



PRAGMA Presentation

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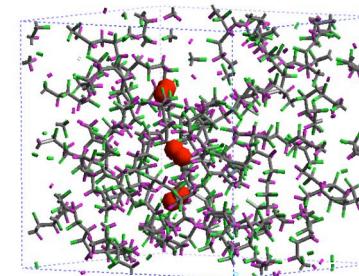
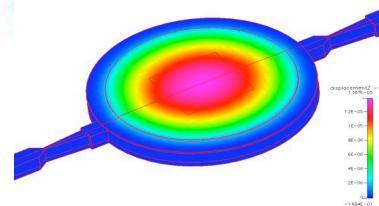
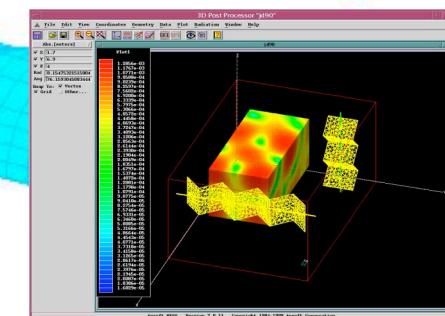
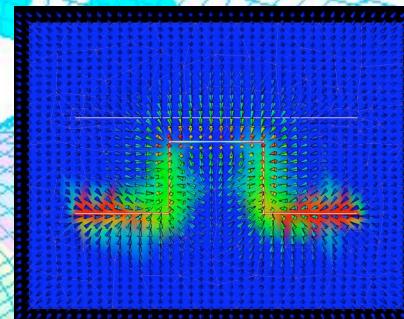
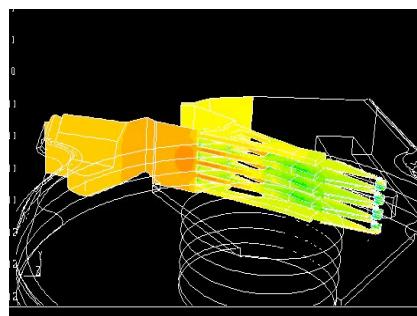


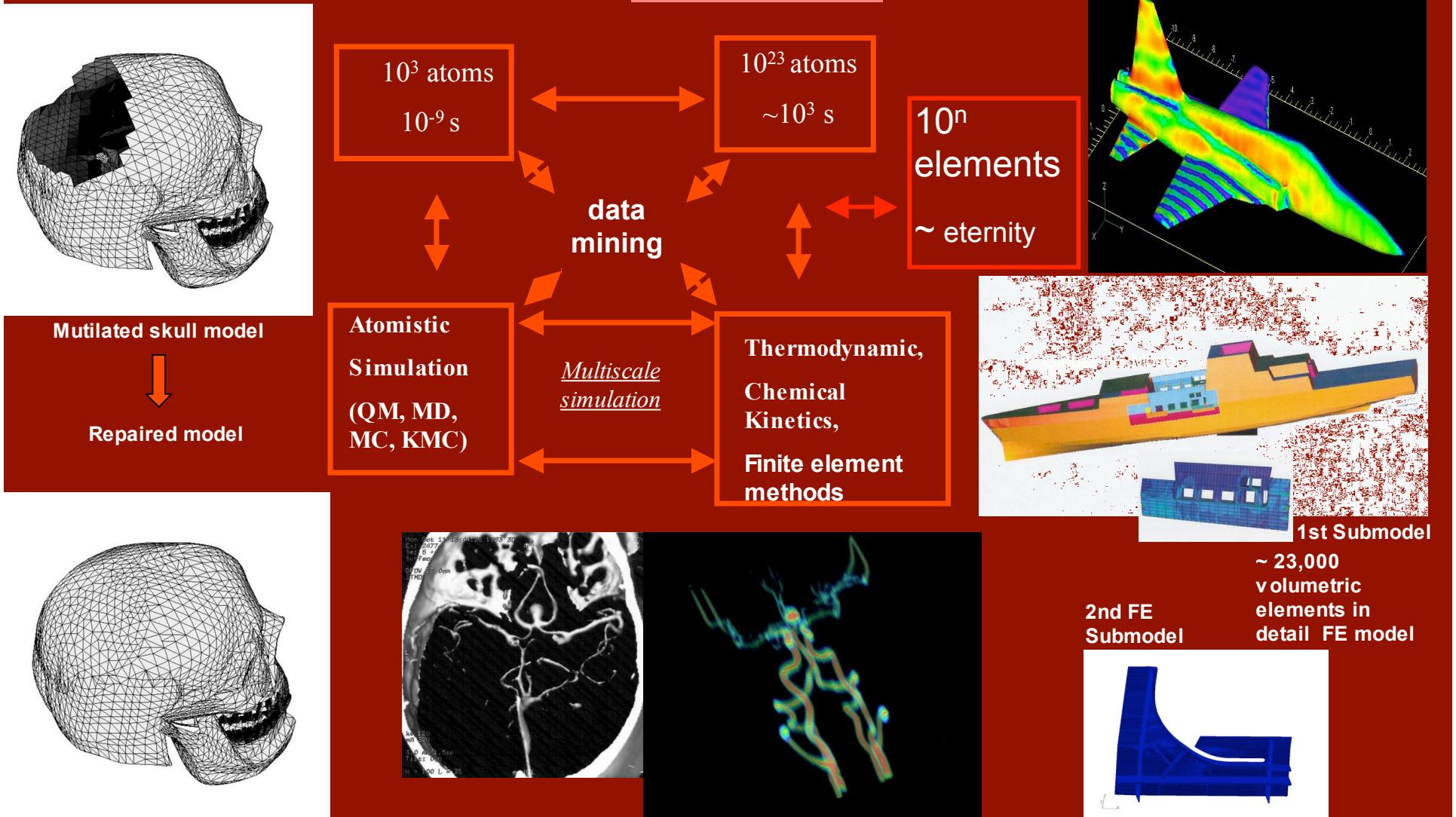
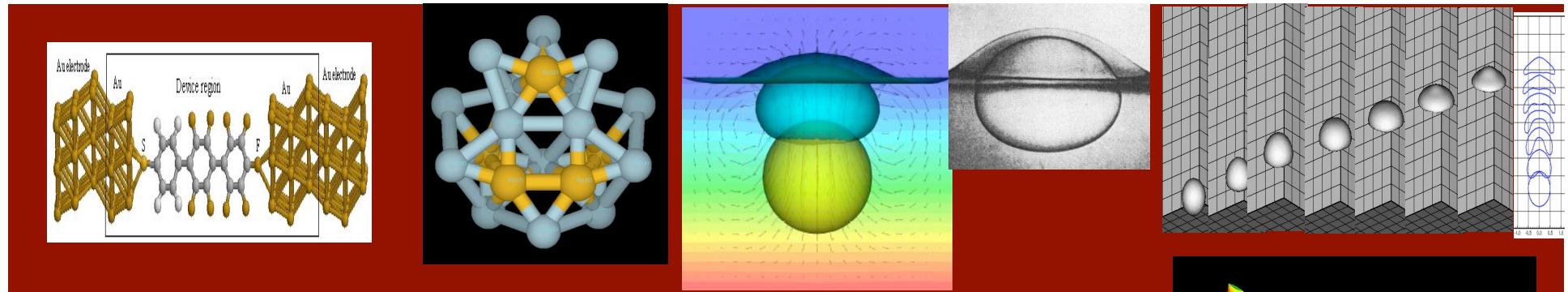
Agenda

