

# LinkSCEEM-2: HPC User Support & Coordination Services within LinkSCEEM-2 project

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# Outline

- **Regional HPC resources**
- **LinkSCEEM-2 Work Packages (WPs)**
  - Coordination activities (WP2,WP3,WP4,WP5)
  - User Services (WP6), related tools
- **Vision for the future**

# LinkSCEEM-2: Linking Scientific Computing in Europe and the Eastern Mediterranean

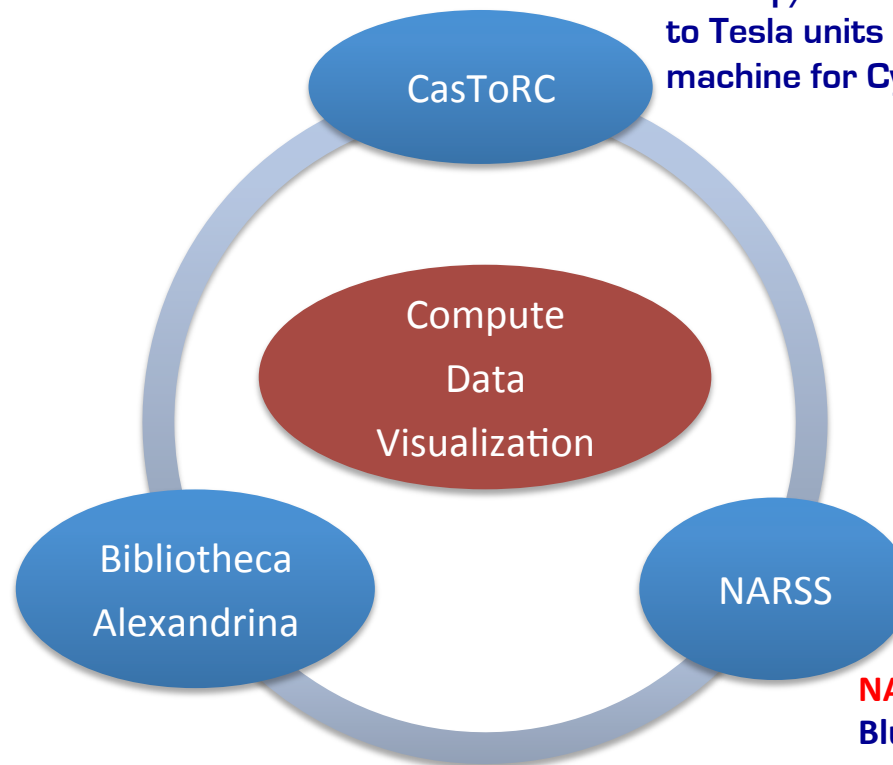
- **LinkSCEEM**
  - 21 month project (April 2008-January 2010)
  - Assessed regional needs, developed strong links with regional users initiated training/technical support, implemented network study
- **LinkSCEEM-Phase 2 ← YOU ARE HERE**
  - 48 month project, started September 1<sup>st</sup>, 2010
  - Follow-up and implementation of LinkSCEEM findings
- **Main goal**
  - Develop an HPC e-infrastructure in the Eastern Mediterranean
  - Create a Virtual Computational Scientist Community in the region

# Regional HPC Resources

30% commitment to LinkSCEEM-2

## CaSToRC:

- Cy-Tera machine, ~35 Tflop/s,, expected in 2011
- Visualization infrastructure – upgrade
- Data storage scalable to 1PB
- 1 Tflop/s Nehalem cluster connected to Tesla units – open to all users, pilot machine for Cy-Tera



## Library of Alexandria:

- SUN cluster of ~12 Tflop/s
- Storage of >4PB, 100TB committed to the project
- An active stereo immersive environment, Fakespace Flying FLEX CAVETM, with four rear-projection surfaces (3 walls and floor – 10ft cube).

## NARSS:

- Blue Gene/L – upgrade to Blue Gene/P

# LS2 Coordination Activities

- **WP2. Networking of User Communities**
  - Organization of general and thematic user meetings
  - Online communications and knowledge tools
  - Industrial networking program
  - Coordination with EU projects with overlapping goals
- **WP3. Management of Access to Resources**
  - Implement a peer review process for compute resources, visualization systems and data repositories

# LS2 Coordination Activities (cont.)

## ■ WP4. Training

- Develop a tiered and adaptive HPC training program
- Provide a consultancy service

## ■ WP5. Dissemination and Outreach

- Organize a Computational Science International Conference, create awareness through outreach programs
- Investigate sustainability of e-Infrastructure

# LS2 Services

## ■ WP6. User Support

- Online helpdesk
- Provide a support service to regional users at all levels:
  - Basic
  - Intermediate
  - Advanced
- Job accounting facilities

# Training and Networking Activities - General

## ■ General User Meetings/Basic Training

- Four 1-day user meetings per year
  - Organized in countries in the Eastern Mediterranean region
  - Include training courses and tutorials
- One 3-day user meeting per year
  - Includes 2 days of general, cross-disciplinary training for 70 users
  - Location alternating between NARSS, Bib. Alex. and CaSToRC/Cyl
- Training topics will include
  - Parallel programming models and tools
  - Introduction to visualization techniques
  - Special sessions for using LinkSCEEM-2 e-Infrastructure resources



# Training and Networking Activities - General

## ■ Advanced Training

- One advanced 3-day cross-disciplinary workshop per year
  - Offering advanced training courses to circa 50 participants
  - First one combined with the PRACE Winter 2011 school in Cyprus
- Training topics include
  - Emerging HPC technologies and tools
  - Programming techniques for GPUs (Graphical Processing Units)
  - Multi-core programming for homogeneous and heterogeneous architectures

# LinkSCEEM/PRACE CyI 2011 Winter School



# Training and Networking Activities - Thematic

- **LinkSCEEM-2 Research Themes:**
  - Climate Modelling, Cultural Heritage, Synchrotron Radiation
- **Basic Training**
  - Co-organized with User Meetings
  - Include training/tutorials in Climate Modeling applications, Cultural Heritage data acquisition and Visualization, and Synchrotron data analysis applications
- **Advanced Training (Thematic)**
  - One 3-day thematic workshop per year per theme
  - Include 2-days of advanced training in theme specific applications

# Webpage for Training resources

The screenshot shows a web browser window displaying the LinkSCEEM website. The browser's address bar shows the URL: [http://www.linksceem.eu/joomla/index.php?option=com\\_content&view=article&id=118&Itemid=132](http://www.linksceem.eu/joomla/index.php?option=com_content&view=article&id=118&Itemid=132). The website header features the LinkSCEEM logo, which consists of a grid of blue dots followed by the text "LINKSCEEM".

