Text-Based Mobile Communications

Usability Study Results

AUGUST 2011

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Accessibility @ RIM

Accessibility @ RIM

- Ensure BlackBerry products and services meet the needs of customers with disabilities

- Generate and drive accessibility requirements

- Sponsor and conduct usability research

- Provide pre and post sale technical support to carriers and customers

- Participate in policy/legislative activity

Recent/Relevant Usability Studies

- Non-Visual Access on Mobile Phones (iPhone)

- Non-Visual Access on Tablet Devices (iPad)

- Screen Magnification Solutions on Smartphones (Nokia)

- Comparative Low Vision Solutions on Mobile Phones

- Real-Time Emergency Solutions on Mobile Phones

- Non-Speech Audio User Interfaces on Mobile Phones

- Touch Screen Smartphone Accessibility

- Mobile Communications & Persons with Physical Disabilities

- …..

Study Overview

About Usability Testing

- Human Computer Interaction (HCI) or Human Factors (HF) related activities.
- Seeking to understand how people use technology
- Qualitative testing conducted with 6-8 participants
- Situation-based to identify real-world scenarios
- Can uncover product usefulness, user mental models, etc.
- Uncovers opportunities to improve solutions before launch to ensure effective user operation, utility, acceptance, etc.
- ***Almost always results in unexpected new findings***

Overview of Study

- Usability study of three (3) different text-based communications modalities (Push Email, IM, RTT) would be used by participants with hearing loss.
- Results intended to inform RIM efforts as applicable, be included in AEGIS project consortium, and inform applicable policy working group activities around the world.
- Builds on our previous studies, including specifically a "Native TTY" or TTY Emulation prototype built by RIM for use in emergency situations.

Objectives

1. Identify how participants with hearing loss use different text-based messaging options on a mobile phone.

2. Learn about preferences persons in the hard of hearing and deaf community have when it comes to IM, real-time text and push e-mail.

3. Identify the need for future research in areas of text-based mobile messaging, emergency communications, Real-time Text, etc.

Protocol Overview

- Facilitator-led, task based usability study

- 8 External participants with hearing loss

- Comparative, within-subject design with 'Talk Aloud' method

- High fidelity solutions, on real devices, on real networks

- Abridged 'Wizard of OZ' communication interaction

- Pre study, post task and post study questionnaire

- Conducted in a pseudo lab environment

- Conducted by RIM and the Canadian Hearing Society (CHS)

Participant Profile

- 8 External Participants: 4 Male and 4 Female

- Participants with hearing loss: 5 Deaf and 3 Hard of Hearing

- Between the age of 25 to 66

- 75% own a BlackBerry device

- 88% use IM on their mobile phone

- 100% previous experience with push email on a smartphone

- 88% use mobile messaging on a daily basis

- 0% had experience with Real-Time Text

Tasks

1. Respond to and conduct an instant messenger chat

2. Initiate and respond to a push e-mail conversation

3. Respond to a RTT call

Study Measures

- Success (Pass or Fail)

- Completion Time (00:00)

- Task Difficulty (5-point Likert scale)

- Task Effort (5-point Likert scale)

- Prompts Required (#)

Technology Used

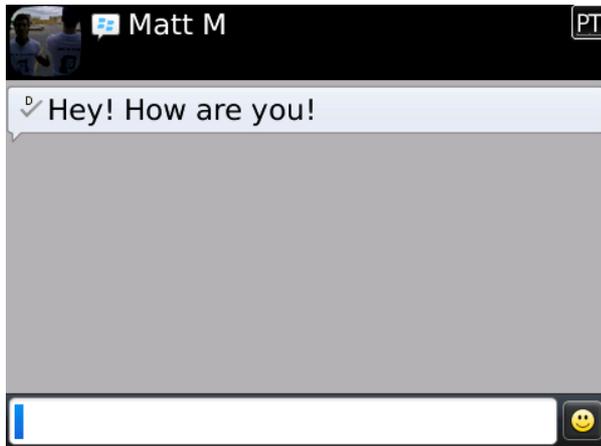**Hardware**
- BlackBerry Bold 9700 smartphone

Service
- Wireless data Service (Rogers Voice & Data, BlackBerry Email Subscription)
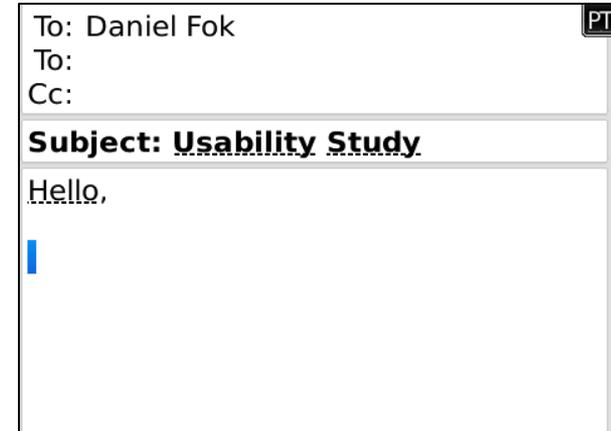- Real-time Text Service (AEGIS RTT Server)

