

Software Requirements

L4. User Involvement



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DER FORSCHUNG | DER LEHRE | DER BILDUNG

Overview

1

Motivation

2

User Centric Design

3

Software Socialness

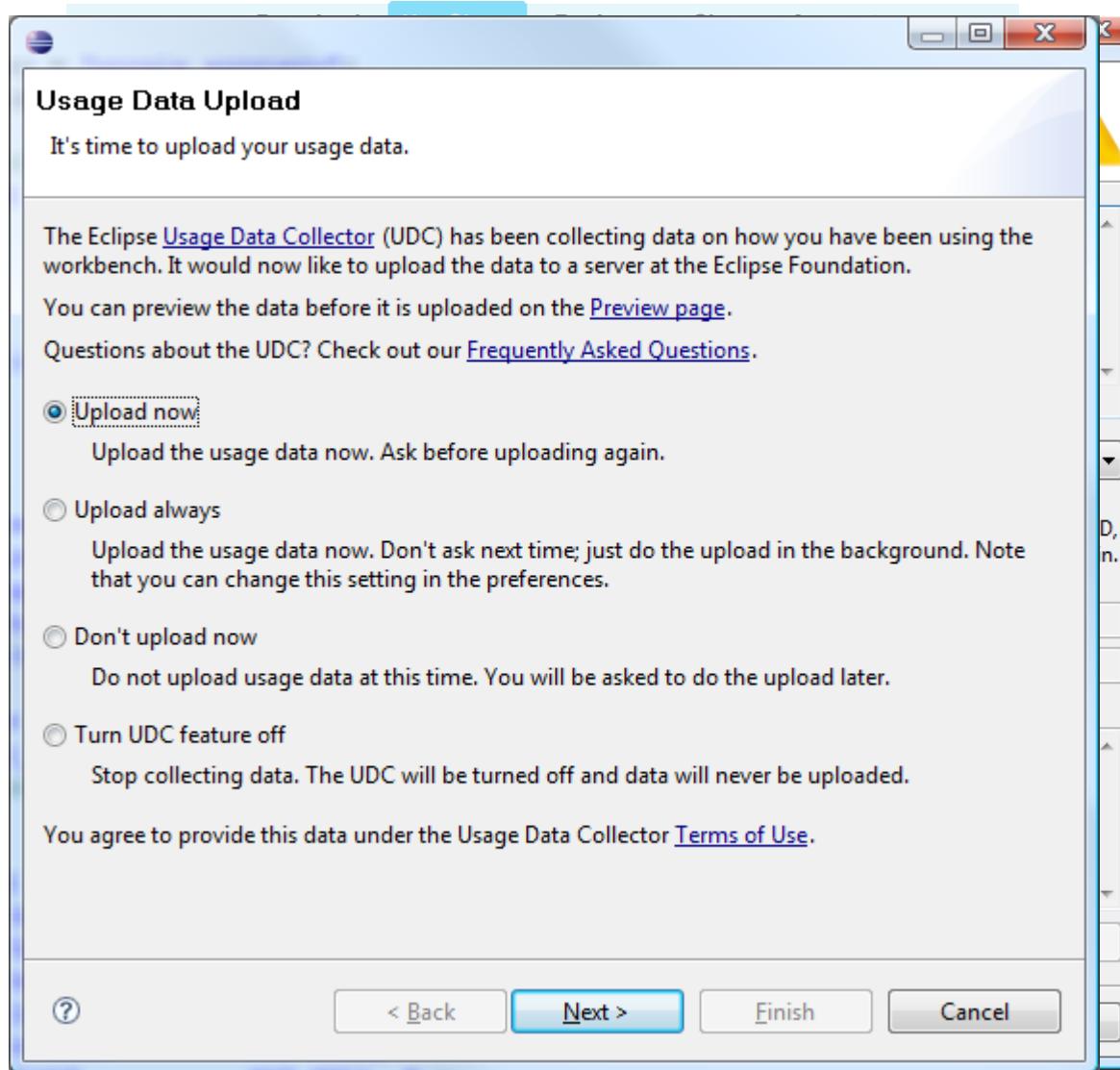
4

Systematic Involvement Approaches

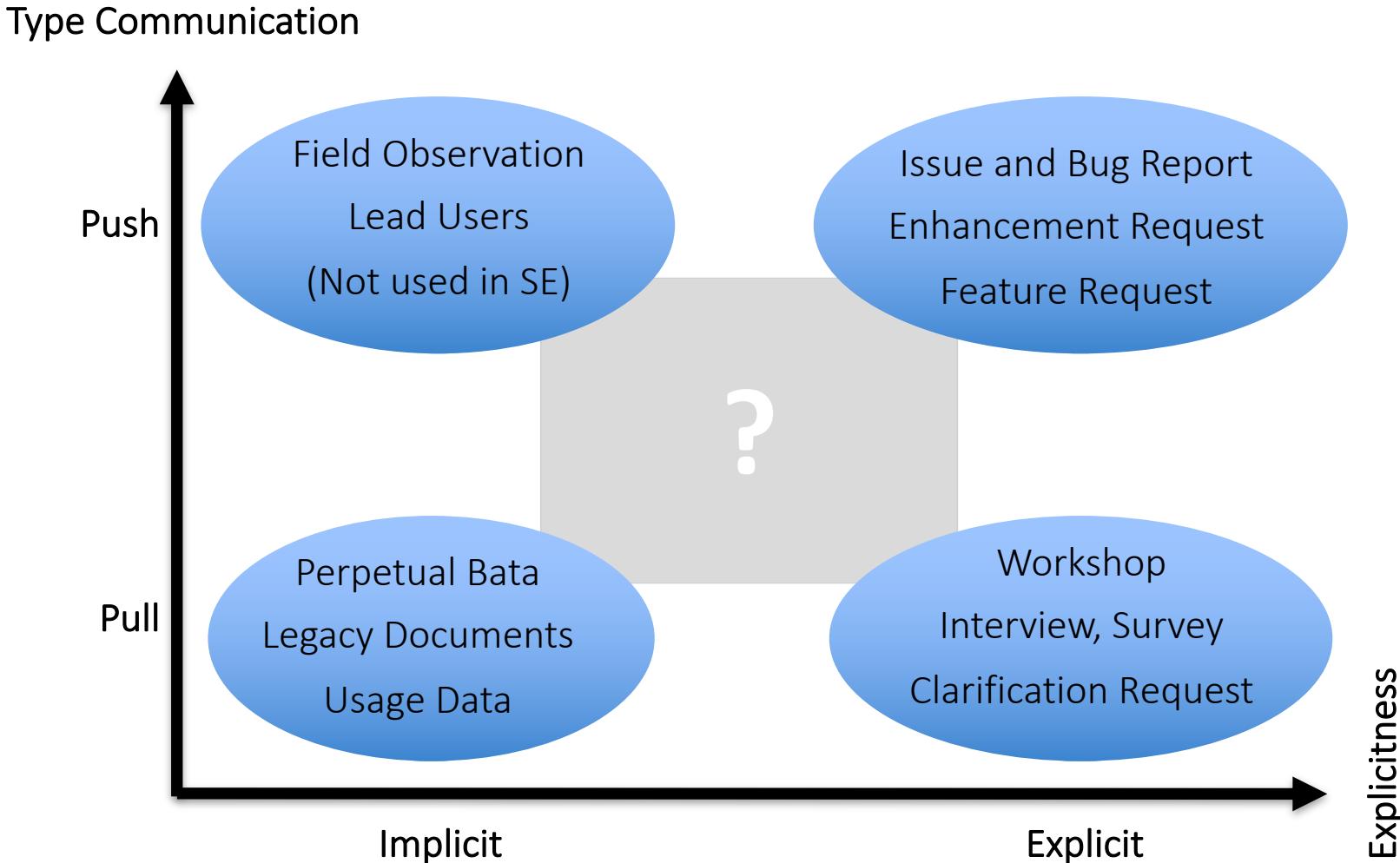
Various concepts to “address” end users in software development

PERPETUAL PROTOTYPE-DRIVEN
BETIA DEVELOPMENT
USER
AGILE
innovation

Various realizations of user feedback



Various types of user feedback



State of the art of user involvement...

...in processes

- Conventional software processes are ***developer-driven***
 - Users are pure ***consumers***
 - “2nd class citizen”
- Users are mainly involved in requirements activities

...in systems

- Heterogeneous, vendor specific feedback interfaces
- User input is **not transparent** and **difficult** to provide since full **context** information must be entered

Serious problems can emerge from this situation



Problem 1: coping with highly customized and frequently changing needs is difficult!



Problem 2: little or no indicators about how software is actually being used!



See how we're helping to improve energy efficiency.

Apple 2.0 Covering the business that Steve Jobs built

600 filmmakers sign complaint about Final Cut Pro X

By Philip Elmer-DeWitt June 27, 2011: 2:42 PM ET

Ask that the company either support the previous version or sell it to someone who will

Nobody has sued Apple ([AAPL](#)) yet over the changes it made in Final Cut Pro X, the **latest version** of its popular professional video editing software, but judging from the language in the **petition** gathering signatures on the Web, it's just a matter of time.

Endorsed by a long list of people who describe themselves as "editors and

To: Apple, Inc.

We, both the editors and affected filmmakers who rely on Final Cut Pro as a crucial business tool, do so in the same way Photoshop, Maya, Pro Tools, and other industry-standard applications are relied on by leading post-production environments. Many have invested hundreds of thousands (some even millions) of dollars in creating Final Cut Pro based companies. These are now threatened by a "purersever" product upgrade of Final Cut Pro 7 titled "Final Cut Pro X," and will likely put several of these companies out of business. The costly process of migrating studio hardware and software is a major burden, especially on studios that have made recent upgrades to support Final Cut Pro. If many had known of the Final Cut Pro X release prior to investing in expensive hardware and software licenses, most, if not all, would have sought alternative solutions.

A large corporation such as Apple, Inc. should not make "revolutionary" paradigm-shifting changes to software which can be referred to as "industry-standard". This is unfair to workers who rely on Final Cut Pro as a business tool and will devastate the Final Cut Pro community. Many editors have relied on the software since its first release and supported Apple through both the hard and easy times. Apple Inc. now has over \$75 billion in assets and does not need to risk the livelihoods of its professional customers by silently discontinuing "Final Cut Pro" instead of selling it to a company willing to support working film, tv, and advertising industry professionals.

We, the Final Cut Pro community, hereby request that:

1. Final Cut Studio 3 is immediately reinstated, supported, and referred to as Apple's "professional grade" editing application.
2. Final Cut Pro is restored under a new name with the functionality and user interface of Final Cut Pro 7.
3. Final Cut Pro X is to be considered part of the iMovie family or labeled a "purersever" product.

OR,

FORTUNE

46 comments

Follow Philip Elmer-DeWitt

Recommend 553 people recommend this. Be the first of your friends.



Road to Durban A Green City Journey

Discussing green initiatives in your country

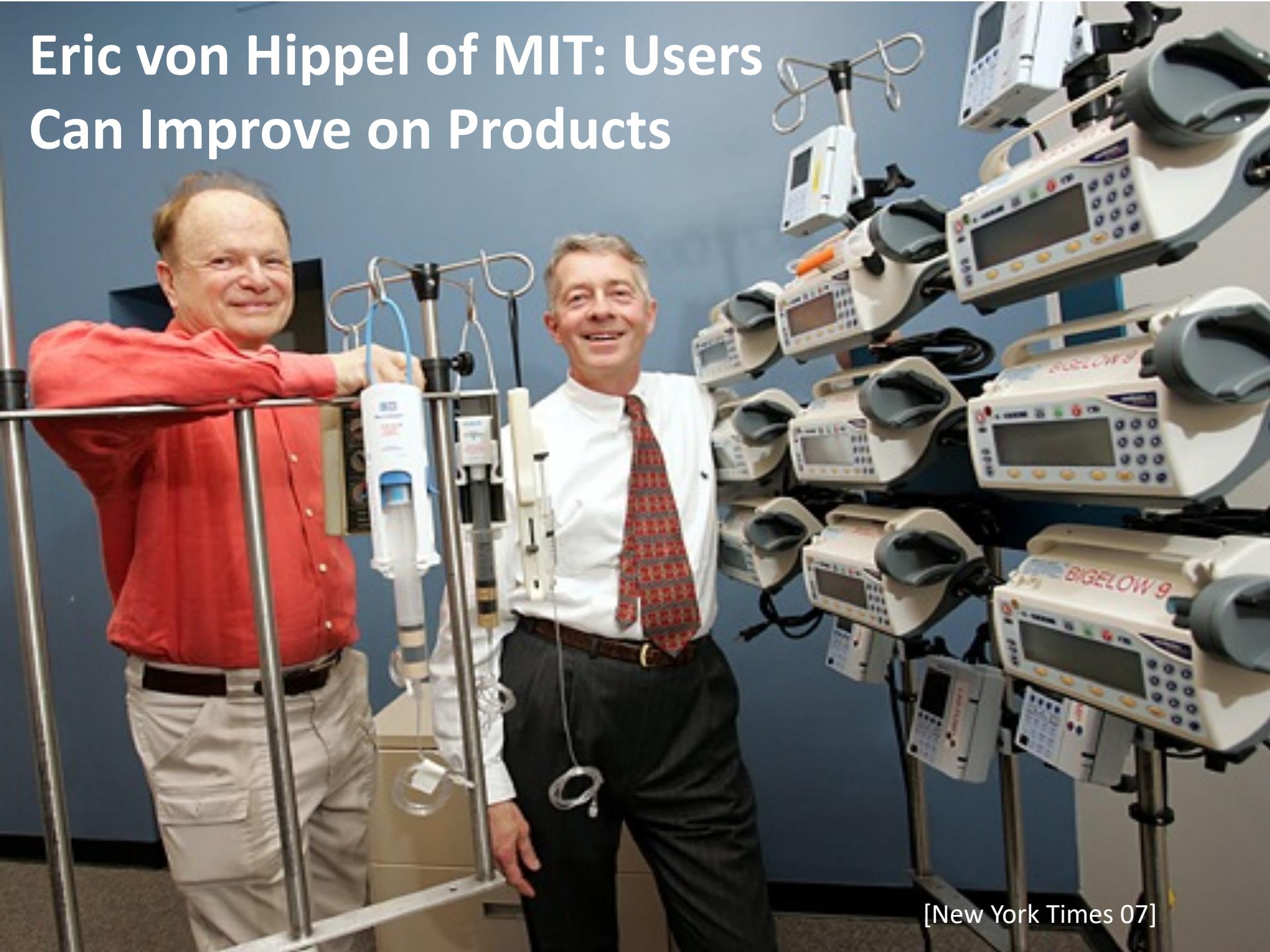


In association with 



Problem 3: valuable resources and user experiences get lost!

