

Make it with friends

Break it yourself

Open-source software and DH research

Andrew J. Roback

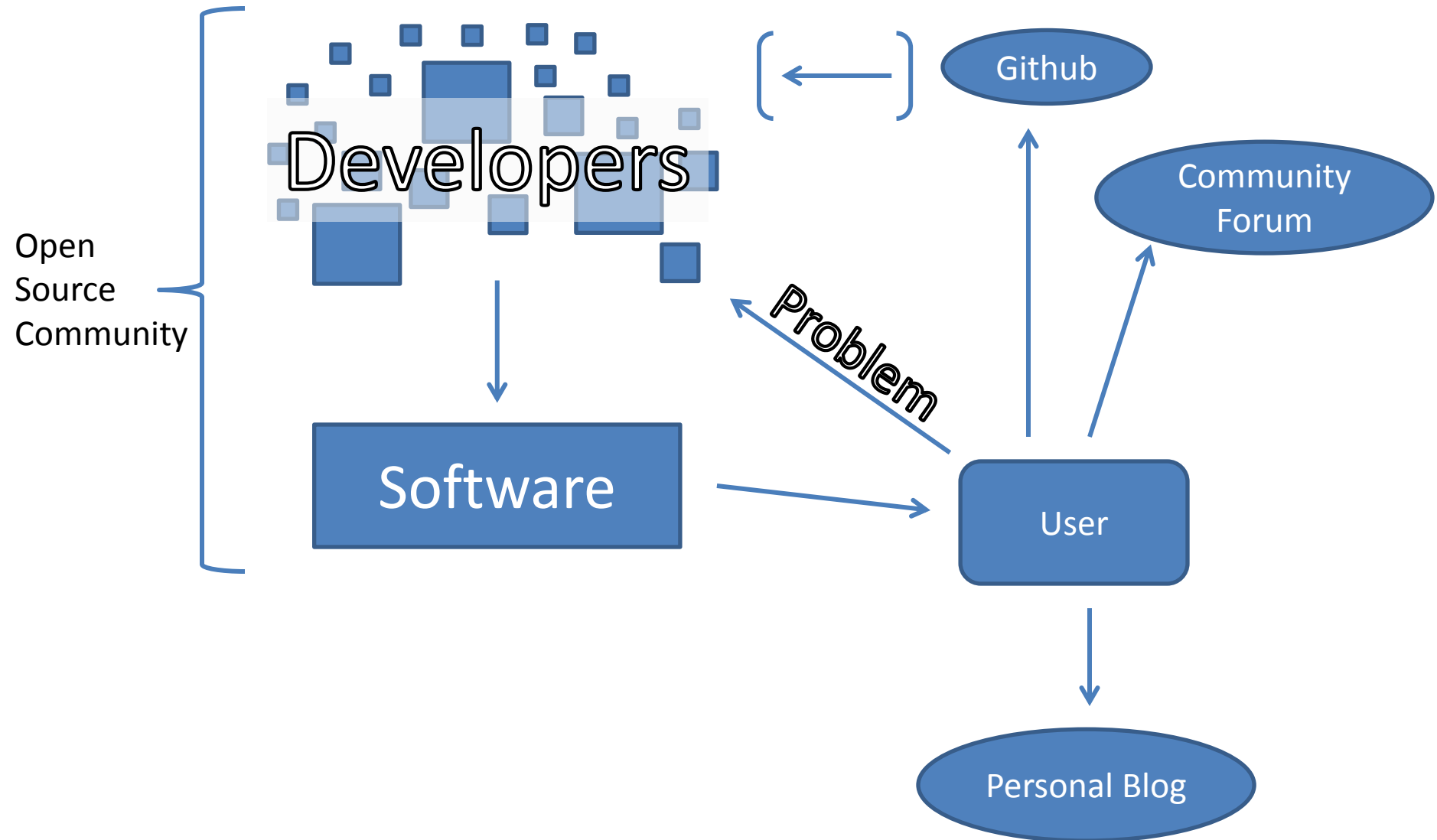
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# Open-source software

1. Free redistribution
2. Source code open to user
3. License allows for derived works
- ...
6. No discrimination against field or endeavor

[The Open Source Definition](#)

# A path for open source work



# Breaking it

Two definitions of “break”:

:(

**1 e** : to render inoperable

!!!

**15 a** : to find an explanation or solution for : SOLVE

# Some examples

1. Transforming JSON to CSV
2. Automating web search using Watir
3. Creating a complex survey using LimeSurvey

# JSON to CSV

## Problem:

I have a lot of data from Twitter in JSON, but to load it into my survey instrument and analyze it, I need it in CSV format.

## Brute force:

Manually edit hundreds of thousands of lines of code. Finish project next century.

