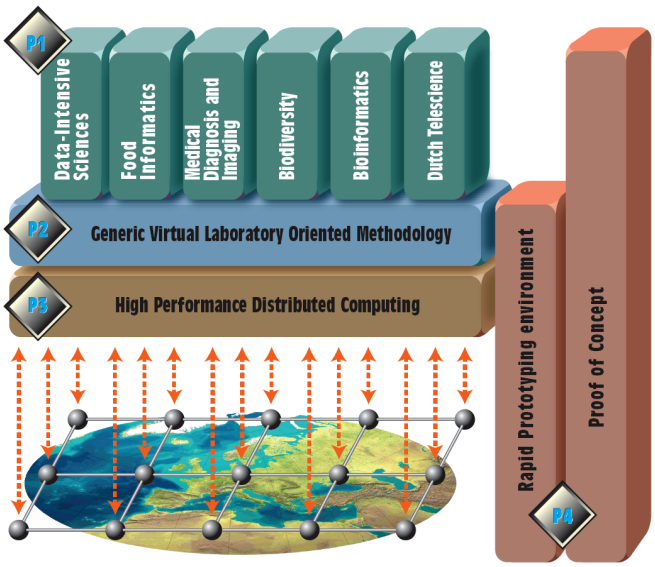
vl·e virtual laboratory for e·science

information

VL-e enables new approaches to traditional sciences

Information has become the fuel of our knowledge society, and our ability to digest, understand and share it will determine our scientific, economic and social progress.

The exceptional increase in computing power, storage capacity and network bandwidth over the past decades forms the basis of a digital revolution which has only just started. Also the changing scale and scope of experimental sciences require a new research paradigm: (digitally) enhanced science or e-Science. The aim of the 'Virtual Laboratory for e-Science' (VL-e) project is to bridge the gap between the technology push of the high performance networking plus the Grid and the application pull of a wide range of scientific experimental application domains. A typical example of this is the life sciences, where VL-e offers solutions for combining laboratory research with computational experiments and simulations, making use of the knowledge and experience gained from dealing with large data sets in high energy physics. At the same time, however, it is recognised that data sets in the life sciences are far more complex than in high energy physics. More specifically, VL-e is developing a Proof-of-Concept (PoC) infrastructure (both hard- and software) to enhance location-independent access to scientific information and stimulate global and multidisciplinary collaboration, thereby enabling new approaches to traditional sciences. The VL-e software (both for rapid prototyping and in the PoC) provides generic functionalities that support a wide range of e-Science applications. This PoC infrastructure will boost the knowledge economy of the Netherlands.



Currently, six application domains are involved: Data-Intensive Sciences, Food Informatics, Medical Diagnosis & Imaging, Biodiversity, Bioinformatics and Telescience. Several Dutch universities, academic hospitals and industries in the life sciences and ICT domain participate in this project. There is also strong collaboration with NBIC (Netherlands Bioinformatics Centre). The recently started Dutch BIG GRID project will build a nationwide production grid, making use of methodology still being developed within VL-e.

The Proof-of-Concept environment in VL-e

VL-e is building a Proof-of-Concept (PoC) environment in The Netherlands. Making use of technological innovations like the Grid, the PoC infrastructure will enable research on geographically disperse locations.

While many research institutions and academic hospitals are already connected through a high bandwidth network, an infrastructure is needed that fully exploits innovations in workflow and data management and visualization. The PoC infrastructure is a Grid infrastructure for the e-Science applications of VL-e, by bridging the gap between the technology push of the high performance networking plus the Grid and the application pull of traditional sciences.

The PoC is the shared, common environment for e-Science applications of VL-e. In the PoC, the different tools and services used and provided by the project members are available, and bound together in a sevice-oriented approach. The PoC covers three distict areas:

- A software distribution, to be installed by members of VL-e on their local desktop machines.
- The PoC environment, the ensemble of systems that run the current PoC distribution.
- The PoC Central Facilities (hosted at SARA and Nikhef) or those systems running the current PoC distribution that are centrally managed by the Scaling and Validation program on behalf of the project.

The PoC is also distributed on a DVD.

The PoC Central Facilities are hosted at SARA and Nikhef.

The PoC Central Facilities consist of a wide variety of resources and access points, including large compute clusters and storage space in near-line tape storage, all accessible via grid and data management tools. Also contained in the PoC are various other application services like databases and local user interface systems.

Regular tutorials and workshops are organized to spread knowledge on the infrastructure and to make both developers and users acquainted with new technological developments.

VL-e Program line: Scaling Up To & Validating in 'Real-life' Applications

Subprogram: SP4.1The Proof-of-Concept environment

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vl-e facts

budget 40M, period 2004-2008
more than 20 consortium partners from industry and academia
director: prof.dr. L.O. Hertzberger
website: www.vl-e.nl

consortiumpartners

A&F Wageningen, AMC, CWI, DSM, Friesland Foods, FEI, FOM AMOLF, NBIC, Nikhef, IBM, LogicaCMG, Philips Research, Philips Medical, SARA, Top Institute Food and Nutrition, TNO Kwaliteit van Leven, TU Delft, Unilever, UvA-IBED, UvA-IvI, UvA-SILS, VU, Vumc, WTCW