Seamless Mobile Services in the Cloud

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Do not try and bend the spoon. That's impossible. Instead... only try to realize the truth.

What truth?

There is no spoon.

There is no spoon?

Then you'll see, that it is not the spoon that bends, it is only yourself.

That it is not the spoon that bends, it is only yourself.
Mobility is Really about the USER!

Device is Mobile  
- Issues: Capability of device

User is Mobile  
- Issues: Limited slices of attentive time/patience

Battery life?  
Connection speed?  
Screen size?  
Connection availability?  
Processing power?

I wish you knew who I am/what I need/what I like ...

I move from place to place (context to context) -- mobile
Mobile Context

- User Preference
- Handset capabilities
- Social Network
- User History
- Surrounding /Context
- Time
- Location

Adapted from http://CEnriqueOrtiz.com
It is not the mobile device that is mobile, but the **user** who is mobile *even without a mobile device*.
Rich Apps on Smartphones

• Most apps merely showcase maturity of mobile application development platform

How much more can the user consume and satisfy the needs?

Desktop computing on a mobile device?
What Do 10 Billion Apps Need?

Apps need to have an sophisticated picture of user

To succeed and differentiate in this crowded space

TIME, 2006
Mobile User’s Context

- Lives in SF
- Shops Organic
- Wants: Car
- Traveling to Paris

Mobility presents opportunity to assign labels as user navigates through *mobile context*
Faceted View of the User

Apps have a faceted view of user

Caucasian
Female
Japan trip in June
Works in Sunnyvale
Travels to Paris
Lives: Near Santa Clara
Wants: House
Wants: Car
Like: Organic Food
Likes: Apple
Married
Friends with X, Y, Z

App 1
(e.g., shopping)

App 2
(e.g., social)

App 3
(e.g., personal, calendar)

App 4
(e.g., Maps app)
Apps and a User, akin to:
Real Picture of User

<table>
<thead>
<tr>
<th>App A</th>
<th>App B</th>
<th>App D</th>
<th>App E</th>
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</thead>
<tbody>
<tr>
<td>App D</td>
<td>App C</td>
<td>App F</td>
<td>App G</td>
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<tr>
<td>App H</td>
<td>App P</td>
<td>App I</td>
<td>App K</td>
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Real Picture of user emerges if apps are able to **SHARE** their own faceted view of user.
Seamless mobility achieved by apps sharing with one another
State of the Art in Sharing

- Adhoc Existing Sharing Framework
- Missing Information Sharing Framework
  - Inter-device information sharing
  - Inter-app information sharing
  - Intra-device information sharing

Network Operator
App Store/Application Data Provider
State of the Art: Issues

- User gets clear combined delivery
- Rich experience

Ad-hoc Existing Sharing Framework
Restaurant reviews
Isolated existence, fragmentation
Ad-hoc communication
Unidirectional
Not scalable
Difficult to maintain
Limited functionality

What is

Sharing Service

What could be

User context is available to all apps
Much more targeted sales and advertisement

Airlines Reservation App
Update preferred Airlines, airport etc.
Preferred/Nearest Airport
Book Tickets
Ticket Details
Travel dates, Destination
Add travel dates

Calendar App

Now: Who maintains this?
Data Sharing – Traditional Way

MegaOnline Corp. (Major Online Shopping)

API

Do you have an API that we can use?

MyBI Corp. (Market Trends Analysis)

Deal with network issues

Oh! You have a firewall that we cannot go through?
Cloud Ecosystem

MyOrganization.com

MyPartner.com

MyOtherPartner.com
Data Sharing - Cloudy Way

**MegaOnline Corp.**  
(Major Online Shopping)

**MyBI Corp.**  
(Market Trends Analysis)

**CloudDB Data Enablement Middleware**

**Sharing Middleware**

**Data Access for MyBI Corp**
Key Players in Data Sharing

Data Owner
\(<\text{Worried of how sharing might affect its own access to data}>\)

Data Consumer
\(<\text{Wants fresh data and certain level of access on shared data}>\)

Provider
\(<\text{Wants sharing to happen as it means more revenue}>\)

- **SLA optimization**
- **SLA (performance)**
- **SLA (data quality)**
- **Profit optimization**
- **$$\$$**
“Users are Privacy Pragmatists”

• Users value privacy but unwilling to pay to protect it
  – A Berkeley study [Grossklags et al., 2007] asked subjects: “How many sexual partners have you had?”
    • Found that they were willing to sell this information for a price
    • But, unwilling to pay sometimes 25c to protect it

• Privacy vs. Incentives
  – 82% people willing to share personal information for a chance to win $100 [Tedschi, 2002]

• Familiarity with technologies develops trust
  – 86% in 1998 preferred not to shop online due to privacy concerns [BusinessWeek/Harris study], but by 2000, 2/3rd of people were open to shopping online
Thank You!