Requirements Analysis

- A Practical Perspective

CS480 Software Engineering
http://cs480.yusun.io
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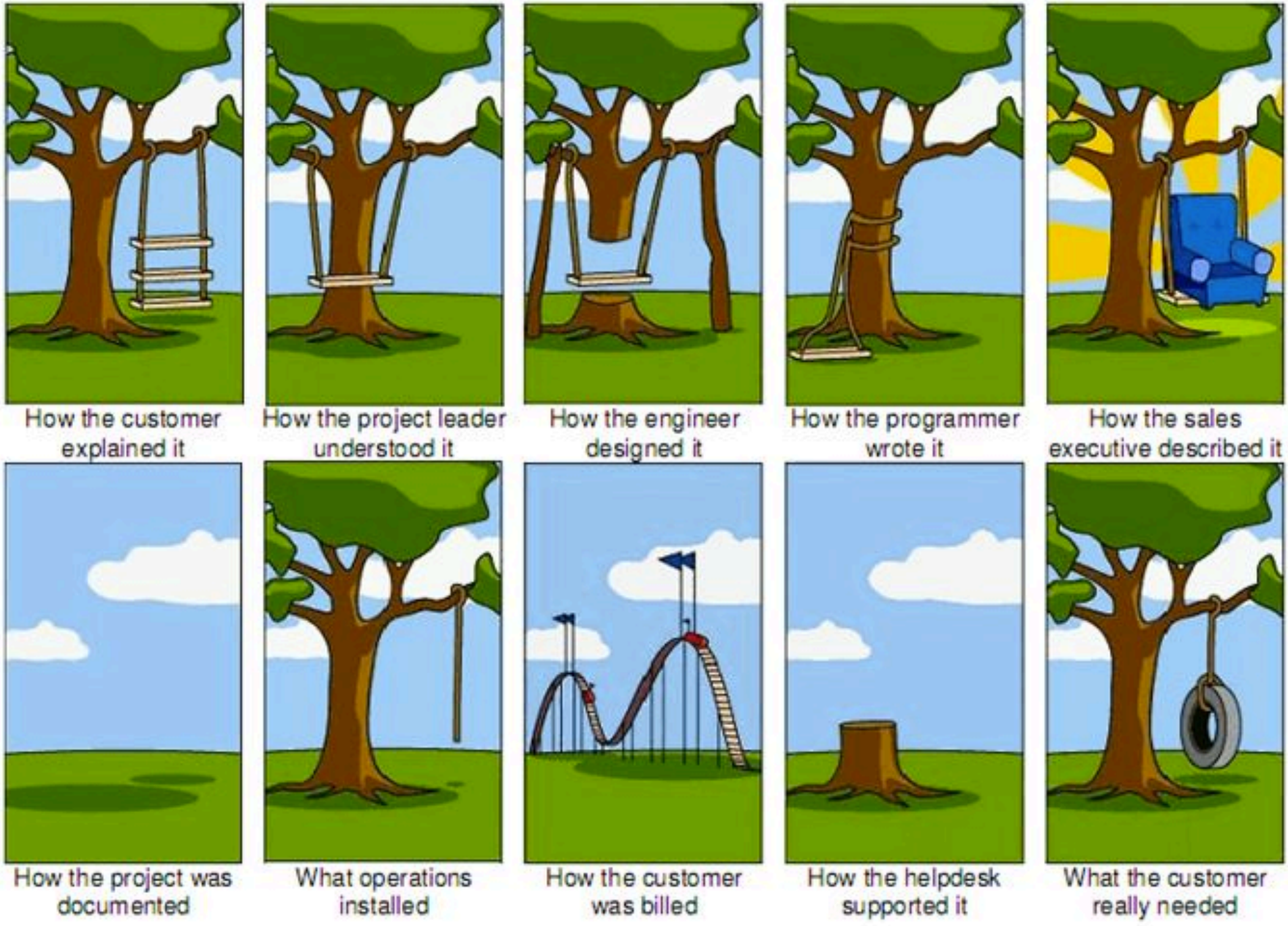
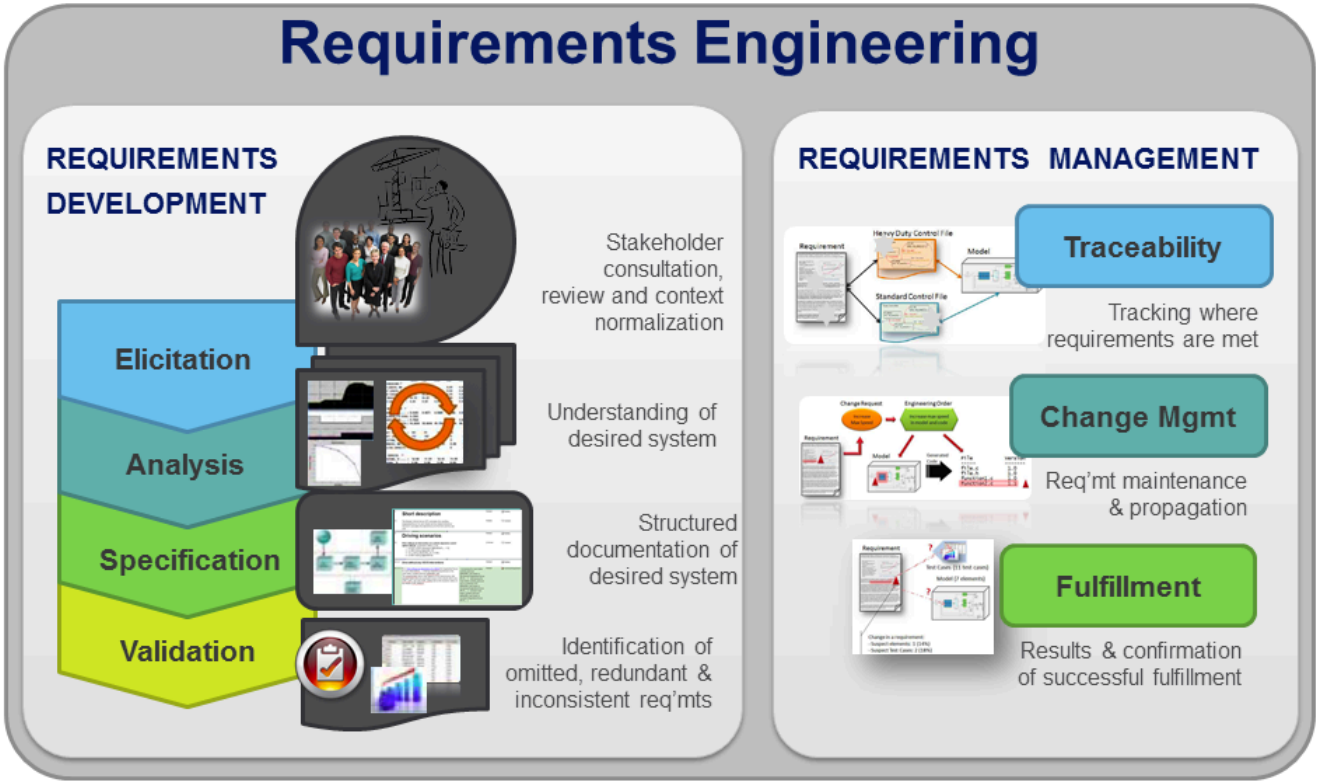
CAL POLY POMONA

