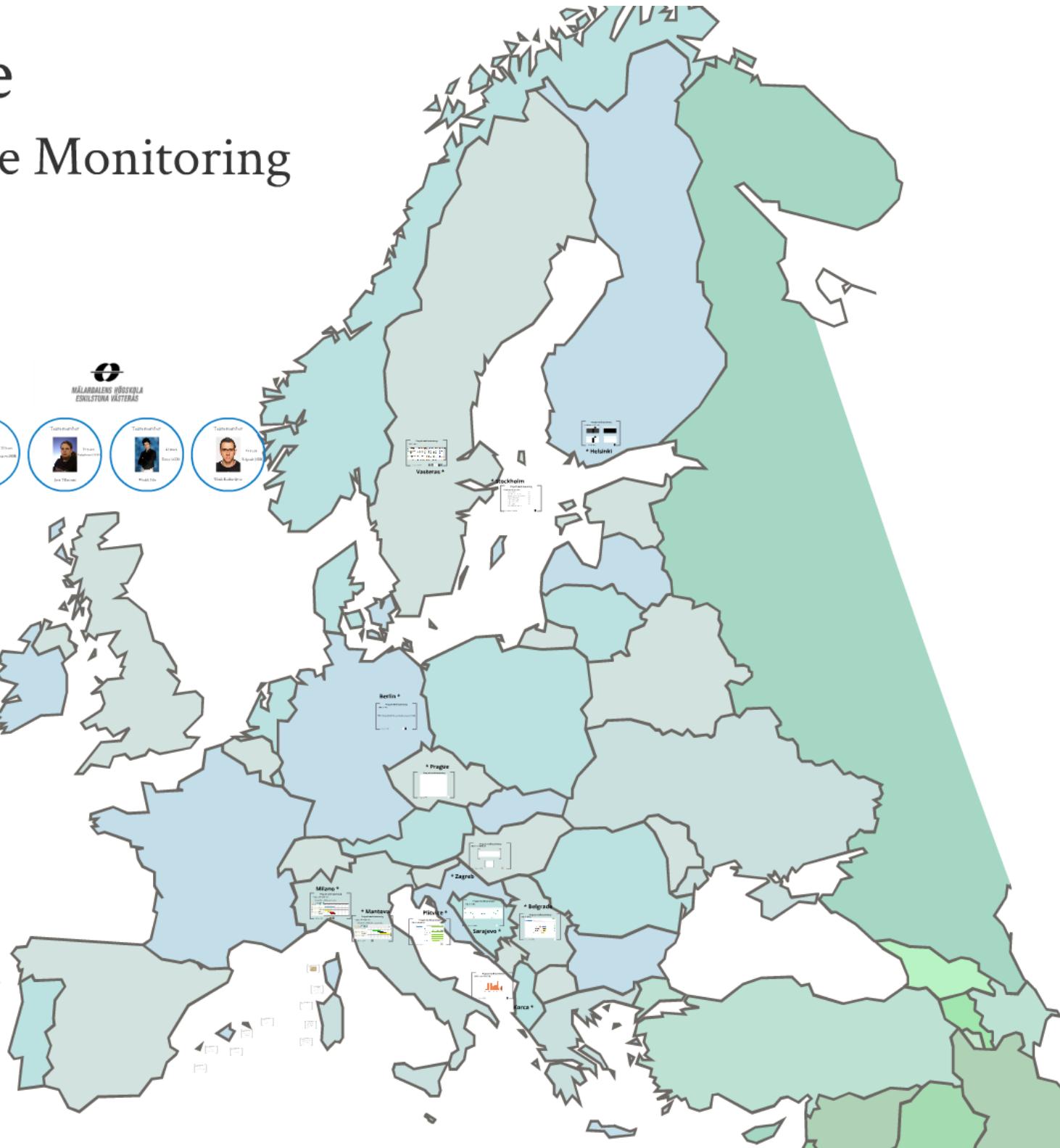


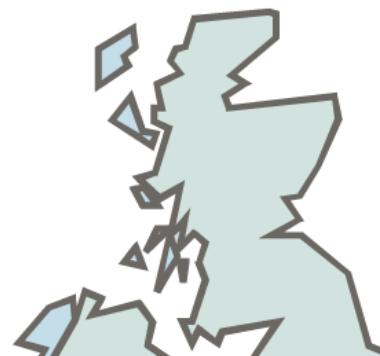
# DSD Course

## Real-Time Bridge Monitoring



# DSD Course

## Real-Time Bridge Monitoring







## MÄLARDALENS HÖGSKOLA ESKILSTUNA VÄSTERÅS

Team member

Team leader



22 years

Sarajevo (BIH)

Dzana Kujan

Team member



24 years

Paderborn (GER)

Jorn Tillmanns

Team member



23 years

Korça (ALB)

Miraldi Fifo

Team member



24 years

Belgrade (SRB)

Nikola Radisavljevic





Supervisor



Igor Čavrak

# Supervisor



Raffaela Mirrandola

# Supervisor



Elisabetta Di Nitto

# Supervisor



Igor Čavrak

Team member

Project leader



25 years

Mantova (IT)

Andrea Bottoli

Team member



24 years

Trento (IT)

Lorenzo Pagliari

(T)

Team member



26 years

Zagreb (CRO)

Marko Brcic

S  
T)

Team member

Team leader



22 years

Sarajevo (BIH)

Dzana Kujan

# Team member



24 years

Paderborn (GER)

Jorn Tillmanns

(H)

