Mobile Applications And Services for Converged Networks

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What are we talking about here?

• **Mobile** - not tied to your desktop
  • cell phones, pdas, tablets, watches, earbuds, shoes, TVs, etc

• **Applications**
  • interactive, social, gaming, business, e-commerce, travel, informational, health care, entertainment, etc

• **Services**
  • presence, location, identity mgmt, group mgmt, PoC, voice, text, video

• **Converged Networks**
  • cellular, WiFi, WiMax, 2.5 G, 3G, 4G, IP, IPTV, etc

**An End to End perspective on mobile applications!**
Mobile Apps and Services

In one word, we are talking about

Convergence
Convergence Innovation Competition - CIC

• Focus on innovative applications in the mobile and converged space

• Commercially viable - must have a business plan

• Winners will receive support to move their ideas to commercialization

IP Multimedia Subsystem - A core technology but not the only one

• Convergence around IP - including VoIP, IPTV and Web
Commercialization Pipeline

**Student Innovators**
- Training
- Preparation
- Team Building
- Classroom & Lab Courses

**GT-Rnoc**
- Develops and administers the platform
- Hosts Academic & Research activities

**Research Competition**
- Hosts & administers the competition
- Supports development teams with coaching & tier one support on the platform

**GT Venture Labs**
- Partners with Venture Labs for bridge
- Supports development teams with coaching & tier one support on the platform
- Hosts & administers the competition

**Sponsor's Product Development**
- Supports development teams with coaching & tier one support on the platform
- Grants & assists in preparation for Angel investor presentations

**Live trials**
- Supports development teams with coaching & tier one support on the platform
- Hosts & administers the competition
- Partners with Venture Labs for bridge

**Commercialization**
- Supports development teams with coaching & tier one support on the platform
- Hosts & administers the competition
- Partners with Venture Labs for bridge

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Two primary goals for this class are:

- Build your expertise in the area of Mobile Apps
- Enhance the resources in the GT lab - This is your "Platform Contribution"

Your active participation will be critical:

- Group projects
- Group presentations
- Discussions in-class and all over campus
Class Syllabus

Some stuff we'll be talking about this semester

- SIP - Session Initiation Protocol - VoIP
- IMS - IP Multimedia Subsystem
- Location Services
- Presence Services
- SIP and Web A/S - Application Servers
- Interactive TV - IPTV
- OSGI - Open Services Gateway Initiative
IMS Benefits - Official Story

• Access Independence - not just Cellular: wired, WiFi, WiMax, etc
• Standards Based - IP, SIP, portable across providers
• QoS - ability to link application needs to provisioning
• Billing/Charging - for commercial viability, carrier ROI, “one bill”
• Integration of new services - no more stovepipe applications
  • presence, location, group management, PoC, voice, text, video
Figure 1: Position of the IP Multimedia Subsystem within a mobile network
IMS - S stands for **SUBsystem**

SIP is just about signaling
- call and session management

What about:
- legacy telephone systems?
- other carriers and their services?
- ISPs, cable and satellite operators?
- content providers?
- service providers?
- large enterprises?
All Those Mobile Applications

• I keep seeing articles about thousands of new mobile applications.
  • iPhone
  • Java
  • Android
• Yes, but how many of them leverage real network services? - very few
• Still lacking simple things like shared presence, address book, identity
• Still too many silos!
All Those Web Applications

- And they’re using Web APIs for Network Services
- They’ve made it fun and easy!
Still Many Challenges

There are lots of challenges to putting it all together.

And a whole lot of opportunities!!!
Business Integration Challenges

“Primary barriers to deployment are company culture and structure, not technical.” - IMS FOKUS Workshop

- IPR and product realization
- access and control
- content ownership
- custom solutions
  - generalized platforms with significant investment (SAP/Oracle)
  - financial transactions (banking, stock market, etc)
  - Security (video, alarming)
  - travel (schedules, coordination, reservations, etc)
  - ...plenty of other large verticals

- In short, who makes money and how?
Human Factors Integration
Challenges

• lessons from the iPod
• have to account for diversity
  • handsets, I/O, and networks
• location services case study .... “coupon spam”
• can’t assume always on connections (problem of Mobile Google Maps)
Technical Integration Challenges

• What is the relationship between IMS and Web 2.0?
• congruent and consistent scale, resolution, and access controls
• exposing IMS services to web applications
• leveraging web services in IMS applications
• converged web and IMS services
• Let’s look at some videos
Coming Up With A Project

• Some questions you should be asking are:
  • What is doable?
  • What is the scope?
  • What tools and resources will we have?
• Today, let's answer this with some examples:
  • Some previous projects
  • Some ideas we have
Idea: Provide a social community network application that enables individuals to interact, inform, and communicate using IMS enabled mobile phones. “…your whole community in your pocket”

Features:
- Profiles (buddies and hotspots)
- Communication
  - Text Chat, Text Message, Picture Message, Voice Call, Video Call, Wall, Blog
  - Push-to-Talk IMS enabling service
- Multimedia
  - Photo Albums, Video / Audio Clips
- Lectures
  - Class Information, Lecture Material, Class Interaction, Announcements, Live / Recorded Lecture
- Events, Ticketing and News
  - Event Information, Reservations
- Subscriptions and Notifications
  - Community updates
Kinship
Devin Hunt, David Jimison

Idea: Instant video sharing with live interaction through chat and location-based collaboration.

