Workflow Enactment in ICENI

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ICENI: Imperial College e-Science Network Infrastructure

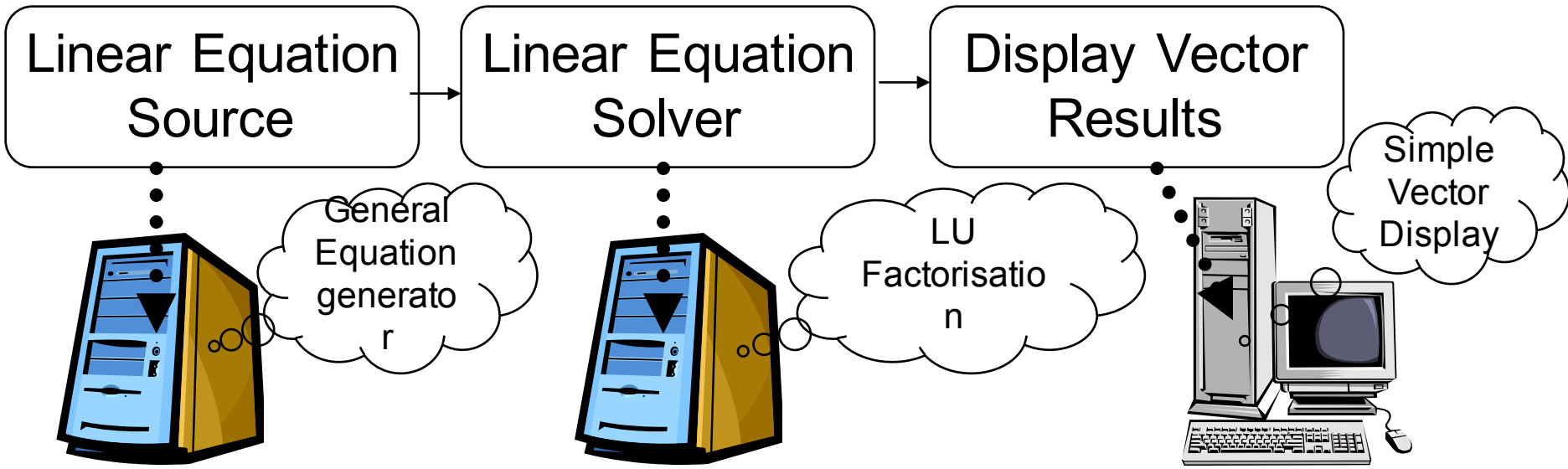
- Collect and provide relevant Grid Meta-Data
- Pluggable architecture
- Test Architecture for Grid Research
- Foundation for higher-level Services and Autonomous Composition
- Integrated Grid Middleware Solution
- Interoperability between architectures, APIs
- Added value layer to other middleware
- Usability: Interactive Grid Workflows
- Role and policy driven security
- ICENI Open Source licence (extended SISSL)

The Iceni, under Queen Boudicca, united the tribes of South-East England in a revolt against the occupying Roman forces in AD60.

