



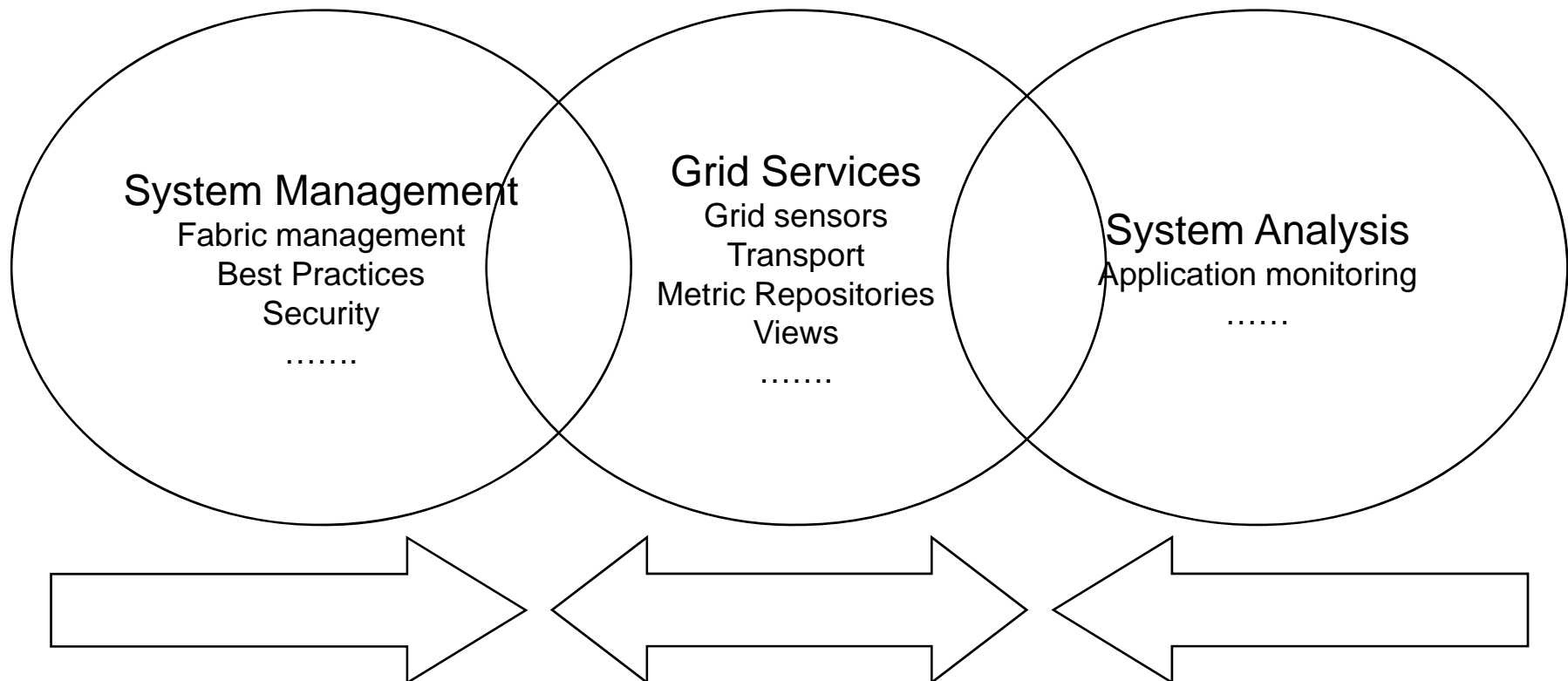
Monitoring Working Group Update

Grid Deployment Board
5th December, 2007. CERN
Ian Neilson



WLCG Monitoring Working Groups

- 3 groups created by Ian Bird
 - “...to help improve the reliability of the grid infrastructure...”
 - “... provide stakeholders with views of the infrastructure allowing them to understand the current and historical status of the service. ...”