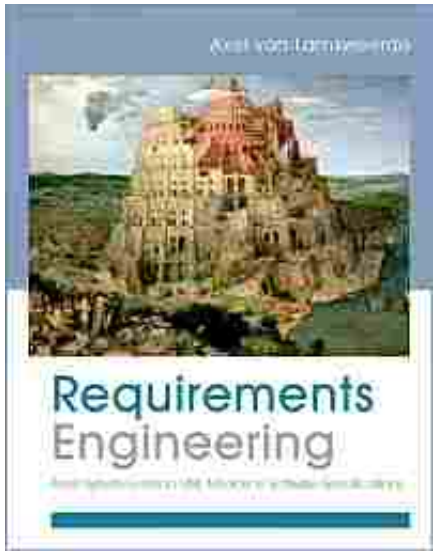

How the customer explained it
How the project leader understood it
How the engineer designed it
How the programmer wrote it
How the sales executive described it
How the project was documented
What operations installed
How the customer was billed
How the helpdesk supported it
What the customer really needed

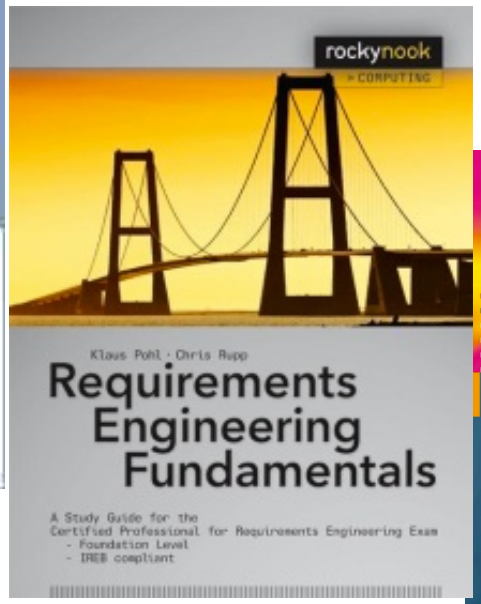
Requirements Engineering

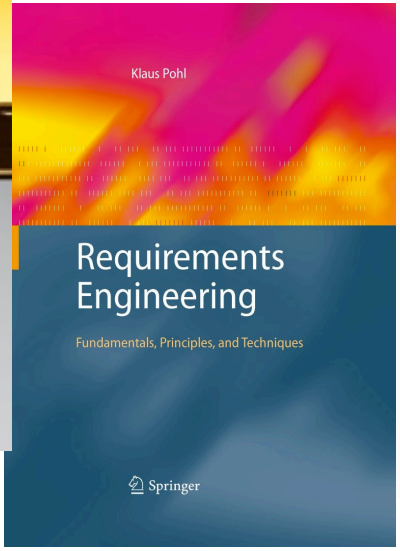
- Requirements engineering (RE) refers to the process of formulating, documenting and maintaining software requirements.

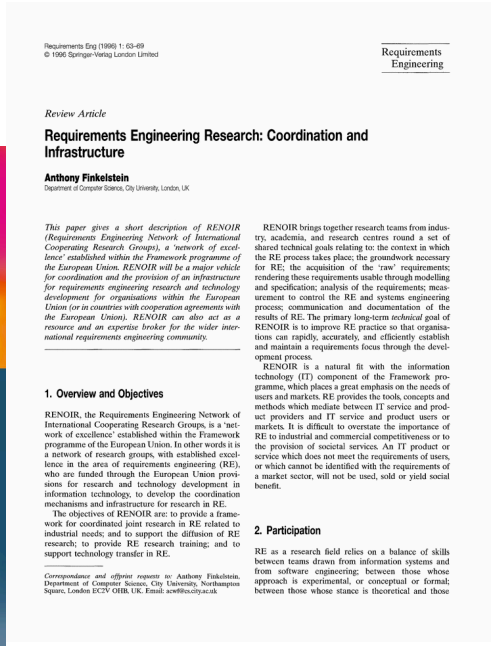


RE is a BIG Research Area









Requirements Eng (1996) 1: 63–69
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Requirements Engineering

Review Article

Requirements Engineering Research: Coordination and Infrastructure

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This paper gives a short description of RENOIR (Requirements Engineering Network of International Cooperating Research Groups), a 'network of excellence' established within the Framework programme of the European Union. RENOIR will be a major vehicle for coordination and the provision of an infrastructure for requirements engineering research and technology development for organisations within the European Union (or in countries with cooperation agreements with the European Union). RENOIR can also act as a resource and an expertise broker for the wider international requirements engineering community.

