UNIVERSITY OF CRETE
FACULTY OF SCIENCES AND ENGINEERING
COMPUTER SCIENCE DEPARTMENT

COURSE CS-564 (OPTIONAL)

ADVANCED TOPICS

IN HUMAN – COMPUTER INTERACTION

Course Convenor: Constantine Stephanidis

SOCIAL MEDIA AND ONLINE COMMUNITIES

Introduction (1/2)

- Social computing has to do with digital systems that support *online* social interaction
  - email with a family member, sharing photos with friends, instant messaging with coworkers
    - prototypically social
  - creating a web page, bidding for something on eBay, following someone on Twitter, making an edit to Wikipedia
    - These actions may not involve people we know, and may not lead to interactions, but nevertheless they are social because we do them with other people in mind: the belief that we have an audience – even if it is composed of strangers we will never meet – shapes what we do, how we do it, and why we do it

Introduction (2/2)

- When we speak of social computing we are concerned with how digital systems go about supporting the social interaction that is fundamental to how we live, work and play
- They do this by providing communication mechanisms through which we can
  - interact by talking and sharing information with one another
  - by capturing, processing and displaying traces of our online actions and interactions
    - that then serve as grist for further interaction
  - essentially providing the necessary space for online communities to live

Communicating online (1/2)

- In online textual environments, people represent themselves through their words, and both syntax and semantics convey meaning
- However, nonverbal cues that help us understand each other (e.g., body language, facial expressions and voice tone) are missing
- Developing shared understanding (i.e., establishing a common ground), a sense of social presence, empathy and trust are therefore usually harder, which in turn makes developing social relationships slower and more difficult

Communicating online (2/2)

- Surprisingly, face to face is not necessarily the best for all types of communication, nor are high-bandwidth synchronous environments
  - It depends on the communication task
  - ☛ For example, text-only environments can be preferable when the content of the conversation is potentially embarrassing
- However, because face-to-face is the default we are used to, it has become the standard for judging other media

Social presence, Identity, and Relationships (1/3)

- Social presence theory speaks about how successfully media convey a sense of participants being physically co-present
  - It helps to explain how social behavior is affected by characteristics of different media
- Social presence depends not only on the words people speak, but also on nonverbal cues, body language and information about the speakers' context

Social presence, Identity, and Relationships (2/3)

- Another feature of reduced social presence, particularly in low bandwidth environments, is that the way people form impressions of each other is different, which can have both positive and negative effects
  - When people meet each other for the first time, they develop mental models of each other and the content of their discussion
    - Their opinions are influenced partly by such things as age, gender, physical appearance, etc.
    - Furthermore, they tend to be developed very quickly, but can be remarkably powerful and resistant to change, even when evidence suggests that they are not completely correct
- In addition, because people communicate without knowing the circumstances and the broader context in which comments are made, misunderstandings can occur

Social presence, Identity, and Relationships (3/3)

- Conversely, there are times when not being able to see the person with whom you converse and knowing you may never meet them can be a positive feature of these environments, because people are encouraged to disclose more about themselves
- Research on people using low-bandwidth systems noticed that these users tend to send fewer messages during the same period as those communicating face to face or via video-conferencing
  - Some online relationships may, therefore, be slower to develop

☛ The way people choose to portray themselves online is of considerable research interest

Empathy and trust (1/4)

- Empathy is defined as: knowing what another person is feeling, feeling what another person is feeling, and responding compassionately to another person
  - Empathy is strongest between similar people and people who share similar experiences, such as people in the same profession
  - This phenomenon is particularly noticeable in patient support communities, where participants experience similar problems, discomfort and treatment
  - However, empathy depends heavily (like common ground and social presence) on nonverbal communication, such as a gaze and body language, so it, too, is influenced by the properties of different communication media

Empathy and trust (2/4)

- Trust can be defined as: the expectation that arises within a community of regular, honest and cooperative behavior, based on commonly shared norms, on the part of the members of the community
- Research effort is being focused on understanding how trust develops online, stimulated by the needs of e-business
  - Procedures and mechanisms are being sought to support trust online
  - ☛ One example of successful online trust management is e-bay's reputation management system. In this system, ratings of customers' satisfaction of transactions with a particular vendor are compiled to provide a history that can be examined by potential customers

Empathy and trust (3/4)

Hi! Sign in or register | Daily Deals | Gift Cards | Sell | Help & Contact | UP TO 50% OFF > | My eBay

ebay Shop by category | Search... | All Categories | Search | Advanced

Back to search results | Listed in category: Toys & Hobbies > Action Figures > TV, Movie & Video Games

Star Wars Millenium Falcon-Original Trilogy Collection-Sealed, New in Box-2004

3 viewed per hour

Item condition: New

| Add to watch list

Price: US $199.99
Approximately EUR 187.84

Buy It Now

Add to cart

23 watching

Add to watch list

Add to collection

New Condition | Longtime Member | Tracked international Shipping

Top-rated seller
majblade2 (2834 ★)
100% Positive feedback

- Consistently receives highest buyers' ratings
- Ships items quickly
- Has earned a track record of excellent service

Follow this seller

See other items

Ad Feedback | AdChoice

Shipping: $59.33 (approx. EUR 55.72) International Priority Shipping to Greece via the Global Shipping Program | See details
Item location: Aurora, Colorado, United States
Ships to: United States and many other countries | See details

Import charges: $47.55 (amount confirmed at checkout)
No additional import charges on delivery

Delivery: Estimated between Tue. Dec. 8 and Fri. Dec. 18
Includes international tracking

Payments: PayPal | VISA
Processed by PayPal
Any international shipping and import charges are paid in part to Pitney Bowes Inc. Learn More

Guarantee: ebay MONEY BACK GUARANTEE | See details
Get the item you ordered or get your money back.
Covers your purchase price and original shipping.

http://www.ebay.com

Empathy and trust (4/4)

- A related issue concerns the persistence of conversations online
  - Savvy online community participants who understand technology are reluctant to enter into online conversations that involve disclosing personal information, because they know it can be retrieved

Group Dynamics Online

- As theory from psychology and linguistics have been adapted and applied to understand how people communicate online, theories from social psychology, sociology, and other branches of the social sciences are being drawn on to help explain how communities form and change
  - Social Network Theory
  - Critical Mass
  - Reciprocity and Social Dilemma
  - Roles, Rituals, Norms, and Policies

Social Network Theory

- Social Network Theory examines the patterns and characteristics of social connections and their relationship to individual's lives and societal organization
  - It is used as a framework to study how people relate to each other through computer-mediated networks
- The characteristics of computer-mediated networks that are examined include
  - the composition of networks, the network size, the range of the network,
  - the frequency of contact between people, the density of interpersonal ties, the characteristics of members,
  - the history of the network and the resource available in the network

Critical Mass

- The number of people needed to make an online community viable and to attract others is known as its critical mass
  - If there are too few people contributing to an online discussion, it will die because there will be insufficient new messages to hold the interest of existing members
- Although critical mass is a useful concept for explaining success and failure, and interactions online, it is of limited practical value because it is so hard to quantify
  - What may be enough people in one community may not be in another because members of different kinds of communities have different expectations

Reciprocity and Social Dilemma

- Reciprocity means giving back to the community, as well as taking from it
  - It is a central concept for explaining the success and failure of communities
- The problem is that often behavior that benefits an individual can damage the group
- Furthermore, in certain situations, individuals can gain benefit without being obvious to the community that they are not contributing, damaging therefore the community effort
  - E.g., if participants in a small community decide to read messages but not to post, the community as a whole will suffer
- This tension between what is best for an individual and for the group is a social dilemma

What is an online community?

