User Experience Design for Mobile Tablet Applications

Mukul Nagle
Learning Points

- We will study the typical behaviors of a mobile tablet user
- Learn how to unlock the business value of your SAP applications through mobile enablement
- Understand the scenarios that mobile tablets are most suited for
- Understand value of User Experience (UX) in mobile design
- Learn about key UX principles behind successful mobile apps
- Dive into detailed UX guidelines for tablet features and elements
- Take a look at great mobile tablet apps in the market and what we can learn from them
What We Will Not Cover

- Mobile UX is a vast and rapidly evolving topic. This presentation is not meant to cover all of the following:
  - Developing a mobile strategy
  - Agile methodology
  - Graphic design techniques
  - All mobile platforms in detail
  - Converting UX design into code

- We will touch upon these where applicable, and can discuss further during the Q&A session
What We’ll Cover …

- The need for a Tablet
- The importance of UX for Mobile
- UX Design Principles
- Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
When Do We Use a Mobile Tablet?

- Open a tablet where laptop is cumbersome to carry or boot up
- For long-running, comprehensive tasks
  - Read/send emails, read full-length documents
  - Make presentations or projector hookup
  - Play high-quality video games
  - However, does not replace desktop for complex tasks
- Tablet user context is different from a PDA; users are:
  - On the go, but not necessarily in a haste
  - Prepared for tablet’s size and mobility restrictions
  - Ready to spend greater time, but less than a laptop
  - Expecting a more engaging experience involving multi-media and graphical applications
Business Benefits of Mobile Tablet Apps

- Deliver on sales and marketing goals
  - Captivate the user with a “wow factor” in first 5 seconds
  - Increase user retention through engaging design
  - Increase brand recognition
  - Differentiate a product from its competitors via mobile channel
  - Encourage users to go from browsing to buying

- Increase user productivity
  - Making data and functions available for mobile workforce
  - Provide greater interactivity and data manipulation
  - Deliver fairly detailed information that is needed
  - Customized content, based on location, preferences, etc.
Audience for Enterprise Tablet Apps

- Executives and supervisors
  - View executive and managerial dashboards
  - Visualize complex, real-time charts
  - Track department performance reports
  - Approve time, invoices, etc., after detailed review

- Customers
  - Make marketing presentations
  - Comprehensive shopping experience
  - In-depth information delivery

- Field Service
  - Service equipment and customer relationships
  - Manage sales customers, revenue, and territories
Audience for Enterprise Tablet Apps (cont.)

Tablet as a marketing and dashboard power toy
Tablet as a Replacement for the Desktop

- Tablet has the potential to replace a laptop for most executives and supervisors
- Users expect most SAP functions available on a GUI/portal, plus advanced mobile capabilities
- Tablet app features expected to be comprehensive and high-grade

SAP MSS Business Package

SAP Manager Insight app
Differentiating Your Mobile App

- A mobile app is more expensive to build than a website
  - Involves building and supporting multiple mobile platforms
  - Demands premium skills needed for mobile development
  - Requires additional mobile and security infrastructure, etc.
- As a result, apps need to deliver significant value and differentiators
  - Focus Apps on high business value objectives
    - E.g., branding, customer integration, executive dashboards
  - Focus Apps on mobile-oriented productivity services
    - E.g., field service, remote approvals
  - Focus on unique, built-in mobile features and toolsets
    - Tighter integration with Contacts and Calendar
    - Offline data storage, Push notifications
Tablet’s Powerful Array of Sensors

- Make best use of built-in sophisticated mobile sensors to empower your app beyond buttons and clicks
- Provide a competitive and productive advantage
- Deliver greater ROI beyond that of a Web site

