

A guide for using social media to crowdsource
ideas for participatory budgeting

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INTRODUCTION

How can social media be incorporated into participatory budgeting processes in order to engage citizens and crowdsource ideas? This was the challenge presented to us by the Participatory Budgeting Project when our team first met with them in February 2015. Creating a crowdsourcing tool and a social media engagement strategy became the primary goals of our team project, which was developed within the course “Crowd Sourced City: Social Media, Technology, and Planning Processes” at MIT’s Department of Urban Studies and Planning.

This guide presents our proposal for leveraging social media to collect ideas for participatory budgeting and provides step-by-step instructions for implementing it. We also address possible strategies for engaging participants through social media and discuss limitations and lessons we have learned in the process of developing our proposal.

While we provide a specific toolkit and implementation flow, our project’s main goal is to provide a framework that cities organizing participatory budgeting processes can use as inspiration and adapt to their own needs. We hope that our project might help cities to engage diverse citizens in simple, creative ways.

CONCEPT

Participatory budgeting processes in the U.S. thus far do not rely significantly on social media for idea collection, focusing instead on in-person idea collection and online collection through mapping tools, such as Shareabouts. People are increasingly reliant on social media, including Twitter, Instagram, and Facebook, for building social connections and for engaging with their communities. Because so much of the population is already using social media on a daily basis, it is an easy entry point to participate in processes like participatory budgeting.

Drawing on inspiration from other online participatory processes that use social media to engage participants, we arrived at two key conclusions: 1) idea collection and idea submission need to be as simple as possible; 2) idea visualization has to be straightforward and attractive. With this in mind, we created the concept of a “brainstorm” page that uses various tools to pull tagged posts from social media into one place—making it easier for participants to see other people’s ideas and submit new ideas.





Identity

With simplicity as the goal, we sought to bring it into the identity of our project as well, choosing an easy to identify hashtag, #PB, and a catchy, bright pink piggy bank as a logo. The piggy bank represents citizen control over budget decisions and is intended to catch people's attention. The simple hashtag can be customized for your city (ie. #PBBOS) and can be used to tag ideas and rally support for the PB process. A consistent and easily recognizable identity creates stronger brand recognition and can help encourage participation across all platforms in the PB process, a key factor in idea generation.

What does a brainstorm page look like?

The screenshot displays a web interface for a brainstorming activity. At the top, there is a navigation bar with the #PB logo on the left and 'About' and 'Submit Your Idea' links on the right. The main content area features a large background image of a brick building with a weather vane. Overlaid on this image is the text: 'HOW WOULD YOU SPEND \$500 TO IMPROVE COMMUNITY LIFE AT DUSP?' in large, white, bold letters. Below the text is a green button labeled 'SUBMIT YOUR IDEA'.

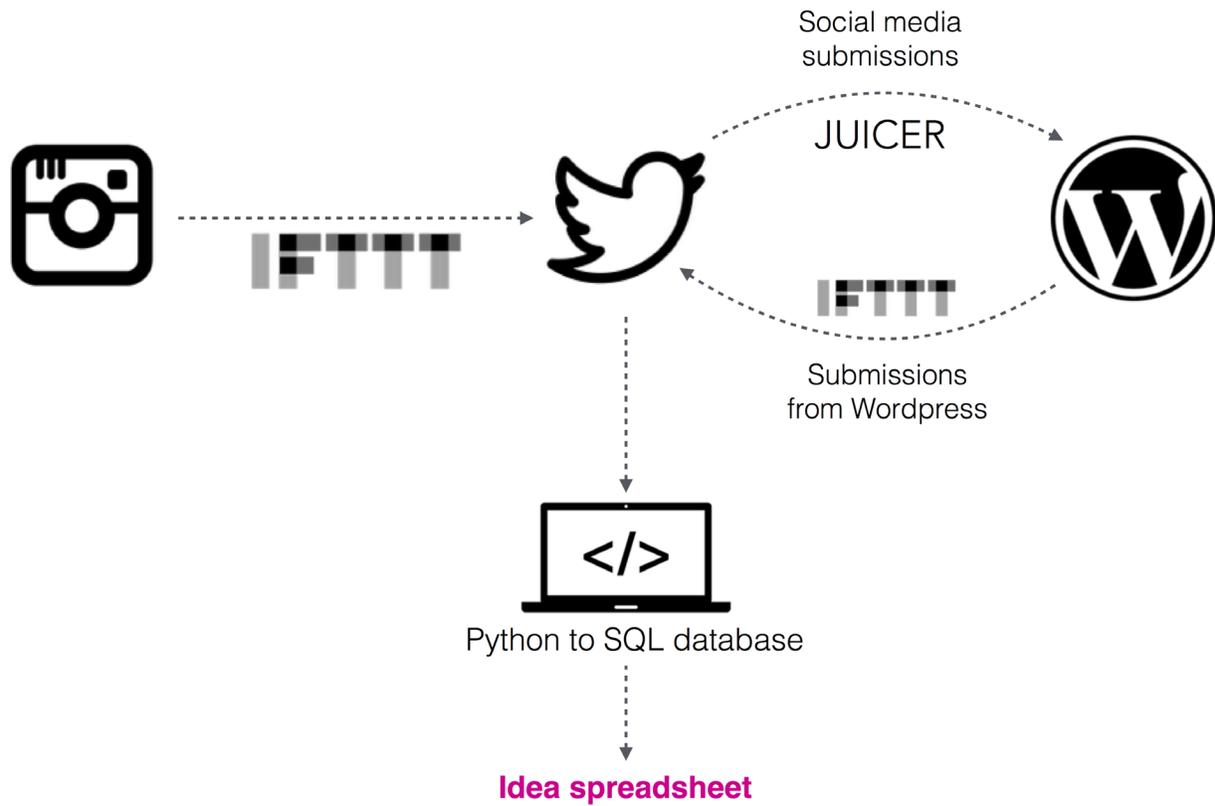
Below the main image, the page is titled 'IDEA FACTORY' in large, bold, black letters. Underneath the title, it says 'Check out what others have suggested' and 'Powered by Juicer'. The page displays five user suggestions in a grid layout, each with a profile picture, name, and timestamp (7d). Each suggestion includes the text of the idea, a retweet icon, a heart icon, and a Twitter icon.

- Sofia:** "LOVE the Bouncy Castle Idea. Would add Bouncy Slide. Also, community spa day. I've seen ones that are under 15 per person." #PBDUSP
- moodyconan:** I also 2nd the beach/bonfire extravaganza! A mix of activities under the sun... #pbdusp
- Davy James:** said: "Bouncy Castle!! You're never too old." #PBDUSP
- deejisaak:** Lets fly kites! #pbdusp
- EM:** said: "DUSP Water Bottles!" #PBDUSP
- Julie:** said: "Outdoor picnic at a park, boat trip, beach trip, swap-of-things, and reflection space." #PBDUSP



Development

The diagram below provides an overview of the steps for developing the crowdsourcing tool. We will discuss each of these steps in detail throughout the rest of the guide.





CREATING THE CROWDSOURCING TOOL

The following instructions will tell you, in a step-by-step process, how to create all of the pieces required for developing a “brainstorm” page for idea collection. When complete, the brainstorm page will bring together all Twitter and Instagram posts that use the designated #PB in a visually pleasing layout.

1. Getting all the ideas to one place

Social Media Accounts

You will need to set up specific accounts for the PB process in your city on the following sites:

- * Twitter: www.twitter.com
- * Instagram: www.instagram.com
- * Facebook: www.facebook.com
- * Wordpress: www.wordpress.com
- * Juicer: www.juicer.io
- * Tumblr (an alternative to Wordpress): www.tumblr.com

We recommend using the same email to register all accounts to make the entire process more straightforward and easier to manage.

Either Wordpress or Tumblr can be used for the brainstorm page. Tumblr is easier to set up and is a good option if you are already using a separate PB website. Alternatively, Wordpress can be used to provide more functionality than just displaying the brainstorm page and can allow users to submit ideas directly through the site, rather than only through social media. We will provide examples for both Wordpress and Tumblr.

IFTTT Recipes

IFTTT.com is a website that allows you to create simple “recipes” to integrate several different web platforms using “if this then that” statements. IFTTT can be used to pull all social media posts into one location. As the examples provided below illustrate, we used #PBDUSP to collect ideas posted to Instagram and Twitter for a participatory budgeting process within the Department of Urban Studies and Planning (DUSP) at MIT. This hashtag should be changed for the city where the PB process is happening (e.g. #PBBOS or #PBNYC).

The steps below explain how to create the “if this then that” recipes:

1. Go to ifttt.com and create an account.
2. Click on “My Recipes”.
3. Click on “Create Recipe”.
4. Choose “trigger” channel (Twitter, Instagram, etc.).
5. Choose “trigger” (e.g. “New tweet by search”)
6. Complete “trigger” fields.
7. Complete action field.
8. Click “Create Recipe”.

Tips:

Keep hashtags simple. Twitter posts only allow for 140 characters and the hashtag characters also count. Also, you will have to enter in your login information for each channel, so be sure to set up Instagram, Twitter, Tumblr, and Wordpress accounts prior to starting the IFTTT process.



