Lowly-intrusive Network Monitoring

in the GridLab Testbed
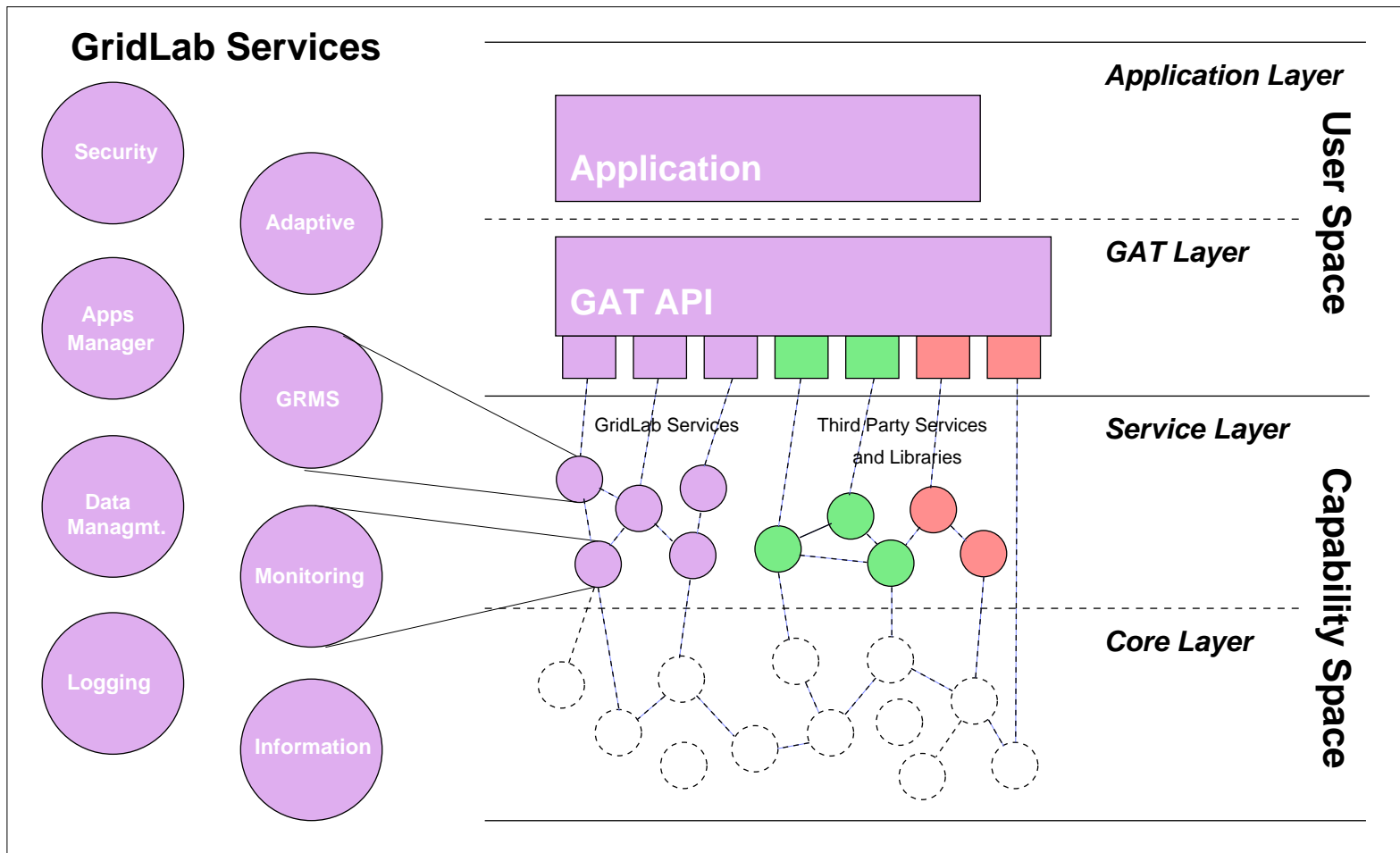
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kindly presented by Brian Tierney

GridLab

Building a Grid Application Toolkit (GAT):

- a higher-level, application-oriented API

- independent of underlying middleware
  (Globus, Avaki, Unicore, …)

