

Distributed Software Development

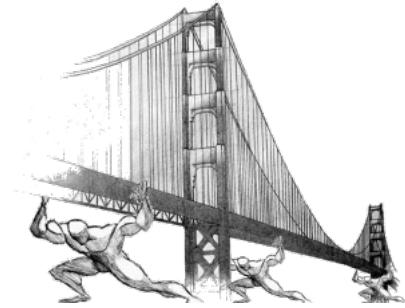
The Development Group



Real-Time Bridge Monitoring Beta Prototype

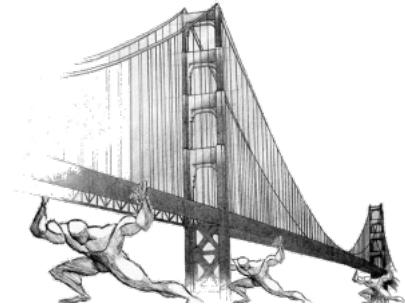


Overview



- Team Organization
- Project Schedule
- Documentation
- Verification & Validation
- Effort

Overview



- Alpha Prototype
- Beta Prototype
- Integration
- New Functionalities
- Demo & Screenshots

Team Organization



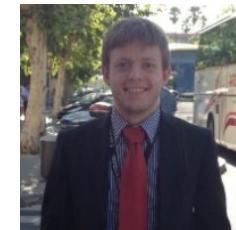
- The Development Group



Andrea Bottoli (PoliMi)



Lorenzo Pagliari (PoliMi)



Marko Brčić (FER)



Dzana Kujan (MDH) Jörn Tillmanns (MDH)
(MDH)



Miraldi Fifo (MDH)



Nikola Radisavljevic

Team Organization



- Roles

Name	Initials	Responsibility (roles)
Andrea Bottoli	AB	Project Manager
Dzana Kujan	DK	Team Leader
Marco Brčić	MB	Documentation Manager
Lorenzo Pagliari	LP	Design Manager
Miraldi Fifo	MF	Testing Manager
Jörn Tillmanns	JT	Database Manager
Nikola Radisavljevic	NR	Integration Manager

Team Organization



- Management
 - Managing Meeting
 - Dzana & Andrea
 - Meeting Agendas
 - Before each meeting
 - Meeting Summaries
 - Customers, Supervisors, Group ...



Project Schedule

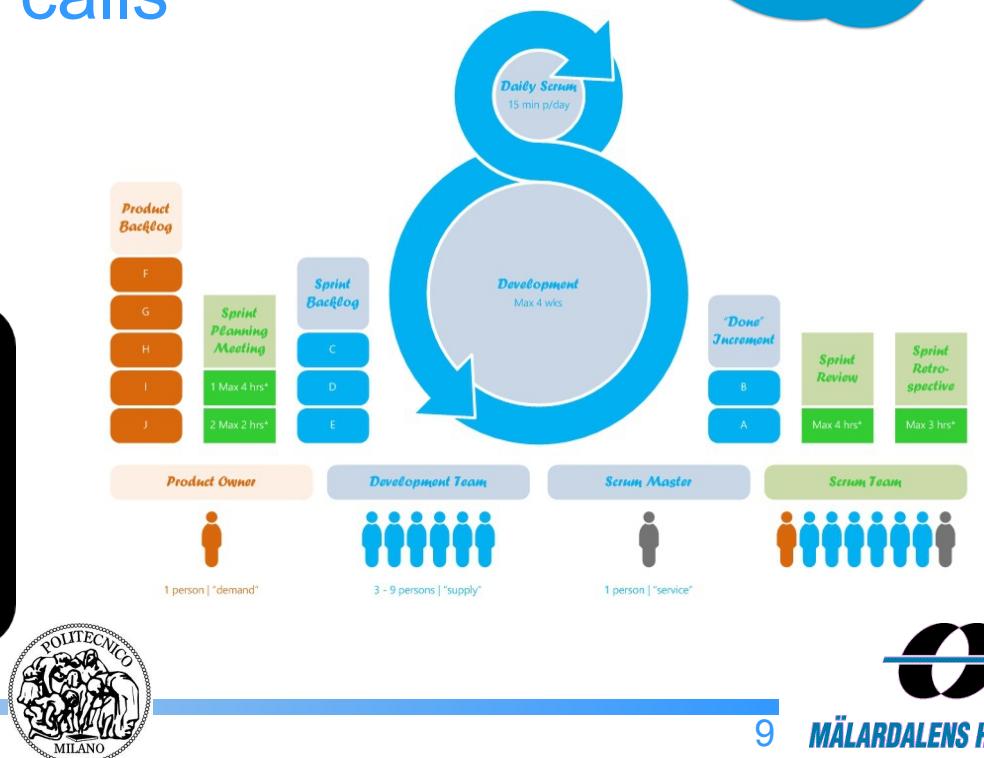
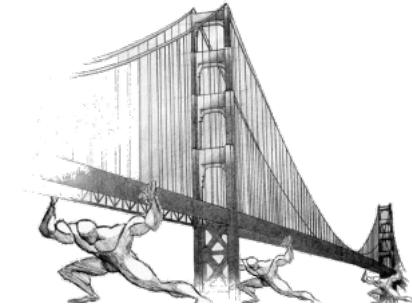


- Project Plan and Current State
 - Where we are and what we have to do

Aufgabename	Nov 24	Dez 1	Dez 8	Dez 15	Dez 22
	S M D M D F S S M D M D F S S M D M D F S S M D M D F S S M D M D F S	S M D M D F S S M D M D F S S M D M D F S S M D M D F S	S M D M D F S S M D M D F S S M D M D F S S M D M D F S	S M D M D F S S M D M D F S S M D M D F S S M D M D F S	S M D M D F S S M D M D F S S M D M D F S S M D M D F S
Requirements Analysis					
System Design					
Programm Design: Alpha_Prototype					
Implementation: Alpha_Prototype					
Testing: Alpha_Prototype					
Programm Design: Beta_Prototype					
Implementation: Beta_Prototype					
Testing: Beta_Prototype					
Programm Design: Final_Version					
Implementation: Final_Version					
Testing: Final_Version					

Project Schedule

- Development Process
 - SCRUM
 - Every day chat meetings
 - Some hangouts calls
 - Lot of commits



Documentation



- Versioning
 - Requirements Documentation v1.3
 - Design Documentation v1.5
 - Technical Documentation v1.1
- New Documents
 - User Guide v1.0
 - Installation Guide v1.0
 - Acceptance Test Documentation v1.0

Verification & Validation



- Meetings with customers
- Check on requirements and functionalities
- An acceptance test document
- Local and Remote Tests
- JUnit test classes

Effort



- Hours spent

Member	W42	W43	W44	W45	W46	W47	W48	W49	W50	Total
Andrea Bottoli	11	40	50	45	47	68	40	41	14	356
Lorenzo Pagliari	10	37	53	51	46	57	37	51	43	385
Dzana Kujan	9	36	43	36	27	36	27	49	24	287
Marko Brcic	11	40	54	60	28	36	26	15	15	285
Jorn Tillmanns	9	37	51	43	20	13	39	16	15	243
Nikola Radisavljevic	9	37	45	36	26	35	26	46	25	285
Miraldi Fifo	9	38	45	35	16	28	14	18	18	221
Ghazaleh Shojaee	-	-	53	13	32	26	-	-	-	124
Total	68	265	394	319	242	299	209	236	154	2186

Effort



- Important Events
 - Changes in Design
 - Changes in Requirements
 - Comply with NTC 08 and EU 305/2011
 - New Technical Documentation
 - Fly to Sweden ;)



