





URLs are people too - using the Social Graph API to build a Social Web

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Kevin Marks

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Structure:

- 1) background,
- 2) Social Graph API details,
- 3) how you can use on your own site.

My generation draws
the Internet as a cloud
that connects
everyone.



Kevin Marks

me

instead of having to navigate phone lines from one computer to the next, you could write programs as though **the net were just one big cloud**, where messages went in at your computer and came out at the destination one.

Tim Berners-Lee

colleague
contact




**Connections between
Computers -TCP/IP
and
Web Documents -HTTP**

Somebody Else's Problem Field

The younger generation experiences it as oxygen that supports their digital lives.



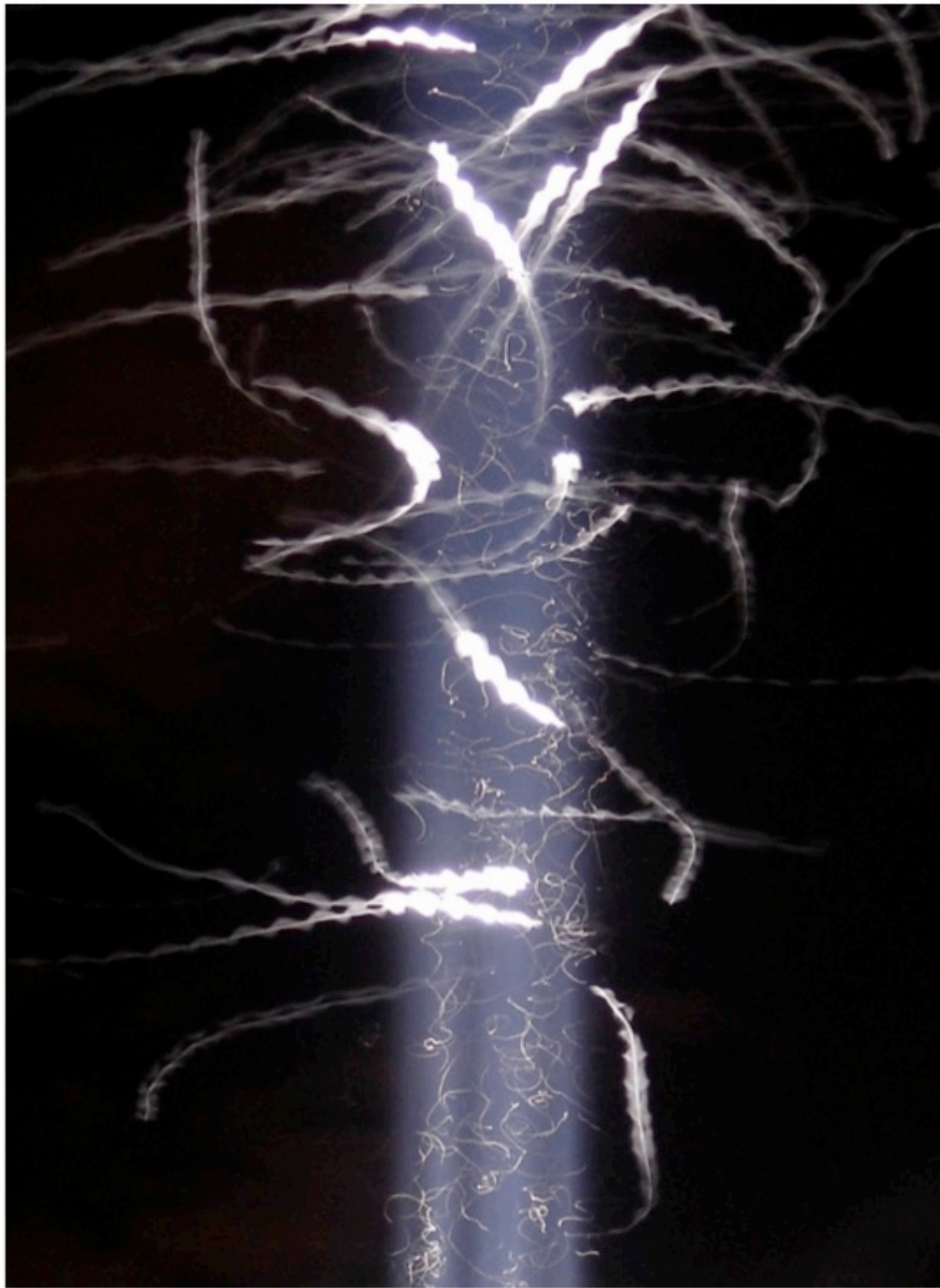


child
friend
met
co-resident

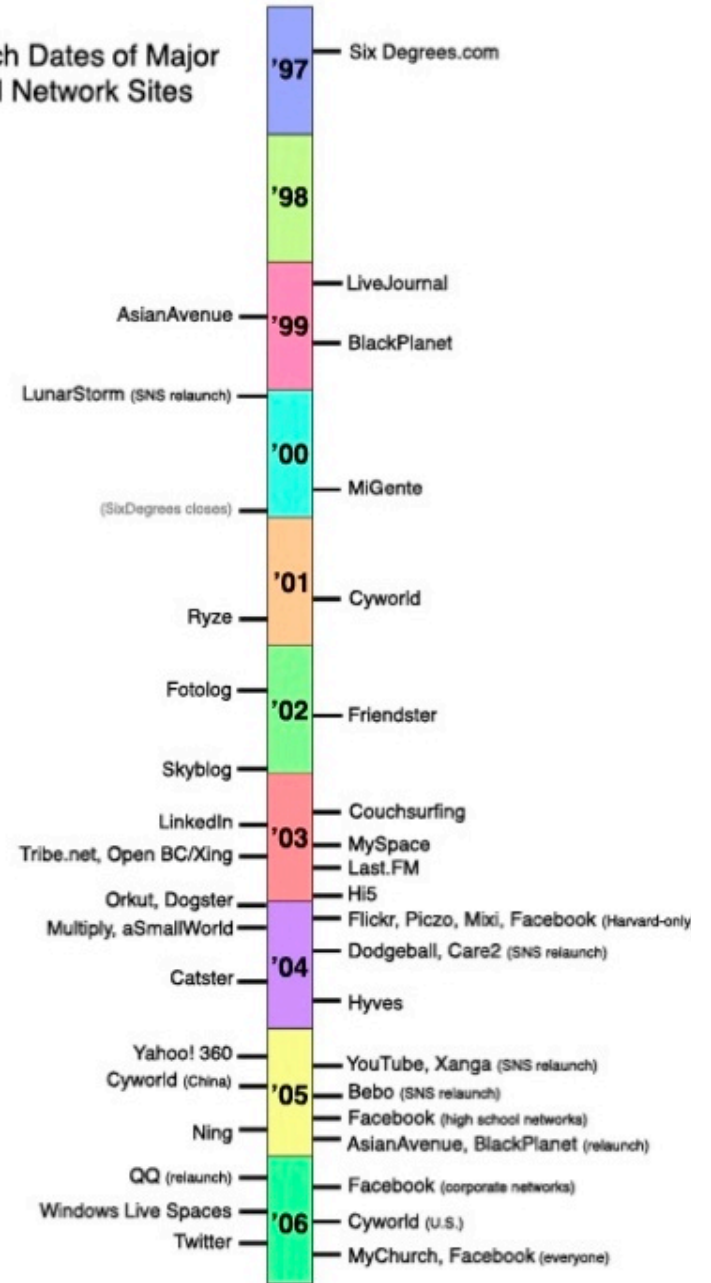
**Andrew
Marks**

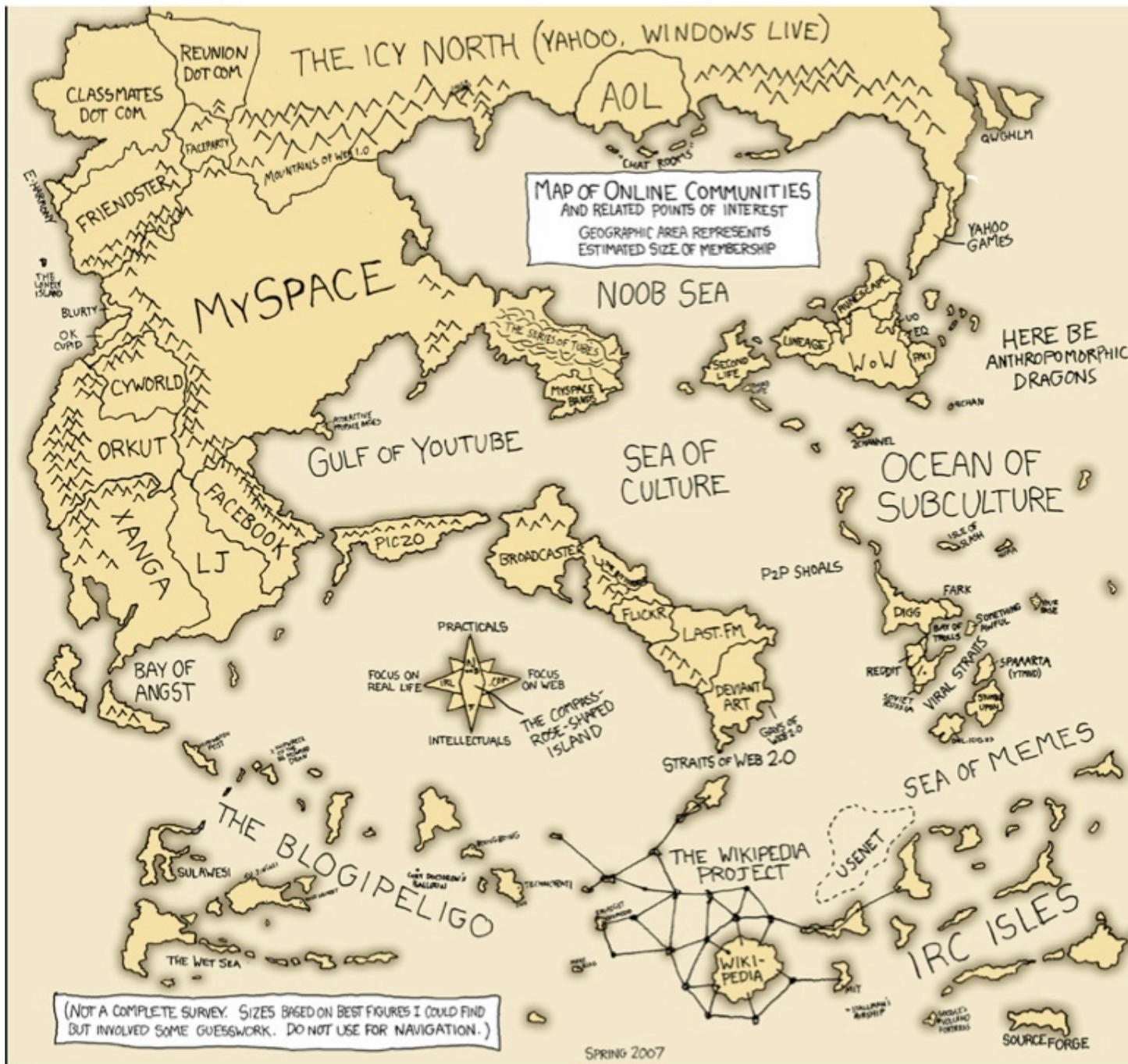
My generation draws the Internet as a cloud that connects everyone.
The younger generation experiences it as oxygen that supports their digital lives.
The old generation sees this as a poisonous gas that has leaked out of their pipes, and they want to seal it up again





