

MICHIGAN STATE
UNIVERSITY

Project Plan

Medication Shortages Dashboard

The Capstone Experience

Team Spectrum Health

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From Students...
...to Professionals

Project Overview

- Aggregate and visualize medication market supply, manufacturing data, and pharmacy inventory on per medication basis
- Overview 'dashboard' providing relevant information quickly and effectively
- Proof-of-concept application
 - To be used to refine business needs and user experience
 - Will not be integrated into Spectrum Health's internal systems due to scope and privacy issues



Functional Specifications

- Data Aggregation
 - Scheduled information gathering from public data sources of medication market supply and pharmacy inventory
- Dashboard View
 - High-level, 'at a glance' information viewing
 - Medication 'watchlist', news feed, etc.
- Medication Detail View
 - Visualizations of medication supply data
 - Basic information about selected medication
 - Users can add/edit/view comments about medication



Design Specifications

- Color
 - Stoplight Analogy
 - Green – Medication in stock
 - Yellow – Medication approaching shortage
 - Red – Medication shortage
- Layout
 - Three column layout
 - Left sidebar consistent across all pages
 - ❖ Search and filter medications
 - Dashboard
 - Center column: User's Watchlist
 - Second column: News Feed.
 - Medication Detail View
 - Center column: Status updates about selected medication
 - Second column: Basic information about medication



Screen Mockup: Dashboard View

SPECTRUM HEALTH

Home About Help

Logged in as Ted Droski
Not you? Log Out

Medication Shortages Dashboard

Type here to filter v

- Chromium
- Buprenorphine
- Dantrolene
- Ketoralac
- Lidocaine
- Chromium
- Buprenorphine
- Dantrolene
- Ketoralac
- Lidocaine

Your watch list

- Dantrolene 25mg Tabs
Mfg out - No date provided
- Buprenorphine 0.3mg
Mfg Out - No release date
- Ketoralac 30mg/mL
Resolved - able to get
- Ondansetron 2mg/mL
Resolved - able to get
- Morphine 10mg/1mL
Mfg Issues Resolving - have stock on hand
- Chromium
Manufacturer out -- Conservation plan in place

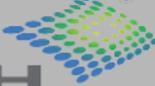
News Feed

- Chromium
Mfg out -- Conservation plan in place
- Ketoralac 30mg/mL
Received Backorders

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Screen Mockup: Detail View



Home
About
Help

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Chromium ^

Buprenorphine

Dantrolene

Ketoralac

Lidocaine

Chromium

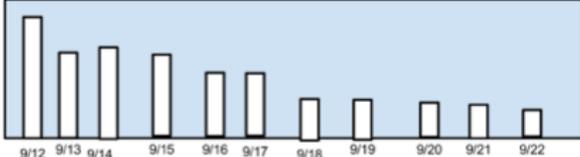
Buprenorphine

Dantrolene

Ketoralac

Lidocaine

Chromium



Manufacturers out	9/22
Conservation plan in place	
Manufacturer supply issues	9/17
Manufacturer supply issues currently able to get	9/15
Inventory Report	9/11
X cases of 30mg	
Manufacturer issues Resolved	9/10
Received backorders	

