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## Keynote: From group collaboration to large scale social collaboration

François Charoy

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Submitted on 6 Jul 2016

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# From group collaboration to large scale social collaboration

François Charoy - @charoy  
Inria/University of Lorraine

EQUIPE PROJET

**Coast**

CENTRE Inria

Nancy Grand Est

# Coast Team

Inria/LORIA research team (15/20 people)

University of Lorraine

Research topic :

Web Scale trustworthy collaborative systems

[teams.inria.fr/coast](http://teams.inria.fr/coast)

@InriaLORIACoast



Inria NANCY  
Grand Est

# Outline

Origin and (fly over) state of art of Computer Supported  
Collaboration

Large scale collaboration (does it exist ?)

Perspectives and research issues





# Dimensions of collaboration

Two or more people working together toward a shared goal

Communication

Coordination

Sharing

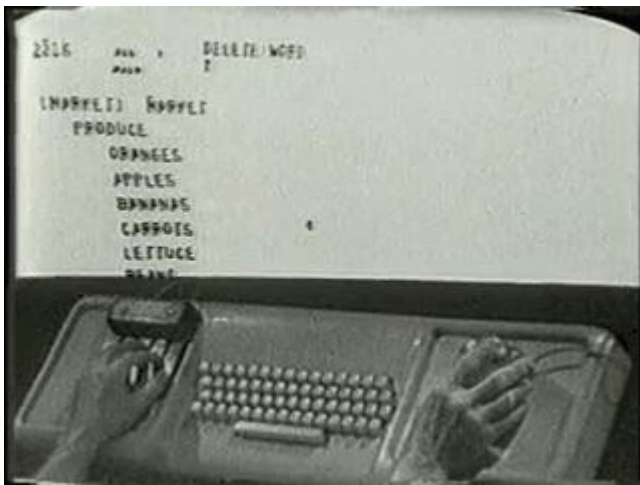
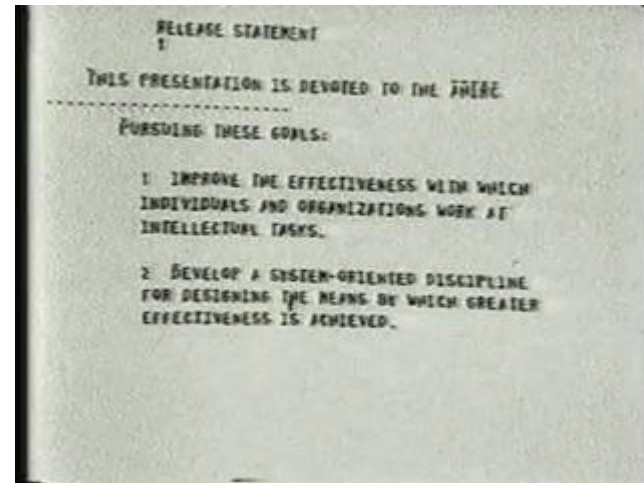
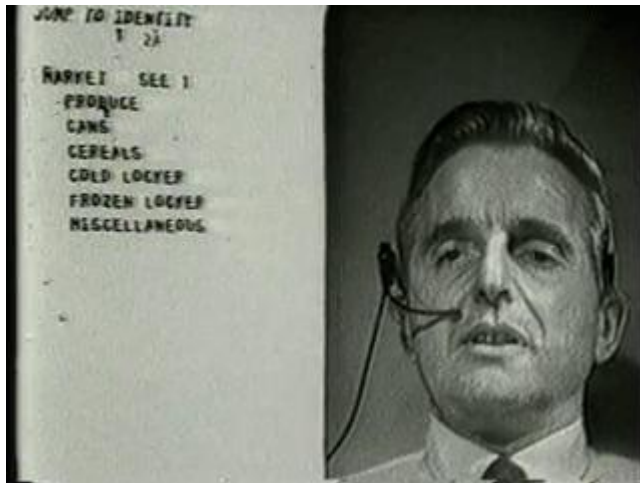
# Implicit vs Explicit Coordination

 **THE**   
**PERSUADERS!**





# Mother of all demos – 12/9/1968 Doug Engelbart Augmentation Project



<http://theyear1968.tumblr.com/post/79620814201/on-december-9-1968-doug-engelbart-and-his-team>  
<https://archive.org/details/doungengelbartarchives>



# Clarence Ellis 5/1943 – 5/2014

- Pioneer in collaboration software and workflow systems

**GROUPWARE**  
**SOME ISSUES AND EXPERIENCES**  
C.A. Ellis, S.J. Gibbs, and G.L. Rein

Groupware reflects a change in emphasis from using the computer to solve problems to using the computer to facilitate human interaction. This article describes categories and examples of groupware and discusses some underlying research and development issues. GROVE, a novel group editor, is explained in some detail as a salient groupware example.

laboration of many specialists, including social scientists and computer scientists. CSCW looks at how

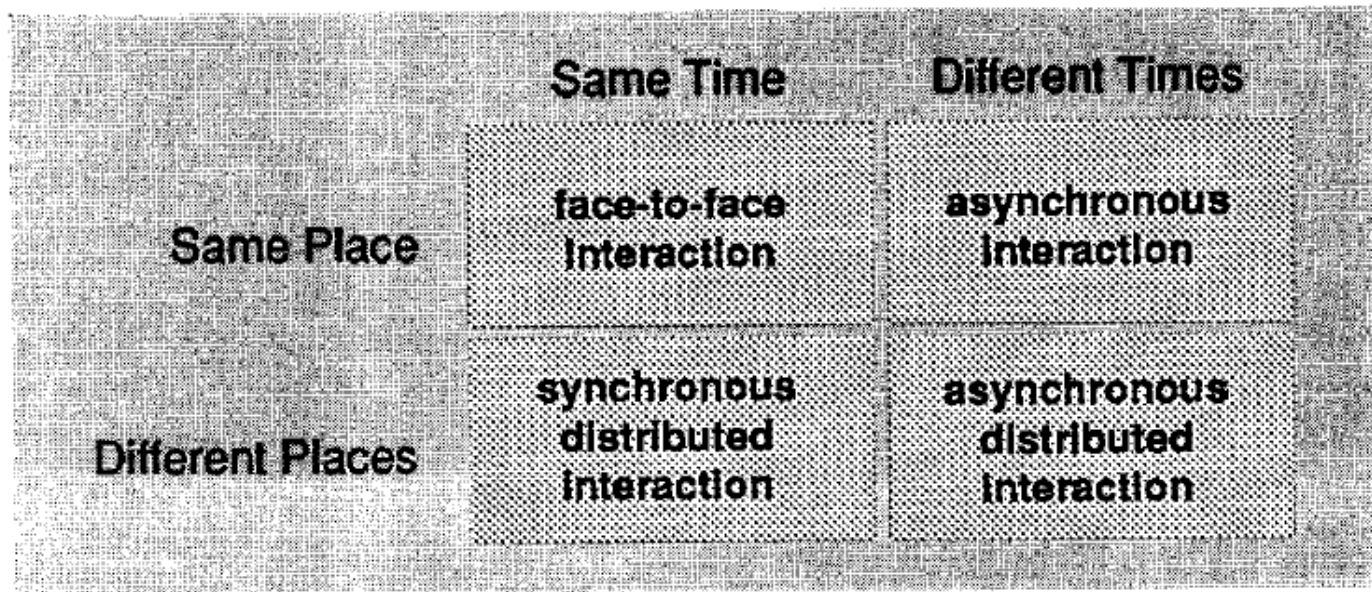
in this larger sense and delineates classes of design issues facing groupware developers. It is divided

**C.A. Ellis,  
S.J. Gibbs, and  
G.L. Rein**



**COMMUNICATIONS OF THE ACM/January 1991/Vol.34, No.1**

# Taxonomy of Groupware



# Office Automation (1979)

- SCOOP (Wharton and Sisman)
- OfficeTalk (Skip Ellis – Xerox Park)



File Index F1			
Memo	ter	Dorothy Brown	
Blank Stock Index		Larry Blue	
Dues		Edward Black	
Personal Letter		ACM	
		Joe Rainbow	

Out-basket			
Trace	Recipient	Subject	Sent
	John Green	Vacation Request	6/05/79
			6/08/79
			6/10/79

In-basket			
Trace	Sender	Subject	Received
	Dorothy Brown	Production Schedule	6/10/79
	John Green	Vacation Time	6/10/79
	Alice White	Budgets	6/11/79
	Edward Black	Salary Adjustment	6/11/79
		Date	Date
		Date	Date
		Date	Date

Receive Print Copy File Send

International Widgets, Inc.  
123 Color Way  
Emerald City, CA 94304

TO: Oliver Rainbow      DATE: 6/11/79

FROM: Edward Black

SUBJECT: Salary Adjustment

I have carefully reviewed your personnel folder and your progress

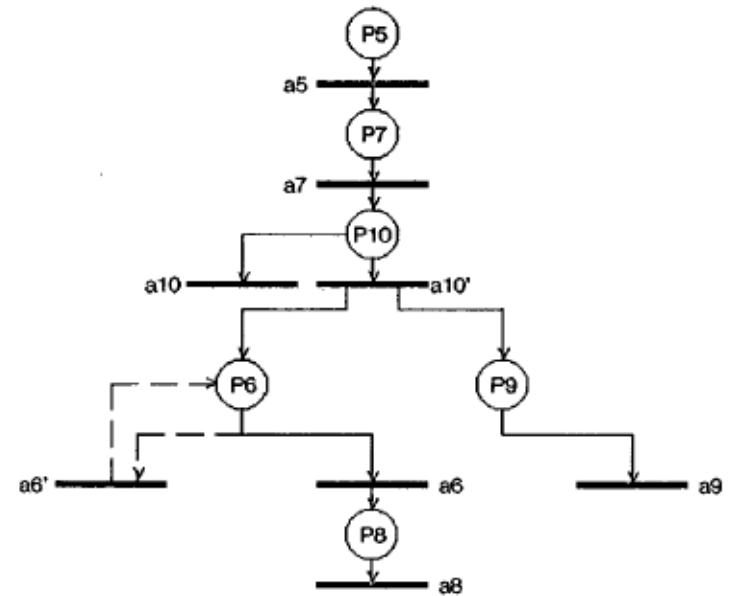
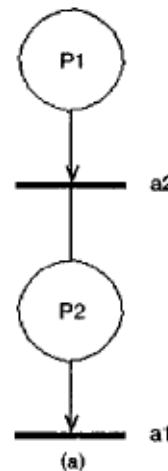


FIGURE 2. (a) Receptionist agent; (b) order administrator agent.



