Social software for p2p systems

The case of wireless neighbourhood communities

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January 2009





B.Sc, M.Sc

University of Crete, Heraklion, Greece

- Distributed systems, networking, high-speed scheduling





PhD

Athens University of Economics and Business

 Economic modelling and incentive mechanisms for resource sharing in peer-to-peer systems





Post-doc

University Pierre & Marie Curie, Paris, France

- On-line communities, ad-hoc networks, social incentives





High-level research goals

- Understand and model user behavior in p2p systems
- Design incentive mechanisms that will encourage them
 - to participate
 - share resources
 - build trust
- Main challenge: go beyond rationality
 - from economics to social psychology
 - from allocation rules to social software
 - from practice to modelling



Outline

- Self-organized communities
 - Social p2p systems
 - P2p online communities
 - Wireless neighbourhood communities
- Extrinsic vs. instrinsic motivations
- Social software
 - Mechanisms
 - Motivations
 - Trade-offs

The case of Wireless Neighbourhood Communities



P2p systems are going social?

- •(very) slowly
 - Problematic because of legal reasons
 - Soulseek, Vuze
- Friend-to-Friend
 - GNUnet, Turtle, Retroshare, Peervasives ...



But why?

- Web-based communities are very efficient
 - It is doubtful that any p2p system could reach the efficiency levels of youtube, flickr, etc.
 - One could just do p2p content distribution for additional efficiency
- Some generic reasons are
 - Privacy
 - Censorship
 - Independence
- More depending on the application
 - P2P is more than file sharing!



The benefit is still not obvious

- Technical challenges
 - Content distribution (long tail), information integrity (e.g., false praise), different privacy/security issues
- Incentive issues
 - Participation, resource sharing, trust
 - Not all communities are the same (configurability)
- Is it really worth it?
 - For many people that value privacy and independence yes!
 - Complements ... not supplements
 - Use web-based communities as meeting places
 - "Going out" vs. "staying home with friends"



Wireless Neighborhood Community

- Hybrid online community
- P2P system
- Ad hoc network





More difficult than file sharing

- Need to build common interest
- Participation and contribution more demanding
- But also important benefits
 - Cheap connectivity
 - Social capital and civic engagement
 - Collective action
 - Bridging the virtual with the physical
 - Community building!





In the city

The Paris New In Town Meetup Group



In the neighborhood

Carte des voisins





In the building



Neighbourhood/City Wireless Mesh networks





Grassroots community wireless networks





"Seattle Wireless started in 2000, and back then it was a simple idea, with huge technical hurdles, high costs and a hard (but novel) sell to the public. Now the technology exists, the hardware is cheap, and **all we need are people** to realize the dream of a locally grown network."



Bringing it all together



Human motivations and incentive mechanisms

From economics to social psychology



Incentives for resource sharing

- Economic approach: resource trading
 - Markets
 - Reciprocity
 - Tokens
 - Reputation
- Challenging issues:
 - Enforcement
 - Equilibrium
 - Information







a) Resource allocation



b) Resource provision



But p2p systems work!

- LimeWire, eMule, Vuze, soulseek, ...
- Also wikipedia, slashdot, SETI@home, …
- Many possible reasons
 - Community spirit
 - Vision
 - Value/cost ratio
 - Self-efficacy
 - Altruism
- Social incentives!





And free riding?





Free riding is not always a problem

 In most successful systems the majority of the contributions come of the small percentage of the participants

- Wikipedia, filesharing, ...



Extrinsic vs. intrinsic motivations

- Direct benefits
 - Payments, resource exchange
- Long-term benefits
 - Feedback, expected reciprocity, socializing
- Self-image
 - Sense of efficacy, pride, status, popularity
- Community
 - Community spirit, belonging, emotional connections, norms
- Intrinsic
 - Interest, fun, inherent satisfaction







Internet access sharing: reciprocity

What's FON?