The main content area is divided into several sections:

- Main Menu:** A vertical list of links including Home, About Us, News, Partners, and HPC Resource Centres.
- Activities:** A vertical list of links including Events, Outreach, and Work Organization.
- User Resources:** A vertical list of links including User Support, Call for Proposals, Access & Allocations, Training (highlighted in orange), and Links.
- Training Events:** A section titled "Training Events" containing a single bullet point: "PRACE/LinkSCEEM 2011 Winter School".
- Training Portal:** A section titled "Training Portal" with the text "Training material is currently available via the training portal ATutor on the following topics:" followed by a list of topics:
  - Getting Started on LinkSCEEM HPC Resources
  - Parallel Computing Explained
  - Introduction to MPI
  - Intermediate MPI
  - Introduction to Multi-core Performance
  - Introduction to OpenMP
  - Debugging Serial and Parallel Codes
  - Multilevel Parallel Programming
  - Introduction to Performance Tools
  - Introduction to Visualization
  - Parallel Numerical Libraries
  - Performance Tuning for Clusters
  - Tuning Applications for High Performance Networks
- Login Form:** A section titled "Login Form" containing fields for Username and Password, a "Remember Me" checkbox, a "Login" button, and links for "Forgot your password?" and "Forgot your username?".
- e-infrastructure CAPACITIES:** A logo for "e-infrastructure" with "CAPACITIES" below it, featuring a stylized graphic of a network or data flow.

At the bottom of the main content area, there is a note: "You may access the HPC Training Portal at: <http://linksceem.eu/ATutor>". Below this, it says "Please watch this space for LinkSCEEM-2 related training material."

# Online Training and Networking Tools

- **Development of online tools to enable training, facilitate networking of user community and promote collaborations**
  - Online training portal
    - [www.linksceem.eu/ATutor](http://www.linksceem.eu/ATutor)
  - Cyber-platform providing an online user forum
  - Knowledge base of computational science researchers/projects
- **Monitoring evolving trends and emerging user needs to adapt training programs through:**
  - Online user networking forum
    - LinkSCEEM LinkedIn group inaugurated; please join, contribute
    - <http://www.linkedin.com/> search for LinkSCEEM group

# Call for Proposals, as of July 2011

The screenshot shows the LINKSCEEM website interface. At the top, the LINKSCEEM logo is displayed. Below the logo, the main content area features a central image of a map of the Mediterranean region with a blue overlay. The text below the map reads "Cy-Tera & LinkSCEEM HPC preparatory access" and "Call for proposals". To the left of the main content are three vertical navigation menus: "Main Menu" with links to Home, About Us, News, Partners, and HPC Resource Centres; "Activities" with links to Events, Outreach, and Work Organization; and "User Resources" with links to Training, Access & Allocations, Links, and User Support. To the right of the main content is a "Login Form" with fields for Username and Password, a "Remember Me" checkbox, and a "Login" button. Below the login form are two logos: "e-infrastructure" and "CAPACITIES". At the bottom of the page, the "Opening date" is listed as 1<sup>st</sup> March 2011, and the "Closing date" is listed as a rolling call with no closing dates.

**LINKSCEEM**

CyTera & LinkSCEEM2 - Call for Proposals, Preparatory Access

**Main Menu**

- » Home
- » About Us
- » News
- » Partners
- » HPC Resource Centres

**Activities**

- » Events
- » Outreach
- » Work Organization

**User Resources**

- » Training
- » Access & Allocations
- » Links
- » User Support

**Login Form**

Username  
[input field]

Password  
[input field]

Remember Me

Login

Forgot your password?  
Forgot your username?

**e-infrastructure**

**CAPACITIES**

**Cy-Tera & LinkSCEEM HPC preparatory access**

**Call for proposals**

**Opening date:** 1<sup>st</sup> March 2011

**Closing date:** Rolling call, applications accepted all-year round, no closing dates

# Online submission review tool (Linklings)

The screenshot shows a web browser window with the URL <https://ssl.linklings.net/applications/linksceem/>. The browser's address bar and search bar are visible at the top. The website's header is dark blue with the text "LinkSCEEMPS2011 Applications". Below the header is a navigation bar with links: "Sign in", "Create an Account", and "Sample Application Forms". The main content area has a yellow background and contains the following text:

**Welcome to the LinkSCEEMPS2011 application site!**  
**LinkSCEEM HPC Proposal Submission 2011**

In order to apply, you need to [create an account](#). If you have an account, please sign in below. If you would simply like to look at the required application forms, you may do so by selecting them in the "Sample Application Forms" box above.

**Sign in**

Email:

Password:

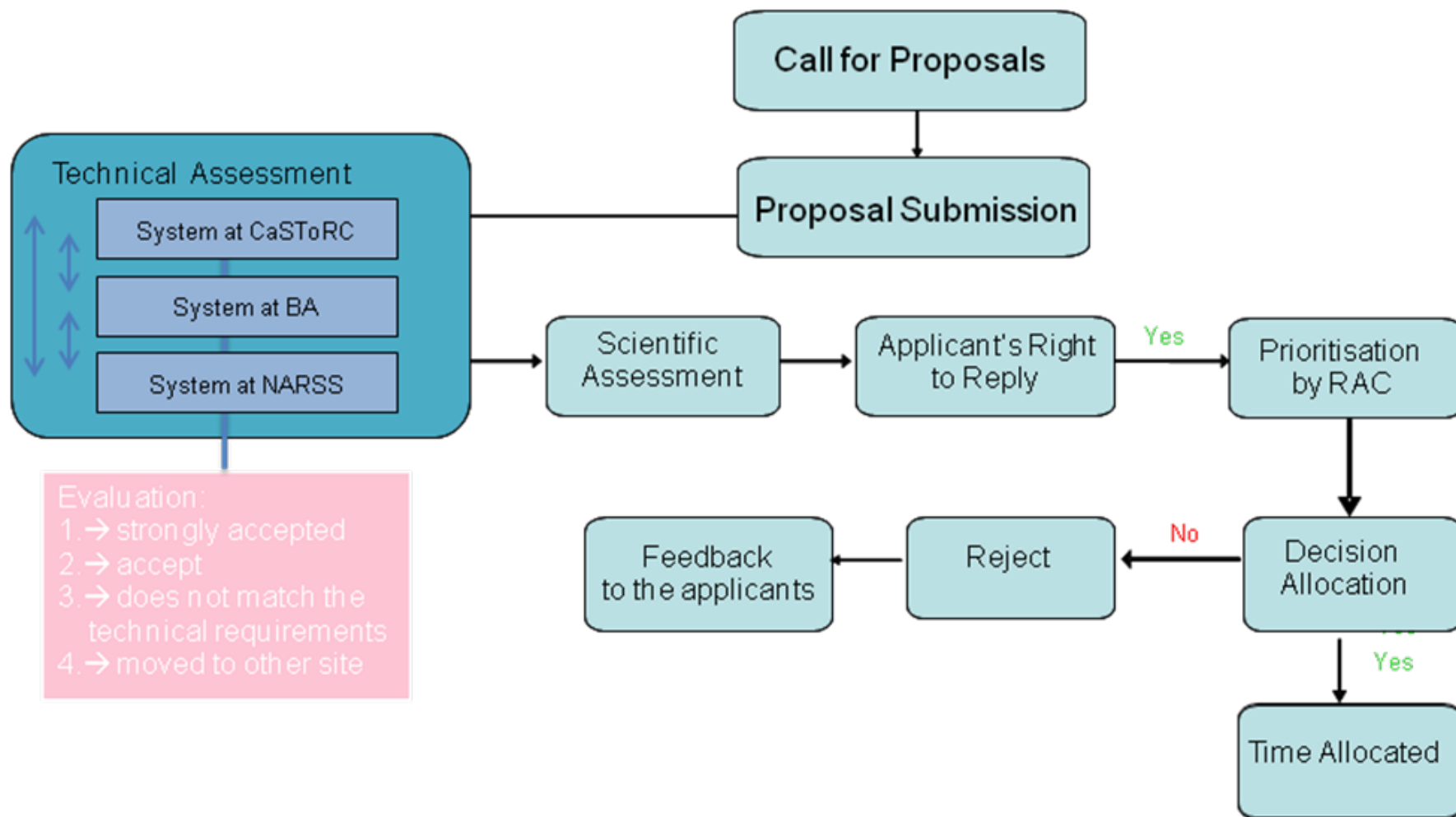
[Forgot Password?](#)

