

Grid Application Programming Environments: Comparing ProActive, Ibis, and GAT

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Thilo Kielmann

Vrije Universiteit, Amsterdam

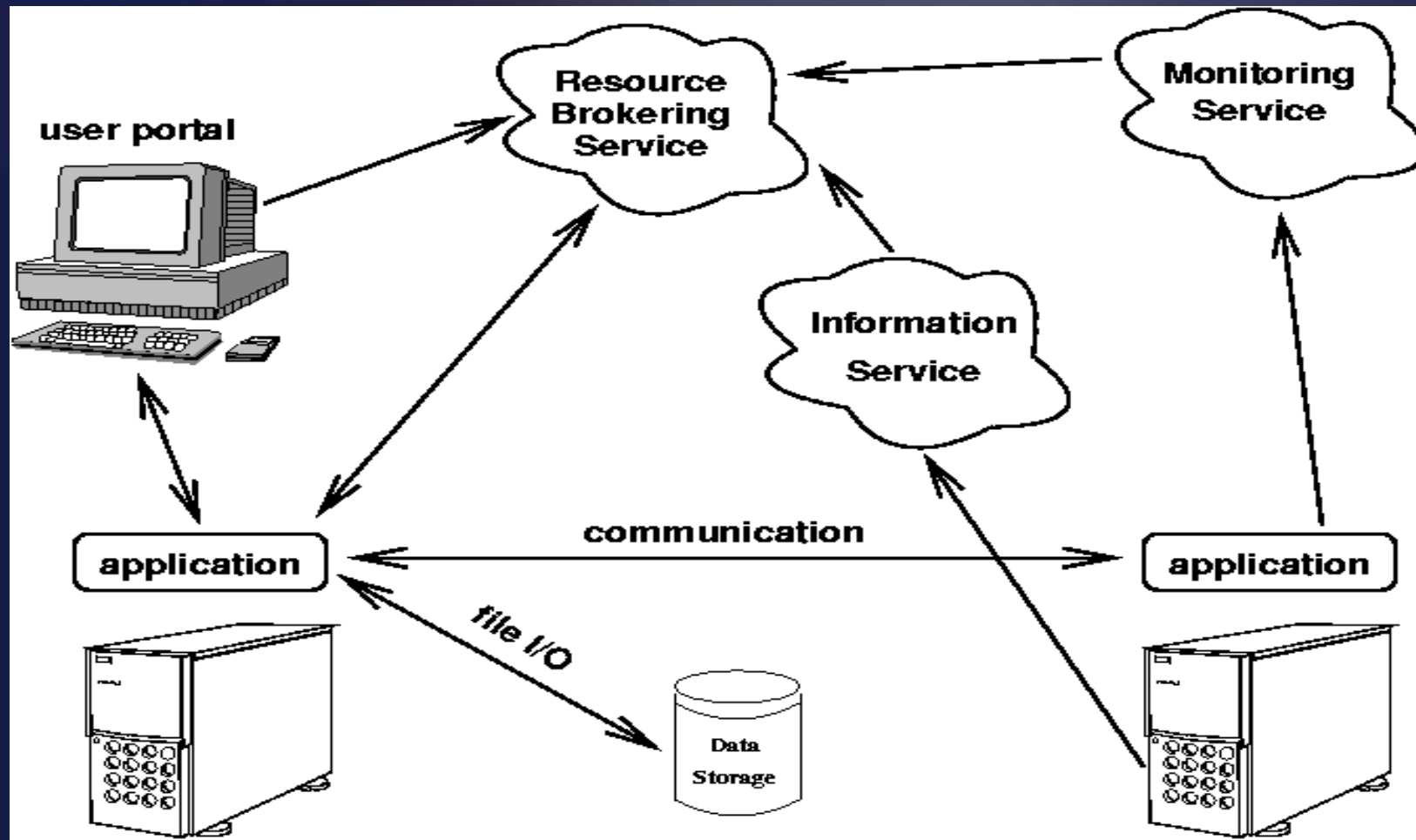
kielmann@cs.vu.nl



CoreGRID: Network of Excellence

- **Funded by European Commission (IST, 6th Framework)**
 - 8.2MEuro, for 4 years, started Sep 2004
- **Goal: integrating the research of the major European groups working on Grids**
 - Currently 42 partner sites
- **6 Virtual Institutes**
 - Knowledge and Data Management
 - Programming Models
 - System Architecture
 - Information and Monitoring Services
 - Resource Management and Scheduling
 - Problem Solving Environments, Tools and Systems