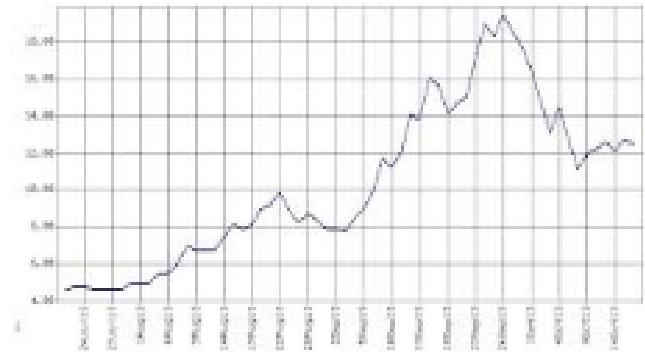
Alpha Prototype



Files

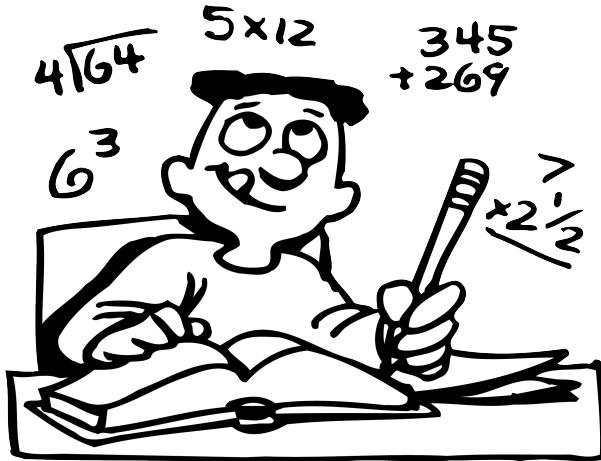
Database

Servlet
→
JSP



Presentation

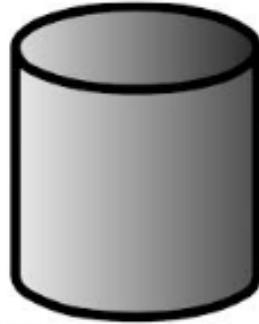
Beta Prototype



Math Engine



Parser



Files

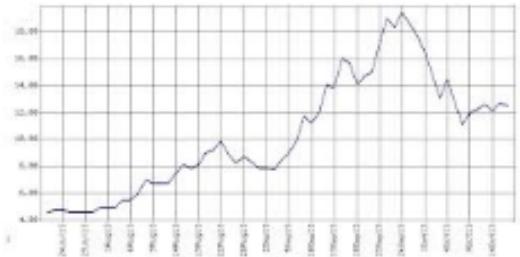
Database

Authentication System



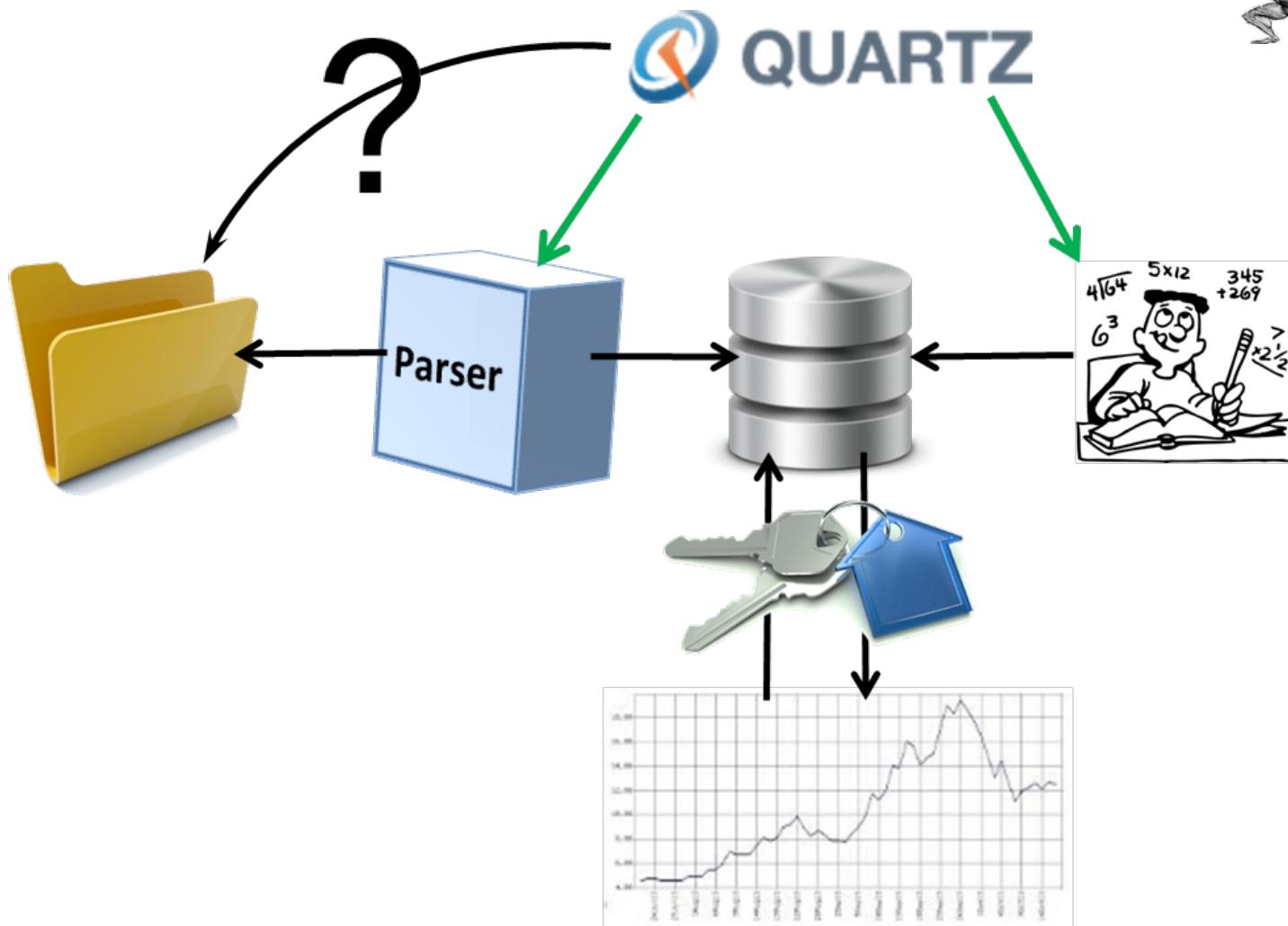
Servlet

JSP

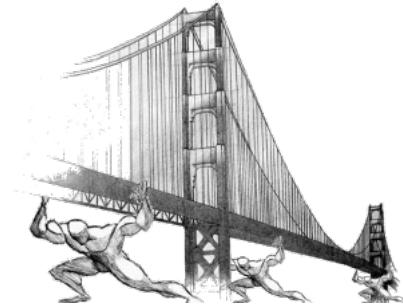


Presentation

Integration



New Functionalities



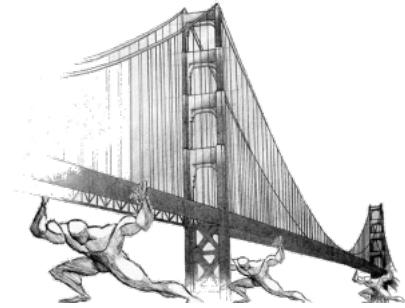
- **Math Engine**
 - Library for making
 - Structural calculations
 - Statistical calculations
 - Algebraic calculations
 - Used by the Calculation Controller
 - Used to produce the Safety Factor (CS)

New Functionalities



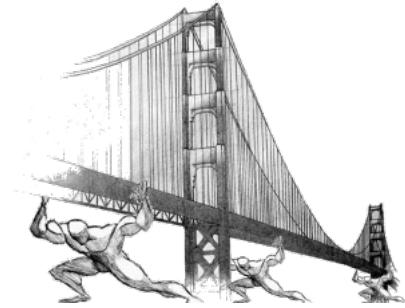
- Calculation Controller
 - Controls the calculations logic
 - Manages calculations
 - A lot of threads in parallel
 - Uses the Math Engine
 - Stores the results in the DB

