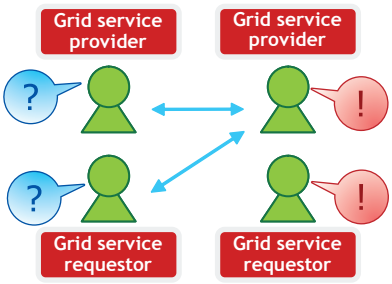
# ARGUGRID

## Argumentation as a foundation for the Semantic GRID

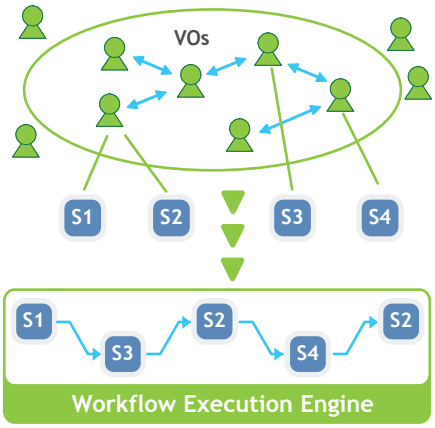
**Argumentation** provides a powerful framework for interacting agents taking decisions, assessing the validity of information, or otherwise resolving differences of opinion. Argumentation focuses on interactions where parties plead for and against some conclusion, and is an essential ingredient of negotiation, persuasion and collaborative decision-making.

### Aims

- Enact the reasoning and decision making processes and negotiation required for dynamic composition of Grid resources and services into executable workflows, using argumentative agents to support Grid service providers and requestors.
- Impact business and business practices by empowering grid-enabled e-business applications where multiple service requestors and providers exist.




### Innovative Contributions




- Supporting the interactions between service providers and service consumers in a service-oriented setting.
- Supporting rational decision-making, as well as negotiation, for the agreement and orchestration of services and contracts that regulate the provision and acceptance of services.
- Helping to justify decisions and agreements and thus contributing to a user-friendly environment for service composition.
- Adding flexibility to the orchestration of services, rendering this cooperation while at the same time maintaining the competitive nature of service composition in a distributed and open environment.
- Supporting the creation, management and dynamic evolution of virtual organisations, understood as societies of agents, to compose individual services into more complex ones.
- Supporting the discovery of service providers/agents at large scale, using multiple selection criteria.

### Objectives

- Provide a new model for argumentative agents populating and evolving within a trusted grid environment.
- Provide a new model for the specification, creation, operation and dissolution of VOs over the grid using argumentative agents.
- Design an architecture for the semantic grid to support argumentative agents and VOs.
- Develop a grid-based platform to support the implementation of models and architecture and assess the ARGUGRID approach.
- Experiment with and evaluate the models, architecture and platform in the context of concrete applications for e-business.

### Partners

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|---|---|---|---|---|---|---|---|
| Department of Computing, **Imperial College London**, UK | Department of Computer Science, **Royal Holloway University of London**, UK | School of Engineering and Technology, **Asian Institute of Technology**, Thailand | **GMV S.A.**, Spain | Institute of Communication and Computer Systems, **National Technical University of Athens**, Greece | **InforSense Ltd**, London, UK | Dipartimento di Informatica, **Universita` di Pisa**, Italy | **cosmoONE Hellas Marketsite S.A.**, Greece |