Launch Dates of Major Social Network Sites

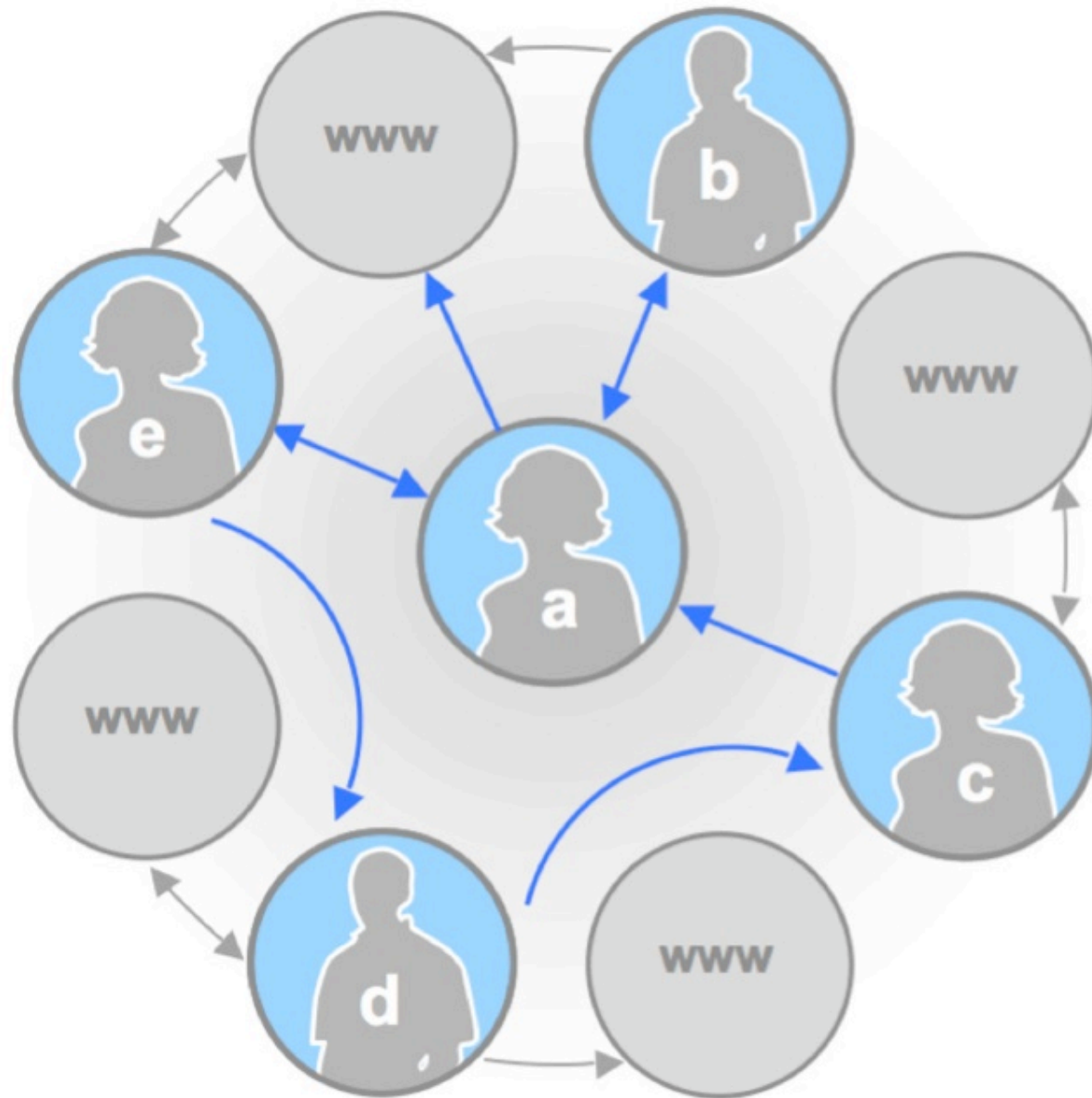




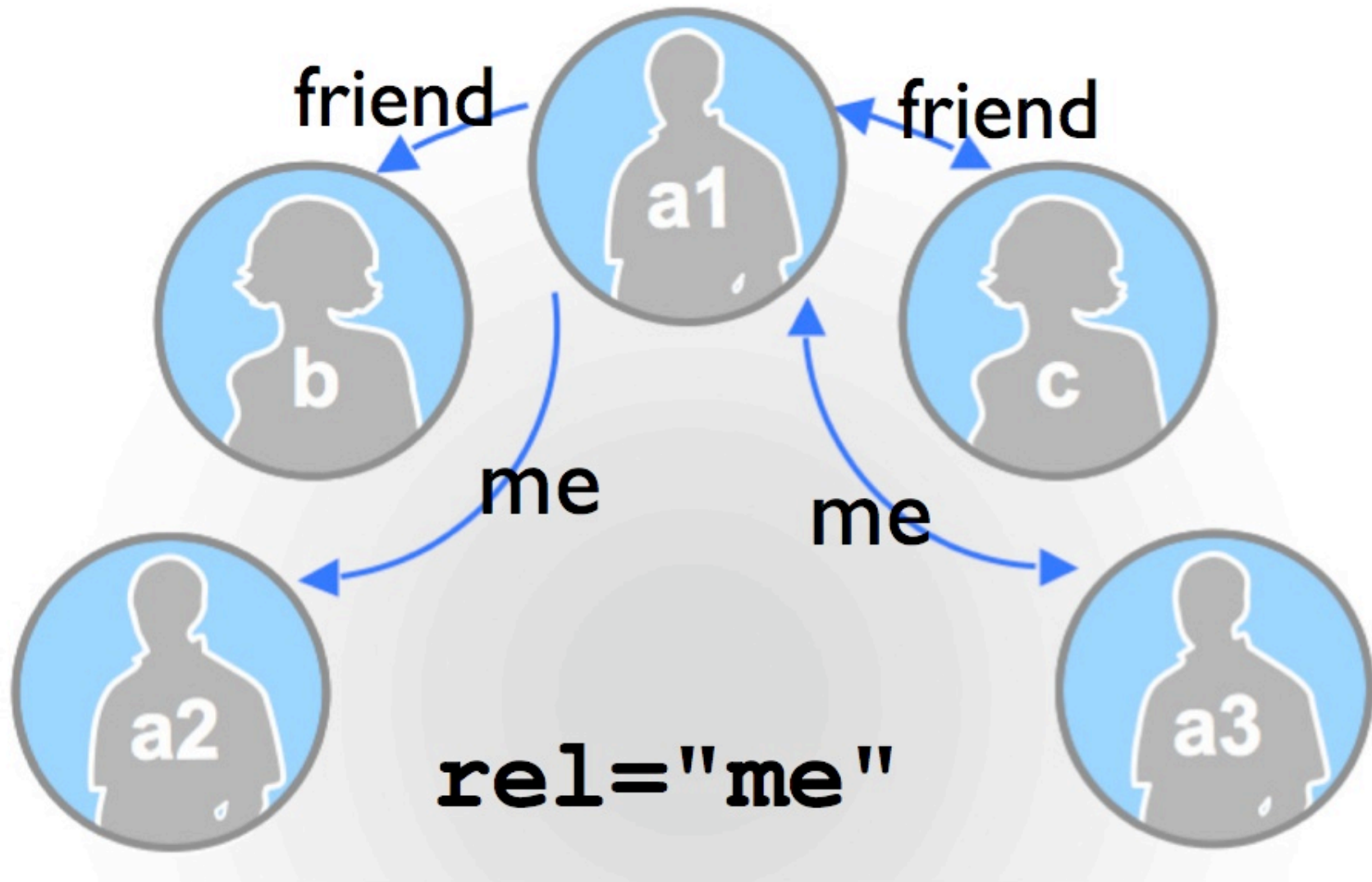


**URLs are
people too**





Links are relationships





Social Graph API: what is it?

