

# Project Plan

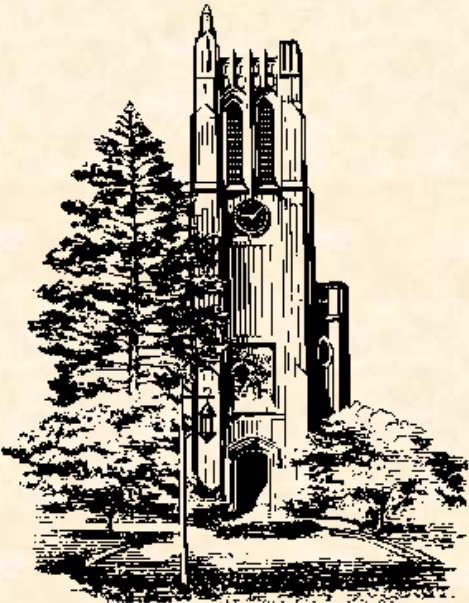
## Irrigation Distribution Uniformity Analysis

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CSE 498, Collaborative Design

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# Project Overview

- Allow graphical analysis of sprinkler test data
- Internal replacement for Space PRO
- Perform multiple calculations on data
- Display graphical representation of data



# Functional Specifications



- Read in both Access Database files and .DTM and .PRF files
- Program will support both manual and automatic modes
- Automatic mode: Single sprinkler type, multiple preset formations
- Manual mode: Multiple sprinkler types, multiple formations, ability to manipulate formations, manual entry of data



# Functional Specifications, cont.

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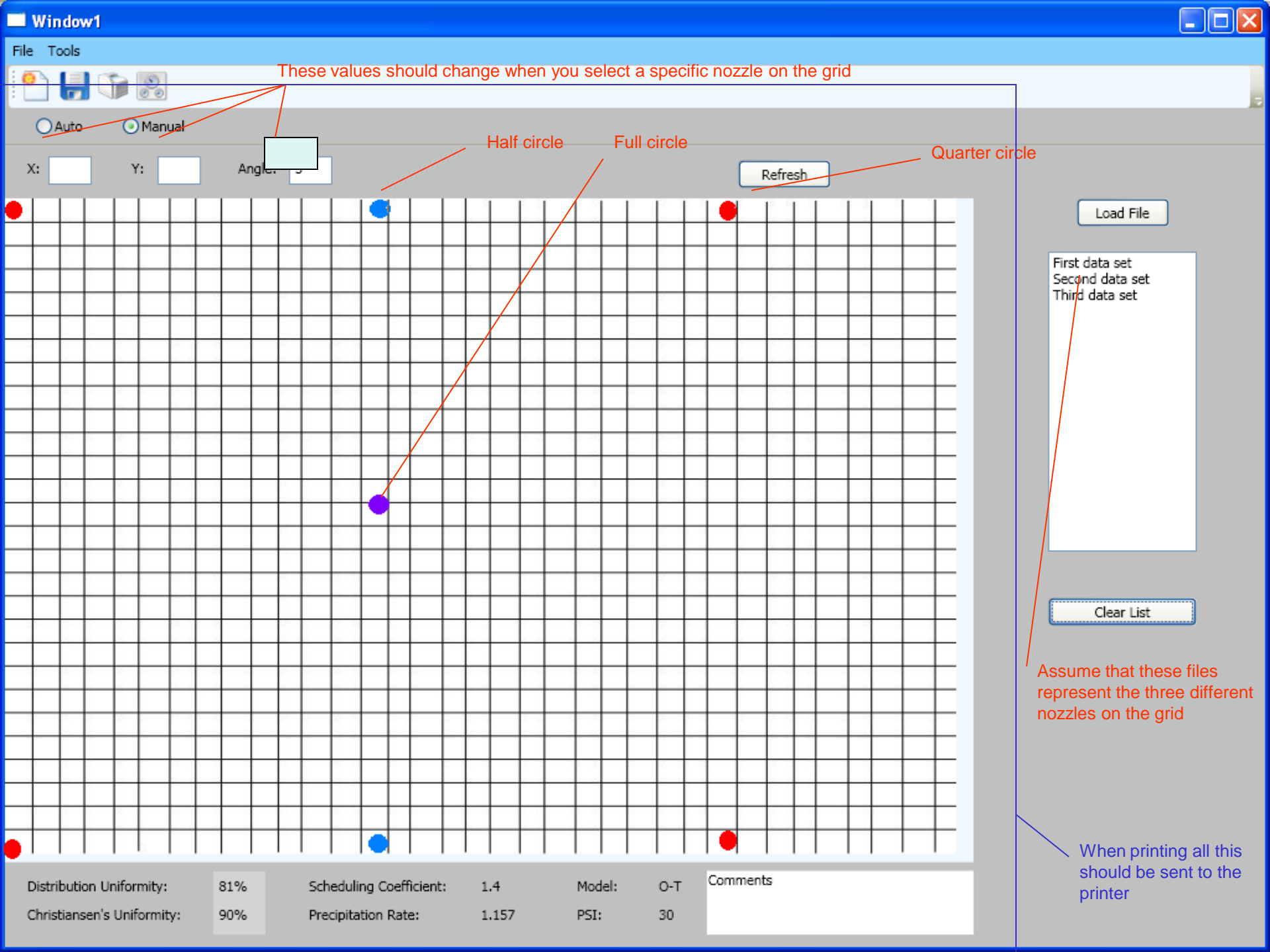
- Ability to print and output data to Excel documents
- Graphically model data and calculations in densograms
- Mouse-over tooltips with x and y coordinates
- Ability to zoom into graphs
- Display of calculation results