[Have an OpenID? >](#)

**Spam Filters:** To make sure that you receive important email that is being sent from this site (e.g., registration and submission confirmations, password reminders, decision notifications, review assignments, etc), you should make sure to include `do_not_reply@linklings.com` in your spam filter's whitelist. Failure to do this may result in you missing an important email.

**Cookies:** For security purposes only, this site requires that you have browser cookies turned on. If

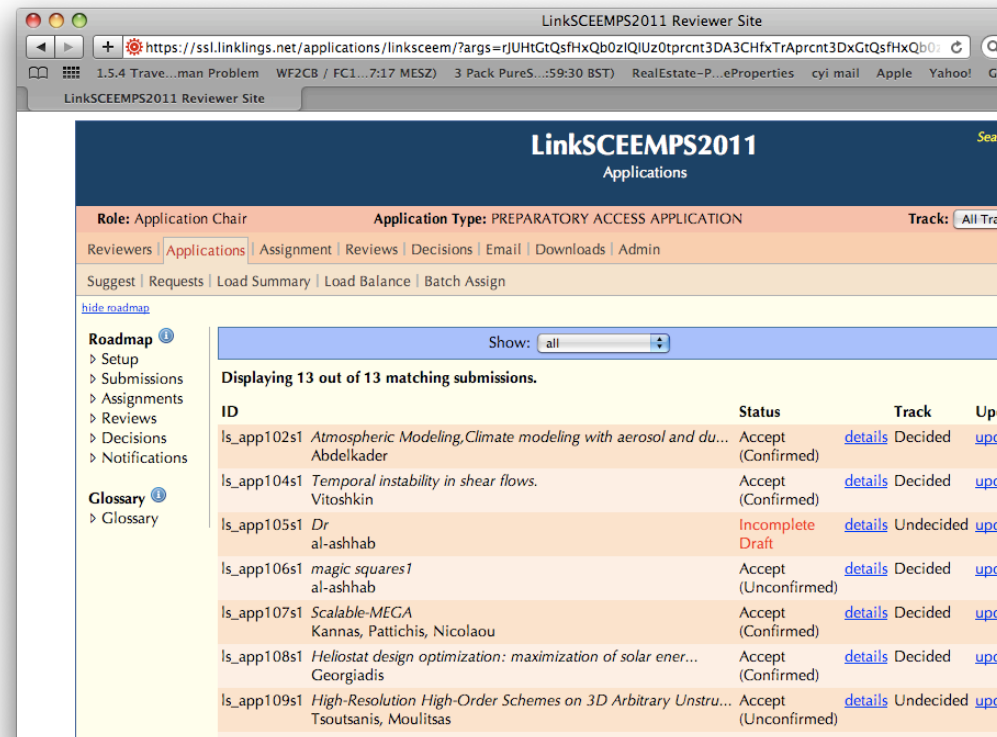
# WP3 - Proposal Evaluation workflow





# Management of Access to Resources

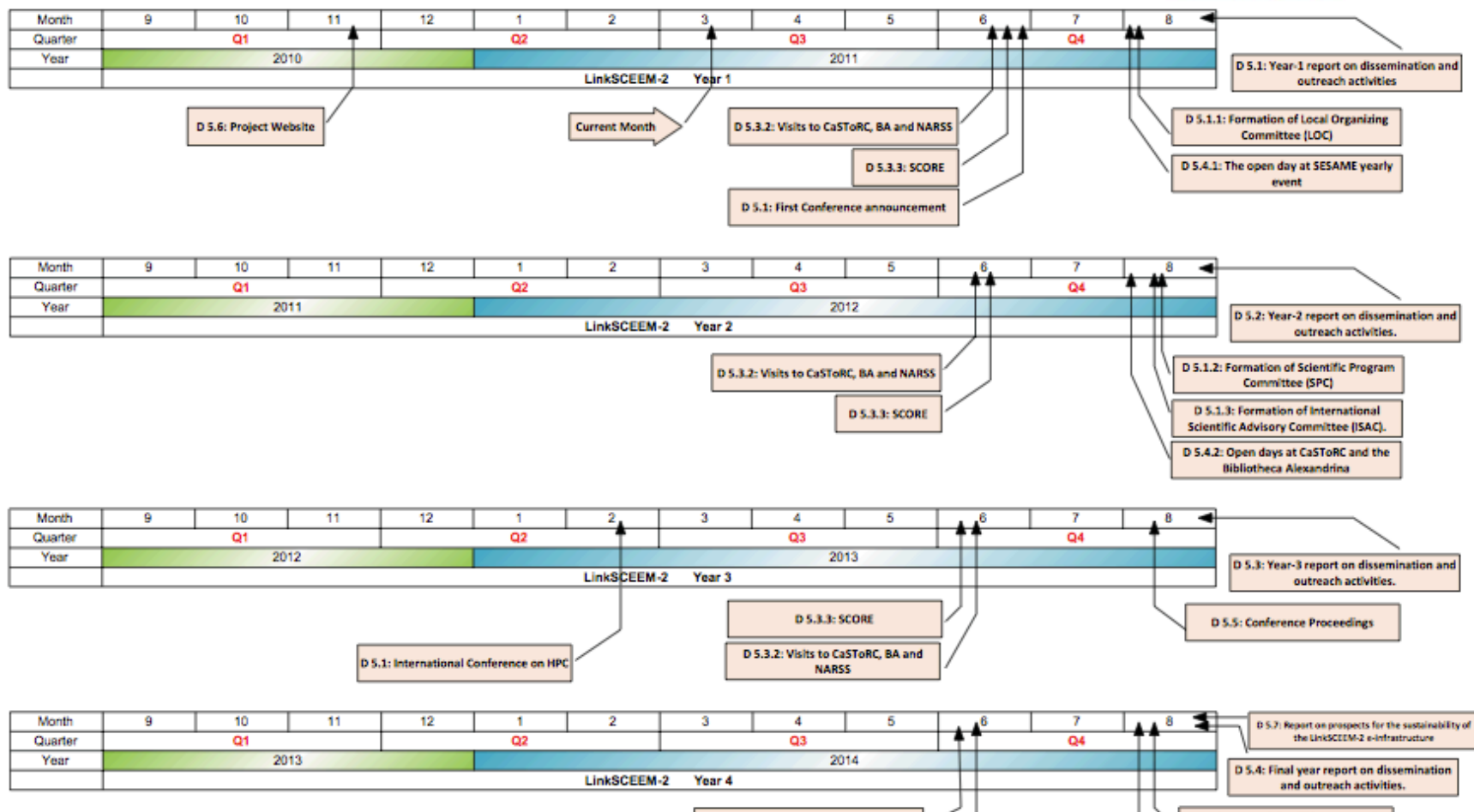
- **Resource allocation process**
  - Calls for Proposals
  - Submission, evaluation, allocation
- **Ongoing**
  - Preparatory call (Rolling)
    - Training purposes, code development, testing
  - 15 Applications (13 approved, 2 pending)
- **Available resources**
  - Euclid (CaSToRC), SUN (BA)