Social Graph API

- Indexes public URLs that are people
- Finds relationships between them
 - directed edges
 - 'me' edges
 - 'friend'-like edges
- Supports the open XFN and FOAF formats
 - all relationship edge types mapped to XFN edge types
- Uses the standard Google crawler
- One massive directed graph
 - API to query it: edges out from a node (or nodes), edges in, follow 'me' links recursively, etc

XFN & FOAF

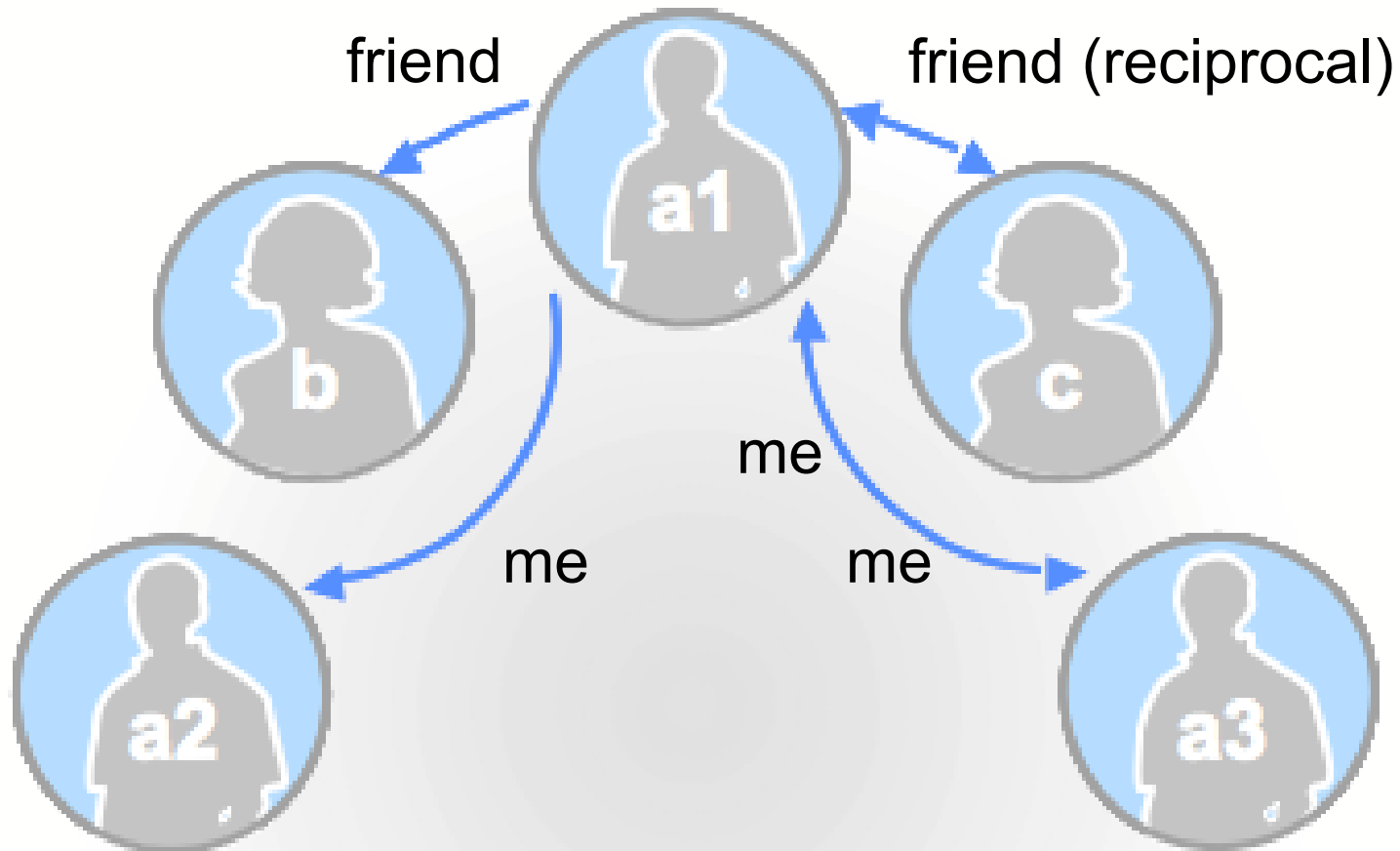
- XFN:

- microformat
- This is `my Foo profile`
- `Bob`.
- <http://gmpg.org/xfn/>
- me, friend, acquaintance, contact, co-worker, spouse, child, muse, neighbor, sibling, date, kin,

- FOAF:

- "friend-of-a-friend"
- RDF schema for social information
- usually encoded as an XML file
- <http://www.foaf-project.org/>
- [LJ FOAF](#)

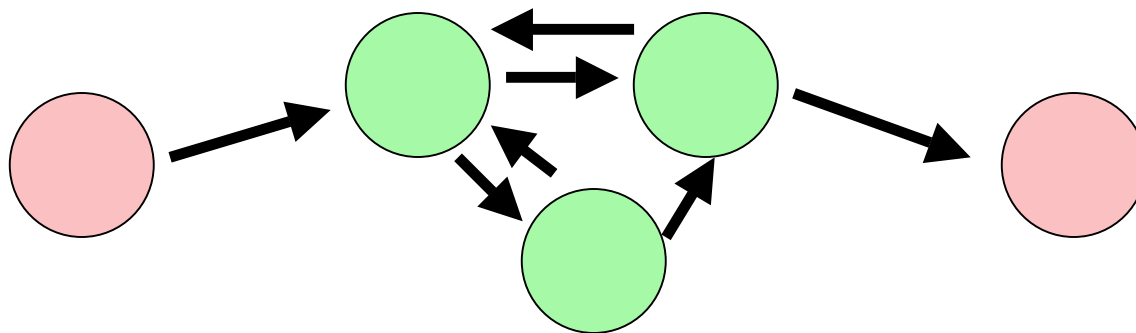
Directed Graph



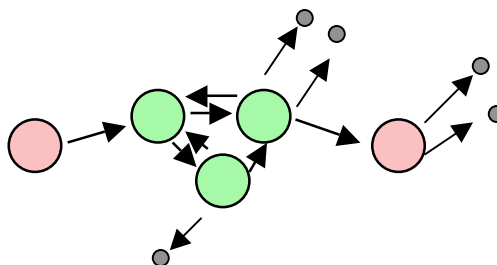
Demos

Pretty HTML pages using the API (JSONP callbacks):

- Finding your connected sites (“me” links) [demo](#)



- Finding your friends [demo](#)



Raw REST query and JSON output: [demo](#)

Canonicalization

- the web is a mess without some cleanup
- different ways people can me:

<http://brad.livejournal.com>

<http://brad.livejournal.com/>

<http://BRAD.livejournal.com:80>

<http://brad.livejournal.com/profile>

<http://brad.livejournal.com/data/rss>

<http://brad.livejournal.com/data/atom>

<http://brad.livejournal.com/data/foaf>

<http://www.livejournal.com/~brad/data/foaf>

<http://livejournal.com/users/brad>

<http://www.livejournal.com/userinfo.bml?user=brad>

...

