Talash: Friend Finding in Federated Social Networks

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Walkthrough

- Federated Social Networks

- FSN Model

- Talash Of Friends

- Quick Connect
  - Address Books
  - Social Graph API

- Delayed Connect

- Experiments

- Future of Talash

Everything Is Social

- Status Updates.
- Friends
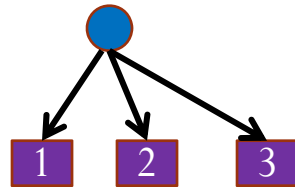- Followers
- Subscriptions

Federated Social Network (FSN)

- Many websites.
- Users on each site.

A.com

B.com

C.com

A.com/user/1 Or A.com/joe

Federated Social Network (FSN)

- Many websites.
- Users on each site.

- Declares Friends.
  - FOAF

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Federated Social Network (FSN)

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- Many websites.
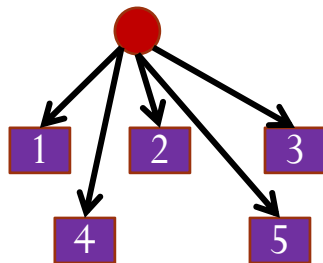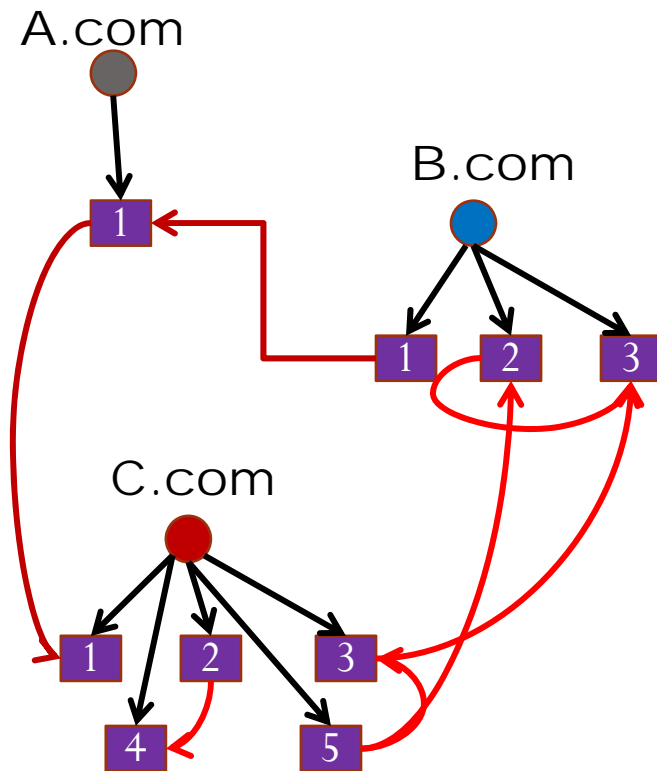- Users on each site.

- Declares Friends.
  - FOAF
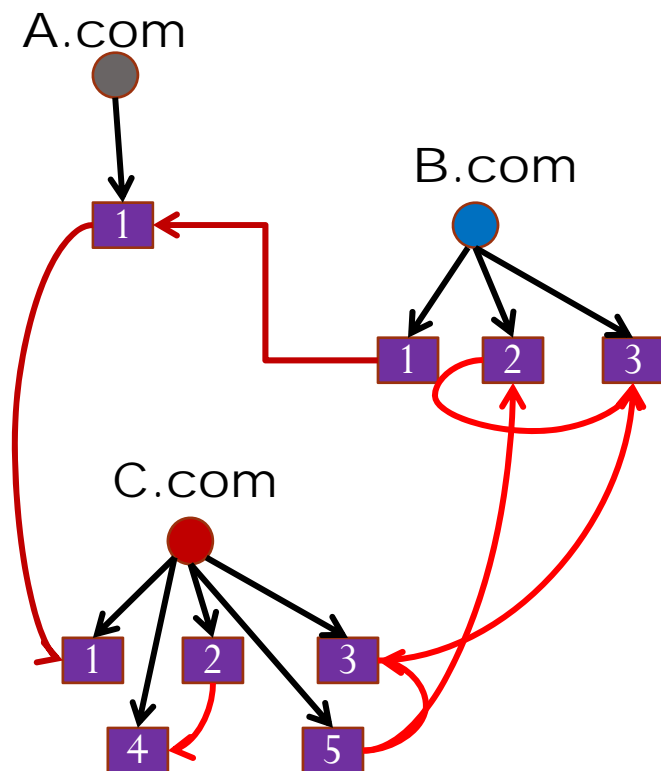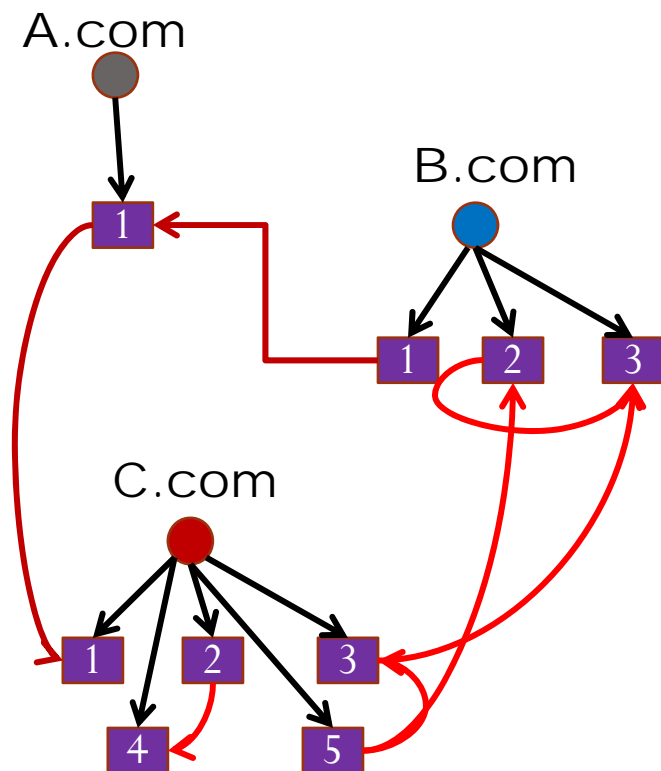
- Interact. Social.