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Team member

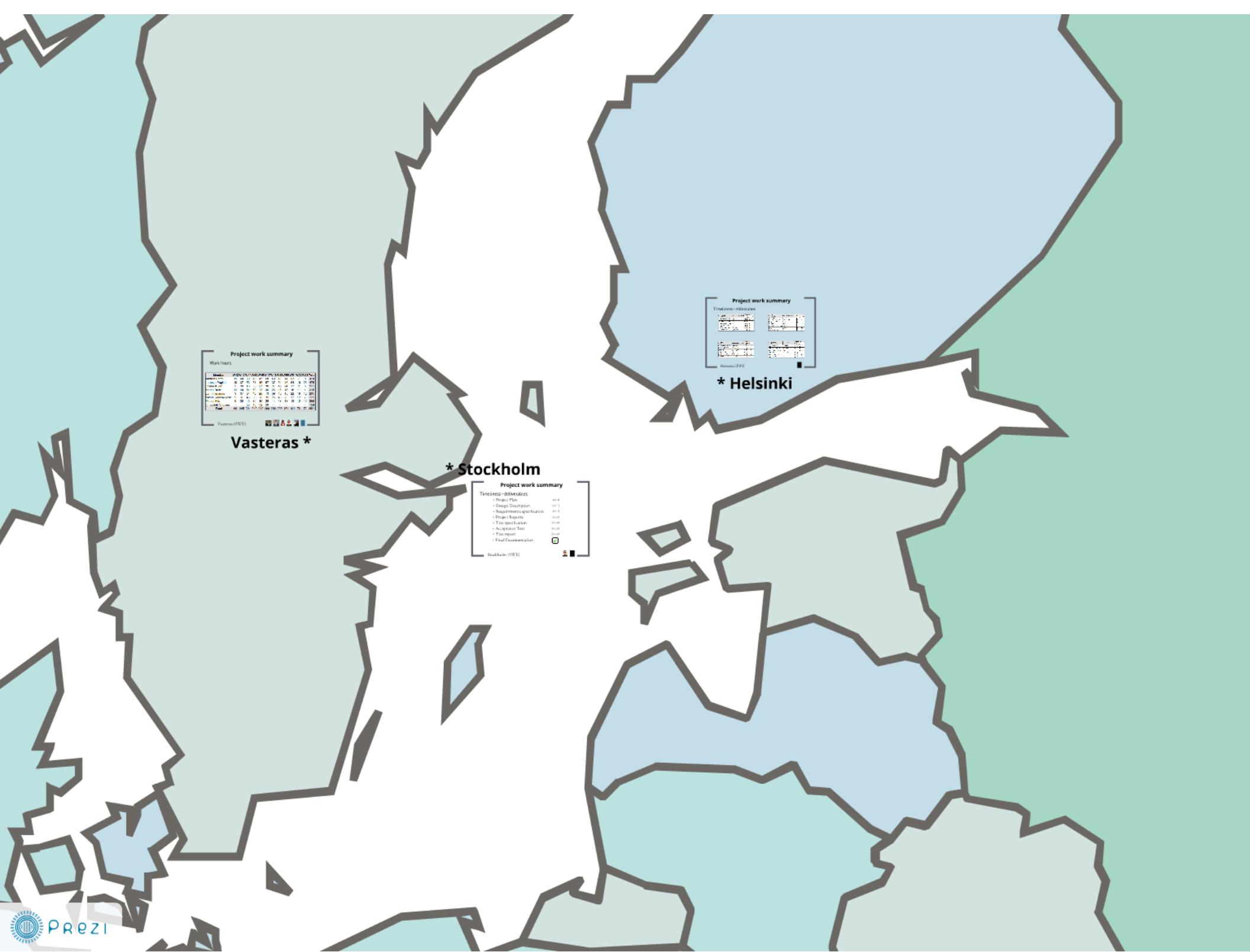


24 years

Belgrade (SRB)

Nikola Radisavljevic

B)



# Project work summary

## Work hours

Member	W42	W43	W44	W45	W46	W47	W48	W49	W50	W51	W52	W01	Total
Andrea Bottoli	11	40	50	45	47	68	40	41	14	53	7	8	424
Lorenzo Pagliari	10	37	53	51	46	57	37	51	43	54	10	26	475
Dzana Kujan	9	36	43	36	27	36	27	49	24	17	2	5	311
Marko Brcic	11	40	54	60	28	36	26	15	15	15	11	4	315
Jorn Tillmanns	9	37	51	43	20	13	39	16	15	22	18	12	295
Nikola Radisavljevic	9	37	45	36	26	35	26	46	25	17	12	7	321
Miraldi Fifo	9	38	45	35	16	28	14	18	18	13	12	10	256
Ghazaleh Shojaee	-	-	53	13	32	26	-	-	-	-	-	-	124
<b>Total</b>	68	265	394	319	242	299	209	236	154	191	72	72	2521

Vasteras (SWE)



# Project work summary

## Timeliness - milestones

Id	Milestone Description	Responsible Dept./Initials	Finished week		
			Plan	Forecast Week +/-	Actual
M-001	Project Plan & Vision	All	42	42	0 43
M-002	Requirements gathering	All	43	43	0 43
M-003	Requirements document	All	43	44	1 43
M-004	System Design	All	43	44	0 43
M-005	Requirement Document	All	44	44	0 44
M-006	Design Document	All	44	44	0 44
M-007	Status Report	All	44	44	0 44
M-008	Organize Repository	Marko Breic	45	45	0 45
M-009	Team Policies	Marko Breic	45	45	0 45
M-010	Share telephone number	All	45	45	0 45

Id	Milestone Description	Responsible Dept./Initials	Finished week		
			Plan	Forecast Week +/-	Actual
M-011	Modify Requirement Doc	Dzana Kujan	45	46	1 45
M-012	Modify Design Doc	Lorenzo Pagliari	45	46	1 45
M-013	Setup tools on PC	All	45	45	0 45
M-014	Change DB	Jorn Tillmanns	45	45	0 45
M-015	Implementation Parser	Jorn Tillmanns	45	45	0 45
M-016	Implementation DAO	Jorn Tillmanns	45	45	0 45
M-017	Start Implementation Math	Andrea Bottoli	45	46	1 45
M-018	Test Parser	Miraldi Fifo	46	47	0 46
M-019	Test Classes alpha prot.	Miraldi Fifo	46	47	0 46
M-020	Alpha prototype	All	46	48	2 46

Id	Milestone Description	Responsible Dept./Initials	Finished week		
			Plan	Forecast Week +/-	Actual
M-021	Requirements Gathering	Andrea Bottoli	47	47	0 47
M-022	Update Design Doc.	Andrea Bottoli	47	48	0 48
M-023	Update Requirem. Doc.	Dzana Kujan	47	48	0 48
M-024	Finalize Math Engine	Lorenzo Pagliari	48	49	1 48
M-025	Web Design	Miraldi Fifo	48	49	1 48
M-026	Status Report	All	49	49	0 48
M-027	User Login System	Jorn Tillmanns	49	50	1 48
M-028	Finalize Math Engine	Lorenzo Pagliari	49	50	0 49
M-029	Junit tests v1	Miraldi Fifo	49	50	0 49
M-030	Web Site Mockups	Nikola Radisavljevic	49	49	0 49

Id	Milestone Description	Responsible Dept./Initials	Finished week		
			Plan	Forecast Week +/-	Actual
M-031	Web Site Graphs	Dzana Kujan	49	50	0 49
M-032	Beta Prototype	All	50	51	0 50
M-033	Beta Prototype pres.	Lorenzo Pagliari	51	51	0 51
M-034	Technical documentation	Andrea Bottoli	51	51	0 51
M-035	Acceptance Test Plan	Miraldi Fifo	51	52	0 52
M-036	Test Report	Miraldi Fifo	01	02	1 52
M-037	Final Presentation	All	02	02	0 01
M-038	Final Documentation	All	02	03	1 01
M-039	Final Product	All	02	03	1 01
M-040	Final Questionnaire	All	02	03	1 01

Helsinki (FIN)



# Timeliness - milestones

Id	Milestone Description	Responsible Dept./Initials	Finished week			
			Plan	Forecast Week	Actual +/-	Actual
M-001	Project Plan & Vision	All	42	42	0	43
M-002	Requirements gathering	All	43	43	0	43
M-003	Requirements document	All	43	44	1	43
M-004	System Design	All	43	44	0	43
M-005	Requirement Document	All	44	44	0	44
M-006	Design Document	All	44	44	0	44
M-007	Status Report	All	44	44	0	44
M-008	Organize Repository	Marko Brcic	45	45	0	45
M-009	Team Policies	Marko Brcic	45	45	0	45
M-010	Share telephone number	All	45	45	0	45