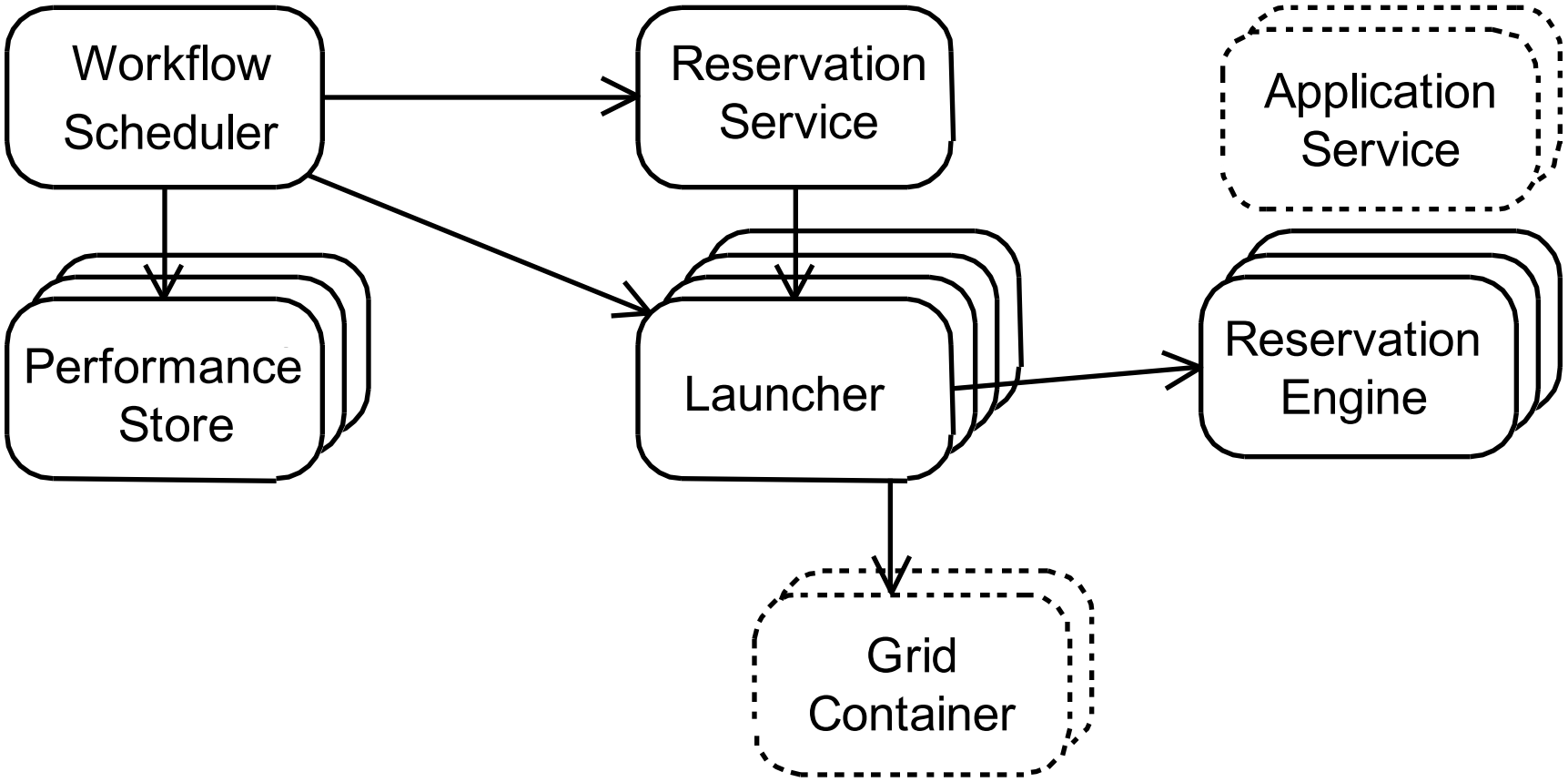
Workflow Enactment

- Applications consist of a number of components linked together in a dataflow manner
- User specifies work as abstract workflow
- The abstract workflow needs to be mapped down to a set of component implementations which will run on resources (concrete workflow)
  - Mapping Workflow Graph over Resource Graph

