A Mobile Webserver-Based Approach for Tele-Monitoring of Measurement Devices

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***Abstract*—In this demonstration the tele-monitoring of measurement devices using a mobile webserver-based approach is shown. For quite some time it has been possible to access the Internet using mobile phones. Hereby the role of the mobile phone has been that of a client. In our approach the mobile phone acts as a webserver that can be accessed from any browser on the Internet, at any time. This opens new and interesting possibilities for tele-monitoring of measurement devices. Measurement data that has been made available as log files can now easily be shared. Webserver scripting technology enables the dynamic creation of content. By creating content that contain the most recent data samples, real-time tele-monitoring of measurement devices is made possible. The content created is graphically presented by the browser at the client.**

I. INTRODUCTION

THIS demonstration shows a mobile webserver-based approach for the tele-monitoring of measurement devices. Hereby the measurement devices are connected to a mobile phone using a local connectivity network (see Figure 1). In contrast to sensor monitoring devices as found in other platforms, the mobile phone here acts as a gateway for, not only logging the data, but also for rendering them over the Internet.

II. TECHNOLOGIES

A solution making use of a custom HTTP gateway is being deployed [1]. The HTTP gateway allows a webserver to be run on a mobile phone with a global URL that can be accessed from any browser in the Internet, at any time. This technology opens new and interesting possibilities for tele-monitoring of measurement devices. Measurement data that have been made available as log files can now easily be shared. An overview of the platform architecture is given in Figure 2

A more advanced application of the technology is to provide remote monitoring capabilities of measurement devices in real-time. For the latter webserver scripting technology is used. Content can now be created in a dynamic fashion. In our case the content involves the temporarily buffered data samples. A graphical representation is obtained by deploying webserver Javascript technology. Figure 3 gives an overview of the overall system and the technologies involved.

Figure 1. Network of measurement devices

III. DEMONSTRATION SETUP

The demonstration shows the real-time tele-monitoring of a pulse oximeter. The measurement device is connected over Bluetooth to the mobile phone. The whole setup is battery powered, has a small form factor, and is mobile. Measurement data can then be obtained using a standard browser over the Internet.

IV. OUTLOOK

The mobile webserver in combination with the HTTP gateway opens new and interesting possibilities. The open interfaces the mobile phone provides allows the straightforward integration of all kind of measurement devices and other use cases to be addressed. Remote monitoring and control of machines belongs to the possibilities.

REFERENCES

[1] Johan Wikman and Ferenc Dósa Rácz , *Mobile Web Serve*, http://research.nokia.com/research/projects/mobile-web-server/index.html.

