strebo

FEATURED

strebo – social trend board



PUBLISHED ON 29. September 20155. October 2015 by streboschreck4 Comments Have you ever wished of a web-based application where you can see ALL the trendy stuff and all your relevant content from different social-media platforms at a glance?

Your journey will end here!

strebo is the project that we will work on, while we are in our third and fourth semester at the Cooperative State University in Karlsruhe. This blog will be used to publish news and other stuff about the project.

The following features are thinkable options for strebo:

Core features:

- Showing trending content (text, images, videos, ...) from social media platforms like Twitter, Facebook, Google+, Instagram, YouTube, ...
- Connecting your social media accounts with strebo and show your personal relevant content from social media platforms
- Searching for content across several social media platforms

Additional features:

- Diagrams about trends, how they grow/how they fall
- World map that shows live posting activities
- Showing trends in single countries/regions or trends depending on other factors
- Mobile solution
- o ...

Enjoy!

Final

PUBLISHED ON 14. June 201614. June 2016 by streboretkowskiLeave a comment Hey guys,

Have you ever wished of a web-based application where you can see ALL the trendy stuff and all your relevant content from different social-media platforms at a glance?

We are here – the semester is over and here are our results of the project which you will find in a nice overview at the following link:

https://github.com/strebo/strebo/wiki (https://github.com/strebo/wiki)

Best regards, team strebo

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Installation

PUBLISHED ON 9. June 201615. June 2016 by streboretkowski1 Comment Hi there,

today we want to show you how you can easily set up our project on your own machine. We wanted to make it as easy as possible for you, so we use **Docker** now and created a **dockerfile** .

You can find the dockerfile in our repository on GitHub (named as dockerfile in our root directory): <a href="https://github.com/strebo

Clone it or download it to your own machine. Please make sure you have Docker installed.

Build the docker image with (make sure you are in the same repository as our dockerfile):

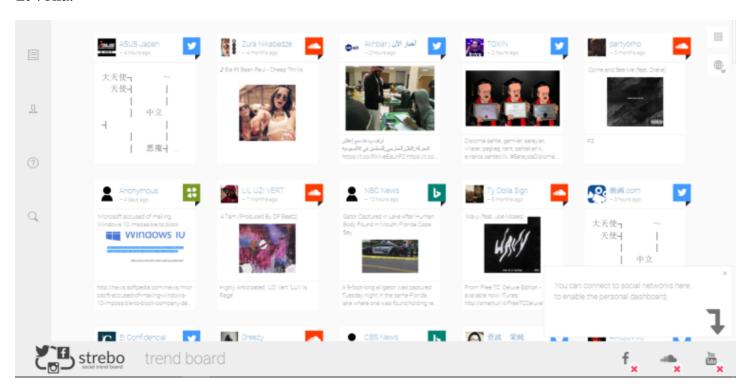
docker build -t strebo.

Then you have just to run it:

docker run -it -p 80:80 -p 8080:8080 -p 443:443 strebo

You will get visual feedback if it does work – and the only thing you have to do now is to open your browser and type in: http://localhost (http://localhost)

Et voilà:



Hint: The personal board for what logins are required *WON'T* work. For this you would have to need to create your own accounts and applications on several social networks. Since in our applications is set that only strebo.net is a valid request and redirect URI.

Best regards, team strebo

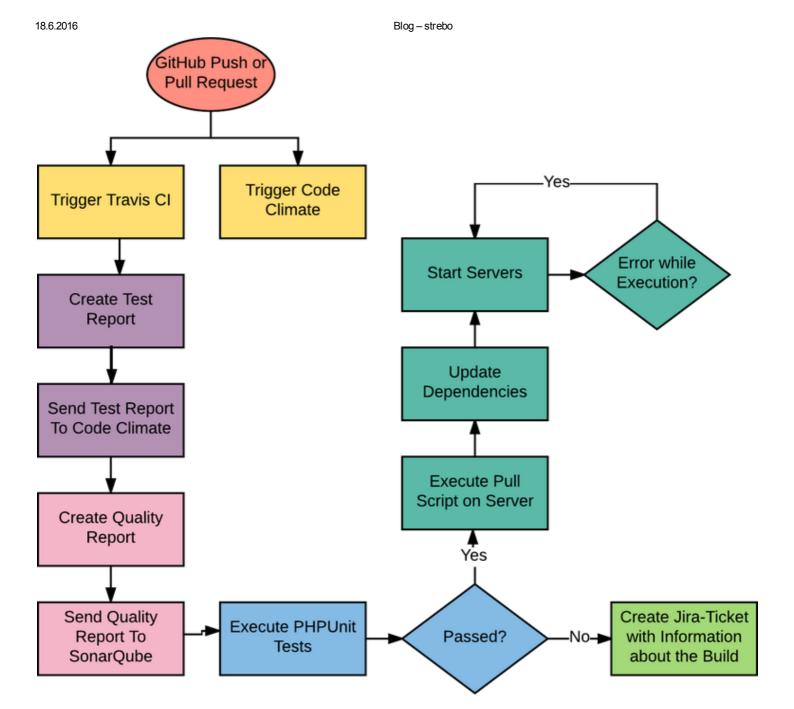
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Auto Depolyment

PUBLISHED ON 3. June 20163. June 2016 by streboretkowski4 Comments Hi guys,

we want to show you how we deal with auto deployment.