1. Overview and Objectives

RENOIR, the Requirements Engineering Network of International Cooperating Research Groups, is a 'network of excellence' established within the Framework programme of the European Union. In other words it is a network of research groups, with established excellence in the area of requirements engineering (RE), who are funded through the European Union provisions for research and technology development in information technology, to develop the coordination mechanisms and infrastructure for research in RE.

The objectives of RENOIR are: to provide a framework for coordinated joint research in RE related to industrial needs; and to support the diffusion of RE research; to provide RE research training; and to support technology transfer in RE.

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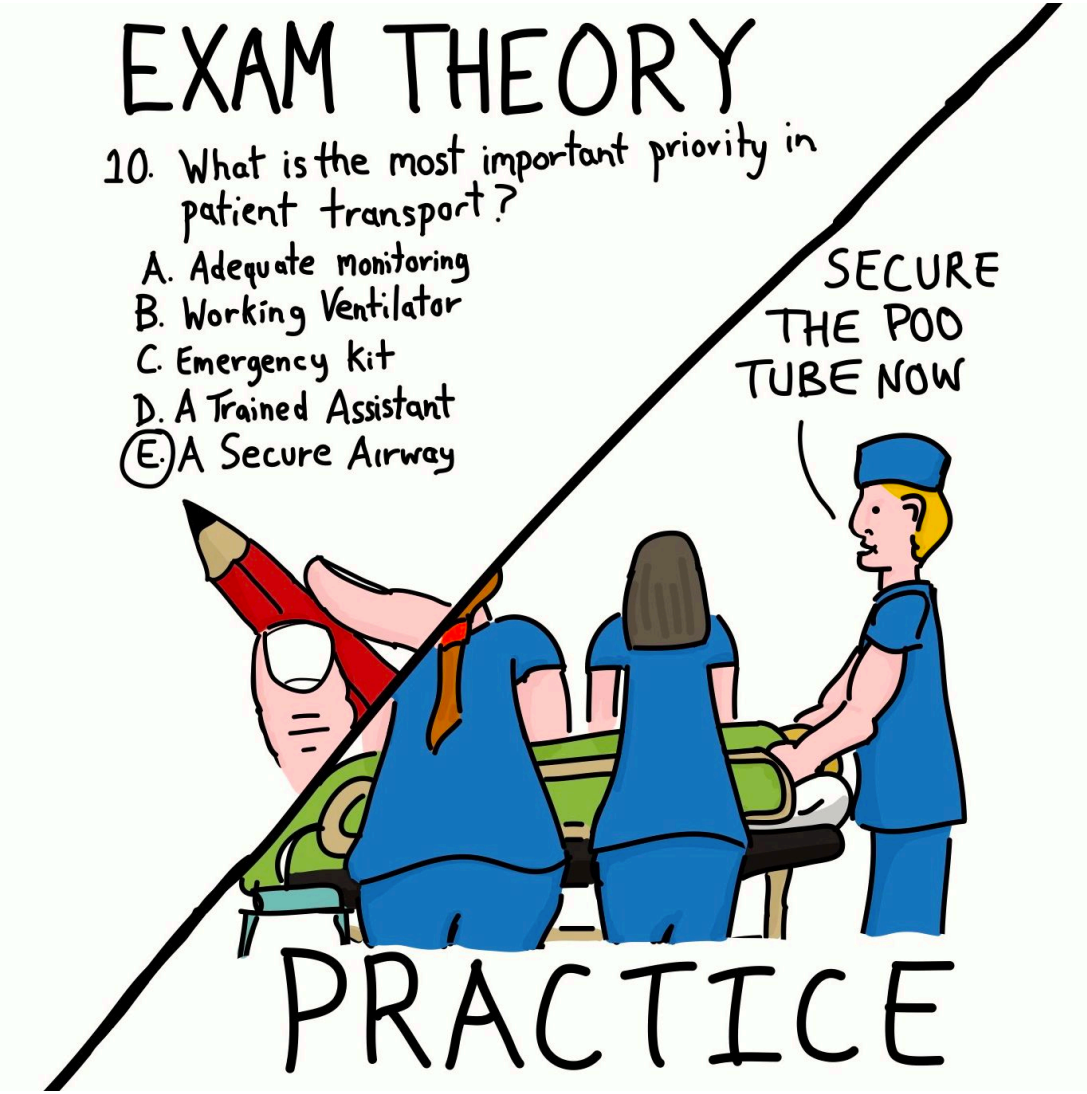
RENOIR brings together research teams from industry, academia, and research centres round a set of shared technical goals relating to: the context in which the RE process takes place; the groundwork necessary for RE; the acquisition of the 'raw' requirements; rendering these requirements usable through modelling and specification; analysis of the requirements; measurement to control the RE and systems engineering process; communication and documentation of the results of RE. The primary long-term *technical* goal of RENOIR is to improve RE practice so that organisations can rapidly, accurately, and efficiently establish and maintain a requirements focus through the development process.

RENOIR is a natural fit with the information technology (IT) component of the Framework programme, which places a great emphasis on the needs of users and markets. RE provides the tools, concepts and methods which mediate between IT service and product providers and IT service and product users or markets. It is difficult to overstate the importance of RE to industrial and commercial competitiveness or to the provision of societal services. An IT product or service which does not meet the requirements of users, or which cannot be identified with the requirements of a market sector, will not be used, sold or yield social benefit.

2. Participation

RE as a research field relies on a balance of skills between teams drawn from information systems and from software engineering; between those whose approach is experimental, or conceptual or formal; between those whose stance is theoretical and those

What's the RE in Practice Today?