# Design Specifications

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- GUI designed as Windows Form
- Graphics will display in pop-up windows
- When manual mode is enabled, sprinkler nozzles will be interactive eg. drag-and-drop



These values should change when you select a specific nozzle on the grid

Angle

Half circle

Full circle

Quarter circle

Refresh

Load File

First data set  
Second data set  
Third data set

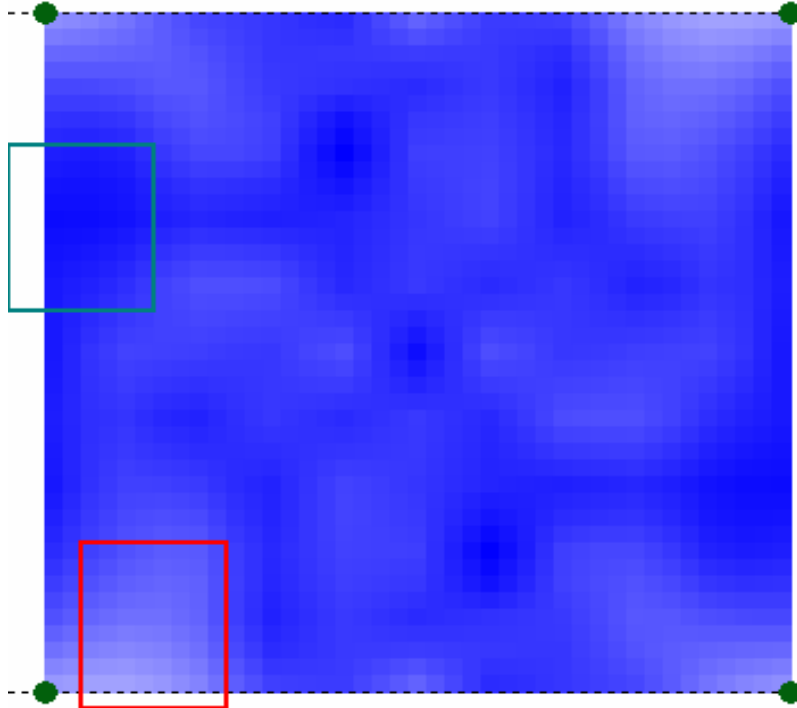
Clear List

Assume that these files represent the three different nozzles on the grid

When printing all this should be sent to the printer

Distribution Uniformity:	81%	Scheduling Coefficient:	1.4	Model:	O-T	Comments
Christiansen's Uniformity:	90%	Precipitation Rate:	1.157	PSI:	30	

# Single Sprinkler Automatic Layout Simulation - Rectangular, Square



<b>Sprinkler Name</b>	TORO PRECISION SPRAY	<b>Base Pressure (PSI)</b>	30.0
<b>Sprinkler Model</b>	O-T	<b>Riser Height (IN)</b>	4.0
<b>Nozzle Size</b>	10H #1	<b>Set Screw Setting</b>	
<b>Flow Rate (GPM)</b>	0.60	<b>Degree of Arc</b>	180
<b>Date/Time of Test</b>	07/10/09	<b>Mins./Revolution</b>	0.00
<b>Testing Facility</b>	C. I. T.	<b>Record Number</b>	
<b>Comment</b>	Sprinkler provided by: TORO		
<b>Catchment Spacing</b>	0.5'		

<b>Distr. Uniformity</b>	81%	<b>Min (In/Hr)</b>	0.426	<b>Spacing</b>
<b>CU (Christiansen)</b>	90%	<b>Mean (In/Hr)</b>	0.888 N/A (Theor.)	Rectangular
<b>Sched Coeff (5%)</b>	1.4	<b>Max (In/Hr)</b>	1.157	10.0' x 10.0'