Monitoring Working Group

- WLCG Grid Services Monitoring WG
 - Principles: Integrate, don't re-invent
 - Connect the islands
 - Simple specifications
 - Build on existing fabric monitoring
 - Bring diagnosis close to solution
 - Initial focus on the site grid services
 - “Make the site admins happy” – Ian Bird



Monitoring Working Group

- Activity & Dissemination
 - Initial BOF enthusiasm led to active participation:
 - SAM team @ CERN - central monitoring
 - EGEE CE Region - Nagios expertise and implementation
 - OSG GOC – interoperable probes
 - LEMON team – architecture sanity checks
 - EDS/Openlab – high-level visualisation & messaging
 - Many presentations
 - WLCG, CHEP, EGEE'07, GridCamp
 - Overall 25+ WG telecon/meetings scheduled in indico
 - Sys. Analysis WG series of experiment-focused meetings



Site Grid Service Monitoring

- Nagios (widely used open-source fabric monitoring package)
 - Based on existing CE EGEE ROC Nagios
 - Integrates (optionally)
 - latest centrally-run SAM status
 - locally-run service checks
 - external network service ‘ping’ from ENOC
 - Alerts directly into LOCAL fabric monitoring system
 - All the Nagios features
 - flexible alarm (email, sms...)
 - dependencies and groupings
 - + grid security model based around myproxy
 - Integrated ‘publisher’ exposes ‘local’ status
- Credit:
 - Emir Imamagic @srce.hr
 - SAM team @CERN



Nagios grid services monitoring

https://pps-monitoring.cern.ch/nagios/

WLCG Service Reliability Worksh... Nagios lcg-2 - Google Search Home - WLCG Monitoring (Preview) GridServiceMonitoring...

Nagios

Tactical Monitoring Overview
 Last Updated: Wed Nov 21 13:20:04 CET 2007
 Updated every 90 seconds
 Nagios® 2.10 - www.nagios.org
 Logged in as /DC=ch/DC=cern/OU=Organic Units/OU=Users/CN=ineilson/CN=606661/CN=Ian Neilson

Monitoring Performance

| | |
|----------------------------------|----------------------------|
| Service Check Execution Time: | 0.00 / 600.44 / 31.580 sec |
| Service Check Latency: | 0.00 / 0.50 / 0.171 sec |
| Host Check Execution Time: | 0.02 / 0.06 / 0.028 sec |
| Host Check Latency: | 0.00 / 0.00 / 0.000 sec |
| # Active Host / Service Checks: | 15 / 74 |
| # Passive Host / Service Checks: | 0 / 54 |

Network Health

Host Health: ██████████
 Service Health: ██████████

General

- Home
- Documentation

Monitoring

- Tactical Overview
- Service Detail
- Host Detail
- Hostgroup Overview
- Hostgroup Summary
- Hostgroup Grid
- Servicegroup Overview
- Servicegroup Summary
- Servicegroup Grid
- Status Map
- 3-D Status Map
- Service Problems
- Host Problems
- Network Outages

Show Host:

Comments

- Downtime
- Process Info
- Performance Info
- Scheduling Queue

Reporting

- Trends
- Availability
- Alert Histogram
- Alert History
- Alert Summary
- Notifications
- Event Log

Configuration

- View Config

Network Outages

0 Outages

Hosts

| | | | |
|--------|---------------|-------|-----------|
| 0 Down | 0 Unreachable | 15 Up | 0 Pending |
|--------|---------------|-------|-----------|

Services

| | | | | |
|-----------------------|------------|-----------------------|-------------|------------|
| 15 Critical | 3 Warning | 13 Unknown | 94 Ok | 3 Pending |
| 14 Unhandled Problems | 3 Disabled | 13 Unhandled Problems | 50 Disabled | 3 Disabled |
| 1 Disabled | | | | |

Monitoring Features

| Flap Detection | Notifications | Event Handlers | Active Checks | Passive Checks |
|----------------|---|---|---|---|
| Disabled | Enabled | Enabled | Enabled | Enabled |
| N/A | All Services Enabled All Hosts Enabled | All Services Enabled All Hosts Enabled | 57 Services Disabled All Hosts Enabled | 71 Services Disabled All Hosts Enabled |



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Current Network Status

Last Updated: Wed Nov 21 13:21:31 CET 2007
 Updated every 90 seconds
 Nagios® 2.10 - www.nagios.org
 Logged in as /DC=ch/DC=cern/OU=Organic
 Units/OU=Users/CN=ineilson/CN=606661/CN=Ian Neilson