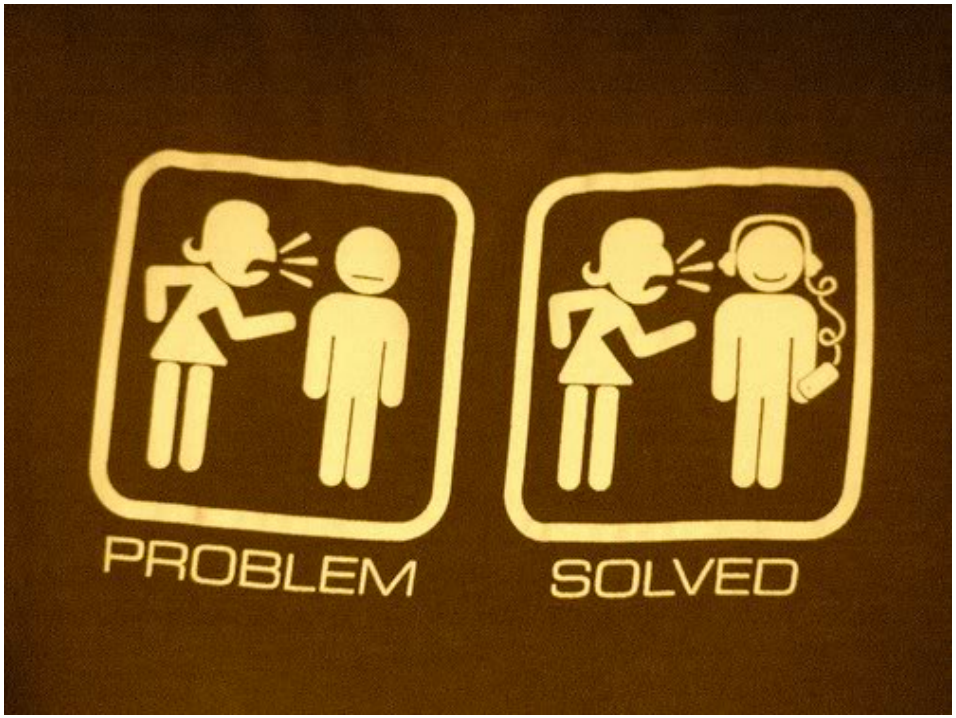
What's the RE in Practice Today?

1. Talk to customers

2. Determine requirements

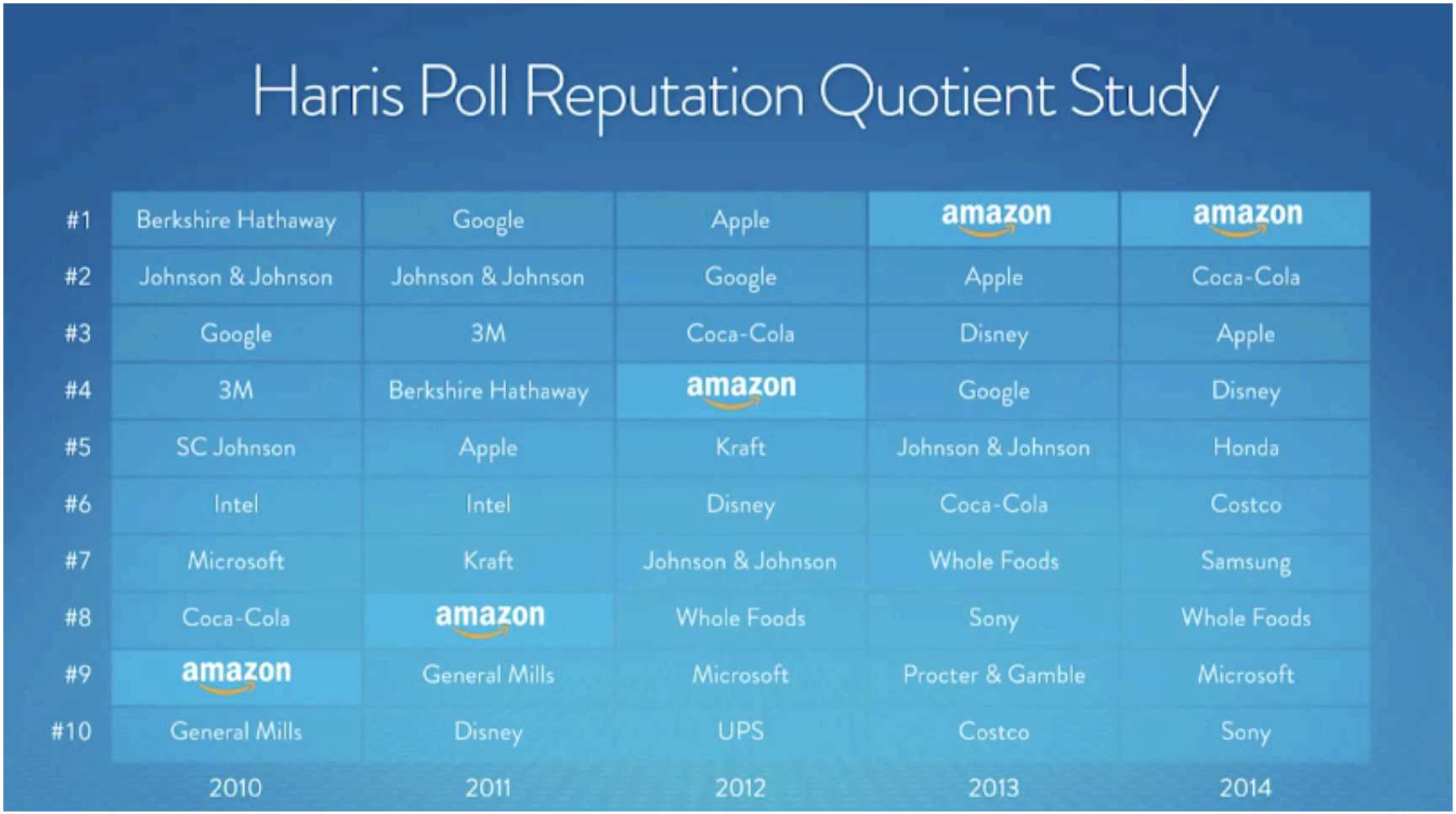
What's Really Important about RE?