Internet access offering









Thank you



Wi-Fi pour hôtels WI-FI Location - satcom Internet Access Appliance Ads by Google

Create account Forgot password

Recent Thank You

eziwnyrah m. at 0 and 0,

kmyrupogmupikip,

AL, United States on

wife w. at 0 and 0,

stories, AL, United

States on 08/10/08

thongs t. at 0 and 0,

hot girls in thongs,

AL, United States on

AL, United States on

08/02/08

07/31/08

wife sharing

Username:

Password:

Login

Messages

08/18/08

Map of Wi-Fi Thank Yous



(40.7456963, -73.9841651) xanteno q. at 0 and 0, wtahotamagbu,

@ 2004, 2005, sociableDESIGN, LLC. — http://www.sociableDESIGN.com — v2.3







Incentives are not additive! (crowding-out)





A lot of related work in social sciences

- Psychology
- Social psychology
- Organizational behavior
- Studies for online communities and social software
 - But still heuristics
- But there is no work on how to provide such incentives for resource sharing in p2p systems!



Incentives for resource sharing (summary)

- Economic mechanisms (credits, reputation)
 - Border effects
 - Complexity
 - Heterogeneous users (both in capabilities and motivations)
 - Crowding-out!
- Social incentives (altruism, self-efficacy, community spirit)
 - Exploit contributions of highly-motivated users
 - Compatible with the community spirit of p2p systems
 - But difficult to formalize ...
 - ... and need social context



Cross-layer incentives

Decoupling of monitoring and resource control



The community layer enables the provision of social incentives



Research agenda

- Provide generic tools/guidelines for social software design
 - Exploit a larger set of human motivations to encourage resource sharing
 - Exploit resource sharing for building community
- Formalize the notion of social incentives for resource sharing
 - Measurements + experiments
- Wireless Neighbourhood communities
 - Build common interest
 - Community-aware wireless mesh networking
 - Network-aware community design
- Interesting multi-disciplinary problems arise!



Social software

- HCI + information management + rules
- Profile page (self-representation)
- Information management (private vs. public info)
- Status/privileges (characterizations, moderators)
- Feedback (view count, favourites, text, history, events)
- Community (outcome, groups, forums, support)
- Socializing (private messages, friendship)
- User participation (web2.0)
- Adaptation over time



Sucessful stories

- Myspace
- Facebook
- Flickr
- Wikipedia
- Slashdot
- But also many unsuccessful ...
- The details matter!



Vision, promise

- A free encyclopedia
- Free content
- Free software
- "Picture the world"

Welcome to Wikipedia,

the free encyclopedia that anyone can edit. 2,698,753 articles in English





Community outcome

Explore





<u>Warm-keh...</u> See more by ~~wv~~ (Mary), or view her profile.

More interesting bits from the last 7 days

Flickr labs have been hard at work creating a way to show you some of the most awesome content on Flickr.

We like to call it *interestingness*.

Explore the gorgeousity by choosing a point in time...

Select a month

Choose 🛟

You can also jump into a <u>calendar view</u> of this month.



Other places to explore include:

- a map of the world
- the popular tags page
- <u>Camera Finder</u>
- visiting the <u>FlickrBlog</u>, or
- most recent uploads.
- video on Flickr



Personal image (external)

Stasind of News FOR NERDS. STUFF THAT MATTERS.	Panayotis	Preferences	Subscribe	<u>Journal</u>	Submit Story	Help Log Sear	<u>rch</u>
Re:Net (Score 1) by <u>Panayotis</u> on Thursday February 07 2008, @07:50PM (<u>#22337486</u>) Attached to: <u>Facebook Sharing Too Much Personal Data With Application Developers</u> This is a tricky "truth" in my opinion the fact that we should be aware of this important fact of popular web-sites, attracting millions naive users, shouldn't be forced somehow to educate the enough options for them to protect themselves.	loesn't mean f eir users and s	165 hat so give them	Panayoti (no real na frindrix@g (email not Karma: Po	s (1119445) me given) <u>mail.com</u> shown public sitive) 4 y)		

Set your status here					edit
This is	how m	y profile will	look to	myself	
scraps	photos	photos of me	videos	fans ☆0	



[Closed - duplicate] Customization - Choose a background colour



Jacob Pittolo dit :

Hi all.

