

CENTRIC 2015, Barcelona

A Primer on User-Centered Mobile App Design

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Center of Advanced E-Business Studies**



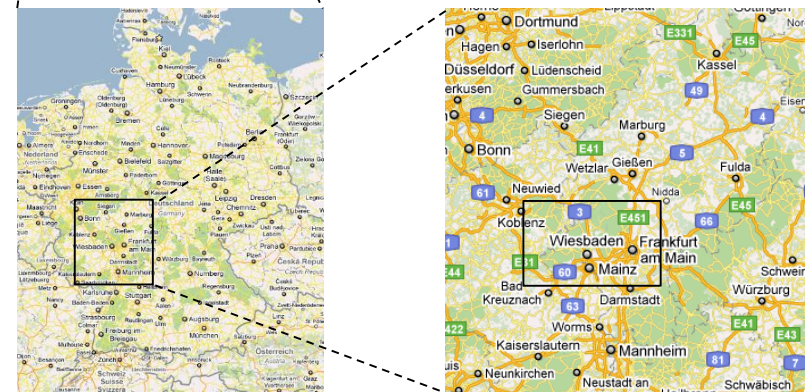
RheinMain University: Facts & Figures



RheinMain University
of Applied Sciences

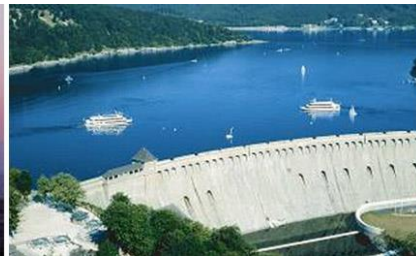


- Founded in 1971
- All in all about **12.000 students**, roughly 1.200 international students
- **60 degree programs**
- Total of **250 professors** (600 employees in total)



Location: State of Hesse

- Roughly at the **geographical center** of Germany
- About **6.3 million residents**
- Hesse's largest city: Frankfurt am Main
- Hesse's economic powerhouse: **the Rhine-Main area**
- **Lots of options for interesting day trips:**
 - Frankfurt, Wiesbaden, Marburg, Kassel, Darmstadt etc.
 - the Taunus uplands, the Rheingau, the Bergstraße etc.



© Images: www.hessen-tourismus.de

Center of Advanced E-Business Studies



CAEBUS
Center for Advanced E-Business Studies

MISSION STATEMENT EXPERTISE ABOUT US RESEARCH TEACHING CONTACT

Das CAEBUS-Team

Mission Statement

The mission of Center for Advanced E-Business Studies (CAEBUS) is to develop innovative and sustainable e-business models and solutions in line with economic and regulatory frameworks. The center is committed to providing these solutions through in depth studies of consumer needs, cultural requirements, and conditions for economic efficiency. CAEBUS defines roadmaps for the successful implementation of E-business solutions in accordance with organizational structures and business processes.

NEWS

- Call for Papers – CAEBUS Publication
23. June 2015
- CAEBUS Ph.D. Candidate took part in the 11th International Conference on Mobile Learning 2015 Doctoral Consortium 30. March 2015
- Visiting ICD NIDA in Bangkok for PhD

Please contact us if you like to cooperate! (www.caebus.de, stephan.boehm@hs-rm.de)

Agenda

1. Introduction
2. Designing & Developing Mobile Apps
3. Mobile App Prototyping
4. Mobile App Marketing


History of Mobile Apps



Mobile applications are already offered a longer time – but only the app store concept was the breakthrough.

Tools

Tools



Application manager

Press , and select Applications > App. mgr.. You can install two types of applications and software to your device:

- J2ME™ applications based on Java™ technology with the extension .jad or .jar ().
- Other applications and software suitable for the Symbian operating system (). The installation files have the .sis extension. Only install software specifically designed for your Nokia N95. Software providers will often refer to the official model number of this product: the Nokia N95-1.

Installation files may be transferred to your device from a compatible computer, downloaded during browsing, or sent to you in a multimedia message, as an e-mail attachment, or using Bluetooth connectivity or infrared. You can use Nokia Application Installer in Nokia Nseries PC Suite to install an application to your device. If you use Microsoft Windows Explorer to transfer a file, save the file to a compatible memory card (local disk).

Install applications and software



 indicates a .sis application,  indicates that the application is not fully installed on the memory card.

Important: Only install and use other software from trusted sources, that are Symbian Signed or have passed testing.


Before installation, note the following:

- To view the application type, version, supplier or manufacturer of the application, select Options > View details. To display the security certificate information for an application, in Certificates, select 'Certificate management', p. 123.
- If you install a file that contains an existing application, you can overwrite the original application if you have the file or a full back-up copy of the application package. To restore the original application, and install the application, select Options > View details.

- The .jar file is required for installing Java applications. If it is missing, the device may ask you to download it. If there is no access point defined for the application, you are asked to select one. When you are downloading the .jar file, you may need to enter a user name and password to access the server. You obtain these from the supplier or manufacturer of the application.

- 1 To locate an installation file, press , and select Applications > App. mgr.. Alternatively, search the device memory or a compatible memory card (if inserted) in File mgr., or open a message in Messaging > Inbox that contains an installation file.
- 2 In App. mgr., select Options > Install. In other applications, scroll to the installation file, and press  to start the installation.

During installation, the device shows information about the progress of the installation. If you are installing an application without a digital signature or certification, the device displays a warning. Continue installation only if you are sure of the origin and contents of the application.

To start an installed application, locate it in the menu, and press . If the application does not have a default folder defined, it is installed in the Applications folder.

To see which software packages are installed or removed and when, select Options > View log.



Source: http://nds1.nokia.com/phones/files/guides/Nokia_N95-1_UG_en.pdf

Mobile Application Defined

Mobile App/Application:

*Application software to run on mobile devices, such as Smartphones, with which the functionality given by hardware and operating software can be applied **to solve user-specific problems.***

*Typically, Mobile Apps consist of programs and data that will be **installed by the end users** themselves to the devices and thus are also an important **element of handset personalization.***



Source of pictures:
<http://tweakyourbiz.com>

App Stores

The major app stores now offer quite a vast number of applications.



App Store

> **1.400.000 Apps**



Google play

> **1.600.000 Apps**



Windows Phone
Marketplace

> **350.000 Apps**

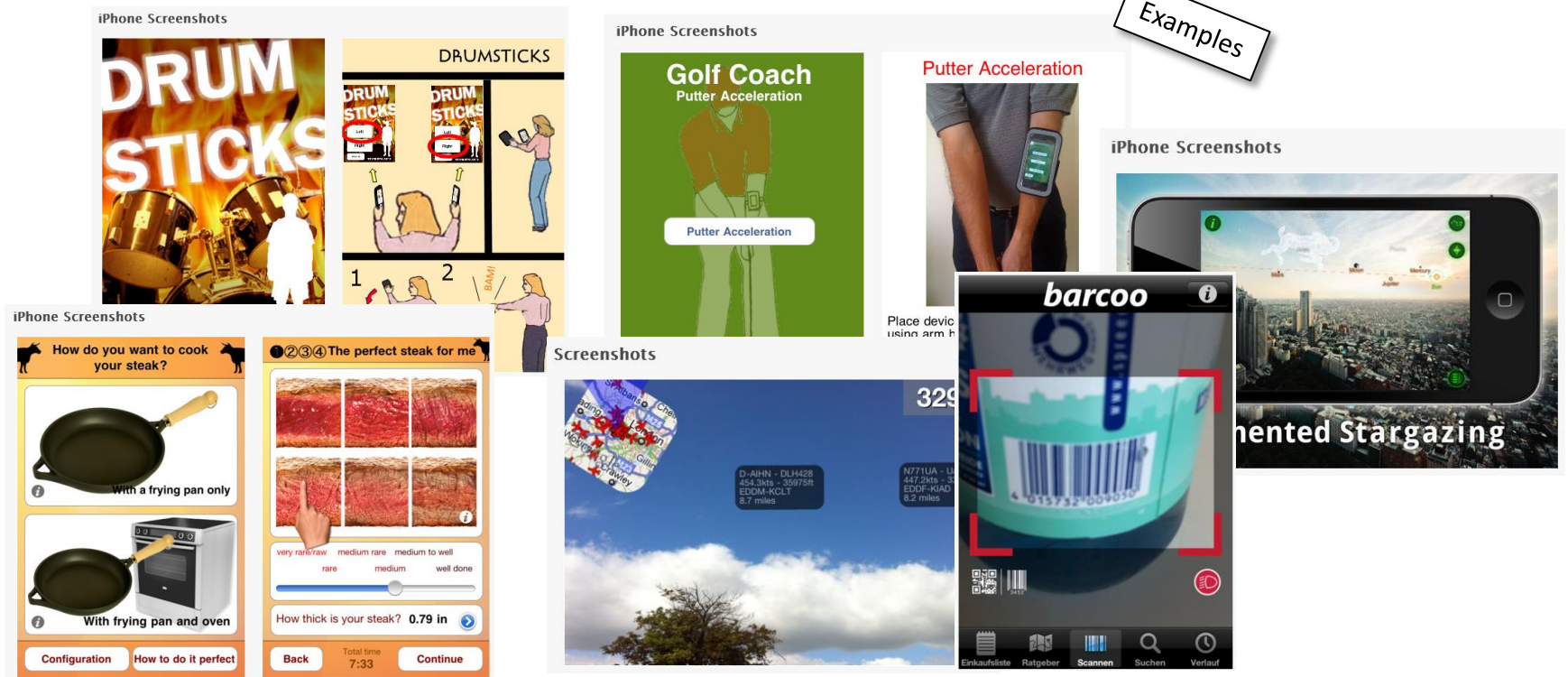


Sourcen: Unternehmenswebsites; Source of pictures: <http://blog.mobiles.co.uk/app-reviews/how-many-apps-2012/>

Advanced Mobile Apps

Many Mobile Apps establish a direct relation to the real mobile usage context in other word the provide a "Real World Connection".

Examples



Augmented Service Offerings

Augmented Service Offerings provide functionalities that are based on an access to other connected devices.

Die WiFi Personenwaage

FAT
MUSCLE
BMI

Ihre Gewichtskurve im Taschenformat

Videopräsentation



Auf Ihrem iPhone, Android
iPad, iPad2
Und Ihrem Computer

Entdecken Sie alle Funktionen der Waage

Entdecken Sie auch die intelligente Babywaage! In Kürze erhältlich!



Denk mal, iPhone, kann ich jederzeit und überall vertolgen! (Berl, 28 Jahre)

Die Daten werden automatisch in mein PC übertragen. Was ist das? (Valerio, 34 Jahre)

Hautzulauf ist es wichtig, auf die Fitness der ganzen Familie zu achten! (Fred, 39 Jahre)

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FREE SHIPPING use promo code: FALL12 Don't miss out - Order Now!