- What problems can you solve?
- What can you provide for your customers?



Cases in Real World

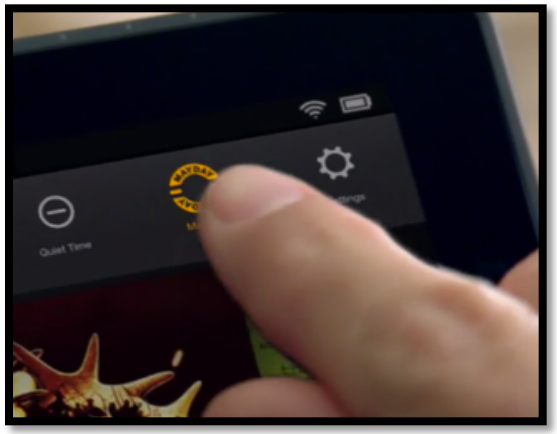
Amazon – Customer Centric



Amazon Mayday

- Live tech support service for Amazon Kindle Fire Devices
  - Video chatting with tech support assistant
  - Assistance by remote access and control

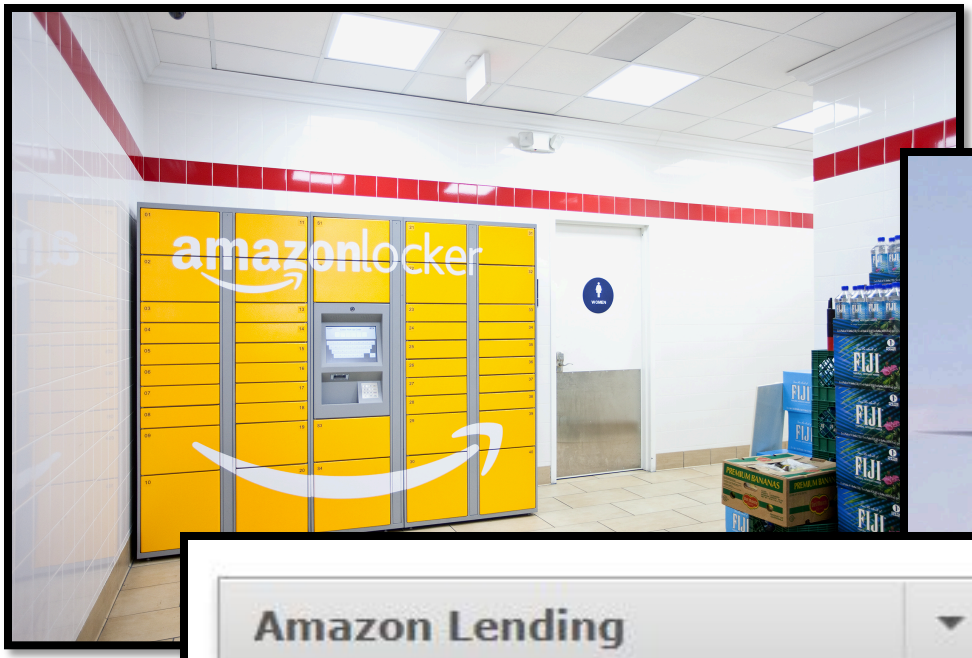
*"We set a goal for ourselves to have a response time of **15 seconds or less** when a customer tapped the Mayday button – we're proud to say that on Christmas Day we met this goal, with an average response time of just **9 seconds**," (source: Digital Trends)*



Amazon Silk

1. Make it faster
2. Private browsing mode
3. Reading mode
4. Trending web pages
5. Easy to share/save pages
6. Cooler UI
7. … …

More Customer-Centric Examples



Amazon Lending

Select a loan and register

$60,000 — Loan amount

6 Months — Loan term

$2,456.04 Total interest

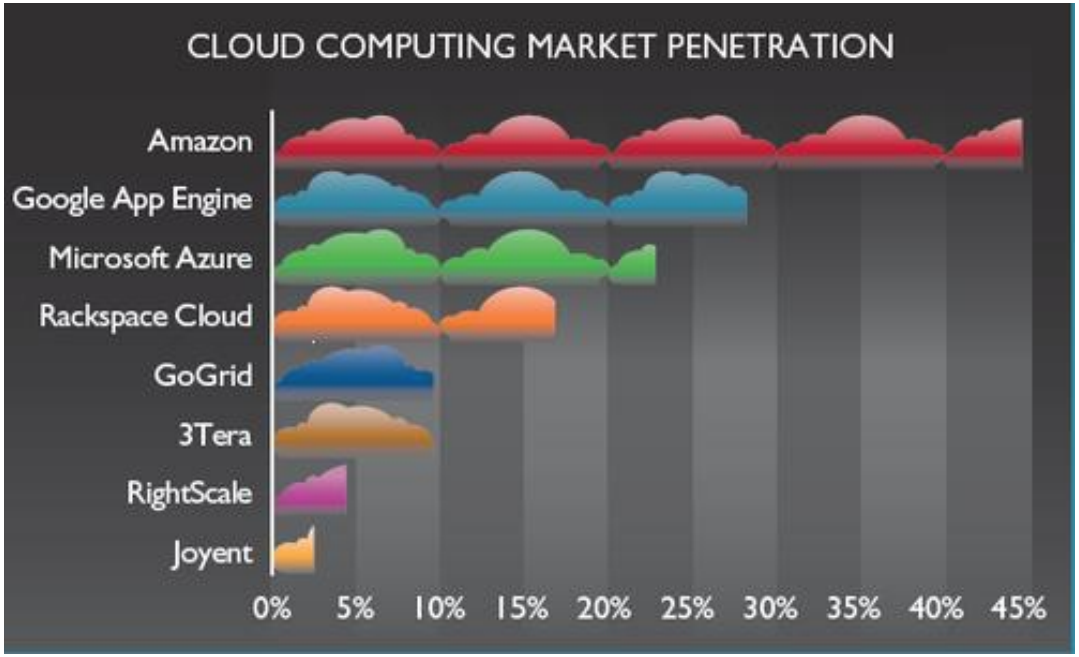
$10,409.34 Monthly payment

amazonlending by Amazon Capital Services, Inc.

