The Nuts and Bolts of Mobile Banking

---what you need to know---

Roger Applewhite

May 20, 2008

AVENUE B
Consulting Inc.

(310) 809-2419
roger.applewhite@avenuebconsulting.com
www.avenuebconsulting.com

About *Avenue B Consulting, Inc.*

- Management consulting firm focusing on payment system products, services, and technologies
- Founded in 2002
- Over 26 years payments consulting experience
- Focuses on financial services industry and electronic transaction processing
- Services include business and strategic planning, new product development, product market validation, business and IT assessments, and competitive analysis

roger.applewhite@avenuebconsulting.com

www.avenuebconsulting.com

Agenda

AVENUE B
Consulting Inc.

- How the mobile phone works as a computing device: *compared to a PC*
- The basic deployment and usage of mobile phones in the US: *what do people really do with their phones?*
- Three models for delivering banking on the mobile phone: *each leveraging a different technological reality of mobile phones today*
- Comparing mobile banking to how PC banking developed 10 years ago: *study the past to know the future*
- Strategic considerations for mobile banking: *what are the bottom lines for entering this market?*

Compare these two devices

AVENUE B Consulting Inc.

- Connectivity
- Authentication
- Messaging
- Browsing
- Geolocation

Let's understand the mobile phone by comparing it to a similar device, the PC, whose application in financial services we know. Besides, the two devices are converging anyway.

PC/Mobile comparison

AVENUE B Consulting Inc.

Mobile	PC
Infrastructure	
2G/3G: Data rate. Essentially all phones are 300kbps+.	Dial-up/broadband: 45% of PCs dial-up (50kbps), 55% have broadband (>1Mbps)
GSM/CDMA: How the phone communicates: CDMA most of U.S., GSM rest of the world.	803.xx: LAN and wireless protocols are completely standardized on PCs
SIMs/RUIMs: GSM phones have a smart card inside, CDMA phones will. Makes the phone a HARD authentication token.	MAC address: Network adapters on PCs are serialized, but do not have cryptographic protection. The PC is NOT a hard authentication token.
Applications	
SMS: 160 byte text messages to any phone worldwide. Produces $35B in revenue for carriers.	Email and IM: Nearly unlimited message size to any PC anywhere, carrying any kind of multimedia. Generates no direct revenue.
WAP: A browser on the phone. Not completely standardized phone-to-phone. Controlled by the operator on flip phones. Some browsers support multimedia. Most have good SSL. Constantly improving.	HTTP/HTML: Standardized browser with full multimedia capability. All browsers have good SSL.
LBS: Geolocation of the phone. Triangulation mostly, some GPS.	IP geolocation: Very rough estimate of PC's location. Can be spoofed.