Eric von Hippel of MIT: Users Can Improve on Products



[New York Times 07]



Problem 4: frustrated users can harm
the reputation of software!

www.dreckstool.de

dreckstool.de/hitlist.do

www.dreckstool.de

Google

www.dreckstool.de

[HITLIST] [HISTORY] [NEWS] [LINKS] [SHOTS] [ABOUT] [NOMINATE] [ADMIN]

Hitlist

Willkommen bei der basisdemokratisch ermittelten Hitliste der schlechtesten Tools.

Sonstige Development System Enterprise Internet Office

Platz	Programmname	Punkte	Vote for it !
1	Lotus Notes	27364	Dreckstool !
2	Microsoft Project	11856	Dreckstool !
3	Update Marketing AG Marketing Manager	11362	Dreckstool !
4	Microsoft Outlook	10879	Dreckstool !
5	SAP R/3	8257	Dreckstool !
6	IBM DB2	8010	Dreckstool !
7	HP OpenView ServiceCenter	7828	Dreckstool !
8	Remedy Action Request System	7713	Dreckstool !
9	Lotus Sametime Connect	7604	Dreckstool !
10	Lotus SmartSuite	7603	Dreckstool !
11	Oracle Database	3071	Dreckstool !
12	Tobit Software David-Server / Tobit Info-Center	1557	Dreckstool !
13	IBM Rational Software Architect	1350	Dreckstool !
14	Citrix ICA Client	1349	Dreckstool !
15	Lotus Domino	1292	Dreckstool !

13

I HATE LOTUS NOTES

The Global Lotus Notes Support Group



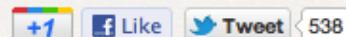
Hello there! If you are new here, you might want to **subscribe to the RSS feed** for updates on this topic.

[Ads by Google](#)[Lotus Sametime](#)[Lotus Notes](#)[Lotus Domino](#)[IBM Lotus Symphony](#)

This website is dedicated to my fellow sufferers who day in day out are forced to use Lotus Notes, causing them to struggle with email communications, squirm at the thought of planning another day and generally fighting for their will to live. Don't despair, don't be broken, don't hang yourself, stand up and be counted.

The Healing Process

Notes 5 July 2007 3,748 Comments



The healing process is started by sharing your thoughts. Release your pain by sharing your experiences of Lotus Notes with me and the others here using the form below. Constructive criticism is of course encouraged (maybe we can stumble over some good ideas that IBM actually want to adopt?!?), but i know some good old fashion bitchin goes a long way to making me feel better, so feel free. Just keep it clean.....ish. Post your error messages, stories of woe (or successes) both will provide either hope or solace.

Now..... You ready?.... Vent away.

3,748 Responses on "The Healing Process"

Sponsors

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[Click for more information](#)

[Advertise Here](#)

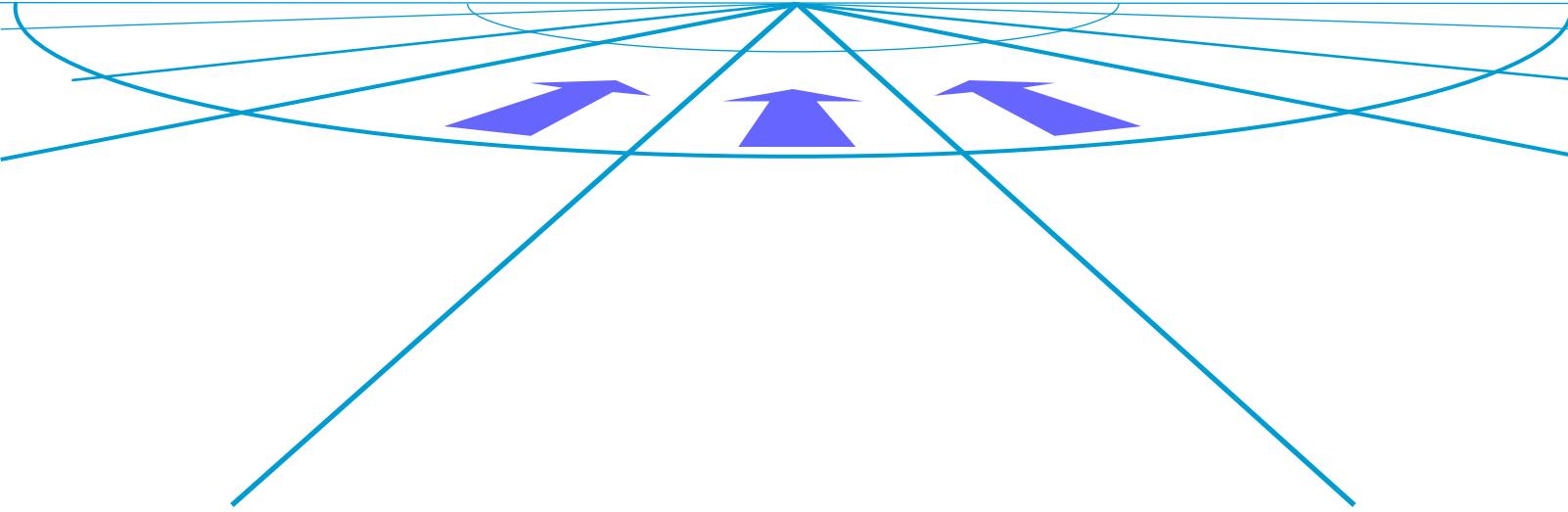
£10 a week!

[Click for more information](#)

Share pain, get the gear.



Systematic user involvement in software lifecycles



1. Better and quicker understand users' needs
2. Users as productive resource in software lifecycles
3. Give users a voice and avoid frustration

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Systematic Involvement Approaches

General principles of user-centric design

- Early focus on users and tasks
- Empirical measurement
- Iterative design



[Gould and Lewis ,1995]

A product has different users...

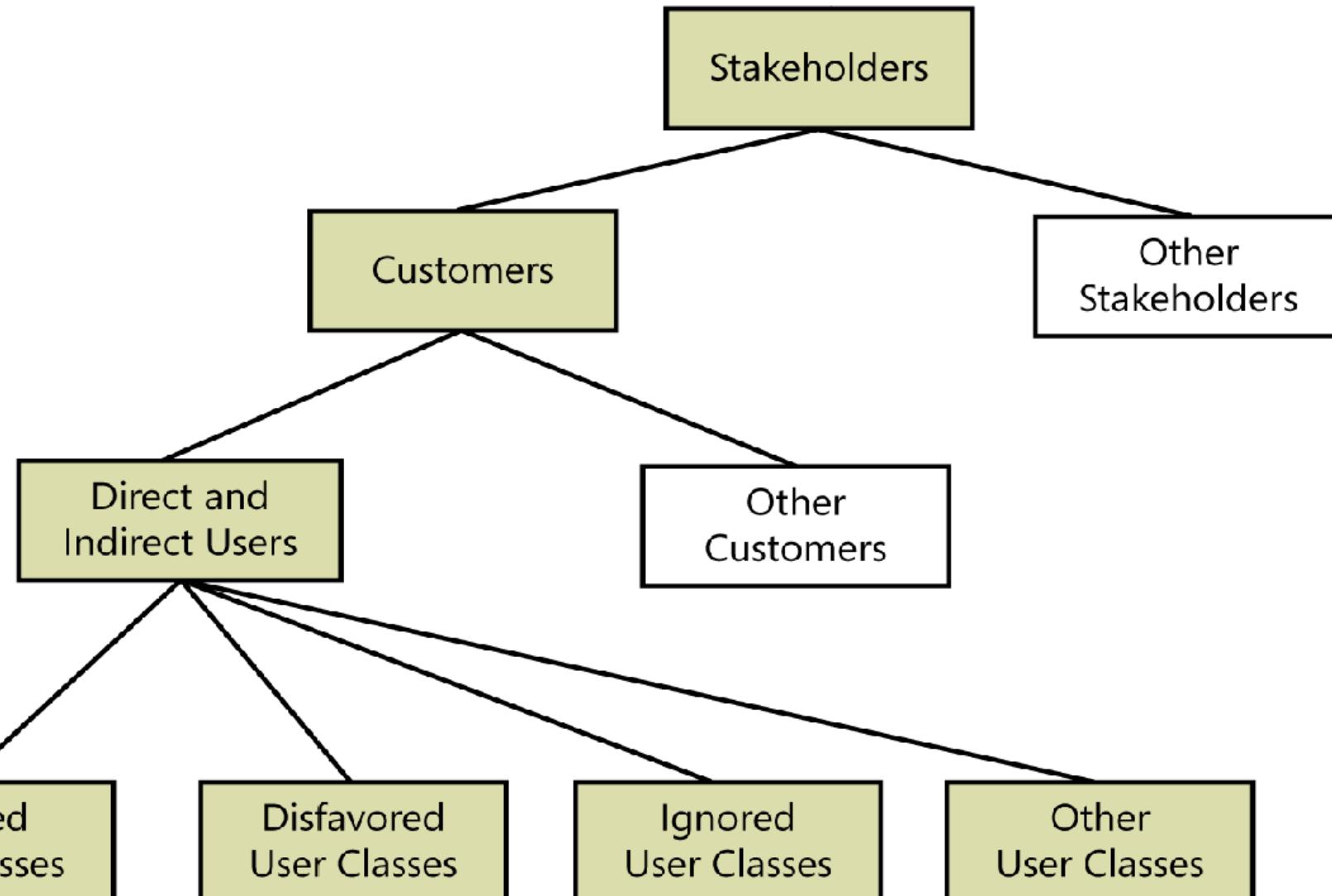
- Users can belong to multiple classes (roles)
 - Example: admins can have different perspectives
 - As an admin
 - As a user
- User classes does not have to be human beings
 - Example:
 - Software agents
 - Internet agents
 - E.g. probe website for vulnerabilities

Differences between product users

- Product users can be classified based on their **differences**:
 - Access privilege
 - Tasks they perform
 - Features they use
 - Usage frequency
 - Domain experience
 - Computer expertise
 - Native language
 - Interaction style
- Geographical differences or profession represent different **marketing segments** rather than different user classes



User classes



Favored user classes

- The “main users” of the product
- Their satisfaction is most closely aligned with achieving product’s business objective



Disfavored user classes

- Users who **aren't supposed to use** the product for legal, security, or safety reasons
 - Example: user who might have stolen a banking information
- Built in features can deliberately make it hard for those users to do things they aren't suppose to do



Indirect users

- Indirect user classes won't use your application
- They access data or services through
 - Other applications
 - Reports
- Example
 - Product installer
 - Integration into a website
- A customer once removed is still your customer
- Don't overlook indirect user classes



How can we identify user classes?



The product champion approach

- Each Product Champion **represents** one user class
 - Interface between the members of a user class and the product team
 - The users select their champions
- They have a **clear view** of the new system
- Should be effective **communicators**
- Need a thorough **understanding** of
 - The application domain
 - The solution's operating environment
- E.g. major customers, beta testers, community leads



Expectations from product champions

Possible activities are:

- Planning
 - Refine the scope and limitations of the product
 - Identify other systems with which to interact
 - Identify relevant standards and certification requirements
 - Evaluate the impact of the new system on business operations
- Requirements
 - Input on requirements from other users
 - Develop usage scenarios, use cases, and user stories
 - Evaluate prototypes



Expectations from product champions

- Validation and verification
 - Review requirements specifications
 - Provide real test data sets
 - Perform beta testing or user acceptance testing
- User aids
 - Contribute to training materials or tutorials
 - Demonstrate the system to peers
 - Evaluate and prioritize defect corrections and enhancement requests
- Change management
 - Evaluate the impact of proposed changes on users and processes

Personas

- A persona is a “placeholder” for a fictional representative of a user class
- Persona details include
 - Social and demographic characteristics
 - Behavioral patterns
 - Preferences
 - Annoyances
 - Stories



How are personas helpful?

- Useful in considering the goals, desires, and limitations of a user class
- Used in case a representative is **not available** at hand
- **Share and remember** a consistent understanding of a specific user group
- Provide a **human "face"** to requirements

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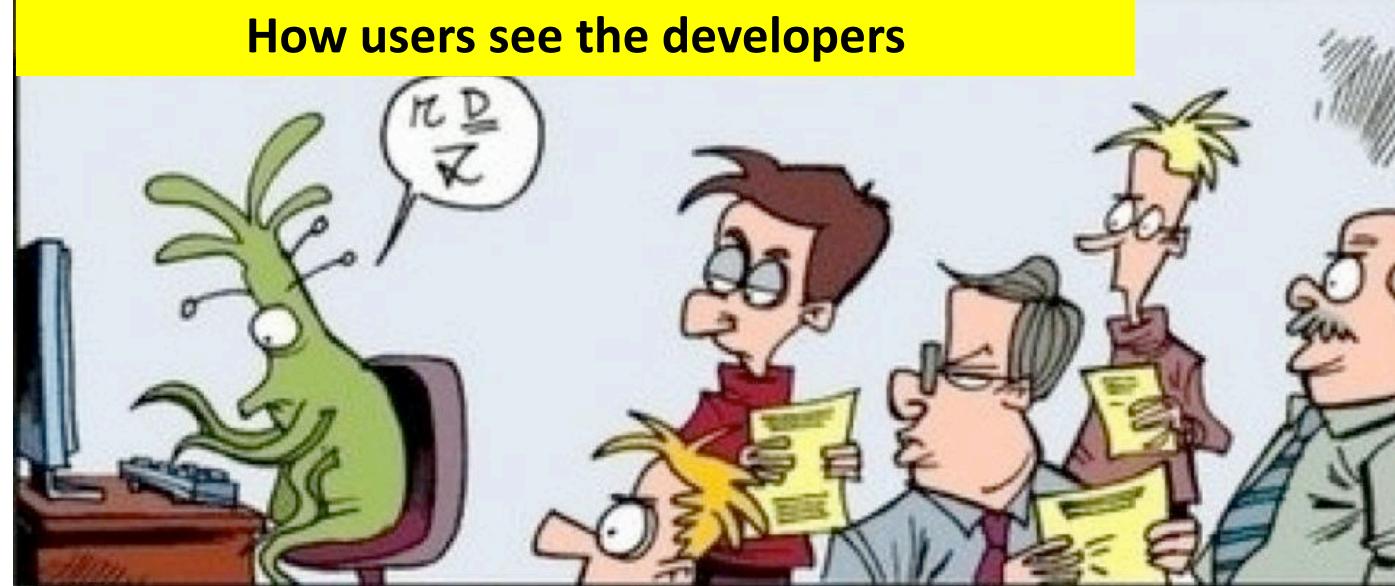
3

