IBERIC INFRASTRUCTURE COMMON PLAN FOR DISTRIBUTED COMPUTATION

IBERGRID - Porto, 13 May 2008

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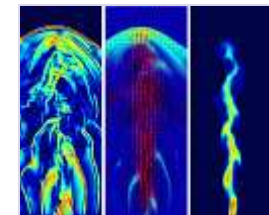 * GRID INFRASTRUCTURE

 * APPLICATIONS

GENERAL BACKGROUND

- **SCIENTIFIC AND TECHNOLOGICAL COOPERATION AGREEMENT OF 8TH NOVEMBER 2003 BETWEEN PORTUGAL and SPAIN. MEMORANDA OF UNDERSTANDING OF 19TH NOVEMBER 2005 (EVORA) FOR GRID COMPUTING AND R&D ELECTRONIC NETWORKS.**

  - **COMMON ACCESS TO RESOURCES**

  - **INFORMATION EXCHANGE AND TRAINING**

  - **RESEARCHERS MOBILITY**

  - **COMMON R&D PROJECTS**

- **MIXED COMMITTEE OF MEMORANDA IN MADRID MEETING (2/10/2006) COMMITED A MIXED WORK GROUP TO ELABORATE AN IBERIC INFRASTRUCTURE COMMON PLAN FOR DISTRIBUTED COMPUTATION.**

- **MIXED WORK GROUP IN THE BRAGA MEETING (12/11/2006) DESIGNATED THE TEAM AND RECOMMENDED MAKING A ROAD MAP.**
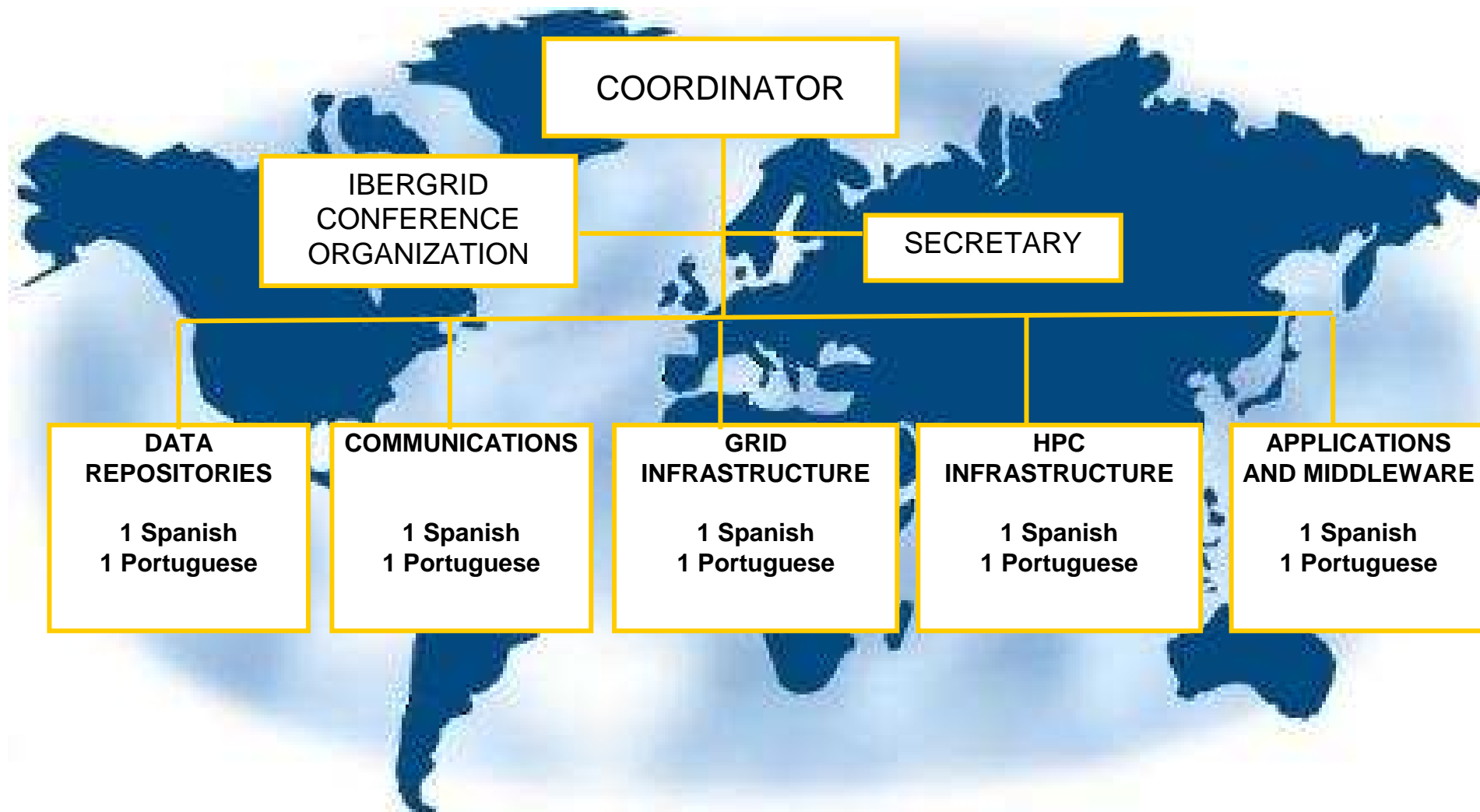
GENERAL IDEAS FOR GRID COLLABORATION