<table>
<thead>
<tr>
<th>Sensors</th>
<th>Common applications</th>
<th>Sample Apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera</td>
<td>Image recognition</td>
<td>Citibank Check Deposit</td>
</tr>
<tr>
<td></td>
<td>Barcode scanning</td>
<td>RedLaser</td>
</tr>
<tr>
<td>Microphone</td>
<td>Speech recognition</td>
<td>Voice Memo</td>
</tr>
<tr>
<td></td>
<td>Dictation</td>
<td>Shazam</td>
</tr>
<tr>
<td>GPS</td>
<td>Maps</td>
<td>Google Maps, Zillow</td>
</tr>
<tr>
<td><strong>Motion sensors</strong></td>
<td>G-force, tilt</td>
<td>Yelp Monocle, Night Sky, Bubble</td>
</tr>
<tr>
<td>(Gyroscope, Accelerometer, Compass)</td>
<td>3-D orientation</td>
<td>Level</td>
</tr>
<tr>
<td>Near-Field Communication</td>
<td>Transmit data securely</td>
<td>Google Wallet</td>
</tr>
</tbody>
</table>
Sample SAP Mobile Apps

- Interview Assistant
- Plant Maintenance
- Electronic Medical Records
- SAP BusinessObjects Explorer for Mobile
- Work Order Management
- Consumer Business
What We’ll Cover ...

- The need for a Tablet
- The importance of UX for Mobile
- UX Design Principles
- Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
Traditional SAP Application Development Process

- Waterfall model for developing SAP enhancements
- Functional specs focus primarily on transactions/BAPIs
- Programmatic approach to screen design
- Less focus on interface resulting in unappealing screens
- Usability practices absent, minimal end-user validation

Real-life example of a screen design without UX process
Drivers for Mobile User Experience

- Specific task objectives and expectations of an app
- Limited real estate on mobile screen
- Poor UI design turns off users, impacts adoption

Business goals for Mobile apps

- Deliver on sales and marketing goals
- Increase user productivity
- Deliver very specific information
- Focus on mobile-oriented services

Expectations of Mobile UX Design

- Create appealing visuals leading to user retention
- Design UI layouts that are easy to act on and navigate
- Design highly streamlined, yet effective UIs
- Research user profile, needs, and pain points
The New Model for Mobile App Development

UX design is an integral part of mobile app development

Results of following a UX process are impressive and far reaching
Planning for UX

- Obtain business sponsorship for UX discipline
- Integrate a UX process with traditional development
- Include UX into the plan, accounting for (limited) iterations
- Staff appropriate UX skills early on
- Use prototypes to simulate app prior to finalizing design
What We’ll Cover …

- The need for a Tablet
- The importance of UX for Mobile
  - UX Design Principles
- Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
Focus on the User and Task

- Research the user profile and mobile usage context prior to designing the app
  - Demographic attributes
  - A Day in the Life (typical actions)
  - Needs
  - Pain points
  - Wants

- Interview end users to answer questions such as: Why would you want to use the app, when, where … ?
Consistency

- Design for consistency between the app and the real world
  - Aesthetics correlated to the type of app (e.g., Productivity apps have nominal graphics and are focused on task)
  - Nomenclature and flow consistent with real-life process
  - App to complement, not mimic, your Web app

- Design the app consistently across all elements of UX design
  - Iconography and visual standards inherent to iOS/Android
  - Wording and terminologies
  - Most used apps (Email, Calendar, Facebook, etc.)
  - Your own collection of internal apps
Ease of Operation

- Users are committing to install your app since they want to use it repeatedly

- Enable ease of operation to:
  - Enable discovery of UI features and information
  - Provide easy-to-use functions without use of Help documents
  - Make it faster for users to input their choices
  - Provide immediate feedback on user actions
  - Reduce wait times by loading lightweight content faster
  - Effortlessly operate over and over again
Ease of Operation (cont.)

Minimize data entry at all costs; provide many ways to select
Ease of Operation (cont.)

