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Integrating European Infrastructure to support science and development of Hydrogen- and Fuel Cell Technologies towards European Strategy for Sustainable, Competitive and Secure Energy

Deliverable

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Introduction

This document reports on the Mapping of existing European Infrastructure facilities organized within the H2FC project in 2013. The Mapping is a key element in the networking activity of the project and is organized within WP 4 'Mapping the existing European Research Infrastructure facilities and activities located at Research Organisations, Universities and Industry all over Europe'.

1 Basics

1.1 Who will be interested in?

Anyone who is working with Hydrogen and Fuel Cells themes and needs to get further information about another organization, industry or associations, to get contact details or to find the webpage of the actions located elsewhere all over Europe.

1.2 What is interesting?

It is interesting to investigate and evaluate in which areas and geographical place activities are settled. (For example whether an association does research or not)

Contact details of any activity can be found very quickly and don't need to get researched anyhow in the web.

1.3 What is important?

One of the most important things is to get to the detailed information of any activity of research organizations, universities and industry with a short loading time.

Also very important is that it is independent of use program for the research, not get blocked anyhow by software (for example: Internet Explorer or Firefox).

2 Structure

The structure of the program can be divided in four levels:

1. Europe
2. Countries
3. Cities
4. Associations

2.1 Europe

2.1.1 Design



The countries in grey are clay and the borders are diaphanous respectively white because of a white background.

Countries all over Europe get included in the mapping. Some needs to get combined especially which appears to small for getting collected or even will have no activities in the research themes.

- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Republic of Macedonia
- Malta
- Montenegro
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Serbia
- Slovakia
- Slovenia
- Spain
- Sweden
- Switzerland
- Turkey
- United Kingdom

Following countries are depicted in the picture:

2.1.2 Activities



When moving with the mouse over the euroboard the different countries where the mouse is over get highlighted in blue and the name of the country appears.

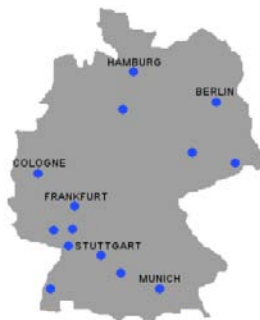
To get further to the second level a country needs to get clicked.

2.2 Countries

2.2.1 Design



GERMANY



A small grey euroboard gets mapped on the upper left corner. Next to it is the name of the elected country and under it is the map of the country with blue dots which represent cities that can be selected. The most important names are depicted to know roughly where everything is.

2.2.2 Activities

While moving with the mouse over the blue dots the cityname gets visible respectively highlighted.

To get back to the first level the small euroboard in the upper-left corner needs to get clicked.

To get further to the third level a circle/city needs to get clicked.

2.3 Cities

2.3.1 Design

the map of the country gets depicted on the upper left corner. Just next to it is the name of the elected city and beneath it are the Research Organisations, Universities, Associations and Industry relating to Hydrogen- and Fuel Cell Technologies displayed that can be clicked on.



KARLSRUHE

[Karlsruher Institute of Technologie \(KIT\)](#)

[Fraunhofer Institute of Chemical Technology \(ICT\)](#)

2.3.2 Activities

To get back to the second level the small map of the country in the upper-left corner needs to be clicked.

To get further to the fourth level an association needs to get clicked.

2.4 Association

2.4.1 Design

The cityname gets displayed on the upper left corner. Just right underneath the cityname the elected associationname gets displayed. On the left hand side the catchwords of the categorie Specification and Hydrogen which apply to the association get displayed in black an the other ones in a light grey. On the right side the catchwords of the other categoriees get displayed in black respectively grey. In between of the catchwords is enough room