# JSON to CSV

## JSON

- JavaScript Object Notation
- Open standard, human readable
- Sequence of nested, attribute-value pairs
- [Example](#)

# JSON to CSV

## CSV

- Comma separated values file
- Uses delimiters and line termination characters
- Easily imported into analysis software (e.g. Excel)

```
1 19563014,358241939411304449,"What do those food labels really mean? Check  
out @NRDCFood new app to help you navigate which claims are real.  
http://t.co/obcC514uIF",Fri Jul 19 15:08:28 +0000 2013,1,0,<a  
href=http://www.hootsuite.com rel=nofollow>HootSuite</a>  
2 19563014,355422478471925760,"Marco Foster will race on a Big Wheel for One  
Hope United as part of the Tour de Grid fundraiser for local...  
http://t.co/170v5rQdIX",Thu Jul 11 20:24:56 +0000 2013,0,0,<a  
href=http://www.facebook.com/twitter rel=nofollow>Facebook</a>
```



# JSON to CSV

## Solution

- Ruby (open-source programming language)
- JSON gem (a library of methods for transforming JSON)
- [Script](#)

# JSON to CSV

Broke it :(

- When I didn't anticipate invalid JSON in my sample

Broke it!!!

- Discovered [JSON Lint Validator](#) and corrected with text editor
- Shared it: [repo on GitHub](#)

# Automating web search

Problem:

I need to find social networking site (SNS) accounts for a list of people/organizations, but no such list exists. Also, Google search API deprecated.

Brute force:

Manually search several thousand terms and copy and paste URLs of accounts.

# Automating web search

## Solution

- Again, Ruby
- Watir gem
  - Made for website testing.
  - Automates interaction with web forms (lets you enter text, push buttons, etc.).
  - Works really well with arrays and loops
- Script and example

# Automating web search

Broke it :(

- When I didn't anticipate Google changing the HTML structure of their search/results pages

Broke it!!!

- When I used XPath (query language for elements in a structured document) to locate elements I wanted browser to find and manipulate.
- Shared it: [personal blog](#)

# Creating a complex survey

Problem:

I want to show survey participants their own SNS posts in a survey and have them describe their motivations for posting. Free platform doesn't exist.

Brute force:

Pay \$\$\$\$\$ for a platform that can do this.

# Creating a complex survey

## Solution

- LimeSurvey
  - Open-source survey platform built on PHP (same scripting language as WikkaWiki, WordPress, etc.)
- Use tokens (list of users) and associated user-defined fields to add customized information

