Brick, Click and Mobile:
Multi-Channel Strategies for Satisfying Your Customers

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E-Business Strategies (EBS)

- EBS is a boutique IT research and strategy consulting firm
- Core Research Areas: E-Business, Mobile and RFID Solutions, Offshore Outsourcing, BPO, and SAP Enterprise Apps

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The Big Picture

Setting the Stage – Why Should Managers Care?

The Mobile Landscape – Structuring the Chaos

The Mobile Value Chain – Industry Structure

Reality Check - Where Are We Today? Forecasts and Diffusion

Key Takeaways

The General Framework

Convergence of two existing Value chains...

TCP/IP INTERNET

MOBILE & WIRELESS INTERNET

NEW SOLUTIONS & PROFIT OPPORTUNITIES

WIRELESS 2G, 3G, 4G

...Creating a new market space with new players

Dominant process and business models still not clear

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A New Era of Computing Infrastructure is Taking Shape
The Next Innovation “S – Curve” - Mobile

Business Issue: How and When should firms make the Infrastructure Shift from the E-Business “S curve” to Mobile?

New Wave of Processes: Evolution of Techno-Processes

Within 3-5 years, customers are going to be mobile
Issue: What does Mobile Processes “look and feel like”?
Critical Questions for Executives:

“When should we invest in mobile applications?”

“What kind of mobile applications should we invest in?”

“How can we using mobile to increase the ROI of current e-business investments?”

The IT Industry Challenge: Create Mobile “Profit” Scenarios

Hypothesis: Oil Fueled The Industrial Economy
Wireless Will Fuel The Real-Time Economy
The Big Picture

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Multiple Streams of Innovation

Network Infrastructure
Applications
Access
Hardware
Content
Software
Commerce

MOBILE SOLUTIONS

The challenge: Organize the Chaos
What does M-Business “Look and Feel Like”?

Mobile is the land of techno-babble. Decision-makers are confused – they are trying to make sense out of the buzzword chaos.

M-Business Lens - Breakthrough Mobile Platforms

Innovation often begins with a technical breakthrough or a catalyst.
To be useful, breakthrough platforms need to be wrapped with application infrastructure.

M-Business Lens - Mobile Application Infrastructure

M-Business Lens - New “Experience” Applications

Revenue growth apps are the fuel of any business. Without revenue there is no business!
M-Business Lens - New “Productivity” Applications

Cost-control and productivity apps are the engine of every business.

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Mobile Application Landscape ...

New Customers
- New Innovation Opportunities

Existing Customers
- Customer Focus

Field Operations Focus
- Field Force

Operational Focus
- Employees

The Catalyst for Mobile Business: Concurrent Streams of Platform Innovation

Breakthrough Platforms

- Device Platforms
  - Cell-phones, PDAs, PocketPCs, Tablets, Appliances

- Client Side Software Platforms
  - Operating Systems, Tools & Browsers

- Hardware Platforms
  - Microprocessors, Chipsets, DSP, Flash Memory, RF Modems

- Web Services Platforms
  - Operating Systems, Tools & Programming Languages
Tremendous Innovation at the Device Level

- Thin and Light PC
- Many Functions
- Fixed Functions
- Data-Centric
- Mininotebook
- PDA
- Superphone
- Enhanced Voice
- Voice-Centric
- Palm-Size PDA
- Wireless Extensible
- Wireless Specialized
- Mobility Requirements

Tremendous Innovation at the Device Add-on Level

- Bluetooth
- Portable Printer
- Mag Card Reader
- 1D Scanner
- 2D Scanner + Imaging
- Global Positioning System
- GSM/GPRS Phone
- Thumb-board

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Device Innovation: A Projected Device Scenario

Mobile Device Innovation

Mobile Application/Service Enablers (e.g., Databases, Security)

Mobile Internet Service Providers – (e.g., 3G Network Infrastructure, WiFi)

Mobile Application Service Providers – Hosted Infrastructure

Application Gateways/Platform Providers – Mobile Middleware

The Enabler for Mobile Business: Application Infrastructure Innovation

Source: Palm Computing

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Separating the Breakthroughs

