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CYCLOPS

CYber-Infrastructure for CiviL protection Operative ProcedureS

Mid-Term Project Workshop

(Deliverable D12)

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1　Introduction

1.1　Purpose of the Document

This document is intended to provide a report of the Mid-Term Project Workshop.

The Conference was fully integrated within the 2nd Iberian Grid Infrastructure Conference, held in Oporto on 12th – 14th May, 2008, at FEUP, Faculdade de Engenharia de Universidade de Porto.

1.2　Intended Readers/ Application Area

The target audience of this document is CYCLOPS Project officers and partners, as well as any other interested party.

1.3　IBERGRID'2008 Conference

"*IBERGRID'2008 is the second edition of a series of Iberian Grid Infrastructure Conferences initiated in 2007 within the framework of the bilateral agreement for Science and Technology, signed in November 2003 between Portugal and Spain, aiming to leverage the construction of a common Iberian Grid Infrastructure and the fostering of cooperation in the fields of grid computing and supercomputing.*

The main goal of the IBERGRID'2008 conference is to constitute a forum where the advances in the development of grid infrastructures, technologies and applications are discussed by the main players in Iberian and Latin American countries."

"*.. The 2nd IBERGRID conference is an excellent opportunity to gather an enlarged community of academics, researchers, students, industry specialists and practitioners in all branches of knowledge sharing a common need, that is, powerful computing, visualization and/or storage resources. This community will benefit from the Iberian Grid Infrastructure being implemented as it will provide easy and secure access to a larger and more powerful set of distributed resources.*"

1.4　Cyclops Mid-Term Project Workshop

On Wednesday 14 May the Ibergrid´2008 conference programme focused on the importance of developing enabling e-infrastructures and virtual organisation services to support applications that anticipate, manage or mitigate crisis situations and other

problems related to environment and security issues, which are the topics of interest of The Cyclops Project.

Participants wishing to attend the Cyclops sessions had the opportunity of registering for this conference day only.

During the morning the conference programme scheduled a Project Cyclops opening session, an invited talk from Cyclops and a panel to debate the European Civil protection issues. During the afternoon the programme included several specific Cyclops open sessions focused on Civil Protection and Earth Science issues.

The shared programme concluded with a Cyclops - Live Demonstration of a CP application porting to GRID

The documents and video used by the participants of the Middle-Term Cyclops may all be downloaded from the official Ibergrid'2008 conference site (see http://www.ibergrid.eu/2008/presentations.html)

2   Mid -Term CYCLOPS - Programme

(Wednesday, 14th May, 2008)

09.45   Project CYCLOPS Opening Session –
"Welcome" – Susana Silva, ANPC

"Italian Civil Protection Organisation and Tasks" - Roberto Sorani

10.30   COFFEE BREAK
11.00 Invited Talk – Stefano Nativi

" The CYCLOPS Project"

11.45 Project CYCLOPS Panel
"European Civil Protection Infrastructure"

Carlos Pires – chair (EC)

Jorge Papaspiliou (HTCI)

Vincenzo Cuomo (CNR-IMAA)

Mirco Mazzuccato (INFN)

Stefano Nativi (CNR-IMAA)

Xavier Viegas (DEMUC)

Rui Almeida (ANPC)

Roberto Sorani (DPC)

13.00   LUNCH

14.30 CYCLOPS Sessions

Chair – Carlos Pires (EC), co-chair - Pierre-Alain Ayral (EMA)

"Geoinformatics and Grid" - Monique Petitdidier (IPSL)

"Decision Support Tools in Forest Fire Management" - Xavier Viegas (DEMUC)

"Flash Flood management: The French Case Study" - Vincent Thierion (EMA)

16.00   COFFEE BREAK

16.30 Live Demonstration

Chair – António Pina (UMINHO)

"RISICO porting to EGEE"

Paolo Mazzetti (IMAA)

Valerio Angelini (IMAA)

Marco Verlato (INFN)

The Ibergrid page http://www.ibergrid.eu/2008/gallery2/main.php gives access to a photo Gallery containing both official and participants' contributions which show the most significant moments of the presentations.