I think it would be good if you could **choose** the **background** colour of every flickr page you see, like Last FM, just have a little "Paint it ______" Button people can press to change the background colour, or let us have multiple colours to choose from. This would be an easy way to add a little bit of customisation that would not effect everyone (like Myspace)

What are your thoughts?

Posté le le 3 octobre 2008 à 8:46 (PST) (permalien) werewegian (administrateur du groupe) a modifié ce sujet il y a il y a 3 mois.



ColleenM pro dit:

Did you search for the previous threads on this topic. www.flickr.com/groups/flickrideas/discuss/72157600044271630/ Posté il y a 3 mois. (permalien)



Rippie: Contra Censural pro dit :

yep, very often requested, but not likely to happen, as you'll read. Posté il y a 3 mois. (permalien)



Pro account without "Pro" badge



Johan Rd dit :

Hi.

I think that the Pro accounts should have an option of removing the silly "Pro" badge and other signs that indicates a pro account.

johan

Posté le 8 janvier 2009 à 5:14 (PST). (permalien)





I just can't believe that after 16 months of Flickr I had more than 1.000.000 views!!! More than 172.000 photostream views! Thank you all so much. I still doesn't believe it....

So what's next...2.000.000 I think I might stop at this beautiful peak ;-)

Ongelooflijk maar na 16 maanden op Flickr heb ik meer dan **1.000.000 views**!!!! gehad. Totaal meer dan 172.000 keer mijn photostream bezocht. Allemaal zo bedankt. Ik geloof het nog steeds niet.....

This photo has notes. Move your mouse over the photo to see them.



Local activity (incoming)



The second a fan of nouvelle notification. 9:32pm



Other Business - 40,332 fans - Become a Fan

Comment



Chloé Rolland at 11:05pm January 13 t'es encore plus timbré que ce que je pensais ...

Show 2 more comments...

Mehdi Bezahaf at 12:08am January 14 ah voilà une deuxieme notification

Mehdi Bezahaf at 12:09am January 14 et une troisiéme héhé

Write a comment...

- Who's viewed my profile?

Your profile has been viewed by 4 people in the last 90 days. In the last 3 days, you have appeared in search results 7 times.

See more »









» Your Photos (NEW comments / Comments you've made)

Recent activity on your photos

Hmm.... No activity in the last 2 days. Try a longer timeframe? since your last login
GO Or, have a look for replies to comments you've made.

🧱 Flickr Ideas / Discuss

Current Discussion

NEW Stop Blogging of Restricted Images Latest: 57 minutes ago

NEW Proposal for a web standard geotag icon Latest: 88 minutes ago

NEW <u>"New" Comments</u> Latest: 2 hours ago

NEW Random slideshow for favorites!



"New" Comments



Am I the only one being bothered with the New Comments not renewing when you've already watched them? I get really happy when I see someone's bothered themselves with writing stuff about my photos but then realise I've already seen that perticular comment... :(Of course I could sign out after each time but I visit this website like 10 times a day and have'nt got the effort... Keep it real /Johan Posted at 6:23AM, 26 September 2007 EET (permalink)





Who has visited you lately? / view all





9 hours ago











9 hours ago

Marcus B 11 hours ago

19 hours ago

21 hours ago

22 hours ago





I want to see the unique views of my photos - we are not naive!



Panayotis says:

Counting all the views generated by the same person (even a little later) and adding 3 views with each comment may increase the user "satisfaction" but it can be disappointing when someone discovers that this is fake ... I don't talk about me ... generally :-)

Posted at 5:17PM, 3 June 2007 EET (permalink) Panayotis edited this topic 19 months ago.



werewegian pro says:

We are not stupid but we are all in the same boat. This particular quirk of the system has been going on for a long time. An additional count of unique views might be nice but that would require the database to hold an index of all your visitors and not just your most recent ones. A huge overhead. I'd rather the disk storage was used for new features. The miscounting when someone faves or comments could be fixed however.

