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# ONE SOCIAL

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Sowmya Sampath

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# Agenda

- **Motivation and Project Description**
  - Related Work
  - Design, Configuration and Tools used
  - Implementation
  - Demo
  - Tests and Observations
  - Conclusion
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# Motivation and Project Description

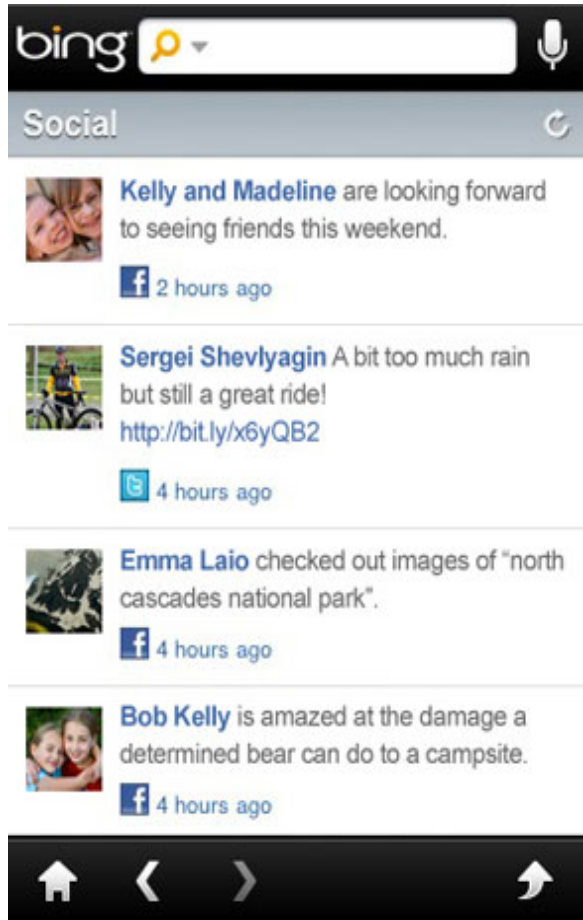
- Facebook and Twitter combined have more than 700 million users.
  - Most common for users to create accounts in both Facebook and Twitter.
  - **OneSocial**
    - ❑ Provides a single view for Facebook statuses and Twitter tweets.
    - ❑ Threads Facebook and Twitter feeds together
    - ❑ Updates both Facebook and Twitter with a single click.
    - ❑ Publishes an web service API that helps further integrations with other networks and helps external developers.
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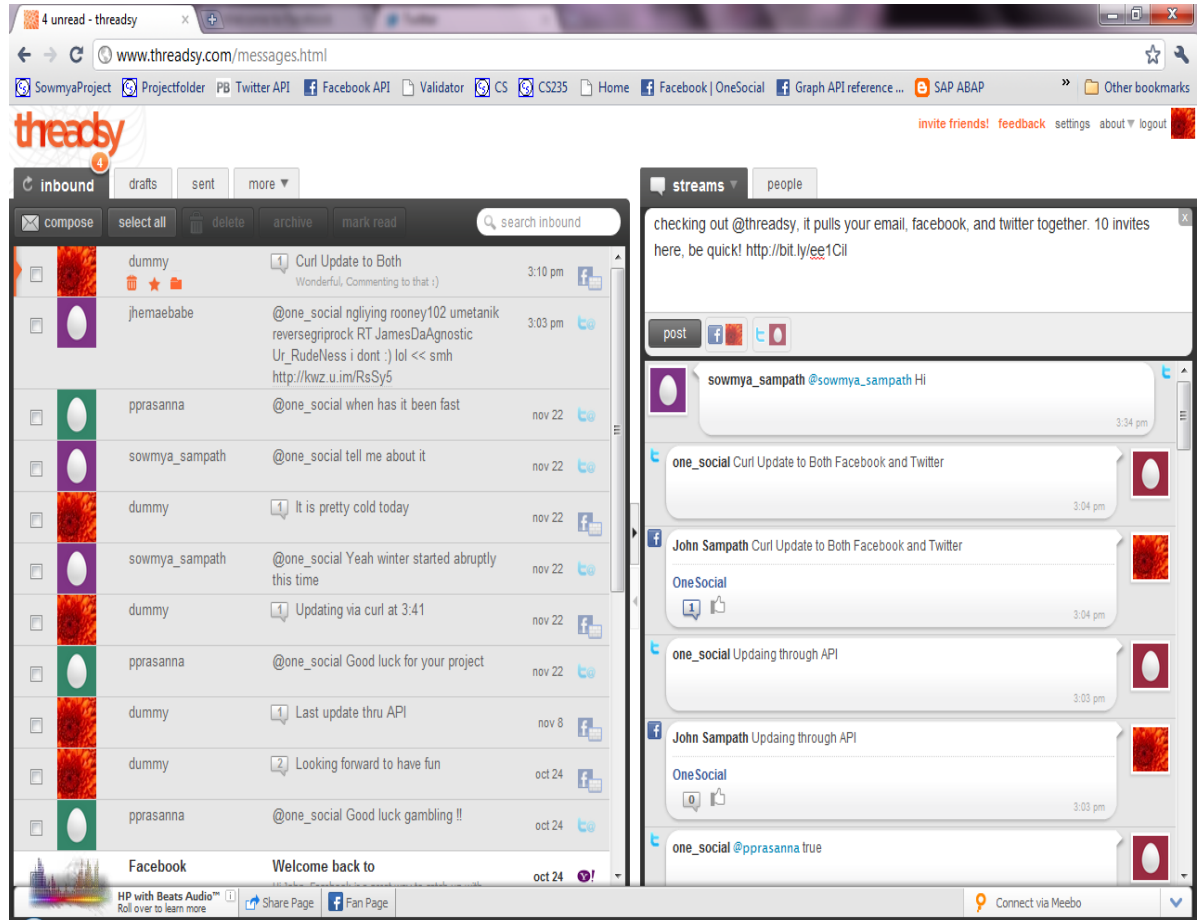
# Bing Social and Threadsy



