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# WaveOne

## The whole web become a realtime collaboration platform

Erlang Factory 2010

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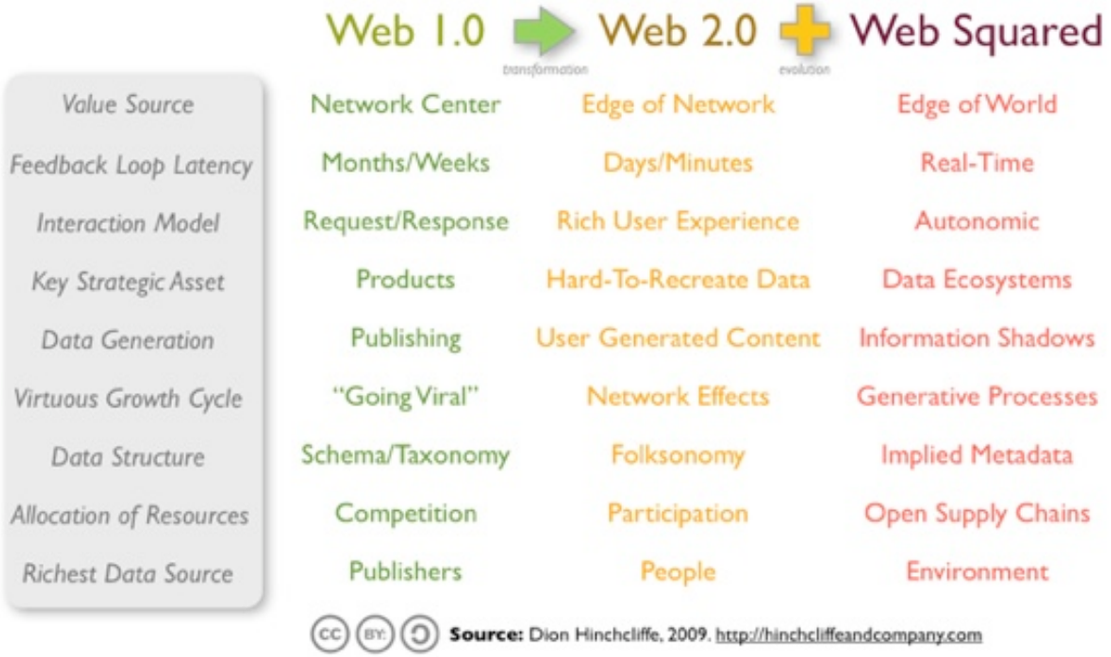
# Building the real time web: Initial problem

# Realtime web: A natural trend of the web

**Web 3.0 or Web²** : real-time platform for data & events

**Web 2.0** : platform for persons

**Web 1.0** : platform for info & documents



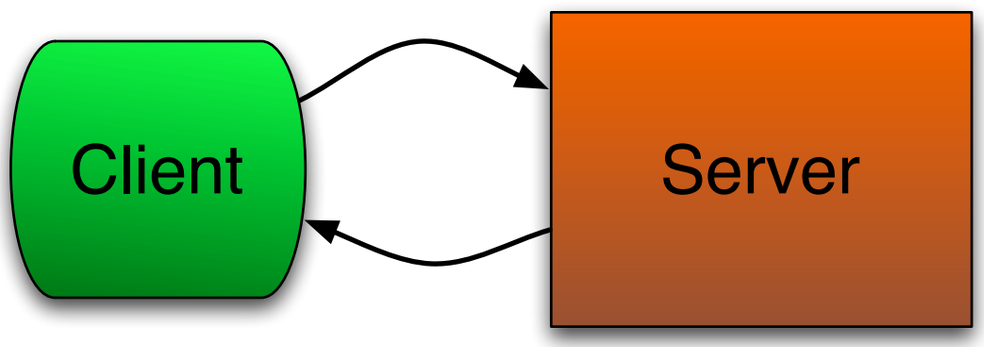
# Build with inadequate technologies

- **Inadequate** technologies have been used for that.
- HTTP is **ubiquitous** so it has been used as a basis.
- **request and response** paradigm, not adequate for **push**
  - Push is the basis of realtime web:
    - = distribution of event coming from the server or another client.
- **AJAX** has been invented to **simulate push**, but it is a hack on a technology which is not adequate.

- Most services that claim to be real time are not trully real time.
- Example Twitter:
  - No push: polling based. A client need to send requests frequently to the server to check if there is new content.
  - Event received are most of the time delayed.

# HTTP limitations

- Request and response mechanism.
- AJAX work around add an overhead with lots of HTTP headers.
- Lack of addressing scheme: You cannot address a user: You cannot only send content back to an HTTP connection.
- Architecture simple but not very flexible:



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# XMPP: emerging solution for realtime user interactions

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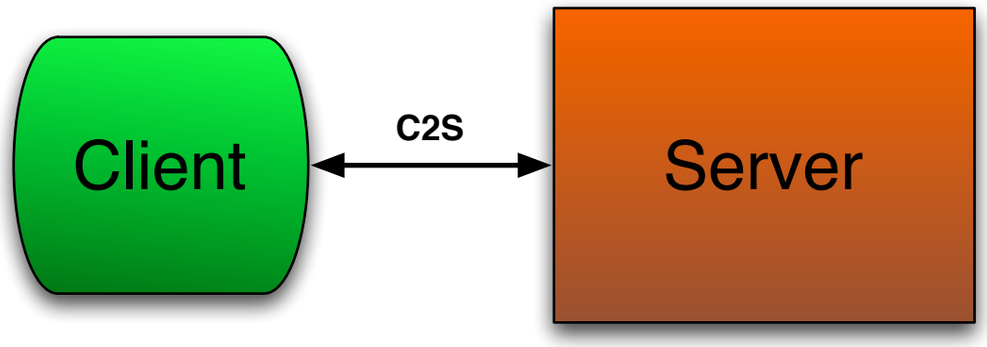
# Emerging protocol for realtime web: XMPP

- XMPP = eXtensible Messaging and Presence Protocol
  - Protocol is formerly know as Jabber
  - **IETF** standard
- **Connected protocol** relying on a session. It means you can send but also receive information seamlessly.
- **Addressing scheme**: Each user can be reached by a message from any point in the network with his unique ID: JID.
- **Federated**: It means you can send information across services and across users through servers.
- It supports realtime message distributions that can covers the full scope of need to build realtime web:
  - Can optionally use **HTTP** as transport layer (Bosh).
  - Can use sophisticated and flexible **event distribution** mecanism (pubsub).
  - Can support all types of devices including **mobile**.
  - Can support **flexible** architecture.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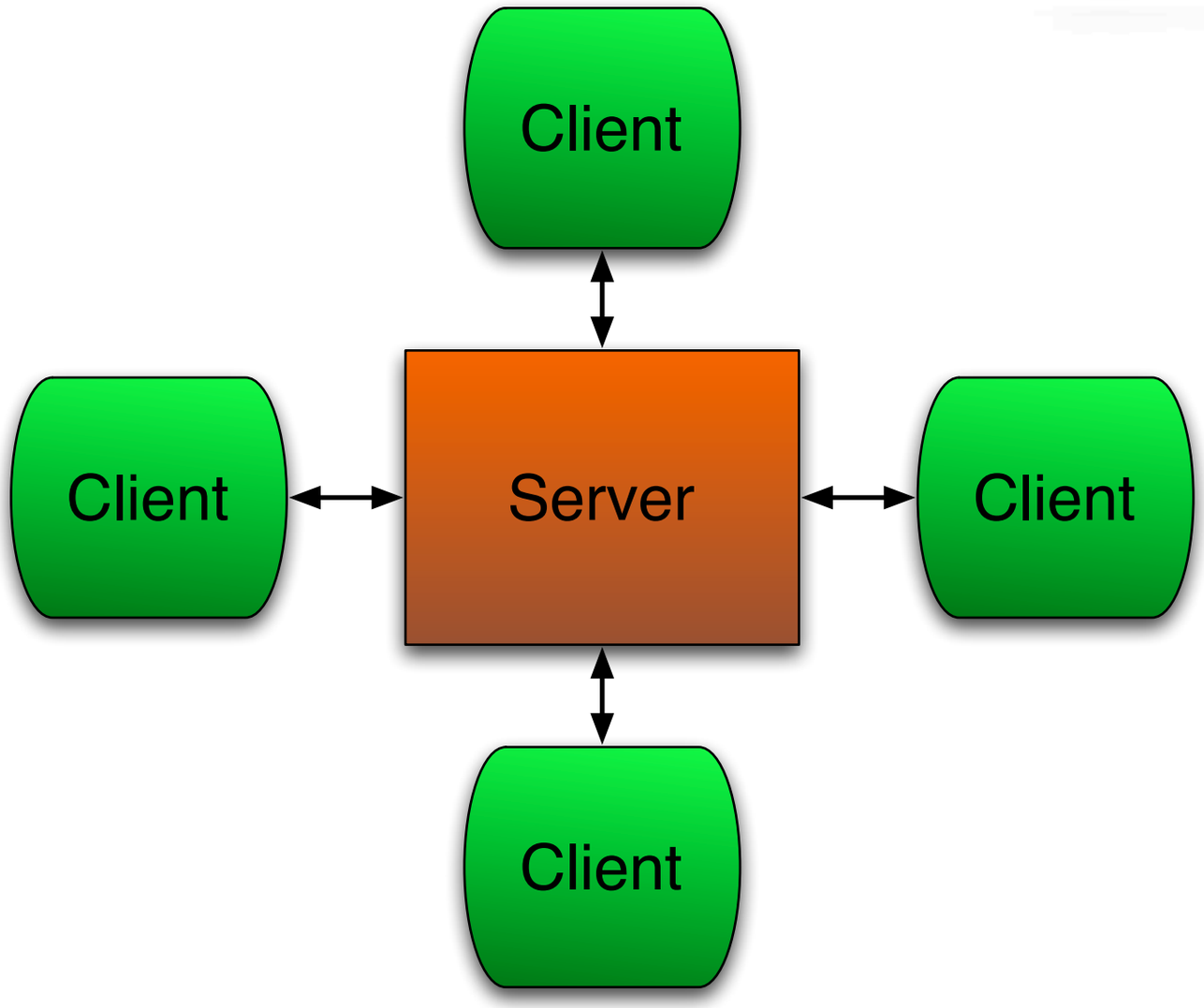
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Client
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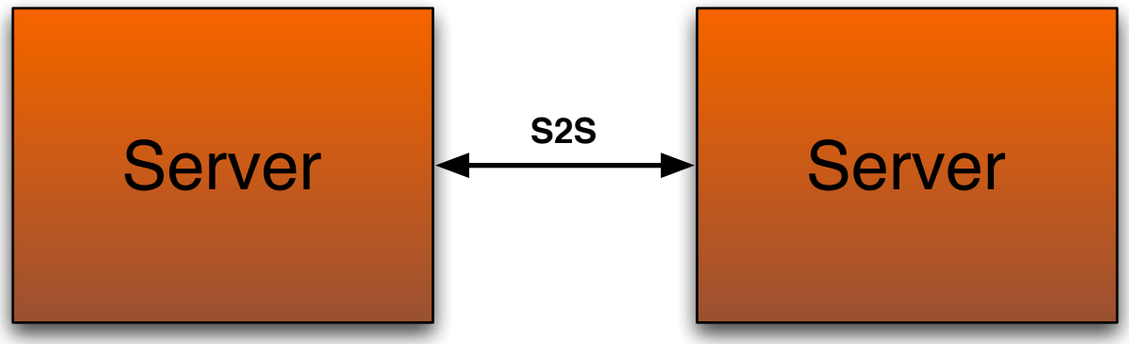
Client
Client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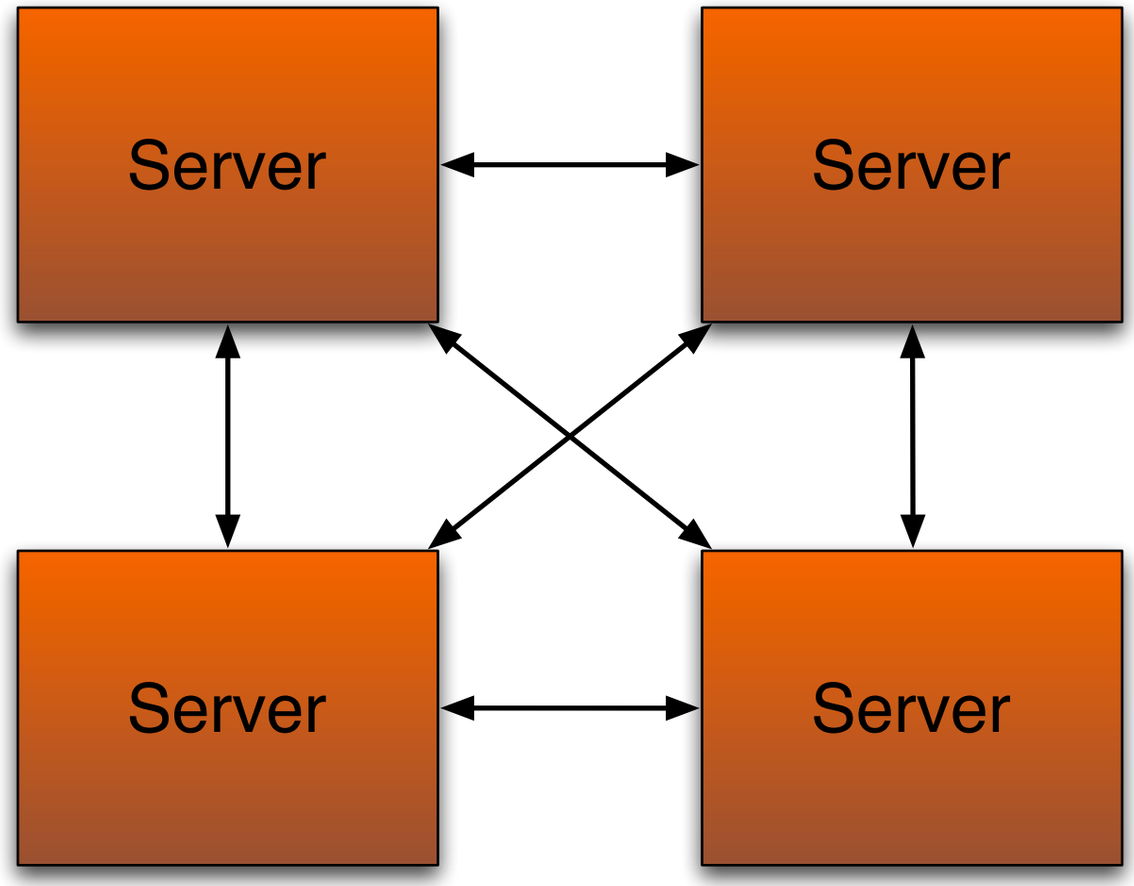
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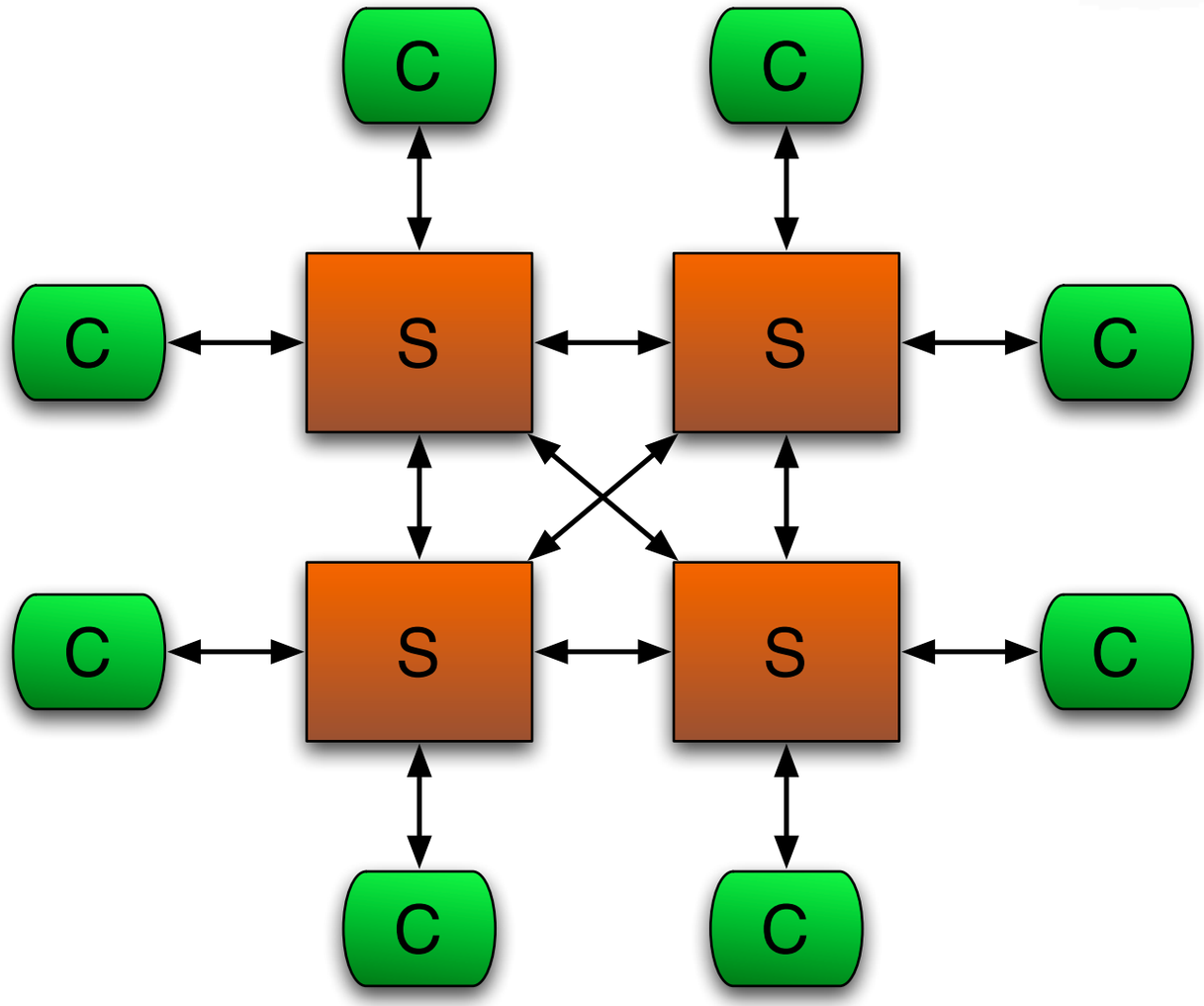
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# Demonstrating the power of XMPP for real time web

