eGee

The network monitoring in grid context
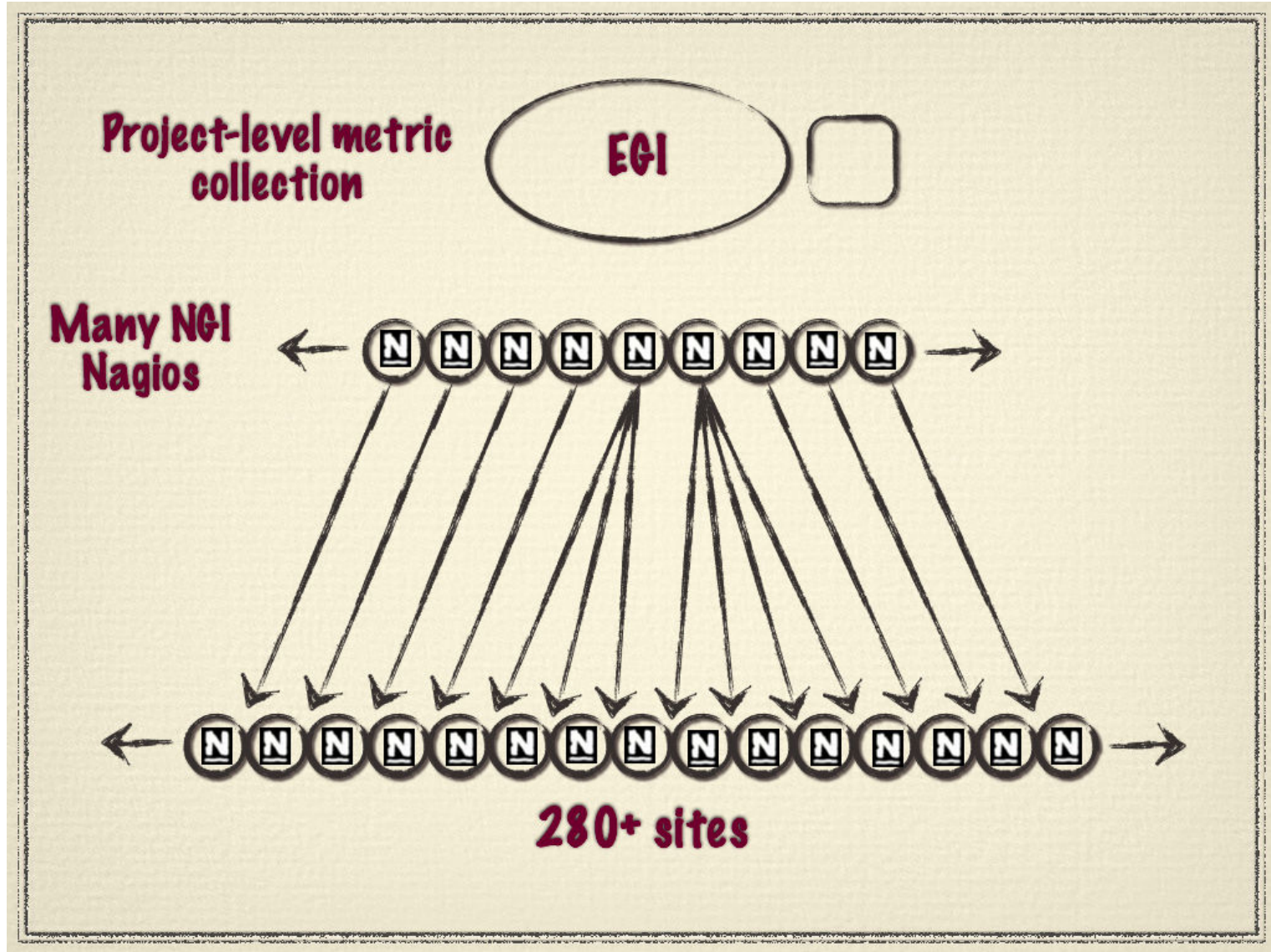