Device Infrastructure

Application Infrastructure

Network/Connectivity Infrastructure

Mobile Middleware
Connected Infrastructure

Sync

GSM  GPRS  3G  4G
Wi-Fi  Bluetooth  Ultra Wide Band

Network Infrastructure Migration – 1G to 4G

<table>
<thead>
<tr>
<th>Network Infrastructure Migration – 1G to 4G</th>
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<tbody>
<tr>
<td>AMPS</td>
</tr>
<tr>
<td>TACS/ NMT</td>
</tr>
<tr>
<td>JTACS</td>
</tr>
<tr>
<td>AMPS</td>
</tr>
<tr>
<td>CDMA IS-95A</td>
</tr>
<tr>
<td>1G 1980's</td>
</tr>
<tr>
<td>2.5G Early 2000's</td>
</tr>
<tr>
<td>4G 2010's</td>
</tr>
<tr>
<td>Speed (kbps)</td>
</tr>
<tr>
<td>128</td>
</tr>
<tr>
<td>384</td>
</tr>
<tr>
<td>384+</td>
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</table>
Rethinking the Role of Application Infrastructure

Yesterday: Wireless is a Web Page, just without wires (e.g., WAP)

Today: Mobile is an Enabling Platform that provides an infrastructure for deploying Enterprise Apps

Application Infrastructure Innovation

Mobile Infrastructure Problems – First Generation

Pervasive Computing
- Bluetooth
- WAP
- 3G
- Mobitex
- PQA
- CDMA
- GSM
- CDPD
- TME/X
- TDMA
- m-Commerce

Enterprise Computing
- Lotusnotes
- Exchange
- SAP R/3
- Oracle.com
- i2
- Legacy

• Rigid
• Tactical
• Unable to Evolve
• Unable to Scale
Mobile Infrastructure Problems – Second Generation

Mobile Infrastructure -- Four Types of Footprints
**Rapid Evolution of Mobile Application Server Infrastructure**

<table>
<thead>
<tr>
<th>Value to the Enterprise</th>
<th>Point</th>
<th>Platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>high</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>high</td>
<td>General Mobile + RFID Platform</td>
</tr>
<tr>
<td>Online, Offline Capability; and Multi-Device</td>
<td>Mobile Application Server</td>
<td></td>
</tr>
<tr>
<td></td>
<td>low</td>
<td>Application Service Provider</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transcoding Screen-Scraper</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Static content only: Unacceptable user experience, difficult to maintain</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Custom Solution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vertically driven; High cost of ownership, no scalability, difficult to maintain</td>
</tr>
</tbody>
</table>

**Scope of Solution**

- Mobile Application Server
- Application Service Provider
- Transcoding Screen-Scraper
- Custom Solution

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**Mobile Middleware Must Support Enabling Different User Experiences**

- **Weather.com – Mobile Consumer Interfaces**
- Hard to Predict User Preferences Forces Companies to Select a Flexible Infrastructure Model

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www.ebstrategy.com
Our Hypothesis: Web Services and Mobile Services are beginning to converge.

Mobile Application Landscape ...

New Customers

New Innovation Opportunities

Existing Customers

Customer Focus

Breakthrough Platforms

Field Operations Focus

Field Force

Operational Focus

Employees
Different Types of Mobile Portal Innovation – New Experiences

Mobile Portal Patterns

- **Wireless Operator Portals**
  - DoCoMo I-Mode
  - Vodafone Live

- **Multi-Purpose Web Portals**
  - Information – Yahoo!, AOL
  - Infotainment – Nokia

- **Commerce Portals**
  - Transaction – Amazon, eBay
  - Location Specific – GeePS, Vindigo

- **Niche and Novel**
  - Personal Portals – Yodlee
  - Wi-Fi Portals – Starbucks, McDonald’s

- **Niche and Novel**
  - Car and Fleet Telematics – GM OnStar
  - Airline Portals – Connexion By Boeing

Typical Mobile Value Chain

- **Content Providers**
  - CNN, Reuters, E*Trade, Golf.com, ESPN.com

- **Content Aggregator**
  - Google

- **Content Aggregator**
  - Yahoo!

