The Computer Science Senior Capstone Experience

CSE498 Collaborative Design

Department of Computer Science and Engineering
Michigan State University

Fall 2007

Professor Wayne Dyksen

Course Objectives

- Complete a Large Software Project
  - Architect
  - Implement
  - Test
  - Document
  - Deliver
- For a Client
- From “Scratch”
- In 15 (Short) Weeks

Course Objectives

- Build and Administer Systems
- Use Advanced Tools And Environments
- Integrate Computer Science Knowledge

Course Objectives

- Work In A Team Environment
- Develop Communication Skills
- Develop Some Interview Talking Points

All-Hands Meetings

- MW, 3:00-3:50pm, CAS 172
- Presentations By
  - Professor
  - Teams
    - Status Reports
    - Demonstrations
    - Formal Presentations
    - Project Videos
  - Guest Speakers

All-Hands Meeting Agendas

08-27: Course Overview / Skills Inventory

08-29: Technical Specifications / Team Assignments

09-03: (Labor Day, No Meeting)

09-05: Project Schedule & Risk

09-10: Teams: Progress Reports

09-12: Prototyping

09-17: Teams: Technical Specifications / Schedule

09-19: Teams: Technical Specifications / Schedule

09-24: Teams: Technical Specifications / Schedule

09-26: Resume Writing & Interviewing

10-01: Creating & Giving Presentations

10-03: Comm Sci-Tech Exchange

10-08: Teams: Alpha Demonstrations

10-10: Teams: Alpha Demonstrations

10-15: Teams: Alpha Demonstrations

10-17: Teams: Alpha Demonstrations

10-22: Ethics

10-24: Intellectual Property and Copyright

10-29: Entrepreneurship

10-31: .NET Framework / C#

11-05: Teams: Progress Reports & Demos

11-07: Teams: Progress Reports & Demos

11-12: The Project Video

11-14: Camtasia Demo

11-19: Teams: Progress Reports & Demos

11-21: Teams: Progress Reports & Demos

11-26: Teams: Progress Reports & Demos

11-28: Teams: Progress Reports & Demos

12-03: Teams: Project Videos

12-05: Teams: Project Videos

12-07: Design Day

12-11: Teams: Project Videos

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Team 1 Auto-Owners Insurance Team Picture

Team 1 Auto-Owners Insurance

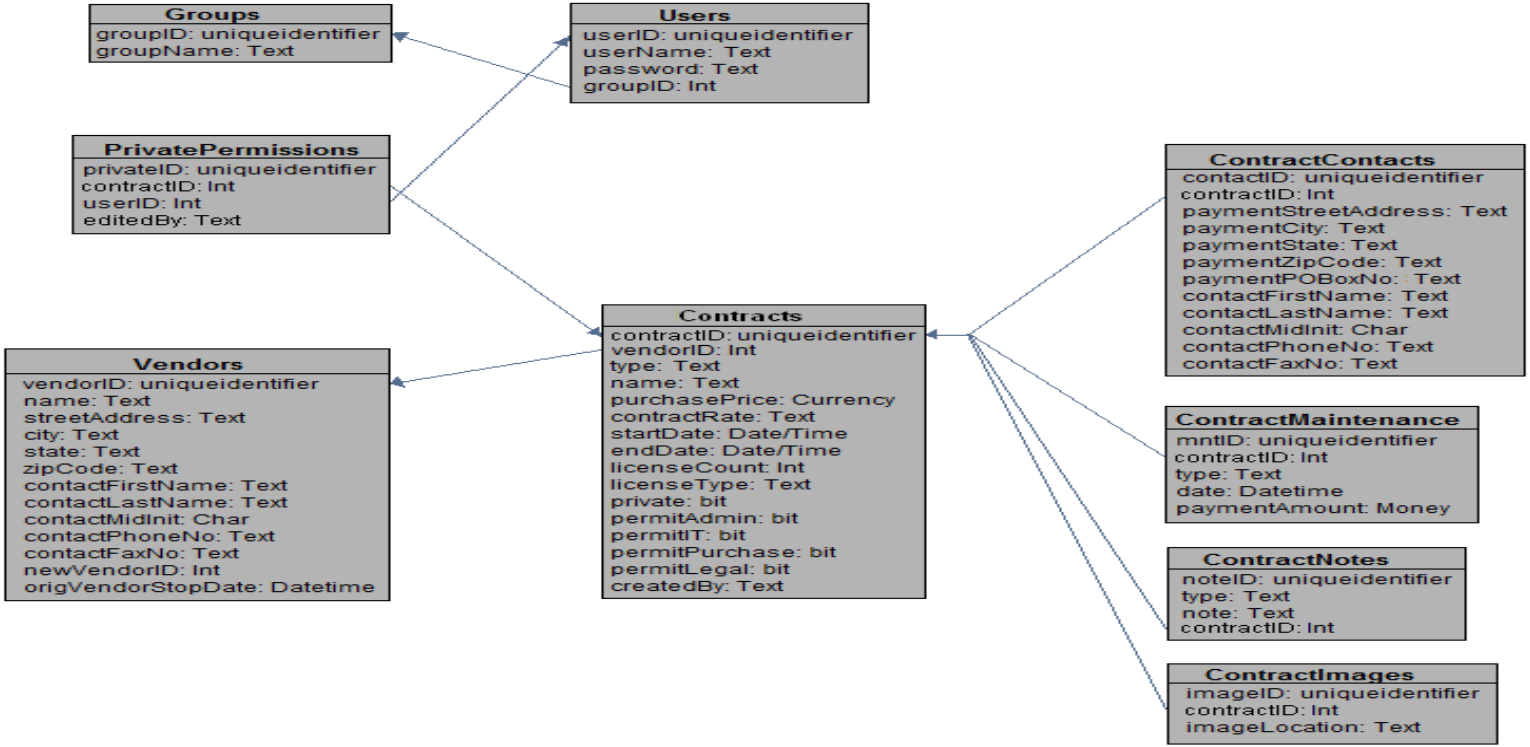
Project Overview

Vendor Management System (VMS)

- Build VMS to Manage Third-Party Business Partners (BP's)
  - Software
  - Services
  - Technical Assistance
- Functionalities
  - Add, Delete, Modify
  - Merge (When One BP Buys Another)
  - Access and Display Related Documents (From Image Right Repository)
  - Track Renewals and Reviews
- Technologies
  - C#
  - .NET
  - SQL