Posted 20 months ago. (permalink)



movielens

helping you find the right movies

Welcome frindrix@gmail.com (Log Out)

You're in the Tiger Group You've rated 26 movies. You're the 31st visitor in the past hour.



Community activity

5 248 importations au cours de la dernière minute · 24 245 éléments comportant le tag rue · 2,6 million d'éléments géotaggés ce mois-ci. · Visite guidée



Your network / view the whole network?





























From Sergio

From ileanaa





From Nafsika

From anaisanais















Happy Christwas to all From drl.















DIERRES MARIECUBIE





47

Your contacts Recent uploads | Contact List | Who calls you a Contact? | Invite | Find your friends

Andrew

Sparkes







User relationships/interactions

Tous mes amis # A B C D E F	GHIJKLMNOPQRST	UVWXYZ		
Listes 1-27 sur 27 1 / 1				préc. suiv.
Choisis le nombre de meilleurs amis : • Personnalise. Classe tes meill • Rends l'affichage aléatoire.	Top 25 eurs amis dans l'ordre en faisant glisser Tes meilleurs amis changeront chaque fo	leur nom dans les carrés rouges. ois que ta page sera rafraîchie.	Friends	
friend groups			Like-Min	Costas
 best friends (0) family (0) school (0) work (0) 				SHOWMIAFACE Long Beach, CA
new group	тату			~
	Marcelo Amorim Marcelo.Amorim@free.fr France	r		edit

UNIVERSI'



Showing 1 through 0 of 0 messages. (Thank You's are stored for 14 days only)

You currently have no thank yous.

Contacts; can we have a choice?



Spikes-place [supprimé] dit :

If someone chooses to be an univited contact you have no choice other than to accept it as a fait accompli or ban them.

Banning them seems a bit like a very large hammer to crack a small nut when all that is needed is a simple "do you wish to allow so mrxyz to be a contact'; yes or no.

It would seem an extremely easy to impliment,; we already have effectively 'do you want to make this uninvited guest a contact'

It would save people such as myself from having literally hundreds of non-reciprocated contacts that I really just don't want!



Brock pro dit:

I think you are missing the major significance of contacts. It is just a way for members to follow your stream within flickr. They want to (in the pure sense*) look at your images - it doesn't imply any connection with you in a myspace/facebook sense.

It no way implies that you are making them a contact, it just lets you know that they have essentially bookmarked your stream within the flickr interface.

*Admittedly many add people as contacts to get them to view their own stream, but that's just something that irritates most of us...

Posté il y a 3 mois. (permalien)





Groups

Groups you belong to (27)

View: By recent activity . In alphabetical order

- NEW DeleteMe! welcomes safe strivers (4,296 members)
- Flickr Ideas (4,466 members)
- Greeks on contemporary Greek life / Η "πλατεία" μας (1,003 member
- Flickr's Weekly Theme Contest! Winner #132: loungerie (1,208 mem
- <u>flickr@paris</u> (2,102 members)
- Decisive Moment (7,669 members)



- New reply to [now implemented!] Real Names
- More...



Group Rankings

Number of movies rated during the past week

Lion Group	674		
Alligator Group	618		
Gorilla Group	570		
Bear Group	479		
Leopard Group	459		
Snake Group	434		
Tiger Group 🕅	433		
Eagle Group	358		
Rhino Group	309		
Polar Bear Group	294		

% of members who logged in during the past week

Lion Group		5%
Leopard Group		4%
Gorilla Group		4%
Alligator Group		4%
Bear Group		4%
Snake Group	39	%
Eagle Group	39	%
Rhino Group	39	%
Polar Bear Group	30	%
Tiger Group 🕅	2%	

Tiger Group



Tigers may seem like killers, but after a hard day they like to cuddle up with a loved one and a romantic movie.

You are a member of the Tiger Group (what are groups?)