[View History For all hosts](#)
[View Notifications For All Hosts](#)
[View Host Status Detail For All Hosts](#)

| Up | Down | Unreachable | Pending |
|----|------|-------------|---------|
| 15 | 0 | 0 | 0 |

| Ok | Warning | Unknown | Critical | Pending |
|----|---------|---------|----------|---------|
| 54 | 3 | 13 | 15 | 3 |

| All Problems | All Types |
|--------------|-----------|
| 0 | 15 |

| All Problems | All Types |
|--------------|-----------|
| 31 | 128 |

Service Status Details For All Hosts

| Host | Service | Status | Last Check | Duration | Attempt | Status Information |
|----------------------------------|-------------------------------|---------------------|---------------------|-----------------|--|--|
| ce110.cern.ch | CE-host-cert-valid-OPS-remote | OK | 11-09-2007 02:49:40 | 41d 1h 30m 51s | 1/1 | SAM status: ok |
| | CE-sft-brokerinfo-OPS-remote | OK | 11-09-2007 01:22:43 | 41d 2h 59m 27s | 1/1 | SAM status: ok |
| | CE-sft-caver-OPS-remote | OK | 11-09-2007 01:22:54 | 40d 2h 59m 32s | 1/1 | SAM status: ok |
| | CE-sft-csh-OPS-remote | OK | 11-09-2007 01:22:49 | 41d 2h 59m 23s | 1/1 | SAM status: ok |
| | CE-sft-job-DTeam-remote | WARNING | 11-09-2007 02:27:15 | 18d 19h 1m 56s | 1/1 | SAM status: warn |
| | CE-sft-job-OPS-remote | OK | 11-09-2007 03:16:57 | 18d 4h 4m 1s | 1/1 | SAM status: ok |
| | CE-sft-loc-rm-OPS-remote | OK | 11-09-2007 01:23:22 | 27d 14h 57m 55s | 1/1 | SAM status: ok |
| | CE-sft-softrvr-OPS-remote | OK | 11-09-2007 01:22:41 | 41d 2h 59m 26s | 1/1 | SAM status: ok |
| | hr_srce.CAdist-Version | UNKNOWN | 11-20-2007 20:15:45 | 7d 20h 5m 46s | 4/4 | WLCG probe execution failed: Download from remote computer failed failed with error: globus_ftp_client: the server responded with an error425 Can't open data connection. data_connect_failed() failed: authentication failed:GSS Major Status: General failureG |
| | hr_srce.GRAM-Auth | OK | 11-21-2007 13:16:59 | 8d 2h 34m 33s | 1/4 | GRAM Authentication test successful |
| hr_srce.GRAM-CertLifetime | OK | 11-20-2007 17:28:25 | 21d 19h 53m 6s | 1/4 | Certificate will expire in 23.94 days (Dec 14 15:07:39 2007 GMT). | |
| hr_srce.GRAM-Command | UNKNOWN | 11-21-2007 13:01:56 | 8d 19h 4m 36s | 4/4 | ERROR: No answer from WLCG probe /opt/lcg/share/grid-monitoring/probes/hr_srce/GRAM-probe | |