- Online communities have the following core characteristics (Whittaker, Issacs, & O'Day, 1997):
  - ☑ Members have a shared goal, interest, need or activity that provides the primary reason for belonging to the community
  - ☑ Members engage in repeated, active participation and there are often intense interactions, strong emotional ties, and shared activities occurring between participants
  - ☑ Members have access to shared resources, and there are policies for determining access to those resources
  - ☑ There is a shared context of social conventions, language, and protocols

Brief history (1/2)

- 1966: E-mail
- 1969: ARPANET
- 1978: Bulletin Board System (BBS), Multi-User Dungeon (MUD)
- 1979: Usenet (by Tom Truscott, Jim Ellis)
  - Users post articles or posts (referred to as “news”) to newsgroups
- 1986: Listserv
- 1988: Internet Relay Chat (IRC)
- 1997: SixDegrees (first modern social network)
- 1998: Open Diary
  - forerunner of modern blogs, allowed users to comment on other people’s diary entries
- 1999: LiveJournal, Blogger, Napster

Brief history (2/2)

- 2001: Wikipedia
- 2002: Friendster
  - First modern, general social network
- 2003: Couchsurfing, Hi5, LastFM, MySpace, LinkedIn, Photobucket, SecondLife
- 2004: flickr, digg, World of Warcraft (WoW)
- 2005: YouTube
- 2006: Facebook, Twitter
- 2010: Pinterest
- 2011: Google+

Categories of online communities

- Mailing lists / Listserver
- Newsgroups
- Forums
- Real-timer, text-based chats
- Network Groups, π.χ. Yahoo! / Google
- Wikis
- Blogs
- Content Communities
- Immersive graphic environments
  - Virtual Game Worlds
  - Virtual Social Worlds

Mailing lists / Listserver

- Characteristics

  Asynchronous, available 24/7, may be moderated or not, can be used for mass broadcast messages, members have to register

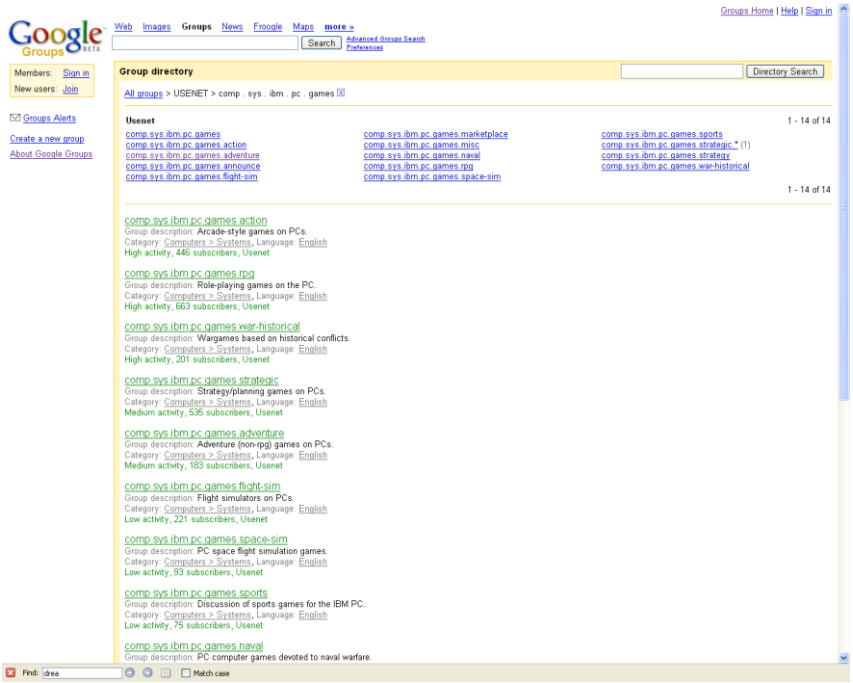
☑ Advantages

Easy to use, good for new users. No special equipment required beyond e-mail capability. Good for sending announcements and newsletters. Good for broadcasting messages and discussions. Participants may take time to reflect, compose, and edit items posted to the list

☒ Disadvantages

Members have to register – may discourage participation. Lists with a large number of postings may be overwhelming to users. Contexts for responses have to be provided by including parts of previous messages

Newsgroups (1/2)



http://groups.google.com

- Characteristics

  Asynchronous, available 24/7

  Collections of discussions on various topics hosted on the Internet, cross posting between groups is common, and spamming is frequent

  Open communities, no registration required to post

  Usually not moderated

Newsgroups (2/2)