- **Collecta**: it is transforming Twitter and other social networking publication into true real time events.

- **Chesspark**: Play chess over XMPP in the browser.

- **Wordpress**: Distribute blog post in real time over XMPP.

- **BBC**: Live distribution of radio program in real time.

- **OneWeb**: Browser interaction tool. Control your browser and share bookmark in real time -> Demo.

- In all cases, the technology used is XMPP and pubsub. Oneweb also uses adhoc commands. Chesspark uses groupchat (multi user chat rooms).

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# Google Wave: emerging solution for realtime user interactions

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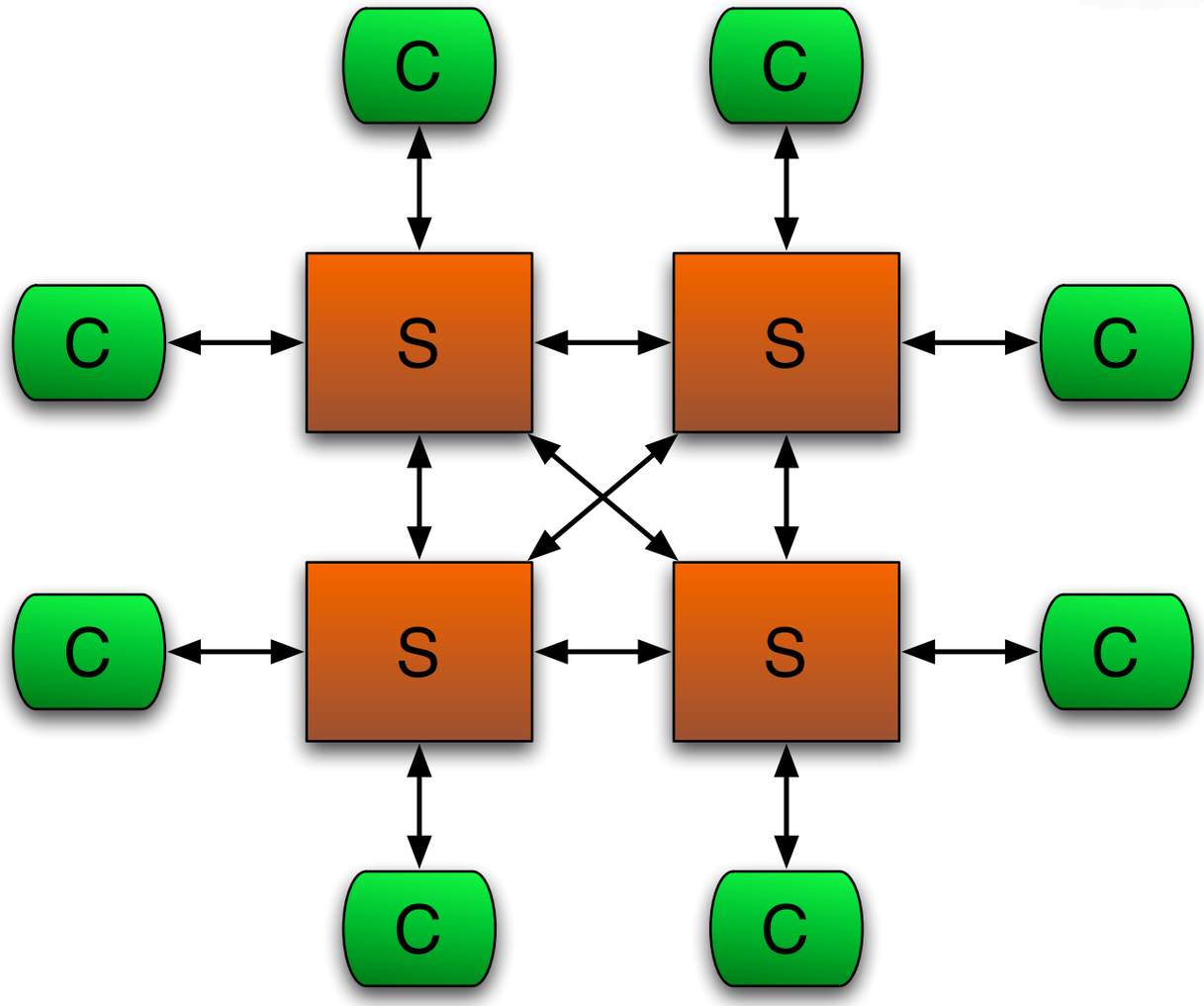
# What is Wave ?

