# Background in Web Development

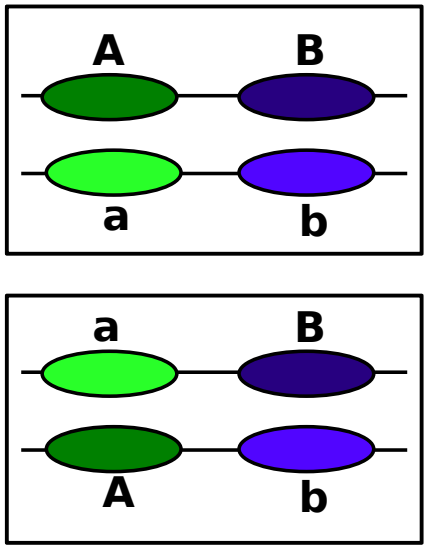
Michał Nowotka
job applicant


EMBL-EBI
ChEMBL group

June 8, 2012

# The problem of haplotype frequency estimation – bacelor thesis

AaBb ?




- Determining haplotypes with laboratory methods is expensive and time-consuming.
- In contrast, there are many cost-effective techniques for determining genotypes.
- In general, it could be impossible to inferre haplotypes from genotype data.

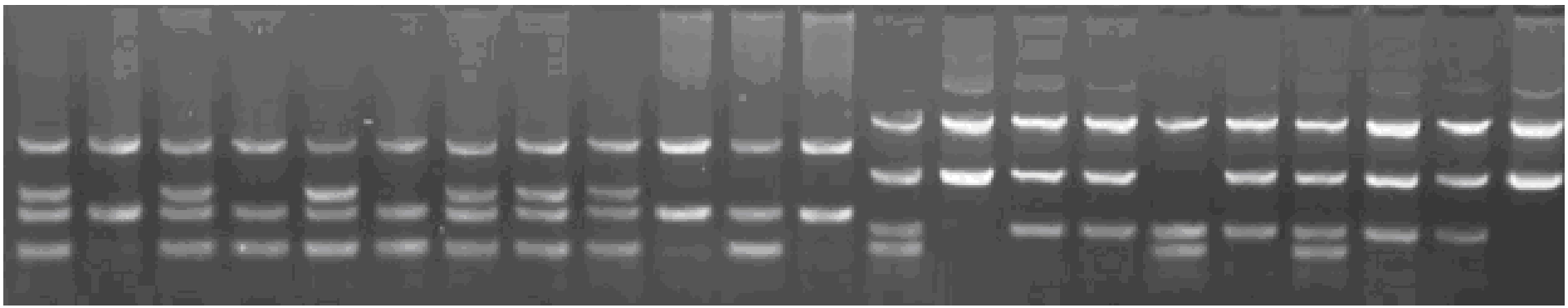


Figure:
Determining genotype experiment results

# Idea of short overlapping windows

## Problem

Every algorithm emploing full space search would operate with $O(c^n)$ complexity. This is why it cannot be directly applied to phasing long genotypes.

## Solution – Genotypes can be divided into shorter pieces that overlap.

- Piece length is fixed, so is computation time.
- Phasing n pieces has now $O(n)$ complexity.
- Multiple pieces can be phased in parrallel.
- If phasing algorithm is convergent total error should not be large.

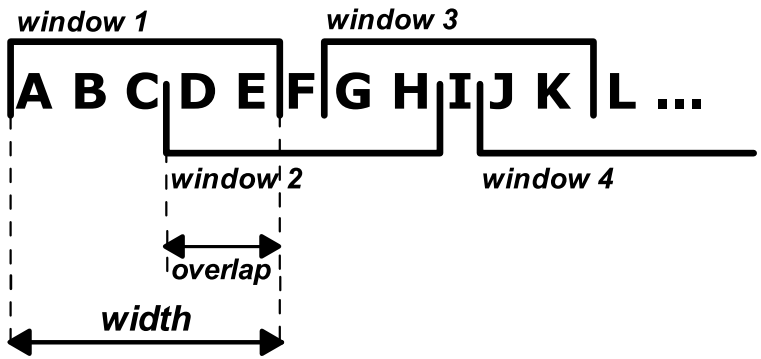
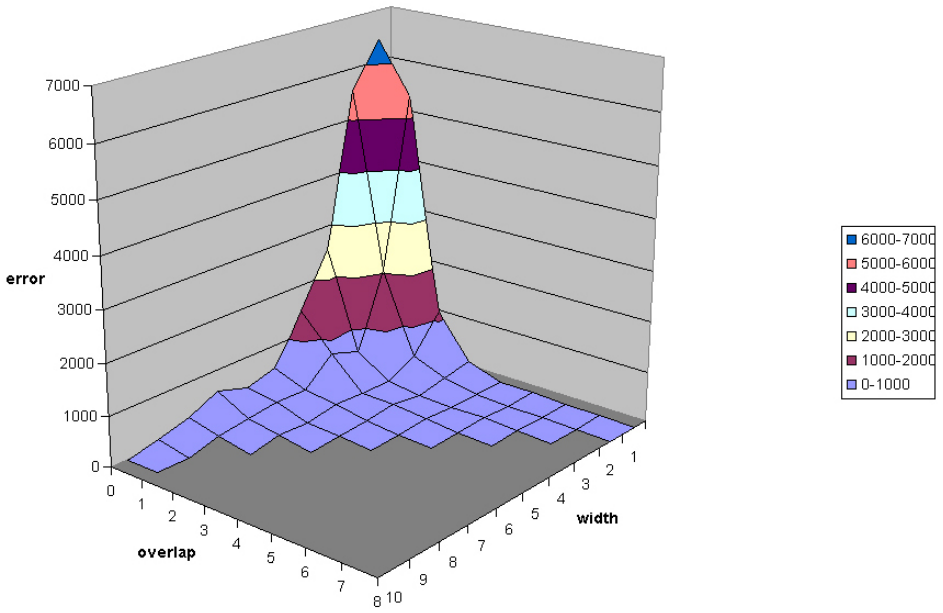
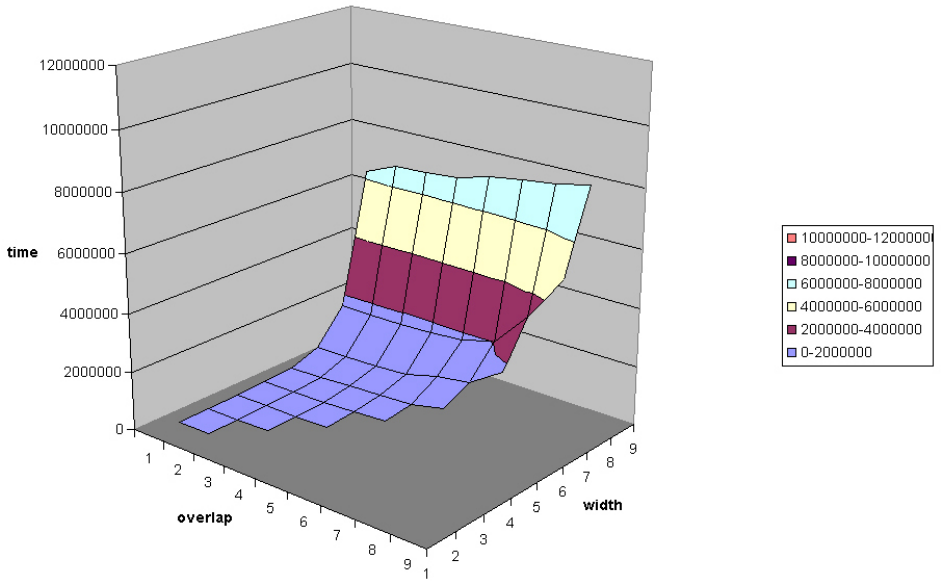



