

## **Project Proposal**

### **BlueZ8**

2007-02-20

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### ***Project Abstract***

The goal of this project is to establish a communications channel between the Z8 development board and a Sony Ericsson P910i cellular phone. Once connected, the P910i would be able to send commands to the Z8 to request certain data, such as readings from a temperature sensor. Additionally, the P910i can send data messages directly to the Z8 to be displayed on the LED array.

The program for the P910i will be written in Java. The P910i supports bluetooth natively and has support for JSR-82 in its J2ME environment. The Z8 will use a BlueSMiRF bluetooth modem provided by the class professor.

## **Strategy**

### Platform

- Z8 Encore Chip and Development Platform
- Sony Ericsson P910i using Java and J2ME

### Capabilities

- Z8: analog inputs, led array, gpio, interrupts
- P910i: J2ME CLDC 1.0/MIDP 2.0, JSR-82 support, Bluetooth 1.1, touch sensitive screen, MIDP installation via connected PC, Symbian OS 7, Arm 9 Processor, 64MB built in storage space

### Externals

- Z8: 4 5x7 LEDs, temperature sensor, bluetooth module (BlueSMiRF), wall powered.
- P910i: battery powered, everything builtin.

### Evaluations

In addition to the P910i, there were two other phones that were evaluated. The popular Motorola V3 Razr and the Samsung t519 Trace. While both phones support bluetooth and Java applications, they were limited in several ways. First, installation of java programs was only available through its builtin browsers. This had its associated data rate costs and could make debugging costly. Next, and most important was limited bluetooth support. While the phone support both required features (BT & Java), they did not support JSR-82 which provides BT support within J2ME.

### Software

On the Z8, there will be a main control loop that awaits data or commands via bluetooth from the P910i. Once data is received it will go through a parser, and then a command execution stage. There will also be an initial configuration of the various modules (BT, LED, etc.).

On the P910i, there will be a GUI interface in which messages can be displayed and commands/text can be entered. This would look similar to a chat client. The 'display' portion would display messages received from the Z8 such as temperature readings. The command side would allow users to enter in text/commands to be sent to the Z8.