| hr_srce.GridFTP-Transfer | CRITICAL | 11-21-2007 13:01:55 | 8d 2h 19m 36s | 4/4 | Upload to remote computer failed failed with error: globus_ftp_client: the server responded with an error425 Can't open data connection. data_connect_failed() failed: authentication failed:GSS Major Status: General failureGSS Minor Status Error Chain:accep | |
| prq_egee.npm.CE-remote | OK | 11-09-2007 03:58:05 | 29d 17h 59m 27s | 1/1 | OK | |
| prq_nagios.GridFTP-Check | OK | 11-21-2007 13:16:57 | 40d 20h 9m 58s | 1/4 | FTP OK - 0.016 second response time on port 2811 [220 ce110.cern.ch GridFTP Server 1.12 GSSAPI type Globus/GSI wu-2.6.2 (gcc32dbg, 1062606889-42) ready.] | |
| prq_nagios.LocalLogger-PortCheck | OK | 11-21-2007 13:16:57 | 40d 20h 3m 54s | 1/4 | TCP OK - 0.002 second response time on port 9002 | |
| xb0725 | NPM-Gather | CRITICAL | 11-21-2007 13:17:00 | 12d 9h 12m 41s | 4/4 | NPM gathering failed with HTTP error: 500 Can't locate object method "new" via package "Net::SSL" |
| | SAM-Gather | CRITICAL | 11-21-2007 12:31:45 | 12d 9h 1m 46s | 4/4 | SAM gathering failed with HTTP error: 500 Can't locate object method "configure" via package "Net::HTTP" |
| | hr_srce.CAdist-Version | UNKNOWN | 11-20-2007 20:41:31 | 11d 19h 40m 0s | 4/4 | Couldn't fetch current CA distribution status. |
| | hr_srce.GridProxy-Get | OK | 11-21-2007 10:36:45 | 8d 2h 44m 46s | 1/3 | MyProxy credential retrieved. VOMS credential retrieved. VOMS proxy reordered. |
| hr_srce.GridProxy-Valid | OK | 11-21-2007 13:07:57 | 8d 2h 43m 34s | 1/3 | Grid proxy is valid. Certificate will expire in 8.98 hours (Nov 21 21:06:47 2007 GMT). | |
| xb2006.cern.ch | CE-host-cert-valid-OPS-remote | OK | 11-09-2007 02:30:53 | 41d 1h 29m 13s | 1/1 | SAM status: ok |
| | CE-sft-brokerinfo-OPS-remote | OK | 11-09-2007 01:19:56 | 41d 3h 0m 58s | 1/1 | SAM status: ok |
| | CE-sft-caver-OPS-remote | OK | 11-09-2007 01:20:17 | 41d 3h 0m 35s | 1/1 | SAM status: ok |
| | CE-sft-csh-OPS-remote | OK | 11-09-2007 01:19:58 | 41d 3h 0m 55s | 1/1 | SAM status: ok |
| | CE-sft-job-DTeam-remote | WARNING | 11-09-2007 02:26:52 | 18d 23h 1m 48s | 1/1 | SAM status: warn |
| | CE-sft-job-OPS-remote | OK | 11-09-2007 03:17:13 | 41d 3h 4m 9s | 1/1 | SAM status: ok |