# Creating a complex survey

## Goal

- Show users their own SNS data
  - Manipulation of files controlling tokens



# Creating a complex survey

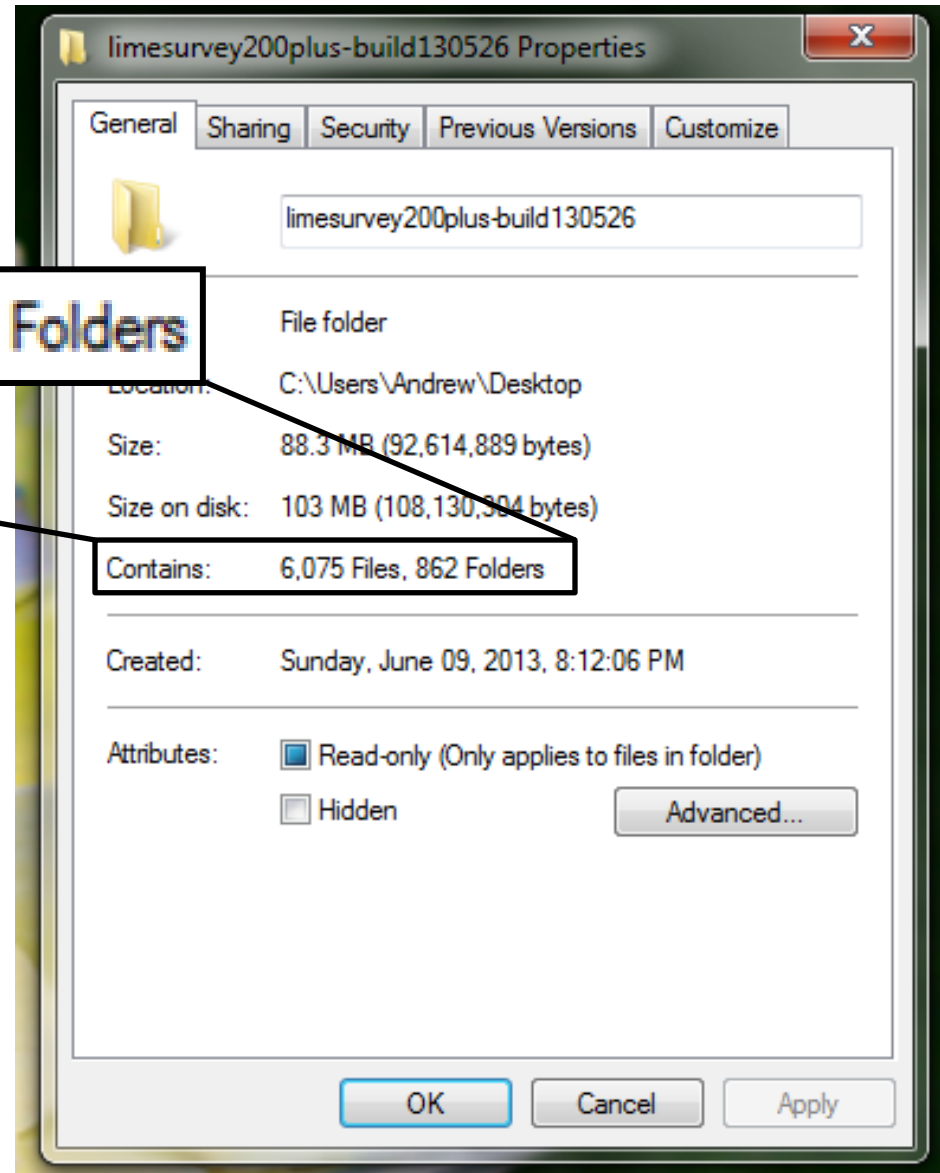
Broke it :(

- Facebook posts were getting truncated so users would not see the whole post.
- After some analysis: all truncated posts are 255 characters long
- Speculation: software is limiting user-defined token field imports by character length

# Creating a complex survey

A challenge:

Contains: 6,075 Files, 862 Folders



# Creating a complex survey

Free-source to the rescue

- Notepad ++
  - Lightweight, but very powerful text editor

# Creating a complex survey

## Broke it!!!

```
1093 // CHECK TO SEE IF A TOKEN TABLE EXISTS FOR THIS SURVEY
1094 $bTokenExists = tableExists('{{tokens_' . $iSurveyId . '}}');
1095 if (!$bTokenExists) //If no tokens table exists
1096 {
1097     self::_newtokentable($iSurveyId);
1098 }
1099
1100 $number2add = sanitize_int(Yii::app()->request->getPost('addnumber'), 1, 100);
1101 $tokenattributefieldnames = getAttributeFieldNames($iSurveyId);
1102 $i = 1;
1103
1104 for ($b = 0; $b < $number2add; $b++)
1105 {
1106     while (in_array('attribute_' . $i, $tokenattributefieldnames) !== false)
1107     {
1108         $i++;
1109     }
1110     $tokenattributefieldnames[] = 'attribute_' . $i;
1111     Yii::app()->db->createCommand(Yii::app()->db->getSchema()->addColumn('{{tokens_' . intval($iSurveyId) . '}}', 'attribute_' . $i, 'VARCHAR(500)')->execute();
1112     $fields['attribute_' . $i] = array('type' => 'VARCHAR', 'constraint' => '500');
1113 }
1114
1115 LimeExpressionManager::SetDirtyFlag(); // so that knows that token tables have changed
1116
1117 Yii::app()->session['flashmessage'] = sprintf($clang->gT("%s field(s) were successfully added."), $number2add);
1118 Yii::app()->getController()->redirect(Yii::app()->getController()->createUrl("/admin/tokens/sa/managetokenattributes/surveyid/$iSurveyId"));
1119
1120 }
1121
```

