

Virtual Campus Hub

Merete Badger, Technical University of Denmark



An EU-funded project running October 2011-2013

www.virtualcampushub.eu

Virtual Campus Hub – Objectives

Why?

To boost integration of research, innovation and education in sustainable energy.

How?

Through delivery of a working concept for a Virtual Campus Hub ready to be implemented at partner universities, research organizations with links to industries, businesses, and innovation parks.

Virtual Campus Hub – Components

1. A technical platform

- Virtual meeting spaces for lectures, conferences, laboratory and numerical exercises
- Innovation tools, executive learning modules, self-study, etc.





2. A set of documented best practices

- For using the platform for courses, teaching & learning methods, innovation processes, networking and joint programs, developed through continued complementary on-site activities.

3. An inventory of staff competence and experience

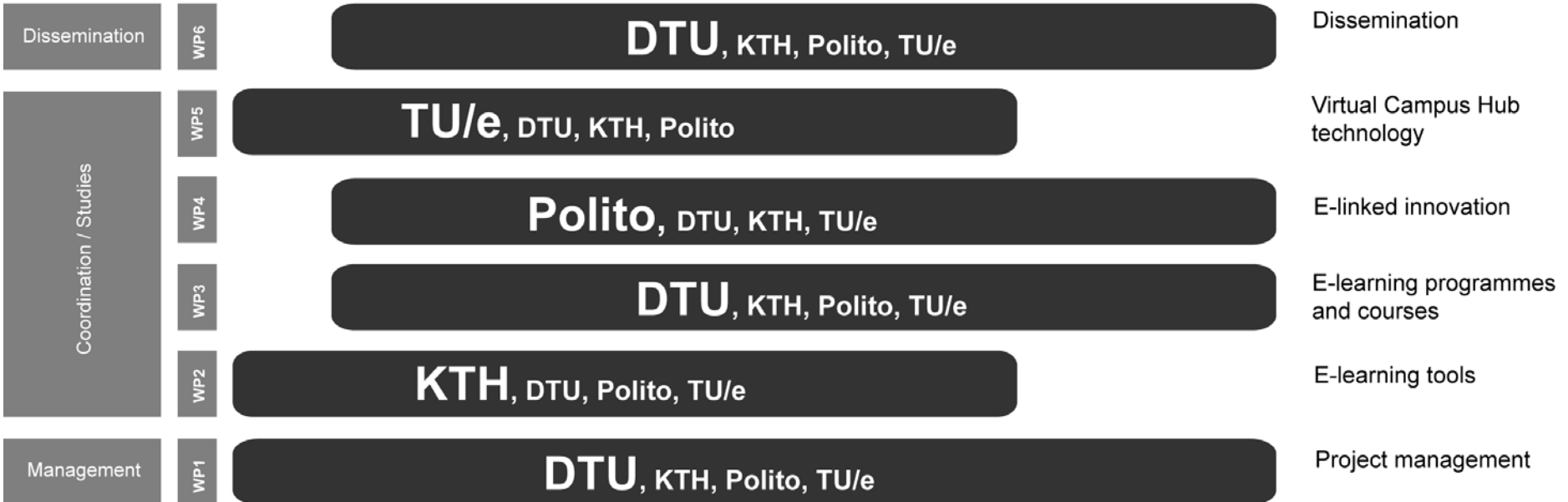
- Enhancing quality
- Scaling-up innovation, education and training activities,
- primarily related to sustainable energy
- Dissemination and communication of the resulting best practices

Virtual Campus Hub – Participants

	Institute	Acronym	Leading staff
	Technical University of Denmark	DTU	Merete Badger
	Royal Institute of Technology, Sweden	KTH	Lucio Monaco
	Politecnico di Torino, Italy	Polito	Laura Farinetti
	Eindhoven University of Technology, Netherlands	TU/e	Frank Vercoulen

Virtual Campus Hub - Roles

01 02 **03** 04 05 **06** 07 08 **09** 10 11 **12** 13 14 **15** 16 17 **18** 19 20 **21** 22 23 **24** Months



Virtual Campus Hub - Relations

Other energy networks:

- SEEIT – a European Strategic Partnership for Sustainable Energy Education, Innovation and Technology (<http://www.seeit-alliance.eu>)
- KIC InnoEnergy – Leading Engine for Innovation and Entrepreneurship in Sustainable Energy (<http://www.kic-innoenergy.com>)
- Explore Energy – gateway for life-long virtual campus learning (www.exploreenergy.eu)

Virtual Campus Hub is linked to:

- Europe 2020 and SET Plan goals
- The European e-infrastructure network incl. Géant

WP2 – e-Learning tools

The **remote laboratory** is operated and monitored on-distance for **real-time experiments** and collection of measurement data.