☑ Advantages

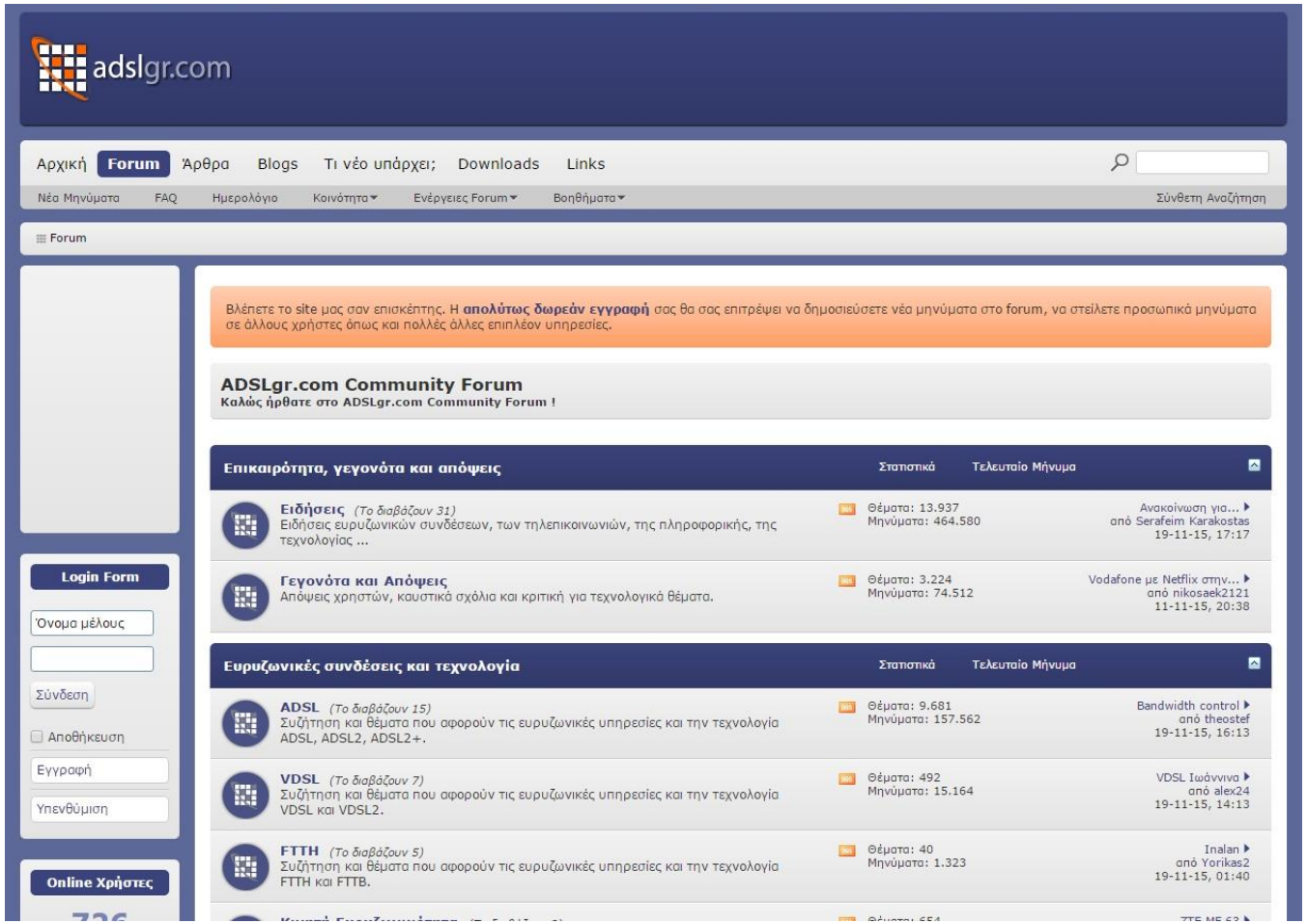
No registration required – may encourage wider participation. No special equipment beyond Internet access. A large number of newsgroups exist – it is easy to find a group to match your interests. Participants may take time to reflect, compose, and edit items posted

☒ Disadvantages

No registration required – may create a sense of anonymity that can lead to inappropriate message and hostile postings (flaming). Spamming is frequent. The volume of messages in some groups may be overwhelming

Message Boards, Bulletin Boards, Discussion, or Forum (1/2)

- Characteristics
  - Asynchronous, available 24/7
  - Users have to go to a site to read messages
  - May be moderated
  - Usually require registration
  - Discussions are threaded or linear
  - Many bulletin board services are set up to send an email to signal new messages, responses and topics of interest



http://http://www.adslgr.com/forum/

Message Boards, Bulletin Boards, Discussion, or Forum (2/2)

- ☑ Advantages

  No special equipment beyond Internet access. Participants may take time to reflect, compose, and edit items posted. Easy to find a group matching your interests. Discussion threads provide historical context. Linear organization provides separate topics for each conversation and is good for in-depth discussion. Many bulletin boards provide good search facilities. Icons and emoticons are becoming increasingly common so participants can signal the content of their message and their mood

- ☒ Disadvantages

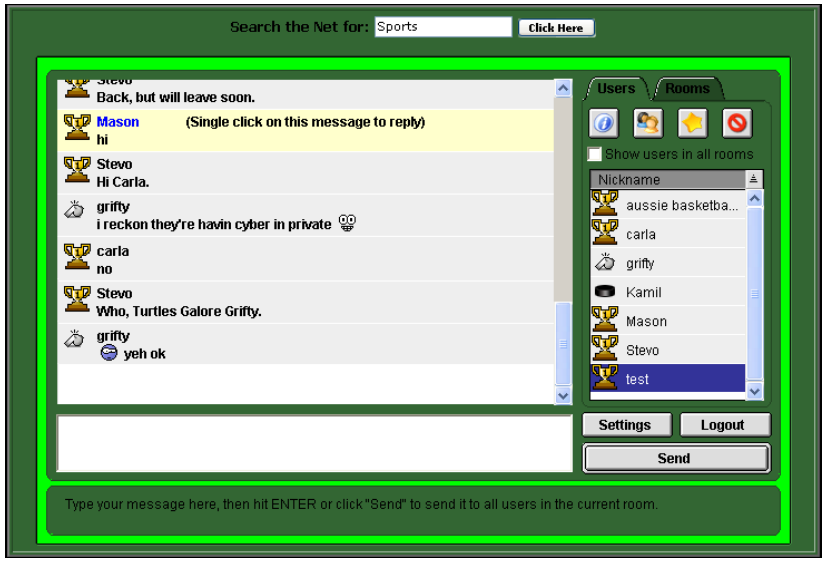
  Newcomers may find it hard to break into conversations. Following threads may become confusing. May be difficult to moderate a large board

Real-timer, text-based chats (1/2)

- Characteristics

  Synchronous, text environments. Messages are short and conversation moves on quickly. Real-time auditoriums may be structured to accommodate a large number of persons in a public chat. Instant messaging provides real-time chats for private groups. Participants register

Instant Messenger



Web chat

Real-timer, text-based chats (2/2)