- Brief Introduction to IHPC
- Overview of grid activities at IHPC
- Areas and forms of contribution to PRAGMA

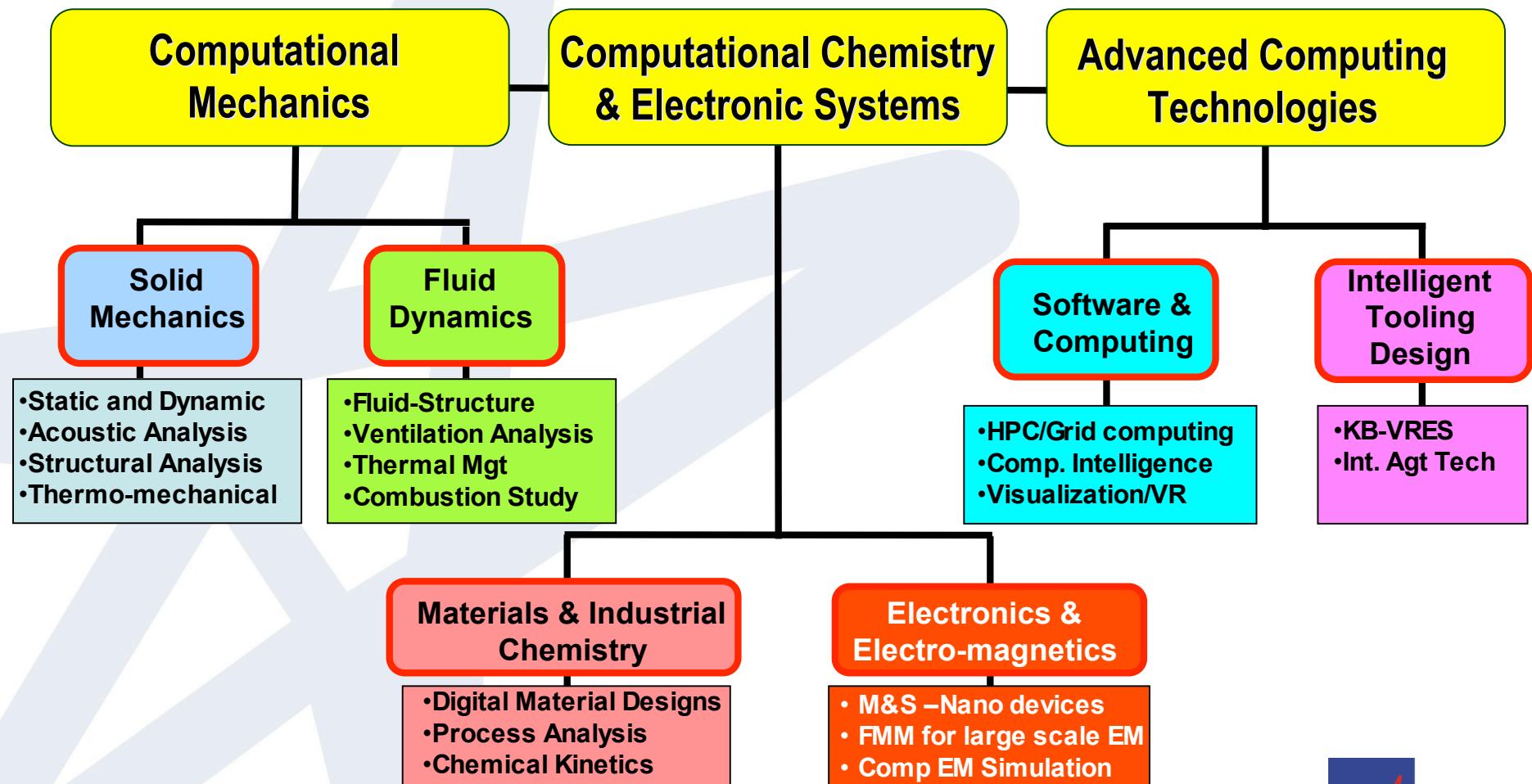
IHPC R&D Mission

To enhance Singapore's global competitiveness through innovative research and human capital development in leading-edge computational science and engineering for modelling, simulation and visualisation





Technology Areas



IHPC's Grid Positioning

- Grid-enable scientific computing + future of all computing
- Enable sister research organizations
- Technology transfer to industry through projects & POCs
- Reasonable functionalities for end-to-end service
 - System architecture, middleware, grid-enabling applications
 - Portal & UI, deployment automation
- Partnership (ISVs, solution providers, R&D entities)
- Physical Sciences + Manufacturing Virtual Grid Community;
Middleware Workgroup
- Continuous validation with R&D and industry partners

Selected Projects

- Grid-Enabled Computational Electromagnetics (BAe, HP-UK, Swansea, Cardiff)
- Multi-Physics Modeling Software (iMath, Comsol)
- Fire & Smoke Modeling (Hart Engineering)
- Collaborative Engineering Design/Simulation (ST Kinetics)
- PSE for Engineering Optimization (NTU)
- New motif discovery for stem cell research (GIS)
- Optimization/gridification of ClustalW (I2R)
- AE@SG on Digital Media Grid (HP, IDA, NTU, SMU)
- Digital Media Contents Management & Delivery (IHPC)
- Grid for Logistics Optimization (SIMTech, NTU)
- Resource hosting and management for GOG Resources (NGO, CERN)
- National Grid Pilot Platform (NGO)
- Access Grid implementation consultancy to Rolls Royce