You will get a rough overview about our build and deployment process (it's the same since we use PHP) in the following flow chart:



It all begins with a GitHub Push / Pull Request which triggers Travis CI to execute the build and deployment process and Code Climate to create a Quality Report. This happens via Webhooks. Then Travis CI creates a Test Report and send it to Code Climate, so it will be informed about our Code Coverage. For SonarQube there will be created a Quality Report. After that our PHPUnit tests will be executed. Depending on the success there is a jira connection which creates a ticket (in case of a fail) or the deployment process on the server will be started. The server pulls from GitHub, updates the dependencies and then restart the servers. If an error occures while execution, the server restarts automatically after 10 seconds. So strebo.net is nearly always available.

travis.yml: https://github.com/strebo/strebo/strebo/strebo/blob/master/.travis.yml (https://github.com/strebo

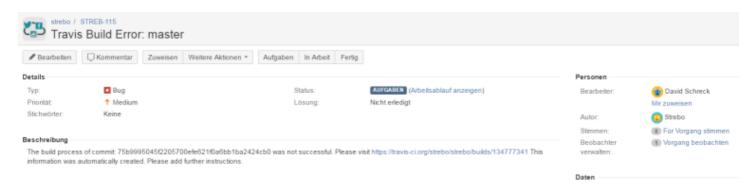
Start Scripts to make auto deployment possible:

https://github.com/strebo/strebo/blob/master/start.sh

(https://github.com/strebo/strebo/blob/master/start.sh)https://github.com/strebo/strebo/blob/master/serverstart.sh

(https://github.com/strebo/strebo/blob/master/serverstart.sh)https://github.com/strebo/strebo/blob/master/nserverstart.sh (https://github.com/strebo/strebo/blob/master/nserverstart.sh)

Here you see what happens if a build process fails. There will be automatically created a jira ticket:



Bash Script which informs Jira:

https://github.com/strebo/strebo/blob/master/.send_ticket.sh (https://github.com/strebo/strebo/blob/master/.send_ticket.sh)

We integrated several badges in GitHub:



Link: https://github.com/strebo/strebo

In addition we updated our Test Document:

https://github.com/strebo/strebo/wiki/Test-Document (https://github.com/strebo/strebo/wiki/Test-Document)

Best regards, strebo team

•

Metrics

PUBLISHED ON 22. May 20162. June 2016 by streboretkowski4 Comments Hi all,

we use Code Climate (it's also a Code Coverage Tool) and SonarQube as Metric Tools. Both are integrated in our deployment process by using Travis CI.

See our Travis Configuration File: https://github.com/strebo/strebo/blob/master/.travis.yml)

SonarQube: http://sonarqube.it.dh-karlsruhe.de/overview?id=5357 (http://sonarqube.it.dh-karlsruhe.de/overview?id=5357)

Code Climate: https://codeclimate.com/github/strebo/strebo/strebo/strebo/strebo)

We analyzed our application regarding complexity. Complexity means the cylocmatic complexity which is defined as:

It is a quantitative measure of the number of linearly independent paths through a program's source code.

So we refactored /Strebo/Twitter.php because of Code Climate suggestion:

```
public function formatTime($time)
154
155
            $month = 0;
156
157
158
            switch (substr($time, 4, 3)) {
159
              case 'Jan':
160
                    $month = 1;
161
                    break;
162
163
                case 'Feb':
164
                    $month = 2;
165
                    break;
                case 'Mar':
166
167
                    month = 3;
168
                    break;
169
                case 'Apr':
                    $month = 4;
170
171
                    break;
                case 'May':
172
173
                    $month = 5;
174
                case 'Jun':
175
176
                    $month = 6;
177
                case 'Jul':
178
179
                    month = 7;
                   break;
                case 'Aug':
181
                    $month = 8;
182
183
                    break;
184
                case 'Sep':
                    $month = 9:
185
186
                    break;
187
                case 'Oct':
                   $month = 10;
188
189
                    break;
                case 'Nov':
190
                    $month = 11;
191
192
                    break;
                case 'Dec':
                    $month = 12;
194
195
                    break:
196
197
            $timeJSON = array('day' => substr($time, 8, 2),
198
199
                 'month' => $month,
                'year' => substr($time, 26),
200
                 'hour' => substr($time, 11, 2),
201
                'minute' => substr($time, 14, 2),
202
                 'second' => substr($time, 17, 2)
203
204
205
             return json_encode($timeJSON);
```

(https://raw.githubusercontent.com/strebo/strebo/master/documentation/Metrics_complexity_twitter_1.png)

This switch can be replaced with a simple associative array:

```
public function formatTime($time)
172
              $month = ["Jan" => 1,
174
175
                  "Mar" => 3,
176
                  "Apr" => 4,
177
                  "May" => 5,
178
                  "Jun" => 6,
179
                  "Jul" => 7,
180
                   "Aug" => 8,
181
                  "Sep" => 9,
182
                   "Oct" => 10,
183
184
                  "Nov" => 11,
                  "Dec" => 12];
185
186
      Similar code found in 1 other location (mass = 29)
              $timeJSON = array('day' => substr($time, 8, 2),
188
                   'month' => $month[substr($time, 4, 3)],
189
                   'year' => substr($time, 26),
190
                  'hour' => substr($time, 11, 2),
191
                   'minute' => substr($time, 14, 2),
192
                   'second' => substr($time, 17, 2)
193
194
195
              return json_encode($timeJSON);
196
197
198
```

So the Cyclomatic Complexity issue disappear. Instead of going through all alternatives with O(n), it's now O(1), thanks to array access. Also – the source code has much less lines of codes what improves the clarity of our code.