Tiger Group thinks these movies are cool

Title	Average Rating
Persuasion (1995)	****
Ever After: A Cinderella Story (1998)	****
Opposite of Sex, The (1998)	****
Empire Records (1995)	****

Group Rankings

Number of movies rated during the past week

Lion Group	674
Alligator Group	618
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Bear Group	479
Leopard Group	459

Group and low ratings from other grou	ps
Title	Mating
Cries and Whispers (Viskningar och rop) (1972)	*****
Happy Together (Buenos Aires Affair) (Chun gwong cha sit) (1997)	*****
Fast Runner, The (Atanarjuat) (2001)	****
Tao of Steve, The (2000)	*****

These movies have high ratings from the Tiger

Frequently Rated Tiger Group Movies: Last Week

Title	Average # o Rating Ratin	f Igs
WALL·E (2008)	**** 4	
As Good As It Gets (1997)	**** 3	
In the Name of the Father (1993)) **** 3	
Slumdog Millionaire (2008)	**** 3	





Filtering/rating

The Internet as a Mesh Network (Score:4, Interesting)

by DigitalisAkujin (846133) O on Thursday February 21, @06:26PM (#22504488) Homepage

The beginning of the end for ISPs.

The internet will eventually become a self propagating mesh network. (Case and point: One laptop per child)

--

Senior Web Developer @ http://www.artician.com

Karma: Neutral

Reply to This

```
1 hidden comment
```

```
Telco's end (Score:1) by bobs666 (146801) Your dead on.
```

Re: (Score:1) by clark0r (925569) you're

```
1 hidden comment
```

Re:The Internet as a Mesh Network (Score:4, Funny)

by zienth (890583) O on Thursday February 21, @07:34PM (#22505584)

The internet is a series of balloons...



Filtering/rating



Ultimate GOLD (Post 1 - Give 5 Gold Stars) Group Pool Discussion 6,746 Members Map Join This Group



It High Quality Images + Post 1, Award 7 Group Pool Discussion 6,598 Members Map Join This Group



1 on 1 POST 1 AT A TIME, COMMENT ON ANY 1 ON PAGE 1

Group Pool Discussion 3,638 Members Map Join This Group



Group Pool Discussion 55,728 Members Map Join This Group



Trade-offs

Participation vs. addiction

- Community building vs. spying (gossiping culture)
- Accountability vs. privacy/anonymity
- Visualization/incentives vs. overload/control
- Status/privileges vs. self-efficacy
 - The existence of users of high status could discourage new comers

• • • •

Technology-aware social software

- User profile
 - A technologically enhanced social image of the user
- Personal feedback for resource contribution
 - From the system, from neighbors
 - Visualization
- Information management
 - Positive (rewarding) approach
- Socialization
 - "My network friends"
- Sense of community
 - Independence, identity, ...



Wireless Neighborhood Communities





Wireless Neighborhood Community





Main challenges

- Application design
 - Wired Internet is an important alternative
 - Large time scales, but might become "boring"
 - Need to build common interest!
- Trust management and incentives
 - Important for bootstrapping and efficient operation!
 - But not so difficult as the "general problem"
- Mesh networking
 - Routing, mobility, power control, access
 - Many practical problems (e.g. interference, obstacles, etc.)
 - A lot of progress but not readily available ...



Cross-disciplinary work

- Social psychology
 - Experiments with real users, behavioral analysis
 - Technology-aware social image
- Human-computer interaction
 - Social software design
- Measurements
 - Study different user behavior patterns in different communities
 - Build simple models to understand the trade-offs
- Urban planning
 - Understanding of community and space
 - Participatory urban planning
 - Bridging the virtual and the physical



References

- Collaborators
 - Benedicte Le Grand, Marcelo Dias de Amorim, Ileana Apostol, Tridib Banerjee
- WIP project: <u>http://www.ist-wip.org/</u>
- <u>http://www.nethood.org</u> (coming soon)
- And for the photos ... <u>http://www.flickr.com</u>