- WIDE-OPEN AND EFFECTIVE COLLABORATION
- STRATEGIC ALLIANCE IN UE
- COMMON INFRASTRUCTURE
  - ORIGINALLY BASED ON EGEE AND EELA STANDARDS
  - POWERFUL COMMON COMMUNICATIONS NETWORK
    - COORDINATION REDIRIS-RCTS; POSSIBLE SPECIFIC GRID NETWORK
  - ORGANIZED RESOURCES STRUCTURE
    - USERS CERTIFICATION; RESOURCE CENTERS SUPPORT; SECURITY; MONITORING AND CONTROL
- APPLICATIONS
  - PUSH COMMON VIRTUAL ORGANIZATIONS
  - SELECT APPROPRIATE COMMON APPLICATIONS
- INFORMATION AND TRAINING
  - TAKE ADVANTAGE OF COMMON INITIATIVES
- RESEARCHERS MOBILITY
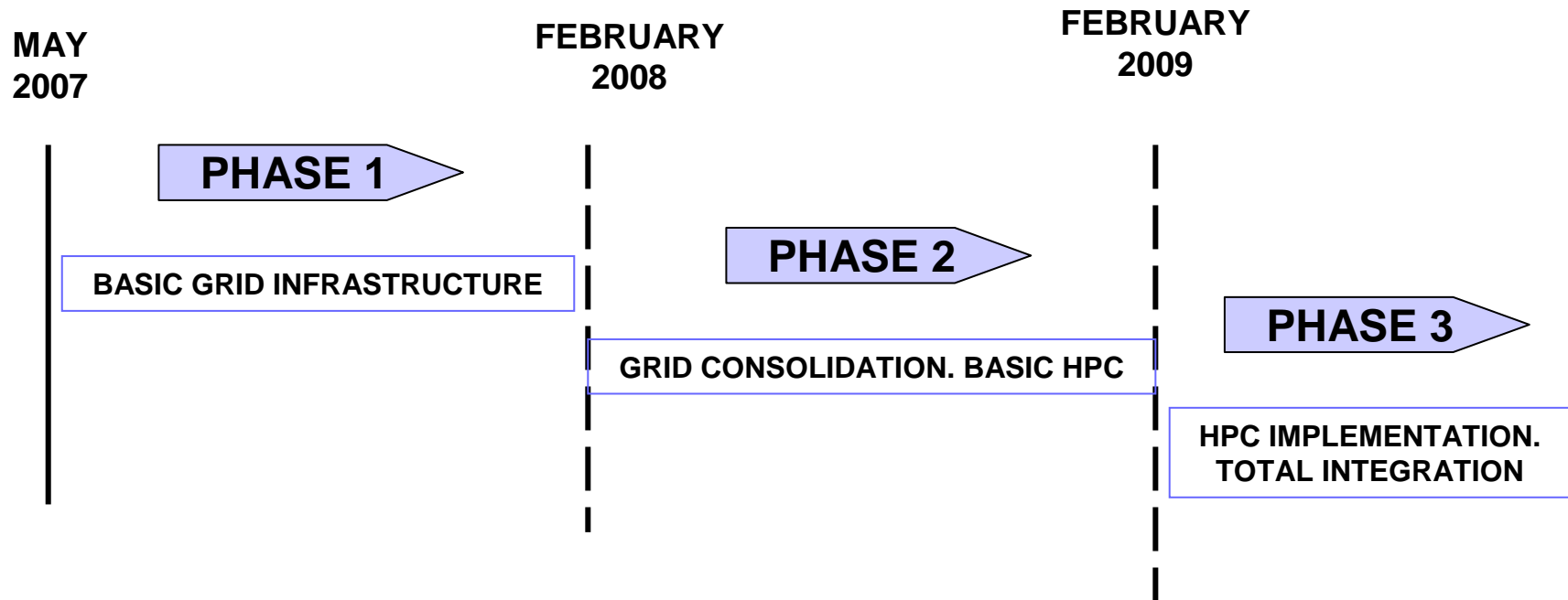 - COORDINATE NATIONAL PLANS AND PROMOTE BILATERAL COOPERATION