Software Socialness

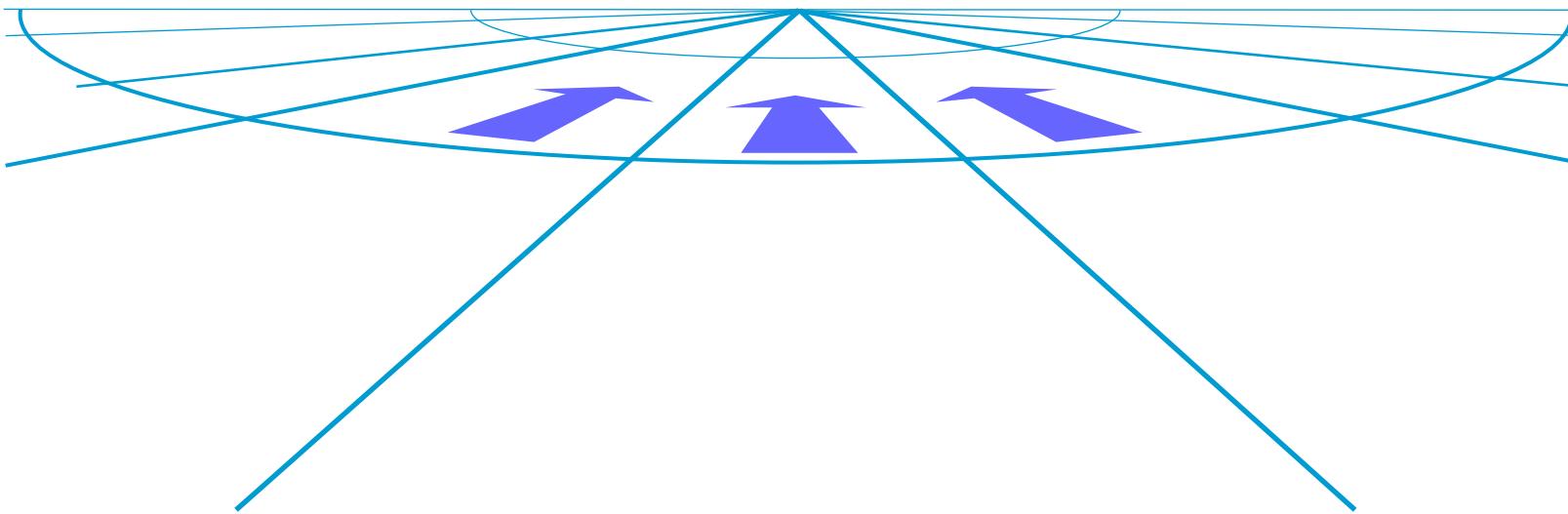
4

Systematic Involvement Approaches

How users see the developers



>> Crowdsourcing Requirements << Continuous user involvement in software lifecycles



1. Revolutionize the **role** of users in software lifecycles
2. Dissolve the **boundaries** to software engineers
3. Make software processes and systems **social**

Socialness of software

Socialness is the degree of involvement of its users and their communities in the software lifecycle

User involvement



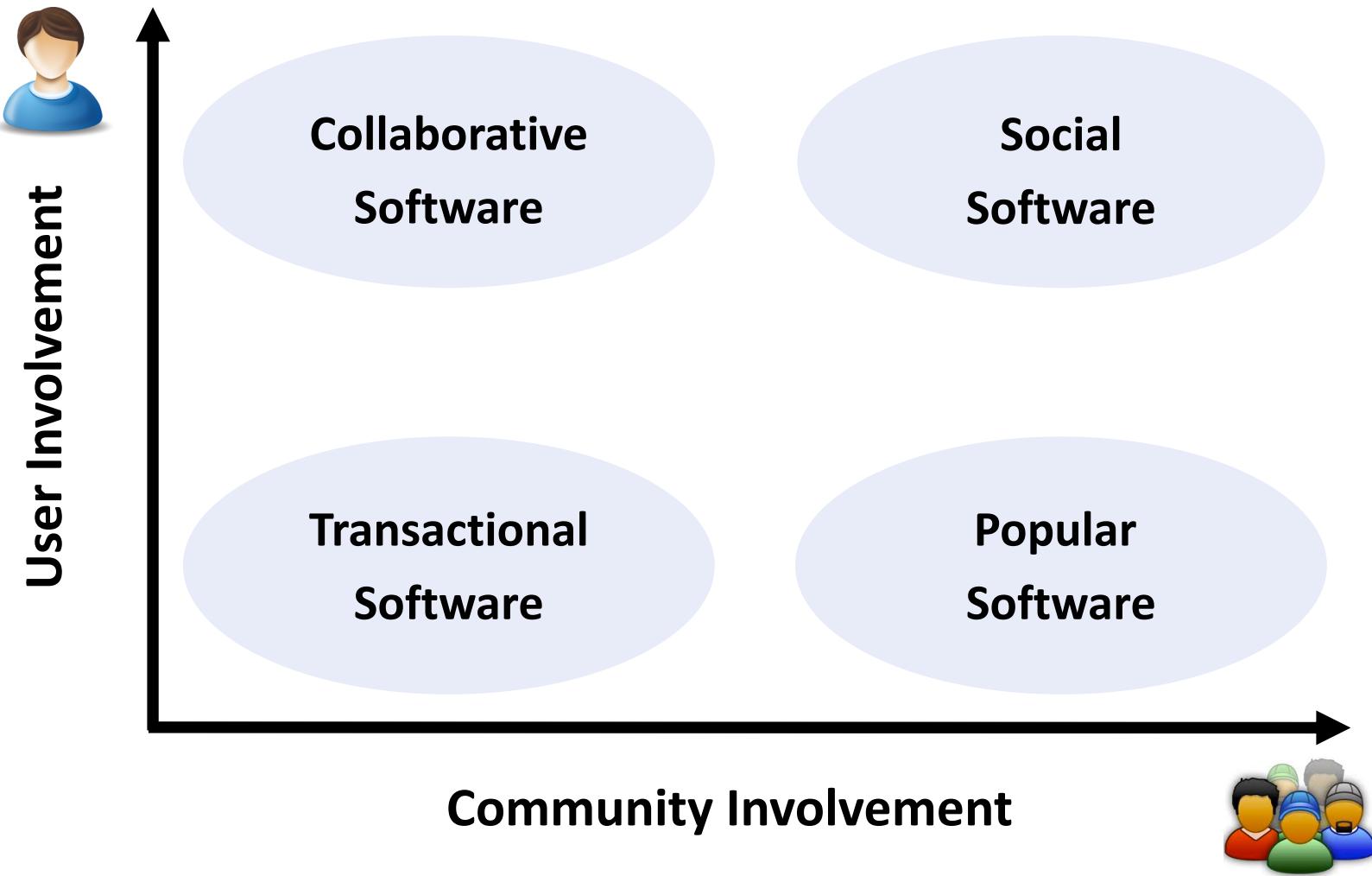
- **Actively work** on specific project activity
(e.g. testing, documentation, development)
- **Influence** management or engineering **decision**
(e.g. give feedback, vote)



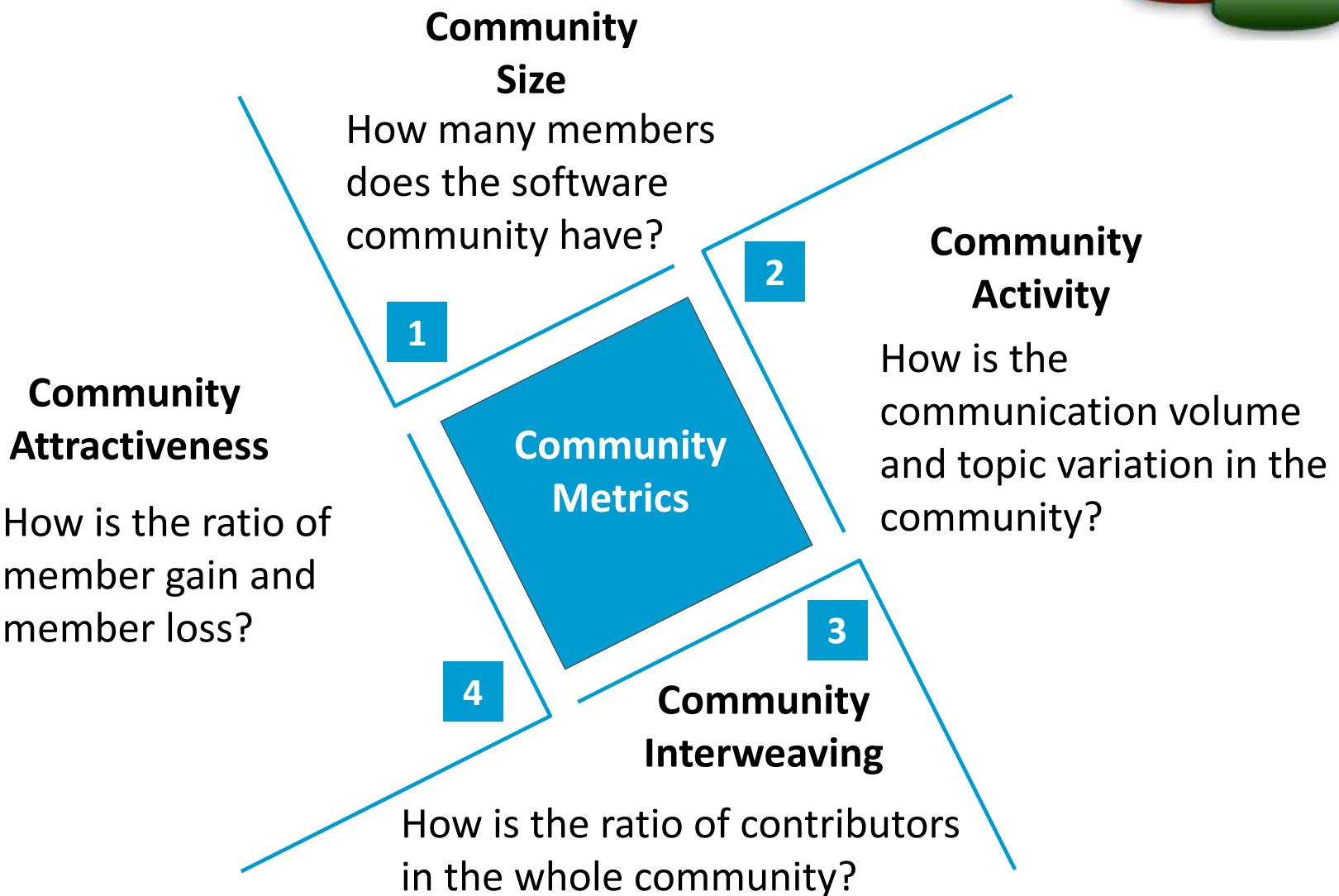
Community involvement

- **Externalize** important **knowledge**
- **Share** common **interests**

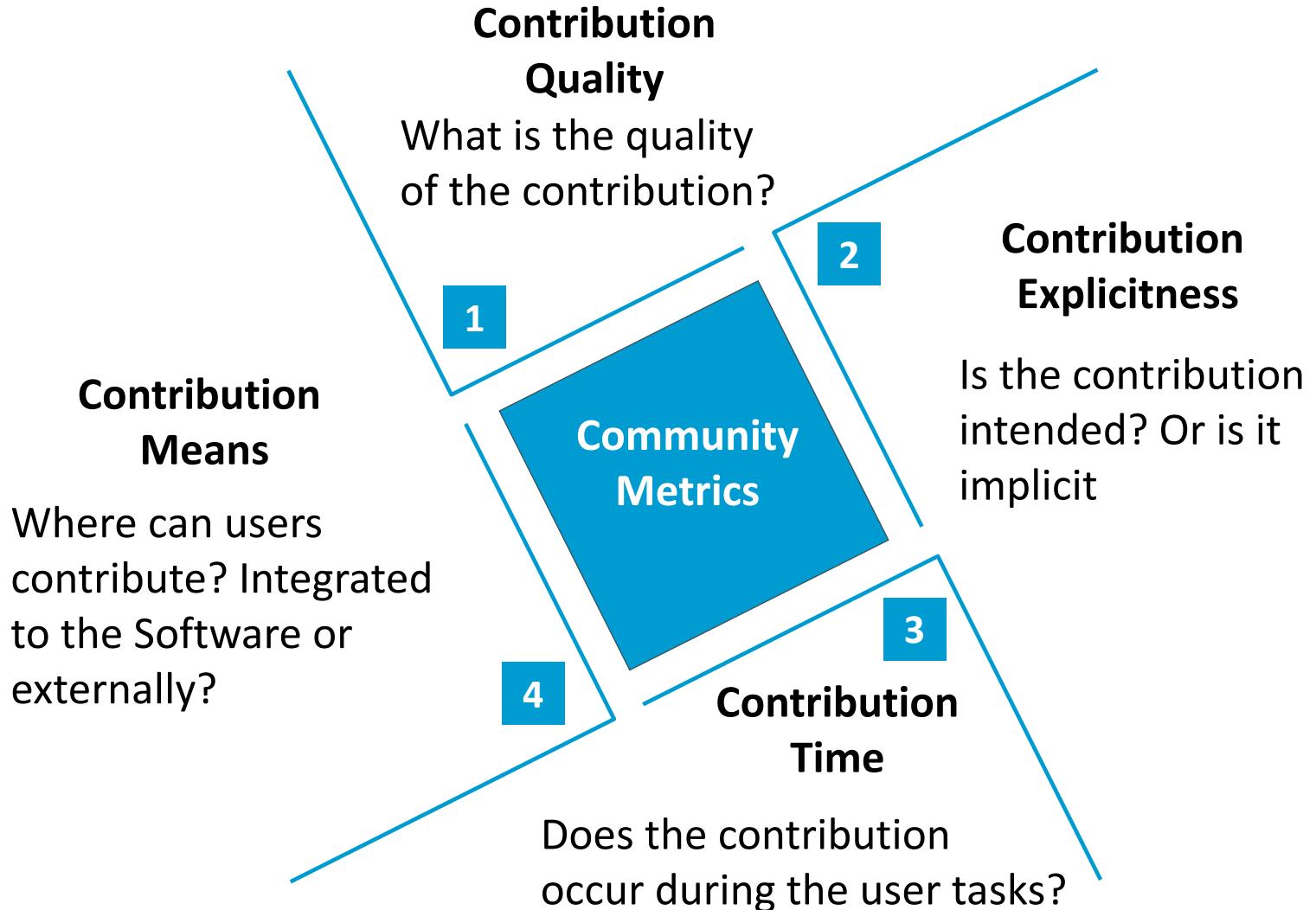
Benchmarking socialness



Measuring community involvement



Measuring user involvement



Challenges

Contribution quality

- If users contribute without professional support, resulting information quality is unpredictable
- This can lead to misunderstandings
- Users might express system properties using their own, possibly inhomogeneous terminology