Company

Estimated Shortage Duration

More information

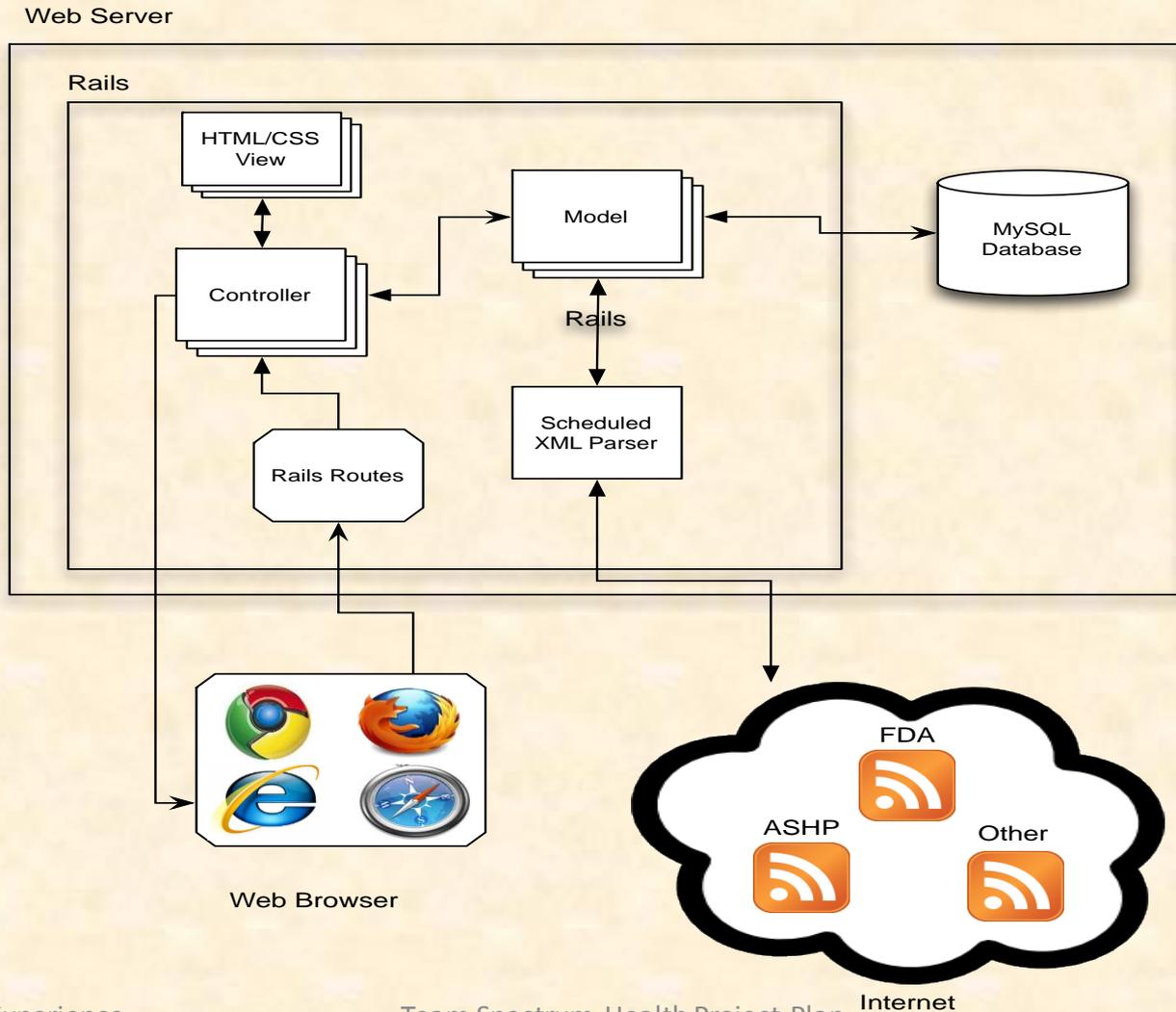
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Technical Specifications

- Ruby on Rails
 - MVC Architecture
 - Model -> View -> Controller web request processing
- MySQL Database
 - Rails allows abstraction of database backend, so this is modular and can be changed at-will
- Scheduled Cron task
 - Running Ruby application to aggregate medication supply data
 - Populates database with aggregated data



System Architecture



System Components

- Software Platforms / Technologies
 - Ruby on Rails
 - Web application framework
 - Using HTML/CSS, JavaScript/jQuery
 - MySQL Database Backend
 - Debian Linux Server
 - Running apache2 production web server
 - Providing Git for source code version control



Testing

- Ruby on Rails
 - Provides generated unit and functional tests
 - Custom written test code to test what Rails cannot
- Manual Testing
 - Each new frontend component will undergo manual functional testing from the web application frontend
- Documentation
 - Code and feature documentation for use during regression testing



Risks

- Ruby on Rails Inexperience
 - Lack of experience working with the Ruby programming language and the Rails web application framework
 - Must learn syntax and web application 'best practices'
 - Team member trust and ability to look to teammates for guidance/assistance
- Project 'Churn'
 - Client is interested in using project as a proof-of-concept, may lead to back-and-forth on design, features, etc.
 - Recurring conference calls, keeping the project collaborative and visible/accessible to the client
 - Leveraging mockups to finalize design and features of the system before beginning significant development work
 - Identifying and preventing 'feature creep'
- Data Aggregation
 - Application must aggregate data from external sources to meet business needs and other features are reliant on this core part of the system
 - Early development must focus on this core part of the application