- A Wave is a real-time social web **object**.
- This « Webject » is a social element that can be **dynamically shared & embedded** with any web services like blogs, wikis, … in real time. Reply, archive, edit and add are available at any point in time in the process.
- **Versioning**: The playback function lets anyone rewind the Webject to see who waveleted, blipped what and when. all history is kept.
- A blended mix of Wave **extensions** : gadgets (run an app), robots (run smart-automated conversation participant), that could be accessed within Wave Inbox.
- **Federation**: There is no central server. You can use your own wave server, participate and invite people to wavelet on your server. Federation is based on XMPP.
- **Open** protocol: People are encouraged to implement their own client and server.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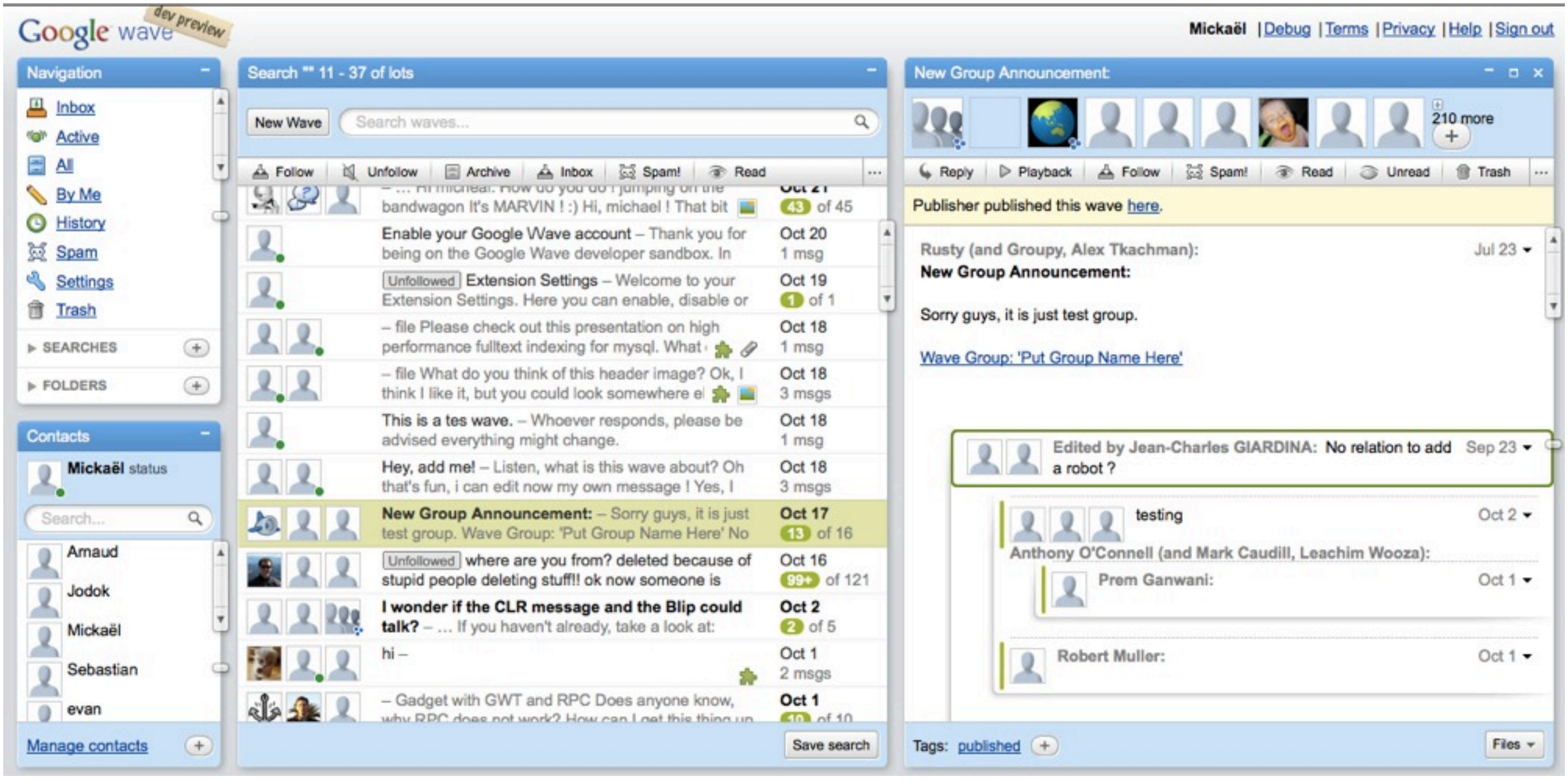
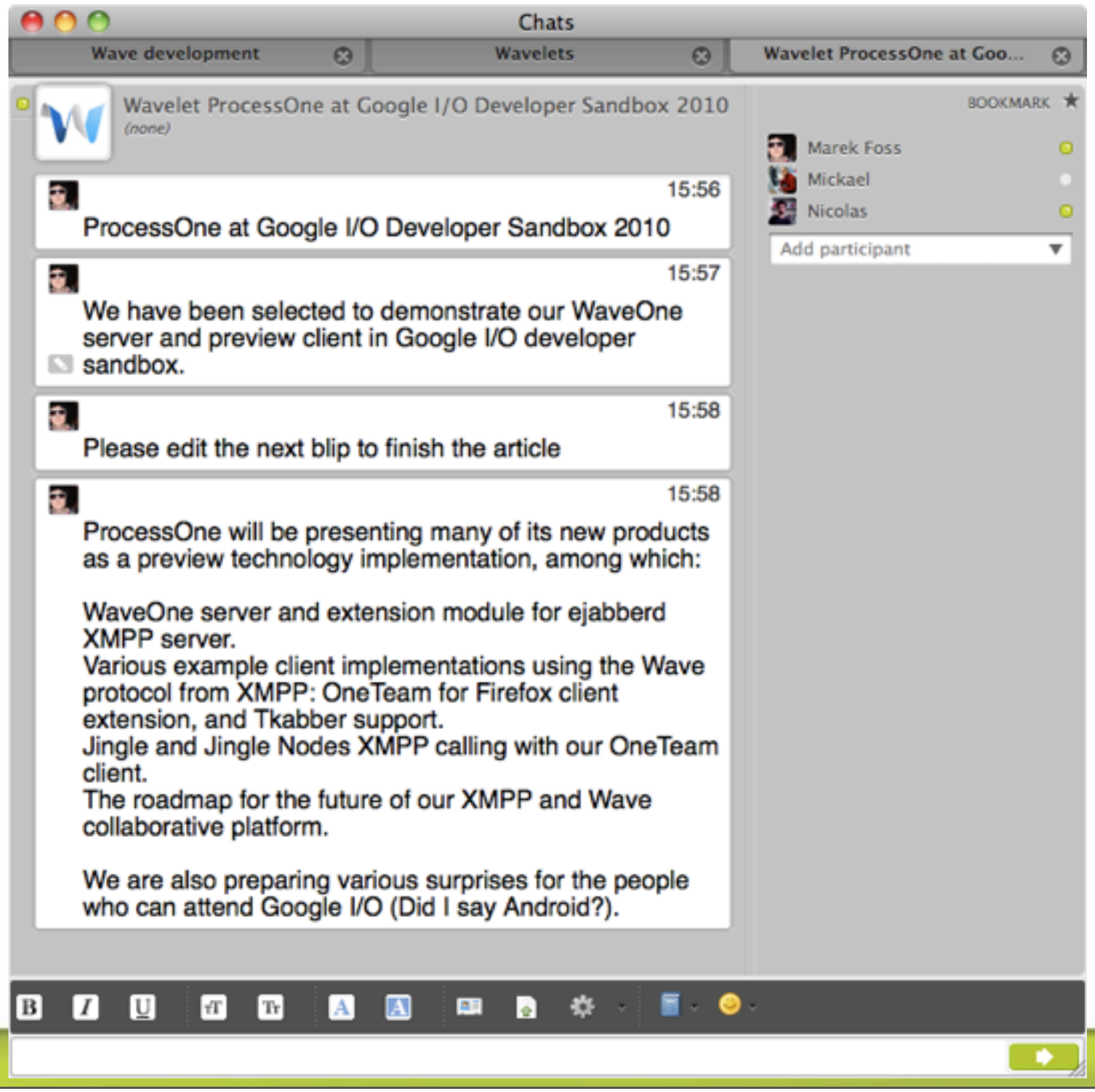
# Wave client by Google



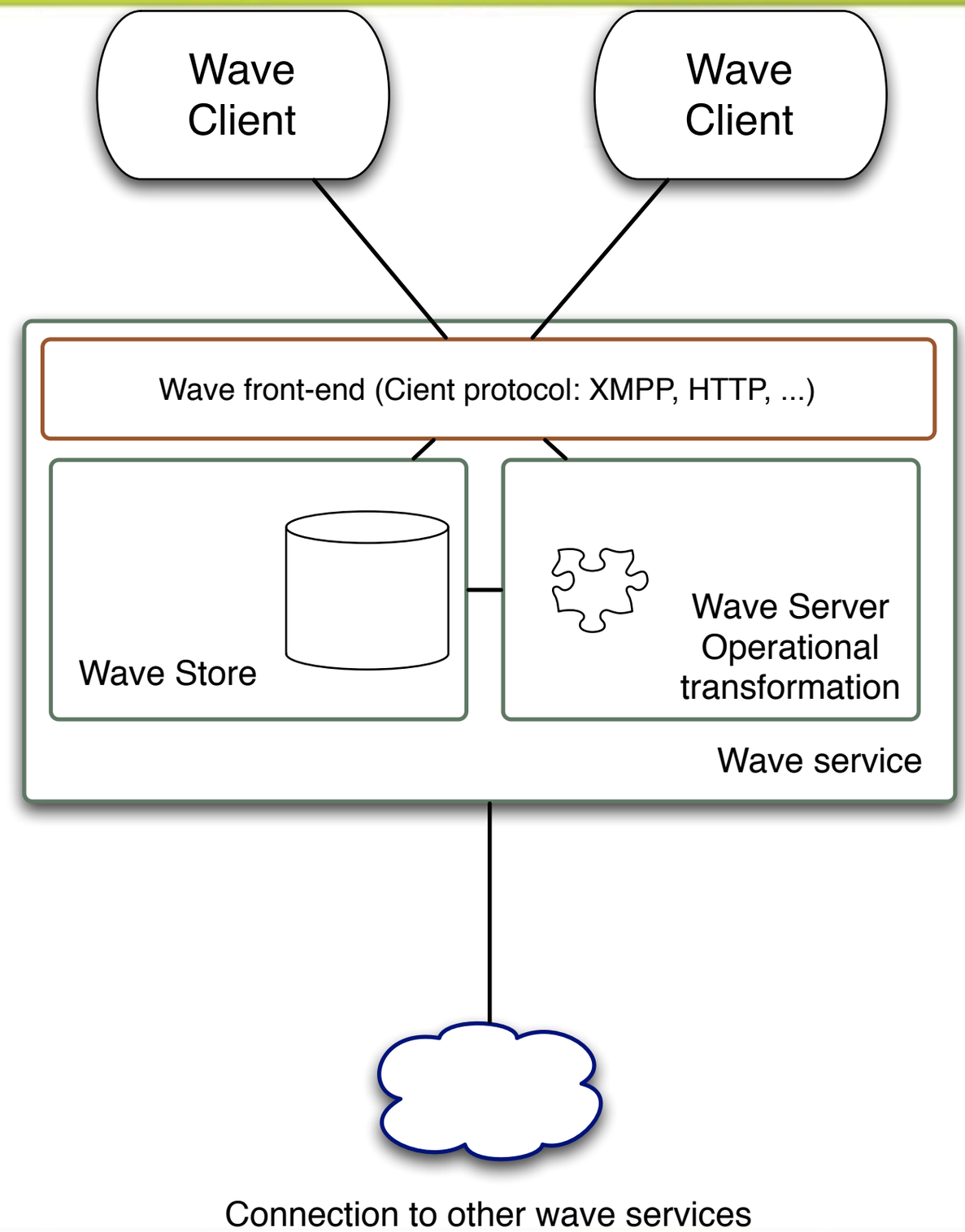
# Wave client by ProcessOne



# Terminology

- **Wave**: a collection of wavelets
- **Wavelet**: a collection of named documents and participants, and the domain of operational transformation. Operational transformation is the mathematical model that allows merging concurrent changes.
- **Blip**: Conversational message
- **Conversation model**: «document format»

# How it works ?


Wave Client
Wave Client
Wave front-end (Cient protocol: XMPP, HTTP, ...)
Wave Store
Wave Server Operational transformation
Wave service
Connection to other wave services

# The protocols used in Wave

- Low level wave Protocol – Protocol Buffer (protobuf)
- Federation Protocol – XMPP
- Robot Protocol – JSON
- Client-Server Protocol – Websocket client but can be XMPP as well.
- Gadget API – OpenSocial
- Wave Embedded API – Javascript

# Difference with XMPP pubsub

- The two technologies looks similar:
  - They are built to distribute events to several participant at the same time
  - They are based on XMPP
- But they have major differences:
  - The core of wave protocol is protobuf (binary) whereas pubsub is XMPP (XML).
  - Wave is XMPP as one of the possible transport for client and only transport for federation.
  - Pubsub is made to distribute events
  - Wave is made to edit a common shared memory space. Distributed events is a side effect.
- Wave and XMPP complete each other because they have different goals.

# What is currently being done missing ?

- Wave is still a **work in progress** by the community but in one year huge progress have been made.
- Google Wave implementation is out of private testing. Anyone can create an account.
- True client protocol has been proposed:
  - Websocket based
  - We used XMPP
- New, simpler, non real time protocol to access the store are being designed.
- Better integration with the XMPP protocol.
- More usage examples.
- Better ecosystem: Bots, Widget, Server and client.

# ProcessOne Wave server

- Already implemented for running a wave service:
  - Wave **store**, with indexing and search of content
  - Wave **server** (Operational transform)
  - ejabberd **XMPP** server plugin to run Wave server
  - Client **protocol** over XMPP
  - Federation with servers like the fedone example implementation proposed by Google
  - Federation with Google Wave in both directions
- Currently being worked on:
  - More flexible and more scalable storage engine
  - Robot and Gadget integration
  - Extra protocol for simpler interactions with wave store
  - OpenSocial server to allow developping gadgets in Erlang

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# The end

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# Useful Links

- XMPP: xmpp.org
- Wave:
  - wave.google.com
  - www.waveprotocol.org
- ProcessOne: www.process-one.net

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# WaveOne server and Firefox WaveOne client

## Collaborating in realtime on the web

Google I/O 2010

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# Use case introduction - Collaborating around WaveOne product launch

- ProcessOne launches its new WaveOne product and need to get organized for the launch at Google I/O conference.
  - Mickaël Rémond and Arnaud Le Ruyet working together with an account on ProcessOne XMPP and Wave server @process-one.net. They have one week left to work jointly on the PR before sending it to the Com Agency.
- Vanessa Clark works for ProcessOne's partner Spark, a PR agency. She use a Wave account provided by Google.
- As you may have understood, these 3 persons must collaborate in order to publish on time the PR

# Mixing Wave and XMPP

- WaveOne client uses XMPP (extensible Messaging and Presence). Thus all features of XMPP are available from the client:
  - Notice that we reuse our XMPP contact list that we are using for standard chat and VoIP (jingle-based).
  - The avatar of Arnaud (/Mickaël) is thus available, coming from the contact description (Vcard).
  - The user ID of Arnaud (/Mickaël) is from @process-one.net domain.

