

MICHIGAN STATE

U N I V E R S I T Y

Project Plan

Context Driven Content Delivery

The Capstone Experience

Team Motorola Mobility

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Project Overview

- **Develop Synchronized Program Content Delivery Tool**
 - Synchronize what the user is viewing on their television with appropriate secondary content on mobile device
- **Enhance efficiency with Cloud2Device**
 - Current configuration is inefficient. Cloud2Device has the ability to relieve strain on network.
- **Provide additional user context information**
 - Allow more meaningful secondary content to be sent to user.
- **Create a rules engine**
 - Allow content providers to manage their policies, rules, and secondary content.

Functional Specifications

- **Synchronized Program Content Delivery Tool**
 - Synchronize based on user actions (e.g. pause, fast forward, rewind, channel change)
 - Synchronize based on user's progress into a particular episode
- **Cloud2Device**
 - Framework will tell server when the user's context should be updated.
- **Additional Context Information**
 - Use what the user is watching, the offset in the show, the GPS location of the user, and user preferences to decide secondary content.
- **Rules Engine**
 - Drools Rule Management System for providers to manage policies and content.

Design Specifications

- **Synchronized Program Content Delivery**
 - Accurate syncing to provide seamless integration between primary and secondary content
 - Sync should not stress the server
- **Additional Context Info**
 - Secondary content should depend on the user's set preferences and GPS location.
- **Rule Engine**
 - Intuitive User Interface

Screen Mockups

Synchronized CompleteTV: Content Page

Select Episode Watching: "MythBusters" My Account Favorites

Kari Byron

@bonniegrll @robogames Wish I could have gone. :)

@grantimahara Did you make it?

@jvnoon Couldn't have done it without the amazing Vex team!! Thank you.

@kentkb Love my dog but be prepared. Generally they are impossible to fully housebreak.

@VEXRobotics It was an amazing event. Proud to be a part of it.

@henrylewis77 Where?

Grant Imahara

@bonniegrll @501stlegion @elmotk Awesome, thanks!

@501stLegion BTW @KimEvey is a friend of mine and @theguild is an excellent series.

@501stLegion RT @KimEvey: Anybody know 501st members in LA/OC area? Pls email watchtheguild at gmail dot com; I have a favor to ask... :)

MythBusters Wikipedia Article	MythBusters IMDb Page	Jamie Hyneman Wikipedia Article	Science Channel Home Page	IMDb - Grant Imahara
Mythbusters: Big Blasts Collection DVD	IMDb - Adam Savage	MythBusters Video - Surfing With Dynamite	Science Channel's Wonders of the Solar System Videos	Amazon - MythBusters Book on Urban Legends
MythBusters - Crash and Burn	MythBusters Video - Exploding Water Heater	MythBusters Experiment Kit	Monster Bug Wars Video: Assassin Bug	MythBusters Video - Fun With Gas
IMDb - Jamie Hyneman	MythBusters Video - Jump Start a Car	MythBusters Video - Diet Coke & Mentos	Science Channel's How It's Made Main Page	Mythbusters - Walking on Water

Show:

Logged in as: hoolrory

- Mythbusters: Big Blasts Collection DVD
- MythBusters Video - Surfing With Dynamite
- Science Channel's Wonders of the Solar System
- IMDb - Adam Savage