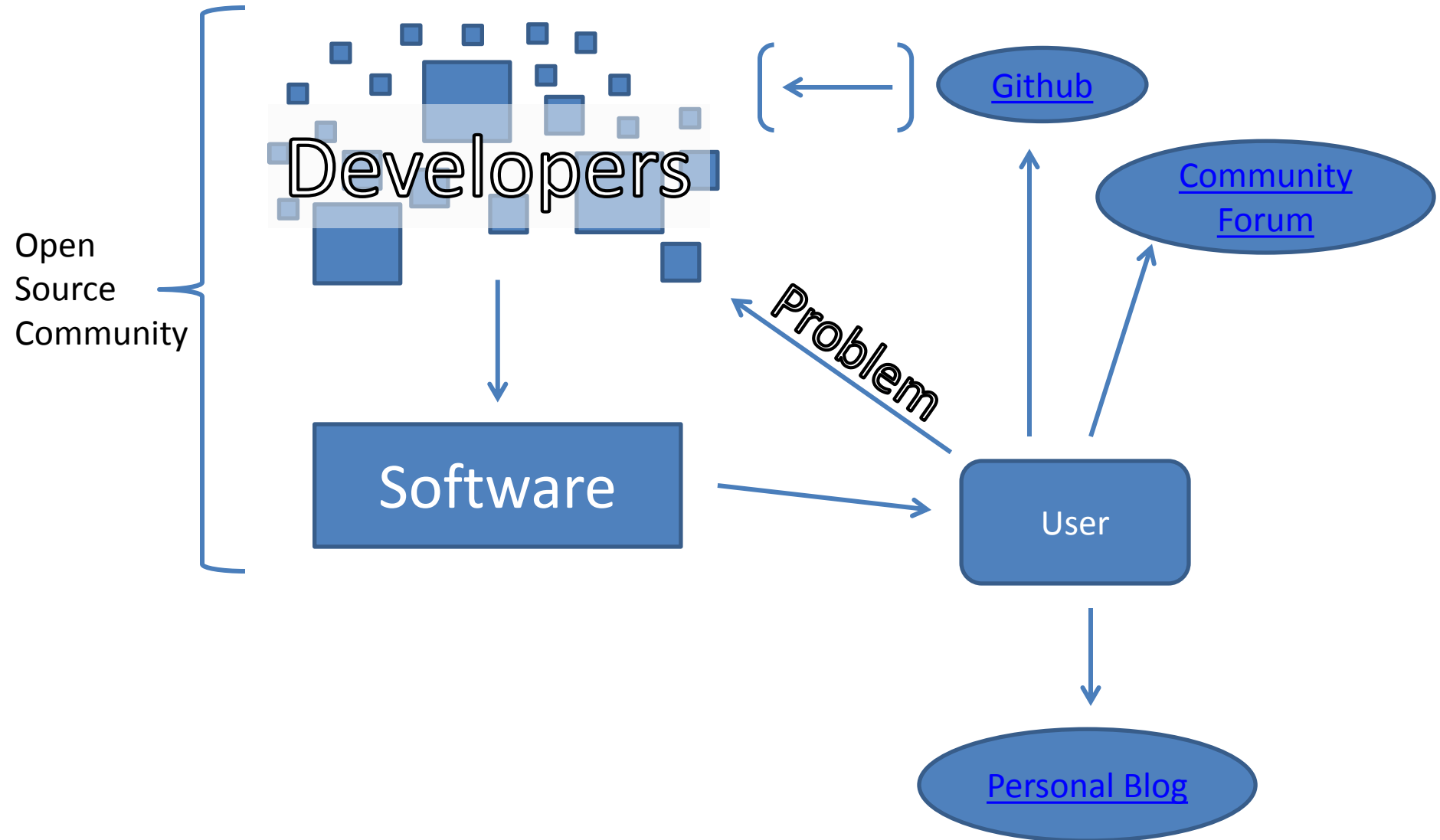
```
Find result - 4459 hits
Search "255" (4459 hits in 244 files)
C:\Users\Andrew\Desktop\limesurvey200plus-build130526\limesurvey\application\controllers\admin\export.php (4 hits)
C:\Users\Andrew\Desktop\limesurvey200plus-build130526\limesurvey\application\controllers\admin\remotecontrol.php (3 hits)
C:\Users\Andrew\Desktop\limesurvey200plus-build130526\limesurvey\application\controllers\admin\tokens.php (2 hits)
Line 1115:     Yii::app()->db->createCommand(Yii::app()->db->getSchema()->addColumn('{{tokens_' . intval($iSurveyId) . '}}', 'attribute_' . $i, 'VARCHAR(255)')->execute();
Line 1116:     $fields['attribute_' . $i] = array('type' => 'VARCHAR', 'constraint' => '255');
C:\Users\Andrew\Desktop\limesurvey200plus-build130526\limesurvey\application\controllers\VerificationController.php (5 hits)
C:\Users\Andrew\Desktop\limesurvey200plus-build130526\limesurvey\application\controllers\admin\statistics\helpers.php (8 hits)
```

# Creating a complex survey

Broke it!!!

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C:\Users\Andrew\Desktop\limesurvey200plus-build130526\limesurvey\application\controllers\admin\statistics\helpers.php (8 hits)
PHP Hypertext Preprocessor file length:116630 lines:2404 Ln:1111 Col:150 Sel:0 UNIX ANSI INS
```

# A path for open source work



# Some final thoughts

- Breaking stuff helps you learn and connects you to other people with the same issues
- Building it yourself gives you unique tools for no \$\$\$ and often results in broadly applicable tools
- Time and frustration are the inevitable costs of such projects
- Sometimes, it is the best (only) option

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# Acknowledgements

*Break It Yourself* is the title of an album by Mom+POP records' recording artist Andrew Bird. I heard the title on WXRT (93.1FM) Chicago and it partially inspired the title of this talk.

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