- **Carrier**

- **Customers**
Interesting Mobile Portal Innovation -- Automotive Portals

Telematics -- Two Types

- Fixed in Dashboard
  - Satellite Network
  - Onboard Computer
  - Car as node on network

- Floating Attachments
  - 3G/GPRS Phones
  - PDA based
  - Person as node on network

Telematics Variations

- Personal Automotive
- Fleet
  - Company Cars and Light Trucks
  - Heavy Trucks

Mobile Portal Innovation -- Telematics

- SOS Emergency
- Roadside Assistance
- Embedded Phone
- Concierge & Information
- Productivity Apps
- Entertainment

- Integrated Vehicle Safety
  - Diagnostics
  - Remote Vehicle Functions
  - Stolen Vehicle Tracking
  - Auto Crash Notification
  - Emergency Notification

- Productivity Applications
  - Maps and Traffic/Routing
  - Directories
  - Mobile Office, Calendar, and Email
  - M-Commerce

- Back-Seat Entertainment
  - Network-Based Applications
  - Streaming Video
  - Games
  - Edu Tools (Books, etc.)

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Takeaway: Analysts projections are always too optimistic in the short-term

Source: Salomon Smith Barney Estimates

Mobile Subscribers by Technology

Source: ARC Group 2000
Let’s take a minute and ask some critical questions

☞ Why were these analyst projections way off?
☞ Based on historical evidence of innovation diffusion and adoption, what factors were not taken into consideration?
☞ How should we readjust these projections to reflect the “real-adoption” of mobile?

The Macro-Level: Phases of Technology Perception

Demand / Visibility

Slope of Hype

Tech Trigger

Hype Peak

Boom

Slope of Despair

Bust

Consolidation

Slope of Profit

Time

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Where are these on this curve?
A) Wireless, 3G Infrastructure
B) Wi-Fi
C) Mobile Portals (e.g., Vivazzi)

Technology Adoption Life Cycle

Innovators
Early Adopters
Early Majority
Late Majority
Laggards

Visionaries: Get ahead!
Pragmatists: Stick with the herd!
Conservatives: Hold on!
Skeptics: No way!
Techies: Try it!

Source: Geoff Moore
The Mobile Business is crossing the Chasm

<table>
<thead>
<tr>
<th>Segment</th>
<th>Innovators</th>
<th>Early Adopters</th>
<th>Early Majority</th>
<th>Late Majority</th>
<th>Laggards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology</td>
<td>Analogue</td>
<td>GSM</td>
<td>GPRS / WLAN</td>
<td>UMTS / WLAN</td>
<td>?</td>
</tr>
<tr>
<td>Market size**</td>
<td>&lt; $100m</td>
<td>&lt; $500m</td>
<td>&gt; $5bn</td>
<td>~ $10bn</td>
<td>?</td>
</tr>
</tbody>
</table>

Mobile Diffusion: Consider the following Pattern
Where are we today: In the Chasm Period of Transition

Enterprise Customer Focus

Business Value, ROI and Application Deployment Issues!
Not Technology

Mobile Vendor Focus

Selling mobile technology hype e.g., 3G
Selling unrealistic solutions e.g., m-commerce portals

Vendors are ignoring customers demands: show me how to make money or save money using mobile?

The Big Picture

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Key Takeaways
Key Takeaways

- Major structural shift in infrastructure of Value Chains is beginning to take place
- The focus is moving from technology to mobile applications
- The benefits of technology, rather than the technology itself – interested in the result, not the process
- Mobile is about process change
  - Corporate applications especially field employee facing apps will be the early adopters

Brick, Click and Mobile:
Multi-Channel Strategies for Satisfying Your Customers

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Mobile Customer Applications

Strengthening customer relationships - create and extend multi-channel relationships and experiences.

- Channel Augmentation (Marketing Information)
- Channel Extension (Sales and Service Transactions)
- M-Commerce Channel (New Service Encounters)
- Multi-Channel Synchronization (Building Loyal Relationships)

Retail Consumer Portals – Brokerage Experiences

- Four of the top 10 U.S. securities houses
  - Merrill Lynch, Fidelity, Charles Schwab, and E*Trade
- Launched retail-mobile services
- Current State -
  - Fidelity has around 100,000 registered users
  - E*Trade less than 25,000 registered users
  - Schwab has about 100,000 registered users
- During a typical month -
  - About 20,000 to 25,000 of the total Schwab-Wireless users access the service
  - Each user averaging 14 times during a typical month
Retail Customer Portals – Banking Experiences