ORGANIZATION

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                    ┌──────────────────┐
                    │   COORDINATOR    │
                    └──────────────────┘

┌──────────────────┐
│    IBERGRID      │              ┌──────────────────┐
│   CONFERENCE     │              │    SECRETARY     │
│  ORGANIZATION    │              └──────────────────┘
└──────────────────┘
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DATA REPOSITORIES	COMMUNICATIONS	GRID INFRASTRUCTURE	HPC INFRASTRUCTURE	APPLICATIONS AND MIDDLEWARE
1 Spanish 1 Portuguese	1 Spanish 1 Portuguese	1 Spanish 1 Portuguese	1 Spanish 1 Portuguese	1 Spanish 1 Portuguese

ROAD MAP

MAY 2007

FEBRUARY 2008

FEBRUARY 2009

PHASE 1

BASIC GRID INFRASTRUCTURE

PHASE 2

GRID CONSOLIDATION. BASIC HPC

PHASE 3

HPC IMPLEMENTATION. TOTAL INTEGRATION

There are not favorable winds for people who don't know where to go

Seneca

ROAD MAP

PHASE 1 (9 MONTHS)

- **COMMUNICATION NETWORK CONNECTION TROUGH GALICE AND EXTREMADURA.**
- **ORGANIZATION APPROVAL AND DEPLOYMENT.**
- **STARTING WITH PRESENT INFRASTRUCTURES (GLITE).**
- **IDENTIFICATION OF RCs AND RESOURCES INVENTORY.**
- **DEFINITIONS OF RESOURCE CENTERS CHARACTERISTICS.**
- **RESOURCES ACCESS STANDARDS AND PROCEDURES.**
- **EUGRID PMA (PKIRISGRID + LIP CA).**
- **COMMON RULES FOR SECURITY.**
- **SELECTED VIRTUAL ORGANIZATIONS OUT OF THE LIST.**

RECOMENDED IN EVORA. IDENTIFICATION OF APPLICATIONS.

- **TRAINING COORDINATION.**
- **IBERGRID INFRASTRUCTURE SUSTAINABILITY STUDY AFTER EU SUPPORT.**
- **DOCUMENT TO IMPROVE RESEARCHERS MOBILITY.**
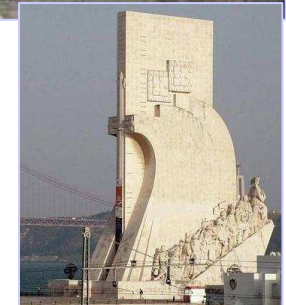
ROAD MAP

PHASE 2 (12 MONTHS)

- **PUSH NEW RESOURCE CENTERS**
- **PUSH NEW VIRTUAL ORGANIZATIONS AND APPLICATIONS**
- **TESTBED DEPLOYMENT**
- **DEFINITION AND DEVELOPMENT OF NEW MIDDLEWARE NEEDS. MECHANISMS FOR EVOLUTION AND INCORPORATION OF NEW MIDDLEWARE**
- **DEFINE AND DEPLOY A COLLABORATION SYSTEM IN THE AREA OF SUPERCOMPUTING**
- **TRAINING COORDINATION ON NEW ACTIVITIES**
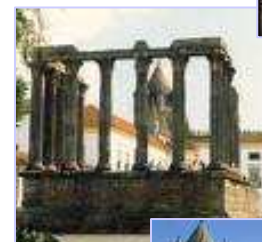
ROAD MAP

