Pengembangan Aplikasi Mobile Digital Library

Literasi Digital dengan Aplikasi Mobile

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Outline

• Why Mobile Apps?
• Literasi Aplikasi
• Trend Aplikasi bagi Pustakawan
• M-Library Application
• Pengembangan Aplikasi Mobile
The mission of librarians is to improve society through facilitating knowledge creation in their communities.”

R. David Lankes

R. David Lankes is Professor and Dean's Scholar for New Librarianship in Syracuse University's School of Information Studies
Library Makerspace
Skills Needed for Librarian

- Information Curation
- In-depth, High-value Research
- Digital Preservation
- Mobile Environment
- Collaboration, Coaching & Facilitation

http://www.lac-group.com/top-five-skills-required-for-librarians-today-tomorrow/
Why Mobile Apps?
DIGITAL IN INDONESIA
A snapshot of the country's key digital statistical indicators

TOTAL POPULATION: 265.4 million
Internet users: 132.7 million
Active social media users: 130.0 million
Unique mobile users: 177.9 million
Active mobile social users: 120.0 million

Urbanisation: 56%
Penetration: 50%
Penetration: 49%
Penetration: 67%
Penetration: 45%

Sources: Population: United Nations, U.S. Census Bureau; Internet: Internet World Stats; ITU: Eurostat; Internetlivestats; CIA World Factbook; MeasMedia.org; Facebook; Government of Indonesia; Social Media and Mobile Social Media: Facebook; Tencent; VKontakte; Kakao; Naver; LINE; Twitter; Weibo; SimilarWeb; GFK; Note: Penetration figures are for total population (all ages).
MOBILE IS SPECIAL

EASIER INTERFACES

FOCUS ON CONTENT

APPS FOR CREATION

NATURAL USER INTERFACE
Natural User Interface

THEN...
(Keyboard + Mice = Graphical User Interface)

NOW...
(Touch + Voice + Gesture = Natural User Interface)
App Literasi

- Ekosistem Mobile
- Kapabilitas Teknologi
- Aksesibilitas
- Special Task
Ekosistem Mobile: Tipe
Ekosistem Mobile: Platform
The Smartphone Platform War Is Over

Worldwide smartphone operating system market share (based on unit sales)

- **Android**
- **iOS**
- **Windows**
- **BlackBerry**
- **Symbian**
- **Others**

**2009**
- Android: 80%
- iOS: 10%
- Windows: 5%
- BlackBerry: 2%
- Symbian: 2%
- Others: 1%

**2010**
- Android: 85%
- iOS: 14%
- Windows: 1%
- BlackBerry: 1%
- Symbian: 1%
- Others: 0%

**2011**
- Android: 80%
- iOS: 20%
- Windows: 1%
- BlackBerry: 1%
- Symbian: 1%
- Others: 0%

**2012**
- Android: 85%
- iOS: 15%
- Windows: 1%
- BlackBerry: 1%
- Symbian: 1%
- Others: 0%

**2013**
- Android: 80%
- iOS: 15%
- Windows: 5%
- BlackBerry: 1%
- Symbian: 1%
- Others: 0%

**2014**
- Android: 90%
- iOS: 10%
- Windows: 1%
- BlackBerry: 1%
- Symbian: 1%
- Others: 0%

**2015**
- Android: 95%
- iOS: 5%
- Windows: 1%
- BlackBerry: 1%
- Symbian: 1%
- Others: 0%

**2016**
- Android: 84.8%
- iOS: 14.4%
- Windows: 0.5%
- BlackBerry: 0.1%
- Symbian: 0.1%
- Others: 0.1%

Source: Gartner
iPhone Evolution

**IPHONE: 1 TO X**
A look at the evolution of the Apple gadget across key specs

<table>
<thead>
<tr>
<th>Model</th>
<th>Weight (in gm)</th>
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<tr>
<td>iPhone 1</td>
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<td>iPhone 3GS</td>
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<td>iPhone 6</td>
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<td>iPhone 8 Plus</td>
<td>188</td>
</tr>
<tr>
<td>iPhone X</td>
<td>174</td>
</tr>
</tbody>
</table>
Android Evolution
Mobile device attributes