Contribution quality

- The quality of user feedback widely differs
- Users provide feedback missing development information:
 - Short messages (e.g., “Great app”)
 - Uninformative messages (e.g., “App crashes”)
 - Or are incentivized to provide unauthentic user feedback (also common for other domains, such as travel-domain)



Crowdsourcing of requirements through app stores

The screenshot shows a dark-themed mobile application store interface. On the left is a sidebar with icons for Discover, Arcade, Create, Work, Play, Develop, Categories, and Updates. The main area is titled "Ratings & Reviews". It displays a large rating of **4.7 out of 5** based on **880 Ratings**. A horizontal bar shows the distribution of ratings from 1 to 5 stars. Below this, reviews are listed:

- Alleine schon das Auswahlwerkzeug sind 5*** 1y ago
imperator.maximus
★★★★★
Nachdem das alte Pixelmator bei mir durch Affinity Photo vor einigen Jahren abgelöst worden ist, habe ich mir doch etwas skeptisch dieses Pro angesehen. Denn letztendlich ist bei Affinity Photo die Entwicklung - ähnlich dem alten Pixelmator - stehen geblieben. Was soll ich sagen: die Bedienung vom Pixelmator Pro ist der absolute Hammer! Man kommt intuitiv schnell da [more](#)
- Workflow stark optimiert, aber...** 1y ago
SannyDries
★★★★★
Pixelmator Pro macht Spaß, es lässt sich damit viel einfacher arbeiten als mit der Vorgängerversion. Elemente können direkt angeklickt, verschoben und vergrößert werden, ohne zuerst mühselig im Seitenfenster auszuwählen. Funktionsumfang reicht für den privaten/Semiprofessionellem Bereich vollkommen aus. Was mich jedoch dazu bewegt hat eine 3-St [more](#)
- Gewöhnungsbedürftig, aber innovativ** 30 Mar
rudluc
★★★★★
Mit seiner umgekehrten Anordnung der Werkzeuge und anderen ungewohnt angeordneten Funktionen hat mich Pixelmator Pro zunächst mächtig verwirrt, und auch jetzt noch besteht ein gewisser Zeitaufwand meiner Arbeit in der Suche nach Lösungen. Andererseits ist der eingeschlagene Weg auch mutig und in aller Regel auch gut durchdacht, auch wenn sich nicht alles direkt [more](#)
- Unglaublich** 1 Oct
Zampanow
★★★★★
Pixelmator Pro ist eine unglaublich gelungene Foto-App. Sehr übersichtlich und leistungsstark. Die Werkzeuge sind übersichtlich angeordnet und erschließen sich intuitiv ohne Handbuch - notfalls hilft auch die integrierte "Hilfe"-Funktion schnell weiter. Beispielsweise das Auswahl- und das Reparieren-Werkzeug funktionieren einfach verblüffend gut. [more](#)

Contribution authenticity

The screenshot shows a web browser window displaying a blog post from the Android Developers Blog. The post is titled "In reviews we trust – Making Google Play ratings and reviews more trustworthy" and was posted on 17 December 2018 by Fei Ye and Kazushi Nagayama. The post discusses the importance of Google Play ratings and reviews for user trust and how Google Play is working to make them more trustworthy. A circular icon featuring a pencil writing on a screen is shown. The right sidebar contains links for search, labels, archive, feed, and newsletter, along with social media icons for YouTube, Twitter, LinkedIn, Medium, and Google Play.

android-developers.blogspot.com

developers Platform Android Studio Google Play Jetpack Kotlin Docs News

Android Developers Blog

The latest Android and Google Play news for app and game developers.

In reviews we trust – Making Google Play ratings and reviews more trustworthy

17 December 2018

Posted by Fei Ye, Software Engineer and Kazushi Nagayama, Ninja Spamologist

Labels

Archive

Feed

Newsletter

Android Developers

Google Play

42

Scalability issues

- The quantity of user contributions imposes limits on how this information can be processed by engineers
- With increasing number of users and frequent contributions manual analysis techniques become infeasible
- Informal data like natural language is hard to analyze automatically because of its high degree of freedom



Conflicting contributions

- Different users will have different, possibly conflicting preferences and expectations
- To make decisions from this data, conflicts have to be identified and resolved
- Continuous user contributions in social systems can lead to frequent conflicts, complicating manual identification and resolution techniques



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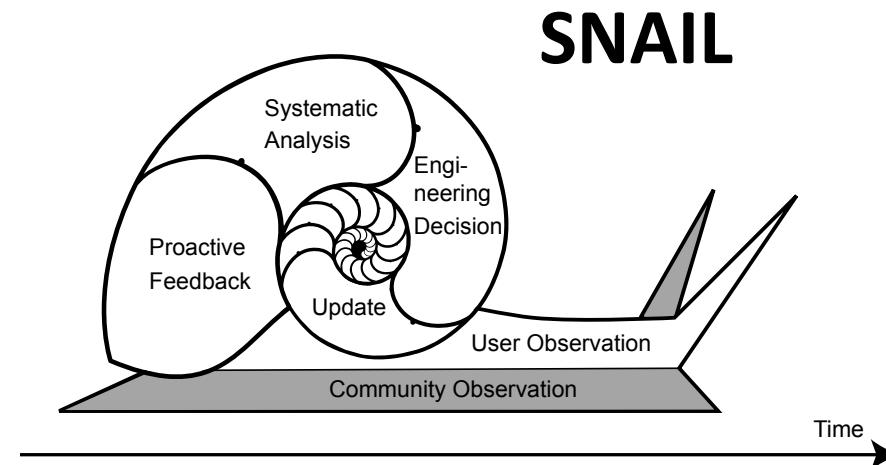
Systematic Involvement Approaches

Systematic user involvement

1. E-Democracy



2. Extending iterative processes

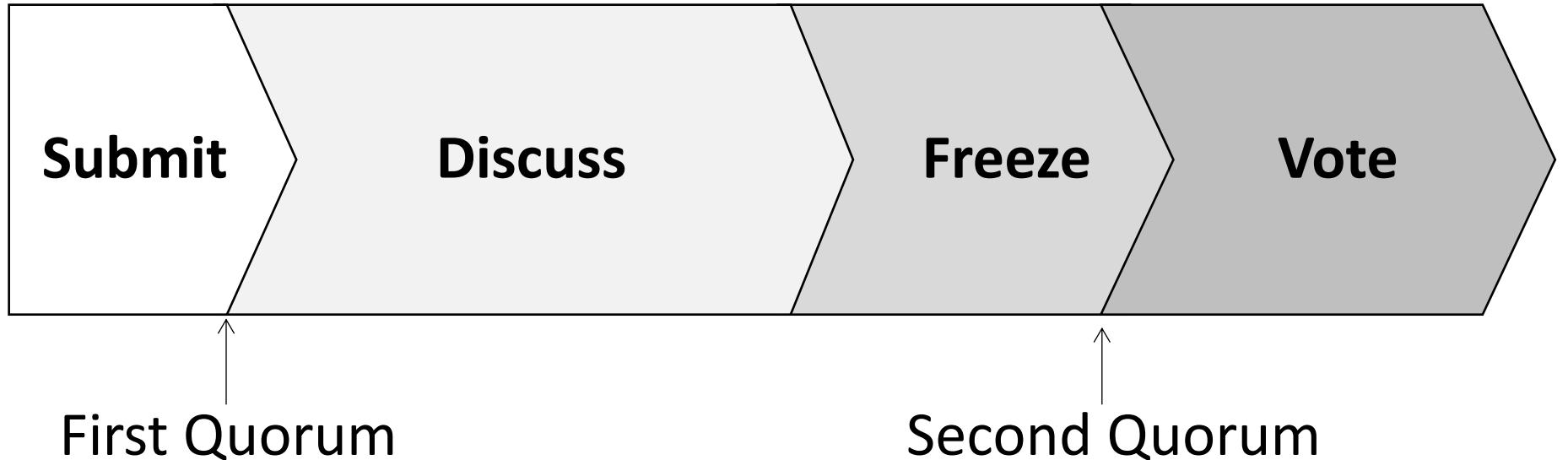


Liquid democracy

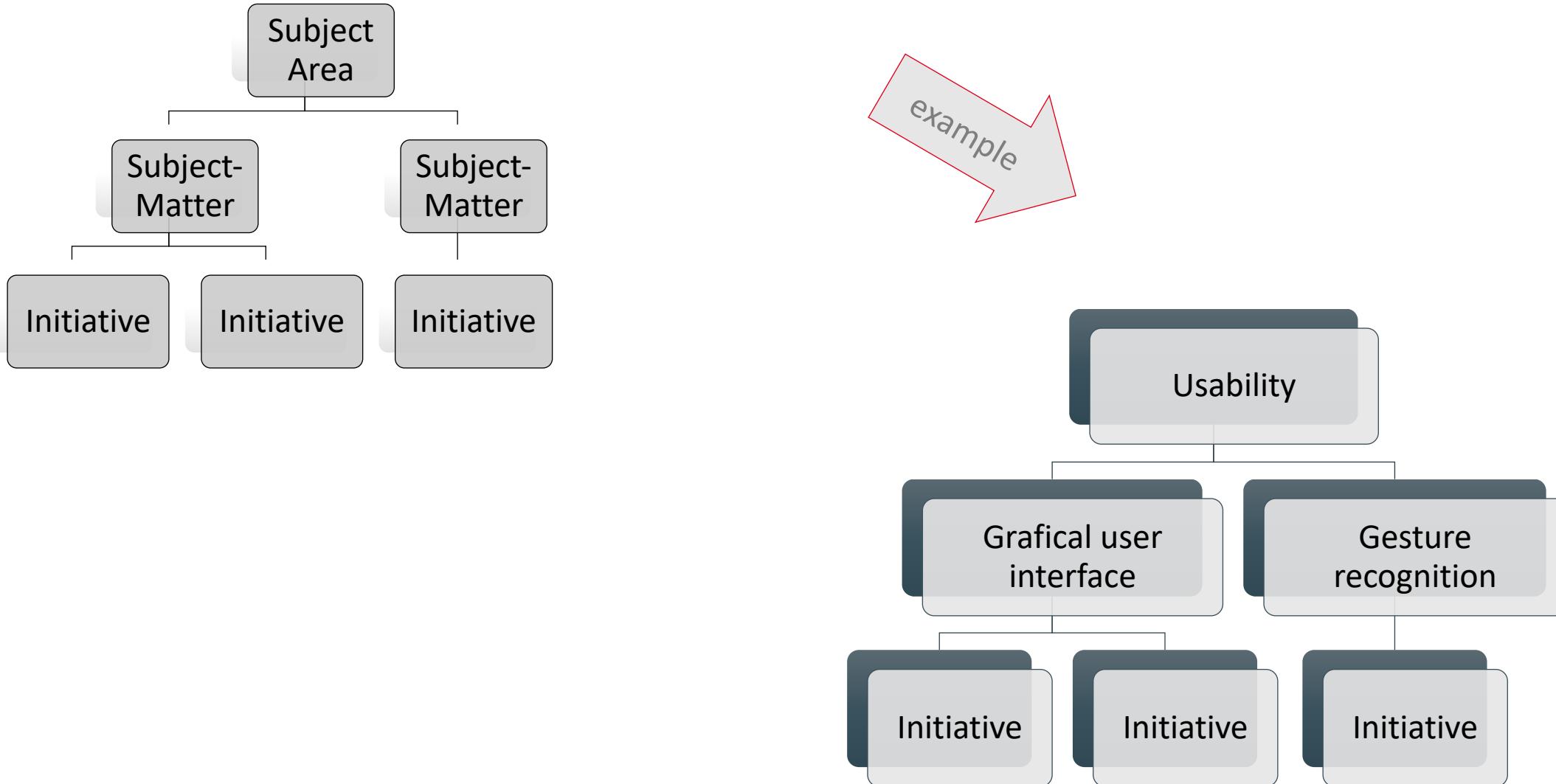
- Combination of **direct** and **parliamentary democracy**
- Everyone can:
 - Submit a matter
 - Vote for every topic (direct democracy)
 - Delegate vote to a representative (parliamentary democracy)
 - Decide to delegate or get back voice at anytime (liquid)
- Vote can be delegated for one, some, or all subjects



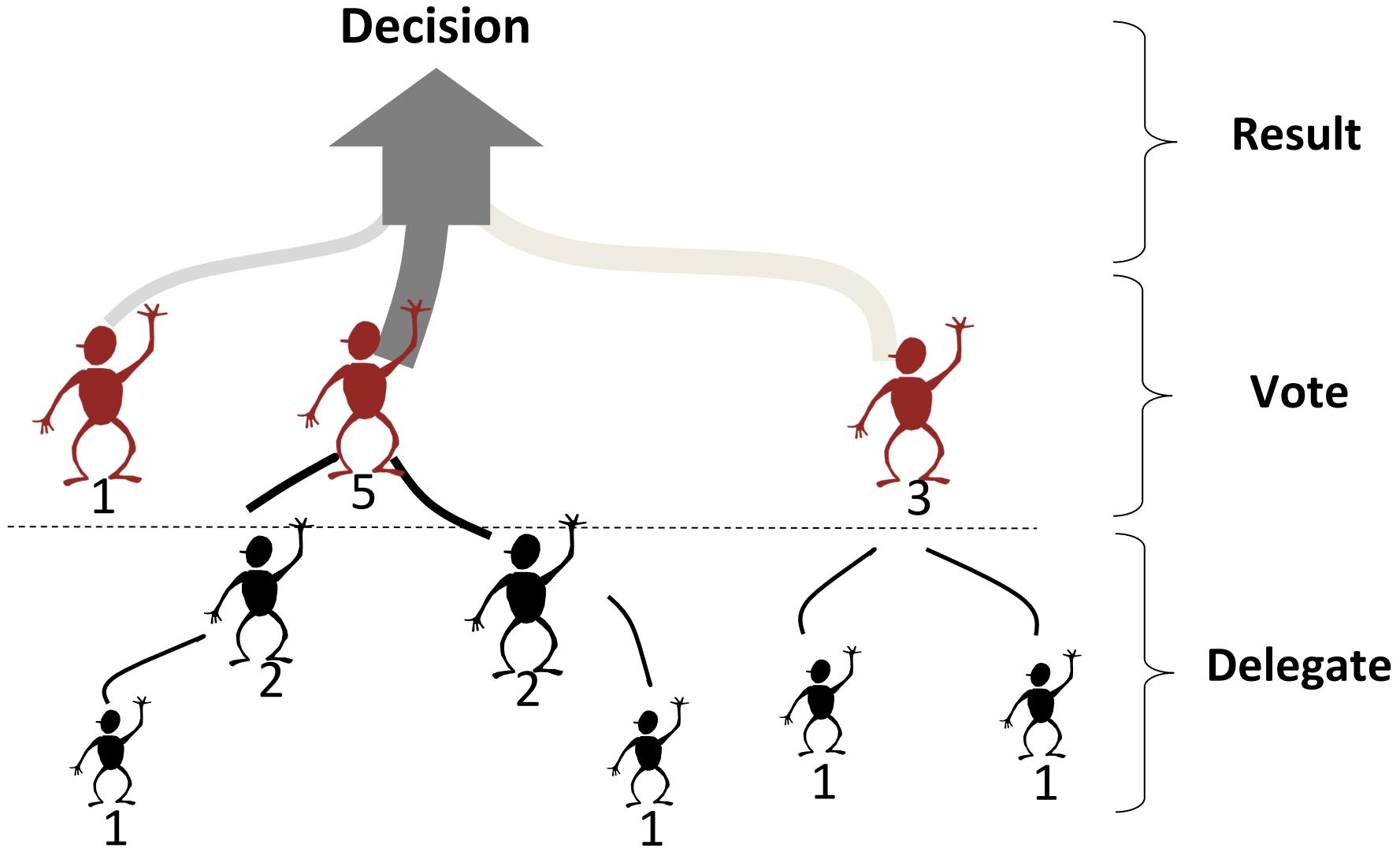
Combination of direct and parliamentary democracy



Launch an initiative



Delegated voting



E-democracy / E-participation tools

- Votorola
- Liquid Feedback
- Adhocracy
- User Voice
- ...

