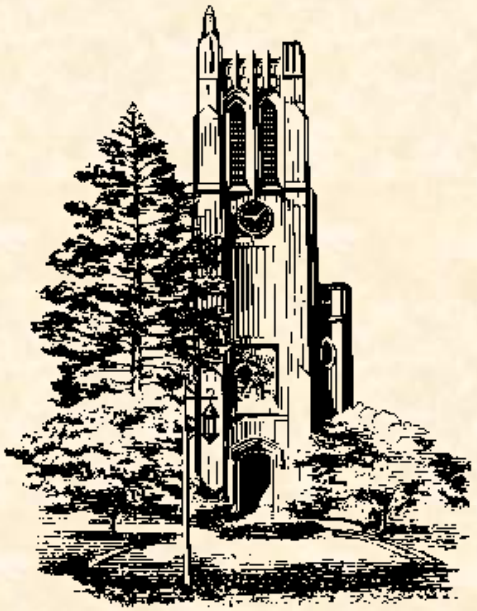
MICHIGAN STATE UNIVERSITY

Technical Specification / Schedule

DaimlerChrysler Transport Management System DCTMS

GPS Processing System



Team 4: DaimlerChrysler

CSE 498, Collaborative Design

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Project Overview

- Develop system (DCTMS) for driver and truck monitoring utilizing GPS & Cellular networks on BlackBerry devices
- DCTMS will replace legacy system that is expensive and no longer supported
- DCTMS will reduce costs by 60% and improve tracking interval from 15 minutes to 5, allowing more detailed reporting

Team 4: DaimlerChrysler

Project Overview

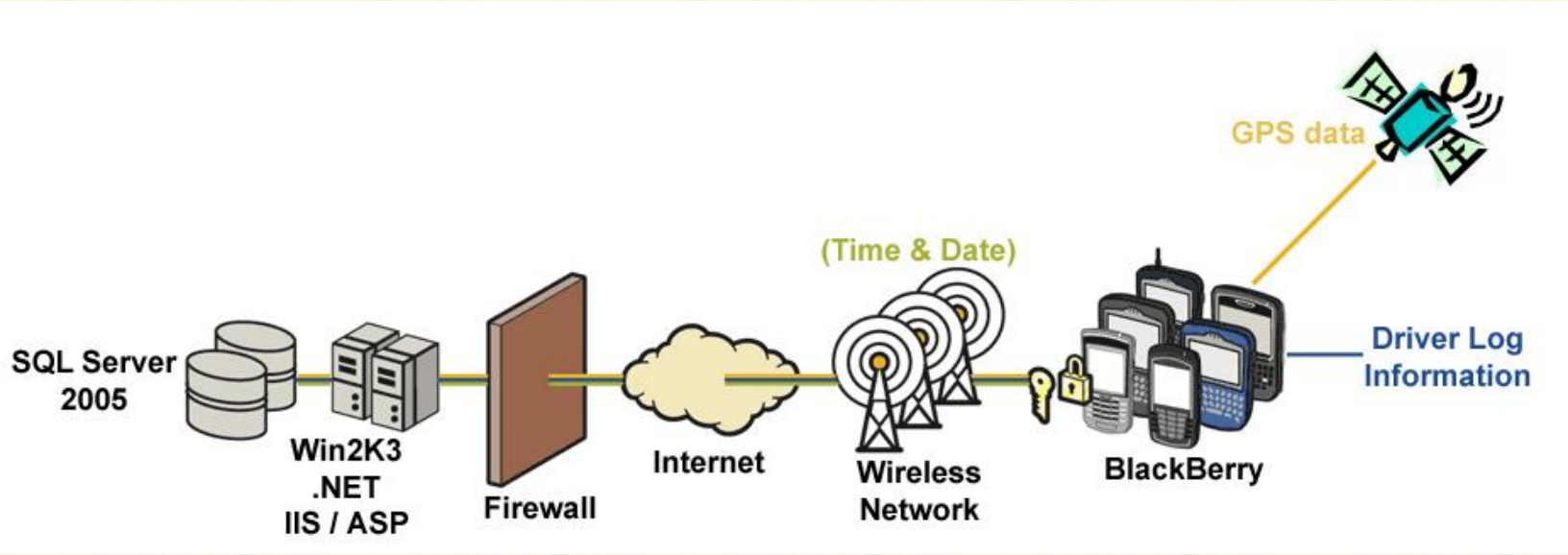
- The objective of this project is to process GPS data received by BlackBerry (BB) devices in order to track and improve driver performance

- Data to be captured and processed follows:
  - DaimlerChrysler Transport (DCTI) Requirements
    - Driver speed and accountability
    - Fuel Tax Credits (miles driven in each state)
  - Department of Transportation (DoT) Driver Log Requirements

Architecture Components

- Hardware Platforms
  - BlackBerry : B7520 Model with integrated SirfStar III chipset GPS receiver
- Communication Channels
  - GPS satellites
  - Nextel cellular network
  - Internet (HTTP)
- Software Platforms / Technologies
  - BlackBerry Java Development Enterprise (BBJDE)
  - Windows Server 2003
  - SQL Server 2005 to store data from BB
  - IIS/ASP.NET for reporting

Architecture Illustrated



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Architecture Risks

- Acquiring and integrating BB device into our environment; currently relying on emulators
- Adapting to scenarios where communication between BB and GPS/Server is lost
- Defining and recognizing GeoFence boundaries for terminal nodes

Project Schedule

1. Write simple app on the BB
   a) Goal: Determine use of either BBJDE or MDS Studio
   b) Date: Week 1 – COMPLETED
2. Create SQL Database
   a) Goal: Storing DCX and DoT specific schema
   b) Date: Jan 26, 2007 – COMPLETED
3. Create stored procedures and views
   a) Goal: To access data and generate reports
   b) Date: Feb 2, 2007 – PARTIALLY COMPLETED
4. Ping server from BB and vice versa
   a) Goal: Test internet communication channel
   b) Date: Feb 2, 2007 – PARTIALLY COMPLETED

Project Schedule

5. Read GPS data from BB
   a) Goal: Test SirfStar III chipset GPS receiver on BB
   b) Date: Feb 2, 2007
6. Create .NET WebService
   a) Goal: Have BB send data to DB
   b) Date: Feb 10, 2007
7. Statistics generation on server
   a) Goal: Using real GPS data, verify DB functionality
   b) Date: Feb 10, 2007
8. Store backlog of coordinates
   a) Goal: Mitigate lost communication between BB and server
   b) Date: Feb 10, 2007

Project Schedule

9. User Interface prototype
   a) Goal: Get DCX approval for ease of use
   b) Date: Feb 10, 2007
10. Demo reporting
   a) Goal: Automatically generate with required information
   b) Date: Feb 10, 2007
11. Implement basic GeoFencing
   a) Goal: Server-side determination of border crossing
   b) Date: Week of Feb 12, 2007
12. Advanced GeoFencing
   a) Goal: BB notification of terminal node boundaries
   b) Date: March, 2007