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Get FREE shipping with promo code FALL12!

Bluetooth



Introducing iGrill®

The first grilling and cooking thermometer and App for iPod Touch, iPhone and iPad.

iGrill is revolutionizing the way we cook & grill today!

iGrill enables you to multitask between your grill and guests with the peace of mind that your food is perfectly cooked, at target temperature and safe for consumption.

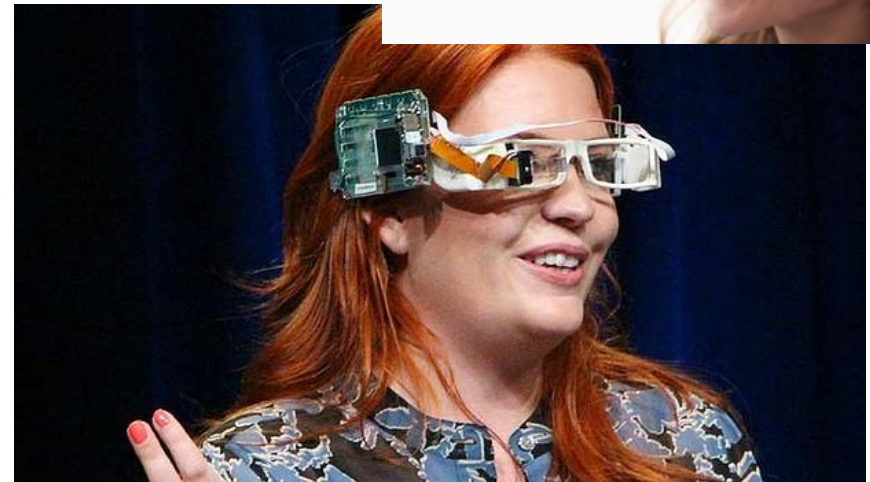
"The future of grilling has arrived" - Fortune



Source: <http://www.withings.de/de/waage>, <http://www.igrillinc.com/>

Next Generation Mobile Apps: Wearable Devices

- Potential disruptive technology
- Social impact (privacy)
- Lifestyle product („Cool or Creepy“)
- New user experience/usability
- New areas of application
(in both – business and consumer segments)
- New eco system



“We removed everything that wasn't absolutely essential.”

Isabelle Olsson, senior industrial designer, Google Glass

Sources: Google, <http://www.smh.com.au/digital-life/digital-life-news/google-glass-wasnt-always-so-slick-20130521-2jxgv.html>

Next Generation Mobile Apps: Mobile Device Trends

- New interaction/usage scenarios
- Screen independent interaction
- Non-intrusiveness
- Smartphone as a hub
- Increasing device fragmentation



Gear, Samsung
(Smartwatch)

Muse, Interaxon
(Brain Sensing)



MYO, Thalmiclabs
(Muscle Activities)



Fokus Today: Simple Apps for Smartphones

Quellen: <https://www.thalmic.com/de/myo/>, <http://www.interaxon.ca/muse/>

Consumerisation of IT

Driven by the success of mobile apps in the consumer segments those concepts are conquering the corporate context ("consumerisation of IT").

SAP The Best Run Businesses Run SAP

Register Log In
Getting Started Contact

SAP Mobile Apps

Home Learn Solutions

ANY TIME. ANYWHERE.
Any device secure access.

Find Solutions >

Featured Apps

- SAP Travel Expense Approval
- SAP CRM Sales
- SAP Policyholder Lookup
- Skill Scanner
- SAP StreamWork
- SAP Leave Request
- SAP Retail Execution
- Market Intelligence
- SAP Sales Order Notification
- SAP BusinessObjects Explorer
- SAP HCM Manager Insight
- iPeople

Illustrative Beispiele

Source: <http://ecohub.sap.com/store/mobility/>

app central

User Login SEARCH

SOLUTIONS PARTNERS COMPANY RESOURCES NEWS & EVENTS BLOG

Manage Apps.
Unleash Devices.
Distribute mobile apps securely across the enterprise without restricting personal devices.

LEARN MORE

For Business
Unlock enterprise resources

For IT Pros
Unleash mobile apps

AppCentral Trial
Get started now

Latest News & Blog

News Flash! The CMO Owns the IT Budget
by Nikfar Khaleeli On Monday, I read a very interesting article titled "The devalued... continue reading"

What People are Saying

"Security fears caused 75% of enterprises to delay rolling out mobile apps at one time or another."
- Keltion Research, 2011

Customer Insights

MITSUBISHI ELECTRIC
COOLING & HEATING

Mitsubishi Electric and AppCentral - Using Mobile Apps to Drive Business
Mitsubishi Electric will discuss how they are using AppCentral to leverage

Source: <http://www.appcentral.com/>

Consumer vs. Business App Environments

Dimensions	Consumer	Business
Time Horizon	Short term „Fire-and-Forget“/Updates	Long term Versioning/Releases
Value Add	Multidimensional (e.g. Enjoyment)	Measurable contribution to corporate success
Complexity	Rather low („Stand-alone“)	Rather high („Backend integration“)
Security	„Hygiene factor“ (except banking/payment)	Business critical („condicio sine qua non“)
Distribution	Epidemic/ Public App Stores	Rollout (planned)/ Enterprise App Store
Usage/ Distribution	Self-determined/ attract and retain customers	Predetermined/ create acceptance

Simplified

Strategic Alignment and Dimensions of Mobile App Projects

For Discussion

Strategic Alignment

- **Reactive**
(Maintain user base/shift desktop to mobile)
- **Expansive**
(Extension of user base/existing customer groups)
- **Innovative**
(Development of new customer groups)
- **Operationally**
(For example, cost savings)
- **Competitive**
(e.g. "Copycat"/users of competitors to poach)
- **Experimental**
(“Trial balloon”, launch & learn approach)
- ...

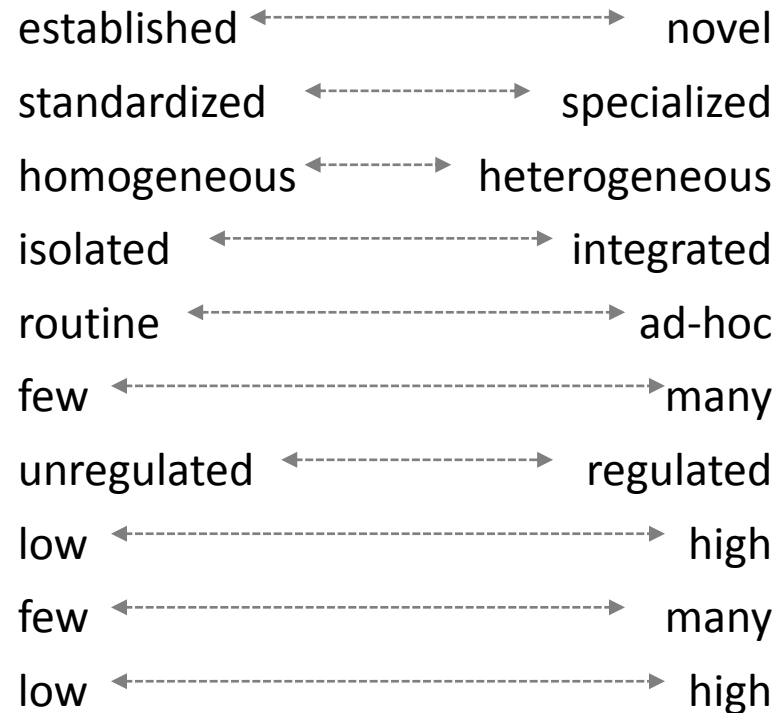


Project Dimensions

- Integration in overall strategy
- Project sponsorship
- Project organization
- Budgeting
- Technical Realization
- Back-end integration
- Security concept
- Design (CI / CD specifications)
- Outsourcing
- Marketing/distribution
- Success controlling (KPIs)
- ...

Complexity Drivers of Mobile App Projects

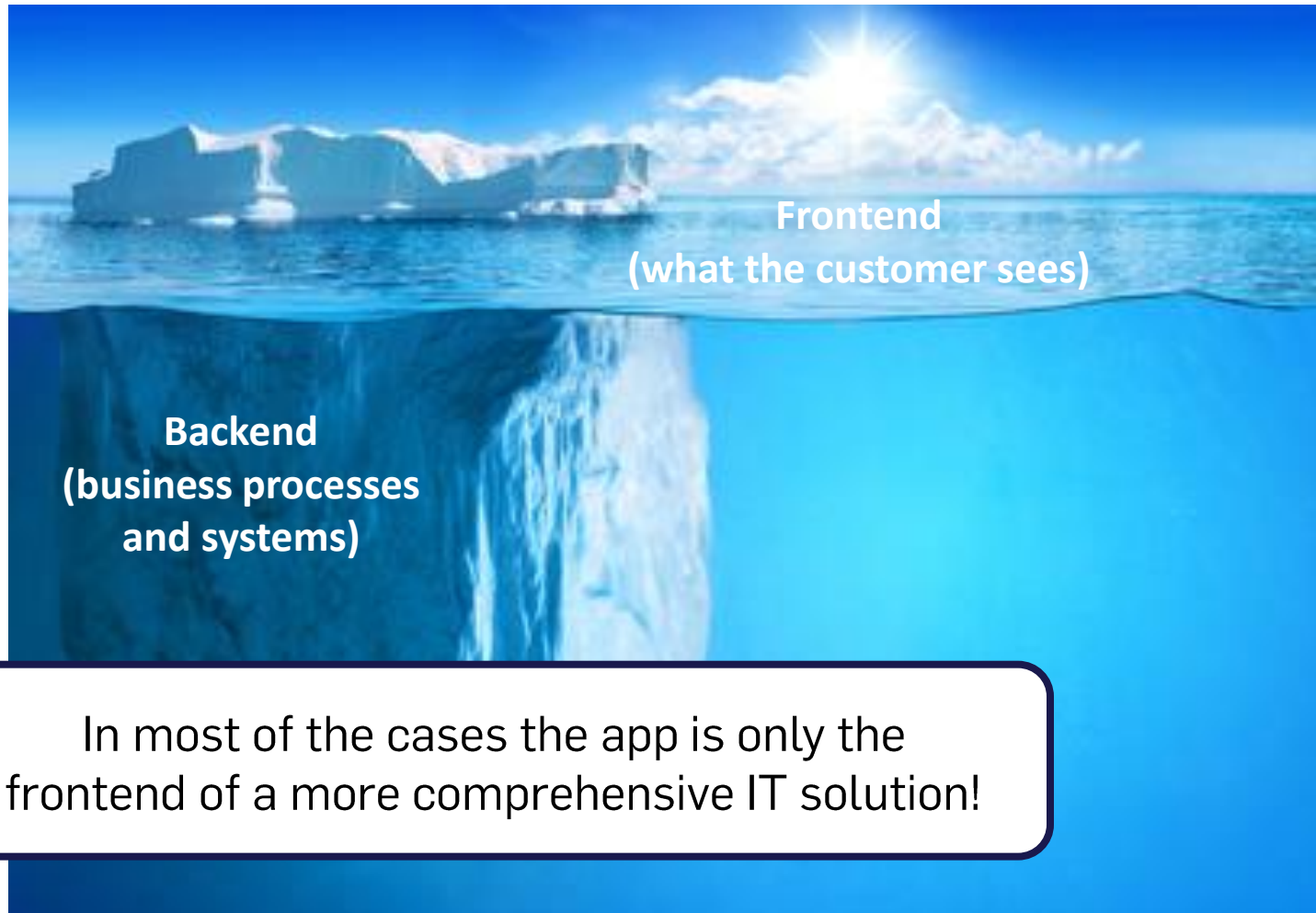
- Innovativeness
- Functions
- User groups
- Backend connection
- Process
- Stakeholder
- Legal requirements
- Safety requirements
- Device platforms
- Device fragmentation