LiquidFeedback



Used in politics to support opinion forming and decisions

Startseite Themenbereiche Mitglieder Kontakte About Bug report Admin Suchen OK Abmelden

Themenbereich 'Sandkasten / Spielwiese' :: Issue #18

Initiative: 'BGE'

Direkte Unterstützung [ändern] Deine Stimme ist delegiert. [mehr] Entwurf bearbeiten Alternative Initiative hinzufügen (ändern)

ZUSTAND Diskussion
RESTZEIT 19 days 13:23:00.55852
NÄCHSTER Eingefroren
ZUSTAND

Aktueller Entwurf	Anregungen	Unterstützer	Initiatoren	Alte Entwürfe	Details
Anregung	Meinungsbild	Meine Meinung		Anregung zur Zeit nicht umgesetzt	Anregung zur Zeit umgesetzt
Kinder berücksichtigen		darf nicht soll nicht neutral soll muss			
Zollgrenze		darf nicht soll nicht neutral soll muss			
Grenzen schließen		darf nicht soll nicht neutral soll muss			
Vermögenssteuer		darf nicht soll nicht neutral soll muss			
100% für kinder		darf nicht soll nicht neutral soll muss			
Kinder nur vom Staat		darf nicht soll nicht neutral soll muss			
Robotersklaven vom Orion		darf nicht soll nicht neutral soll muss			
Neue Anregung hinzufügen					

User voice

- User in requirements engineering
- Delegate (some) decisions to users
 - User have a limited number of votes
 - Users must prioritize their wishes and requests
- Users understand that there are other users for the product as well

User voice

General Feedback Forum marcus [settings](#) [switch to account:](#) [logout](#)

Welcome to our official feedback forum. Do you have an idea? Do you recognize a good idea when you see one? We want to hear from you!

I suggest you ...

- enter your idea (new feature, fix bug, etc) - [Search](#)

[top ideas](#) [hot](#) [new 3](#) [accepted](#) [completed](#) [Anonymous Votes](#) [Shown](#)

1,254 votes **2** **Support multiple languages** [started](#)
So that ..
..everyone can have UserSuggest...
..alla kan ha UserSuggest...
..herkes UserSuggest kullanabilir...

admin response
I happy to announce that we're very close. The technical issues have been solved, we've frozen the copy and we're sending out the translation files to translators (we're not using 99translations for this). I'll be emailing those of you that have generously offered to translate for us. If you'd like to help with a language please email me (rich at uservoice.com)
- Richard White [edit](#)

[59 comments](#) | by edgerunner | [move](#) [edit](#) [delete](#)

487 votes **vote** **allow negative votes?** [Set Status / Close](#)
sometimes, especially in cases where there's a lot of traffic on a suggestion, allowing someone to vote *against* something might be worthwhile.
Obviously negative votes should still count against the user's vote total (except as a positive subtraction, if you know what I mean... ;)), and to avoid slashdot-style battles, perhaps setting the maximum negative vote to -1 would be a good idea.

admin response
We'll continue this healthy discussion but our first step will be to allow simple up/down voting on ideas so it's easier to see dissenting opinions. If *IF* we experimented with downvotes it would most likely cost you votes and/or not affect the vote count but rather a secondary score for controversy (cluing the admin in to check out the

2 votes left!
[What happens if I run out?](#)

Your Ideas

- 1** [Allow private reskin \(paid\) usage integrated into other site](#)
- 1** [Add A "Compliment" Section - Say What's Right About Product](#)
- 2** [facebook/ Google IG integration](#)
- 1** [Holding area for suggestions when out of votes](#)
- 1** [Use same architecture to create community FAQ](#)
- 2** [Support multiple languages](#) [started](#)

[Admin console](#)

[General activity feed](#)

Other Forums

- [Beta Accounts \(0\)](#)
- [Premium Services \(5\)](#)
- [Premium Users \(3\)](#)
- [Team \(1\)](#)
- [Translations \(36\)](#)

User voice example (MS excel)



Bring back REAL keyboard customization!

It is completely not true, that keyboard customization through OS X keyboard preferences really works. Tell me how to make a shortcut to fill cell with color: for instance CTRL+2? Or how to paste values (without any mid-steps)? Or even do something more advanced than copy/paste with my own combination of inputs.

The fact is that office 2016 for mac lacks this feature and this "workaround" is NOT a replacement. Please bring back the option that was SO USEFUL!

[5 comments](#) · [Editing](#) · [Flag idea as inappropriate...](#)



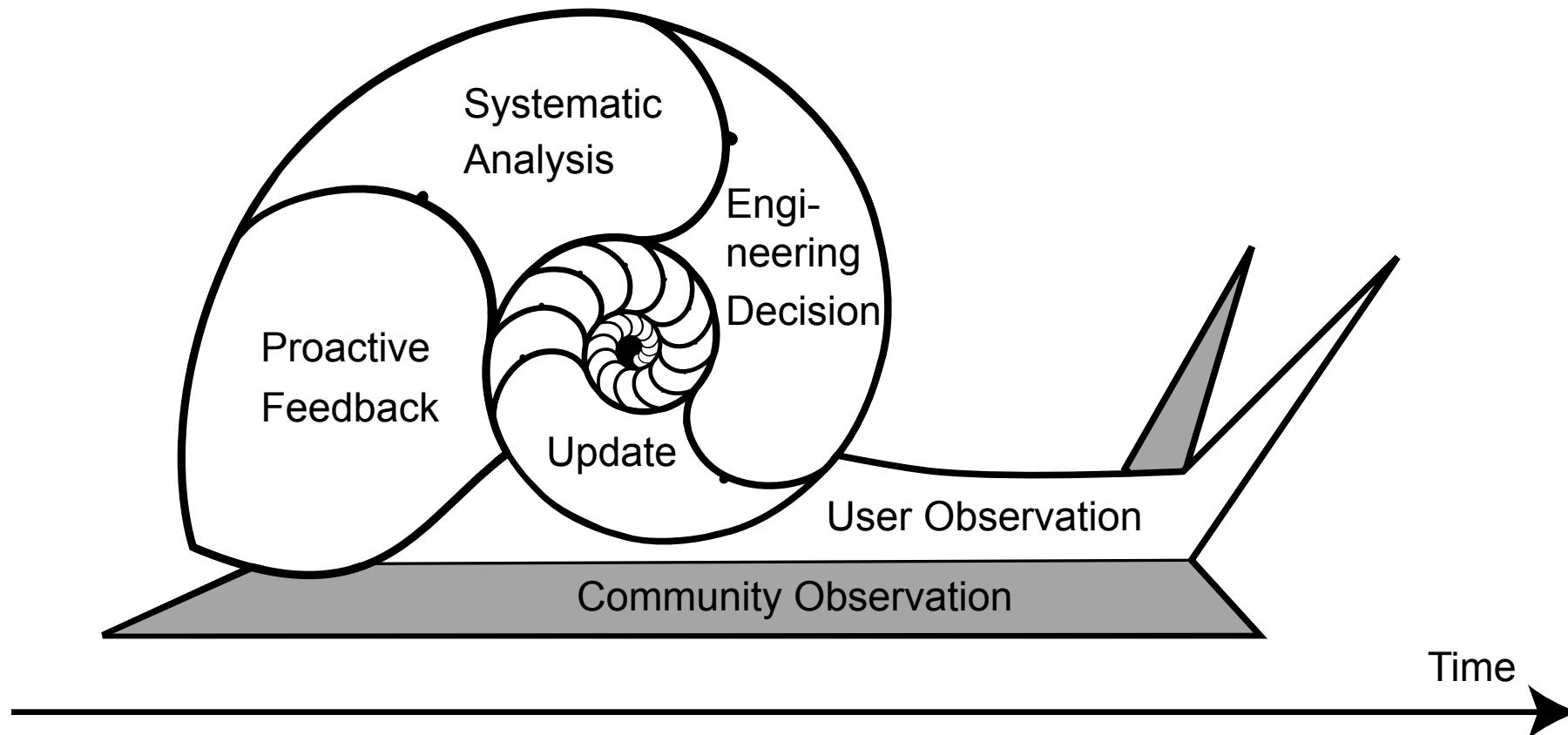
UNDER REVIEW

· **Excel Team [MSFT] (Admin, Office.com) responded**

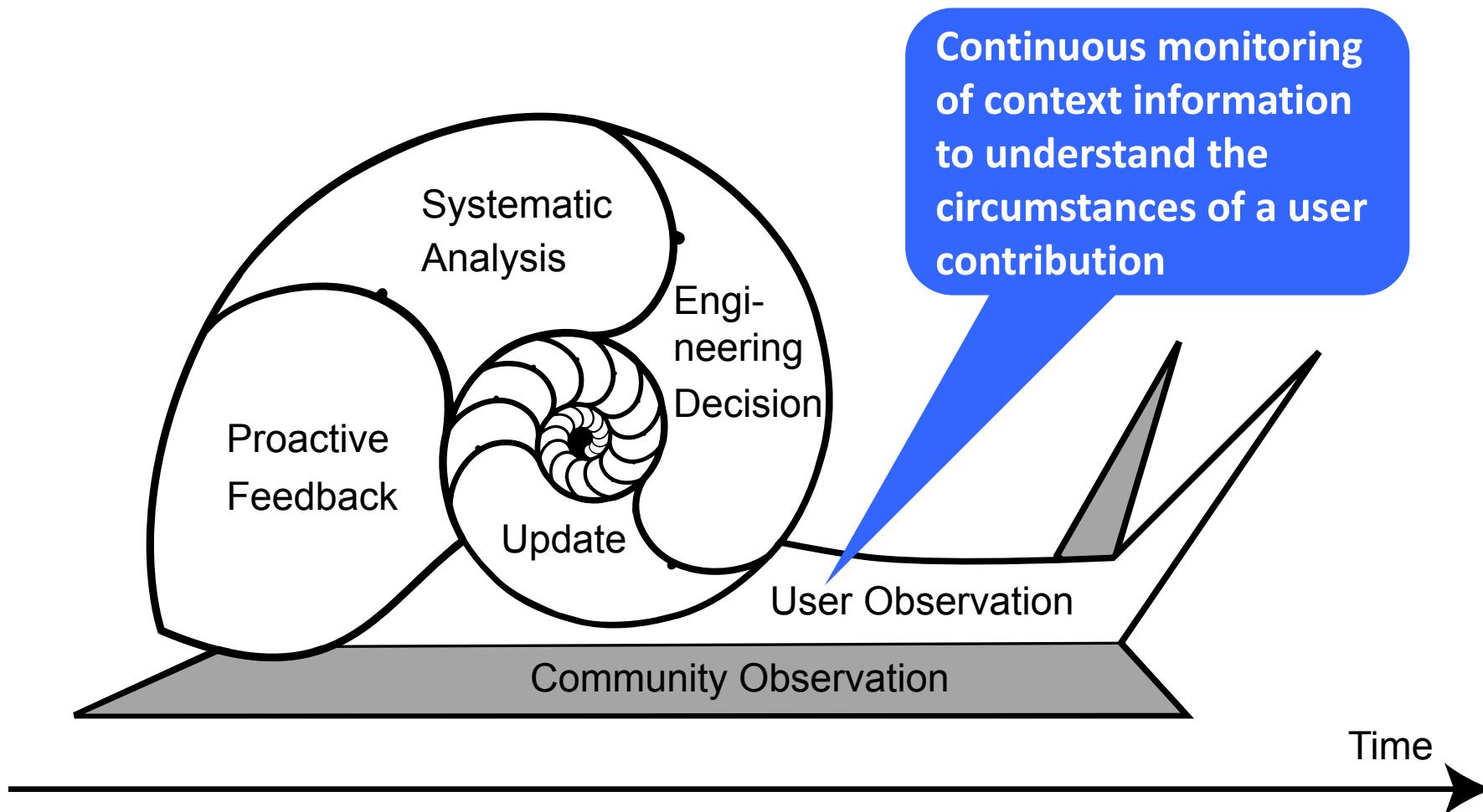
Thanks for the feedback AlexK. We'll take this into consideration. As always with ideas on this site, we'll give higher priority to things with more votes, so vote on.