The screenshot shows a web browser window titled "LinkSCEEMPS2011 Reviewer Site". The URL is <https://ssl.linklings.net/applications/linksceem/?args=rjUHtGtQsfHxQb0zIQUz0tprcnt3DA3ChfxTrAprcnt3DxGtQsfHxQb0z>. The page header includes "LinkSCEEMPS2011 Applications" and "Role: Application Chair". The application type is "PREPARATORY ACCESS APPLICATION". The track is "All Tracks". The page has a navigation menu with "Applications" selected. Below the navigation, there is a "Roadmap" section with a "Glossary" link. The main content area displays a table of 13 submissions, with the first few rows visible:

ID	Status	Track	Up
ls_app102s1 Abdelkader	Accept (Confirmed)	<a href="#">details</a> Decided	<a href="#">up</a>
ls_app104s1 Vitoshkin	Accept (Confirmed)	<a href="#">details</a> Decided	<a href="#">up</a>
ls_app105s1 al-ashhab	Incomplete Draft	<a href="#">details</a> Undecided	<a href="#">up</a>
ls_app106s1 al-ashhab	Accept (Unconfirmed)	<a href="#">details</a> Decided	<a href="#">up</a>
ls_app107s1 Kannas, Pattichis, Nicolaou	Accept (Confirmed)	<a href="#">details</a> Decided	<a href="#">up</a>
ls_app108s1 Georgiadis	Accept (Confirmed)	<a href="#">details</a> Decided	<a href="#">up</a>
ls_app109s1 Tsoutsanis, Moulitsas	Accept (Unconfirmed)	<a href="#">details</a> Undecided	<a href="#">up</a>

# WP5 timeline, as set by SESAME partner



# Project website

http://www.linksceem.eu/joomla/index.php?option=com\_content&view=article&id=93&Itemid=126

## LINKSCEEM

### About Us

The LinkSCEEM-2 project aims at the establishment of a high performance computing (HPC) eco-system in the Eastern Mediterranean region by interlinking and coordinating regional compute, storage and visualization resources to form an integrated e-infrastructure.

The main project objective is to enable scientific research in the region by engaging and supporting research communities with an initial emphasis in the fields of climate research, digital cultural heritage and synchrotron radiation applications.

To achieve its mission, the project will link e-resources, provide user support and

Go to "http://www.linksceem.eu/joomla/"

# User Support

- **Basic user support (ongoing)**
  - Set up a user support group
  - Staff of CaSToRC, BA and NARSS supported by staff at FZJ-JSC
  - Develop a user support news and documentation webpage
  - Implement a web-based helpdesk ticketing system
- **Intermediate user support (pending)**
  - Set up a **performance consulting services mechanism**
- **Advanced User Support (pending)**
  - Provide specialized high-level support for algorithm development and code optimization

# Users Support initial page

The screenshot shows a web browser window titled "Users Support" with the URL [https://www.linksceem.eu/joomla/index.php?option=com\\_content&view=article&id=120&Itemid=134](https://www.linksceem.eu/joomla/index.php?option=com_content&view=article&id=120&Itemid=134). The page features the LinkSCEEM logo at the top center. On the left, there are three vertical menu boxes: "Main Menu" with links to Home, About Us, News, Partners, and HPC Resource Centres; "Activities" with links to Events, Outreach, and Work Organization; and "User Resources" with links to User Support, Call for Proposals, Access & Allocations, Trainings, and Links. The main content area is titled "Users Support" and contains three sections: "Introduction" (describing the project and support), "Primary User Support" (providing the helpdesk email [helpdesk@cyi.ac.cy](mailto:helpdesk@cyi.ac.cy)), and "Allocations and Access" (providing the URL <http://www.linksceem.eu/hpcaccess>). A "Training Portal" section lists topics like "Getting Started on LinkSCEEM HPC Resources", "Parallel Computing Explained", and "Introduction to MPI". On the right, there is a "Login Form" with fields for Username and Password, a "Remember Me" checkbox, and a "Login" button. Below the login form are logos for "e-infrastructure" and "CAPACITIES".

## LINKSCEEM

### Main Menu

- » Home
- » About Us
- » News
- » Partners
- » HPC Resource Centres

### Activities

- » Events
- » Outreach
- » Work Organization

### User Resources

- » **User Support**
- » Call for Proposals
- » Access & Allocations
- » Trainings
- » Links

## Users Support

### Introduction

Cy-Tera and the EU-funded LinkSCEEM projects allow researchers from Cyprus and the Eastern Mediterranean region to apply for time on high-end high-performance computers via a peer review process. The projects provide user support to assist prospective users in using the HPC systems available and a training portal for introducing users to material necessary for preparing applications for such systems. Information on requesting user support and accessing the training material, as well as on the process for access & allocations of compute resources can be found below.