*Low complexity,
standard software
"Mobile Apps"*

*High complexity,
customized solutions
„Mobile Solutions“*

Mobile Apps: Backend vs. Frontend



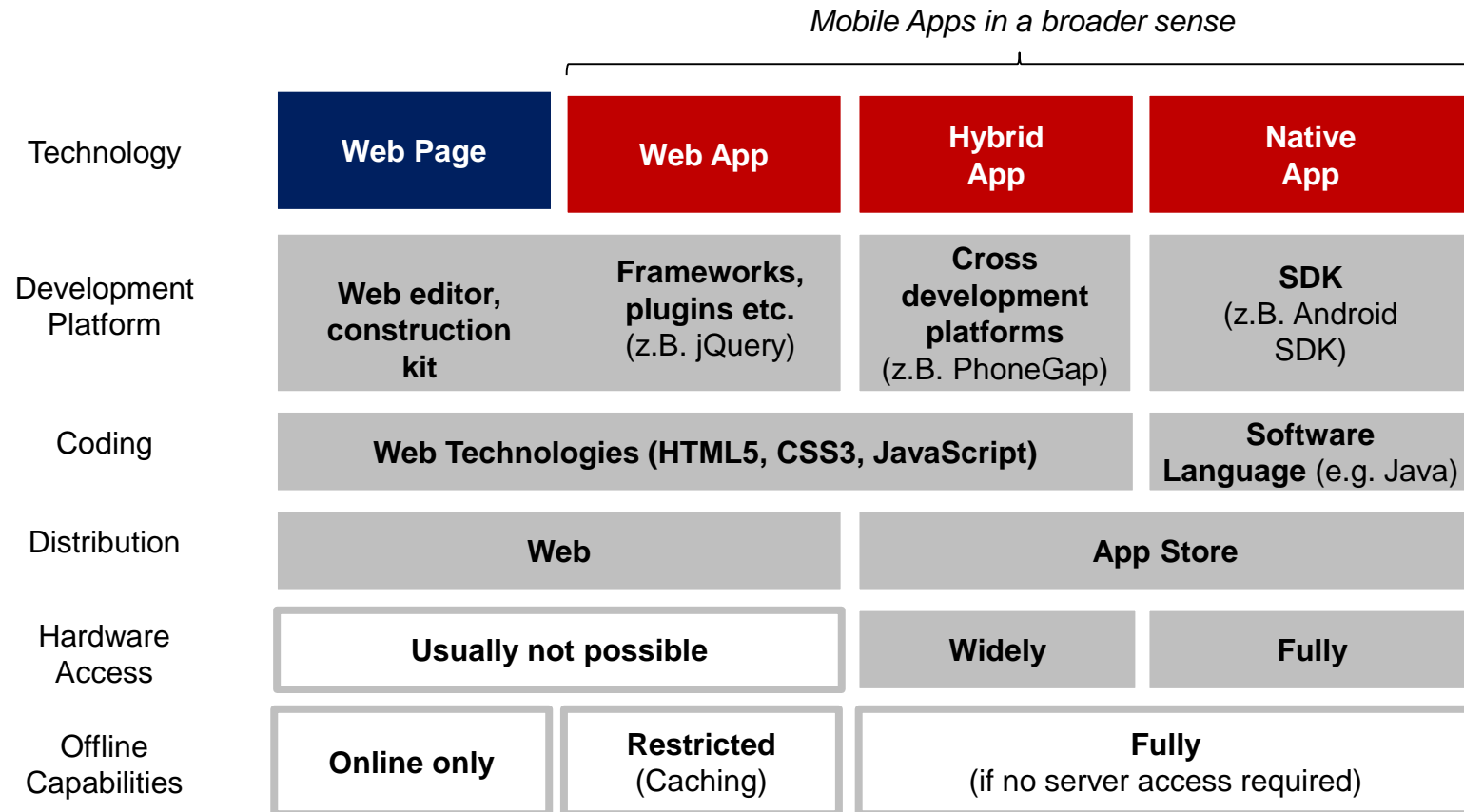
Fokus Today:
Simple Apps
for Smartphones

Agenda

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4. Mobile App Marketing

Types of Mobile Apps

Technically, a mobile app can be realized in very different ways.



Mobile Web Apps

Mobile web apps offer a similar look and feel as native applications, provide limited offline use and run encapsulated from the hardware in the browser.

- + Ease of development
- + Icon/shortcut possible
- + Easy to publish via a link
- + Operating system independent
(run in "any" browser)
- + Always up to date
- No sale on App Stores
- Limited offline-capabilities (only caching code and content)
- No access to handset functions such as camera (localization possible)
- Poor/limited performance

Mobile Web Apps: jQueryMobile

The screenshot shows the jQuery Mobile website homepage. At the top, there's a navigation bar with links for Plugins, Contribute, Events, Support, and jQuery Foundation. Below this is the jQuery Mobile logo and a donation section with a 'SUPPORT THE PROJECT' button. A main navigation bar includes links for Demos, Download, API Documentation, Themes, Resources, Blog, and About, along with a search bar. The main content area features a large heading 'A Touch-Optimized Web Framework' and a sub-heading 'jQuery Mobile is a HTML5-based user interface system designed to make responsive web sites and apps that are accessible on all smartphone, tablet and desktop devices.' To the right of this text is a 'Download jQuery Mobile' section with buttons for 'Custom download' and 'Latest stable' (Version 1.4.5, jQuery 1.8 - 1.11 / 2.1). Below the main text, there's a section titled 'Seriously cross-platform with HTML5' with a paragraph explaining the 'write less, do more' mantra and a link to 'Browser Support'. To the right of this is a 'Developer Links' section with a list of links: Source Code (GitHub), jQuery Mobile Git (WIP Build) (with sub-links for JavaScript and CSS), Report an issue, Browser Support, Changelogs, Upgrade Guides, and Roadmap. An image of various mobile devices is also present.

<https://jquerymobile.com/>



+



Hybrid Apps

Hybrid apps combine advantages of web apps and mobile apps allow access to terminal functions and promise a simple cross-platform portability.

- + Relatively simple development
- + Cross-platform portability
- + Sale on app stores possible
- + Comprehensive access to handset functions (depending on Framework)
- + Offline capability
- High dependence on framework (e.g. for debugging, OS updates)
- Limited performance
- Porting requires typically more comprehensive interventions (e.g. GUI)
- Dependencies on App Store, and OS vendors (e.g. app review)

Hybrid Apps: PhoneGap/PhoneGap Build (Cloud)

The screenshot shows the PhoneGap website homepage. At the top, there is a navigation bar with links for 'About', 'Developer', 'Community', 'Apps', and 'Enterprise', along with an 'Install' button. The main content area features a large heading: 'Easily create apps using the web technologies you know and love: **HTML, CSS, and JavaScript**'. Below this, a sub-heading states: 'PhoneGap is a free and open source framework that allows you to create mobile apps using standardized web APIs for the platforms you care about.' There are two buttons: 'Install PhoneGap' and 'Getting Started Guides'. To the right, a video player is shown with a 'Watch Intro' button. Below the main content, there are two dark-themed sections. The left section is titled 'Adobe PhoneGap Enterprise' and describes 'Enterprise mobile application development and management across channels and platforms'. It includes three icons representing 'INTEGRATE CROSS CHANNEL MARKETING', 'MOBILE APPLICATION MANAGEMENT', and 'ENTERPRISE SUPPORT & TRAINING', with a 'Get more info' button. The right section is titled 'The PhoneGap Developer App' and describes 'Develop locally then see the changes instantly on your mobile device with our cross-platform app'. It features an illustration of a laptop and a smartphone, with a 'Get it now!' button.

<https://build.phonegap.com/>, <http://phonegap.com/>

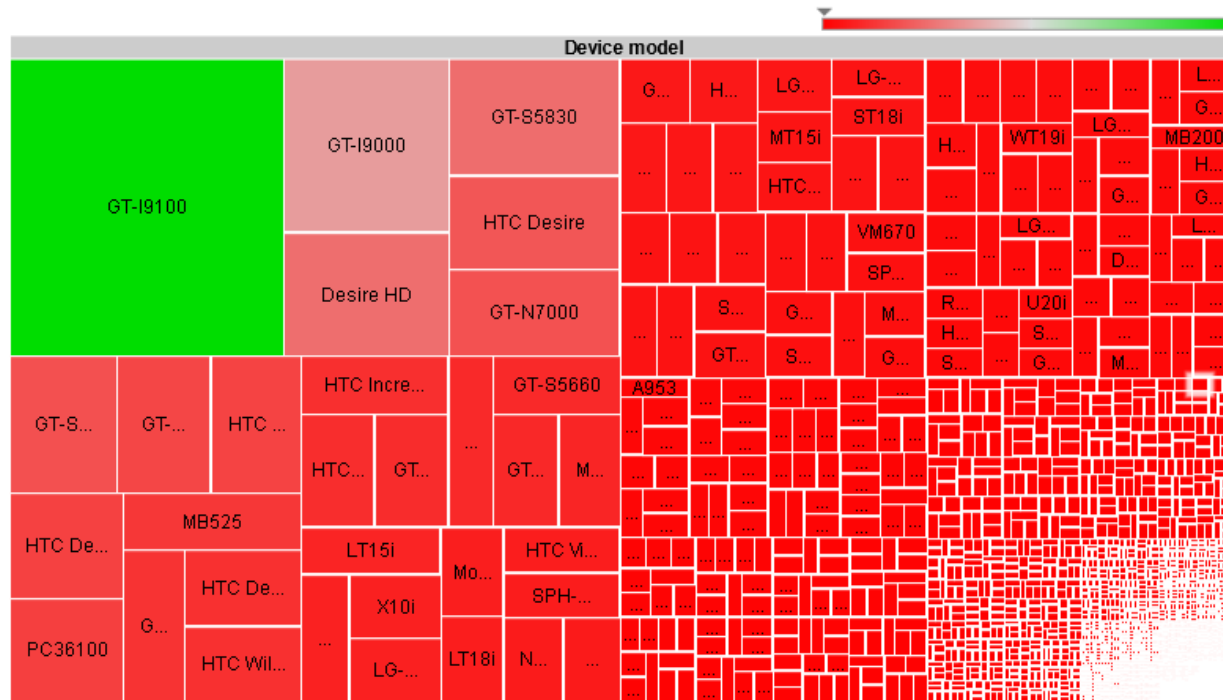
Native Apps

Native Apps (mobile apps in the narrower sense) are specifically programmed, compiled, and installed on the device for a specific operating system platform.