*From SpacePro*

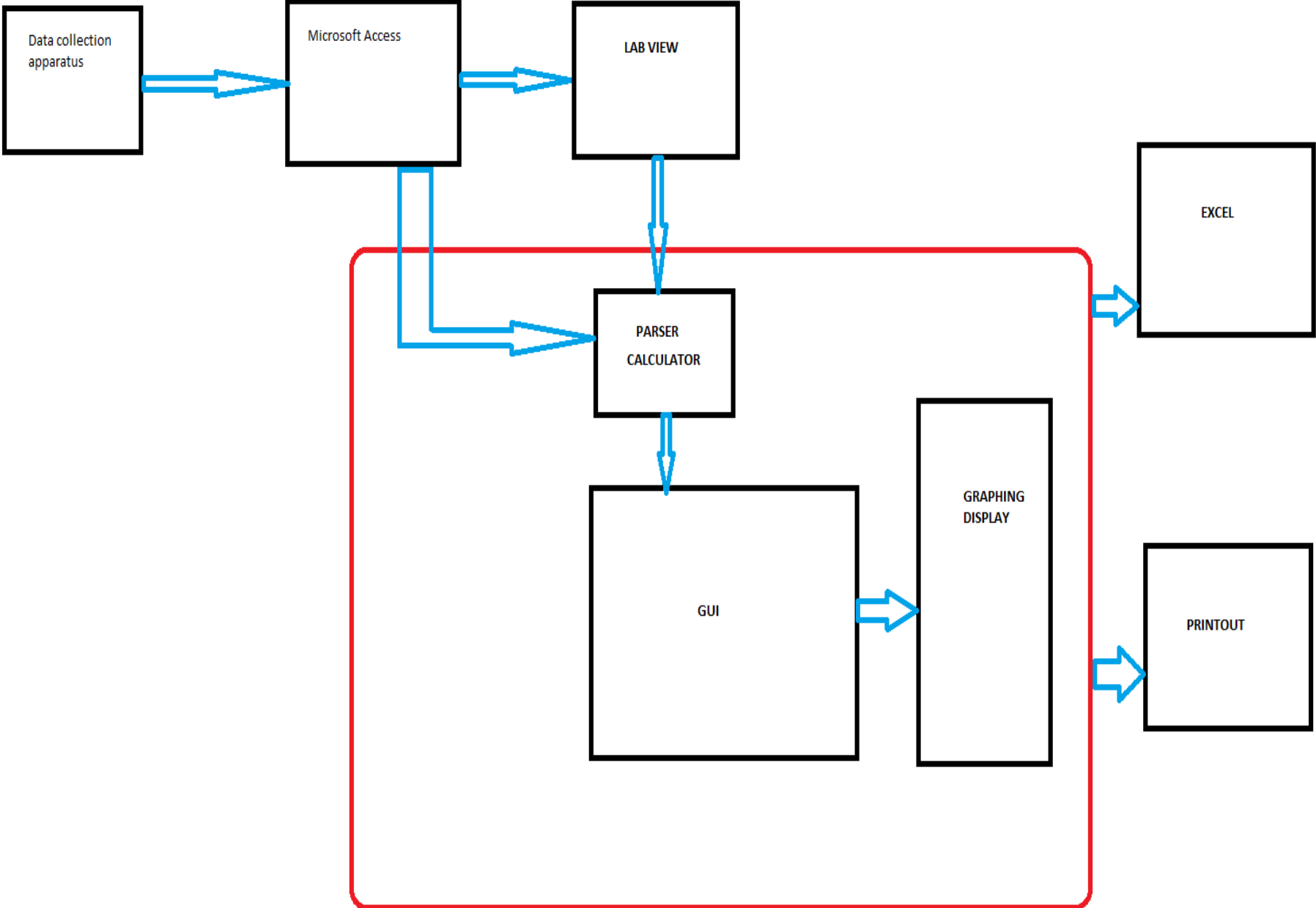


# Technical Specifications



- Developed using Visual C# and ASP.NET
- Developed in Visual Studio 2008
- 3 project elements: Parser, GUI, Graphing Capabilities







# System Components

- Hardware Platforms
  - PC
- Software Platforms / Technologies
  - Windows XP/Vista/7
  - Informal Support for Mac OS X



# Testing

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- Testing on the parser will be done utilizing an automatic script utilizing various malformed data files. Additional files will be created based on bugs found.
- GUI testing will be done manually.
- Manual mode will be stress tested to determine maximum amount of possible sprinklers.