"From research to production grids: interaction with Grid'5000" session wrap-up

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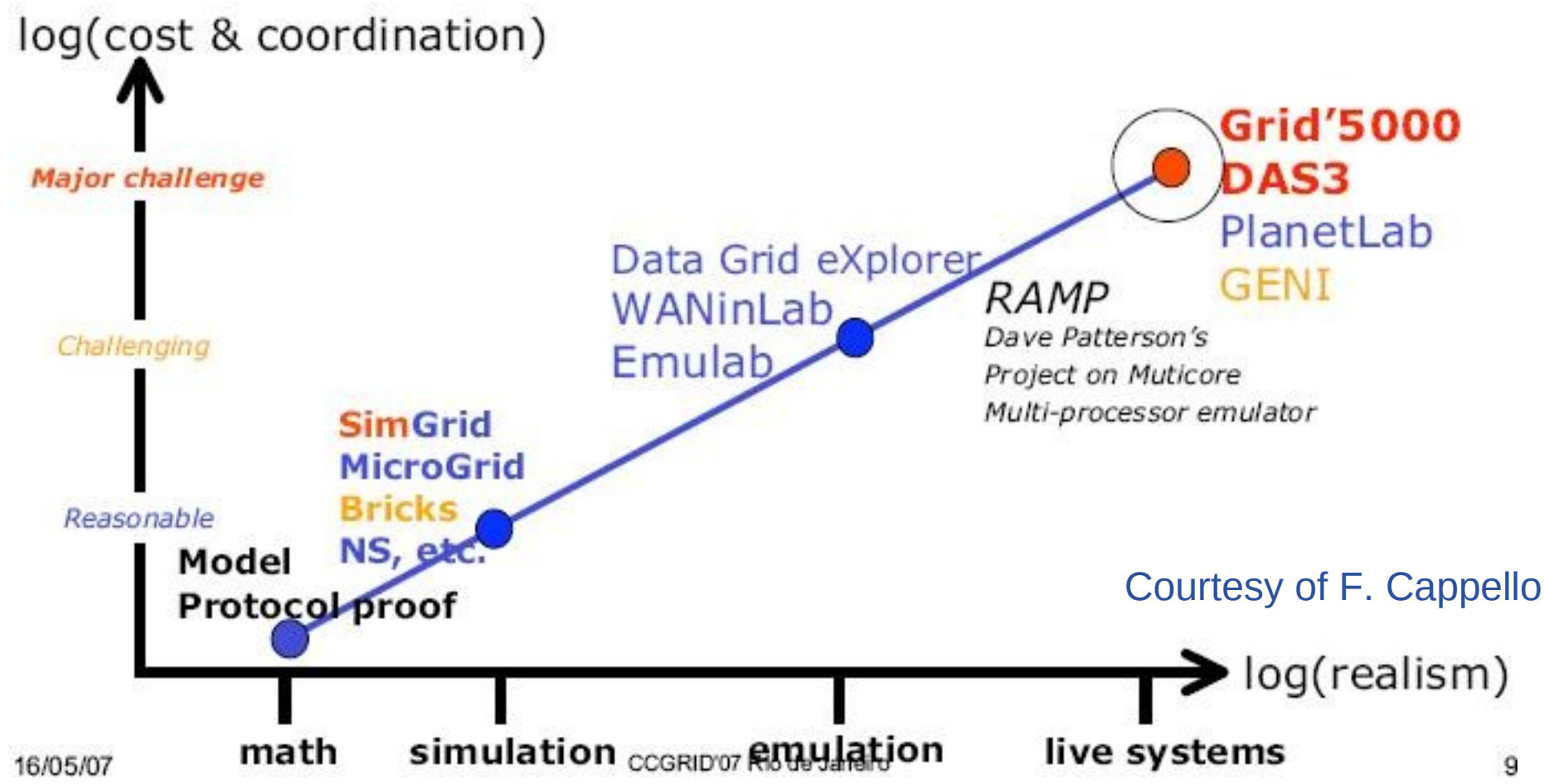
Information Society and Media

