



# International Collaboration to Extend and Advance Grid Education

## e-IRG: Education & Training

*Malcolm Atkinson*

*National e-Science Centre & e-Science Institute  
Edinburgh*

*5<sup>th</sup> October 2006*



# Education & Training

- **Preliminary Recommendations**
  - Increased investments in E&T are essential
    - so that full potential of e- Infrastructures may be realised
  - Focus education on improving understanding
    - as to how e- Infrastructure may be exploited effectively
  - Focus training to improve capacity
    - to develop, deploy and manage e- infrastructure and applications that use it
  - Develop policies and standards
    - for coordination and collaboration in E&T
- **Plans for next 6 months**
  - Survey current practice
    - Initiate work on recommending curricula and methods
  - Develop framework for sharing E&T materials and support
    - Including contribution policies
  - Initiate development of student & educator access policies
    - Considering access and mobility across regional & national boundaries



- **Training**

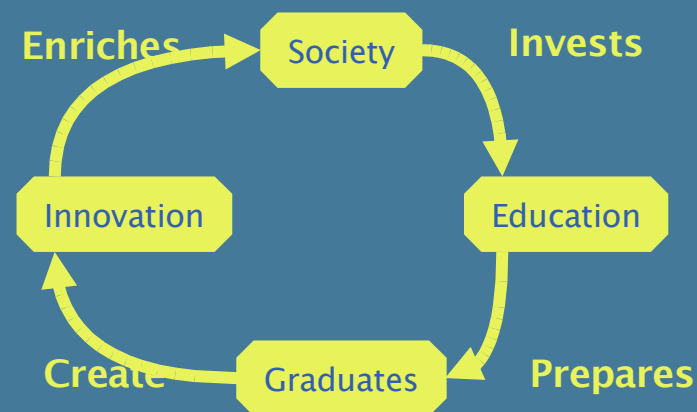
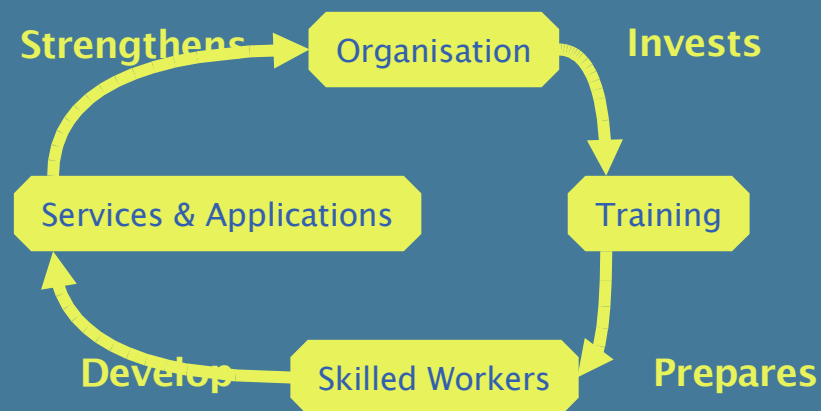
- Targeted
- Immediate goals
- Specific skills
- Building a workforce

- **Education**

- Pervasive
- Long term and sustained
- Generic conceptual models
- Developing a culture

- **Both are needed**

# Vive la Difference





# Austrian Recommendations

Launch an ERA-wide activity to coordinate education and training efforts, with an emphasis on efficient effective exploitation of e-Infrastructures by all EU citizens.

Increase investments in education and training based on findings of the coordination activity.



# Vision

- An ideal would be to develop sufficient investment and commitment to including grid education and training in Educational Organisations throughout the ERA.
- Education should primarily focus on the injection of awareness raising and skill development in a wide range of disciplines and professions, so that graduates are equipped to creatively exploit the benefits of e-Infrastructure.
- Only through a wide federation of actions in many educational institutions can the desirable scale and breadth of applications be reached.



## Path to Vision

To bring such a federation about, it is necessary to stimulate interest, seed the community of educators with relevant experts and provide pooled resources and support to those who engage in grid education and training both as educators and learners.