Mobile usage statistics

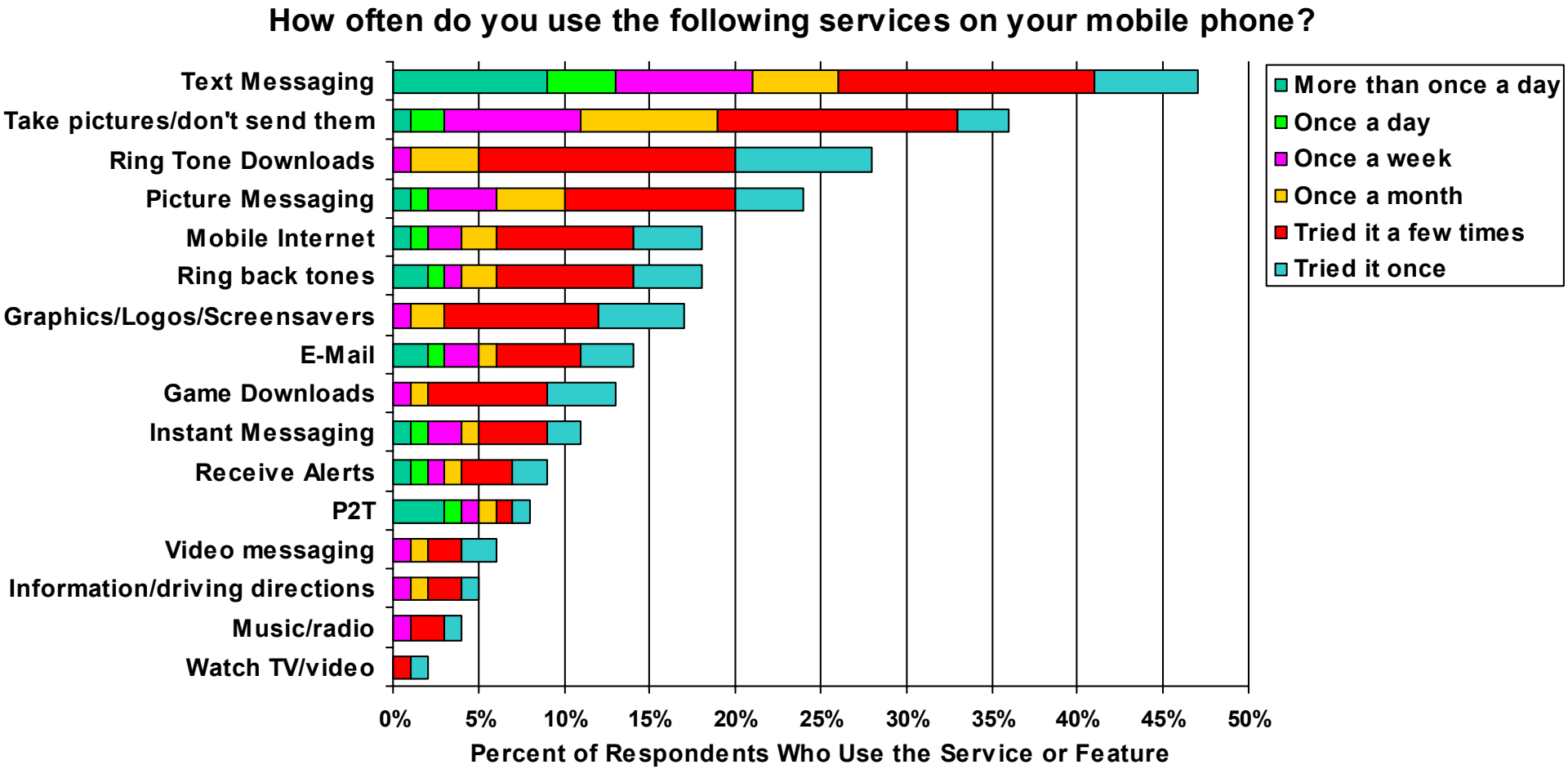
AVENUE B Consulting Inc.

- Devices
  - 94% “flip” phone
  - 6% “smart” phone
- Data
  - 14% of users have a data plan
  - 13% use mobile browser to find news or information
  - 2% use mobile browser for financial services
- Text messages
  - 47% of users text at least once per month
  - 23% text nearly daily
  - 31% have a text messaging plan
- Demographics
  - Gen Y and younger twice as likely to use data and text services

Statistics courtesy of mFoundry

How mobile phones are used

AVENUE B Consulting Inc.



Base: US Mobile consumers 18 years of age and older (5,300 respondents).
Source: Yankee Group 2006 US Mobile User Survey

The three mobile banking models

AVENUE B Consulting Inc.

- **SMS** – send text messages to perform transactions and receive data
  - Ubiquitous: Virtually every phone, on every network, can participate. Banks do not have to interact with operators
  - Expensive: 3-5¢ per message, *possible* financial impact on end user
  - Poor interface: Difficult to assemble even the easiest commands
  - Slow: SMS response time can be slow, especially across networks. Delivery not guaranteed.
  - Security concerns: Basically, no security

The three mobile banking models

AVENUE B Consulting Inc.

- **Application on phone** – download a client application to your phone that allows you to perform banking
  - Excellent use of phone resources: Best display of any method
  - Very light communications use: Small data charges
  - Secure: Best native use of phone security assets. Avoids "WAP Gap"
  - Proprietary: Application is unique or uniquely configured for every handset model
  - Operator involvement: In many cases, must partner (today, at least) with operators to have the application installed or easily downloaded to the deck. Operators charge "courtesy fees" for this option
  - Application maintenance: On-phone application updating potentially reduces ability for deployer to make changes quickly. However, multi-tier xml-driven models are an improvement

The three mobile banking models

AVENUE B Consulting Inc.