**User interfaces**
- Touchscreen
- Keyboard
- Predictive text
- Stylus
- Voice
- Gesture

**Hardware**
- Operating system
- Chipset
- Memory & storage
- Power & battery
- Ruggedness
- Biometric security
- Weight

**Connectivity**
- Telephony
- Mobile data
- Infrared
- Bluetooth
- Device connectors

**Sensors**
- Barometer
- GPS & compass
- Proximity sensor
- Accelerometer
- Near field communication
- Three-axis gyro

**Rich media & graphics**
- Graphics acceleration
- Rich media playback
- Rich media recording
- 3D
- Front & back cameras
- Ambient light sensor

**3rd party accessories**
- Companion devices

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**Screen orientation**
- Primarily portrait
- Portrait or landscape
- Portrait or landscape

**Example screen dimensions**
- iPhone 4S
  - 3.5 inch (diagonal)
  - 960x640 pixel resolution
- Samsung Galaxy Note
  - 5.3 inch (diagonal)
  - 1280x800 pixel resolution
- BlackBerry Playbook
  - 7 inch (diagonal)
  - 1024x600 pixel resolution
Special Task

- Phone & Text Messaging
- Internet Access
- Browsing
- GPS Navigation
- Digital Camera
- Read Book / Magazine
- Watch TV / Movie
- Music Player
- Voice Recording
- Drawings/ Writing
- Etc.

Mobile App with Special Tasks
Jenis Aplikasi berdasar Fungsionalitas

- Internet
- Business
- Hiburan / Entertainment
- Permainan
- Navigasi
- Media sosial
- Fotografi

- Utility
- Edukasi
- Gaya Hidup (Lifestyle)
- Keuangan (Finance)
- Productifity
- dll
4 Type of App

1. CONSUME
2. CURATE
3. CREATE
4. COLLABORATE
Consuming App

Ebooks
- Kindle
- iBooks

Magazines
- Zinio
- Next Issue

News & Feeds
- Feedly
- Flipboard

Radio and Podcasts
- TuneIn Radio
- Stitcher Radio
Merriam-Webster Dictionary
Dictionary with voice search
Read on Any Device
Take every word, every sentence, every story everywhere you go.

Download books directly from the Kindle app
You don’t need to own a Kindle device to enjoy Kindle Unlimited. With our free Kindle reading apps, you can download Kindle Unlimited books anywhere, anytime.
Columnist Brutally Rips Deron Williams For Letting The Brooklyn Nets Collapse

Tony Manfred

The Brooklyn Nets have lost eight of their last 10 games, and a lot of the blame is falling on Deron Williams, who signed a $100-million contract to be the centerpiece of the team this summer.

The fiercest criticism yet came from Dave D’Alessandro of the Newark Star-Ledger. In an epic column today, he wrote that Williams isn’t working hard enough, hasn’t taken responsibility, and carries himself with a sense of entitlement.

Here’s how the column starts, just to get a sense of the tone:

“Good morning, Deron Williams.

Dec. 20, 2012, 9:51 AM
Curating App

Social Media
Twitter  Facebook

Images
Pinterest  Instagram

News & Websites
Flipboard  Scoop.it
Pinterest adalah virtual pinboard di mana Anda bisa mengunggah foto atau gambar yang dapat dimasukkan kedalam kategori-kategori yang bisa di customize namanya.
Creating App

<table>
<thead>
<tr>
<th>Photos</th>
<th>Movies &amp; Music</th>
<th>Presentations</th>
<th>Presentations</th>
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<tbody>
<tr>
<td>iPhoto</td>
<td>iMovie</td>
<td>Keynote</td>
<td>Google Slides</td>
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<td>Snapseed</td>
<td>GarageBand</td>
<td>Haiku Deck</td>
<td>Prezi</td>
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<th>Spreadsheets</th>
<th>Narrated Slideshows</th>
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<tr>
<td>Pages</td>
<td>Numbers</td>
<td>Explain Everything</td>
<td>VoiceThread</td>
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<tr>
<td>Google Docs</td>
<td>Google Sheets</td>
<td></td>
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</tbody>
</table>
Colaborating App

<table>
<thead>
<tr>
<th>Live Chats</th>
<th>Shared Notes &amp; Files</th>
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</thead>
<tbody>
<tr>
<td>Skype</td>
<td>Evernote</td>
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<tr>
<td>Hangouts</td>
<td>Dropbox</td>
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</table>