### Primary User Support

User support is provided via an online helpdesk system. The helpdesk service is provided at: [helpdesk@cyi.ac.cy](mailto:helpdesk@cyi.ac.cy)

### Allocations and Access

To request access to the available HPC sites visit: <http://www.linksceem.eu/hpcaccess>

### Training Portal

Training material is currently available via the training portal ATutor and spans the following topics:

- Getting Started on LinkSCEEM HPC Resources
- Parallel Computing Explained
- Introduction to MPI

### Login Form

Username

Password

Remember Me

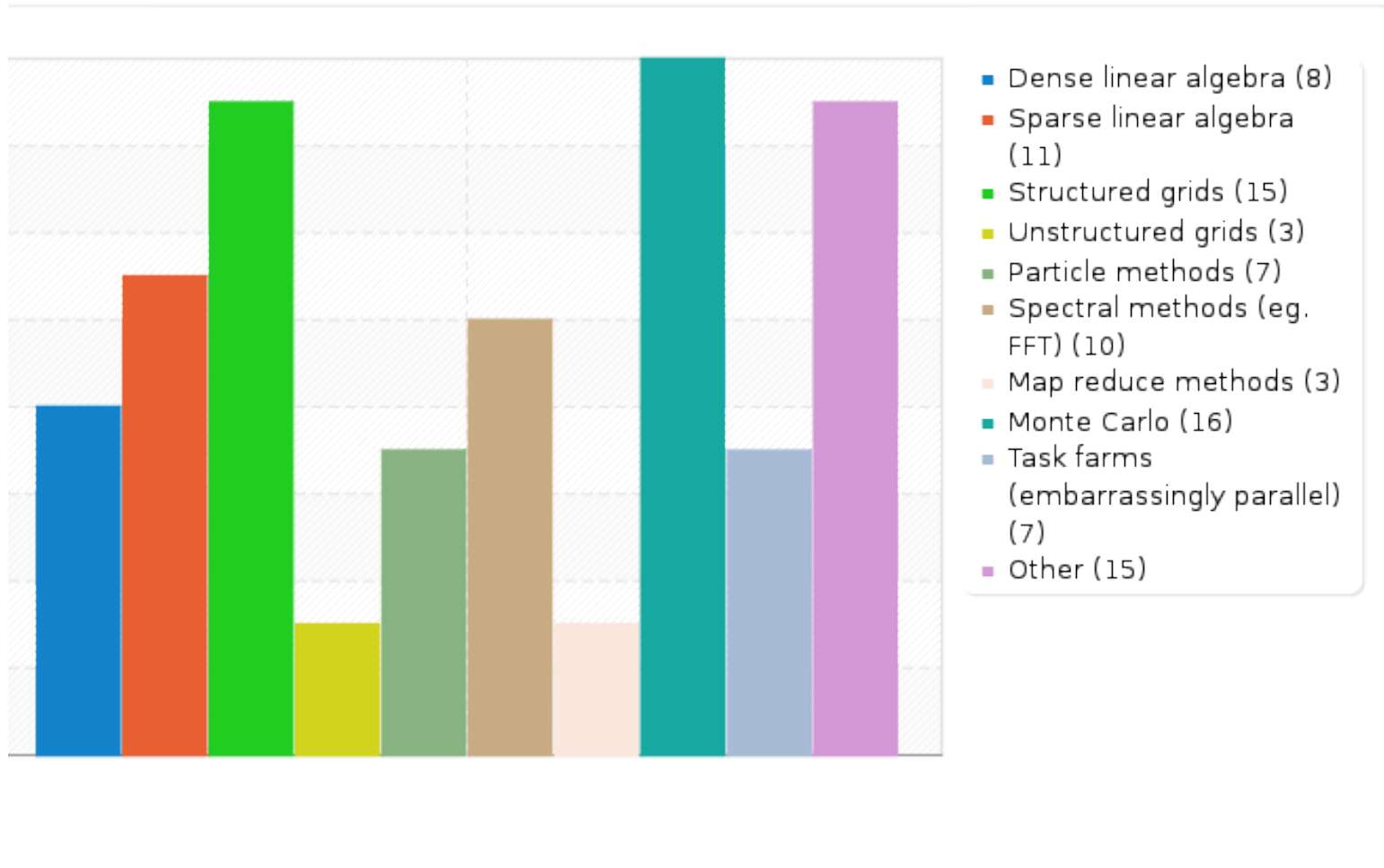
[Forgot your password?](#)  
[Forgot your username?](#)