- **WAP** – user surfs to the mobile banking website
  - Server side control: Allows single-point control of user experience and functionality
    - Caveat: Not quite like Internet today – creating a consistent experience across all devices and browsers is a challenge. Carrier support of open WAP not ubiquitous.
  - Moderate use of phone resources: Reasonable display quality, varies by phone
  - Moderate security: TLS/SSL as with Internet, though end-to-end encryption not universal ("WAP Gap")
  - Heaviest communications use
  - Poor first outing: WAP 1.0 failed to deliver

Comparing development paths

AVENUE B Consulting Inc.

"Home" Banking		"Mobile" Banking
Text-based (screen) Prodigy (proprietary network application), *defunct*	→	Text-based (SMS) ClairMail, Yodlee, Clickatell
Fat client/device-oriented Visa Interactive, *defunct* Quicken (offline) – *very much alive* ORCC ScreenPhone, *device defunct*	→	Fat client mFoundry, Firethorn
Browser-specific AOL, *banking service defunct*	→	WAP today Barclays B of A (500K users) Wells Fargo
Standard browser today ***Everyone***	→	Standard browser tomorrow ***Everyone***

Time

PC banking vendor industry history – roadmap for mobile banking vendor industry?

AVENUE B Consulting Inc.

1. Fat client software publishers
2. Server-software specific publishers
   - 5 Paces – now S1
   - Edify – acquired by S1
3. Independent Internet banking service providers
   - Corillian - acquired
   - ORCC – continues independently
4. In-house development, or on-premise software
   - Many large banks, some small ones, too.
5. Core processor adjunct product

Today, mobile banking is somewhere between 1 and 2. For Internet banking, there are still going concerns in each category, though they tend to be niched by institution size or market category

What to do? *Think strategically…*

AVENUE B Consulting Inc.

- Nearly all home banking and bill payment services sales were ultimately justified on retail account-base defense. Bill payment is still referred to as a "sticky" product. But did banks benefit?
  - "The mobile channel is another in a long list of channels that banks must build and support. And even if any revenue is generated, it may have to be shared with other players." – *Janey Place, formerly EVP, NationsBank*

What to do? *Think strategically…*

AVENUE B Consulting Inc.

- Is mobile banking an application that interests *your* bank customers?
  - Banking is something consumers *have* to do, not often something they *want* to do. How do you "delight" them with this product?
  - Yes, early adopters are checking their balances (70% of registered users), but is that really valuable, and will it last?
  - The heaviest users of mobile phones (<18 years old) use them almost exclusively for entertainment

What to do? *Think strategically…*

AVENUE B Consulting Inc.

- Consider waiting a little bit – be a fast follower
  - Mobile data speeds (and costs), handset capabilities, and operator openness are all improving *rapidly*. A strong WAP solution may only be a year away.
  - We have not yet seen how well bank customer service will react to supporting mobile banking. We also don't yet know the volume of calls it will generate.
  - Compelling applications have not yet emerged – basic banking transactions alone don't justify the investment
  - Several large banks are teaching end-users about this channel through heavy promotion. Ride their coattails?
    - Risky if you think mobile will really make someone switch institutions, but is that a realistic concern?

What to do? *Think strategically…*

AVENUE B Consulting Inc.

- You want to get in now? Deploy basic mobile banking, but focus on leveraging the device's "always with me" nature
  - **Alerts and notifications**: Account limit notices and fraud alerts have the ability to reduce customer service calls, and can be delivered cheaply.
    - Many justify mobile banking by saying that customers often use mobile phones to call a bank service center. *Instead*, let's keep them from needing to contact us at all. That's real cost shifting.
    - Very common in the brokerage and airline industry
  - **Two-factor authentication**: High-net worth or commercial customers.
    - A less expensive, and more convenient method of deploying a second token.

What to do? *Think strategically…*

AVENUE B Consulting Inc.

- Look at deploying *WAP*
  - Mobile banking applications will migrate off the phone and on to a bank server.
    - Not the best or most consistent user experience today, but this is where the technology is heading
    - Make sure your vendor can chart a logical path to this eventuality
  - **Integrate** mobile banking into your Internet banking structure, both *technically* and *managerially*
    - Mobile and Internet banking are complimentary, not exclusive. They need to share a common interface theme and use the same data and function definitions.
    - Use a vendor now to navigate the legacy peculiarities of mobile phones, but prepare for the day when publishing content to mobile will be handled as an extension of the bank's general Internet services.

AVENUE B
Consulting Inc.

Thank you!