New Functionalities



- Quartz scheduler
 - Schedules
 - The loading of the system settings
 - The checking for new data
 - The parsing of new data
 - The calculations
 - Uses Job Classes and Servlets
 - Interfacing with Tomcat

New Functionalities

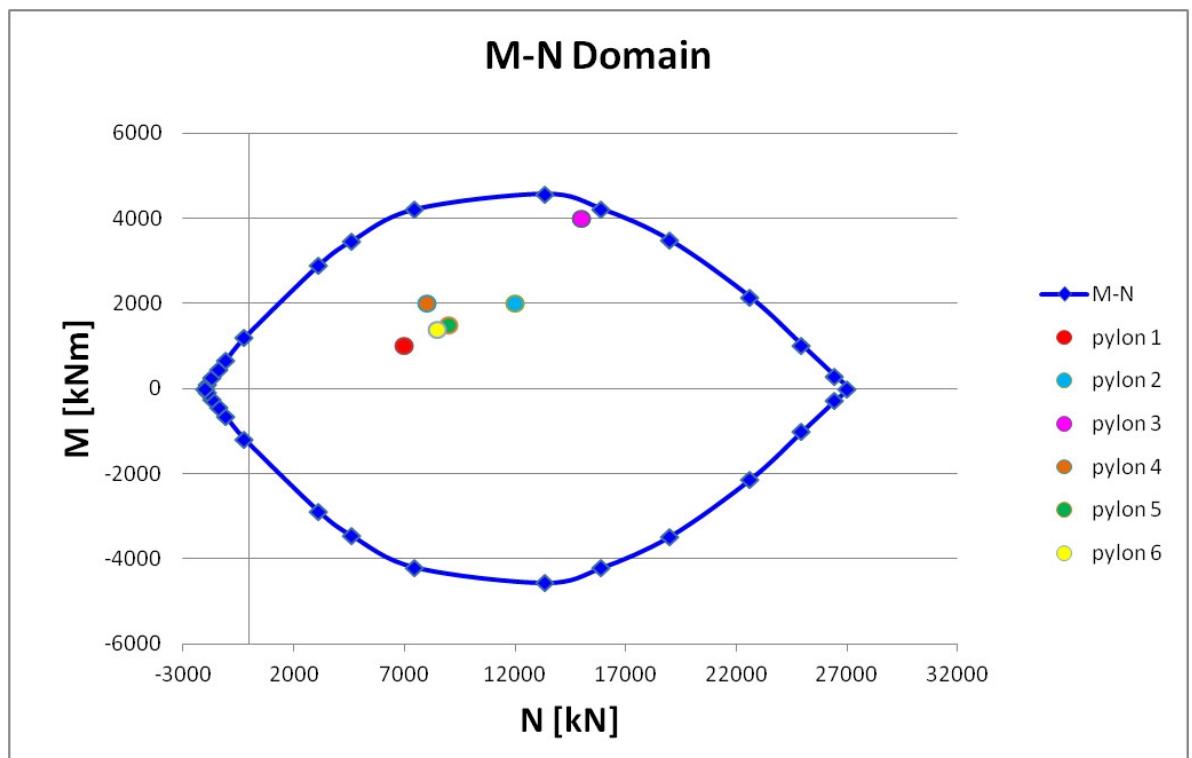
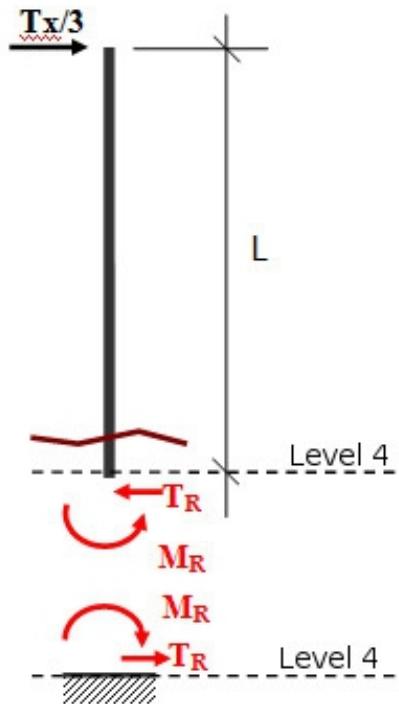


- Authentication System
 - Allowed a first authentication
 - Permits to see different pages
 - Permits to see different contents & data
 - Works with Tomcat

New Functionalities



- M-N Domain



Demo

- Localhost
- VM:
<http://161.53.67.134/BridgeMonitoring/>



Screenshots



```
81         ...
82         pool.submit(new CalculationsControllerTask(this, eCalculatedDataType.OneHour ,this.last1hourTi
83 //          //1day calculation task
84         pool.submit(new CalculationsControllerTask(this, eCalculatedDataType.OneDay ,this.last1dayTime
85
86         pool.shutdown();
87
88         exit = pool.awaitTermination(1, TimeUnit.HOURS);
89     }
90     while(!exit && trigger<3);
91 } catch (InterruptedException e) {
92     e.printStackTrace();
93 }
94
95 }
```

Servers Console

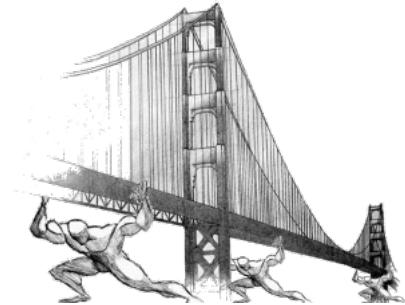
Tomcat v6.0 Server at localhost [Apache Tomcat] C:\Users\Andrea\Documents\eclipse\jre\bin\javaw.exe (19/dic/2013 03:33:23)
informazioni: quartzinitializer: Scnequier has been started...
dic 19, 2013 3:33:26 AM org.apache.catalina.core.ApplicationContext log
Informazioni: QuartzInitializer: Storing the Quartz Scheduler Factory in the servlet context at key: org.quartz.impl
QUARTZ JOB ONLY ON START UP -- LOADING PATH FROM CONFIG FILE
dic 19, 2013 3:33:26 AM org.apache.coyote.http11.Http11Protocol start
Informazioni: Starting Coyote HTTP/1.1 on http-8080
QUARTZ JOB ONLY ON START UP -- LOADING FLAGS FROM DB
QUARTZ JOB EVERY 60 seconds
There are other more priority jobs with me, so leaving
dic 19, 2013 3:33:26 AM org.apache.jk.common.ChannelSocket init
Informazioni: JK: ajp13 listening on /0.0.0.0:8009
dic 19, 2013 3:33:26 AM org.apache.jk.server.JkMain start
Informazioni: Jk running ID=0 time=0/12 config=null
dic 19, 2013 3:33:26 AM org.apache.catalina.startup.Catalina start
Informazioni: Server startup in 1780 ms

Screenshots



```
INFO: [Tomek] 19/12/2013 03:33:26,012 CONSOLE[main]
dic 19, 2013 3:33:26 AM org.apache.catalina.startup.Catalina start
Informazioni: Server startup in 1780 ms
QUARTZ JOB EVERY 60 seconds
-> It's checking for new data
-> It's parsing
-> It starts the calculations
QUARTZ JOB EVERY 60 seconds
-> It's checking for new data
-> It's parsing
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QUARTZ JOB EVERY 60 seconds
-> It's checking for new data
-> It's parsing
-> It starts the calculations
```

Screenshots



Local instance MySQL56 remote db

File Edit View Query Database Server Tools Scripting Help

Query 1 delete select

```

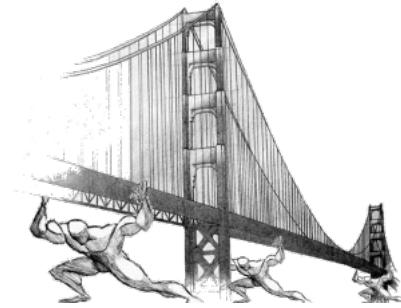
1 • select * from sensor_data_10_min;
2 • select * from sensor_data_1_day;
3 • select * from sensor_data_1_hour;
4 • select * from worst_case_00;
5 • select * from worst_case_01;
6 • select * from worst_case_10;
7 • select * from worst_case_11;
8
9 • select count(ID) from sensor_data_10_min;
10 • select count(ID) from sensor_data_1_hour;
11 • select count(ID) from sensor_data_1_day;
12 • select count(ID) from sensor_data_raw;