The morning session opened with a non-CYCLOPS related Invited Talk by Dr. Paul Watson (see Ibergrid conference programme for details). Following questions from the audience, Dr. Roberto Sorani thanked Dr. Watson, made some amusing comments about the 'shocking nature'of some of his slides and briefly outlined the theme of the CYCLOPS opening session to follow (how Civil Protection in Europe actually works). He then introduced the following speaker.

3 Project CYCLOPS Opening Sessions

3.1 Welcome Address

Eng. Susana Silva officially welcomed all present to the CYCLOPS sessions day, jointly organised by University of Minho and Portuguese Civil Protection (ANPC) agency.

In her speech she stressed how important it is for CP agencies to work together with the scientific community to provide decision-makers with a higher level of primary

information, which can then be used to save lives and reduce property damage; she admitted that there were still gaps in the system which needed to be addressed.

3.2 Opening Session

The Project CYCLOPS opening session entitled "Italian Civil Protection Organisation and Tasks" was presented by Dr. Roberto Sorani.

He first described the three phases of risk management in Italian CP: Before, During and After an event, the network of (21) regional and (1) national CP centres and the importance of the (41) competency centres. Following this, he listed the different types of risk, highlighting flood and fire, respectively, as the two biggest risks in Italy, commenting on the first major flood event in Florence (3rd Nov. 1966) which caused the Italian government to begin research into CP.

After explaining the mechanism for gathering and controlling the flow of (raw) data used for monitoring and forecasting (via National Radar Network Coverage Plan, operated by the Airforce) Dr. Sorani went on to discuss the Hydrology Satellite Application Facility (HSAF) project. This project has as its goal better hydrological evaluation of the 12 participating countries by the application of satellite data to the parameters of Rain Rate; Soil moisture; Snow (ie. Hydrological Validation).

As an illustration, Dr. Sorani made reference to a case study (Discharge of River Arno- Florence) where non-perfect agreement had resulted from use of the current model, and the resulting improvement in the correlation of results after applying satellite data, in order to correct the model.

Next he spoke briefly about the use of the CYCLOPS project; duration of the project (due to end Sept. 2008, unless proposal for more time is made to the commission, in order to conclude two important experiments); the project partners, and the deliverables (either completed or under preparion)

Dr. Sorani finished his presentation with a description of the objectives and results of the Forest Fires Exercise Application 2008 (EU FIRE5) which took place in Gallura, Sardinia, 15th-19th April, 2008.

3.3 Invited Talk

An Invited Talk entitled "The CYCLOPS Project" was presented by the Technical Manager, Dr. Stefano Nativi. This focused mainly on the technical aspects of the project, beginning with a general overview of CYCLOPS, its main activities, applications and initiatives. A definition of the Global Monitoring for Environment and Security (GMES) concept followed, Dr. Nativi outlining the importance of developing enabling e-infrastructures and virtual organisation services to serve specific GMES communities, such as CP, the CYCLOPS vision being to bridge the gap which still exists between the strategic applications (user-orientated) of the GMES/CP communities and the resource provision (technological) of the GRID communities.

CYCLOPS aims to provide a complete GRID-Based Platform taking into account the specific needs of the CP community (interoperability). Dr. Nativi presented the architectural framework and described the services before reporting on the technological aspects of two test case applications:

1. G-RISICO (Italian CP application for Wild Fire Risk Assessment)
2. Flash Flood Forecast (French CP application for Flood Warning system)

The results for G-RISICO were close to expectation (spatial accuracy) providing architectural proofs of concept.

The Flash Flood Forecast application has not yet been implemented.

Dr. Nativi concluded by identifying various Preliminary Research Themes:

- Grid Infrastructure Enhancement
- Advanced Middleware
- Security Infrastructure
- CP Application Enablement
- Standardisation Process

The floor was then opened for questions.

- Question/answers

Q1. Dr. António Pina (UMINHO): How can a RISICO simulation be run in Portugal?

Answer: There are currently plans to run the application in France, Spain and Portugal. Obviously (meteorological) data is needed. The problem is a lack of standardised service components. However, Dr. Nativi does not believe this is a

serious problem as the INSPIRE Directive will push to use the same protocols/data models, all countries benefiting from standardisation in the process.