Figure: What are the error and execution time as a function of **width** | **overlap**

# Results

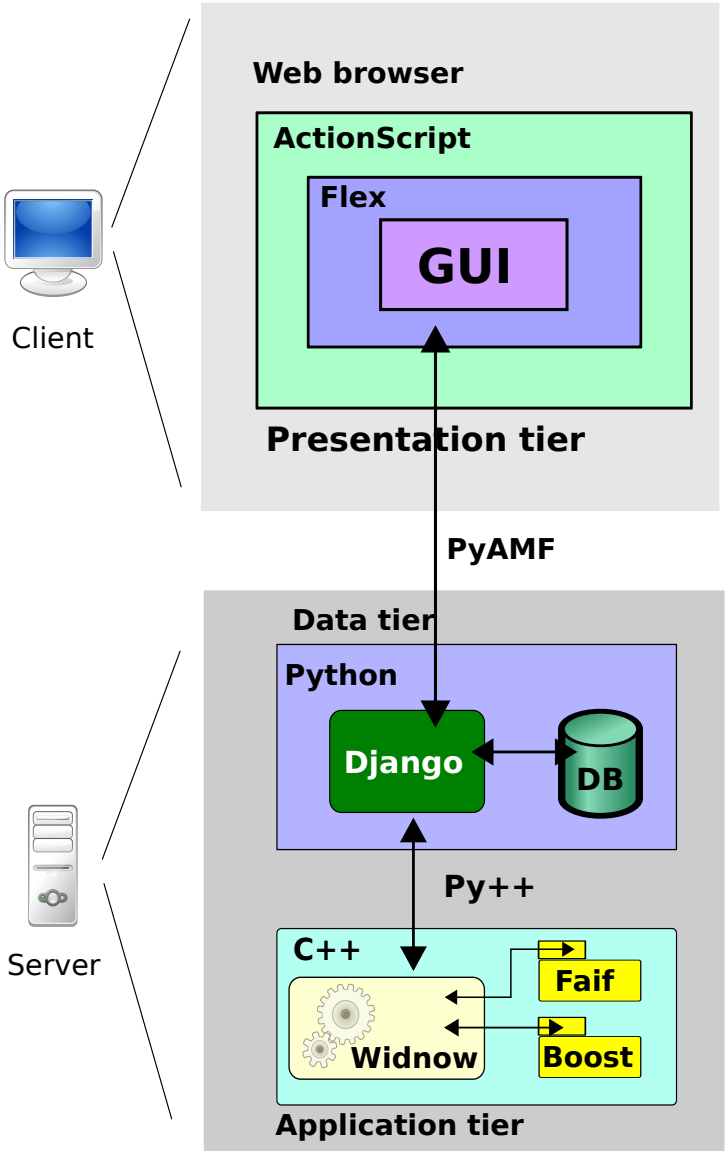



Error as a function of with and overlap parameters




Execution time as a function of with and overlap parameters

# Application architecture



# Automated functional annotation using classification algorithms and data fusion – master thesis

## Functional genomics as a major field in applied bioinformatics

- Functional interpretation is a key step in the analysis of DNA and protein sequences.
- This task cannot be done without availability of extensive functional annotation of the datasets.
- Due to the fast development of high-throughput sequencing technologies, an increasing amount of novel, uncharacterized sequence data have arisen.
- Stabdarized functional annotation is essential.

## The goal

Privide biologists useful informartion to take into account when addressing the task of functionally characterizing thei requence data.

# Automated functional annotation – the algorithm

## Input

Uncharacterized DNA or protein sequence.

- BLAST.
- Gene Ontology lookup.
- Data fusion and inferrence.

## Output

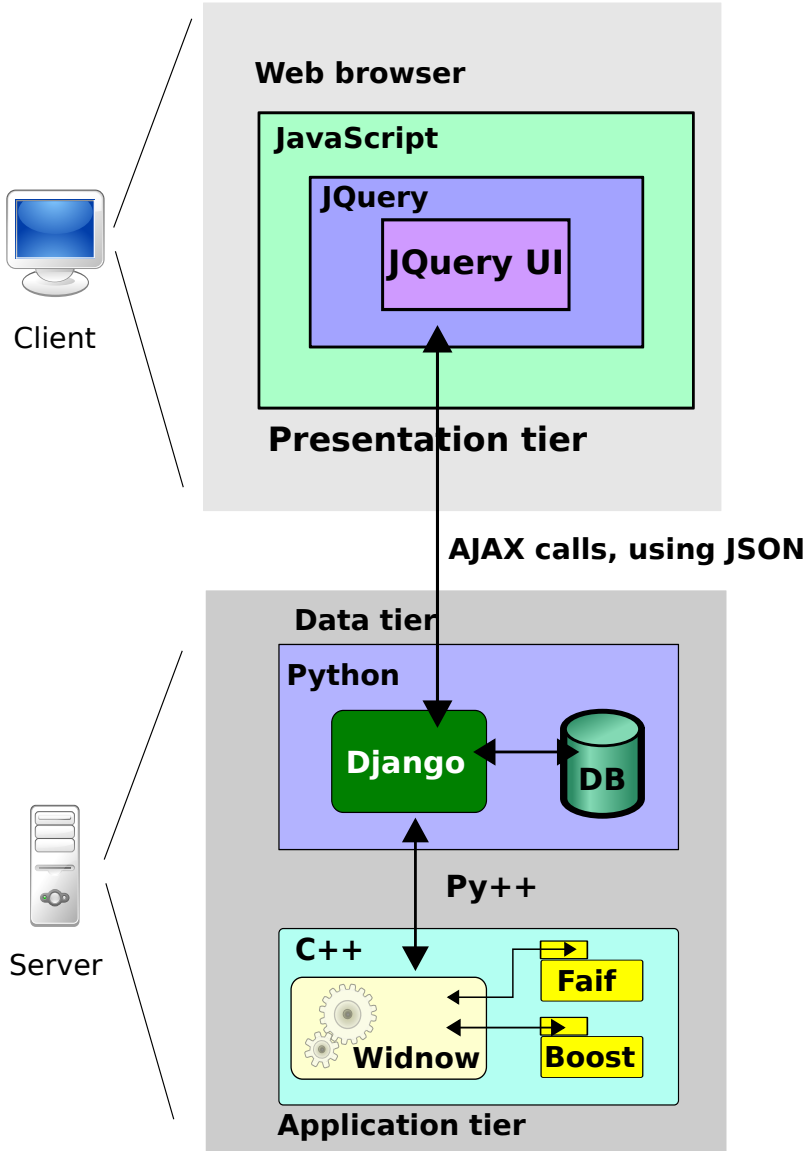
Inferred functional annotation for the input sequence