The screenshot shows the Bing Social interface. At the top is the Bing logo and a search bar. Below it is a 'Social' section with a refresh button. The main feed displays four posts:

- Kelly and Madeline** are looking forward to seeing friends this weekend. (Facebook icon, 2 hours ago)
- Sergei Shevlyagin** A bit too much rain but still a great ride! <http://bit.ly/x6yQB2> (Twitter icon, 4 hours ago)
- Emma Laio** checked out images of "north cascades national park". (Facebook icon, 4 hours ago)
- Bob Kelly** is amazed at the damage a determined bear can do to a campsite. (Facebook icon, 4 hours ago)

At the bottom is a navigation bar with icons for home, back, forward, and search.



The screenshot shows the Threadsy web application. The browser address bar displays [www.threadsy.com/messages.html](http://www.threadsy.com/messages.html). The page has a top navigation bar with links like 'invite friends!', 'feedback', 'settings', 'about', and 'logout'. Below this is a 'threadsy' logo and a tabbed interface with 'inbound', 'drafts', 'sent', and 'more' tabs. The 'inbound' tab is active, showing a list of messages:

From	Message	Time	Platform
dummy	Curl Update to Both Wonderful, Commenting to that :)	3:10 pm	Facebook
jhemabebabe	@one_social ngliying rooney102 umetanik reversegriprock RT JamesDaAgnostic Ur_RudeNess i dont :) lol << smh <a href="http://kwz.u.im/RsSy5">http://kwz.u.im/RsSy5</a>	3:03 pm	Twitter
pprasanna	@one_social when has it been fast	nov 22	Twitter
sowmya_sampath	@one_social tell me about it	nov 22	Twitter
dummy	It is pretty cold today	nov 22	Facebook
sowmya_sampath	@one_social Yeah winter started abruptly this time	nov 22	Twitter
dummy	Updating via curl at 3:41	nov 22	Facebook
pprasanna	@one_social Good luck for your project	nov 22	Twitter
dummy	Last update thru API	nov 8	Facebook
dummy	Looking forward to have fun	oct 24	Facebook
pprasanna	@one_social Good luck gambling !!	oct 24	Twitter

Below the message list is a 'Facebook' section with a 'Welcome back to' message. At the bottom is a navigation bar with links for 'Share Page' and 'Fan Page'. On the right side, there is a 'streams' tab and a 'people' tab. The 'streams' tab is active, showing a list of updates from various users, including 'sowmya\_sampath', 'one\_social', 'John Sampath', and 'pprasanna'. Each update includes a profile picture, a name, and a message. At the bottom right is a 'Connect via Meebo' button.