# Challenges at the time

Office Information Systems and Computer Science

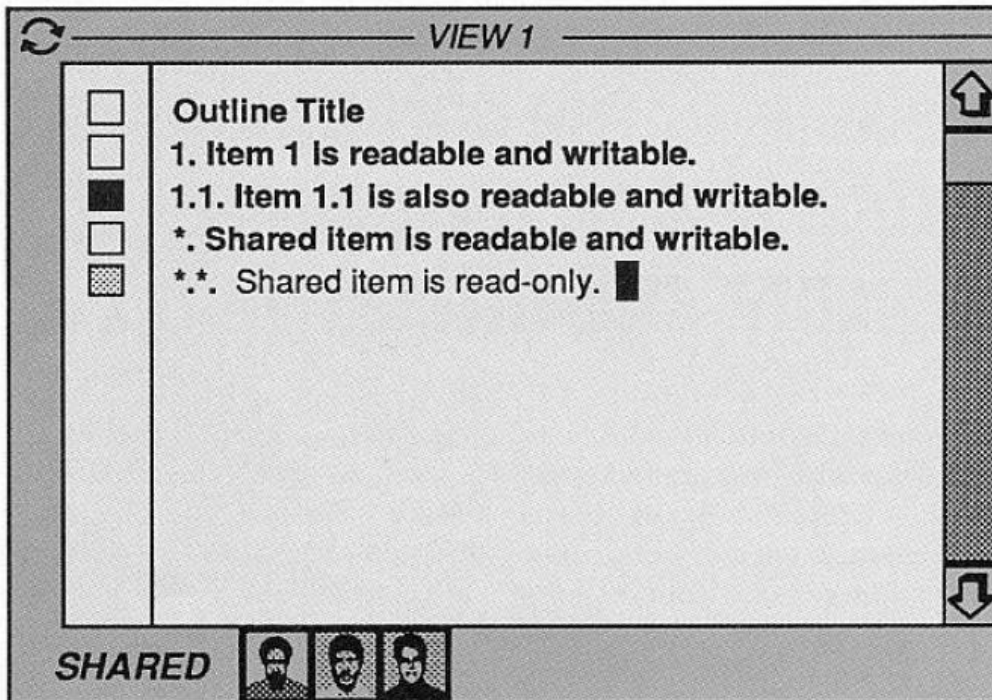
Clarence A. Ellis and Gary J. Nutt

- A programming language that can be **used by a Clerical worker**
- Software engineering – **modeling and validation**
- Operating Systems and database – distribution of data, **consistency and security**
- Measurement and Evaluation
- Communication - teleconferencing
- Other area – psychology, social implications

# Collaborative Editor



- GROVE Group Editor



users ask “Isn’t it chaotic to all edit in the same document, even the same paragraph, at the same time?” and “Why would a group ever want to edit in the same line of text at the same time?” Indeed, this editor is at

# Design issues (at the time)

- WYSIWIS (What you see is what I see)
  - Relaxed vs strict
- Group Processes (Organising the collaboration)
- Concurrency Control (Optimist vs Pessimistic)
- Over issues

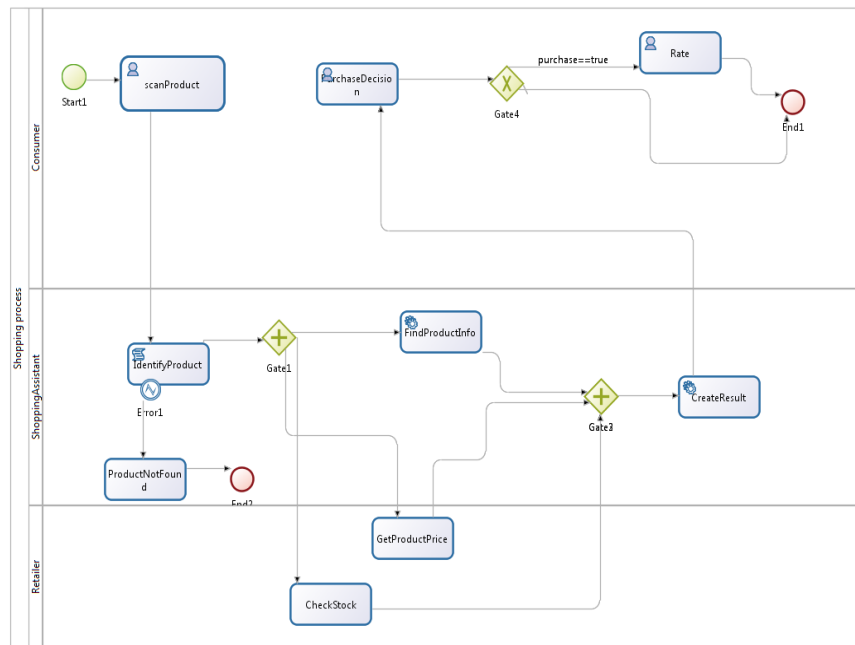




# BPM systems



- Model and automate office processes
- Integrate Information Systems



# Collaborative BPM

## Social BPM

Support collaboration between people and organisations

More flexible/supports change

Allow more interactions between participant

Support for inter organisational process





# BonitaBPM V6 (2015)



The screenshot displays the Bonita Studio interface for a process named "Buy a MINI (3.2)". The main workspace shows a BPMN diagram with the following elements:

- Start1**: A green circle representing the process start.
- Model choice**: A task represented by a person icon.
- Color selection**: A task represented by a person icon.
- Accessories**: A task represented by a person icon.
- Availability check**: A task represented by a gear icon.
- Availability info**: A task represented by a person icon.
- Decision**: A yellow diamond connector with two outgoing paths: "Mini not available" and "Mini available".
- Test Drive**: A task represented by a person icon, which is a sub-process of the "Mini available" path.
- Payment options**: A task represented by a person icon, which is a sub-process of the "Ready to order" path from the "Test Drive" task.
- Order**: A task represented by a gear icon.
- Recap**: A task represented by a person icon.
- Order finished**: A red circle representing the end of the process.
- Order cancelled**: A red circle representing an alternative end state from the "Test Drive" task.

The configuration panel at the bottom right shows the following details for the "Buy a MINI" process:

- Pool**: Buy a MINI
- Name**: Buy a MINI (Buy\_a\_MINI) Edit...
- UserXP**: (Empty field)
- Version**: 3.2
- Actor Selectors**: (Empty field)
- Connectors**: (Empty field)
- BAM**: (Empty field)
- Dependencies**: (Empty field)
- Description**: Design and order your car

# Inter organisational processes



The view-based approach to dynamic inter-organizational workflow cooperation

Issam Chebbi <sup>a</sup>, Schahram Dustdar <sup>b,\*</sup>, Samir Tata <sup>a</sup>

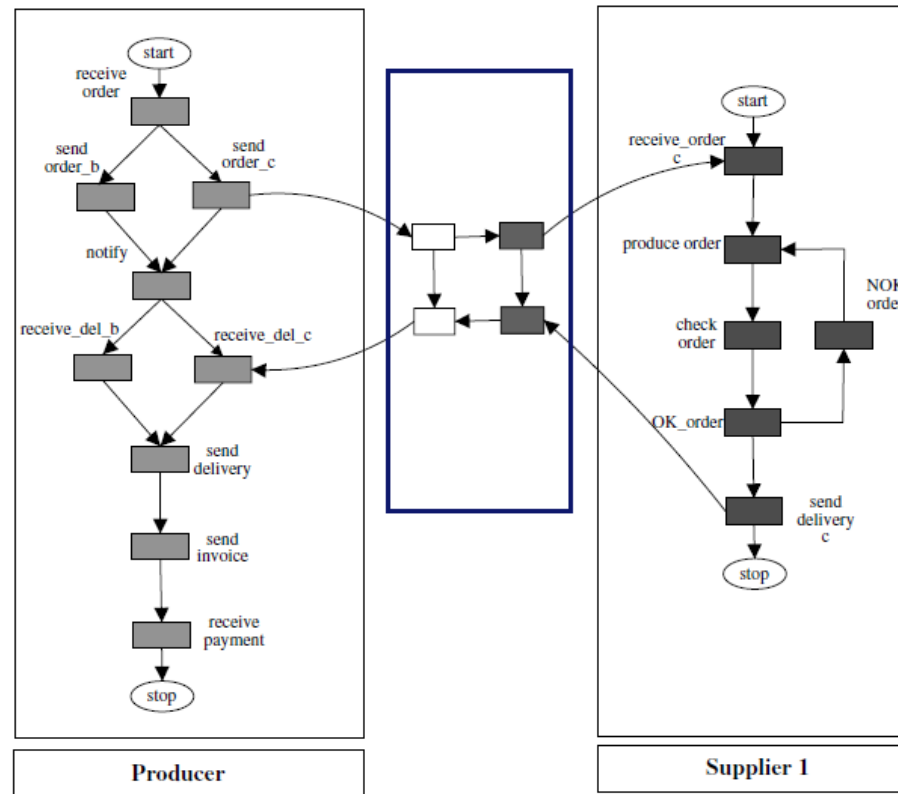


Fig. 4. Public vs. internal processes.

# Coordination tool



The screenshot displays a Trello board for the 'AtomicOpenShift Roadmap'. The board is organized into columns representing different stages of completion: 'Epic Backlog', 'Done (3.2)', 'Done (3.1)', 'Done (3.0)', and 'Done (2.x)'. Each card in the 'Done' columns includes a title, a description, and a progress indicator (e.g., '6/6', '10/10'). The 'Epic Backlog' column lists several tasks such as 'Seamless Developer Experience on OpenShift', 'Integrated CI / CD Workflows to Enable DevOps', and 'Mobile Services (mobile)'. On the right side, a 'Menu' panel shows a grid of member avatars and a list of recent activity, including updates from Dan McPherson regarding 'Improvements for JBoss and Java application development' and 'Improve the development experience for individual stacks and frameworks'.

Trello used by OpenShift



# Data sharing and collaborative editing

- Version and Distributed version control Systems
- Wiki
- Synchronous collaborative editors
- File Sharing

# Version Control Systems and File sharing



- CVS, SVN, Git, ...