<table>
<thead>
<tr>
<th>Shared Whiteboard</th>
<th>Shared Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>SyncSpace</td>
<td>Google Docs</td>
</tr>
</tbody>
</table>
IDEAS FOR USING MOBILE APPS IN LIBRARY SERVICES OR MAKE MOBILE DIGITAL LIBRARY
Mobile Digital Library

A list of possible mobile service is listed below:
1. Mobile library site
2. Mobile On-line Public Access Catalogue (MOPAC)
3. Circulation services
4. Reference Enquiry services
5. Current Awareness Service and Selective Dissemination of Information Service (CAS & SDI)
6. E-mail and SMS – Service
7. Distribution of E-Resources through Mobile site
8. Library Maps and floor plans
9. Library News, Events and Blogs
10. Library Hours and library tours
11. Mobile databases
12. Inter library loan service
Mobile Digital Library .. (2)

13. List of new Arrivals
14. Books and Article’s search
15. Mobile apps for library
16. Library instructional program through mobile site
17. Subject guide, path-finders etc.
18. Photo/Video gallery
19. Library Surveys
20. Feedback / Comments / Suggestions
21. Contacting library staff for help
22. Mobile database - PubMed for Handhelds is a mobile web portal for the National Library of Medicine. or library
MOBILE APPLICATION DEVELOPMENT
Development Live Cycle

- **Design**
  - UI Design, Functional Design
- **Development**
  - Waterfall / Agile Development, Functional Development, Unit Testing
- **Testing**
  - UI Testing, UX Testing, UAT Testing
- **Launch / Maintenance**
  - Launch, Load Testing, Maintenance

Requirement Gathering / Analysis
- Rough Draft, Wireframes, Scope Document
Prototyping Method

Idea
Prototype Testing
Build Prototype
Design
Design Testing
Prototype
Testing

Design for Development
Implementation
Deployment
Maintaining
Tahapan Pengembangan Aplikasi

1. Design → Design Testing
2. Development
3. Implementation → Testing
4. Deployment → Publish
5. Maintenance
Design Aspect

- Application **Architecture**
- **Functional Requirement**
- **Non Functional Requirement** → Reliability, Security, Usability, etc.
- **Diagrams** → Activity, Sequence, Class
- **Database** → Local or Server based (Web Services)
- **User Interface**: Color, Menu, Size, Position, Image, Icon, Graphics, etc
- **User Experience**: Information Architecture, Interaction, Control, Respond, Notification
Application Architecture Sample

- Offline Application
- Offline Application with Online data access (Web Service)
- Online Application
- Application with Push Notification
Requirement Analysis

• Mendefinisikan **kebutuhan** aplikasi
• Penggalian kebutuhan pada **stakeholder**: Pustakawan, Pengelola Perpustakaan, Pengguna Perpustakaan
• **Layanan** apa yang dibutuhkan dan atau layanan apa akan diberikan
• **Fitur dan fungsi** apa saja yang harus ada pada aplikasi
Design: User Experience
Design: Wireframe & Screenflow
Design: Mockup / User Interface
Prototyping Tools
Prototyping Tools: Marvel
Development Consideration

- Local or Server-Based Data
- Internal or External Access
- Pushing or Pulling the Data
- Building or Buying
Implementasi / Development

• **Development**: Tahapan pembuatan aplikasi (Coding)
• Choose **Platform**
• Choose appropriate **development tools**
  – Design Tools / Prototyping Tools
  – Development Tools
  – Rapid Development Tools
• Others: Library, Services, API
Mobile Application Testing

- **Functional Testing**: Verifies that the mobile app functions as specified in the design document.
- **Compatibility Testing**: Check compatibility across devices, OS, browsers, backward and forward system support.
- **Performance Testing**: Assess responsiveness, operating capacity, scalability and readiness of the app.
- **Security Testing**: Verify data integrity, storage issues, tainted inputs and security of activity logs.
- **Usability Testing**: Ensures that users are able to perform the intended tasks on the app satisfactorily.
- **Test Automation**: Automation of mobile regression test suites.
3-Tier Application Testing