# Inferring functional annotation

For combining multiple results the Dempster's rule of combination is used.

- Often used as a method of sensor fusion.
- Strongly emphasises the agreement between multiple sources and ignores all the conflicting evidence.
- Better alternative to weighted voting.

# Application architecture



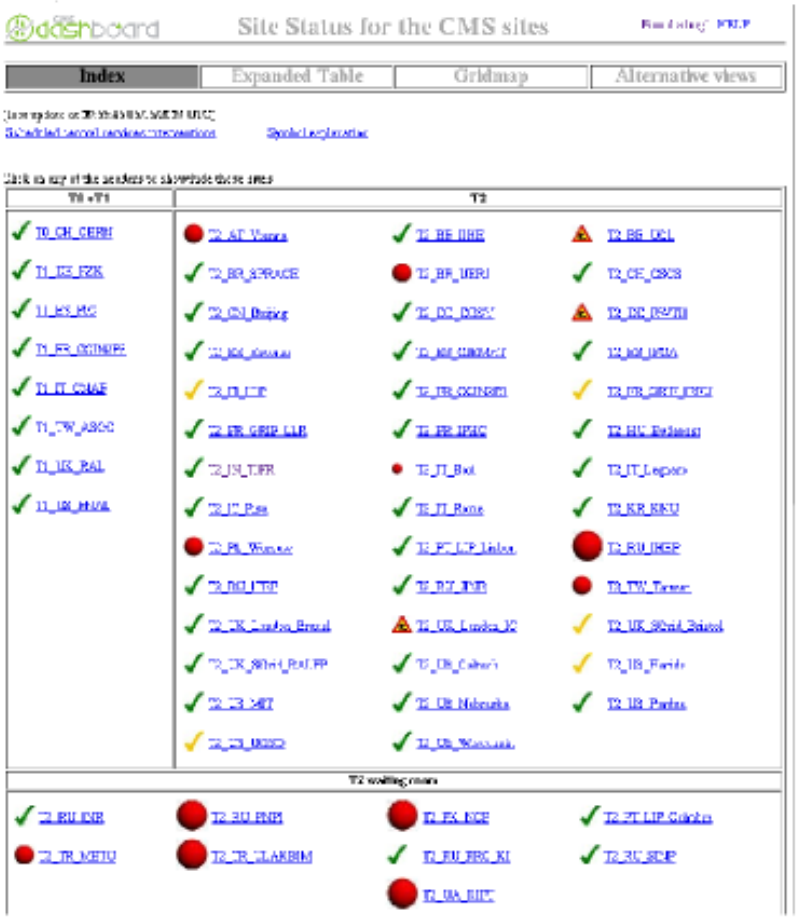
# Site Status Board – an application monitoring the behavior of all the centers of a particular VO

- SSB provides a single entry point that summarizes the status of the sites.
- The main idea is to provide a flexible framework which would allow VOs to define multiple monitoring metrics.
- The metrics can be added, deleted and easily modified.
- The most critical metrics can be combined into a single value for each site corresponding to its status.
- SSB keeps the history of how all the metrics have evolved over time..
- SSB consists of three components: collectors that gather information, a database and a web server.