OneDrive  
for Business



Google Drive for Work



amazon WorkDocs



Dropbox

# Workspace Awareness



- What are the other doing

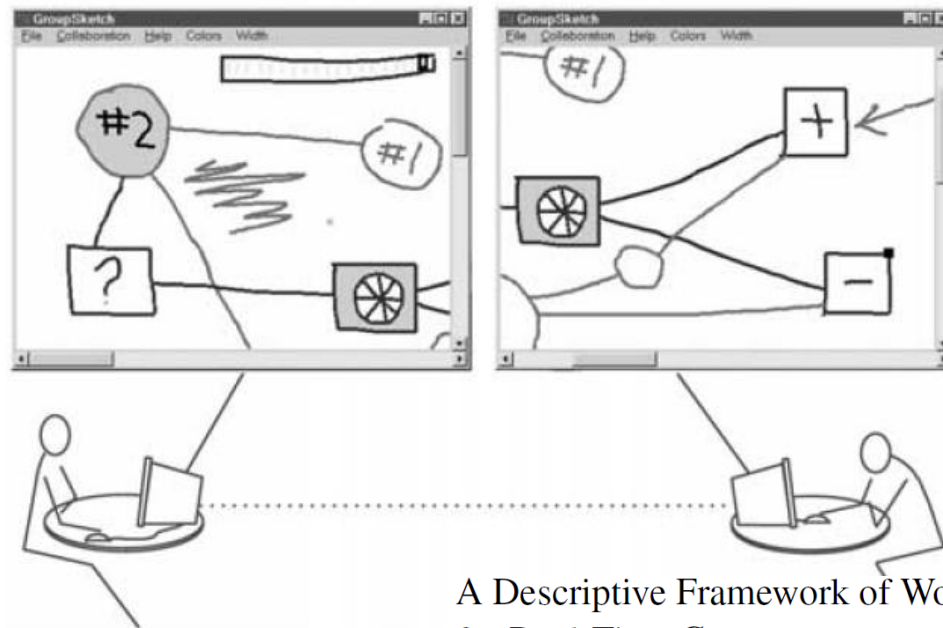


Figure 1. GroupSketchpad, a rel

A Descriptive Framework of Workspace Awareness  
for Real-Time Groupware

CARL GUTWIN<sup>1</sup> & SAUL GREENBERG<sup>2</sup>

# Example : the Radar view



- Where are the other – what are they doing

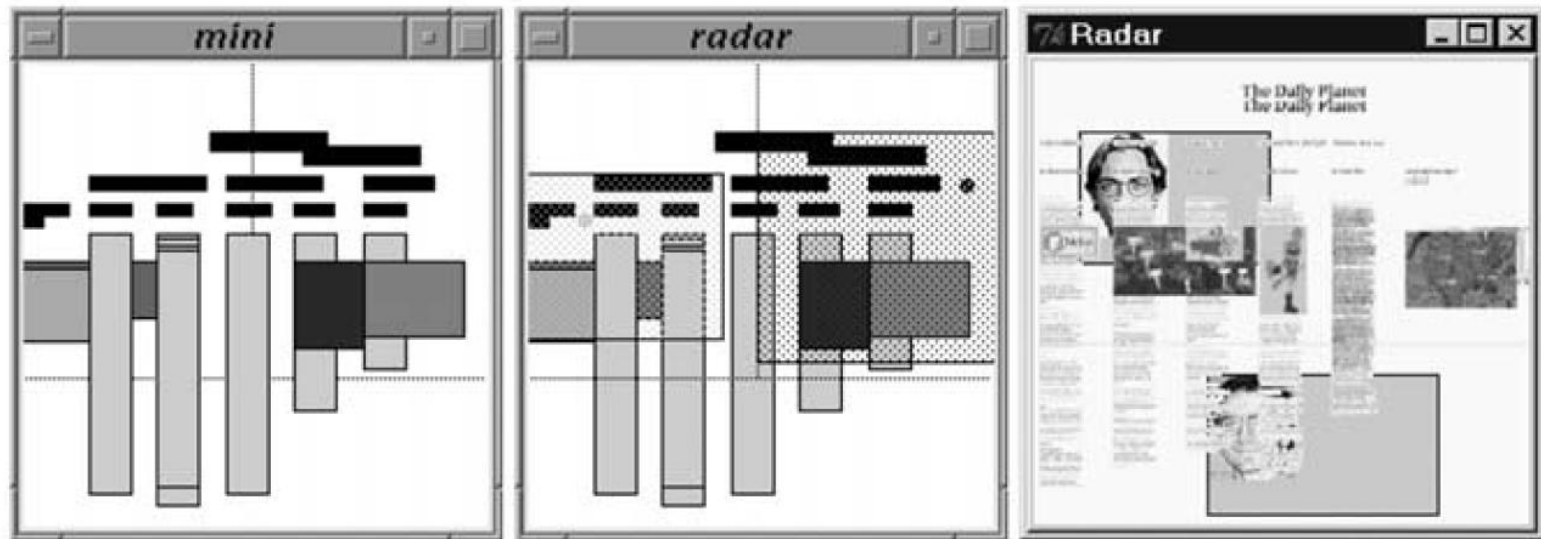


Figure 4. Three versions of the GroupKit radar view. Version 4a shows object movement only; 4b adds location information by showing each person's main view as a shaded rectangle; 4c adds photographs for participant identification.



# Real time collaborative editing



Maintaining replicas in real time

Ensure eventual consistency

Take care of user intention

Google Doc/EtherPad

# Writing workshop on Framapad

Hébergé par Bearstech Framapad (limites) Plein écran

poieo 4.8 Administration

01 26 2015 18 55:43

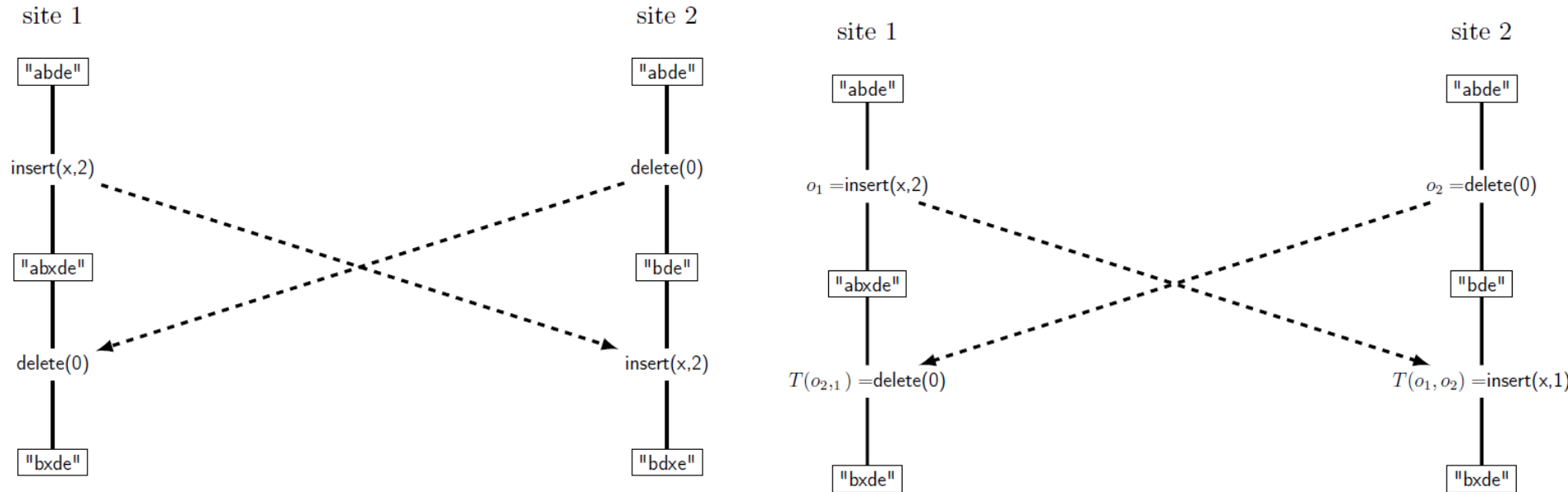
poieo 4.8 Version 646 Saved Jan 26, 2015

Où Est-ce que la Loire-Atlantique fait partie de la Bretagne ?  
Au même endroit mais de l'autre côté de la route les premières lunettes 3D en carton vieux stylo cassé utilisée comme carabine  
Panneau zone 30  
Zone 70 (encore)  
En arrivant au STOP, à ma droite le panneau de publicité « Auberge de La Coudre » avec le numéro  
Je marche, c'est chiant, et je ne suis pas prête d'arriver ! 20 minutes à pied. Ou plus !  
Il était une fois la pièce du puzzle qui réussit à réunir la France, petit pays d'Europe. Etrange paradoxe.  
Un bar au coin de cette rue, un autre au bout de celle-ci. Une église au bout de cette rue, une autre au bout de celle-ci. Des touristes, des touristes, des touristes, brandissant leurs appareils photos.  
J'habite dans une maison d'un quartier d'une petite ville, la ville est une cuvette. Ce pays de vaches !  
J'habite une autre maison qui paraît très petite, une maison qui bouge toujours avec moi.  
Tous voqués mais finissant comme des « moutons ».  
Je suis un élément. Un élément d'une liste très organisée. Et puis si on cherche un peu, on tombe aussi sur des blogs de pâtisseries et de mode.  
Une réussite sociale à première vue. Céline Dion.  
Un numéro quelconque, numéro 4.  
Et si on cherche un peu, il n'y a pas tant de personnes qui sont connues (Edgar Allan Poe, Quentin Tarantino, Roger Federer, Tim Burton).  
Puis je descends par la cour du collège pour enfin arriver dans la cour du lycée. C'est alors que j'ai sombré.  
Que l'oubli m'a englouti. Je me suis noyée. Je devais avoir 10 ans. Je devais avoir 10 ans. Je devais avoir 10 ans. c'était sans doute en 2006.  
Je me souviens avoir eu mon premier ordinateur en CM1 ou en CM2, gros écran et centrale, ordinateur beige mais pas du moment où l'on a du le jeter sûrement pendant ma ferme.  
 Brusque changement de direction. D753 et tout d'un coup c'est beaucoup plus plat.  
 Peu important les noms, peu important les personnages, car elle est chacun d'eux.  
 Peu importe l'auteur, car seul importe son œuvre.  
 C'est quoi un rêve ?  
 Rêver c'est important plus important que d'attendre le métro.  
 Il y a Carnac en Bretagne, avec sa plage et sa nature. Il y a Nairobi au Kenya, avec ses parcs et ses grandes étendues solitaires. Il y a Bombay, en Inde, et sa culture magique. Il y a le Machu Picchu, et ses montagnes splendides. Il y a Palerme en Sicile, et son histoire passionnante.  
 Bonjour, dégustation de melon. Et pâtisseries. Choses qui ont une grâce raffinée. C'est comme les bigorneaux !!!  
 Sur place ou à emporter ?  
 C'est une affaire sérieuse, ça vous suit toute une vie. Mais quel rapport avec les questions précédentes ? Plein de mystères.  
 STOP !! N'importe quoi. Je vais pas manger ça. C'est pas la saison.

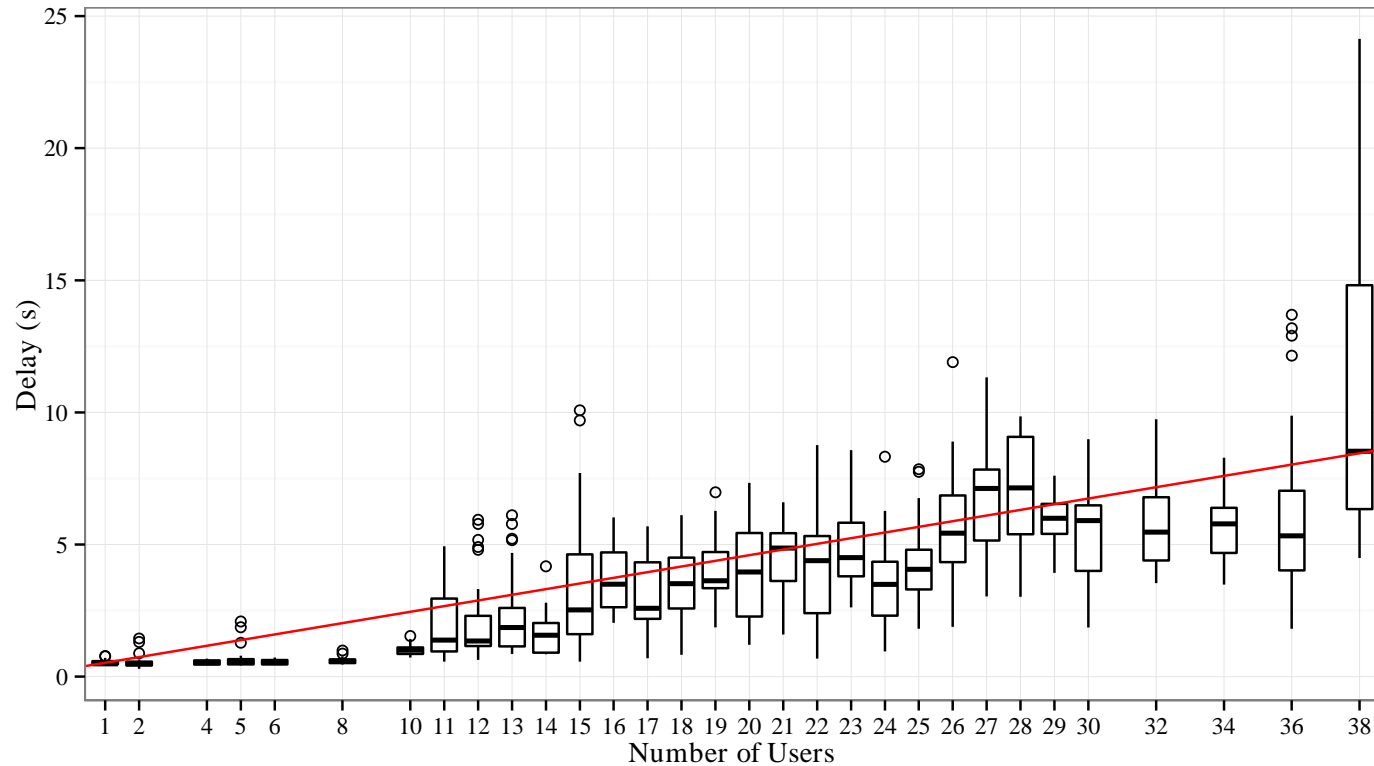
<https://vimeo.com/117890611>

# Operational Transformation

Enforce eventual consistency



# Delays in GoogleDocs



Typing speed:  
2 chars/sec



# Conflicts management



How to avoid them when the number of users grows

1 40 ans d'interaction homme-machine : points de repère et perspectives

2 Depuis qu'il existe les ordinateurs, la question de l'interface avec les utilisateurs s'est posée. En quarante ans, l'interaction homme-machine (IHM) a permis de rendre l'informatique accessible à un plus grand nombre, d'une façon que nul ne pouvait prédire. Que serait le visage de l'informatique aujourd'hui sans les interfaces graphiques ?