- **Backend**:
  - Enterprise Data
  - Application Data
  - Mobile Web Services

- **Middleware**:
  - Communication Framework/Server
  - Device Management Testing
  - Authentication Testing
  - Security Testing

- **Device UI**:
  - Mobile Website
  - Installation Testing
  - Functional Testing
  - Compatibility Testing
  - Device Profiling
  - UI Testing
  - Interruption

Types of Testing:
- Integration Testing
- SOA Testing

 automatability:
- Partially Automatable
- Fully Automatable
- Not Automatable
Development Team (Role)

- Project Manager
- Application Designer
- Mobile Programmer
- Application Tester
- UI/UX Designer
- Marketing
- Backend Admin / Operator
Type of Application

• SMS Application

• Web Based Application: 
dibangun dengan teknologi pembuatan web: HTML, CSS, Javascript. Bersifat CROSS PLATFORM

• Native Mobile App: 
dibuat, dikompilasi dan diinstalasi khusus untuk platform tertentu

• Hybrid Mobile App: 
gabungan Native + Web, dikembangkan dengan teknik web tetapi dikompilasi menjadi app native
Native
Built using Objective-C, Java, .NET

Hybrid
Built using HTML, CSS, JavaScript

Web
Built using HTML, CSS, JavaScript (in native wrapper)
Native Application

Native Application:

- Java ME (sebelumnya J2ME)
- .NET Compact Framework (C++, C#, VB.NET) for Windows Mobile
- Symbian (C++)
- BlackBerry (Java)
- **Android (Java)**
- iPhone / iOS (Objective-C, Swift)
Teknologi Web utk Mobile App

• HTML5
• CSS3
• Javascript: Jquery Mobile, AJAX
• Data (Web Service): JSON, XML
• Localstorage: SQLite

• Hybrid → Merubah aplikasi mobile web menjadi native
Hybrid Mobile App

• Using web technology: HTML5, CSS3, Javascript
• New Javascript Framework: Node.js, Angular, ionic
• Javascript to Native: React Native by Facebook, Native Script
Cross-Platform Framework

- Build once compiling & run everywhere
Native Script

Beautiful, accessible, platform-native UI - without WebViews. Define once and let **NativeScript** adapt to run everywhere, or tailor the UI to specific devices and screens.
Cost Development

Dalam mengembangkan sebuah aplikasi mobile harus memperhitungkan biaya-biaya yang timbul dari komponen berikut:

• **Hardware**: Komputer development, mobile device
• **Software**: Development Tools
• **Pemilihan Platform**
• **Lisensi**
• **Dokumentasi & API**
License

- Developer Android: $25 one time
- Developer iOS: $99 / year

Development Tools:
- Android Studio ← Free
- xCode ← Free
- Cross Platform Dev Tools ← Freemium
Mobile App Development Platform

- Kony
- Xamarin
- Adobe AIR
- Sencha Touch
- PhoneGap
- Appcelerator
- iOS
- Android
- Windows
- BlackBerry
- HTML5
- Symbian
- Bada
- webOS
- Mac OS desktops
- Tizen
Cross Platform & Game Dev Dev Tools

- Xamarin
- ionic
- PhoneGap
- appcelerator® titanium™
- unity
- kony
- Sencha
- Yapp
- Cocos2dx
Deployment

- **Deployment**: tahapan pengembangan dan implementasi pada lingkungan penggunaan sebenarnya → hosting-upload-testing-publish

- Hosting: server di internet tempat penyimpanan basis data dan logic aplikasi (program)

- Publish to Market / Store
Market Store
Sample Showcase

- Aplikasi: Aplikasi UB TV Streaming
- Application Type: Native App
- Platform: Android
- Development Tools: Android Studio + Genymotion
- Prototyping Tools: Adobe XD
- Backend: Node.js
- Data exchange: JSON
- Database: MySQL
RESUME

• Waktunya menerapkan Teknologi Mobile dan mengadopsi aplikasi mobile pada layanan perpustakaan
• Apps for Creation – not only consumption
• Perpustakaan memfasilitasi penciptaan (creation)
• Pengembangan aplikasi mobile dengan memberikan layanan perpustakaan berbasis aplikasi mobile
• Pustakawan + Apps = Great Combination!
TERIMA KASIH

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