Living Room

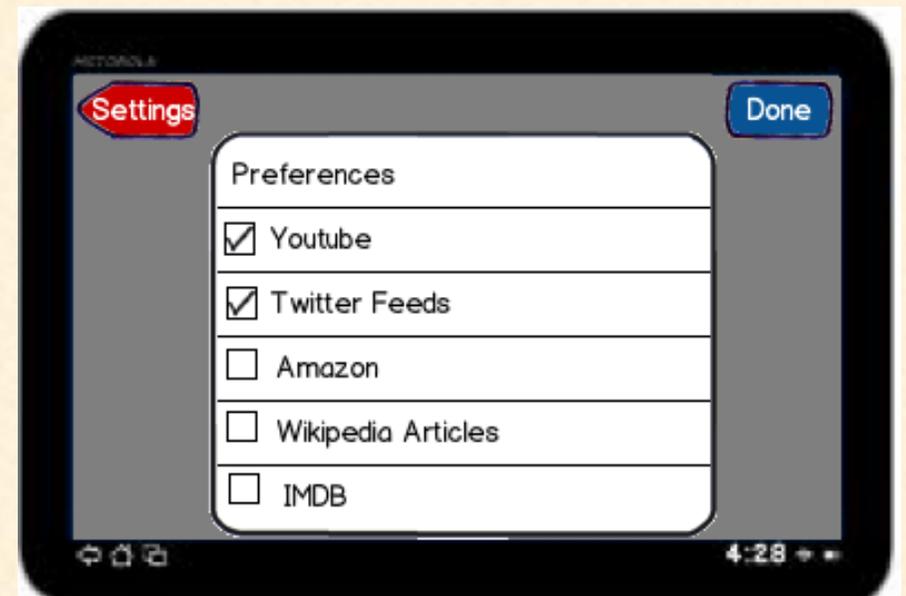
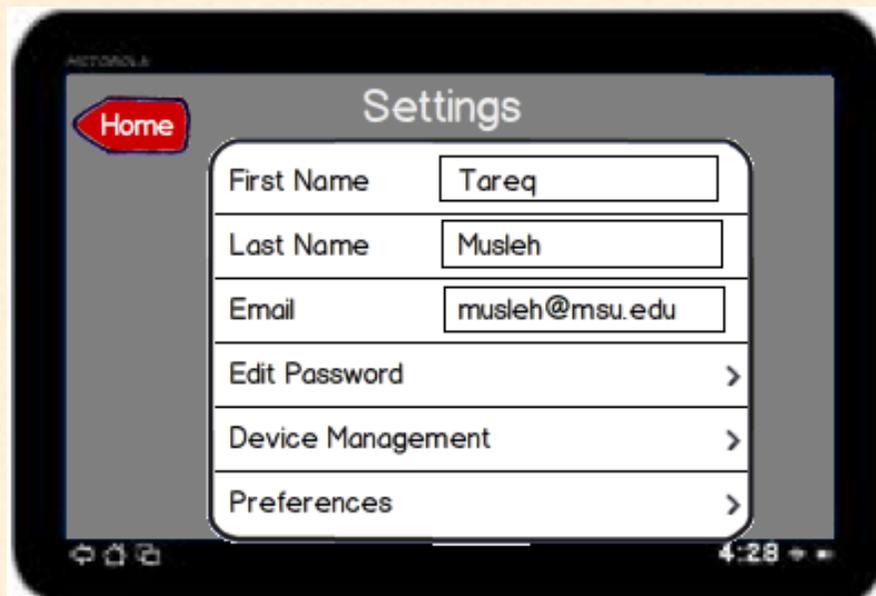
Bedroom