pouvais



interfasses

1 40 ans d'interaction homme-machine : points de repère et perspectives

2 Depuis qu'il existe les ordinateurs, la question de l'interface avec les utilisateurs s'est posée. En quarante ans, l'interaction homme-machine (IHM) a permis de rendre l'informatique accessible à un plus grand nombre, d'une façon que nul ne pouvait prédire. Que serait le visage de l'informatique aujourd'hui sans les interfaces graphiques ?



pouvaitt



interfacces

# What about today's topic



# About Large SCALE

- Hundreds or thousands of people
  - Crowds, communities, social networks
- Hundreds of organisations
- Thousands of services

# Large scale collaborative editing

users ask “Isn’t it chaotic to all edit in the same document, even the same paragraph, at the same time?” and “Why would a group ever want to edit in the same line of text at the same time?” Indeed, this editor is at



# Pad strasbourg nuit debout



More than 70 participants

17/04/2016 23:10:22

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

Version 23979 Enregistré le 17 avril 2016

Auteurs : Alex, anonyme, Tiffany, Tiffany, Alex / Hackerspace, Val, Isotta, Jol, Mikael, G, Nath, Alice, Christoph, Antoine, viny, Martin, dimtriads, Heine, Ben, Hay, Samten + 55 auteurs anonymes ( ... )

Pour que les pads restent des outils fonctionnels, veuillez copier le plus rapidement possible les comptes rendus sur les pages wiki à cet effet ( ici pour vous : <https://wiki.nuitdeboutstrasbourg.tk/dokuwiki/doku.php?id=actions> )

Veillez à ce que la mise en page soit propre et que ce soit corrigé et structuré. Les pads pourront ainsi être réservés aux discussions plus techniques sur les actions à mener au sein de la branche. Une fois un point résolu, vous pouvez le copier-coller en bas de page pour qu'il reste disponible en consultation d'archive ou bien l'effacer si ça n'a plus d'importance fonctionnelle. ( ne déroutons pas les nouveaux venus avec trop de contenu non structuré.

Veillez également à afficher en dessous de ce message un bref résumé des objectifs principaux de la branche pour que les gens sachent comment interagir avec les autres.

Merci de laisser ce message en haut de page pour le moment

-----

Agenda

-----

- Lundi 18 avril - 8h30 - place Kléber : distribution de café et/ou de petit dej' place Kléber  
info : <https://strasbourg.nuitdebout.fr/pad/p/distribCa%C3%A9>  
Apporter, thermos, goblets, thé, eau chaude, sucre, carton, feutres, prospectus ...
- mardi 19 avril - 18h - à république: atelier "voix" suivi ou complété de "techniques de prise de parole"  
- "voix" pour ne pas se casser la voix pendant la manifestation du lendemain  
- techniques de prise de parole pour parler devant un auditoire, une caméra, un journaliste ...
- mercredi 20 - 14h - Place Kléber : manifestation contre la loi travail à l'initiative des étudiants.  
Départ Place Kléber, arrivée place de la Rep.
- jeudi 21 - 17h30 - place Kléber : distribution de café <https://strasbourg.nuitdebout.fr/pad/p/distribCa%C3%A9>
- vendredi 22 - 11h30 - marché à Cronembourg : Tractes et contacte avec les habitants à côté du CNRS
- Samedi 23 après-midi : ateliers : la loi travail - logement - monnaie locale Le Stück
- mercredi 27 midi : intervention devant l'ENA pour dialogues et interview, en préparation

<https://nuitdeboutstrasbourg.tk/dokuwiki/doku.php?id=actions> Consultations en ligne

-----

**Bienvenues sur le pad du groupe Actions !**

N'oubliez pas de faire remonter vos comptes rendus les ami-e-s ... surtout de votre groupe ! :

Samedi 16 avril :

- Lundi 18 avril 8h30 : distribution de café et/ou de petit dej' place Kléber  
pad dédié aux futures distribution de café : <https://strasbourg.nuitdebout.fr/pad/p/distribCa%C3%A9> Concernant ce lien, ou le trouve-t-on mis à part ici ? pas forcément facile d'y accéder pour les personnes voulant se greffer sur l'action en effet.  
Besoin de goblets ?
- mardi 19 - 18h à république: atelier "voix" pour ne pas se casser la voix pendant la manifestation du lendemain

<https://strasbourg.nuitdebout.fr/pad/p/Actions/timeslider#23979>

# Real Time Wikipedia



WIKIPEDIA  
The Free Encyclopedia

Article: **Boston Marathon bombings: Revision history**

View logs for this page

Breakdown history

From year (and earlier): 2014 From month (and earlier): All Tag filter: Go

For any version listed below, click on its date to view it. For more help, see Help:Page history and Help:Edit summaries.

External tools: Revision history statistics • Revision history search • Contributors • Edits by user • Number of watchers • Page view statistics • (diff) • Difference from current version, (prev) • Difference from preceding version, (next) • Minor edit, (minor) • Automatic edit summary preview (edit) View newer 50 (older 50) (20 | 100 | 250 | 500)

**Compare selected revisions**

10:51, 15 April 2013 Jamesdavis (talk | contribs) (2,263 bytes) (-188) (undo)

10:51, 15 April 2013 The ed17 (talk | contribs) (2,263 bytes) (+18) (break) (undo)

10:51, 15 April 2013 Krishna (talk | contribs) (2,045 bytes) (+62) (undo)

10:51, 15 April 2013 Theopolime (talk | contribs) (1,983 bytes) (+44) (undo)

10:50, 15 April 2013 The ed17 (talk | contribs) (1,938 bytes) (-24) (undo)

10:50, 15 April 2013 Kennvido (talk | contribs) (1,983 bytes) (+7) (update) (undo)

10:49, 15 April 2013 James12345 (talk | contribs) (1,962 bytes) (+49) (undo)

10:49, 15 April 2013 Crochfates (talk | contribs) (1,338 bytes) (-4) (undo) (programmer correction) (undo)

10:49, 15 April 2013 The Rambling Man (talk | contribs) (1,342 bytes) (-529) (format) (undo)

10:49, 15 April 2013 Krishna (talk | contribs) (1,864 bytes) (+28) (undo)

10:49, 15 April 2013 Kennvido (talk | contribs) (1,806 bytes) (+538) (update) (undo)

10:49, 15 April 2013 The ed17 (talk | contribs) (1,298 bytes) (-10) (already referenced) (undo)

10:48, 15 April 2013 The Rambling Man (talk | contribs) (1,313 bytes) (+4) (italics) (undo)

10:48, 15 April 2013 80.90.195.239 (talk) (1,309 bytes) (+27) (undo)

10:47, 15 April 2013 The Rambling Man (talk | contribs) (1,282 bytes) (-1) (comma) (undo)

10:47, 15 April 2013 The Rambling Man (talk | contribs) (1,283 bytes) (-255) (reuse | Script assisted date formatting) (undo)

10:47, 15 April 2013 67.78.59.121 (talk) (1,538 bytes) (-1) (undo)

10:46, 15 April 2013 The Rambling Man (talk | contribs) (1,539 bytes) (+88) (reuse) (undo)

10:46, 15 April 2013 Sethant (talk | contribs) (1,451 bytes) (-5) (correct to one hour after finish) (undo)

10:46, 15 April 2013 ZevEisenberg (talk | contribs) (1,456 bytes) (-6) (Delete extraneous '1' (undo)

10:45, 15 April 2013 The Rambling Man (talk | contribs) (1,482 bytes) (-77) (no dead confirmed) (undo)

10:45, 15 April 2013 The Rambling Man (talk | contribs) (1,539 bytes) (-23) (stop forcing) (undo)

10:45, 15 April 2013 67.78.59.121 (talk) (1,816 bytes) (-35) (undo)

10:44, 15 April 2013 Sethant (talk | contribs) (1,551 bytes) (+276) (add time) (undo)

10:43, 15 April 2013 The ed17 (talk | contribs) (1,275 bytes) (-38) (add) (undo)

10:43, 15 April 2013 Kennvido (talk | contribs) (1,313 bytes) (+116) (update) (undo)

10:43, 15 April 2013 The Rambling Man (talk | contribs) (1,187 bytes) (-10) (Script assisted date formatting) (undo)

10:42, 15 April 2013 The Rambling Man (talk | contribs) (1,187 bytes) (+98) (date) (undo)

10:42, 15 April 2013 DragonHawk (talk | contribs) (1,169 bytes) (-77) (listening right now and they're saying no confirmed fatalities) (undo)

10:41, 15 April 2013 The Rambling Man (talk | contribs) (1,246 bytes) (+4) (link) (undo)

10:41, 15 April 2013 The ed17 (talk | contribs) (1,242 bytes) (-29) (added Category:Boston Marathon using HOAC) (undo)

10:40, 15 April 2013 The Rambling Man (talk | contribs) (1,213 bytes) (-82) (stop copying and pasting from the main) (undo)

10:40, 15 April 2013 Kennvido (talk | contribs) (1,398 bytes) (+29) (added Category:Boston Marathon using HOAC) (undo)

10:40, 15 April 2013 Flaps (talk | contribs) (1,346 bytes) (-7) (undo)

10:39, 15 April 2013 The ed17 (talk | contribs) (1,358 bytes) (-66) (no iz th email) (undo)

10:39, 15 April 2013 The ed17 (talk | contribs) (1,415 bytes) (-) (the ed17 moved page Boston Marathon explosion to Boston Marat) (undo)

10:39, 15 April 2013 Kennvido (talk | contribs) (1,415 bytes) (+202) (update) (undo)

10:37, 15 April 2013 Elnika (talk | contribs) (1,415 bytes) (-) (590) (undo)

10:37, 15 April 2013 The Rambling Man (talk | contribs) (1,213 bytes) (-37) (no) (undo)

10:36, 15 April 2013 Lugnuts (talk | contribs) (1,258 bytes) (+41) (undo)

10:36, 15 April 2013 Theopolime (talk | contribs) (1,213 bytes) (+5,998) (Reverted to revision 55054320 by Theopolime. fix (small) (undo)

10:36, 15 April 2013 Theopolime (talk | contribs) (29 bytes) (-208) (Reverted 1 edit by Stothenes12 (talk) Corrected notable cover) (undo)

10:34, 15 April 2013 Stothenes12 (talk | contribs) (235 bytes) (-295) (dominate page for deletion using Page Curation (subst) (undo)

10:34, 15 April 2013 What is wrong with you people (talk | contribs) (29 bytes) (1,188) (Does not seem to be an article) (undo)

10:34, 15 April 2013 Theopolime (talk | contribs) (1,213 bytes) (+29) (link) (undo)

10:33, 15 April 2013 Kevin W. (talk | contribs) (1,181 bytes) (-12) (undo)

10:33, 15 April 2013 Theopolime (talk | contribs) (1,181 bytes) (+93) (fix) (undo)

10:32, 15 April 2013 Theopolime (talk | contribs) (1,373 bytes) (+28) (what) (undo)

10:31, 15 April 2013 Theopolime (talk | contribs) (1,051 bytes) (+823) (inv to article) (undo)

10:27, 15 April 2013 Lugnuts (talk | contribs) (28 bytes) (-28) (Redirected page to Boston Marathon) (undo)

**Compare selected revisions**

10:27, 15 April 2013 Lugnuts (talk | contribs) (28 bytes) (-28) (Redirected page to Boston Marathon) (undo)