Which recipes should I create?

For now, create the recipes below. We will talk about other recipes when we reach other parts of the guide.

Instagram → Twitter

The recipe below reposts all Instagram posts using the designated hashtag to your Twitter account. This way all social media content is driven to Twitter, which will facilitate data extraction later. We will come back to this point again in the Data Management section of the guide.

If new photo by anyone tagged #PBDUSP, then post a tweet with image to @PBCrowdSourced

Twitter → Twitter contact list

This recipe collects the Twitter handles of everyone who uses the designated hashtag. This list can be used for reaching out to participants to encourage future engagement.

If new tweet from search for #PBDUSP, then add user to list for @PBCrowdSourced

Keep in Mind:

For IFTTT to be able to identify tweets containing the specified hashtag, users' accounts need to be public. Since this may limit participation, it is important to include this information in the website Q&A, social media posts encouraging mobilization, and even emails.



2. Visualization options for the brainstorm page

Wordpress

A Wordpress page is an easy way to set up a website to pull together the crowdsourcing ideas. Wordpress is accessible to most, even with little coding or web development experience. Templates and themes make it easy to create a custom website with many functions. You can access the Wordpress site we created at: <http://wordpress.hannahpayne.webfactional.com/>

A couple of notes before we start customizing Wordpress:

1. You will need to host the wordpress site. One hosting site you can use is Webfaction. DUSPviz at MIT has a great tutorial on how to set up a web hosting account with Webfaction: <http://duspviz.mit.edu/webfaction/>
2. If you are using a Webfaction account, the following is a tutorial also from DUSPviz at MIT on how to set up a Wordpress site on your Webfaction account: <http://duspviz.mit.edu/webfaction-wordpress/>

Customizing Wordpress

1. To start, go to Dashboard → Appearance → Themes → Add New
2. Choose a theme you like and install it. Once installed, click “Activate” at the bottom of the page. We used “Zerif Lite” as a theme but, you can choose whatever theme you prefer. If you want to follow this guide step-by-step, we recommend choosing Zerif Lite to make the process easier.
3. Next, go to Appearance → Customize. This will give you the option to make a number of changes including adding content, logos, and photos.
 - Under “Site Title & Tagline”, enter your title and tagline. We used “Participatory Budgeting: Share Your Ideas.”
 - Under “General Options”, upload your logo, enter the links to your Facebook page and Twitter account, enter your address, and your email.
 - Under “Big Title Section”:
 - Enter the title of your site (e.g., “How Would You Spend \$XXX to Improve Your City?”)
 - Under “Green Button Link”, write “Submit Your Idea” and enter the link to the submission page (see more details under User Submitted Posts).
 - Under “Our Focus Section”, write “Idea Factory” under title and “Check out what others have suggested” under the subtitle.
 - Hide the “About Us Section”.
 - Hide the “Our Team Section”.
 - Hide the “Testimonials Section”.
 - Under “Latest News Section”, write “Submitted Ideas” as the title.
 - Leave “Ribbon Sections” blank.
 - Hide “Contact Us Section”.
 - Upload the background photo under “Background Image”.
 - Under “Static Front Page”, select “your latest posts”.



Wordpress Plugins

Wordpress plugins allow you to easily add additional functionality to the Wordpress site. Go to the admin panel and click on Plugins → Add New. From there you can search for plugins directly. To create the brainstorm section you will need to add the following Wordpress plugins:

1. Juicer Plugin

The Juicer plugin collects social media posts, using either a hashtag or username, and presents them in a bulletin board format. Juicer can be installed by searching for Juicer under the “add new plugin” section of the Dashboard of the Wordpress admin page.

Once Juicer is installed on Wordpress, you will need to create a Juicer account at juicer.io (if you hadn't already done that). You can then choose up to two social media sources for free and can add more sources with a paid subscription. First select the social media source (Twitter, Facebook, Instagram, etc.) and then select either by username or hashtag.

We used Twitter and Facebook as the feed sources because Twitter should already be pulling all Instagram posts thanks to the IFTTT recipe you created. For Twitter, we selected the option to collect posts by hashtag (#PBDUSP), this allows you to collect posts from other users and posts that you tag. For Facebook, we chose to collect posts from our Facebook page. In Juicer, you have the option to collect posts by hashtag, however, the Facebook API that collects posts by hashtag is not very reliable and may not run smoothly with Juicer. Because of this, we recommend that you collect posts for Juicer by your Facebook page (@pbDUSP) and share relevant posts on your own PB Facebook page so they can be pulled through to the Wordpress site.

Once the account and feeds are set up, you need to return to Wordpress to embed the feed into your site. To do so you paste [juicer name='juicer'] into the code of your page, but replace 'juicer' with your Juicer username. Be sure to put the juicer code between code tags. To embed the code in the Zerif Lite theme, go to Dashboard → Appearance → Editor. From the Editor section, click on “our_focus.php” on the right side of the page under “Templates.” The code below has the Juicer code highlighted in pink:

```
<section class="focus" id="focus">
<div class="container">
  <!-- SECTION HEADER -->
  <div class="section-header">
    <!-- SECTION TITLE -->
    <?php
    $zerif_ourfocus_title = get_theme_mod('zerif_ourfocus_title',__('Our focus','zerif-lite'));

    if( !empty($zerif_ourfocus_title) ):
      echo '<h2 class="dark-text">'.__($zerif_ourfocus_title,'zerif-lite').</h2>';
    endif;
    ?>
    <?php
    $zerif_ourfocus_subtitle = get_theme_mod('zerif_ourfocus_subtitle',__('Add a subtitle in
    Customizer','Our focus section','zerif-lite'));
    if( !empty($zerif_ourfocus_subtitle) ):
      echo '<h6>'.__($zerif_ourfocus_subtitle,'zerif-lite').</h6>';
    endif;
    ?>
  </div>
  <div class="row">
    <?php juicer_feed('name=pbcrowdsourced'); ?>
  </div>
</div> <!-- / END CONTAINER -->
</section> <!-- / END FOCUS SECTION -->plugins:
```



2. User submitted posts

The User Submitted Posts plugin allows page visitors to submit ideas directly from the Wordpress page without having to log in. These ideas will be posted under the “Latest News Section.”

Once User Submitted Posts is installed on the Wordpress page you can edit the submission form by going to “settings” under the administrator dashboard. Under settings, click on “user submitted posts.” From there you can go to ‘options’ to select what to include in the form by choosing ‘show’ or ‘hide’.

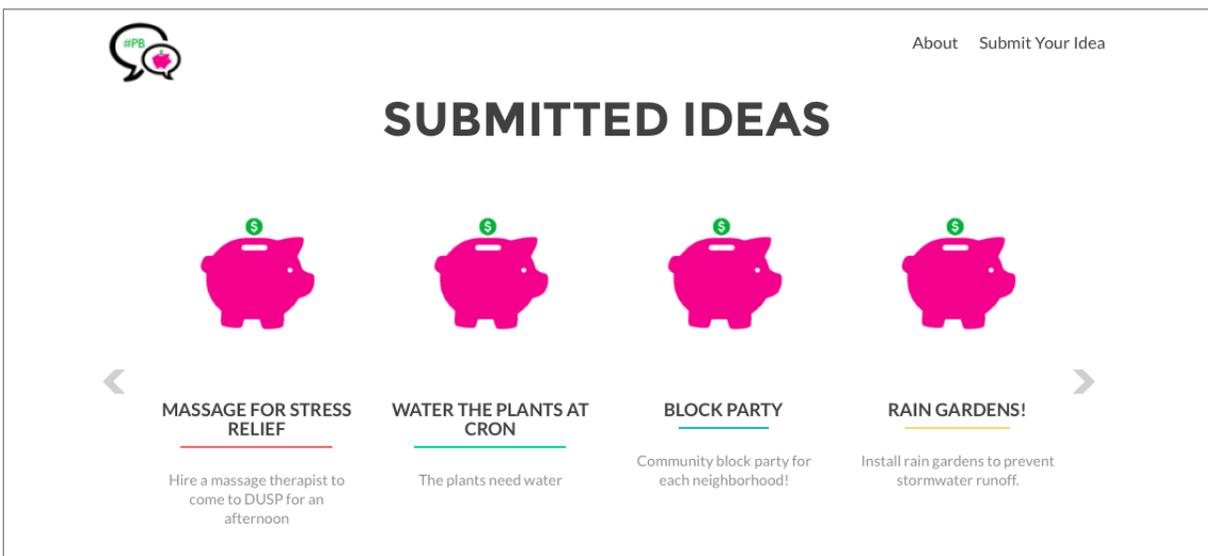
- * Hide post url, post tags, and challenge question. Keep all other Fields marked as “show.”
- * Enter an email address if you would like to receive alerts about post submissions.
- * Under “Redirect URL”, write “/”. This will redirect to the home page after the person submits an idea.
- * Leave other options as default.

