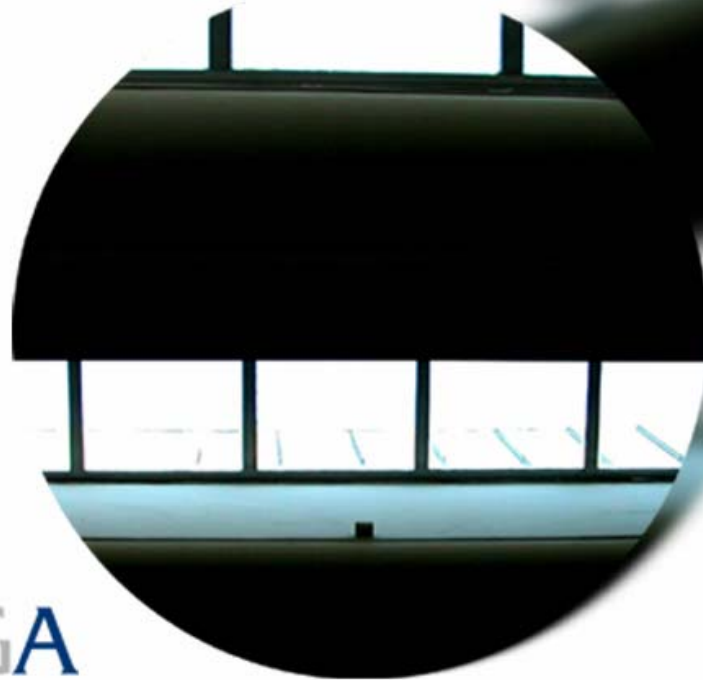


**CENTRO DE
SUPERCOMPUTACIÓN DE GALICIA**



CESGA

Spanish Conference on e-Science Grid Computing

Madrid, March 2007

CESGA

ESTABLISHED IN 1993

IN SANTIAGO DE COMPOSTELA [SPAIN]

CESGA.

PRESENTATION OUTLINE

- **CESGA: General description of the institution**
- **FINIS TERRAE: New HPC Supercomputer for 2007**
- **RECETGA: Galicia's Science & Technology Network**
- **GRID Technologies & Projects at CESGA**

MISSION STATEMENT

- **To provide high performance computing and communications resources and services to the scientific community of Galicia and to the National Research Council, as well as, to institutions and enterprises with R&D activity.**
- **To promote the use of new information and communication technologies applied to research within the scientific community of Galicia.**
- **To become a consolidated RTD Centre of Excellence serving as international scientific and technological reference in the field of computing science and numerical simulation.**

LEGAL ENTITIES

- Public Company
- Public Foundation

PARTNERS

- Regional Government of Galicia 70%
- National Research Council of Spain 30%



Xunta de Galicia



CESGA'S COMMUNITY OF USERS

- Galician Universities
- Galician Regional Government Research Centres
- Spanish National Research Council (CSIC) Centres
- Other public or private enterprises and institutions
 - Hospital Laboratories
 - Private Companies' R&D Departments
 - Technological & Research Centres
 - Other Universities worldwide
 - ...



SERVICES

- HPC, HTC & GRID Computing
- User Data Storage
- Advanced Communications Network
- GIS resources and tools
- e-Learning & Collaboration Infrastructures
- e-Business promotion and support

The biggest supercomputers



1993: VP-2400

2,5 GFLOPS 0,5 GB memory

Nº 1 in Spain and Nº 145 in the World (TOP500)