```

Result Set Filter: Export/Import: Wrap Cell Content:

wind_speed	wind_direction	wind_speed_max	wind_direction_max	hydrometer	hydrometer_variance	sonar	sonar_variance	sonar_perc_correct	sonar_perc_wrong	sonar_perc_outOfWater	sonar_perc_error	sonar_perc_uncertain	safety_factor_00	safety_factor_01	safety_factor_10	safety_factor_11
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1.51991	270.334	3.24375	235.17	17.2081	0.00100312	10.1414	0.00020902	0.996226	0	0	0.00377358	0	7.90664	7.71369	4.87862	4.84859
1.77468	284.117	2.98125	272.453	17.2066	0.00112237	10.1439	0.00072762	0.928333	0.0716667	0	0	0	7.90634	7.71347	4.87875	4.84873
1.57328	264.705	3.97875	247.68	17.2007	0.00124479	10.1363	0.00136635	1	0	0	0	0	7.89896	7.70664	4.8786	4.84867
1.43135	255.041	2.625	259.47	17.1985	0.00129949	10.1406	0.00032393	0.926667	0.07333333	0	0	0	7.90972	7.71718	4.87881	4.84891
1.47386	264.117	2.83875	282.06	17.1937	0.00106639	10.1586	0.000943008	1	0	0	0	0	7.91177	7.71938	4.87959	4.84974
1.24035	272.05	3.09	286.448	17.1889	0.00119487	10.165	0.00122105	0.928333	0.0716667	0	0	0	7.91208	7.71992	4.87994	4.85014
0.732168	269.11	2.69625	233.775	17.1876	0.00137014	10.1782	0.00129888	1	0	0	0	0	7.91714	7.72486	4.88046	4.85067
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1.30164	270.986	3.06375	288.18	17.1789	0.00116821	10.1464	0.000443076	0.912176	0.0858283	0	0.00199601	0	7.91228	7.72067	4.87948	4.84982
1.61674	279.962	2.79375	243.585	17.1769	0.00163999	10.1462	0.000597848	1	0	0	0	0	7.91382	7.72227	4.87952	4.84988
1.00018	268.605	2.53125	289.867	17.1784	0.00161628	10.1419	0.000222118	0.928333	0.0716667	0	0	0	7.91527	7.72361	4.87932	4.84967
1.26834	269.717	2.325	280.52	17.1713	0.00146527	10.144	0.000479093	1	0	0	0	0	7.91779	7.72641	4.87957	4.85001
1.24137	266.51	2.31	240.66	17.1669	0.00154435	10.1598	0.00144724	0.926667	0.07333333	0	0	0	7.91988	7.72864	4.88025	4.85074
1.08994	251.299	3.1275	185.04	17.1698	0.0013729	10.1612	0.00049797	1	0	0	0	0	7.92489	7.73334	4.88024	4.85069
1.04739	255.643	2.35125	271.35	17.1669	0.0013562	10.1538	0.000255083	0.928333	0.0716667	0	0	0	7.91806	7.72688	4.88003	4.85052
1.14224	269.811	3.16125	206.81	17.1622	0.00168975	10.1514	0.000616059	1	0	0	0	0	7.91866	7.72777	4.88018	4.85056

Screenshots



Local instance MySQL56 x remote db x

File Edit View Query Database Server Tools Scripting Help

Query 1 delete select x

```

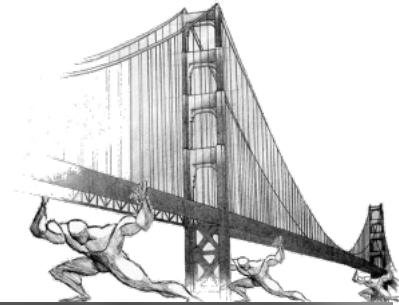
1 • select * from sensor_data_10_min;
2 • select * from sensor_data_1_day;
3 • select * from sensor_data_1_hour;
4 • select * from worst_case_00;
5 • select * from worst_case_01;
6 • select * from worst_case_10;
7 • select * from worst_case_11;
8
9 • select count(ID) from sensor_data_10_min;
10 • select count(ID) from sensor_data_1_hour;
11 • select count(ID) from sensor_data_1_day;
12 • select count(ID) from sensor_data_raw;

```

Result Set Filter: Export/Import Wrap Cell Content

ID	wind_speed	wind_direction	wind_speed_max	wind_direction_max	hydrometer	hydrometer_variance	sonar	sonar_variance	sonar_perc_correct	sonar_perc_wrong	sonar_perc_outOfWater	sonar_perc_error	sonar_perc_uncertain	safety_factor_00	safety_factor_01	safety_factor_10	safety_factor_11
19	1.74857	280.256	4.98375	202.185	16.8965	0.00133378	10.0963	0.000341945	0.963889	0.0361111	0	0	0	7.95662	7.7786	4.88398	4.85786
20	1.74034	281.064	4.47	302.355	16.8721	0.00152011	10.0918	0.000229113	0.963889	0.0361111	0	0	0	7.95143	7.77484	4.88434	4.85852
21	2.00028	281.521	4.77375	305.46	16.847	0.00144542	10.0993	0.000258351	0.963889	0.0361111	0	0	0	7.95567	7.78026	4.88517	4.85965
22	2.24103	273.467	4.76625	218.678	16.8212	0.00154669	10.0778	0.000365005	0.964167	0.0358333	0	0	0	7.95975	7.78562	4.88493	4.85973
23	1.90989	279.787	5.115	262.71	16.7949	0.0015951	10.0717	0.000399146	0.963889	0.0361111	0	0	0	7.94411	7.7718	4.88527	4.86038
24	2.12349	290.454	5.0475	208.485	16.7686	0.0013392	10.0679	0.000324902	0.963056	0.0369444	0	0	0	7.97137	7.7979	4.88569	4.86112
25	1.98799	280.256	4.455	271.642	16.7423	0.00141728	10.0746	0.000466152	0.963889	0.0361111	0	0	0	7.96166	7.79162	4.8865	4.86224
26	1.10167	244.383	4.74	270.203	16.7174	0.00125212	10.0823	0.000565866	0.963333	0.0366667	0	0	0	7.96302	7.79423	4.88732	4.86334
27	1.46077	284.413	3.6	216.158	16.6941	0.00114973	10.068	0.000257835	0.968611	0.0313889	0	0	0	7.98668	7.8185	4.88728	4.86358
28	1.54324	271.62	4.4625	246.443	16.6703	0.00116394	10.0907	0.000229955	0.969722	0.0302778	0	0	0	7.97696	7.81024	4.88863	4.86519
29	1.30213	247.779	4.18125	205.583	16.6455	0.00126579	10.0692	0.000346813	0.963056	0.0369444	0	0	0	7.99615	7.83026	4.88834	4.8652
30	1.15029	260.5	3.4575	198.36	16.6184	0.00113395	10.0726	0.0004375	0.962775	0.037225	0	0	0	8.00457	7.83987	4.88903	4.8662
31	1.10301	232.126	3.405	263.362	16.5981	0.00113637	10.0554	0.000316997	0.963333	0.0366667	0	0	0	7.99363	7.8303	4.88881	4.86621
32	0.510772	174.448	2.82375	202.365	16.5761	0.00111798	10.0545	0.000170138	0.963056	0.0366667	0	0.000277778	0	8.00993	7.84733	4.88923	4.86688
33	0.470031	206.062	1.83	216.765	16.5554	0.0010454	10.0614	0.00032034	0.9625	0.0372222	0	0.000277778	0	8.01439	7.85275	4.88891	4.86779
34	0.22147	243.809	1.79625	210.915	16.5325	0.00114527	10.068	0.000447199	0.963611	0.0363889	0	0	0	8.01931	7.85872	4.89062	4.86875
35	0.291247	232.398	1.87125	202.275	16.514	0.0011812	10.0641	0.00037427	0.963333	0.0366667	0	0	0	8.02244	7.86275	4.89085	4.86919
36	0.192033	161.403	1.11375	196.2	16.4973	0.00115472	10.054	0.000160203	0.963056	0.0369444	0	0	0	8.02492	7.86606	4.89081	4.86934
37	0.469871	266.544	1.51875	226.125	16.4765	0.00117455	10.0649	0.000299707	0.963611	0.0363889	0	0	0	8.0278	7.86992	4.89164	4.87039
38	0.78996	240.238	1.96875	354.6	16.457	0.00106877	10.0638	0.000289531	0.963056	0.0369444	0	0	0	8.03275	7.87576	4.89198	4.87095
39	0.49062	272.12	3.11625	296.225	16.4272	0.00117749	10.0599	0.000260516	0.962222	0.0366667	0	0	0	8.02452	7.89272	4.89222	4.87120