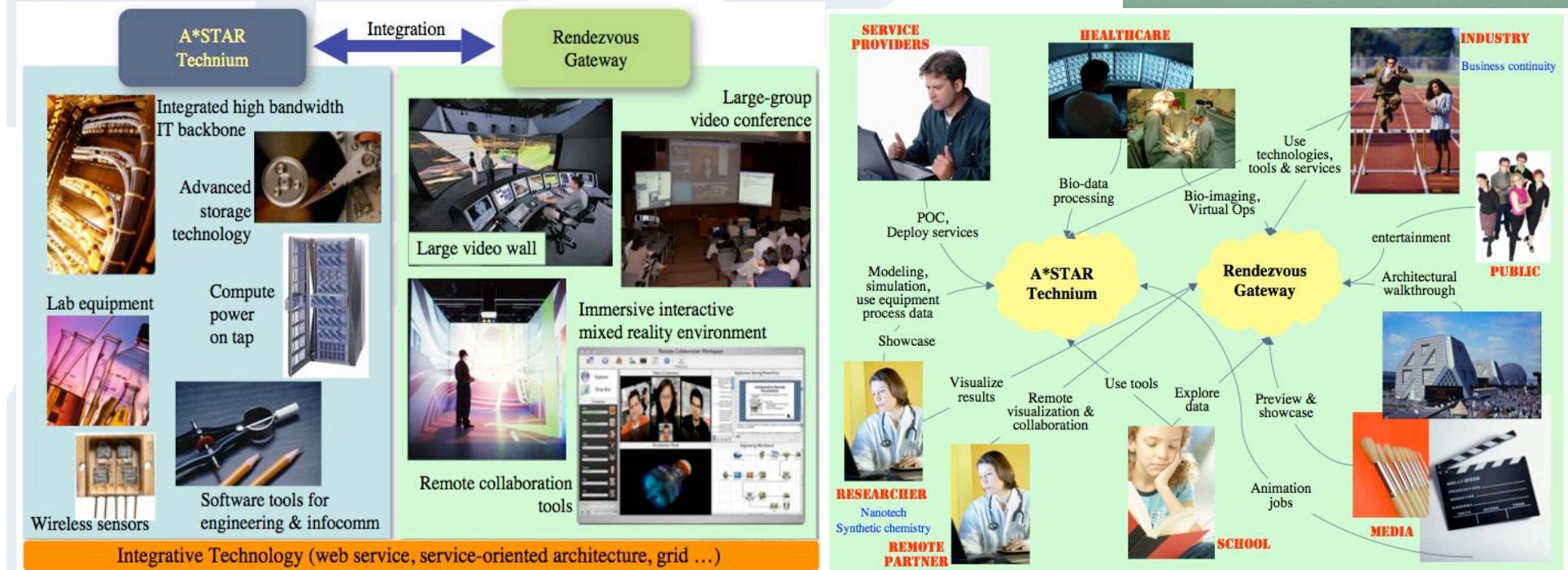
Selected Publications

25+ conference/journal papers

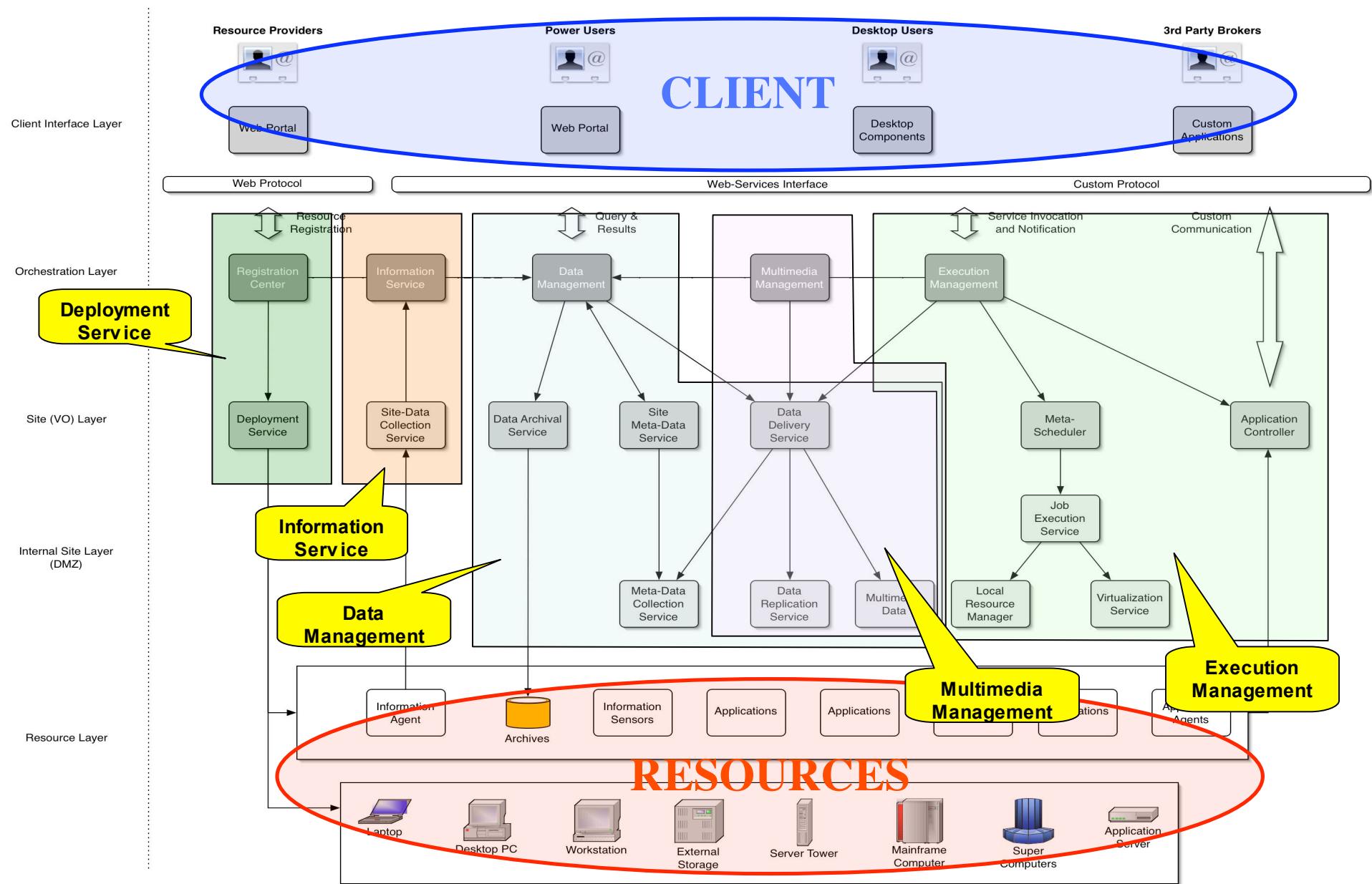
- Information Service and Management for Computational Grid, International Journal of Web Services Research, Vol. 2, No. 3, July-September 2005, pp. 69-82.
- An Information Service for Grid Virtual Organization: Architecture, Implementation and Evaluation, The Journal of Supercomputing, Vol. 34, Number 3, Dec 2005, pp. 273-290.
- Design and Implementation of a Multimedia Personalized Service over Large Scale Networks, ICME 2006
- GRASG - A Framework for "Gridifying" and Running Applications on Service-Oriented Grids, ccGrid2006
- Architecture Model for Information Service in Grid Environments, ccGrid2006
- SC Global panel session on Power Walls and Access Grid, SC05