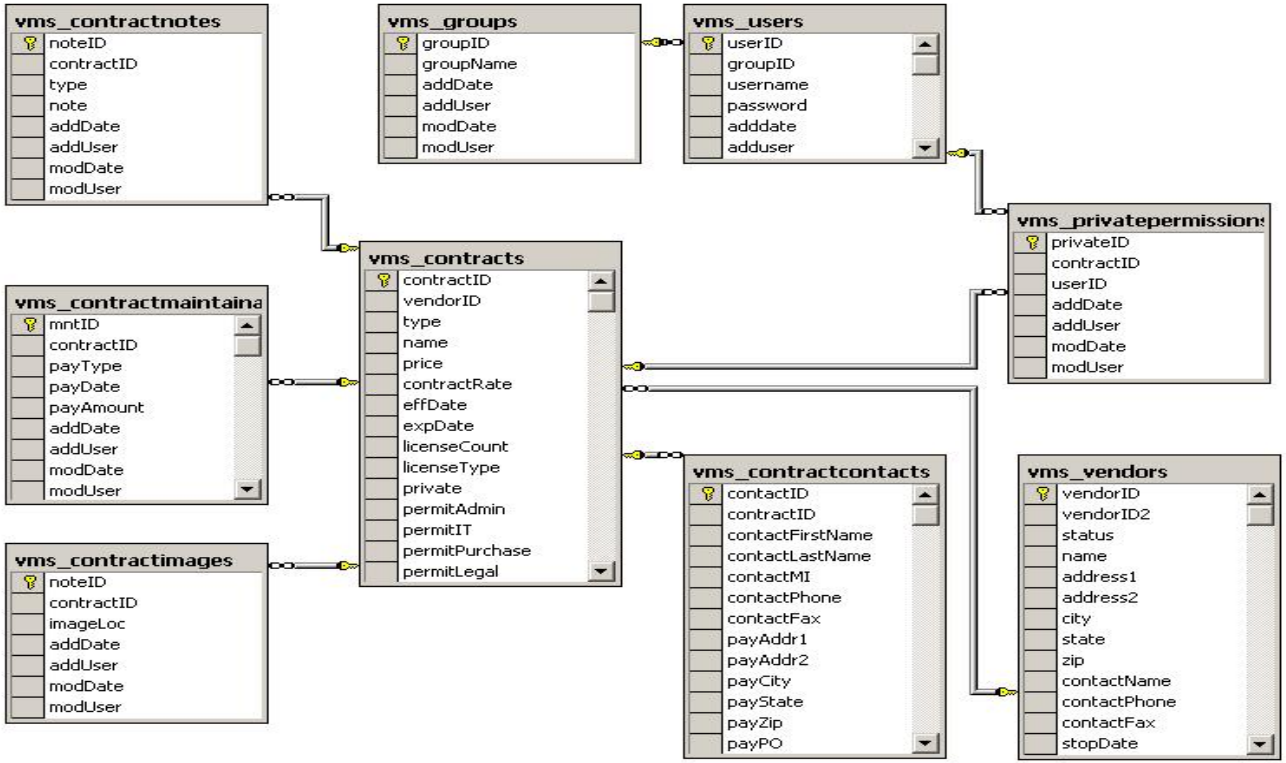
Team 1 Auto-Owners Insurance

Architecture Illustrated 1/3



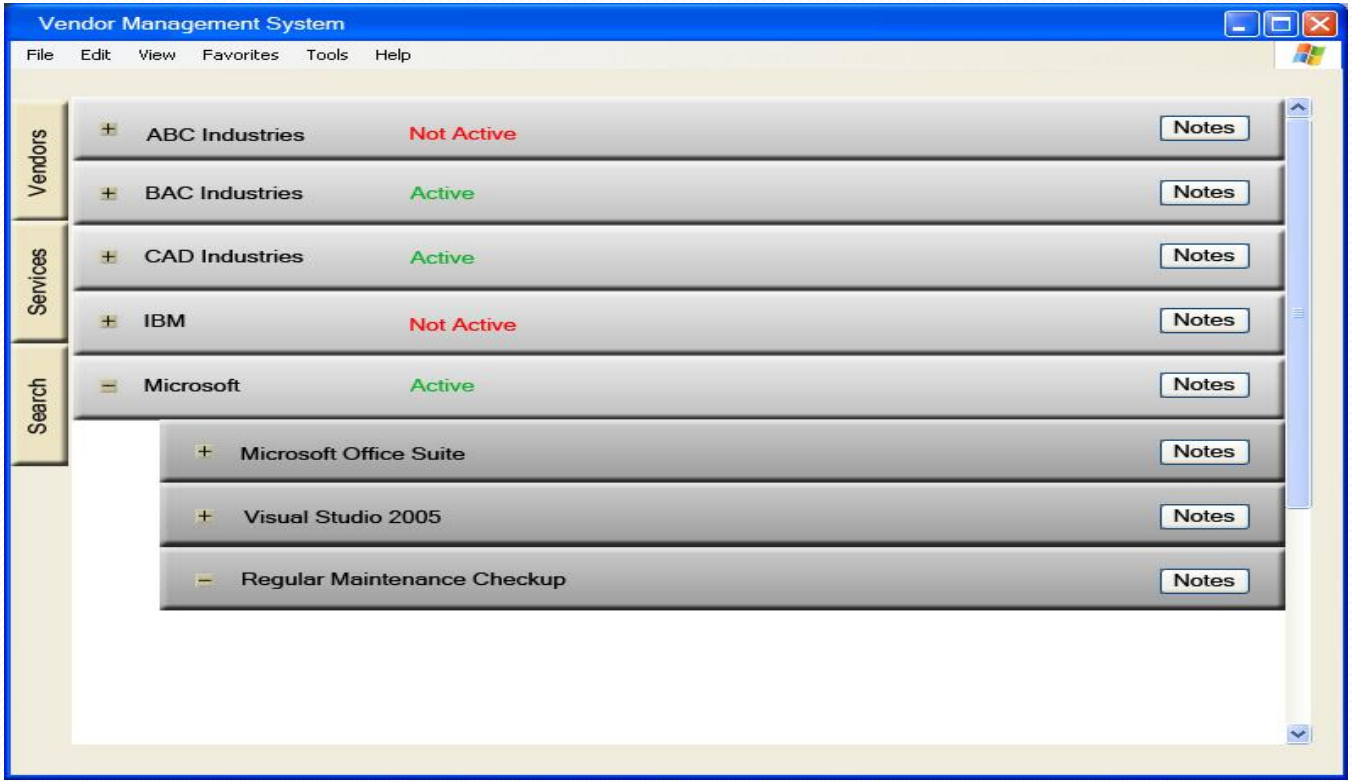
Team 1 Auto-Owners Insurance

Architecture Illustrated 2/3



Team 1 Auto-Owners Insurance

Architecture Illustrated 3/3



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To Global Sites

Team 2 Ford
Team Picture

Team 2 Ford

Project Overview

Ford Safety Index: Automotive Warning System

- Enable Driver to Avoid/Prepare For “Travel Troubles” by Leveraging In Vehicle Internet Connectivity
- Monitor Alerts Of Vehicle Safety Features
  - Traction Control
  - Roll Stability
  - Air Bag Deployment
  - Excessive Braking
  - Etc.
- Match Alert Patterns to Internet Information
  - Bad Weather
  - Traffic
  - Accidents
  - Etc.
- Possible Scenarios
  - Issue Patterns
  - Central Driver Alert Service
  - Visual Mapping
  - Notify Authorities
  - Instrument Panel Simulation

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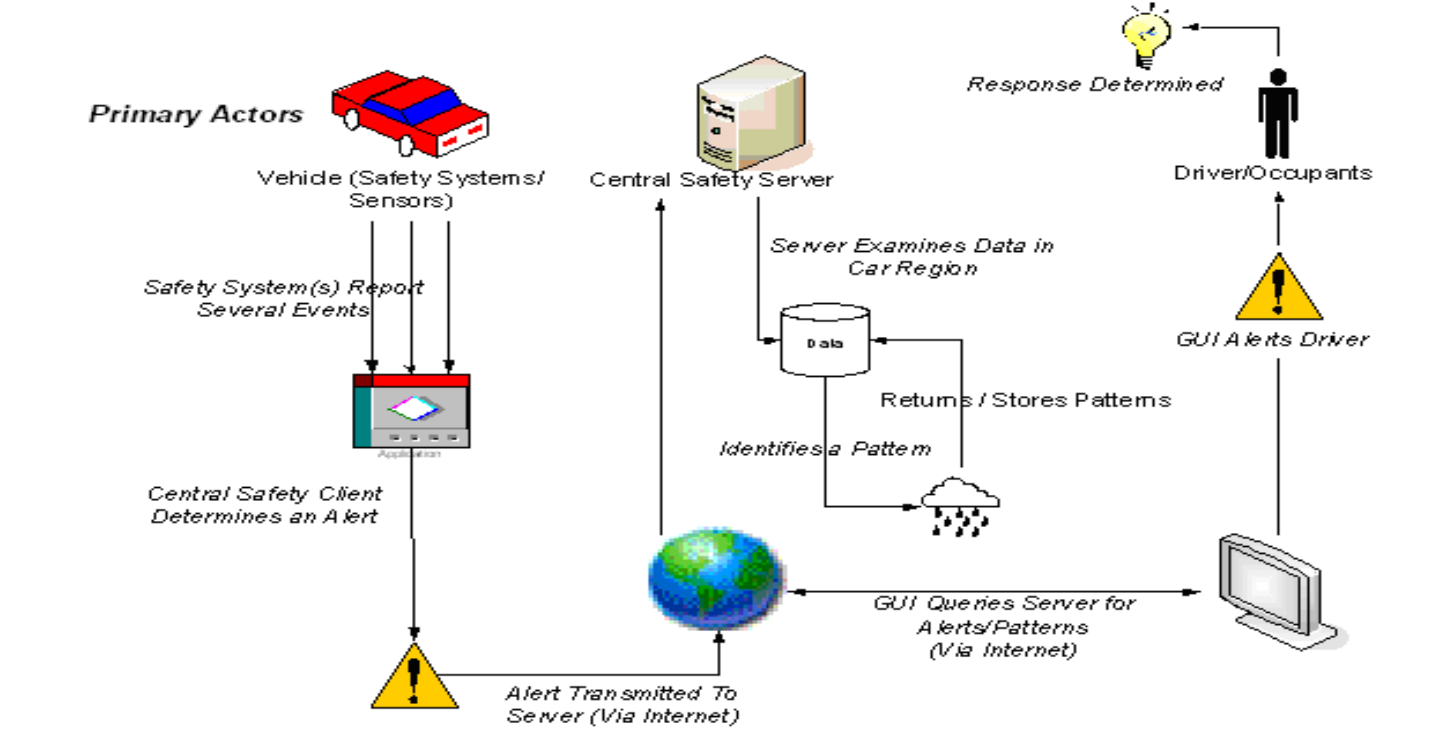
Team 2 Ford