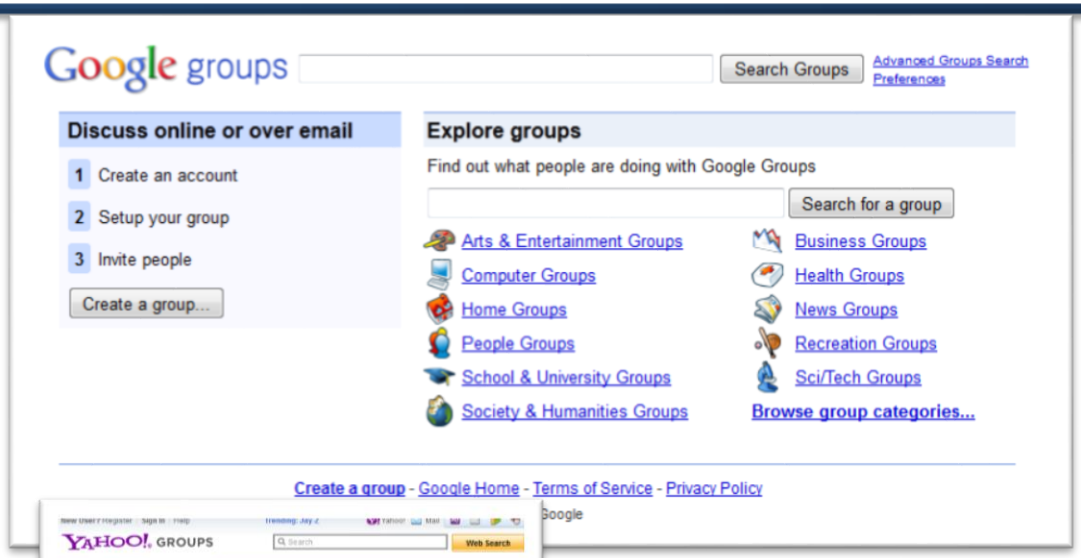
☑ Advantages

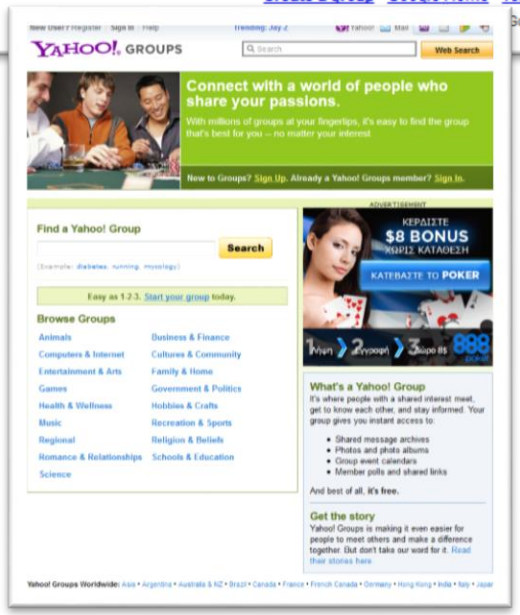
Provides a sense of immediacy. Allows people to communicate in real-time. Good for quick exchanges, holding meetings, conducting interviews, to hang out and relax. Newcomers can learn to participate in chats easily

☒ Disadvantages

Must be online at a specific time to participate. No time to reflect, compose, and edit postings. Several conversations may appear at the same time and be confusing for participants. Conversations may get intertwined because messages appear in a first-come first-displayed basis

Network Groups (e.g. Yahoo! / Google)





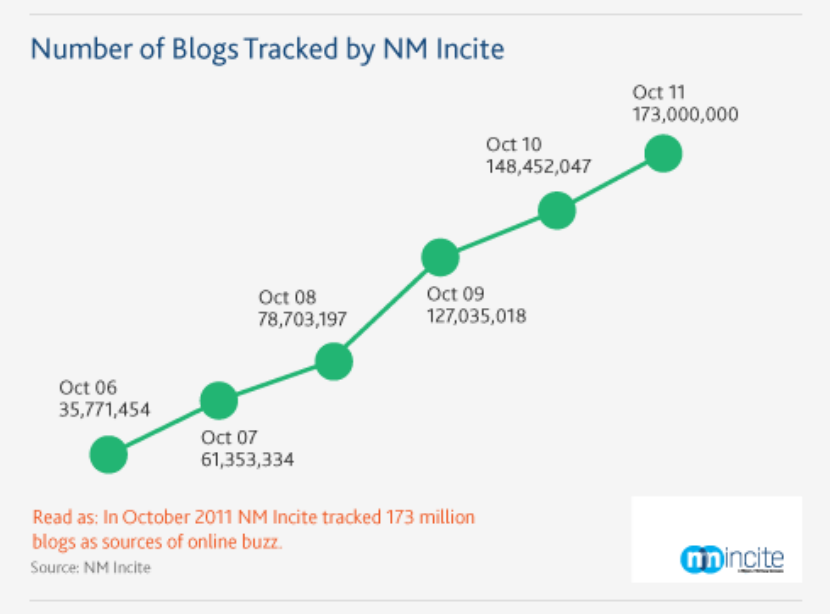
- Some groups are simply announcement bulletin boards, while others are discussion forums
- Characteristics
  - Threaded discussions
  - Public / member-only access
  - Search messages by subject, date or sender
  - Use of photos and icons as avatars
  - Posts' rating

Wikis

- Collaborative web pages whose users can add, modify, delete or evaluate content
  - Wiki is a Hawaiian word meaning “fast”
- Wikipedia is a characteristic example of a wiki: it is a collaborative encyclopedia developed by individuals from more than 40 countries, speaking more than 250 different languages
- The openness of wikis gives rise to the concept of 'Darwikinism’
  - a concept that describes the 'socially Darwinian process‘: because of the openness of wikis and the rapidity with which wiki pages can be edited, the pages undergo a natural selection process like that which nature subjects to living organisms
  - 'Unfit' sentences and sections are ruthlessly culled, edited and replaced if they are not considered 'fit', which hopefully results in the evolution of a higher quality and more relevant page
  - Whilst such openness may invite 'vandalism' and the posting of untrue information, this same openness also makes it possible to rapidly correct or restore a 'quality' wiki page