# Online helpdesk software (Jira)

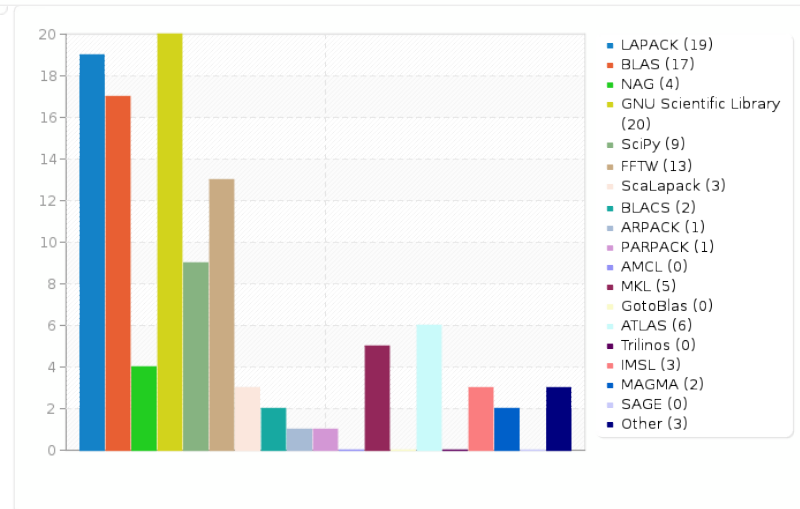
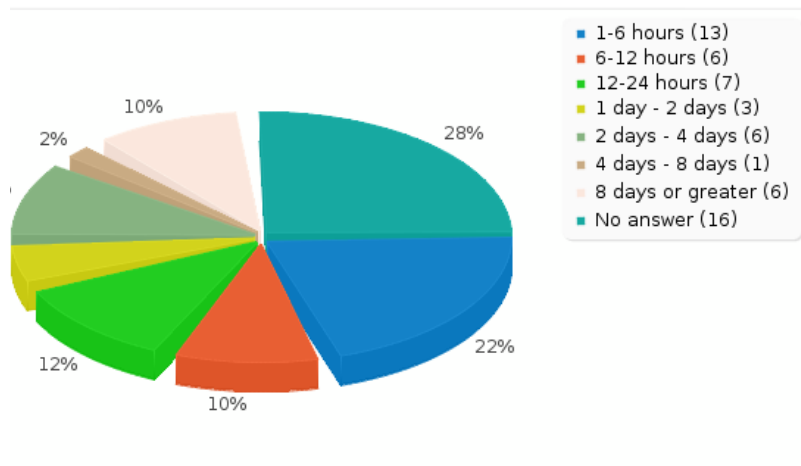
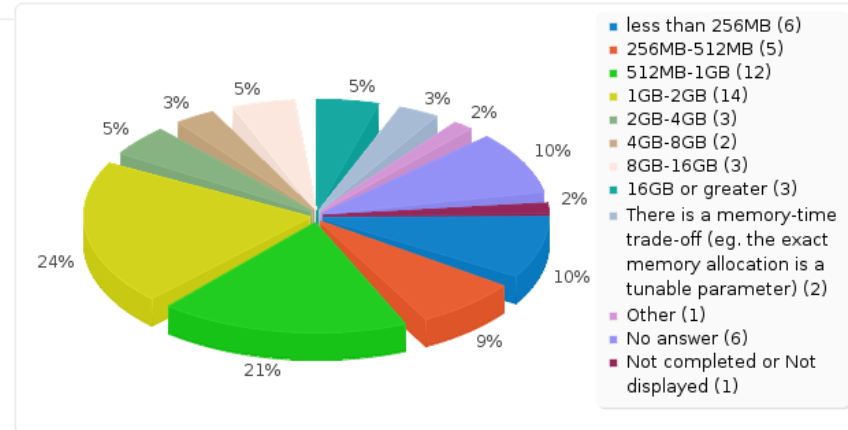
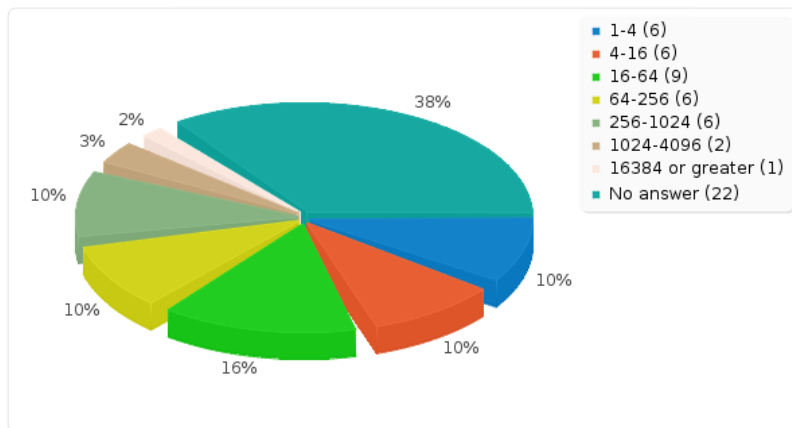
The screenshot shows the Jira dashboard for The Cyprus Institute. The browser address bar displays `http://jira.cyi.ac.cy/secure/Dashboard.jspa`. The page header includes the logo for The Cyprus Institute, the user name "Fotis Georgatos", and a search bar. The navigation menu contains "Dashboards", "Projects", "Issues", and "Administration". A "Hello world" message is displayed at the top left. The main content area is divided into several sections:

- Introduction:** Contains a welcome message, a "Where do I start?" section with links to guides and training, and an "Agile project management for JIRA" section.
- Assigned to Me:** Shows "No matching issues found."
- Favorite Filters:** Shows "You have no favorite filters at the moment." with links to "Create Filter" and "Manage Filters".
- Admin:** Lists administrative actions such as "View all or create new" for Projects, "Browse users, groups or create a new user" for Users, "Restore or backup JIRA data as XML" for Data, "Configure JIRA or modify global permissions" for Setup, and "JIRA: Evaluation (view details) (Expires in 21 days, 12 hours on 24/Mar/11)" for License.
- Activity Stream:** Titled "CYI HELPDESK", it shows "No activity was found".

# What are the user algorithms' profiles?



# More details of training candidates apps.





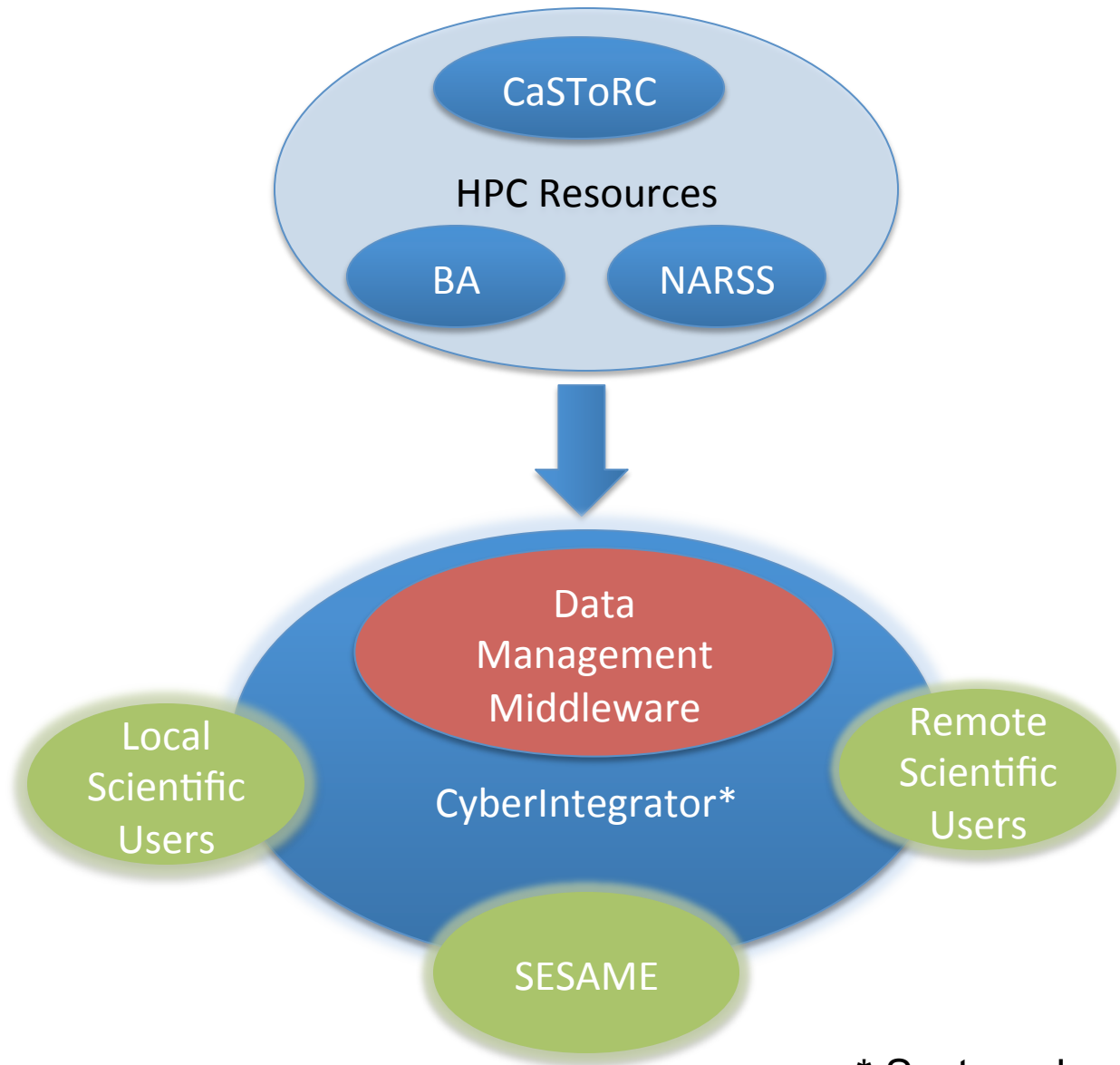
# Some more related tools for HPC users

## ■ Medici

- A Scalable Semantic Content Repository
- web and desktop-enabled content management system
- Target: Community collections of image, audio, and video files