Architecture Illustrated



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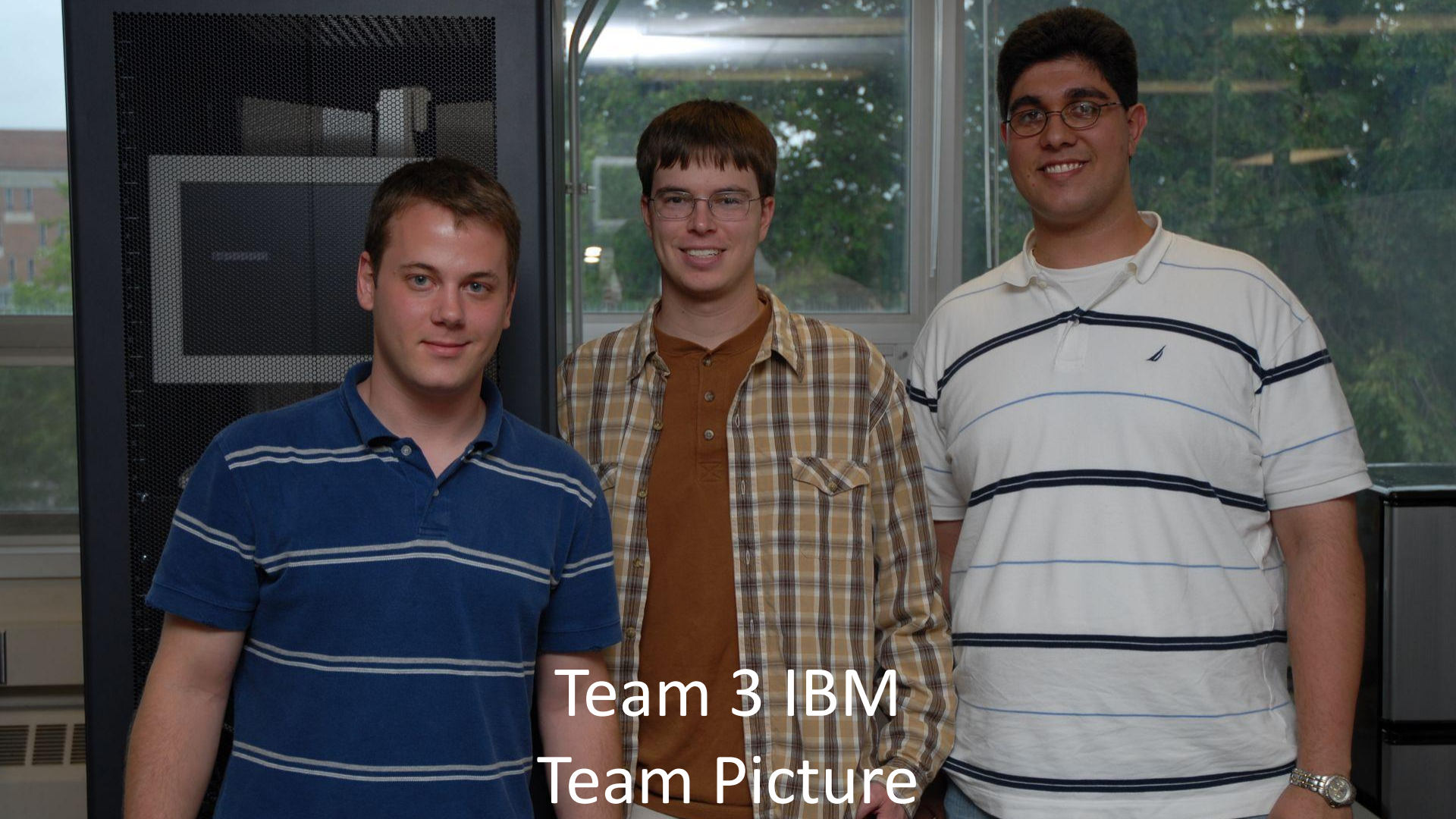
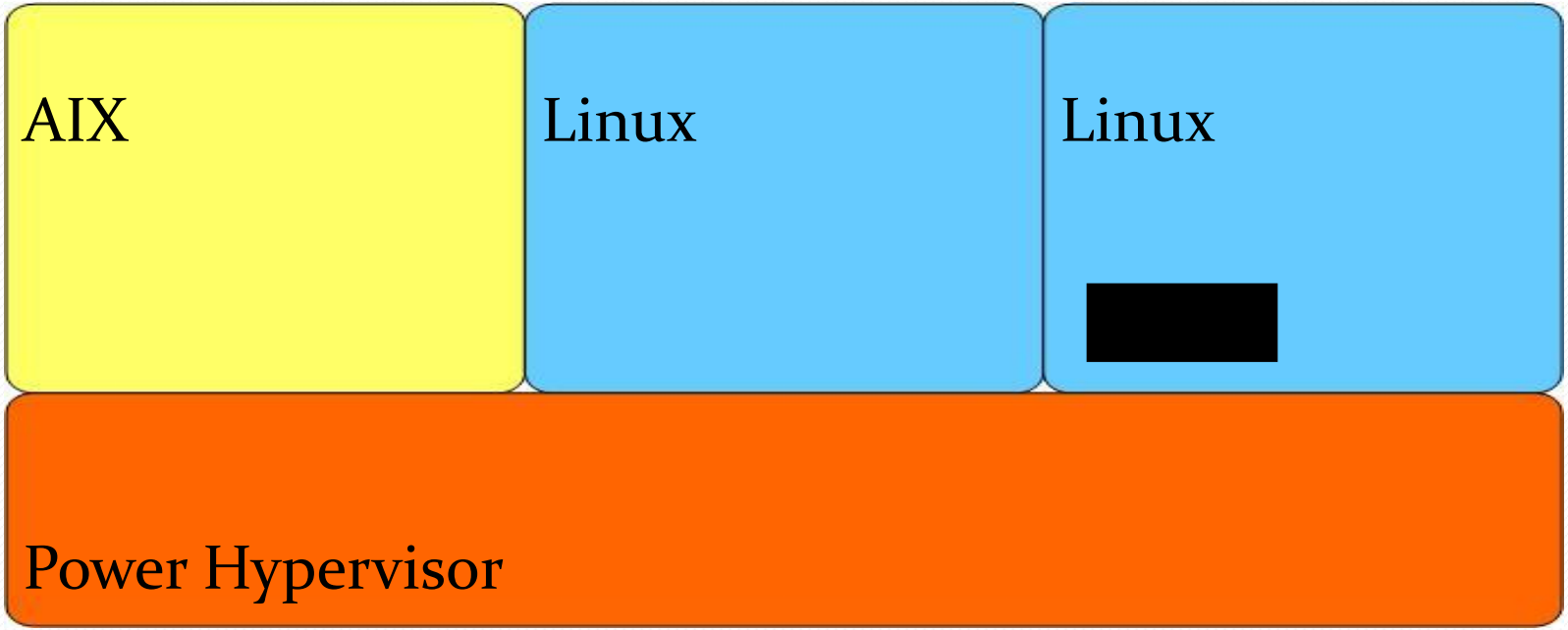

Team 3 IBM
Team Picture

Project Overview

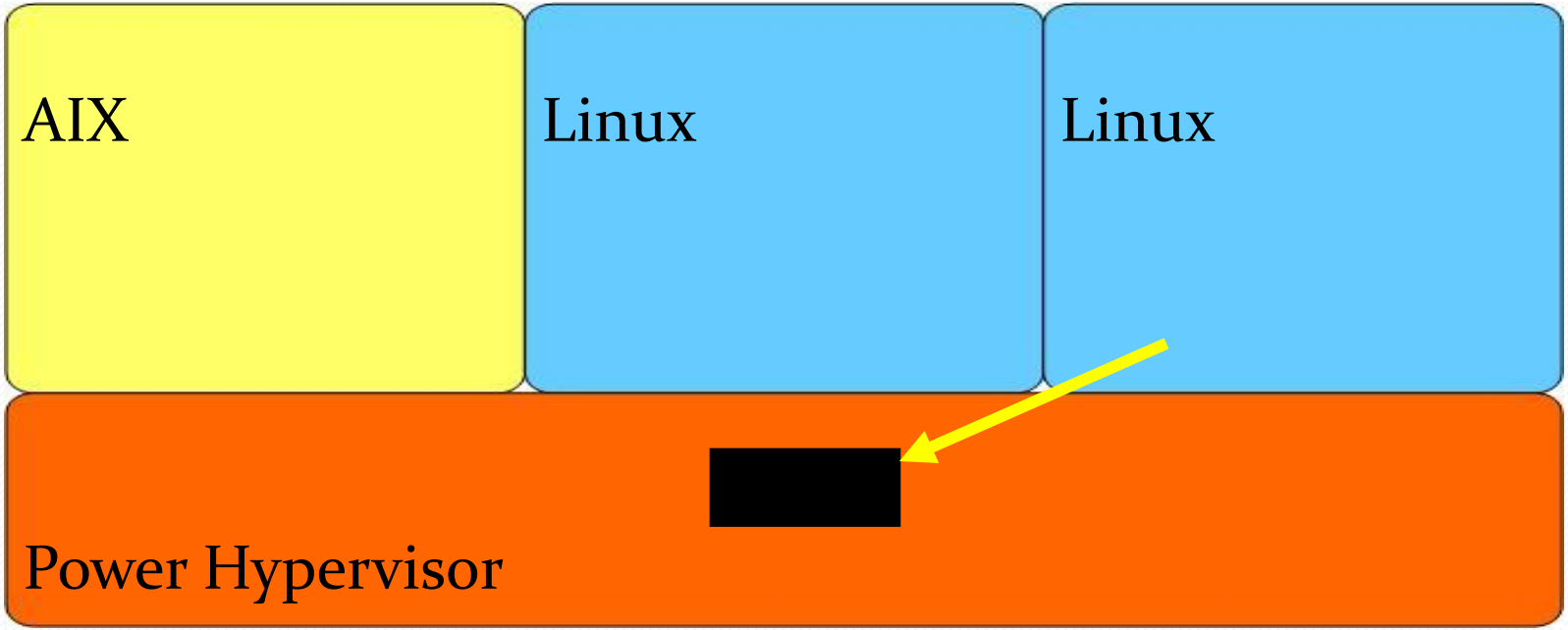
Enable Linux for Processor Folding

- Processor Partitioning
  - Partition Physical Processors into Logical Processor
  - Includes Dedicated Processors and Shared Processors
- Dedicated Processor Sharing
  - Intended to Make Use of Idle Dedicated Processors
  - Idle Dedicated Processor “Donated” to Shared Processor Pool (SPP)
  - Enabled by Turning on Flag in the Virtual Processor Area
- Processor Folding
  - Intended to Maximize Dedicated Processor Donation
  - Physical Processor Must Be Idle Before Logical Processors Donated
  - Pack Work Onto Minimal Number of Physical Processors
  - Must Tweak Kernel Dispatching Policies
- Requires
  - Linux Kernel “Hacking”
  - Running on IBM Multi-Processor Hardware