To include categories in your form (environment, community and culture, health and safety, etc.), go to “Posts” from the main admin panel and select ‘categories’. From the ‘categories’ page you can add categories that you would like to include in the form. If you want to include categories, be sure to select ‘show’ next to ‘post category’ on the User Submitted Posts settings.

Now, you will need to embed the “User Submitted Posts” code into a new page on Wordpress. To do this, go to the admin dashboard and click on Pages → Add New. Enter a title for your new page: “Submit Your Idea.” Under “Text”, write the following:

```
<code>
[user-submitted-posts]
</code>
```

To change the default icon of the user submitted posts, you will need to connect to the website folders through an SFTP connection. If using Webfactional and the Zerif Lite theme, you will need to go to “webapps” → “wp” → “wp-content” → “themes” → “zerif-lite” → “images.” The easiest way to change the icon is to delete the image that says “blank-latestposts.png” and save a version of your icon as “blank-latestposts.png.” After you have renamed your icon, you can then upload the new “blank-latestposts.png” to the same Images folder. The image below illustrates what this section could look like on your homepage.





Tweeting user submitted posts

You can also have any new post on your Wordpress site be tweeted through your Twitter account. To do this, you will need to create a new IFTTT recipe:

if  then 

created April 20, 2015
last run April 28, 2015
run 8 times

If any new post on your blog, then post a tweet to @PBCrowdSourced

In order to tag the tweet with the right hashtag, write in the hashtag under “What’s happening?” as pictured below:

Action

Post a tweet

This Action will post a new tweet to your Twitter account. NOTE: Please adhere to Twitter's Rules and Terms of Service.

 **What's happening?**

PostTitle PostUrl #pbDUSP

3. Adding other pages

You can add additional content to your website by creating new pages. To add new pages, go to the admin dashboard and select “Pages” → “Add New.” We recommend creating an “About” page that provides additional details on the participatory budgeting process.

Note on costs:

*Wordpress: the theme we used for our Wordpress website includes several functionalities at no cost. You can purchase an upgrade for the theme that would allow for greater customization. If the city is considering using Wordpress for the PB website, it might also be worth investigating which theme will better suit its needs.

*Juicer Plugin: for \$10 per month it is possible to unlock additional Juicer functions that will improve social media idea collection. It will also eliminate any advertising of the plugin. We strongly recommend paying this fee.

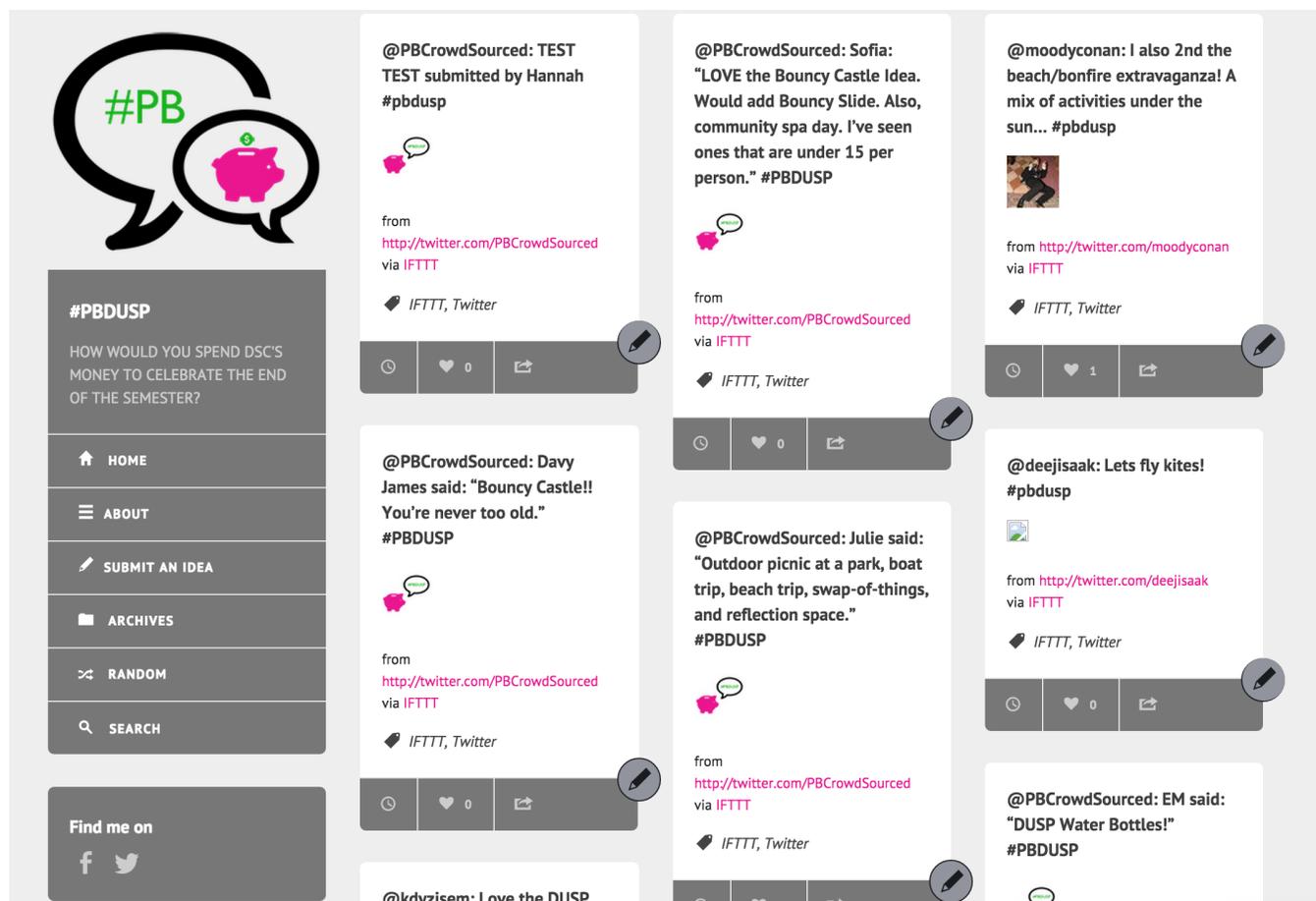


Tumblr

If you want a simpler brainstorm page that only collects social media posts, Tumblr is a good option. Tumblr is an easy site to use to display images, videos, and posts. However, if you use this option you should also make sure that there is a way to submit ideas not through social media because many citizens will prefer not to use social media to engage in the PB process.

You can customize your Tumblr by selecting a theme and then can change colors, titles, content, and other features under "Customize Theme." If you have experience with HTML, you can edit the HTML code directly. Make sure that your Tumblr page follows similar formatting to your other webpages in order to create a consistent online presence.

While Tumblr is great for creating a visually pleasing brainstorm page, it does not have much additional functionality. For example, users cannot submit ideas directly through the Tumblr. Though it is possible to provide a link to a page where participants can submit proposals outside of social media, this could potentially make the process more cumbersome than simply having all interaction happen in one place. Below is an example of brainstorm page we built on Tumblr (you can access it at pbcrowdsourced.tumblr.com).





Getting Twitter and Instagram Posts to Tumblr

Use the following IFTTT recipes to collect ideas from Twitter and Instagram and post them to Tumblr:

Instagram → Tumblr



created March 10, 2015
last run April 27, 2015
run 6 times

If new photo by anyone tagged #PBDUSP, then create a photo post on your Tumblr blog



created March 13, 2015
last run March 13, 2015
run 1 time

If new video by anyone tagged #PBDUSP, then create a video post on your Tumblr blog

Twitter → Tumblr



created March 10, 2015
last run 7 days ago
run 62 times

If new tweet from search for #PBDUSP, then Create a text post on your Tumblr blog



DATA MANAGEMENT

In this section of the guide we explain how to extract tweets with a specific hashtag from Twitter, save it to a database, format the database according to a format of interest, and export it as a csv file. These steps will help you collect and manage the ideas generated on social media for future stages of the participatory budgeting process.

1. Extracting data from Twitter and saving it to a database

In the first section of this guide we explained how to set up IFTTT recipes to repost ideas from Instagram to a Twitter account. This step is important because it enables us to extract all the ideas generated on social media from just one source: Twitter. A simple way to do this is to use a Python script. Python is a programming language that allows us to access Twitter data and download it to a database in a matter of seconds. The next steps will guide you through setting up the Python environment, editing the Python script, running it, and saving the data to a SQLite database.

Setting up the Python environment

To run the python script you will first need to download Python, install a few Python libraries (a collection of programs and subroutines that enables us to run the script), and have a good text editor (Sublime Text works well).

1. Download Python at <https://www.python.org/downloads/>
2. You will need the following Python libraries:
 - Simplejson: <https://pypi.python.org/pypi/simplejson>
 - Twython: <https://twython.readthedocs.org/en/latest/index.html>
 - Sqlalchemy: <http://www.sqlalchemy.org/>
3. To install the Python libraries, open Terminal on Mac or CMD (command line) on Windows and type the following commands:
 - pip install simplejson
 - pip install twython
 - pip install sqlalchemy

Accessing the Twitter data

To be able to access Twitter data, we need to obtain an API key, an API secret, an Access token, and an Access token secret. We can obtain them by doing the following:

1. Login to a Twitter account and navigate to <https://apps.twitter.com/>
2. Click on "Create New App" and fill in the necessary information. When you agree to the terms and conditions, you will be taken to a new page with information on the application you just created. Under the tab "Keys and Access Tokens" you will find the items we mentioned above, which we will include in the Python script when we start editing it.