- In 2000 and 2001, Top U.S., Canadian and European banks
  - Bank Of America, First Union and Wells Fargo
  - Fleet's Quick & Reilly,
  - Bank of Montreal
  - Keybank and Washington Mutual
  - NatWest, Egg, Bank of Ireland

- Launched retail-mobile services
  - Account statement/Balance inquiry
  - Fund transfer
  - Bill payment

- Target Market: High Net Worth and High Net Income Customers

Mobile Banking in Europe – WAP based

www.ebstrategy.com
Mobile Banking in the U.S – PDA based Solutions

- Online Trading
- Alerts and Notifications
- Portfolio and Account Management
- Funds Transfer
- Bill Presentment and Payments
- Personalized Interface
- Synchronization with the Web

Retail Customer Portals – Banking Experiences

- **Bank of Montreal**
  - launched its Veev wireless service in 1999 with 724 Solutions
  - Veev, which allowed customers to conduct a range of banking and investment activities
  - broadened June 2001 to offer real-time news feeds, tailored news on topics from sports to politics, and stock activity.

- **Wells Fargo**
  - Service launched in February 2001
  - Popular among 2,500 early adopters who used it mostly to check balances and transfer funds.
  - Service requires Web-ready phones with Sprint PCS service and Palm VII or i705 organizers.
Retail Customer Portals – Banking Experiences


- April 2002, Natwest, Egg U.K. decided to drop its WAP-based mobile banking service at the start of this year, after 16 months of operation.

- On September 1, 2002 Wells Fargo says it will discontinue its mobile banking service due to limited adoption.
  - Wells Fargo now believes customers want "reverse wireless" services such as alerts on mortgage rates and stock market activity

- Exception Japan: Bank of Tokyo-Mitsubishi has 1.5 million wireless users

- Exception Europe: BCP (Portugal) (Unknown # of Users)

Questions for You

Why did Mobile Banking in the U.S and Europe fail?
Why are Mobile Brokerage Solutions fairly successful?
Why Did Mobile Banking Fail?

**Limited Understanding the Multi-channel Customer**

- Priorities
- Purchase Criteria
- Customer Anger
- Preferences
- Decision Making Process
- User Behavior
- Functional Needs
- Systems Economics

"Outside In" vs. "Inside Out"

Customer-Facing Process Upgrades

**Brick & Mortar**
- Paper based
- IVR/Call Center Invested
- Tradition and Jurisdiction
- Service (Payments, Signatures)
- Changes and modifications

**Web**
- Speed
- Customization
- Content
- Personalized Transactions
- One-Stop Service

Click-n-Brick Processes Multi-Channel Infrastructure

Cross-Channel process synchronization is work-in-progress.
**Process Upgrades - Brick, Click, and Flicks**

**Brick & Mortar**
- Paper-Based
- IVR/Call-Center
- Tradition and Jurisdiction
- Employee-Centric
- Constant Changes

**Web**
- Speed
- Customization
- Content
- Personalized Transactions
- One-Stop Service

**Mobile**
- Real-Time
- Process Optimized to Device
- Personalized Transactions

Click-n-Brick-n-Flicks
Multi-Channel Infrastructure

Introducing a new process variable is confusing
Cross-cutter Process are very hard to design and build

**Multi-Channel Customer Strategies -- The Big Picture**

**Multi-Channel Customer Access**
The Case of Banking

**Multi-Channel Customer Focus**
The Case of Package Distribution

**Starbucks Consumer Experience**
Innovation Using Wi-Fi

**I-Mode and FOMA Portals -- History, Evolution and Business Model**

**New Consumer Trends: Multi-Web & Mobile Imaging Services**

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Mobile and Logistics/Distribution – Mature Users

- FedEx
- UPS
- Airborne/DHL
- TNT
- Deutche Post

Brick-Click-Flick -- Mobile package tracking and distribution is part of the overall business landscape. It is cost of the doing business!