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FSN powered By StatusNet

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OStatus Protocol Suite

- PubSubHubBub

- Salmon

- WebFinger

- Activity Stream

➢ Multicast Status Updates to Followers.

➢ Receive Comments Back From Friends.

➢ Address a User as username@example.com

➢ Display Activities as a Stream for each User.

New User on FSN

A.com

B.com

C.com

A.com/user/1 Or A.com/joe

New User on FSN

D.com

A.com

B.com

C.com
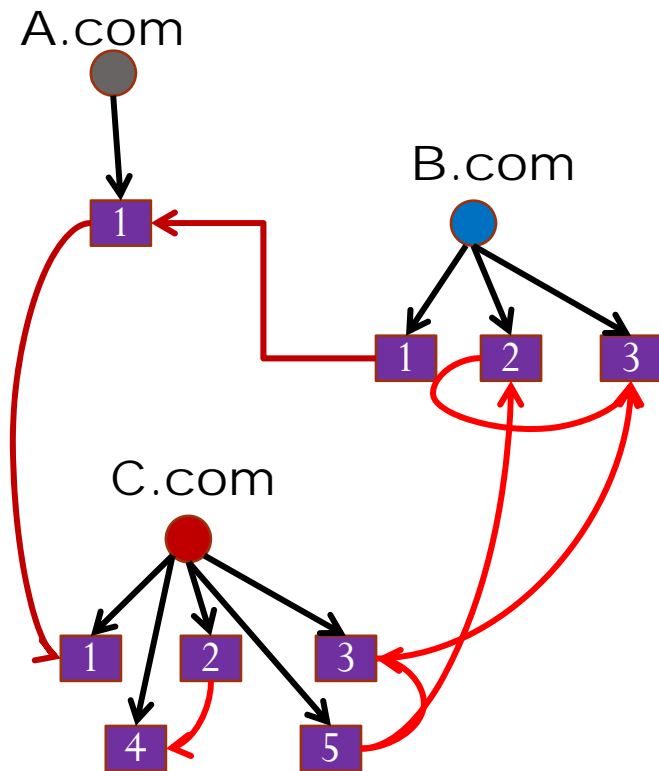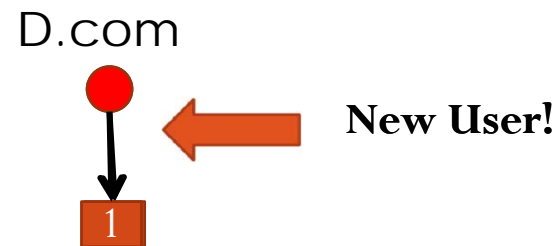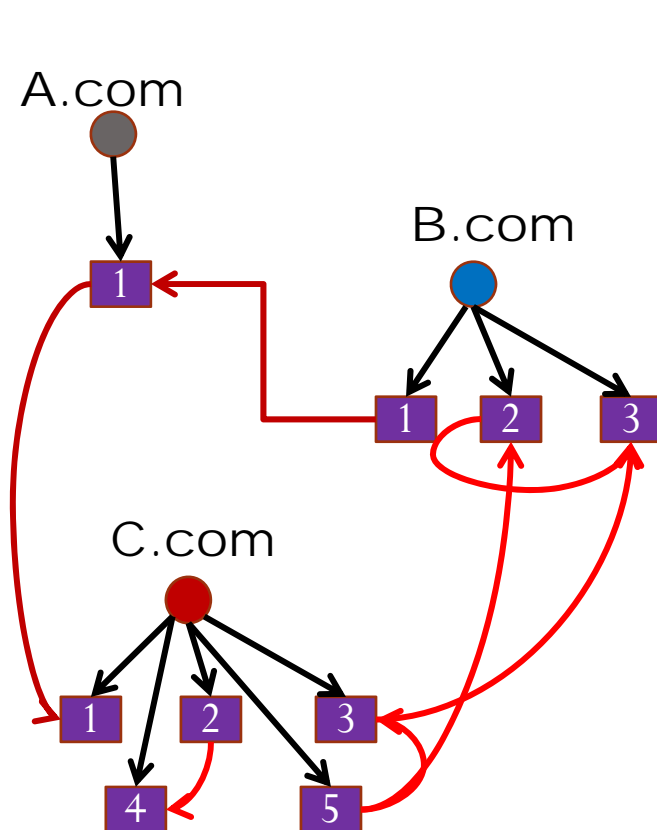
New User!

- A new user joins the FSN.
- No friends.
- No interaction.
- No one knows, new user exists.
- New Users are Isolated.

A.com/user/1 Or A.com/joe

New User on FSN

A.com

B.com

D.com

New User!

C.com

Can we find new friends for this User?