Creating a SQLite Database

We can use a SQLite Database to store the data extracted from Twitter every time we run the script. Other types of databases exist, but we found SQLite to be simple enough to use for this purpose. The following steps will guide you through creating the database:

1. Download the SQLite Database Browser at <http://sqlitebrowser.org/>
2. Open SQLite Database Browser, create a new database, and save it to the same folder where you will save the python script.

Editing the Python Script

Open a copy of the Python script that has been provided to you along with this guide. We recommend creating a copy so that you will always have a version of the original script to refer to. The images below will guide you through the script and point to where you should make edits.

Tips:

Naming the database the same as the Python script and keeping both in an easily accessible folder might make your life easier. Don't forget to add ".sqlite" to end of the database's file name.

```
dusp_twitter_run.py x
1  #!/usr/bin/python
2  -*- coding: utf-8 -*-
3  #!/usr/bin/env python
4
5
6  import sys
7  import urllib
8  import string
9  import simplejson
10 import sqlite3
11
12 import time
13 import datetime
14 from pprint import pprint
15
16 import sqlalchemy
17 from sqlalchemy.orm import mapper, sessionmaker
18 from sqlalchemy import Column, Integer, String, ForeignKey, Text, DateTime, Float
19 from sqlalchemy.ext.declarative import declarative_base
20 from sqlalchemy import Unicode #
21 from sqlalchemy import Text #
22
23 from sqlalchemy import DECIMAL
24 from sqlalchemy import Unicode
25
26
27 from sqlalchemy.sql import join
28 from types import *
29
30 from datetime import datetime, date, time
31
32 ids = ['PBDUSP',] # enter your search terms
33
34 from twython import Twython
35 t = Twython(app_key='mlJ0Cac0f6hNZsJ5h89pYSjif', #REPLACE 'APP_KEY' WITH YOUR APP KEY, ETC., IN THE NEXT 4 LINES
36 app_secret='0D6dwDU52hZ5mmUFA0PaIecU6jh8rMqPC9NIz05IzY8KGvewes',
37 oauth_token='71853930-yby521NSr0kLDfjYQcmiayzHUBf0ic1E1dav5Gwy',
38 oauth_token_secret='611M02EJYFIYVS9qgLBxDz0Yx2JqD877Wbyq94oI7I2VM')
39
40 Base = declarative_base()
41
```

These commands access the Python libraries that we installed previously. Keep them as they are.

1. On line 32, replace 'PBDUSP' with the hashtag being used for the participatory budgeting process in your city. Keep it within single quotation marks. If there is more than one hashtag being used, separate them using commas. You can add up to 10 hashtags.

2. On lines 35 to 38, replace the information in yellow with the API key (app_key), the API secret (app_secret), the Access token (oauth_token), and the Access token secret (oauth_token_secret) obtained from the application we created earlier. Keep them within single quotation marks.

Tip: Twitter does not differentiate between lower case and upper case, so there is no need to create different versions of the same hashtag.



```
43 class Messages(Base):
44     __tablename__ = 'dusp_pb'
45
46     id = Column(Integer, primary_key=True)
47     query = Column(String)
48     tweet_id = Column(String)
49     coordinates = Column(String)
50     retweeted_status = Column(String)
51     created_at = Column(DateTime)
52     content = Column(Text)
53     from_user_screen_name = Column(String)
54     from_user_id = Column(String)
55     from_user_location = Column(String)
56     source = Column(String)
57     json_output = Column(String)
58
```

Lines 46 to 57 define the columns that the final table will contain. Do not change any of these names for now. Later on in this guide we will introduce a procedure to change the column names.

3. In this part of the code, we are creating the table in the database that will contain the information extracted from twitter. After `__tablename__`, change 'dusp_pb' to the name you want for your table. Remember to keep it within single quotation marks.

What information is this script collecting?

- * id is a unique identification number for each entry on the table;
- * query will return the hashtag that was used to search for tweets;
- * coordinates will return the latitude and longitude of the tweet sender if the person has geolocation enabled;
- * retweeted_status will tell you if this tweet is a retweet;
- * created_at will give the date and time the tweet was created;
- * content provides the content for the tweet (the PB idea);
- * from_user_screen_name returns the twitter handle of the sender;
- * from_user_id returns the unique twitter id of the user who sent the tweet;
- * from_user_location provides the location indicated by the user in their bio (if any);
- * source provides the source of the tweet;
- * json_output returns a json output for the tweet.

If you wish to collect less information, just delete the lines associated with the items you want to remove before running the script.

```
111 def get_data(kid, max_id=None):
112     try:
113         d = t.search(q=kid, count = '100', result_type = 'recent', max_id = max_id) # lang = 'en'
114
```

Line 113 is where we define the parameters for the Twitter search. Count indicates that we are collecting 100 tweets every time we run the script. This is the maximum number Twitter will allow per run. Result_type set as 'recent' allows us to collect the most recent tweets. You can find other available parameters here: <https://dev.twitter.com/rest/reference/get/search/tweets>

```
308
309 class Scrape:
310     def __init__(self):
311         engine = sqlalchemy.create_engine("sqlite:///Users/isadoracruxen/Desktop/DuspTwitterRun/dusp_twitter_run.sqlite", echo=False)
312         Session = sessionmaker(bind=engine)
313         self.session = Session()
314         Base.metadata.create_all(engine)
315
```

4. In line 311 we define where is the database that will store the data from Twitter. Change the information in yellow after `sqlite:///` to match the file path for the SQLite database you created earlier. Remember to keep it within quotation marks.



Running the Python Script

After editing the Python script, you are ready to run it and let it populate the SQLite database with the ideas from social media. The steps below explain how to run the script:

1. Open Terminal on Mac or CMD on Windows, and navigate to the folder where you have saved the script and the SQLite database.

On Terminal, if the folder is in your desktop, use the following commands to navigate to it:

```
cd Desktop
cd Folder Name
```

2. Once you have reached the location of your files, use the following command to run the Python script:

```
python filename.py
```

The image below illustrates these steps.

```
Isadoras-MacBook-Pro:~ cruxen$ cd Desktop → Reach Desktop
Isadoras-MacBook-Pro:Desktop cruxen$ cd DuspTwitterRun → Reach Folder
Isadoras-MacBook-Pro:DuspTwitterRun cruxen$ ls
dusp_twitter_run.py          pbdusp_share.csv
dusp_twitter_run.sqlite     pbdusp_share.xlsx
dusp_twitter_run_complete.sqbpro  snippet_sqlite.txt
Isadoras-MacBook-Pro:DuspTwitterRun cruxen$ python dusp_twitter_run.py
```

Tip:

We recommend testing whether the script is working before the participatory process begins. This will allow you to have time to fix any issues. A good way to test the script is to use a trending hashtag on Twitter, which should definitely return 100 tweets per run.

Command to run Python script.

Important:

The file must have a .py extension to be recognized as a python script.

3. Wait until the script finishes running and then open the SQLite database to see the results. Voilà! You should see something like the following image:

	query	tweet_id	coordinates	retweeted_status	created_at	content	1_user_screen_n	
1	PBDUSP	5928275412...			2015-04-27 23:07:54.000...	COFFEE MACHINE! #...	PBCrowdSo...	30
2	PBDUSP	5928275379...			2015-04-27 23:07:53.000...	Water dispenser #P...	PBCrowdSo...	30
3	PBDUSP	5928151747...		THIS IS A RETWEET --...	2015-04-27 22:18:46.000...	RT @PBCrowd...	Cruxen	71
4	PBDUSP	5927737233...	0.0, 0.0		2015-04-27 19:34:03.000...	I 2nd a beach trip! To the C...	MatthewWillner	92
5	PBDUSP	5927603055...			2015-04-27 18:40:44.000...	Join the participatory ...	hspayne9	11
6	PBDUSP	5927598191...			2015-04-27 18:38:48.000...	Let's celebrate the end of th...	hspayne9	11
7	PBDUSP	5927013407...			2015-04-27 14:46:26.000...	#PBDUSP Organize a ...	Cruxen	71
8	PBDUSP	5926961819...			2015-04-27 14:25:56.000...	And we're off! #PBDUSP b...	PBCrowdSo...	30
9	PBDUSP	5925426140...	-71.1148398, 42.3667445		2015-04-27 04:15:42.000...	#PBDusp	FayrouzSaad	37
10	PBDUSP	5924181408...		THIS IS A RETWEET --...	2015-04-26 20:01:06.000...	RT @PBCrowd...	hspayne9	11

Keep in mind:

If you expect several ideas to be posted to social media within short time frames, you should run the Python script at least twice a day in order to always collect the most recent tweets. Twitter has a short term memory and will not return all tweets after certain periods of time; it will give you only the most popular.