We also analyzed our application regarding duplicated code. Dublicated code is defined by the following subsections:

Identical code

When 2 or more blocks of code contain the exact same variable names and structure.

Similar code

When 2 or more blocks of code contain the same structure, but have different contents (such as variable names or literal values). This can help catch cases where a developer has copy and pasted a section of code, leaving the structure the same, but adjusting some variable names for a different context.

Mass

"Mass" refers to the size of the duplicated code. Specifically, mass is determined by the size of a code block's sexpression, after it has been parsed into a node of an Abstract Syntax Tree (AST).

Here you can see Code Climates suggestion:

```
18.6.2016
                                                          Blog - strebo
           public function formatTime($time)
184
185
186
               $month = ["Jan" => 1,
                    "Feb" => 2,
187
                    "Mar" => 3,
188
                    "Apr" => 4.
189
                    "May" => 5,
190
                    "Jun" => 6,
191
                   "Jul" => 7,
192
193
                    "Aug" => 8,
                    "Sep" => 9,
194
                    "Oct" => 10,
195
196
                    "Nov" => 11,
                    "Dec" => 12];
197
198
       Similar code found in 1 other location (mass = 29)
               $timeJSON = array('day' => substr($time, 8, 2),
199
200
                    'month' => $month[substr($time, 4, 3)],
                    'year' => substr($time, 26),
201
                    'hour' => substr($time, 11, 2),
202
                    'minute' => substr($time, 14, 2),
203
                   'second' => substr($time, 17, 2)
204
               );
205
206
               return json_encode($timeJSON);
207
208
209
210
```

We solved this problem by integrating the function formatTime(\$time) into the abstract class AbstractSocialNetwork. Each other social setwork class extends this class and is so able to use this function without the need to reimplement it:

```
$data['createdTime'] = parent::formatTime(strtotime($tweet->created_at));
$data['text'] = $tweet->text;
$data['title'] = null;
```

The resulting code of class Twitter and the other social network classes is much shorter now. It's also much easier now to change the logic of how the time is formatted because just a single class has to be modified.

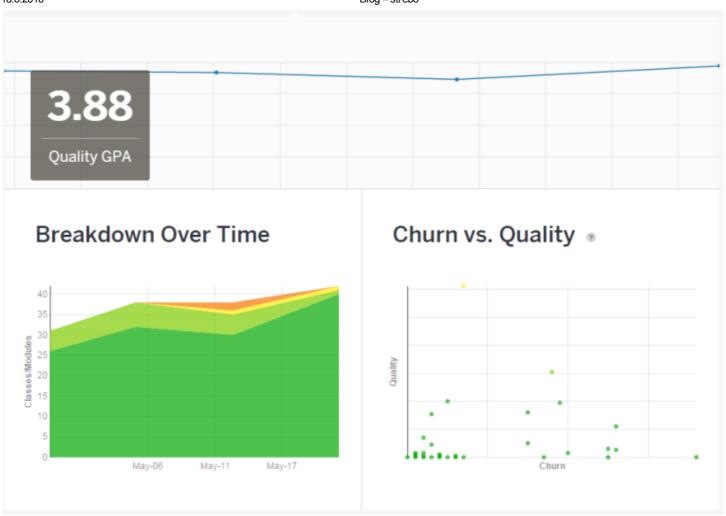
The source code of this file can be found on GitHub: https://github.com/strebo/st

We decided to let the following issue unresolved. The reason is that it's not that obvious to refactor this code without making a mistake and we think it's okay since this code can be seen as completed. We don't expect it to change or to get more complex. It's an isolated piece of code.

```
js/DifferenceFilter.js
app.filter('differenceFilter', function () {
     Function 'anonymous' has a complexity of 13
          return function (time) {
                var dateGet = new Date();
                if (time) {
                    time = JSON.parse(time);
5
                   var postDate = new Date(time.year, time.month-1, time.day, time.hour, time.minute, time.second);
                    var timeDiffSec = Math.round(Math.abs(dateGet - postDate) / 1000);
                    var timeDiffMin = Math.round(Math.abs(timeDiffSec) / 60);
                    var timeDiffHour = Math.round(Math.abs(timeDiffMin) / 60);
                    var timeDiffDay = Math.round(Math.abs(timeDiffHour) / 24);
10
                    var timeDiffMonth = Math.round(Math.abs(timeDiffDay) / 30);
11
                    var timeDiffYear = Math.round(Math.abs(timeDiffMonth) / 12);
12
                    var formattedTime;
13
                    if (timeDiffSec < 60) {
14
                        formattedTime = "just now";
15
                    } else if (timeDiffMin < 60) {
16
                        formattedTime = timeDiffMin + ( timeDiffMin===1 ? " minute " : " minutes " ) + "ago";
17
                    } else if (timeDiffHour < 24) {
18
                        formattedTime = timeDiffHour + ( timeDiffHour===1 ? " hour " : " hours " ) + "ago";
19
                    } else if (timeDiffDay < 30) {
20
                        formattedTime = timeDiffDay + ( timeDiffDay===1 ? " day " : " days " ) + "ago";
21
22
                    } else if (timeDiffMonth < 12) {
                        formattedTime = timeDiffMonth + ( timeDiffMonth===1 ? " month " : " months " ) + "ago";
23
                    } else if (timeDiffYear !== 0) {
24
                        formattedTime = timeDiffYear + ( timeDiffYear===1 ? " year " : " years " ) + "ago";
25
26
                    } else {
27
                        formattedTime = '';
28
                    return formattedTime:
29
38
               } else {
31
                    return "timeless";
33
           };
34
35
   )
```

