**Concepts and Objectives**

**The main objective of PaaSage is**

To deliver an open and integrated platform to support both design and deployment of Cloud applications, together with an accompanying methodology that allows model-based development, configuration, optimisation, and deployment of existing and new applications independently of the existing underlying Cloud infrastructures.

PaaSage architecture
- Cloud Modelling Language (CML)
- Speculative Profiler
- Intelligent Stochastic Reasoning
- Extra functional Adaptation
- Metadata
- Collaborative software development

**PaaSage Lifecycle**
- Model-driven IDE
- Deployment on Multi-Clouds
- Profiling and Adaptation
- Metadata repository
- Developer interface (social network)

Define your application once
Deploy it at the full spectrum of the Clouds

**AGH Contribution to PaaSage**

Extended eScience Use Case
- Local domain researchers, including PL-Grid community: bioinformatics (genomics, proteomics), metals engineering (complex metallurgical processes)
- International collaborations: Virtual Physiological Human (Taverna and DataFluo workflows), multiscale applications: fusion (Kepler workflows), military mission planning support (EDA), astronomy (Pegasus workflows)

Products:
- **Hyperflow**: workflow execution engine inspired by process networks theory and hypermedia (REST) paradigm
- **Scalarm**: massively self-scalable platform for data farming workflows

**Support for Data Farming Applications**

Scalarm [3] is software of choice for supporting data farming in PaaSage

It is a complete, self-scalable platform providing with PaaSage:
- Design of Experiment methods
- Data exploration techniques
- Support for multi-cloud infrastructure
- Efficient computation with "pilot jobs" and "pull" mechanism
- Support for scaling rules
- Automatic deployment with Model-Driven Architecture
- QoS monitoring

**Support for Large-Scale Scientific Workflows**

- Pipelines of many (100K+) resource intensive tasks
- Powered by the Hyperflow workflow engine
- Extension to PaaSage Reasoner prepares workflow deployment plan and autoscaling rules

**Extended Metadata**

- To extend the PaaSage Communication Hub with capability to integrate information from various data sources, e.g. relational databases, LDAP catalogues, or XML files, using predefined mappings and transformation methods
- The solution will be based on the X2R tool developed at AGH [4], which will semi-automatically translate data from legacy information sources to unified, ontological format based on provided mappings

**References**