

An automated meta-monitoring mobile application and frontend interface for the WLCG computing model

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Monitoring the WLCG sites is important. MadFace is a new monitoring framework for every WLCG site and any kind of infrastructure, which is easy to integrate with our existing monitoring workflow and install on your smart phone. We present the key concepts of MadFace, including its browser crawler, image processor, Bayesian analyser, mobile viewer and a model of how to manage a complex infrastructure like the WLCG.

Motivation

Basics

- Monitoring many web pages in real WLCG systems
- Various grid services in HEP
- New and different interfaces
- Have designed them for browsers (or web service outputs)
- Finding and solving problems as soon as possible
- Running *High Throughput Computing* clusters
- Used *HappyFace* as a low-level meta information collector

Monitoring plays a key role

- Checking status and providing 24-7 service
- Discovering problems in each site/cloud/world-wide level
- Displaying or sending notifications or messages
- Finding reasons why system does not work

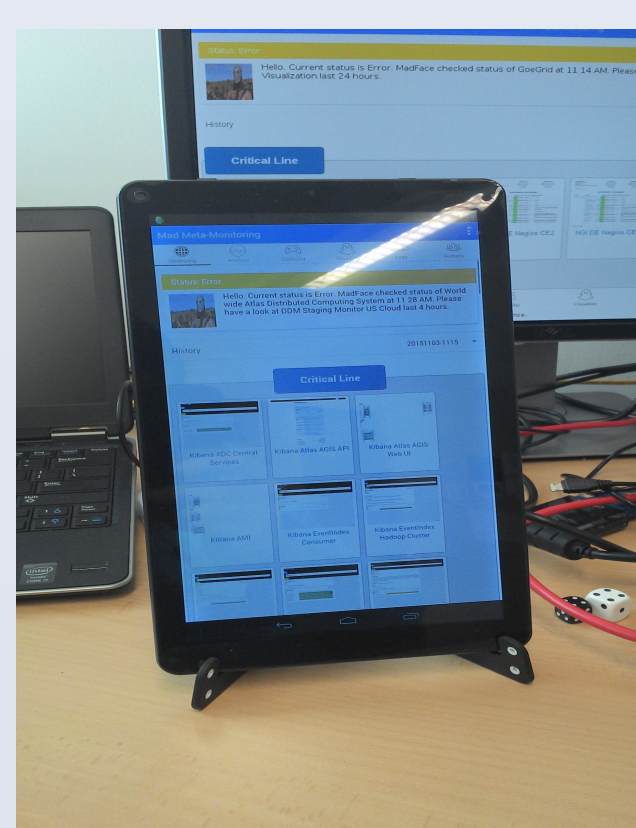
Monitoring and administration in mobile application

- Reduce stress of administrators
- Increase system reliability
- Understand status in a whole system well

Model

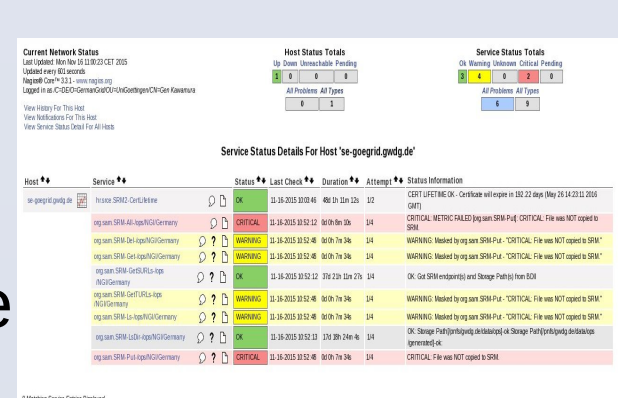
MadFace: HappyFace compatible UI

- Flexible
- *Only one mobile application*
- Up-to-date monitoring information
- History function
- Fast
- Comfortable
- Simple warning system
- Customisable