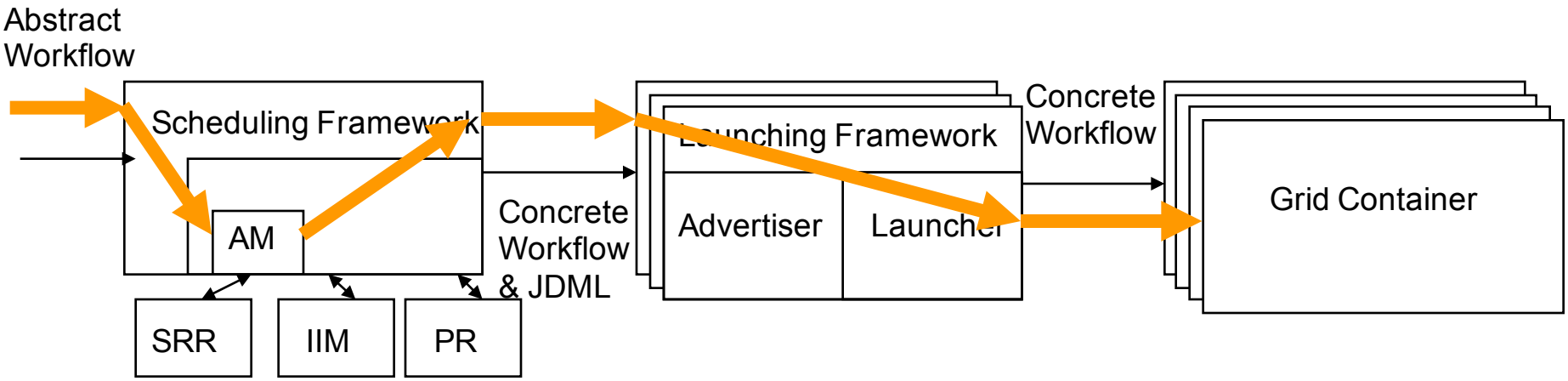
Workflow Enactment



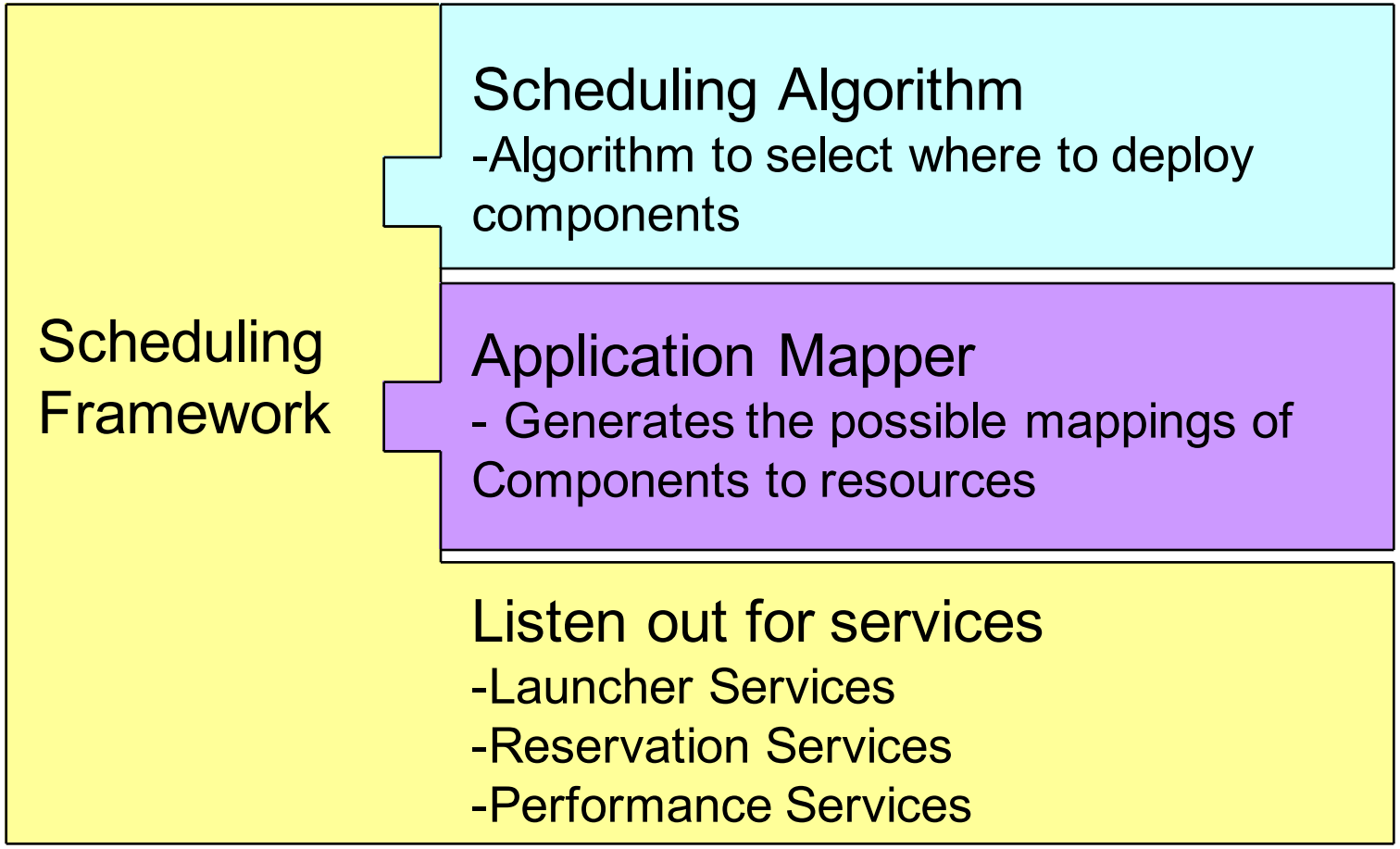
The Architecture



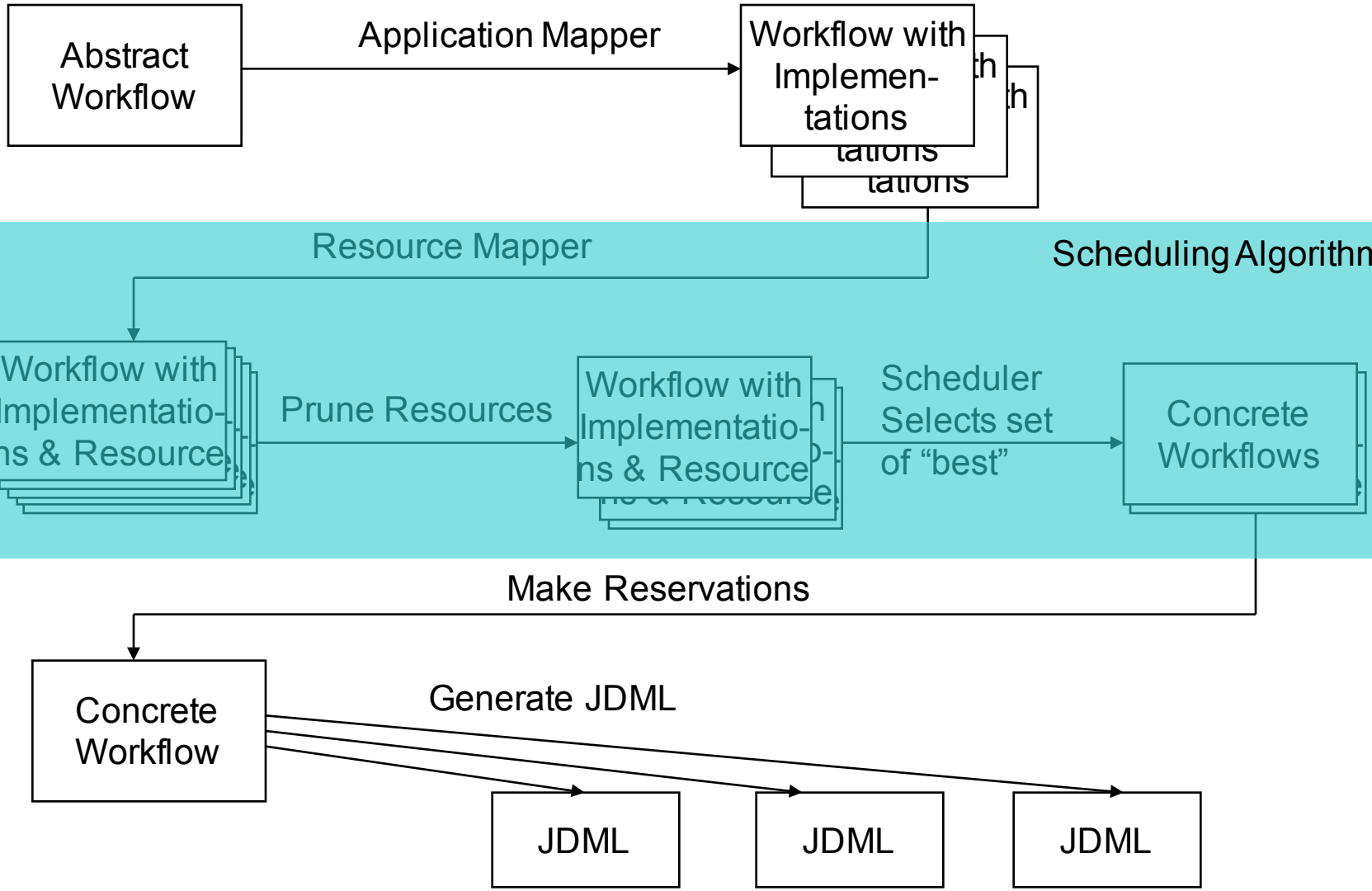
