

Mobile Alerts

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Introduction

- Information Glut – Peter Denning

“Infoglut”, *CACM*, 2006, (forthcoming)

- VIRT (Valued Information at the Right Time) - Rick Hayes-Roth

“Two Theories of Process Design for Information Superiority: Smart Pull vs Smart Push”, *Command and Control Research and Technology Symp: The State of the Art and the State of the Practice*. San Diego, CA, US DoD, Command and Control Research Program, 2006 (forthcoming)



Our connections in to the world

- Email – multiple
- Chat
- Cell phone
- Landline phones – office, home, home office
- SMS, MMS
- Etc.



Our Context

- For office people
 - Meetings, conferences, classes, home, office, home-office
- For military
 - Need to be silent, need to be invisible, short time to attend to critical info

Incoming Info

- Emails
- Phone calls / voice mails
- SMS, MMS

- Urgent
- Important but not urgent
- Urgent but not important ☺
- Not important, not urgent, like SPAM
- SPAM

Problem

- Deliver
 - valued information
 - rapidly
 - keeping in mind user's context



Context is the key for alerting...



Sound Alerts

- Ring tones
- Each tone represent a separate user or a group of people
- Encoded with message – high pitch for urgent
- Intrusive, high degree of publicity, lack of privacy.
 - Good for outdoor environment, not suitable for meeting/seminars
- Available on cell phone, desk-phones, pagers, beepers

Speech Alerts

- “Urgent email from Joe”
- A part of the message can be delivered with the “ring”
- In-vehicle navigation system to provide directions and route information to the driver
- Disadvantage:
 - Specialized Equipment: Speakers & Earpiece
 - Difficult to listen over noisy background

Text Alerts (SMS)

- Less intrusive and can be read in the privacy of the receiver.
- Most common use – convey short message
- Available in cheapest cell phones
- Disadvantage:
 - Have to view the screen of the device

Image and Video Alerts (MMS)

- Used for image transfer and video streaming
- Effective for conveying complex information
- Disadvantage
 - Higher bandwidth, storage
 - Available in sophisticated devices

Silent Alerts

- Used to provide non-intrusive alerts
- High degree of privacy - not noticeable by others
- Very useful for the handicapped users (e.g., deaf or blind users)
- Disadvantage : device has to be close to the body to sense it
- Examples
 - Silent vibration/tactile alerts
 - Color coded lights
 - Sensing alerts (new)
 - Device that emits different scents
 - Ambient touch (e.g., TouchEngine technologies)

E.g. TouchEngine Technology

- Navitus by Sony
 - Integrated Remote Commander
 - Tactile Response Display
 - LCD presses back against your finger tips to confirm your command as you enter



Mobile Alerts - Key Components

- User and Device Profiles
- Information Acquisition
- Alert Construction
- Alert Delivery

User Profiles

- Calendar – captures dates/times/place
- Context profiles – e.g., when in meetings, send urgent emails by SMS (for SMS-challenged, send voice mails)
- Describes how to reduce content - filter info for importance
 - E.g. emails from certain individual and marked urgent – deliver now
 - Voice mails or missed calls from certain numbers, inform now

Device Profiles

- User registers the devices he has access to with the system
 - Helps determine which types of alerts the device can handle
 - Device capability – image size, color/mono,

Information Capture

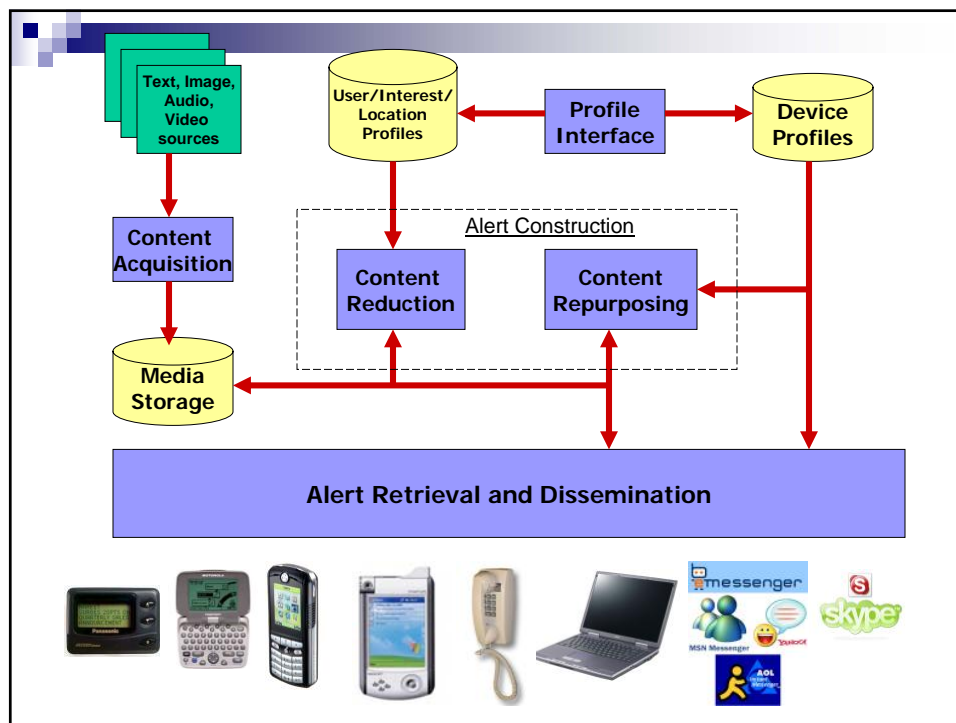
- Capture information from various sources
 - Sender initiated
 - Predefined or scheduled alerts
 - Location-based alerts
- Content reduction - determine what is valuable and what is not – a critical step in the process

Alert Construction

- Content reduction - convert messages into a form that is amenable for efficient processing later on
 - Convert email trails into buttons that user can press to get the trail, if desired
 - Convert attachments into options
- Content Repurposing
 - Match content to the device capability and user preferences
 - Keep in mind network capability and cost (roaming?)
 - Keep in mind dynamic device parameters (low on battery?)

Alert Delivery

- May need to switch on user device, change its mode depending on the alert importance
- Allow both pull and push operations for alert delivery
 - Pull is another case of content reduction!



Topics for Research

- Content reduction – information-value awareness
- User profiles and user context definition – user-state awareness
- Content repurposing – device awareness
- Content delivery – network awareness

Thank you

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