- based on a set of services
  (on top of "core" middleware)

- many services need performance information, e.g.
  - data movement and replication
 - remote visualization
  - resource broker

Grid Application Toolkit

GridLab Services

- Security
- Adaptive
- Apps Manager
- GRMS
- Data Managmt.
- Monitoring
- Logging
- Information

Application — Application Layer — User Space

GAT API — GAT Layer

GridLab Services | Third Party Services and Libraries — Service Layer — Capability Space

Core Layer

The GridLab Testbed

Performance Monitoring

GridLab monitoring system:

- One unifying system for all interesting resources
  - CPU, disk, queues
  - network
  - job progress
- integration of existing sensors
  (e.g., NWS, batch queues)
- resource-local storage for prediction purposes
- Low intrusiveness is key:
  - widespread deployment of the system
  - scalability issues
  - application monitoring
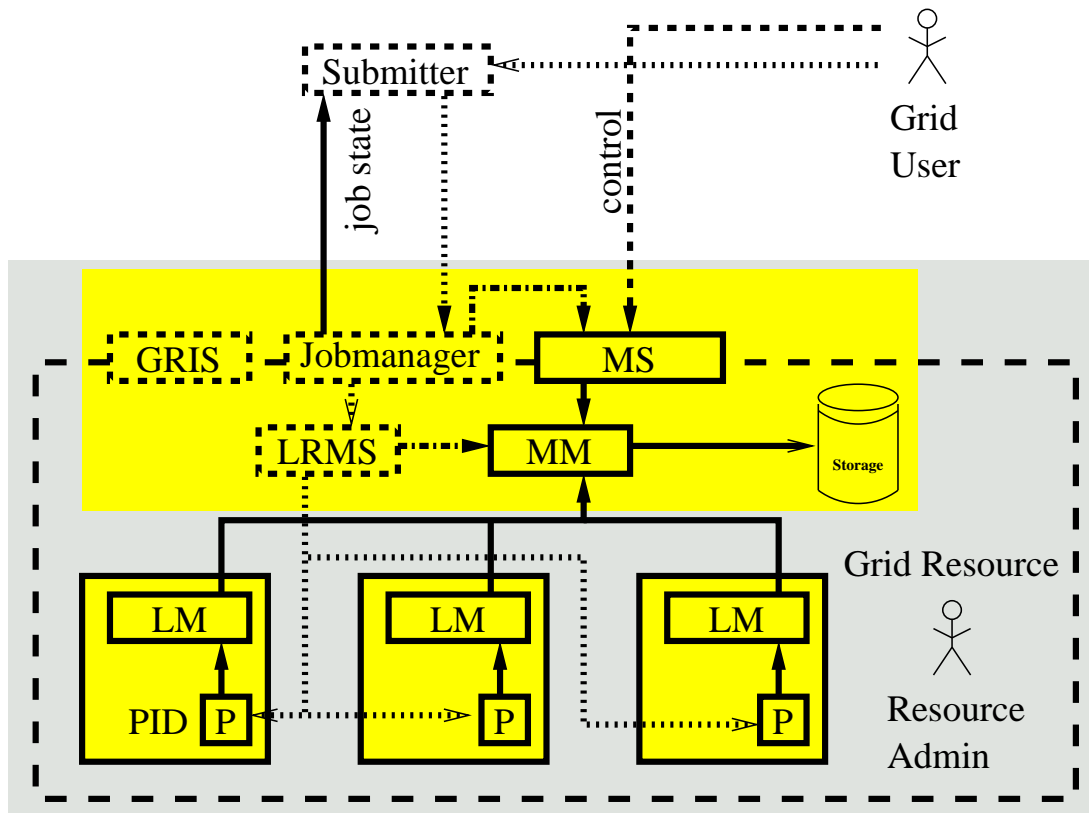
Monitoring System

