



Fuel Cell **TE**sting, **S**afety and **Q**uality **A**ssurance

FCTESQA

an IPHE recognised project

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Project Objectives

- **To provide validated and benchmarked testing procedures and testing methodologies applied to FC, FC stacks and FC systems**

Project Deliverables

- ☛ To identify the best applicable testing procedures by benchmarking & Round Robin testing
- Independent testing will provide
 - Technology benchmarks
 - Input for regulations, codes and standards
 - Increased customer acceptance and confidence

FCTESTNET

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Objectives

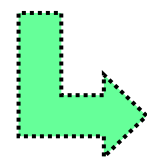
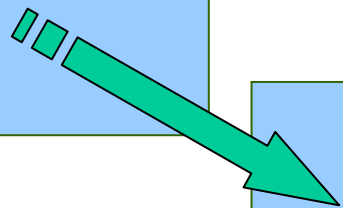
- Compile and harmonise testing procedures for fuel cells, stacks and systems
- Initial assessment of FC systems against user requirements for stationary, portable and transport applications

- IEC TC105
- ISO TC 197
- CEN/CENELEC
- IEA
- OTHER INT'L. ACTIVITIES



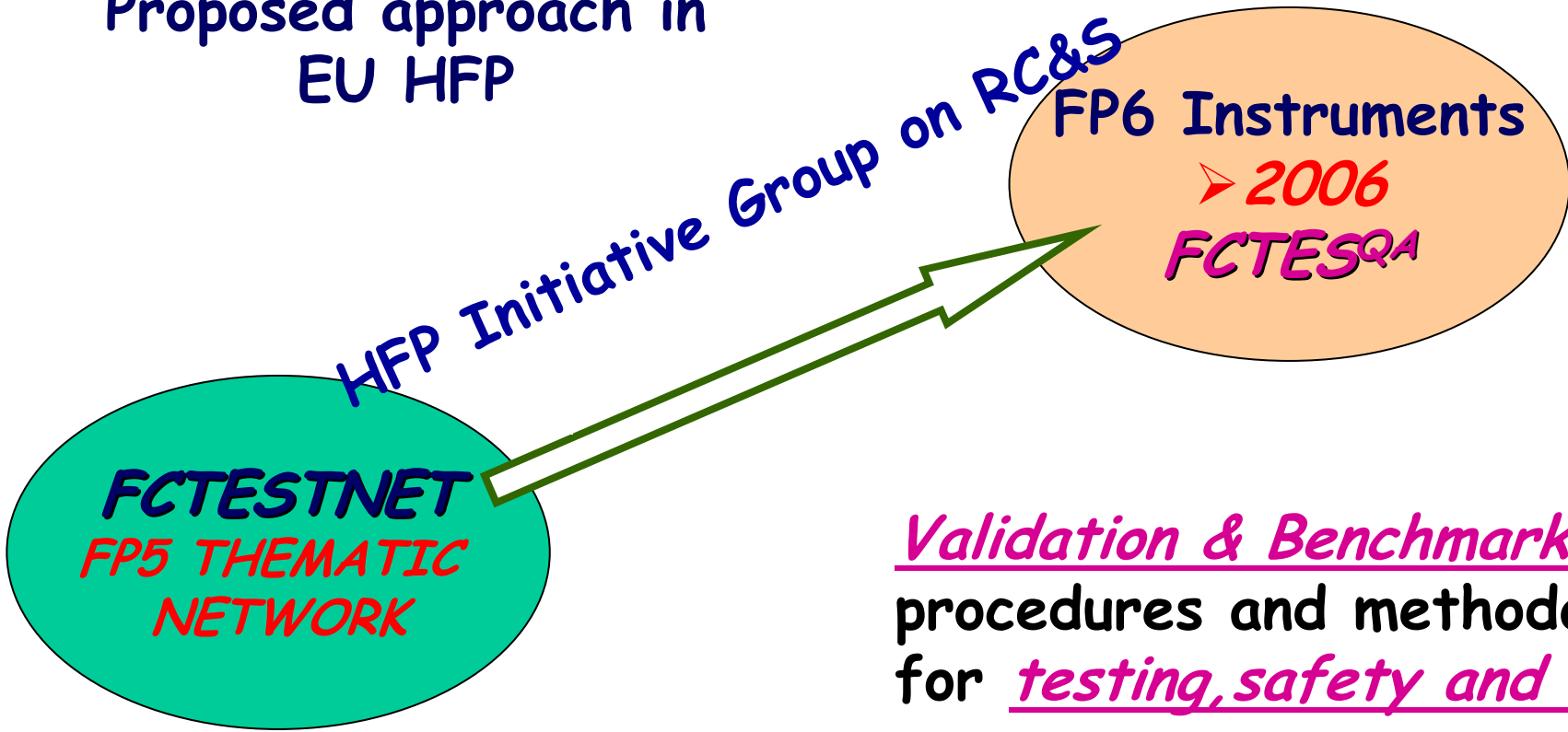
Deliverables

- Compilation of testing protocols & methodologies
- Agreed proposals for harmonisation



Further work

Proposed approach in EU HFP



Validation & Benchmarking of procedures and methodologies for testing, safety and quality assurance

Harmonisation of testing procedures and methodologies

Input of Pre-normative Research results to SDOs



FCTES^{QA} in a nutshell

What:

- Validation of methods and procedures
- Benchmarking of performance
- Round robin testing of FC cells, stacks and systems

How:

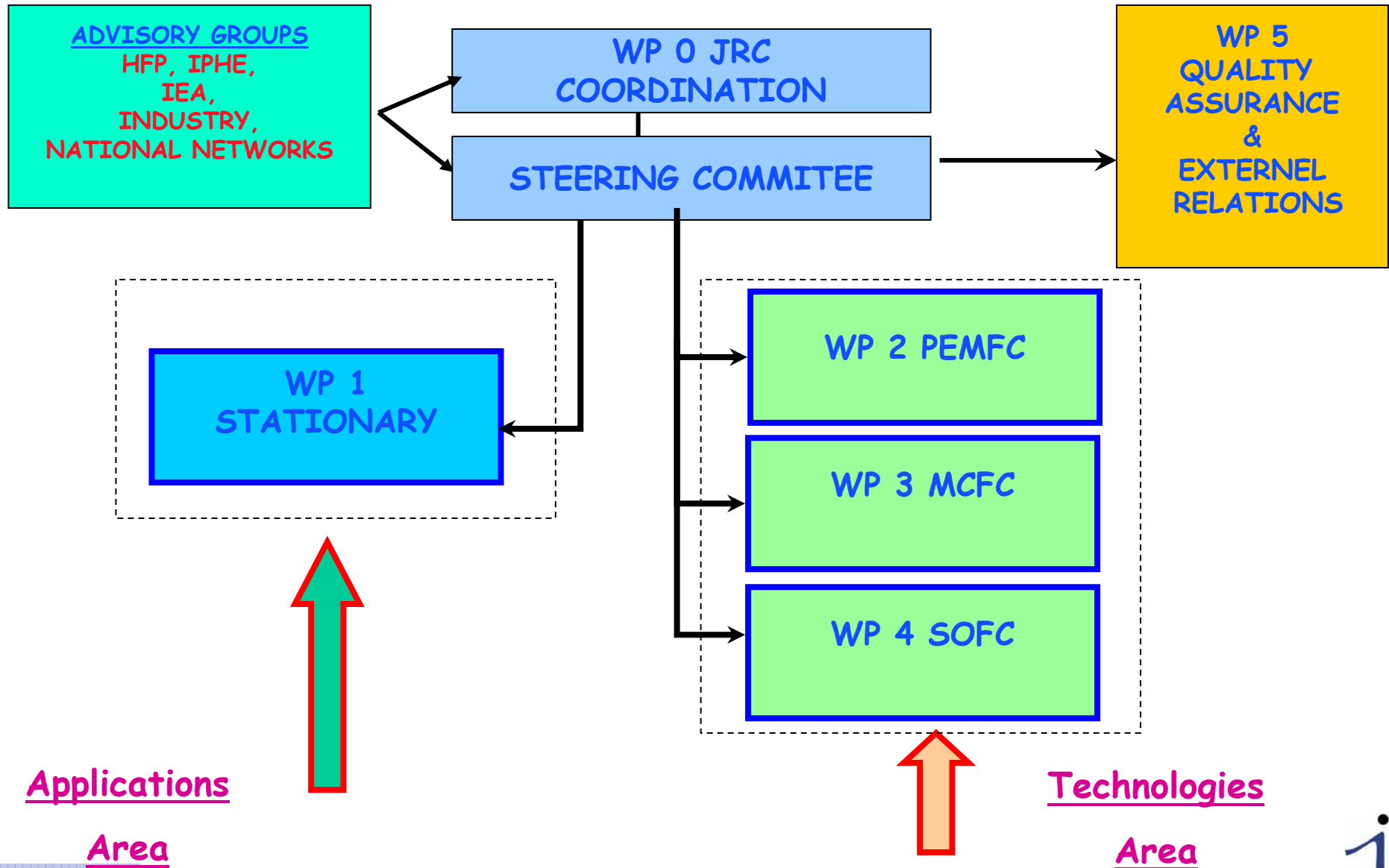
- Virtual European laboratory (*ERA concept*)
- Optimised international collaboration
- Exploiting results from demonstration exercises