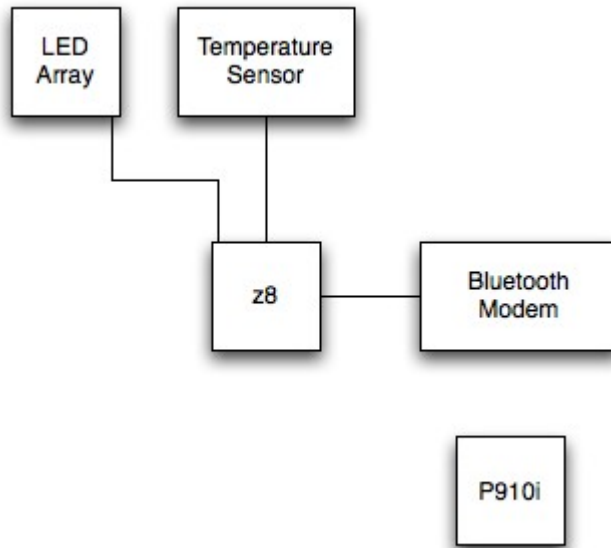


Figure 1: Preliminary Hardware Diagram

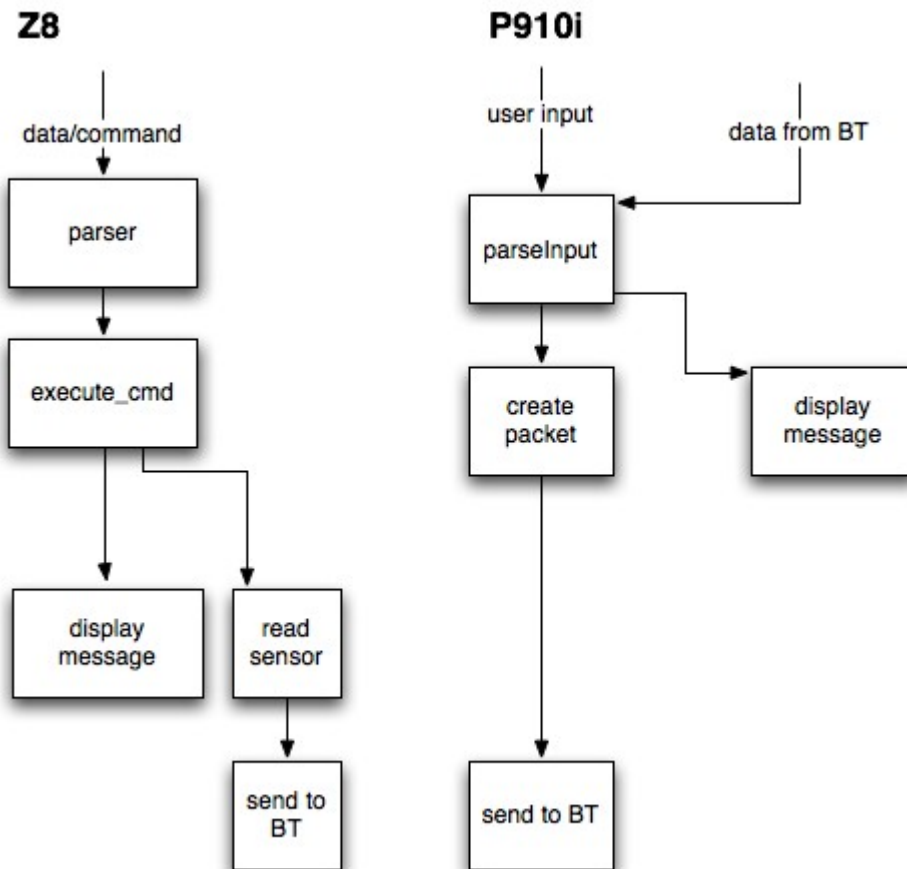


Figure 2: Preliminary Software Diagram

## Unknowns

Being completely new to Bluetooth (for both the Z8 and J2ME), there are plenty of things I may come across. There may be quirks in the Symbion OS that need to be handled as they come up.

## Implementation Plan

Obtain P910i and development kit.

Obtain Z8 and all necessary components (temperature sensor, bluetooth module).

Load sample apps to P910i. Write sample apps of my own.

Write sample bluetooth apps. Talk to PC or other easier to talk to device.

Configure and test modules on Z8.

Pair Z8 to P910i via bluetooth.

Design protocol/packet format for communications

Initial GUI layout on P910i.

Input screen/section for P910i

Develop output/display for P910i.

Bluetooth driver/configuration for Z8.

Input parser for Z8.

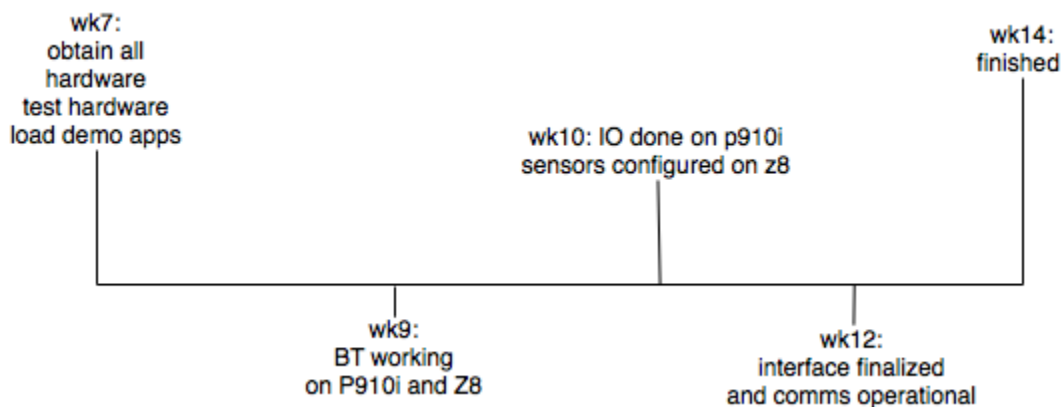
Temperature sensor driver for Z8.

Output formatter for Z8.

Input parser for P910i.

Output formatter for P910i.

Testing should be integrated as much as possible at every development step.



A critical path exists near week 9 when I try to get bluetooth working on both devices.

## ***Resources***

Z8 development board and sdk: already have one from university.

BT module: obtain from class professor

temperature sensor: obtain from class professor

Sony Ericcson P910i (and necessary cables): already have one.

Symbion OS 7.0 UIQ 2.1 SDK: available online

PC/Mac with BT support: already have one. (for testing)