2. Editing the database structure and exporting it as a csv file

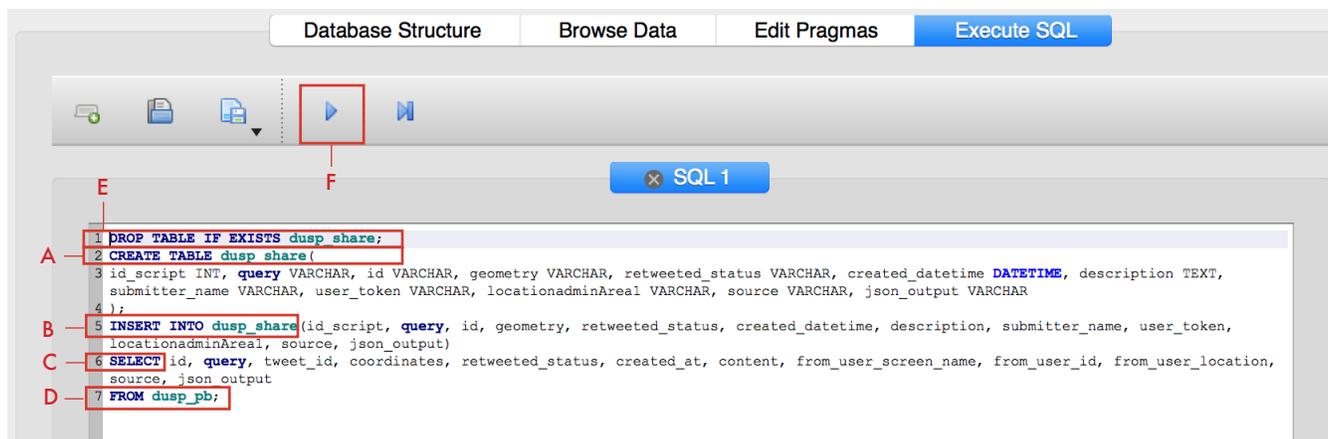
Once you have collected the social media data in your database, you can edit the column names to match any database structure you might wish to follow by executing a simple code within SQLite Database Browser. The next steps explain how to do this, using Sharabouts' (a web map platform) database structure as an example.

1. Open the SQLite database containing the crowdsourced ideas.
2. We want to change the following column names to match the Shareabouts' database structure:

- * id → id_script
- * tweet_id → id
- * coordinates → geometry
- * created_at → created_datetime
- * content → description
- * from_user_screen_name → submitter_name
- * from_user_id → user_token
- * from_user_location → locationadminArea

We will use a short snippet of code to make these changes within the SQLite Browser. The other columns will retain their original names.

3. Click on the "Execute SQL" tab within SQLite Database Browser. Copy the following code into the text area. The image below provides information on what the code does and how you might change it.



A. This command creates a new table within the same database. This table will contain a copy of the content in the original table but will have different column names. You can replace `dusp_share` with the name you want to give to the new table. In line 3, you will add the names of the columns in the new table and define the variable type (e.g., `VARCHAR`, `DATETIME`, etc.). Separate the names of the columns as illustrated above. Add the column names respecting the order of the columns in the original table (the one we created with the script). Do not erase any of the parentheses or semi-colons.

B. This command tells the program that we will insert content into the columns of the table we just created. Here you will specify the same column names we defined in line 3. The following line, "SELECT", tells it what the content will be.



C & D. These commands tell the program to select the content that will populate the new table from the table we originally created using the script (in this case, the table `dusp_pb`). After “SELECT”, on line 6, you should include the names of the columns from the original table, maintaining the column order.

E. This command is here to help you. Let’s say you run the Python script once, and then use the SQL code to create a new table with different column names. If you run the Python script again to collect more tweets, you will want to transfer the new content to the other table as well. This command allows you to do just that. It tells the program the following, if the table that I am trying to create already exists, replace it with a new table with the same name, same column names, and same content as the table defined in FROM (in this case, “FROM `dusp_pb`”). This will prevent you from creating a new modified table every time you run the script.

F. Once you have finished editing the SQL snippet of code, click on this button to run it and generate the new table with different column names.

You should now have two tables within the same database. Save the whole database to your folder to keep the two tables. If you want to export them as a csv file, click on File → Export → Table(s) as csv file.

Going through the data

While the steps described above facilitate data management, going through all ideas once they are in the spreadsheet is still challenging. Below we provide a few tips that may help to make this process a little easier.

- Use filters in Excel to separate promotion tweets from actual ideas: this can be done by trying to identify accounts that were more likely to post to social media to engage participants and raise awareness, and then using the filters to view the tweets and Instagram posts from these accounts (e.g., your partner organizations). The search function can also be helpful for this purpose. You can search for key words associated with promotion tweets.
- Look at retweets to identify popular ideas: under “`retweeted_status`” you will find information on whether the post is a retweet. For ideas submitted through Twitter, this information might help out you identify ideas that have broader support.



WEB MAP INTEGRATION

We chose to format the SQLite database according to Shareabouts' database structure because several cities have used Shareabouts for idea submission during the early stage of the PB process. Matching database structures allow for potentially merging the tables and having all ideas in one place. If the city is interested in using a map for idea collection, below we provide some tips and thoughts based on our exploration of web mapping possibilities:

1. Shareabouts

If you choose to use Shareabouts and want to integrate social media posts into it, you can turn the csv file extracted from the SQLite database into a json file and upload it to the Shareabouts database using the Shareabouts API. This is why you need matching database structures. Because this process is less intuitive than one might think—we attempted this upload many times and experienced several problems—we recommend working closely with the technical team at Shareabouts if you use this option. Moreover, it would be helpful to have someone on your team who understands coding and databases.

2. Other web mapping options

There are other web mapping options that are easier to manage than Shareabouts and allow for greater social media integration. One option that we liked is Ushahidi, which is also an online mapping tool for crowdsourcing. In addition to allowing users to submit ideas and locate them on a map, Ushahidi also provides a feature that automatically collects tweets (by hashtag) and puts them on the map.

Using the IFTTT recipes that we set up earlier, this would be an easy platform for displaying ideas on a map and integrating social media. Ushahidi also has simple ways to bring in an RSS feed of tweets using your designated hashtag. The next page provides a comparison of Ushahidi and Shareabouts, as well an example of a Ushahidi page we created early in our process.

Finally, PBNYC has used CartoDB, another great web mapping tool, to display final proposals, voting locations, and districts. We think this is an excellent way to incorporate maps into the PB process because the maps show limited but highly relevant information. For more information, check out the PBNYC website: <http://m.pbnyc.org/map>

Web map limitations

While webmapping platforms are useful for visualizing where participants' would like certain projects to take place, we recommend a shift away from a map-dependent idea submission process. In general, many participants' ideas are not location specific, which requires submitters to arbitrarily pick a location for their idea. An added challenge for putting tweets on a map is that the vast majority of Twitter users do not activate geolocation and even if they do, they might not be tweeting from the location of their proposal. Furthermore, if all ideas are displayed the maps quickly get crowded with ideas, making it difficult to read through many proposals quickly. Inspired by recent PB initiatives, notably in New York City, in the "Roadmap" section of this guide we propose an alternative way to integrate web mapping into the PB process.



Shareabouts vs. Ushahidi

	SHAREABOUTS	USHAHIDI
Platform	Web	Web + Mobile
Mapping Platform	Leaflet	Open Layers
Data Collection	Web + Smartphones	SMS + Web + Smartphones
Social Media	Twitter + Facebook login	Twitter integration + RSS feeds
Functionality	Visually pleasing user interface / unfriendly management	Less appealing layout / easy-to-use platform to develop and manage

Ushahidi example page

The Boston participatory budgeting process

FILTERS **ALL** BRAINSTORM PICTURES VIDEO

CATEGORY FILTER [HIDE]

- ALL CATEGORIES
- ARTS AND CULTURE
- PUBLIC SPACE
- ENVIRONMENTAL
- INFRASTRUCTURE
- OTHER
- PUBLIC SAFETY

HOW TO SUBMIT A PROPOSAL

By using an app:
iPhone
Android

By sending an email:
hannanp176@gmail.com

By sending a tweet with the hashtag/s:
#ourbudgetBOS

By filling this form on our website.

PROPOSALS (FROM THE MAP, LISTED IN CHRONOLOGICAL ORDER)

TITLE	LOCATION	DATE
test	algheshg	Mar 13 2015
Better lighting on the Esplanade	Esplanade	Mar 13 2015
Improve safety at bus stop	Mass Pike Off Ramp	Mar 13 2015

BRAINSTORM IDEA FEED

TITLE	SOURCE	DATE
@PBCrowdSourced: Sofia: "LOVE the Bouncy..."	Brainstorm Idea...	May 2 2015
@moodyconan: I also 2nd the beach/bofire...	Brainstorm Idea...	May 1 2015
@PBCrowdSourced: Davy James said: "Bouncy..."	Brainstorm Idea...	May 1 2015



IMPLEMENTATION

To test the technology, outreach, and participation, we organized a simplified participatory budgeting process in the Department of Urban Studies and Planning (DUSP) at MIT with funding set aside by the DUSP Student Council. We ran a week long process that included outreach and idea submission. Below we provide information and thoughts on this process.