Screenshots



Local instance MySQL56 × remote db ×

File Edit View Query Database Server Tools Scripting Help

Query 1 delete select ×

1 • select * from sensor_data_10_min;
2 • select * from sensor_data_1_day;
3 • select * from sensor_data_1_hour;
4 • select * from worst_case_00;
5 • select * from worst_case_01;
6 • select * from worst_case_10;
7 • select * from worst_case_11;
8
9 • select count(ID) from sensor_data_10_min;
10 • select count(ID) from sensor_data_1_hour;
11 • select count(ID) from sensor_data_1_day;
12 • select count(ID) from sensor_data_raw;

Result Set Filter: Export/Import Wrap Cell Content

ID	wind_speed	wind_direction	wind_speed_max	wind_direction_max	hydrometer	hydrometer_variance	sonar	sonar_variance	sonar_perc_correct	sonar_perc_wrong	sonar_perc_outOfWater	sonar_perc_error	sonar_perc_uncertain	safety_factor_00	safety_factor_01	safety_factor_10	safety_f
128	1.47703	278.268	5.115	262.71	16.9579	0.0246608	10.1118	0.00130065	0.963508	0.036473	0	2.43602e-05	0	7.92143	7.74117	4.98319	4.85632
129	0.996111	255.173	5.79	237.443	16.43	0.018543	10.0645	0.000408725	0.963541	0.0364356	0	2.34841e-05	0	8.00209	7.84725	4.89255	4.8718
130	1.12821	256.712	6.91875	275.017	16.0475	0.00977984	10.0205	0.000616083	0.963556	0.0364439	0	0	1.2185e-05	8.03328	7.89722	4.89809	4.88125
131	3.36145	278.764	8.52375	305.73	15.8832	0.0015167	10.0495	0.000318329	0.96584	0.03416	0	0	0	8.06932	7.9406	4.90202	4.88669
132	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
133	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
134	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
135	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
136	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
137	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
139	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
141	1.47809	158.379	7.18125	87.0975	14.7731	0.00145061	9.98386	0.000167553	0.963007	0.0368338	0	0.000159613	0	8.34306	8.25989	4.91353	4.90602
142	1.05885	180.747	4.9125	138.398	14.7832	0.00148962	9.97891	0.0003111	0.963769	0.0362076	0	2.32921e-05	0	8.28125	8.19829	4.91282	4.90524
143	1.33005	222.319	6.5025	289.283	14.8292	0.00162212	9.97566	0.00025219	0.962383	0.0374537	0	0.000163045	0	8.21647	8.13233	4.91192	4.90407
144	2.07879	227.345	6.5775	276.503	14.8016	0.00186794	9.95856	0.000417746	0.964409	0.0355329	0	5.82316e-05	0	8.2072	8.12375	4.91016	4.90239
145	2.18225	240.121	8.05875	298.44	14.6883	0.00226268	9.9706	0.000598347	0.963547	0.0364526	0	0	0	8.22024	8.14159	4.91284	4.90573
146	3.03459	173.975	10.3162	105.457	14.6381	0.00144846	9.97918	0.000361878	0.922751	0.0351948	0	0.0420544	0	8.39558	8.33732	4.9144	4.90757
147	2.42501	114.235	8.59875	116.887	14.6834	0.00174358	9.9802	0.000341931	0.963571	0.0364176	0	1.16462e-05	0	8.35477	8.275	4.91405	4.90699
148	1.78926	140.826	4.875	188.212	14.7264	0.00142551	10.0071	0.000310523	0.952264	0.0377258	0	0	0	8.28076	8.2008	4.91625	4.90905

Screenshots



File Edit View Query Database Server Tools Scripting Help

Query 1 delete select x

```
1 •  select * from sensor_data_10_min;
2 •  select * from sensor_data_1_day;
3 •  select * from sensor_data_1_hour;
4 •  select * from worst_case_00;
5 •  select * from worst_case_01;
6 •  select * from worst_case_10;
7 •  select * from worst_case_11;
8
9 •  select count(ID) from sensor_data_10_min;
10 • select count(ID) from sensor_data_1_hour;
11 • select count(ID) from sensor_data_1_day;
12 • select count(ID) from sensor_data_raw;
```

Result Set Filter: Edit: Export/Import: Wrap Cell Content:

ID	pylon_number	N	Tx	Ty	Mx	My	M	cs	comb_number	timestamp
565	1	3201.51	0	61.6221	106.244	0	106.244	7.96158	1	2011-03-23 07:50:00
566	2	2518.82	0	61.472	105.681	0	105.681	9.9573	1	2011-03-23 07:50:00
567	3	3167.33	0	61.6221	106.244	0	106.244	8.04222	1	2011-03-23 07:50:00
568	4	2485.22	0	61.472	105.681	0	105.681	10.0814	1	2011-03-23 07:50:00
569	5	3133.15	0	61.6221	106.244	0	106.244	8.1245	1	2011-03-23 07:50:00
570	6	2451.63	0	61.472	105.681	0	105.681	10.2085	1	2011-03-23 07:50:00
*		NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Screenshots



File Edit View Query Database Server Tools Scripting Help

Query 1 delete select x

```
1 • select * from sensor_data_10_min;
2 • select * from sensor_data_1_day;
3 • select * from sensor_data_1_hour;
4 • select * from worst_case_00;
5 • select * from worst_case_01;
6 • select * from worst_case_10;
7 • select * from worst_case_11;
8
9 • select count(ID) from sensor_data_10_min;
10 • select count(ID) from sensor_data_1_hour;
11 • select count(ID) from sensor_data_1_day;
12 • select count(ID) from sensor_data_raw;
```

Result Set Filter: Export/Import: Wrap Cell Content:

ID	pylon_number	N	Tx	Ty	Mx	My	M	cs	comb_number	timestamp
571	1	3212.5	0	81.4116	140.596	0	140.596	7.78117	2	2011-03-23 08:00:00
572	2	2529.21	0	81.1098	139.464	0	139.464	9.6767	2	2011-03-23 08:00:00
573	3	3166.82	0	81.4116	140.596	0	140.596	7.88418	2	2011-03-23 08:00:00
574	4	2484.72	0	81.1098	139.464	0	139.464	9.83187	2	2011-03-23 08:00:00
575	5	3121.15	0	81.4116	140.596	0	140.596	7.98994	2	2011-03-23 08:00:00
576	6	2440.22	0	81.1098	139.464	0	139.464	9.99204	2	2011-03-23 08:00:00
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Screenshots



File Edit View Query Database Server Tools Scripting Help

Query 1 delete select x

```
1 •   select * from sensor_data_10_min;
2 •   select * from sensor_data_1_day;
3 •   select * from sensor_data_1_hour;
4 •   select * from worst_case_00;
5 •   select * from worst_case_01;
6 •   select * from worst_case_10;
7 •   select * from worst_case_11;
8
9 •   select count(ID) from sensor_data_10_min;
10 •  select count(ID) from sensor_data_1_hour;
11 •  select count(ID) from sensor_data_1_day;
12 •  select count(ID) from sensor_data_raw;
```