Vision of Future of Computing

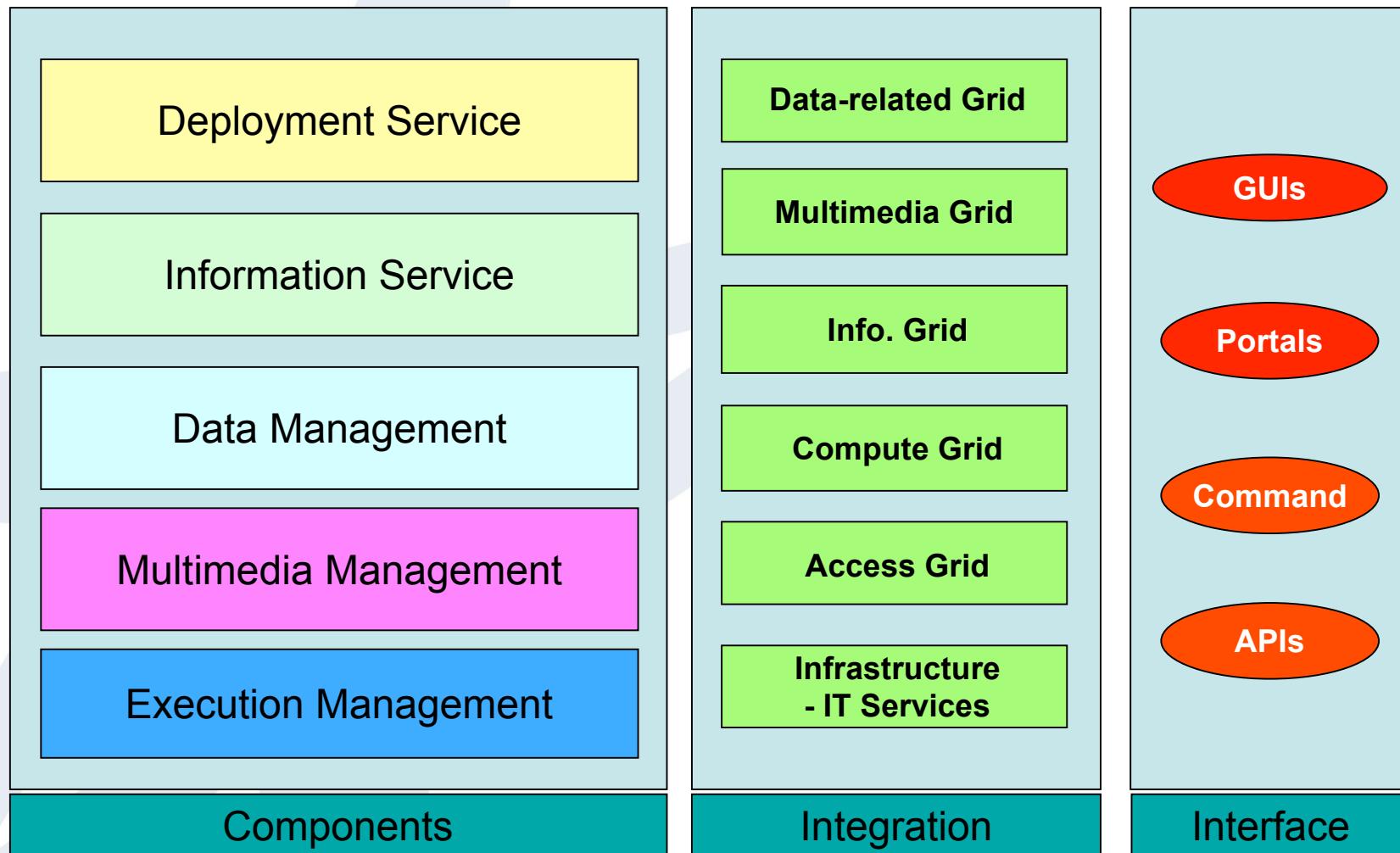
- Software utility services platform in new building
- Grid as the glue for A*STAR's infocomm technologies and resources
- Diverse user communities