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cur | prev

19:49, 15 April 2013 Kristijh (talk | contribs) .. (1,864 bytes) (+28) .. (undo)

cur | prev

19:48, 15 April 2013 Kennvido (talk | contribs) .. (1,836 bytes) (+538) .. (update) (undo)

cur | prev

19:48, 15 April 2013 The ed17 (talk | contribs) .. (1,298 bytes) (-15) .. (already referenced) (undc)

cur | prev

19:48, 15 April 2013 The Rambling Man (talk | contribs) .. (1,313 bytes) (+4) .. (italics) (undo)

cur | prev

19:48, 15 April 2013 80.90.195.239 (talk) .. (1,309 bytes) (+27) .. (undo)

cur | prev

19:47, 15 April 2013 The Rambling Man (talk | contribs) m... (1,282 bytes) (-1) .. (-comma) (undc)

cur | prev

19:47, 15 April 2013 The Rambling Man (talk | contribs) .. (1,283 bytes) (-255) .. (reuse | Script a

cur | prev

19:47, 15 April 2013 67.78.59.121 (talk) .. (1,538 bytes) (-1) .. (undo)

cur | prev

19:46, 15 April 2013 The Rambling Man (talk | contribs) .. (1,539 bytes) (+88) .. (reuse) (undo)

cur | prev

19:46, 15 April 2013 Sethant (talk | contribs) .. (1,451 bytes) (-5) .. (correct to one hour after finish) (undc)

cur | prev

19:46, 15 April 2013 ZevEisenberg (talk | contribs) m... (1,456 bytes) (-6) .. (Delete extraneous '1' (undc)

cur | prev

19:45, 15 April 2013 The Rambling Man (talk | contribs) .. (1,482 bytes) (-77) .. (no dead confirm) (undc)

cur | prev

19:45, 15 April 2013 The Rambling Man (talk | contribs) .. (1,539 bytes) (+23) .. (stop forcing) (ur

cur | prev

19:45, 15 April 2013 67.78.59.121 (talk) .. (1,516 bytes) (-35) .. (undo)

cur | prev

19:44, 15 April 2013 Sethant (talk | contribs) .. (1,551 bytes) (+276) .. (add time) (undo)

cur | prev

19:43, 15 April 2013 The ed17 (talk | contribs) .. (1,275 bytes) (-38) .. (add) (undo)

cur | prev

19:43, 15 April 2013 Kennvido (talk | contribs) .. (1,313 bytes) (+116) .. (update) (undo)

cur | prev

19:43, 15 April 2013 The Rambling Man (talk | contribs) .. (1,197 bytes) (+10) .. (Script assisted c

cur | prev

19:42, 15 April 2013 The Rambling Man (talk | contribs) .. (1,187 bytes) (+18) .. (date) (undo)

cur | prev

19:42, 15 April 2013 DragonHawk (talk | contribs) .. (1,169 bytes) (-77) .. (listening right now and

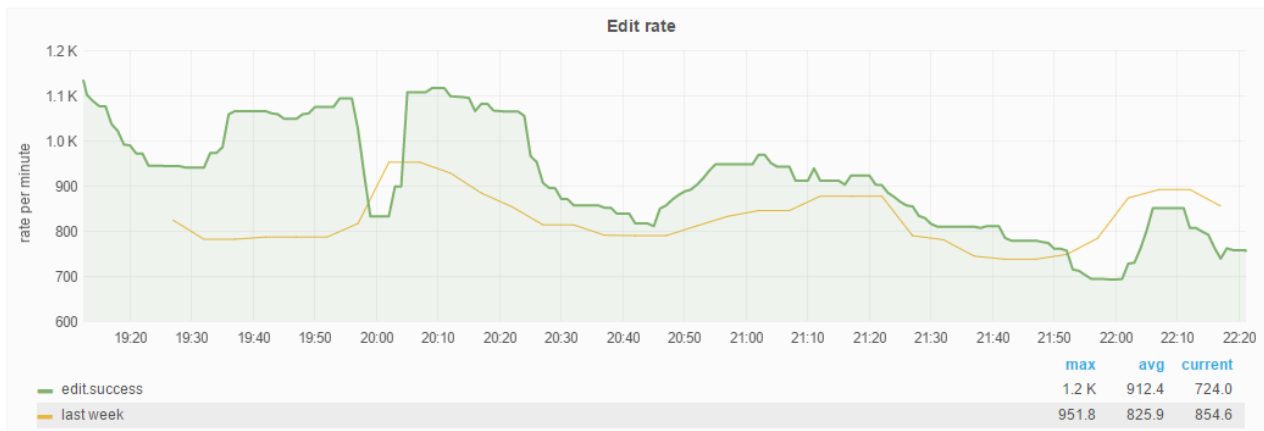
cur | prev

19:41, 15 April 2013 The Rambling Man (talk | contribs) .. (1,246 bytes) (+4) .. (link) (undo)

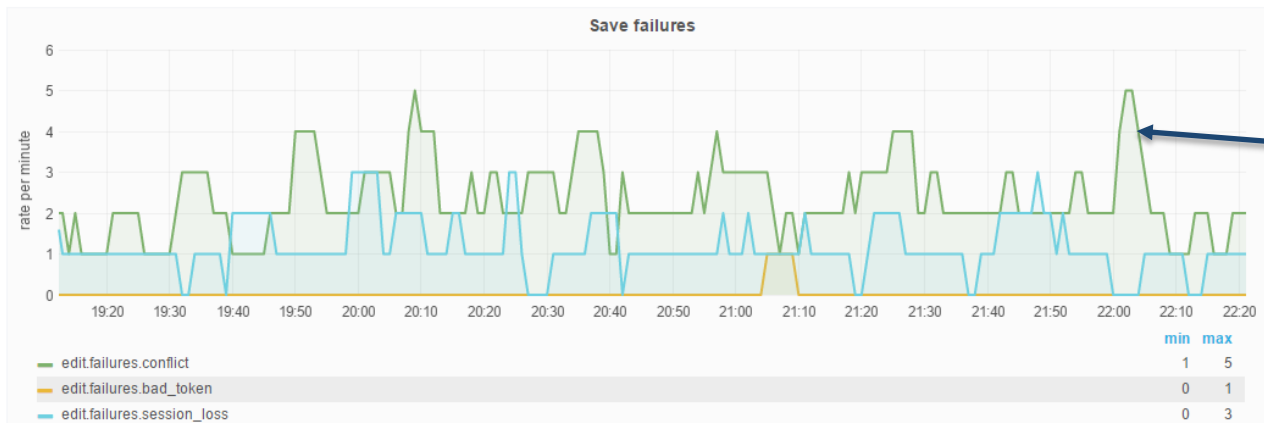
cur | prev

19:41, 15 April 2013 The ed17 (talk | contribs) (1,242 bytes) (+29) (added Category:Boston M

# Wikipedia edit conflicts



900 edit/mn



5 failure conflict/mn

<https://grafana.wikimedia.org/dashboard/db/edit-count>

# Centralized architecture ?



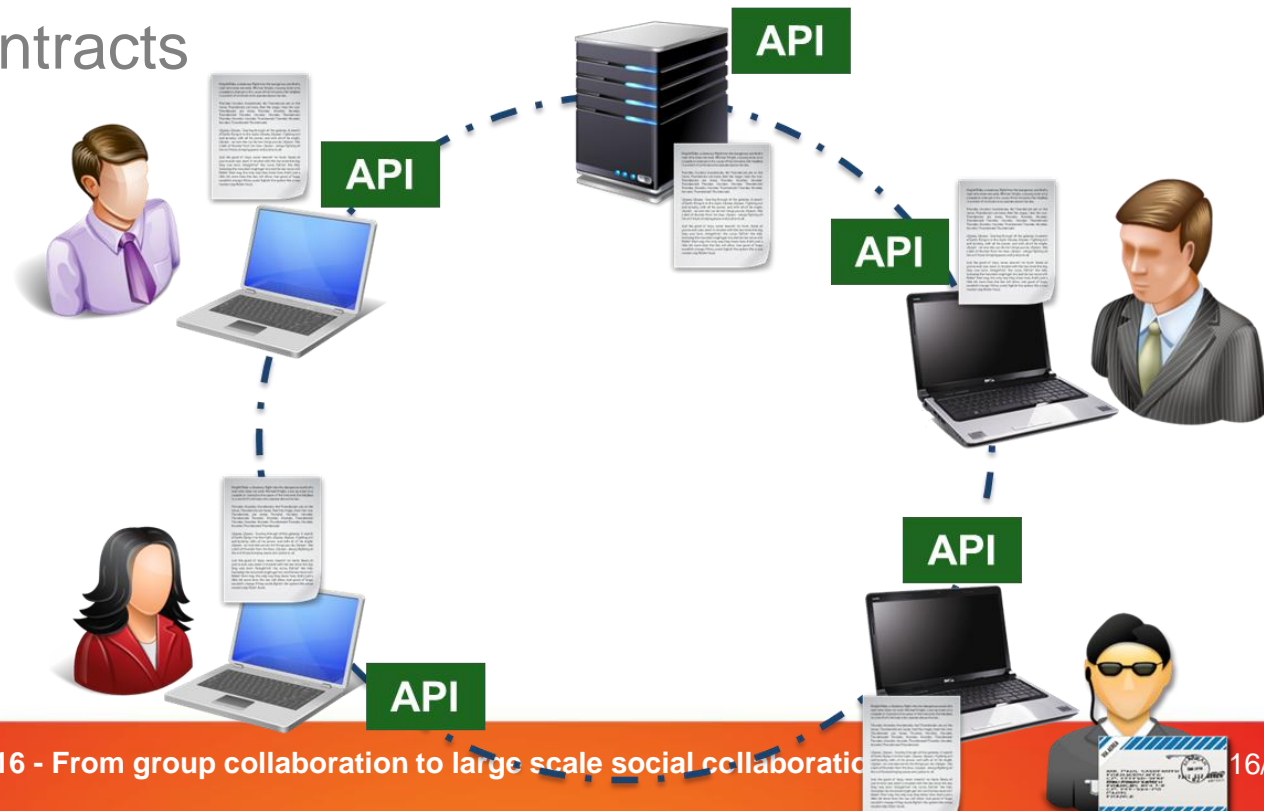


# Abstract/Configurable p2p architecture



## OpenPaas::NG

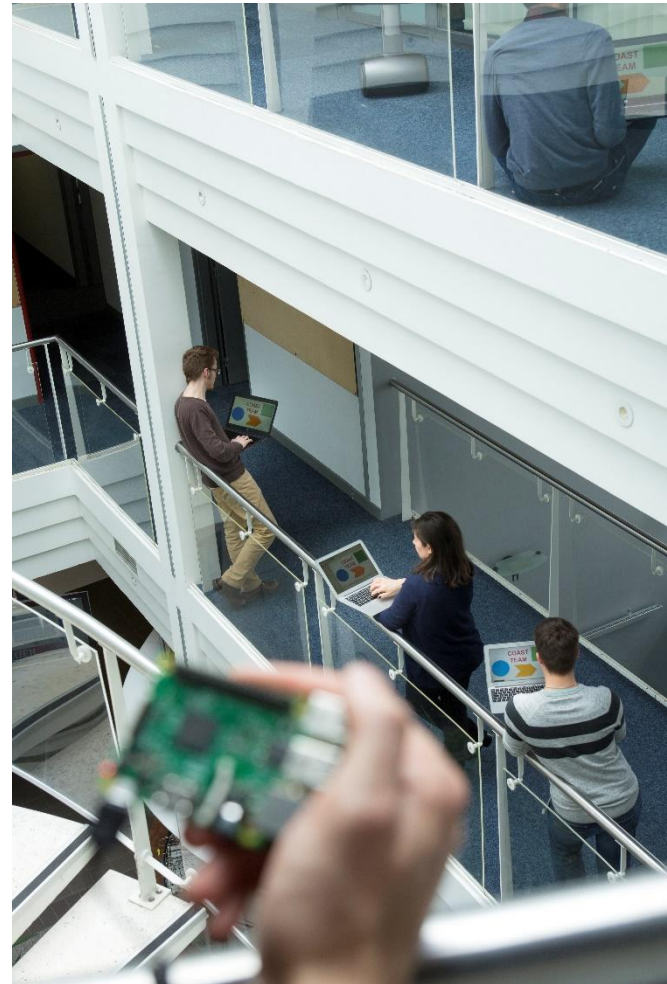
- Each partner decides of the control and of the contracts



