

MICHIGAN STATE
UNIVERSITY

Project Plan

Synchronized Program Content Delivery

The Capstone Experience

Team Motorola Mobility

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*From Students...
...to Professionals*

Project Overview

- Develop Synchronized Program Content Delivery Tool
 - Synchronize what the user is viewing on their television with appropriate secondary content on mobile device
- Develop Audio Sync Service
 - User can record sample audio footprint of a program, and the sync service will identify the program and sync
- Develop Synchronized Complete TV mobile app
 - Smooth interface for user preferences
- Develop Set Top Box User Interface
 - Similar to a program guide



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
- Audio Sync Service
 - Record sample audio, identify program, and sync
- Set Top Box UI
 - User can select a program, and the mobile device will sync accordingly
- Synchronized CompleteTV Application UI
 - Users can customize sync and secondary content preferences



Design Specifications

- Synchronized Program Content Delivery
 - Accurate syncing to provide seamless integration between primary and secondary content
- Audio Sync Service
 - User should not be taken out of the experience to record audio
- Synchronized CompleteTV
 - Intuitive User Interface



Screen Mockups

Synchronized CompleteTV: Content Page

Select Episode Watching: "MythBusters" My Account Favorites

Kari Byron

- @bonniegrl @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

- @bonniegrl @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
Amazon	Wikipedia	YouTube	Amazon	YouTube