Id	Milestone Description	Responsible Dept./Initials	Finished week			
			Plan	Forecast	Week +/-	Actual
			Week	+/-		
M-011	Modify Requirement Doc	Dzana Kujan	45	46	1	45
M-012	Modify Design Doc	Lorenzo Pagliari	45	46	1	45
M-013	Setup tools on PC	All	45	45	0	45
M-014	Change DB	Jorn Tillmanns	45	45	0	45
M-015	Implementation Parser	Jorn Tillmanns	45	45	0	45
M-016	Implementation DAO	Jorn Tillmanns	45	45	0	45
M-017	Start Implementation Math	Andrea Bottoli	45	46	1	45
M-018	Test Parser	Miraldi Fifo	46	47	0	46
M-019	Test Classes alpha prot.	Miraldi Fifo	46	47	0	46
M-020	Alpha prototype	All	46	48	2	46

Id	Milestone Description	Responsible Dept./Initials	Finished week			
			Plan	Forecast		Actual
				Week	+/-	
M-021	Requirements Gathering	Andrea Bottoli	47	47	0	47
M-022	Update Design Doc.	Andrea Bottoli	47	48	0	48
M-023	Update Requirem. Doc.	Dzana Kujan	47	48	0	48
M-024	Finalize Math Engine	Lorenzo Pagliari	48	49	1	48
M-025	Web Design	Miraldi Fifo	48	49	1	48
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M-027	UserLoginSystem	Jorn Tillmanns	49	50	1	48
M-028	Finalize Math Engine	Lorenzo Pagliari	49	50	0	49
M-029	Junit tests v1	Miraldi Fifo	49	50	0	49
M-030	Web Site Mockups	Nikola Radisavljevic	49	49	0	49

Helsinki (FIN)

Id	Milestone Description	Responsible Dept./Initials	Finished week			
			Plan	Forecast Week	+/-	Actual
M-031	Web Site Graphs	Dzana Kujan	49	50	0	49
M-032	Beta Prototype	All	50	51	0	50
M-033	Beta Prototype pres.	Lorenzo Pagliari	51	51	0	51
M-034	Technical documentation	Andrea Bottoli	51	51	0	51
M-035	Acceptance Test Plan	Miraldi Fifo	51	52	0	52
M-036	Test Report	Miraldi Fifo	01	02	1	52
M-037	Final Presentation	All	02	02	0	01
M-038	Final Documentation	All	02	03	1	01
M-039	Final Product	All	02	03	1	01
M-040	Final Questionnaire	All	02	03	1	01



# Project work summary

## Timeliness - deliverables

- Project Plan (v1.3)
- Design Description (v1.7)
- Requirements specification (v1.4)
- Project Reports (v1.0)
- Test specification (v1.0)
- Acceptance Test (v1.0)
- Test report (v1.0)
- Final Documentation 

Stockholm (SWE)



## Berlin \*



## \* Prague



# Project work summary

Github - info

URL : <https://github.com/andrea-bottoli/DSD>

Berlin (GER)



# Project work summary

This repository  Explore Gist Blog Help

brcinho + X ↗

PUBLIC  [andrea-bottoli / DSD](#)

Distributed Software Development

847 commits 1 branch 0 releases 8 contributors

branch: master / [DSD](#)

design document updated class diagrams and user interfaces

brcinho authored an hour ago latest commit [11de8a8e3a](#)

Code	class diagrams updated	an hour ago
Documentation	design document updated class diagrams and user interfaces	an hour ago
Other	fix	5 days ago
.gitattributes	First set up	3 months ago
.gitignore	Database-Chapter updated	a month ago
README.md	Create README.md	3 months ago

[Clone in Desktop](#) [Download ZIP](#)

 README.md

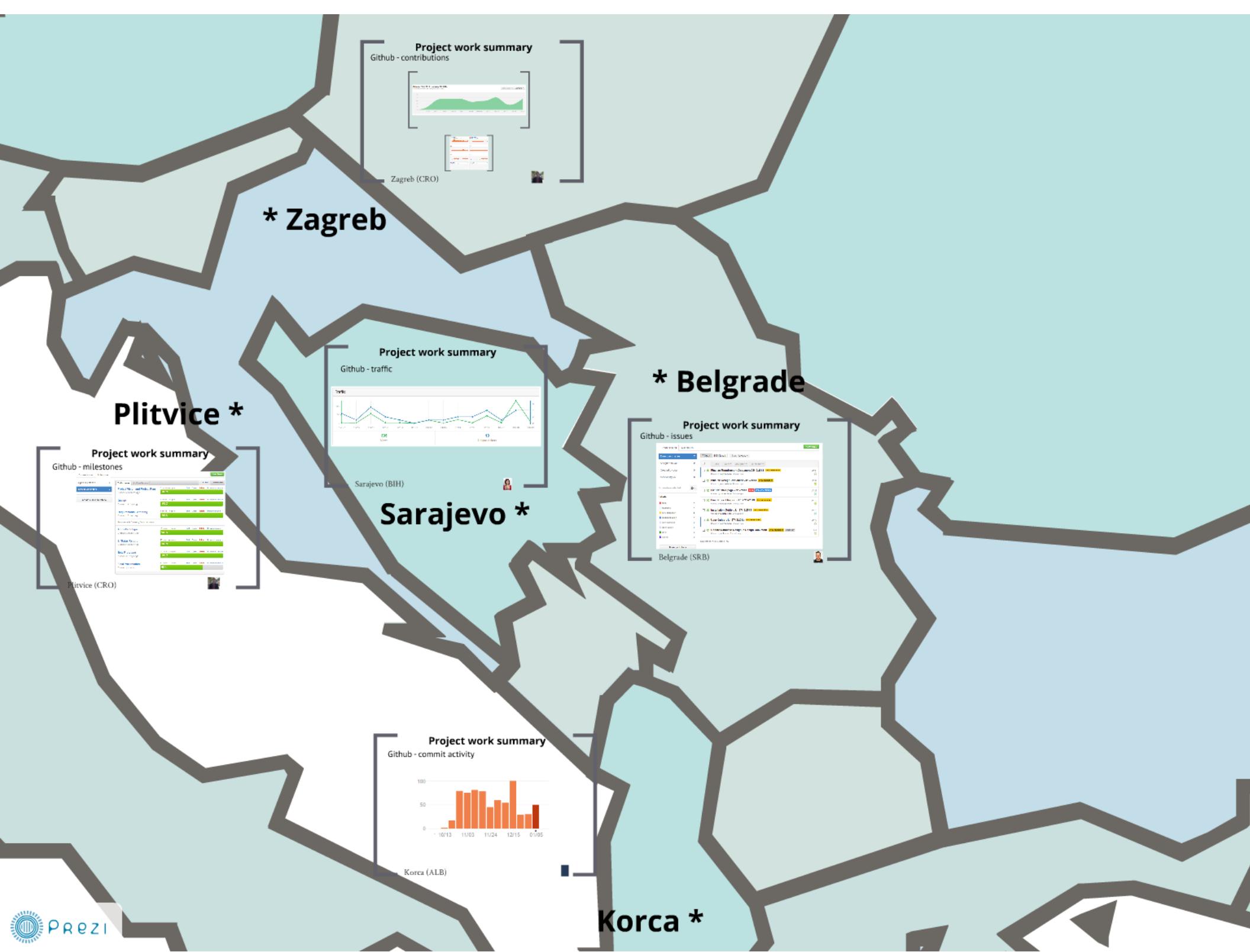
## DSD

Distributed Software Development

This is the repository of the DSD project. It is intended to share the code used to develop the Real-Time Bridge Monitoring. The project is in collaboration with PoliMi, FER and MDH university.