Meta-monitoring mobile application

Bayes analysis of browser views



Change

Binary segmentation coding of status

$$\frac{P}{(1-p)} = \frac{P(\text{State 0} | X)}{P(\text{State 1} | X) \text{ or } P(\text{State 0} | X)}$$

where X is a last state of each state point

State 0 = Normal

State 1 = Error

Implementation

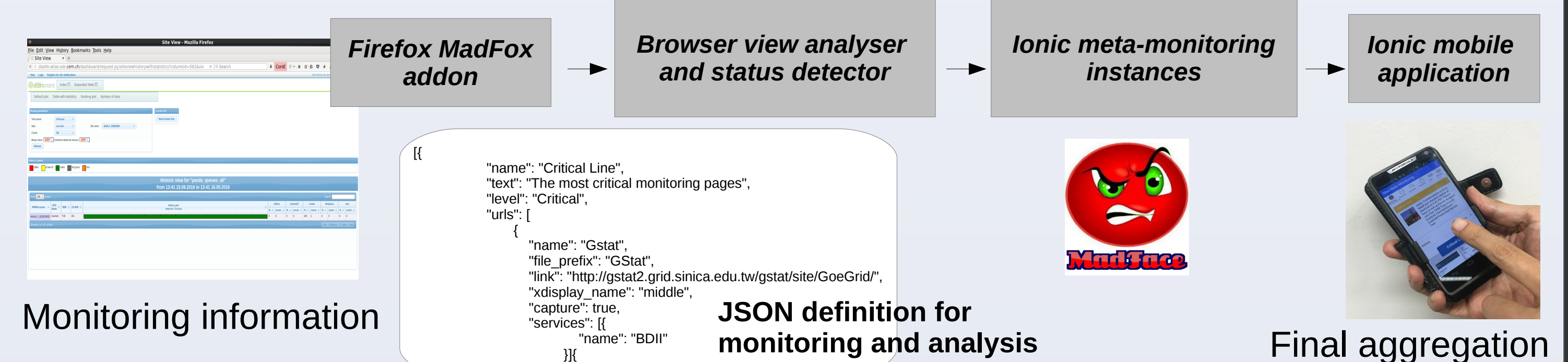
Web + Mobile framework

- Ionic, AngularJS framework
- Server-side JavaScript technology
- Firefox + Madfox addon developed by JetPack Manager

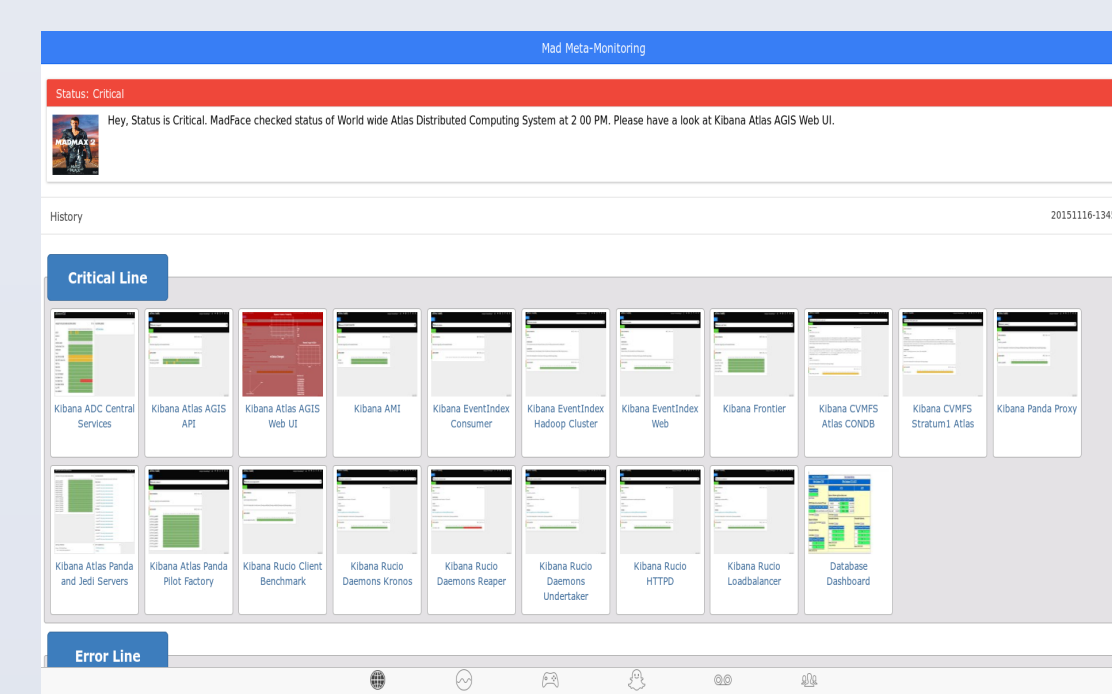
Online Bayesian analyser

- Uses R language and libraries
- Conversion from browser views to information criteria
- Bayesian change process analyser
- Bayesian network analyser