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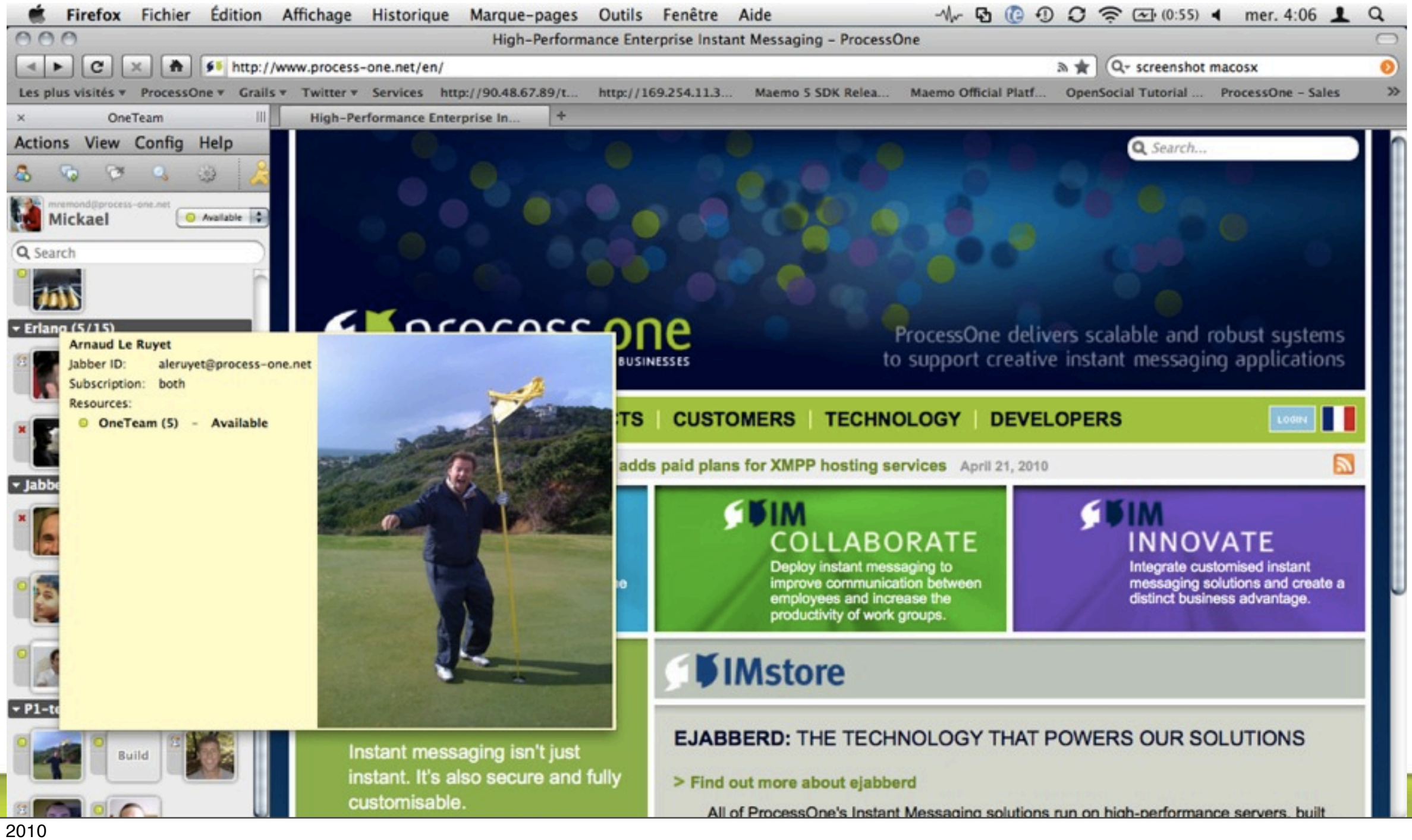
# Mixing Wave and XMPP



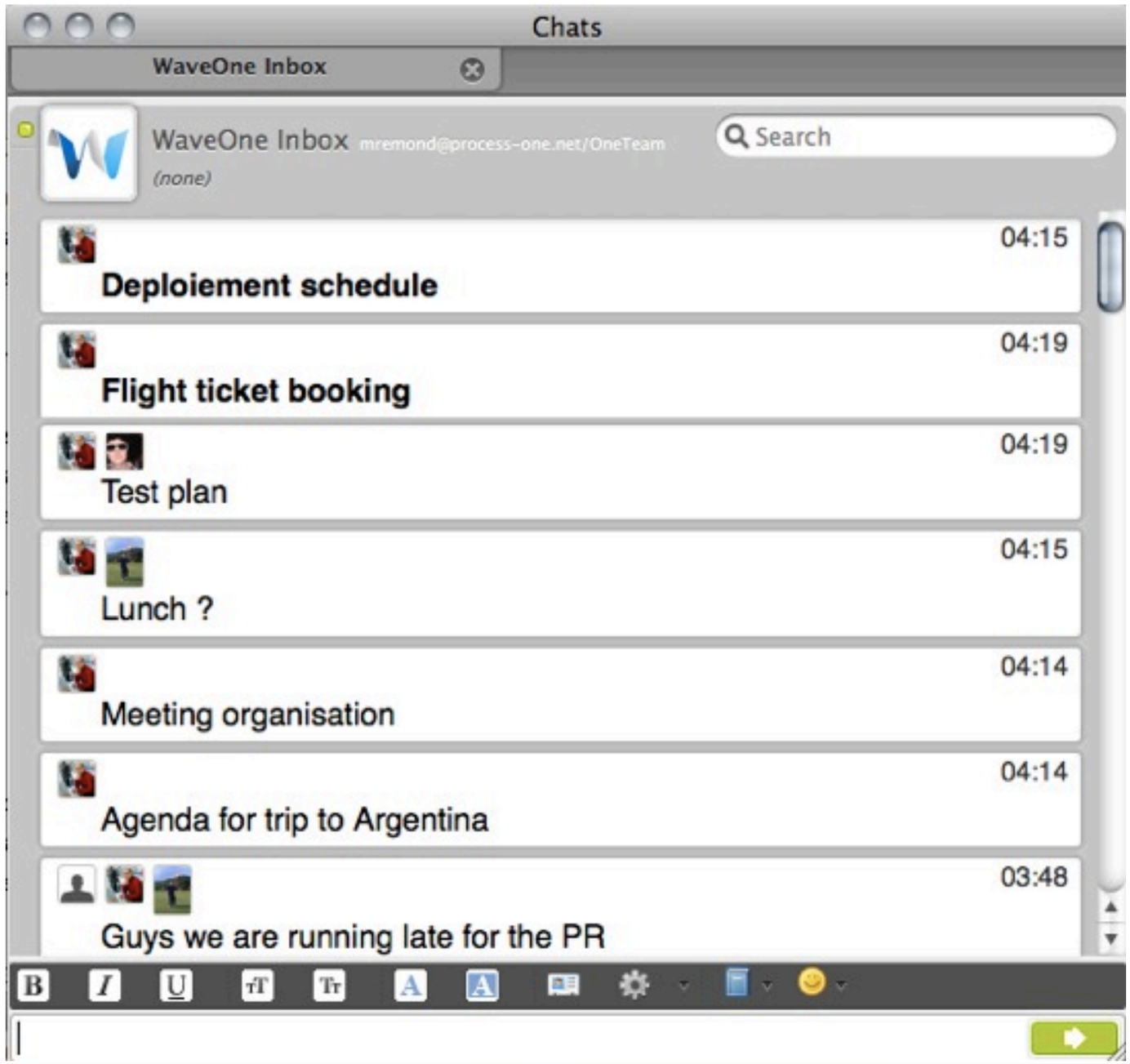
# First wave of press release ...

- Mickaël creates a wavelet on WaveOne.

- Mickaël creates the basic content in 3 elements (blips):
  - The PR title,
  - The explanation
  - The draft of the ProcessOne internal document and sharing them with Arnaud

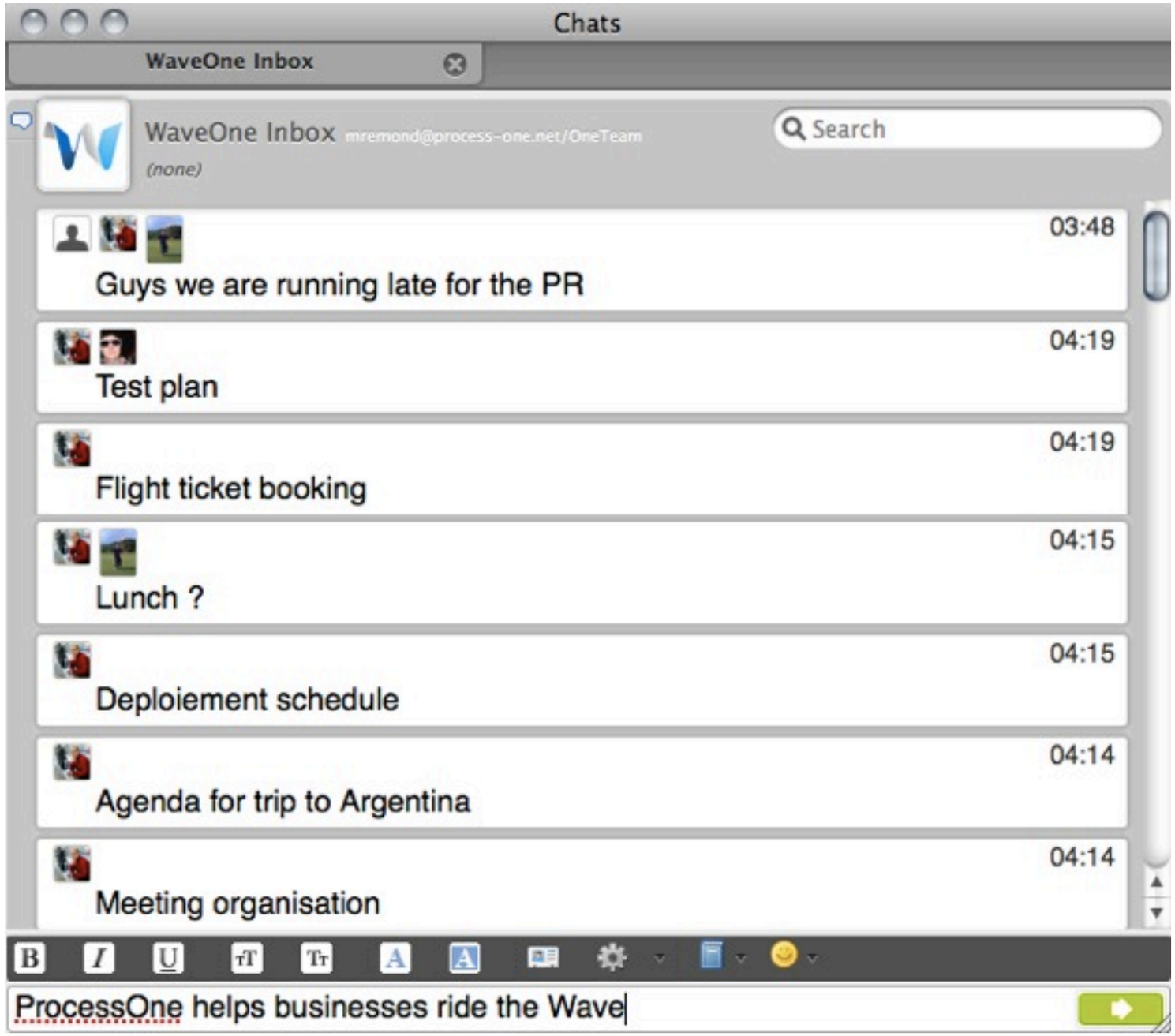
# First wave of press release ...