A.com/user/1 Or A.com/joe
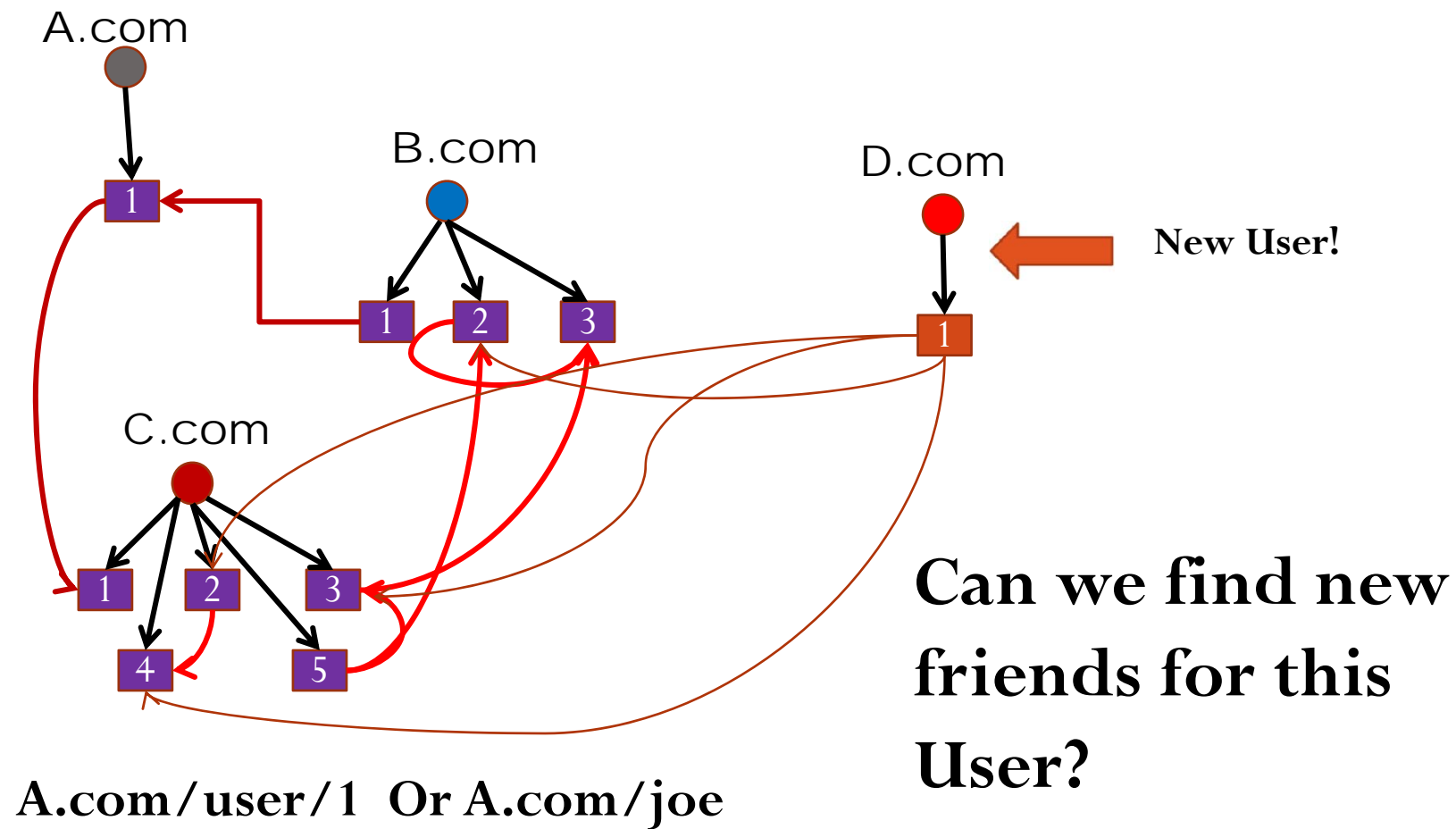
Talash

Given a User X on the FSN can we

1. Find other Users that X might know.

2. Find other Users that X might find interesting.

Knows and Interesting!

- **Knows:** One User appears in the others address book Or has communicated with the other at least once over email or on other public forums or online social networks.

- **Interesting:** One User will be interesting to another if they share some common attribute.
  - Relative term. Can be weighted.

FSN Centered Around A User

- User knows all Friends.
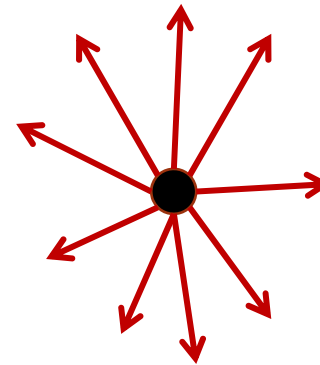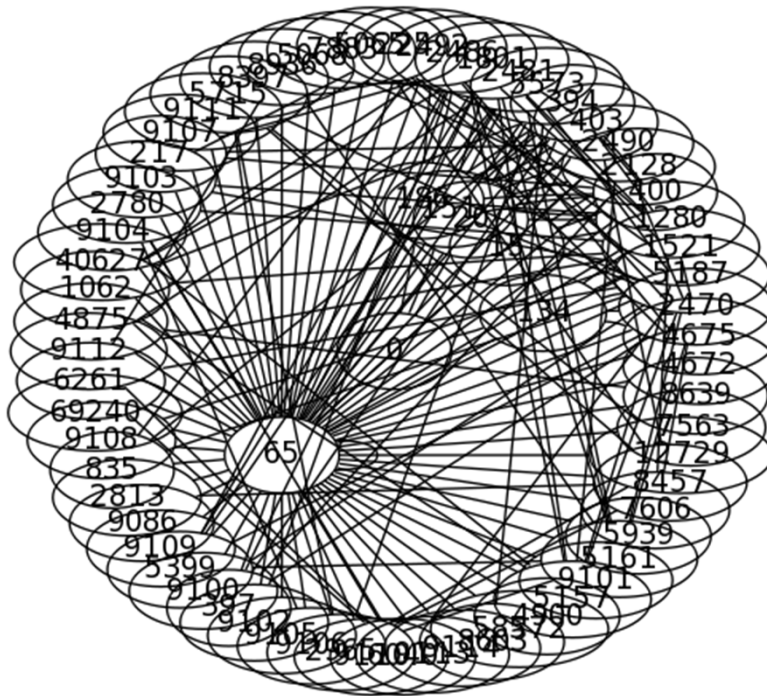
FSN Centered Around A User

- User knows all Friends.