KARLSRUHE

Karlsruher Institute of Technology

<p>Research</p> <p>Education</p> <p>Industry</p> <p>Association or other</p> <p>Hydrogen in general (testing & experiments)</p> <p>Safety Issues of Hydrogen (all applications, testing & experiments)</p> <p>Storage Material and/or Systems (R&D)</p> <p>Hydrogen production and applications (testing & development)</p>	<p>KIT bundles the missions of both precursory institutions: A university of the state of Baden-Wuerttemberg with teaching and research tasks and a large-scale research institution of the Helmholtz Association conducting program-oriented provided research on behalf of the Federal Republic of Germany. Within these missions, KIT is operating along the three strategic fields of action of research, teaching, and innovation.</p> <p>contact</p> <p>webpage</p>	<p>Fuel Cells in general (testing experiments, life-cycle test)</p> <p>Materials: Components, electrodes (R&D)</p> <p>Stacks and Systems (testing & development, life cycle)</p> <p>Manufacturing of Fuel cells and/or components</p> <p>Manufacturing of infrastructure (filling stations, power stations)</p> <p>Other activities</p> <p>Description of special activity</p>
---	---	--

for a text that describes the company. Underneath is a contact of the association and a transmission to the website of the company.

2.4.2 Activities

To get back to the third level the name of the city in the upper-left corner needs to be clicked.

When on of the button “contact” or “webpage” gets clicked a new window with the related information will be opened.

2.5 Information card

For the mapping it is important to get as many information cards as possible. It is the essential thing of the mapping. Without information cards the whole mapping gets useless.

For this reason it is important to get many and accurate information cards.

An information card consists of the following data:

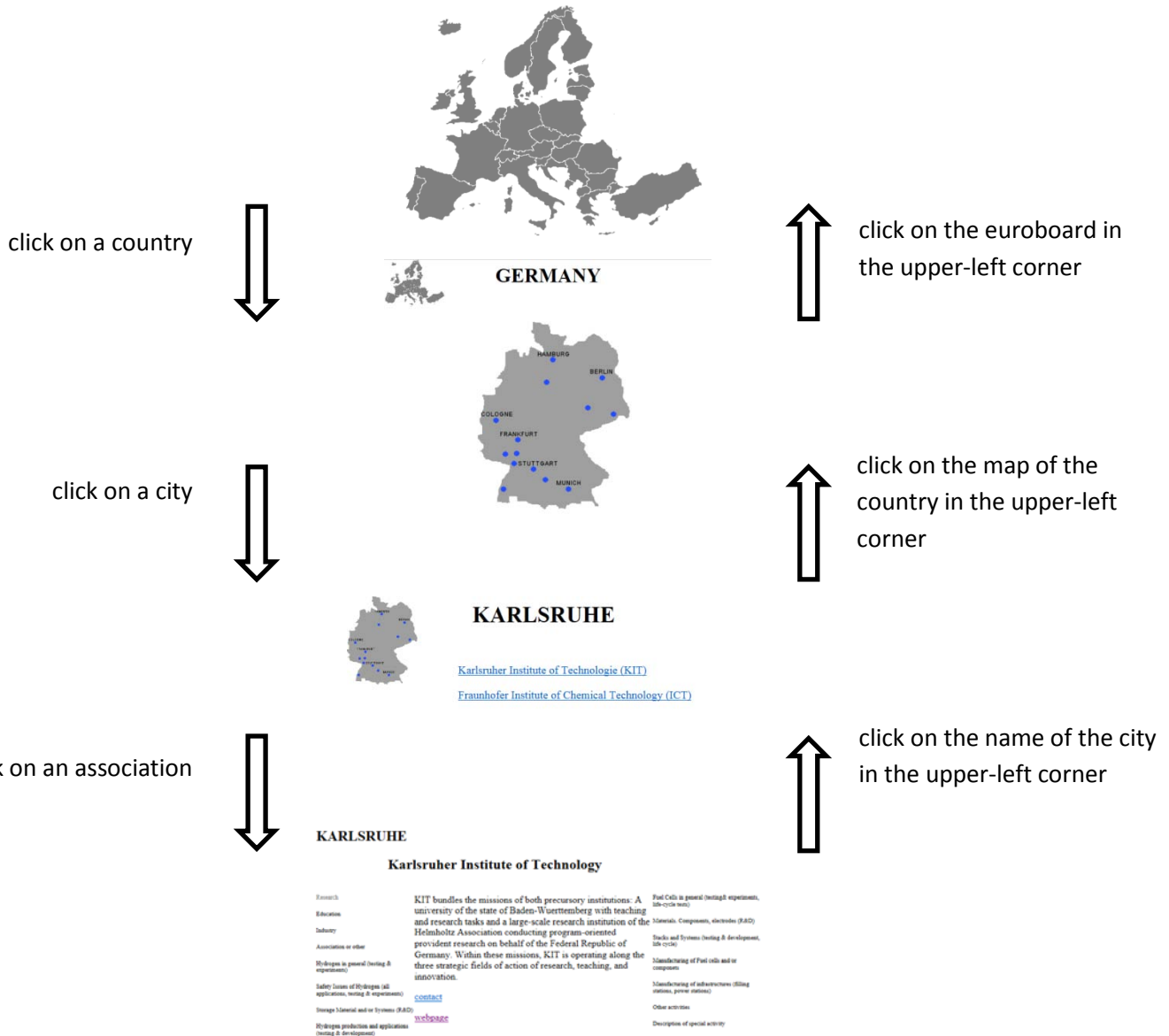
- name of the association
- city/town and country
- contact/contacts
- webpage
- Description (optionally)
- Catchwords

