



Investing in your future



Ireland's EU Structural Funds Programmes 2007 - 2013
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An Roinn Fiontar, Trádála agus Nuálaíochta
Department of Enterprise, Trade and Innovation

HEA

Higher Education Authority
An tÚdarás um Ard-Oideachas



What is Grid-Ireland?

Grid-Ireland is the **National Grid Initiative** (NGI) for Ireland. Each European Union member state has a National Grid Initiative. NGIs are entities with a public mission aiming to mobilise funding resources at national level for the provision of grid services. The Irish NGI, Grid-Ireland, was established in 1999 to develop and coordinate the provision of national grid services for the academic research community in Ireland. It is a founder member of the European Grid Infrastructure (EGI). It supports Irish academics who wish to participate in EU projects and would benefit by bringing grid resources to the table.



What is EGI ?

EGI is a collaboration of NGIs and EIROs to coordinate a sustainable computing grid infrastructure for Europe that will seamlessly enable users access to a diverse range of widely dispersed computing resources in the most efficient and suitable manner possible. EGI headquarters are at EGI.eu in Amsterdam.

EGI's mission is aligned with the European Commission's goal to remove barriers to the free movement of knowledge across Europe. This ambition, outlined in the Lisbon Treaty, is now hailed as the fifth freedom to be enjoyed by the EU, after the free movement of goods, capital, services and people.

Grid is one of the key distributed computing infrastructure technologies underpinning the fast-evolving sectors of e-Science, e-Health and e-Government, and is expected to play a key role in the development of the European Research Area (ERA).

What are grid services?

Grid Computing is a generic term used to describe a distributed ensemble of computing services that enable user communities to form *Virtual Organisations (VOs)* and share widely distributed resources in a co-ordinated, structured, secure and trusted manner, and meanwhile guarantee that resource providers still control who may access their resources.

What is a grid infrastructure?

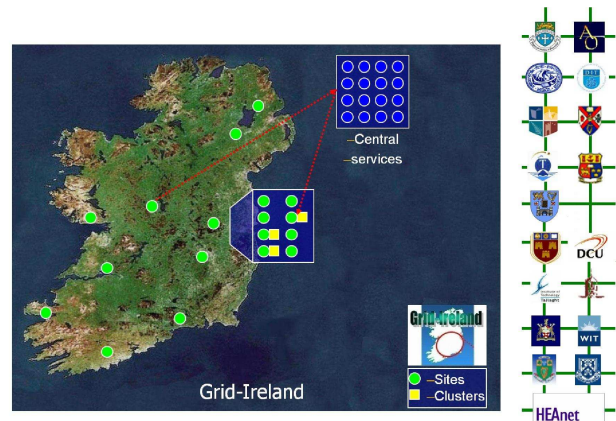
e-Science computing grids are infrastructures assembled using grid services on which groups of scientists (e.g. bioinformatics, high-energy physics) can share and aggregate computers, storage and scientific instruments. Some grid infrastructures are specific to a discipline (e.g. *Cancergrid*), whilst others serve many.

The generic European Grid

TCD/Grid-Ireland is a partner in the EU FP7 **EGI-InSPIRE** project, led by EGI.eu. Currently, this grid infrastructure is composed of some 310 sites from 57 countries, providing over 240,000 CPU cores and over 100 petabytes of data storage to many research disciplines, and will unify several previously diverse large EU grids to form a persistent generic EU Grid.

The Irish Grid

Grid-Ireland has sites and central services:





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Sites that share resources (clusters/storage) do so via *gateways* that run the grid services (a layer above HEAnet). Currently over 1000 CPU cores and over 100 terabytes of storage are shared. Central services provide necessary coordination.

Grid-Ireland users

Grid-Ireland currently supports usage in the following research domains: bioinformatics, high-energy physics (incl.CERN), geophysics and earth sciences, astronomy & astrophysics, computational chemistry, network simulation, mathematical research, grid middleware and marine sciences. Support staff can advise on the best way for users to get their applications grid-enabled as quickly as possible, and a helpdesk tracks all user requests and issues.

Grid applications are typically *loosely-coupled*, where the workload can be easily broken down into smaller sets of individual tasks that have little or no interaction with one another. In this way, a large job may be grid-enabled in an efficient manner. In addition, Grid-Ireland staff are joint leaders with CSIC in Spain in expanding the support for *tightly-coupled* (MPI) parallel workloads on the EU Grid.

Grid-Ireland policy activities

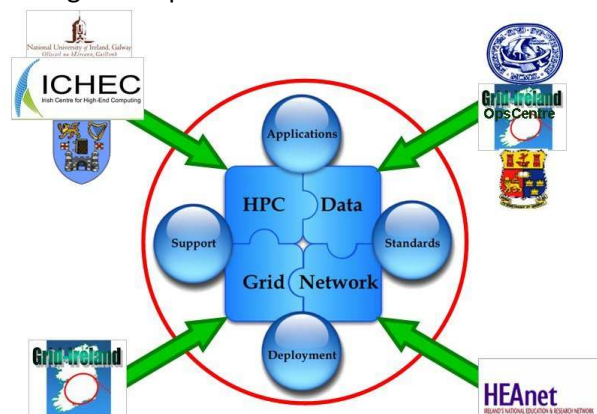
Grid-Ireland is primarily a policy body that engages with its EU peers, the Irish Government and other interested parties. It establishes the policies, practices and standards for grid operations in Ireland. It interacts with its peers within EGI, which is a member of the European e-Infrastructure Forum along with PRACE and Geant. User requirements influence policy inputs to the relevant funding agencies.

Grid-Ireland operational activities

Grid-Ireland delegates its operations to the OpsCentre, based in Trinity College Dublin, which is recognised internationally as the operations centre coordinating Irish grid activities, e.g. it is the body that issues grid certificates accepted by most major grid infrastructures. It also underpins Irish grid activities in major EU projects. It interacts with EU Grids, especially EGI-InSPIRE, which interfaces with EU ESFRI projects. It is funded by the EU FP7, and by the HEA as part of the e-INIS collaboration under PRTL I cycle 4.

e-INIS integrated e-Infrastructure

The e-INIS initiative aims to coordinate and enhance activities to create a sustainable national e-infrastructure. Since 2007 it has made significant input into the Irish Centre for High Performance Computing on HPC, into HEAnet for federated identity management and lambda switched 10Gbps networking, into the Grid-Ireland OpsCentre as funding, and into the OpsCentre, DIAS and UCC for a large scale pilot national datastore.



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