## The inbox



# First wave of press release ...

## Creating the wavelet



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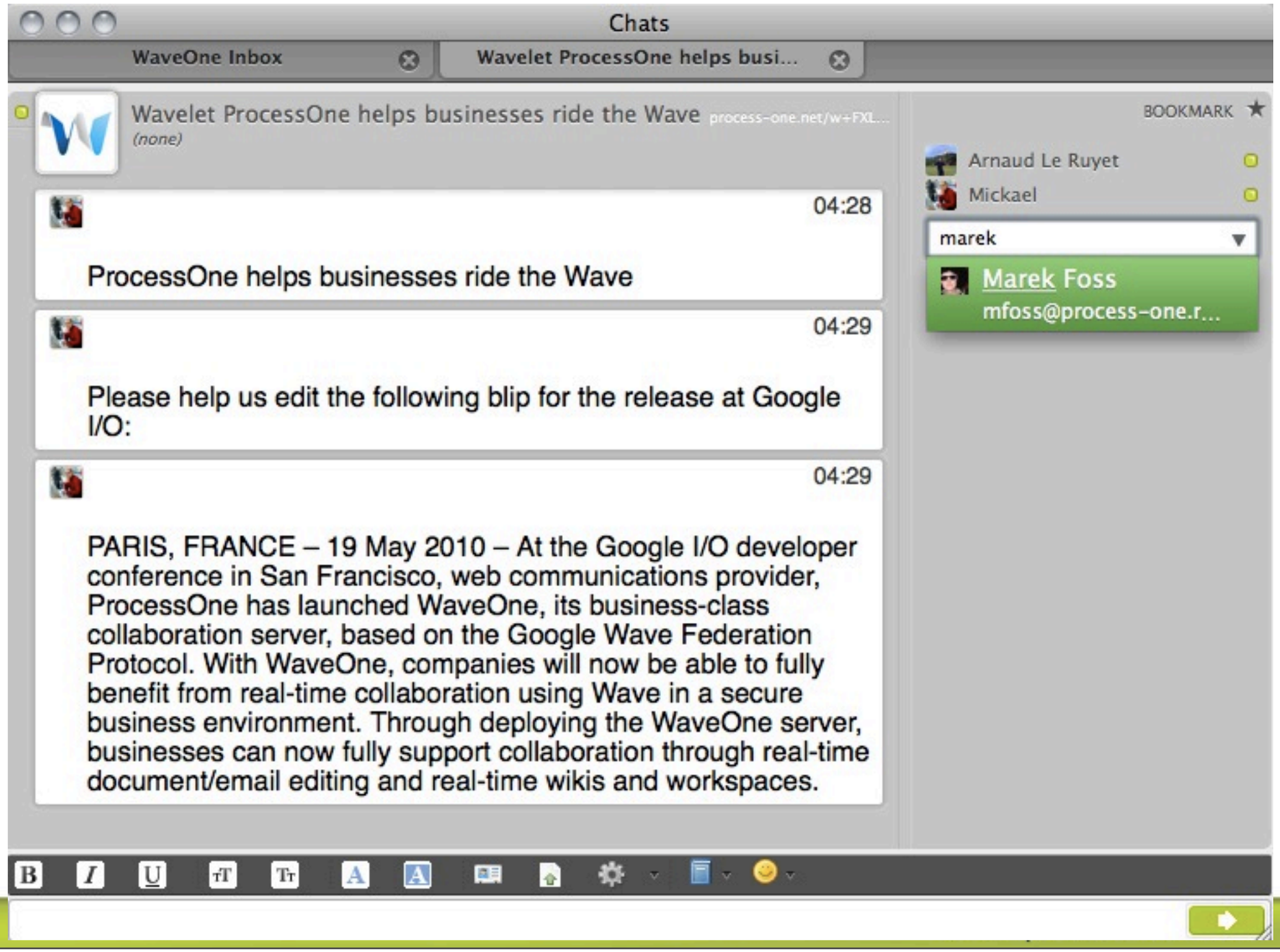
# First wave of press release ...

## Creating the content / adding participants



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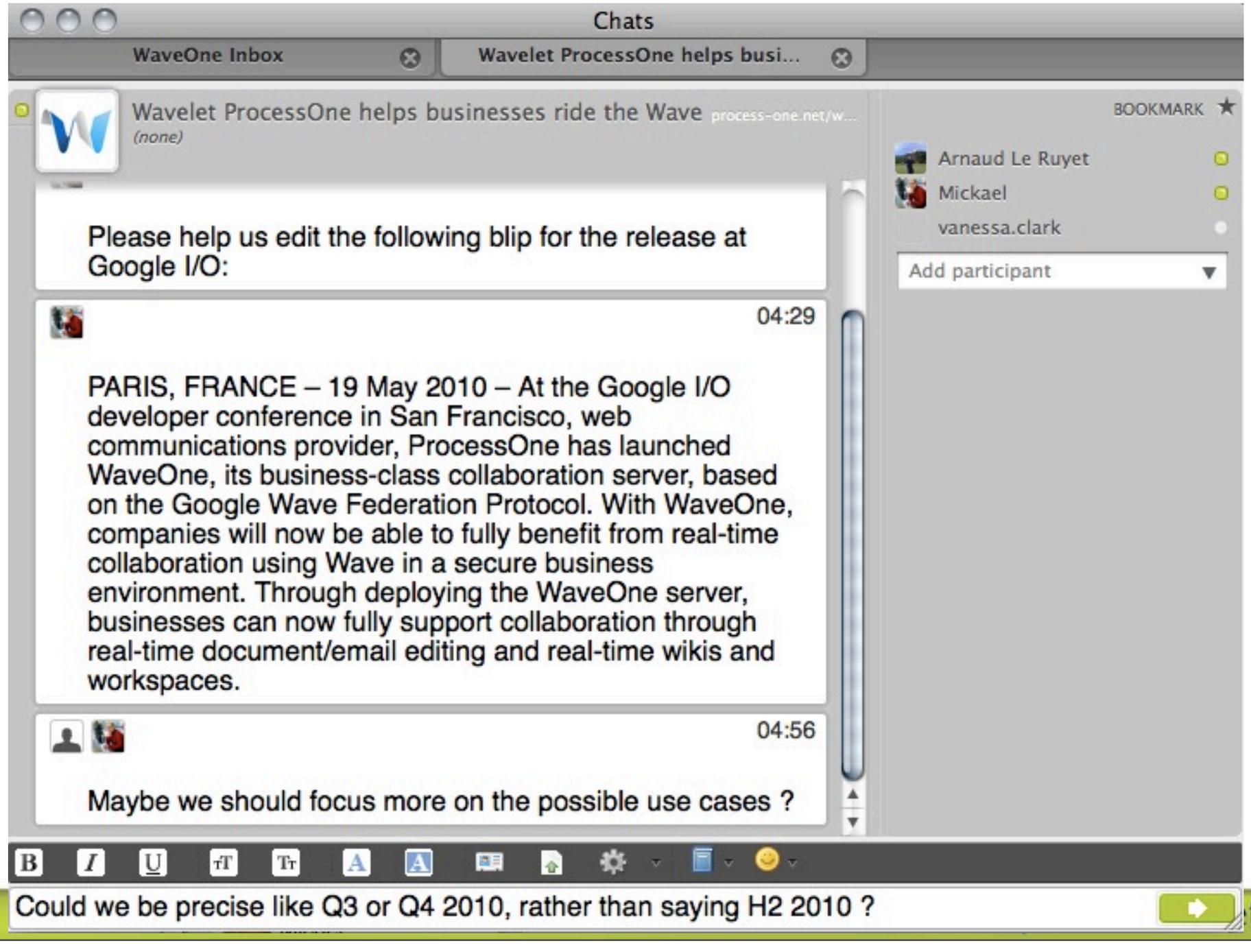
# First wave of press release ...

## Other internal participant add new blip to comment on wave



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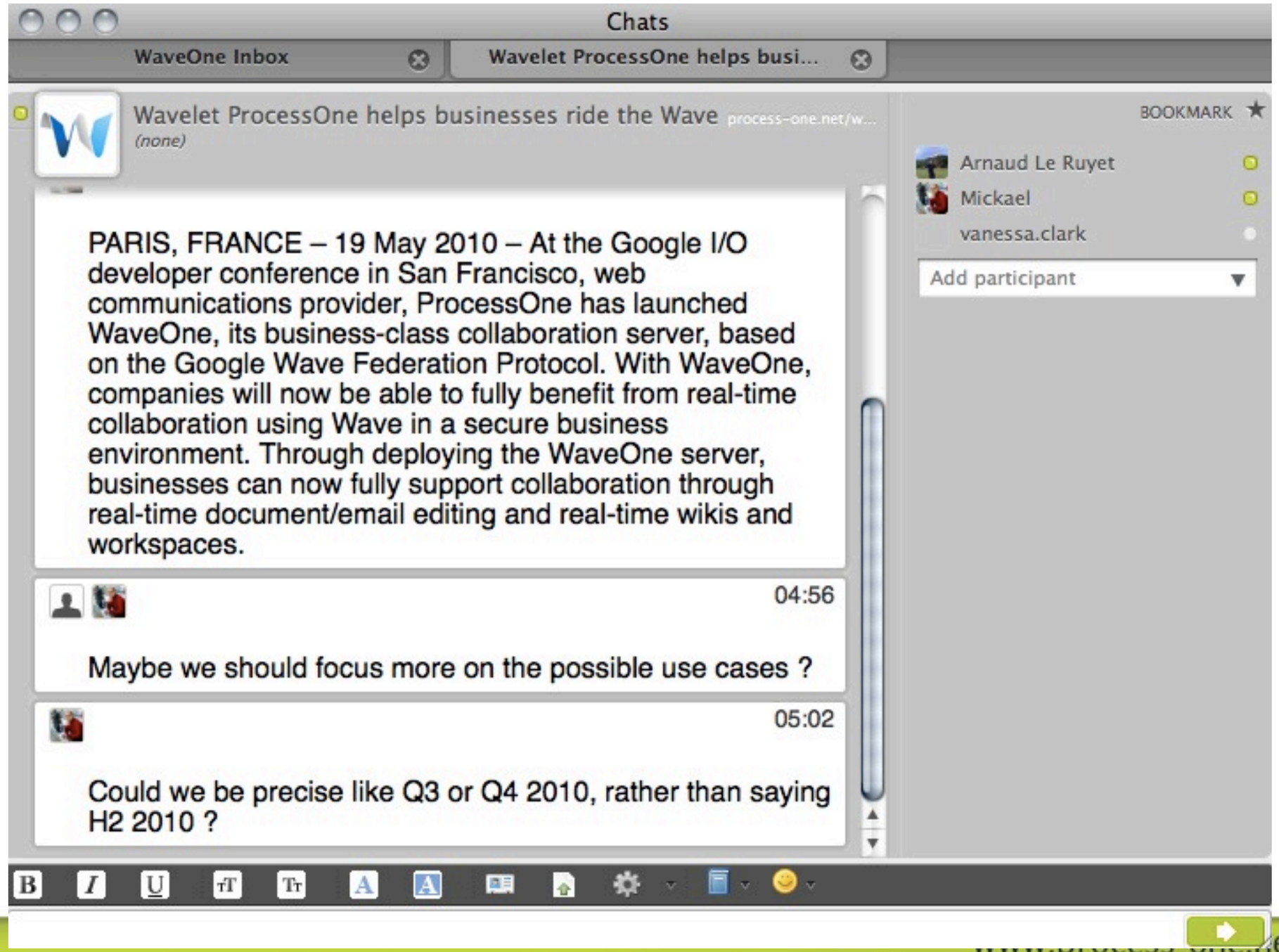
# First wave of press release ...

## Blip appears in conversation



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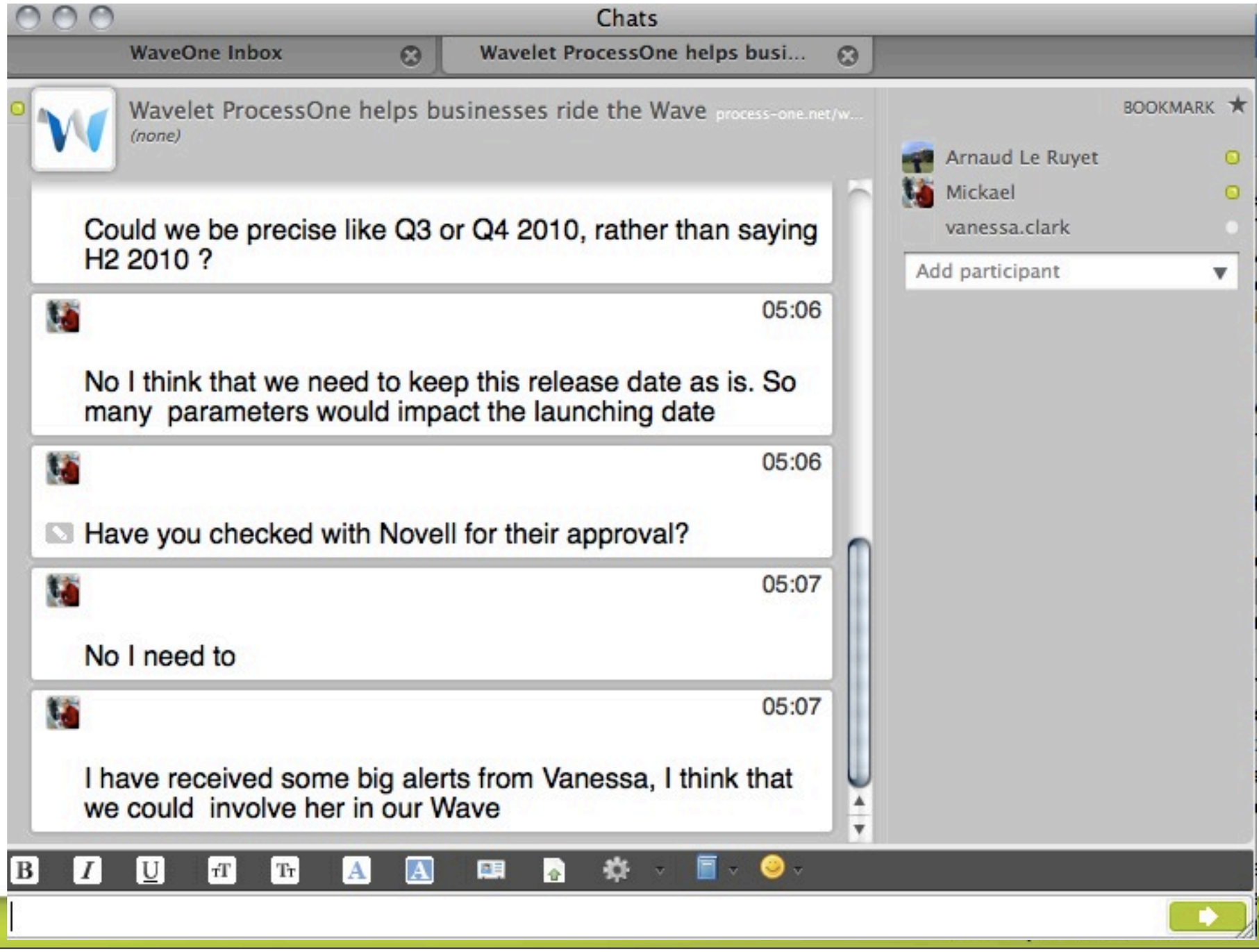
# First wave of press release ...