Basement

Audio Sync

Screen Mockups

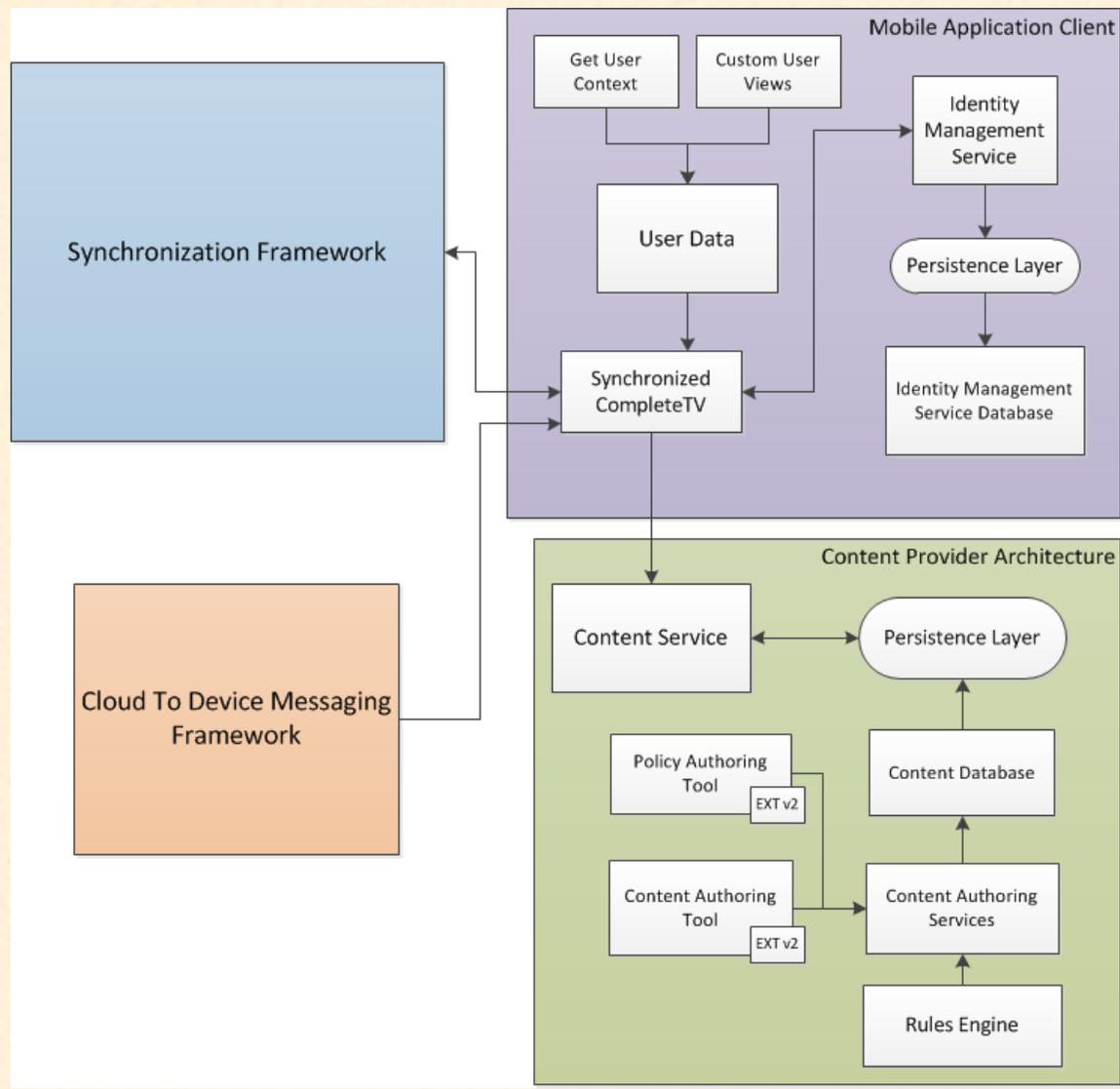
Synchronized CompleteTV: Settings Page



Technical Specifications

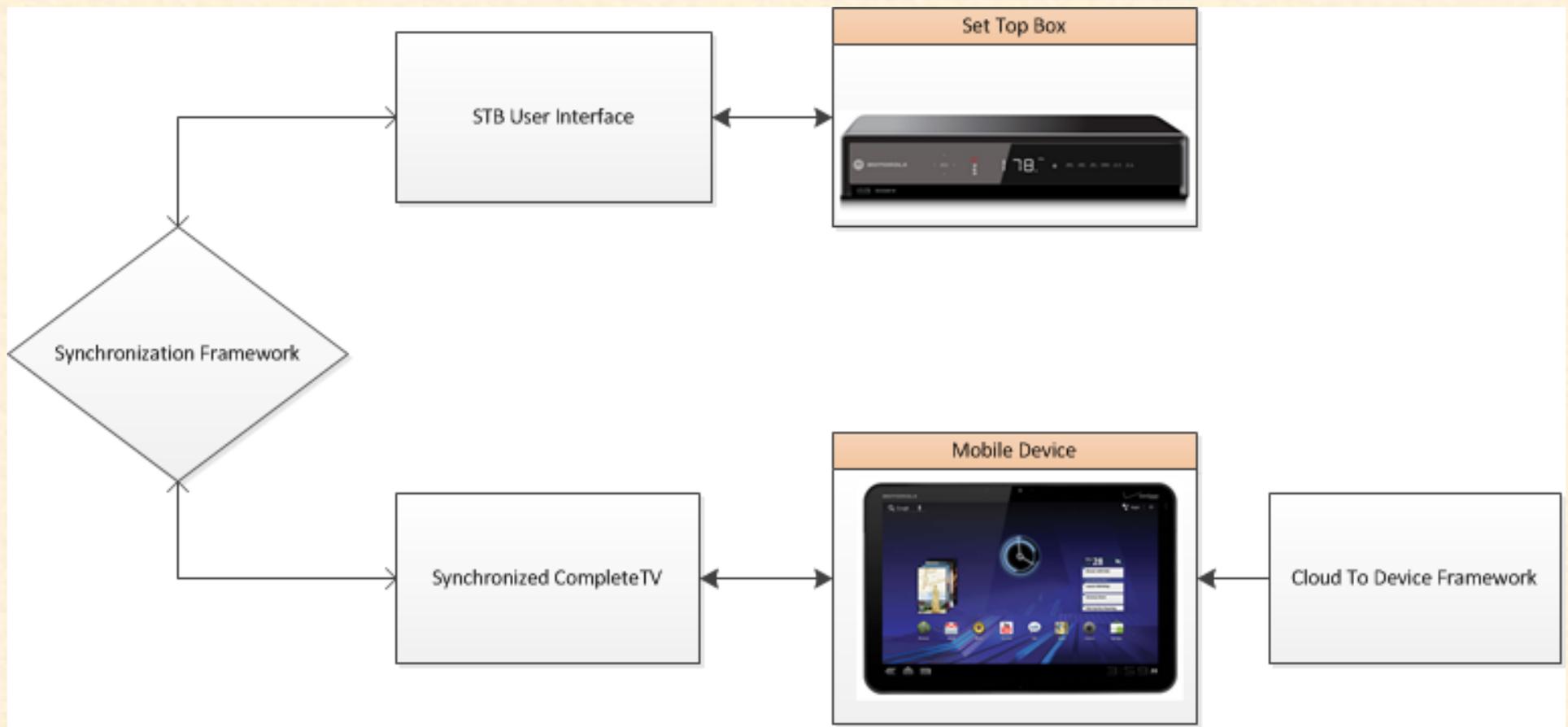
- **Databases**
 - Identity Management Database
 - Store information about the user, devices, and associations between them in PostgreSQL Database
 - Sync Database
 - Stores sync events in PostgreSQL Database.
- **Application Server**
 - Deployed to GlassFish
 - RESTful APIs
- **Mobile Device**
 - Communicates with Sync Service and Content Service
- **Set Top Box**
 - Sends information about the program being played to the Sync Service

