

Interoperable total conversation

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ETSI ES 204 009 Human Factors (HF);

“Requirements for interoperable total conversation services”

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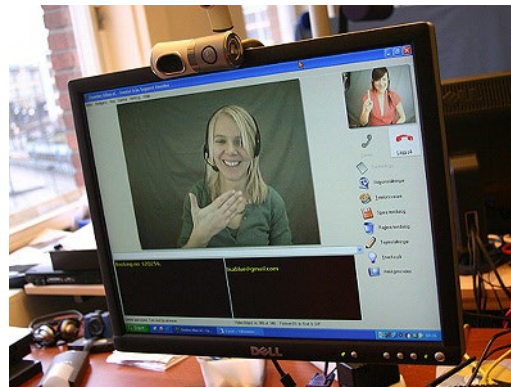
Total Conversation



The European Accessibility Act (EAA)

- Requirements on Information and Communication Technology (ICT) to be accessible by persons with disabilities
- **Products and services** shall meet accessibility requirements
 - Total Conversation shall be provided by products providing real-time video communication.
 - Total Conversation services shall be provided by services providing real-time video communication services.

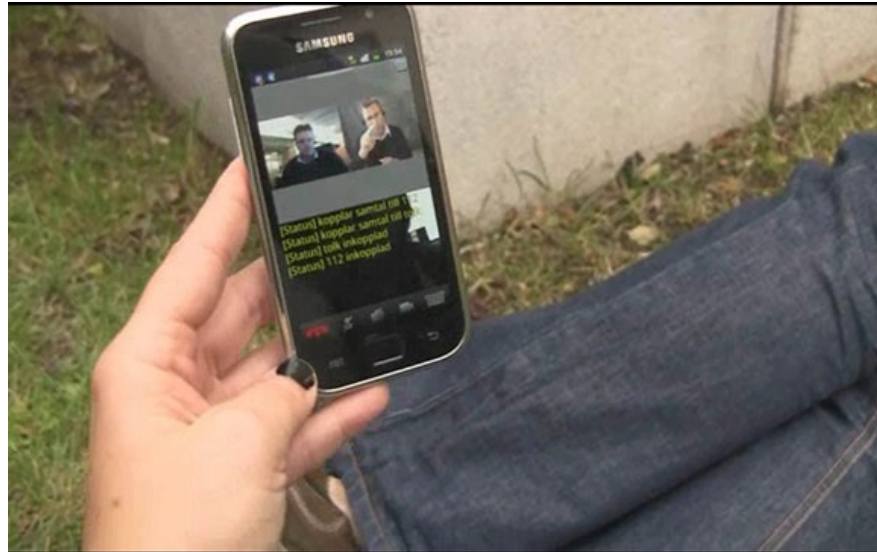
In force: 28. June 2025



Total Conversation

What is Total Conversation Service?

- **Real-time text, video and voice – all at once:**
 - Adding **real-time text (RTT)** to real-time video communication services
 - Providing **video** with quality for sign language and lip-reading
 - Providing **voice** communication with quality for persons with hearing loss
- more universal communication service
- Users choose preferred modality