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# Related work

- Bing Social
    - Collects the feeds from both Facebook and Twitter and displays them in reverse chronological order.
    - It has no facility to update in Facebook or Twitter.
  - Threadsy
    - Collects the feeds from both Facebook and Twitter and displays them in reverse chronological order.
    - In addition, has a facility to update individually to Facebook and Twitter.
  - Both Bing Social and Threadsy offer single sign-on facility.
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# Feature Comparison

Applications	Update to both Facebook and Twitter	Read from both Facebook and Twitter	Thread Facebook and Twitter messages	Publish the services as a REST API
Bing Social	No	Yes	No	No
Threadsy	Yes (separately)	Yes	No	No
Facebook to Twitter	Yes	Yes	No	No
Twitter to Facebook	Yes	Yes	No	No
OneSocial	Yes	Yes	Yes	Yes

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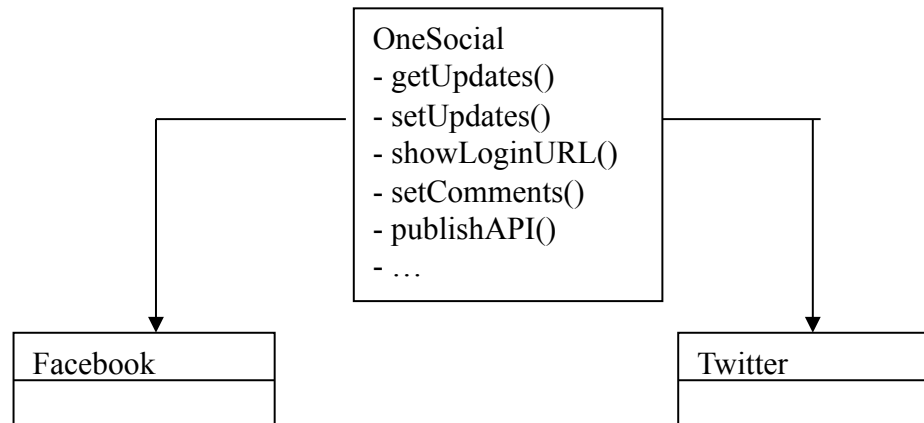
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# Design

- OneSocial provides a layer of Abstraction over both Facebook and Twitter
- Common services are placed in the base class
- OneSocial was built upon MVC design pattern
- Easy to integrate with more social networks



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## ■ Configuration and Initial Settings

- ❑ OneSocial Application is created in Facebook and Twitter, which yields the secret key.
- ❑ Other settings like https protocol, creating SSL certificates, port forwarding were done to host OneSocial website securely on the internet.

## ■ Tools Used

- ❑ Zend Platform with PHP with Apache, MySQL, HTML, CSS and Javascript were used.
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# Implementation – Update Statuses

- Users link their OneSocial ID with Facebook and Twitter using OAuth
  - Upon successful authentication, users enter their status update in OneSocial
  - Call Facebook's Update API passing the status message and user's Facebook access token
  - Call Twitter's Update API passing the status message and user's Twitter access token
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# Implementation - Threading

- Convert Facebook and Twitter stream into a common OneSocial stream format
  - Group Twitter tweets by identifying Root, Comment and Sub-Comment tweets using id and in\_reply\_to\_status\_id of each tweet
  - Group Facebook and Twitter by their Root streams' creation time
  - Perform a numeric sort (reverse chronological) on the grouped feeds
  - Group messages (and sort comments) that have the same text
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# Implementation – Web Service API

- Web page and Web service execute same code path with different output format
- APIs use the common OneSocial stream structure
- Set Updates API – Write status message to both Facebook and Twitter

```
curl -k "https://onesocial.dyndns.org/api/v1/setupdates" -d  
"userid=master&pwd=*****&status=Example Status Update"
```

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- Set Comments API – Set comments for a particular status message

```
curl -k "https://onesocial.dyndns.org/api/v1/setupdates" -d  
"userid=master&pwd=*****&statusID=100001530595145_158042127570475&com  
ment=Response thru API"
```