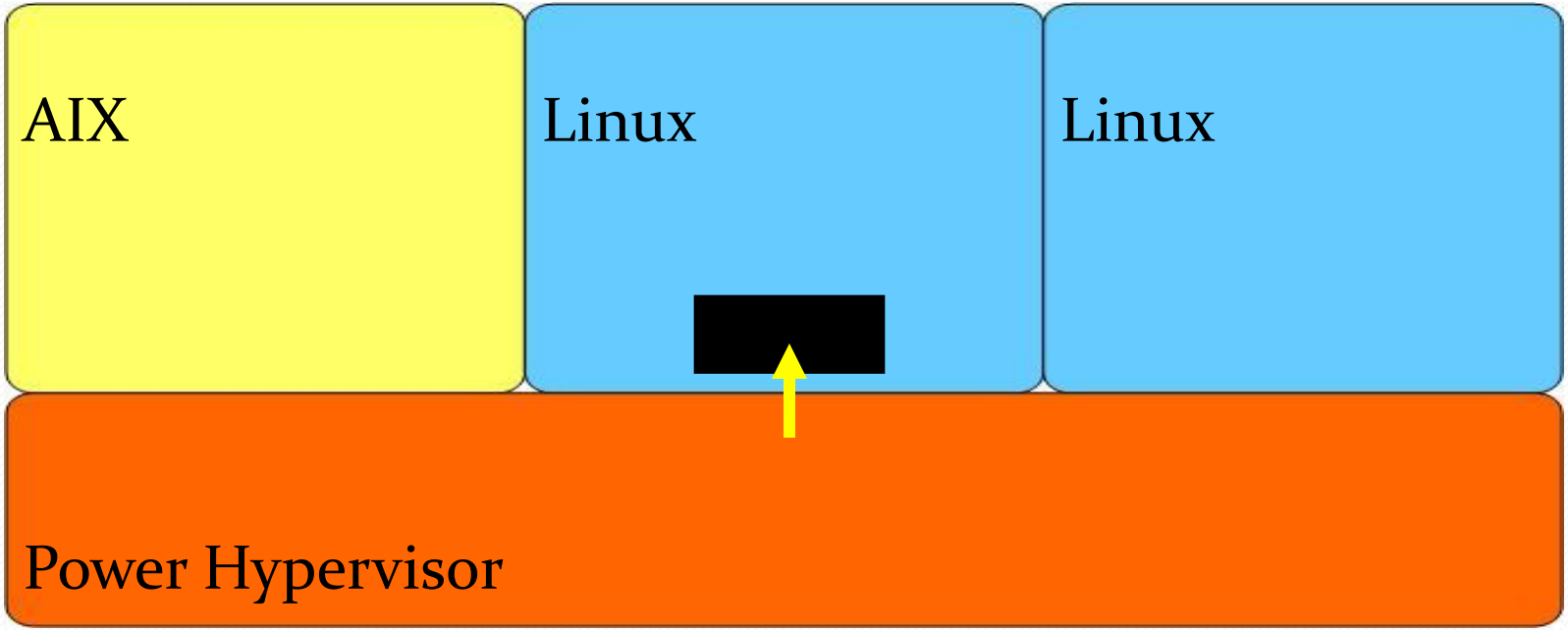
Processor Folding Illustrated



Processor Folding Illustrated

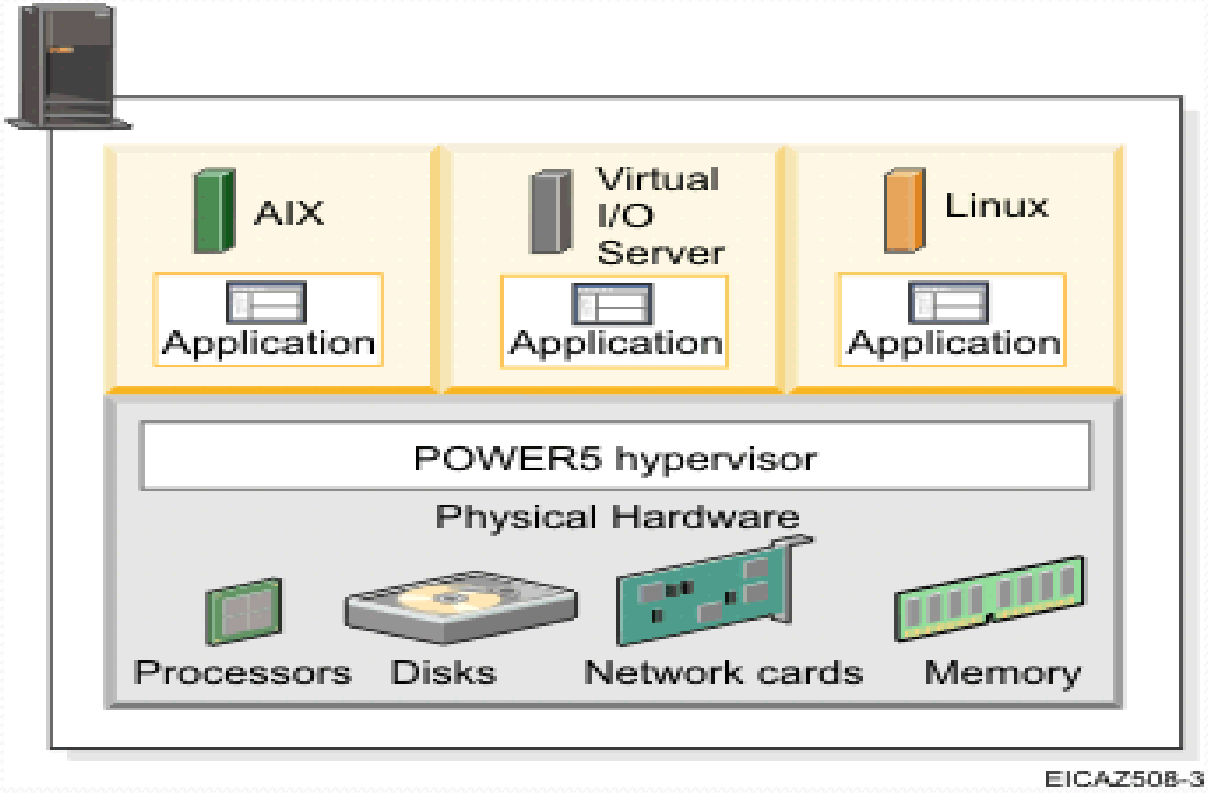


Processor Folding Illustrated



Team 3 IBM

Architecture Illustrated



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LATEST NEWS: Motorola Executives to Present to the Investment Community

More News

CONSUMER

Team 4 Motorola
Team Picture

Team 4 Motorola

Project Overview

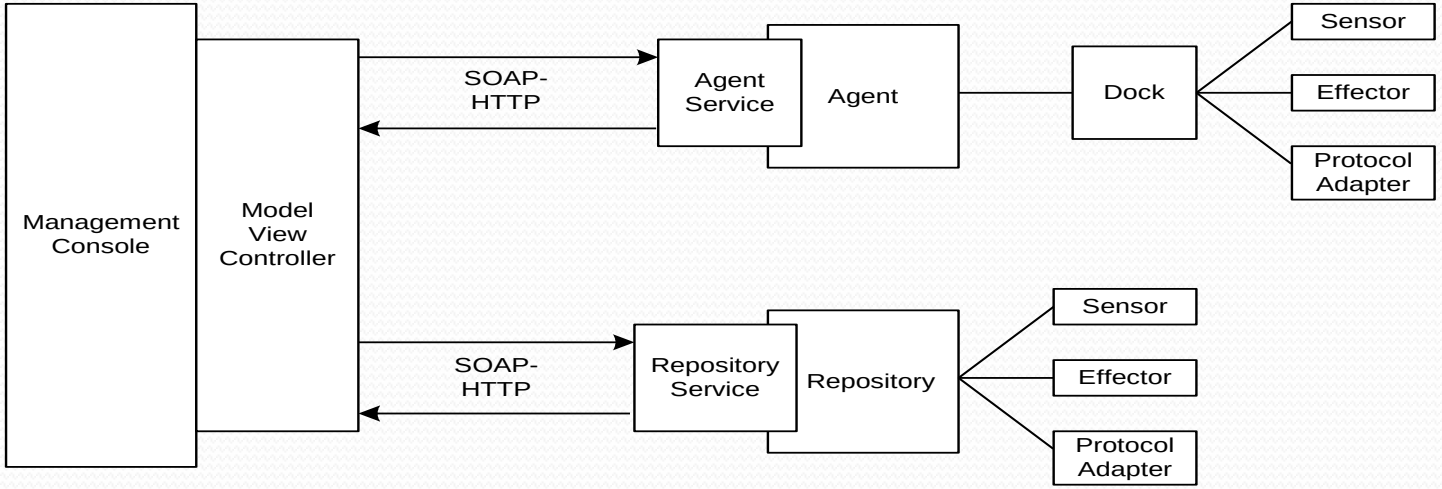
AJAX Based Management Console for the Agent Framework

- Remote Management of Entities
  - Complex, Heterogeneous
  - Routers, Switches, Etc.
- Agent Framework (Existing)
  - Agents Do Remote Management
  - Framework for Rapid Development of Agents
- Management Console (Proposed)
  - Interacts with Components Generated by the Framework
  - Manage Components
    - Query
    - Configure
    - Deploy
  - Graphical Interface via Web Browser

The CSE Senior Capstone Experience

Team 4 Motorola

Architecture Illustrated



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8/30/07

Sircon Corporation Marks 20-Millionth Transaction

8/21/07

Virginia Selects Sircon Corporation to Help Streamline Insurance Licensing and Regulatory Management

8/13/07

First Standardized Producer Appointment Forms Released By ACORD

View the recent web seminar on Anti-Money Laundering regulations

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What's New...

Sircon Ranks Highly in

Producer Services

Individual producers or licensing administrators can quickly and securely apply, renew and more using our online services.

Select a service from the menu.

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- Check license application status
- Request a letter of certification
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- Find your license number/NPN
- Check your status with a state
- Maintain your firm association
- Update email address with a state

State Information Center

Select a state from the dropdown menu to find **state online services, department contacts, Web site addresses**, and other helpful information.

Important Notices

- 2007 Minnesota Producer License Renewals
- Idaho Insurance Licensing Services
- Louisiana Licensing System Conversion Update

Team 5 Sircon
Team Picture

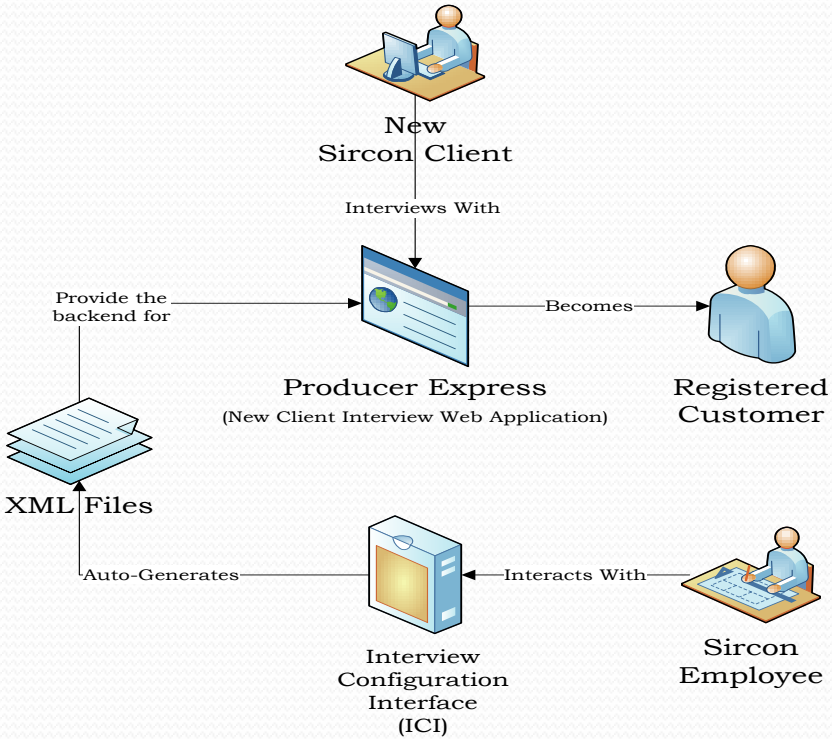
Project Overview

GUI Configuration Tool for Dynamic Interview

- Dynamic Interview
  - Interview in Which Subsequent Questions Depend on Answers
  - Similar to TurboTax
  - Currently Programmed “By Hand”
    - Time Consuming and Error Prone
    - Must Be Done by a Programmer
- Graphical Tool
  - Allows User to
    - Enter Questions with Answer Choices
    - Represent Question Dependencies
  - Generates XML Code Auto-Magically
  - Useable by Interview Designers (Rather Than Just Programmers)
- Technologies
  - Java
  - XML
  - Swing