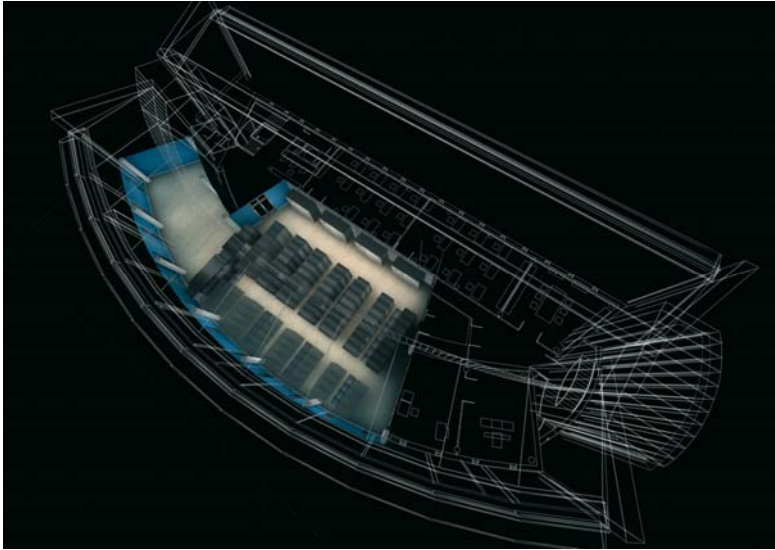
2003: SUPERDOME

768 GFLOPS 384 GB memory

Nº 1 in Spain and Nº 227 in the World (TOP500)



FINIS TERRAE (2007)