... and dozens more

Canonicalization

- SGNodemapper makes URLs canonical
 - knows about major sites' URL patterns
- Open Source project:
 - <http://code.google.com/p/google-sgnodemapper/>
 - contributions from Plaxo, SixApart, others
 - used by Plaxo Pulse (PHP bindings)
- implemented in Javascript
 - perfect embedding language!
 - Java (Rhino)
 - C++/PHP/Perl (Spidermonkey)
 - python/ruby should work too
 - or use in browser?

Canonicalization SGN format

<http://brad.livejournal.com>

<http://brad.livejournal.com/>

<http://BRAD.livejournal.com:80>

<http://brad.livejournal.com/profile>

<http://brad.livejournal.com/data/rss>

<http://brad.livejournal.com/data/atom>

<http://brad.livejournal.com/data/foaf>

<http://www.livejournal.com/~brad/data/foaf>

<http://livejournal.com/users/brad>

<http://www.livejournal.com/userinfo.bml?user=brad>

...

... and dozens more

<sgn://livejournal.com/?ident=brad>

Canonicalization SGN format

<http://flickr.com/people/35237099379@N01/>

<http://flickr.com/people/kevinmarks/>

become...

sgn://flickr.com/?pk=35237099379@N01

sgn://flickr.com/?ident=kevinmarks

ident is for user-chosen names that can change

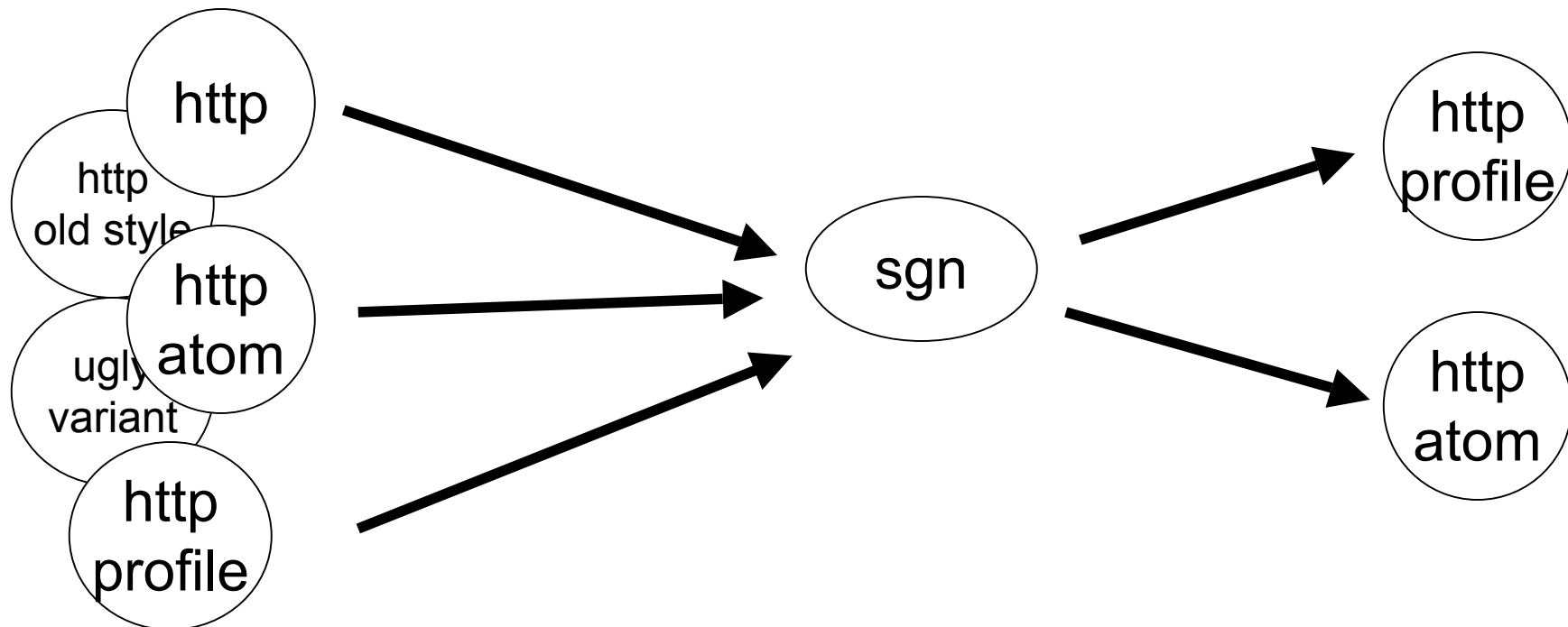
pk is for primary key - often ugly, system assigned, more permanent

Sites often expose both. Social Graph API maintains equivalence mappings.

Also produces http URLs..

atom(sgn://livejournal.com/?ident=brad) =>
http://brad.livejournal.com/data/atom

profile(sgn://livejournal.com/?ident=brad) =>
http://brad.livejournal.com/profile



Read-only

- Social Graph API is just a cache
 - read-only API
 - the web is the data source



Let's make a social networking site...





©2008 SHETLAND PRODUCTIONS JOHN@KOVALIC.COM WWW.DORKTOWER.COM
LIVEJOURNAL: MUSKRAT-JOHN.LIVEJOURNAL.COM
MYSpace: MYSpace.COM/MUSKRAT_JOHN