- Get Updates API – Displays both Facebook and Twitter feeds in a single threaded view in reverse chronological order.

```
curl -k "https://onesocial.dyndns.org/api/v1/getupdates" -d  
"userid=master&pwd=*****"
```

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# Demo

OneSocial Website

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# Tests and Observations

## ■ Unit Testing

- ❑ Tested individual functions such as getUpdates, setUpdates, getComments, setComments and Authentications using various PHP scripts
- ❑ Passed both valid and invalid credentials to these functions and validated the behavior
- ❑ Set various comments and sub-comments to validate the threading functionality.
- ❑ Helped identify change in response structure from id to id\_str and in\_reply\_to\_status\_id to in\_reply\_to\_status\_id\_str

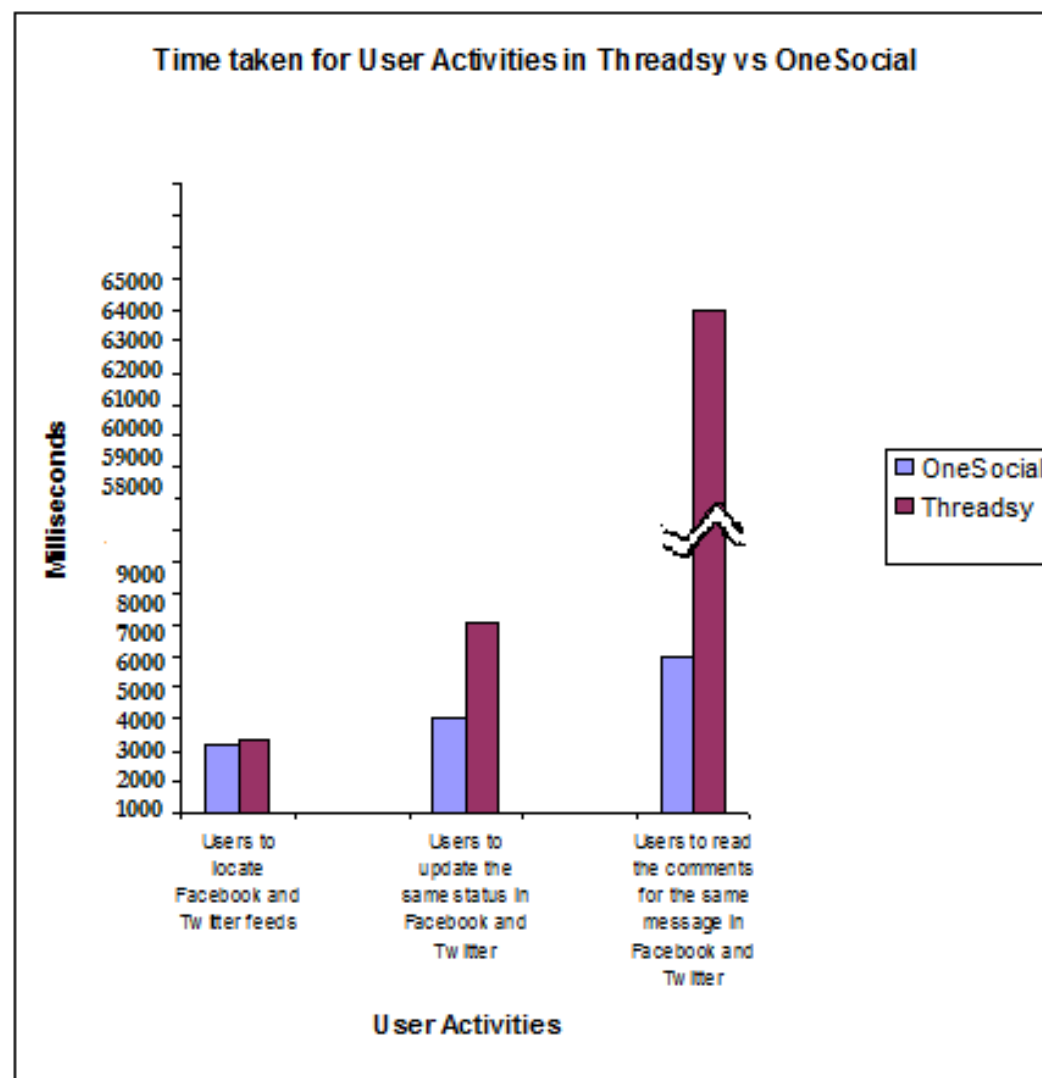
## ■ API Testing

- ❑ Used various test PHP scripts with CURL to validate the API responses
  - ❑ Simulated network outage and validated that the response timed out
  - ❑ Verified the APIs return 200 on success, 404 for user not found and 401 for invalid authentication.
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# Usability Testing