# And the conversation goes on, iterating on the PR content edition



# Federation and real time editing

- Mickaël, once both agree on the initial content, decides that it is fine to go ahead and includes the Vanessa Clark from the PR agency in the workflow.
- He adds vanessa.clark@wavesandbox.com as a participant of the same wave.
- She benefits from all the previous work and can participate directly to the discussion, to the current point.

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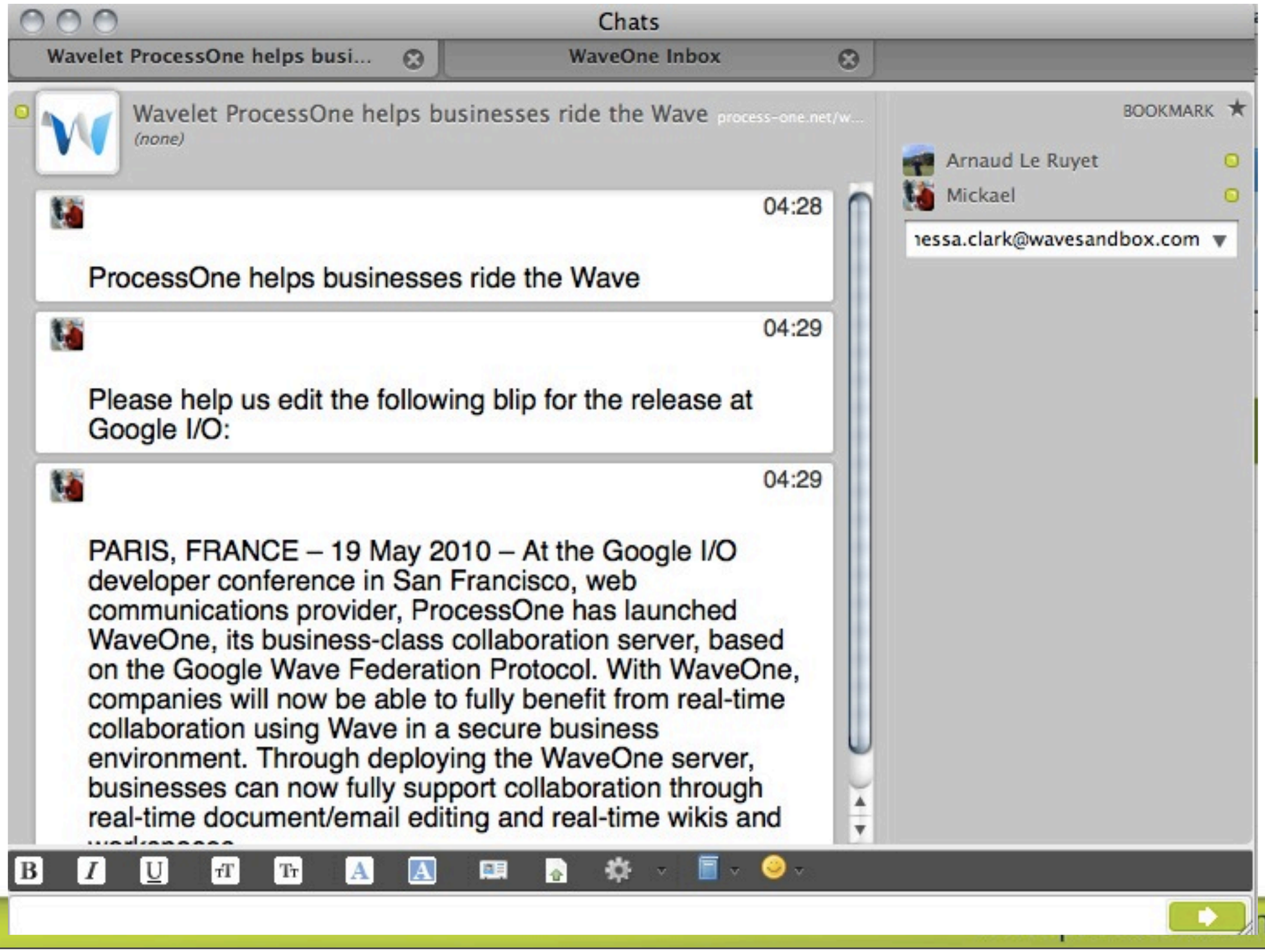
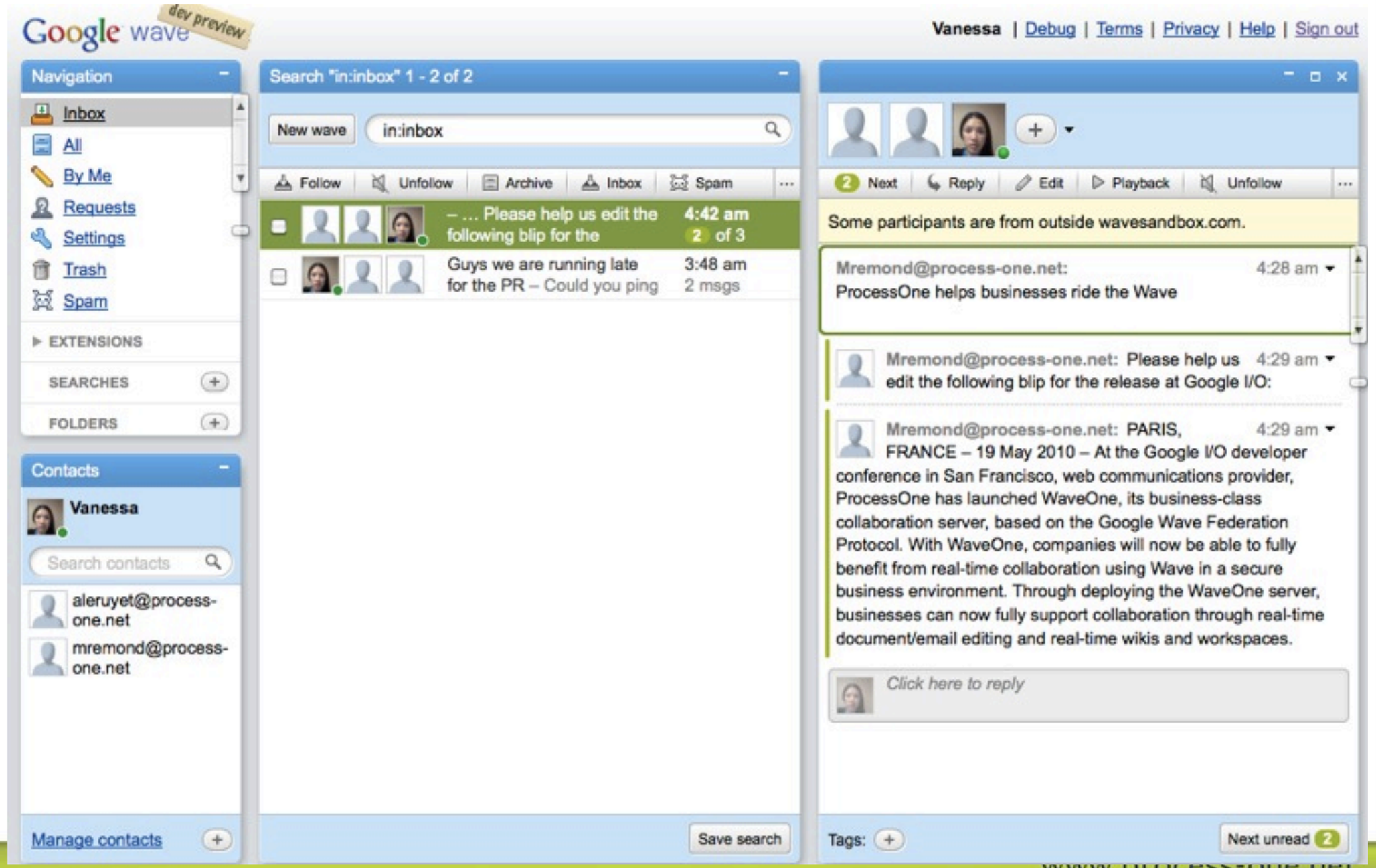
# Federation and real time editing