Cheers,
John [MS XL]

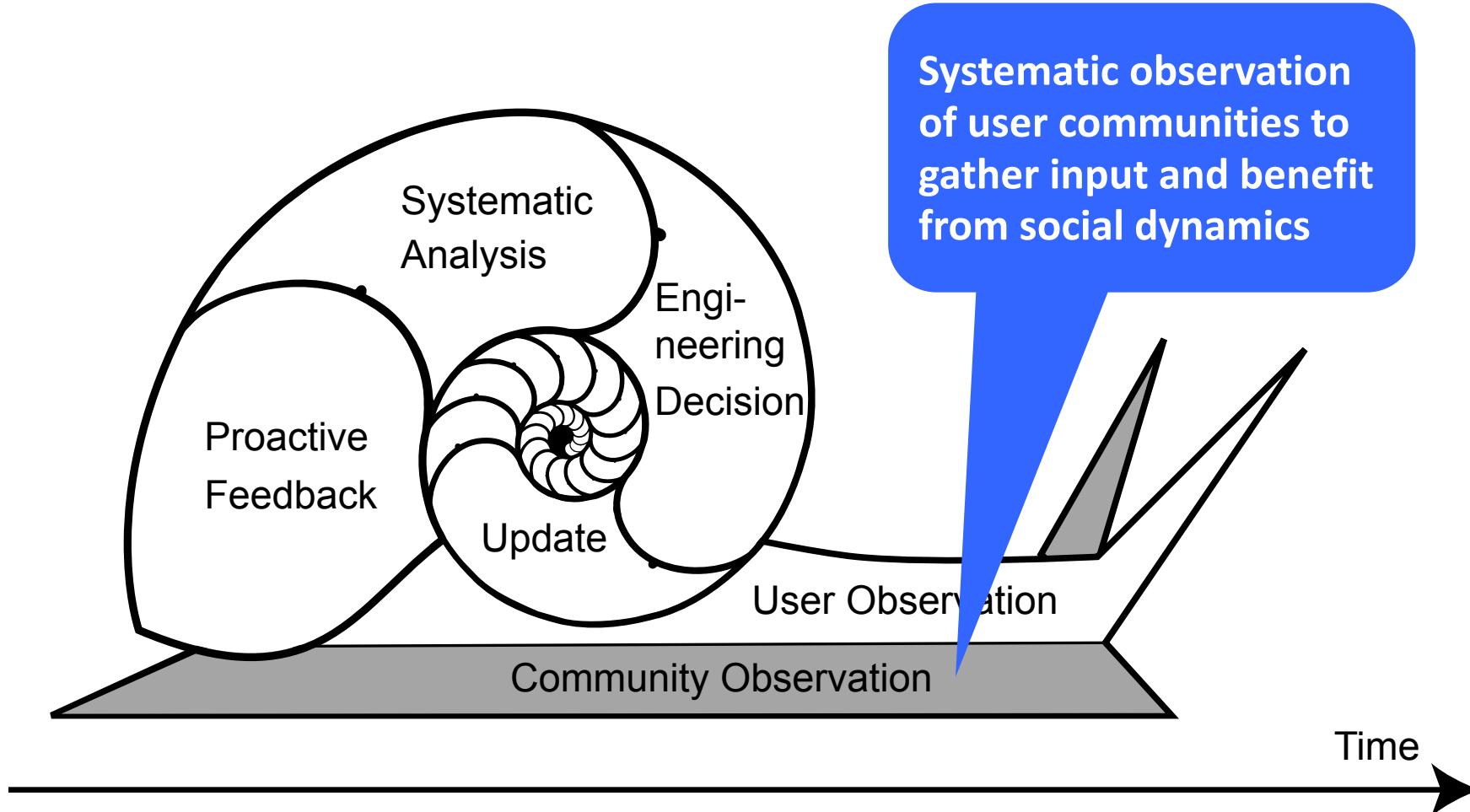
SNAIL process: systematic user involvement



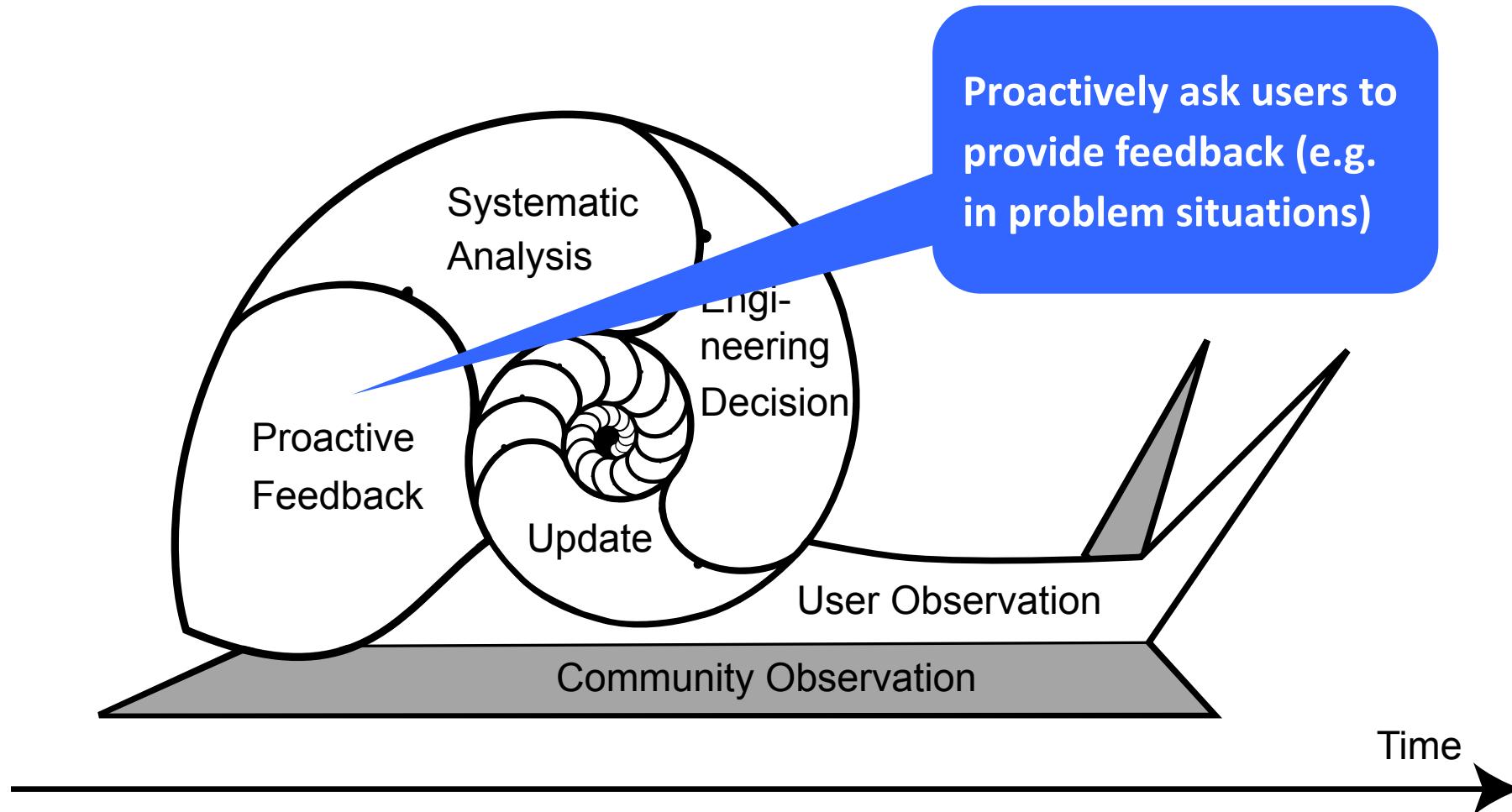
1. User observation



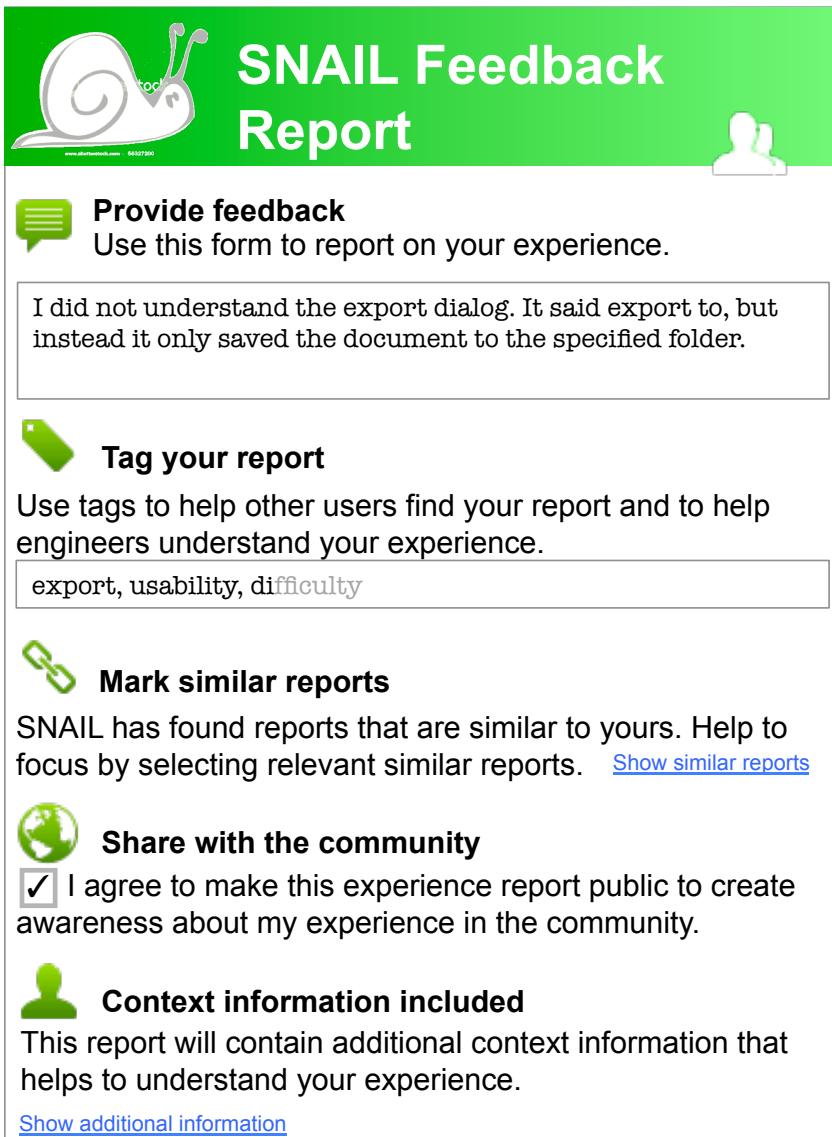
2. Community observation



3. Proactive feedback



Proactive user feedback



The image shows a screenshot of the SNAIL Feedback Report interface. At the top, there's a green header bar with the title "SNAIL Feedback Report" and a snail icon. Below the header, there's a section titled "Provide feedback" with the sub-instruction "Use this form to report on your experience." A text area contains the user's feedback: "I did not understand the export dialog. It said export to, but instead it only saved the document to the specified folder." Underneath this, there's a section titled "Tag your report" with the instruction "Use tags to help other users find your report and to help engineers understand your experience." A text input field contains the tags "export, usability, difficulty". Below that is a section titled "Mark similar reports" with the instruction "SNAIL has found reports that are similar to yours. Help to focus by selecting relevant similar reports." A link "Show similar reports" is provided. The next section is "Share with the community" with a checked checkbox "I agree to make this experience report public to create awareness about my experience in the community." Finally, there's a section titled "Context information included" with the instruction "This report will contain additional context information that helps to understand your experience." A link "Show additional information" is at the bottom.

SNAIL Feedback Report

Provide feedback
Use this form to report on your experience.

I did not understand the export dialog. It said export to, but instead it only saved the document to the specified folder.

Tag your report
Use tags to help other users find your report and to help engineers understand your experience.

export, usability, difficulty

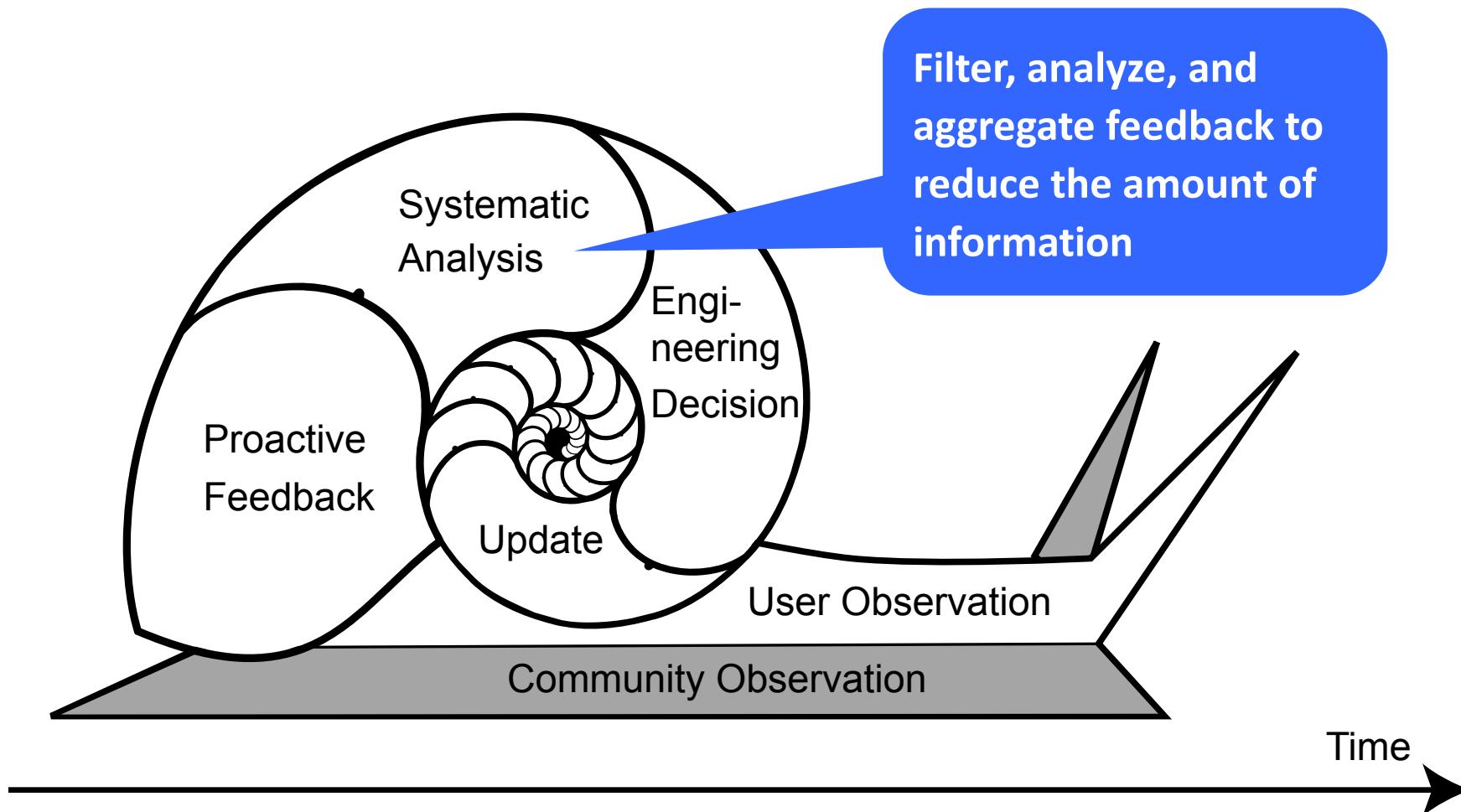
Mark similar reports
SNAIL has found reports that are similar to yours. Help to focus by selecting relevant similar reports. [Show similar reports](#)

Share with the community
 I agree to make this experience report public to create awareness about my experience in the community.