Architecture Considerations & Middleware Focus



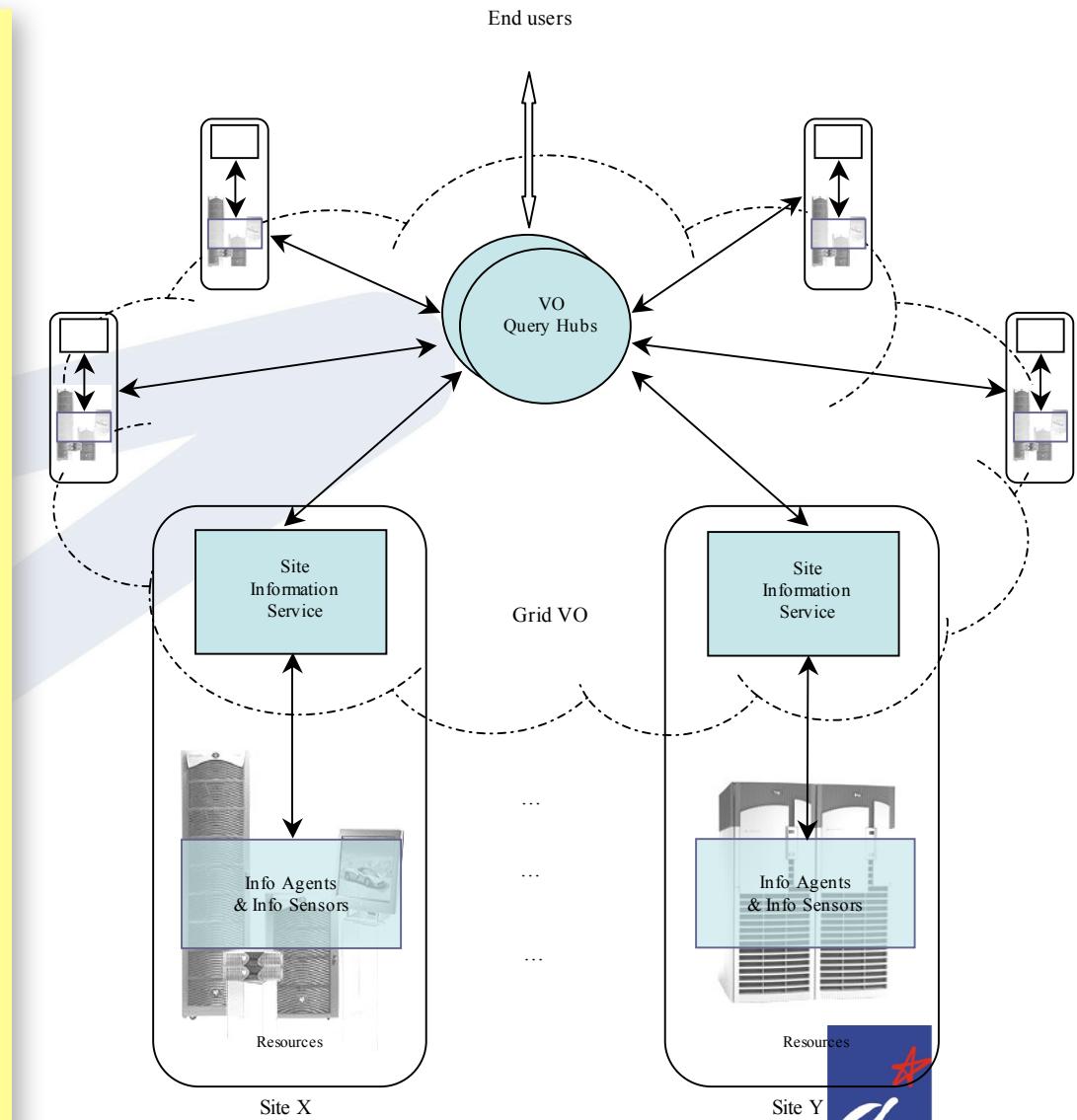
Our Grid Building Blocks



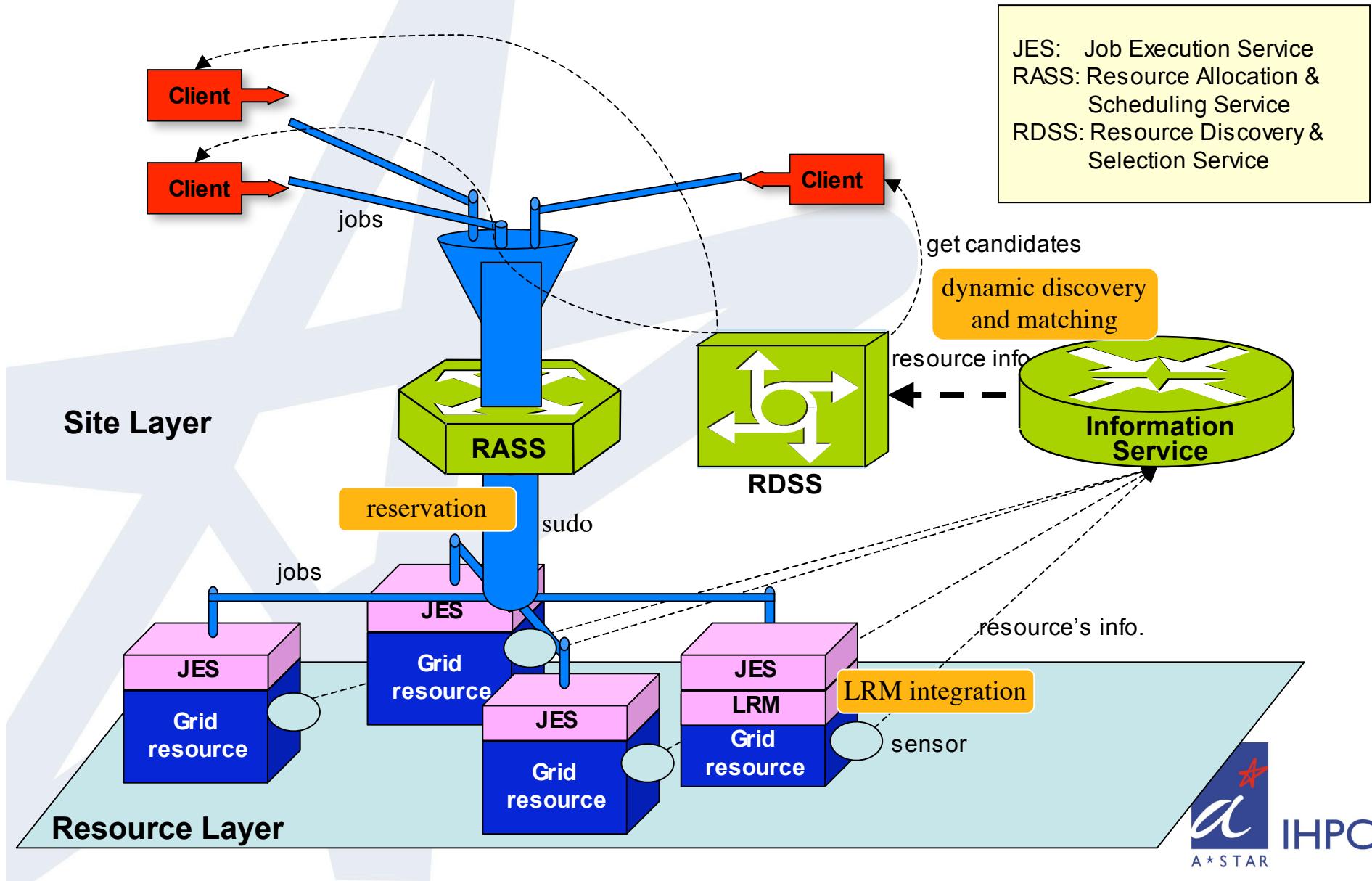
GT4 compliant

Information/Monitoring Services

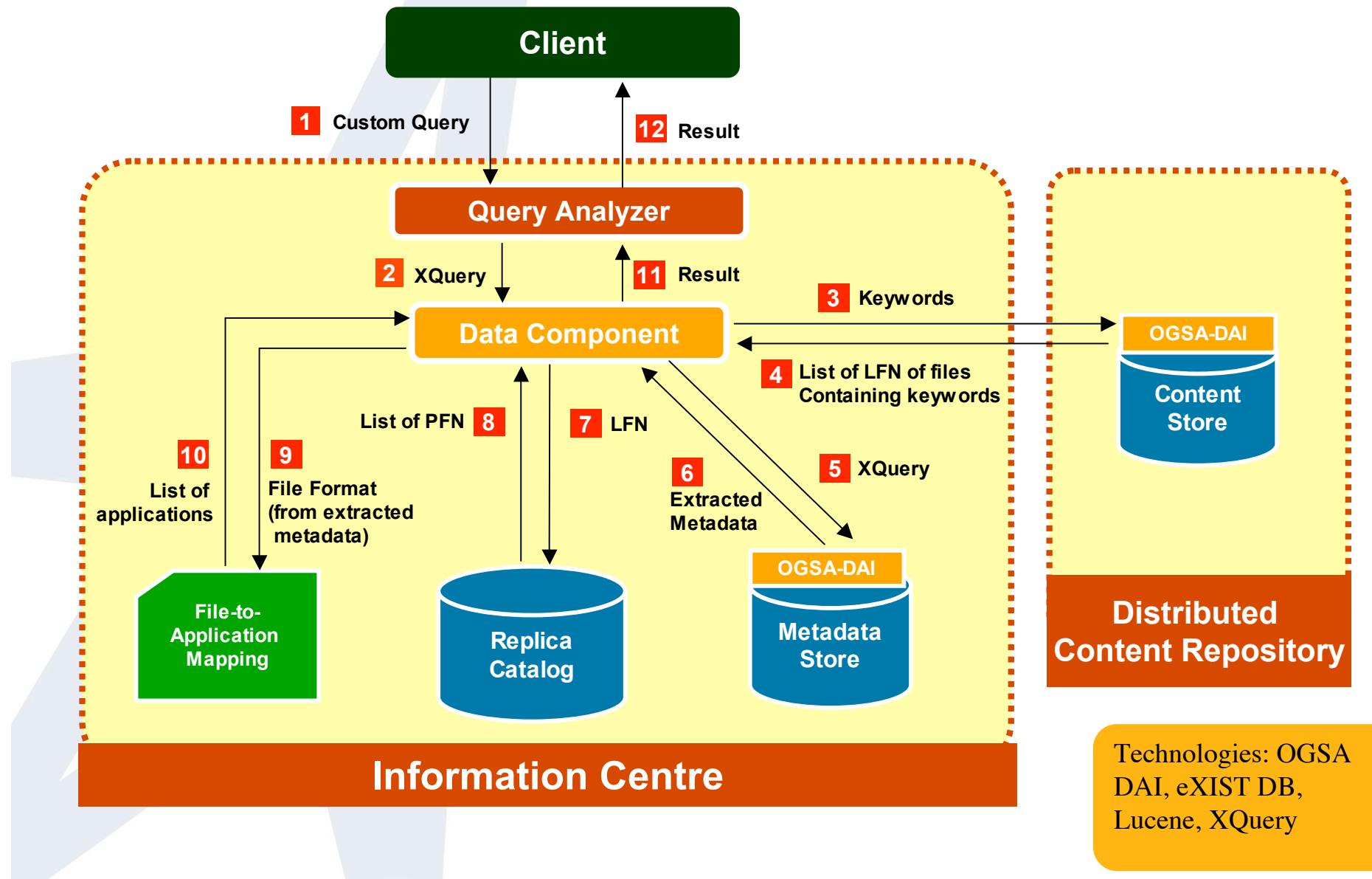
- **VO Query Hub**
 - DHT for indexing
 - Track registered SIS
 - Redirect query to SIS
 - Authorization mechanism for access
- **Site Info Service (SIS)**
 - Consolidate info from IA and package into WSRF entities
 - Query processing
 - Push info upward to Info Center
- **Info Agent (IA)**
 - Manage and track sensors
 - Collate info from sensors & package for upward delivery to SIS
- **Info Sensors**
 - Flexible scripts capturing any raw info
 - Hot-pluggable
- **Future works**
 - Scalability, repository for search/ download