Guidelines for filters or selectors:

- Display all selectors either horizontally or vertically
- Fit the selectors within the visual area of the app
- Supply images to appear at both ends of the slider to help users understand what the slider does
- Do not use sliders when an exact value is usually needed
- Maintain a comfortable hit region (44x44 points)
- Avoid too many choices within a filter criteria
- Do not place widgets and links too close together
- Do not use spin wheels for lists that do not cycle naturally
Information Architecture

- A well-structured Information Architecture (IA) is essential to keeping the mobile app organized and effective in a limited real estate
  - Employ user research techniques like User Personas, Use Cases, etc., to understand user objectives
  - Conduct a Card Sorting exercise, preferably with sample set of real users (instead of IT co-workers)

- Design app navigation to be:
  - Intuitive in its organization and nomenclature
  - Predictable in its sequence of activities
  - Noticeable; e.g., include indicators to show need for “flicking”
  - Efficient; 1-2 clicks from home page to all key functions
  - Manageable; choose a small set of top-level menu items (ideally 5-6) to avoid overloading of the main navigation
Organizing Information Hierarchies

- Many ERP functions return large and complex data sets
  - List of employees, invoices, product catalog, etc.
- Methods to flatten deep information hierarchies:
  - Organize your data into categories
  - Display relevant filter criteria
  - Design screen layout to depict data relationships

- Tools to organize hierarchical data:
  - Split View
  - Popover
  - Segmented Control
  - Custom-tabbed navigation
Organizing Information Hierarchies: Split Views
Organizing Information Hierarchies: Popover
Organizing Information Hierarchies

Custom Tabs

Segmented Control
Adding Physicality and Realism

• When appropriate, add a realistic, physical dimension to your application

• The more true to life your application looks and behaves, the easier it is for people to understand how it works, and the more they enjoy using it
How Tablet Usability differs from Web Usability?

- Adapt to the form factor and screen size
  - Redesign screen layout to optimize page density
  - Cut down content shown
  - Adjust font size, don’t just shrink the screen resolution
  - Clickable elements to fit finger size, not a mouse pointer
  - Tailor navigation to the mobile platform
  - Avoid large image or data downloads

Amazon.com’s extensive home page

Amazon simplified app home page
What We’ll Cover …

- The need for a Tablet
- The importance of UX for Mobile
- UX Design Principles
  - Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
Mobile Tablet UI Element Guidelines

Navigation Controls
- Tables and Lists
- Modal Views and Alerts
- Textboxes and Labels
- Display Size and Resolution
- Branding
Navigation Controls

- Navigation controls drive the flow of the app across different functionality screens and within a screen.
Navigation and Toolbars in iOS

- iOS provides 3 menu bars for navigation
  - **Navigation Bar**
    - Back button, Title of current screen
    - 1 Content-specific control to act on the data on the same screen
  - **Tool Bar** – for frequently used commands
  - **Tab Bar** – organizes main features of app
    - Accessible from any location in app
    - “More … ” tab shown for >5 tabs
    - Utilize this as a branding opportunity
    - Minimum 44x44 points (1cmx1cm) for each icon
Navigation and Toolbars in Android Tablet

- Main action bar
- Navigation bar
- App Icon
- Action buttons
- Search box
Navigation and Toolbars in Android Tablet (cont.)

- The action bar is:
  - Located at the top of screen to highlight important features
  - Best used for actions across your app, e.g. search, refresh
  - Preferably not contextual

- Dashboard
  - Acts as a welcoming screen of your app
  - Provides the flavor of the app
  - Entry point into different main categories of the app

- Quick actions
  - A quick actions pop over can be used for items that have competing internal targets
  - It has to be triggered from a distinct visual target
  - It should not block the originating item which it acts upon
Tips for Navigation Design

- Keep to a maximum 5 tabs, though the tablet can fit more
- Ensure all tabs are valid and functional for that user/role
- Keep essential information at the top of the screen
- Avoid a home screen full of icons; one less navigation step

Design
- Background – light-to-dark gradients from top to bottom
- Glossy Effect – top half of navigation bar