With due attention for

- Safety-related issues
- Quality issues
- Dissemination

FCTES^{QA} STRUCTURE

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Applications

Area

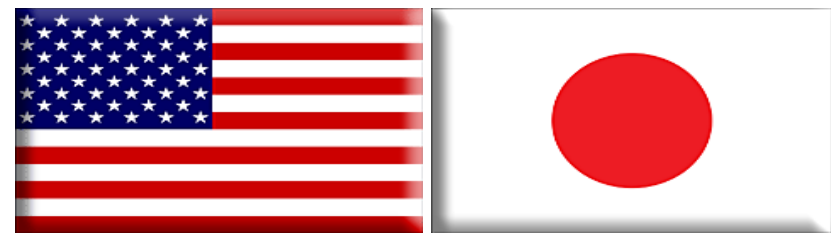
Technologies

Area

**FCTESQA
MEMBERS**



**International Partnership
for the Hydrogen Economy**



31 Participating Organisations

JRC-IE

VDI

ENEA

ECN

ZSW

DLR

Vito

CEA

FZ Julich

INTA

VTT

CEA

AVL List

ENEA

UTBM

UASHH

UMICORE

CESI



Universität Karlsruhe

TU Graz

HT Ceramics

Viessman Werke

EnBW

Ansaldo

GE Global Research

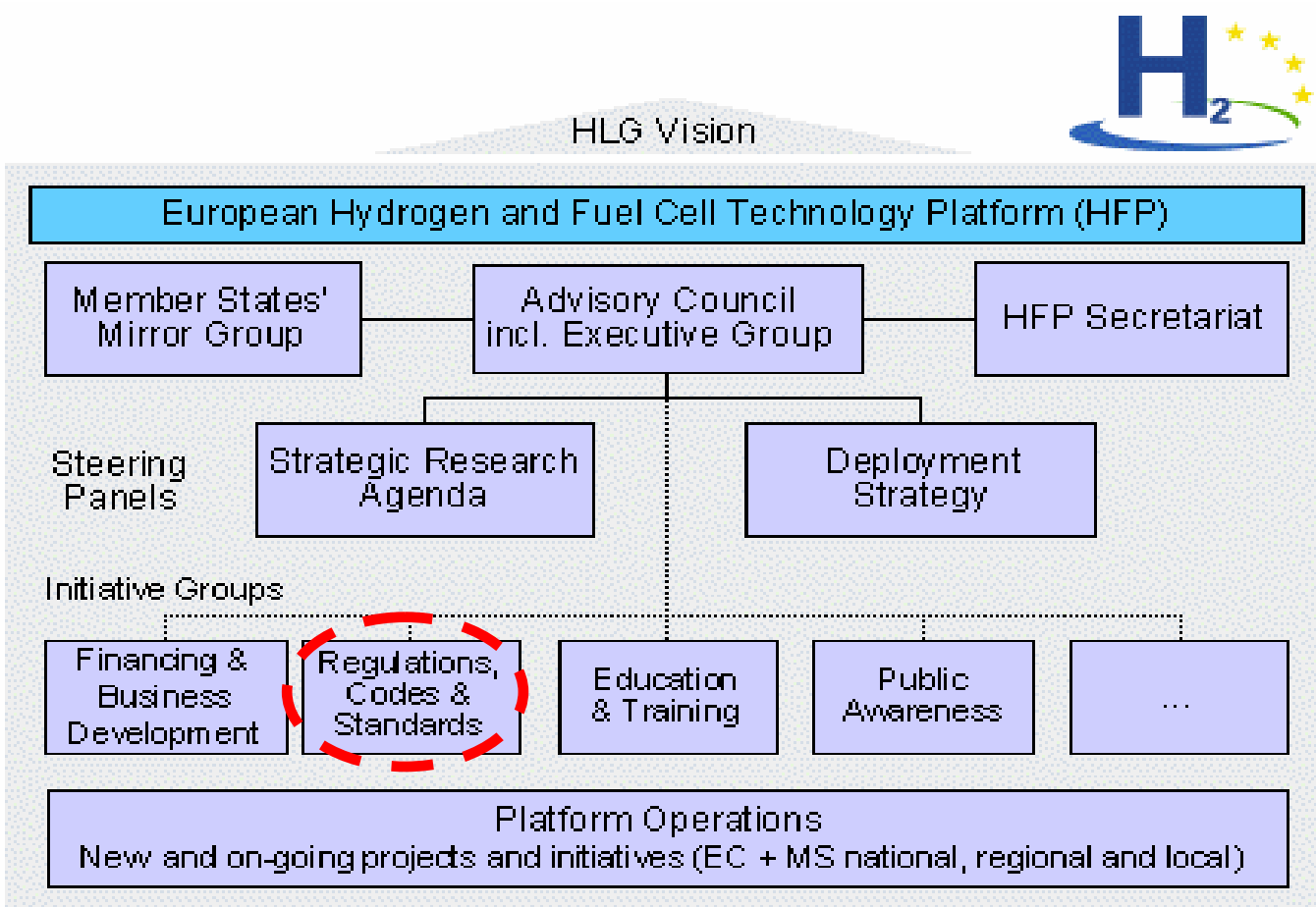
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31 Participating Organisations