Living Room

Bedroom

Basement

Audio Sync

Show: AI

Logged in as: hoolory

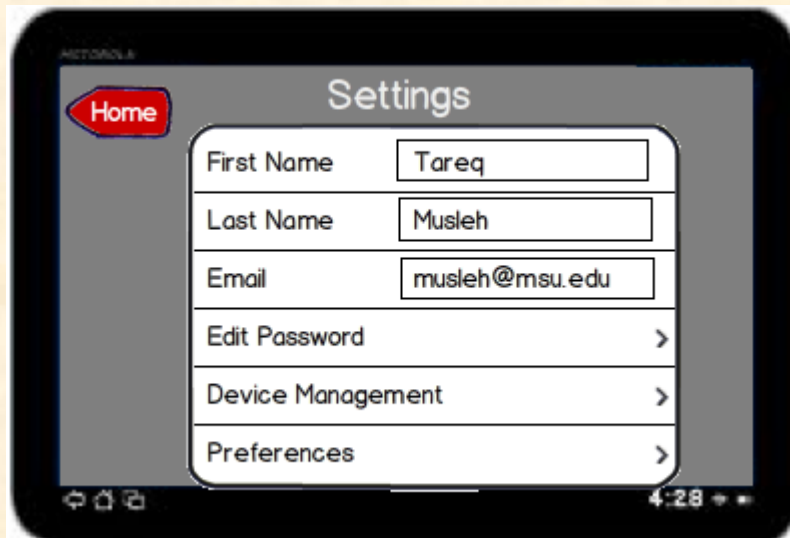
Logout

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



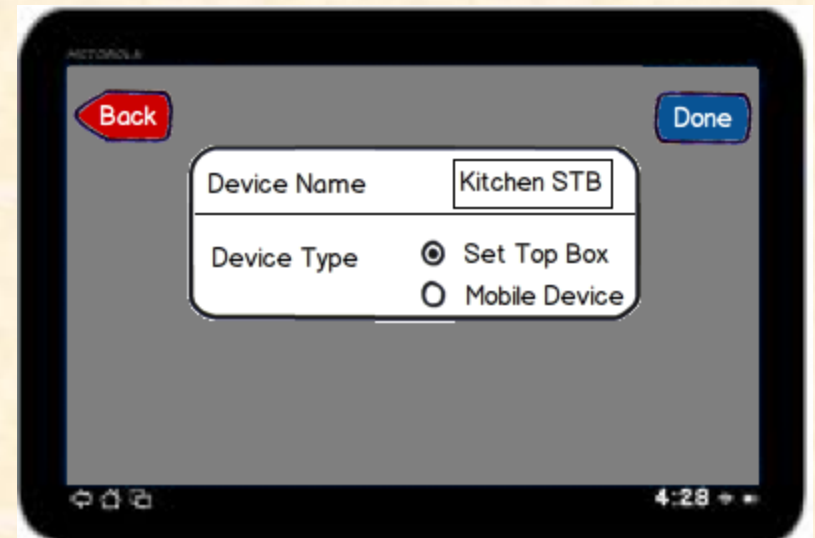
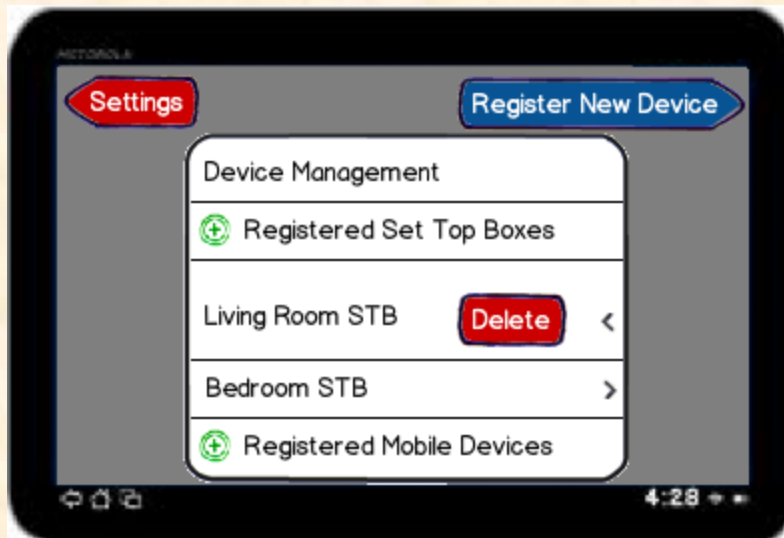
Screen Mockups