Result Set Filter: Export/Import Wrap Cell Content

ID	pylon_number	N	Tx	Ty	Mx	My	M	cs	comb_number	timestamp
571	1	4457.46	34.3333	61.3456	105.223	508.133	518.914	4.88475	19	2011-03-23 08:00:00
572	2	3775.35	-34.3333	61.3456	105.223	-508.133	518.914	5.53295	25	2011-03-23 08:00:00
573	3	4424.23	34.3333	61.3456	105.223	508.133	518.914	4.91303	19	2011-03-23 08:00:00
574	4	3742.12	-34.3333	61.3456	105.223	-508.133	518.914	5.56854	25	2011-03-23 08:00:00
575	5	4391	34.3333	61.3456	105.223	508.133	518.914	4.94161	19	2011-03-23 08:00:00
576	6	3708.89	-34.3333	61.3456	105.223	-508.133	518.914	5.60454	25	2011-03-23 08:00:00
*	HULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Screenshots



File Edit View Query Database Server Tools Scripting Help

Query 1 delete select x

1 • select * from sensor_data_10_min;
2 • select * from sensor_data_1_day;
3 • select * from sensor_data_1_hour;
4 • select * from worst_case_00;
5 • select * from worst_case_01;
6 • select * from worst_case_10;
7 • select * from worst_case_11;
8
9 • select count(ID) from sensor_data_10_min;
10 • select count(ID) from sensor_data_1_hour;
11 • select count(ID) from sensor_data_1_day;
12 • select count(ID) from sensor_data_raw;

Result Set Filter: Edit Export/Import Wrap Cell Content:

ID	pylon_number	N	Tx	Ty	Mx	My	M	cs	comb_number	timestamp
577	1	4467.89	34.3333	80.8839	138.639	508.133	526.707	4.85932	20	2011-03-23 08:10:00
578	2	3785.79	-34.3333	80.8839	138.639	-508.133	526.707	5.49928	26	2011-03-23 08:10:00
579	3	4424.11	34.3333	80.8839	138.639	508.133	526.707	4.89621	20	2011-03-23 08:10:00
580	4	3742.01	-34.3333	80.8839	138.639	-508.133	526.707	5.54559	26	2011-03-23 08:10:00
581	5	4380.33	34.3333	80.8839	138.639	508.133	526.707	4.93362	20	2011-03-23 08:10:00
582	6	3698.23	-34.3333	80.8839	138.639	-508.133	526.707	5.5926	26	2011-03-23 08:10:00
*	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

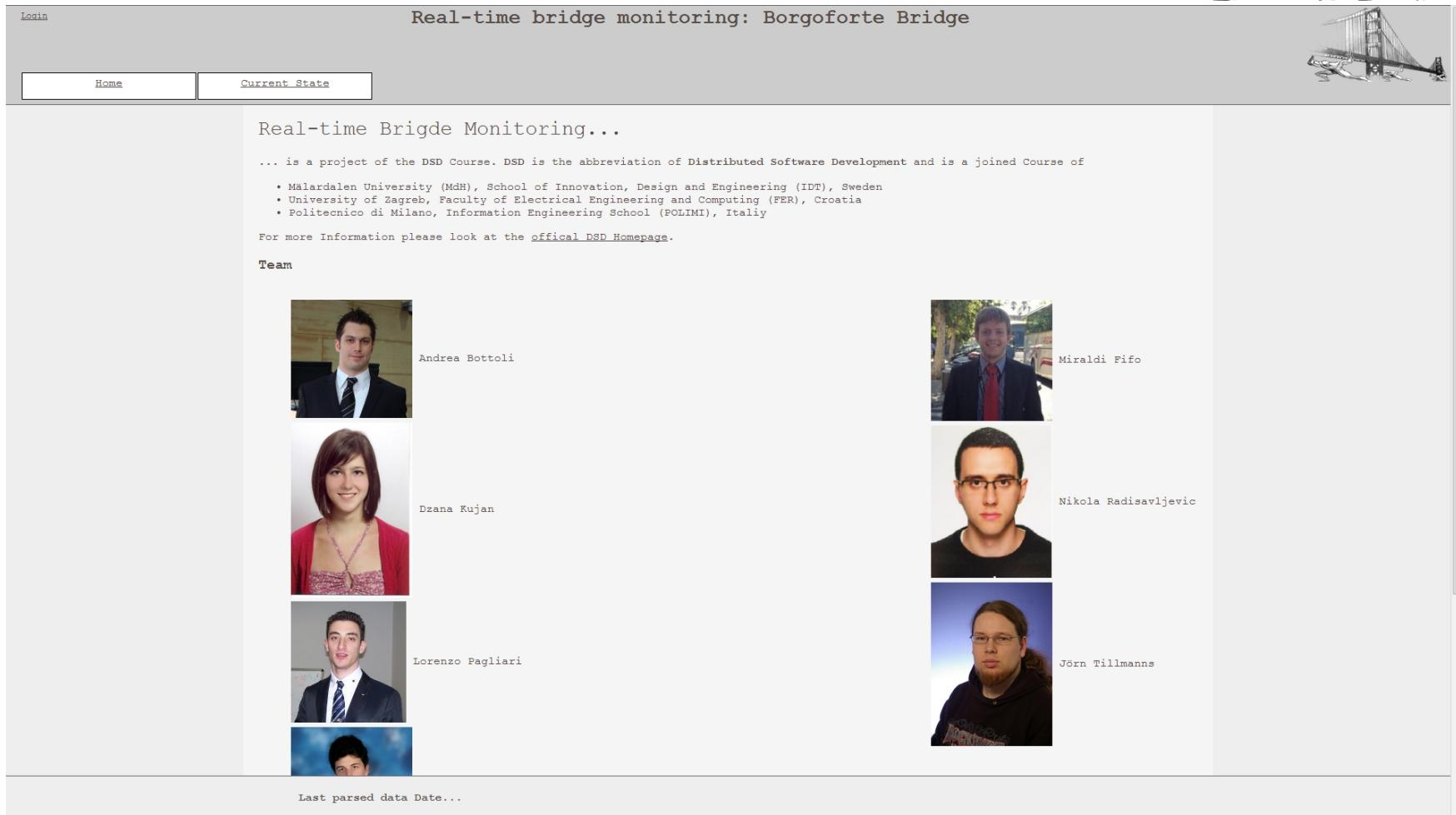
Screenshots



Login

Real-time bridge monitoring: Borgoforte Bridge

Home Current State



Real-time Brigde Monitoring...

... is a project of the DSD Course. DSD is the abbreviation of Distributed Software Development and is a joined Course of

- Mälardalen University (MdH), School of Innovation, Design and Engineering (IDT), Sweden
- University of Zagreb, Faculty of Electrical Engineering and Computing (FER), Croatia
- Politecnico di Milano, Information Engineering School (POLIMI), Italy

For more Information please look at the [official DSD Homepage](#).

Team

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Nikola Radisavljevic



Jörn Tillmanns



Last parsed data Date...

Screenshots



Login

Real-time bridge monitoring: Borgoforte Bridge

Home Current State

Actual Values

Mantova side:

22/03/2011 12:58:40

Flow rate: 520 m³/s
Water level: 17 m
Water speed: 1 m/s
Wind speed: 3 m/s
Wind direction: 32°
River bed height: 3 m

Modena side:

22/03/2011 13:56:18

Pier 31

Mantova side

P5 P3 P1

P6 P4 P2

Pier 30

Modena side

Pier 29

Last 24 hours trend:

Anemometer graph (Wind speed): chart by amcharts.com

18:00 21:00 00:00 03:00 06:00 09:00 12:00 15:00

3.0
2.5
2.0
1.5
1.0
0.5
0.0

Show all

Last parsed data Date...

