



Personal
Power
Plant

P3: Personal Power Plant

Makes over your PCs into power generators on the Grid

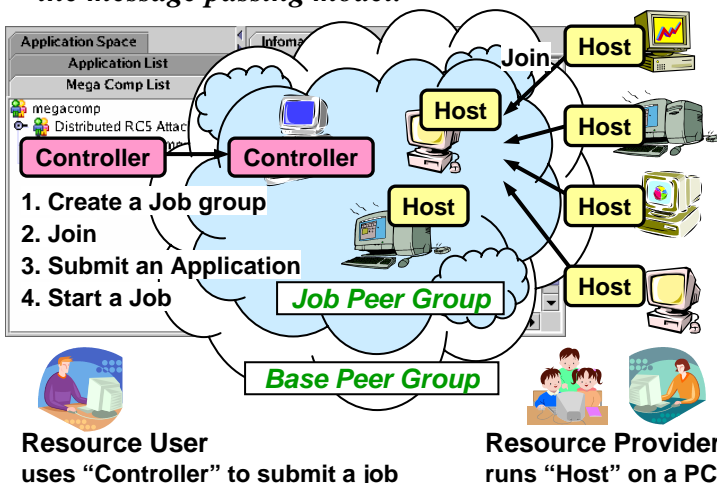
P2P Middleware for Transfer and Aggregation of PC Computational Resources

P3 is middleware used for distributed computing that makes effective use of existing PCs. It enables engineers and scientists to harvest PC's compute power of existing computers in their organization. It also enables outside contributors to participate in research projects that are too massive for a single organization to handle. Unlike conventional distributed computing projects, in P3 a "participant" means not only a "resource provider" but also a "resource user" because the participant both provides and uses the power.

PCs interact with each other in a true P2P mode

◆ P3 utilizes JXTA, widely accepted P2P communication library. P2P concepts efficiently support P3:

- **Discovery:** PCs dynamically discover each other and jobs without a centralized server.
- **Peer Group:** PCs are grouped into job peer groups, where computers carry out code distribution, job control, and group communication for parallel computation.
- **Overlay Network:** Enables end-to-end communication over NAT and firewall. It supports parallel processing in the message passing model.

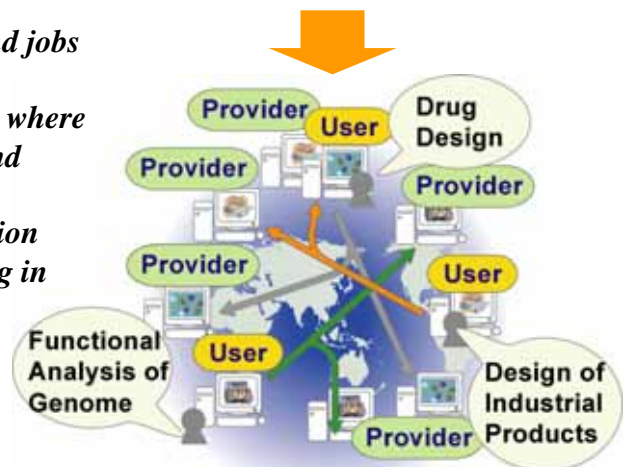


Resource User uses "Controller" to submit a job

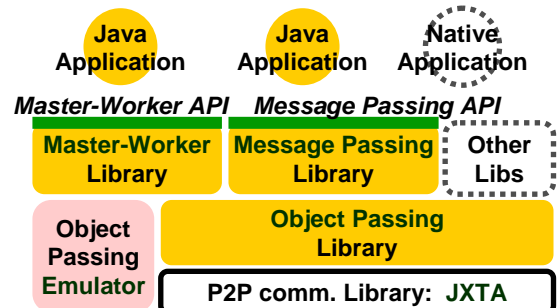
Resource Provider runs "Host" on a PC



Conventional distributed computing



P3 enables transfer and aggregation of individual resources



Libraries and Emulator hosting parallel applications

Future Plans

- **Integration of harnessed PCs into other kinds of Grid resources such as PC clusters and DBs. (in 6-18 months)**
- **Commercial dealings of collected resources. (in 2-5 years)**

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