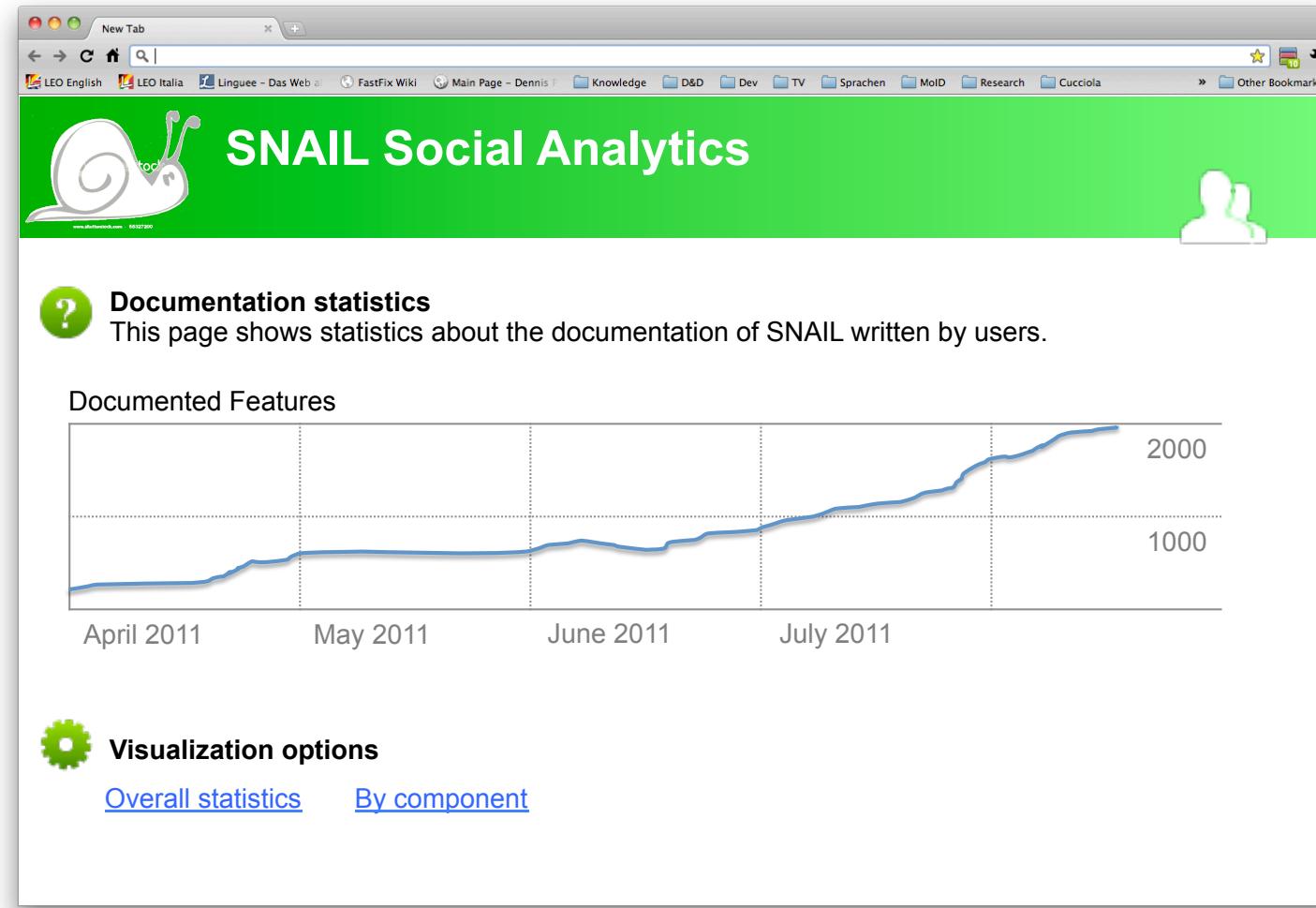
Context information included
This report will contain additional context information that helps to understand your experience.

[Show additional information](#)