Source code can be found here: https://github.com/strebo/

The overall improvment of our code is shown in the following charts:



Best regards, team strebo

Test Coverage

PUBLISHED ON 22. May 201623. May 2016 by streboretkowski4 Comments Hi all,

we use Code Climate as our test coverage tool. We have written some tests and we have now a test coverage in the desired area of 20 - 40 percent.

Detail information about our test coverage you can find here: https://codeclimate.com/github/strebo/strebo/coverage)

It also offers a badge: Coverage 31%

As an additional tool we use SonarQube to improve the Code Quality: http://sonarqube.it.dh-karlsruhe.de/overview?id=5357 (<a href="http://sonarqube.it.dh-karlsruhe.

Our test document can be found here: https://github.com/strebo/wiki/Test-Document) (https://github.com/strebo/strebo/wiki/Test-Document)

Best regards, team strebo

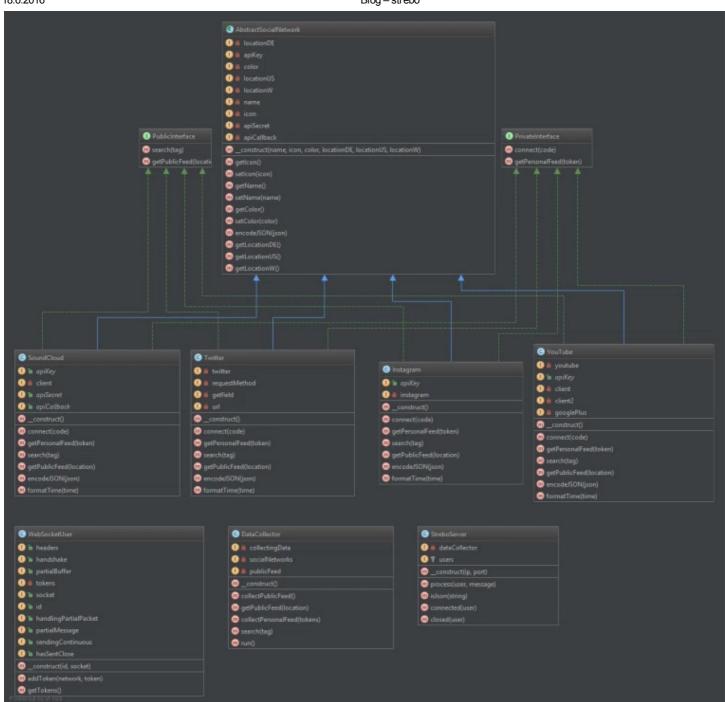
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Design Pattern

PUBLISHED ON 8. May 20169. May 2016 by streboschreck4 Comments Hi fellows,

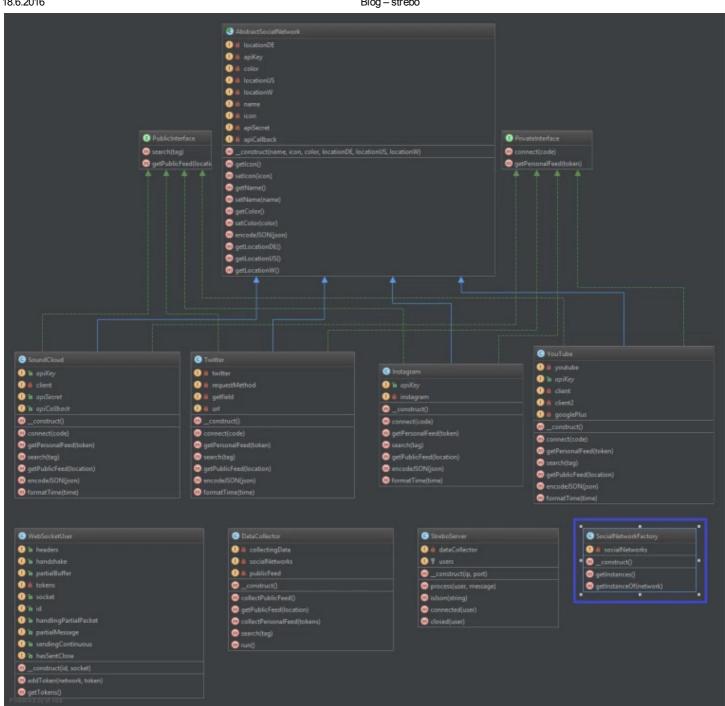
we implemented a Factory Pattern.

You can see our old Class-Diagram here: (link for zooming in (https://github.com/strebo/strebo/blob/master/documentation/strebo_uml.jpg))



The new Diagram is shown here, the pattern is marked with a blue box: (<u>link for zooming in</u>

(https://github.com/strebo/strebo/blob/master/documentation/strebo uml new.jpg))



So you can see that a class 'SocialNetworkFactory' is added. This one creates instances of all available social networks and return these instances. Before this it was done by the 'DataCollector' class. For modularization reasons, maintaining the overview and maybe for future use cases – it makes sense to outsource this task.