New HPC Supercomputer 2007

More than: 16.000 GFLOPS

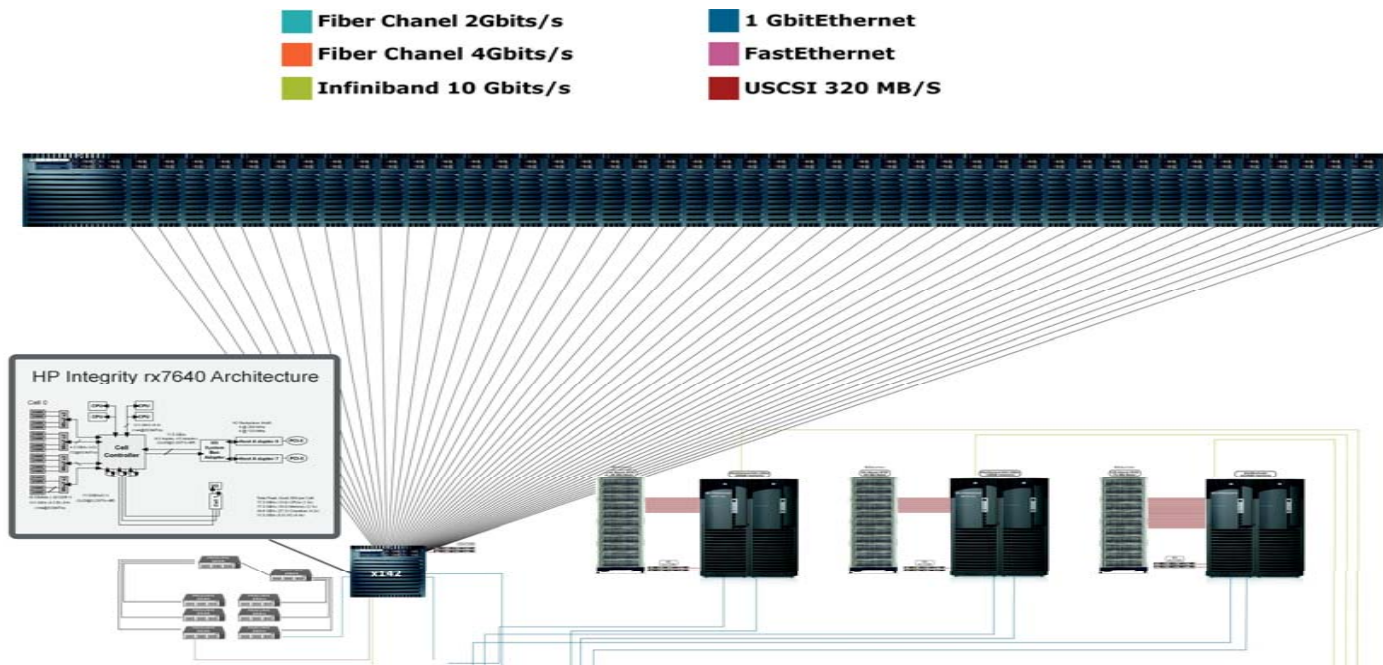
2.580 CPUs

19.000 GB Memory

OPEN SOURCE



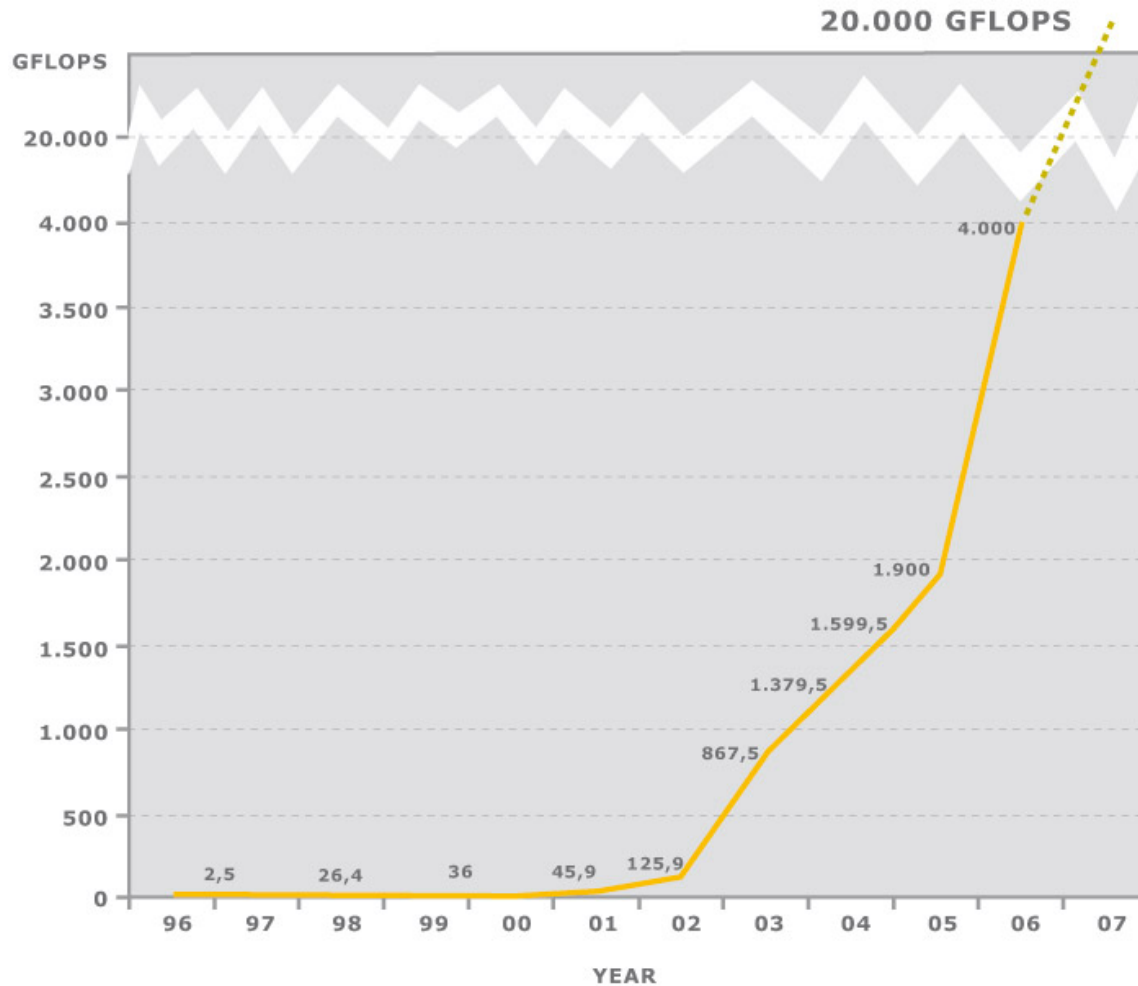
FINIS TERRAE (2007) - COMPUTING NODES



SUPERCOMPUTING NODES: 147 cc-NUMA Nodes with Itanium CPUs connected through a high efficiency INFINIBAND network

- 1 node: 128 cores, 1.024 GB memory
- 2 node: 64 CPUs, 256 and 128 GB memory
- 142 nodes: 16 cores, 128 GB memory
- 2 nodes: 4 cores, 4 GB memory for testing