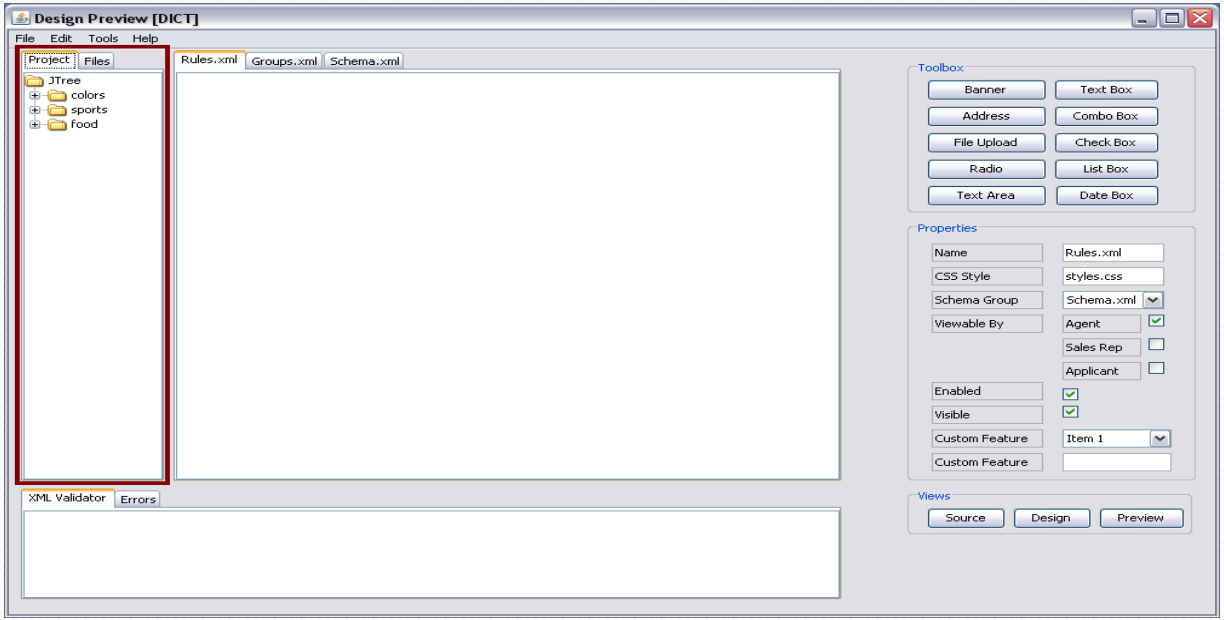
Team 5 Sircon

Project Overview



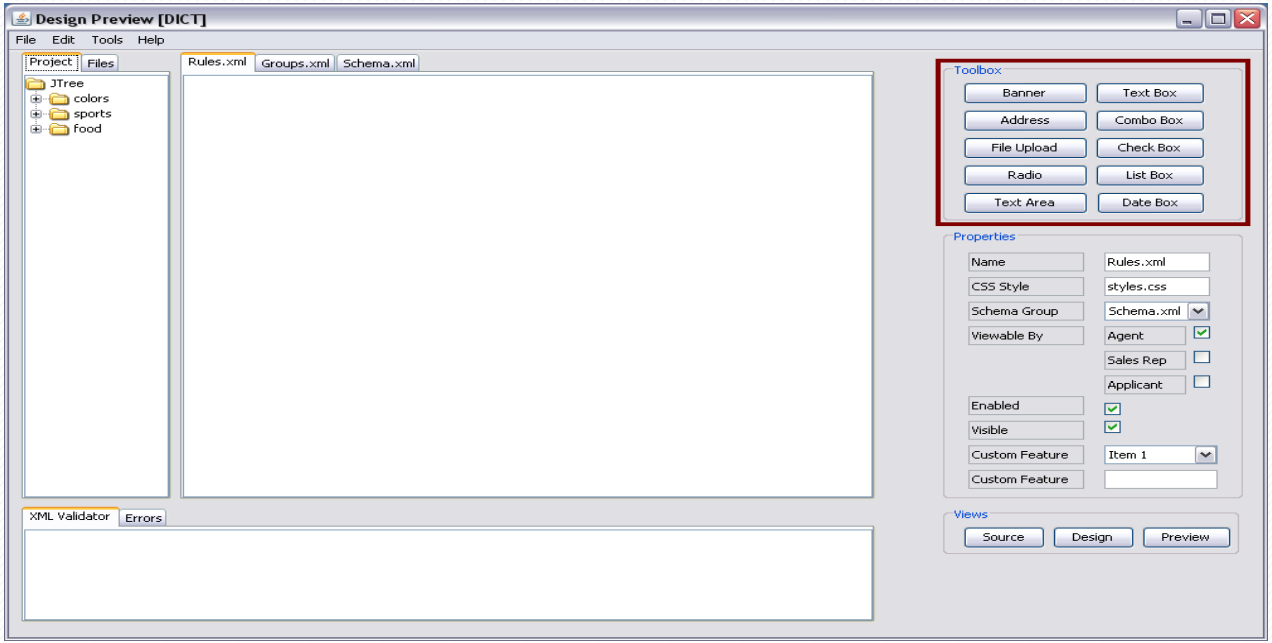
Functional Specifications

- File browser will allow the user to navigate through system directory, as well as project directory



Functional Specifications

- Toolbox window containing the elements
- Elements are derived from the given schema



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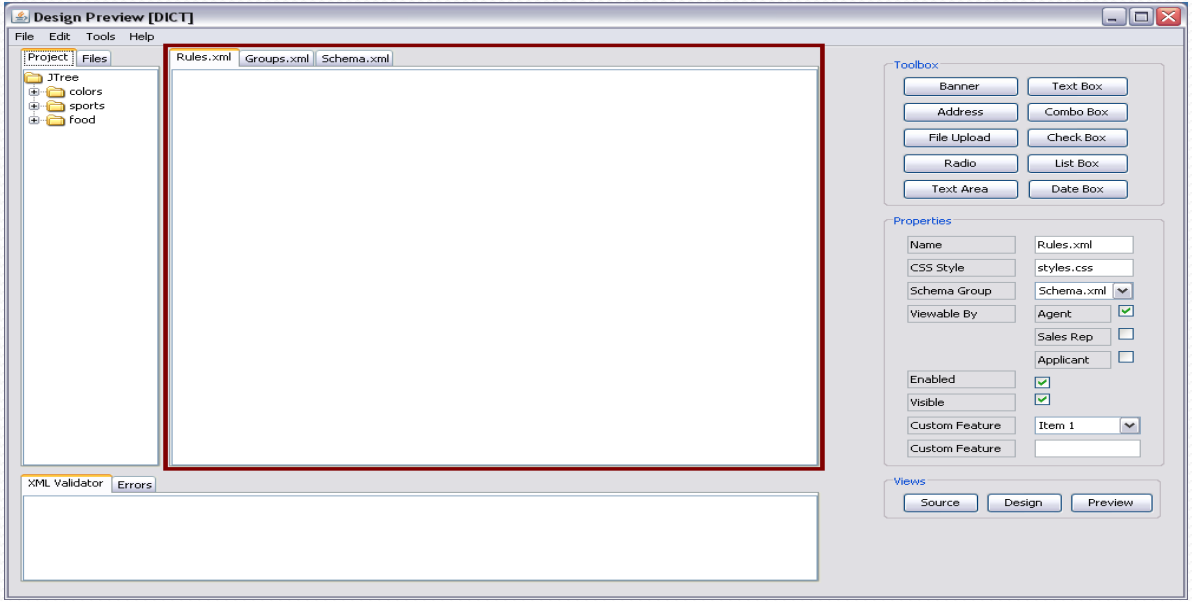
Functional Specifications

- Provide drag-and-drop functionality to re-organize form elements.
- Central panel for spatial layout of elements



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Team 6 TechSmith
Team Picture

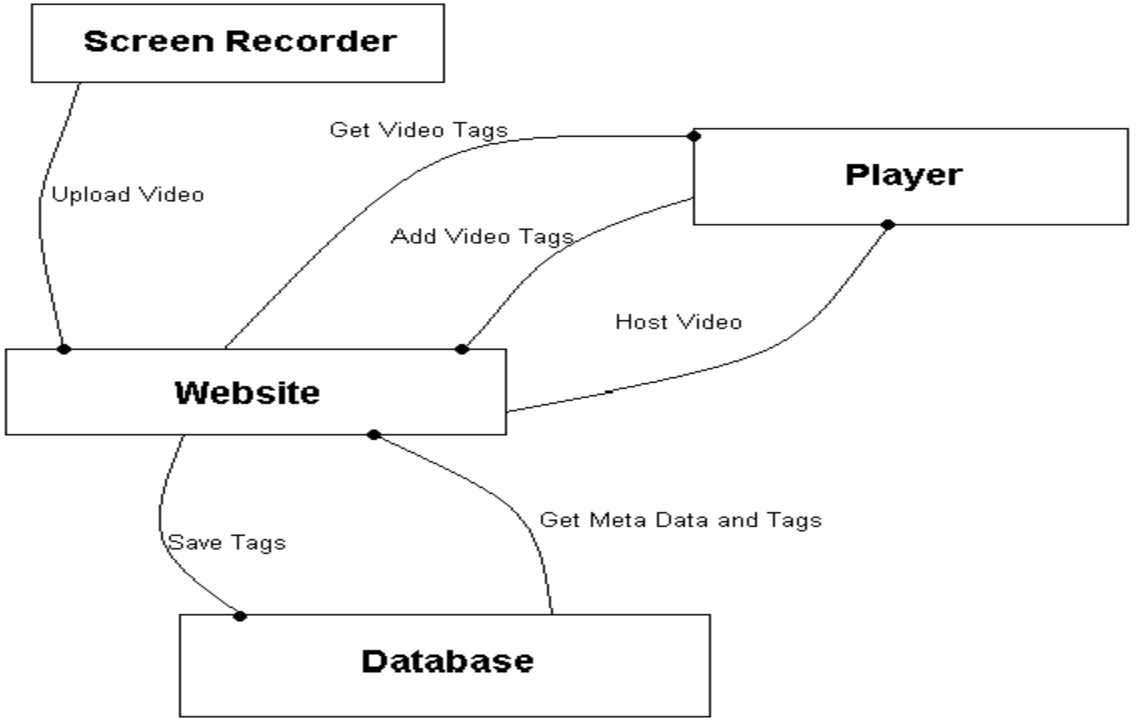
Project Overview

Rich Media Collaboration

- Rich Interaction and Conversation About Audio and Video Clips
  - More Than Playback, Text Commenting and Social Network Tagging
  - Like motionbox.com, veotag.com, or viddler.com
- Solution Based on Microsoft's Silverlight Technology
  - Screen Recording Tool
  - Content Hosting and Delivery Server
  - Silverlight Application and Web Site
    - For Both Content Author and Content Audience
    - Provide Rich Collaboration
- Requirements
  - Windows and Mac OS X Support
  - Browsers that Support Silverlight v1.1
- Technologies
  - C++ or C#/.NET or Both
  - TechSmith Screen Recorder SDK
  - Microsoft Silverlight v1.1
  - XAML, ASP.NET, HTML, CSS, Javascript, AJAX, Etc…
  - Microsoft Windows Presentation Foundation
  - Microsoft Windows Media Format SDK
  - Microsoft IIS