Synchronized CompleteTV: Settings Page



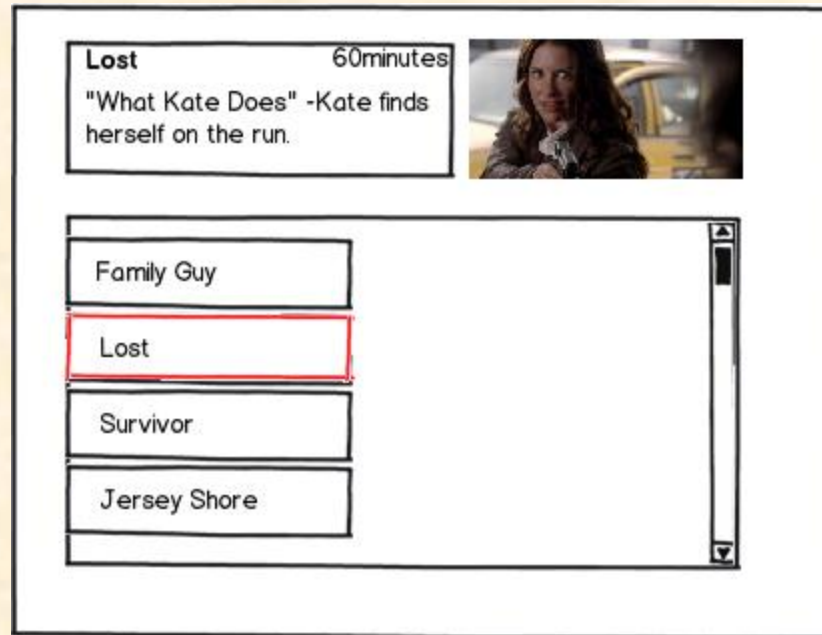
Screen Mockup

Synchronized CompleteTV: Device Management Pages



Screen Mockups

Set Top Box UI

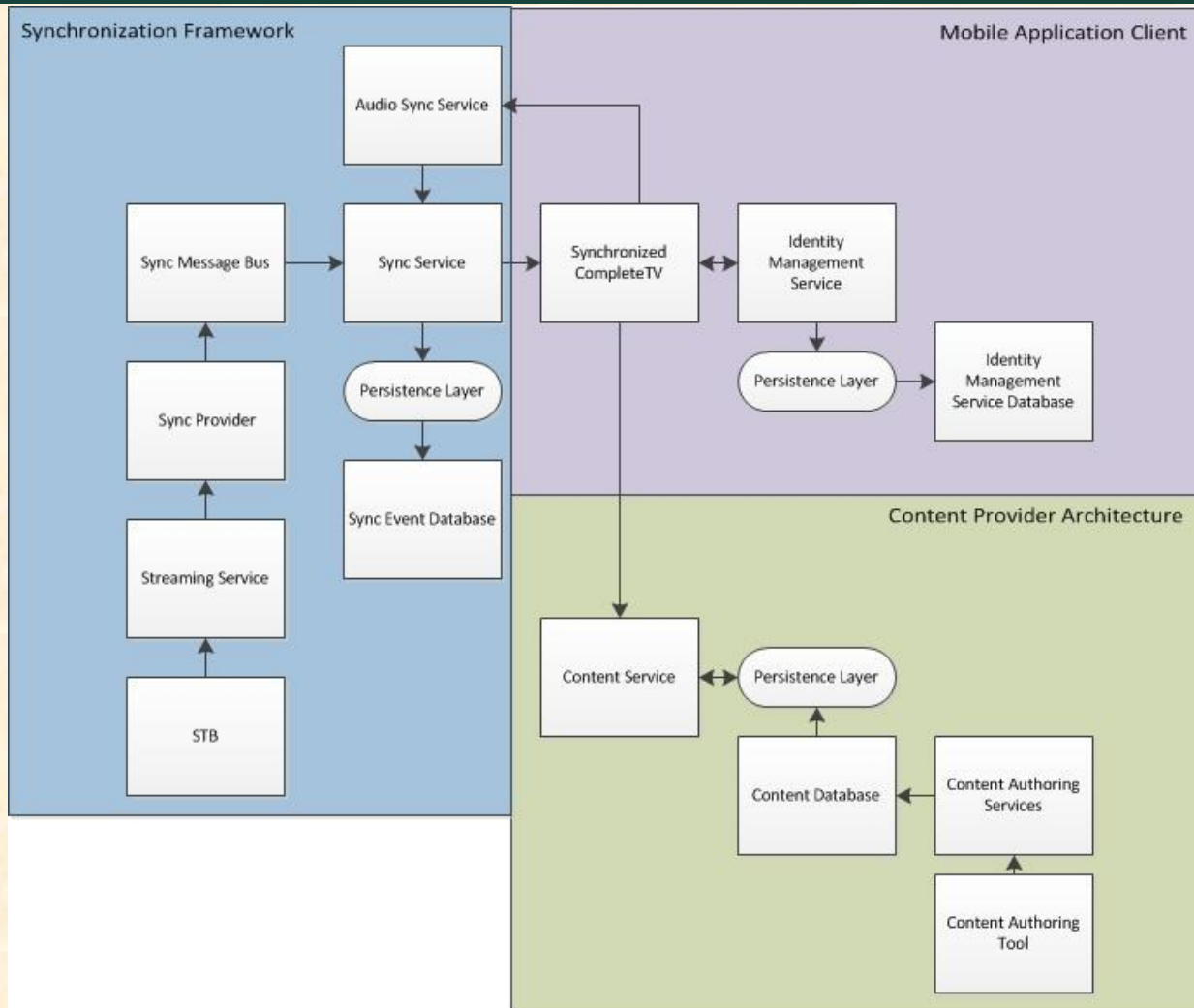


Technical Specifications

- 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

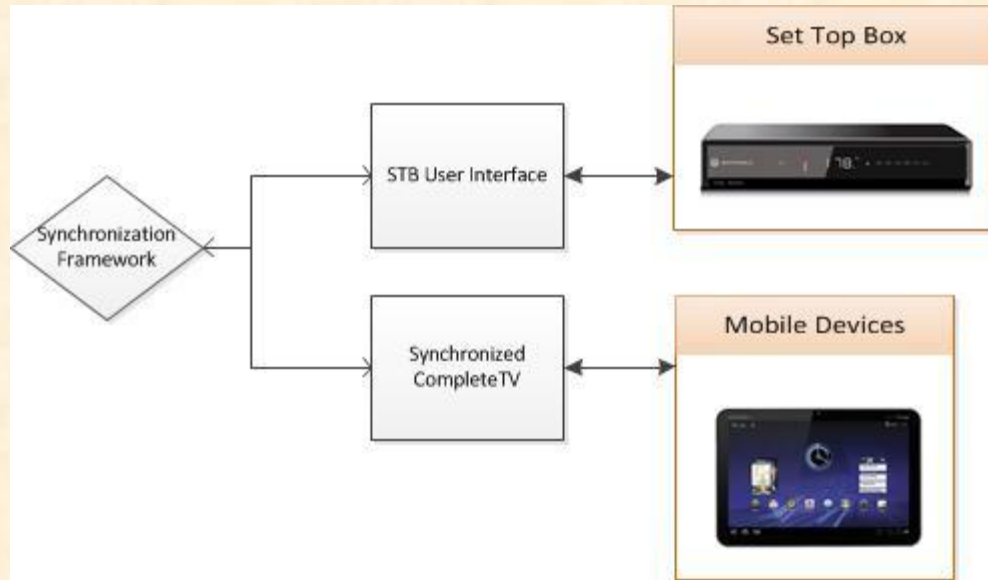


System Architecture



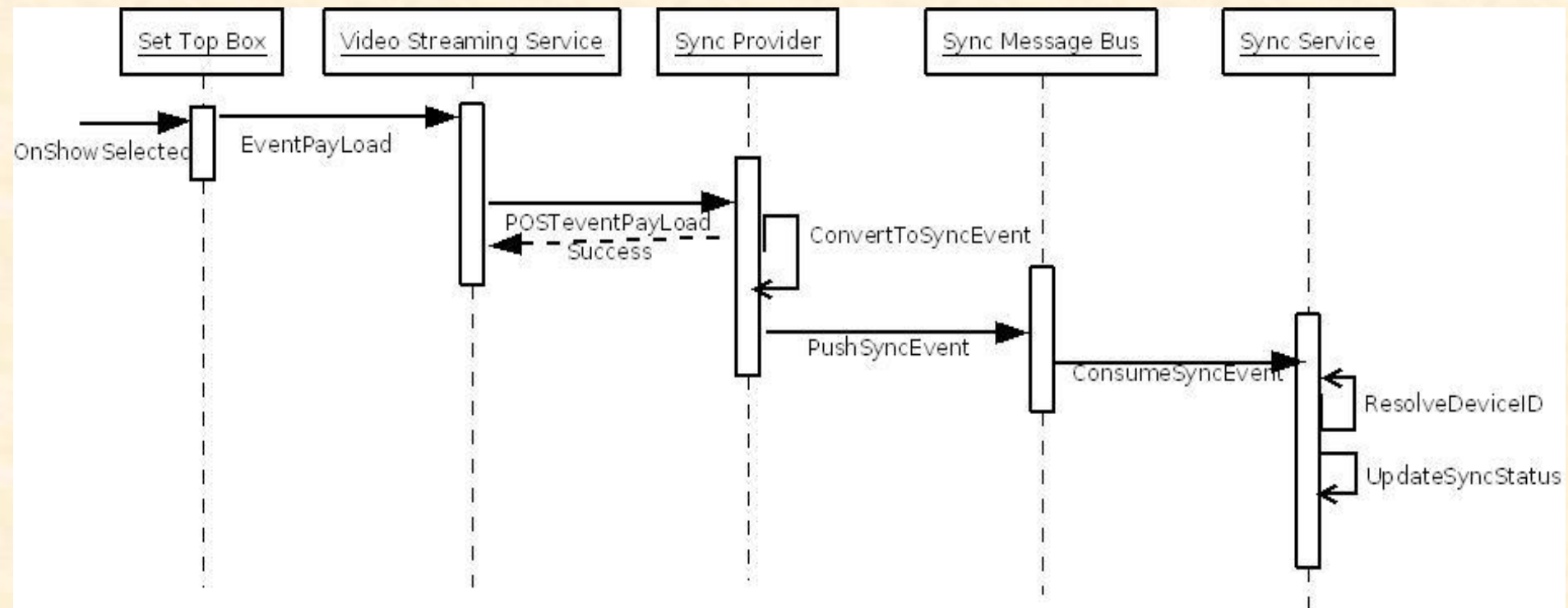
System Architecture

Clients



System Architecture

Sync 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



Testing

- Synchronized Program Content Delivery Tool
 - Accurate syncing of primary and secondary content
 - Test performance with many users syncing at once
- Audio Sync Service
 - Test user experience and ease of use



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
- High Performance
 - Syncing needs to be accurate to deliver appropriate secondary content
- Intuitive Syncing
 - Syncing process should have very little user involvement; we don't want to take them out of the user experience

