIT
AL
UU
NCSRD
UWAR
HSL
INERIS
PS

External Networking



Advisory Board

Name	Company/Institution	Nation	Expertise
Derek Miller	Air Products	US	Industry
Andrei Tchouvelev	AVT	Canada	General Expert, SDO (ISO), SME
Klaus Schäfer	DLR	D	Large Scale User, General Expert
Franz Grafwallner	ET Energiesysteme	D	Aerospace Expert
Trygve Skjold	GexCon	No	Modelling Expert, SME
Karl Verfondern	Jülich	D	General Expert, Research
Shoji Kamiya	KHI	Japan	Industry, Naval application
Salvador Aceves	LLNL	US	Research, Cryo-compressed
Lee Philips	Shell	UK	Industry
Ethan Hecht	SNL	US	Research
Christoph Haberstroh	Uni Dresden	D	Cryo
Gerd-Michael Würsig	DNV GL	D	Insurance, General Expert, Naval application
Pietro Moretto	JRC	NL	EC, Research
Volker Schröder	BAM	D	SDO, Regulation (national)
Steve Woods	NASA	US	Research, Aerospace Expert

Due Deliverables (see https://www.preslhy.eu/deliverables/)

Number	Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date (month)
D1	D1.1	Kick-off Meeting	1	KIT	OTHER	CO	1 → 4
D2	D1.2	Website including internal communication tools	1	KIT	DEC	PU	3 ✓
D12	D2.1	RCS Analysis	2	HySafe	REPORT	PU	3 → 4
D13	D2.2	State-of-the-Art analysis	2	AL	REPORT	PU	3 → 4
D14	D2.3	LH2 installation description	2	AL	REPORT	PU	4 ✓
D15	D2.4	LH2 Research Priorities Workshop	2	HySafe	OTHER	PU	4 → 9!!
D16	D2.5	Phenomena Identification and Ranking Table Analysis	2	AL	REPORT	PU	4 ✓

Deliverables (see https://www.preslhy.eu/deliverables/)

Number	Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date (month)
D1	D1.1	Kick-off Meeting	1	KIT	OTHER	CO	1 → 4
D2	D1.2	Website including internal communication tools	1	KIT	DEC	PU	3 ✓
D12	D2.1	RCS Analysis	2	HySafe	REPORT	PU	3 → 4
D13	D2.2	State-of-the-Art analysis	2	AL	REPORT	PU	3 → 4
D14	D2.3	LH2 installation description	2	AL	REPORT	PU	4 ✓
D15	D2.4	LH2 Research Priorities Workshop	2	HySafe	OTHER	PU	4 → 9!!
D16	D2.5	Phenomena Identification and Ranking Table Analysis	2	AL	REPORT	PU	4 ✓

Deliverable D2 / D1.2 Website www.preslhy.eu

Coordinator: +4972160826105 jordan@kit.edu

PRESLHY

Prenormative Research for Safe Use of Liquid Hydrogen

Research and Innovation Action Supported by the FCH JU 2.0

HOME | PROJECT OVERVIEW | CONSORTIUM | MANAGEMENT STRUCTURE | WORK PACKAGES | DELIVERABLES | EVENTS | RESOURCES | GLOSSARY

Hydrogen is an attractive energy carrier, versatile in production and use, for instance as a carbon free fuel in transport. It is one of the most promising options for large scale storage of volatile renewable energy, wind and solar.

In its cryogenic liquid state (LH2) hydrogen provides largest densities and some intrinsic safety advantages. Therefore, LH2 is attractive for scaling up supply infrastructures for e.g. for fuel cell driven trains, ships or car or truck fleets.

Industry knows how to handle LH2 safely. However, the new applications imply new conditions and untrained users.

PRESLHY, a EU FCH JU 2.0 co-funded research and innovation activity (Project ID 779613), investigates respective knowledge gaps and will close these gasp with a large experimental program providing new validated models and engineering correlations for efficiently safe design and operation of innovative hydrogen solutions.