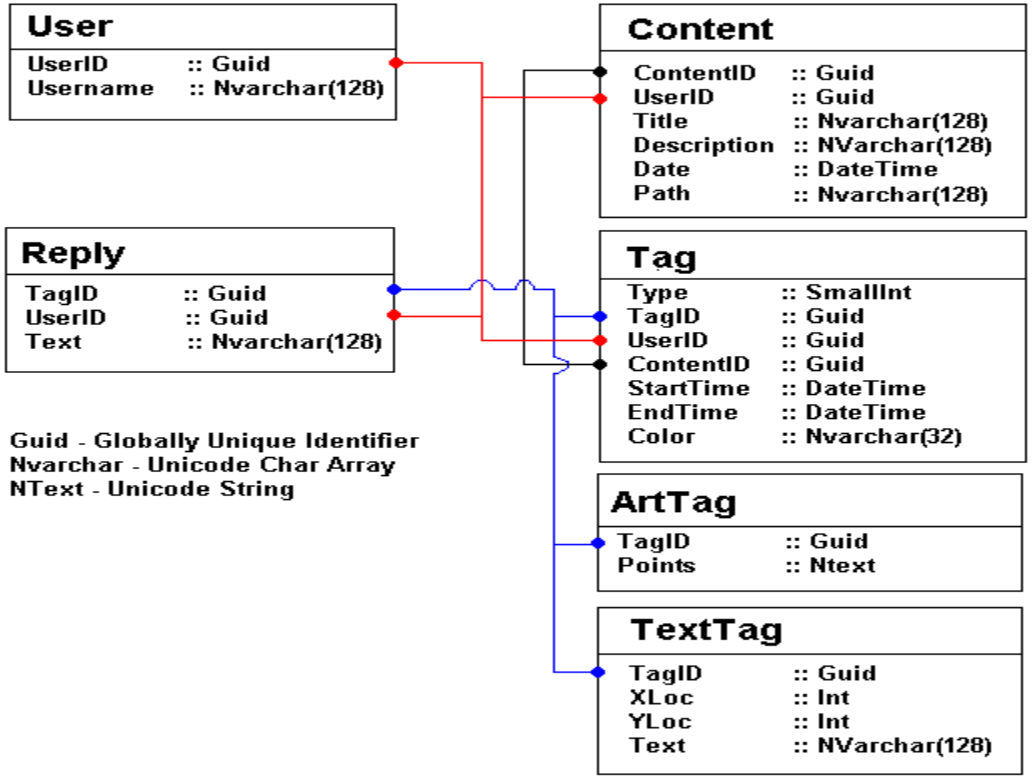
Team 6 TechSmith

Interaction



Team 6 TechSmith

Database



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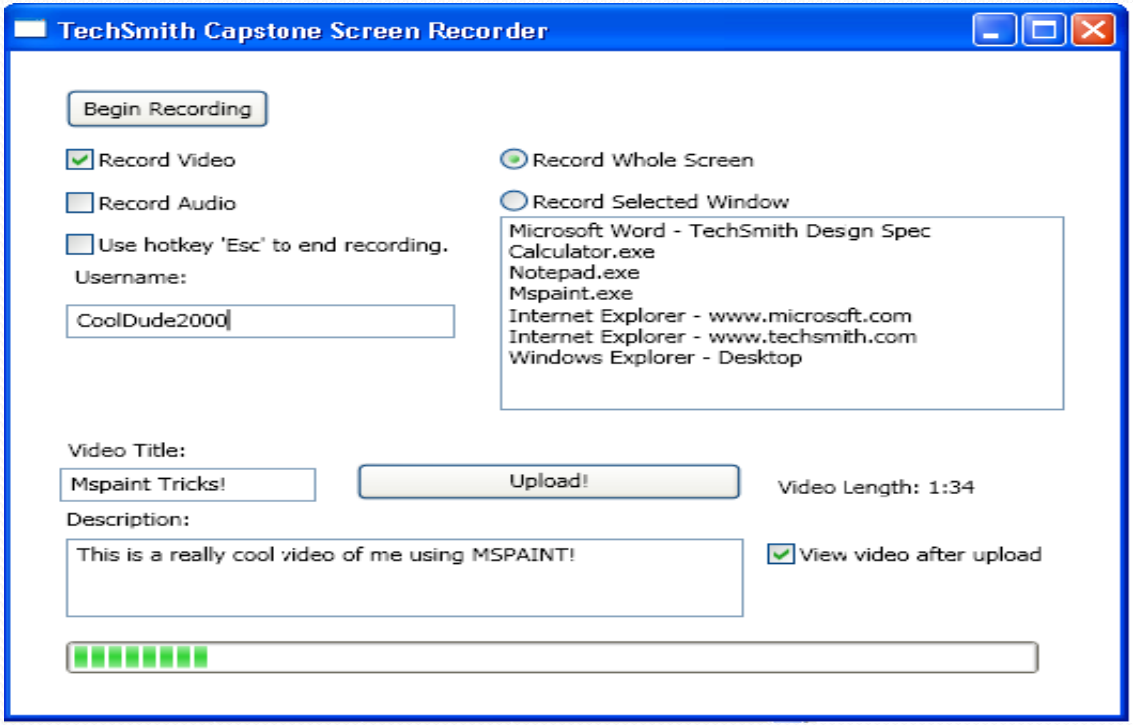
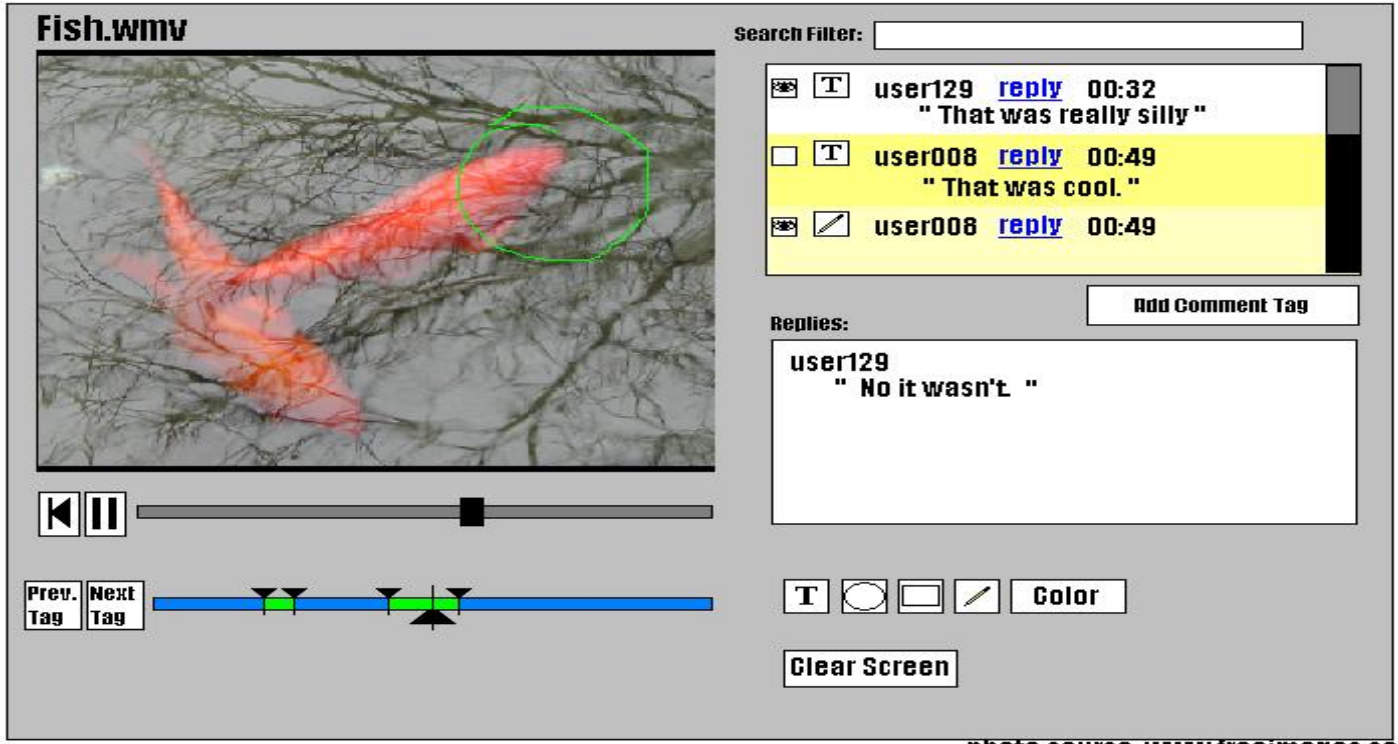
Recorder Mockup



Player Mockup



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Virginia Selects Sircon Corporation to Help Streamline Insurance Licensing and Regulatory Management

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- Find your license number/NPN
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- Maintain your firm association
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Team 1 Auto-Owners Insurance Status Report