Execution Management Framework

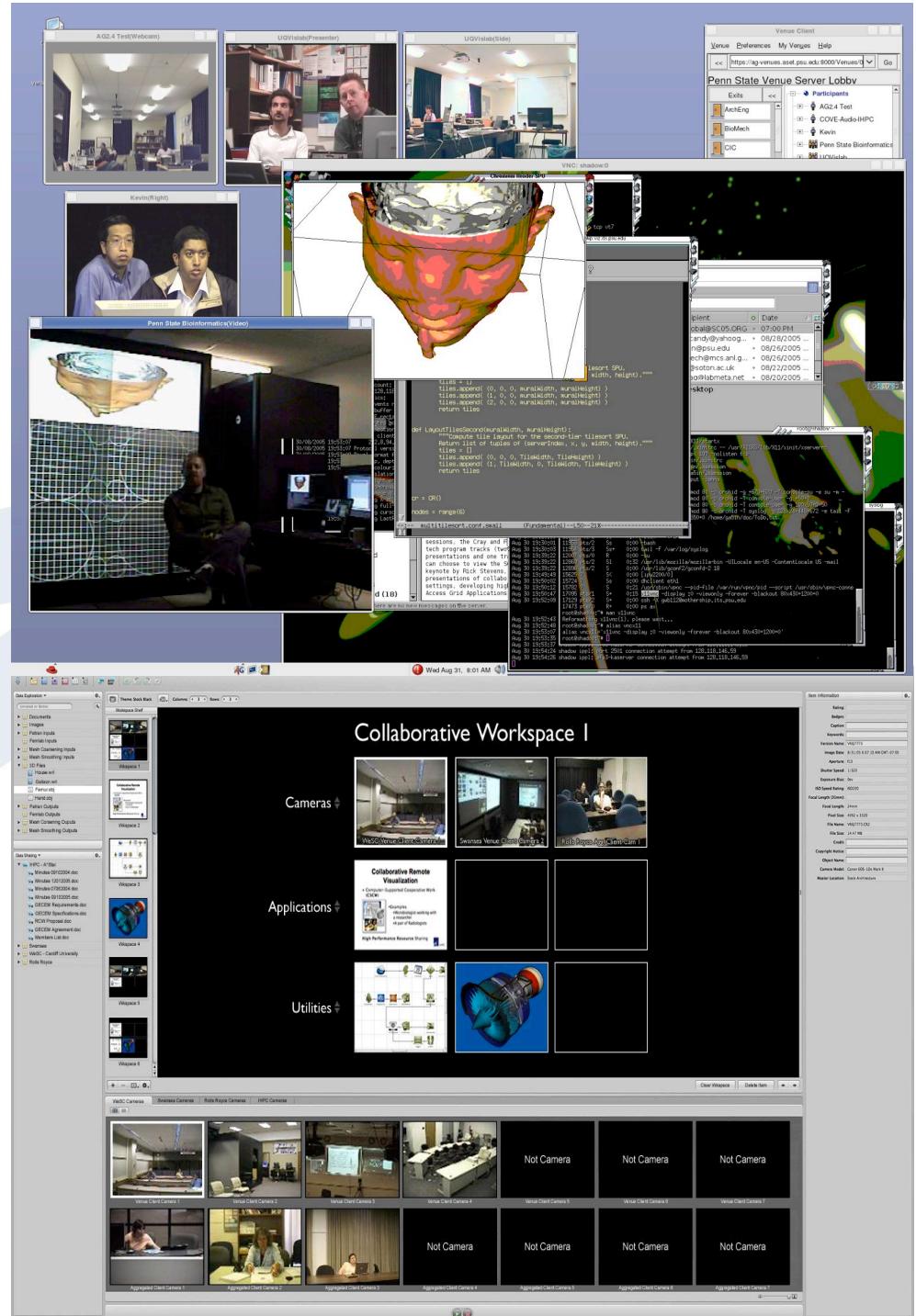


Data & Software Management



Remote Collaborative Workspace

- Group-group video-conferencing
- Application sharing
- Multiple video feeds
- AG on 2x2 tiled display
- Data exploration
- Persistent data sharing
- Aggregated clients
- Dynamic workspaces
- Engineering utilities
- Remote visualization



IHPC's Participation in PRAGMA

- Joint middleware and architecture R&D
- Deployment and validation on PRAGMA grid
- 16-CPU Linux cluster for joint R&D and test-bedding
- Collaboration on selected application areas
- Invite partners for ‘software utility services’