Screenshots



Real-time bridge monitoring: Borgoforte Bridge

logout

Home Current State Parameters History Diagrams Statistics

Actual Values

Mantova side:

22/03/2011 12:55:40

Flow rate: 520 m³/s

Water level: 17 m

Water speed: 1 m/s

Wind speed: 3 m/s

Wind direction: 32°

River bed height: 3 m

Modena side:

22/03/2011 12:56:11

Compass rose:

Pier 31

Pier 30

Pier 29

Modena side

Mantova side

Last 24 hours trend:

Anemometer graph(Wind speed):

chart by amcharts.com

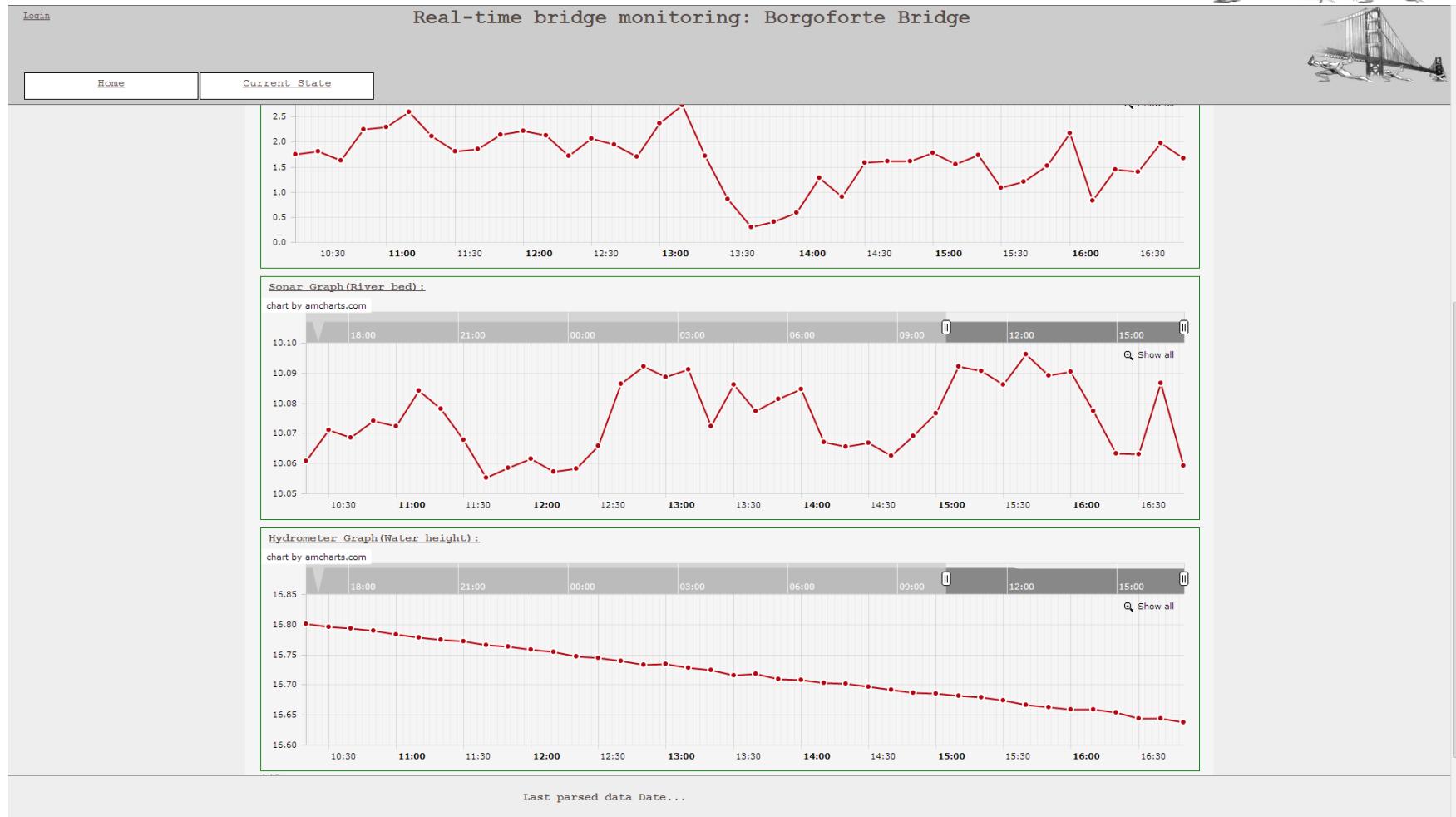
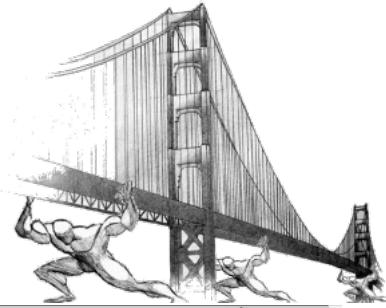
Mar 23, 2011 value: 2.735830068588257

18:00 21:00 00:00 03:00 06:00 09:00 12:00 15:00

3.0
2.5
2.0
1.5
1.0
0.5
0.0

Last parsed data Date...

Screenshots



Screenshots



Real-time bridge monitoring: Borgoforte Bridge

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Current valid parameters

Parameter Data ID:	Parameter ID:	Name:	Abb:	Unit:	Category:	Val:	User ID:	Time stamp:	Save
115	112	Value of the force due to the vehicle braking	Fr	kN	ShiftingWeights	206.0	1	Wed Nov 20 09:03:01 CET 2013	Save
839	113	arm for the vehicle braking moment	n	m	ShiftingWeights	3.3	1	Wed Dec 18 00:51:08 CET 2013	Save
106	103	Axial load for load combination A1	N(A1)	kN	VehicleBreaking	4024.0	1	Wed Nov 20 09:03:01 CET 2013	Save
107	104	Bending moment xx for load combination A1	Mxx(A1)	kNm	VehicleBreaking	4368.0	1	Wed Nov 20 09:03:01 CET 2013	Save
108	105	Bending moment yy for load combination A1	Myy(A1)	kNm	VehicleBreaking	3908.0	1	Wed Nov 20 09:03:01 CET 2013	Save
109	106	Axial load for load combination A2	N(A2)	kN	VehicleBreaking	3116.0	1	Wed Nov 20 09:03:01 CET 2013	Save
110	107	Bending moment xx for load combination A2	Mxx(A2)	kNm	VehicleBreaking	8077.0	1	Wed Nov 20 09:03:01 CET 2013	Save
111	108	Bending moment yy for load combination A2	Myy(A2)	kNm	VehicleBreaking	3015.0	1	Wed Nov 20 09:03:01 CET 2013	Save
112	109	Axial load for load combination A3	N(A3)	kN	VehicleBreaking	1979.0	1	Wed Nov 20 09:03:01 CET 2013	Save
113	110	Bending moment xx for load combination A3	Mxx(A3)	kNm	VehicleBreaking	2121.0	1	Wed Nov 20 09:03:01 CET 2013	Save
114	111	Bending moment yy for load combination A3	Myy(A3)	kNm	VehicleBreaking	25756.0	1	Wed Nov 20 09:03:01 CET 2013	Save
100	97	Plank weight on the stack	Pp	kN	WeightOfTheStack	10710.0	1	Wed Nov 20 09:03:00 CET 2013	Save
101	98	Weight of single pulvino	Ppu	kN	WeightOfTheStack	840.0	1	Thu Nov 21 23:28:00 CET 2013	Save
102	99	Weight of the trunk of pylon	Ptp	kN	WeightOfTheStack	267.0	1	Thu Nov 21 23:28:39 CET 2013	Save

Last parsed data Date...