1. Outreach and Engagement

Adding idea collection through social media to the participatory budgeting process will not take many additional resources and can be done by leveraging existing outreach and engagement activities. The PB team can use existing relationships and resources to foster engagement and successfully implement the social media crowdsourcing tool.

We recommend two complementary outreach strategies to encourage participation through social media: an online strategy and an offline strategy. To illustrate each of them, below we provide an outline of how we conducted outreach and engagement during the PBDUSP process and recommendations for how you can adapt different strategies to meet your city's needs.

Online engagement

Email

One of the main outreach strategies currently used by PB processes is to email partners, local agencies, and stakeholder groups in order to capitalize on their own social networks. The same strategy could be employed to raise awareness and encourage participation through social media. During PBDUSP, we did this by emailing flyers to student groups. An example email is shown below:

Hey DUSP!

Do you have an idea about how to celebrate the end of the semester or improve student life at DUSP?

DSC is running a **participatory budgeting process**, where **you** get to decide how to spend DSC's money!

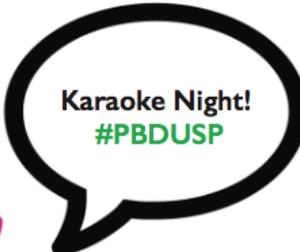
Share your ideas on **Twitter** or **Instagram** using **#pbDUSP** (make sure your account is public to be included!)

Check out what others have shared or share your own ideas on pbcrowdsourced.tumblr.com

Voting on ideas will happen this weekend.

What's your idea?
DSC Participatory Budgeting

Karaoke Night!
#PBDUSP

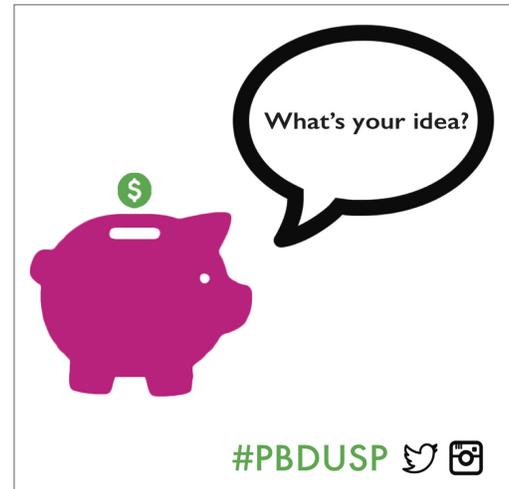


#PBDUSP  
pbcrowdsourced.tumblr.com
April 27th - May 1st



Twitter & Instagram

Maintaining a strong presence on Twitter and Instagram is important. Tweets and Instagram posts can encourage participation as well as keep followers up to date on the PB process. Examples of images and updates are provided below:



Also, keep your Twitter feed active with ideas and updates:

Home Notifications Messages Search Twitter Tweet

How would you spend DSC's money to celebrate the end of the semester?

#PB

Your budget. Your ideas. Your choice.

TWEETS 37 FOLLOWING 41 FOLLOWERS 3 LISTS 1 Edit profile

PBCrowdSourced
@PBCrowdSourced
pbcrowdsourced.tumblr.com
6 Photos and videos

Tweets Tweets & replies Photos & videos

PBCrowdSourced @PBCrowdSourced · May 1
Sofia: "LOVE the Bouncy Castle Idea. Would add Bouncy Slide. Also, community spa day. I've seen ones that are under 15 per person." #PBDUSP

PBCrowdSourced @PBCrowdSourced · May 1
Davy James said: "Bouncy Castle!! You're never too old." #PBDUSP

PBCrowdSourced @PBCrowdSourced · Apr 30
EM said: "DUSP Water Bottles!" #PBDUSP

Who to follow · Refresh · View all

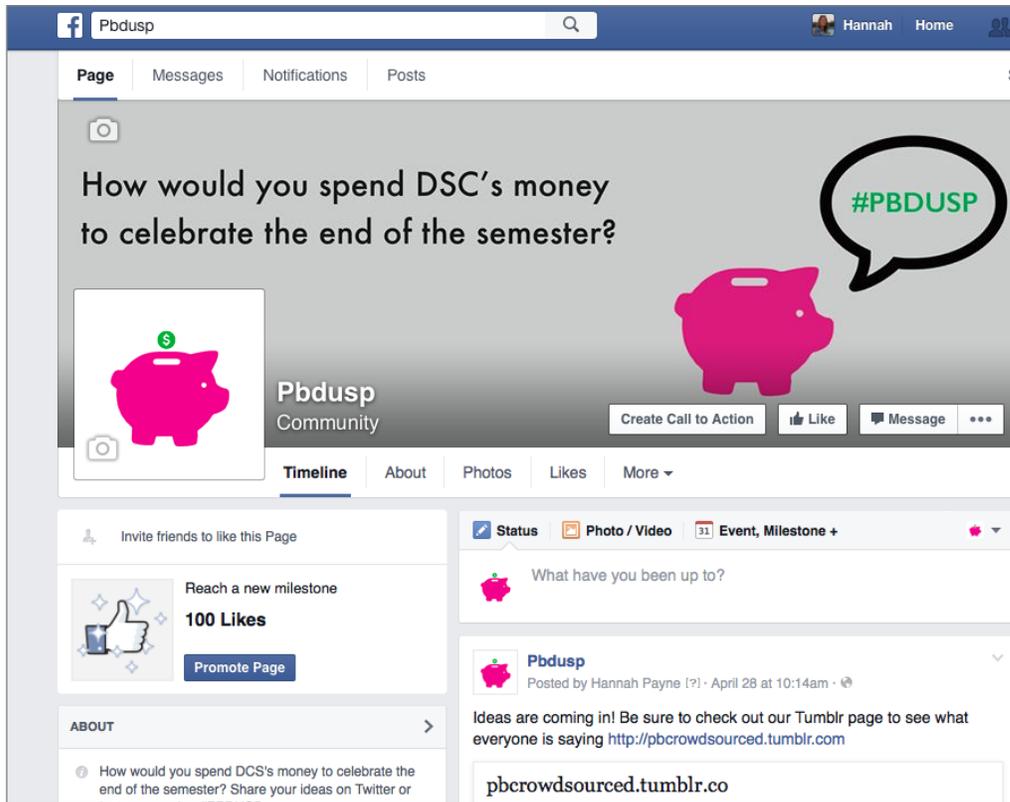
- Katie Kowalsky** @KatieKo...
Followed by Mike Foster
Follow
- Sam Matthews** @vancemat...
Followed by Mike Foster
Follow
- Kevin Durant** @KDTrey5
Followed by Rob Gronkows...
Follow

Find friends



Facebook

In our experience, we found that Facebook posts are one of the most effective ways to engage participants. Generally, we had more people contribute ideas after we posted to Facebook. We recommend creating a Facebook page to both promote participation and provide up-to-date information on the PB process.



Encourage Facebook followers to submit ideas by posting reminders to your Facebook wall as well as to other Facebook groups.

Tips:

1. Connect with local groups and partners through social media. Many of them have Twitter and Facebook accounts and can help to create engagement around PB.
2. Creating social media campaigns or contests might be a good way to engage specific groups, particularly youth.
3. Maintaining consistent content, colors, and logos across all interfaces will help strengthen brand identity and recognition.