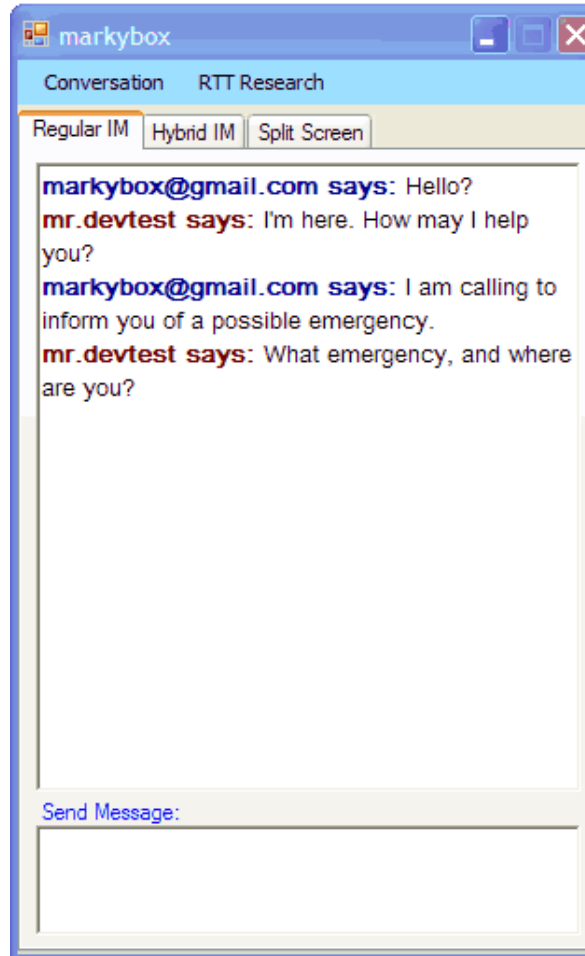


Total Conversation

What is Real-Time Text?