- + Comprehensive developer tools
- + Most comprehensive functionality
- + Comprehensive devices access
- + User experience can be optimized for a specific handset very well
- + Very good performance
- + Most comprehensive commerciality
- + Offline capability
- Knowledge in specific programming language required
- Separate development for each operating system platform required
- Dependencies on App Store, and OS vendors (e.g. app review)
- Device specific adaptation required (to fully exploit the potential)

Device Fragmentation (Android)

The large terminal fragmentation in Android devices is a problem which complicates the development of Android apps.



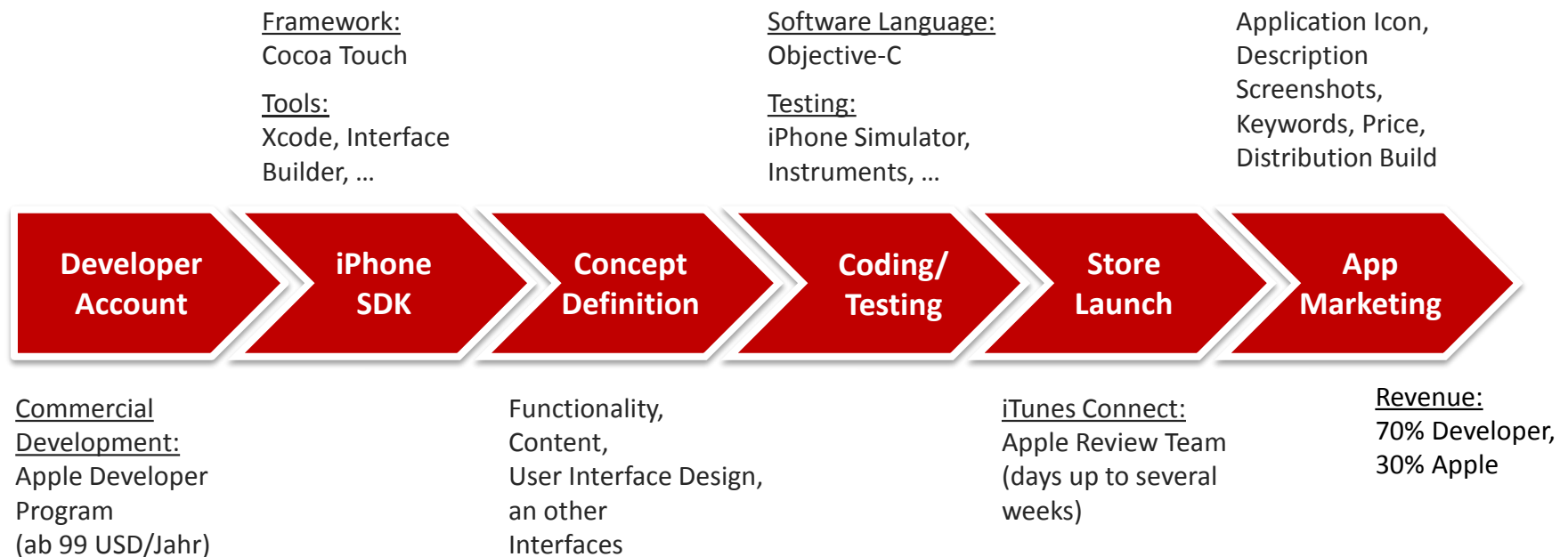
Device fragmentation based on the downloads for the software “OpenSignalMaps” (681,900 downloads in 6 month, 3.992 different handsets, 61.389 downloads by GT-i9100 [Galaxy SII]).

Source: <http://opensignal.com/reports/fragmentation.php>

App Development Process

Between the idea to the market launch of an app are various steps that slightly vary by the specific mobile platform.

Selected Steps of an iPhone App Development



Mobile App Development: Standardized Solutions

Standardized "modular systems" and construction kits are the simplest solution offered for mobile app development.

The screenshot displays the AppYourself website interface. At the top, there is a navigation menu with links for 'Preise', 'Tour', 'Design Service', 'Reseller', 'Jobs', and 'Support', along with an 'Anmelden' button. The main heading reads 'Der App Baukasten - in 3 Schritten zur eigenen App.' Below this, three circular icons represent the steps: 1. Design auswählen (choosing a design template), 2. Inhalt anpassen (customizing content with various widgets like contact, information, and social media), and 3. App veröffentlichen (publishing to Google Play or the App Store). Each step includes a brief description of the process. The right side of the page features a navigation bar with 'Produkt', 'Vertrieb', and 'Ressourcen' links, and a 'Kostenlos testen' button. A large blue banner at the bottom right states 'ERSTELLEN SIE IHRE APP MIT NUR WENIGEN KLICKS!' and a red banner below it says 'KOSTENLOS TESTEN' with the note 'KEIN ABO ERFORDERLICH'. A hand holding a smartphone is visible in the foreground, displaying a mobile app interface.

Mobile App Development: IT Service Provides

Depending on the specific requirement criteria the app development can be provided by different IT service providers.

For Discussion

Criteria	Freelancer	(Digital-) Agency	IT System House	IT System Integrator
Project budget	Low	Medium	High	Very high
Complexity	Low	Medium	High	Very high
Life span	Short	Medium	Medium	Long
Design requirements	Medium	High	Medium	Low
Security requirements	Low	Medium	High	High
Business criticality	Low	Medium	High	High

Mobile App Development Costs: Categories

Development costs vary depending on the platform - programming and debugging account for about half the cost.

Table: Mobile application development costs

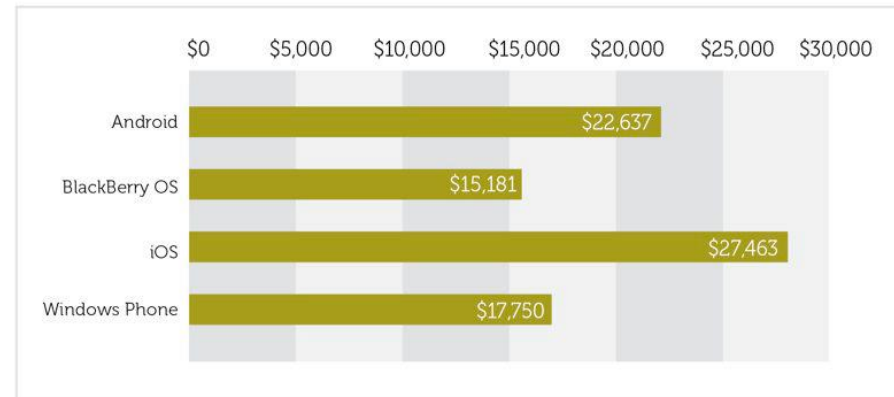
Cost	Description
Tools	Computer cost, developer registration fees and tools licenses.
Development & Debugging	The bulk of app production costs (upwards of 55%).. Practically speaking, the cost of person-hours devoted to the project.
UX design	Storyboards, user interaction and graphic design typically make up 25% of total app cost.
Maintenance	Typically 10% of the initial app cost, on an annual basis
Marketing	We estimate that marketing costs average 10% of app production expenses. In practice, marketing costs differ based on the developer segment – Hobbyists and Explorers will use Facebook as the lowest hanging fruit, whereas Hunters will use more sophisticated and premium channels such as professional PR services and incentivised downloads.
Back-end	Back-end costs vary depending on the application's requirements – from lightweight (user management services on Appcelerator, Spire.io or Parse.com) to heavy (applications written from scratch on Amazon Web Services (AWS) or Google App Engine).

Source: VisionMobile

iOS apps are the most expensive to develop

Average cost to develop an app for 95% of apps excluding those with highest development time (n=1,510)

2012!



Source: Developer Economics 2012 | www.DeveloperEconomics.com | June 2012
Licensed under Creative Commons Attribution 3.0 License

Vision mobile BlueVia

Source: <http://www.visionmobile.com/product/developer-economics-2012/>

Mobile App Development Costs: iBusiness Study

In Germany, average development costs of 7,800-49,000 EUR were identified – the cost vary based on the complexity of the app.

iBusiness study on app development costs in 2013

- Survey of agencies and design studios in Germany
- Average cost depends on the complexity:
 - Simple app: 7,754 EUR
 - Medium complexity ("Where-is-my-car-app"): 13,397 EUR
 - High complexity: 48,804 EUR
- A major cost driver: front end/back end development
- Additional costs for second platform: 58%
- Costs for iOS / Android now aligned
- Symbian apps cost 45% more - Windows Phone currently the most expensive

Source: http://business.chip.de/news/Mobile-Apps-Alleskoenner-kosten-50.000-Euro_64005338.html

Mobile App Development Costs: Costs Calculator

First indications of the expected costs for an app development can be derived from online calculators.

The screenshot shows the 'How Much To Build An App' calculator interface. The 'App Features' section displays a grid of 24 features, with the following selected (highlighted in green): Email Login, Dashboard, Camera / Photos, Custom User Interface, and Camera / Photos. The 'Totals' section shows the following breakdown:

Feature	Cost
Camera / Photos	6,000
Dashboard	6,000
Email Login	1,500
Custom User Interface	12,000
Total	\$25,500

The interface also includes a 'Save Quote' section with an email input field, a 'Permanent Quote URL' field containing 'www.otreva.com/calculator/', and a 'Save Quote' button.