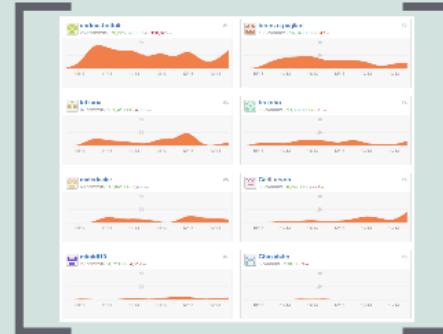


Prague (CZE)



# Project work summary

## Github - contributions



Zagreb (CRO)

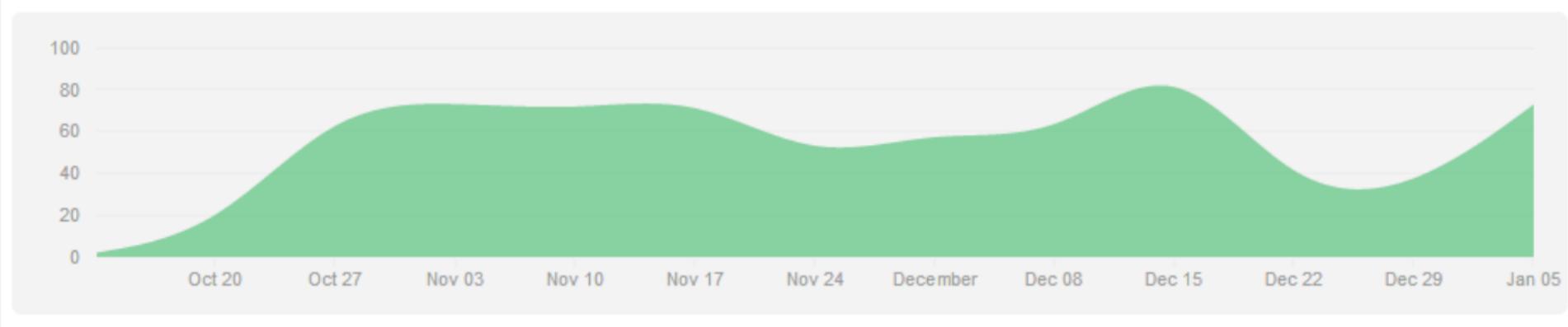


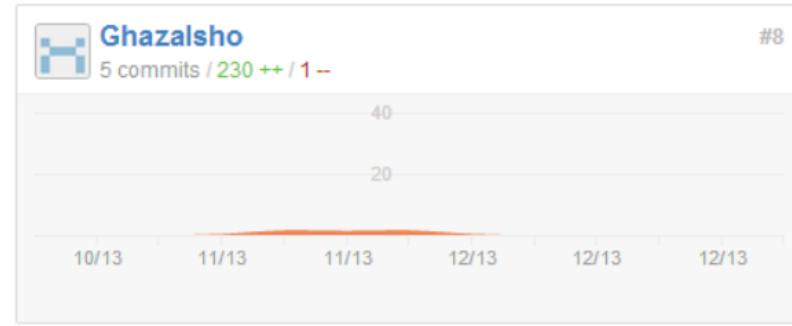
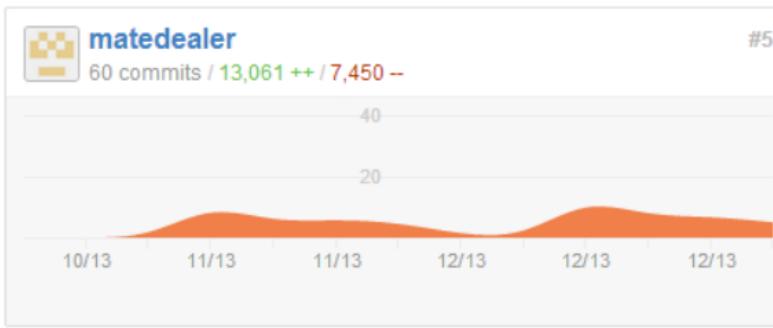
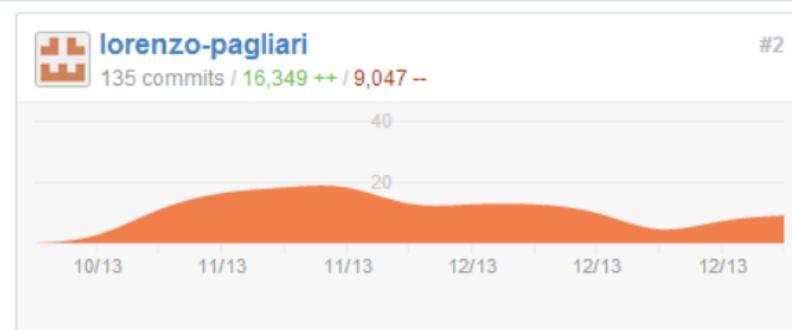
# Contributions

October 13th 2013 – January 5th 2014

Commits to master, excluding merge commits

Contribution Type: **Commits** ▾





# Project work summary

## Github - issues

Browse Issues      Milestones      New Issue

**Everyone's Issues** 7      7 Open 186 Closed      Sort: Newest ▾

Assigned to you 2      Created by you 0      Mentioning you 3

No milestone selected

**Labels**

Label	Count
bugs	1
database	1
documentation	6
implementation	1
administration	0
organization	0
other	0
testing	0

Close      Label ▾      Assignee ▾      Milestone ▾

<input type="checkbox"/> ⓘ Finalize Requirement Document 28/12/2013 <span style="background-color: yellow;">documentation</span>	#193
Opened by andrea-bottoli 20 days ago	
<input type="checkbox"/> ⓘ Finalize Design Document 28/12/2013 <span style="background-color: yellow;">documentation</span>	#192
Opened by andrea-bottoli 20 days ago	
<input type="checkbox"/> ⓘ Fix Statistics page 27/12/2013 <span style="background-color: red;">bugs</span> <span style="background-color: blue;">implementation</span>	#187
Opened by andrea-bottoli 20 days ago	
<input type="checkbox"/> ⓘ Final Project Report v1.1 27/12/2013 <span style="background-color: yellow;">documentation</span>	#179
Opened by andrea-bottoli 20 days ago	
<input type="checkbox"/> ⓘ Installation Guide v1.1 27/12/2013 <span style="background-color: yellow;">documentation</span>	#178
Opened by andrea-bottoli 20 days ago	
<input type="checkbox"/> ⓘ User Guide v1.1 27/12/2013 <span style="background-color: yellow;">documentation</span>	#177
Opened by andrea-bottoli 20 days ago	
<input type="checkbox"/> ⓘ Update Database Design in Design Document <span style="background-color: yellow;">documentation</span> <span style="background-color: lightgray;">database</span>	#49
Opened by matedealer 2 months ago	