Learn more

Amazon Cloud Competition

- Don't focus on competition, but on customer needs.



amazon web services™

Google Cloud Platform

Alibaba – Customer First

- Jack Ma

  "Customers first, employees second, and shareholders third"

Alibaba.com
Global trade starts here.™

Qihoo VS Tencent

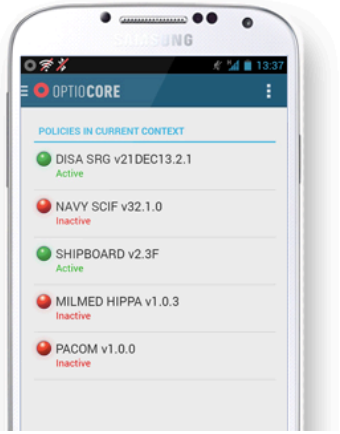
Startup – Optio Labs

- Founded in 2012, 3 co-founders and 10 employees
- In March 2014, Optio Labs closed a $10 Million Series A funding round

OPTIOLABS
AN ALLIED MINDS COMPANY

Optio Labs – Optio Core

- Derived from a university research project at Virginia Tech
- The idea was created after a meeting with a federal research group meeting by listening their needs



OPTIOCORE

Built specifically to meet U.S. government security requirements, OptioCore deploys on Android devices to provide an OS level rules engine that is fully aware of a users' cyber-physical context. OptioCore can detect any change in sensor or application behavior to take immediate, local action based on pre-defined policies. OptioCore is tailored for high-security environments such as Federal, Department of Defense, Financial Services, and Critical Infrastructure and other environments where security is paramount.

Optio Labs – Stay with Customers

Startup – PAR Works

PAR works
An Allied Minds Company

- Augmented reality is a live view of a physical, real-world environment whereby elements are augmented by computer-generated content.

AR Applications

Great Start


SXSW 2013
ACCELERATOR
FINALIST


FINALIST
2013 SXSW


DESIGN &
ENGINEERING
SHOWCASE
HONORS
INNOVATIONS
INTERNATIONAL CES
2013

But…

- No idea on what the customers want to do
- Simply demo the tech and wait …
- "Wow, it's cool, but how can I use it?"

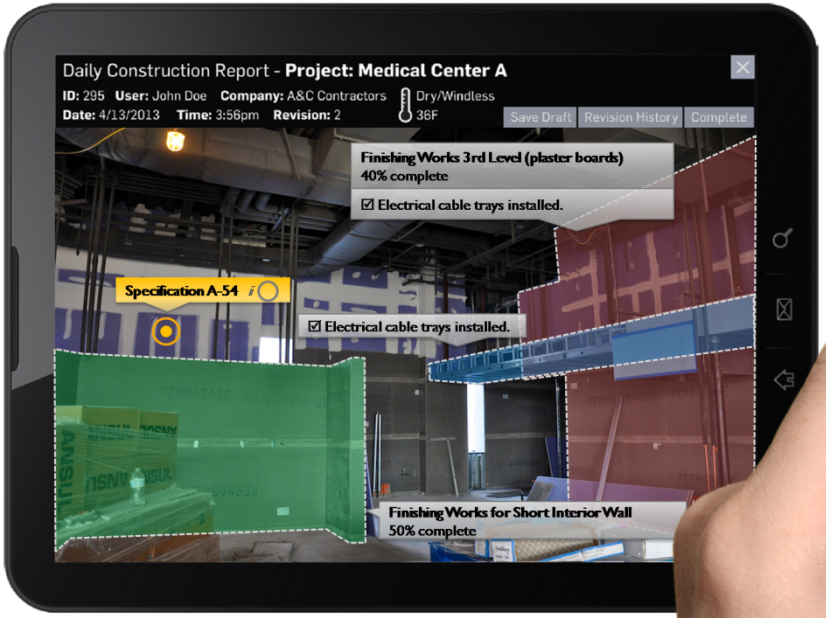
Getting Back on Track

- Talk and re-think about the most important problems we can solve
- Focus on a narrow range of problems and domains

AR in Construction: Documentation Management

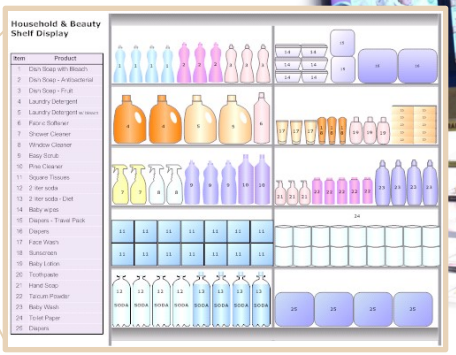
ZACHRY

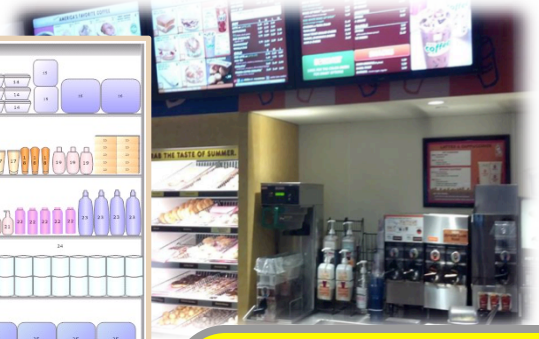
How to efficiently manage, search construction reports and documents?