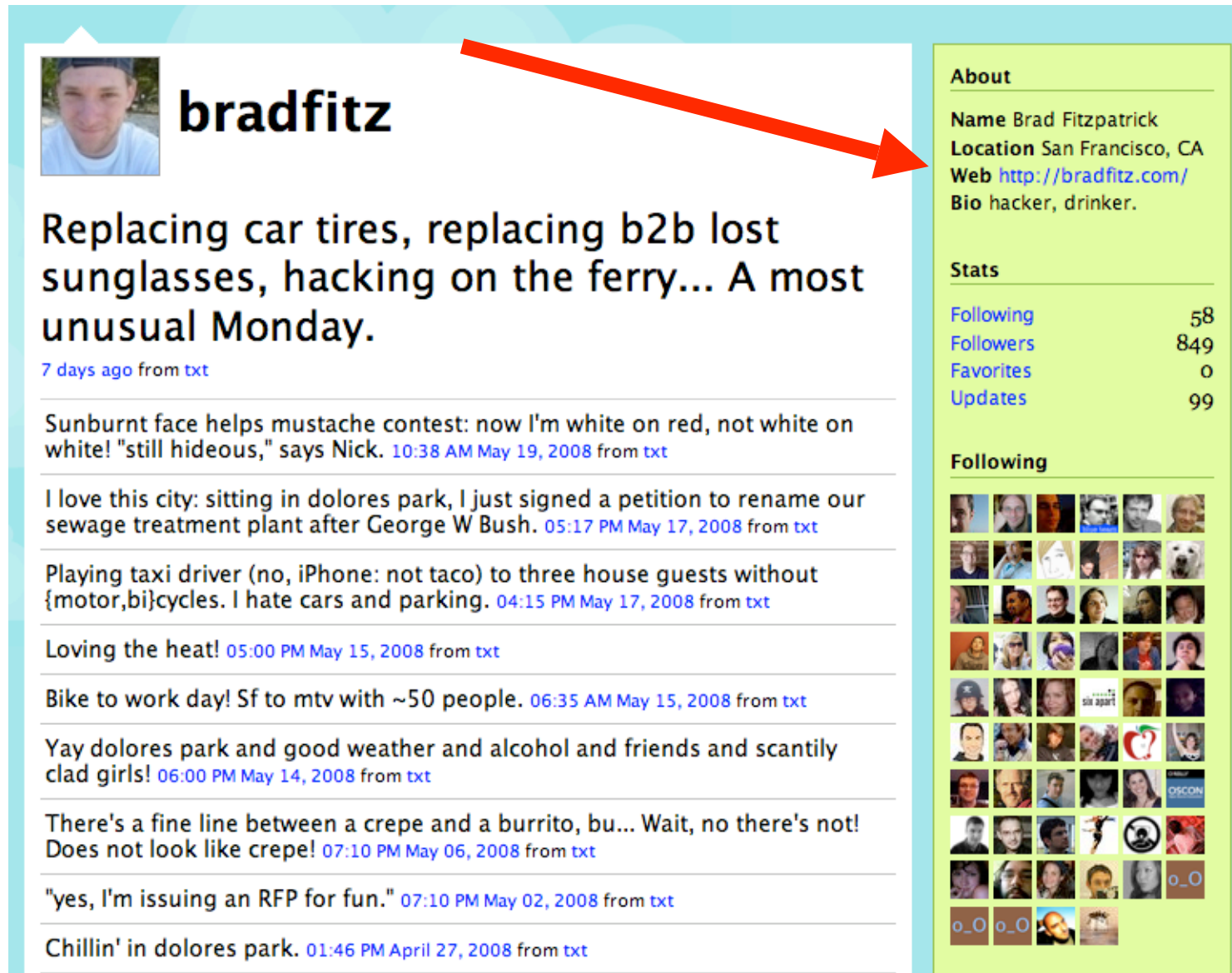
Why?


- interesting sites/apps today are social
- use the social graph
- how do you get it?
 - ask users for it (tedious, users are bored of re-listing their friends)
 - get it via a container (Facebook, OpenSocial)
 - go get a public copy of it (Social Graph API)
 - all of the above

Doing one thing and doing it well.

- Unix Philosophy: "do one thing and doing it well"
 - e.g. Dopplr (tracking friends' travel schedules)
- In the social world, people and relationships are the Unix "pipes"
- If you're a general (monolithic?) site that tried to support everything, there will always be other websites that do one thing better.
- People will use more than just your website. Get over it. Accept it. Encourage it.

Sites recognizing others



 **bradfitz**

Replacing car tires, replacing b2b lost sunglasses, hacking on the ferry... A most unusual Monday.
7 days ago from txt

Sunburnt face helps mustache contest: now I'm white on red, not white on white! "still hideous," says Nick. 10:38 AM May 19, 2008 from txt

I love this city: sitting in dolores park, I just signed a petition to rename our sewage treatment plant after George W Bush. 05:17 PM May 17, 2008 from txt

Playing taxi driver (no, iPhone: not taco) to three house guests without {motor,bi}cycles. I hate cars and parking. 04:15 PM May 17, 2008 from txt

Loving the heat! 05:00 PM May 15, 2008 from txt

Bike to work day! Sf to mtv with ~50 people. 06:35 AM May 15, 2008 from txt

Yay dolores park and good weather and alcohol and friends and scantily clad girls! 06:00 PM May 14, 2008 from txt

There's a fine line between a crepe and a burrito, bu... Wait, no there's not! Does not look like crepe! 07:10 PM May 06, 2008 from txt

"yes, I'm issuing an RFP for fun." 07:10 PM May 02, 2008 from txt

Chillin' in dolores park. 01:46 PM April 27, 2008 from txt

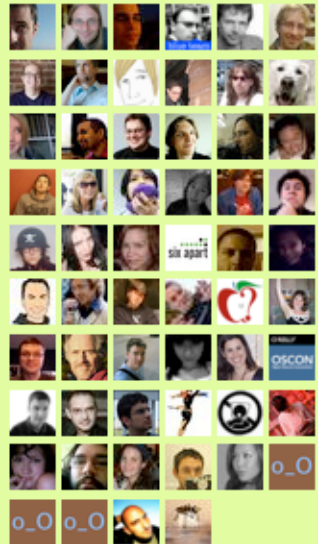
About

Name Brad Fitzpatrick
Location San Francisco, CA
Web <http://bradfitz.com/>
Bio hacker, drinker.

Stats

Following	58
Followers	849
Favorites	0
Updates	99

Following



Sites recognizing others



The screenshot shows the top navigation bar of a LiveJournal profile. On the left is a small profile picture of a man. To its right, the name 'brad' is displayed with a star icon, followed by 'Account' and links for 'Help' and 'Logout'. Below this are links for 'Post', 'Messages (2000)', 'Friends Page', 'Invite', and 'Mobile'. On the right side of the header is the LiveJournal logo, which includes a pencil icon and the text 'LIVEJOURNAL™'. Below the header is a dark blue navigation bar with links for 'Home', 'Journal', 'Profile', 'Friends', 'Communities', 'ScrapBook', and 'Explore'. There is also a search bar with 'Find', a dropdown menu for 'Interest', and a 'Go' button.

Profile

You can edit your information (or choose what information is considered public) at the [Edit Personal Information](#) page.



User: [brad](#) (2)  

brad's life

bored as hell and i wanna get ill

Name: Brad Fitzpatrick

Text Message: [Send brad a text message](#)
on his/her cellphone/pager.

Website: [bradfitz.com](#)

Location: [San Francisco](#), [California](#), [United States](#)

Birthdate: 1980-02-05

E-mail: brad@danga.com
brad@livejournal.com



[View all userpics](#)



Sites recognizing others

Pownce home find friends settings Logout

Message Link File Event

post a note...

Send to: all my friends Post It!

Show: all notes & replies Refresh

Brad F.
28-year-old guy

Friend Requests
4 friend requests!

Friends Add Friends

- Tatsuhiko M.
- fadi b.
- Krissy T.
- Ryan F.
- Jason S.
- Nat T.
- Owen T.
- Scott H.
- sarah I.
- Byrne R.
- Brad W.