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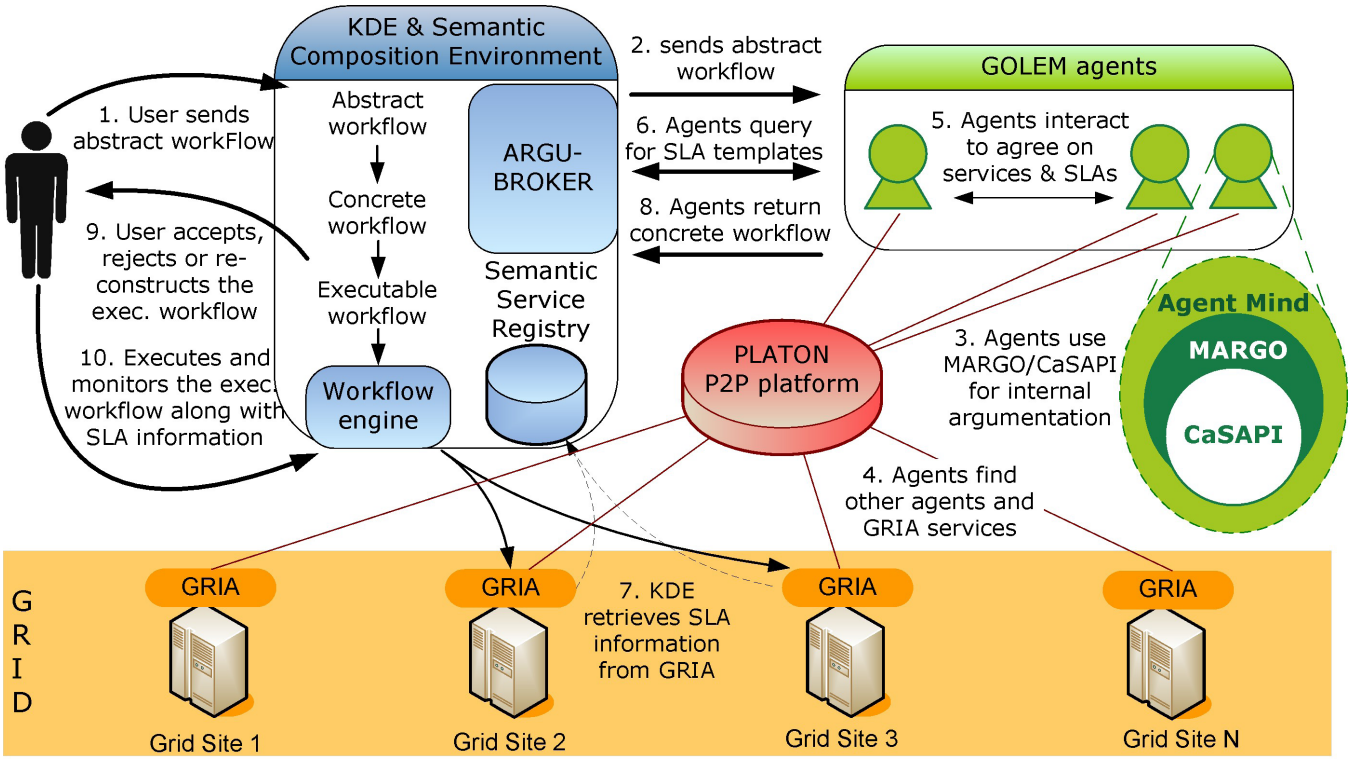
### Platform

The ARGUGRID platform consists of several interacting components:

- the KDE platform
- the GOLEM platform
- the PLATON Peer-to-Peer platform
- the GRIA Grid platform
- MARGO & CaSAPI argumentation framework




All ARGUGRID platform components, and the ARGUGRID platform itself, can be distributed among computer elements residing in distinct locations, connected to the global Internet.

### Use Cases

Three different scenarios are being used to test and validate the innovative ARGUGRID capabilities:

- Earth Observation: Information about Earth Observation services is currently accessible only in a very scattered way through different mission operators, scientific institutes, service companies, data catalogues, etc. Easier and timely access to large quantities of primary data, together with a deep knowledge of the sensors and its characteristics, is needed for delivering effective services. A system with that knowledge, able to select the best options and combine them to quickly create a tailored product, would be very appreciated in crisis scenarios.
- E-Procurement: The ARGUGRID e-Procurement scenarios refer to two complex cases where argumentation techniques will prove their effectiveness:
  - Selecting and deciding upon the best deal when procuring complex systems, projects or services from a supplier, or from a consortium of suppliers, and,
  - Selecting the best type of e-Auction, and its optimum setup parameter values, given specific assumptions and inputs.
- Business Planning & Outsourcing: A business consultant scenario on investing and operating a business case presents a vision on how Grid technologies could be applied as a communication network, describing business processes by using workflows, and managing negotiation between parties by using intelligent agents. This case provides guidelines for developing a conceptual framework for decision making and negotiation components therein.

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Information Society Technologies

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