The French gridS

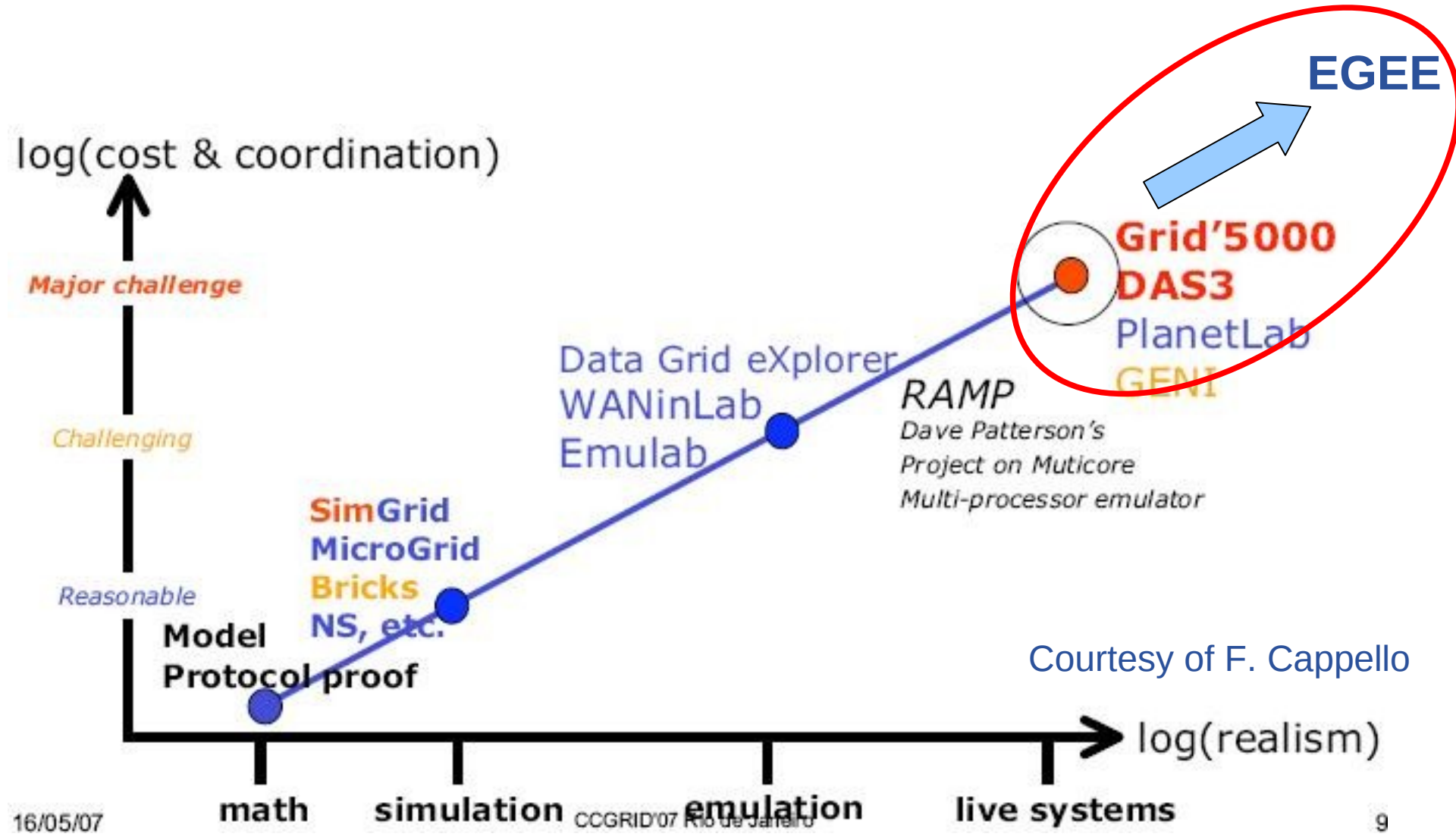
- **Production grid infrastructure**
  - EGEE French Federation
  - Majority of LCG sites
- **Grid'5000**
  - Grid'5000 is a National research effort developing a large scale nation wide infrastructure for Grid research
    - Highly reconfigurable, controllable and monitorable experimental Grid platform
    - 9 sites geographically distributed in France
    - 100 to a thousand PCs per site
    - connected by the RENATER Education and Research Network
  - The infrastructure is a large scale testbed where real life experimental condition hold
- **National Grid Institute**
  - CNRS institute, inaugurated end of 2007
  - Encompass production and research Grids
  - Complemented by a ministry prospective to synthesise the needs for production grids (Jan – Sept 2008)