Icons
- Simple relevant iconography
- Variation of white (inactive)
- Change of color (active)
Typical Navigation Pitfalls

- Avoid these pitfalls while designing the navigation:
  - Dumping numerous content items under the “Home” tab
  - Dumping a large list of menu items under the “More …” tab
  - Using breadcrumbs (similar to those on a Web site)
  - Using (uncommon) acronyms
  - Inconsistent phrasing between menu names
    - E.g., “My Life” and “Your Work”
  - Menu names that are synonymous and may confuse users
    - E.g., Tools, Utilities, Tasks, Work
  - Inconsistent hierarchical classifications
  - Deep hierarchies (e.g., in a Product Catalog) that result in exhaustive digging
Navigation and Toolbar Examples — iOS
Navigation and Toolbar Examples — Android
Navigating with Gestures

- Multi-touch interface introduced radically new interactions:
  - Transition from clicks to gestures
  - Use of multiple fingers (sensing up to 5 touch signals)
  - Greater interactivity and control over screen elements
- Keep gestures consistent with iOS/Android standards
- Avoid customized or complicated gestures
- Use gestures to mimic real-world actions

<table>
<thead>
<tr>
<th>Gesture</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap</td>
<td>Starting the <em>Flashlight</em> app</td>
</tr>
<tr>
<td>Tap and Hold</td>
<td>Drag to add item to list in <em>Target</em> app</td>
</tr>
<tr>
<td>Drag/Pan</td>
<td>Panning maps in <em>Yelp</em></td>
</tr>
<tr>
<td>Flick/Swipe</td>
<td>Flicking paper ball in the <em>Paper Toss</em></td>
</tr>
<tr>
<td>Pinch open/close</td>
<td>Zoom in/out in <em>Google Maps</em></td>
</tr>
</tbody>
</table>

Source: www.lukew.com/touch/
Mobile Tablet UI Element Guidelines

- Navigation Controls
- Tables and Lists
  - Modal Views and Alerts
  - Textboxes and Labels
  - Display Size and Resolution
  - Branding
When Do We Use Tables?

- Group similar elements into categories
- Organize long list of items for better readability
- Provide ability to summarize, with option to view further details
- Enable a hierarchical display with drill down
Tips for Tables Design

- Use tables to …
  - Provide a list of options for selection
  - Display hierarchical information
  - Display conceptually grouped information
  - Display information that is indexed to facilitate lookup

- Dos and Don’ts
  - Always provide feedback when users select a list item
  - If table content is extensive or complex, avoid waiting until all the data is available before displaying anything
  - Avoid variable row heights in a plain table
  - Keep text labels succinct to avoid truncation
  - Provide a search option for large data sets
  - Annotate visually identifiable and pleasing iconography
Table Styles

Plain tables

Grouped tables

Accordion Views
(Android only)

Commonly Used iOS Table Controls
Table Layout

Size the table dimensions appropriately

DO fit the table within the visual area of the app

DO NOT stretch the table through the entire screen width
Mobile Tablet UI Element Guidelines

- Navigation Controls
- Tables and Lists

Modal Views and Alerts
- Textboxes and Labels
- Display Size and Resolution
- Branding
Modal Views

- When do we use Modal Views?
  - Provide self-contained functionality in the context of the current task or workflow
  - Critical to get the user’s attention
  - Complete (or explicitly abandon) task to avoid leaving the user’s data in an ambiguous state

- Guidelines
  - Keep modal tasks fairly short and narrowly focused
  - Always provide an obvious and safe way to exit a modal task
  - Coordinate the overall look of a modal view with the appearance of your app
Modal Views in iOS

- **Appearance and behavior**
  - Covers the entire application screen, which strengthens the user’s perception of entering a separate, transient mode
  - Displays text if appropriate and contains the controls necessary to perform the task