# Training & Education: First meeting

- The T&E WG was started – using detailed slides
- Scope of Policy Area was agreed – training to equip citizens with skills & education to stimulate cultural change
  - Extended scope to include outreach
- Goals were agreed – to significantly increase the rate and extent of education and training
  - Building cases
  - Assembling shared material
- An incremental approach was agreed
- An initial set of “volunteers” was augmented by many more!
- A target set of collaborations was agreed
  - Added National Grid Initiatives

# Training & Education: First meeting

- **A broad set of information requirements**

- was reduced to initial targets
- to be assembled concurrently
- volunteers were identified / are awaited

Now a report  
by  
April 2007

- **The initial structure for the chapter**

- was discussed
- was ambitious

- **Priorities and an initial work plan was agreed**

- draft introductory & motivation sections
- formed an editorial group: Atkinson, Gentzsch, Kacsuk, SEE
- assemble data for appendices: Vienna volunteers
- Twiki to organise policy discussion

Not done

Not done

4th October 2006 e-IRG Meeting, Bonn

- **Telecons to review progress and direction**
- **Meet to review progress in June**

Not done





# Progress since Linz

- **Established Education & Training Working Group**
  - At Open Grid Forum
  - Workshops in
    - Athens (Feb. 2006)
    - Tokyo (May 2006)
    - Washington DC (Sept. 2006)
  - Initial focus is on university education
    - Alliances with EPIC, OSG & TeraGrid
  - Provides forum for international policy and collaboration
  - Recommend e-IRG E&T participants join OGF E&T-WG



# Progress since Linz 2

- **Established ICEAGE Forum**
  - Context for Expert discussions
  - Alliances with EU projects, EUNIS, training concertation, ...
  - Intended to feed into e-IRG & OGF ET-WG
  - Two meetings
    - Ischia, May 2006
    - Washington DC & Geneva, Sept. 2006
  - Discussions
    - Curricula, Focus on University courses
    - How to have high impact
      - *Work via application disciplines*
      - *Work with enthusiasts*
  - e-IRG E&T enthusiasts welcome at the Forums
- **<http://www.iceage-eu.org/forum.htm>**



# Progress since Linz 3

- **Established an initial repository**
  - Education & training material
  - International federation of resources
    - Using digital library & eLearning standards
  - Recommend use, comment and contribution
    - By e-IRG E&T community
  - Those with major E&T resources
    - Extend the federation using same standards
  - Develop e-Infrastructure metadata terms
    - For describing material
- **<http://baillie.lib.ed.ac.uk:8080/iceage/>**



# Progress since Linz 4

- **Established initial list of Masters Courses**
  - For information
  - For analysis
  - Please extend and improve – make complete
  - Needs broadening to all forms of E&T
- **<http://www.iceage-eu.org/courses.htm>**



# Progress since Linz 5

- **Seeding Capabilities for E&T**
  - International Summer School in Grid Computing 06
    - 64 students from >125 applicants
    - ~50% PhD students, 29 countries, >20 disciplines
    - Faculty, post docs, ...
    - All material and curriculum available
- **Students identified need for continued provision**
  - t-Infrastructure from all technologies
    - OMII, Condor, Globus, gLite, Taverna, ...
- **[http://www.iceage-eu.org/summer\\_schools.htm](http://www.iceage-eu.org/summer_schools.htm)**
- **Other summer schools**
  - [http://www.iceage-eu.org/other\\_summer\\_schools.htm](http://www.iceage-eu.org/other_summer_schools.htm)



# Progress summary & Plans

- Some progress against most goals
- Need to get better coordinated
- Get more participants
- Accelerate progress
- This requires active volunteers
- AND shared leadership



# Slides for Today



# Relationship between E&T and Support

- The students that have attended courses should be able to transfer to e-infrastructure and receive support
- Educators building t-infrastructure for their courses or using production e-infrastructure for their courses will need support
- Trainers particularly need to provide information consistent with the currently supported e-infrastructure
- The support organisation should be able to communicate frequently recurring misconceptions to trainers and educators
- Educators should be able to expect stability and pervasive standards from supported systems to increase the value of investment in curricula and learning.