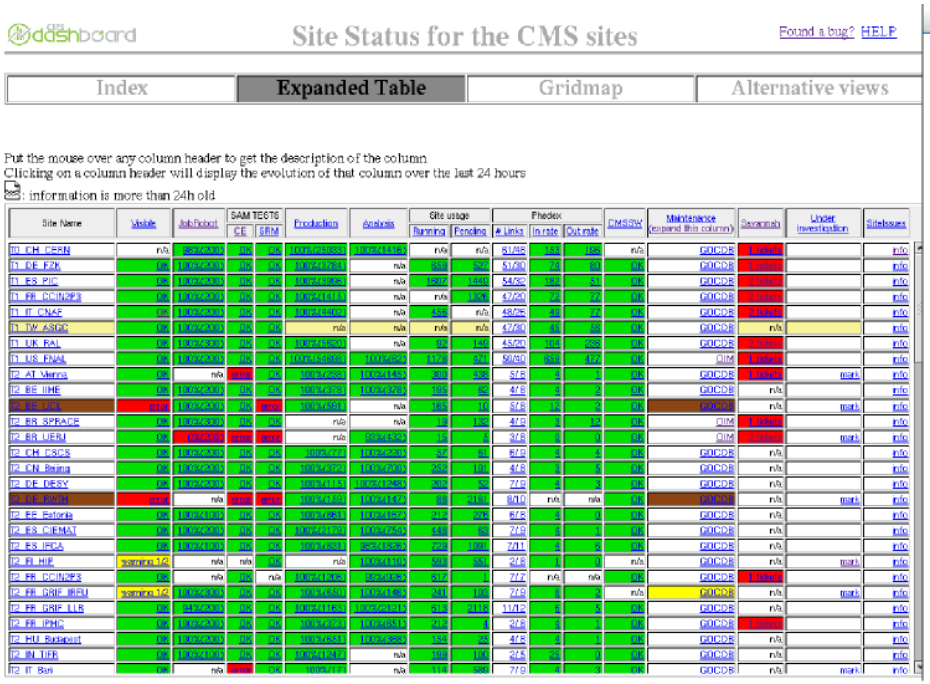
# SSB – implemented features

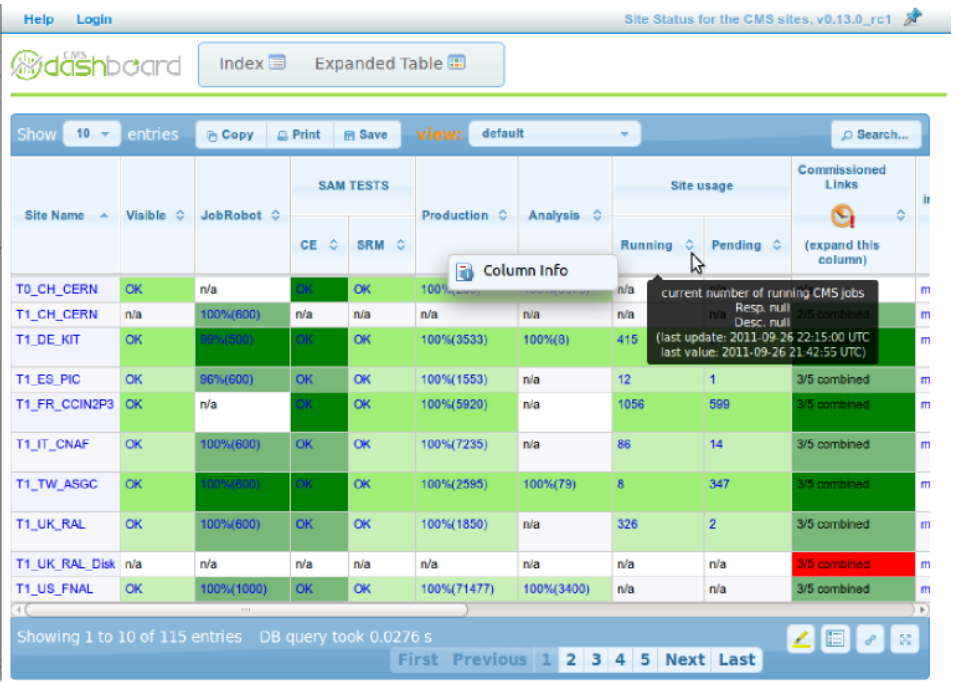
- XSLT replaced by Java Script template system.
- New coherent GUI.
- Filtering, paging, sorting in Expanded Table, computed on server side.
- Expanded Table ready for large amount of data.
- Redesigned backend.
- Client-side plotting.
- Bookmarking, undo/redo.
- Backbone.