Code before of DataCollector class: <u>Data Collector Old</u>

(https://github.com/strebo/strebo/blob/b76fa858a0077cac43b1a8c88d16c5be671798c0/Strebo/DataColle ctor.php)

Code after of DataCollector: Data Collector New

(https://github.com/strebo/strebo/blob/935b2cd9c8712f5656c741f276ed2812ee1ab823/Strebo/DataColle ctor.php)

Code of new SocialNetworkFactory: Social Network Factory (https://github.com/strebo/strebo/blob/935b2cd9c8712f5656c741f276ed2812ee1ab823/Strebo/SocialNet workFactory.php)

Best Greetings, strebo.

•

Refactoring

PUBLISHED ON 1. May 20161. May 2016 by streboparsegyan4 Comments Hey there,

Today each of us shows you how to refactor code. For our example we use an simple project. The used refactoring steps are based on Martin Fowlers book "Refactoring: Improving the Design of Existing Code".

Here are the links to the single refactored example projects of our team members:

Aram: https://github.com/Aaper/Fowler)

David: https://github.com/schreckda/Fowler

Fabian: https://github.com/ScientiaEtVeritas/Fowler (https://github.com/ScientiaEtVeritas/Fowler)

Best regards, team strebo.

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Time estimation for Semester II

PUBLISHED ON 24. April 201618. June 2016 by streboschreckLeave a comment Our methods to estimate the time for our Use Cases in Semester II are the following:

- Function Points in relation with Time
- Weekly Sprints planned in Jira with planned Backlog
- Weekly Team coordination

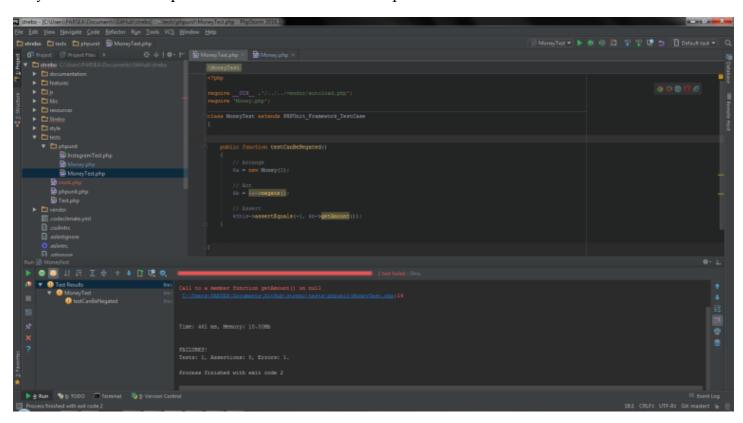
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Unit Testing

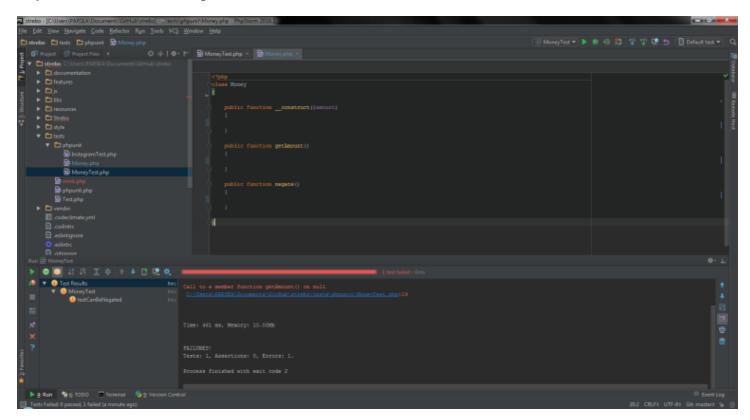
PUBLISHED ON 24. April 201627. April 2016 by streboretkowski4 Comments Hey there :

Here is a short report about the TDD in our project. We chose an easy toycode example for demonstration. Furthermore we're using Phpstorm for our development. Phpstorm provides the posibility to easily create a test class for a newly created class.

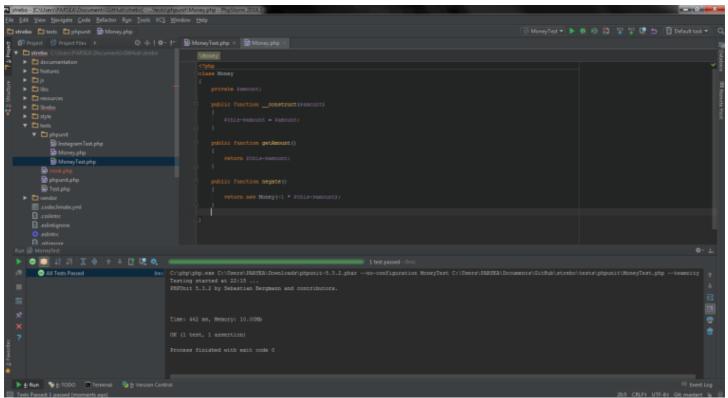
As you can see in this picture the testcode with the expected results is createdd at first.



If you try to run this testcode it is going to fail because the tested class itself is not implemented yet, as you can see in the next picture.