Grid'5000 infrastructure



Courtesy of F. Cappello

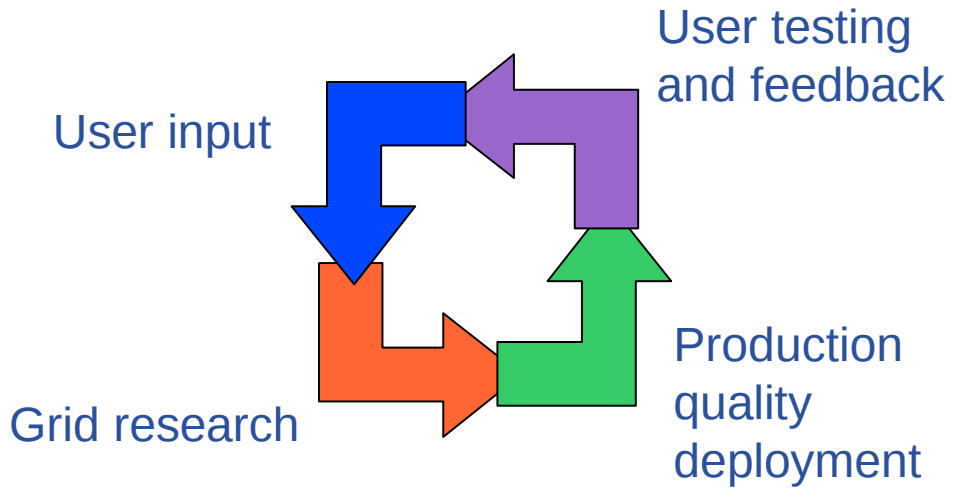
Grid'5000 infrastructure



Courtesy of F. Cappello

Session goals

- **From research to production grids**
  - The virtuous cycle



  - Research and production infrastructures are complementary tools
  - Fostering exchanges and collaboration between the EGEE production grid experts and the research community
- **Fostering exchanges and collaboration between the production and research communities**
  - Talks describing various aspects of Grid'5000 based research
  - Discuss challenges arising on the EGEE production infrastructure

Session talks

- **Modeling the EGEE latency to optimize job time-outs**
  - Grid modeling, joint use of EGEE and G5K inrastructures
- **Expo : an experiment framework for dedicated platforms**
  - Controlled experiments framework
- **IV Grid Plugtests: composing dedicated tools to run an application efficiently on Grid'5000**
  - Tools integration for large scale application deployment
- **All-in-one graphical tool for grid middleware management**
  - Middleware monitoring and management
- **DeployWare: A Framework for Automatic Deployment of Software Systems on Grids**
  - Application environment deployment and management
- **Simple, fault tolerant, lightweight grid computing approach for bag-of-tasks applications**
  - Resources allocation

Participants

- Francesco Giacomini (EGEE JRA1)
- Nick Thackray (EGEE SA1)
- Olivier Keeble (EGEE SA3)
- Cal Loomis (EGEE NA4)
- Cécile Germain-Renaud (Grid'5000)
- Eddy Caron (Grid'5000)
- Frank Capello (Grid'5000)
- Tristan Glatard (chair)

Production challenges

- **Operations (SA1)**
  - Services resilience (redundancy, failovers)
  - Service discovery / reduce manual configuration
  - Lack of consistency of services CLI / logs / error messages
  - VOs configuration complexity at sites level
- **Middleware (JRA1)**
  - Software stack complexity
  - Interoperability and standardisation problem in the zoology of tools available
  - Research needed to make strategic choices
    - Ex: how to submit jobs? Push vs pull vs pilot jobs model.
- **Certification & testing (SA3)**
  - YAIM for uniform configuration of multiple services
  - Deployment, incremental releases
  - Certification & testing at production scale
  - Example: BDII scaling problems
    - Inheritance of the original globus MDS, evolutions tied for compatibility

Discussions

- **Cost of migrating prototypes from research to production**
- **Take into account the constraints of a production grid**
  - Site policy restrictions matter
  - Hardly reserve (all) resources
- **Bridging the gap from Grid'5000 to EGEE infrastructure**
  - gLite images to deploy on Grid'5000
  - Creating a Grid'5000 VO
  - Incremental approach : replace service per service
  - Require clear APIs specifications
  - Using the PPS
- **Scalability testing**
  - Use of large infrastructure
  - Realistic conditions simulation
- **Grid modeling**
  - Production systems logging
    - Grid Observatory cluster: data collection & publication
  - (Hopefully compact) models giving insights on Grid behavior

Conclusions

- **Research and production grids are complementary tools**
- **The French grid community invests in both directions**
  - This creates tensions
  - This is important to ensure diversity / new opportunities
  - This require collaborative work
  - Timescales and constraints are different
- **Let us continue speaking to each other!**