# Old and new SSB

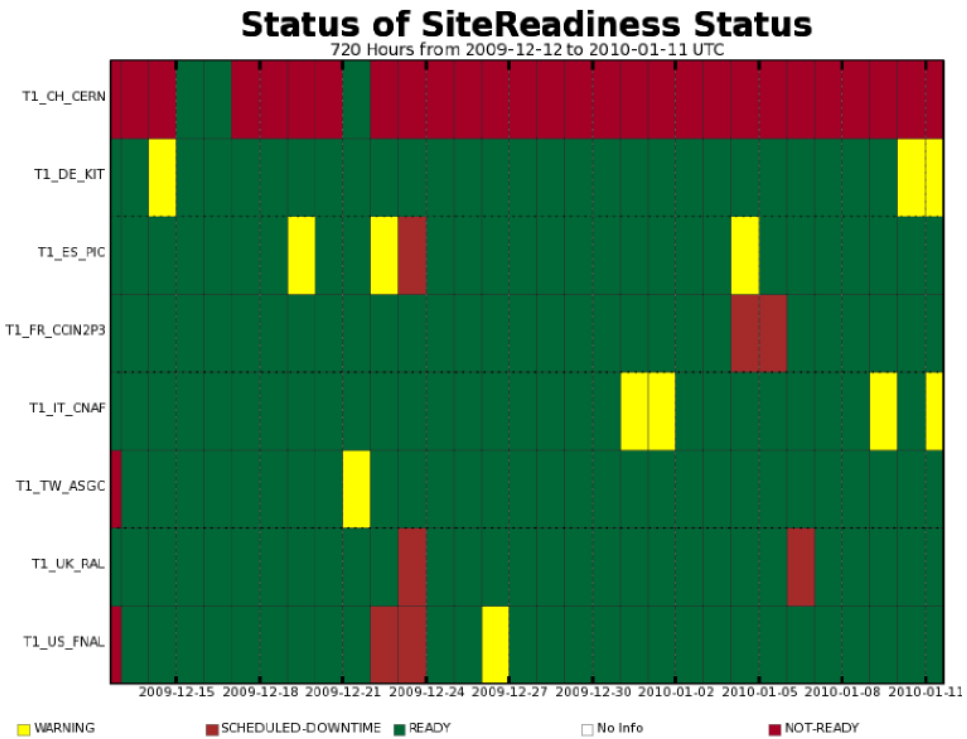


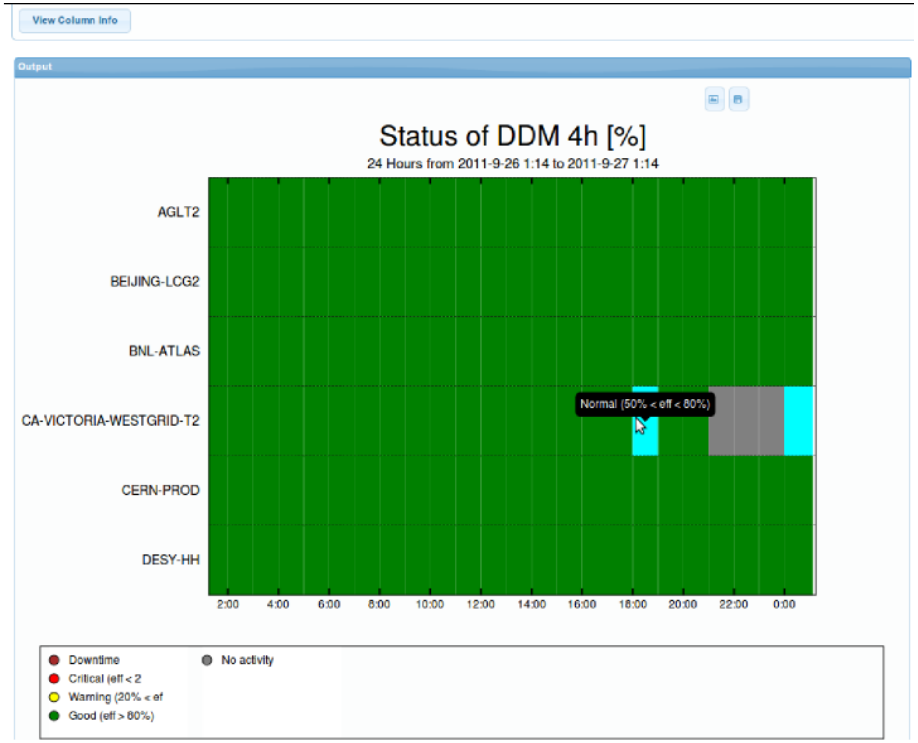

# Old and new SSB



# Old and new SSB



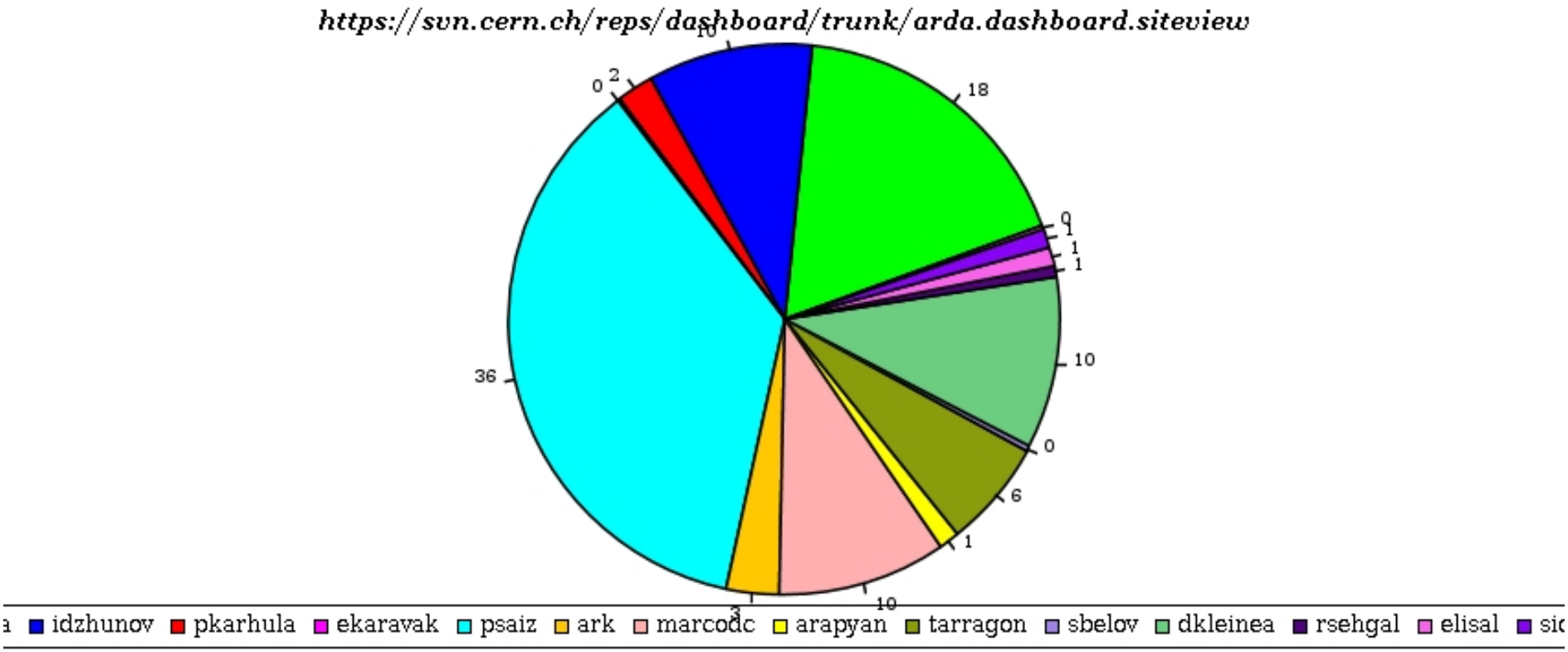



# SSB – collector metainformation

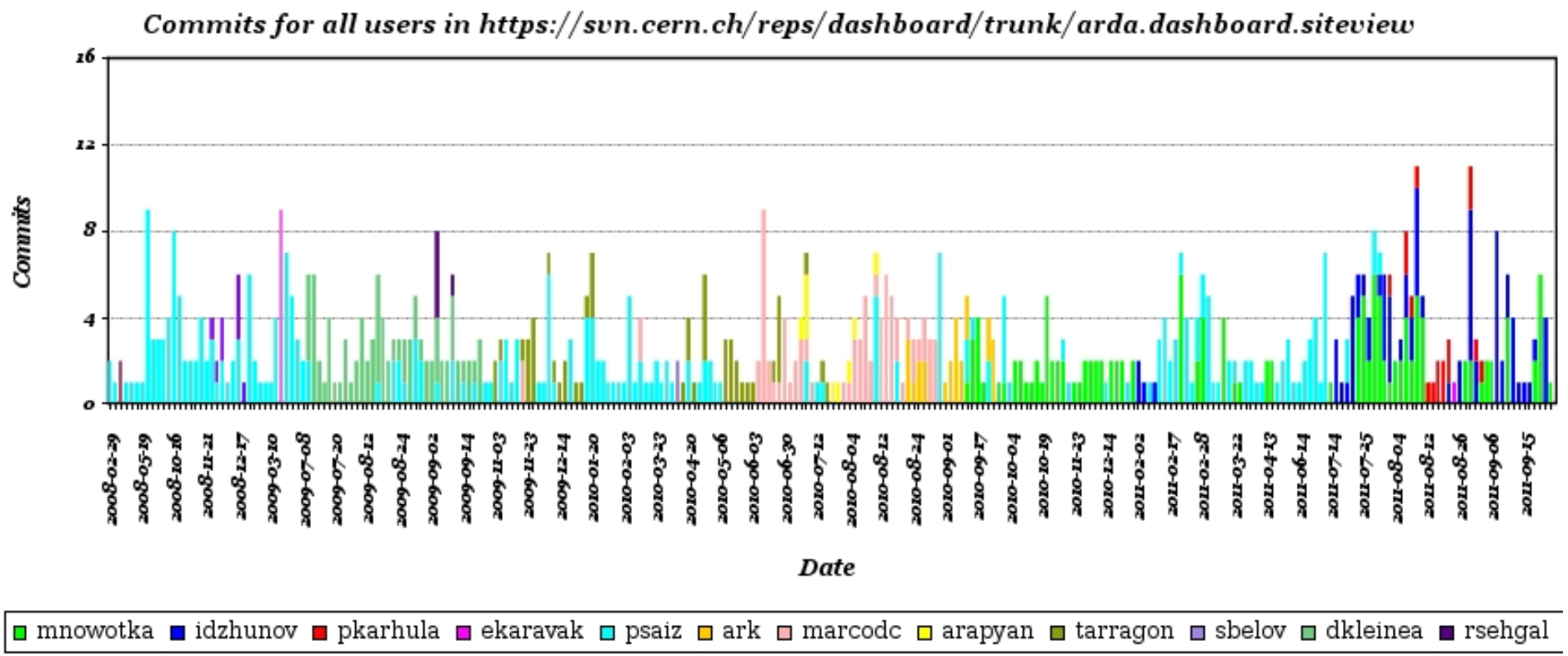
# SSB – TODO

- Tests (jQunit, Selenium).
- Database synchronization.
- Web based installation wizard.
- Getting rid of FOUCs.
- Refactoring of DAO.
- Expanded Table should refresh periodically and highlight recent changes.
- NoSQL for Sieview Data.