# MUTE v2 – No central server

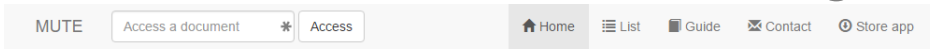


Photos Christian Morel



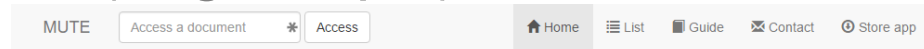
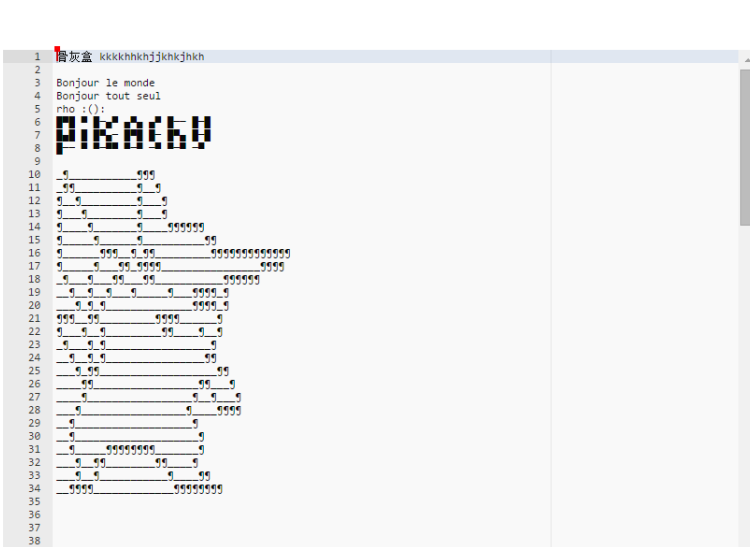
# The Mute P2P editor

- Based on CRDT Algorithm (LogootSplit)



Try MUTE, the Multi-User Text Editor

Switch to history mode  Switch to offline mode **Online!**



Try MUTE, the Multi-User Text Editor

Switch to history mode  Switch to online mode **Offline!**



<http://mute-collabedition.rhcloud.com/doc/wetice2016>

# Delays in MUTE

2 car./sec./utilisateurs  
1 à 40 utilisateurs





# Who is doing what ?



- Awareness at a large scale

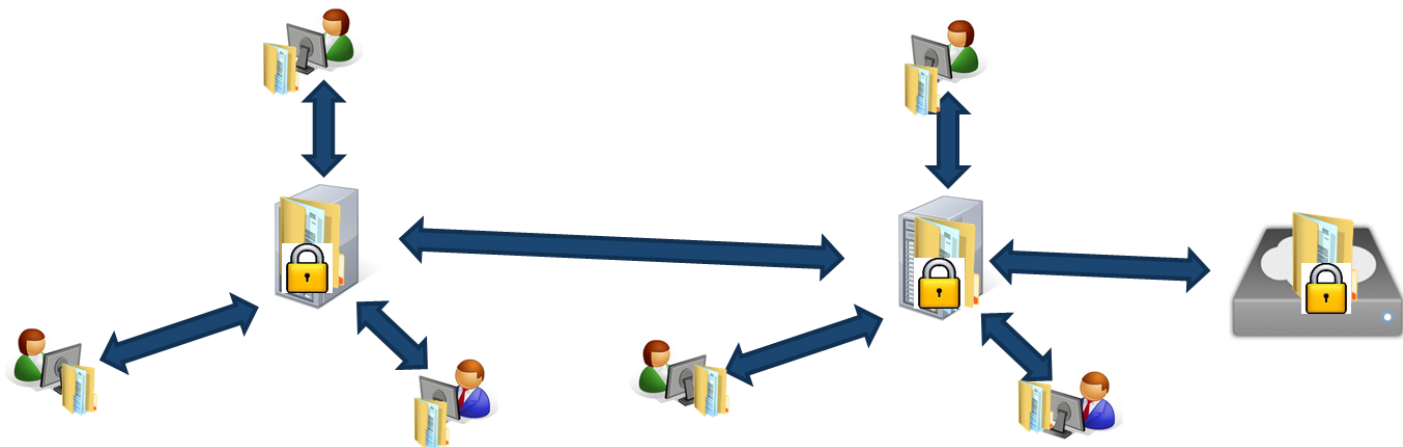




# A complex challenge : security and trust

- Who are the people I'm working with
- Collaboration data can be encrypted and not shared on the cloud (being investigated).
- Provides guarantees to the participants

Current Issue





# Coordination at a large scale



# Haiti Earthquake 2006

- 7.0 Magnitude earthquake – 3.5M people affected – 220.000 death (est.)
- **Hundreds** of responding organisations



# Unexpected event at an unexpected scale

- First responder : people
- Overwhelming answer from the international community (hundreds of NGO's)
- First important use of social network
- volunteer based crisis mapping
- <http://www.digital-humanitarians.com/>

# Hurricane Katrina 2005

- Category 5 Hurricane
- Caused breaches to flood protections structures
- 80% of the city of New Orleans Submerged (1500 deaths)





# Coordination issues

- Very wide area affected
- Several political decisions level
- Coordination issues during the evacuation

# The Danube floods

- 2002,2005,2006,...,2014
- Very common event – cross international borders
- Requires a dedicated organisation



# Coordination at a large scale

- Combination of human and services activities
- Composition of hundred of services
- Duration, kind of contribution, governance
- Various domains : logistic, crisis management, software development,

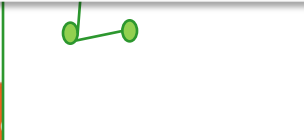
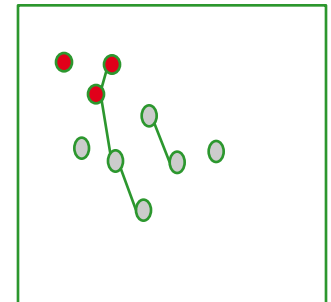
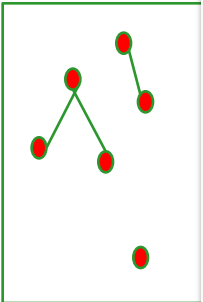
# Inter organisational issues



**“we are exchanging text information real-time through either cell or mobile units or satellite”**

**[..]**

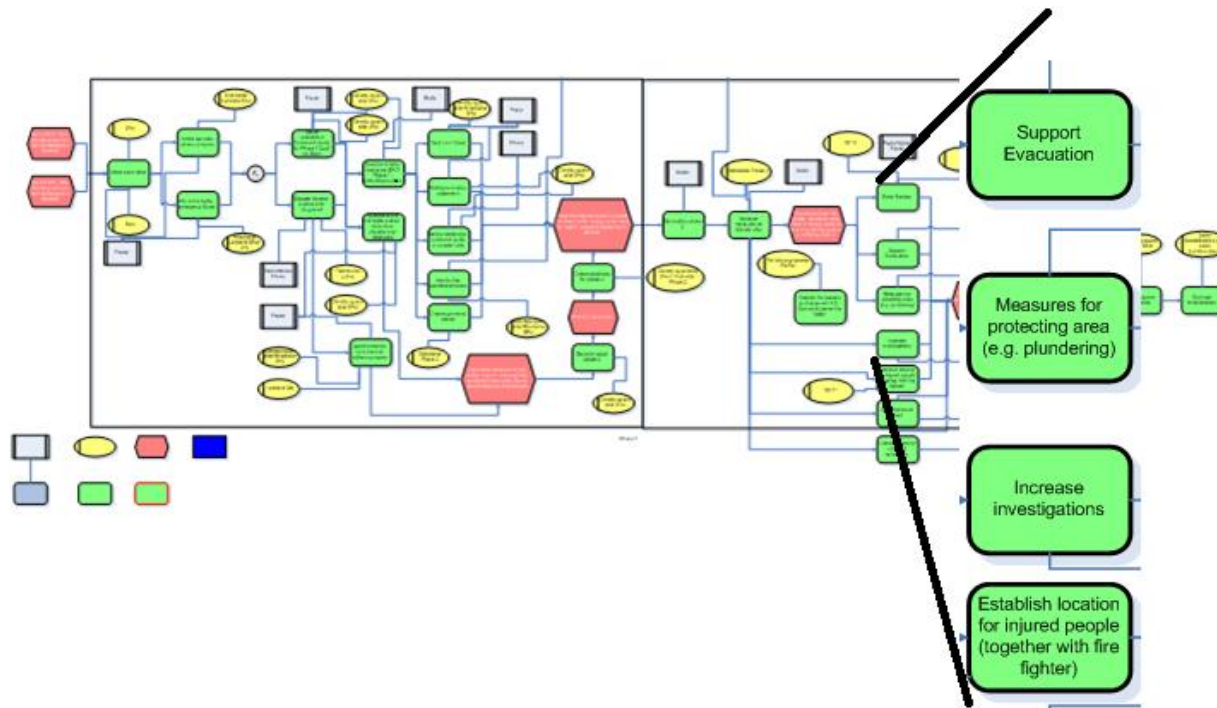
***“obvious the more complex a situation gets, for instance where you may have many organizations working collectively in order to accomplish a goal, but at the same time working independently in terms of their own interests, where you get in those in situation like that, you know it get to the point, to be so complex that it would be overwhelming”***



# Complex BP Modeling



- Outcome of a workshop with Firefighters



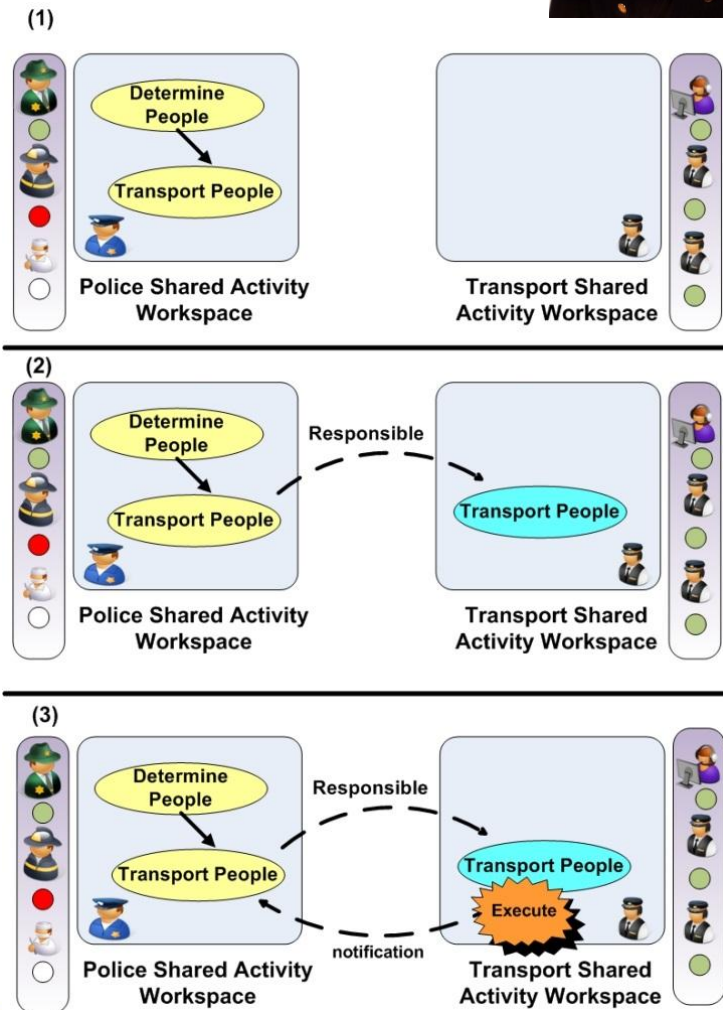


# Coordination awareness



- Activity awareness ?
- Coordination **without a central authority**
- Distribution of control
- Privacy

