

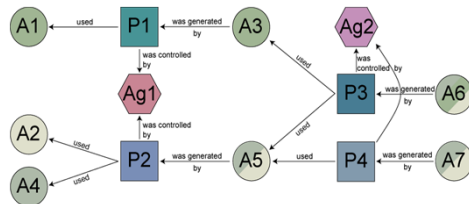
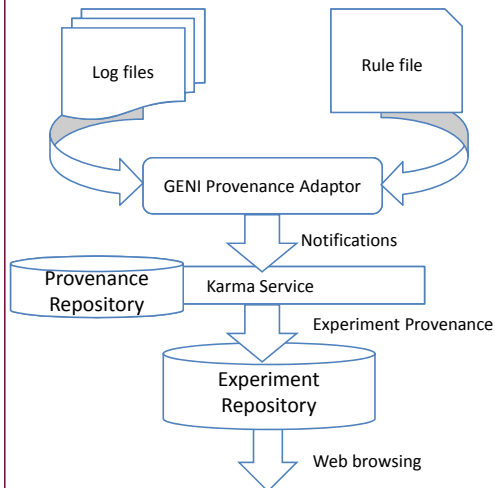
NetKarma : Capture and Representation of Provenance for GENI Experiments



Collection Sources

- We collect provenance from multiple sources to obtain information describing GENI experiments and conditions of experiment including:
 - Experimental tool commands
 - Topology created using the control frameworks
 - Operational status on substrate /infrastructure
 - Code and data contained in the experimental slice
 - Measurement data obtained
 - Annotations by experimenters

Collection and Representation

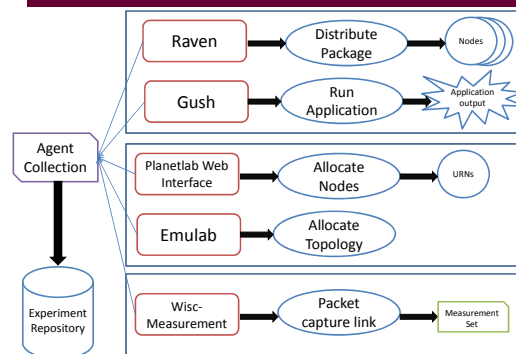


- Karma is a workflow provenance collection tool developed by Indiana University which captures and stores process and data provenance. The framework is based on generating discrete provenance activities during the lifecycle of a “workflow” execution that can be aggregated to form complex data and process provenance graphs that can span across workflows.

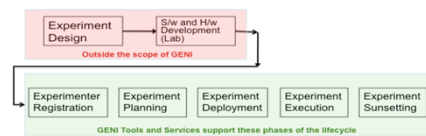
- GENI Adaptor provides an interface that uses the GENI experiment logs and a set of rules to derive provenance information and maps them into the Karma repository.

- The adaptor is a generic log processing unit for GENI log files which comprise of two sub-units:
 - Log Parser
 - Notification Generator

Building Experiment Provenance



GENI Experiment Life Cycle



The diagram above shows the GENI Experiment life cycle [3] whereas the diagram below shows an OPM representation of the provenance graph for a GENI experiment.



References

1. Simmhan, Y.L., Plale, B., and Gannon, D., Karma2: Provenance Management for Data-Driven Workflows, *International Journal of Web Services Research*, 5(2): 1-22, 2008.
2. The Open Provenance Model (v1.01), <http://eprints.ecs.soton.ac.uk/16148/1/opm-v1.01.pdf>.
3. Lifecycle of a GENI Experiment . GENI-SE-SY-TS-UC-LC-01.2 <http://groups.geni.net/geni/wiki/ExperimentLifecycleDocument>