AR in Retail: Product Filtering

AR in Planogram Compliance





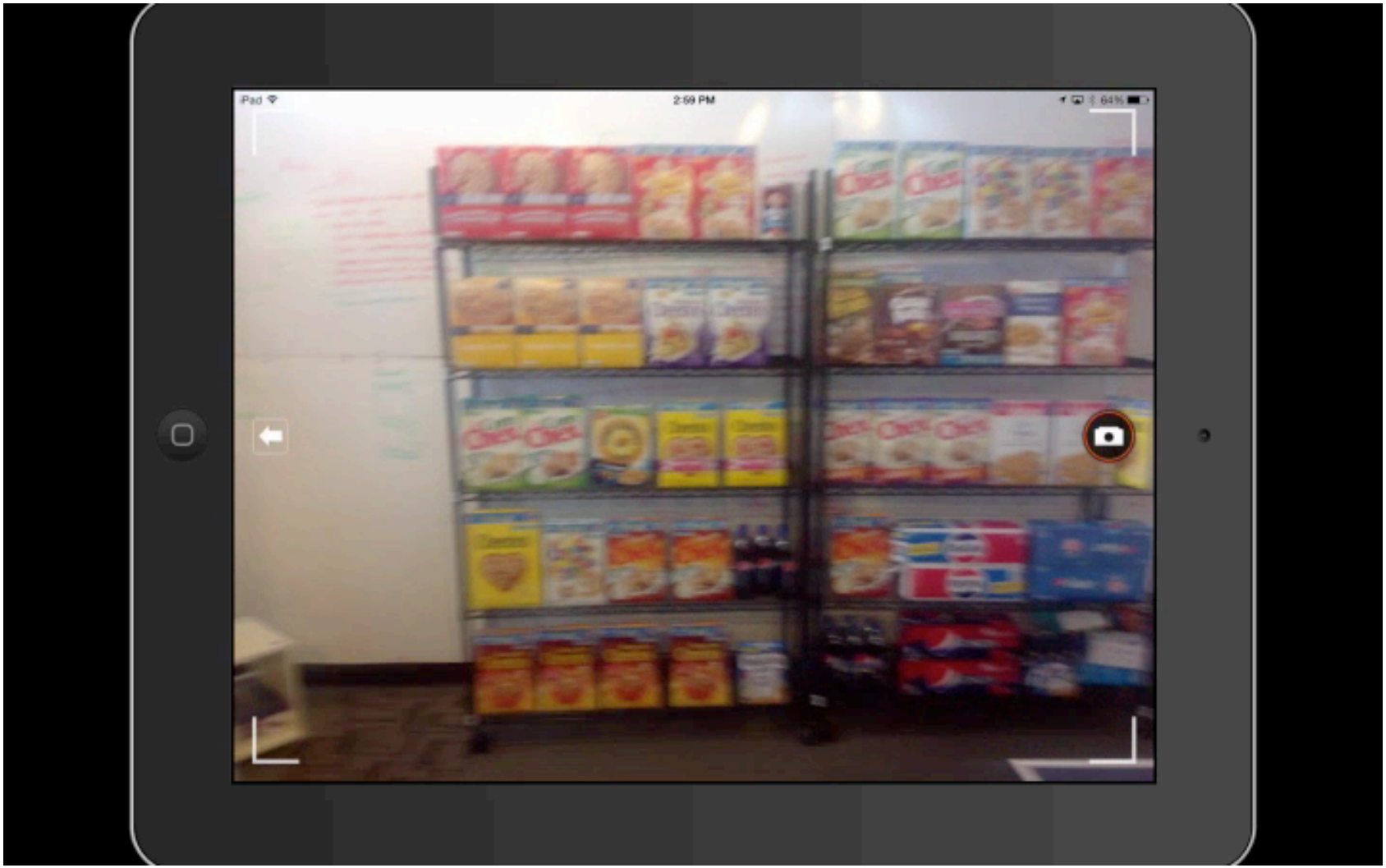
How to automate planogram deployment and monitoring