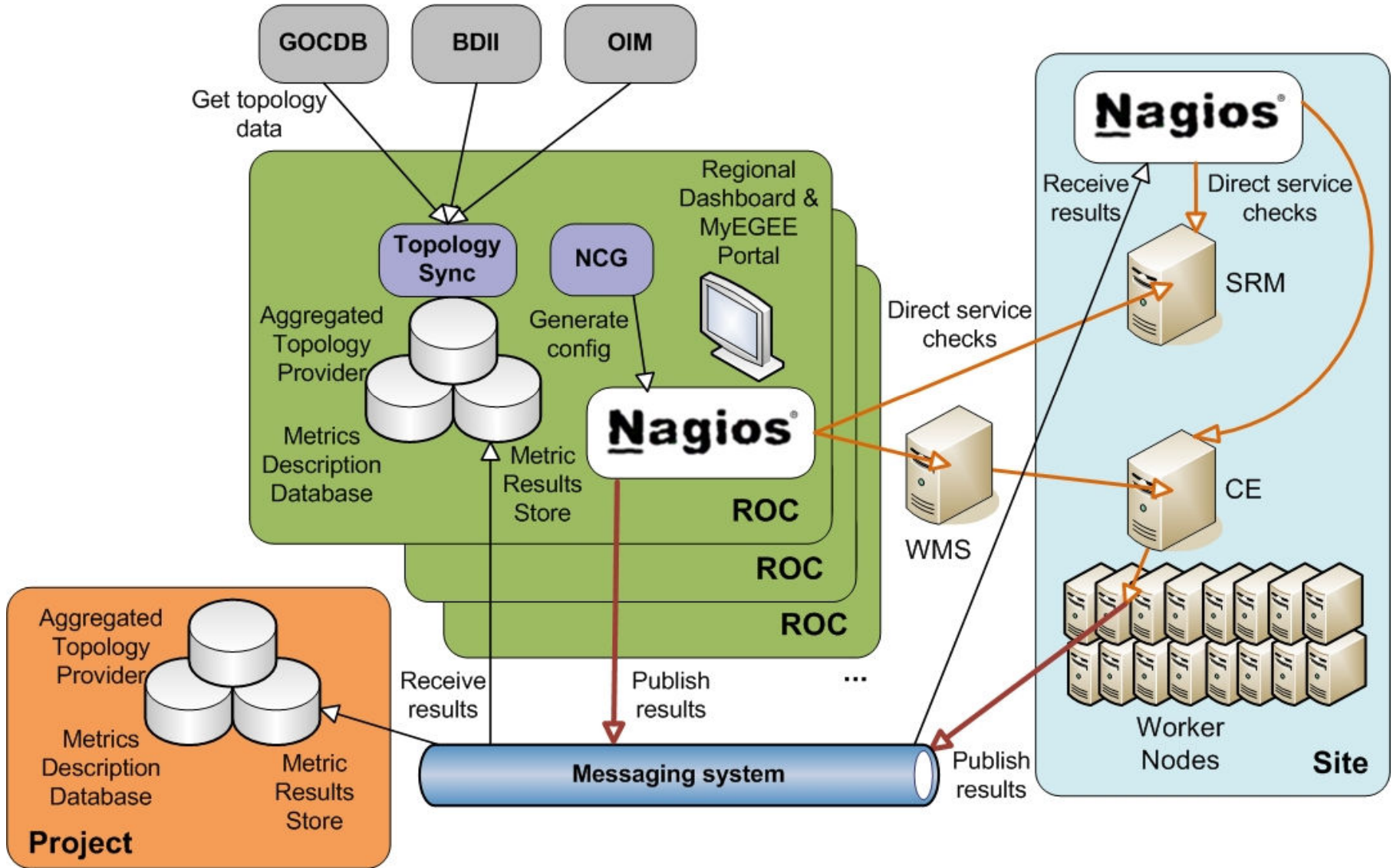## Operations Perspective

