Challenges in Mobile Multimodal Application Architecture

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Outline

- History of Mobile Multimodal Industrial Efforts
- Landscape of Mobile Multimodal Applications
- Challenges
- No Conclusion

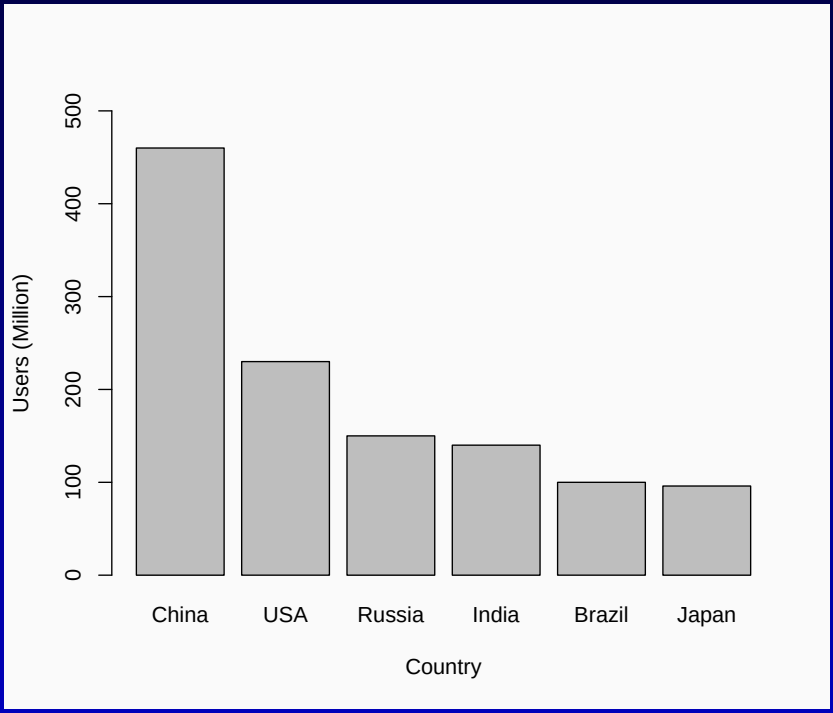
History of Mobile MM

- Industrial Efforts
  - WAP Forum started to investigate MM in 2000
  - OMA (following WAP) agreed an work item in 2002(MMMD)
  - OMA completed its architectural work in 2005
  - OMA decided to terminate its work without Tech specs in 2006
  - (Pending termination in OMA)

MMMD: MultiModal and MultiDevice

Wireless Telephony

- Expecting rapid shift towards mobile data services



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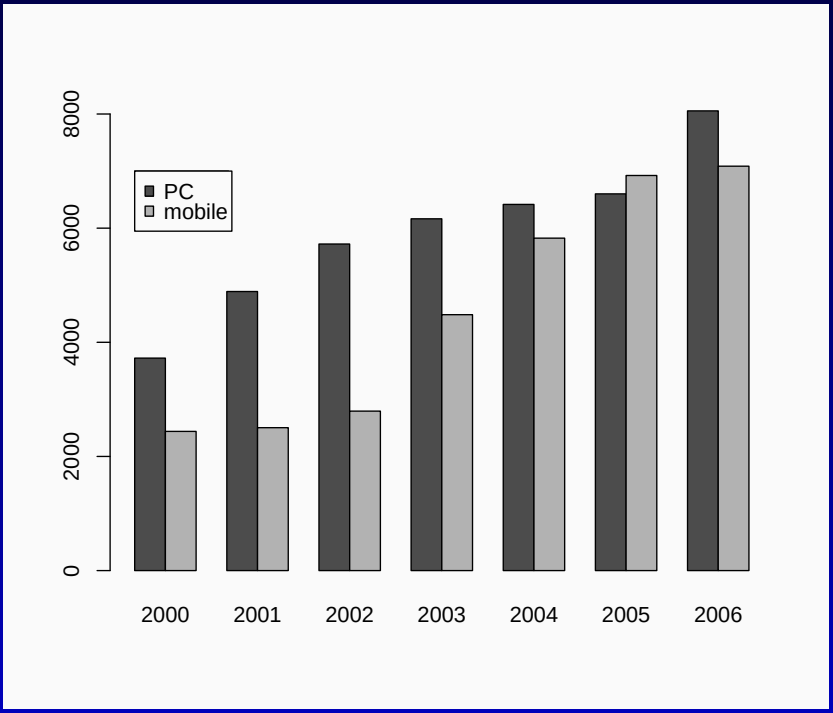

PC and Mobile In Japan

Landscape

- Capability Improved for MM
  - Increased Network Bandwidth (IMT-2000 users 81% in Japan)
  - CPU and Memory Increased (sub-GHZ, GByte)
  - Linux emerged (LiMo, Open Handset Alliance, . . .)

Retrospective View (general)

- Mobile Data Services need Spiral Evolution
  - Interaction among Services, Content, and End-users
  - Spiral allows gradual capability improvement through use
- Two-Wheel Efforts necessary
  - Capability Evolution
  - Ease of Authoring
- Many believed that *mobile* fits MultiModal . . .

Obstacles in Mobile MM Road

- Challenges in Encapsulation
- Challenges in multimodal Contexts
- Challenges in Content Authoring

Underlying Platforms

- tight-bound-ness to the underlying capabilities
  - failed generalization bypassing the real issues
  - failed design without specific underlying knowledge
  - rapid progress of env threats the higher-layer standardization
- How can we unbind these bonds?

General vs. Specific

- Bridge too far?
  - Single application with multimodal interactions with a user
  - Single application with different modal interactions to different users
  - Single application with single modality with a user at a time (different contexts provide different modal interactions with the user)
- Gap to be filled between general framework and workable solution
- Less support from the PC Internet

Authoring

- Intuitive Difficulties?
- Who are rigorous authors?
- Authoring systems support?
- Authoring is always a pain . . .
  - Obstacles for general MM
  - Obstacles for mobile MM (more authoring and usability test pains)
- Event sequence among multiple entities will be a nightmare

Retrospective View (case)

- Contradicting Observations
  - Sustained Enthusiasm
  - Little or Isolated Contributions

Conclusion

- No Conclusion
  - No Silver bullet to the Challenges (seems like)
  - Industry will be pleased to see mobile Multimodal Apps