UPS and FedEx Mobile Vision: Provide Better Customer Service

- Each package is important
  - but there are millions of them, dispersed over millions of square miles

- Each delivery has to be made “on time”
  - but there is traffic, varying volumes of packages, weather fluctuations, …

- … and in cases of failure
  - customers want to know where the package is
  - who signed for it
  - when can it be redelivered

Information Services Wrapped around Package Delivery
Evolution of Capabilities
UPS Wireless Timeline - 1986

Package Tracking System
- Tracked air packages only
- Scanned package bar code at origin & destination buildings

Evolution of Capabilities
UPS Wireless Timeline - 1991

DIAD I
- Custom data collector
- First to capture signature
- Uploaded at end of day

Source: UPS
www.ebstrategy.com
### Evolution of Capabilities
#### UPS Wireless Timeline - 1993

**DIAD II**
- Tracks package info in real time
- First nationwide cellular service

86 91 93 96 99

Source: UPS

### Evolution of Capabilities
#### UPS Wireless Timeline - 1996

**First Wearable Scanner**
- Enabled full-visibility tracking
- Scan when package handled
- Doesn’t hinder sort productivity

86 91 93 96 99

Source: UPS
**Evolution of Capabilities**
**UPS Wireless Timeline - 1999**

- **DIAD III**
  - Built-in data radio
  - On-the-spot tracking
  - Immediate two-way comm.

**Evolution of Capabilities**
**UPS Wireless Timeline - 2004**

- **DIAD IV**
  - Global Positioning Satellite (GPS)
  - 128 megabytes of memory – 20 times the capacity of the DIAD III.
  - Color Screen
  - Real-Time connectivity

Source: UPS

www.ebstrategy.com
**UPS Customer Self Service Applications**

- Provide Mobile Customers
  - Drop box locator
  - Quick cost calculator
  - Time-in-transit estimator
  - Package tracker

- Saves UPS more than $1.50 each time a customer uses mobile technology rather than contacting their call center

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- I-Mode and FOMA Portals -- History, Evolution and Business Model
- New Consumer Trends: Multi-Web & Mobile Imaging Services
Starbucks Big Idea – Increase Customer Lock-in using Wi-Fi

- Starbucks Business Model;
  - Lifestyle Company – aimed at high-income individuals
  - Value proposition: Unique Consumer Experience
  - 5,600 locations in the U.S

- Starbucks Business Challenge:
  - How to keep the Consumer Experience Fresh, Unique and Enriching

- Differentiation: Technology Enabled Consumer Experience
  - Access portal for customers

Starbucks Wi-Fi Project History

- 2001 – MobileStar and Starbucks deployed access to 500 Starbucks and airport lounges.

- October 2001
  - MobileStar went bankrupt
  - Assets acquired by VoiceStream Wireless Corp
  - VoiceStream acquired by DT and branded T-Mobile in early 2002

- August 2002 Re-Launch
  - T-Mobile offering the service at 1,200 Starbucks Coffee Co. locations

- Customer Access Model
  - Customers can access the service after establishing a HotSpot account using a PCMCIA Card
  - 802.11b technology in front and T-1 connection in the back. Speed limited by the T-1 connection

- Initial Target Market
  - Realtors, Business Professionals
Starbucks Wi-Fi -- Pricing Model

- Free 24-hour trial
- Unlimited Local Monthly rates
  - Unlimited local plans beginning at $30 per month for unlimited minutes and 500 megabytes of data transfers.
  - Minutes used outside the local area will be charged at 15 cents per minute with additional megabytes charged at 25 cents per megabyte.
- Unlimited National Monthly Rates for broader travelers
  - $50 per month provides unlimited minutes anywhere in the country and the same 500 megabytes of data transfer.
  - Additional megabytes are also charged at 25 cents per megabyte.
- Prepaid Plans for occasional users
  - $20 for 120 nationwide minutes or $50 for 300 nationwide minutes.
- Metered Plans
  - $3 per month for 15 nationwide minutes, with each additional minute charged at 25 cents.

Adjusting the Pricing Model (March 2003)

<table>
<thead>
<tr>
<th>Old Pricing</th>
<th>New Pricing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlimited Local (500 MB) $29.99/month</td>
<td>Unlimited National (1 yr. contract) $29.99/month</td>
</tr>
<tr>
<td>Prepay 20 $20</td>
<td>Prepay 300 $50.00 (minimum session - 10 mins.)</td>
</tr>
<tr>
<td>Prepay 300 $50.00</td>
<td>Pay-as-you-go $0.10/min. (minimum session - 60 mins.)</td>
</tr>
<tr>
<td>Pay-as-you-go $2.99 (for 15 minutes, then 25 cents/minute)</td>
<td></td>
</tr>
</tbody>
</table>
T-Mobile HotSpot and Starbucks -- 2004