- Friends might know each other.
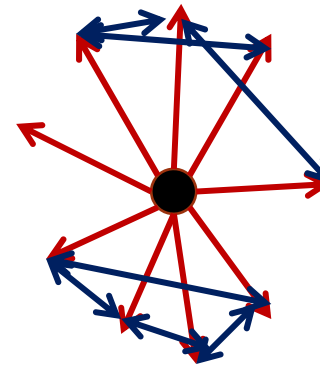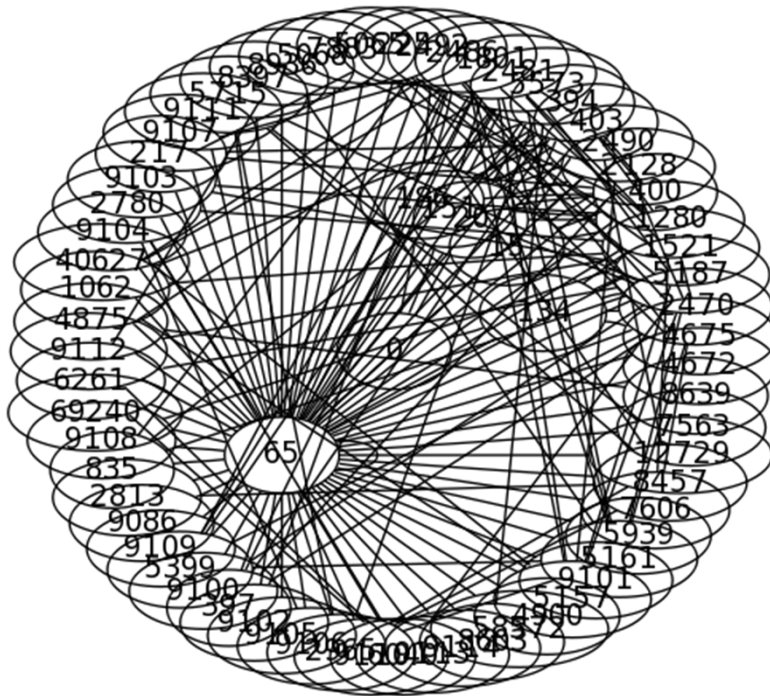
Friend Finding

- Only Local Information available.

- Existence of another User known only if URI is known.

- New Users have no initial friends.

Quick Connect

Attacks Cold Start Problem.

Social Graph API

- Request a URI.

```
"canonical_mapping": {
  "evan.status.net":
   "http://evan.status.net/"
},
```

Social Graph API

Google Social Graph API

- Request a URI.

- Find all public profiles.

"claimed_nodes": [

   "http://evanp.myopenid.com/"

  ],

"unverified_claiming_nodes": [

 "http://alpha.libre.fm/user/evan",

 "http://github.com/evanp",

"http://www.identi.ca/evan",]

Social Graph API

- Request a URI.

- Find all public profiles.

- URIs of Subscribers and Subscriptions.

```
"http://www.livejournal.com/us
    ers/xtof/profile":

{ "types": [ "colleague",
    "contact", "me", "muse" ] },


"http://status.ianmcorvidae.net/
    ": { "types": [ "contact" ]},
```

Quick New Friends

- Tap Address books.

- Get all the contacts in a Users Address book.

- Gmail, Yahoo, Plaxo, Twitter

Quick New Friends

- Tap Address books.

- Use OAuth, PoCo.


```
<entry>
<title>Pradeep</title>
<gd:email address="PD@gmail.com"
    primary="true"/>
</entry>
```

Quick New Friends

- Tap Address books.

- Use OAuth, PoCo.

- Query Social Graph API

- Gets each contacts' Public Profiles

- Check if they are OStatus Accounts.

- Allow Subscription.

Quick New Friends

- Find all your friends' email addresses.

Address Books

G SG API

- Find their public OStatus Profiles

- Allow cross domain subscription.