## Adding a participant from another wave provider



# Federation and real time editing

## Other participant jump into the discussion



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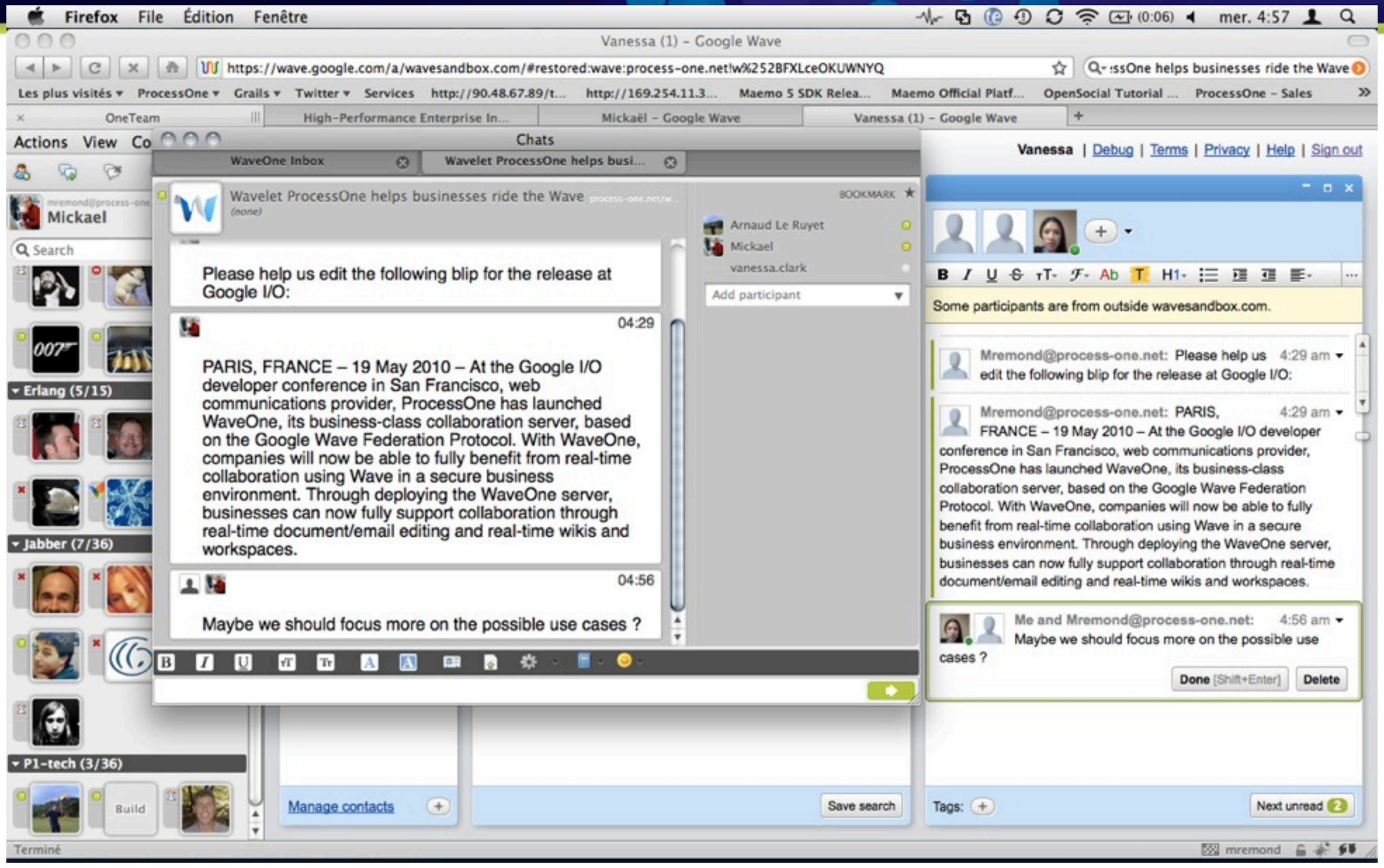
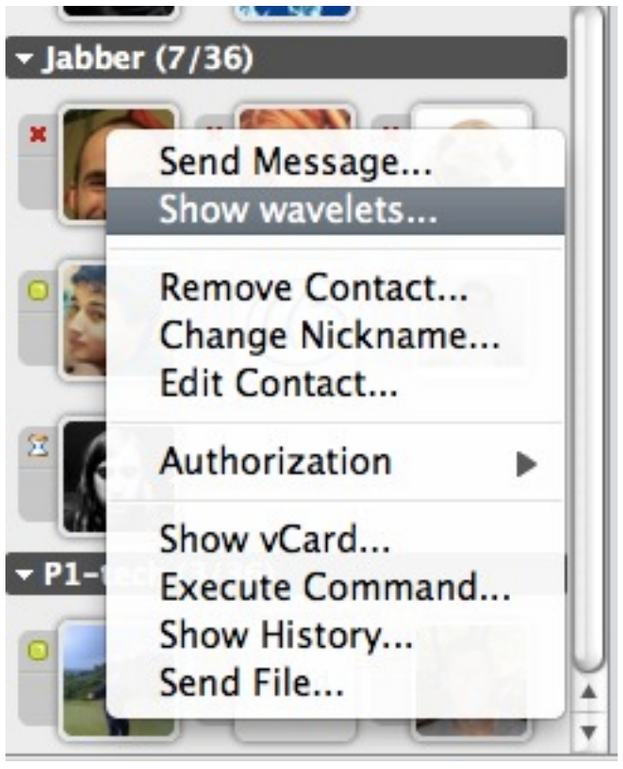
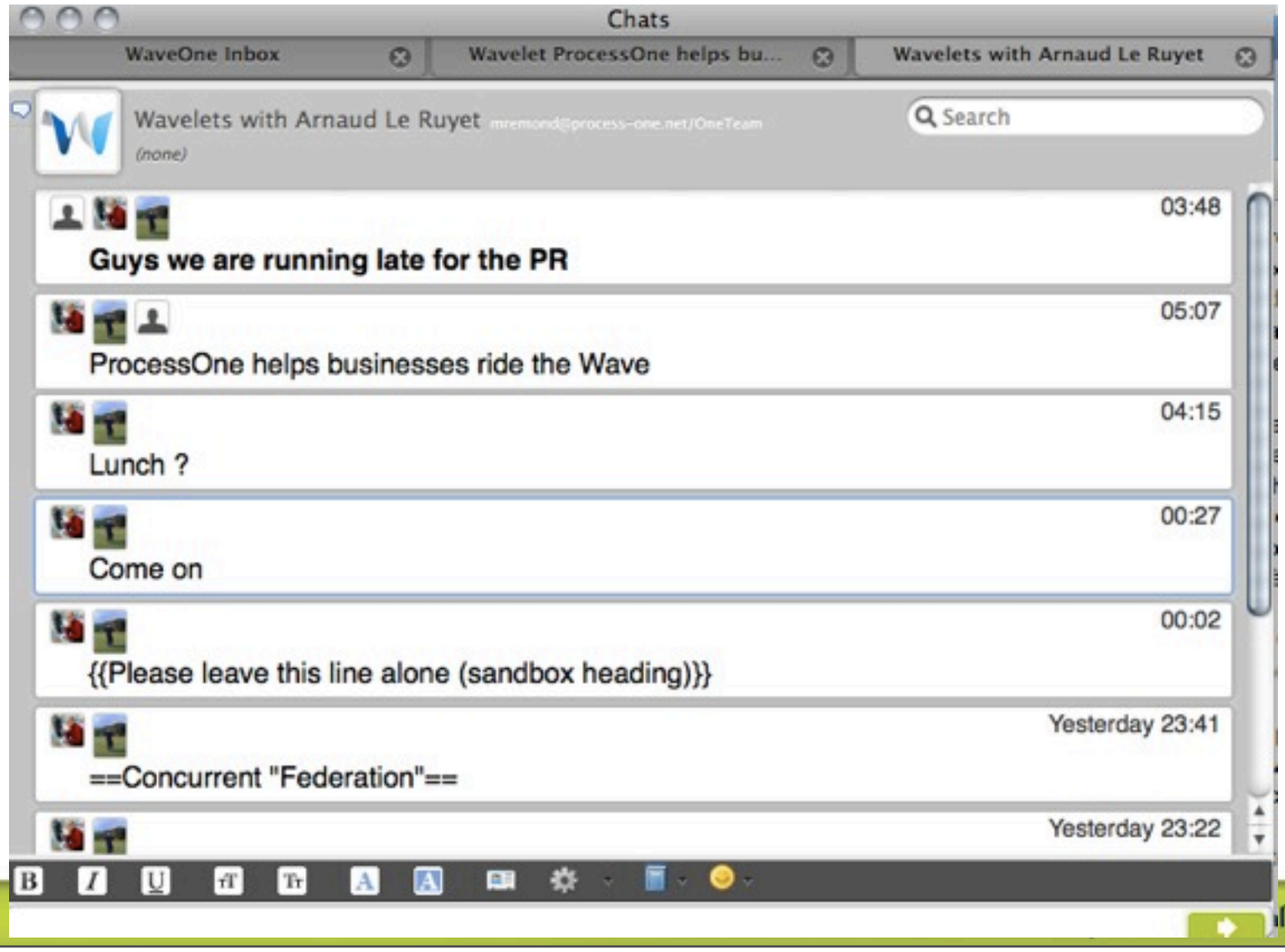


# Searching and shortcuts

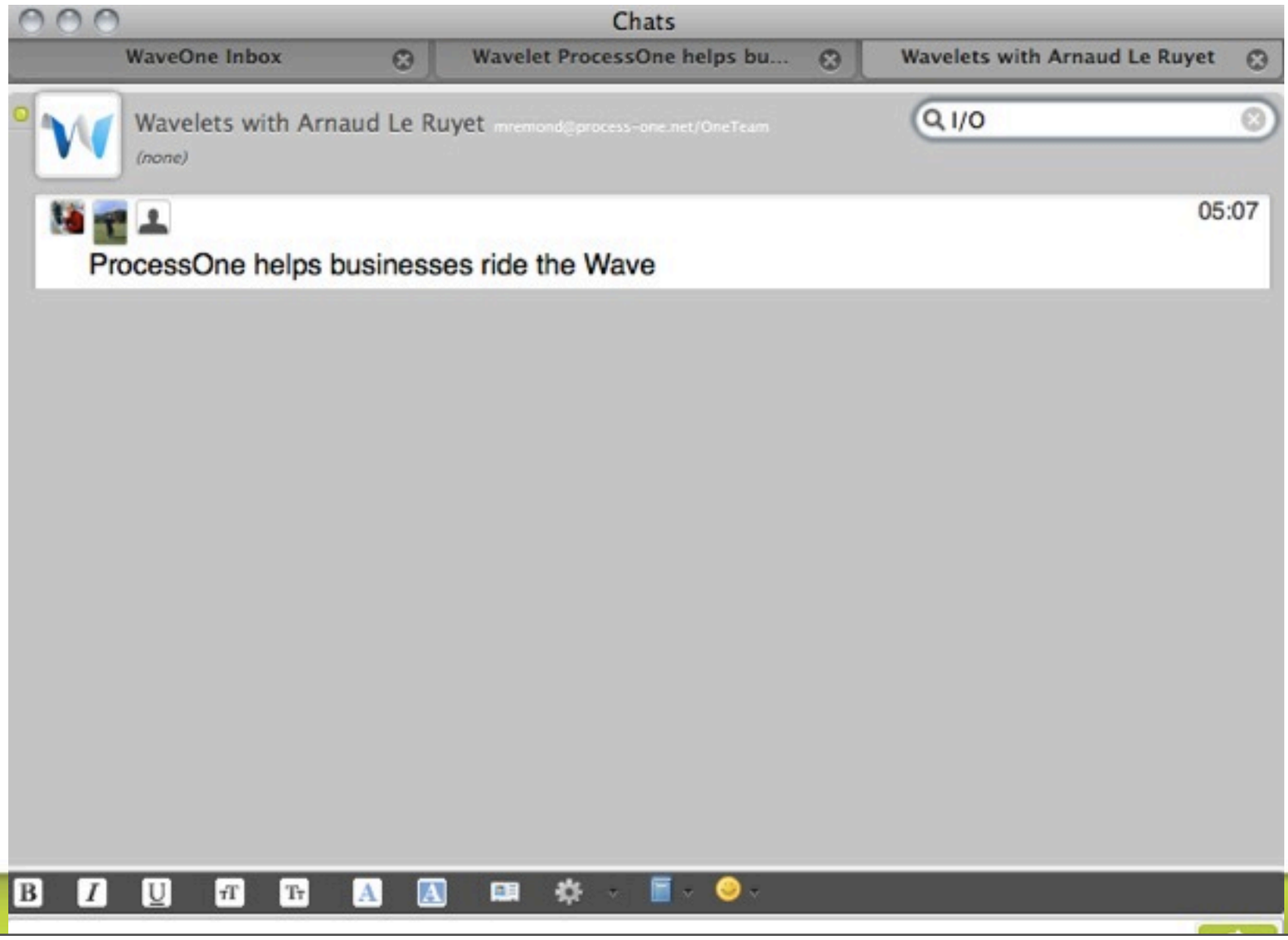
- Mickaël needs to search for conversation with one contact. For any of your contact, you can find the list of wave you had with them by opening WaveOne filtered inbox.



# Searching and shortcuts

- You can use the search field to search back for the wave you need to find based on keyword (plain text search).

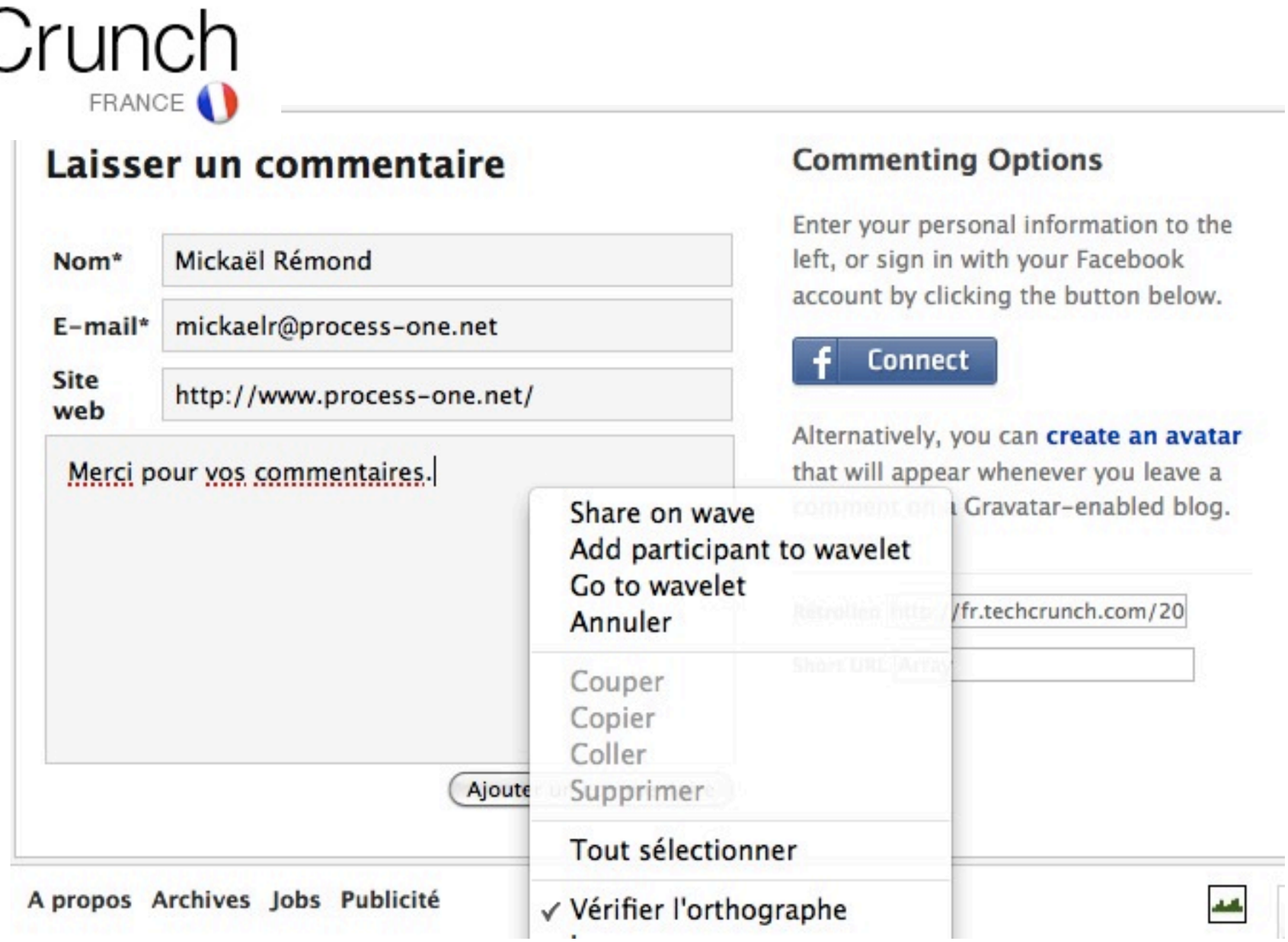


# TextArea shared editing: Wave the whole web

- The Press Release is finally done and has lead to articles on various sites.
- After managing the press briefing agenda with Wave, the team would like to collaboratively write comment to cheers the users on Techcrunch.
- Mickaël decides to start writing a comment on the blog and share it on wave immediately to write it with his team.
- He adds participants from internal and external wave service and they prepare the blog post live together.
- When the blog post is ready, Mickaël posts it.

