

Netkarma Status Update

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Netkarma

- Create a dataset and tools to correlate network measurement and experimental results with the conditions of the experiment
- GENI experiments can be much larger than previous network experiments, Netkarma will help researcher understand their own data
- Store provenance of each experiment
 - Process workflow to create experiment
 - Network status during the experiment
 - Capture dataflow and data transformations

Netkarma Approach

- Experimental Tools are the first target source of data
- Workflow description in a standardized format -- Open Provenance Model (OPM)
- Use “Scavenger” approach
 - Capture existing data artifacts produced by the GENI infrastructure

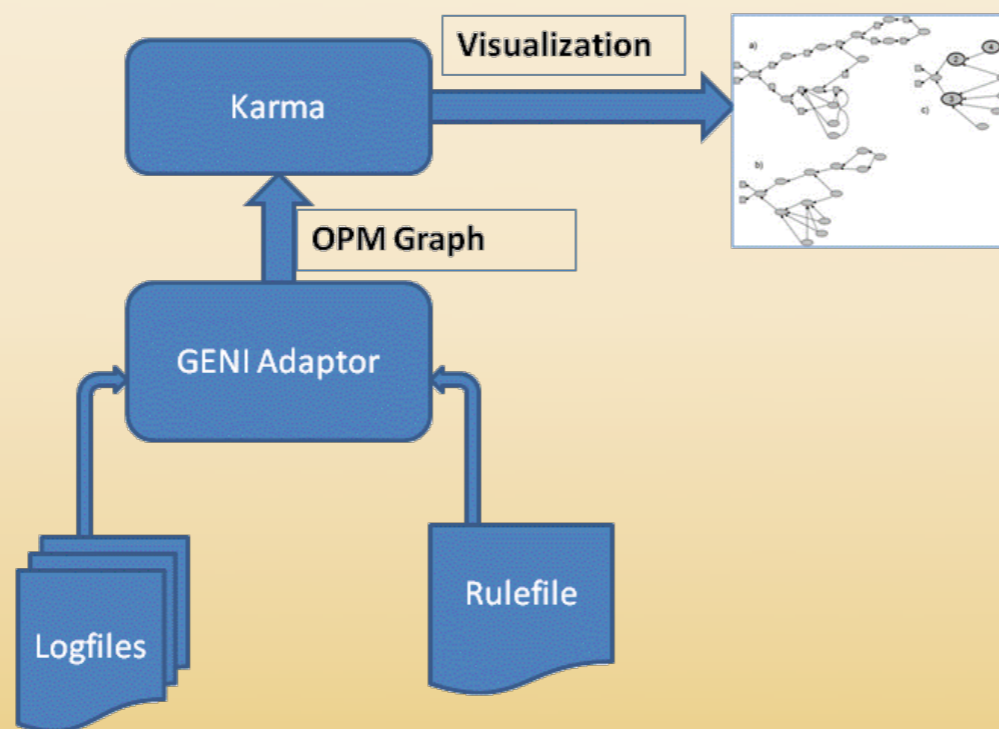
Approaches/ attributes	Instrumentation	“Scavenger”	Manual post - processing
Completeness of relationships	complete	most	much missing
Provenance construction	automatic	automatic after parser written	manual
Work to instrument	large	some	none

Netkarma status

- Capture of data from any experiment using the GUSH tools
- Conversion of GUSH data products and output
- Storage of GUSH experiment provenance in the Karma DB
- Creation of generic rules framework
 - To be used for Raven and Control Plane data importation
- Visualization of OPM graphs

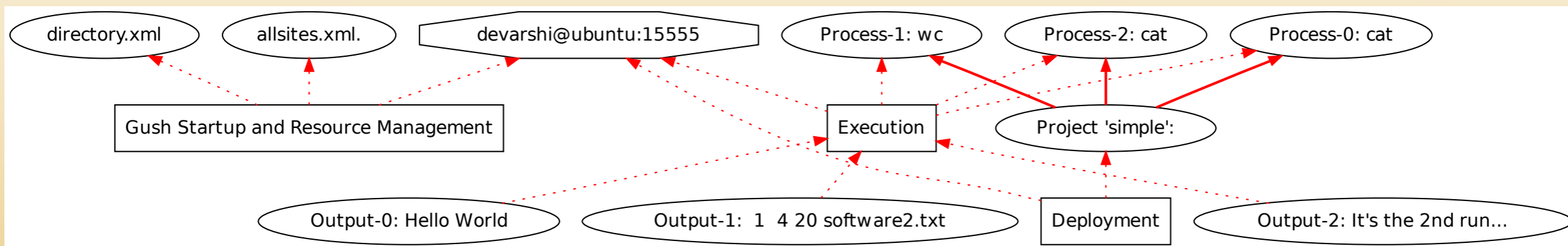
NetKarma and GUSH

- Capture information about the experiments that use the GUSH tool
 - Use existing GUSH data traces (xml project files, logfiles)
 - Parse Gush logfiles on controller and clients; generate relations



NetKarma data

- Netkarma captures from the GUSH data products:
 - Agents: entities acting as a catalyst of a process
 - Process: action resulting in a new artifact
 - Artifact: an immutable piece of state



Future Plans

- Expand NetKarma capture to new data sources
 - Other experimental tools
 - Use the rule-based “scavenger” method on other experimental tools
 - Control Planes
 - Get experimenter, slice and topology information from the control plane
- Operational state of the substrate/infrastructure
- Measurement data obtained from the GENI Measurement Infrastructure

Demo and Links

- Demo of the Netkarma provenance collection using GUSH
 - At tonight's demo session and in a few minutes
 - Creation of a OPM graph on the fly using sample experiment running on Planetlab nodes
- IU Data Provenance: <http://www.dataandsearch.org/provenance/>
- NetKarma page: <http://groups.geni.net/geni/wiki/netKarma>
- GUSH - NetKarma Software: 1.0 available off of Netkarma page