![Modal View Examples]
Modal Views in Android

- Dialogs can be used to confirm that the user understands the severity of an action
- Toasts can echo back that an action has been successfully taken
- Dialogs and Toasts are for feedback
- Dialogs and Toasts should only be displayed as the immediate response to the user action inside of your app
Alerts

- Alerts gives people important information that affects their use of the application (or the device)

Guidelines

- Design an eye-catching way to display the information that harmonizes with your app’s style
- Update users on tasks that are progressing normally
- Keep the title short enough to display on a single line
- When possible, use a sentence fragment
- Don’t hesitate to be negative
- Avoid using “you,” “your,” “me,” and “my”
- Use capitalization and punctuation appropriately
- Avoid creating unnecessary alerts
Alerts (cont.)

Use “Badges” on tab bar icon for messaging without interference
Alerts (cont.)

- Android’s Alert Guidelines
  - Make it personal
  - Navigate to the right place
  - Timestamps for time sensitive events
  - Stack your notifications
- Notifications are indicated by icons in the notification area and can be accessed by opening the notification drawer
- Notification area is integrated with the system bar at the bottom of the screen
Mobile Tablet UI Element Guidelines

- Navigation Controls
- Tables and Lists
- Modal Views and Alerts
- Textboxes and Labels
- Display Size and Resolution
- Branding
Textboxes

- A text field accepts a single line of user input (shown here with a purpose description and placeholder text)

- Place form label outside the input field
- Display a hint to clarify purpose
- Display Clear button in the right end
- Assign the proper tab index order
- Specify appropriate keyboard types
Writing Style Guidelines

- Create a professional impression of your app by using:
  - Courteous, non-abrupt writing style
  - Short and logical labels, avoid truncation
  - Simple and precise titles using short words
  - Appropriate capitalization and punctuation

- Make the message readable
  - Most important messages at the top of the screen
  - Actionable and concise messages involving sentence fragments
  - Legible labels; clarity is priority over fancy fonts or colors
  - End user’s terms and language, avoiding technical jargon
Sample UI Controls in Android (Honeycomb)
Mobile Tablet UI Element Guidelines

- Navigation Bar
- Tables and Lists
- Modal Views and Alerts
- Textboxes and Labels
- Display Size and Resolution
- Branding
Display Size and Resolution

- App should handle variations in display sizes
  - Tablets come in many shapes, screen sizes, and resolutions
  - Portrait/Landscape orientation adds another variation
  - Use portrait/landscape mode where naturally suited to the task (e.g., for videos, detailed stock charts)

1024 pixels

768 pixels

Split View: Left = 320 + right = 704 pixels
Display Size

- Customize/scale UX standards for smaller form factor
- Design for most display sizes
  - Larger display requires images with high-grade resolution
  - Design layouts and icons that can adapt to screen sizes
  - Create separate set of icons for each screen density
- Maintain density independence to adapt to density variations
  - iOS: Points instead of pixels
  - Android: “dp” units (Density-independent Pixels)
Display Resolution

- Deliver graphic assets in sets of different densities
  - Work in base standard (MDPI) and scale up/down
  - Create bitmap image versions for popular screen densities, i.e., MDPI (100x100) and HDPI (150x150)

Images from developer.android.com
Image and Text Dimensions

- Recommended range for touchscreen objects: 7-10 mm
- Typical icon size: 44 points (iOS) or 48dp units (Android)
- Typical icon sizes:
  - iPhone: 40x40 pixels (Navigation Bar), 60x60 pixels (Tab Bar)
  - Android: 48x48 dp
Mobile Tablet UI Element Guidelines

- Navigation Bar
- Tables and Lists
- Modal Views and Alerts
- Textboxes and Labels
- Display Size and Resolution

Branding
Brand Personality

- Stay true to your brand personality with visual branding
- Brand is an emotional reaction of a consumer to the personality of your product or service’s representation
- Make your brand powerful and memorable for users to connect and familiarize with its personality

Elements of Visual Branding

- Name, Logo
- Typography
- Product Color
Tips on Effective Mobile Device Branding

- Branding opportunities
  - Brand recognition starts with App icon and iTunes listing
  - Use high quality artwork/graphics for an immediate impact
  - Consider a splash screen for a short branding animation

- Adapting corporate branding for the mobile device
  - Maintain consistency between website and mobile branding
  - Adjust fonts and image size for mobile display/bandwidth
  - Place logo in the center of top Navigation Bar
    - Note: Logo may be replaced by screen title during navigation
  - Avoid Web site elements such as Footer, About Us, etc.

