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DISTRIBUTED MEASUREMENTS – A SYSTEM ARCHITECTURE AND AN APPLICATION EXAMPLE

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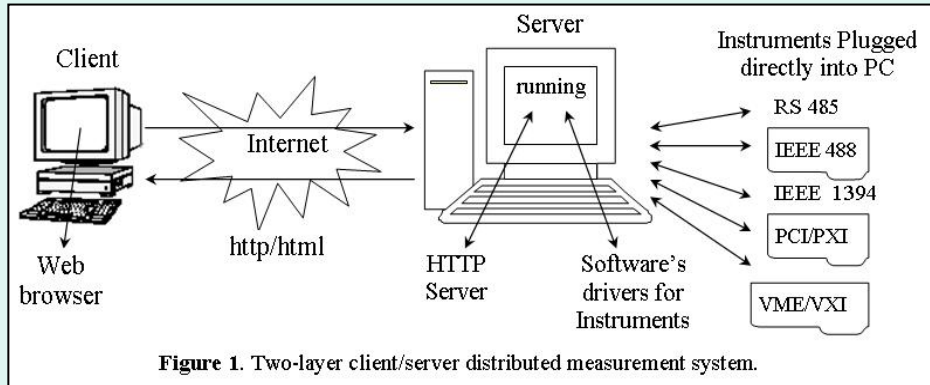Technical University of Sofia, branch Plovdiv

Department of Computer systems, Department of Electronics

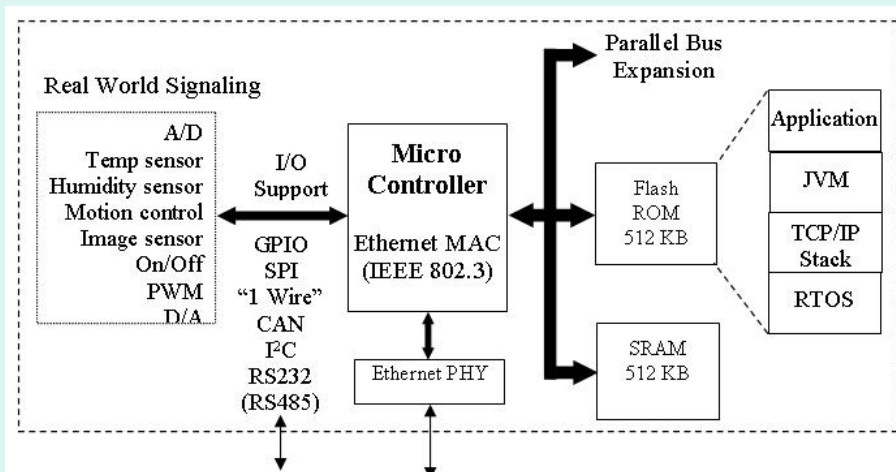e-mail: gvs@tu-plovdiv.bg; kakanak@tu-plovdiv.bg; gip@tu-plovdiv.bg;
http://net-lab.tu-plovdiv.bg

Prerequisites

- Advances in embedded systems technology
- Utilizing Web technologies
- Ubiquitous Internet and communication
- Related Work

Related Work

Figure 1. Two-layer client/server distributed measurement system.

Advances in embedded systems technology

Figure 2. Micro-controller with embedded network hardware and software capabilities.

Tree-layer Distributed Measurement System (1)