_locations
- Over 2100 Starbucks stores now, 2,600 by year end
- Over 150 Starbucks UK coffee shops

_network usage
- Early adoption is impressive and growing – double digits growth each month
- Average of ~45 min. per session steady over last 2 yrs
- It’s easy and it works: customer sat levels are high
- Starbucks internal usage as an important proof point – 600 field managers now use the network

_pricing
- Further discounts for bundling with cell-phone service
- Competition will further force pricing down Many options to match

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Retail Wi-Fi -- How it Works

[Diagram showing the process of Retail Wi-Fi]
The Economic Model

- U.S. T-Mobile hotspots were grossing US$400K per month in January 2003
- U.S. T-Mobile hotspots were grossing $1.4 M by the end of 2003.
- With 4,200 locations by year’s end, $1.4M works out to $13 per hotspot per day on average.
- With ~ $400 per month per store, how does T-Mobile ever expect to even pay on a current basis for the cost of each store’s dedicated T-1 line, much less other ongoing costs, and the original capital expenditure?
- T-Mobile would need to at least quadruple this revenue figure to pay out CapX and current operational costs.

**Issue:** What should T-Mobile do to get higher penetration and usage?

Bottomline; Starbucks – creating unique experiences

**Focus:** Incremental Consumer Experience Innovation

**Key innovation:** Understand that certain business assets drive strong business case
- Leverage “Free” in-store marketing
- Leverage existing customer trust & credibility
- Enhance existing marketing/loyalty programs
- Desire for brand innovation
- Leverage Attractive Location Assets

What can other retailers learn from the (Brick & Mobile) Starbucks experience?
**Business Value Creation – Evaluating the Basics**

**Business Value to Starbucks**
- Marketing Value
- Advertising Value
- Brand Value of the Perception of being an Innovator
- Financial Value due to more sales
- Customer Attraction and Retention Value

**Business Value to T-Mobile**
- Marketing Value
- Advertising Value
- Brand Value of the Perception of being an Innovator
- Financial Value due to more sales
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The Case of Banking

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Starbucks Consumer Experience Innovation Using Wi-Fi

I-Mode and FOMA Portals – History, Evolution and Business Model

New Consumer Trends: Multi-Web & Mobile Imaging Services
**NTT DoCoMo: I-Mode Portal**

- DoCoMo was born from NTT
  - Spun off by NTT, Japan, in 1992 – High Profit Margin
  - Largest single country wireless operator in the world
  - I-Mode was born from DoCoMo

- March 1997
  - Started PDC-Packet service (their version of GSM)

- Feb 1999: launch for mobile subscribers
  - Implemented on DoCoMo’s “always on” 9.6 kbps PDC packet network
  - Text, images, animated images, colors, 16-chord ringing tones

- Key Innovation
  - Simple, easy to use –> Explosive growth of content and users
  - Created a Win-win relationship between content providers and DoCoMo
  - Microbilling service for content providers via phone bill
3G FOMA -- Freedom Of Multimedia Access

- First W-CDMA service in the world
  - May 2001: pilot
  - Oct 2001: commercial service within a limited area in Tokyo
  - Sep 2002: 134k subscribers
  - 2004: subscriber target 6m, 97% nationwide coverage

- Implemented on W-CDMA
  - packet network (384/64 kbps) and
circuit switched (64/64 kbps)

- Voice communication service plus:
  - Video streaming service (i-motion)
  - Videophone service
  - High-speed Web access
  - Multiaccess (simultaneous voice and data access)

3G FOMA Service Content

- **i-mode**
  - Up to 384kbps downlink high-speed access
  - Can attach still pictures and music to i-mode mails
  - Can transmit up to 5,000 characters when sending e-mail
  - Can use i-appli contents
  - Video clipping service using i-mode <i-motion>

- **Videophone**
  - Comfortable motion picture transmission using 64K digital transmission

- **M-stage Service**
  - DoCoMo’s music distribution service <M-stage music>
  - DoCoMo’s video distribution service
  - DoCoMo’s Live distribution service <V-Live>

- **High-speed Data Communication**
  - Up to 384kbps downlink and 64kbps uplink packet transmission
  - 64kbps digital communication

- **Multi-access**
  - Can send data over the packet switched network while speaking on the phone

- **Voice Communication**
  - Voice quality that is as good as fixed line service
  - Dual mode (FOMA/PDC) service for increased convenience
    (Can use both services with the same phone number)
  - International roaming services
FOMA Subscriber Growth

- Total number of FOMA subscribers exceeded 3 million on Mar. 30, 2004, owing primarily to release of “900i Series” handsets.
- FOMA subscriber base is projected to reach 10.6 million as of Mar. 31, 2005.