The Catchwords can be classified in four categories (specification, Hydrogen, Fuel Cells and others). These catchwords shall represent the association in what they are doing respectively what they are not doing.

The catchwords and their allocation to the categories are the following:

- Specification:
 - research
 - education
 - industry
 - association or other
- Hydrogen:
 - Hydrogen in general (testing & experiments)
 - Safety Issues of Hydrogen (all applications, testing & experiments)
 - Storage Material and/or Systems (R&D)
 - Hydrogen production and applications (testing & development)
- Fuel Cells:
 - Fuel Cells in general (testing& experiments, life-cycle tests)
 - Materials. Components, electrodes (R&D)
 - Stacks and Systems (testing & development, life cycle)
 - Manufacturing of Fuel cells and/or components
- Others:
 - Manufacturing of infrastructures (filling stations, power stations)
 - Other activities: description of special activities

2.6 Outline



3 Features

Submit-button

There will be a “submit-button” on the fourth level. With this button partners will be able to login and to submit a short description or changes of the elected activity.

Potential partners should also be able to submit new activity that will be added than manually to the data bank.

4 Documentation

4.1 Functions

There are different functions to get from layer to layer to the detailed information of an association.

4.1.1 `changeImage()`

This function is responsible for the mouseover of the euroboard.

An empty image and the highlighted images of the countries get swapped.

4.1.2 `changeCountry()`

This function is responsible for the changing of the first with the second level. (Europe to Country)

4.1.3 `back()`

This function is responsible for the changing of the second with the first level. (Country to Europe)

4.1.4 `changeCity()`

This function is responsible for the changing of the second with the third level. (Country to City)

4.1.5 `backToCountry()`

This function is responsible for the changing of the third with the second level. (City to Country)

4.1.6 `showAssociation()`

This function is responsible for the changing of the third with the fourth level. (City to Association)

4.1.7 `backToCity()`

This function is responsible for the changing of the fourth with the third level. (Association to City)

4.1.8 `osloandarea()`

This function is responsible for the changing of the map of Norway to an separate are for splitting the cities around Oslo.

4.1.9 `straightToCity()`

This function is responsible for the changing of the first with the third level. (Europe to City)

4.1.10 backToEurope()

This function is responsible for the changing of the third with the first level. (City to Europe)

4.2 maps

4.2.1 mapeurope

This map is used to convert the interactive euroboard. Every country is saved as one or more polygons to know where the mouse is over or not.

4.2.2 backeurope

This map is responsible to leave the second level to get to the first level.

4.2.3 countries

This map is essential to get to the third level form the second level. It saves where the cities are.

Every country has its own map.

4.2.4 backcountries

This map is important to leave the third level to get to the second level.

Every country has its own map.

5 Results and Outlook

The Mapping is integrated on the project homepage since 22.08.2013. Modifications will be done continuously. New activities can be added each time by an automatically by an included submission system.

In order to get modifications done easier the mapping will get refined continuously. That's why the mapping will be overworked within the framework of a bachelor-thesis (start 10.02.2014).