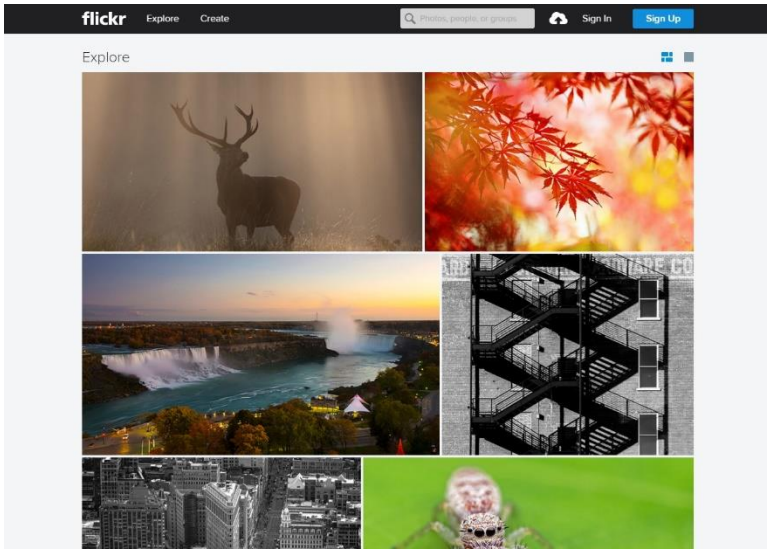
Blogs

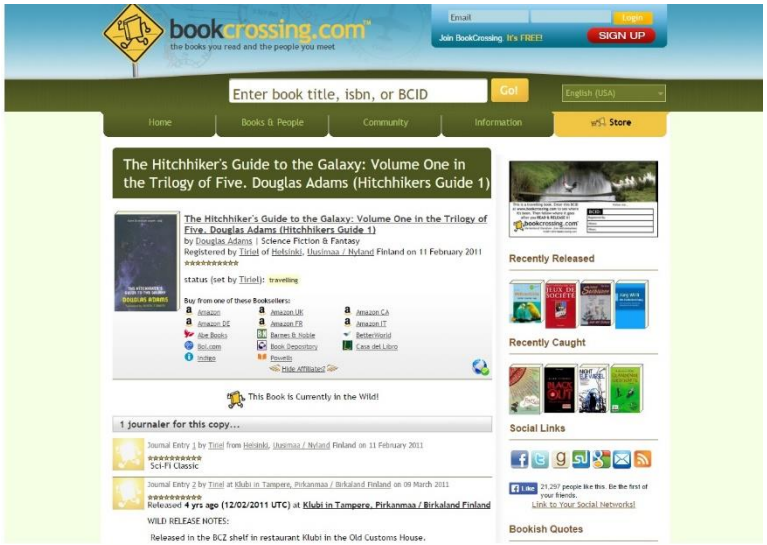
- Blogs (web logs) are websites that display date-stamped entries in reverse chronological order (OECD, 2007), usually by one person, however provide interaction to the readers through the addition of comments
  - They combine text, images and links to other blogs, web pages or media
- A blog may provide commentary on any subject
  - Popular subjects include politics, music, literature, travelling, movies and personal blogs
- By the end of 2011, over 181 million blogs were tracked around the world, up from 36 million only five years earlier in 2006



Content Communities

- The main objective of content communities is the sharing of media content between users
- Content communities exist for a wide range of different media types, including:
  - text (e.g., BookCrossing, via which 750,000+ people from over 130 countries share books)
  - photos (e.g., Flickr)
  - videos (e.g., YouTube)
  - PowerPoint presentations (e.g., Slideshare)





Immersive graphic environments (1/3)

- Characteristics

  Synchronous, interactive, navigable environments, with 3-D graphics, sound, animation, and customizable characters (avatars)
  Highly versatile gaming e-business, learning, and entertainment environments
  May be moderated or unmoderated, open or public

Second Life (secondlife.com)

Immersive graphic environments (2/3)

World of Warcraft (http://eu.battle.net/)

Sims (www.thesims.com)

Immersive graphic environments (3/3)

☑ Advantages

Interactive, visual and aural environments allow individuals creative freedom to express themselves. Provide highly collaborative environments. May provide a broader experience by generating a stronger sense of presence and engagement for some types of interaction

☒ Disadvantages

Many types of immersive technology require high-memory computers with audio ports, headsets, microphones, and fast Internet access. May require downloading programs and plug-ins. The space can become crowded with avatars that limit interaction. Unclear how much value is added by these environments

Definition: What are social networks?

- We define social network sites as web-based services that allow individuals to:

1. construct a public or semi-public profile within a bounded system,
2. articulate a list of other users with whom they share a connection, and
3. view and traverse their list of connections and those made by others within the system

- The nature and nomenclature of these connections may vary from site to site (Boyd, Ellison, 2008)
- Although exceptions exist, the available research suggests that most SNSs primarily support pre-existing social relations
  - These relationships may be weak ties, but typically there is some common offline element among individuals who friend one another, such as a shared class at school

Definition: What are social media?

- Social Media is a group of Internet-based applications that is build on the ideological and technological foundations of **Web 2.0**, and that allows the creation and exchange of **User Generated Content** (Kaplan, Haenlein, 2010)

Web 2.0 (1/2)

- Web 2.0 is a term that was first used in 2004 to describe a new way in which software developers and end-users started to utilize the World Wide Web
- A platform whereby content and applications are no longer created and published by individuals, but instead are continuously modified by all users in a participatory and collaborative fashion

Web 2.0 (2/2)

- Although Web 2.0 does not refer to any specific technical update of the World Wide Web, there is a set of basic functionalities that are necessary for its functioning
- Among them are:
  - Adobe Flash
    - a popular method for adding animation, interactivity, and audio/video streams to web pages
  - RSS (Really Simple Syndication)
    - a family of web feed formats used to publish frequently updated content, such as blog entries or news headlines, in a standardized format
  - AJAX (Asynchronous Java Script)
    - a technique to retrieve data from web servers asynchronously, allowing the update of web content without interfering with the display and behavior of the whole page

User Generated Content

- User Generated Content (UGC) can be seen as the sum of all ways in which people make use of Social Media
- The term, which achieved broad popularity in 2005, is usually applied to describe the various forms of media content that are publicly available and created by end-users
- UGC needs to fulfill three basic requirements in order to be considered as such:

1. it needs to be published either on a publicly accessible website or on a social networking site accessible to a selected group of people
   - excludes content exchanged in e-mails or instant messages
2. it needs to show a certain amount of creative effort
   - excludes mere replications of already existing content (e.g., posting a copy of an existing newspaper article on a personal blog without any modifications or commenting)
3. it needs to have been created outside of professional routines and practices
   - excludes all content that has been created with a commercial market context in mind

Organisation for Economic Cooperation and Development (OECD, 2007)

Social Networks vs Online communities (1/2)

- Social networks and online communities are *subgroups* of social media
  - The difference is not always apparent, e.g., social networks may contain online communities (e.g., Facebook groups)
- *Social Networks*

1. Bound together by pre-established interpersonal connections
2. Each connection has his or her own social network
3. Characterized by a spider web-like "network" structure

- *Online Communities*

1. Bound together by a common interest or topic
2. ANY person can be a part of ANY community
3. Characterized by a more complex overlapping and "nested" structure

Social Networks vs Online communities (2/2)