Team 1 Auto-Owners Insurance Status Report

Team 1 Auto-Owners Insurance Weekly Triage Meeting with Matt

Team 1 Auto-Owners Insurance Technical Specifications Presentation

Team 1 Auto-Owners Insurance Technical Specifications Presentation

Team 1 Auto-Owners Insurance Technical Specifications Presentation

Team 1 Auto-Owners Insurance
Alpha Demo Presentation

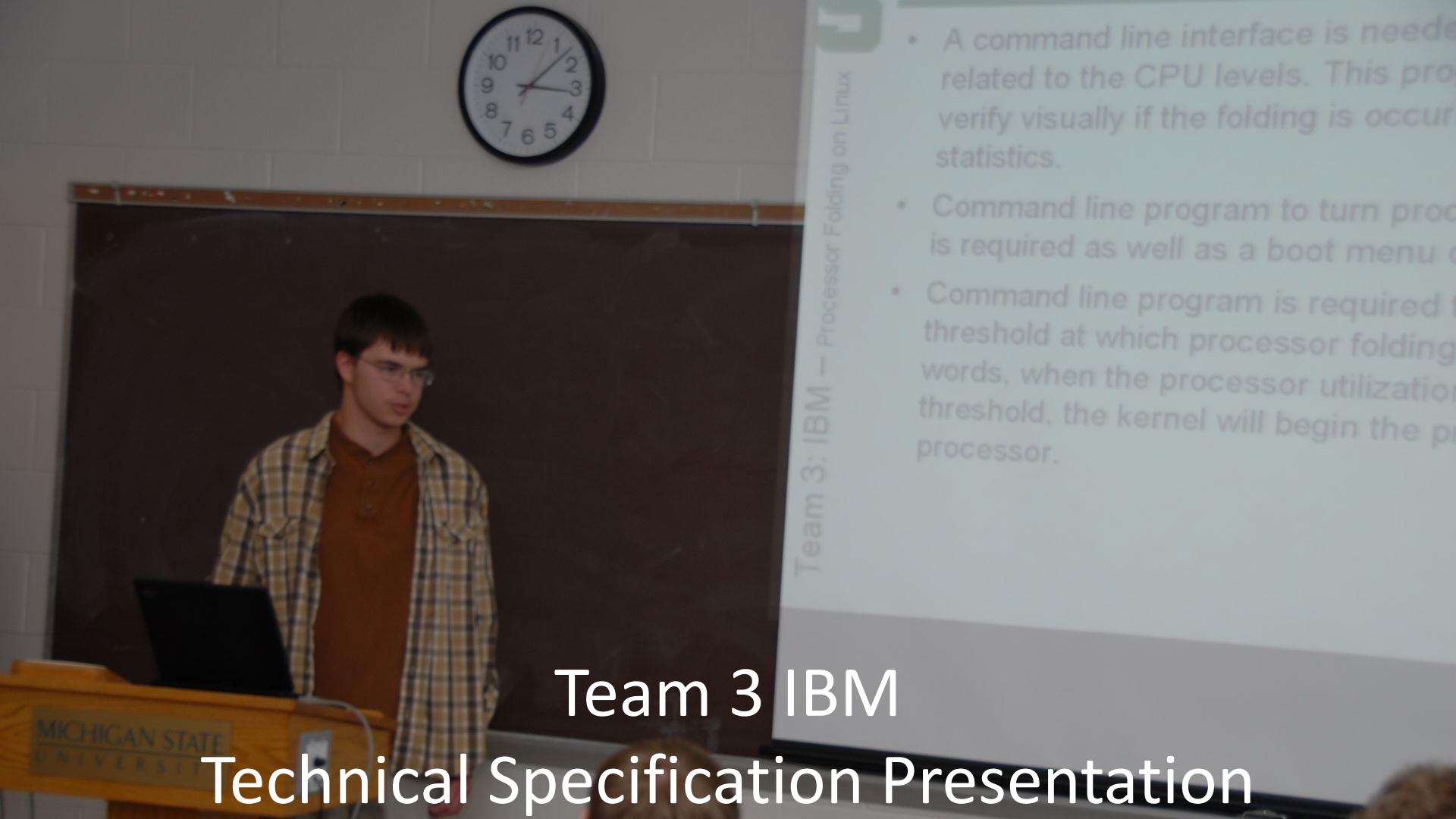
Team 1 Auto-Owners Insurance Alpha Demo Presentation

Team 2 Ford
Status Report

Team 2 Ford
Technical Specification Presentation

Team 3 IBM
Status Report

Team 3 IBM
Technical Specifications Presentation



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Technical Specification Presentation

Team 4 Motorola Status Report

Team 4 Motorola
Technical Specifications Presentation

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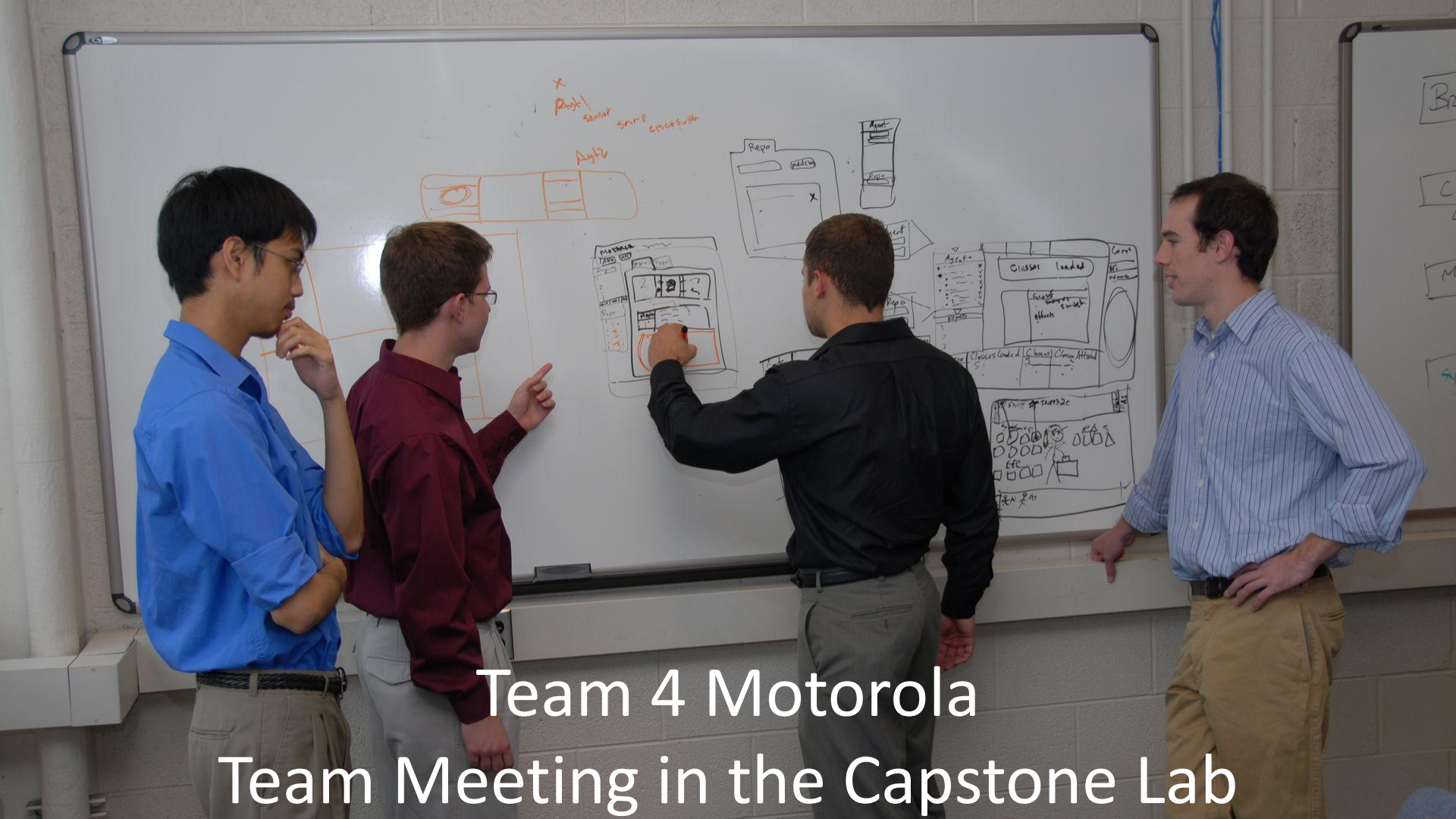
Technical Specifications Presentation