# SSB – Impact chart



# SSB – Commits


Commits for all users in https://svn.cern.ch/reps/dashboard/trunk/arda.dashboard.siteview
Commits
16
12
8
4
0
2008-02-29
2008-05-19
2008-10-16
2008-11-21
2008-12-17
2009-03-10
2009-07-08
2009-07-20
2009-08-12
2009-08-24
2009-09-02
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2011-08-12
2011-08-26
2011-09-06
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Date
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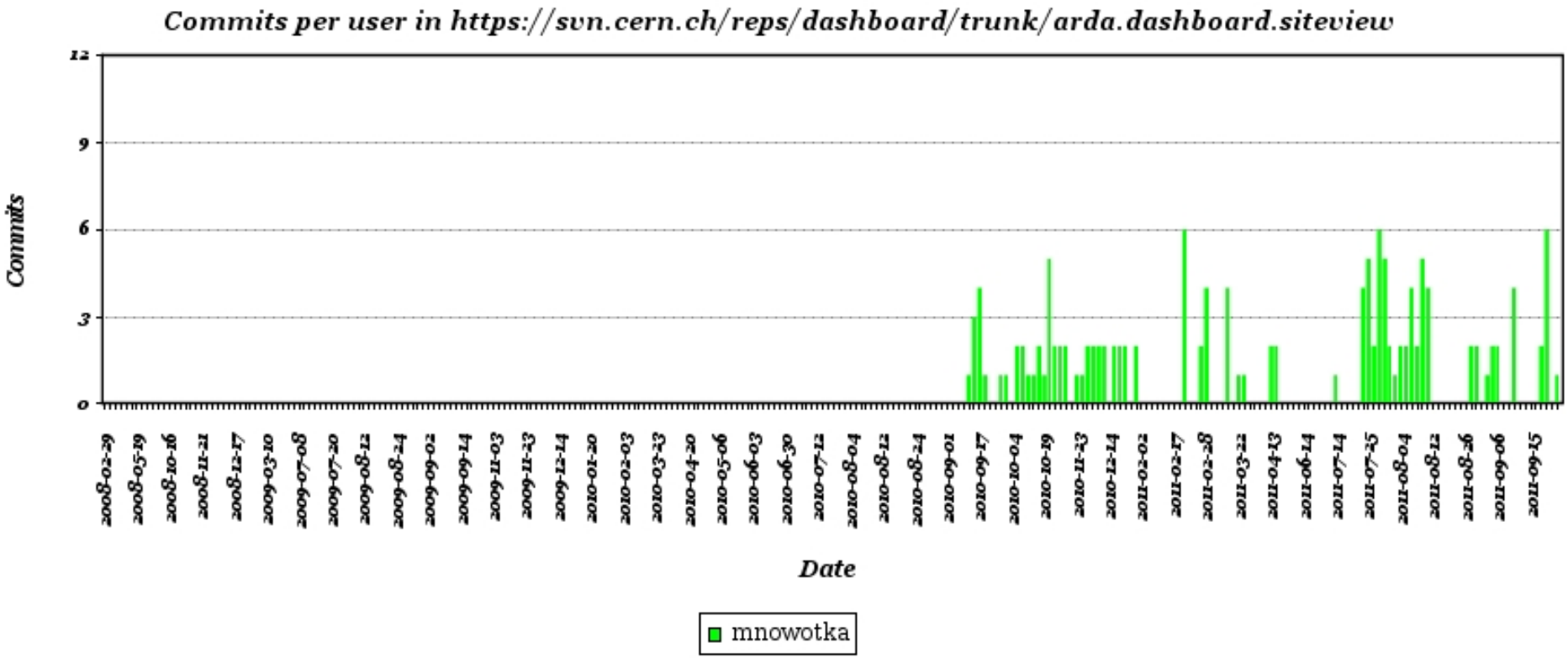
rsehgal

# SSB – My commits



# Framework

## Benefits for the dashboard framework:

- Coherent set of tools and libraries.
- Proofs of concepts.
- Authentication mechinsms implemented in framework.
- Better documentation.

# MonAlisa

- Installation on every node.
- Instalation and tuning of ML Repository.
- Alarms.
- New Metrics.

# MonAlisa

dashboard

## MonALISA Repository

MonALI
MONitoring Agents us
Integrated Services Arch

Repository Home | Administration Section | Events XML Feed | MonaLisa GUI

Repository

- MonALISA Repository
- Global Views
- Statistics
- Services
- Machines
- Collectors
- Repository info
- Installed packages