local monitor (LM)
- node-local sensors

main monitor (MM)
- site-local control
- site-local storage

monitoring service (MS)
- outside interface
- data transfer only when needed
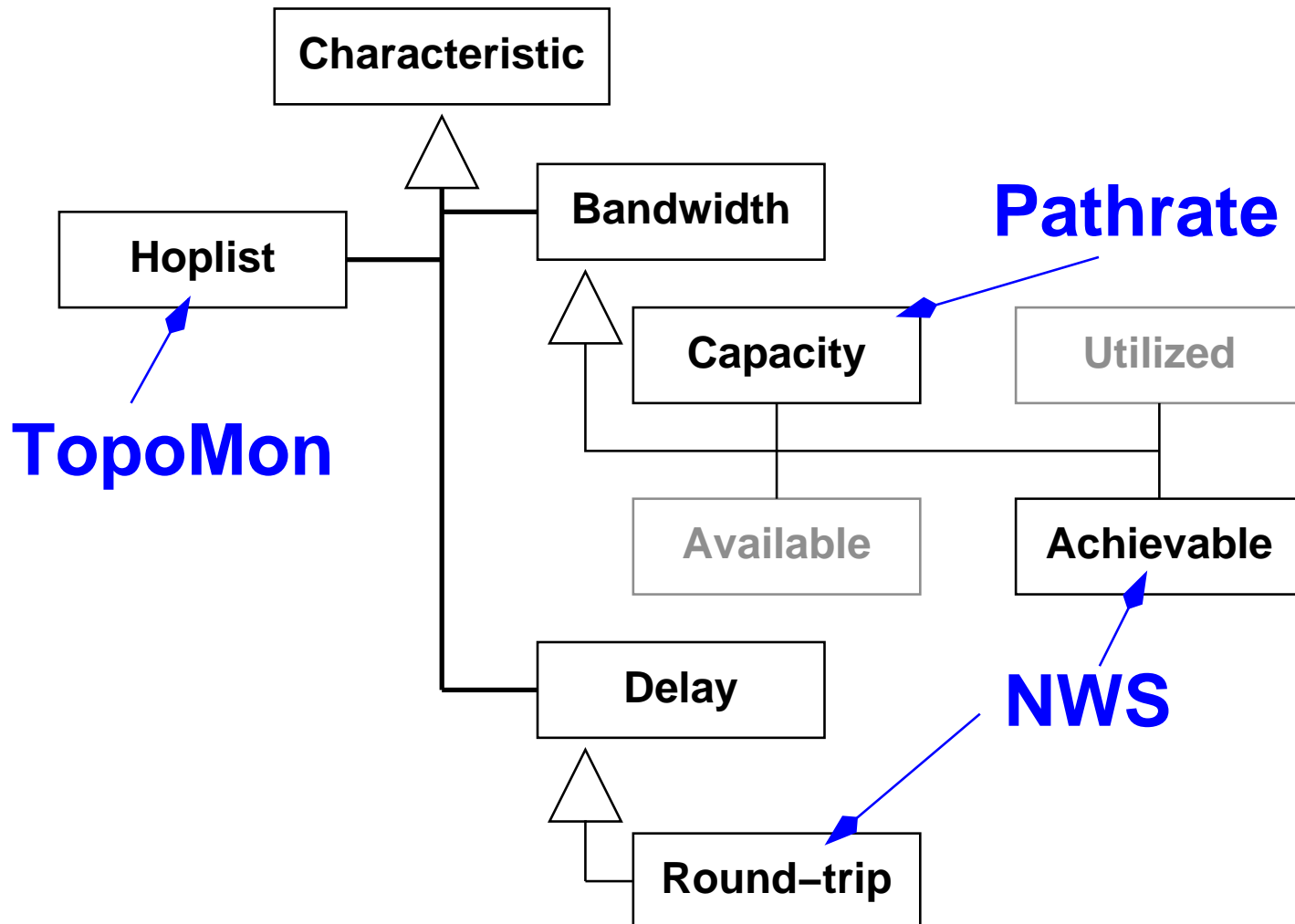
Network Monitoring

Low intrusiveness even more important:

- active measurements

- acceptance by site administrators
  (e.g., iperf is not acceptable)

- scalability

Characteristics needed for GridLab services:

- bandwidth, both capacity and achievable

- delay, roundtrip

- hoplist

Choice of Sensor Tools

Driven by low intrusiveness:

Summary

GridLab performance monitoring:

- low intrusiveness is key design driver

- hierarchy of monitoring processes

- keep measurements local

- keep measurement data local
  until requested from elsewhere

More information:

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- www.gridlab.org