Nagios grid services monitoring

- Prototype deployed/tested at sites
 - CERN PPS, NIKHEF, FZK, LIP, SARA, ..
 - Packaged as rpms for easy installation
 - Repository hosted by Sys. Management WG.

- Positive, constructive feedback

*Ronald Starink, Nikhef.
@ EGEE'07* *Not difficult to setup
Very useful!
Jeff: "For me it's already worth the investment"
Not yet "production quality", but close*

- Feedback issues addressed in latest release
 - Modular configuration
 - Dependency on gLite-UI
 - Documentation



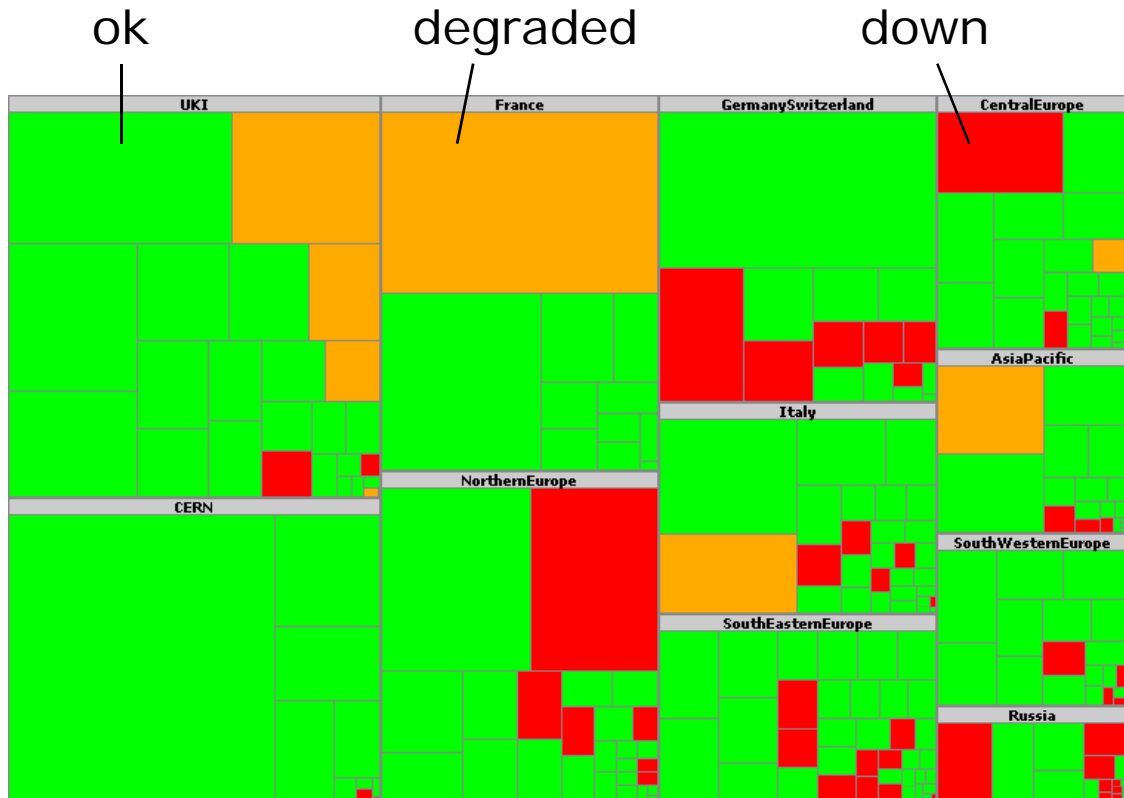
Nagios grid services monitoring

- Near-term activity
 - with 2nd release, move out of “prototype”
 - increase scope of the local checks (on-box)
 - ‘standardize’ metric publication
- Need to
 - ‘encourage’ deployment – how?
 - components should be reusable
 - clarify role of central, regional and site monitoring



GridMap Visualization

- Visualize the Grid by using *Treemaps*
 - (Grid + Treemap = *GridMap*)



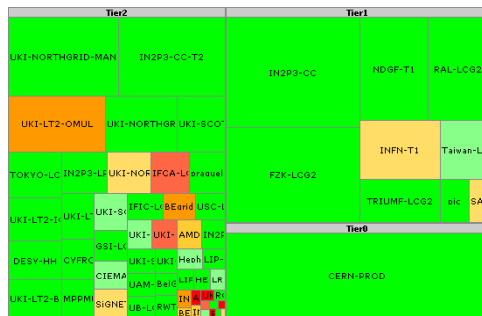
Colour of rectangle is e.g.

- SAM status of site / service
- Availability of site / service
- ...

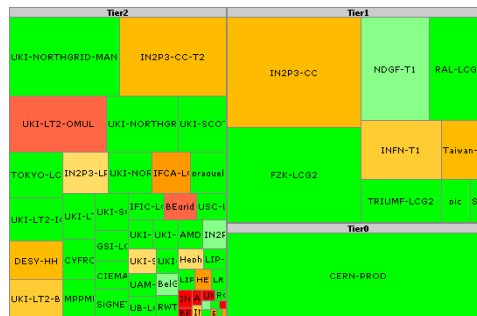


Trends

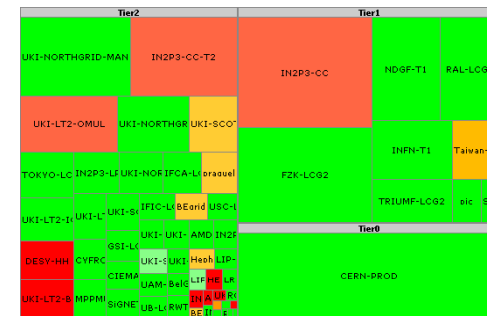
- Trends can be understood by looking at a sequence of *GridMaps*