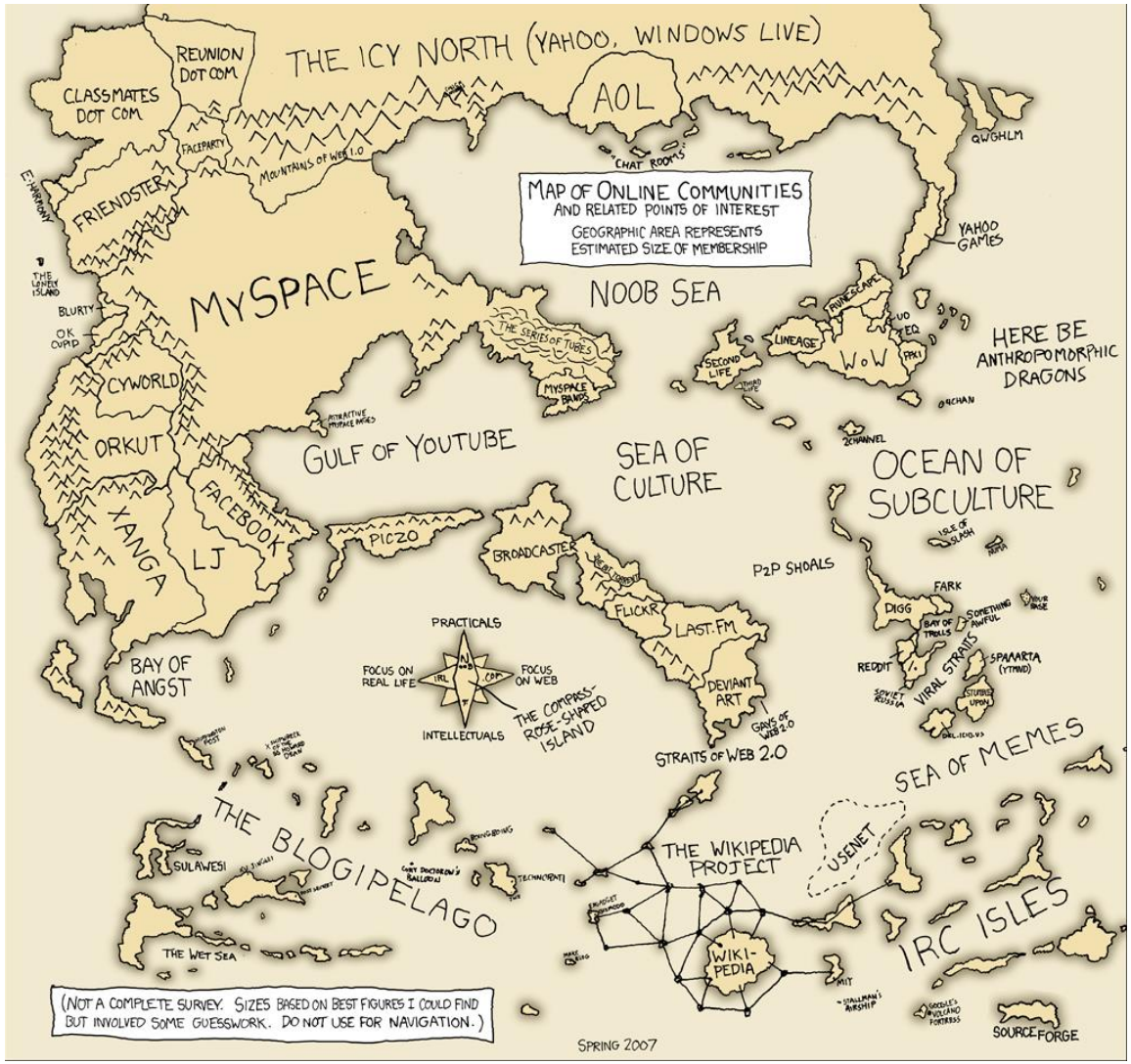
- Based on the above:
- Social Networks:
  - Facebook, LinkedIn, MySpace, Twitter
- Online communities:
  - Newsgroups, Yelp, Wikipedia, Digg, Flickr, blogs, YouTube

Microblogging (or mini-blogging)

- Microblogs allow users to exchange small elements of content such as short sentences, individual images, or video links
  - Usually microblogs are used for the description in short phrases (typically less than 200 characters) of current life events
- Twitter is a popular microblogging service
  - Messages consisting of at most 140 characters are called tweets
  - A tweet can be a statement made by a user, a reply to another tweet, or a retweet
  - Retweet, the feature that has made Twitter a new medium of information dissemination, refers to a common practice to copy someone else's tweet as one's own, sometimes with additional comments
  - Users can follow other users as friends or simple followers

Rapid increase of social media users (1/4)

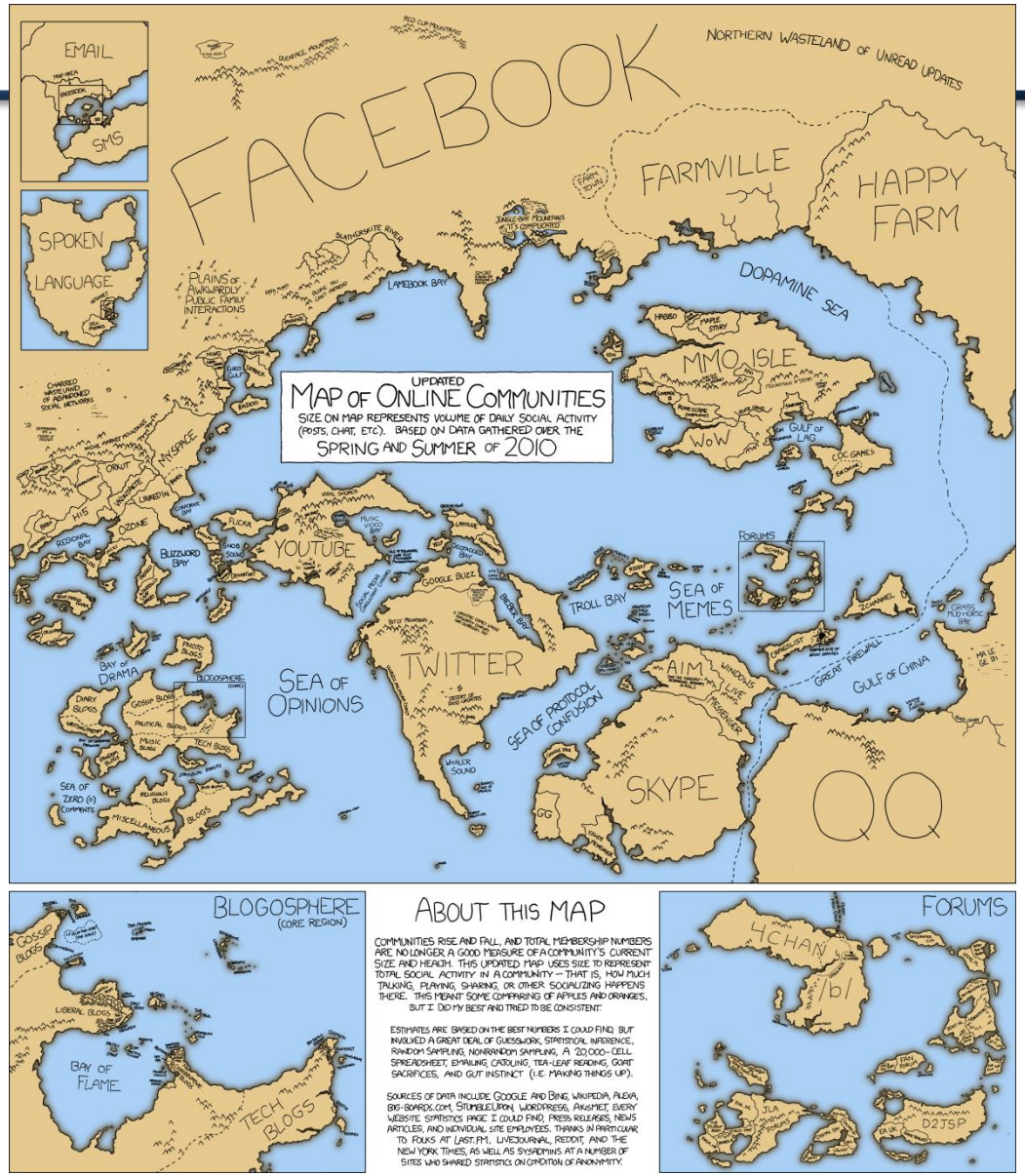
- xkcd: **2007**
- Facebook:
  - 58 million users
  - 145 million in 2008
- Twitter
  - 400,000 tweets posted *per quarter* in 2007
  - 100 million tweets posted *per quarter* in 2008
- MySpace
  - More than 100 million users (leader)