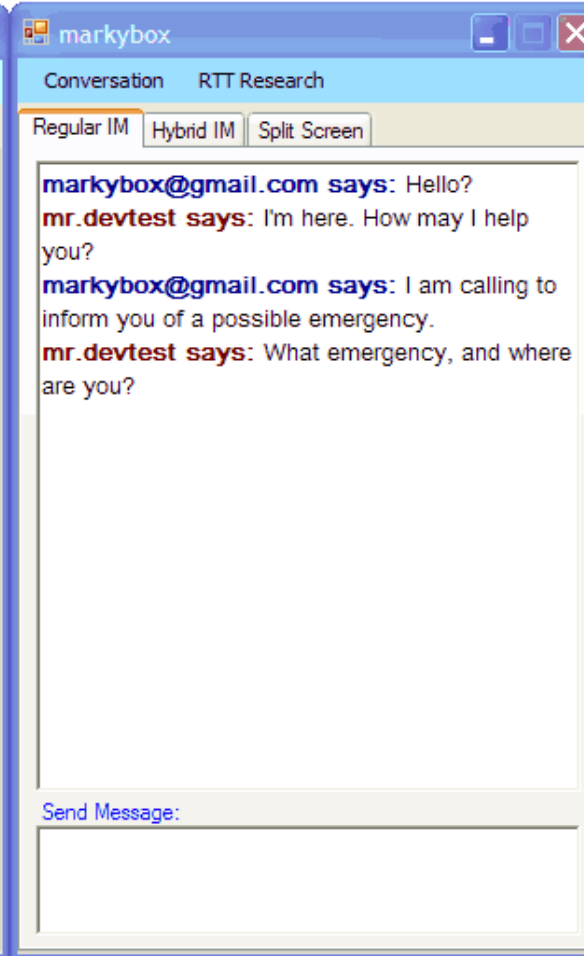
Regular Chat

Line by Line



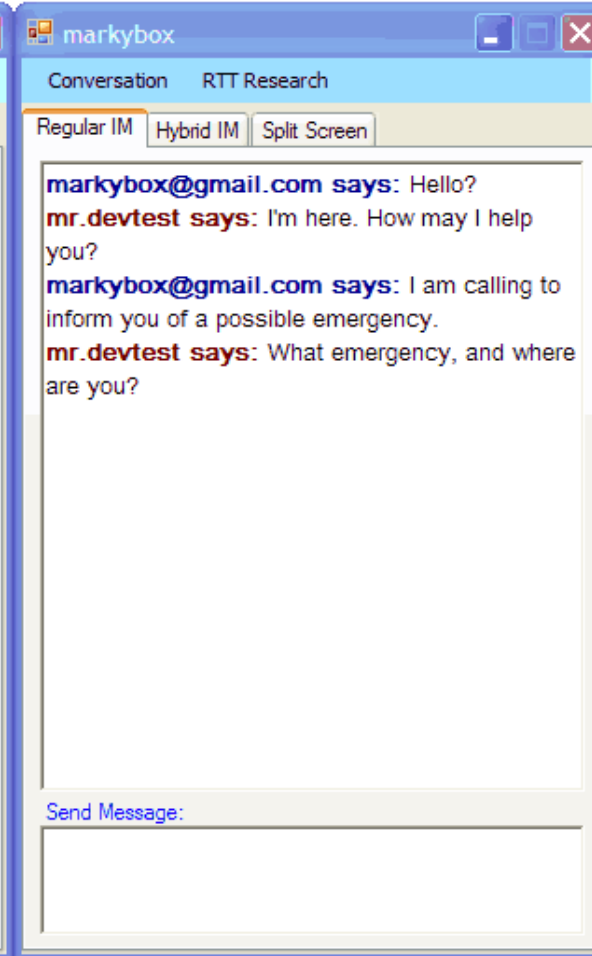
Real Time Text

No Key Press Intervals
1 Packet Per Second



Real Time Text

Natural Typing / Interval Encoding
1 Packet Per Second



Total Conversation

RECOMMENDED

Total conversation - Real-life example



The contents of this video were developed by University Gallaudet under grants from the National Institute on Disability, Independent Living, and Rehabilitation Research USA.

Main quality requirements



Total Conversation

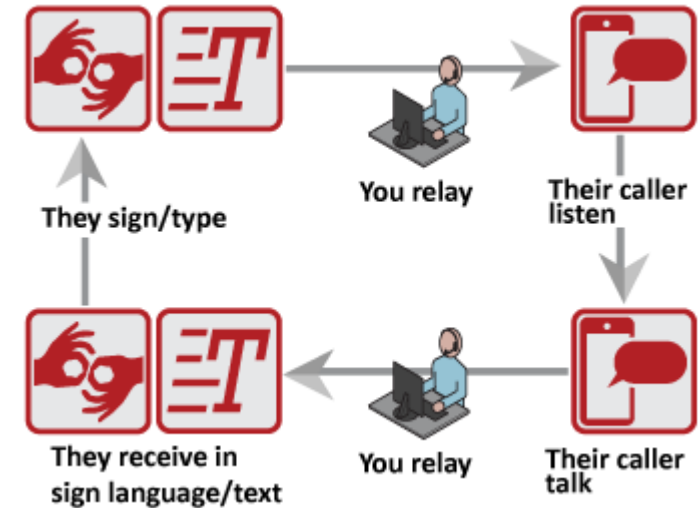


- **Reproduce motion smoothly** (≥ 20 frames per second)
- **Reproduce details: fingers, mouth, eye direction** ($\geq 340 \times 280$ pixels)
- **Do not delay – allow good interaction** (≤ 400 ms end-to-end)
- **Good synch audio-video** (≤ 100 ms)
- **Audio: 250 Hz to 7000 Hz essential for speech perception**
- **RTT: < 1 s delay, 30 characters/s, Unicode support**



Role of Relay Services

- Video relay: Sign language ↔ speech
- Text relay: RTT ↔ speech
- Captioned telephony: real-time captions for speech
- Essential for emergency and public services (Phone call 112)



Integration with Assistive Technologies

- **Hearing aids & cochlear implants:**
 - T-coil
 - Bluetooth LE Audio/Auracast™
- **Screen readers & Braille displays for RTT**
- **Augmentative and Alternative Communication (AAC) devices**



Total Conversation

Technology for total conversation



- **Technology agnostic concept. Mobile, WiFi, Fixed, VoIP, Web**
- **Detailed specifications for Session Initiation Protocol SIP**
- **Detailed specifications for 3GPP and GSMA VoLTE and 5G**
- **Can be implemented also in Web Technologies WebRTC.**

And any future real-time multimedia technology



Total Conversation



Application Scenarios

- **Access to multimodal and flexible communication services**
- **Emergency communication (112):** multimodal access
- **Education and e-learning:** inclusive classrooms
- **Telehealth:** accessible doctor–patient interaction
- **Professional collaboration:** inclusive workplace communication



Join in making real-time multimedia services accessible
and rapid for all by implementing total conversation!



Link to standard ETSI ES 204 009

Requirements for interoperable total conversation services