Dr. Carlos Pires (European Commission) informed Dr..Nativi that the Commisssion was already using the INSPIRE Directive in contracts, in a special clause obliging the acceptability of data for the purposes of post-operative policy. He subsequently posed two questions:

Q 2.1 How do you face the problem of heterogeneity of multiple data from multiple sources? Is it important?

Q 2.2 How data should be preserved in the long-term so that models can be run in 10/20 years' time for comparison purposes?

Answer 2.1: In order to establish a multi-disciplinary earth system science, there must be a common approach to data. At present this is difficult due to the multitude of existing data models, protocols and formats. A common domain must be developed by means of a common forum of research scientists.

Answer 2.2: European Centres for data storage must be established in order to preserve the enormous quantity of input data which is currently being generated. However, this must be done in an interoperable, standardised manner for all disciplines.

3.4 Project CYCLOPS Panel

The final morning session was dedicated to the Project CYCLOPS Panel discussion of the "European Civil Protection Infrastructure", chaired by Dr. Carlos Pires. The other panel members were as listed in the Final Programme.

After welcoming all present, Dr. Pires made some opening comments about his work with the Research Programme of the European Commission (regarding science and research capabilities) highlighting a project for a high-speed academic communications network connecting all member state initiatives. He spoke of CYCLOPS as a key project of benefit to all member states from an e-infrastructure standpoint, further posing the question "What still needs to be done?"

The other panel members were then invited to introduce themselves. Before opening the discussion to the public Dr. Pires first selected some relevant questions for the panel.

Question: What are the hurdles and difficulties in setting up a European effort to coordinate a CP system (training/resources etc.) and what are the barriers?

Xavier Viegas: made the comment that these were not the original questions he had been asked to respond to, but rather what are the objectives and relevance of having a European CP Infrastructure. He believed such an infrastructure to be very important as currently no infrastructure is able to capitalise on the results and data from the various CP projects (representing the loss of a valuable asset). He referred to communication barriers and difficulties in making available data and expertise, as well as problems associated with the use of high technology, such as accessing data and managing very large files. He then outlined three objectives for a European CP infrastructure:

a) To provide a National authority with a data-base, decision support tools and expert advice from all over Europe (and eventually from other parts of the world)
b) To make available updated information on all major E.U. disasters and the coordination of any International collaboration
c) To facilitate the adoption of standard procedures.

Rui Almeida: spoke of his experience running the Portuguese Mission in Greece during Summer 2007, his usual job consisting of preparing information for field operatives. Besides the language barrier, Dr. Almeida mentioned difficulties in collating information from various sources via internet and telephone (such as university professors/ meteorological institutes and so on).

With an approach such as CYCLOPS his task would be made much easier as all information would be available on one single network. If national information could be complemented with European information Dr. Almeida feels he would have better large-scale understanding of a problem or crisis. Comparing CYCLOPS to a 'Google-type' system he summarised the objectives as follows:

a) to help missions working abroad
b) to complement information on a national basis.

Roberto Sorani: stated that although the idea of a CP service in Italy was born following the floods of 1966, it was not until the earthquakes of the 1980's that it was

understood that the various CP agencies around Europe needed to work together under one single command. However, in reality there was a great deal of beaurocracy every time people or machinery needed to be moved.

Therefore, he concluded, there is a need for CP to be coordinated by one single (non-political) person responsible to the government, having total flexability in terms of decision-making and spending money (which must be justified).

He also said much time had been spent formulating models which now must be put into use. One of the problems is the existence of different CP organisations around Europe. Field exercises are extremely useful but costly (4-day operation in April 2008 cost 4.8 million Euros, of which only a part was funded by the European Commission).

He also recognised the importance of the many highly-motivated volunteer workers as part of the CP service. No bureaucracy, together with greater flexibility would allow for a greater possibility of combat.

Stefano Nativi: stated that in order to bring together different countries for CP it is first necessary to establish common rules or best practices for the main tasks, such as how to access data, assess risk and plan intervention in crisis and post-crisis situations. These common protocols have not yet been established.