A Grid Application Execution Scenario



Functional Properties

What applications need to do:

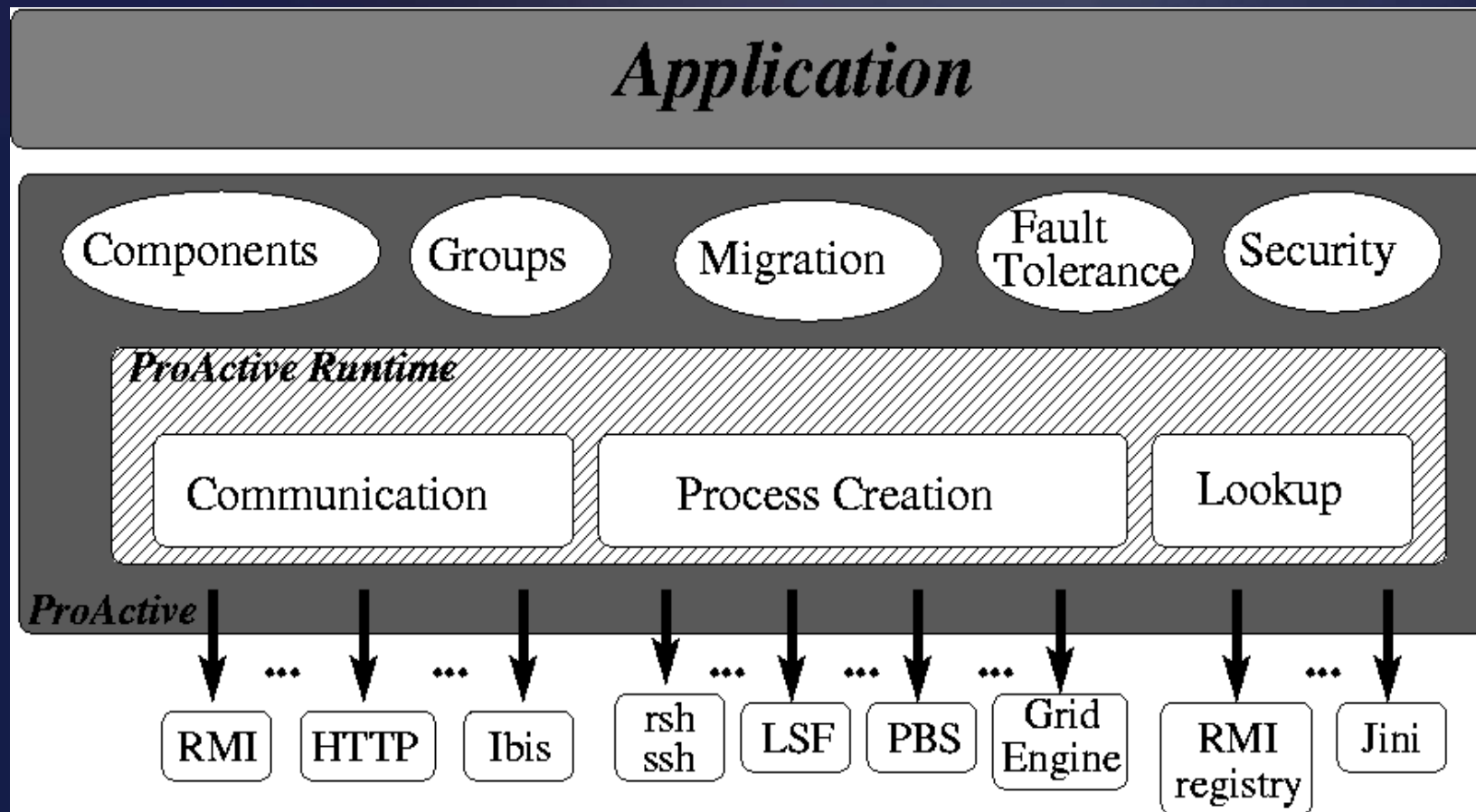
- **Access to compute resources, job spawning and scheduling**
- **Access to file and data resources**
- **Communication between parallel and distributed processes**
- **Application monitoring and steering**