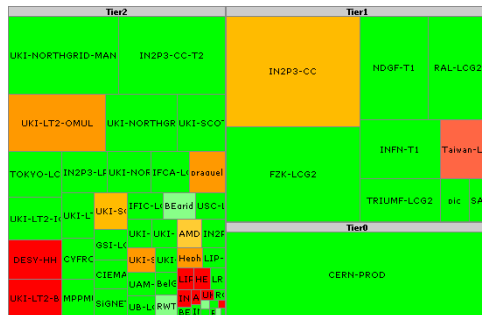
20 Sep 2007



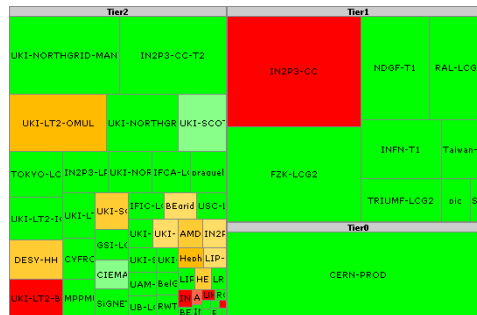
21 Sep 2007



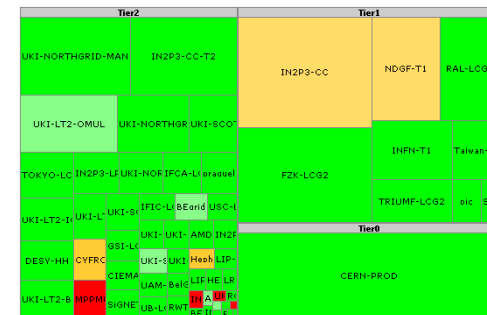
22 Sep 2007



23 Sep 2007

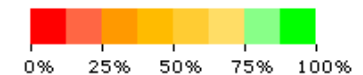


24 Sep 2007



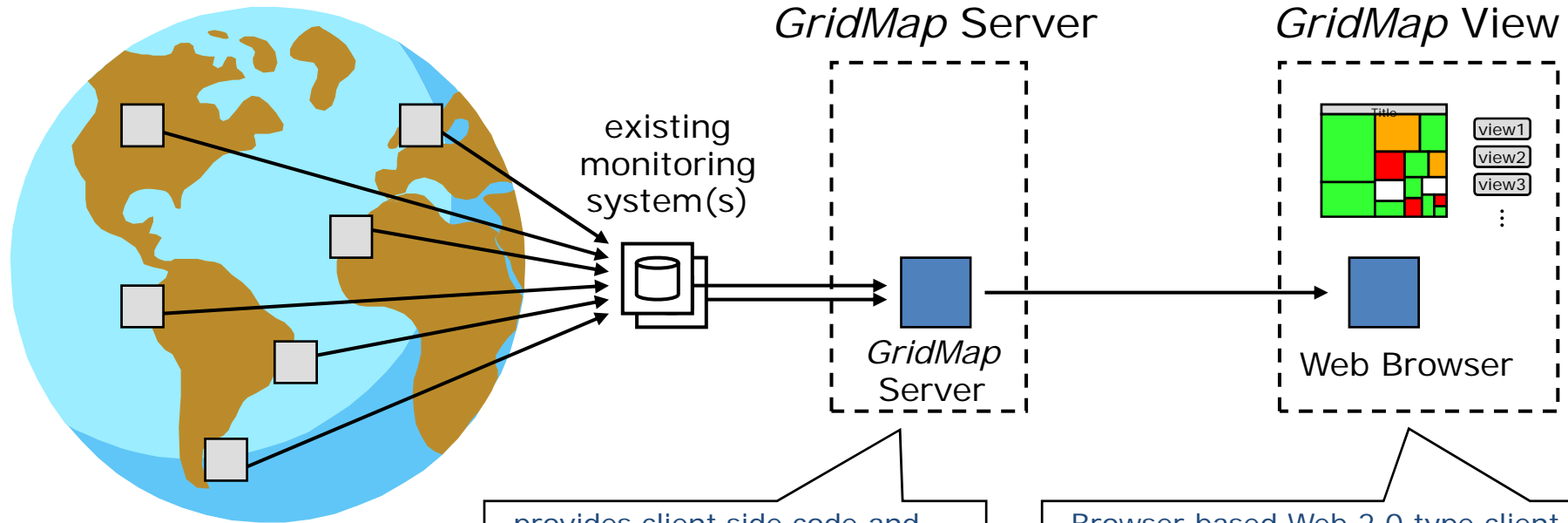
25 Sep 2007

Site Availability over time





GridMap Architecture



Grid sites

- provides client side code and client supporting services
- implements *GridMap Layout Algorithm*
- retrieves and caches data from existing monitoring systems
- POC implementation is based on Apache / Python

- Browser based Web 2.0 type client component
- single interactive and responsive web page (no page reloads required, data is retrieved in the background)
- fast switching between views possible
- details of the site/service statuses are shown as a context sensitive Tooltip
- POC implementation is based on HTML, lightweight JavaScript libraries, AJAX type communication pattern



Grid Service Monitoring

- Summary:
 - WG's have focused monitoring activity
 - Useful deliverables close to release
 - Site-based grid service monitoring
 - High level visualisation tool
 - Many activity threads not mentioned here
 - <https://twiki.cern.ch/twiki/bin/view/LCG/GridServiceMonitoringInfo>
- Now:
 - WLCG Service Reliability Workshop and GDB
 - Gaps, architecture and plan for coming year.



Monitoring