https://xkcd.com/256/

Rapid increase of social media users (2/4)

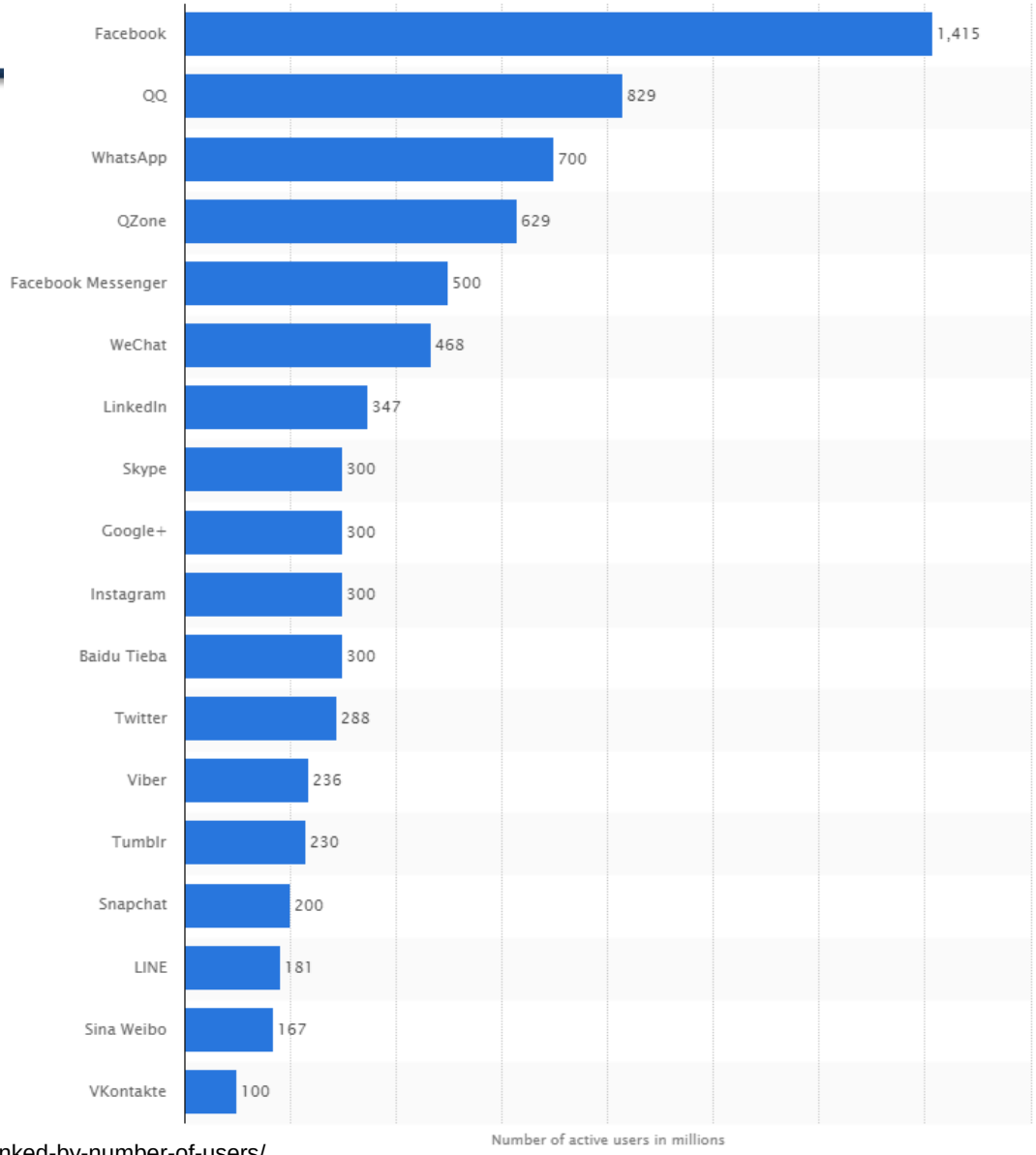
- xkcd: **2010**
- Facebook
  - 608 million users
- Twitter
  - In February 2010, Twitter users were sending 50 million tweets *per day*
- MySpace
  - 95 million
  - Steadily declining ever since (probably would not be visible on the map today)



https://xkcd.com/802/

Rapid increase of social media users (3/4)

- **2015**
  - 72% of online adults get on Facebook at least once a month
  - More than 30% of ALL senior citizens of the US are on Facebook
  - 500 million tweets *per day*
  - Twitter record: 143,199 Tweets *per second* (Japan, 2013)
  - World of Warcraft: >10 million subscribers, highest grossing videogame of all time



http://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/

Rapid increase of social media users (4/4)

- **Mobile**: even more rapid growth, Facebook is expected to exceed 1 billion users by 2016
- 38% of Facebook MAU (Monthly active users) accesses *exclusively* through mobile devices – more than half a billion users
- 60% of Twitter users tweets through mobile devices

➢ Designing for mobile becomes a **first** priority for every firm that has a presence on social media – practically **all**