Non-functional Properties

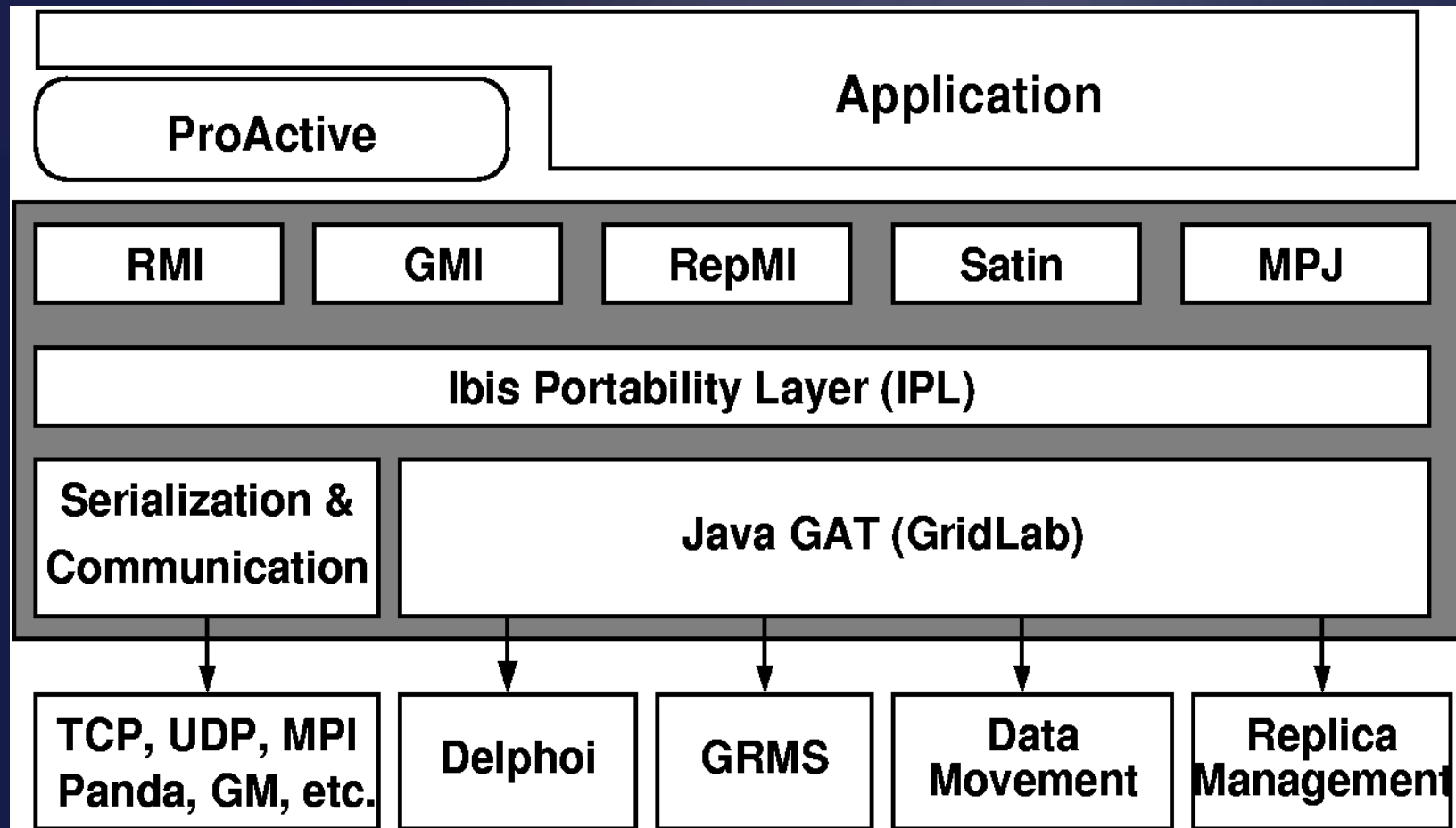
What else needs to be taken care of:

- Performance
- Fault tolerance
- Security and trust
- Platform independence

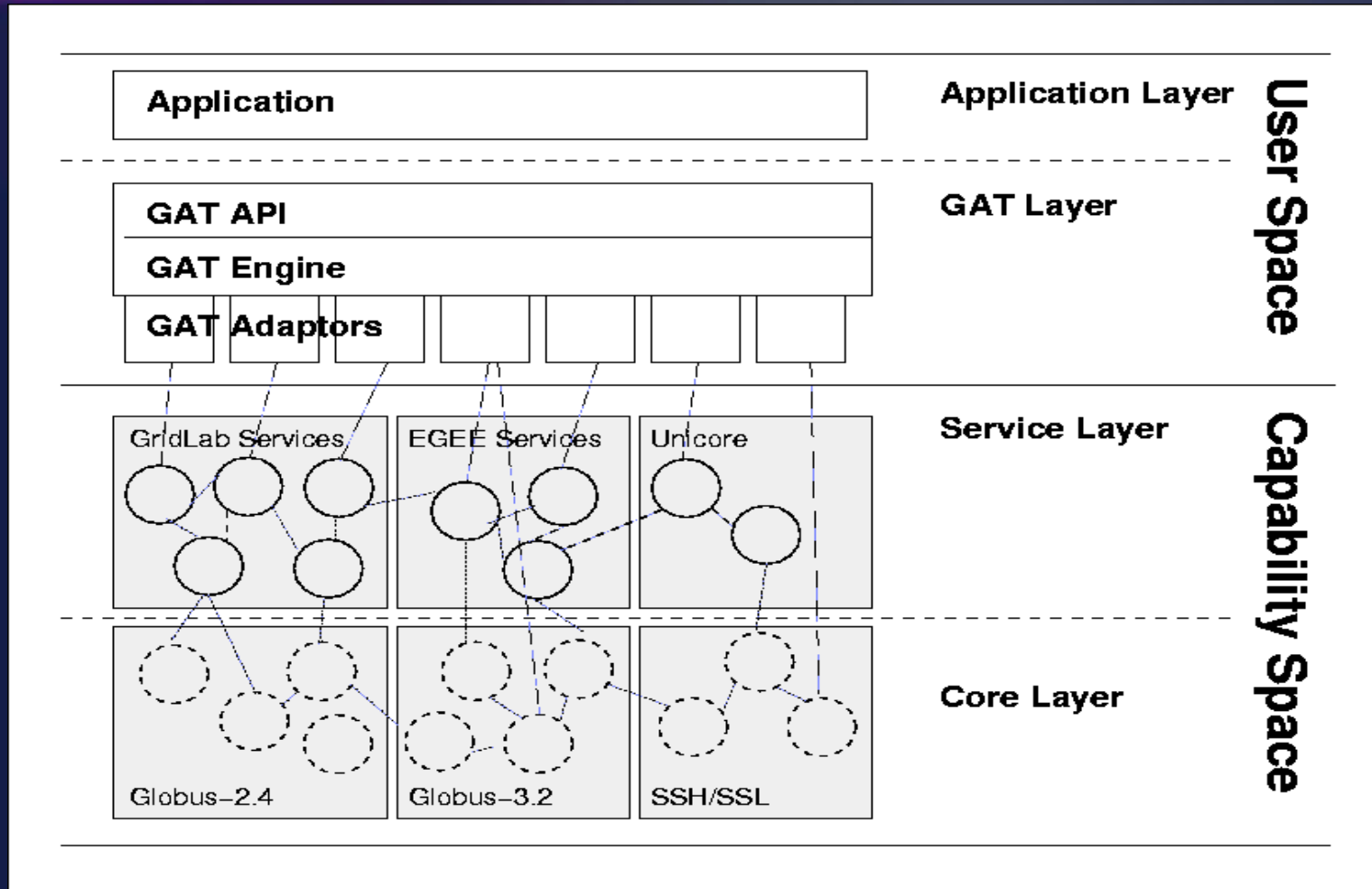
ProActive



Ibis



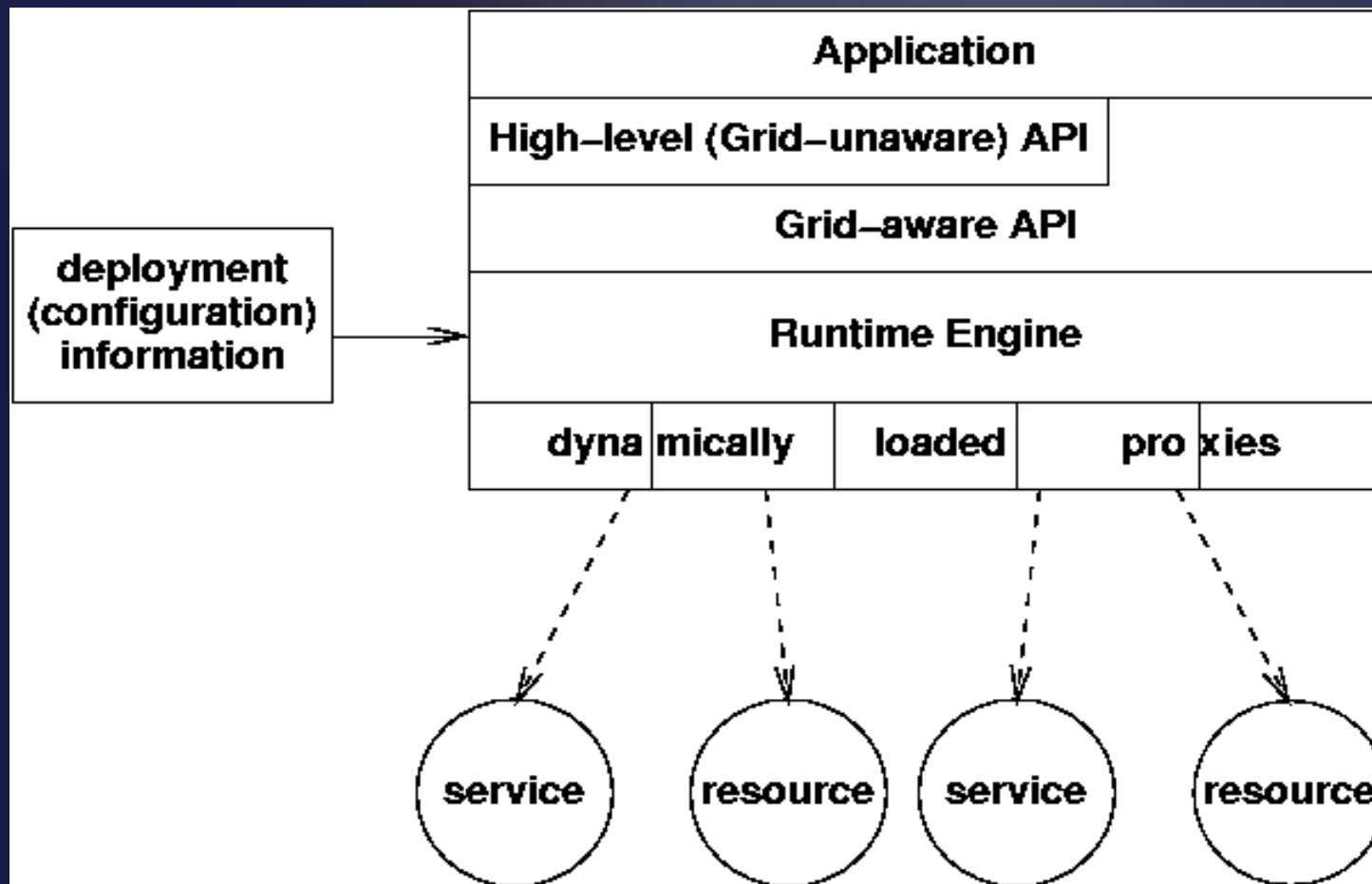
GAT



Comparing ProActive/Ibis/GAT

Property	ProActive	Ibis	GAT
<i>Non-Functional Properties</i>			
performance	●	●	○
fault tolerance	●	●	●
security / trust	● / ○	● / ○	● / ○
platform independence	●	●	●
<i>Functional Properties</i>			
resources / job spawning / scheduling	● / ● / ○	○ / ○ / ○	● / ● / ●
files / data resources	○ / ○	○ / ○	● / ●
parallel / distributed communication	● / ●	● / ●	○ / ●
application monitoring / steering	● / ○	○ / ○	● / ●

Synthesizing a Generic Architecture



Conclusions

- We identified a set of functional and non-functional properties for grid application runtime environments
- None of our systems currently addresses them all
- Work in progress:
 - CoreGRID virtual institute on Environments, Tools, and Systems
 - designing/building a generic grid platform

www.coregrid.net

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