Keyboard shortcuts available

Manage Labels

Belgrade (SRB)



# Project work summary

Github - commit activity

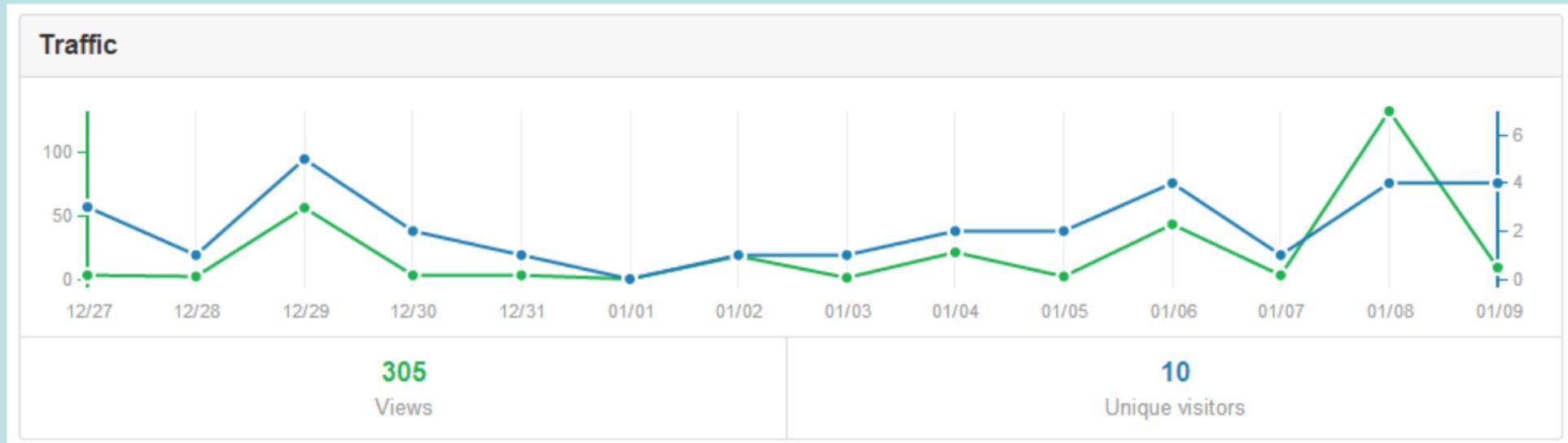


Korca (ALB)



# Project work summary

## Github - traffic

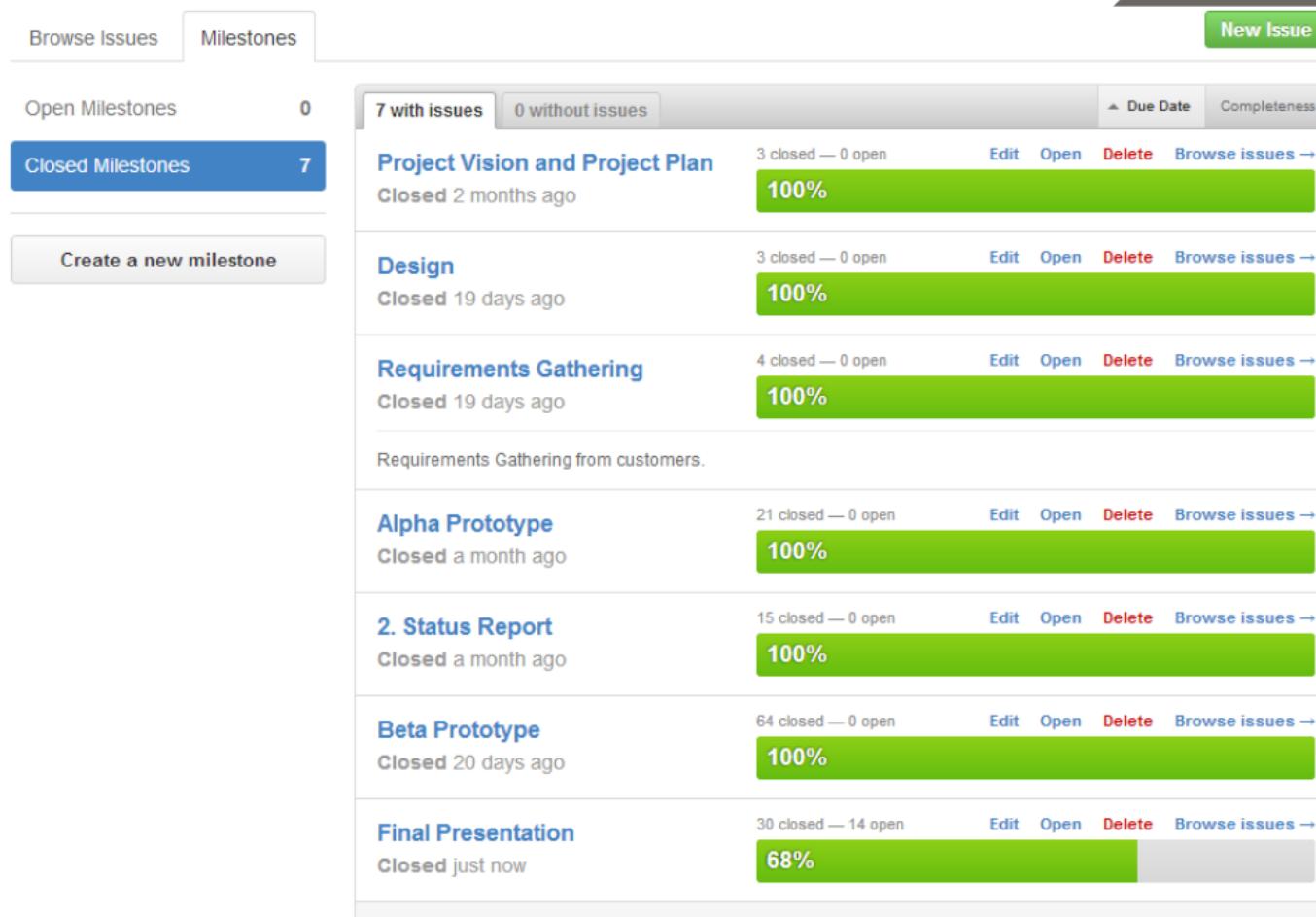


Sarajevo (BIH)



# Project work summary

## Github - milestones



Plitvice (CRO)

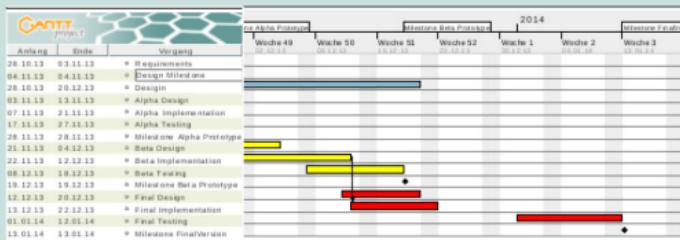


# Milano \*

## Project work summary

Project plan fulfillment

things left : additional testing



Milano (IT)