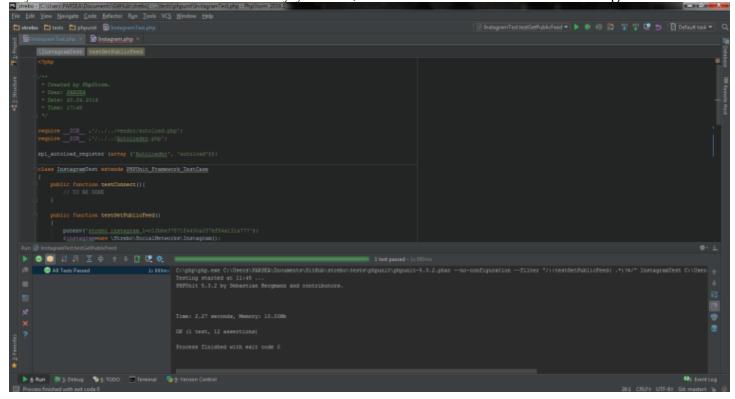


After the functionality of the specific class has been implemented, you can rerun the test and see the tests passing.



We have chosen PHPUnit as our testing framework to test our backend, PHP code and our PHP classes. Our test codings (including the toycode) can be found here: https://github.com/strebo/strebo/tree/master/tests (https://github.com/strebo/strebo/tree/master/tests)

If you don't want to execute the tests by yourself, here is a screenshot of a test running in our IDE:



In the last week we also developed a sophisticated build and testing process:

We use Travis CI as platform for automated testing and our build process as a whole which will be triggered by GitHub pushes. See https://travis-ci.org/strebo/strebo (https://travis-ci.org/strebo).

The configuration file can be found here: https://github.com/strebo/blob/master/.travis.yml (https://github.com/strebo/strebo/blob/master/.travis.yml)

In addition we set up a code quality and test coverage tool called Code

Climate: https://codeclimate.com/github/strebo/strebo (https://codeclimate.com/github/strebo/strebo)

The configuration file can be found

here: https://github.com/strebo/strebo/blob/master/.codeclimate.yml

(https://github.com/strebo/strebo/blob/master/.codeclimate.yml)

We also have configuration files for ESLint and CSS

Lint: https://github.com/strebo/strebo/blob/master/.eslintrc

(https://github.com/strebo/strebo/blob/master/.eslintrc)

and https://github.com/strebo/strebo/strebo/blob/master/.csslintrc

(https://github.com/strebo/strebo/blob/master/.csslintrc)

Here is screenshot of our working test coverage analysis:

5.84% Test Coverage					
Path	Coverage	Relevant LOC	Covered	Missed	Hits / Line
Strebo/AbstractSocialNetwork.php	50.0%	14	7	7	0.8
Strebo/DataCollector.php	0.0%	57	0	57	0.0
Strebo/PrivateInterface.php	_	0	0	0	0.0
Strebo/PublicInterface.php	-	0	0	0	0.0
Strebo/SocialNetworks/Instagram.php	76.27%	59	45	14	1.0
Strebo/SocialNetworks/SoundCloud.php	0.0%	53	0	53	0.0
Strebo/SocialNetworks/Twitter.php	0.0%	139	0	139	0.0
Strebo/SocialNetworks/YouTube.php	0.0%	64	0	64	0.0
Strebo/StreboServer.php	0.0%	43	0	43	0.0
Strebo/WebSocketServer.php	0.0%	458	0	458	0.0
Strebo/WebSocketUser.php	0.0%	3	0	3	0.0

Best regards, team strebo.

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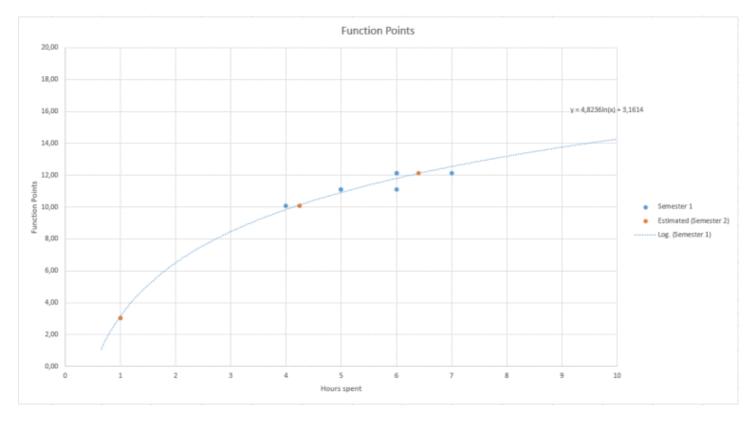
Function Points

PUBLISHED ON 18. April 201624. April 2016 by streboschreck3 Comments Hi Fellows,

we have calculated the Function Points for our UseCases. You can find the documents here (https://github.com/strebo/strebo/wiki).

Our Function Points / Time graph needs some rework as there are still some discrepancies and we will update this post as soon as our data is correct.