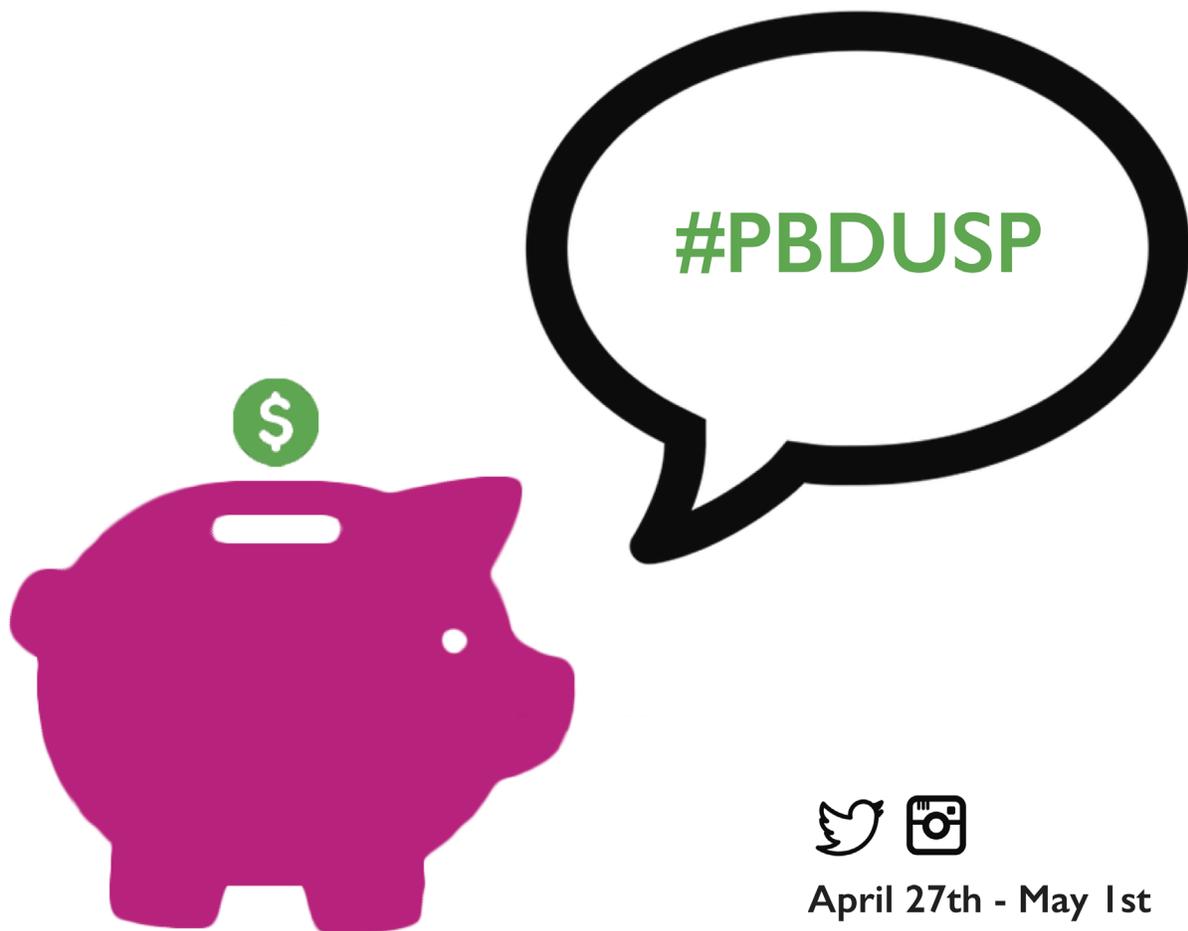


Offline engagement

The PB team should continue to utilize in person engagement to grow participation in the PB process. In our experience, word-of-mouth and face-to-face interaction helped raise awareness of PBDUSP. By leveraging existing events (pop-up events and assemblies) and creating additional opportunities for engagement, the PB team can turn offline outreach into online engagement and idea creation.

Flyers & Posters

We recommend distributing flyers and hanging eye-catching posters on bulletin boards in community center, cafes, schools, bus stops, etc. Here is an example of a poster:

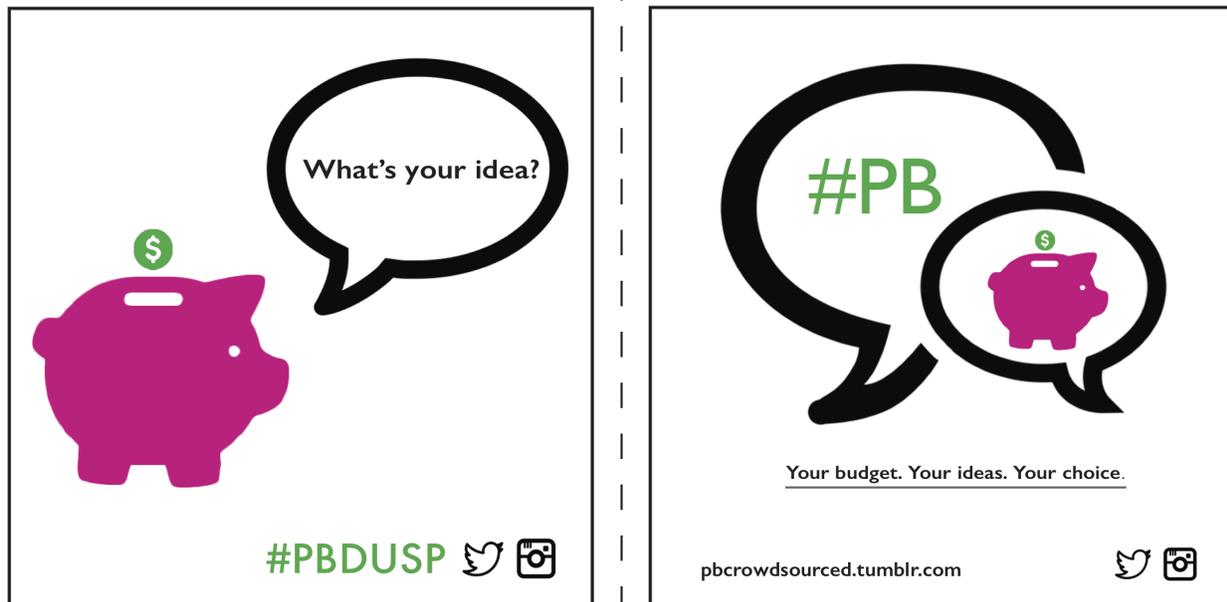


With our posters, we tried to build curiosity around the piggy bank (our logo) to lead people to try to find out more about it and to recognize the logo easily once they received emails or flyers.



Stickers

We also distributed stickers to advertise the DUSP PB process. This is a good strategy for allowing involved citizens to promote the PB process on their own by placing stickers on their waterbottles, laptops, etc. When others ask about the stickers, these citizens can then help provide information about the process. Below is an example of a sheet of stickers:



Pop-up events & Public Assemblies

We recommend leveraging pop-up events to incentivize engagement on social media by promoting the hashtag and the brainstorm website. One idea for a pop-up event is to run an Instagram photo-contest in which people can write their idea on a chalkboard and then post a photo of them holding the chalkboard to Instagram or Twitter. Live-tweets and photos could also be used during public assemblies.

Targeted outreach

Your city's PB team can help expand the number and diversity of participants in the process through targeted outreach. When engaging these communities, it is important to work with them to place flyers, engage through social media sites, and leverage mailing lists when appropriate. These groups can include:

- * Youth: target areas with schools, universities, and colleges to capture youth participation and engage groups.
- * Faith-based groups or individuals: place materials in churches, mosques, and synagogues and work with religious organizations.
- * Minority/Immigrant groups: target community centers, community leaders, and local organizations representing these groups and provide materials in multiple languages as necessary.



2. Results of participatory budgeting at DUSP

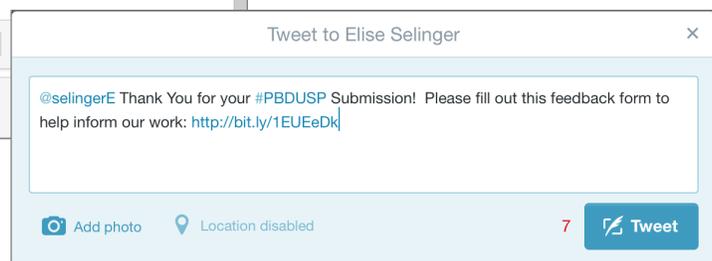
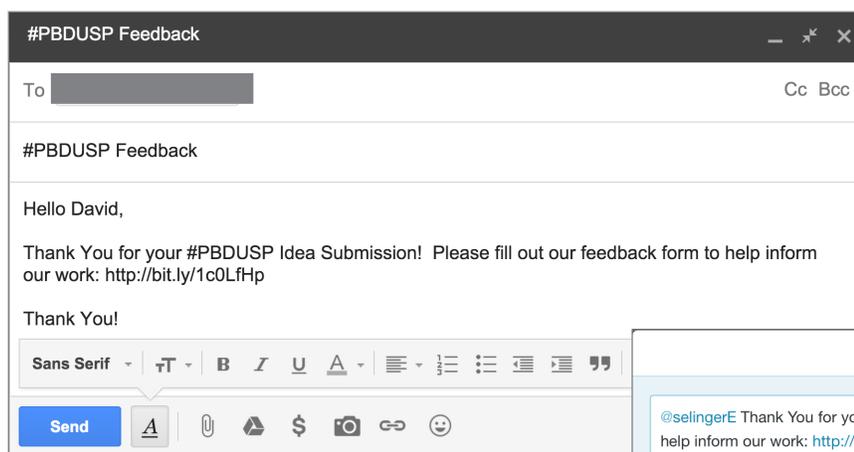
Testing the process with DUSP students provided important insight on the logo, outreach design, and overall performance of the crowdsourcing tools. Below we discuss some the results and the lessons we have learned. However, it would be important to test these ideas in a city participatory budgeting process in order to better gauge what works and what needs improvement in large-scale PB processes.

Participation

- 19 students submitted ideas through Twitter
- 02 students submitted ideas through Instagram
- 10 students submitted ideas through an online form
- 57 students voted via a Google Form

Closing the feedback loop

Sustaining engagement and credibility in participatory processes is often a problem. To address this, we wrote back (through email and direct message on Twitter) to students who submitted ideas to thank them for their participation and ask for feedback (see below).