- **Test I** – Locate Facebook and Twitter statuses in Threadsy and OneSocial.
  - **Result I** - The time taken was not much different for Threadsy and OneSocial.
  
  - **Test II** - Update a status "I am going to hawaii this weekend" in both Facebook and Twitter using Threadsy and OneSocial.
  - **Result II** – Threadsy took a little longer than OneSocial as users have to repeat the same message.
  
  - **Test III** - Read all the comments posted for the status above in both Facebook and Twitter.
  - **Result III** - In Threadsy, users had to navigate and scroll for more than a minute to collect the statuses and its comments.
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# Conclusion

- **Managed multiple social networks easily**

- ❑ One Social combines and threads Facebook and Twitter stream together
- ❑ Updates both Facebook and Twitter in a single click

- **Published REST APIs to build new social networks**

- ❑ Easily scalable to include new social networks by changing its feed format to OneSocial response format
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# OAuth

- Redirect the user to <https://graph.facebook.com/oauth/authorize> and pass the application id and post authorize callback URL as parameters to this API.
  - User enters their credentials for Facebook and Twitter are authorized and a verification string is returned along with the callback url.
  - Generate an access token using the above verification string by fetching [https://graph.facebook.com/oauth/access\\_token](https://graph.facebook.com/oauth/access_token)
  - Once the access token is obtained, all further communications to Facebook/Twitter will only require this token instead of the user's credentials
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# Twitter Response Structure

```
<statuses type='array'>
  <status>
    <created_at>Fri Jul 16 16:58:46 +0000 2010</created_at>
    <id>18700887835</id>
    <text>got a lovely surprise from @craftybeans</text>
    <source>web</source>
    <in_reply_to_status_id></in_reply_to_status_id>
    <favorited>>false</favorited>
    <user>
      <id>29733</id>
      <name>cindy li</name>
      <screen_name>cindyli</screen_name>
      .
      .
      .
    </user>
  </status>
  ...
</statuses>
```

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# Facebook Response Structure

```
[id] => 1437286239_172765289409397
[from] => (
  [name] => John Doe
  [id] => 1437286239
)

[message] => It is so cold in SFO this winter
[type] => status
[created_time] => 2010-11-26T19:10:59+0000
[updated_time] => 2010-11-26T22:26:20+0000
```

```
[comments] => (
  [data] => (
    [0] => Array (
      [id] => 1437286239_172765289409397_2081304
      [from] => Array (
        [name] => Will Rafael
        [id] => 3434451
      )
      [message] => Welcome to my life in New York
      [created_time] => 2010-11-26T21:11:12+0000
    )
    [1] => Array (
      [id] => 1437286239_172765289409397_2081655
      [from] => Array (
        [name] => Glen Mcgrath
        [id] => 634622076
      )
      [message] => How cold is it now?
      [created_time] => 2010-11-26T22:26:20+0000
    )
  )
  [count] => 2
)
```

# OneSocial Response Structure

```
<message>
  <id>1437286239_172765289409397</id>
  <image>https://graph.facebook.com/1437286239/picture</image>
  <user>Kalyan Sundaram</user>
  <text>Break the Rules for next 6 months.....</text>
  <app>Facebook</app>
  <time>12 hour(s) ago</time>
  <likes>1</likes>
  <comments>
    <image>https://graph.facebook.com/1437286239/picture</image>
    <user>Kalyan Sundaram</user>
    <text>
      @Harjot : Yes
      @Bala : yes,early start to enjoy the Thanks Giving :-)
      @Maha : Cheers .. Party iam already started. unforgettable
      start :-)
    </text>
    <app>Facebook</app>
    <time>51 minute(s) ago</time>
  </comments>
</message>
```