PEAK PERFORMANCE EVOLUTION AT CESGA



* 1 GFLOPS=1.073.741.824 Operations of floating point per second

--- EXPECTED

GALICIAN' SCIENCE & TECHNOLOGY NETWORK



N. PORTUGAL



CESGA

GRID COMPUTING

PROJECTS AT CESGA




CESGA

CENTRO DE SUPERCOMPUTACIÓN DE GALICIA

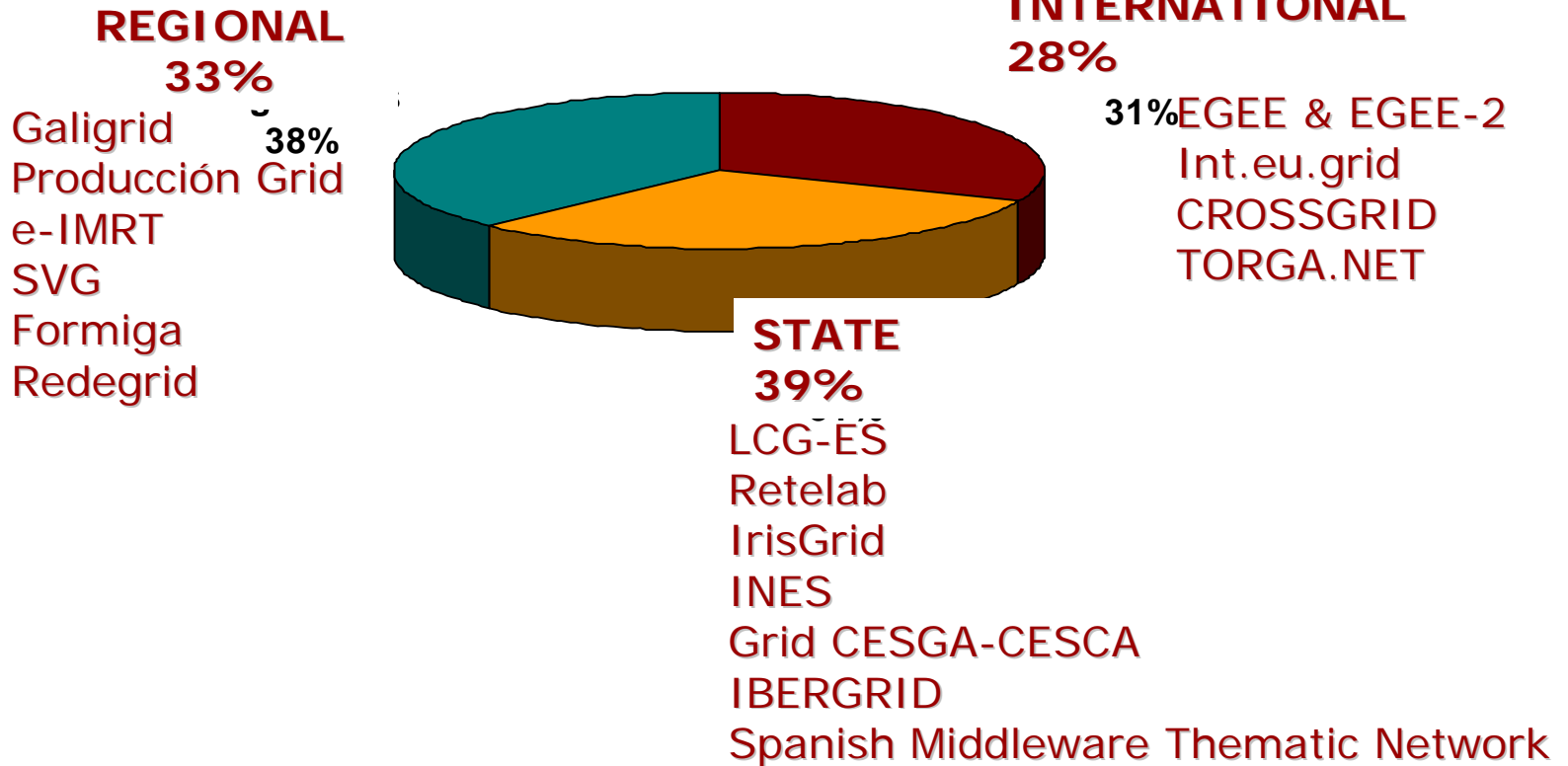
LARGEST GRID INITIATIVES IN SPAIN (10/2006)

- EU DataGrid
- EU CrossGrid
- LCG (LHC Computing Grid)
- IRISGrid
- EGEE
- EGEE2
- DEISA
- Int.Eu.Grid
- IBERGrid Initiative
- Spanish Middleware Thematic Network
- EUMEDGrid
- EELA