The **exercise** is combined with on-line **self-assessments** and **pre-tests**, all 100% automatically corrected.

No need for teachers to provide supervision or correction of exercises.



KTH Industrial Engineering and Management

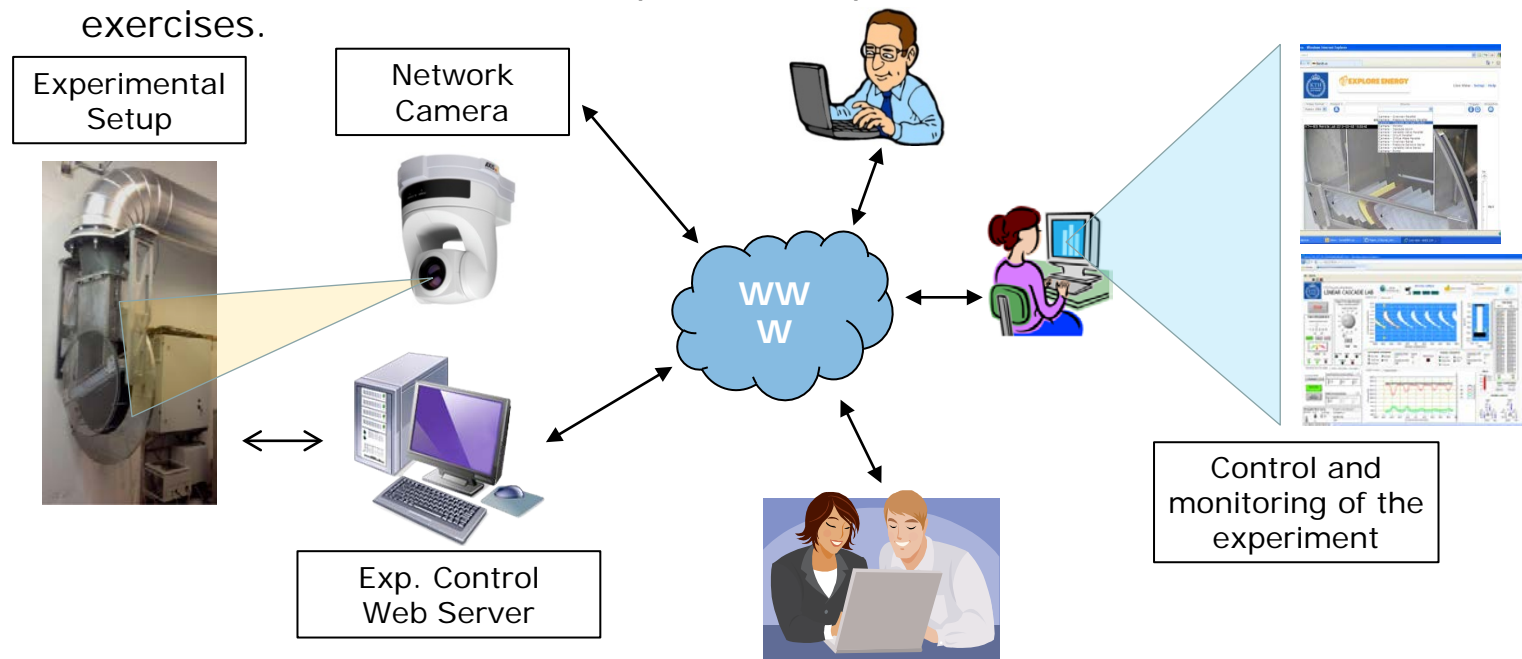


Figure 1 Remote laboratory setup (Remote Linear Cascade Lab)

Examination Tools

On-line examination tools for **100% automatic correction** including

multiple answers on “simple questions”:

self-assessments will be developed such that a pool of questions can generate a significantly (factor of 100 or more) number of possible answers to multiple choice questions.



**KTH Industrial Engineering
and Management**

Concerning a solar power tower system it can be said that...

- Tower systems reach the highest optical efficiencies of all solar devices
- CORRECT** The solar irradiation is concentrated to the top of the tower
- Thermal storage cannot be used with a tower system
- CORRECT** The fluid in the primary circuit can be molten salt
- The secondary circuit is used for cooling purposes only

Concerning a solar power tower system it can be said that...

- The fluid in the secondary circuit is usually molten salt or synthetic oil
- Thermal storage cannot be used with a tower system
- Tower systems reach the highest optical efficiencies of all solar devices
- The central tower rotates to track the Sun
- CORRECT** It is surrounded by a heliostat field

WP3 – e-Learning Programmes and Courses



WP3 includes selection, implementation and evaluation of VCH elements in ongoing and new sustainable energy educational programs. At least 3 test cases will be selected.