OStatus
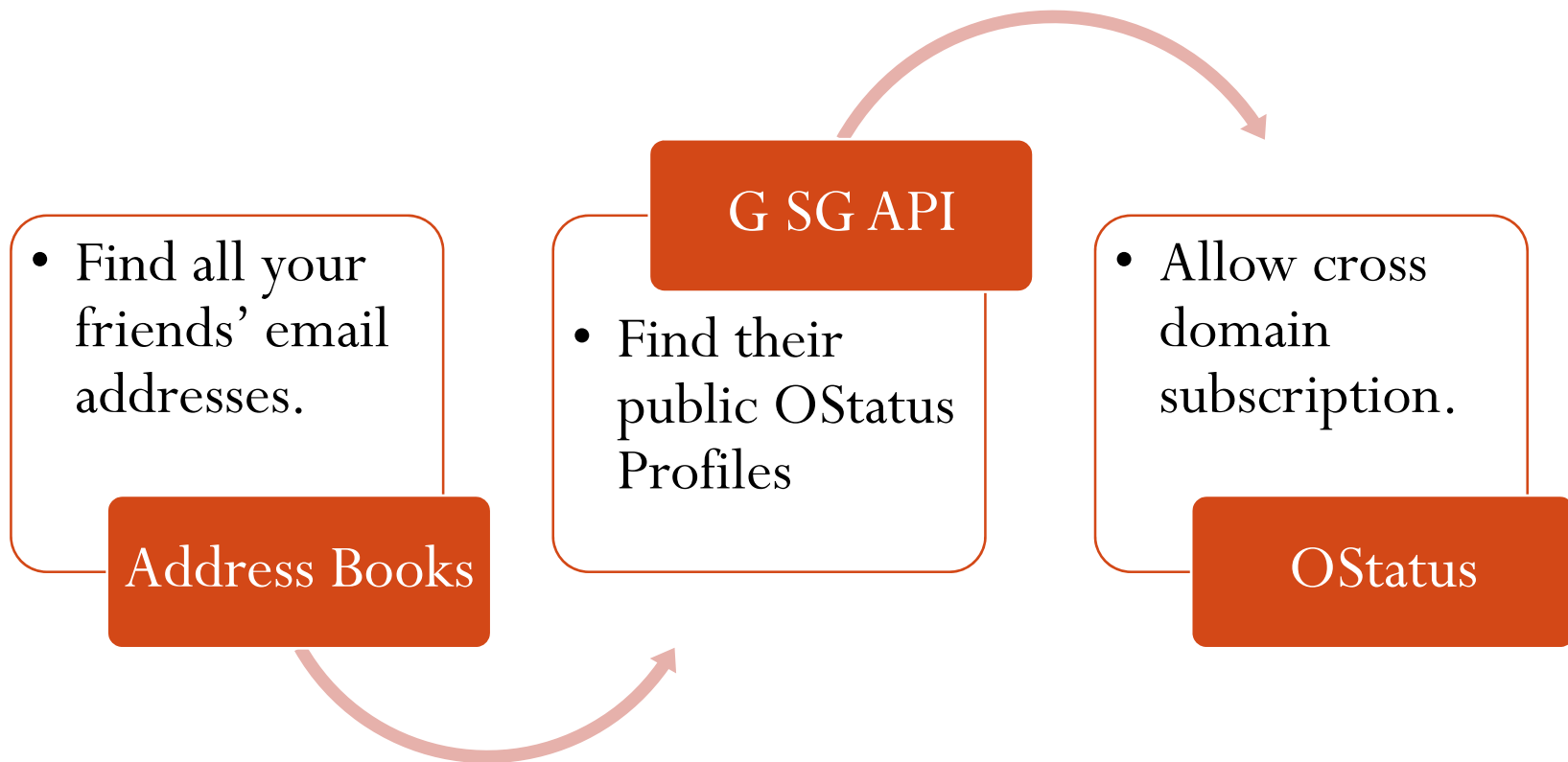
Quick New Friends

- Tap Address books.

- Use OAuth, PoCo.

- Query Social Graph API

- Background download using Daemons.
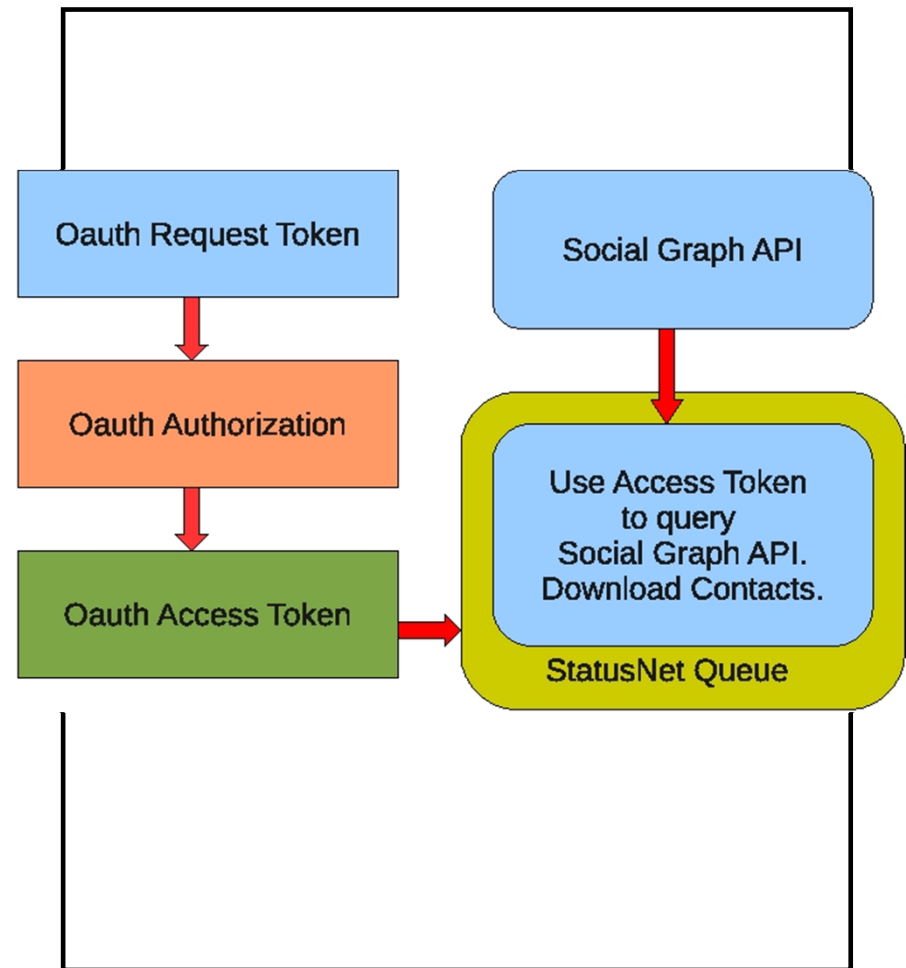
Whats New?

- Contacts may or may not exist on same domain.
- Finding Friends across domains.

A.com   **D.com**

New User!

1 ← 1

- Using aggregated information?

WebFinger

- In Absence of SGAPI, Use **WebFinger**
  - Query joe@example.com
  - Retrieve RDF about public profiles.

```
<Subject>
acct:ruturaj@identi.ca
</Subject>
<Alias>
http://identi.ca/user/153712
</Alias>
<Link rel="describedby"
type="application/rdf+xml"
href="http://identi.ca/ruturaj/foaf"/>
```

Delayed Connect

Incrementally Find New Interesting Friends.