News

Some updates of the project website
by Thomas Jordan on April 12, 2018 at 2:49 pm

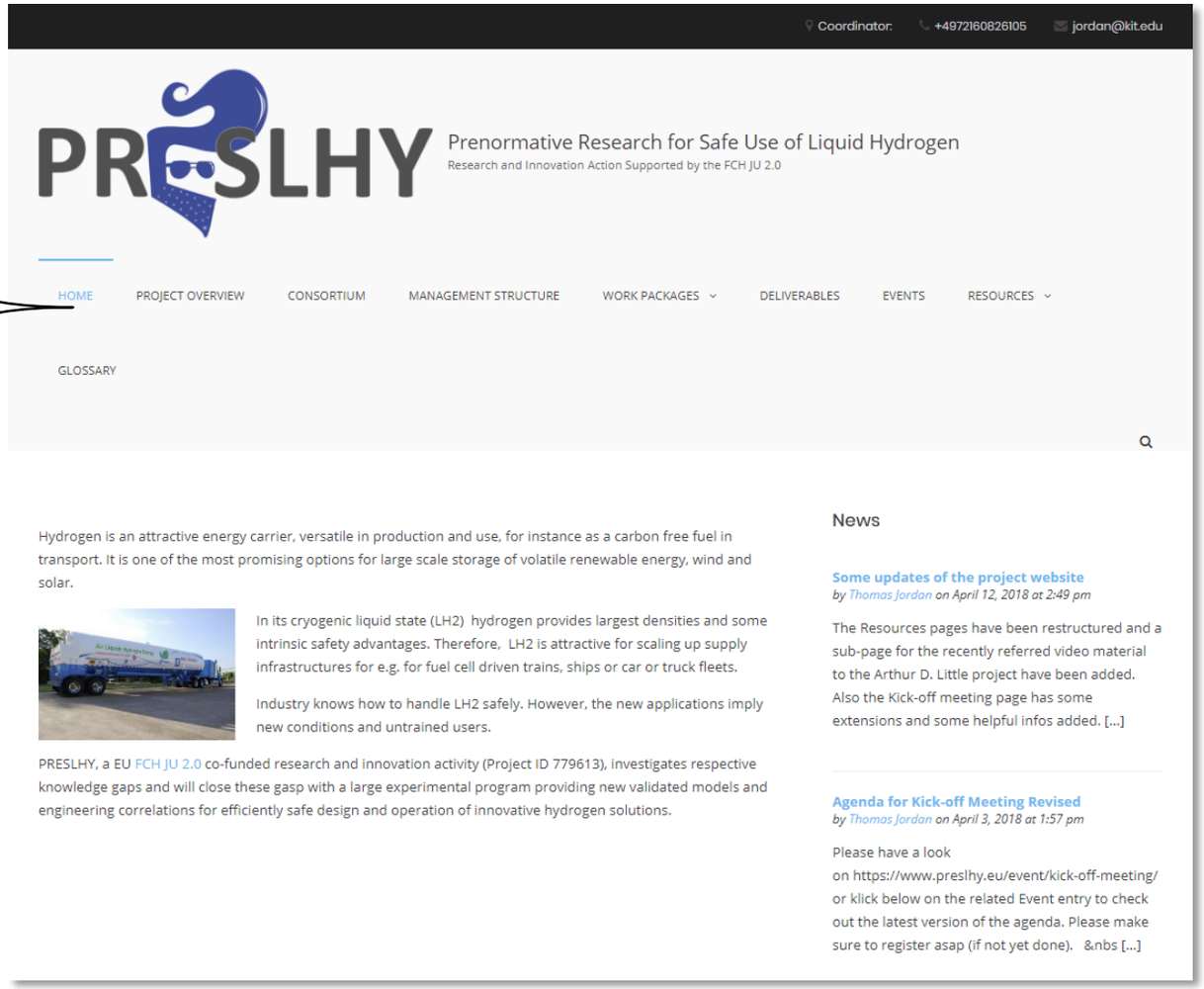
The Resources pages have been restructured and a sub-page for the recently referred video material to the Arthur D. Little project have been added. Also the Kick-off meeting page has some extensions and some helpful infos added. [...]