Screenshots



Real-time bridge monitoring: Borgoforte Bridge

logout

Home Current State Parameters History Diagrams Statistics

Choose the range for the history graphs:

Start date: End date: Show

Mar 2011 April 2011

Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5		1	2					
6	7	8	9	10	11	12	3	4	5	6	7	8	9
13	14	15	16	17	18	19	10	11	12	13	14	15	16
20	21	22	23	24	25	26	17	18	19	20	21	22	23
27	28	29	30	31			24	25	26	27	28	29	30

Historical data FROM: Tuesday, Mar 22, 2011 4:00 PM TO: Tuesday, Mar 22, 2011 4:50 PM T D

Wind speed graph:
chart by amcharts.com

Time	Wind Speed
16:00	1.50
16:10	1.78
16:15	1.55
16:20	1.42
16:30	1.45
16:40	1.42
16:45	1.22

Sonar Graph:
chart by amcharts.com

Time	Sonar Data
16:00	1.05
16:10	1.10
16:20	1.12
16:30	1.15
16:40	1.18
16:45	0.95

ata Date...
localhost:8080/BridgeMonitoring/HistoryView# [REDACTED]

Screenshots



Real-time bridge monitoring: Borgoforte Bridge

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Show current month

Historical data FROM: **Wednesday, Mar 23, 2011 12:00 AM** TO: **Thursday, Mar 24, 2011 12:00 AM** T D

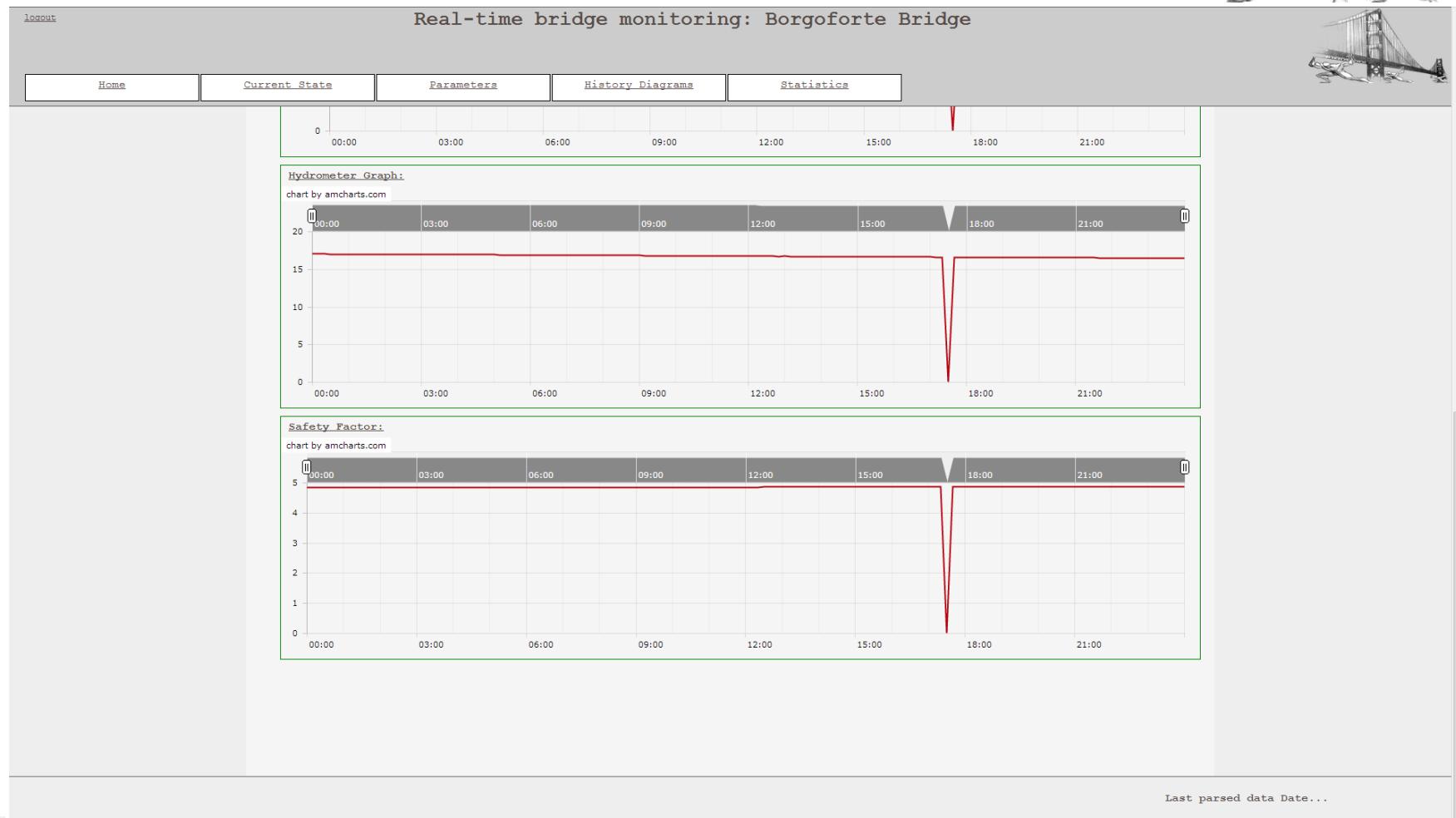
Wind speed graph:
chart by amcharts.com

Sonar Graph:
chart by amcharts.com

Hydrometer Graph:
chart by amcharts.com

Last parsed data Date...

Screenshots



Screenshots



Real-time bridge monitoring: Borgoforte Bridge

Sei passato a schermo intero. [Esci da schermo intero \(F11\)](#)

[Home](#) [Current State](#) [Parameters](#) [History Diagrams](#) [Statistics](#)

Statistics

Count of raw data
26283589

Raw data max timestamp
Mon Nov 19 21:28:08 CET 2012

Count of Mantova picture files
2696

Mantova pictures max timestamp
Tue Dec 20 11:40:40 CET 2011

Count of Modena picture files
6178

Modena pictures max timestamp
Wed Dec 19 10:28:20 CET 2012

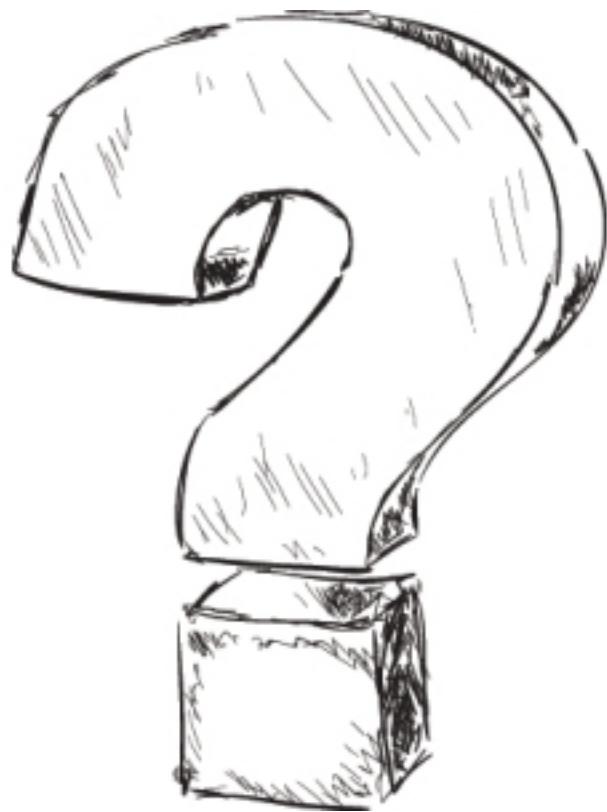
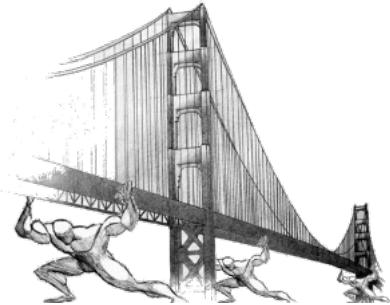
Count of Analog text files
7604

Analog files max timestamp
Mon Nov 19 21:28:15 CET 2012

Count of Sonar text files
...

Last parsed data Date...

Question Time





Thank you for your attention