Strategy

Use Friends And FOAF
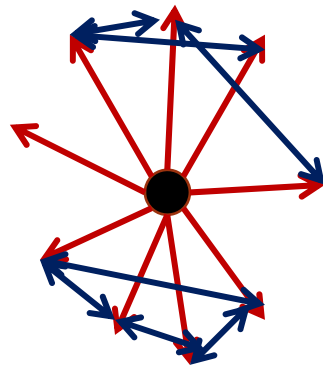
Two Hop Distance
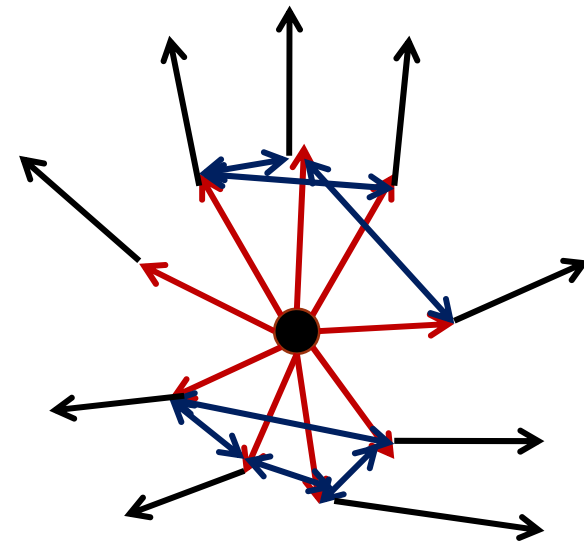
Your Friends might know about other friends you don't know about.

Strategy

- User has many friends. (say 300)
- Use Information from Users' friends to find new friends.
- Prospective new friends: Friend Of A Friend.

Friend Of A Friend
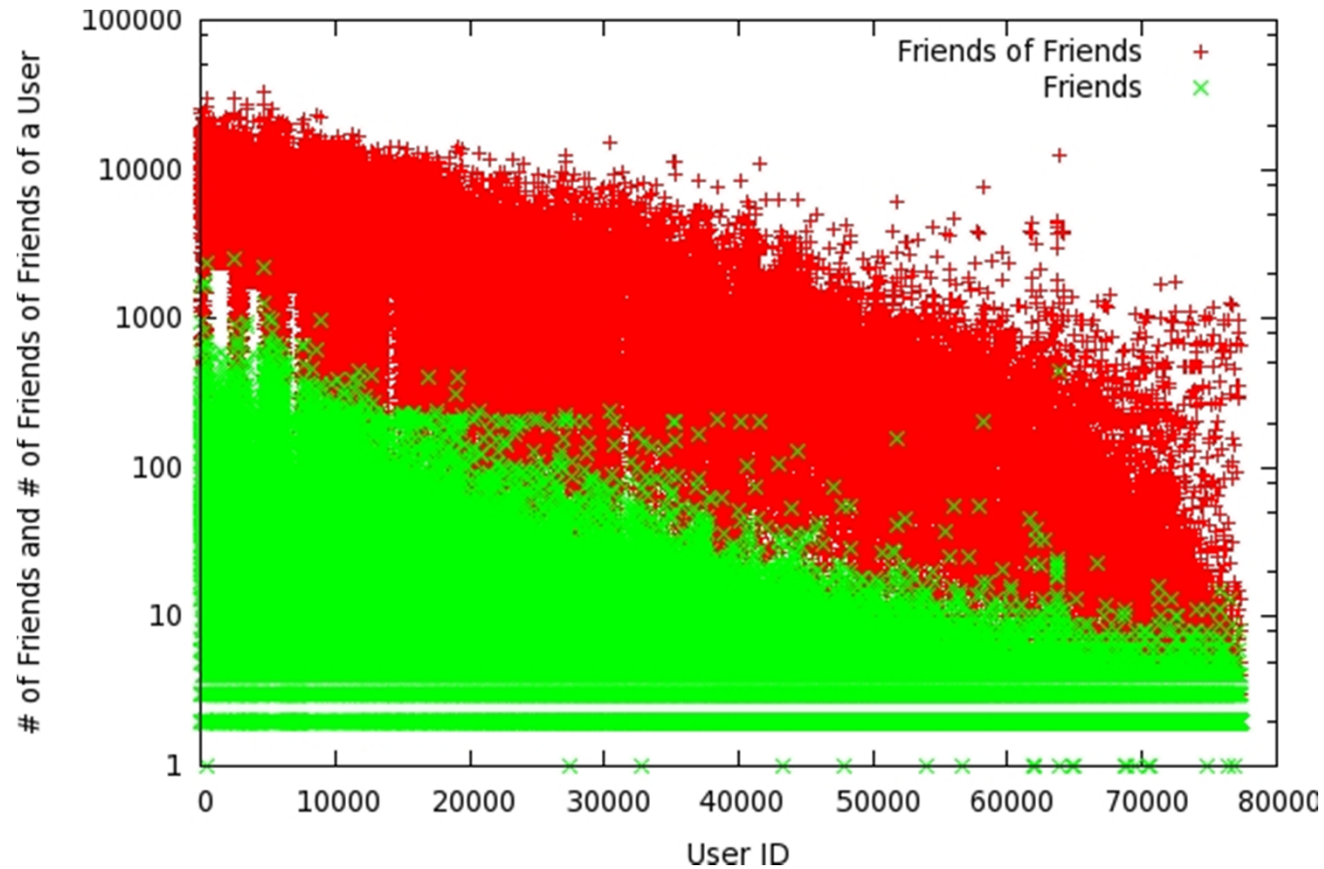
- HTTP requests to acquire FOAF very large.