Jorge Papaspiliou: believes Europe to be a paradigm of cooperation in the CP domain, 4000 universities being connected in one of the fastest and highest performing Grid infrastructures in the world. Commenting on the recent situation in China, he said the time for discussion is now past. Immediate action must be taken using the existing infrastructure, rather than building a new one, by fostering cooperation and bringing together existing CP communities and systems.

Secondly, CP agencies currently lack technical background, cooperation with operatives in the technical domain (such as universities) being imperative in order to build the necessary capacity for using new technology to their best advantage.

Finally, Dr. Papaspiliou suggested that the system has become too complex and focused on the need for simplification and a new light-weight infrastructure. He proposed working on success stories to build cases for honest measurement, to prove what would happen without the infrastructure in place, highlighting the need to

move immediately in such cases as fire detection and prevention, with the whole community working on similar applications.

The CYCLOPS Project has great potential and capacity. Now all the technology is in place (though some integration work is still needed), the issue must be raised at policy level as political cooperation and agreement between the nations in the CP domain is of vital importance.

Vincenzo Cuomo: described again the organisational structure of the Italian CP system, based on regional information centres (data) and centres of competence (development of technological and scientific aspects). He stressed the importance of expert use of technology but stated, however, that though the intended end-users are CP agencies, they are not expert users. There is therefore a need to decide on the best practices to be exported, in order to produce expert CP users. He identified two key points:

a) possibility of focusing on problems at regional, national and European level and also in specific areas, such as technical or operational, with a real need to focus on the end-user

b) individual responsibility and the development and coordination of a clear chain of responsibility to enable European intervention, not only in Europe but worldwide.

Mirco Mazzuccato: identified three important steps for the coordination of a European CP system:-

1) at infrastructure level – a consolidated infrastructure with a clear service offering in terms of computing capacity and capabilities is needed so that CP agencies know what they can rely on.

2) at CP level – investing in technology such as CYCLOPS could help CP agencies to obtain results and therefore make better decisions, however there is currently a lack of initiative. There should be a specific entity within the CP community responsible for data collection and coordination of efforts.

3) at policy level – policies are needed to make clear the advantages and convenience of sharing information, applications and knowledge across Europe, to provide better response. Policy action is needed.

The floor was opened to the public. One conference delegate responded, commenting that normally when a community has a problem research is used to find a solution. In science there is an acceptable level of risk but research strategies are costly.

With regards to the CYCLOPS Project he suggested that the sequence was in reverse with CYCLOPS looking for a community which needs its solutions. The delegate said he had been following CYCLOPS for two years and conceded that CYCLOPS has certain useful applications. He posed two questions:

- Question/answers

Q 1. What do you take from the experience of collaboration between two very different communities?

Q 2. In the framework of the present programme (for the implementation of a large European infrastructure) are people aware of the need for horizontal communication systems?

Dr. Carlos Pires asked for a round of replies, first regarding lessons learned from CYCLOPS.

Responses:

Mirco Mazzuccato: - a positive experience. It was good to work with a different type of community (CP community being more practical) and to see the possibilities offered by new technology.

Vincenzo Cuomo: - a good experience which must be continued because of the complexity of current day problems. One of the objectives of Emergency Response is to give a reply within 12 hours. But there are still problems with the integration of communication systems. However, a platform which is capable of satisfying the requierments of CP is one which can be ported with other applications. Operational change is complicated, but it is important that CYCLOPS becomes part of the European infrastructure for many reasons, not least of which is quality control of data.

Jorge Papaspiliou: - referred to the importance of path connections in Europe and the unfortunate length of time needed for the CYCLOPS Project path to reach maturity. Only with a real path and high-performance network is there a possibility for Grid communities to function.

Other domains are maturing so fast that they are now able to offer a commodity. Following unity and maturity comes policy – the implementation of the activity in an organised way at management level. There is currently a deficit of technological development reaching maturity, meaning it has not yet reached policy level. Policies are crucial for Europe on an organisational level. This will eventually happen within the CP domain.

Horizontal communication networks are important. Of the 34 areas identified for research within Europe, GRID capacity is the only horizontal network. All European CP services should be able to access any data they require; however there is a failure to commit resources at present.