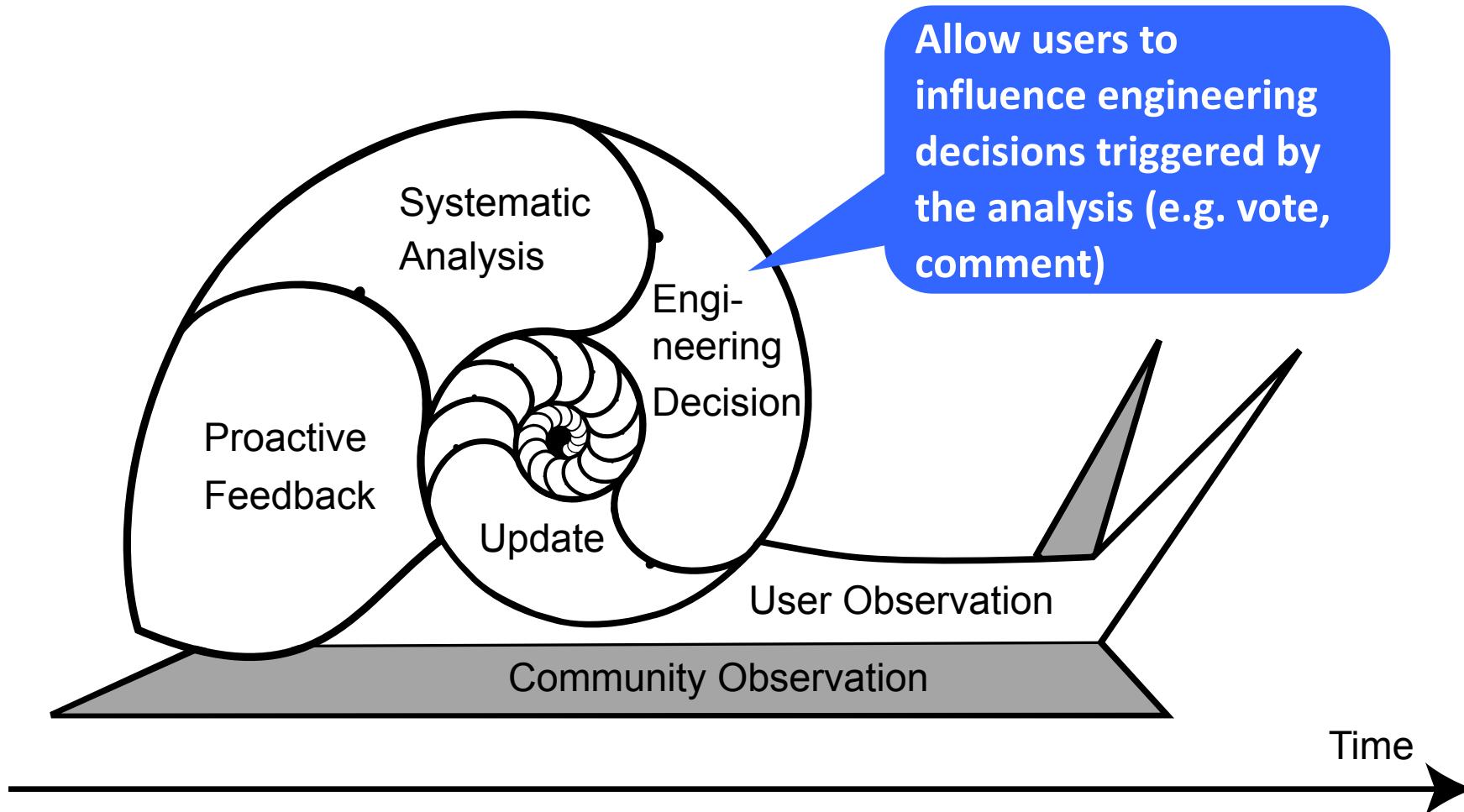
4. Systematic analysis



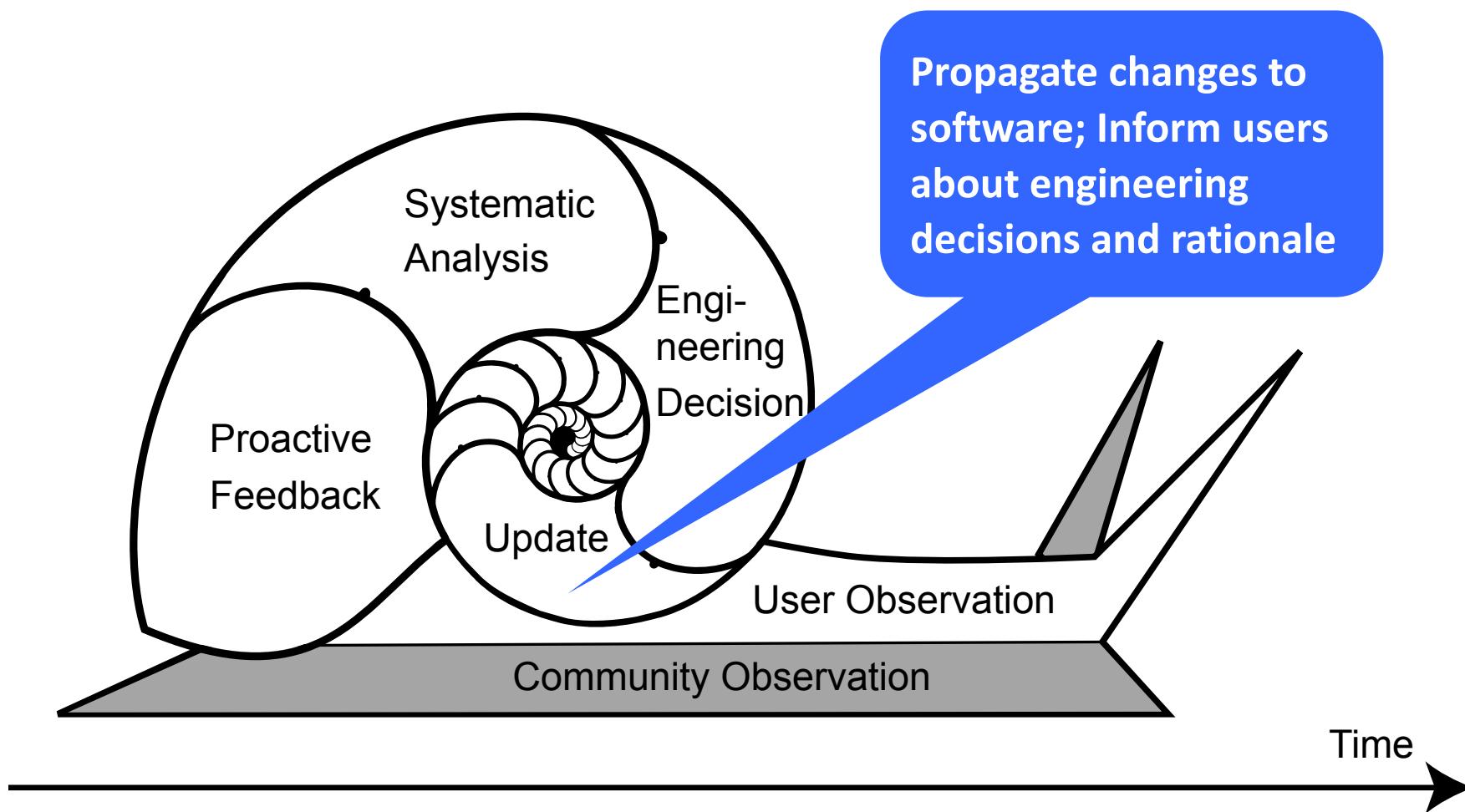
Example of user feedback analysis



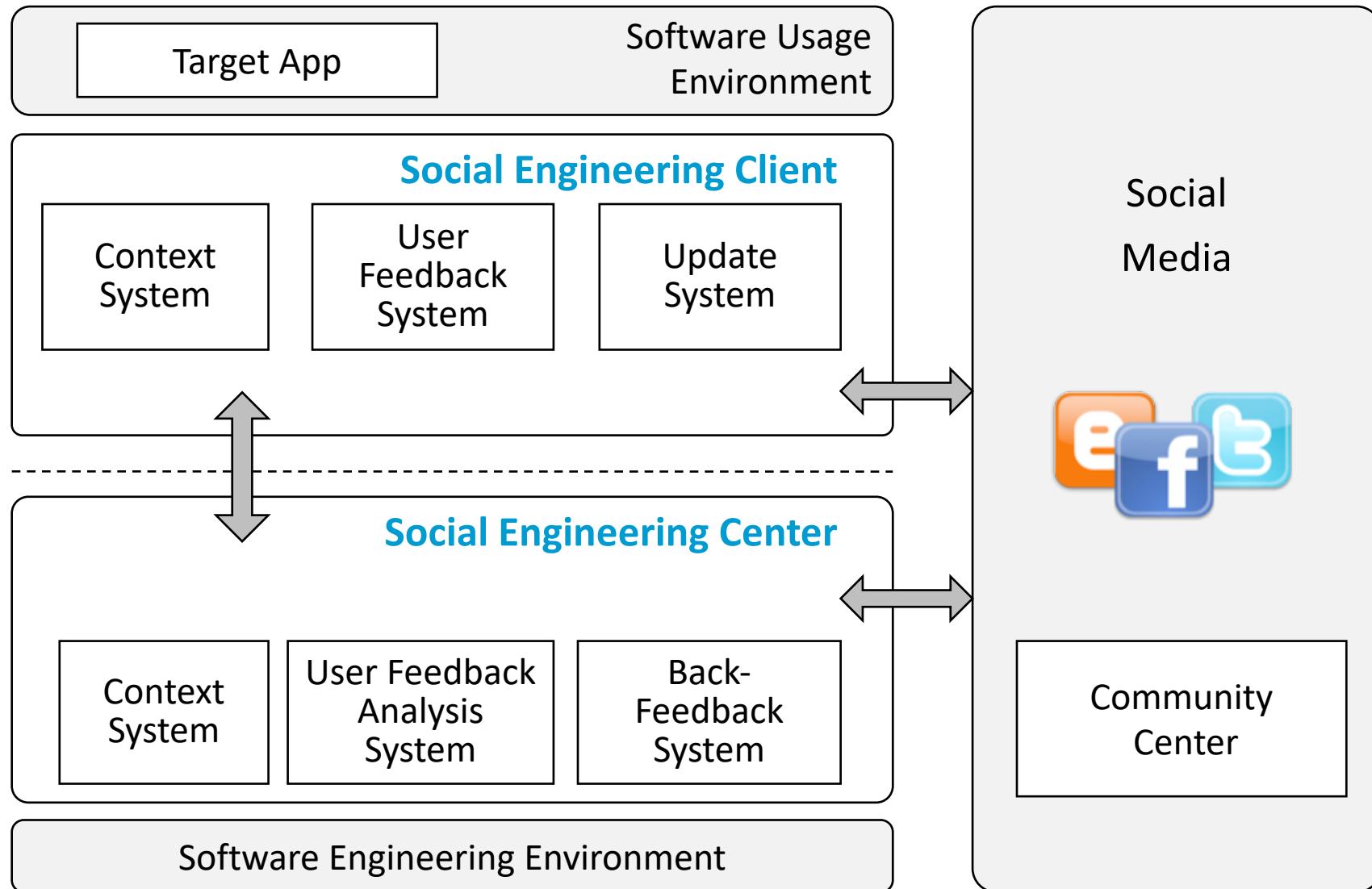
5. Engineering decision



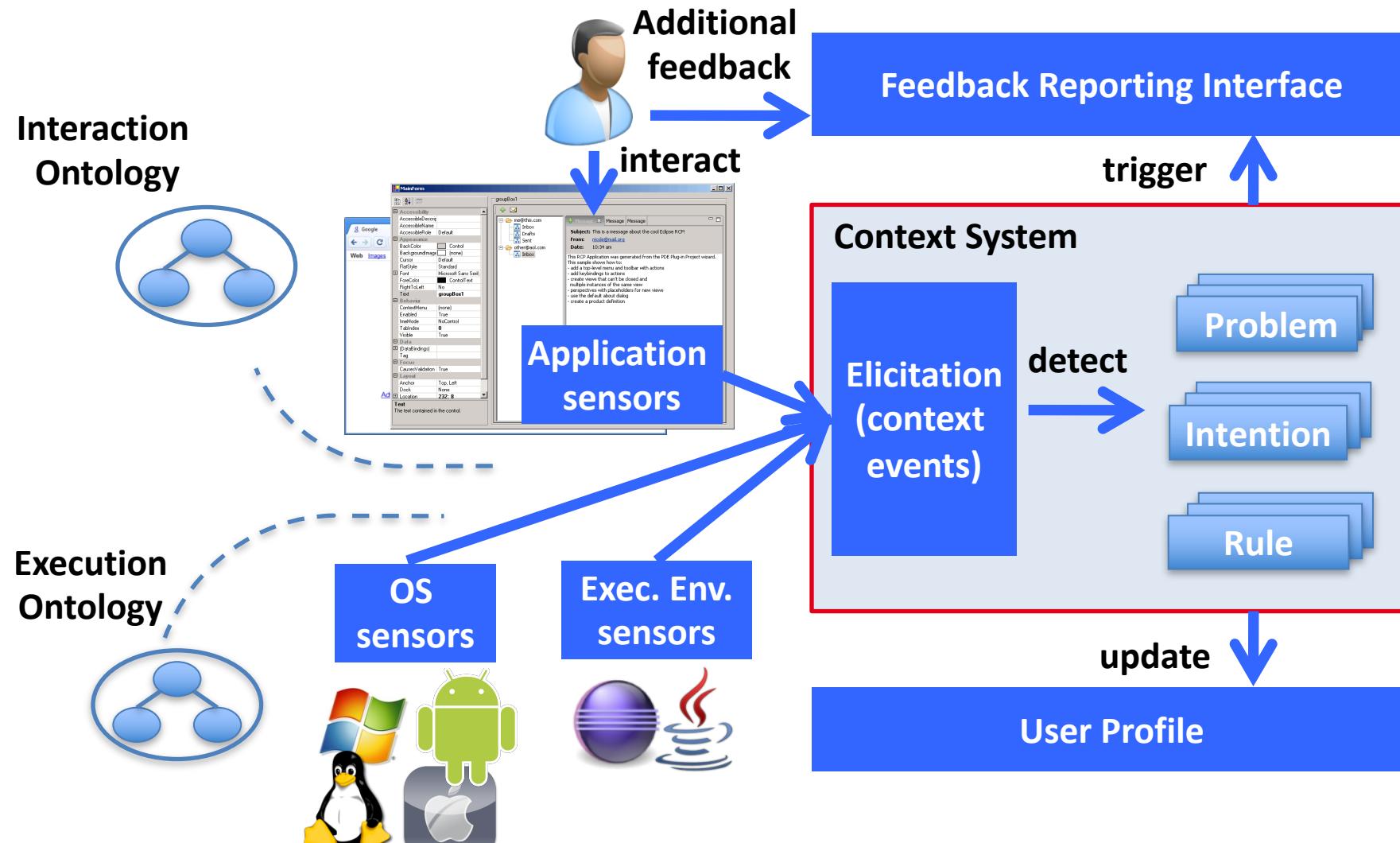
6. Update



Reference architecture of social software



Context observation and processing



Next steps!

The grand challenges for crowdsourcing requirements



Support users to create and submit high quality feedback



Tools and methods to filter, analyze, and aggregate feedback

Support users to create and submit high quality feedback



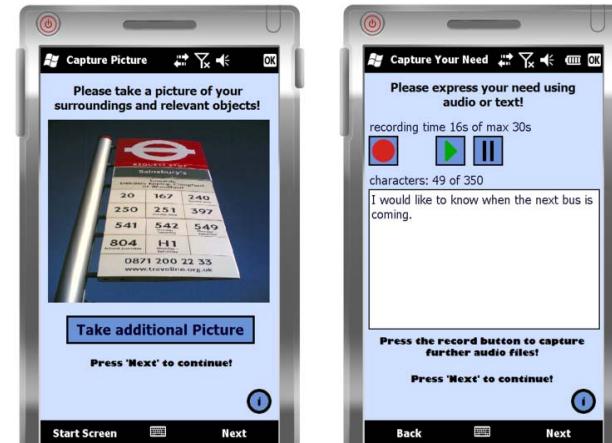
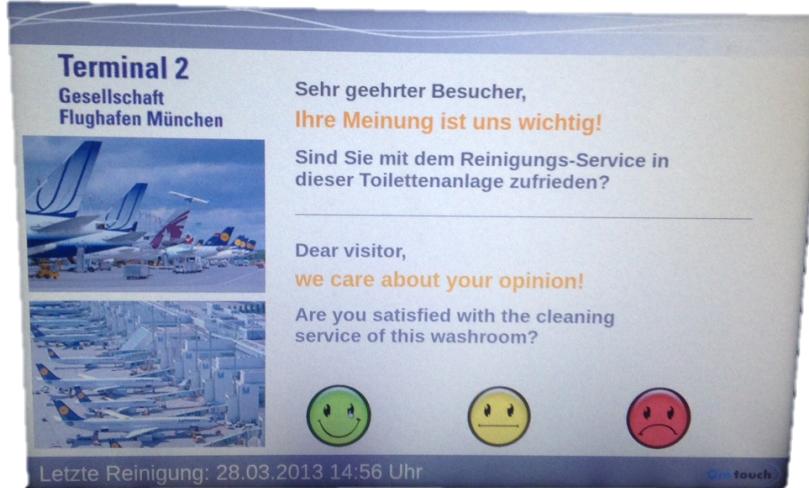
- **Context-awareness and context enrichment**
- Detect and describe the situation for the user
- Right levels of details (abstractions)
- Protect user's **privacy**
- Assessing the **level of experience**
- Metrics and algorithms for quantifying **context similarity**

Tools and methods to filter, analyze, and aggregate feedback

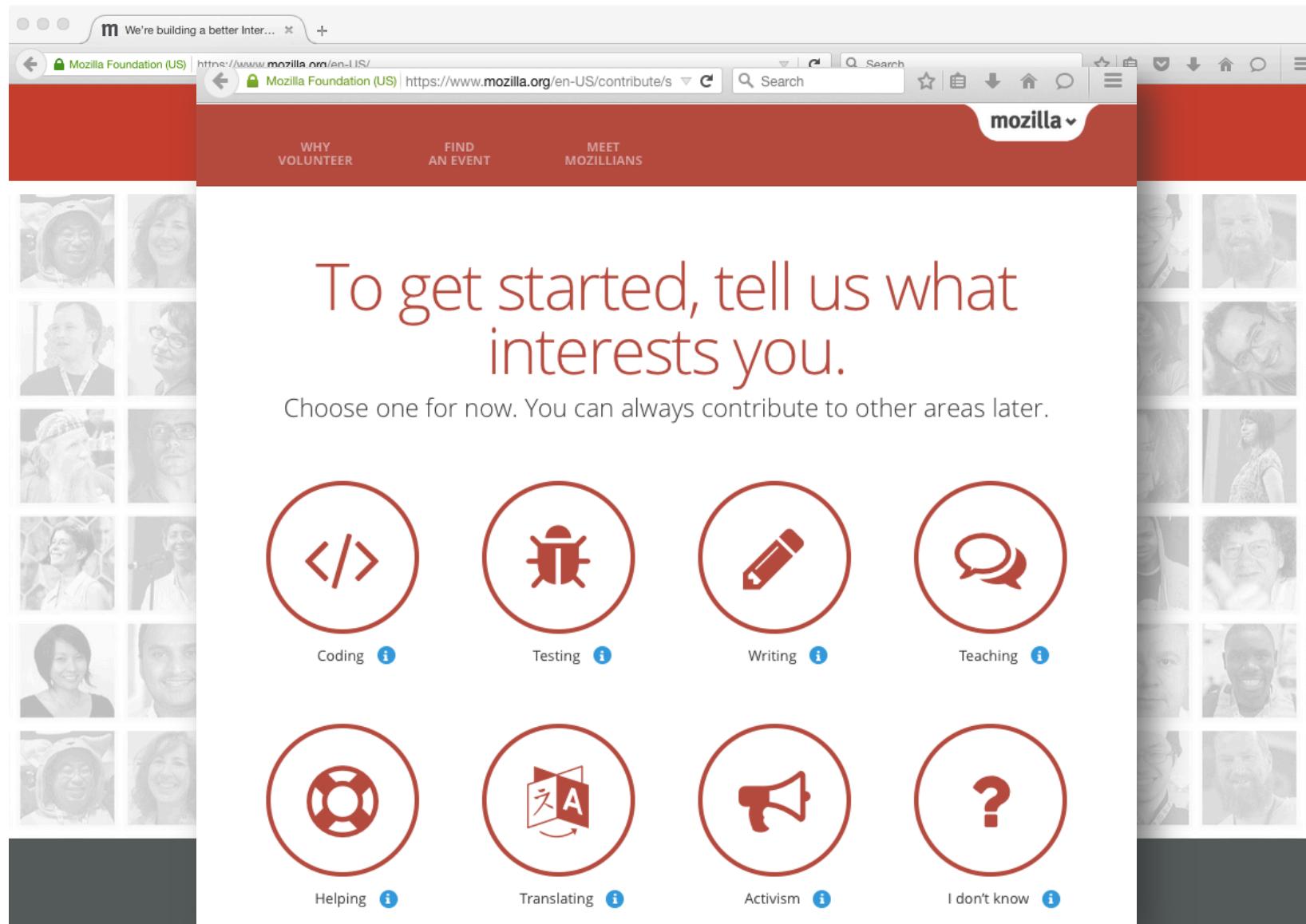
- Huge amount of data
 - Conflicting feedback (preferences)
- Mobile analytics
 - Recommendation systems



Crowdsourcing requirements of services and products...



Crowdsourcing other software engineering activities

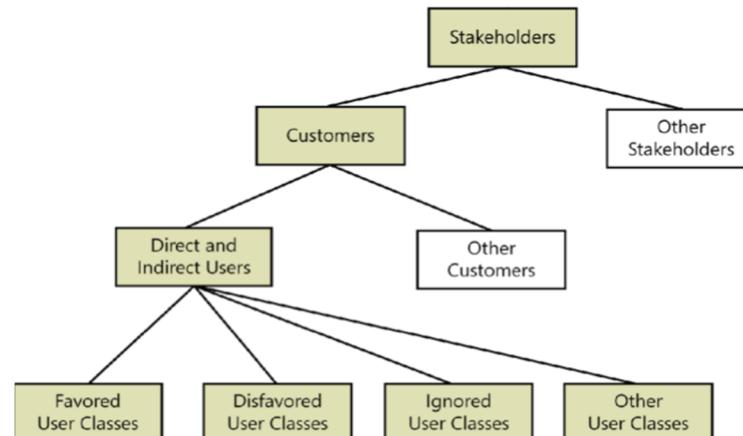


Summary

Low user involvement -> unexplored & not-understood user needs



User Classes



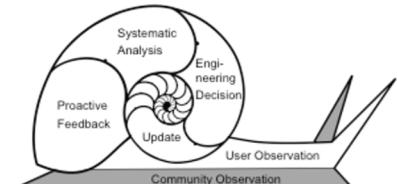
[Software Requirements, 2000] 19

Systematic User Involvement

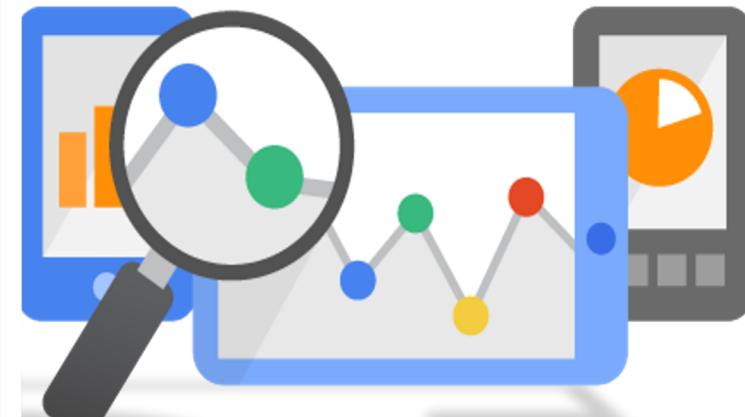
LiquidFeedback



SNAIL



Context, Analytics, Recommenders



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