Managed by

Virtual Institute
Programming models

Marco Danelutto

Contribution to the virtual institute

UNIPI

http://www.coregrid.net

marcod@di.unipi.it

UNIPI: main related projects

GRID.it (3 year, large # partners, ministry funded)

- Group target: *component based, high performance, grid programming environment*
- Status:
  - *structured parallel programming environment available*
  - *Component model almost designed*
  - *Interoperability with common standards (CCM, WS)*
  - *Application testebed being developed (computational chemistry, bioinformatics, earth observation, graphics, …)*

Legge 449 (two 2 year projects, ministry funded)

- Group target: *grid programming environment (ASSIST) & component interoperability*
- Status: *most preliminary results of the GRID.it (project synergy in the project setup!)*

European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed, GRID and Peer-to-Peer Technologies

2

UNIPI → task 3.2

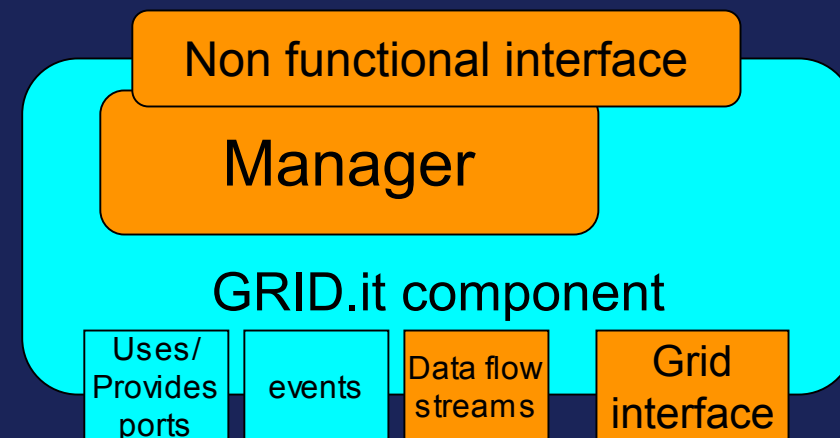**Standard component mechanisms (ports, events)**

New HP mechanisms: streams

Manager: autonomic control of component

- **Manages non functional interface & interacts with the exec environment through the grid interface**

Non functional interface

- **Ports and events**
- **Accepts performance contracts**
- **Provides access to manager**

Non functional interface

Manager

GRID.it component

| Uses/ Provides ports | events | Data flow streams | Grid interface |

European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed, GRID and Peer-to-Peer Technologies

3

UNIPI → task 3.3

Structured programming environment

- – **Predefined, reusable, parallel component composition patterns**
- – **Layered implementation**
    - ▪ **Application**   *grid awarness hidden*
    - ▪ **Compiler tools**   *static optimisations*
    - ▪ **Run time support**   *dynamic optimisations + grid targeting*
    - ▪ **Grid middleware**   *any one abstracted by common API*
- – **Interoperability with standard frameworks (WS, CCM)**
    - • **Guaranteed through wrappers / bridge components**

that means:

- – **Almost no code needed to program "standard" grid applications**

European Research Network on Foundations, Software Infrastructures and Applications for large scale distributed, GRID and Peer-to-Peer Technologies

4