WAsP online course:

DTU Wind Energy has developed an online course in wind energy (WAsP course), which represents one test case.

Learning Management System ("itslearning") - holds the WAsP online course material



The screenshot shows the itslearning LMS interface for the WAsP course. The browser address bar shows the URL: <https://windenergy.itslearning.com/main.aspx?CourseID=2>. The page header includes the DTU Wind Energy logo and navigation links like "Dashboard", "Courses", "Projects", "Calendar", "ePortfolio", and "My library". The user is logged in as "Badger, Merete".

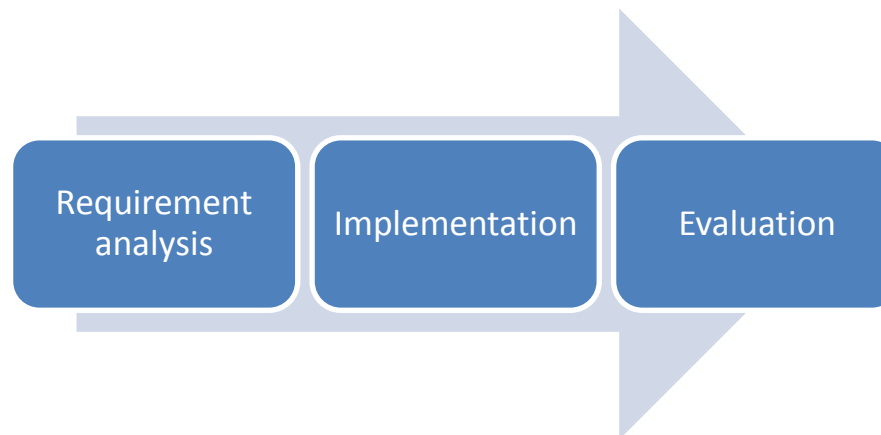
The main content area is titled "WAsP course" and features several sections:

- Bulletins:** A section for course updates. It includes a "Student login" announcement with the following details:
 - User: student
 - Password: Online2306A link to an "Interesting video about online learning of the future" is provided, along with a "Subscribe" button.
- Funding and collaboration:** A section highlighting the course's development by the Technical University of Denmark (DTU) and its partial funding by the European Commission under the 7th Framework Programme, project Virtual Campus Hub.
- Latest changes:** A list of recent updates, including discussion forums for various course topics.



WP4 - e-Link Innovation for Decision Makers

- Specific learning material for managers and entrepreneurs
 - Requirement analysis
 - Contents development / adaptation
- Sharing of data sets and best practices
 - Real data, useful for creating simulations, validating business plans, showing SMEs added value, ...
 - Best practices in a comprehensive directory of skills and competences



WP5 – Virtual Campus Hub Technology



TU / **e**

Technische Universiteit
Eindhoven
University of Technology

Where innovation starts

 **VIRTUAL CAMPUS HUB**
Part of Explore Energy

Problem

Universities have an increasing number of and increasingly diverse relations with the outside world, but ICT is still inward looking

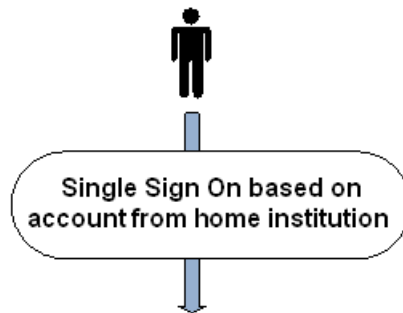
- Barriers for access, collaboration and data exchange across institutions and companies
- Everybody has plenty of tools available, but using them across an institution's border is cumbersome
- Labour-intensive workarounds offer far from perfect solutions