Edit: We managed to overcome the discrepancies and are happy that we are now able to present you our Function Points / Time graph:



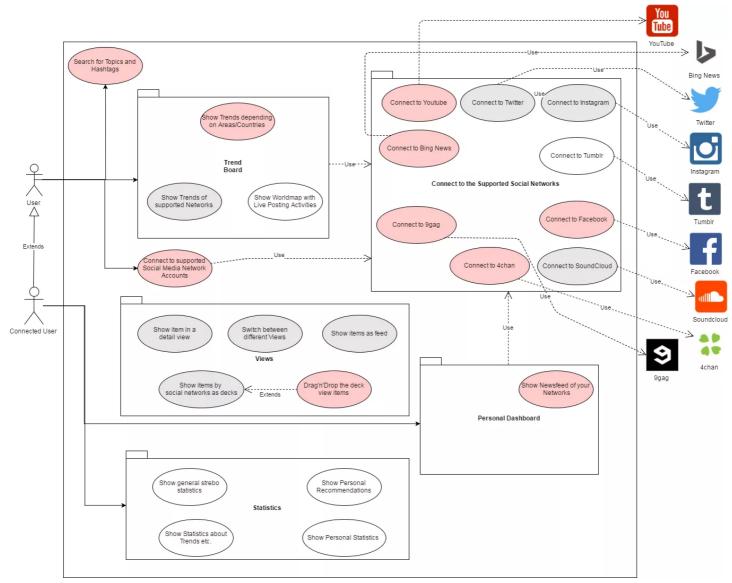
Best Greetings, the strebo team.

Semester II – Use Cases and Risk Management

PUBLISHED ON 10. April 201618. June 2016 by streboschreck4 Comments Hello everybody,

the next semester has started and we will continue to work on strebo!

Fist of all we updated our Overall Use Case Diagramm to display our goals for this semester (the red ones):



Here are the links to the new Use-Cases:

Search for Topics and Hashtags (https://github.com/strebo/strebo/wiki/Use-Case-%E2%80%93-Search-for-Topics-and-Hashtags)

Show Newsfeed of your Networks

(https://github.com/strebo/strebo/wiki/Use-Case-%E2%80%93-Show-Newsfeed-of-vour-

Networks)Drag'n'Drop the deck view items

(https://github.com/strebo/strebo/wiki/Use-Case-%E2%80%93-Drag'n'Drop-the-deck-view-items)Show Trends depending on Areas/Countries

(https://github.com/strebo/strebo/wiki/Use-Case-%E2%80%93-Show-Trends-depending-on-Areas-Countries)Connect to Supported Social Media Network Accounts

 $\underline{(https://github.com/strebo/strebo/wiki/Use-Case-\%E2\%80\%93-Connect-to-Supported-Social-Media-Network-Accounts)}$

We also created a "Use Case Effort Estimation" document which can be found https://github.com/strebo/strebo/wiki/Function-Point-and-Use-Case-Effort-Estimation).

And last but not least we now have a "Risk Management Plan", found https://ldrv.ms/x/s!AktnWDhNa6IJhp4IGe4I hol pyWrA).

An Overview for all our documents can be found here (https://github.com/strebo/strebo/wiki).

Best greetings, the strebo team.

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Midterm Project Report

PUBLISHED ON 22. December 2015 by streboparsegyanLeave a comment Hello everybody,

after a long time full of work we want to present you the results we have so far.

Our deployed project can be found at http://strebo.net/).

<u>The Sourcecode of our project (https://github.com/strebo/strebo)</u> is available on GitHub as well as <u>all of our documentations (https://github.com/strebo/strebo/wiki)</u>.

If you want to see how we organised our project have a look at our <u>Gantt Chart</u> (https://github.com/strebo/strebo/blob/master/documentation/Strebo GanttChart.pdf) and our <u>Scrum Borard</u> (https://jira.it.dh-karlsruhe.de:8080/secure/RapidBoard.jspa? rapidView=9&projectKey=STREB&view=planning.nodetail).

We wish you a merry Christmas and a happy new year,

your Team strebo

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Gantt Chart

PUBLISHED ON 29. *November* 201530. *November* 2015 by streboparsegyan4 Comments Today we want to give you an overview of all the work we have done until today. To do so we created an Gant Chart which can be found https://github.com/strebo/strebo/strebo/blob/master/documentation/Strebo GanttChart.pdf).

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Jira

PUBLISHED ON 23. November 201523. November 2015 by streboschreck6 Comments We are now on Jira, which can be found http://jira.it.dh-karlsruhe.de:8080/projects/STREB/summary)! http://jira.it.dh-karlsruhe.de:8080/projects/STREB/summary)!

We already started our first sprint, that will take two weeks, found http://jira.it.dh-karlsruhe.de:8080/secure/RapidBoard.jspa?projectKey=STREB&rapidView=9.

On <u>strebo.net</u> (<u>strebo.net</u>) you can already access the trend board with two different views, and three connected Social Networks.

Best greetings the strebo team.

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Software Architecture Document

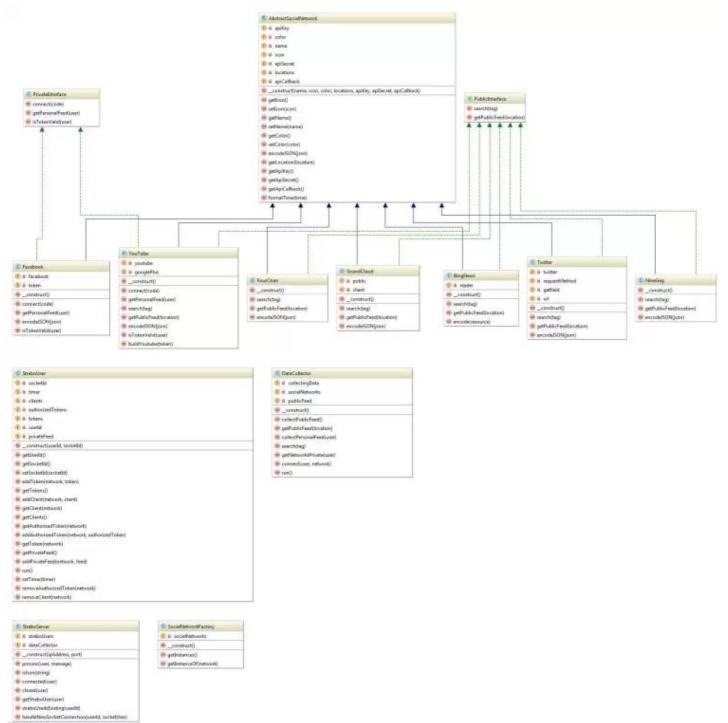
PUBLISHED ON 16. November 201516. November 2015 by streboretkowski6 Comments We are happy to tell you that we moved our Documents to the GitHub Wiki and show you our new Software Architecture Document.

