



Social Software as Key Enabler of Collaborative Development Environments

Filippo Lanubile

University of Bari, Italy

Collaborative Development Research Group http://cdg.di.uniba.it

Software development as an intense collaborative process

- "an exercise in complex interrelationships" *
- Research question:
 How can social software be used to mitigate the negative effects of distance in global distributed development?



Collaborative Development Environments



- Project workspaces with integrated tool set
 - version control
 - tracker
 - event notification
 - documentation
 - communication
- Most tools are now implemented as social software













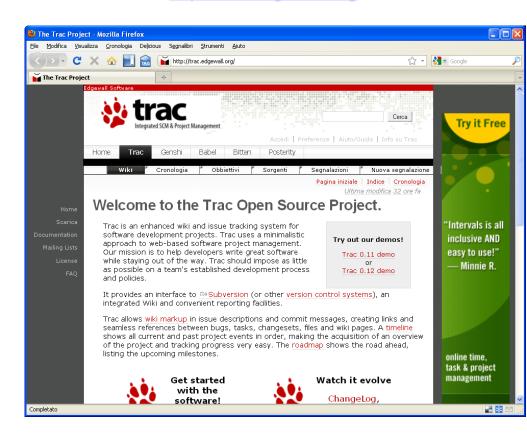


Trac

Social software

- Wiki
- RSS feeds
- Plugin for tagging tickets and wiki pages *
- Plugin for discussion forums

http://trac.edgewall.org



^{*} Calefato F, Gendarmi D, Lanubile F. Investigating the Use of Tags in Collaborative Development Environments: A Replicated Study. ESEM 2010.

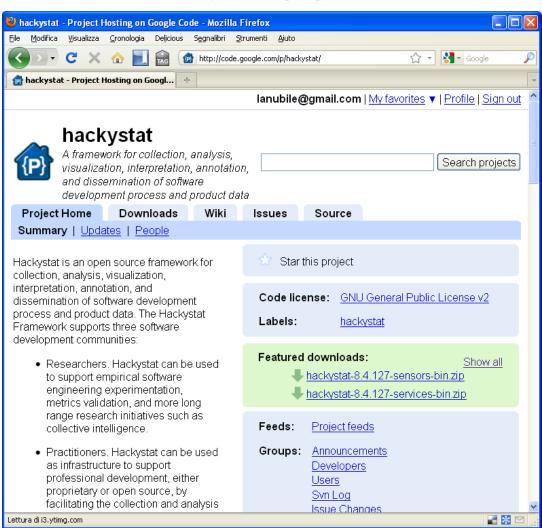
Google Code

Social software

- Wiki
- RSS feeds
- Google Groups



http://code.google.com/



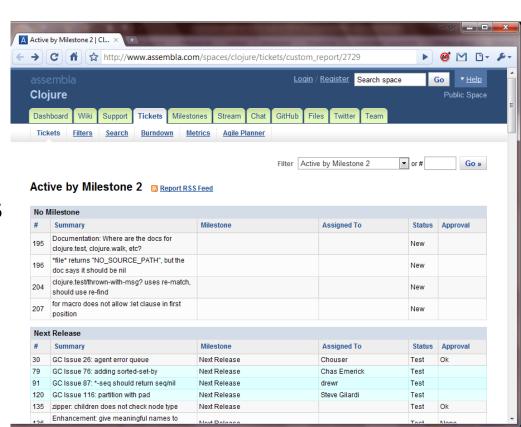
Assembla



http://www.assembla.com/

Social Software

- Wiki
- RSS feeds
- Plugin for Twitter
- Standup reports for remote Scrum meetings
- Synchronous communication
 - XMPP
- Activity stream
 - Follow projects and software artifacts (tickets, wiki pages)



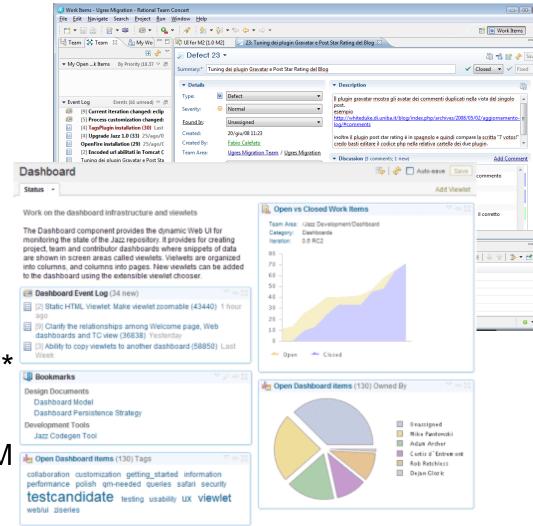
Jazz

http://jazz.net/projects/rational-team-concert



Social Software

- Synchronous communication
 - XMPP, Skype
- Wiki
- RSS feeds and built-in RSS reader
- Tagging work items *
- Project community
 - Integration to the IBM Connections suite