Agenda for Kick-off Meeting Revised
by Thomas Jordan on April 3, 2018 at 1:57 pm

Please have a look on https://www.preslhy.eu/event/kick-off-meeting/ or klick below on the related Event entry to check out the latest version of the agenda. Please make sure to register asap (if not yet done). &nbs [...]

Website structure

- ❑ Home
- ❑ Project Overview
- ❑ Consortium
- ❑ Management Structure
- ❑ Work Packages
  - WP1
  - …
  - WP6
- ❑ Deliverables
- ❑ Events
- ❑ Resources
  - Project related documents
  - Public documents, Links
  - RCS
  - Video Material
- ❑ Glossary



Website features

- Wordpress based (Version 4.9.5 using Suffice theme)
- Ready for protected internal pages

  (requires use of login via www.preslhy.eu/wp-admin)

  with extensive user role editing
- Newsletter and RSS news feed (News window on right column)
- Event planning (e.g. www.preslhy.eu/event/kick-off-meeting)
- WP-Doodle

Deliverables

Number	Deliverable (number)	Deliverable name	Work package number	Short name of lead participant	Type	Dissemination level	Delivery date (month)
D17	D2.6	Refined Work Program	2	AL	REPORT	PU	5
D3	D1.3	Data Management Plan Version 1.0	1	KIT	ORDP	PU	6
D44	D6.6	Plan for Dissemination, Communication and Exploitation	6	ULster	REPORT	PU	6

Advisory Board - Instructions

Some extracts from the DoW / Part B:

"… inject the **industry and standardisation view** …

… define/evaluate **initial state-of-the–art**, current LH2 specific knowledge

… providing critical review of **existing RCS**,

… identifying the **key scenarios** and involved elementary phenomena,

… identifying **critical knowledge gaps**

… **refine the work program** in close collaboration with phenomena oriented WP3, WP4 and WP5 ..."

→

- Listen to the following presentations,
- Actively participate in the PIRT exercise,
- Provide us a feedback on the currently planned experimental program (on Friday morning)

Agenda of today….

09:00	**Welcome** Round table introduction	*Jordan*
09:15	**Introduction** to PRESLHY / Overview and some administrative issues, Advisory Board instructions (WP1)	*Jordan / Jedicke*
10:15	*Coffee/ tea break*	
10:30	**Experimental Program** **WP3 - Release and Mixing**	*Venetsanos*
11:00	**WP4 - Ignition**	*Hawksworth*
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14:00	**Implementation** **Exploitation and Dissemination (WP6)**	*Cirrone*
14:30	**Description of Installations (WP2)**	*Jallais*
15:30	*Coffee/ tea break*	
15:45	**Status of RCS** **Regulations, Codes and Standards (WP2)**	*Tchouvelev*
17:30		

Fun Facts

panies **Salaries** Jobs Studies Search... For Employers Login Sign Up

gen Plant Operators › Memphis, TN ›

Money Raised

Years Experience

Gender

Ethnicity

Education Level

See compensation and culture

Liquid Hydrogen Plant Operator Salary in Memphis, TN

The average Liquid Hydrogen Plant Operator in Memphis, TN makes $50,458. This is 7% lower than the Liquid Hydrogen Plant Operator national average of $54,161.

Memphis Average	U.S. Average
$50,458 ↓ 7% VS US AVERAGE	$54,161
$50,458 — $50,458	$46,447 — $67,025

Base Salary	Bonus	Get Bonus
$49,649	$809	100%

Base Salary	Bonus	Get Bonus
$53,293	$868	100%