Team 4 Motorola
Technical Specifications Presentation

Team 4 Motorola
Alpha Demo Presentation

Team 4 Motorola
Conference Call with Kabe



Team 4 Motorola
Team Meeting in the Capstone Lab

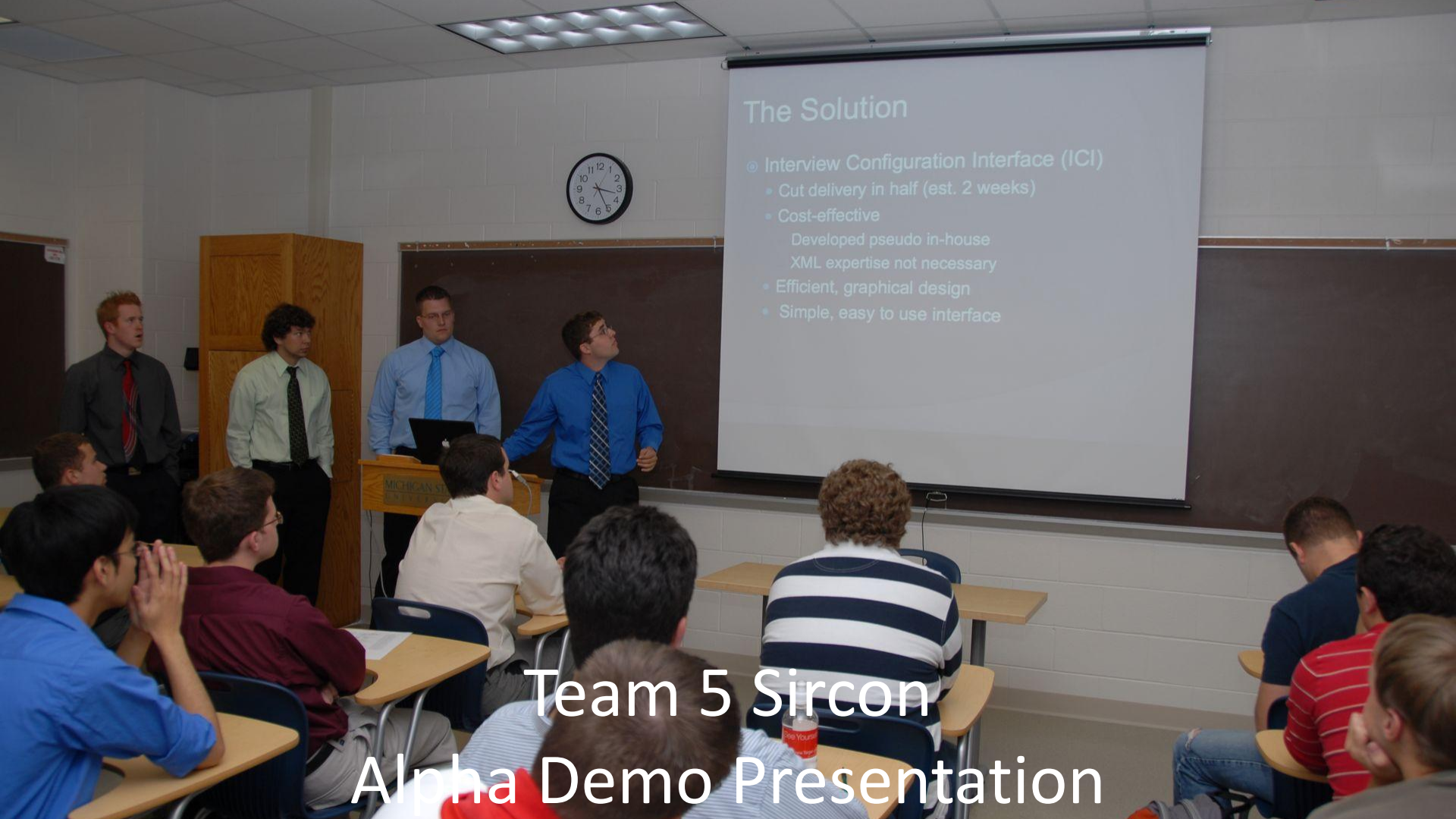
Team 5 Sircon Status Report

Team 5 Sircon
Technical Specification Presentation

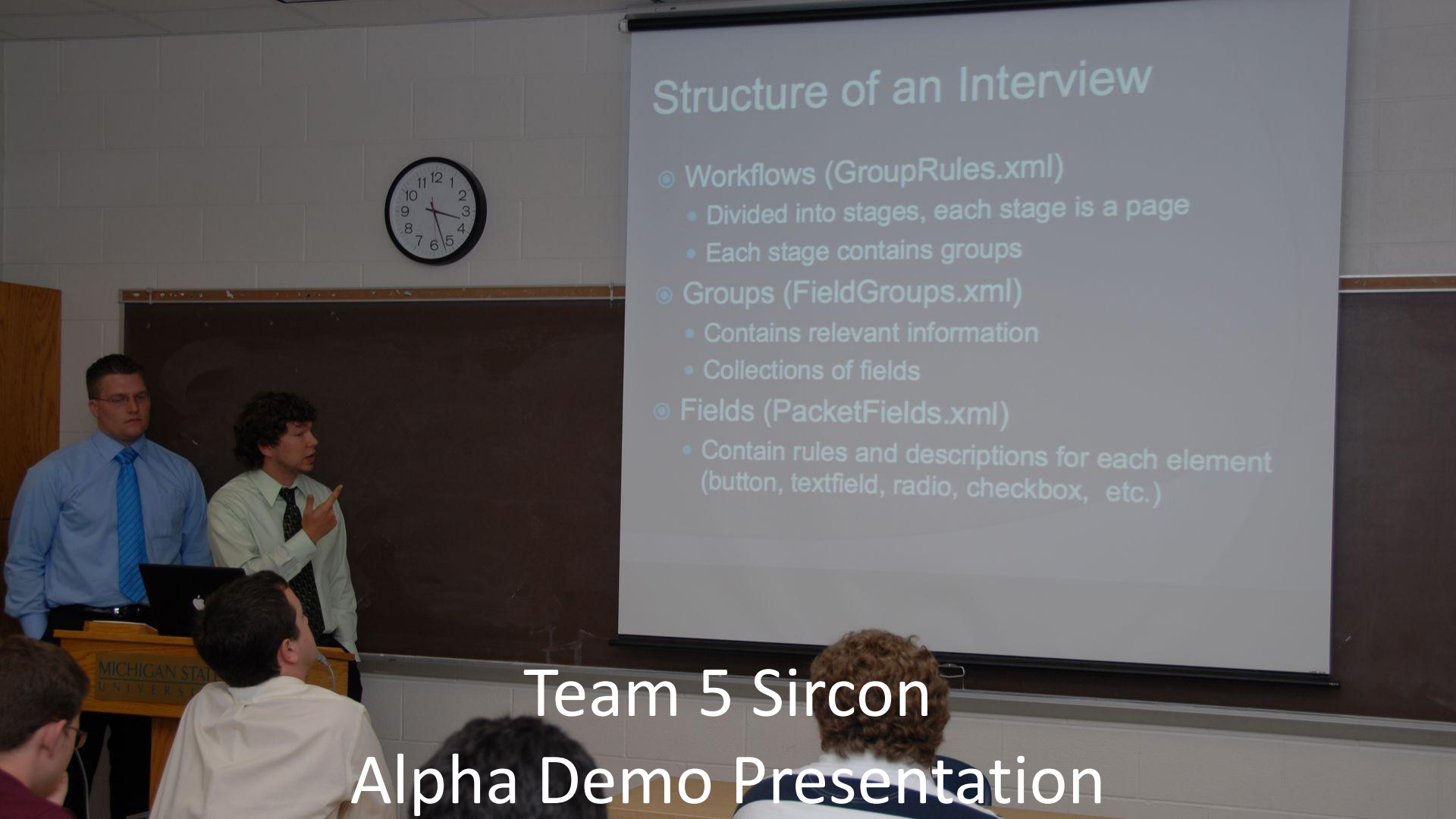
Team 5 Sircon
Technical Specification Presentation

Team 5 Sircon
Technical Specification Presentation

Team 5 Sircon
Technical Specification Presentation



Team 5 Sircon
Alpha Demo Presentation



Team 5 Sircon
Alpha Demo Presentation

Team 5 Sircon
Working in the Capstone Lab

Team 6 TechSmith Status Report

Team 6 TechSmith
Technical Specification Presentation

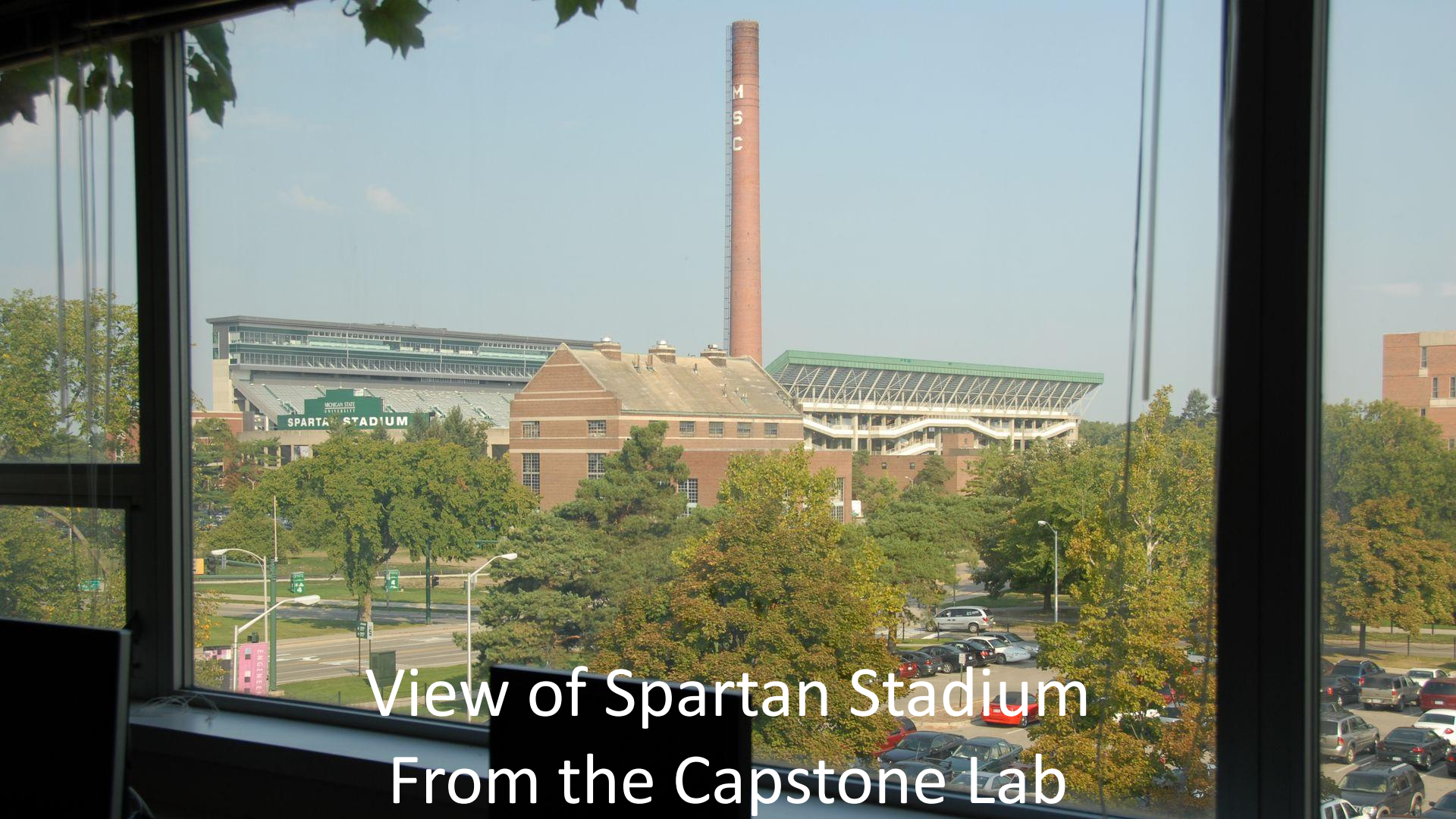
Team 6 TechSmith
Technical Specification Presentation

Team 6 TechSmith
Alpha Demo Presentation

Team 6 TechSmith
Alpha Demo Presentation

Team 6 TechSmith
Alpha Demo Presentation

Team 6 TechSmith
Working in the Capstone Lab



View of Spartan Stadium From the Capstone Lab