# Relationship between E&T and Support

- **Documentation and user is important and influences/is influenced by both user support and E&T**
  - Documentation of a range of user scenarios ranging from beginners (e.g. getting certificate) to sophisticated use (e.g. MPI)
  - Aiming to store such use case scenarios using digital library technology
  - Looking for synergy between such use case scenarios and provision of training material



# Slides from Linz



# Getting Volunteers : starter list

Malcolm Atkinson

David Fergusson

Ilmars Slaidins

Rosa Badia

Wolfgang Gentzsch

Peter Slood

Lajos Balint

Laimutis Telksnys

Roberto Barbera

Erwin Laure

Nikos Vogiatzis

Gaspar Barreira

Peter Kacsuk



# Getting Volunteers : Please volunteer now

- **Fill in and hand in sheet**
  - Your preferred title
  - Your first name
  - Your second / family name
  - Your affiliation
    - Organisation, address, role
  - What you would be prepared to work on
- **Add similar information for others**
  - Who work with you
  - Who may help
  - State whether they have already agreed



# Potential Collaborators

- **Projects**

- EPIC
- ICEAGE
- EGEE-II
- ...

- **EU organisations**

- Training concertation
- ...

- **Global Organisations**

- GGF
  - Education & Training CG
  - Education Grids CG
- ACM
- IEEE
- BCS
- ...

- ...

Who will collect this information?

Who will collect this information?

Who will collect this information?

Who will collect this information?

Who will collect this information?

Who will collect this information?

- **National Organisations**

- Education & Industry Ministries
  - Each member state
- Academic & Professional Societies
  - Each member state
- Funding bodies
  - Each member state
- ...

- **Individual Institutions**

- Universities
- Research Institutes
- Laboratories
- ...

- **Industry**

- Training Organisations
- Publishers
- ITC vendors
- User companies
- ...



# Information Collection 1

- To identify and understand current practice

- Representative sample

- Current training (Rosa Badia)
    - Current summer schools
    - Current Post Graduate courses
    - Current Undergraduate courses
    - Current Schools' activities

Who will collect this information?

- Curricula

- Target students
    - Target outcome
    - Time
    - Contents
    - Teaching method
    - Providers
    - Maturity

Who will collect this information?



# Information Collection 2

- **To identify and understand current practice**

- Representative sample

- Current training (Rosa Badia)
- Current summer schools
- Current Post Graduate courses
- Current Undergraduate courses
- Current Schools' activities

And keep it up to date?

- Curricula

- Target students
- Target outcome
- Time
- Contents
- Teaching method
- Providers
- Maturity

And keep it up to date?



# Information Collection 3

- **Information about Teachers and Trainers**

- Training & Experience
- Contributions and Courses
- Knowledge and Availability

- **eLearning available**

- Repositories
- Content & Portals
- Standards and Policies

- **t-Infrastructure**

- Training grids & services
- Booking services
- Exercises
- Contribution and Access policies

Who will collect  
this data?

Who will collect  
this data?

Who will collect  
this data?





# Information Collection 4

- **Information about Students**

- Statistics about applicants
- Statistics about graduates
- Statistics about qualifications
- Statistics about careers

Who will collect this data?

- **Information about Employer Requirements**

- Skills required
- Quantities of staff with these skills
- Geographic issues

Who will collect this data?

- **Information about Policy**

- National rules for access and qualifications
- Institutional rules for access and qualifications

Who will collect this data?



# Collate and Refine Information

- **Organise databases**

- Hosted at multiple sites or one?
- Support queries, searches and updates

- **Review quality**

- Data quality poor unless effort

- **Fill gaps**

- Missing target
- Suspicious anomalous values

- **Produce summaries**

- Appendices supporting policies
- Direct and shared use

- **Produce reports**

- Policies that are consistent with the observations

**Information Collection & Collation takes too long**



# Information Collection Conclusion

- It is a long-term activity
- and a result we want to achieve
- but we *must start* developing policy (Chapter)
- *while data is collected.*
- Part of the outcome may be a need to collect data
  - And maintain it
  - To guide and steer Education & Training
- **Sampling and Surveys may be necessary**
  - alliances will help
- **So onwards to start drafting a Chapter**



# Chapter Structure 1

## 1 Motivation and Scope

## 2 Goal

## 3 Where are we now?

3.1 Training today

3.2 Education today

3.3 eLearning availability

3.4 t-Infrastructure availability

3.5 Estimates of requirements

## 4 Policy issues to address

4.1 agreements on access for students and teachers

4.2 agreements on providing shared facilities

4.3 agreements on recognising teachers

4.4 agreements on recognising qualifications

4.5 understanding and responding to requirements

4.6 education and training should lead culture change

Pose the problem  
we address

A green speech bubble with a yellow border and a yellow outline. It has a rectangular body and a long, narrow tail pointing towards the bottom-left, specifically towards the text '4.6 education and training should lead culture change'. Inside the bubble, the text 'Pose the problem we address' is written in yellow.