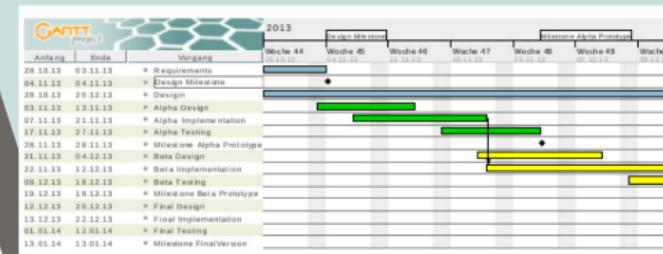


# \* Mantova

## Project work summary

Project plan fulfillment

things left : finalize documentation



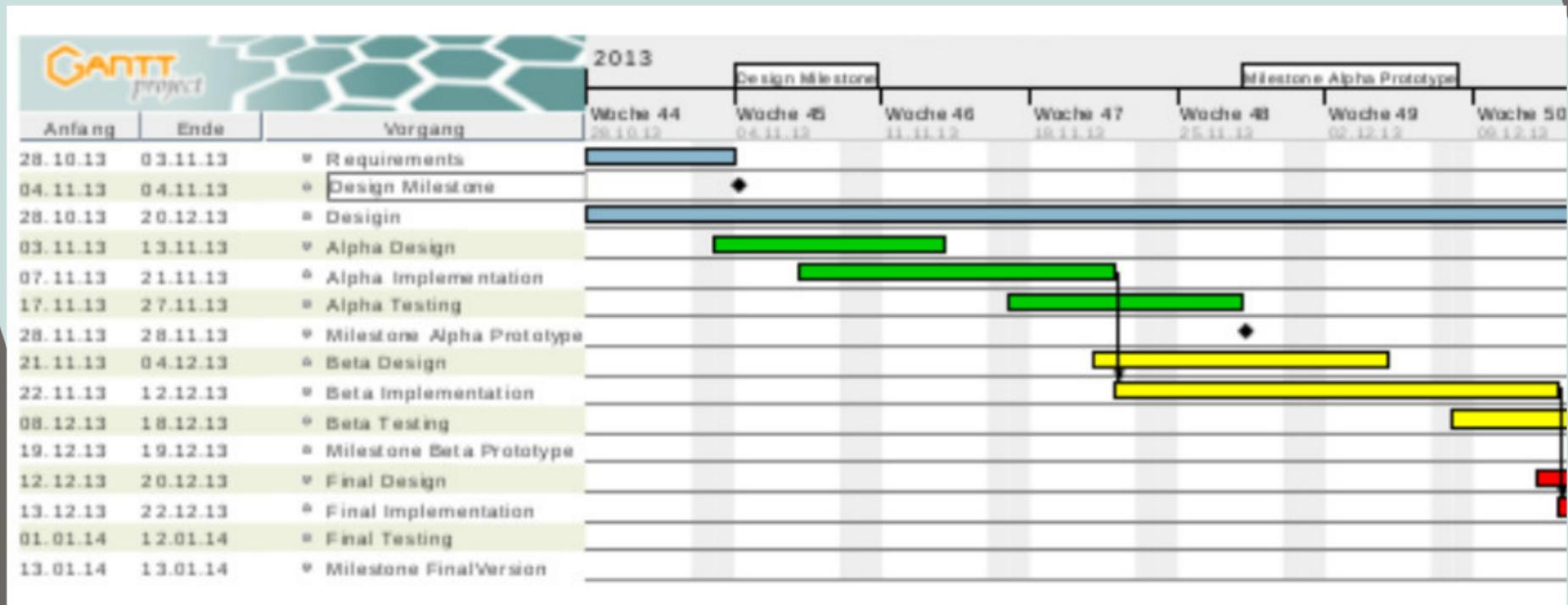
Mantova (IT)



# Project work summary

Project plan fulfillment

things left : finalize documentation



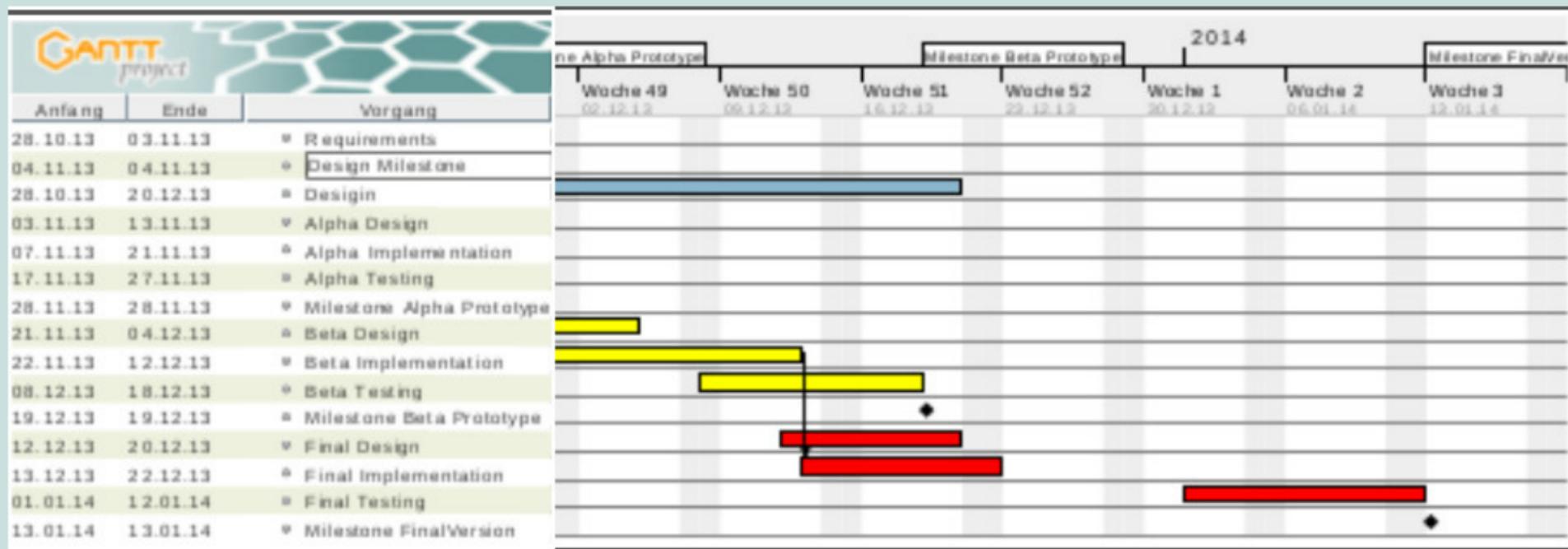
Mantova (IT)



# Project work summary

Project plan fulfillment

things left : additional testing



Milano (IT)



# Distributed software development

Beauty of the idea



Work from anywhere you want!