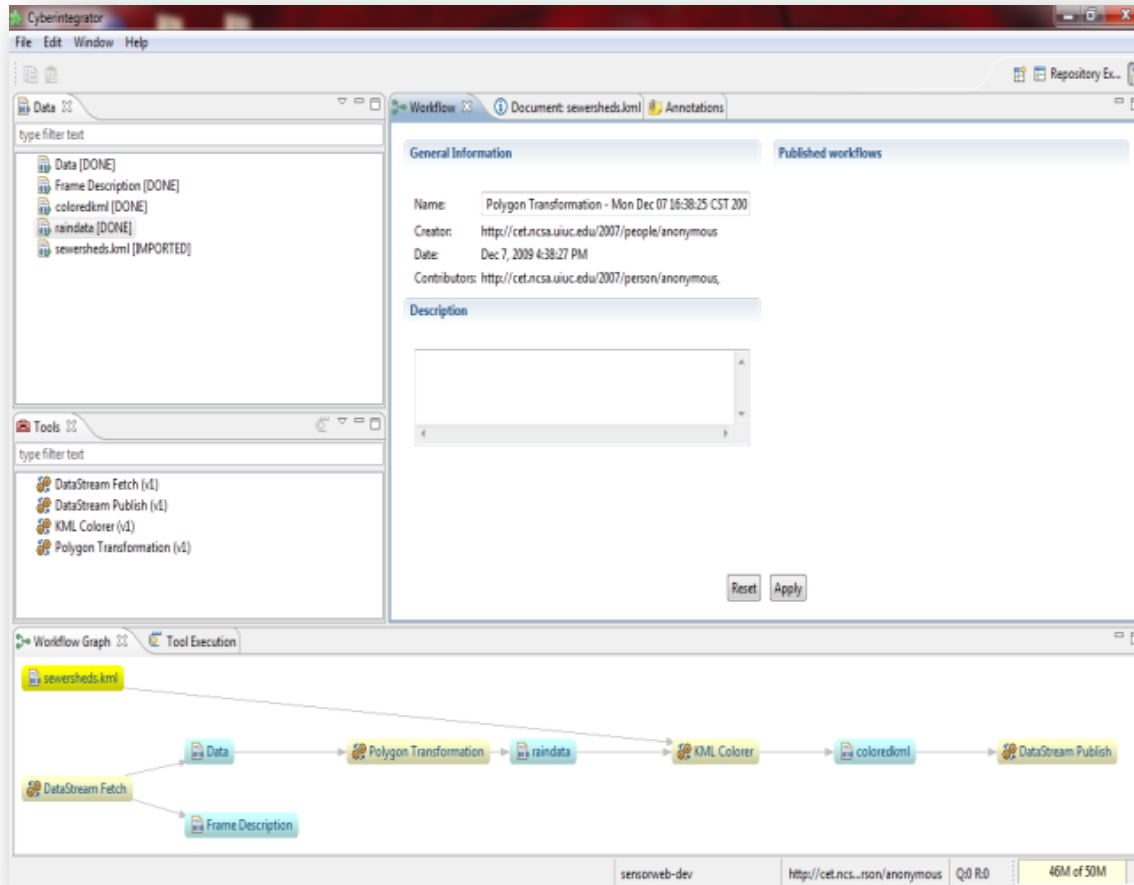
## ■ CyberIntegrator

- Provide specialized high-level support for algorithmic development and code optimization
- highly interactive environment to support and address the many needs of scientific processes