Stefano Nativi: - spoke of the Italian experience of trying to manage the European CP community, which was not successful for various reasons. He referred to comments by Dr. Cuomo about expert end-users. In order to bring high technology into expert usage operatives who can speak both languages (ie.technical and CP domain) must be brought on board. CYCLOPS took on two more partners due to the need for this sort of capability.

He underlined the special role played by China in this area, being both fluent in CP language and having the capacity to lead with technology. Mediators are needed to bring two different worlds together.

Roberto Sorani: - spoke of initial difficulties experienced working with other countries, but these have now been overcome. The best way to demonstrate that the project is working correctly is by application. Trials have now been made, the CYCLOPS Project platform having been applied to practical cases such as risk of fire and flash floods.

Rui Almeida: - CYCLOPS represents an open door to opportunity. At present the CP community is only monitoring situations, not having the capability to analyse the information it is currently producing. CYCLOPS Project offers a solution with its software. He believes the prototype should be shown to other countries to motivate investment.

Xavier Viegas: - spoke of overcoming language difficulties between CP area and the scientific communities. Though it is important for communities to understand one another, one should not aim too high, but take small steps. Dr. Viegas is in favour of

putting specialised teams into each country. CP services need interlocutors to communicate with specialised centres and teams.

He also warned against the possibility of moving away from a situation where information is lacking, to one where CP services are overwhelmed with data without access to expert advice.

Carlos Pires: - made the closing remarks, stating that from an outside observer's point of view CYCLOPS is a showcase of communities talking together. There is now a complete application ready to be shown. He agreed that there would not be many opportunities to change the existing organisation and that CP was a major issue as it involved planning resources for worst case scenarios. He spoke of his experience as ICT manager which allowed him to see clearly the problems relating to self-centred communities with very specific data requirements. Though the needs of these communities must be accommodated, there is a need to enforce user community area for use of e-infrastructure. They must be more open to the new technologies and systems provided, and need to have common languages.

The lessons learned from the CYCLOPS Project were good and the road map is also good. He concluded by asking which best practices could be used and shared between member states and suggested the community should think in terms of lists of things to be done.

3.5 CYCLOPS Sessions

The first half of the afternoon session was dedicated to three separate presentations concerning different GRID applications. (A fourth presentation on Grid technologies and sensors had been cancelled).

- **Geoinformatics and Grid** -
  presented by Monique Petitdidier (IPSL) and Horst Schwichtenberg

Dr. Petitdidier, an atmospheric physicist, made a presentation entitled "Grid Activity in Earth Science" (elaborated in collaboration with EGEE and DEGREE EU project partners).

Following a 3-D description of the Earth Science (ES) domain (time and spacial scales), she proceeded to explain the usefulness to ES of the Grid infrastructure : an interactive, collaborative platform for handling a large number of shared resources

(computing, data, tools and so on) with secure and restricted access, being subject to the same data and software policy as outside the Grid. Dr. Petitdidier also spoke of the intensive computing capabilities, such as running massive parallel jobs, as well as the matter of confidentiality. Currently, two virtual organisations (VO) exist due to the different policies for academic and private research: VO ESR (Earth Science Research) and VO EGEODE (Expanding GEOsciences on Demand).

The presentation covered the process of sharing and storing large quantities of data on the Grid (such as satellite data on ozone) and the possibility of porting algorithms to explore this data; risk evaluation of water contamination; flood forecasting; determination of earthquake mechanisms and algorithms for geomorphology (understanding landscape formation and evolution).

The final remarks mentioned a need to improve, or develop new, tools as EGEE is not perfect, gaps existing between ES needs and Grid technology; the objectives and short, medium and long-term goals of the DEGREE Project (a community similar to CYCLOPS) and the evolution of gLite. All those wishing to partner or Port were invited to ask for an application; though she did stress that partners must bring data to share.

Further comments concerning the subject matter of the presentation were made by Horst Schwichtenberg.

Dr. Carlos Pires opened the floor for questions, commenting that the multidisciplinary mindset was different from that of other projects.

- Questions/Answers

Question: What exactly is a virtual organisation?

Answer: A community of people sharing the same resources, each member needing a certificate proving them to be an authorised member of a recognised institution.

Response (Dr. Pires): This type of organisation is more fluid than a regular one, being a cooperative platform which goes beyond the individual member states. This experience of virtual roadmapping should be exported to the CYCLOPS Project. (Dr. Nativi also made some comments along similar lines).