# Distributed project experience

Communication and flow of information



Hangouts - group calls



Skype - group chat



Mobile - emergency



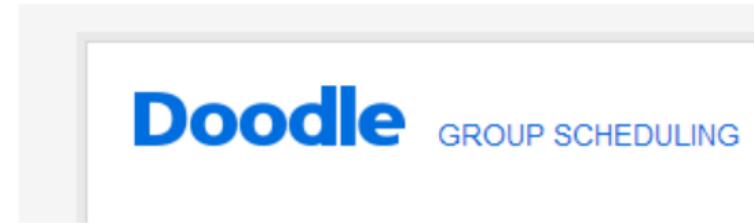
Airplane - final presentation :-)

# Distributed project experience

## Meetings



**Google**  
Calendar



- Group meetings**
- every Monday and Thursday at 19:00 group video call
  - chat used everyday by each team member
  - additional video calls when necessary

- Project leader and team leader meetings**
- about every day
  - formally every Tuesday

- Customer meetings**
- one every week
  - first one with both customers
  - The others with Ing. Crotti

- Supervisor meetings**
- one every week
  - inform about project status, group status and managing
  - report about customer meetings
  - gather advices, suggestions and proposals
  - report problems

# Group meetings

- every Monday and Thursday at 19:00 group video call
- chat used everyday by each team member
- additional video calls when necessary

# **Project leader and team leader meetings**

- about every day
- formally every Tuesday

# Customer meetings

- one every week
- first one with both customers
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# **Supervisor meetings**

- one every week
- inform about project status, group status and managing
- report about customer meetings
- gather advices, suggestions and proposals
- report problems

# Distributed project experience

## Integration of components

- one branch was enough for our project which was not that big and didn't have such an intensive workload
- in projects which are bigger, it is good practice to have more branches for development and additional branches for testing

# Distributed project experience

## Division of work

- good division of work is very important!
- we divided our work by layers in our system
- it would be better if we divided the work vertically, for each member to do all the layers but on separate components of system

# Distributed project experience

Main disadvantages of DSD

Timezones!

Cannot mostly be bypassed!

# Distributed project experience

Main disadvantages of DSD

Communication and flow of information!

Can mostly be bypassed!

# Distributed project experience

Main advantages of DSD

Expertize

Better and greater choice!

# Distributed project experience

Main advantages of DSD

Tools for work

Only good internet connection and laptop!

# Distributed project experience

Main advantages of DSD

Mobility

We can always stay on the warmer hemisphere!

# Requirements

- Local and Remote interface using the web
- Different views depending on the role of the user
- Math Engine that does all the structural calculations
- A DB that contains all the data in a structured way
- Real-Time Monitoring of the status of the bridge

- Conform on
  - EU 305/2011
  - NTC 08
- MN Domain
- Send Alarm (e-mail) to the engineer in charge to manage the possible crisis
- Possibility to change some parameter to change the structural model
- Possibility to add/edit/delete users

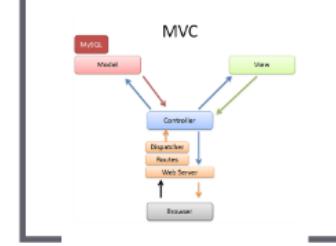
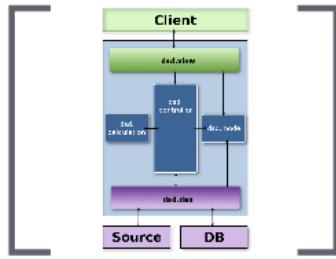
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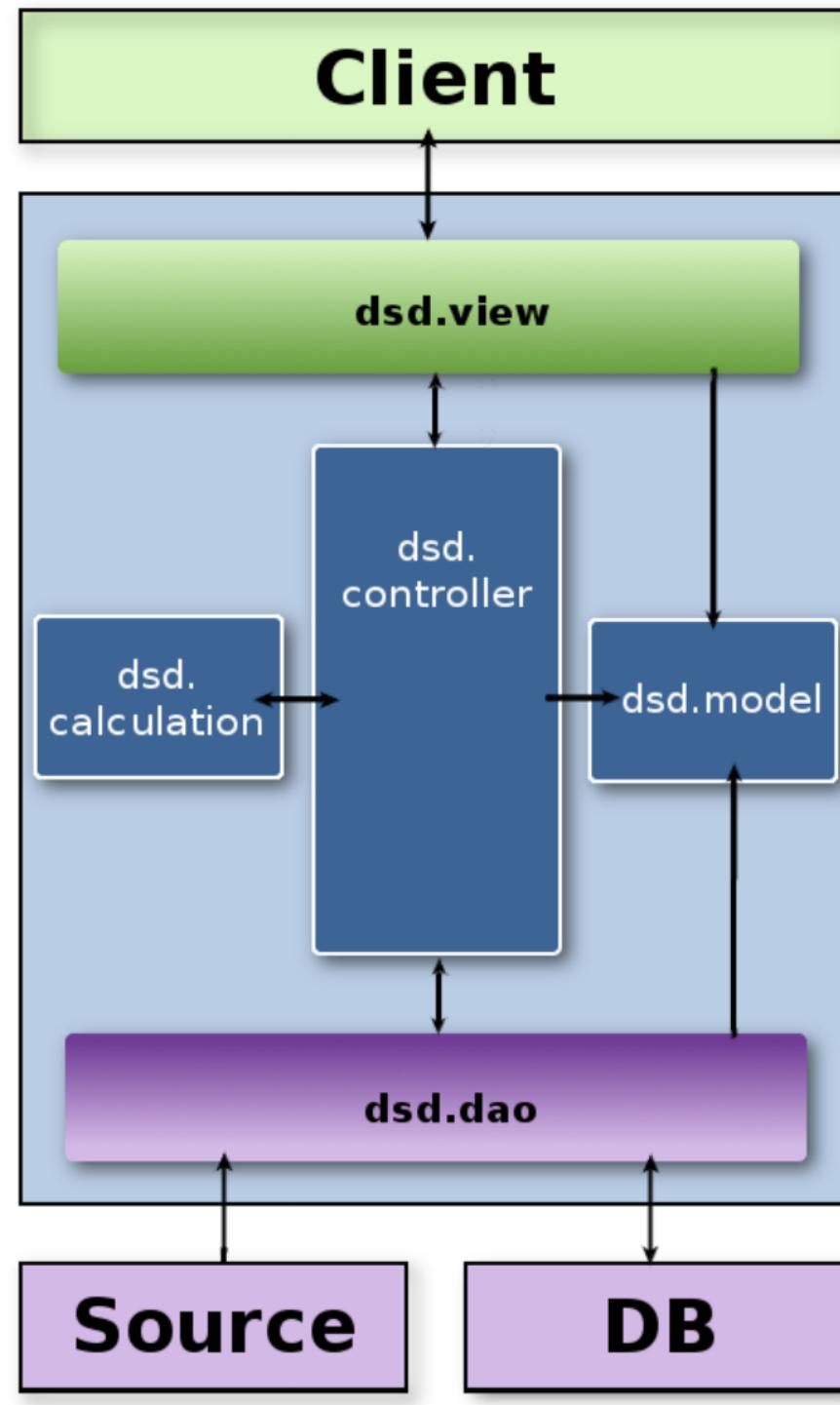