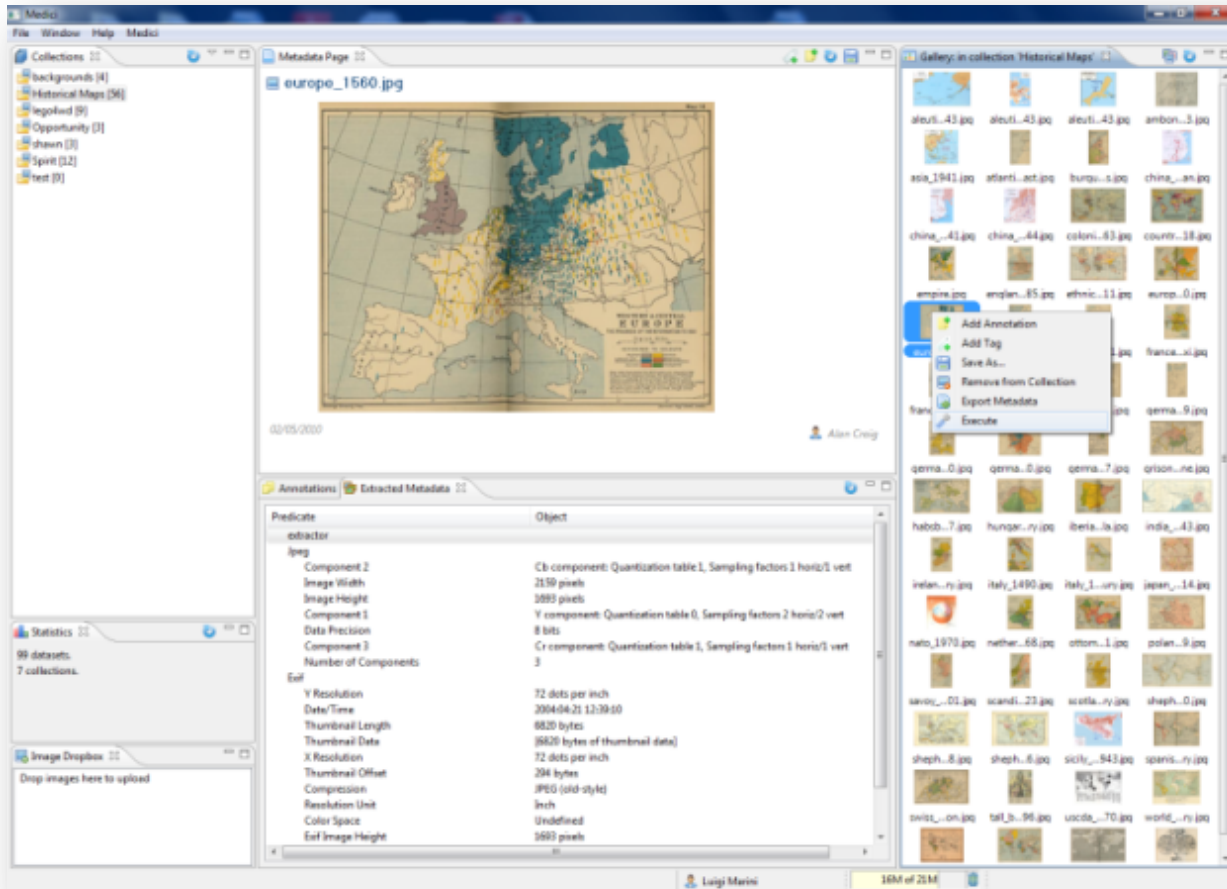
\* System developed at NCSA

# Cyberintegrator



- A workflow tool for exploration and integration

# Medici



## ■ A Scalable Semantic Content Repository

# Vision for the Future

- **CaSToRC is proceeding with the establishment of its HPC infrastructure and related research and education activities.**
- **Ongoing efforts to promote HPC usage and create a HPC community in the region.**
- **CaSToRC developed to be a Research Infrastructure of regional dimension**
  - Open to regional groups and projects for usage
  - Welcomes collaborations on research and education activities

Thank you

[linksceem.eu](http://linksceem.eu)

## Acknowledgement

Funding is provided by DG-INFSO

Grant Agreement Number: 261600

Call (part) identifier: FP7-INFRASTRUCTURES-2010-2

Topic: INFRA-2010-1.2.3: Virtual Research Communities

Funding Scheme: Combination of CP & CSA

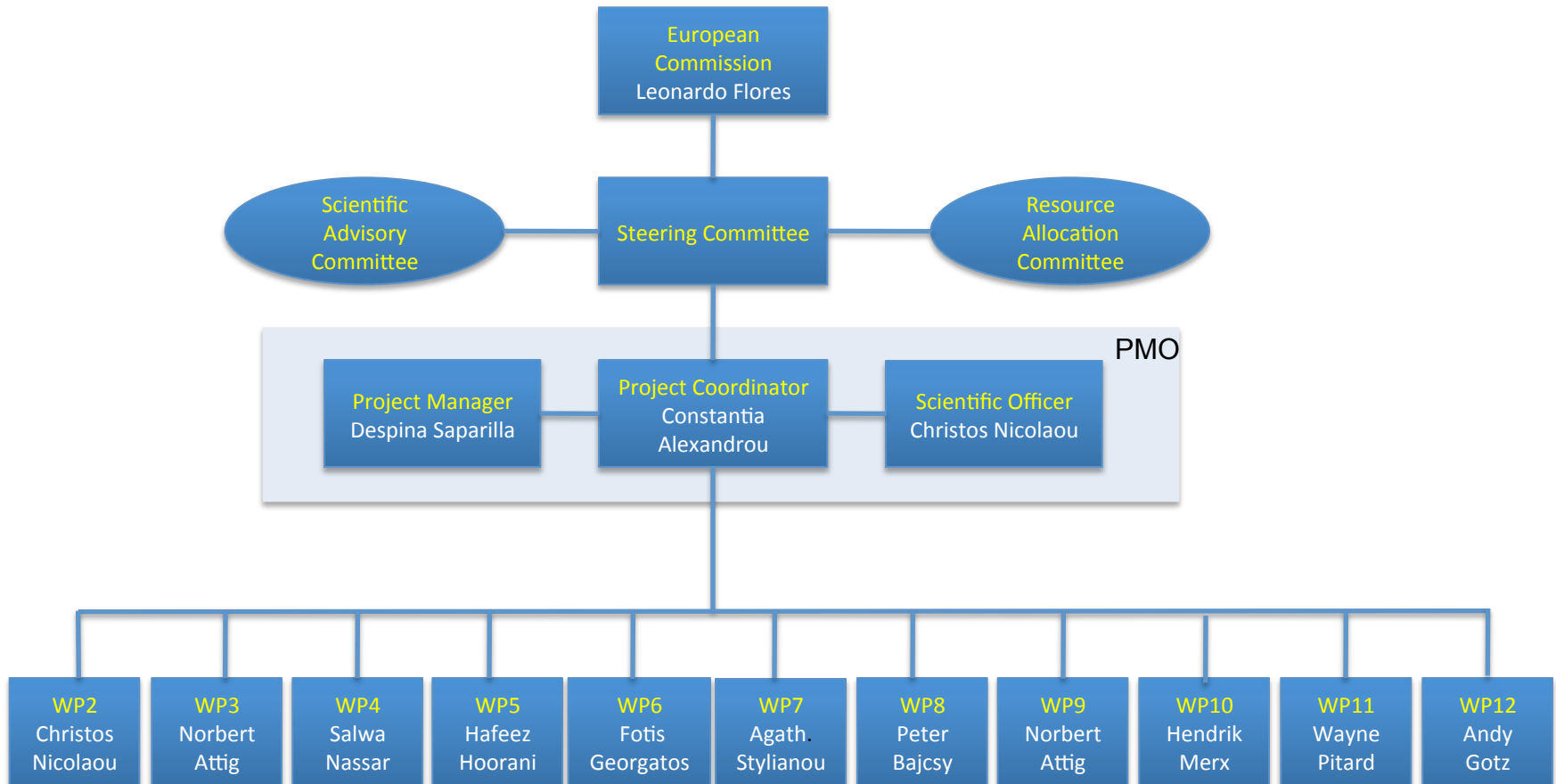


THE CYPRUS  
INSTITUTE

FP7 RI 261600

CaSToRC

# Organization Structure



# Ongoing Activities

- **Project start date September 1<sup>st</sup> 2010**
- **Kick-of teleconference call September 22<sup>nd</sup>**
- **October 25<sup>th</sup> Successful Kick-off meeting at Cyl**
  - WP meetings
  - Steering Committee meeting
- **Inauguration Event**



# The LinkSCEEM Opportunity

- **Make crucial contributions to the development of an Eastern Mediterranean virtual computational science community**
  - **Bring together regional user communities starting from Climate, Cultural Heritage and Synchrotron Radiation research.**
  - **Expand user communities to non-partner institutions in Lebanon, Greece, Turkey, etc**
- **Act as a bridge between Eastern Mediterranean computational science researchers and organizations and, the EU HPC ecosystem**
- **Exploit prospects for enlargement of infrastructure through engagement of additional computational resources from the region**
- **Explore synergies with partners to attract young talent from the region to science and technology**
- **Develop synergies with EU projects**
  - **E.g. PRACE - combine training, outreach activities, advanced HPC architectures, etc**