Community Around A User
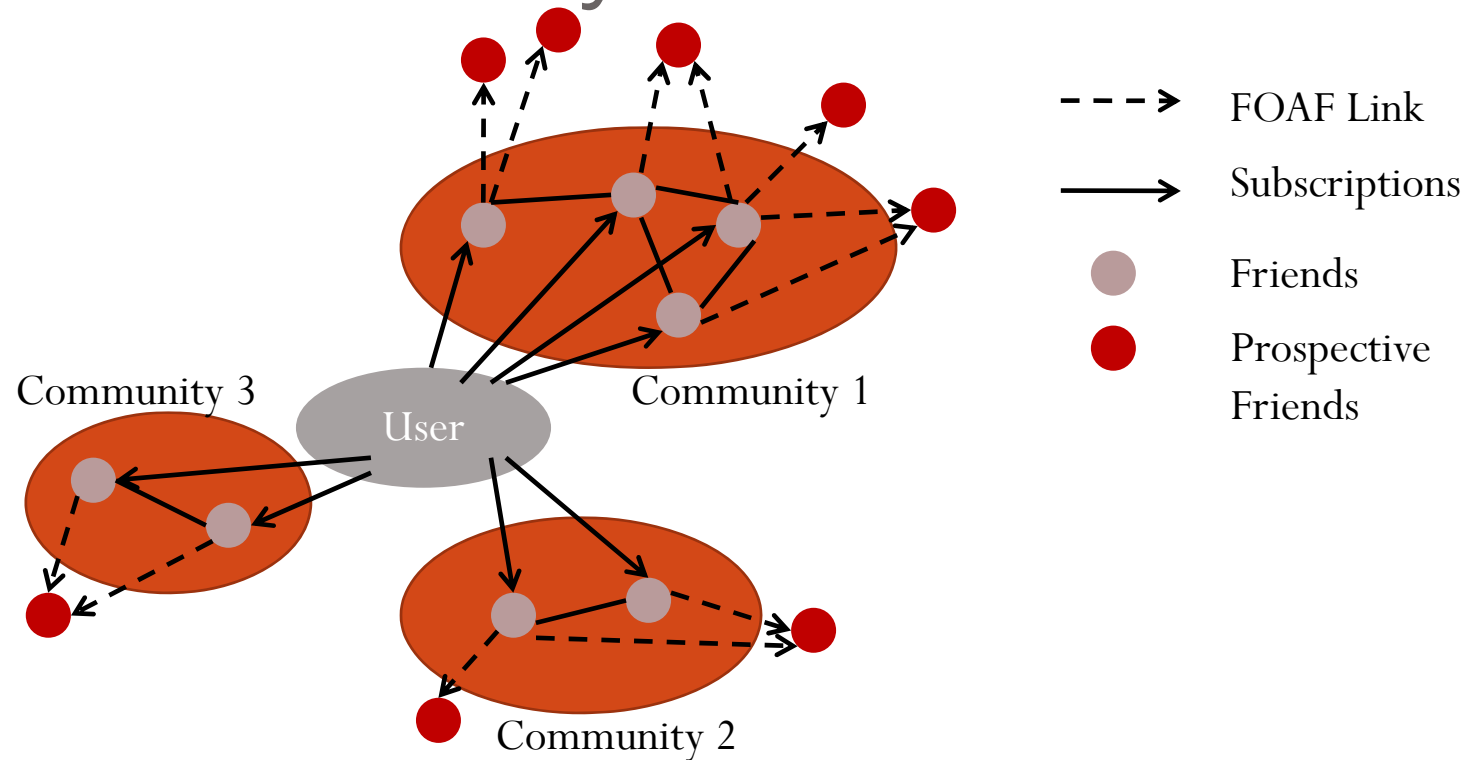
- Each User is part of multiple Communities.
- Each Community has different attributes
  - College Friends, School Friends, Workplace, Rubik Cubers Club

Strategy

- Caching of FOAF details.

- Limiting FOAF requests.
  - Obtain FOAF only from interesting friends.

- Select friends from every community.

Algorithm

1. Find User's communities.

2. Select log(n) interesting friends from each community.

    - Maximum degree nodes, Maximum degree centrality.

    - Call them leaders.

3. Request FOAF from each leader from each community.

4. Evaluate Interestingness.

5. Recommend K top Interesting friends.

Experimentation

- OStatus enabled FSN for experimentation.
- Manual feedback from Users.

Parameter	Value
Number of Users	285,198
Number of Edges	1,663,690

Manual feedback
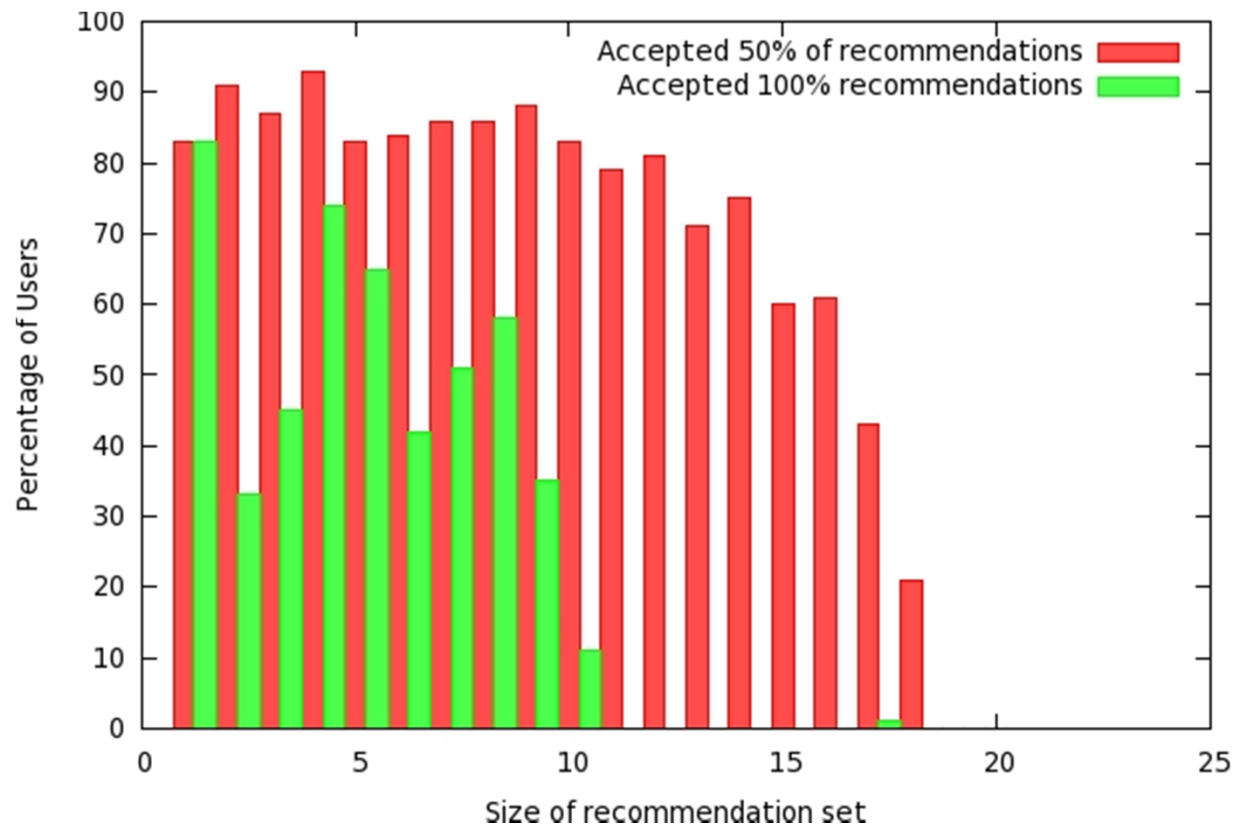
Only small sets of recommendations were accepted.