COMPLIANCE

AR in Planogram Compliance

Inconsistencies immediately recognized and clearly marked

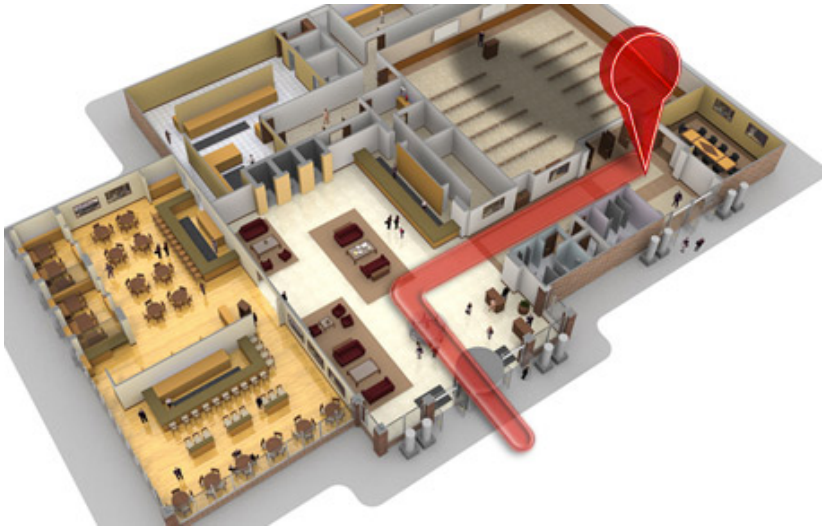
AR in Planogram Compliance

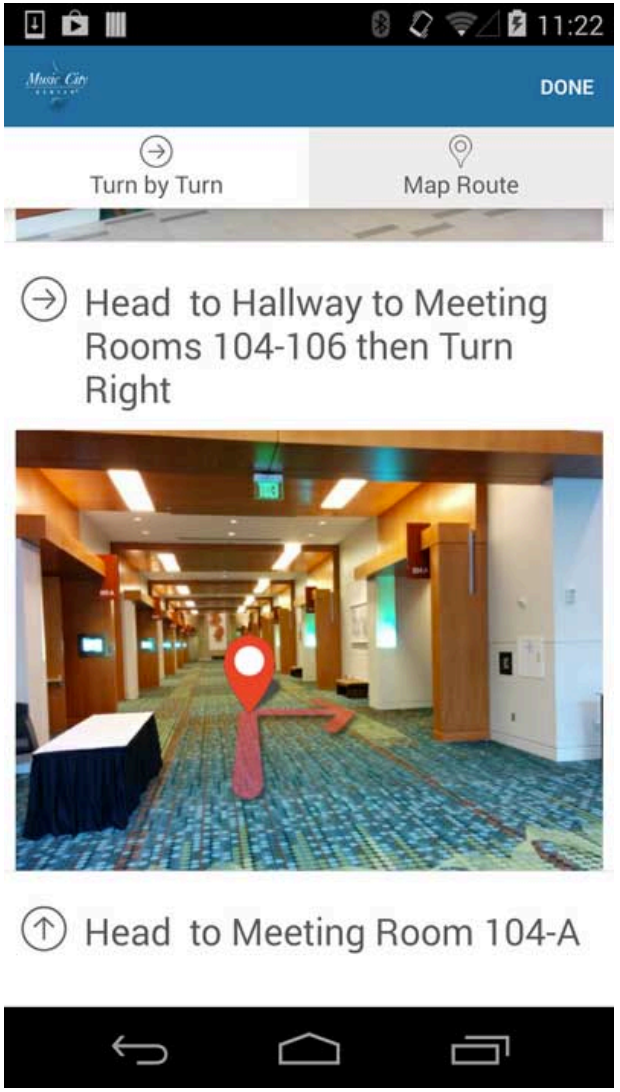


Lesson

- Always ask yourself:
  - Is it something cool or something useful?

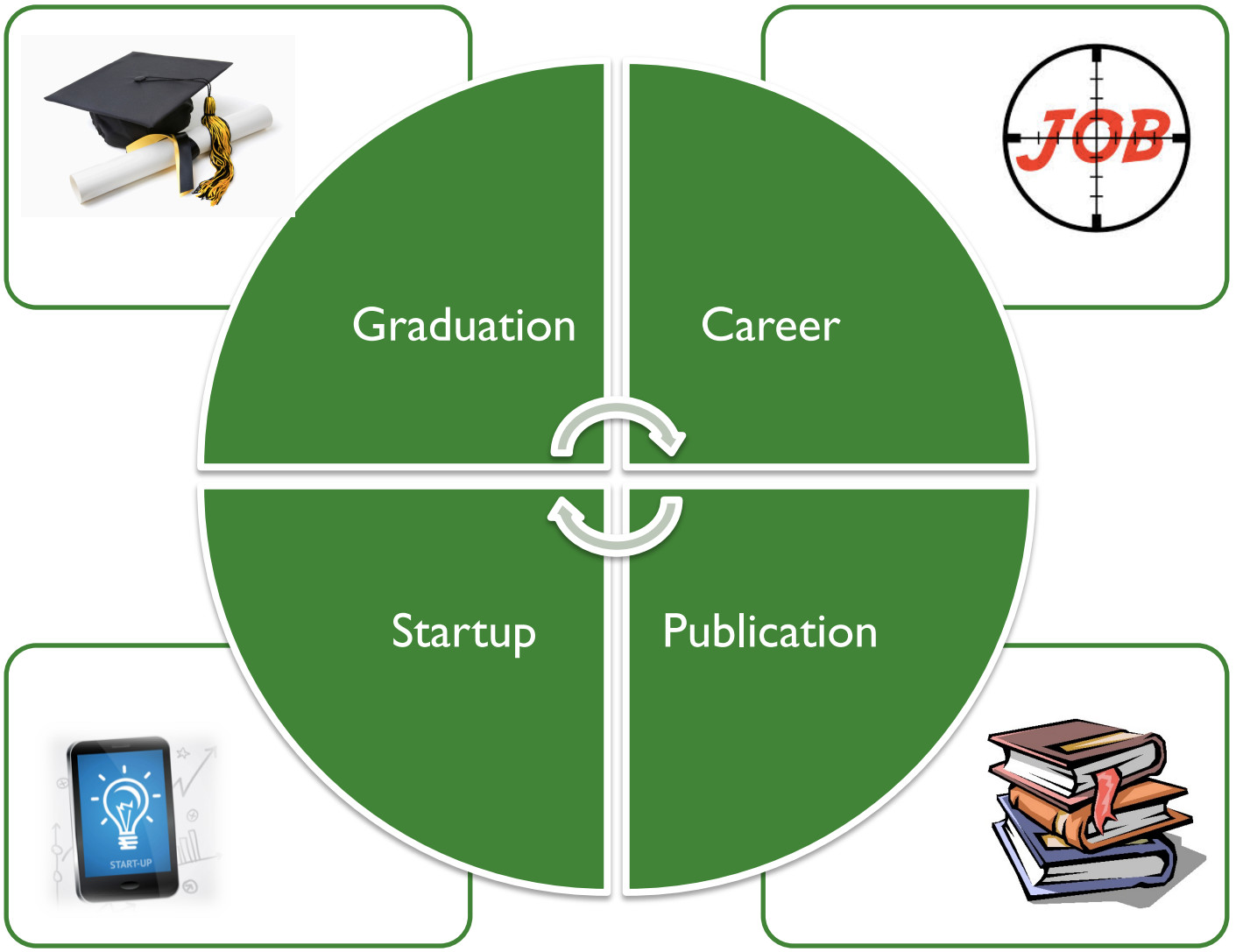
Ziiio – Indoor Navigation





- http://zii.io

What is a Good Student Project?



How to Build a Good Project?