 CESGA is partner in all projects marked in red

PROJECTS PROMOTED OR PARTNERED BY CESGA

GRID PROJECTS DISTRIBUTION BY SOURCE OF FUNDING



EUROPEAN FUNDED GRID PROJECTS AT CESGA

PROJECT

CESGA'S RESPONSIBILITY

EGEE & EGEE-2: Enabling Grid for E-science	Monitoring & Accounting SWE Accounting enforcement & EGEE View
Int.eu.grid: Interactive European Union Grid	Project monitoring & accounting Interactive & parallel job adaptation
CROSSGRID: Development of Grid environment for Interactive Applications	Testbed. Network QoS
TORGA.NET: Trans Portugal-Galicia Network	Communications Network Access Grid Room Configuration Grid CESGA – Universidade do Minho
LCG: LHC Computing Grid	Hosting & support Tier-2 USC

STATE FUNDED GRID PROJECTS AT CESGA

PROJECT

CESGA'S RESPONSIBILITY

LCG-ES Development of a Datagrid infrastructure for the analysis of LHC data	Hosting & support for the research group at Universidade de Santiago de Compostela
Retelab Oceanographic Model Implementation	Researcher access management Design & implementation of a virtual lab
Irisgrid: Spanish National Grid Initiative	Executive Committee Member
INES: Spanish Technological Platform for Software & Services	Grid Technology Task Group Coordinator
Grid CESGA-CESCA (2003)	Grid Design & Configuration Code Adaptation

STATE FUNDED GRID PROJECTS AT CESGA



- IBERIAN Network
- IBERIAN grid
- IBERIAN Conference
- IBERIAN VOs

REGIONAL FUNDED GRID PROJECTS AT CESGA

PROJECT

CESGA'S RESPONSIBILITY

Galigrd: Study & implementation of a Grid technology based computing platform	Design & implementation of the infrastructure
Producción Grid: Management of the production and use of resources in a Grid environment	Grid architecture definition. Design, development & implementation of GT3 based solution
e-IMRT: Radiotherapy planning advanced systems using computing environments	Project coordination. Adaptation of the calculus modules to Grid technology. Developmente of an indexing module for cases of interest
SVG: Galician Virtual Supercomputer	Design & deployment of the architecture
Formiga: Facilitating resource re-exploitation through integration and gridification of PC rooms	Project coordination Infrastructure design & implentation. Design of operational procedures.
Redegrid	Network promoter & coordinator



THANK YOU

FOR YOUR ATTENTION

Javier García Tobío

info@cesga.es

www.cesga.es

TORGA.NET PROJECT

TRANS PORTUGAL - GALICIA NETWORK



Fondo Europeo de
Desarrollo Regional

Interreg III A
España - Portugal



Direcção-Geral do
Desenvolvimento
Regional
Autoridade de Pago



Dirección Gral. de
Fondos Comunitarios y
Financiación Territorial
Autoridad de Gestión



Universidade do Minho



CESGA



Centro de Computação Gráfica

CENTRO DE SUPERCOMPUTACIÓN DE GALICIA

TORGA.NET PROJECT PRESENTATION

TORGA.NET: TRANS PORTUGAL - GALICIA NETWORK

- EUROPEAN REGIONAL DEVELOPMENT FUNDS

INTERREG III A PROGRAM,

SPAIN. GALICIA - NORTH OF PORTUGAL SUBPROGRAM

BUDGET: 4.1 Million €

- PARTNERS:

- UNIVERSITY OF VIGO (UVIGO)- GALICIA. N-W SPAIN
- UNIVERSITY OF MINHO (UM) – NORTH OF PORTUGAL
- SUPERCOMPUTING CENTER OF GALICIA (CESGA)
- GRAPHIC COMPUTATION CENTER (CCG) – NORTH OF PORTUGAL