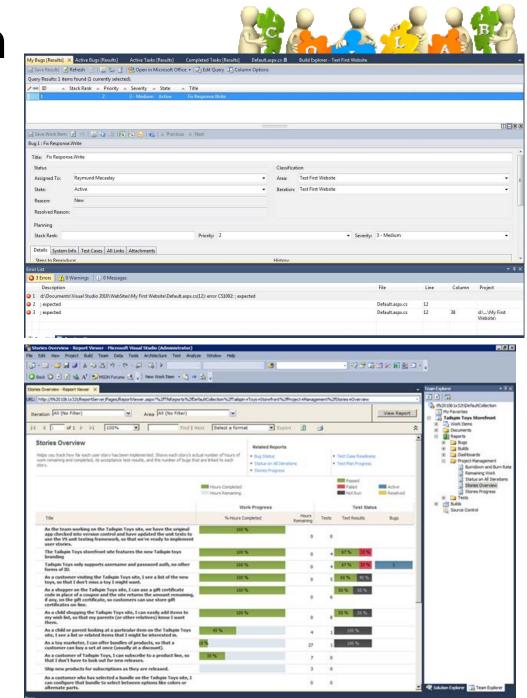


* C. Treude and M.A. Storey. Work Item Tagging: Communicating Concerns in Collaborative Software Development. IEEE Trans. Soft.. Eng. 38(1) 2012

Team Foundation Server (TFS)

Social Software

- Plugins for synchronous communication
 - SIP/SIMPLE,Skype



SEO

Stories Overview - Re...



CodePlex

Social Software

- Wiki
- RSS feeds
- Activity stream
 - Follow projects

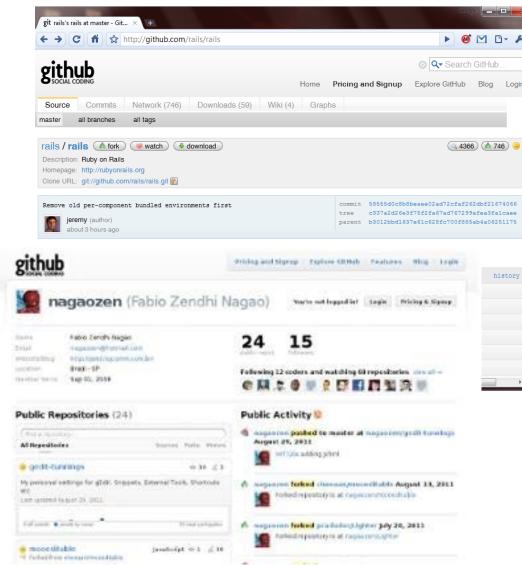
www.codeplex.com



http://github.com/

GitHub Social Software

- Wiki
- RSS Feeds
- Activity stream
 - Follow projects
 - Follow developers' activities
- View developers' connections
- Twitter-like interaction
 (@mentions)



- CSCW emerged from HCI to address collaboration problems in workgroups:
 - communication breakdowns
 - coordination problems
 - lack of knowledge about colleagues' activities
- Same problems faced by software developers in large scale teams
 - especially true for globally distributed projects

Group awareness



"an understanding of the activities of others which provides a context for your own activity" *

- Informal awareness
- Group-structural awareness
- Workspace awareness
- Social awareness

^{*} Dourish, P. and Bellotti, V. Awareness and coordination in shared workspaces. Proc. CSCW '92.

Group awareness in collaborative development environments

	Informal awareness	Group- structural awareness	Workspace awareness	Social awareness
Trac		YES	YES	
Google Code		YES	YES	
Assembla		YES	YES	
Jazz	YES	YES	YES	partial (IBM Connections)
TFS	YES	YES	YES	
CodePlex		YES	YES	
GitHub		YES	YES	partial (view developers' connections and @mentions)

Is social awareness needed? (1/4)



- 25% of new coordination requirements involve project members that do not often work together
- Support the sharing of personal and contextual information to increase the likelihood of successful interaction

Is social awareness needed? (2/4)



- Distance of a collaborating partner affects
 - willingness to initially cooperate,
 - ability to persuade another
 - deception of that partner
- Effects of distance can be overcome through repeated interactions over time, if people felt being close
 - Trust-building effect

Is social awareness needed? (3/4)



- Whom to contact when getting a list of experts from an expertise search tool?
 - Decisions based on participation in social software
 - focus on people likely to respond
 - Decisions based on social closeness
 - avoid cold calls

Is social awareness needed? (4/4)



- Professionals use internal social networking
 - to build stronger bonds with their weak ties and
 - to reach out to employees they do not know
- Different motivations for new connections
 - Desire to connect personally
 - Desire to connect professionally
 - Desire to gather support

How can social software be used to mitigate the negative effects of distance in global distributed development?

- Current approach: Have all team members use a single, project-oriented, social networking site
- Problems
 - Project-oriented networking sites do not capture the full social identity of a software engineer
 - On the other hand, nobody would like to get project news feeds into the personal timelines of Facebook or Twitter
 - In large global teams, you might do not know people you should be aware of (awareness network)
 - The awareness network can be very dynamic *

^{*} de Souza, C.R.B., Redmiles, D.F. The Awareness Network, To Whom Should I Display My Actions? And, Whose Actions Should I Monitor?, IEEE Trans. on Sw Eng, 37(3), 2011.

Conclusions



- Great impact of social software on collaborative development environments
 - but how to provide social awareness is an open issue
- Challenge for empirical studies
 - How can we measure the actual benefit of being personally connected to other developers, whenever they are located?