Purpose Virtual Campus Hub

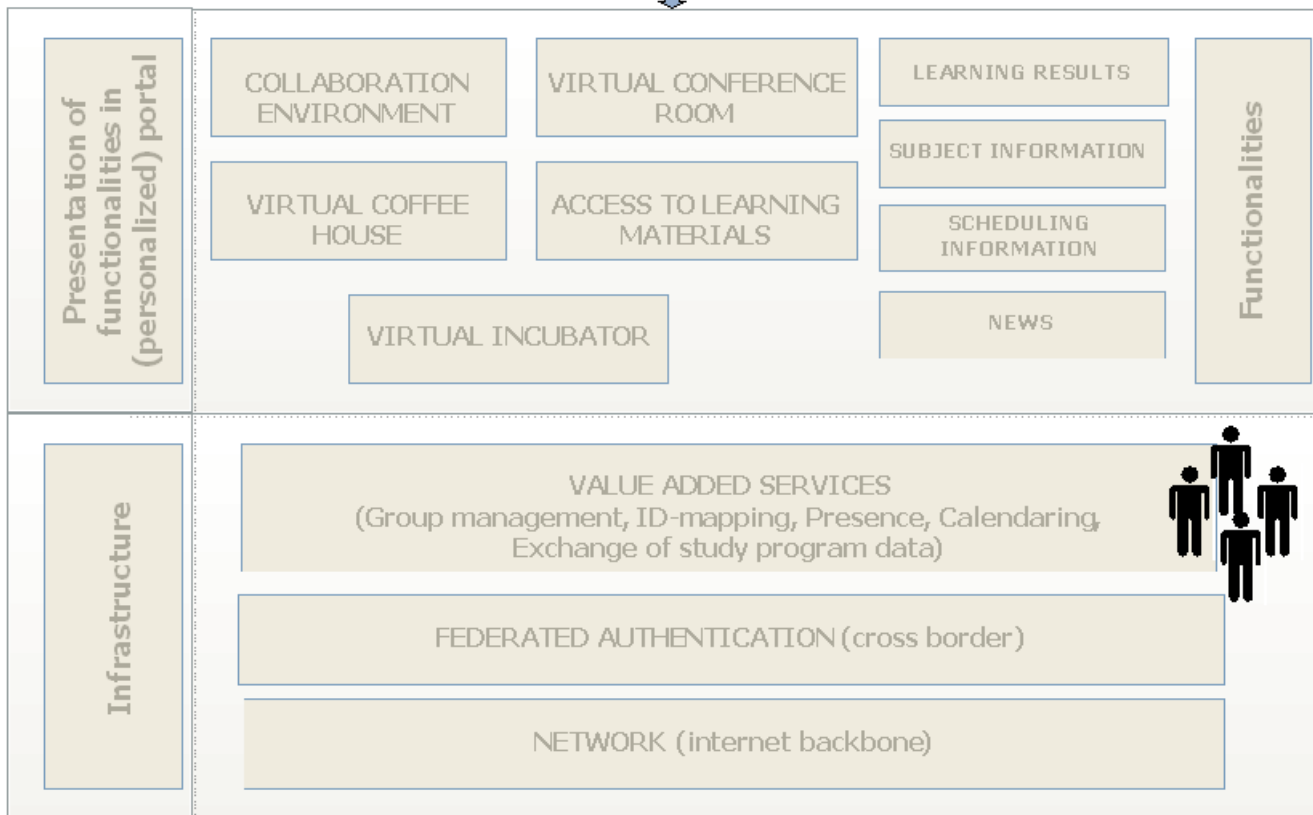
Lower barriers for access, collaboration and data exchange for:

- ***Federated authentication:*** Use your own account at other institutions / companies
- ***Group management:*** Create groups across institutions and companies and grant these groups access to applications at an institution or company
- ***Portal:*** Easy access for groups to applications or data (*portal*)
- ***Data exchange mechanism:*** Easily retrieve data from different institutions (e.g. course information or student results in joint programs)

What does a Virtual Campus Hub consist of?



- Virtual Campus Hub:**
- Functionalities
 - Infrastructure
 - Presentation in portal



Challenges

Géant infrastructure:

EduGain, SurfFederatie,
WAYF, Swamid, IDEM

- Enable federated authentication across borders
- Enable group management across borders

Local institutions or companies:

DTU, KTH, PoliTo, TU/e

- Provide identities across borders (IdP)
- Connect applications to the national hub (SP)
- Enable applications for group management
- Develop (simple) reusable gadgets for own VCH applications

TU/e (but others may
setup own portals as well)

- Setup demo portal and incorporate gadgets developed

**Local institutions with
Géant as hub?**

- Design of a exchange mechanism for formal data (e.g. course information, student results)


More about Virtual Campus Hub

Terena VAMP workshop

Thursday 6 September 2012 in Utrecht

10:30-12:00 Workshop Programme A:

VO use cases (i)

- 
- Virtual Campus Hub, Frank Vercoulen (TU/e - Eindhoven Technical University)
 - Project Bamboo, Keith Hazelton (University of Wisconsin - Madison)
 - Discussion topics

VO use cases (ii)

- Identity management in the European Grid Infrastructure: established solutions, new needs, open questions, Gergely Sipos (EGI)
- Globus Nexus, Steve Tuecke (University of Chicago / Globus Online)
- Discussion topics