6 Mapping and Contact List H2FC European Infrastructure

1. This list is needed to prepare an overview about Research Organisations, Universities, Associations and Industry within Europe being active in the area of Hydrogen and Fuel Cells. This is a deliverable within the networking activities of H2FC and thus should be supported by each partner organisation!
2. The list of Email contacts will be additionally needed to promote activities out of H2FC European Infrastructure (workshops and conferences, access to research infrastructures, technical school, researches exchange program, any fruitful news arising from partners of H2FC and so on...) via a H2FC-newsletter, which will be send frequently (~3 monthly). Please nominated probably interesting institutions or people you already know about, not being partner of H2FC.
3. Each nominated institution and contact will get the chance to subscribe or unsubscribe the news-letter! KIT will respect and take care about the data security. This will be mentioned and highlighted in the first H2FC-newsletter send to the nominated people or institutions.
4. Do not forget to enter your own institution or organisation because of the mapping!
5. This list will be updated starting 2014. Actually the first edition should be collected from partners.

We pronounced about 500 – 1000 contacts in the DOW, which shows interest in receiving our newsletter. Please take notice about, that this newsletter shall not substitute any other newsletter circulated anyhow through anybody in this topic nor being in competition with other newsletters. The focus is set on H2FC activities and its consortium regarding their internal information only! (Consortium concerns and information could be workshops and conferences or symposia arranged by partners!)

ESTIMATION: If each partner includes only 50 – 100 contacts, we will get a final number around 1.200 – 1.500 (because of doubling and whatever!)

Nominated by	Name of research organisation, university, associations and industry (Short name) near to or closed by: town	Email contact (contact person if available)	Official webpage	Specification				Hydrogen				Fuel Cells				Others	
				Research	Education	Industry	Association or other	Hydrogen in general (testing and experiments)	Safety Issues of Hydrogen (all applications, testing and experiments)	Storage Material and/or Systems (investigation and development)	Hydrogen production and applications (testing and development)	Fuel Cells in general (testing and experiments, life-cycle tests)	Materials, Components, Electrodes (investigations and development)	Stacks and Systems (testing and development, life cycle)	Manufacturing of Fuel Cells and/or Components	Manufacturing of Infrastructures (filling stations, power stations)	Other activities
GERMANY																	



KIT	Karlsruher Institute of Technology (KIT) Karlsruhe	Olaf.jedicke@kit.edu Thomas.Jordan@kit.edu Maximilian.Fichtner@kit.edu Etc.	www.kit.edu	x	x			x	x	x	x	x	x	x			superconducting	Hydrogen filling station and busses
KIT	Fraunhofer Institute of Chemical Technology (ICT) Karlsruhe	Armin.kessler@ict.fraunhofer.de Gesa.Langer@ict.fraunhofer.de Norbert.Eisenreich@ict.fraunhofer.de	www.ict.fraunhofer.de	x	x			x	x			x						
KIT	Fraunhofer Institute for Solar Energy Systems (ISE) Freiburg	Thomas.Aicher@ise.fraunhofer.de Tom.Smolinka@ise.fraunhofer.de Ulf.Groos@ise.fraunhofer.de	www.ise.fraunhofer.de	x	x					x	x	x						Hydrogen fillings station and cars

KIT	International Association for Hydrogen Safety (IA HySafe) Brussels	atchouvelev@tchouvelev.org	www.hysafe.org				x	x	x								Conferences, workshops	
	Etc.																	
	Etc																	
	Up to 50 – 100																	

Nominated by	Name of research organisation, university, associations and industry (Short name) near to or closed by: town	Email contact (contact person if available)	Official webpage	Specification				Hydrogen				Fuel Cells				Others	
				Research	Education	Industry	Association or other	Hydrogen in general (testing and experiments)	Safety Issues of Hydrogen (all applications, testing and experiments)	Storage Material and/or Systems (investigation and development)	Hydrogen production and applications (testing and development)	Fuel Cells in general (testing and experiments, life-cycle tests)	Materials, Components, Electrodes (investigations and development)	Stacks and Systems (testing and development, life cycle)	Manufacturing of Fuel Cells and/or Components	Manufacturing of Infrastructures (filling stations, power stations)	Other activities
Switzerland																	
Empa	Swiss Federal Laboratories for Materials Science and Technology	Andreas.zuettel@empa.ch Andreas.borgschulte@empa.ch ulrich.vogt@empa.ch	www.empa.ch	x	x			x	x	x	x	x	x	x			Empa Swiss Federal Laboratories for Materials Science and Technology



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