PHASE 3

- SUPERCOMPUTING COLLABORATION DEPLOYMENT
- DEFINITION OF SPECIFIC ACCESS MECHANISMS TO IBERGRID
  - MARE NOSTRUM
  - NATIONAL SUPERCOMPUTING NETWORK
  - FINISTERRAE
  - OTHERS
- SPECIFIC TRAINING PROGRAMMES
- MIDDLEWARE INTEGRATION
- APPLY SPECIFIC MECHANISMS FOR PERSONAL MOBILITY

BRIEF REPORT ON LAST YEAR E-SCIENCE GENERAL PROGRESS IN PORTUGAL AND SPAIN

PORTUGAL

- **FIRST CALL FOR GRID TECHNOLOGY PROPOSALS. 13 PROJECTS APPROVED**

- **CENTRAL GRID NODE (FCNN, LIO & LNEC CONSORTIUM) LAUNCHING**

- **E-INFRASTRUCTURE REFLECTION GROUP MEETING ON 11-12 OCTOBER**

SPAIN

- **SPECIAL ACTION APPROVED TO CREATE e-SCIENCE NETWORK KICK-OFF MEETING ON FEBRUARY 2008**

- **JRU FOR GRID EU PROJECTS (EELA2, EGEE3)**

- **TWO NEW ICTS (FINISTERRE, CETA-CIEMAT)**

SUMMARY of EVENTS

THE PLAN WAS PRESENTED AT THE FIRST IBERGRID CONFERENCE (MAY 2007, SANTIAGO DE COMPOSTELA)

FIRST COORDINATION MEETING IN LISBON, ON MAY 4th, 2007

THE FIRST YEAR COORDIANTION COMMITTEE WAS NOMINATED:

- **Coordinators: Gaspar Barreira/ Vicente Hernández**
- **Data Repository: Pedro Ferreira/ Manuel Delfino**
- **Communications: Pedro Veiga/ Tomás de Miguel**

- **Grid Infrastructure: Jorge Gomes/ Jesús Marco**
- **SC Infrastructure: Manuel Fiolhais/ Javier García Tobio**
- **Applications: Antonio Socesa/ Ramón Gavela**

SECOND COORDINATION MEETING IN VALENCIA, ON JULY 24th, 2007

* OPORTO IBERGRID CONFERENCE ANNONCEMENT (2008)

THIRD COORDINATION MEETING IN PORTO, ON JANUARY 28th, 2008

* VALENCIA IBERGRID CONFERENCE ANNONCEMENT (2009)

COMMUNICATIONS

PORTUGAL

- **PUBLIC CONCOURSES LAUNCHED**
- **GALICIA CONNECTION ALMOST FINISHED**
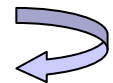- **EXTREMADURA CONNECTION. JULY**

SPAIN

- **RedIRIS-XUNTA AGREEMENT TO CONNECT WITH PORTUGAL NETWORK AT GALICIA BORDER. JULY**
- **RedIRIS-JE AGREEMENT TO CONNECT WITH PORTUGAL NETWORK AT EXTREMADURA BORDER. JULY.**
- **REINFORCEMENT OF INTEGRATION WITH SPANISH NETWORK. 2009**
- **EU FUNDING (FEDER)**

ELECTRONIC NETWORK CONNECTIONS

GRID INFRASTRUCTURE

- **TECHNICAL PROPOSAL FOR A COMMON GRID INFRASTRUCTURE delivered end 2007**

- **INTEGRATE EXISTING RESOURCES IN EGEE, EELA, int.eu.grid**
  - **3000 cores, 200 TB aprox.**

- **INTEROPERABILITY (single job submission entry point)**

- **USE STANDARD gLite MIDDLEWARE + MPI, INTERACTIVE EXTENSIONS**

- **CREATE CENTRAL SERVICES (Resource Brokers, etc.) WITH BACKUP or REPLICA in SPAIN/PORTUGAL**