Does this count as Music Video Monday? I think it does. Public

www.youtube.com/watch?v=P9dpTTpjy... (18 views)

16 hours ago | Ariel Waldman - Pro! 5 Replies Forward

Another good song from the latest Deathcab album. Public

Upcoming Events
This Sun at 2 p.m.
CupcakeCamp
Citizen Space - San Francisco
View all Events

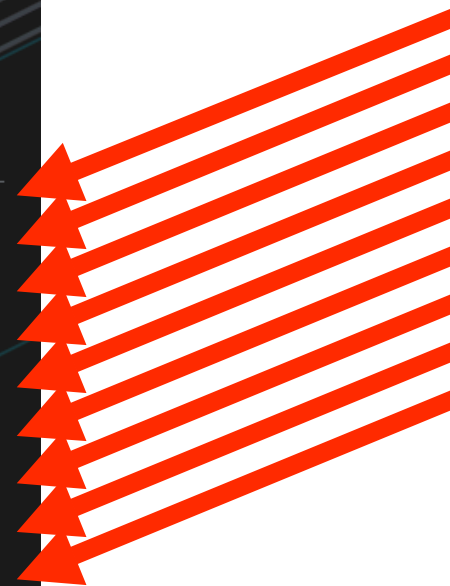
Pownce News
Public files! Send your files to the public as well as your friends.

Go Pro!

- Send files up to 250 MB
- Design a custom theme
- No advertisements
- Only 20 bucks a year
- Go Pro Today!

Other Profiles Edit

- LiveJournal Profile
- Facebook Profile
- Twitter Profile
- Vox Profile
- Zoomr Profile
- del.icio.us Profile
- Dodgeball Profile
- Reddit Profile
- YouTube Profile



Sites recognizing others

The image shows a screenshot of a Friendfeed profile for Brad Fitzpatrick. The profile header includes the name "Brad Fitzpatrick" and a "Subscribe to Brad Fitzpatrick" button. Below the header, there are several activity items: "published photos on Picasa Web Albums" with a link to "IMG_5173.JPG" and three photo thumbnails; "posted a message on Jaiku" with a link to "Hot tub & weekend update" and a timestamp of "yesterday at 3:19 am"; and "posted two entries on brad's life" with links to "Yay Phoenix!" and "Hot tub & weekend update" and timestamps of "Sunday at 4:57 pm" and "Sunday at 4:12 pm".

On the right side of the profile, there is a "Services" sidebar. This sidebar contains a row of social media icons: Facebook, RSS, Picasa, YouTube, and others. Below the icons is a search bar with a "Search" button. Further down, there are sections for "Discussion" (with a "Comments" link) and "Subscriptions" (listing users like Bret Taylor, Chris Messina, etc.).

Red arrows are drawn on the image, pointing from the main content area towards the "Services" sidebar, specifically highlighting the row of social media icons.

friendfeed [Sign in](#) or [Create an account](#)

friends rooms me everyone Brad Fitzpatrick

Brad Fitzpatrick
Subscribe to Brad Fitzpatrick

published photos on [Picasa Web Albums](#)
[IMG_5173.JPG](#)

18 minutes ago

posted a message on [Jaiku](#)
[Hot tub & weekend update](#)
yesterday at 3:19 am

posted two entries on [brad's life](#)
[Yay Phoenix!](#)
Sunday at 4:57 pm
[Hot tub & weekend update](#)
Sunday at 4:12 pm

published photos on [Picasa Web Albums](#)

Services

Search

Discussion
[Comments](#)
none this week, 2 all time

Subscriptions

- [Bret Taylor](#)
- [Chris Messina](#)
- [Dave Morin](#)
- [David Recordon](#)
- [David Weekly](#)
- [Jason Shellen](#)
- [Joi Ito](#)
- [Kevin Rose](#)

GOOGLE

Other Profiles

Link to your other profiles and let your Pownce friends know where else you are online. You can control who sees your other profiles by changing your [privacy settings](#).

+ Social Networks + Instant Messengers + Websites

Add a Social Network

- ✓ 43Things
- Bebo
- Catster
- del.icio.us
- Digg
- Dodgeball
- Dogster
- Dopplr
- Facebook
- Flickr
- GoodReads
- Hi5
- Jaiku
- Last.fm
- LinkedIn
- LiveJournal
- MOG
- Multiply
- MySpace
- Newsvine
- Ning
- Orkut
- Pandora
- Pownce
- Reddit
- SonicLiving

Share something » Import » All services

News

- [Digg](#)
- [Google Reader](#)
- [Mixx](#)
- [Reddit](#)

Bookmarking

- [del.icio.us](#)
- [Furl](#)
- [Google Shared Stuff](#)
- [Ma.gnolia](#)
- [StumbleUpon](#)

Status

- [Gmail/Google Talk](#)
- [Jaiku](#)
- [Pownce](#)
- [Twitter](#)

Video

- [Seesmic](#)
- [Vimeo](#)
- [YouTube](#)

Photos

- [Flickr](#)
- [Picasa Web Albums](#)
- [SmugMug](#)
- [Zoomr](#)

Blogging

- [Blog](#)
- [Tumblr](#)

Music

- [iLike](#)
- [Last.fm](#)
- [Pandora](#)

Books

- [Goodreads](#)
- [LibraryThing](#)

Miscellaneous

- [Amazon Wishlists](#)
- [Disqus](#)
- [LinkedIn](#)
- [Netflix Queue](#)
- [Netvibes](#)
- [SlideShare](#)
- [Upcoming](#)
- [Yelp](#)

Your shared sites

- [http://brad.livejour...](#)
- [bradfitzpatrick](#)
- [bradfitzpatrick](#)
- [brad@danga.com](#)
- [brad@fitzpat.com](#)
- [bradfitz](#)
- [bradley.j.fitzpatric...](#)
- [bradfitz](#)
- [bradfitz](#)
- [bradfitztube](#)

Accounts: Email: [brad@danga.com](#)

IM: [brad@fitzpat.com](#) [remove](#)

[+ Add an IM account](#)

Website: [http://bradfitz.com/](#)

Blog: [http://brad.livejournal.com/](#)

Amazon: [♥ My Profile](#)
[My Reviews](#)
[Wishlist](#)

del.icio.us: [♥ bradfitzpatrick](#)

Digg: [♥ bradfitzpatrick](#)

NEW Facebook: [Log in to receive updates](#)

Flickr: [♥ brad@danga.com](#)

Auto-suggest profile links!