Clustering Advantage
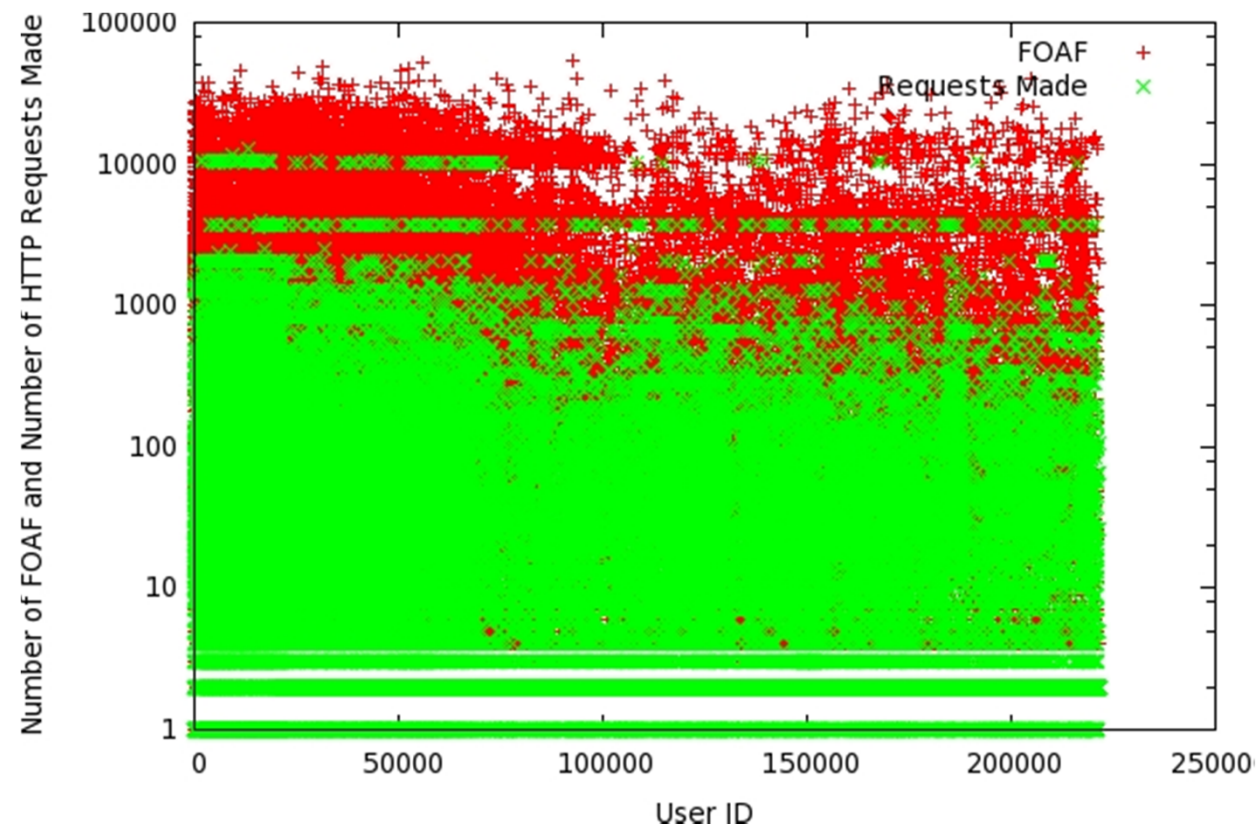
Less requests per User as compared to .

Community Improvement

Community Details	Initial ASPL	Final ASPL
Developers of Identi.ca	1.807	1.602
Group of entrepreneurs	1.974	1.965
FOSS Contributors	2.453	2.702
Family	1.333	1.000

Average shortest path length goes towards 1.0 (decreases) implying the <u>community around the User</u> became well connected.

Conclusion

- Solved Cold Start in FSN.

- Mechanism to expand FSN using FOAF knowledge.

- Primary building blocks
  - FOAF
  - WebFinger

Future Work

- Better algorithm for Delayed connect.
  - Learning User Preferences.

- Hope to have WebFinger for all Online Email Services.

References

- www.status.net

- www.identi.ca

- www.gitorious.org/friend-connect
  - Repository for plugin.

- www.ostatus.org/tag/specification

- www.statusnetdev.net/talash/testdata/
  - Test manual feedback