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e-infrastructure

Enabling Grids for E-sciencE

- **Monitoring In Operations**
- **Service Availability Monitoring**
  – Architecture
  – Network Monitoring
- **Performance Monitoring**
- **Possible Future Work**
- **Conclusion**

Enabling Grids for E-sciencE

- **Provide means to site and grid operators to monitor their resources**

- **Focus on improving availability and reliability by spotting problems and issuing alarms**

- **Define procedures for escalation and resolution of more complex problems**

Enabling Grids for E-sciencE

Project-level metric collection

EGI

Many NGI Nagios

280+ sites

Schema provided by Karolis Eigelis

Enabling Grids for E-sciencE
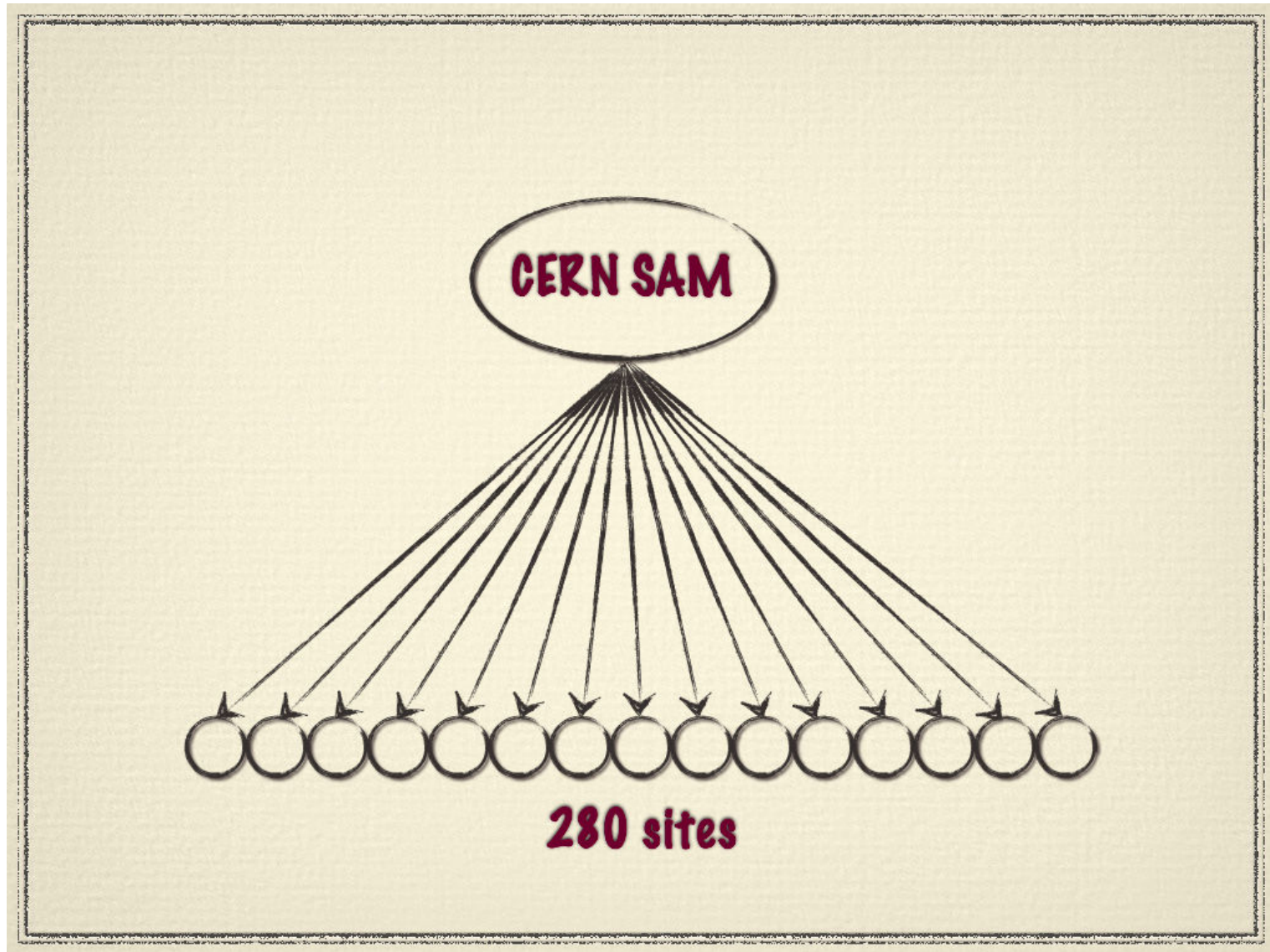
- **Database components**
  - Aggregated Topology Provider (ATP)
  - Metric Description Database (MDDB)
- **Operations services**
  - GOCDB, ENOC, OIM
- **Grid information services**
  - BDII

Enabling Grids for E-sciencE

- **SAM probes**
  - various grid services (CE, WN and SRM)
- **WLCG probes (SRCE, CERN)**
  - various grid services (e.g. GridFTP, LFC)
- **BDII & Gstat probes**
  - validation of content in information system BDII
- **Nagios native probes**
  - standard services (e.g. web, ftp, ssh servers)

Enabling Grids for E-sciencE

- **Collaboration with ENOC**
  - integration of ENOC Downcollector features into SAM

- **Added lightweight service checks**
  - based on nmap
  - executed with high frequency
  - used for masking other alarms

Enabling Grids for E-sciencE

- **Integrated network topology data**
  - ENOC provided static list of border routers for all sites
  - Nagios supports network hierarchy
  - in case of router failure site resources flagged as unreachable

