

Greenhouse Gang

Greenhouse Management System

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A Greenhouse

A conventional greenhouse is a simple structure built from plastic panes of glass which trap heat within its walls.

Greenhouses are used to grow plants with specific needs such as temperature and light intensity.

These variable can be controlled by opening windows, pumping hot water under the soil, or limiting the amount of light entering the greenhouse.

Monitoring all these variables is usually performed manually.

The greenhouse management system

The greenhouse management system will fully automate the management of a greenhouse using the latest pervasive systems and technology.

The proposed system will control and monitor light intensity, soil temperature, and air temperature.

This will be done using a two computers and a wireless sensor network.

The greenhouse management system

As the system for the this project will not a be a fully implemented system, the scope of the project has been limited to monitoring and controlling temperature.

Therefore all actuation will be represented as a pop up containing the actuation requested.

Specification

Hardware

The Proposed system will use:

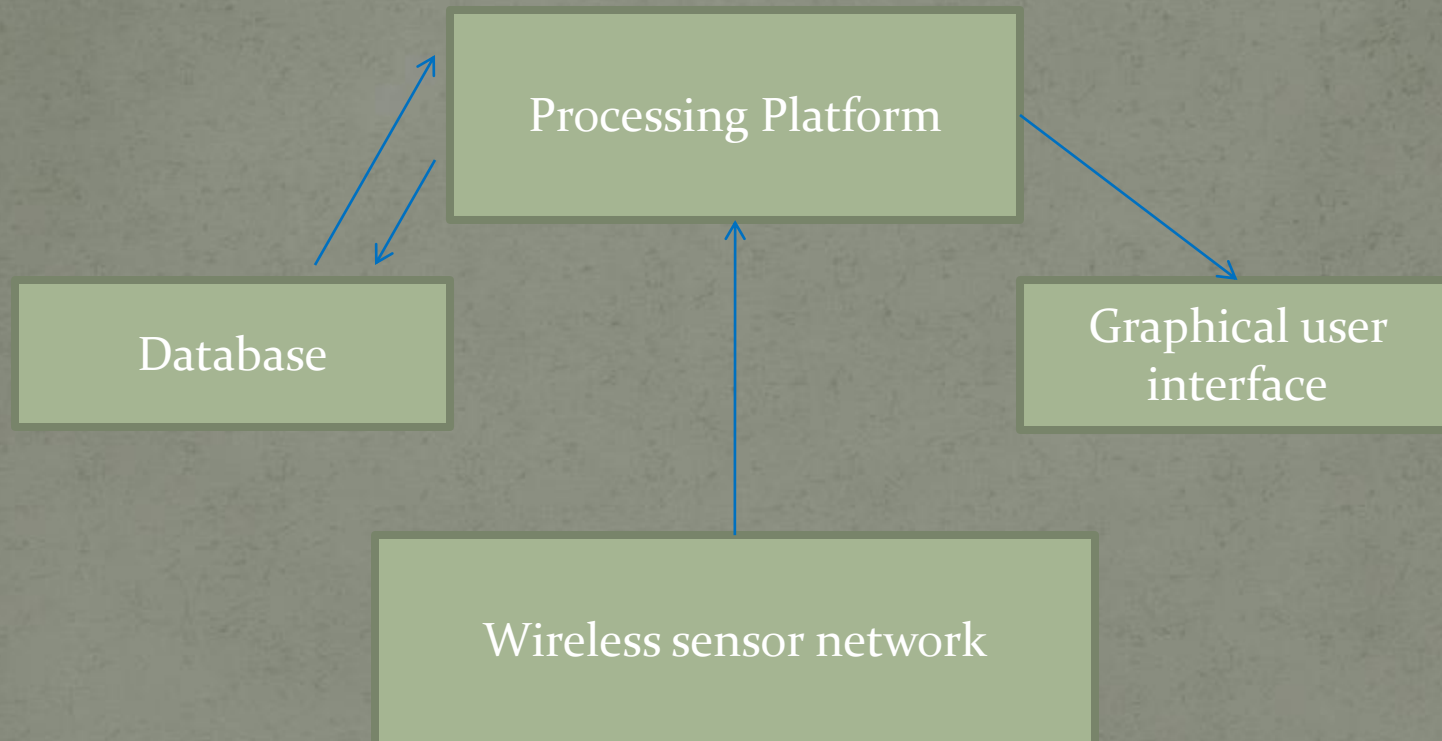
- 4 Wireless Bluetooth Gumstix
- 20 Wireless temperature sensors
- 1 Bluetooth enabled PC / PDA
- 1 PC