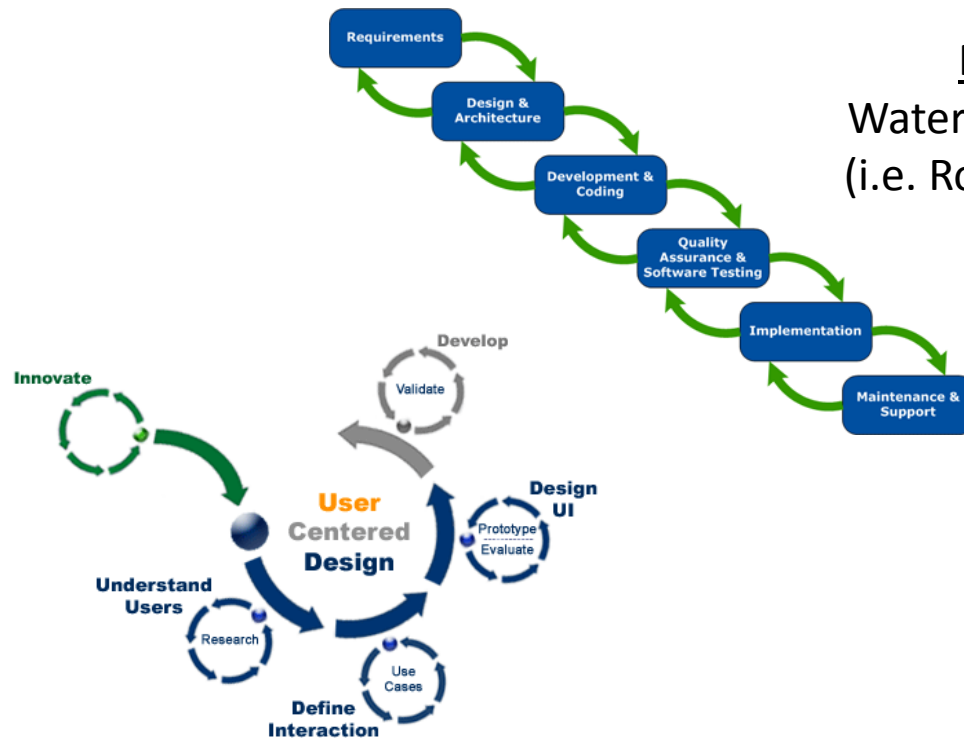
Example: Otрева App Cost Calculator

(Source: <http://www.otreva.com/calculator/#>)

Development Approach

It is important that the app development follows an user-centered approach, i.e. is taking the earliest possible involvement of end-users.

Past:
Waterfall Model
(i.e. Royce 1970)



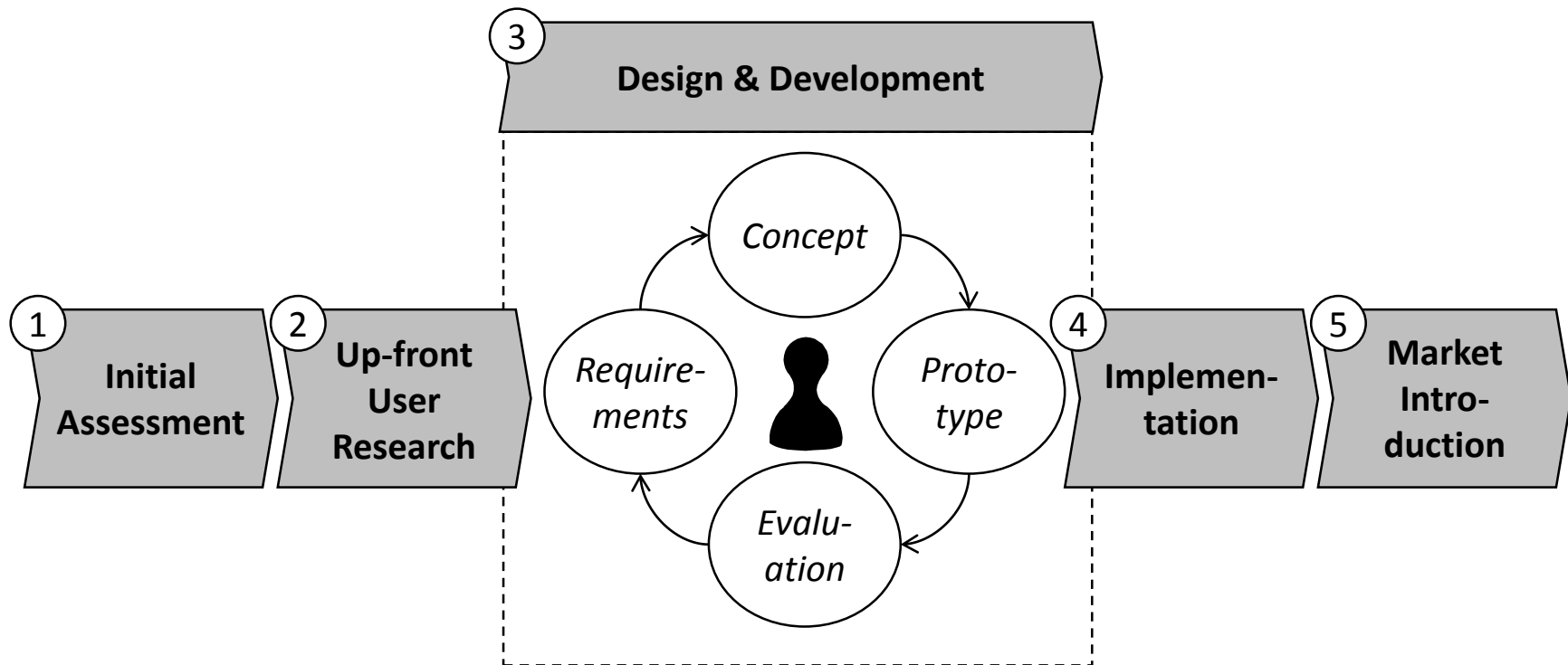
Today:
User-Centered Design
(i.e. ISO 9241, SAP)

Source of pictures:

<http://projectcommunityonline.com/wp-content/uploads/2012/06/developmentprocess1.gif>,
http://www.sapdesignguild.org/editions/edition10/ucd_overview.asp

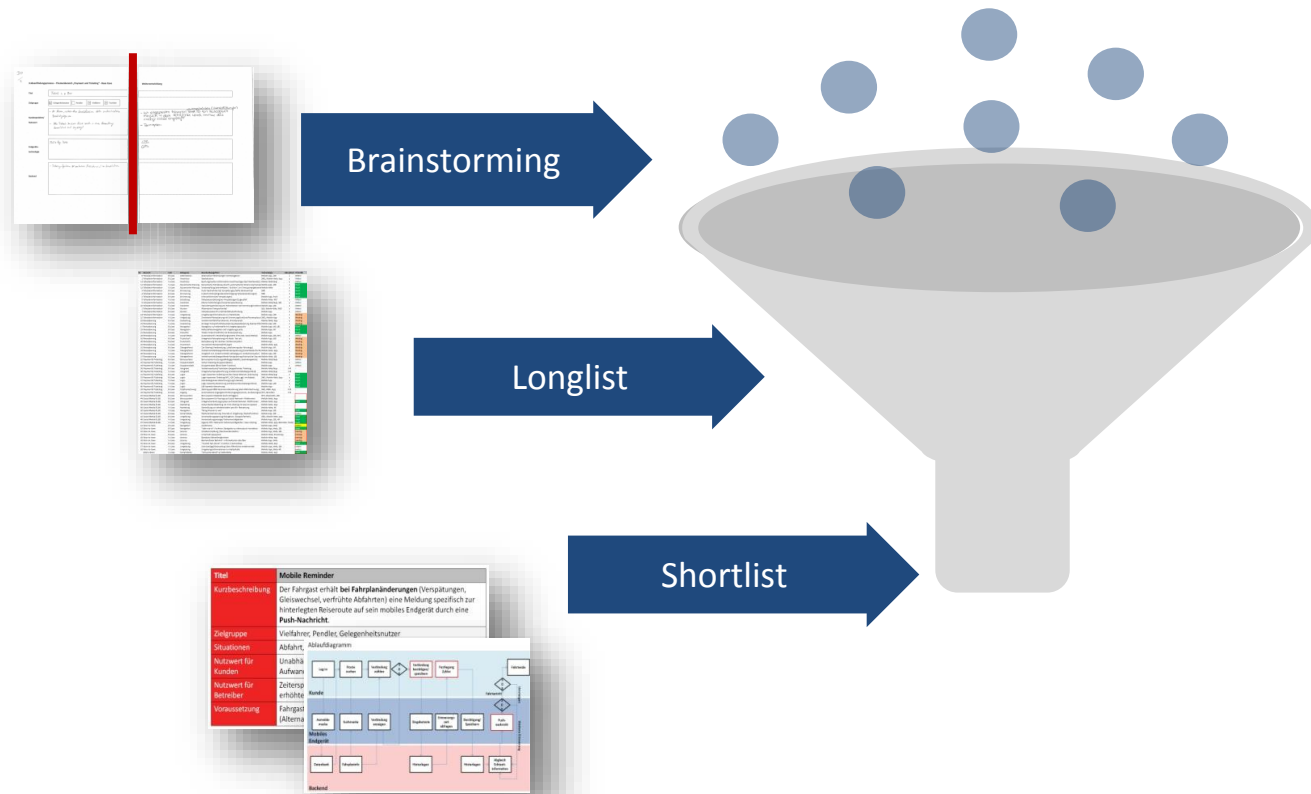
User Centered Design Approach

The design & development approach within UCD relies on prototypes to gather user feedback and stepwise improve the app concept.



Idea Generation

Idea generation has to be conducted before the development process can begin – features and functions can be defined using creativity techniques.



Source: Projekt HSRM/CSC

Competitive User Experience Analysis

Based on these ideas a competitive analysis from the user's perspective should follow ("Competitive User Experience").

Advantages of a "Competitive User Experience" Analysis

- ➔ Identification of best practices and user expectations (established functions and design elements)
- ➔ Avoid mistakes of others (problem areas of existing solutions)
- ➔ Better adaptation to user needs (Identification of opportunities and "niches")
- ➔ Inspiration/identification of emotional elements ("Emotional Design")

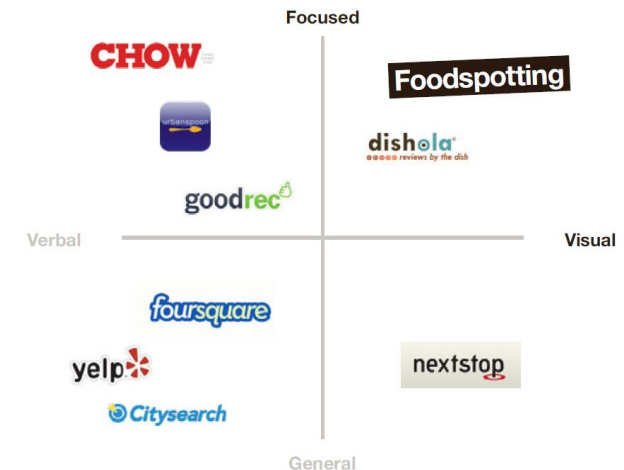


FIGURE 5.1 Two-by-two diagram for Foodspotting (Courtesy of Alexa Andrzejewski)

Source: Susanne Ginsburg, Designing the iPhone User Experience

Up-front User Research

In further steps customer requirements are to collect by up-front user research – this is not to be confused with a usability testing.