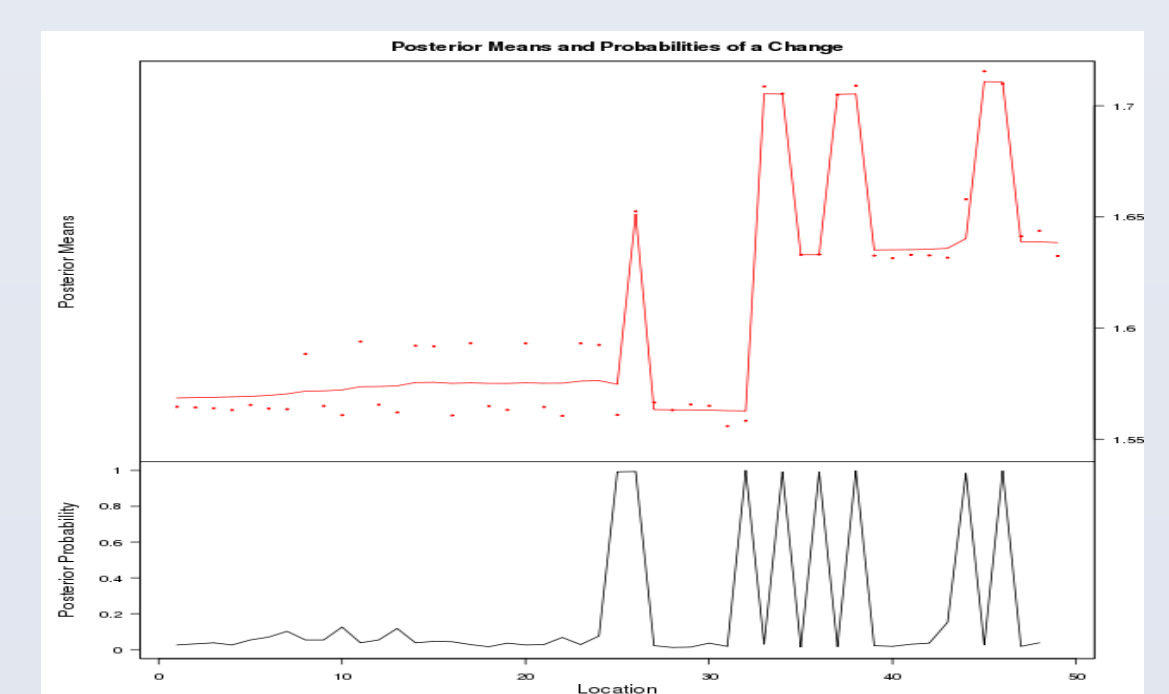
Meta-monitoring architecture (browser view mode)



Application and results



Main meta-monitoring view



Bayesian change status in a browser view. When posterior probability is high, a change point.



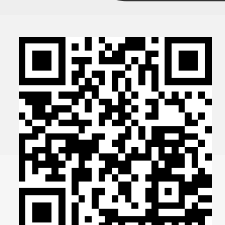
Network of monitoring views

Test instances are monitoring a WLCG site and the ATLAS distributed computing system. Our prototype system and application can detect the Bayesian change and analyse the status.



GoeGrid Tier-2 and ADC MadFace instances

- HappyFace is a meta-monitoring system. The MadFace prototype system works in the same manner.
- Designed as a sophisticated meta-monitoring mobile application.
- The latest frameworks can easily deliver a flexible meta-monitoring system and mobile application.
- Some shift duties would be automated.
- A mobile administration drastically reduces the efforts of site/cloud/world-wide collaboration.



GitHub: MadFace



GitHub: MadFace
Meta server RPMs



Android MadFace application
Try it out!

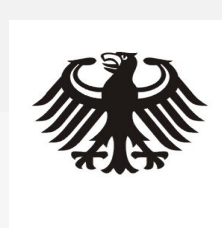


"Site specific monitoring of multiple information
systems—the HappyFace Project."
IOP Publishing, 2010.



GitHub: HappyFace
Docker container

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