Software

The Proposed system will use:

- Database containing plant profiles
- Microsoft windows vista
- Graphical user interface
- Base station software

Parts of the system



Processing Platform

The processing platform we have chosen for this system will be a regular windows PC however as the system software has been designed to work on windows CE the system can even be run from a PDA device

The PDA or PC simply processes all the data coming in from the Gumstix and sends out temperature values to the GUI and also any actuation needed to the appropriate actuator

Wireless sensor network

The wireless sensor network is made of 20 temperature sensors connected to 4 Verdex Gumstix which is in turn connected via Bluetooth to a processing platform (PC)

Each Gumstix contains a configuration file containing:

- IP address and port of the base station.
- A specific ID for the Gumstix device
- The time interval (in seconds) at which the temperature data is collected and sent.

Graphical user Interface

The GUI has been created using c#

It includes real time graphs, one for each sensors connected.

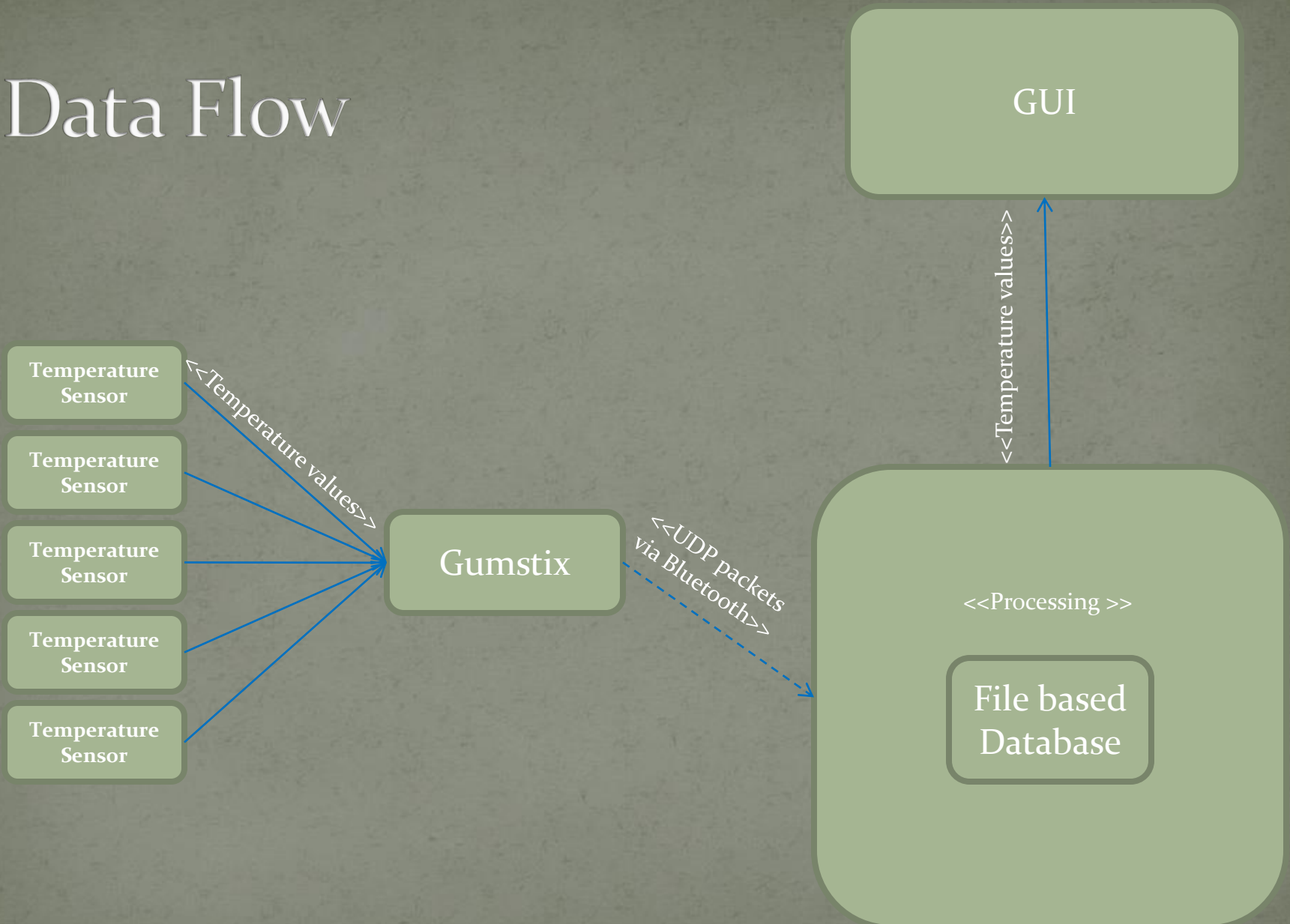
Information displayed includes:

- Temperature in degrees Celsius

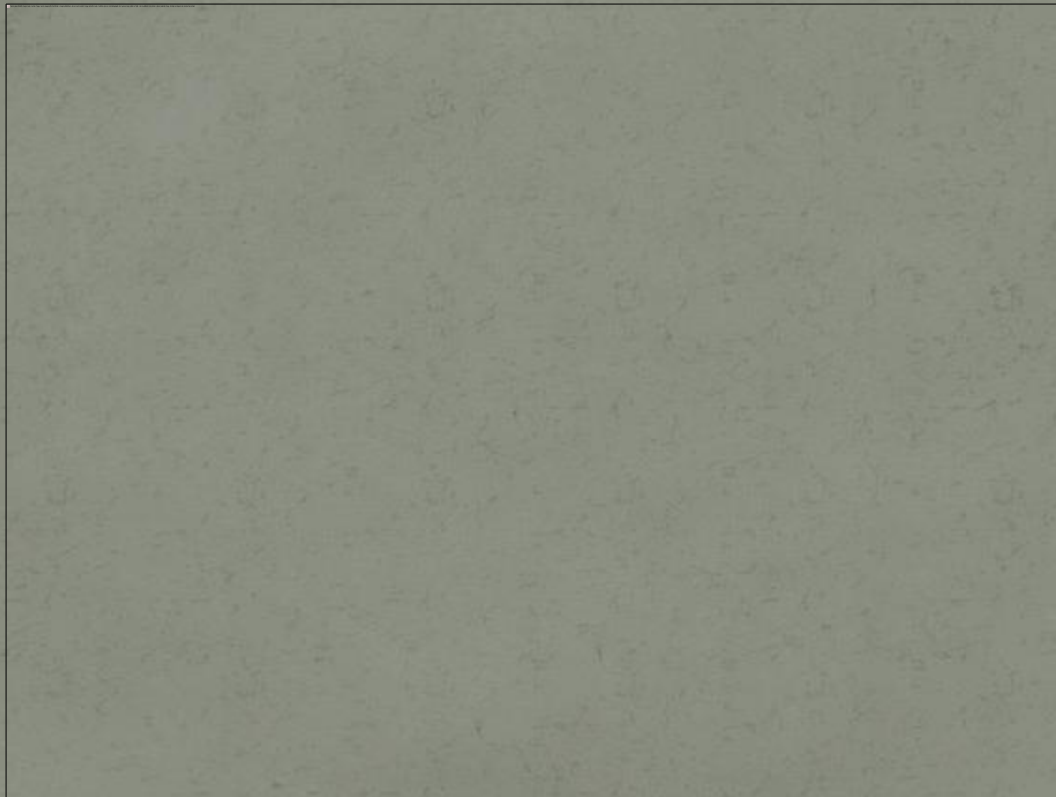
- A value temperature represented as a colour

- Real time line graph for the previous 30 seconds

Data Flow



Demonstration



The End

<http://greenhouse.progterv.info>