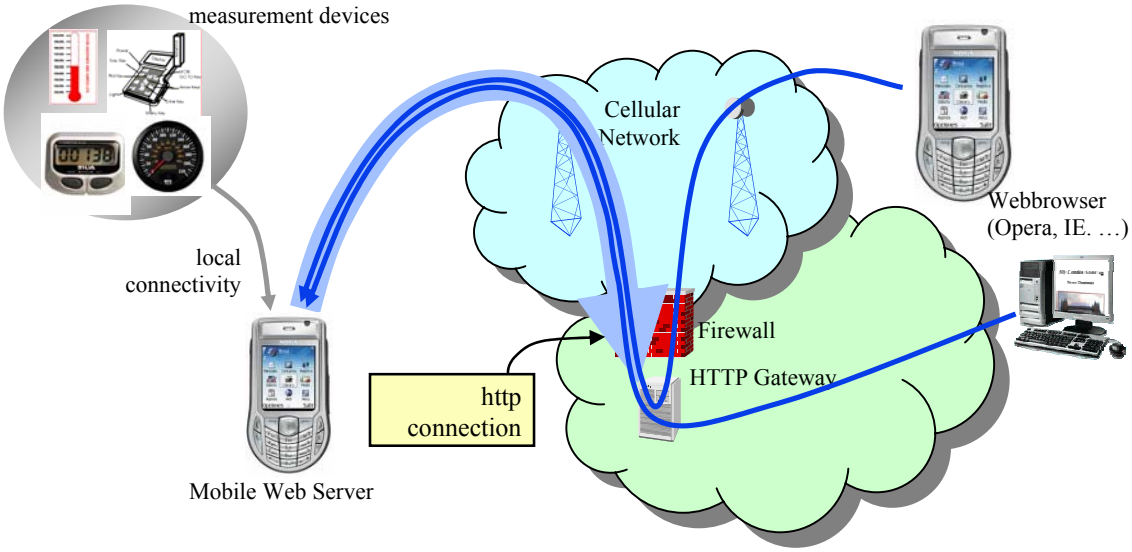

Figure 2. Platform Architecture

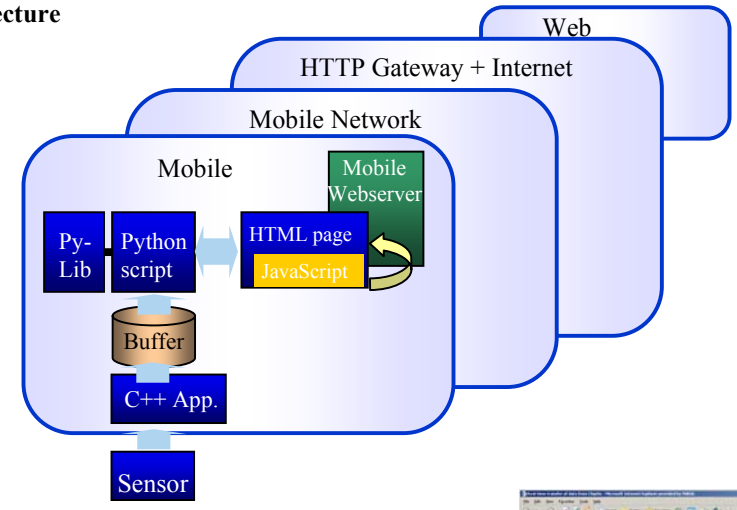

Figure 3. System Overview

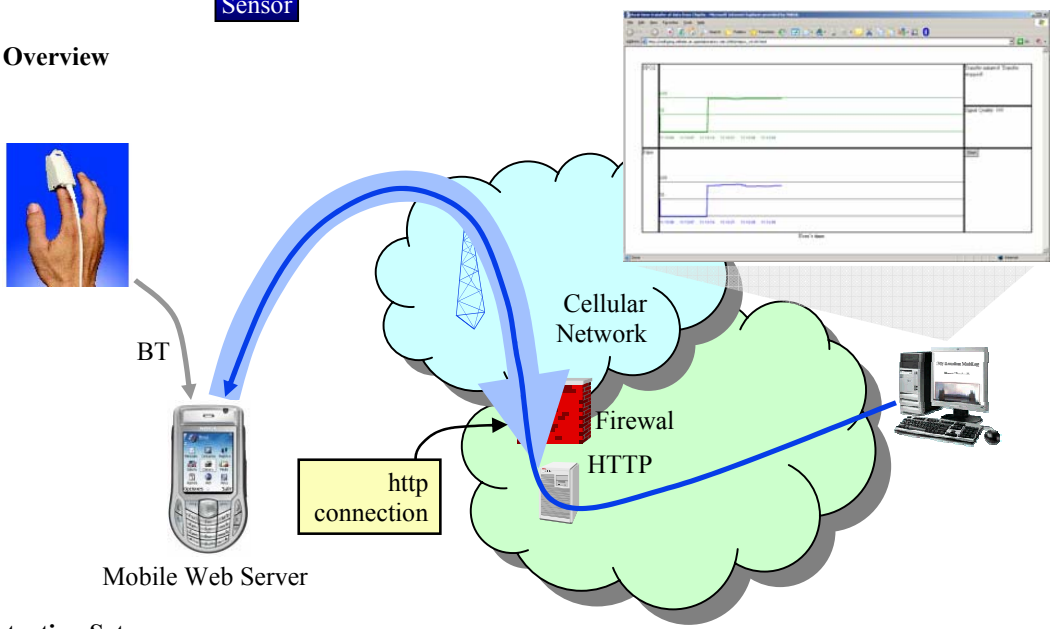

Figure 4. Demonstration Setup