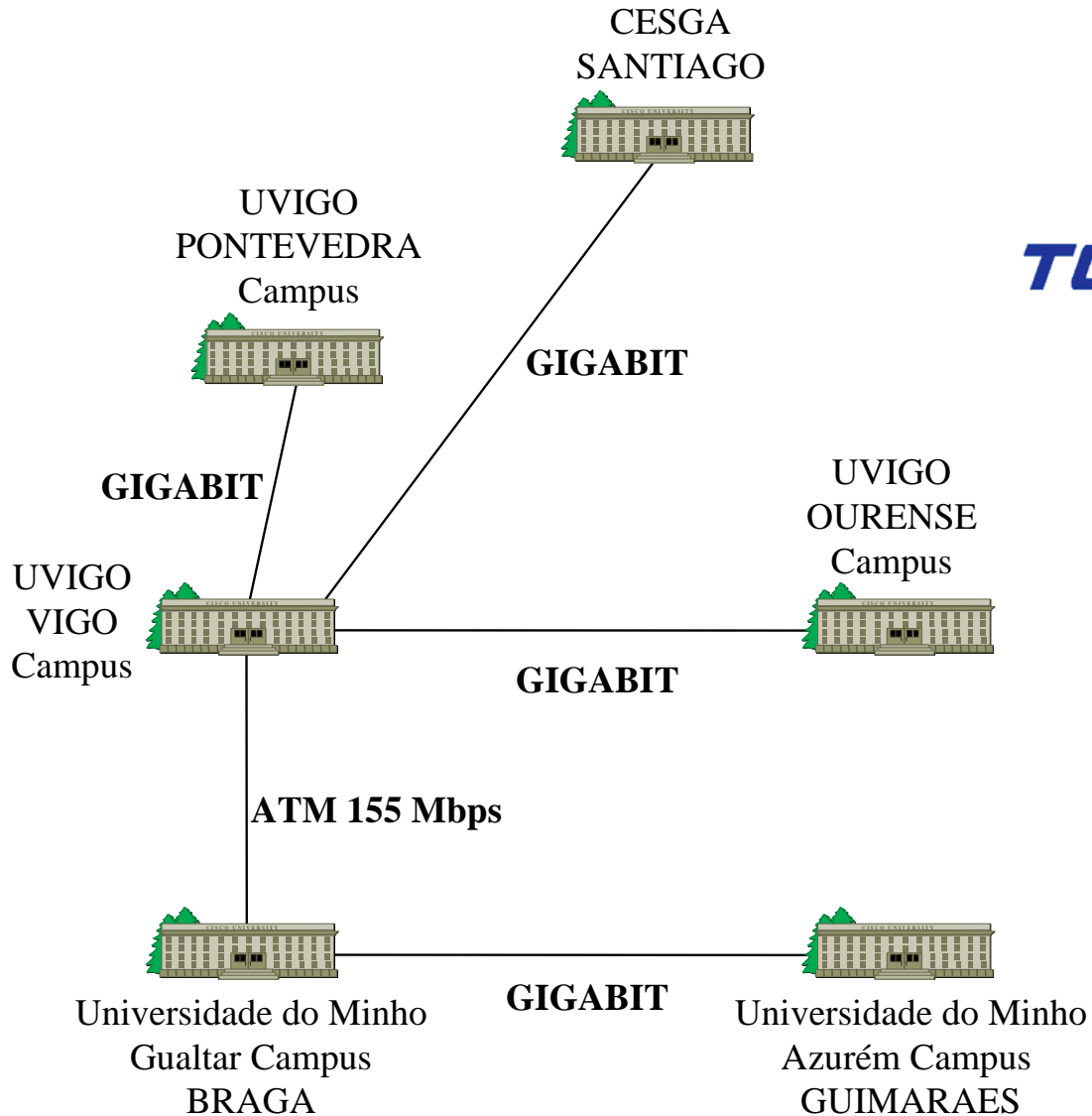
OBJECTIVES

- TO BUILD AN ADVANCED DIGITAL COMMUNICATION PLATFORM BETWEEN R&D INSTITUTIONS OF GALICIA AND NORTH OF PORTUGAL
- TO INCREASE COLABORATIONS IN RESEARCH PROJECTS
- TO LEVERAGE ECONOMIC DEVELOPMENT
- TO IMPROVE COOPERATION AMONG UNIVERSITIES