You will find it here: <u>Software Architecture Document</u> (https://github.com/strebo/strebo/strebo/wiki/Software-Architecture-Document)

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UML Class Diagram

PUBLISHED ON 8. November 201513. June 2016 by streboretkowski4 Comments



Today we want to show you our first idea of an UML Class Diagram of our application. It is automatically generated with JetBrains PhpStorm. We will update this diagram if something changes.

The image above shows you an idea how our application works. There is a StreboServer that handles all user requests and a DataCollector that handles all connections to the social networks. To create instances of the single social networks the class SocialNetworkFactory is used. The different social networks (at the moment there are Twitter, BingNews, Facebook, 4Chan, 9Gag, SoundCloud and YouTube) inherits from AbstractSocialNetwork that have methods and attributes which every social network has. If a social network can provide a public feed it implements PublicInterface. If a social network provide a private feed it implements PrivateInterface. There can be networks that implements both interfaces, most will implement only one. The class StreboUser is used to administrate our Users as well as to save the access tokens of the single social networks if a user is loged in to a social network implementing the PrivateInterface.

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Gherkin: .feature files

PUBLISHED ON 2. *November* 201518. *June* 2016 by streboschreck4 Comments We have updated our Use Case documents and they now contain information about our .feature files!

The documents can be found here:

<u>Use Cases (https://github.com/strebo/strebo/wiki#2-use-cases)</u>

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Use Case Specifications

PUBLISHED ON 25. October 201518. June 2016 by streboschreck4 Comments We specified our Use Cases.

The documents contain information about the process flow as well as several descriptions, specifications and screenshots of mockups to get a better idea of how the implemented Use Cases will be presented to the users.

Our Use Cases can be found here:

Use Cases (https://github.com/strebo/strebo/wiki#2-use-cases)

We also added the links to our SRS, found here: SRS (https://github.com/strebo/strebo/wiki/Software-Requirements-Specification)

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Software Requirements Specification

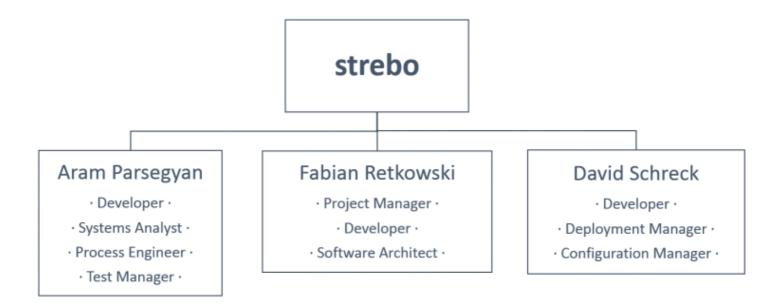
PUBLISHED ON *18. October* 201512. *November* 2015 by streboretkowski4 Comments
Our SRS documentation can be found here: <u>SRS (https://github.com/strebo/strebo/wiki/Software-Requirements-Specification)</u>

The document is also on the same repository on GitHub: https://github.com/strebo/strebo (https://github.com/strebo/strebo)

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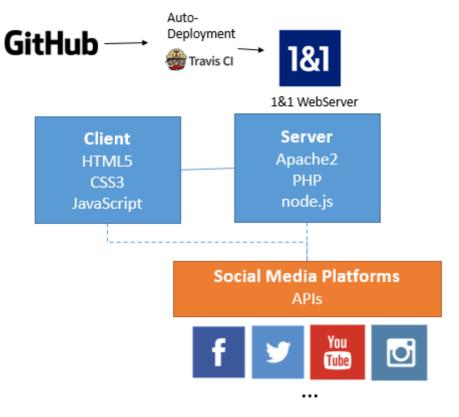
Team Roles and Technologies

PUBLISHED ON *5. October* 201518. *June* 2016 by streboschreck5 Comments
The following scheme provides a rough overview about our team roles in RUP terminology:



For further explanation of these RUP terminologies you can look at http://www.ibm.com/developerworks/rational/library/apr05/crain/.

Our application is web-based, so on client side, technologies like HTML5, CSS3 and JavaScript are used. Some Frameworks like jQuery will help us here. On serverside we use a PHP application which is hosted on a 1&1 vServer. The communication between serverside and clientside will be achieved with WebSockets. To get information from social media platforms we use several APIs, for example the Twitter API or Facebook API. The support of APIs and their functions are very different, so the integration of these APIs will be also very different and maybe it is also necessary to scrape data from websites.



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