Still an issue today



# Crowdsourcing

Coordinating very large scale/long running simple activities

Combining human task and service in a process at a large  
scale

Centralised process with very distributed unknown  
performers

# Haiti Crisis Mapping

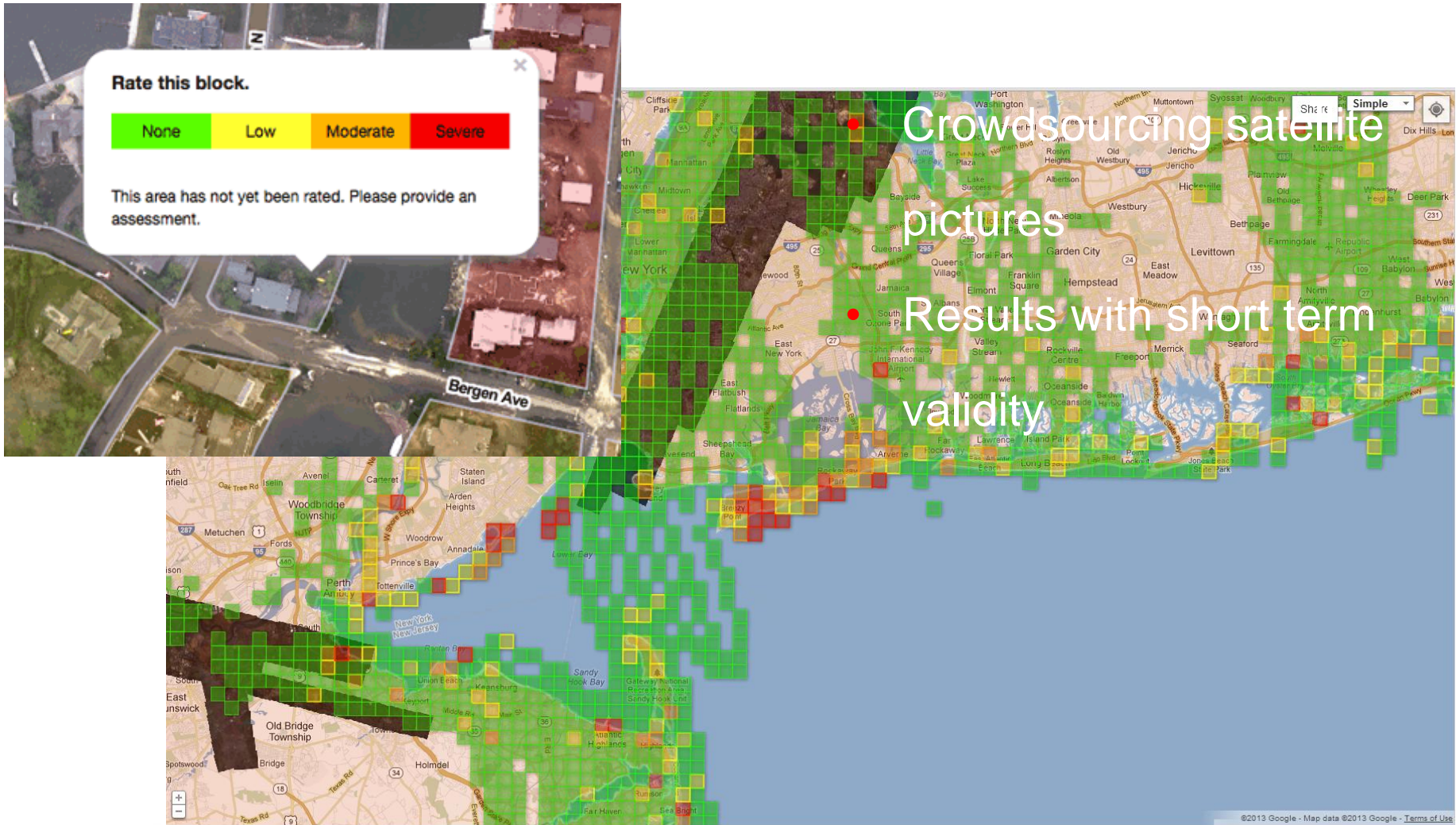
4636 project volunteers translated 25,186 SMS messages and numerous e-mail, Web, and social media communications, resulting in 3,596 reports that were actionable and included enough relevant information to be mapped on Ushahidi.<sup>31</sup>



The Fletcher Crisis Mappers at work in Boston. Photo courtesy of Carol Waters.



# Sandy Damage Assessment (2012)



# Industrialisation of crowdsourcing



(a) Transcribe receipt

```

The Foodnan Cafe
250 Walnut Street
Englewood, NJ 07631
201-568-8056
08/07/2010 9:30AM CHECK NO: 01001
TABLE: 0 PERSONS: 02
SERVER: BERT
Qty Price
1 Foodnan Burger/ 15.00
  Medium Rare/Onions/
  Lettuce/French Fries
1 Ginger Ale 1.50
1 Diet 7-Up 1.40
1 Cappuccino 2.00
1 Chec Rasp. Truffles 1.50
1 Grilled Chicken/ 7.95
  Beefsteak Tomatoes/
  Bacon/French Bread
Subtotal >> 29.35
Tax >> 2.42
Pay this Amount >> 31.77
Use these two lines for advertisements,
special announcements, etc. . . . .
    
```

Company name

Address

Date

Total

(b) Check and improve

```

Happy Food Company
***** Customer Copy *****
1/2/2006 9:45:36 PM
Store Location
Store City : Store State Store Zipcode
Store Country
TEL: (408) 476-8754

Employee : vincent
StoreID :store1
SystemID :POS 2
Pay By :CASH

# Desc Qty Price
2 DVD Spinal Tap 2 $64.00 Y
4 Internet Manager 2 $50.00 Y

***** INVOICE *****
447

Subtotal : $114.00
Tax : $9.41 ( 8.25% )
Total : $123.41

CASH payment : $30.00
Total Item Sold : 4

Change Due : $178.58
    
```

Company name

Address

Date

Total

(c) Classify receipt



Spending type

Transportation

Accommodation

Meal

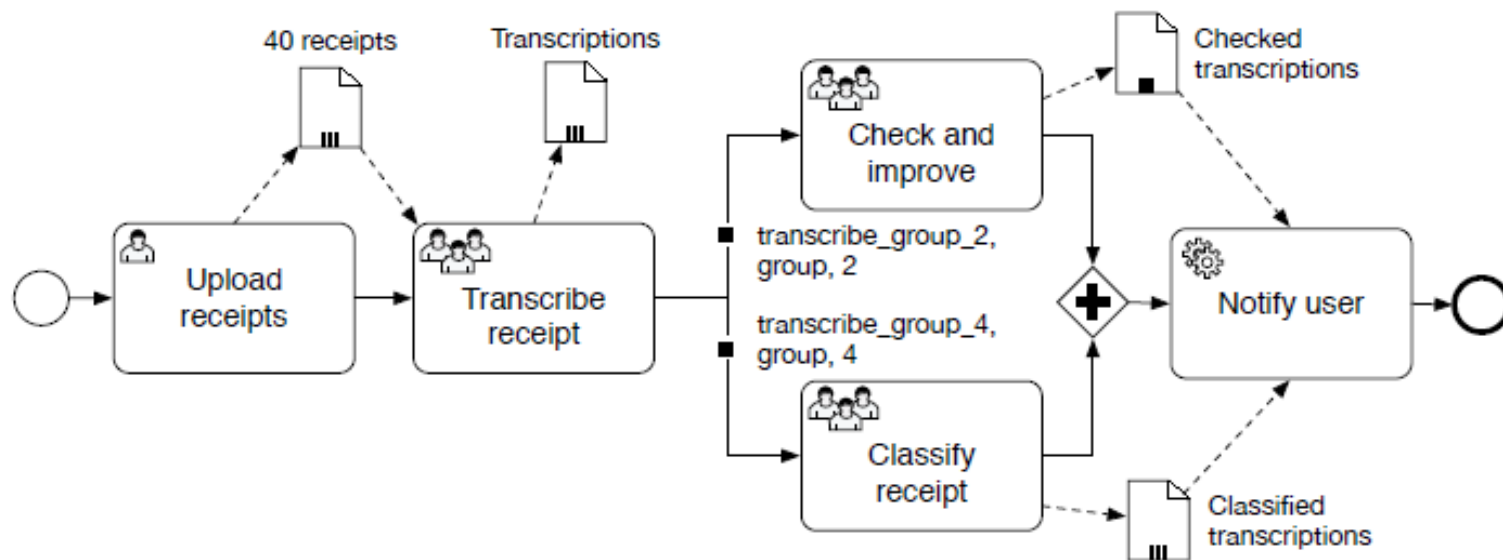
Other

BPMN Task Instance Streaming for Efficient Micro-Task Crowdsourcing Processes

Stefano Tranquillini<sup>1</sup>, Florian Daniel<sup>1,2</sup>, Pavel Kucherbaev<sup>1</sup>, and Fabio Casati<sup>1</sup>



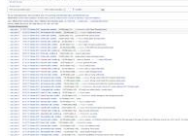
# BPM for crowdsourcing



# Large scale real time coordination

## Unsolicited individual data

### Collaborative data



Wikipedia 1500 edit to the main page between the 28 and the 30th of october, not mentioning the talk or the area related pages

Twitter – 35000 geolocalised tweet/day



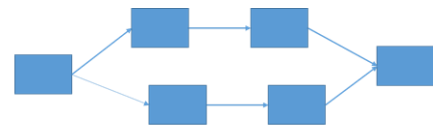
Flickr – 3000 geolocalised photos/day



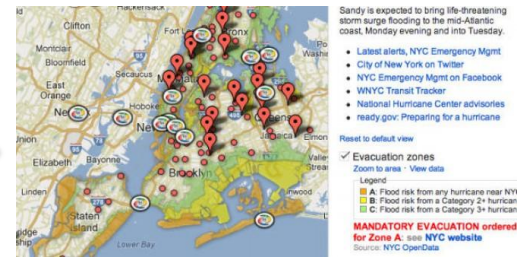
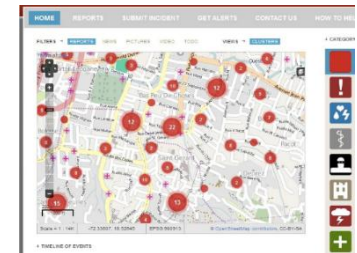
10 photos/s on instagram during sandy