- Adopted from Business Information systems
- Separates application form presentation logic
- Independence of layers' functionalities
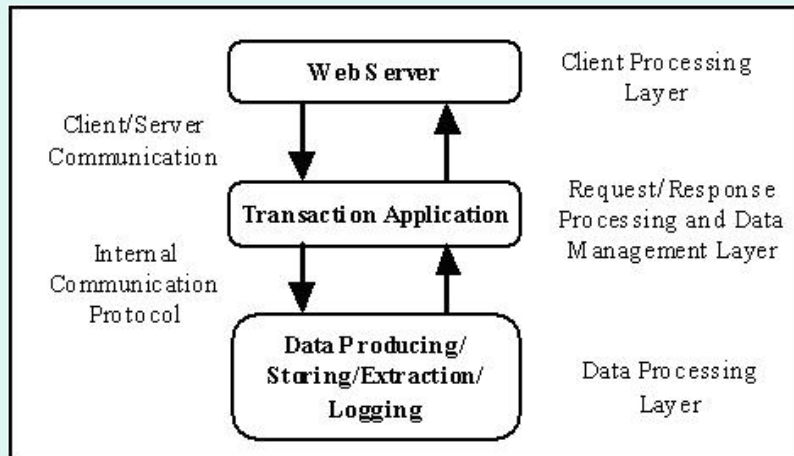- Independence of layers' administration

Tree-layer Distributed Measurement System (2)

Adaptation of model for distributed measurements
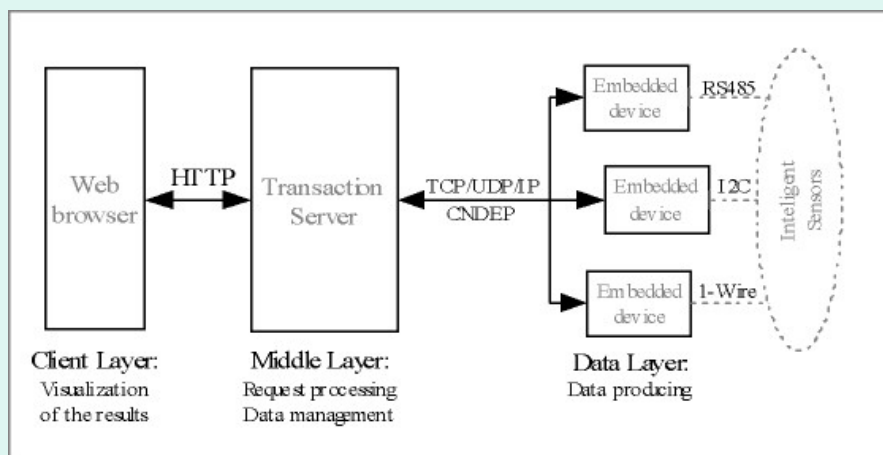
# Tree-layer Distributed Measurement System (3)

Layers and functionality

Tree-layer Distributed Measurement System (4)

Layers described:

- Client Processing Layer – used for interaction with the end consumer. This consumer could be a manager controlling and monitoring of the observation;
- Request/Response Processing and Data Management Layer – used for managing, collecting and distributing the entire data flow;
- Data Processing Layer – distributed among the entire system. Depending on its role, the layer could be separated in several tiers for data collecting, data storing, data logging and data extracting.

Sample Implementation
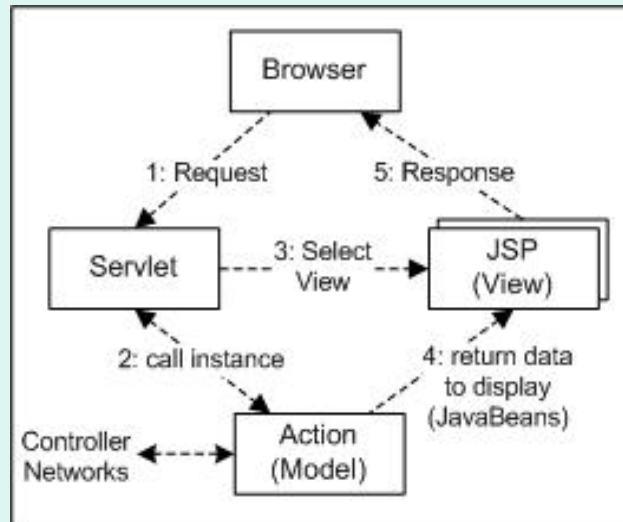
Future Work

- Web services on every tier
- Dynamically discoverable measurement devices
- DS TINIm400 as Ethernet-to-Industrial Gateway

ACKNOWLEDGEMENTS

Your Questions