Enactment Pipeline



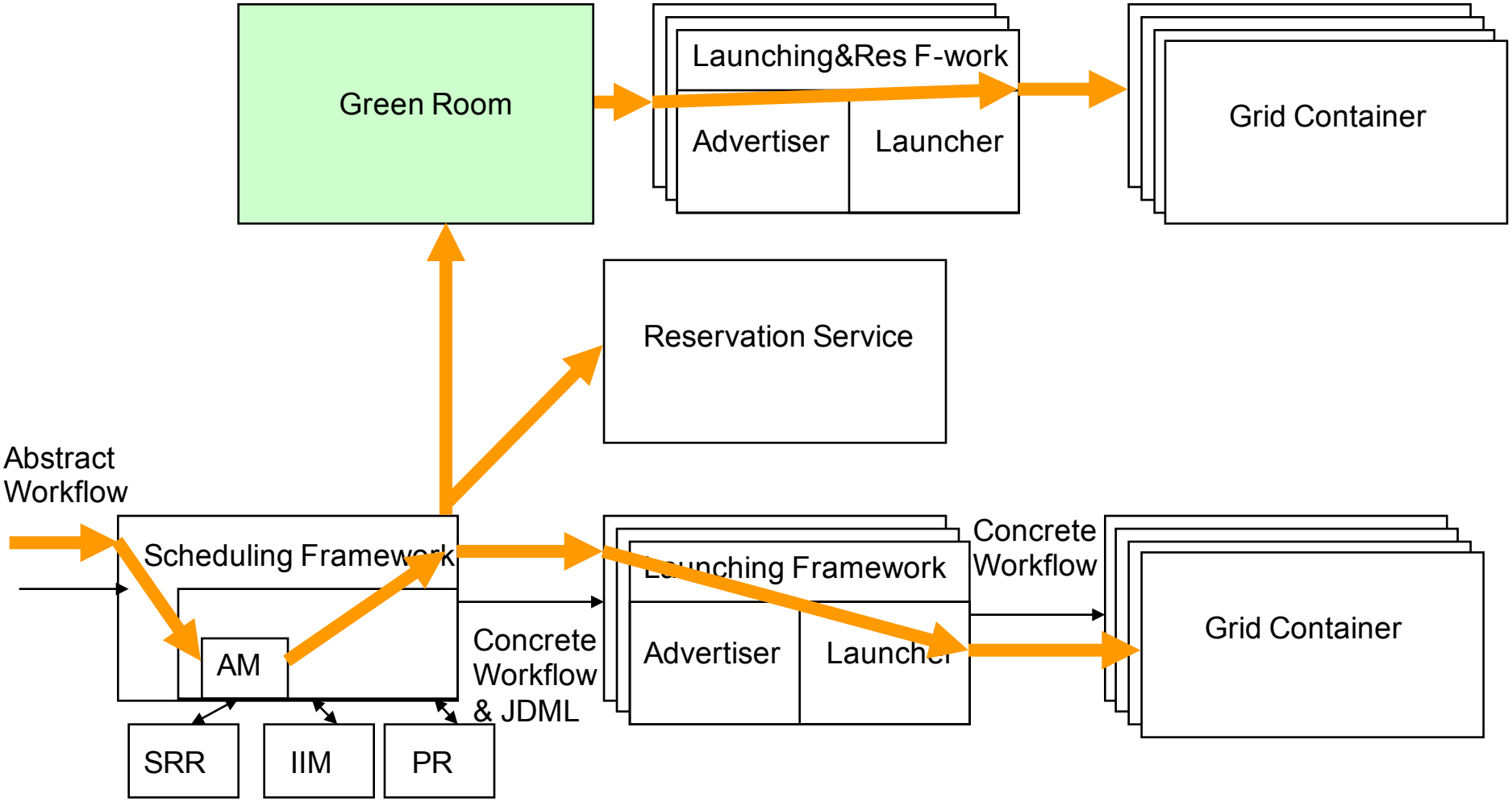
Scheduling Service



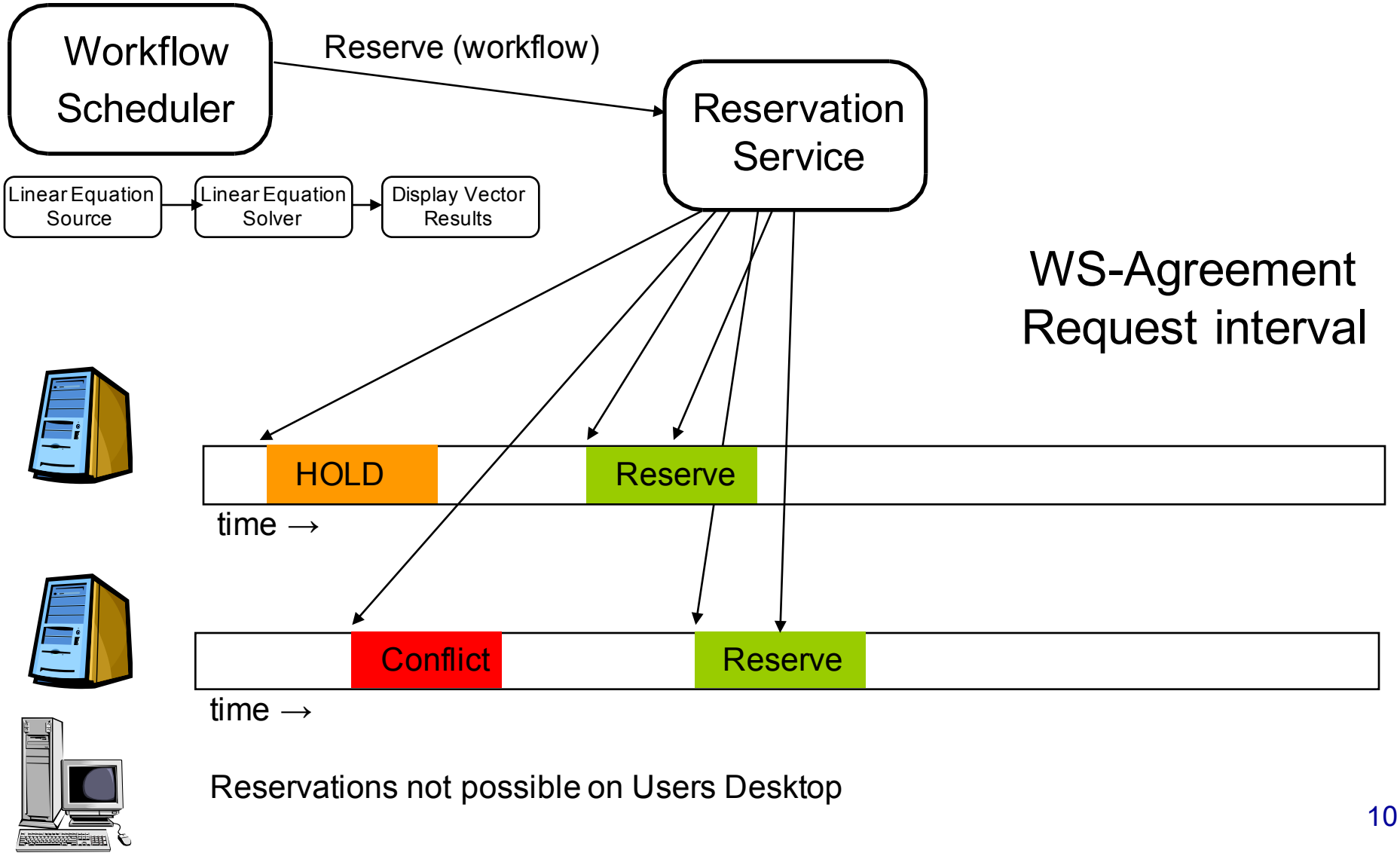
Stages in the Scheduling Framework