# Chapter Structure 2

## 5 Access for Students and Teachers

### 5.1 Access to course information

schedules, categories, curricula, reviews, capacity, prerequisites, facilities, acceptance rates

### 5.2 Access to course materials

curricula, course notes, presentations, recorded lectures, exercises (instructions, software, data), solutions, reviews and translations

### 5.3 Access to eLearning portals

### 5.4 Access to t-Infrastructure

grids of training clusters, virtual machines, training data, student-workload monitoring, student-work diagnosis

### 5.5 Access to student progress and achievement data

### 5.6 Access to staff data

• Mobile staff & students



# Chapter Structure 3

## 6 Provision of Shared Facilities

- 6.1 Ownership of IPR
- 6.2 Expectations of acknowledgement
- 6.3 Expectations of feedback
- 6.4 Retained rights
- 6.5 Obligations – minimum plus limits
- 6.6 Expectations of fair use
- 6.7 Booking systems
- 6.8 Support obligations and freedoms

• May require a matrix by type of contribution



# Chapter Structure 4: Appendices

**A1 Categories of Courses**

**A2 Example Courses**

**A2.1 Summer Schools**

**A2.2 PG courses in Grid and e-Science**

**A2.3 Components in Discipline Specific Courses**

**A3 Examples of eLearning Portals**

**A4 Examples of T&E Repositories**

**A5 Examples of t-Infrastructure**

**A6 Examples of National Policies & Provision**

**A7 Alliances and Data Sources**



# Chapter Structure Summary

- **A Large Task**
  - ∇ ⇒ **partition into subtasks & prioritise**
- **Start information collection subgroups**
  - One per Appendix?
- **Start editorial group**
- **Start groups drafting sections 1 to 4**
- **Start a structured Twiki**
  - One section per subsection in Section 5
  - Discuss on twiki options for Section 5
  - Note implications for subsequent sections
- **Monthly telcons with editorial group**
  - Review progress
  - Steer to convergence
- **Meet in June to**
  - review draft of Sections 1 to 4
  - attempt consensus on Section 5
  - Initiate next subtasks





EU AT



# Training and Education



Malcolm Atkinson

# Training & Education: First meeting

- The T&E WG was started
- Scope of Policy Area was agreed –training to equip citizens with skills & education to stimulate cultural change
- Goals were agreed – to significantly increase the rate and extent of education and training
  - Building cases
  - Assembling shared material
- An incremental approach was agreed
- An initial set of “volunteers” was augmented by many more!
- A target set of collaborations was agreed
  - Go betweens were identified

# Training & Education: First meeting

- **A broad set of information requirements**
    - was reduced to initial targets
    - to be assembled concurrently
    - volunteers were identified / are awaited
  - **The initial structure for the chapter**
    - was discussed
    - was ambitious
  - **Priorities and an initial work plan was agreed**
    - draft introductory & motivation sections
    - assemble data for appendices
    - Twiki to organise policy discussion
    - Telcons to review progress and direction
- 4th October 2006 e-IRG Meeting, Espoo
- Meet to review progress in June**

# On- line comments

- Extend the interest area of E&T including outreach
- Take L. Hluchy out of volunteers
- Add National Grid Initiatives to Potential Collaborators
- Add Wolfgang Gentzsch (D- Grid) to the core of the Editorial Group
- Possibly, Peter Kacsuk should be a member of the Editorial Group
- Another member will come from SEE
- People from Uni. Vienna can help with the Appendices of the document (names to be filled in)

A large, white, crumpled piece of paper or fabric is the central focus of the image. It has a blue line drawn on it, which appears to be a stylized map or a decorative element. The paper is set against a dark green background. The lighting creates soft shadows, emphasizing the texture of the crumpled paper.

Questions  
&  
Comments  
please

Photographer: Kathy Humphry