- **Decision Support Tools in Forest Fire Management -**
  presented by Xavier Viegas (DEMUC)

Dedicating his presentation to natural disasters rather than manmade (arson), Dr. Viega first spoke of Decision Support Systems (DSS) in Forest Fire management, combining human decision-making with computational technology (common in USA, Canada and Australia).

He listed the physical factors upon which forest fires are dependant (**topography**:- slope, orientation, altitude; **vegetation**:- height, physical and chemical properties; **meteorology**:- wind speed and direction, temperature, relative humidity, fuel moisture; **time**) and described the three stages (Before, During and After) of a natural disaster and what this entails.

Following a brief assessment of the problem in Portugal, Dr. Viega gave a history of the Forest Fire research carried out at Coimbra University since 1986. He then described the current fire detection network, via ground and aerial means (though he also stressed the major contribution of reports of sightings by citizens via mobile phone).

At ground level, the network of manned towers is gradually being replaced by a new generation of unmanned towers installed with video and infrared cameras, transmitting images in real time, as well as mobile watch towers mounted on vehicles, which transmit GSM images to a web page to allow operatives to observe the field.

At aerial level, Project COMETS, (unmanned remote-controlled aerial vehicles), is currently being tested. The complexity and problems in constructing Fire Behaviour Prediction Models was discussed, Dr. Viega mentioning Farsite (Fire Area Simulator), a free model from USA and Fire Station (Simulation of Fire Behaviour over Complex Topography), a model developed by the ADAI team.

He further discussed the main components of Fire Station such as system structure, input data, output data and predictions, as well as the possible applications of the model. (Scientists are currently working on the process of using Fire Station in the Grid environment). The description of three cases followed, demonstrating the possibility of testing different scenarios with Fire Station:

1) Arson fire – Sept. 2001 – operational use of model (detection using infrared cameras)

2) 2004 - Simulation of two Wild fires under operational conditions (generation of fuel maps)

3) Fuel Management and Treatment (Coimbra) – two scenarios: With and Without Fuel Treatment (observation and measurement of results to minimise future risk)

Dr. Viega showed a number of slides of fatal accident sites. Though DSS are important to CP authorities, he concluded that at present they can do little to improve fire safety, forest fires being extremely complex and a growing threat to both mankind and nature.

The floor was then opened for questions.

- Questions/Answers

Q. 1 Monique Petitdidier – In order to create a map is the model run only once or many times, as in other geo-science domains?

Answer: Following a fire, the model is run according to four grid points and wind direction data. However, if there is any uncertainty the model is run again with variable data.

Q. 2 Carlos Pires – Do you use satellite imaging in your approach?

Answer: The Meteorological Institute and CP service use satellite imaging for gathering data, such as the localisation and shape of a fire. We use this information for our simulations.

Q. 3 Carlos Pires -What is the main problem for fire behaviour prediction/simulation at this moment, computational or data?

Answer: There are problems with several aspects of the model, which means it is not yet 100% reliable. It is also hoped to receive data faster though access to satellite imaging.

Q. 4 Carlos Pires – What is fuel treatment?

Answer: Fuel refers to vegetation and treatment refers to any modification of the vegetation such as cutting or burning.

Q. 5 What is done with all the data generated from the simulations? Are these 'virtual fires' catalogued?

Answer: All information is made available on a database.

- **Flash Flood Management: The French Case Study –**
  - presented by Vincent Thierion (EMA)

A presentation entitled "Flash Flood Applications", with the sub-title 'Can Grid Technology enhance Flash Flood Crisis Management?' was presented by Vincent Theirion within the framework of the CYCLOPS Project.

After first presenting the meteorological aspects of flash floods, highlighting the geographical situation of the lowlands of Southern France, M. Theirion proceeded to describe a specific incidence of extreme flash flood – Marseille – 8/9 Sept.- 2002.

Due to the complex nature of rainfall factors, hydrological modelling is complicated and, at present, unreliable, making monitoring and forecasting extemely difficult. The existing system of hydrological forecasting was described, focusing on the Grand Delta Flood Forecasting Service (SPC-GD): objectives, data collection, and operation and information system. Various requirements for a more reliable system were identified, the foreseen advantages of Grid technology being in terms of computational power and storage capacity.