IBERGRID CENTRAL SERVICES

- **RESOURCE BROKER**
  - **gLite RB, CrossBroker**

- **VOMS SERVER.**
  - **SINGLE ONE, ONE PER VO, DISTRIBUTED CLUSTER WITH LB**

- **FILE CATALOG**
  - **SINGLE ONE, ONE PER VO, DISTRIBUTED CLUSTER WITH LB**

- **MONITORING**
  - **EGEE SERVICES HOSTED AT CESGA**

- **OTHER. Helpdesk, software repositories**

IBERGRID CORE SERVICES STRUCTURE

- **Information index (top BDII):**   **ii01-ibergrid.domain**

- **File catalogue:**   **lfc01-ibergrid.domain**

- **Brokers:**   **rb01-ibergrid.domain**

- **VOMS:**   **voms01-ibergrid.domain**

- **Storage elements:**   **se01-ibergrid.domain**

- **Catchall UI:**   **ui01-ibergrid.domain**

INTEGRATION OF EXISTING RESOURCE CENTERS

- **Existing RCs normally have:**
  - **CE, WNs, SE, BDII, MON, UI**

- **Option 1: support for sequential single-processor jobs**
  - **Existing RC needs only to reconfigure to support IBERGRID VOs**

- **Option 2: support for MPI applications**
  - **Existing RC needs to install additinal middleware on CE and WNs**

- **Option 3: storage for IBERGRID**
  - **Existing RCs must dedicate SEs to IBERGRID**

APPLICATIONS

- **NEED TO WAIT FOR COMMUNICATIONS AND INFRASTRUCTURE**

- **QUESTIONNAIRE SENT BUT NO ANSWERS**

- **MANY GROUPS WORKING TOGETHER THROUGH DIFFERENT PROJECTS (EGEE, EELA,…) and BILATERAL AGREEMENTS**
  - **MEDICAL IMAGING, SISMIC MONITORING, etc.**

- **WILL ORGANISE INITIAL VOs:**
  - **GENERIC ONE**
  - **For selected fields (MEDICAL IMAGING, …)**

- **WILL PROFIT FROM THE INERTIA FROM APPLICATIONS GROUP of Spanish eScience Network and Portuguese FTC GRID PROJECTS**

APPLICATIONS. GOALS

- **CATALYSE COMMUNITIES STRUCTURING AROUND VOs**

- **ENSURE APPLICATIONS AVAILABILITY THROUGHOUT SITES**

- **PROVIDE SUPPORT FOR NEW COMMUNITIES**
  - CODE TRANSFORMATIONS
  - CONSULTING
  - SCIENTFIC PRODUCTION PLANNING
  - LIFE CYCLE: ANALYSIS -> GRIDIFICATION -> DEPLOYMENT -> PRODUCTION

- **CENTRAL POINT FOR BUILDING NEW COLLABORATIONS**
  - FINDING PARTNERS
  - CATALOG of APPLICATIONS/RESEARCH GROUPS

- **SUCCESS STORIES**

APPLICATIONS. OPORTUNITIES

- **APPLICATIONS DIVERSITY**
  - AROUND 60 APPLICATIONS REGISTERED in SPANISH eSCIENCE NETWORK
  - AROUND 40 APPLICANTS TO FCT GRID PROPOSALS

- **DOMAINS FROM CURRENT COLLABORATIONS**
  - FORMAL or INFORMAL
  - MEDICAL IMAGING
  - CLIMATE
  - HEP
  - SISMIC MONITORING

- **ONGOING COLLABORATIONS**
  - WILL HAVE ACCESS TO IBERIAN INFRASTRUCTURE WHEN READY
  - ORGANIZE AROUNG VOs
  - WILL FOSTER SEARCH OF FUNDING INSTRUMENTS (CYTED, FP7, FCT…)

CONCLUSIONS

- **COLLABORATION IS FLUENT and REGULAR**

- **DIFFERENT AREAS ADVANCE AT DIFFERENT SPEEDS**

- **CONVERGENCE BY PROFITING FROM INERTIA OF ONGOING INITIATIVES (current projects and collaborations, Spanish eScience Network, etc.)**

- **NEED TO PUSH KEY ASPECTS:**
  - **Integration of eInfrastrucutures**
  - **Basic middleware operability**
  - **Applications critical mass (VOs)**
  - **Researchers mobility and training**

VALENCIA 2009!!!

IBERIC INFRASTRUCTURE COMMON PLAN

FOR DISTRIBUTED COMPUTATION

Thank you very much