Up-front user research: Informs product requirements and design

“What should we design?”



Usability testing: After requirements defined and initial design established

“Did we design it right?”

Source: Ginsburg 2010

Book Recommendation: Mobile App Design

Designing the iPhone User Experience: A User-Centered Approach to Sketching and Prototyping iPhone Apps

by Suzanne Ginsburg

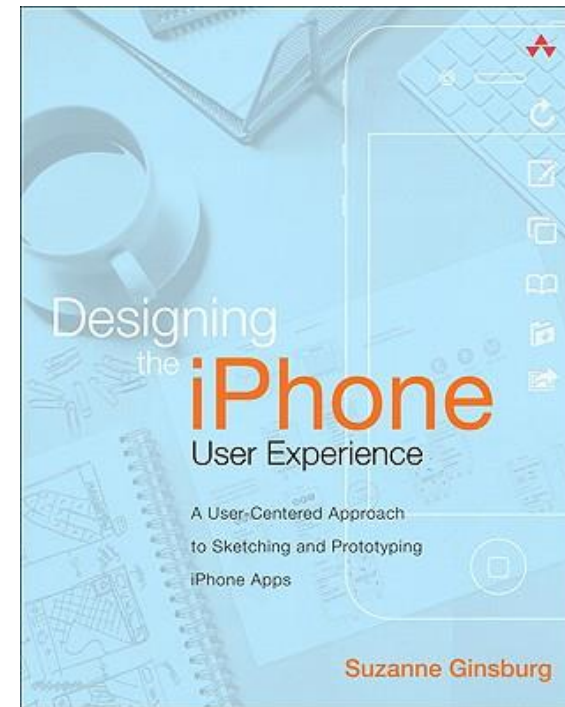
Paperback: 336 pages

Publisher: Addison-Wesley Professional

1 Edition (August 22, 2010)

Language: English

ISBN-10: 0321699432



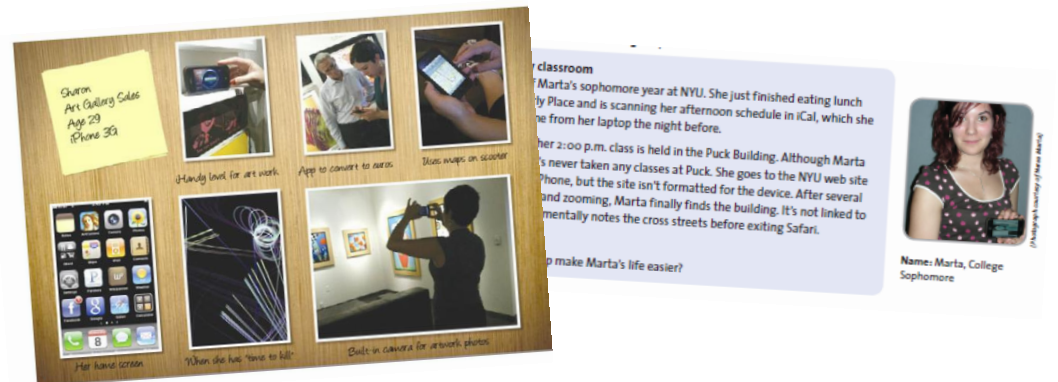
Methods for Up-front User Research

A variety of tools are available to conduct up-front user research and to document the findings of this process.

User Research Methods:
Shadowing (Context Analysis),
Field Interviews, Diary Studies



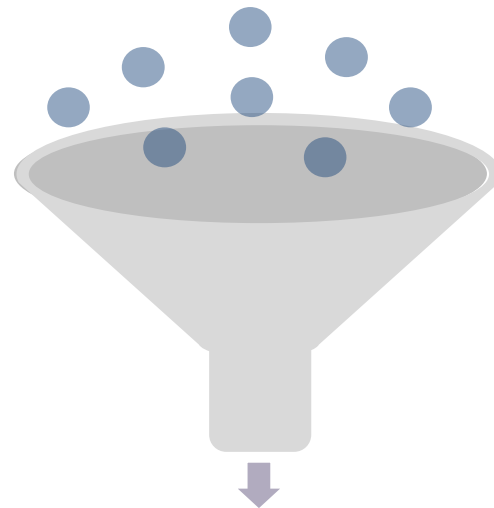
User Research Analysis & Documentation:
Personas, Szenarios, Use Cases,
User Journeys



Source of pictures: <http://www.facit-digital.com>, <http://www.system-concepts.com>, Suzanne Ginsburg 2010

Prototyping

The concept can then be tested based on prototypes to determine its suitability with users and to be further improved.



Konzeption/Prototypen



Prototyping Types

Based on the development phase low- and high fidelity prototypes are used.

Low-fidelity/Paper Prototypes (e.g. Forms, Stencils)



High-fidelity/Click-Prototypes (e.g. Axure)



Low-fidelity Prototypes/Wireframes (e.g. Balsamiq)



Source of pictures:

<http://uxpin.com/mobile-kit-for-iphone.html>, <http://www.uistencils.com/products/iphone-stencil-kit>,
<http://builds.balsamiq.com/b/mockups-web-demo/>, <http://www.axure.com/learn/iphone-app/template>

Video Prototypes

Mobile app concepts can be presented very clearly to users and decision makers in demo videos – or so called “video prototypes”.



Link to video example: http://www.csc.com/de/offerings/64514/70102-mobile_loesungen_im_oeffentlichen_personenverkehr

Agenda

1. Introduction
2. Designing & Developing Mobile Apps
3. Mobile App Prototyping
4. Mobile App Launch

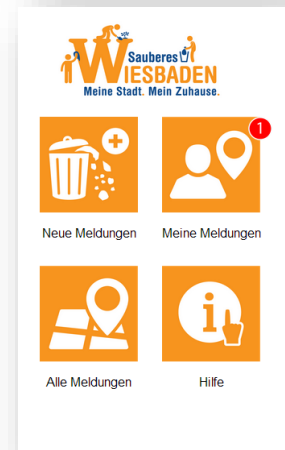
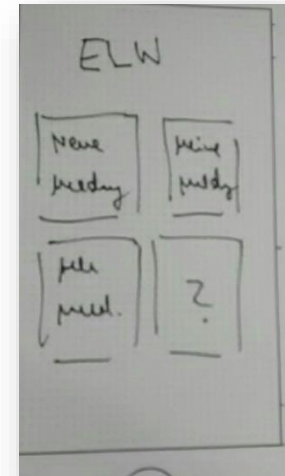
Methods for Up-front User Research

► Low-fidelity Prototyping:

- (1) High level of abstraction from screen design
- (2) No colors, pictures, fonts, etc.
- (3) Use of wireframes, placeholders, etc.
- (4) Paper based, software based, hybrid

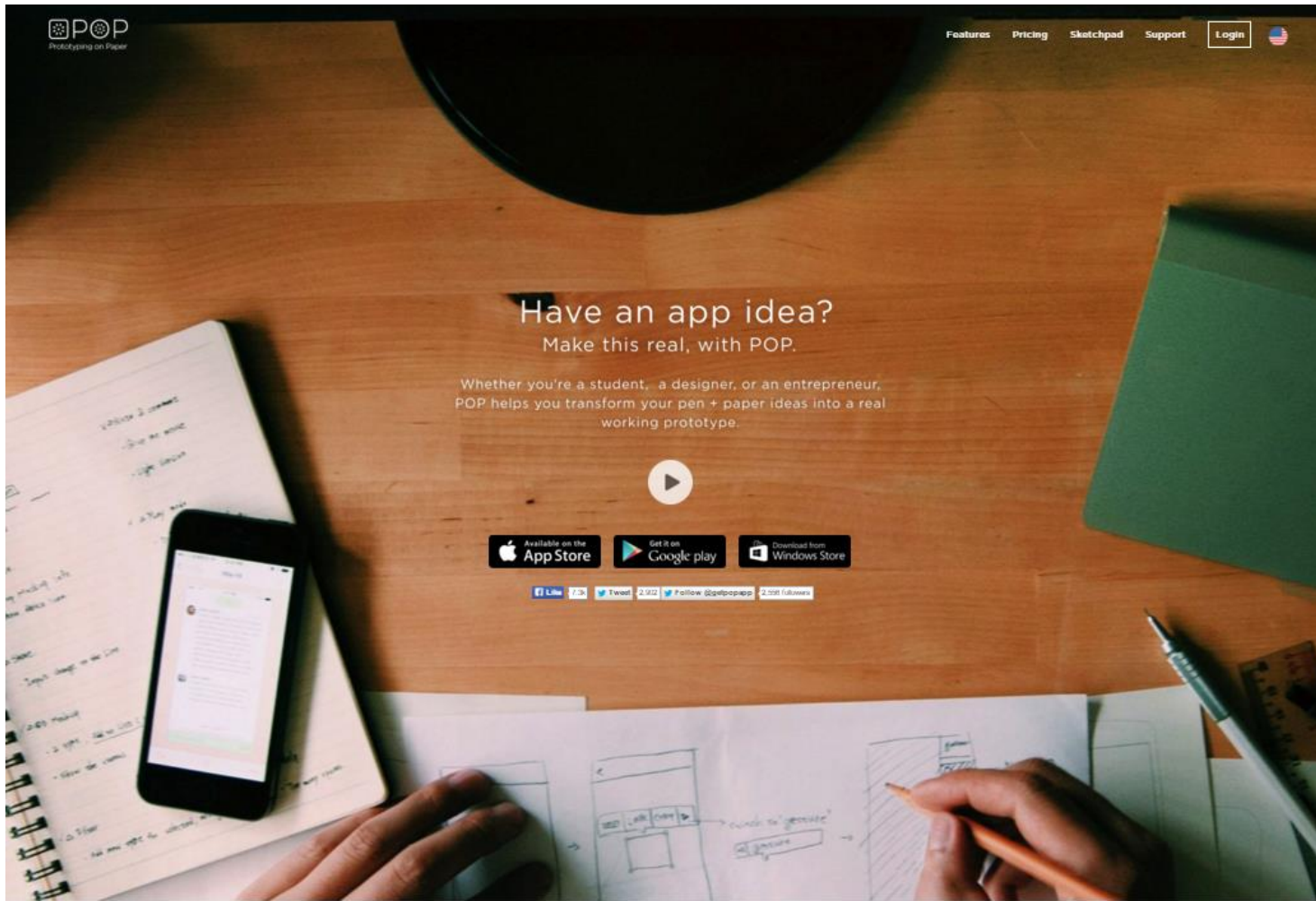
► High-fidelity Prototyping:

- (1) Design is very close to the end product
- (2) Usage of colors, pictures, fonts, etc.
- (3) Picture- (e.g., InVision) or code-based (e.g., Codiqa)
- (4) Software based



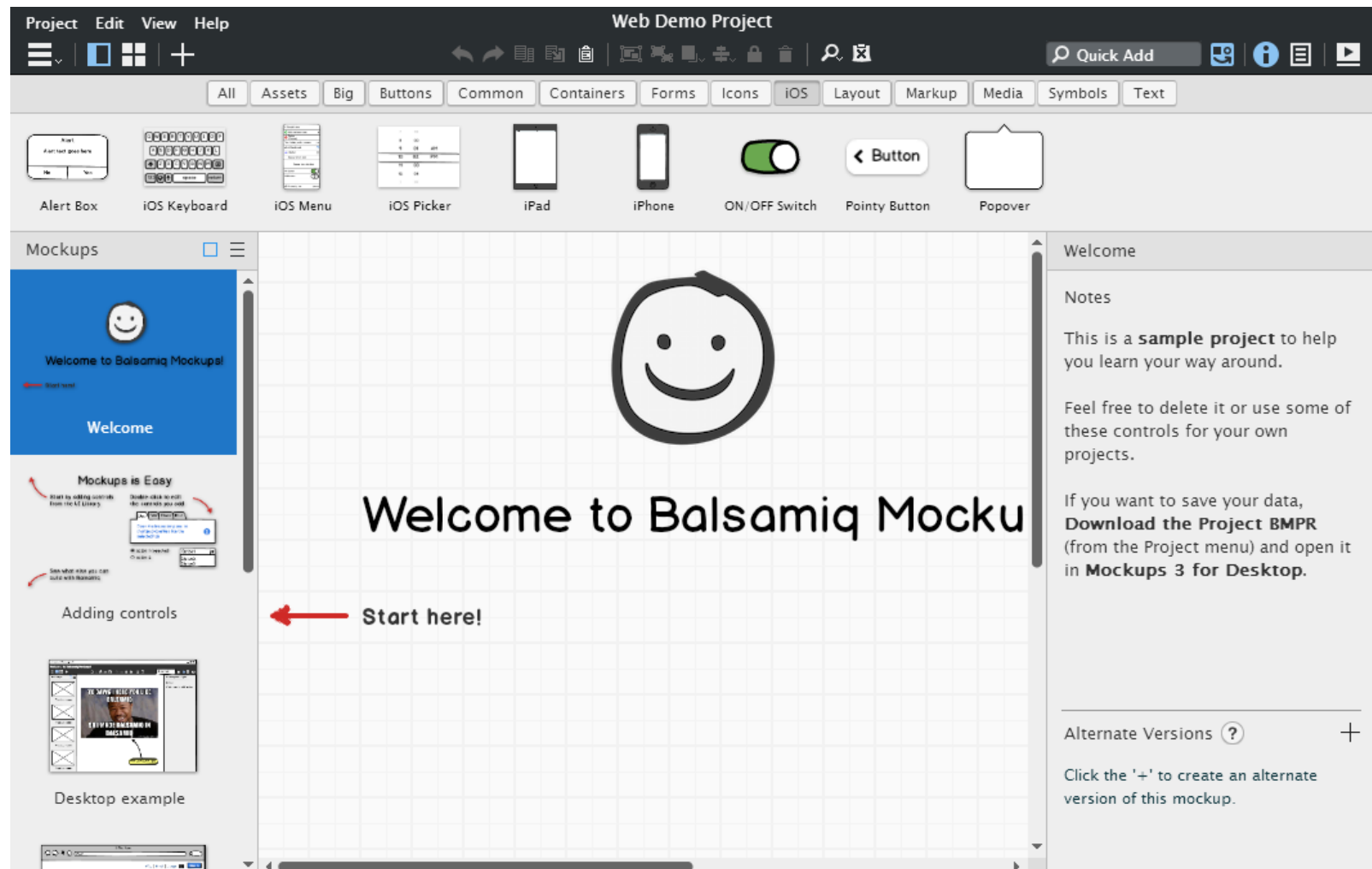
Quelle: Ginsburg (2010)

Prototyping Tools (Low-Fidelity, POP)



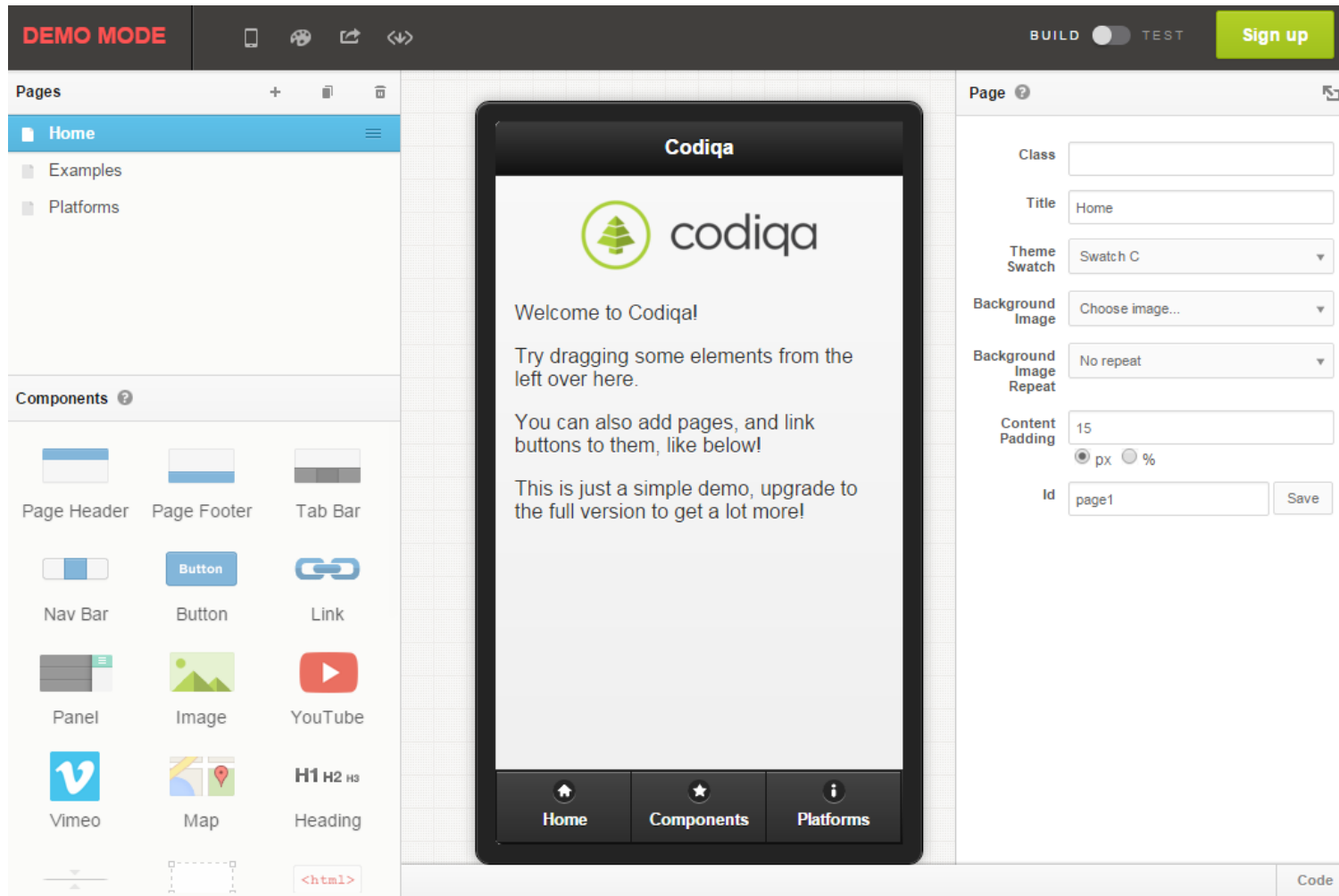
<https://popapp.in/>

Prototyping Tools (Low-Fidelity, Balsamiq)



<http://webdemo.balsamiq.com/>

Prototyping Tools (High-Fidelity, Codiqa)



<https://codiqa.com/demo>

Prototyping Tools (High-Fidelity, Fluid)

The screenshot shows the Fluid UI website. At the top left is the 'fluid' logo. To its right are navigation links: 'Features', 'Use cases', 'Demos', and 'Plans'. Further right are two buttons: 'Sign in' and 'Sign up free'. The main content area features a large image of a person's hands typing on a laptop. The laptop screen displays a wireframe of an app. Two smartphones are positioned in front of the laptop, showing mobile app prototypes. The left smartphone displays a calendar-like interface with a landscape background and event cards. The right smartphone displays a user profile page for 'Jimmy Jarroster' with a location of 'Dublin, Ireland' and a list of friends. Overlaid on the image is the text 'Design brilliant apps' in a large white font, followed by 'Then share them online for feedback or preview them on your mobile.' in a smaller white font. A white callout box with a dark background and the text 'Try it free' is positioned on the left side of the image. At the bottom of the image, there is a blue speech bubble icon.

fluid

Features Use cases Demos Plans Sign in Sign up free

Design brilliant apps

Then share them online for feedback or preview them on your mobile.

