DANFOSS AUDITING SYSTEM

May15-02

Responsibilities

- Jamie Countryman (SE) - Team Lead

- Zach Carlson (SE) - Web Master, Key Concept Holder

- Mitch Valenta (CPRE) - Communications

Problem

- Auditing done on paper

- Time-consuming and prone to failure

- Incomplete audits

Solution

- Create a web app

- Simplifies and centralizes the auditing process

- More powerful and accessible

Specifications

- ASP .NET 4.0

- Windows Server

- Microsoft SQL

- Internet Explorer and mobile Safari

What Changed?

- ASP .NET 4.0 MVC

- Active Directory authorization

- Deletion of audits

- Camera functionality

Current Design

- ## MVC design changed to Web Forms

  Pro: Most Danfoss solutions use this

  Con: Unfamiliar technology

- ## Windows Communication Foundation (WCF) added

  Pro: Consolidates business logic (ex. GetAllAudits())

  Con: Restructuring implementation

Current Design

- Disable audits / questions instead of deleting

  Pro: Statistics information still held for viewing

  Con: Database may fill with lots of data

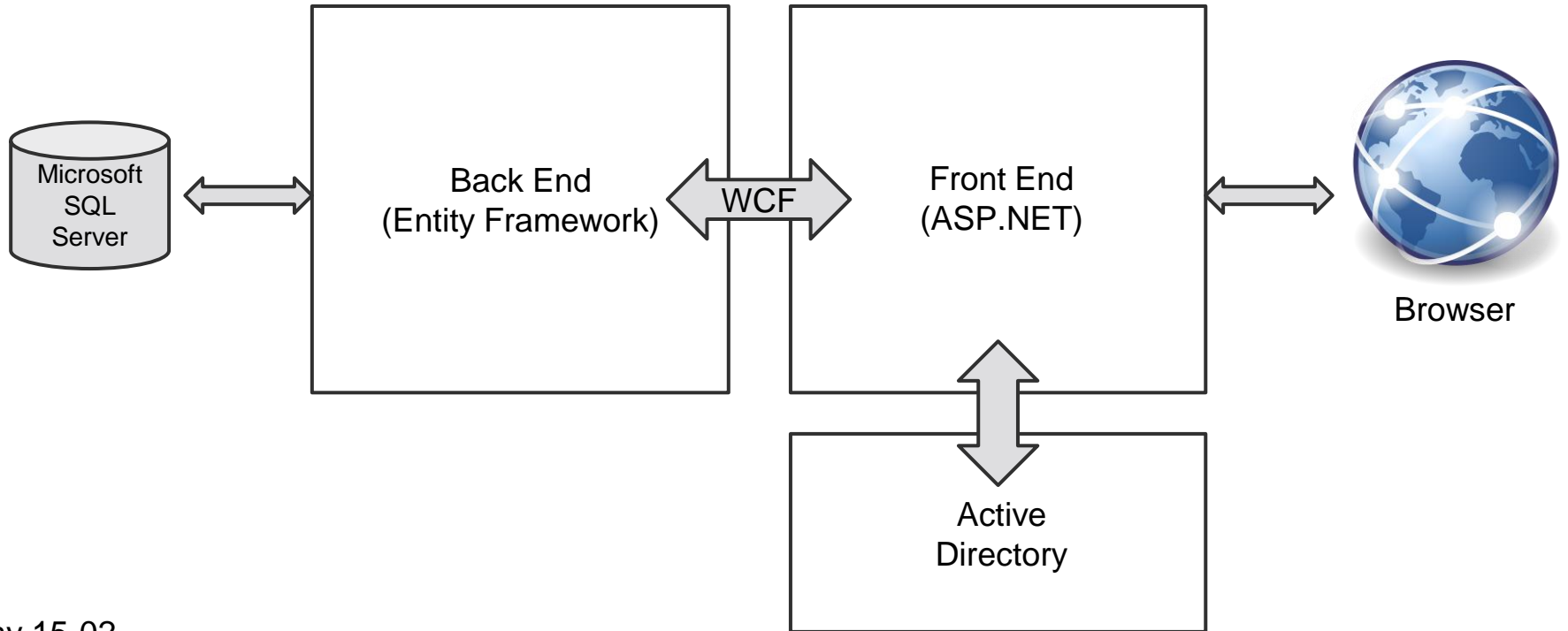- User roles handled in-app instead of with Active Directory

