

VPH NoE

Virtual Physiological Human – Network of Excellence



Gathering the critical mass of resources

On August 1st 2009, the VPH NoE released the beta version of an online VPH Toolkit (<http://toolkit.vph-noe.eu/>) which will form the basis of a central knowledge pool to support the VPH community. The **key to success for this Toolkit is openness of tools, methods and services to enable these and experiences to be shared with a drive towards standardisation, utilisation and community development.**

Gathering the expertise needed to provide European leadership

The VPH NoE is organising the VPH research community around a layered participation model:

- The VPH NoE membership is constantly expanding: to date we have a total of 56 member institutions and growing.
- The VPH-I group currently involves 15 VPH research projects, for over 150 partner institutions. These figures will expand with the inclusion of the new batch of projects that is emerging from call 6. The VPH-I group represents the institutions that are actively involved in collaborative VPH research.

VPH NoE Advisory Board: this panel is formed by world-recognised academic, clinical and industrial experts is advising the Network on the strategic directions that VPH research should undertake. On 2009 a Strategic vision update was produced, that was recently published in The Philosophical Transactions of the Royal Society. In September 2010 we plan another consensus meeting that will update the strategy.

The Virtual Physiological Human Network of Excellence (**VPH NoE**) has been designed with **'service to the community'** of VPH researchers as its primary purpose. The aims of the network range from the continued development of a VPH Toolkit and associated infrastructural resources,

to integration of models and data across the various relevant levels of physiological structure and functional organisation, through to VPH community building, training activities and support.

The VPH forms a core target of the 7th Framework Programme of the European Commission, and aims to support the development of patient-specific computer models and their application in personalised and predictive healthcare.

The Virtual Physiological Human Network of Excellence (VPH NoE) was launched in June 2008 and aims to provide the necessary infrastructure including computational methodologies, tools and databases that will enable academic, clinical and industrial researchers to communicate, and to exchange data and technologies in a standardised way.

To achieve this, the VPH NoE has several key objectives:

- Support for inter-institution and interdisciplinary research projects;
- Development of a VPH ToolKit - shared and mutually accessible computational resources and infrastructure;
- Development of standards and ontologies as a means towards achieving interoperability and modularity of developed models.
- Progression in horizontal and vertical model/data integration;
- Development of interdisciplinary training activities and VPH careers;
- Creation of Industrial, Clinical and Scientific Advisory Boards for consultation.

The VPH NoE will connect the diverse VPH projects, from those funded as part of the VPH initiative (VPH-I) to encompass related projects funded under previous EC frameworks and

national funding schemes, industry, healthcare providers and international organisations.

Challenges

A key challenge is the development of quantitative, integrative and predictive models that describe human physiology and this will be the provision of a necessary research infrastructure. The scale of data to be generated, processed and exchanged requires software tools and massive computer storage and that are currently not widely available. Dissemination is another key challenge as the VPH NoE scope is by definition multidisciplinary. Scientists able to deal with multidisciplinary topics are required, necessitating a need for training of multidisciplinary individuals and VPH specialists.

Benefits

The **VPH ToolKit works closely with Exemplar projects** (small research projects which are funded by the VPH NoE with the aim of providing solid examples of horizontal and vertical model/data integration, which may only be achieved through the integration of disparate knowledge and research infrastructure). The VPH Toolkit aims to provide the technical and methodological framework to support and enable VPH research. The Toolkit portal is a shared and mutually accessible source of research equipment, managerial and research infrastructures, facilities and services. Other VPH projects, including the Exemplar Projects (EPs) and VPH-I projects are able to add and draw capacity from it.

In pooling these activities within the VPH research area, issues of interoperability, standards and – more broadly – integrative VPH research are also being addressed. **The VPH NoE recognises a necessity for scientists able to deal with multidisciplinary topics.** The VPH NoE is also creating a framework to support and facilitate this training. We are addressing training and career development for both early and in-career VPH researchers and training activities will pay special attention to the outcomes generated from other VPH-related projects and existing European Commission initiatives. Through dissemination, the impact of VPH NoE initiatives relating to VPH EPs, the VPH ToolKit, and interdisciplinary training will be maximised.

Next steps

The VPH NoE project is in its second year. Progress has been made with several of the Exemplar and VPH-I projects and we have released the beta version of the online 'ToolKit' (<http://toolkit.vph-noe.eu/>). The VPH community

is growing and the first open VPH meeting is now being actively prepared. This will help to develop the international dimension of VPH research. **VPH 2010¹** will be held in **Brussels, 30th Sept – 1st Oct 2010**, and will bring together over 200 experts from academia, industry, clinics, to discuss the progress and challenges of the VPH. There will also be a **VPH Industry Day²** on the **8th and 9th of September** which will look into ways of building a new European industry based on the results of research projects involved in developing the Virtual Physiological Human. The two-day meeting will enable the **VPH community to showcase its best results to the biomedical industry in order to expand the take-on of VPH technologies in the health industry.**



@ a glance

Partners:

University College London (united kingdom)
The University of Oxford (united kingdom)
Centre National de la Recherche Scientifique (France)
Université Libre de Bruxelles (Belgium)
Institut National de Recherche en Informatique et en Automatique (France)
The University of Nottingham (united kingdom)
Universitat Pompeu Fabra (Spain)
The University of Auckland (New Zealand)
European Molecular Biology Laboratory (Germany)
The University of Sheffield (united kingdom)
Karolinska Institutet (Sweden)
Institut Municipal d'Assistencia Sanitaria (Spain)
GEIE ERCIM (France)
Istituto Ortopedico Rizzoli (Italy)

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¹ <http://www.vph-noe.eu/vph2010>

² <http://www.vph-noe.eu/news/332-vph-industry-meeting-2010>