Try it free

<https://www.fluidui.com/>

Prototyping Tools (Low-Fidelity, Proto.io)

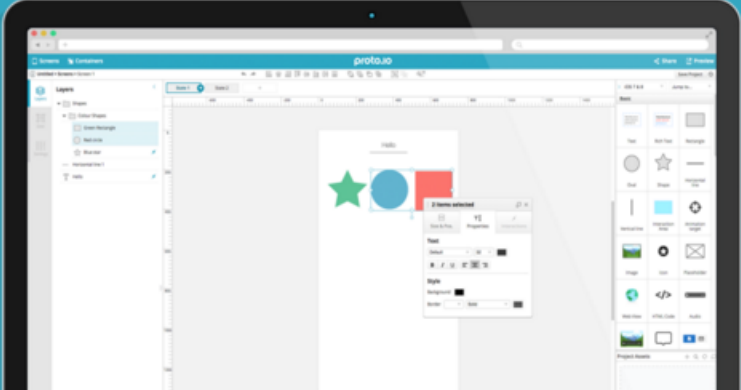
proto.io

New features Tour Customers Demos Learn Pricing Blog Sign in [Sign Up Free](#)

Groups, Layers and Multi-item edit

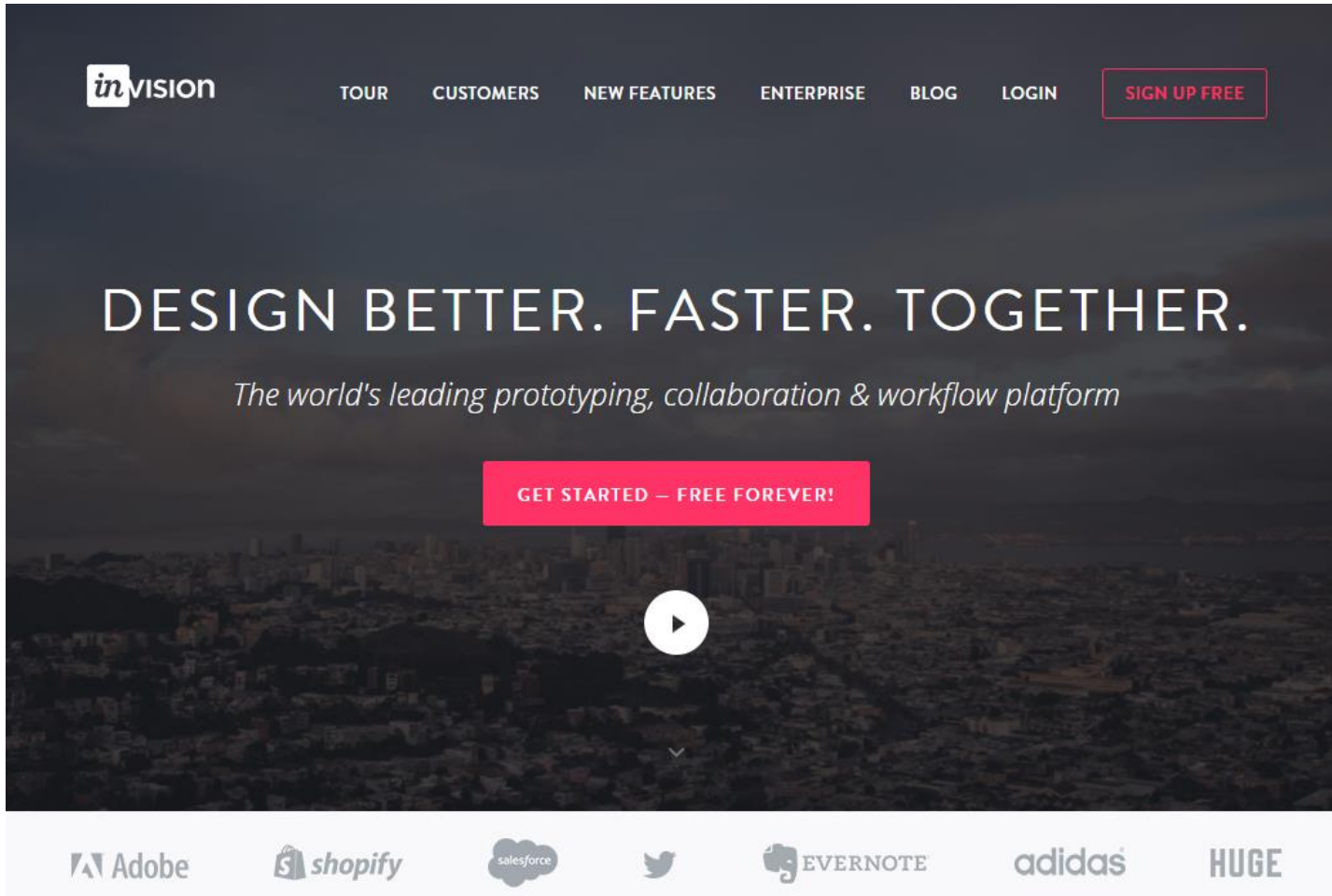
Speed up and organize your work beautifully, in nested groups.

[Read more](#)

A screenshot of the Proto.io web application interface. The interface shows a design workspace with a star, a circle, and a square. A properties panel is open over the shapes, displaying various settings like fill color, stroke, and opacity. The interface is clean and modern, with a light blue and white color scheme.

<https://proto.io>

Prototyping Tools (Low-Fidelity, InVision)



The image shows the homepage of the InVision website. The background is a dark, high-angle photograph of a city at night. At the top left is the InVision logo. To its right are navigation links: TOUR, CUSTOMERS, NEW FEATURES, ENTERPRISE, BLOG, and LOGIN. A pink button labeled "SIGN UP FREE" is in the top right corner. The main headline reads "DESIGN BETTER. FASTER. TOGETHER." in large white letters. Below it is the tagline "The world's leading prototyping, collaboration & workflow platform" in a smaller white font. A prominent pink button in the center says "GET STARTED – FREE FOREVER!". Below this button is a white play button icon inside a circle, indicating a video. At the bottom of the page, there is a row of logos for partner companies: Adobe, shopify, salesforce, twitter, EVERNOTE, adidas, and HUGE.

<http://www.invisionapp.com/>

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Business Model

If a commercialization of the app is intended, the business model must be specified prior to its distribution.

Important Business Models for Mobile Apps

Business Model	Description and Characteristics
Paid App	Download the app for a purchase price
InApp-Purchase	Payment for additional features or content
Freemium	Free basic version and paid extensions
Virtuelle Goods	Paid "consumer goods" (e.g. currency for a mobile game)
Subscriptions	Time-recurring payments for use
Advertising	Integration of paid advertising

Mroz (2013): App-Marketing

Upload in the Store: Review Process

In order to be able to publish the app in the App Store of the platform the relevant requirements and design guidelines have to be considered carefully.

<http://developer.android.com/distribute/googleplay/publish/console.html>

The screenshot displays the iTunes Connect Developer Guide interface. On the left, there is a navigation menu with categories like 'Publishing', 'Localization Checklist', 'Promoting', 'App Quality', 'Policies', 'Spotlight', 'Google Play for Education', and 'Open Distribution'. The main content area is titled 'About iTunes Connect' and includes a 'Table of Contents' with sections such as 'Introduction', 'Overview of iTunes Connect', 'First Steps: Identifying Your App in iTunes Connect', 'Creating an iTunes Connect Record for an App', 'Configuring Store Technologies (Optional)', 'Displaying on the Store in More Than One Language (Optional)', 'Submitting the App', 'Setting Up User Accounts', 'Viewing and Changing Your App's Metadata', 'Viewing and Changing Your App's Status and Availability', 'Transferring and Deleting Apps', 'Improving Your Customers' Experience', and 'Replacing Your App with a New Version'. Below the text, a flowchart illustrates the app submission process: 'Enroll in Program' (with a person icon) leads to 'Develop & Test' (with a computer and phone icon), which leads to 'Create iTunes Record' (with a music note icon). This step is highlighted with an orange box and an arrow pointing to it from the text 'You are here'. The flowchart continues to 'Submit App' (with a green checkmark icon) and finally to 'Release App' (with App Store and Google Play icons).

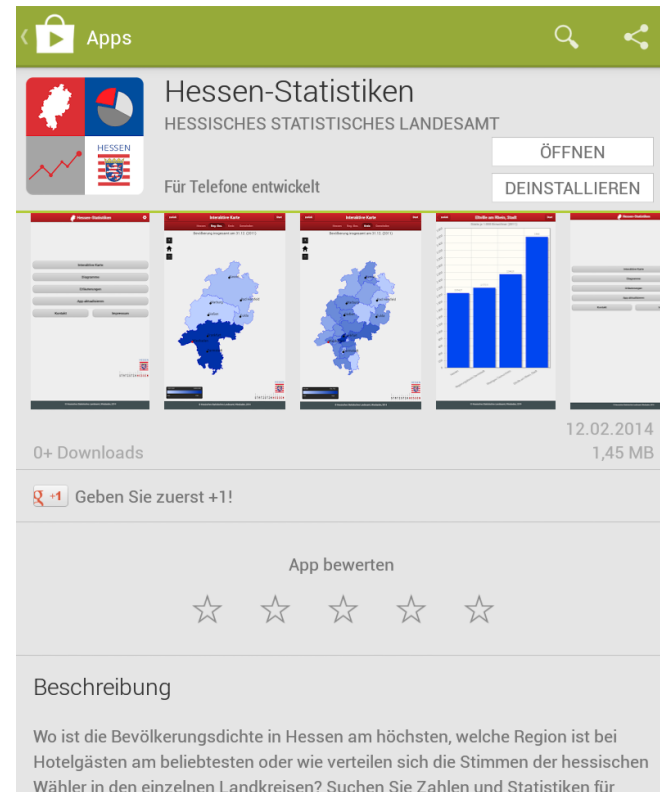
https://developer.apple.com/library/ios/documentation/LanguagesUtilities/Conceptual/iTunesConnect_Guide/Chapters/About.html#//apple_ref/doc/uid/TP40011225-CH1-SW1

Upload in the Store: Required Items and Content

For the distribution in the App Store different information needs to be provided depending on the platform.

Important Information for App Store Upload

- App name
- Choice of category
- Keywords for the app-description
- App Description
- Icon, Logo, Graphic Feature
- Screenshots
- Demo Video (optional)
- pricing model
- Administrative information
- App software (such as APK file on Android)
- ...



Elements of a Mobile App Distribution Strategy

In addition to publication in the App Store a comprehensive distribution strategy need to be defined – even a good app does sell "automatic".

Important elements of a Mobile App Distribution/Marketing Strategy

Element	Description an Characteristics
Timing Strategy	Scheduling of launch and updates
Pricing Policy	Price levels and price changes
Customer Relations	App website and dealing with reviews/feedback
Public Relations	Communication on public relations and social media
Cross Promotion	Advertisement on website, flyers, products, etc.

Mroz (2013): App-Marketing

Performance Measurement

Also important is a continuous performance measurement and monitoring of user feedback / reviews.

<http://www.distimo.com>

The image displays two overlapping screenshots of mobile analytics dashboards. The background screenshot is from Distimo, showing a line graph of 'Daily device install estimations over the last 4 weeks' with a total of 1.50M units and a 30% increase. The foreground screenshot is from Apptweak, showing 'Worst reviews & ratings for [app name]' with a list of user reviews and their dates. A yellow callout box with the word 'Examples' is positioned over the Apptweak screenshot.

Apple iTunes Connect

<https://www.apptweak.com>