- Conform on
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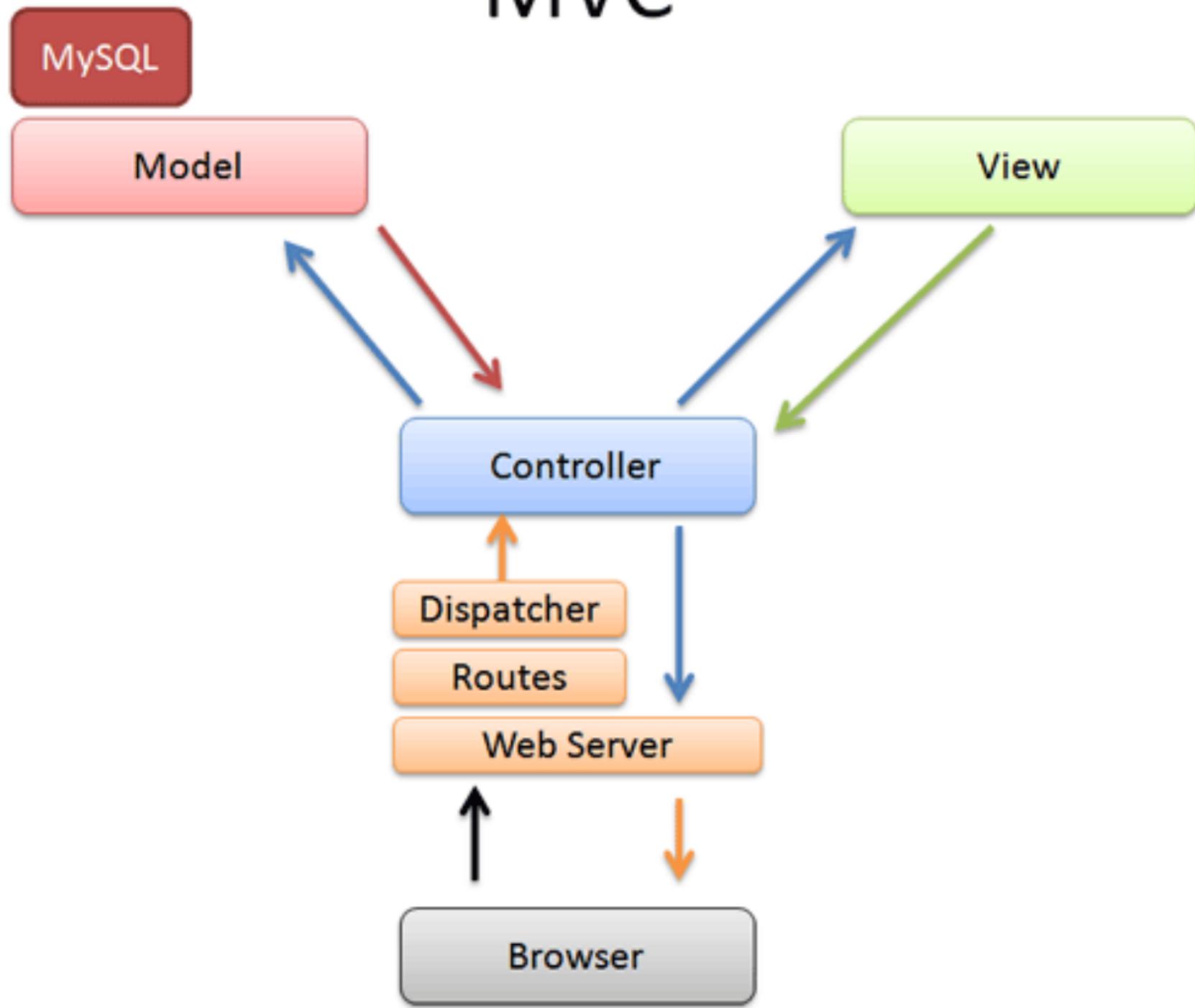


# Design

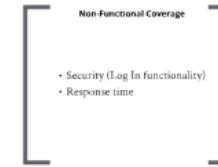
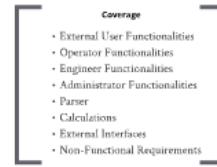
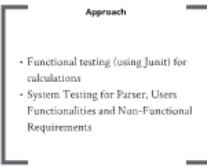




# MVC



# Verification & Validation



# Approach

- Functional testing (using Junit) for calculations
- System Testing for Parser, Users Functionalities and Non-Functional Requirements

# Coverage

- External User Functionalities
- Operator Functionalities
- Engineer Functionalities
- Administrator Functionalities
- Parser
- Calculations
- External Interfaces
- Non-Functional Requirements

# Non-Functional Coverage

- Security (Log In functionality)
- Response time

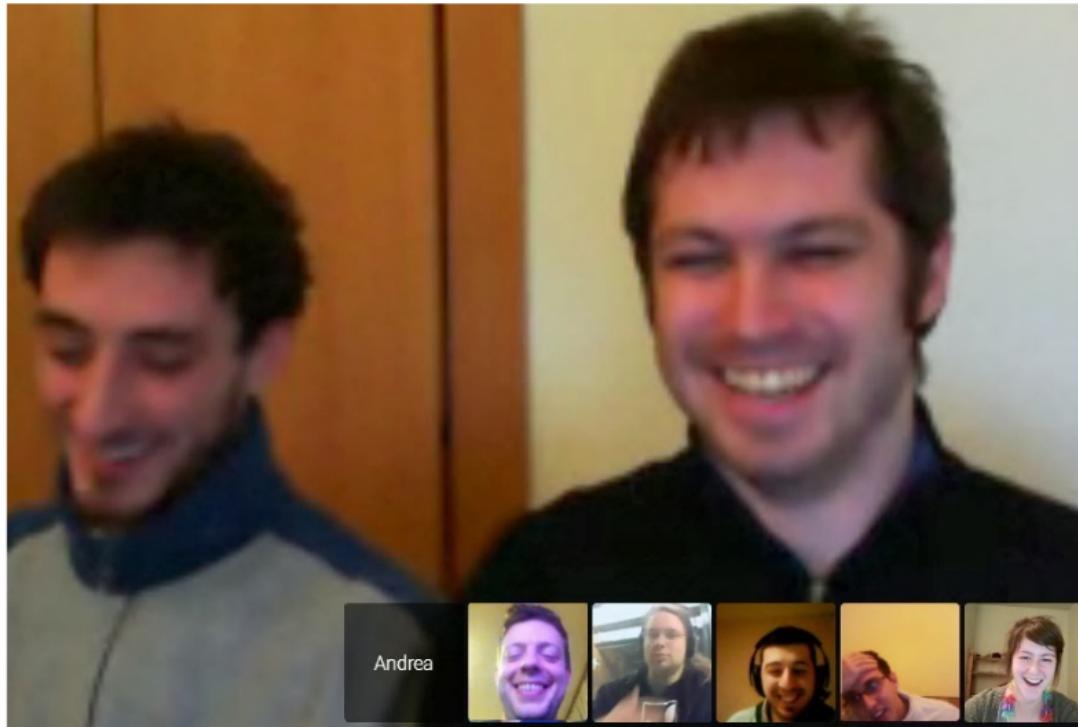
# Demo

<http://161.53.67.134/BridgeMonitoring/>

# Question time



Thank you for your attention  
and Good Luck in the Future!



# DSD Course

## Real-Time Bridge Monitoring