close all

This page: bookmark, URL

### Dashboard machines' status

What is this a

Machines status

| | | | CPU | | | | Networking (eth0) | | Busiest disk | | | httpd workers | | httpd now | | httpd instance avg | | | httpd instance total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Host | sms state | Online | Load | usr | sys | iowait | idle | IN | OUT | Util (%) | Device | IOPS | Running | idle | Req/s | Traffic | Req/s | Traffic | Bytes/req | Requests | Traf |
| dashb-virtual06 | | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | |
| dashboard03 | production | | 0.04 | 0.667 | 0.103 | 0.131 | 99.08 | 0.176 Mbps | 0.711 Mbps | 1.601 | sda | 5.38 | 2 | 98 | 7.491 | 0 | 3.8 | 46.1 KB/s | 12390 | 107736 | 1. |
| dashboard17 | production | | 0.03 | 1.662 | 0.75 | 0.355 | 97.07 | 87.4 Kbps | 30.91 Kbps | 0.997 | hda | 5.516 | 1 | 7 | 0.017 | 85.31 B/s | 0.04 | 173 B/s | 4342 | 170 | 72 |
| dashb-virtual09 | | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | |
| dashb-virtual11 | | | 0.16 | 1.217 | 2.1 | 0 | 96.45 | 0.824 Kbps | 3.868 Kbps | 0.042 | sda | 0.817 | - | - | - | - | - | - | - | - | |
| dashb-virtual04 | | | 0.42 | 13.73 | 11.01 | 0 | 74.33 | 1.718 Kbps | 3.393 Kbps | 0.083 | sda | 3.083 | - | - | - | - | - | - | - | - | |
| dashboard11 | maintenance | | 0.08 | 0.36 | 0.2 | 0.015 | 99.41 | 12.53 Kbps | 22.2 Kbps | 0.12 | sda | 4.083 | - | - | - | - | - | - | - | - | |
| dashboard21 | production | | 0.4 | 1.437 | 0.674 | 0.345 | 97.02 | 0.101 Mbps | 0.529 Mbps | 0.992 | hda | 5.549 | - | - | - | - | - | - | - | - | |
| dashboard09 | production | | 0.01 | 0.965 | 0.125 | 0.021 | 98.86 | 80.69 Kbps | 0.52 Mbps | 0.213 | sda | 3.7 | 3 | 72 | 6.85 | 0 | 3.59 | 57.5 KB/s | 16384 | 102092 | 1. |
| dashboard27 | maintenance | | 0.01 | 0.282 | 0.218 | 0.161 | 99.26 | 2.349 Kbps | 4.166 Kbps | 0.43 | hda | 3.017 | - | - | - | - | - | - | - | - | |
| dashboard31 | production | | 0.32 | 1.925 | 0.536 | 17.41 | 79.02 | 95.24 Kbps | 91.88 Kbps | 19.78 | hda | 5.699 | 74 | 54 | - | - | - | - | - | - | |
| dashboard22 | maintenance | | 0.05 | 0.33 | 0.362 | 0.201 | 99.07 | 2.458 Kbps | 3.152 Kbps | 0.572 | hda | 2.666 | - | - | - | - | - | - | - | - | |
| dashb-virtual07 | | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | |
| dashboard25 | production | | 0.17 | 3.052 | 0.904 | 0.396 | 95.17 | 83.56 Kbps | 51.35 Kbps | 0.965 | hda | 8.632 | - | - | - | - | - | - | - | - | |
| dashb-virtual02 | | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | |
| dashboard23 | production | | 0.19 | 0.128 | 0.287 | 9.902 | 89.64 | 2.456 Kbps | 3.215 Kbps | 16.48 | hda | 2.066 | - | - | - | - | - | - | - | - | |
| dashb-virtual05 | | | - | - | - | - | - | - | - | - | | - | - | - | - | - | - | - | - | - | |
| dashboard02 | production | | 0.01 | 0.069 | 0.184 | 0.127 | 99.57 | 3.987 Kbps | 4.478 Kbps | 1.427 | sda | 6.3 | - | - | - | - | - | - | - | - | |

# Other applications

- Dashboard for Google Eearth.
- SiteView.

# Peresentations

Group meetings presentation:

- jQuery.
- Charting.
- Deployment and load balancing.
- noSQL.
- Architecture of JS applications.

# Twiki

Twiki articles:

- JS tools and libraries (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/Libs).
- MVC architecture (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/ModelViewController).
- Dashboard services documentation (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/Services).
- MonAlisa installation procedure (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/MonAlisa).
- Authentication mechanism in dashboard framework (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/Auth).
- Form handling (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/FormHandling).
- Google Earth emergency (https://twiki.cern.ch/twiki/bin/view/ArdaGrid/DashbEarth).

# Other

- Contributing to CHEP papers.
- Attending to Daily Ops.
- Attending to CMS Ops.
- Summer Student.

# What I learned

- Java Script technologies.
- Dashboard Framework.
- CERN School of Computing.
- Sys Admin stuff.
- Many interesting lectures (including Richard Stallman and James Watson).
- French course.
- Working in multinationa environment.
- Working in large organisation.
- Living abroad.
- Faster than light neutrino.

# Horus.pl

Horus

Development of business applications intended to use by corporate clients:

Orange

T-mobile

Play

Netia

# Horus Workflow

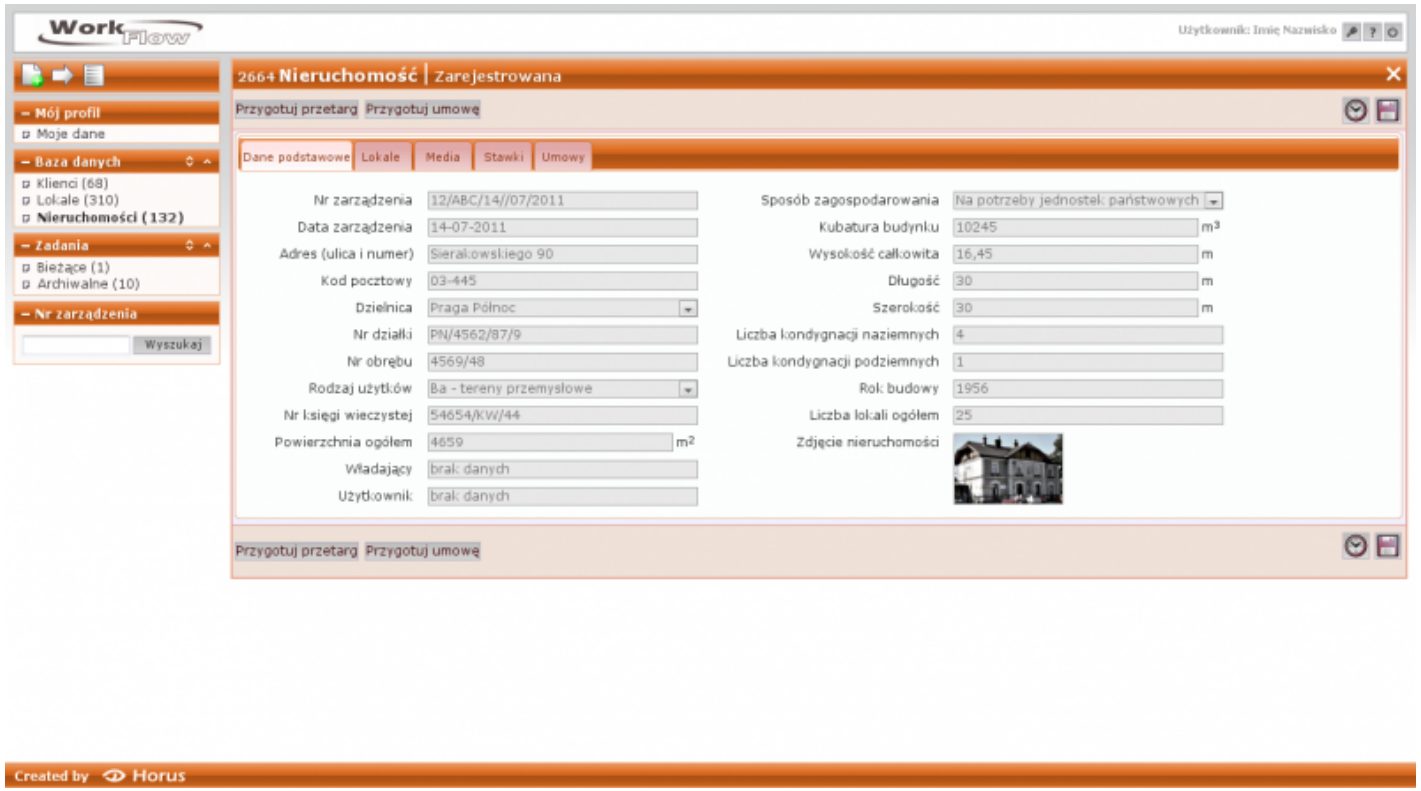
## Horus Workflow

Horus Workflow is used to define and monitor workflow in business processes. It supports the implementation of any number of administrative processes, personnel, management or sales.