Impact

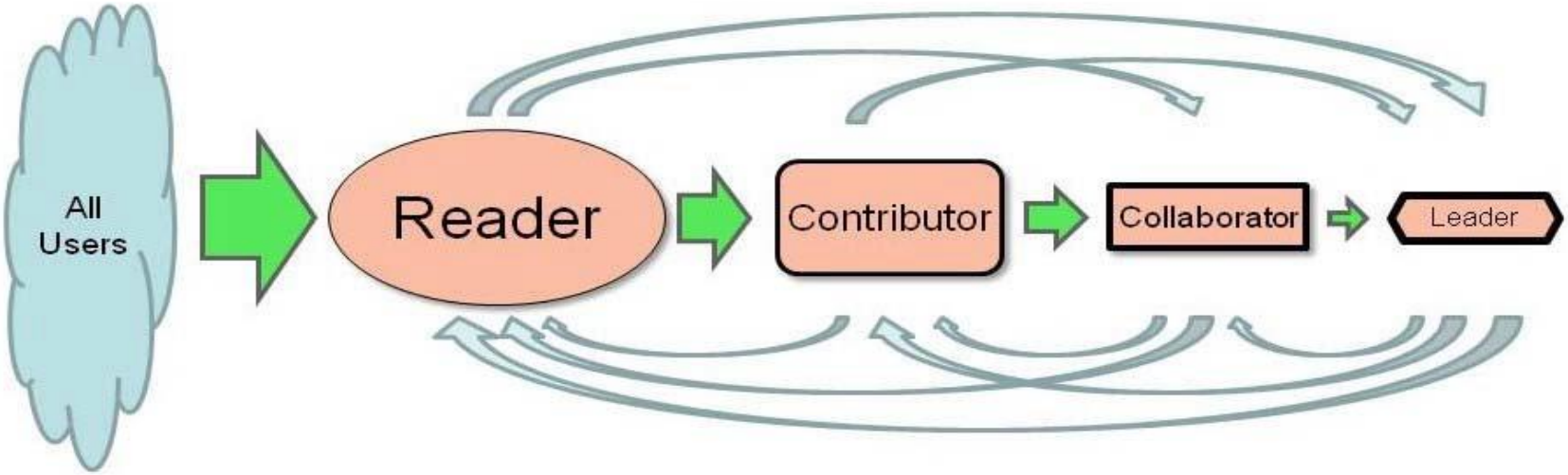
- The use of social media has changed the way we function and interact
- The same is true for individuals, groups and business firms
- Journalism and news, politics (YouTube presidential debates with user questions), corporal presence and branding, advertisement, technical support, social organization and self-organization, education (Wikipedia and YouTube are obvious examples), even history and collective memory – are some of the areas that have now been changed forever because of social media
- Negative impact on matters of privacy, bullying, etc.
  - Employers checking the profiles of prospective employees
  - Careless use of personal information – minors and novice users

The reader-to-leader framework

The reader-to-leader framework (1/2)

- People typically start using their web and mobile devices to join a discussion group, read a blog, or tag a photo
- Usually, new users begin by doing simple things that don't take much effort or require them to expose themselves
  - they may edit an incorrectly spelled word or agree with someone else's comment
- Metaphorically, they dip their toe in. A few of these people return and begin participate more actively
- The successive levels of social participation that we are concerned with can roughly be categorized as
  - Reading
  - Contributing
  - Collaborating
  - Leading

The reader-to-leader framework (2/2)



- The thickness of the green arrows and smaller shapes indicate the decreasing number of people who move from one form of participation to another
- The thin grey arrows indicate how people can also move in a non-linear fashion to participate in different ways
- In addition to making these transitions to greater participation, many people terminate their participation for a variety of reasons, which is not shown explicitly in the figure
- There is also a time dimension within the four activities
  - For each activity, there are the uncertain first steps, sometimes followed by repeat visits that can mature into a growing sense of confidence and increased activity as a reader, contributor, collaborator, or leader
  - There are at least two paths to maturation: participants may become more active within one stage or may move on to begin another stage

Reader: Venturing in, reading, browsing, searching, returning

Usability and sociability factors that may influence reading

Usability	Sociability
Interesting and relevant content presented in attractive, well-organized layouts	Encouragement by friends, family, respected authorities, advertising
Frequently updated content with highlighting to encourage return visits	Repeated visibility in online, print, television and other media
Support for newcomers through tutorials, animated demos, FAQs, help, mentors, contacts	Understandable and clear norms or policies
Clear navigation paths so that users have a sense of mastery and control	A sense of belonging based on recognition of familiar people and activities
Universal usability to support novice/expert, small/large display, slow/fast network, multilingual, and users with disabilities	Charismatic leaders with visionary goals
Interface design features to support reading, browsing, searching, and sharing	Safety and privacy

Contributor: Rating, tagging, reviewing, posting, uploading

Usability and sociability factors that may influence contributing

Usability	Sociability
Low threshold interfaces for easily making small contributions, e.g., no login	Support for legitimate peripheral participation so that readers can gradually edge into contributing
High ceiling interfaces that allow large and frequent contributions	A chance to build their reputation over time while performing satisfying tasks
Visibility for users' contributions and frequency of views; aggregated over time	Recognition for the highest quality and quantity of contributions
Visibility of ratings and comments by community members	Recognition of a person's specific expertise
Tools to undo vandalism, limit malicious users, control pornography and libel	Policies and norms for appropriate contributions

Collaborator: Developing relationships, working together, setting goals

Usability and sociability factors that may influence collaborating

Usability	Sociability
Ways to locate relevant and competent individuals to form collaborations	An atmosphere of empathy and trust that promotes belonging to the community and willingness to work within groups to produce something larger
Tools to collaborate: communicate within groups, schedule projects, assign tasks, share work products, request assistance	Altruism: a desire to support the community, desire to give back, willingness to reciprocate
Visible recognition and rewards for collaborators, e.g., authorship, citations, links, acknowledgements	The desire to develop a reputation for themselves and their collaborators, their group or community; the need to develop and maintain one's status within the group
Ways to resolve differences (e.g., voting), mediate disputes, and deal with unhelpful collaborators	Respect for one's status within the community

Leader: Promoting participation, mentoring novices, setting and upholding policies

Usability and sociability factors that may influence leadership

Usability	Sociability
Leaders are given higher visibility, and their efforts are highlighted, sometimes with historical narratives, special tributes, or rewards	Leadership is valued and given an honored position and expected to meet expectations
Leaders are given special powers, e.g., to promote agendas, expend resources, or limit malicious users	Respect is offered for helping others and dealing with problems
Mentorship efforts are visibly celebrated, e.g., with comments from mentees	Mentors are cultivated and encouraged

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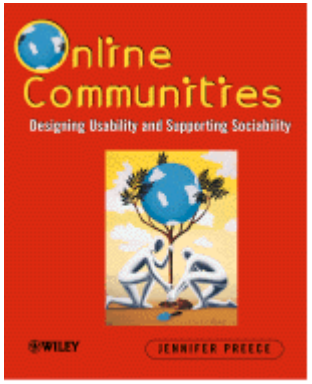

Jenny Preece

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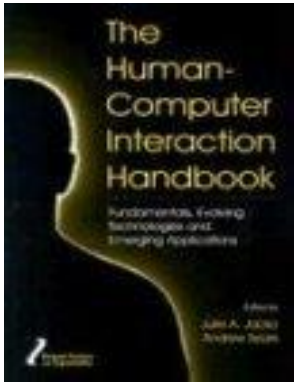

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The end

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