Enabling Grids for E-sciencE
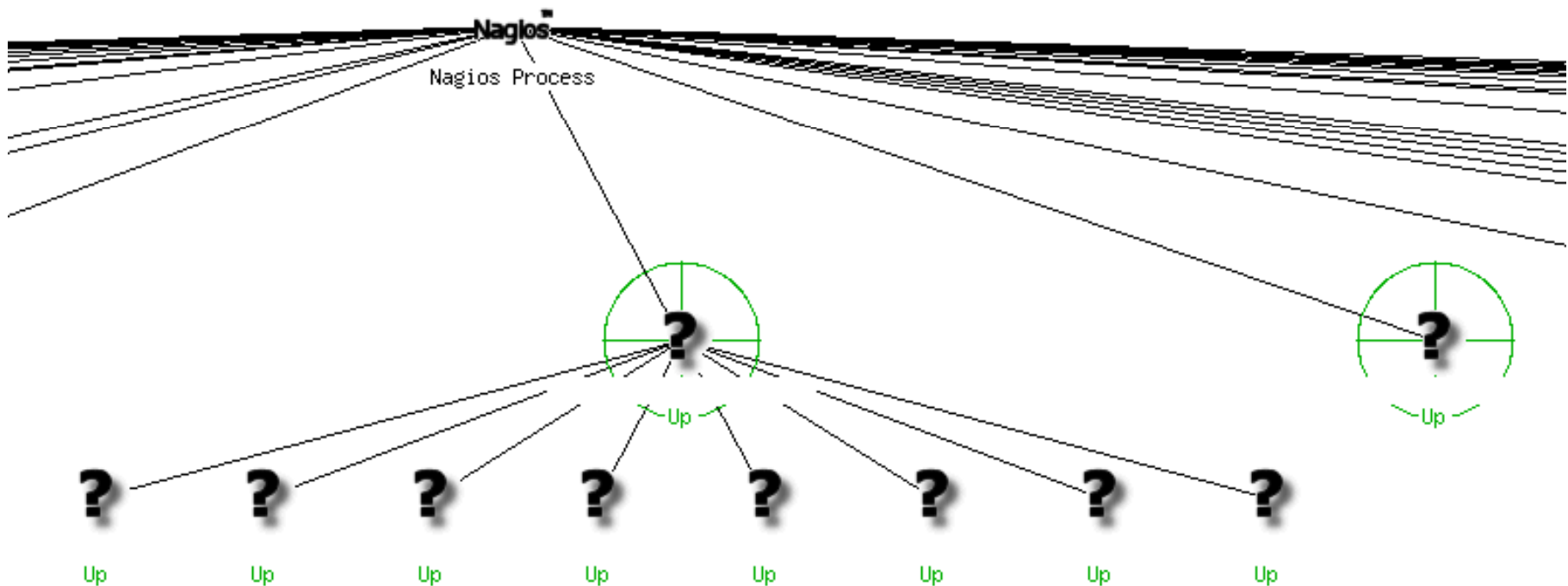
- **Several grid systems gather performance**
  - BDII, GridFTP transfers
  - Dashboards and VO-specific systems

- **Some raise alarms based on performance data**

- **Majority of sites are without dedicated links**
    - without SLAs what should we alarm on?

- **Severe degradation of network performance**
    - e.g. failure of primary link
    - interpreted as service unavailability

Enabling Grids for E-sciencE

- **Lightweight checks improvement?**

- **Dynamic network topology info?**

- **Better integration with networking monitoring systems?**

- **End-to-end monitoring between sites?**

Enabling Grids for E-sciencE

- **Dynamic performance testing**
  - to distinguish between failure and severe degradation
  - interesting for grid services (job & file transfer management)

- **With dedicated links**
  - monitoring network parameters
  - raising alarms in case of degradation

- **Monitoring dynamic link reservation**

Enabling Grids for E-sciencE

- **Multilevel monitoring provide the means for administrators to better monitor their services**

- **Integration with existing components to automate operations of monitoring instances**

- **Network monitoring mainly focused on end-to-end links**

Enabling Grids for E-sciencE

- **OAT web page
  https://twiki.cern.ch/twiki/bin/view/EGEE/OAT_EGEE_III**
- **OAT Multi-level monitoring architecture
  https://twiki.cern.ch/twiki/bin/view/EGEE/MultiLevelMonitoringOverview**

Thank You!

Questions?