Also covered in the presentation were possible improvements in modelling and data-processing by using Grid technology, as well as technical problems currently being experienced (the model architecture currently crashes in real-time crisis management situations). Future areas for research were also identified.

The floor was then opened for questions.

- Questions/Answers

Q. 1 – Monique Petitdidier – Concerned about the inaccuracies of the forecasts asked what kind of input data is currently being used with the model.

Answer: Modelling cannot be performed without data. Hydrological forecasting depends on correct meteorological information, but if this data is unavailable or incorrect, then the resulting forecast will be wrong.

Q. 2 – Carlos Pires – Why does the model crash? Why does it not run in critical circumstances?

Answer: The model is a prototype and the problem lies with the computational power. This must be resolved in the near future.

The chair, Carlos Pires, made some comments before closing the session. He spoke of the important and intuitive nature of the problems the speakers were trying to solve through the application of technology and suggested that the different projects try and help one another, rather than work in isolation.

3.6 Live Demonstration

- **RISICO porting to EGEE**

  - Paolo Mazzetti (EMA), Valerio Angelini (EMA), Marco Verlato (INFN) and P. Fiurocci

The final Cyclops and Ibergrid session, jointly presented by Paolo Mazzetti, Valerio Angelini, Marco Verlato and Paolo Fiurocci, was intended to give a detailed explanation and demonstration of how the RISICO model (Italian application for Wild fire Risk Assessment) actually functions when ported to EGEE. Following a brief introduction to the key aspects and architectural framework of the Grid, Paolo Mazzetti proceeded to a description of RISICO, in operation since 2003. A warning was given, however, that RISICO is a tool for forecasting and prevention and not a fire fighting tool in itself. It can provide fire-fighters with data on potential damage, but cannot forecast where or when a fire will ignite.

Fire hazard is assessed by means of three models (dead fuel moisture model; potential fire spread model; live fuel moisture and load model).

Both meteorological forecast data (from National Meteorological Observation Network) and remote sensory data (mapping and charting of vegetation) are used to define the initial stage of the run. However, as it was found that RISICO was not able to assess the real danger in past crisis management situations, the system were redefined (2007) to be more flexible and capable of using all up-to-date information.

Valerio Angelini then proceeded to give a live demonstration of using the model on the Grid. Four main panels were indicated:

1) Run Management (input parameter selection/ temporal and spatial domain/ QoS)
2) Services View (web processing services-WCS/ web coverage services-OGC)
3) Grid Status (job status/ input preparation/ progress/ output assessment)
4) Output View (visual presentation of forecast)

As the model can take a long time to complete its run, a short movie (approx. 5 min) had been prepared to condense and explain the various steps in the process.

Following this, the results of the live demonstration were discussed. One of the comments made by the team concerned the problem of obtaining a synchronised response when using standard issue request and the resultant need to push for better synchronisation of applications.

Following a history of the evolution of RISICO the team outlined future plans for the application, including:

i.   better mapping of coverage

ii.   cross border testing and evaluation of results and flexibility (Italy/France)

iii. possibility of Grid overhead reduction (to reduce required model run time)

After congratulating the RISICO team, the floor was opened for questions.

- Questions/answers

Q. 1 Has the system been tested with actual data for validation purposes? How does it fare with similar products?

Q. 2 Is the system being used to predict actual fires or just to give an idea of risk? What is the advantage of this?

Team answer 1: Use of the Fair Weather Index has proved that RISICO is able to assess risk danger. Four different dynamics can be observed: fire spread rate; fuel moisture; linear; wind effect.

Team answer 2: It is dependant on the size of the search and heterogeneity of vegetation. If the search is spread out more than 1km, then the system cannot discern fires.

4 Closing Session

Chair – Gaspar Barreira

This session concluded the main conference programme of IBERGRID'2008. In the table, were present from the organization committee the co-chairs Lígia Ribeiro and Tito Vieira, both from the University of Porto. Antonio Pina from University do Minho was joined the table as the representative of the CYCLOPS Project.