**INPUTS**



**Process**

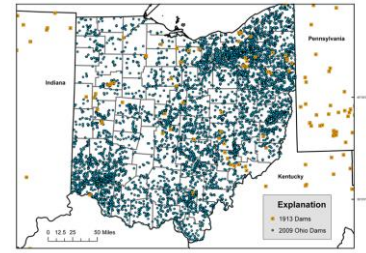


### Citizen Sourcing Data

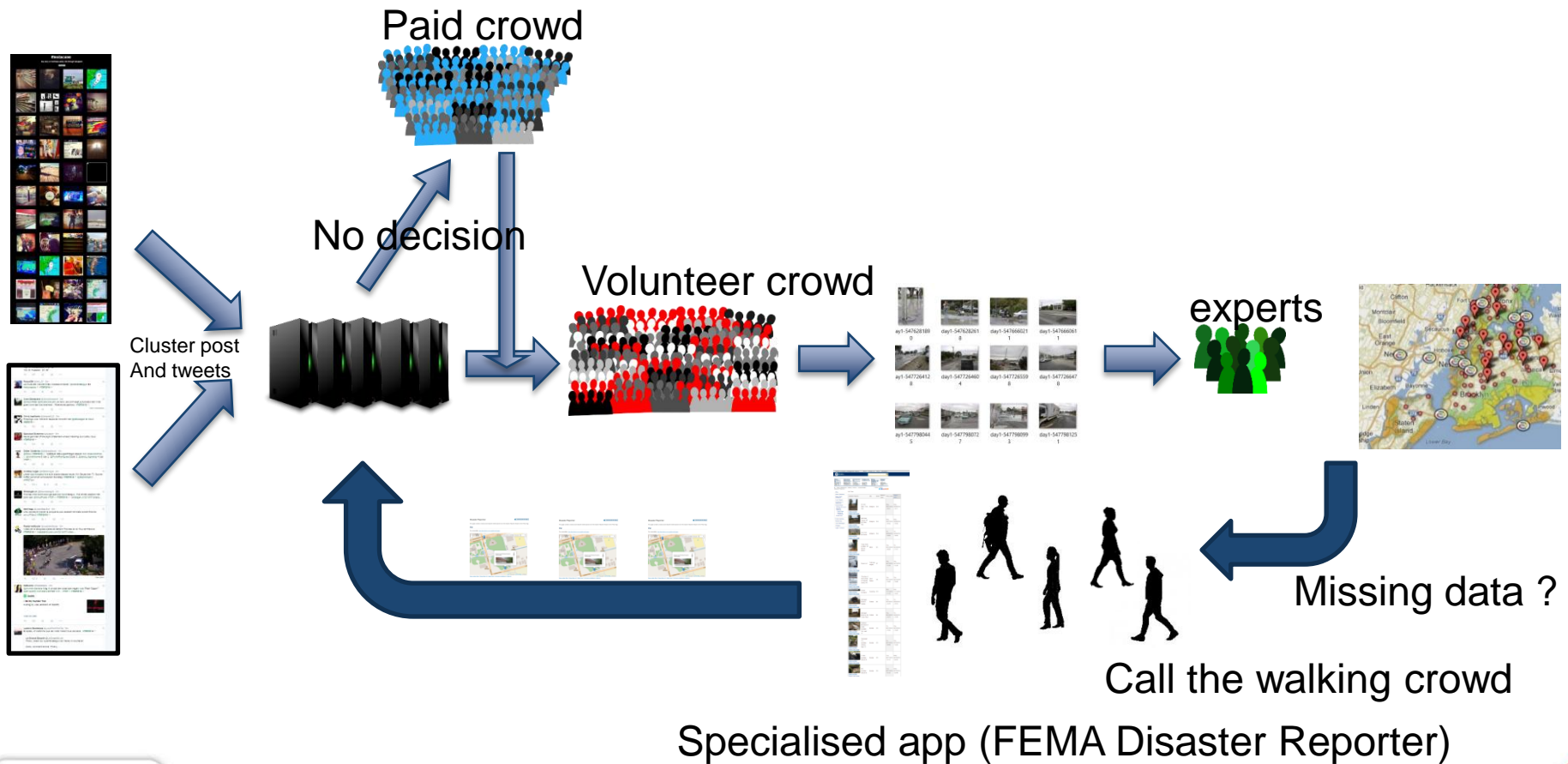


Dedicated app can receive notification and but used to ask for data

FEMA dedicated app



# Human/Machine composition example



# The Refugee crisis

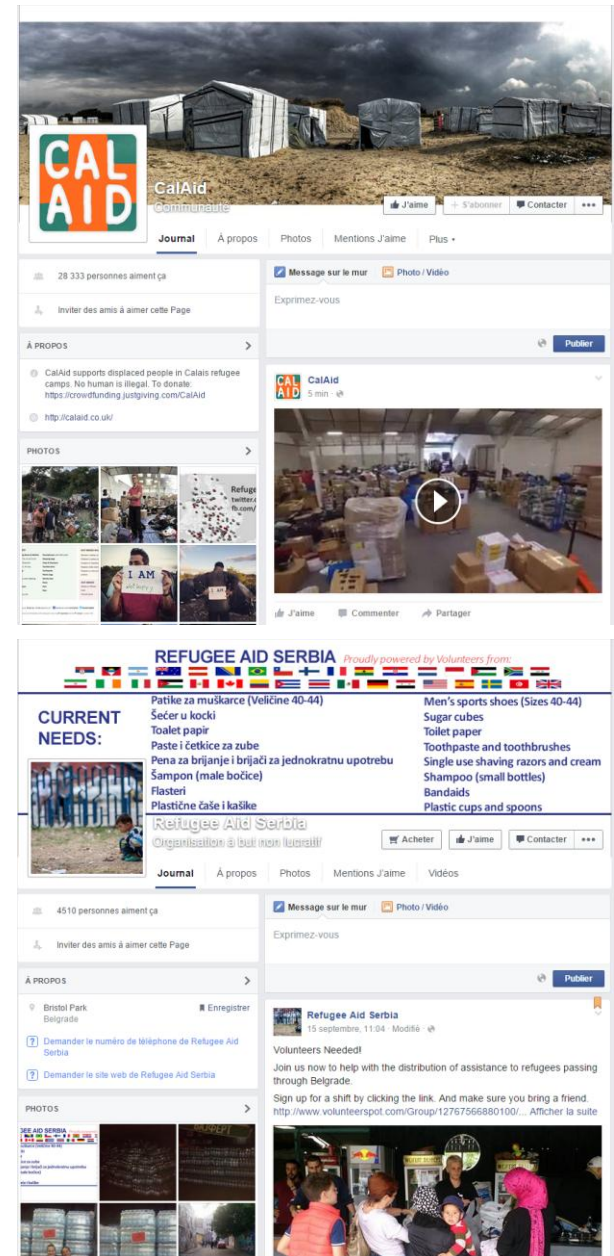
- A very tricky kind of crisis
- Affect international relationships
- Difficult agreement on the response





# Citizen coordination

- International scale
- Citizen create Facebook pages, maps, dedicated tools to coordinate
- But privacy, security, reliability, trust issues





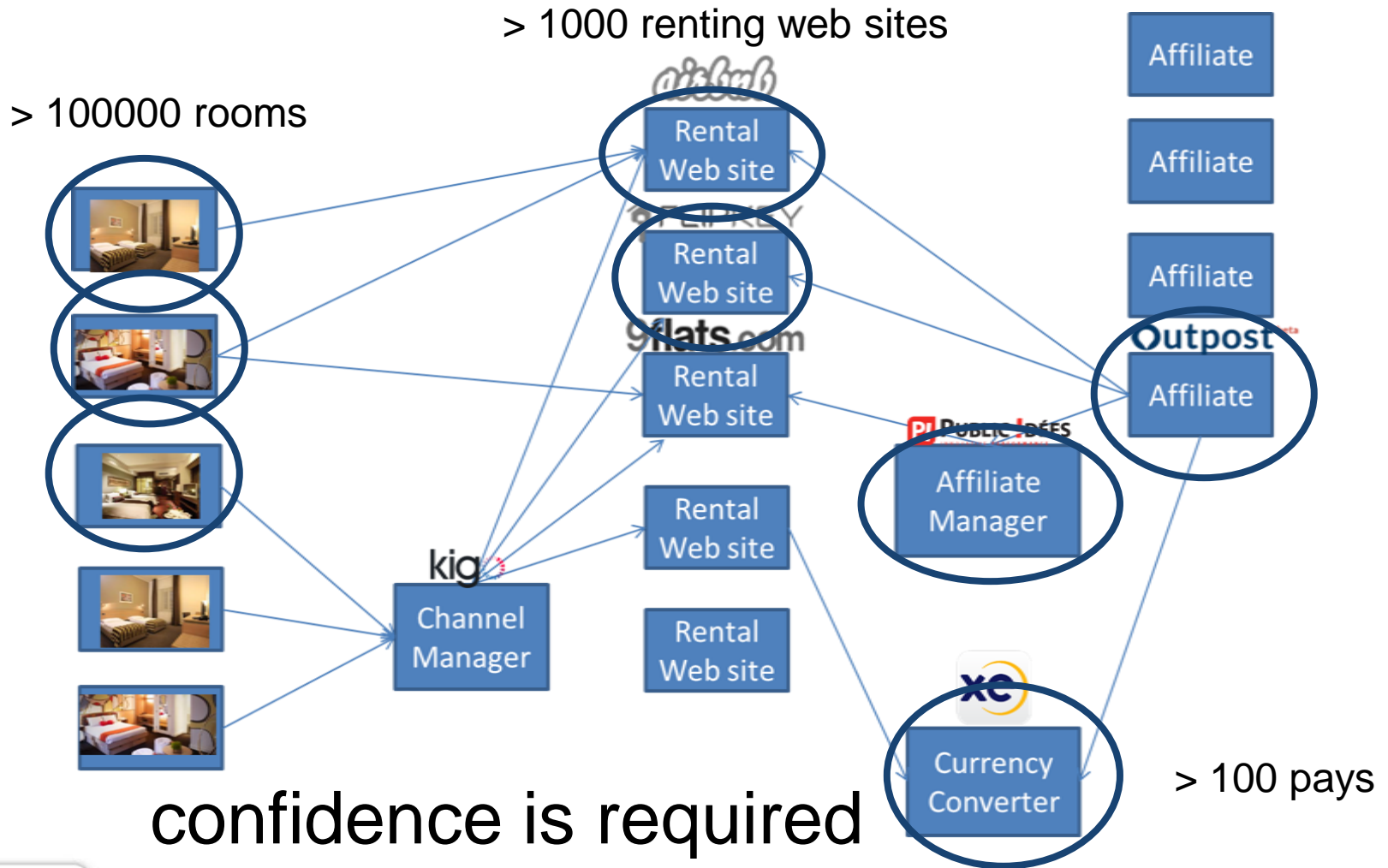
# Internet wide service composition

The screenshot displays the Outpost website interface. On the left is a map of Florence, Italy, with numerous blue location pins. The main content area features three accommodation listings:

- Appartamento Oltrarno-Pitti: wifi internet**: Apartment, Entire Place, €436 for 4 nights, 2 sleeps, 1 bedroom, 1 bathroom, Centro storico. Includes buttons for Details, Book it, and Add.
- Lorenzo Studio**: House, Entire Place, €1728 per night, 2 sleeps, 3 bedrooms, 2 washrooms, Centro storico. Includes a 'FLIP' button, Book it, and Add buttons.
- Large double room with king-size bed, on the second floor**: Room - Apartment, Private Room, €149 per night, 2 sleeps, 1 bedroom, 1 bathroom, 1 bed, Centro storico. Includes the 'roomorama' logo, Book it, and Add buttons.

Navigation and utility elements include: ACCOMMODATIONS, RIDESHARES, EXPERIENCES, Stash, Logout, List a space, and a currency selector set to EUR.

# Behind the scene



# Conclusion

- Large scale collaboration exists
- Large scale collaboration helps to solve large scale problems
- Only very solution based ad-hoc support

# Large scale collaboration issues

- A programming language that can be used by a **Clerical worker**
- Software engineering – **modeling** and **validation**
- Operating Systems and database – **distribution of data, consistency and security**
- Measurement and Evaluation - **prediction**
- Security, **privacy and trust**
- WYSIWweS or What ou see is what we see
- **Community** Processes
- Concurrency Control
- Other area – psychology, social implications

**QUESTIONS ?**



# Credits

- Some slides have been prepared by
  - Jorn Franke (Activity management)
  - Gérald Oster (P2P sharing)

Most of the work presented here are contribution made by members of the Coast team and the preceeding ones

<https://team.inria.fr/coast/>

Original photos are from Christian Morel (DR)