  Pro: Faster than Active Directory (much less red tape)
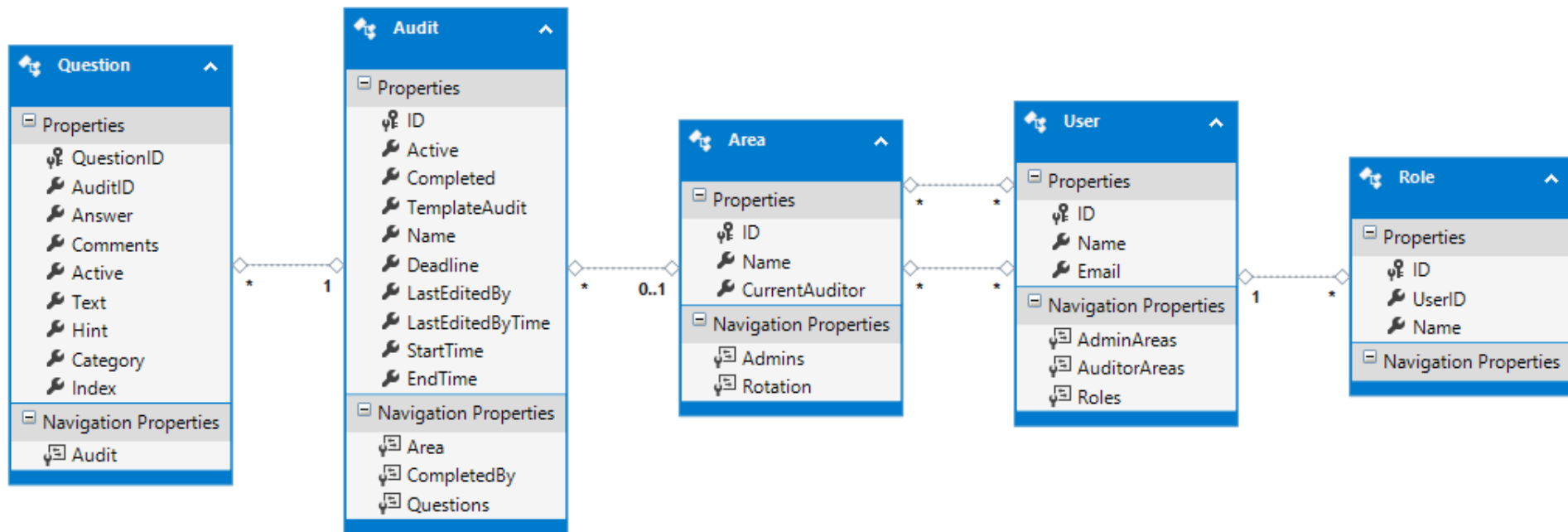
  Con: Had to roll our own authorization system

Current Design

Danfoss Auditing System

Current Design

Design Process

- Danfoss design principles
  - User roles in app

- Danfoss suggestions based on previous senior design projects
  - Design focuses—ASP.NET over Javascript

- Feedback from potential users
  - In-person meetings

Trello

Audit mapping

Example Auditor Use Case

- User logs in
  - List of available audits is presented

- User selects an audit to complete

- User answers each question in the audit with "yes" or "no"

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Example Administrator Use Case

- Administrator logs in and selects the "Administration" tab

- Administrator clicks the "New audit from template" button

- Administrator modifies template questions and clicks "Done"

- Administrator assigns auditors to the new audit

Disabling an audit

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Adding and removing administrators

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Technical Challenges

- Active Directory login

  - Started with VirtualBox, switched to VMware

  - Setting up DNS and BIND

  - Difficult to pinpoint issues

Technical Challenges

- Testing on remote devices

  - Configuring IIS Express for our system was tricky

  - Involved opening ports for Windows Firewall

Technical Challenges

- WCF
  - Retrofitting WCF required rearranging business logic

  - Added extra layers of complexity

  - Rewriting previously used statements

Considerations

- Wifi disconnected on shop floor
  - System will operate after connection established

- Javascript injection
  - Sanitize user input

Test Plan

- ## Operational profile testing
  - ### Ensuring typical use cases work correctly

- ## Integration testing
  - ### Ensure everything being committed works
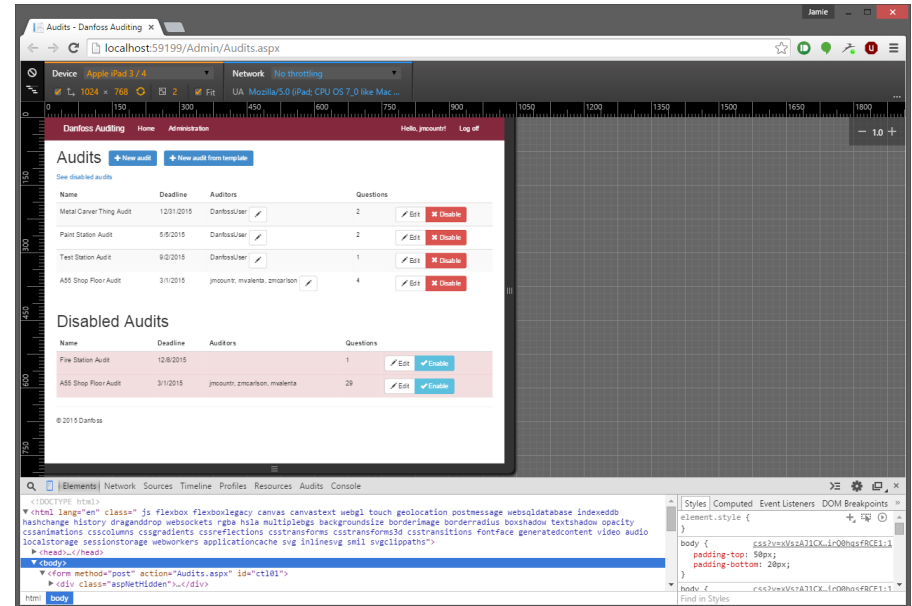
Test Plan

- Client feedback
  - Regular feedback on the system from Danfoss
  - Beta test

- Regression testing
  - Ensure nothing is broken by a commit

QUESTIONS

Budget

Resource	Source	Estimated Cost
Visual Studio with Microsoft SQL Server	Provided by ISU through Dreamspark	$0
StyleCop	Open Source	$0
Development web server	IIS Express via Visual Studio	$0
Windows server 2012	Provided by ISU through Dreamspark	$0

Development Schedule

Task	Completed
Admin / Home page content	Dec. 8
Active Directory Login	Feb. 15
Dynamic Audit Questions	Feb. 23
Audit Creation	Mar. 4
WCF integration	Mar. 12
Role-based Authorization	Mar. 16
Auditor assign to audit	Mar. 28
Audit answers save and results	Apr. 21
Area functionality	Apr. 22