Source: NTT DoCoMo – April 2004

FOMA Future: Link to Brick & Mortar Services

- Field trial of airport check-in service using FeliCa-enabled i-mode handsets is in progress.
- Handset-based check-in service to be made available at principal international & domestic airports in the future. We are studying ways to expand service offerings and improve CRM through linkage with airline mileage plans.

Source: NTT DoCoMo – April 2004
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- Starbucks Consumer Experience
  Innovation Using Wi-Fi
- I-Mode and FOMA Portals – History,
  Evolution and Business Model
- New Consumer Trends: Multi-Web
  & Mobile Imaging Services

Multi-Channel Portal Trend
Driven by Device Convergence

**Mobility has already taken over**
- Portable FM radios
- Pagers
- Watches
- Alarm clocks

**Mobility starts to impact the market**
- Portable CD & cassette players
- MP3 players
- Digital cameras
- PDAs

**Mobility will have a long term impact**
- Laptops
- Web browser devices
- Video camcorders
- Traditional analog media

Source: Nokia
The Emerging Case of Imaging (MMS) Portals
Trend: Two Consumer Phone Categories

Evolution of Image Capture

<table>
<thead>
<tr>
<th>Film-based Cameras</th>
<th>Camcorders</th>
<th>Digital Cameras</th>
<th>Digital Video Cameras</th>
<th>Camera Phones (Photos)</th>
<th>Camera Phones (Vid Clips)</th>
<th>Camera Phones (Live Video)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1900</td>
<td>mid-1980s</td>
<td>mid-1990s</td>
<td>Late-1990s</td>
<td>2002</td>
<td>2003</td>
<td>2005</td>
</tr>
</tbody>
</table>

 Cameras/video cameras trends
- Smaller, more powerful, connected
- Time from image capture to publication has been reduced to near real-time
- True convergence – imaging, communications, computing
Mobile Imaging Value Proposition

- **STORE**: Store up hundreds of my photos & video clips. That is my photo album in a pocket.
- **CAPTURE**: Capture and print good quality photos in fast easy way.
- **PRINT**: Print high quality images at home, office and retail.
- **SHARE**: Share my images over MMS or e-mail as easily as send a text message.
- **VIEW**: View my images in bright colors and a large size.

Source: Nokia

Imaging Behavior

- **Memory keeping**: Emotional content
- **Detail documenting**: Purposeful content
- **Social snapping**: Short-term
- **Informative illustration**: Long-term consumption

Source: Nokia
Multi-Channel Customer Strategies – The Big Picture

- Starbucks Consumer Experience Innovation Using Wi-Fi
- McDonald’s Wi-Fi Business Model – Stupid or Clever?
- I-Mode Portal – History, Evolution and Business Model
- FOMA – Next Generation Portal
- Key Takeaways Things to think about further

Lessons from Pioneers

<table>
<thead>
<tr>
<th>Promise</th>
<th>Reality</th>
<th>Business Problem:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to new customers</td>
<td>Few transact online</td>
<td>Overspend – Business Model not sustaining</td>
</tr>
<tr>
<td>Lower acquisition costs</td>
<td>Acquisition costs higher</td>
<td>Churn - Don’t differentiate their customer offerings</td>
</tr>
<tr>
<td>Lots of new products that create critical mass</td>
<td>No ROI in sight for any products</td>
<td>Value - Don’t understand customer value proposition</td>
</tr>
</tbody>
</table>
**Mobile Portals are moving rapidly into a new phase of advanced features and services**

**Three key industry drivers are:**
- Applications on the move
  - Successful take off of Multimedia Messaging Service
- Explosion of new innovative products
  - Music, Media and Entertainment
  - Gaming, Social Networking
  - Car and Fleet Telematics
  - Imaging -- Camera Phones and Mobile Printing

**Increasing role of software based on open and compatible standards**
- Leading to a richer consumer experience