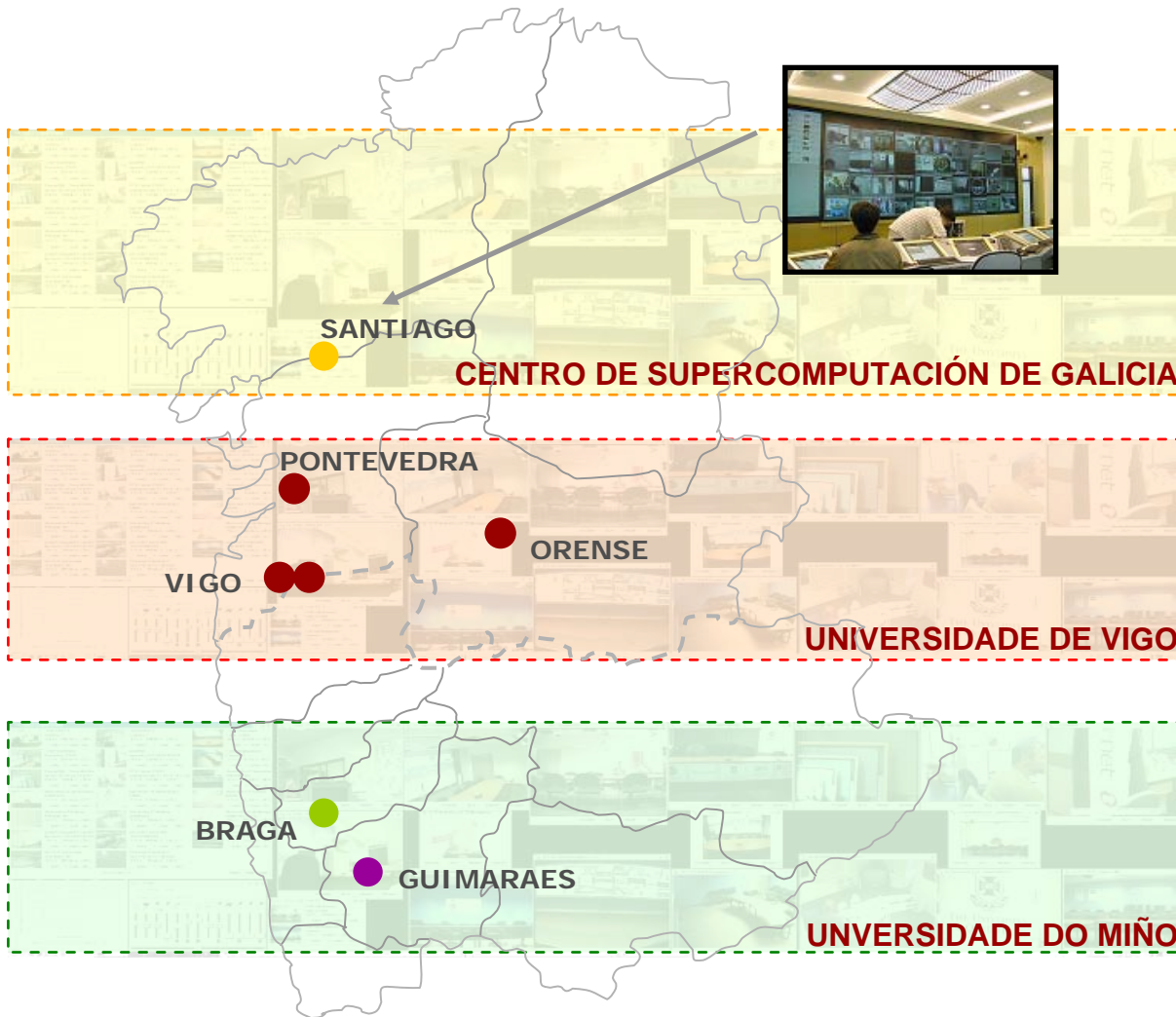
INFRASTRUCTURE

- HIGH CAPACITY DIGITAL COMMUNICATION NETWORK
- ACCESS GRID NETWORK WITH ROOMS AT:
 - VIGO CAMPUS (2)
 - PONTEVEDRA CAMPUS
 - OURENSE CAMPUS
 - BRAGA CAMPUS
 - GUIMARAES CAMPUS
 - SUPERCOMPUTING CENTER (SANTIAGO DE C.)