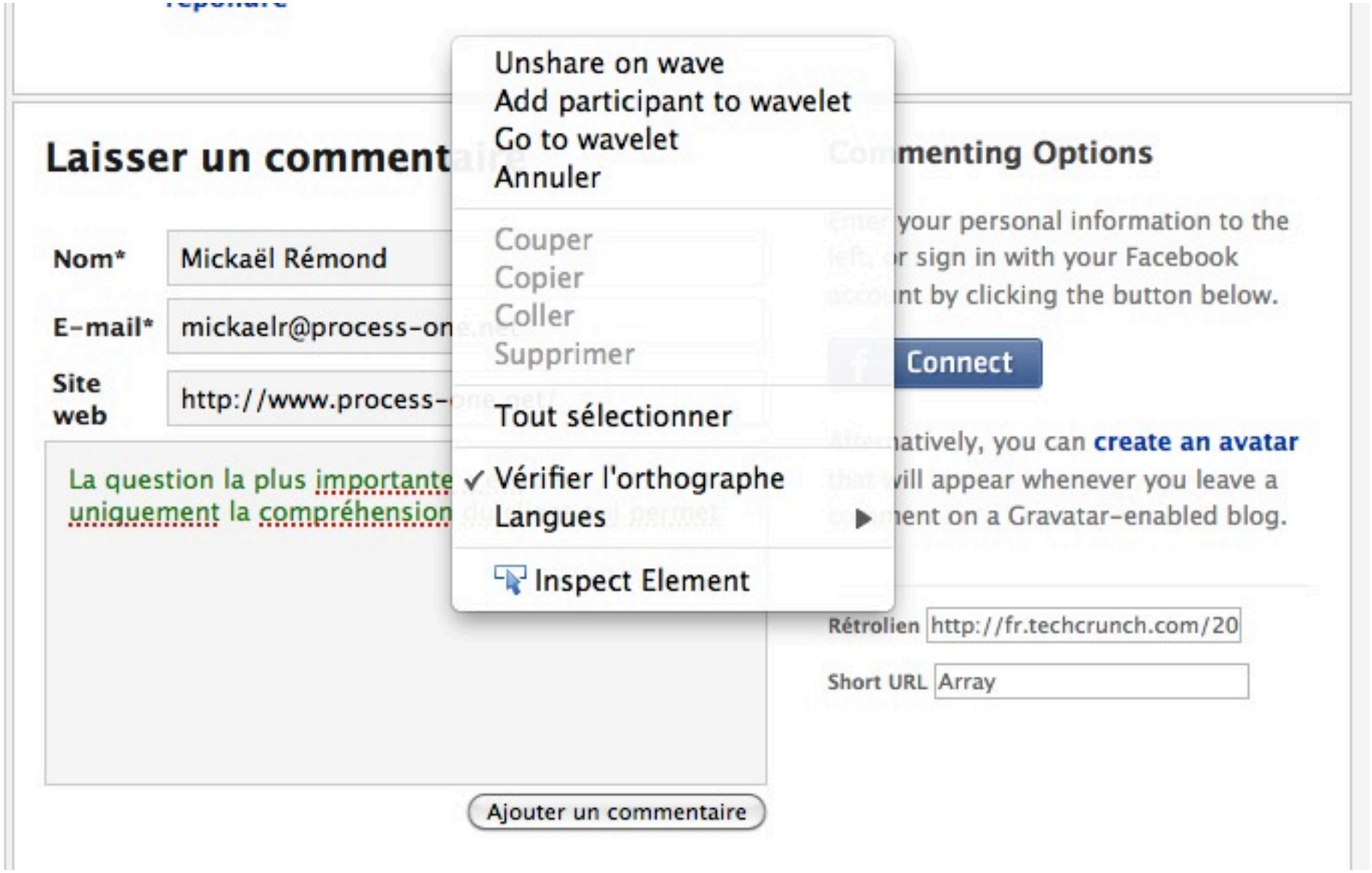
# TextArea shared editing: Wave the whole web

## Share any textarea to edit content together



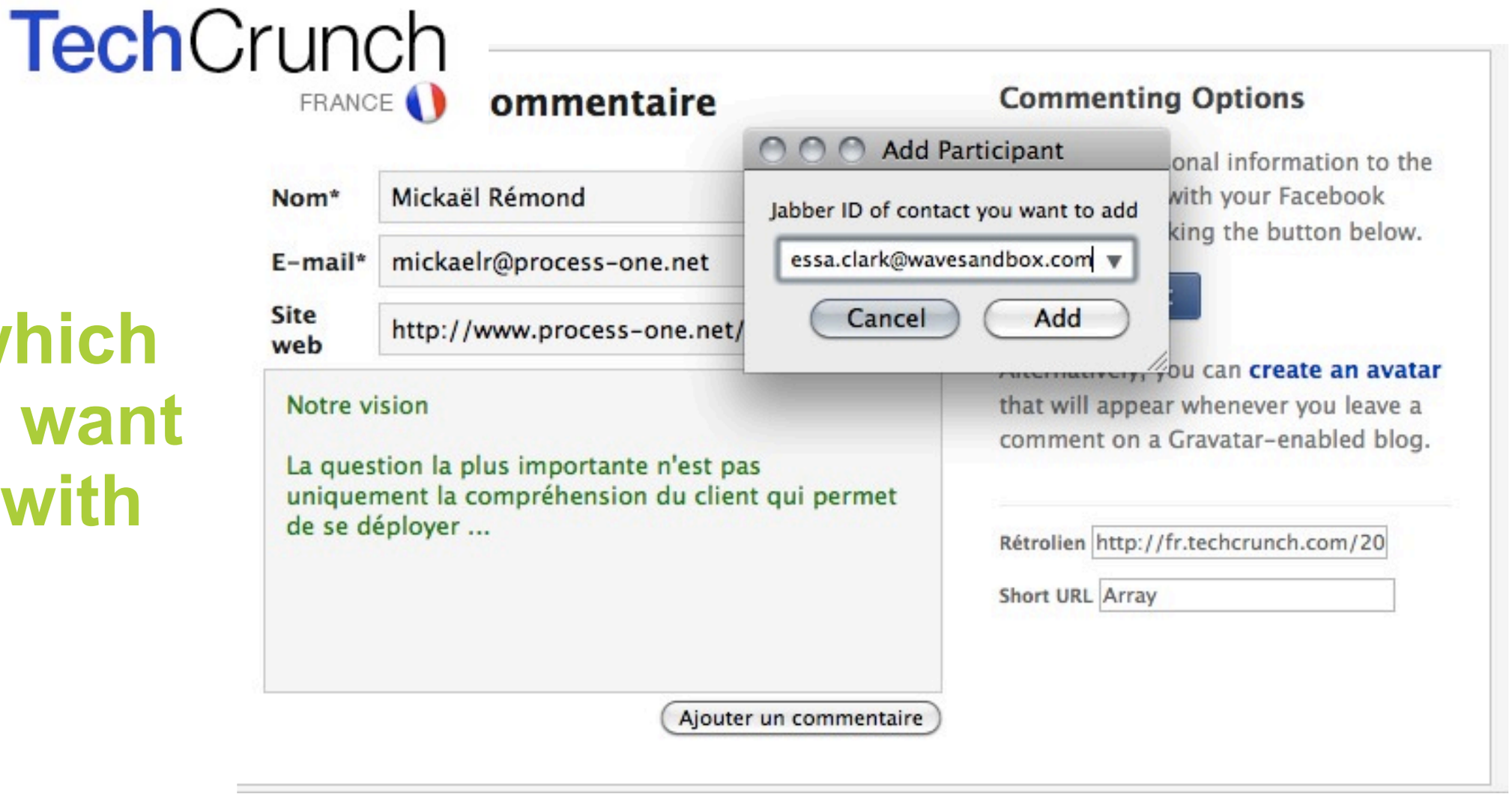
# TextArea shared editing: Wave the whole web

## Add participants



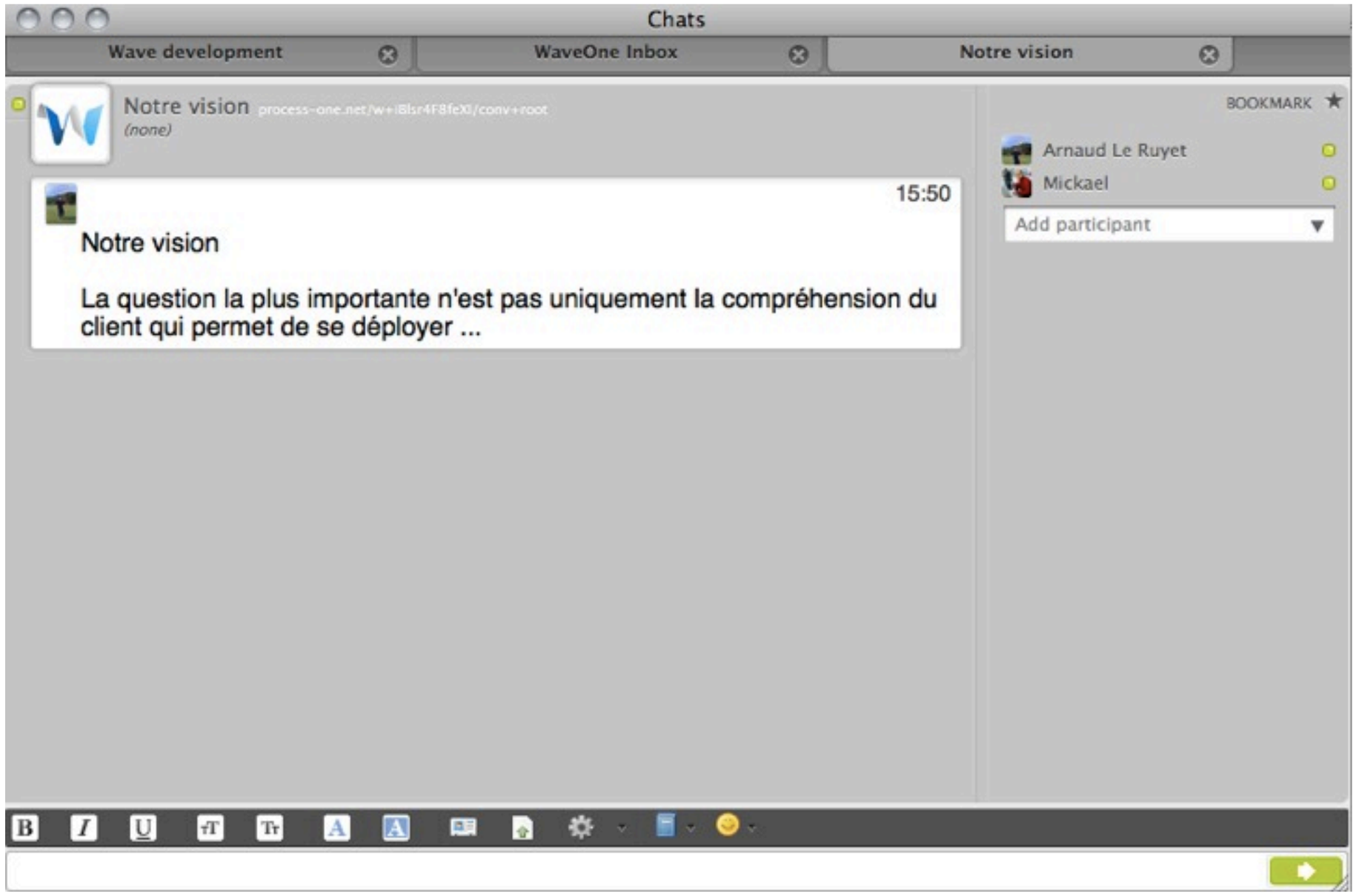
# TextArea shared editing: Wave the whole web

## Select which one you want to work with



# TextArea shared editing: Wave the whole web

## Other can jump in the collaborative edit from WaveOne



# TextArea shared editing: Wave the whole web

When ready, the initial user can post the changes

TechCrunch FRANCE

**Laisser un commentaire**

Nom* Mickaël Rémond

E-mail* mickaelr@process-one.net

Site web http://www.process-one.net/

La question la plus importante n'est pas uniquement la compréhension du client qui permet de se déployer ...

Thank you all.

Ajouter un commentaire

**Commenting Options**

Enter your personal information to the left, or sign in with your Facebook account by clicking the button below.

Connect

Alternatively, you can **create an avatar** that will appear whenever you leave a comment on a Gravatar-enabled blog.

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