- DICP, China
- RRC-KI, Russia
- IPPE, Russia
- KIST, Korea
- NEDO, Japan
- DoE, US



Identification of major item(s) : Regulations, Codes & Standards



Alignment to SRA/DS

☛ More specifically, FCTES^{QA} is:

- working on *“Stationary Applications”*, DS report, August 2005, p. 40-43
- working towards removing₁ *“possible barriers and hurdles for hydrogen and fuel cells”*, DS report, August 2005, p. 63
- paving the way towards *“Regulations, Codes & Standards”*, DS report, August 2005, p. 64-67

Alignment to SRA/DS

☛ More specifically, FCTES^{QA} is:

- supporting, *“Cross-cutting issues / IG-RCS” DS report, August 2005, p. 83-84*
- supporting HFP/SRA/DS through monitoring the results from other groups outside HFP, as well as cooperating with such groups (US DoE, Japan NEDO, Korea KIST)
“Coordination and Networking” DS report, August 2005, p. 85

Cross-cutting issues

☛ **How project addresses and contributes to:**

☛ **Regulations, Codes and Standards**

The main emphasis of the project is to validate testing procedures & testing methodologies applicable to FC, hence *paving the way for future RC&S*

Cross-cutting issues

- How project addresses and contributes to:

Dissemination & public awareness

Mainly among the members of the consortium and to International organisations, such as: IEA, Standardisation bodies, fuel cell associations, etc.

Cross-cutting issues *RCS*

- International Standards under development (e.g. IEC TC 105)
- FC Glossary
- Single cell testing

Enhancing cooperation and future perspectives

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Project interactions (current-potential)

EU projects:

ZERO Regio

Real SOFC

HarmonHy

CELINA

SOFC 600

Gen FC

ONGOING



Enhancing cooperation and future perspectives

☛ National Projects or organizations:

- ☛ **Vlaams Samenwerkingsverband
Brandstofcellen vzw (VSB) Belgium**

☛ International organisations:

- ☛ **IEA**
- ☛ **ISO-TC 197 WG12**
- ☛ **IEC-TC 105**
- ☛ **CEN/CENELEC**
- ☛ **USFCC**

☞ Exploitation of project results :

Opportunity:

- All EU funded projects dealing with FC are kindly requested to use the FC Glossary EUR 22295EN
- All EU projects on FC dealing with testing should at least amongst other tests use the validated testing procedures suggested by FCTESNET- FCTES^{QA}
- Communicate the experiences concerning the applicability and functionality of the testing methods