NETWORK DESCRIPTION



Access Grid In Galicia-Norte Portugal



- Sala Access Grid del CCG
- Sala Access Grid de la Universidad de Miño
- Salas Access Grid de la Universidad de Vigo
- Sala Access Grid del CESGA



PROJECT BENEFITS (APRIL 2005 - APRIL 2006)

- OVER 40 AG EVENTS SPAIN-PORTUGAL
- DOCTORAL CLASSES: 82 CLASS SESSIONS
- OTHER AG SESSIONS: 240
- AG TIME USED: 1.400 hours
- UVIGO-TV: 586 LESSONS, 30.500 downloads, 12.500 users of live programmes
- BACKUPS UMINHO-UVIGO
- COMPUTING GRID UMINHO-CESGA: 700 JOBS Physics and Chemistry



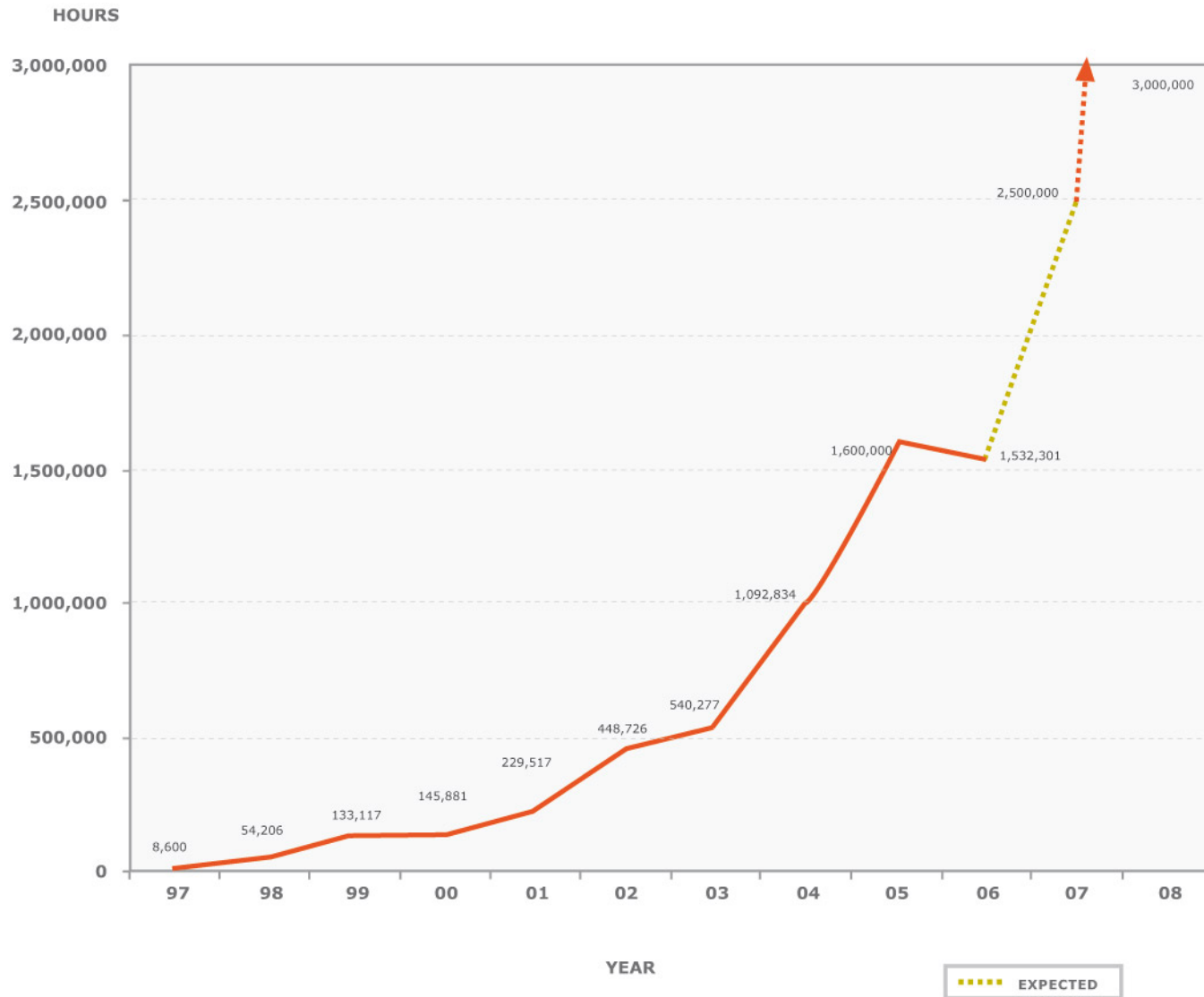
Spanish Conference on e-Science Grid Computing



Madrid, March 1st, 2007



USER'S CPU TIME CONSUMED SINCE 1997



CONNECTIVITY THROUGH RedIRIS 10 & GÈANT-2