Horus Workflow System Features:

- Support for managing tasks
- The ability to define own processes
- Support for document management processes
- Support for a variety of organizational structures
- Monitoring of user activity (change history)
- Management of the company organizational structure

# Horus Workflow – application screenshot



# Horus Workflow – technologies

Used technologies and libraries:

- Spring
- Maven
- JBoss
- Hudson / Jenkins
- Coffee Script
- JQuery UI

# TMS Brokers Brokerage House

TMS Brokers
DOM MAKLERSKI

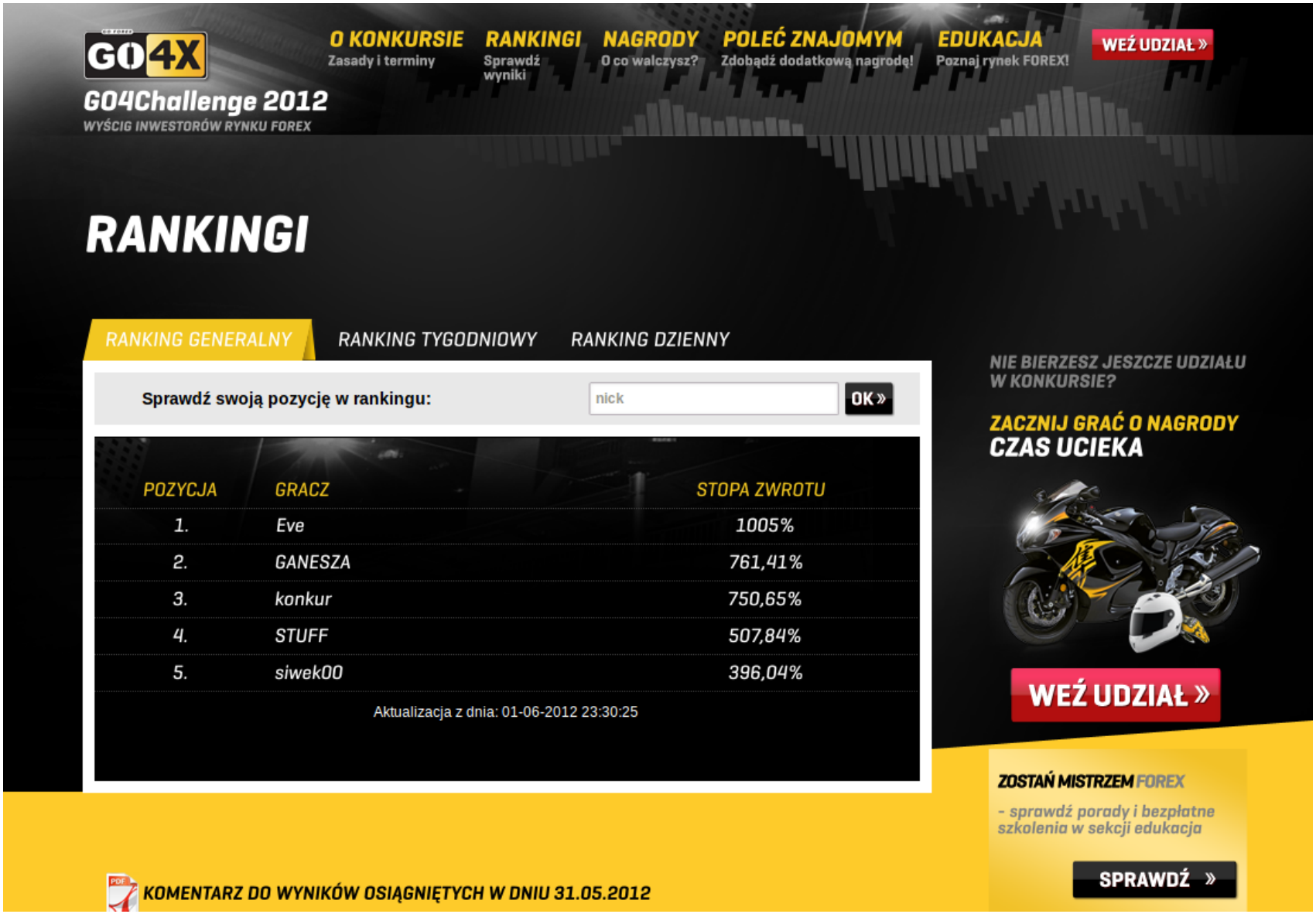
## Tasks and responsibilities:

- Development of financial reporting software
- Supporting promotional campaigns
- MetaTrader API programming

# TMS Brokers – technologies

Used technologies and libraries:

- JQuery UI
- Highcharts and Highstock
- Python
- Django
- C++


GO4X
O KONKURSIE
Zasady i terminy
RANKINGI
Sprawdź wyniki
NAGRODY
O co walczysz?
POLEĆ ZNAJOMYM
Zdobądź dodatkową nagrodę!
EDUKACJA
Poznaj rynek FOREX!
WEŹ UDZIAŁ »
GO4Challenge 2012
WYŚCIG INWESTORÓW RYNKU FOREX
RANKINGI
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RANKING TYGODNIOWY
RANKING DZIENNY
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POZYCJA GRACZ STOPA ZWROTU
1. Eve 1005%
2. GANESZA 761,41%
3. konkur 750,65%
4. STUFF 507,84%
5. siwek00 396,04%
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ZACZNIJ GRAĆ O NAGRODY
CZAS UCIEKA
WEŹ UDZIAŁ »
ZOSTAŃ MISTRZEM FOREX
- sprawdź porady i bezpłatne szkolenia w sekcji edukacja
SPRAWDŹ »
KOMENTARZ DO WYNIKÓW OSIĄGNIĘTYCH W DNIU 31.05.2012

# Github

## Source

LaTeX source of this presentation can be downloaded from github:

```
git://github.com/mnowotka/Chembl-job-web.git
```

# Thank you for your attention.