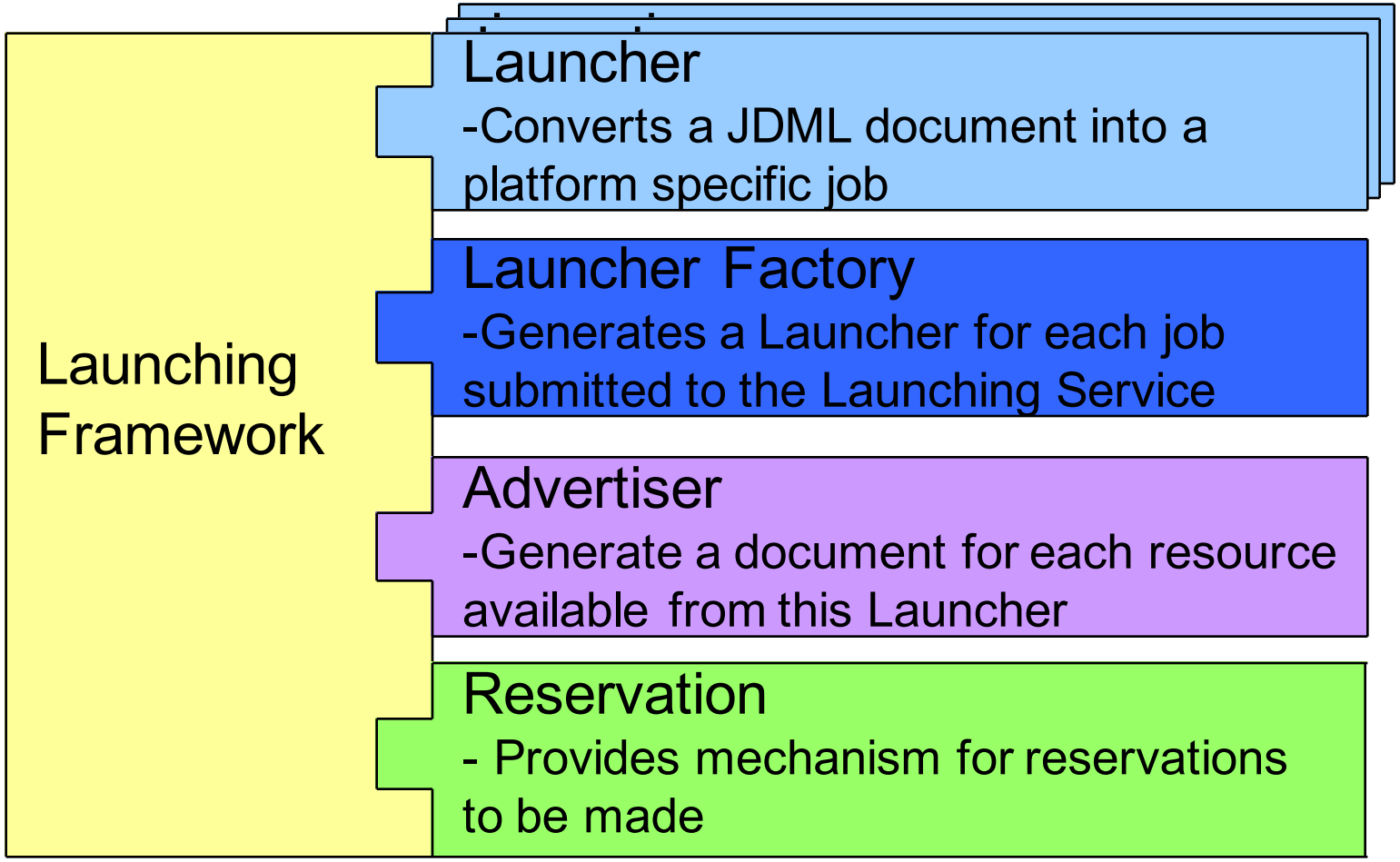
Reservations & Delayed Execution



Reservations



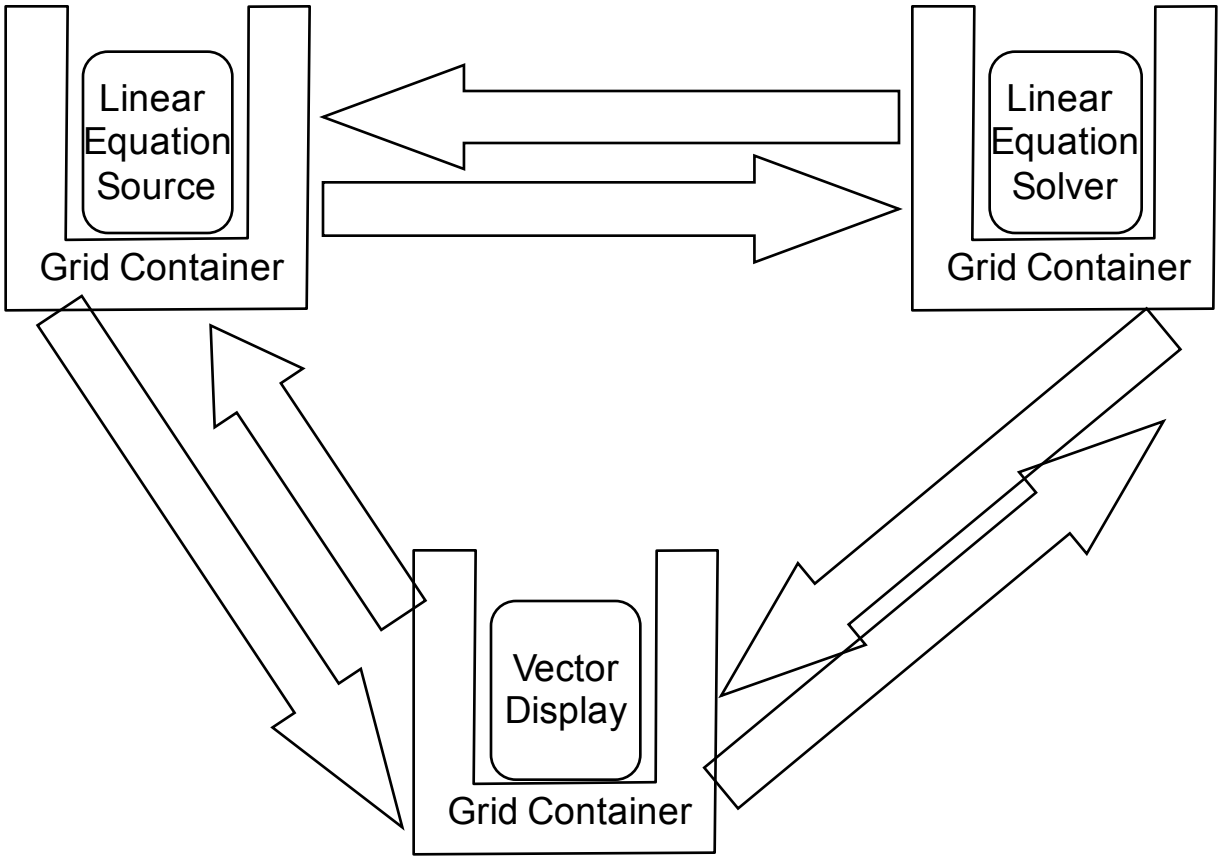
Launching Service



Grid Container

- Provided an environment for components to run within
- Instantiates the components that should be launched locally
- Performs the choreography between components
- Responsible for inter-component communication

Grid Containers



Summary

- Have developed an end to end Pipeline for deploying workflows
- Pluggable architecture for experimentation
- ICENI is evolving
  - Towards Web Services
- Further research is required in scheduling algorithms and reservation techniques

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