Real-Time Text for smooth and rapid communication

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Presenting XMPP draft extension
XEP-0301 Real-Time Text, by Mark Rejhon

Motivation for real-time text in XMPP

- Have you ever wondered what the other party is typing in an XMPP IM communication?
- Have you ever hurried up to get your message ready and sent to keep the other party informed?
- Have you ever had confusion by crossposted messages?

The solution: XMPP Real-Time Text

- Demo

Live demo of basic features of real-time text in XMPP:

-Smooth viewing what remote user is typing.

-Editing as usual in current entry, with positioning, deletion, insertion.

-Simultaneous typing.

Note, the online demo in the live workshop can be replaced by visiting the demo in the www.realjabber.org site by workshop archive viewers.

Real-time text in XMPP –use cases

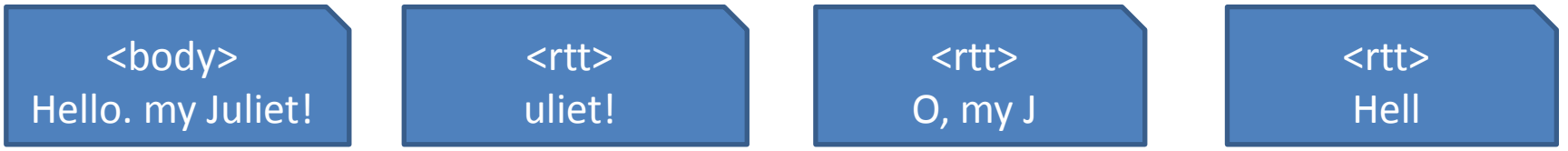
- Intensive conversation. Receiving party reads the thoughts as they are developed in typing.
- Multi-party chat. Mixed real-time and message-wise display, depending on client support of real-time text extension.
- Emergency service application. Every transferred character can contribute to rescue.
- Relay services and on-line captioning
- Any text chat

Real-time text in XMPP. Extension XEP-0301

- XEP-0301 In-Band Real-Time Text
- Draft extension since June 2011.
- http://xmpp.org/extensions/xep-0301.html
- Author: Mark Rejhon, Canada
- Client extension to make IM client support real-time text
- Open source demo implementation available at www.realjabber.org
- C#
- Apache license

Real-time text in XMPP Coding

- Main structure
  - Send completed messages as usual in <body> elements.
  - Send typed text fragments time-sampled at regular intervals in <rtt> elements.
  - Receive and display <rtt> elements consequtively to smooth build-up of message
  - Replace with message <body> when received.



Basic Example ”Hello, my Juliet!” in 3 rtt messages and one body

```
<message to='juliet@capulet.lit' from='romeo@montague.lit/orchard' type='chat' id='a01'>
<rtt xmlns='urn:xmpp:rtt:0' seq='0' event='new'>
<t>Hell </t>
</rtt>
</message>
<message to='juliet@capulet.lit' from='romeo@montague.lit/orchard' type='chat' id='a02'>
<rtt xmlns='urn:xmpp:rtt:0' seq='1'>
<t>o, my  J</t>
</rtt>
</message>
<message to='juliet@capulet.lit' from='romeo@montague.lit/orchard' type='chat' id='a03'>
<rtt xmlns='urn:xmpp:rtt:0' seq='2'>
<t>uliet!</t>
</rtt>
</message>
<message to='juliet@capulet.lit' from='romeo@montague.lit/orchard' type='chat' id='a04'>
<body>Hello, my Juliet!</body>
</message>
```

Basic coding details

- <rtt> element contents
  - <t> text elements – one or more characters
  - <w n=#> pause elements. Wait # ms before display, replicates typing rate.

Example of timing elements w replicating typing rate

```
<message to='bob@example.com'
    from='alice@example.com/home' type='chat' id='a01'>
<rtt xmlns='urn:xmpp:rtt:0' seq='0' event='new'>
<t>H</t>
<w n='215'/><t>e</t>
<w n='154'/><t>l</t>
<w n='251'/><t>l</t>
<w n='115'/><t>o</t>
<w n='265'/>
</rtt>
</message>
```

Editing in already sent text

- You can position and edit in current message as usual.
- Real-time edit elements are sent.

  <t p=n>text insert text at position p

  <e p='#' n='#'/> backspace n char at position p

Currently only in current message.

(may adapt XEP-0308 Last Message Correction approach)

For more details on coding – see XEP-0301

Transmission interval and smooth display

- Recommended time sampling interval 1 s.
- Balance between server load and conversational usability. 1 s optimum (?)
- Meets usability requirements for end-to-end delay <2 seconds for usable conversation.

- Smoothness of display is essential for good usability. Created by <w>pause elements. Called Natural Typing NT.

Seamless Introduction

- When two clients have the real-time text function, it can be used between them.
- If only one has the function, messages work in message mode ”as usual”.
- This works both because <rtt> elements are ignored if not understood, and because of a feature negotiation.
- The feature can be gradually introduced among clients to improve XMPP user experience.

State of standardisation and development

- http://xmpp.org/extensions/xep-0301.html
  - XEP-0301 first draft accepted June 2011
  - Discussion in xmpp standards list
  - Minor adjustments planned
  - Your input is welcome

Relation to other methods for real-time text

- Other already standardised real-time text protocols exist.
- Valuable as medium in SIP multimedia calls. Implemented in RTP by RFC 4103.
- Every communication environment should have its real-time text protocol
- Conversion between them essential, where interoperability is arranged for other media between communication environments.

Next step

- Include draft XEP-0301 in your XMPP implementations to make them smooth and rapid.
- Contribute to standardisation of xep-0301 in the standards list of xmpp.org
- Contribute to improved user experience in communication.

More info:

xmpp.org/extensions/xep-0301.html

www.realjabber.org

www.realtimetext.org

Greetings from Mark Rejhon, author of XEP-0301

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