- Minimize real estate for branding on functional screens
  - Consider faded background wallpaper or other creative ways
Buttons and Images

- Use standard buttons where actions are typical of the platform
- Avoid changing the action of a standard button
- Follow platform specific icon guidelines; avoid iOS icons for Android platform and vice-versa
- Optimize image size to reduce download time
- Make “Save” button more prominent than “Cancel” button
- Space “Cancel” and “Save” buttons
Iconography and Artwork

- Consider professional designers to develop high-quality graphics
  - Provides a realistic feel to the app
  - Delivers a pleasing experience to the end users
  - Enhances value of the app and your brand

- Avoid gratuitous and excessive graphics that overshadow main content and purpose
What We’ll Cover …

- The need for a Tablet
- The importance of UX for Mobile
- UX Design Principles
- Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
Design Ideation and Wireframing Tools

- Sketching – explore design concepts at an conceptualization stages

Yahoo! Design Stencil Kit for MS Visio

WireframeSketcher

Balsamiq

OmniGraffle
Interface Design Tools

- Adobe Photoshop – manipulating images and graphics, also used for graphical layout
Interface Design Tools (cont.)

- Adobe Illustrator – vector-based tool, primarily for graphical layout and image creations
Interface Design Tools (cont.)

- Adobe Catalyst – creation of screen flows without coding, creation of demos
What We’ll Cover …

- The need for a Tablet
- The importance of UX for Mobile
- UX Design Principles
- Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
Well-Designed Tablet Apps Are Killer Apps!

Simple UX principles and details result in impactful apps
What We’ll Cover …

- The need for a Tablet
- The importance of UX for Mobile
- UX Design Principles
- Mobile Tablet UI Element Guidelines
- Mobile Design Tools
- Bringing it all together
- Wrap-up
Additional Resources

- **UX Guidelines**
  - Android: [Http://developer.android.com/design](http://developer.android.com/design)
  - Nielsen Norman Group: [Http://nngroup.com/reports/mobile](http://nngroup.com/reports/mobile)

- **Wireframing resources**
  - Yahoo! Stencil: [Http://developer.yahoo.com/ypatterns/about/stencils](http://developer.yahoo.com/ypatterns/about/stencils)
  - Balsamiq: [Http://balsamiq.com](http://balsamiq.com)
  - Graffletopia: [Http://graffletopia.com/categories/iphone](http://graffletopia.com/categories/iphone)
  - iPhone icons: [Http://medialoot.com/item/iphone-app-icon-kit](http://medialoot.com/item/iphone-app-icon-kit)
  - Photoshop Templates: [www.teehanlax.com](http://www.teehanlax.com)
Key Learnings

- Tablet apps offer significant advantages over Web sites through rich features and extended sensors
- Tablet can be a potential replacement for your laptop
- Understand and correctly apply User Experience (UX) method to traditional SAP application development
- Study needs, behaviors, and context of your mobile user
- Mobile apps need provide only a subset of desktop SAP functions
- Observe great mobile tablet apps in the market, but follow specific UI design guidelines as defined by the platform vendor
- Mobile apps get developers, business owners, and users excited – have fun building them!
How to contact me:
Mukul Nagle
mnagle@deloitte.com
Thank you for participating.

Please remember to complete and return your evaluation form following this session.

For ongoing education on this area of focus, visit the Year-Round Community page at [www.asug.com/ycr](http://www.asug.com/ycr)