Software
- Push Email (BlackBerry Email)
- IM application (BlackBerry Messenger)
- RTT application (AEGIS RTT Prototype)
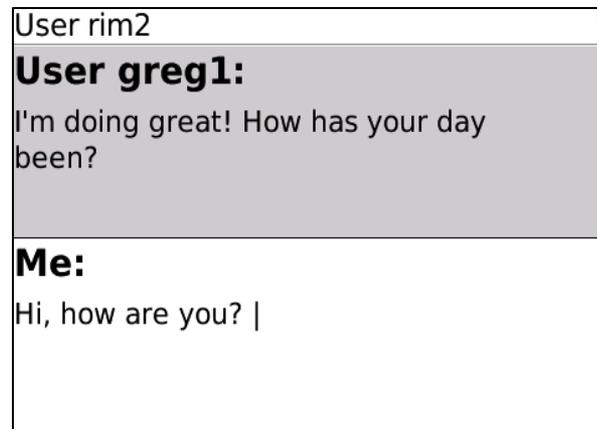
Text-Based Messaging Solutions

BlackBerry Messenger

PT

Matt M

✓ Hey! How are you!

☺

BlackBerry Email

To: Daniel Fok
To:
Cc:

Subject: Usability Study

Hello,

AEGIS Real-Time Text (alpha)

User rim2

User greg1:

I'm doing great! How has your day been?
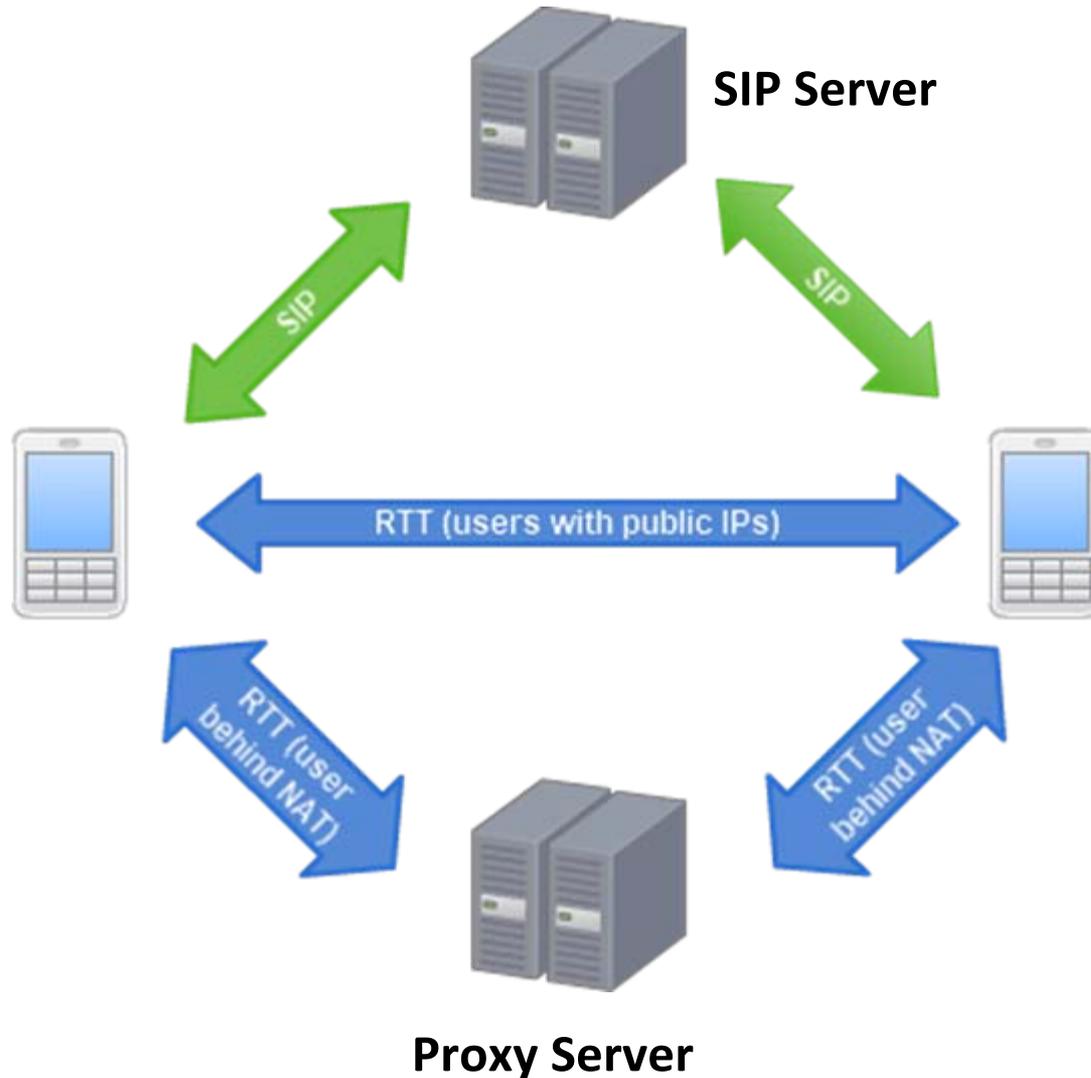
Me:

Hi, how are you? |

AEGIS Project Summary

- **Project Name**: Open **A**ccessibility **E**verywhere: **G**roundwork, **I**nfrastructure, **S**tandards (ÆGIS)

- **Contract:** ÆGIS- FP7-224348

- **Programme:** 7th Framework-Programme

- **Duration:** 01 September 2008-29 February 2012, 42 Months

- **Budget:** € 12.600.861

- **Consortium:** 19 organizations including Industry, Academic, Non-Profit and Consumer Advocacy organisations

AEGIS Real-Time Text Prototype

SIP Server

SIP

RTT (users with public IPs)

RTT (user behind NAT)

RTT (user behind NAT)

Proxy Server

Signalling
SIP
UDP
IP

Data
T.140
RFC4103
UDP
IP

Limitations & Assumptions

- Participants did not receive an orientation

- Study focused on a single platform (BlackBerry smartphone)

- The RTT app is a prototype, whereas other text-based messaging solutions are commercially available

- The RTT task started at a connected state, excluding the initiation of a chat call from initial scope

- While tasks were not focused on emergency calling, participants were informed 911 access was available

Observations

Task 1: Instant Messenger Chat

- 75% of participants were familiar with IM and completed the task with ease

- 100% Success

- Task time 1.1 to 2.6 seconds

- *"I would use IM over RTT when calling home because with IM I know the message will be delivered but with RTT the other person needs to be by there phone all the time. If my wife is in the shower, I know she'll get my BBM and respond."*

Task 2: Email Conversation

- Participants found this task Difficulty and Effort to be <u>easy</u>

- Task time 2.4 to 4.2 seconds

- 50% prefer Email over RTT for business usage

- *"Using e-mail is more professional than RTT, I wouldn't want my boss to see my mistakes. An e-mail allows me to correct mistakes before sending."*

- *"I like using e-mails because the other person can see if I've read the message or not and with RTT, if I answer the call I need to always reply. E-mails allow me respond at my own convenience."*

Task 3: Respond to a RTT call

- Participants found this task to be <u>easy</u>

- Task time 2.06 to 3.15 seconds

- 100% of participants said they would use RTT over TTY because of RTT's fast response time.

- 100% of participants said they would use RTT in an emergency situation if it could connect to 911.

- 63% of participants did not like the fact that the person on the other line could see their mistakes, corrections and thoughts right away

Task 3 Quotes

- *"[RTT] is amazing, it's instantaneous and I don't have to wait."*

- *"I wouldn't use [RTT] all the time, if I'm mad or angry then I might say something I wouldn't want to, so I would use BBM more often."*

- *"It's cool. It would bother me that the other person could see my mistakes and thoughts.*

- *"I would use [RTT] all the time, the application feels like I'm talking on the phone, I like the quick responses!"*

Post Session Observations

- 100% of participants preferred RTT in emergency situations

- 88% of participants reported that they would use IM over RTT to contact someone they were not familiar with, because they would not want the other person to see their mistakes and corrections.

- 50% of participants would rather use RTT over or push email and IM to check in with the office.

- 50% of participants raised concern about what the person would see (i.e., mistakes, corrections, immediate thoughts).

Study Summary

Summary

1. **RTT Preference** - participants preferred RTT over Email and IM initially because it felt like a text message, but was as quick as TTY.

2. **Selective RTT Usage** - participants preference for RTT was limited to casual short conversations, whereas, professional and/or long communications would be sent using Email or IM.

3. **Expected RTT Ubiquity** – participants expected/hoped RTT would be available as an option in the future, and expect the same level of quality as found using other communication methods.

Implications

- Persons without disabilities will also need/want this solution

- Further research is needed (UI, out of box, performance, network effects/utilization, interoperability, etc.).

- Multiple RTT standards exist (XMPP, RFC4103, IMS MMS) and require harmonization.

- PSAP-terminal solutions needs equal development and testing efforts to ensure scalability and efficacy.

- Evidence-based policy activity need to be informed by such testing, research and standards activities.

Upcoming Accessibility Initiatives

Upcoming Usability Research

- Real-Time Text Communications on Mobile Phones

- Total Conversation Communications on Mobile Phones

- Mobile Phone Communications Solutions for Emergencies

- Video Relay Services on Mobile Phones

- Sound Intelligibility Study on Mobile Phones

Contacts

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