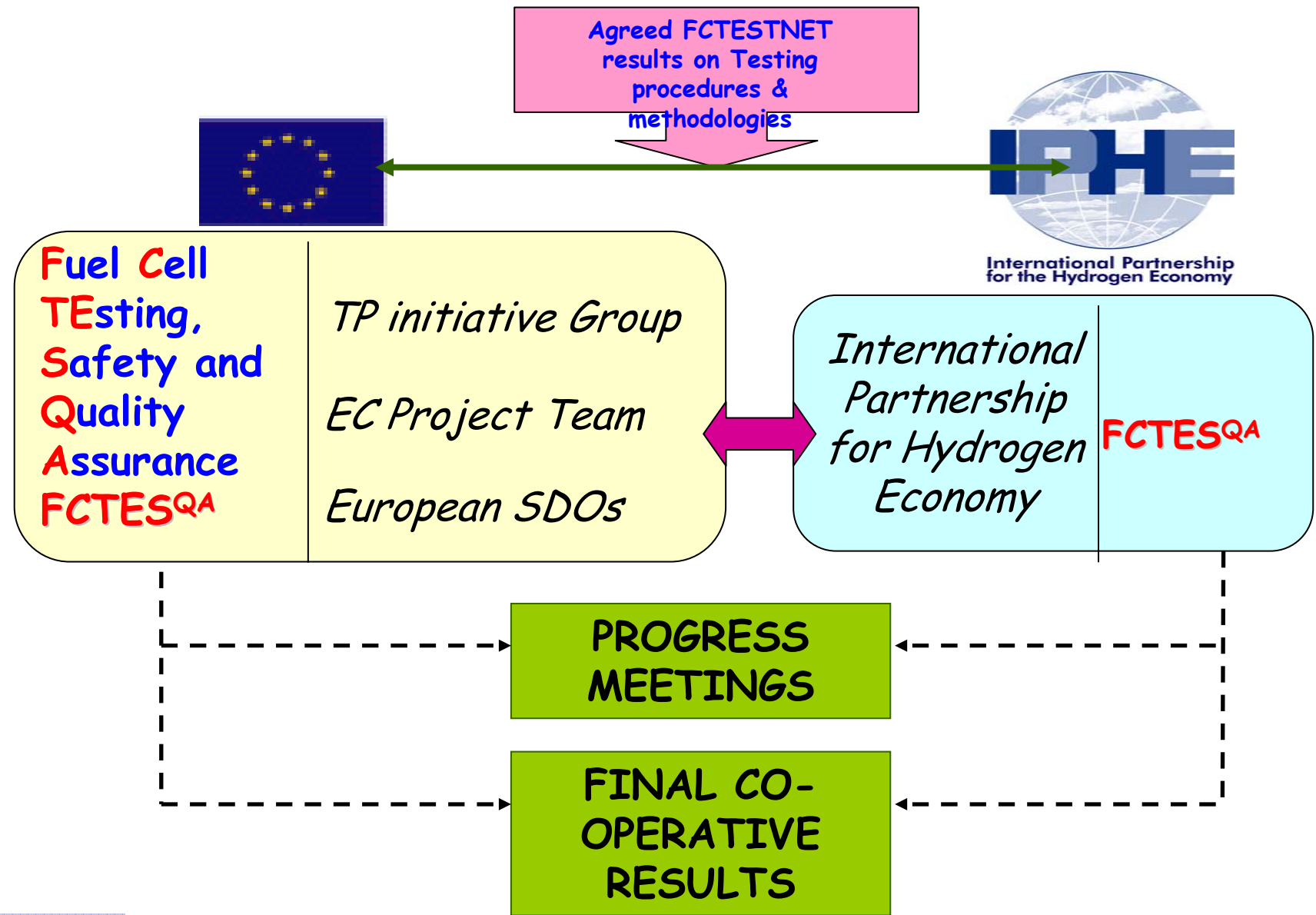
Exploitation of project results :

- Building alliances between industry, government, research centers, SMEs, etc.
 - ❖ **Opportunity:** Industry, SMEs should be more ACTIVELY engaged
- Need/opportunities for international collaboration
 - ❖ **Opportunity:** All IPHE members should be engaged



Exploitation of project results

- Support future JTI activities by providing benchmarked criteria
- Trigger *FURTHER* prenormative research





Thank you for
your attention!