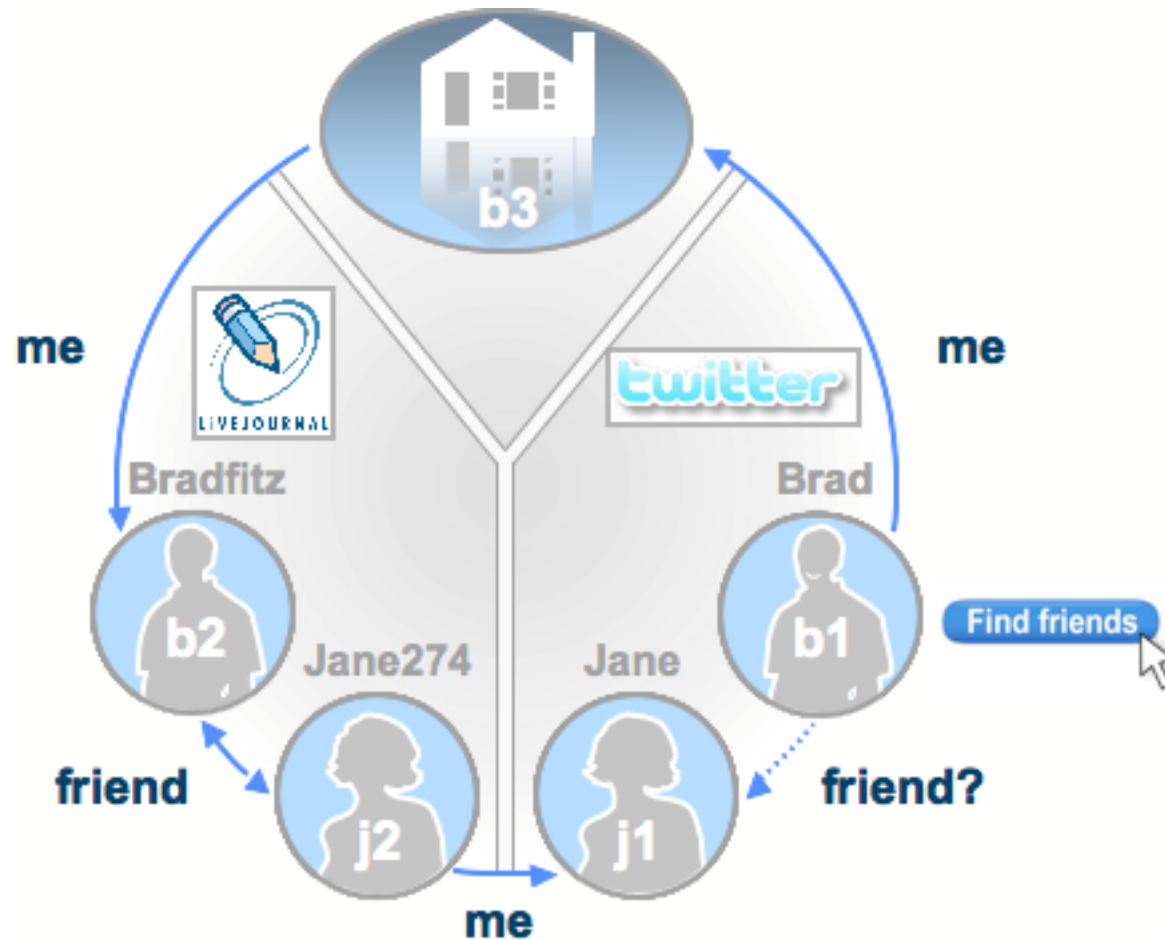
- hit the Social Graph API as they enter each one
 - and/or start with their email address
 - ask to follow me links (fme=1)
- auto-suggest all the returned other accounts

`http://socialgraph.apis.google.com/lookup
?q=livejournal.com/users/brad,brad@danga.com,
twitter.com/bradfitz
&fme=1 (link)`

or, if you're using sgnodemapper, add: `&sgn=1 (link)`

Auto-suggesting friends

- now you know their accounts on other sites, so....
- let's use that to find their friends on your site:



But first: reviewing email import

- step 1: get user's address book
 - their email + password (yech)
 - OAuth / AuthSub / LiveAuth / etc
- step 2: foreach (email in addressBook) {
if (SELECT userid, username, display_name FROM user
WHERE email=? AND **email_verified='Y'**) {
"OMG you're friends with \$display_name, add them!"
} else {
[X] Please spam \$email and tell them to join!
}
}
- step 3: viral profit!

Replacing with URLs...

- step 1: get user's social graph
 - public social graph: Social Graph API, manual crawl/parsing(?)
 - protected graph: social network-specific APIs
 - merge
- step 2: foreach (url in socialGraph) {
if (SELECT userid FROM url_to_userid_map WHERE url=?
AND url_verified='Y') {
"OMG you're friends with \$display_name, add them!"
} else {
~~[X] Please spam \$email and tell them to join!~~
remember this URL and do step 2 each day in the
background
}
}
- step 3: more connected users!

Tiny Demo

- quick hack demo of this concept, all in JavaScript:
- [demo](#)

url_verified='Y' !?

- need to verify emails/URLs, else \$Attacker can join \$NewSite and claim to be brad@danga.com / <http://bradfitz.com/>
 - and then daveman692 on \$NewSite is told that \$Attacker is his friend, because daveman692 friends [http://bradfitz.com.](http://bradfitz.com/) elsewhere

url_verified='Y' !?

- verifying an email is easy
- verifying a URL....
 - OpenID
 - if it supports OpenID
 - Social Graph "me" path back to a verified URL (like \$NewSite's profile page)
 - put magic markup on page and crawl it to verify
 - might as well be an OpenID delegate tag,
 - or an XFN rel="me" back to \$NewSite's profile page

Props

- Plaxo Pulse new user flow:
 - no email address to join,
 - no password to join,
 - login with OpenID,
 - don't enter your sites,
 - don't enter your friends,
 - uses Social Graph API (+ manual crawling/parsing)
 - finds your sites
 - finds your friends
 - imports all your activity from those friends/sites
 - ...
 - ... all right when you login the first time with OpenID. :-)
- See Joseph Smarr's talk tomorrow all about this!

Summary

- URLs are useful too; emails aren't the only identifiers for people
- Users are sick of reentering their friends (& their other sites)
- Try the Social Graph API!
- Add XFN and/or FOAF to your pages and get your graph indexed

Q & A

Image Credits

email tombstone:

<http://globalnerdy.com/2007/07/23/kids-say-email-is-only-for-talking-to-the-mar>

swirly patterns:

<http://www.flickr.com/photos/platinum/6056978/>

kevin and andrew:

<http://www.flickr.com/photos/thomashawk/416449908/>

map:

<http://xkcd.com/c256.html>

Social network history:

<http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>