While we recognize that reaching out to each participant would be more challenging in a city-wide process, we strongly recommend devising strategies to do so. Reasons include thanking them for their participation, asking for clarification or further information (e.g., asking if there is a specific location where they would like their idea to be implemented), and—in later stages of the PB process—letting participants know whether their ideas have been selected for development or voting. One idea is to use the list of accounts that have used the PB hashtag (collected through the IFTTT recipe or the Python script) to write back to participants.

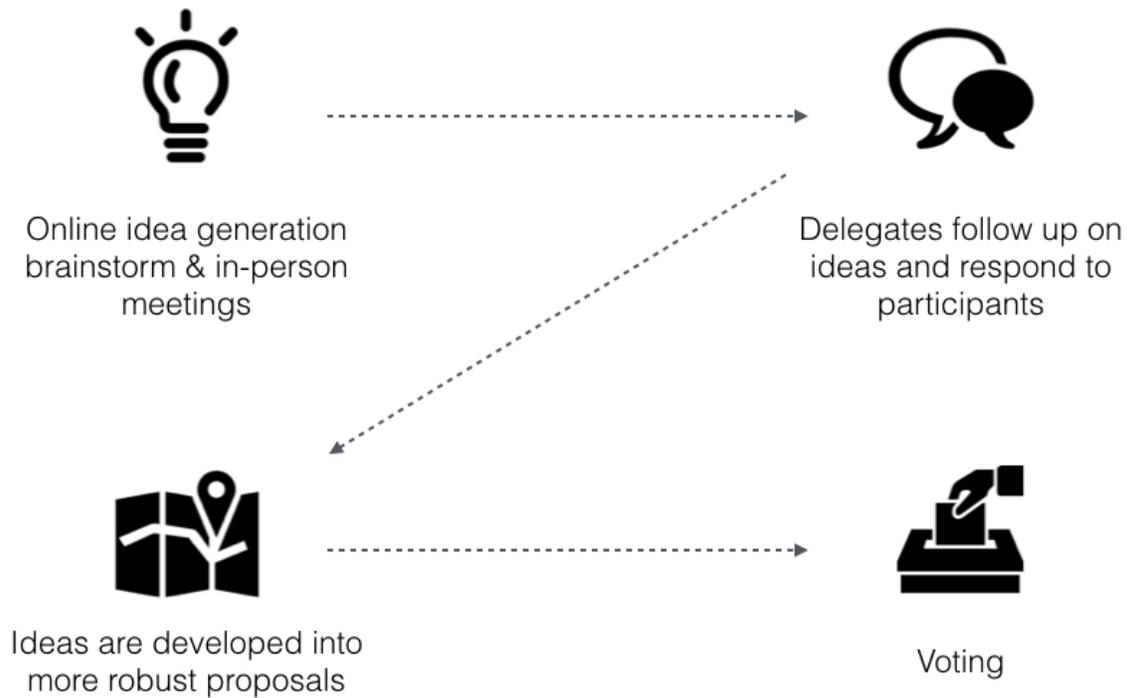
Lessons Learned

- It is important to provide options for idea submission that do not require social media. Many students noted that their Twitter or Instagram accounts are private and that they would prefer not to use social media to submit their ideas.
- Participation is higher when idea submission is quick and easy.
- Word of mouth is important. Many students chose to participate after learning about the process through conversations with process leaders and friends.
- A catchy, easy-to-identify logo may be an asset. Our piggy bank logo worked: people liked it!
- Flyers and stickers are popular and help engage participants.
- Online and targeted engagement help reach a broader set of participants.
- Twitter was more popular than Instagram (this may be because people wanted to keep Instagram accounts more private).
- More people voted than submitted ideas. We had more than 30 people vote in less than 4 hours.
- It was exciting to see a “conversation” beginning to form in the social media thread as people saw what others had posted and responded to their ideas. Most of these comments were supporting or complementing other ideas. This indicated to us that the “brainstorm page” concept has true potential.



ROADMAP

Integrating social media into the PB process will help create an additional avenue for participation and will help citizens engage easily with the PB process on platforms they are already using. We believe that adding in a robust social media component to the PB process will increase participation in the PB process and expand awareness. We envision our proposal for a brainstorm page to be incorporated into the current PB process in the following way:



1. Online idea generation brainstorm & in-person meetings

This phase is all about building awareness for PB and collecting as many ideas from as many people as possible—both online and offline. The in-person meetings will still be the backbone of the idea generation process because they are able to provide and collect a significant amount of information. However, the social media piece will make participation easy for those who cannot attend in-person meetings. The PB team should promote the PB process heavily during this phase, online and offline (see Outreach and Engagement Section).

2. Delegates follow up on ideas and respond to participants

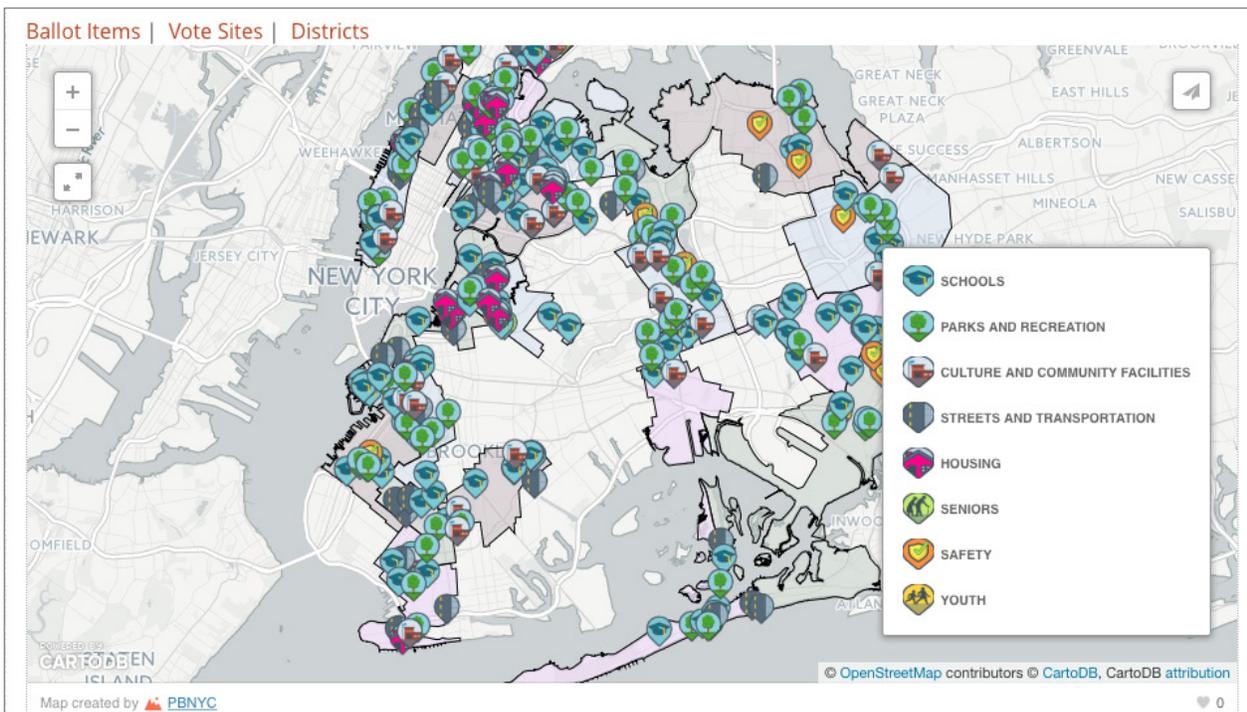
This phase will be key in narrowing down the pool of ideas. Delegates will need to follow up on ideas submitted online to gather more information on the idea, including location and scope. Delegates should try and respond to all submitted ideas with a quick reply even if not all ideas are developed into proposals. During this phase, the PB team should continue to solicit participation via its advertising campaign that incorporates elements of social media.



3. Ideas are developed into more robust proposals

Once the idea submission process is well underway, delegates can begin to focus on the most promising ideas and help to develop those ideas into more formal proposals. Delegates can also group ideas together if the ideas can be formed into one proposal.

If the PB team in the city wants to use any kind of web mapping, we recommend that it happen during this stage in order to maintain a manageable number of proposals on the map. Shareabouts, Ushahidi, or CartoDB can be used. If the PB team does not want to use web mapping, we recommend creating another site that can display the developed proposals in ways that are easy for participants to navigate. Here is an example of a map created with CartoDB to display proposals developed after the idea collection stage for New York City's Participatory Budgeting process:



4. Voting

If possible, we recommend that voting be available online in order to make it more accessible.



REFERENCES

Code Kitchen. "Mining Twitter with Python." Access on March 2015, http://web.mit.edu/aizhan/www/twitter_api_workshop/#/22

Social Metrics. "Downloading tweets with a specific hashtag." Access on April 2015, <http://social-metrics.org/downloading-tweets-with-a-specific-hashtag/>

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Students who participated in #PBDUSP

Code Kitchen

The Noun Project

Social Metrics

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Links:
Wordpress http://wordpress.hannahpayne.webfactional.com/
Tumblr pbcrowdsourced.tumblr.com