Smart Objects

The need for Experimentation

Ioannis Chatzigiannakis

Sapienza University of Rome
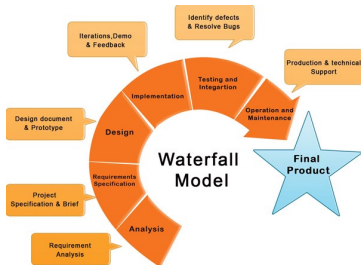
Lecture 3

How dow we build is a smart object?
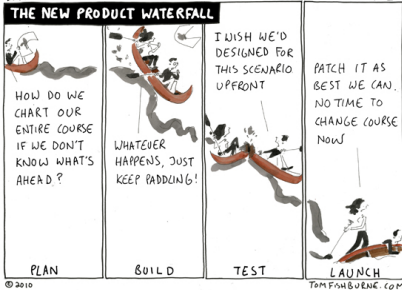

Product Development Lifecycle

Iterations,Demo & Feedback

Identify defects & Resolve Bugs

Production & technical Support

Design document & Prototype

Implementation

Testing and Integration

Operation and Maintenance

Design

Final Product

Requirements Specification

Waterfall Model

Project Specification & Brief

Analysis

Requirement Analysis

BUT WHAT IF CONSUMERS AREN'T LOOKING FOR A "DISRUPTIVE SYNERGIZED PARADIGM SHIFT" IN A BREATH MINT?

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What should our smart object do?

What do the users expect from our smart object?

The Definition of User Experience (UX)

"User experience" encompasses all aspects of the end-user's interaction with the company, its services, and its products.

Don Norman and Jakob Nielsen

The Definition of User Experience (UX)

- ▶ Meet the exact needs of the customer
- ▶ without fuss or bother
- ▶ Next comes simplicity and elegance:
  produce products that are a joy to own, a joy to use.
- ▶ ...goes far beyond giving customers what they say they want
- ▶ ...go beyond checklist of features

The Definition of User Experience (UX)

"In order to achieve high-quality user experience in a company's offerings there must be a seamless merging of the services of multiple disciplines, including engineering, marketing, graphical and industrial design, and interface design."

Don Norman and Jakob Nielsen

How dow we build is a smart object?

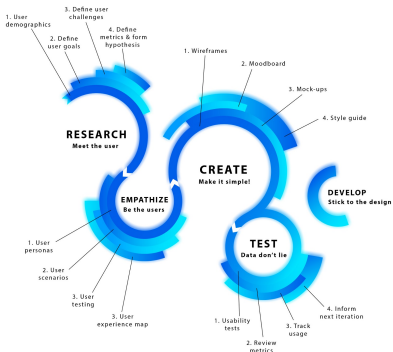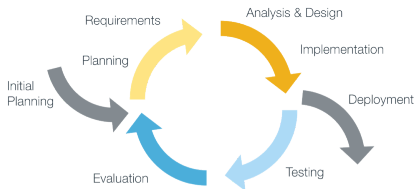## UX Design Process

RESEARCH DESIGN PROTOTYPING TESTING MEASUREMENT

Diagram: Design Process

1. User demographics
2. Define user goals
3. Define user challenges
4. Define metrics & form hypothesis
1. Wireframes
2. Moodboard
3. Mock-ups
4. Style guide

RESEARCH
Meet the user

CREATE
Make it simple!

EMPATHIZE
Be the users

DEVELOP
Stick to the design

TEST
Data don't lie

1. User personas
2. User scenarios
3. User testing
3. User experience map
1. Usability tests
2. Review metrics
3. Track usage
4. Inform next iteration

Product Development Lifecycle

Requirements
Analysis & Design
Planning
Implementation
Initial Planning
Deployment
Evaluation
Testing

The need for a prototyping process

- ▶ Need to interact with users.
- ▶ Tangible objects convey more than story boards & wireframes.
- ▶ Mock-ups are a first important step.
  - ▶ Need for fast & low-cost mock-ups
  - ▶ 3D printing
- ▶ How can we add some basic functionality ?
  - ▶ Need for interactive mock-ups
  - ▶ Developing hardware prototypes require electrical engineers ?
  - ▶ Open Source Hardware.

Further Reading

1. *Usability 101: Introduction to Usability*
   https://www.nngroup.com/articles/usability-101-introduction-to-usability/
2. Geoffrey Moore: *Crossing the Chasm*
3. Make: Magazine
   https://makezine.com/
4. Instructables
   https://www.instructables.com/
5. Hackster
   https://www.hackster.io/
6. Adafruit
   https://www.adafruit.com/
7. Seeedstudio
   https://www.seeedstudio.com/
8. Sparkfun
   https://www.sparkfun.com/
9. Getting Started with the Arduino/Genuino 101
   https://www.arduino.cc/en/Guide/Arduino101