System Architecture



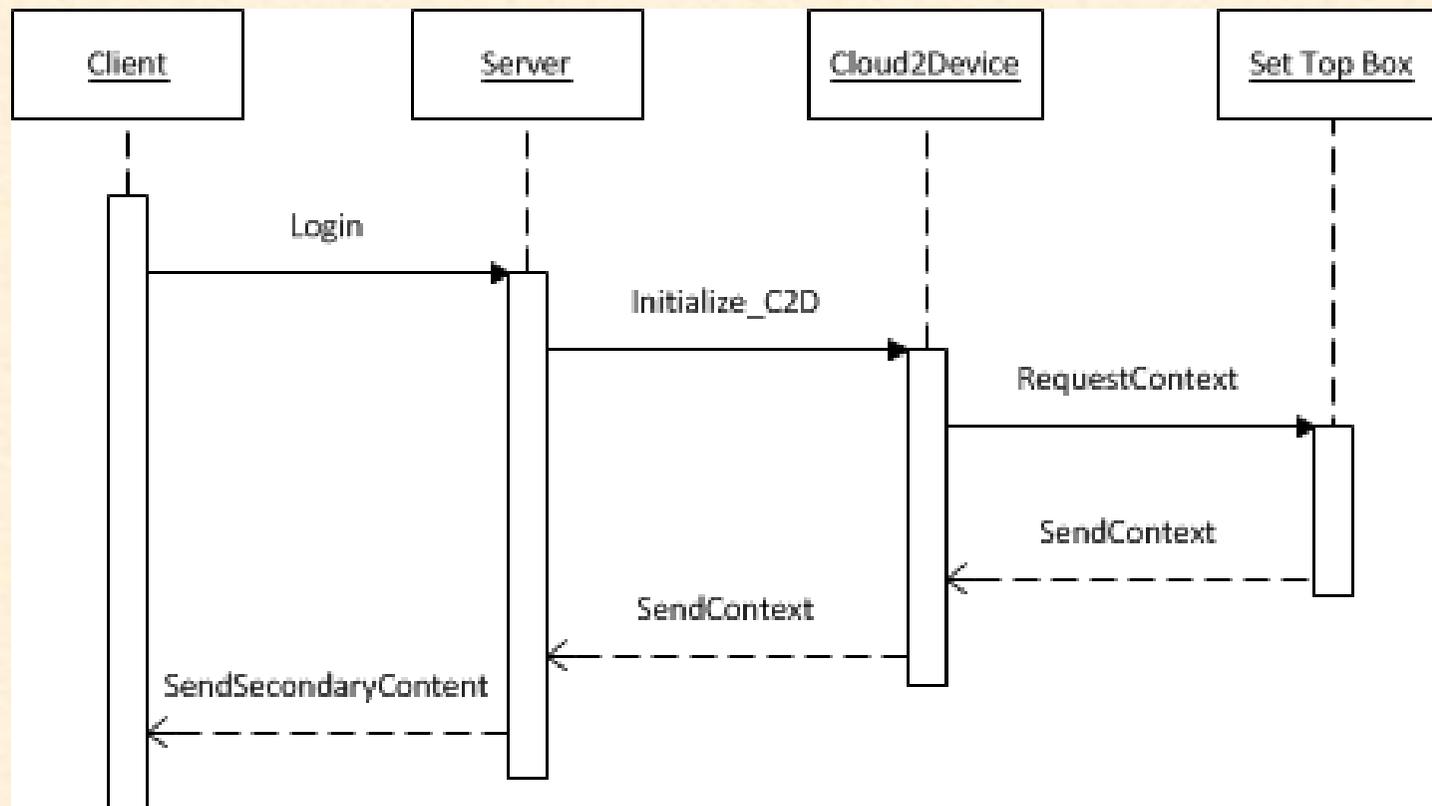
System Architecture

Clients



System Architecture

Sync Using Cloud2Device Sequence Diagram



System Components

- **Hardware Platforms**
 - Motorola Set Top Box & TV
 - Android mobile device
 - Windows & Mac Desktops
- **Software Platforms / Technologies**
 - Java, RESTlet framework, Eclipse
 - jQuery, jQuery Mobile
 - Set Top Box Portal
 - PostgreSQL / MyBatis Persistence Layer
 - Cloud2Device

Testing

- **Synchronized Program Content Delivery Tool**
 - Accurate syncing of primary and secondary content
 - Test performance with many users syncing at once
- **Additional Context Information**
 - Meaningful secondary content based on user context in multiple locations
- **Rule Engine**
 - Test reliability and user experience.

Risks

- **Scalability**
 - Needs to be able to support multiple users syncing simultaneously
 - Needs to be able to support multiple Set Top Boxes sending sync events simultaneously
- **Reliability**
 - Cloud2Device and other new technologies need to be thoroughly tested to ensure integration was done correctly.
- **Context Driven Content**
 - All secondary content must follow provider policies and rules
 - Content should also depend on user preference and info.