Features:
- Video capture streamed to an IMS-based video service.
- Instantly accessible to multiple consumers
- Simultaneous chat for true participatory experience
- Video stored automatically - even if phone is lost
- Encourage collaborative capture and contribution of multiple users
- Videos also available to web users
MobMedia
Gaurishankar Krishnan, Shivam Goyal

Idea: Location based mixed media sharing using mobile devices.

Features:
• A medium for location-based encounters
• Discover and share media
• Drop media
• Get media recommendations and suggestions
• Create multiple avatars
• Buddy list
• Private, Protected and Public media
• Alerts, News Feed, Comments
Distributed Asset Tracking
David McCann, Dannon Baker, John Etherton

Initial Problem: current approach to asset tracking
• Infrastructure overhead
• Rigid process
• Special purpose technology

Solution
• Personal responsibility
• Natural transactions
• Extensible tracking technologies

Winner - Business Users
CHOWZI
Harry Marr, Jason George

Idea: Mobile Advertising for the Food Service Industry

Features:
- targeted advertising based on rich user profile data
- real-time response
- friends social network, social site integration
- For Patrons:
  - Discounts
  - Group coordination
  - High yield, quality leads
- For Vendors:
  - Marketplace analysis
  - Customer analysis
  - Advertisement distribution
Pervasive Healthy Diet Adviser
Jiten Chhabra, Daniel Serrano, Mayank Goel

Idea: Personalized, Professional Dietary Advice
• tailored to user’s diet profile
• based on latest medical findings
• localized, contextual

The Problem
• Increasing obesity rates
• Conflicting, confusing dietary advise
• Difficulty matching needs to available food offerings

The Solution
• Individualized dietary monitoring and analysis
• Meal recommendations for nearby restaurants based on user’s current situation
• Restaurants gain high value customers
3GAdS Mobile Tour Guide 3D
Karthik Halukurike, Matt Weber, Aileen Morales, Matthew Swarts

Idea: An Enhanced Direction Finder Experience
- location based ads and coupons
- enhanced 3D visual interface
- fly through capabilities
- augmented reality

Leveraging IMS
- Presence, Buddy lists, PTT, Video and Audio calls
- Streaming data services
- Content management, geo tagging

Targeted Advertising
- Individualized, based on user preferences
- Integrating social aspects
- Targeting high value customers

Winner - 2008
Idea: Ad Based Mobile Phone Services
- SIP-based pre-call advertising
- universal advertising platform
- sponsored telco services
- making the process “enjoyable”

Highly targeted
- In-call ads
- Location based ads
- Event based ads
- Social network based ads

Leveraging IMS
- SIP call management entry point
- Location services
- Presence services
- Media server
WhereAmI - Location Services

• A location service for the Georgia Tech community
• A research and education enabling service
• Aggregates data from multiple determination methods
• Location information returned in multiple formats
• Allows user feedback through map interface
• Third party lookups and service interface
• Rich Geo-data working with campus GIS
ConCal

Conferencing via Calendars

Your calendar sets up the conference call and calls you!
## Why ConCal?

<table>
<thead>
<tr>
<th>Without Concal</th>
<th>With Concal</th>
</tr>
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<tbody>
<tr>
<td>Get invited via email</td>
<td>Get invited via email</td>
</tr>
<tr>
<td>Accept via email</td>
<td>Accept via email</td>
</tr>
<tr>
<td>Remember conference time</td>
<td>Answer your phone</td>
</tr>
<tr>
<td>Call into the conference</td>
<td>talk</td>
</tr>
<tr>
<td>Enter conference ID</td>
<td>talk</td>
</tr>
<tr>
<td>Enter PIN</td>
<td>talk</td>
</tr>
</tbody>
</table>
Scheduler: Zimbra Extension

Zimlet allows a meeting to become a conference call
Components of ConCal

• This project included multiple components
  • Web services
  • Zimbra Zimlet development
  • Voice service integration - Asterisk
  • Web client UI
  • Mobile client UI - iPhone, Android, WM
Other Ideas

- **Personal Notebook**
  - a true replacement for the notebook, accessible everywhere,
    organizable, easy drawings

- **Consumables Manager**
  - keep up with the stuff I regularly buy - filters, bags, bulbs, batteries,
    ink cartridges, paper
  - make re-ordering easy, watch for bargains

- **Augmented Serendipity**
  - increase the likelihood of a valuable “chance” encounter
  - location, calendar, interest profile
Other Ideas

- Personal IPTV
  - TV is generally a shared experience, how do you manage interaction? Bring in the personal mobile device.

- Campus Life Tools
  - open gathering place locator - not the formal schedules but where are the people right now?
  - campus navigation - open parking spaces, trolley schedule, walk paths
  - food services: what's open, what's crowded, what's on the menu
Next Steps

- These are the things we'll be working on to start bringing you next week
- Timelines and schedules
- Lab resources
  - Development tools
  - Devices
  - Expertise