Hopes And Aspirations

- Create community-centered web service for developing regions
- In this class, connect farmers and potential consumers using mobile infrastructures and web services
- For the future, extend the service to the domain of job market, healthcare and vice versa
System Architecture

Low Resource (Farmers)
Low-End Cell Phone

Mid Resource (Middlemen)
ODK Tables
ODK Collect
Android Mobile

High Resource (Web Servers)
ODK Aggregate
Web Service
App Engine / Amazon EC2

High Resource (Consumers)
Internet Browsers

SMS Communications

Internet Communications
Farmer ➔ Middlemen

- Farmer sends his/her product information
  @Sales +type Corn +name YoonSung +qty 10 +price 10
Middlemen

- Receives SMS on ODK Tables
Middlemen ➔ Web Server

- Sends information to web server using ODK Collect
Web Service Demo

- Listing
- Search
- Comment System
- Mobile Page
Surprises

- Browser Compliance
- Search with Location
- Hadoop
- Oddly, Images
Lessons Learned

What Worked

- Architecture helps organization
  - MVC
- Reference Experts
  - Referred to Amazon UI and framework
- Devoted many initial design hours
  - Code architecture
  - Database
- Amazon AWS
- Utilize Tools
  - Time to work on other complexities
  - Location identification
Lessons Learned
What Worked
Lessons Learned

What Did Not Work

- Test Harness
  - Esp. as project got complex
- Not using Test Machines
  - Over 800 SVN check-ins
- Tools don’t always fully work
  - AWS MapReduce
- Late changes
Performance Testing

- Amazon Elastic MapReduce
  - Hadoop
  - Up to 19 “instances” allowed
    - 1 cores each at 1 compute unit
    - 1.6GB Memory
    - Moderate I/O Performance
- Instances in Northern Virginia
Performance Testing

Ave Resp Time vs. Num of Users

Ave Response Time (sec)

Number of Users
Performance Testing

Ave Resp Time vs. Num of Users

- Ran test at 3am
- Note that exceeded cores
Performance Testing

- Amazon Elastic MapReduce
  - Hadoop
- Up to 15 “instances” capable
  - 8 cores each at 2.5 compute units
  - 7GB Memory
  - High I/O Performance
- Instances in Northern Virginia
Performance Testing

Ave Resp Time vs. Num of Users

Note that exceeded cores
User Testing

- **Goal:** Outside points of view
- **Who:** People with varied technical backgrounds
- **What:** Five scenarios covering basic functionality.
- **How:** Give a task, take notes on steps to completion.
Results

Task

- Sign Up
- Browse
- Search
- Comment
- Post

Success

- Failed
- Difficulty
- Succeeded
Task Example - Comment

- Leave a comment
  - Scroll Down
  - Type in Comment
  - Click Submit
  - View comment at top

- Simple Right?
What Went Wrong

- Ordering of comments of newest at top, to oldest at bottom not intuitive.
- Unable to pick out own comments easily.
- Item page too confusing.
- Did not realize had to be signed in.
- Reply: “Intuitive, but too ugly to use.”
What We Learned / Fixed

- Comments
  - Made it look better, pieces visually catching.
  - Changed color of your own comments.
- Other
  - Reworked posting process
  - Overall look of website
Division of Labor

- Matt
  - UI
  - Customer Interaction
  - User Study
- Yoon
  - Vision and Architecture
  - Mobile
  - Admin System
- Ting-Yen
  - Database
  - Search – natural language + location
  - Performance Testing
Questions?