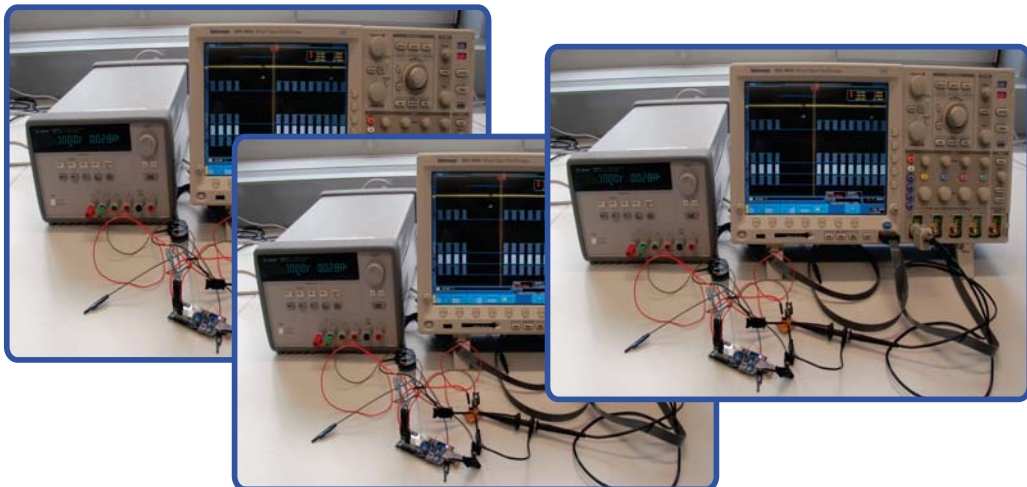


FlockLab

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Goal: Distributed Lab Equipment



Features:

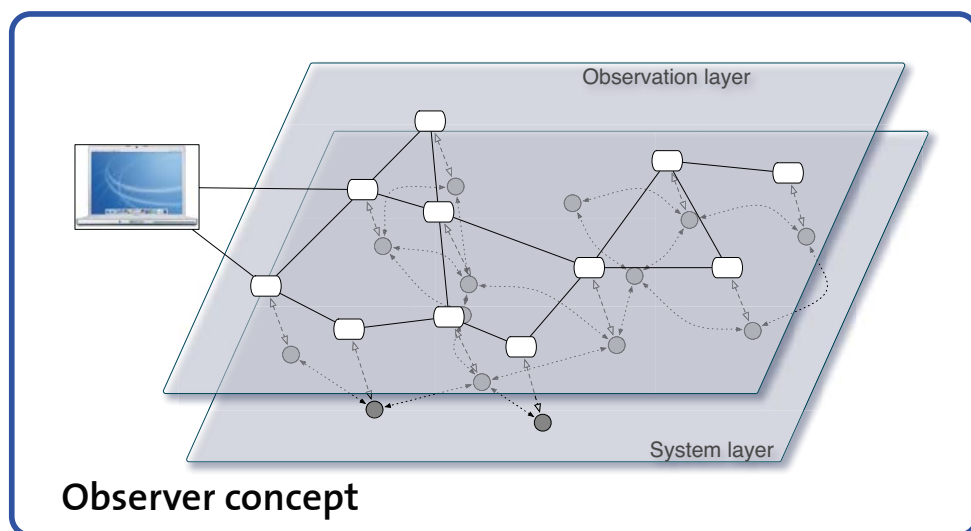
- Distributed Logic Analyzer
- Distributed power measurements
- Control of voltage and other inputs

Requirements:

- Reliability (even under high data rates)
- Synchronization
- 100us precision

FlockLab provides a distributed lab instrument for testing wireless sensor networks. Reducing precision requirements in favor of cost, creates a scalable, distributed lab solution.

FlockLab in Detail

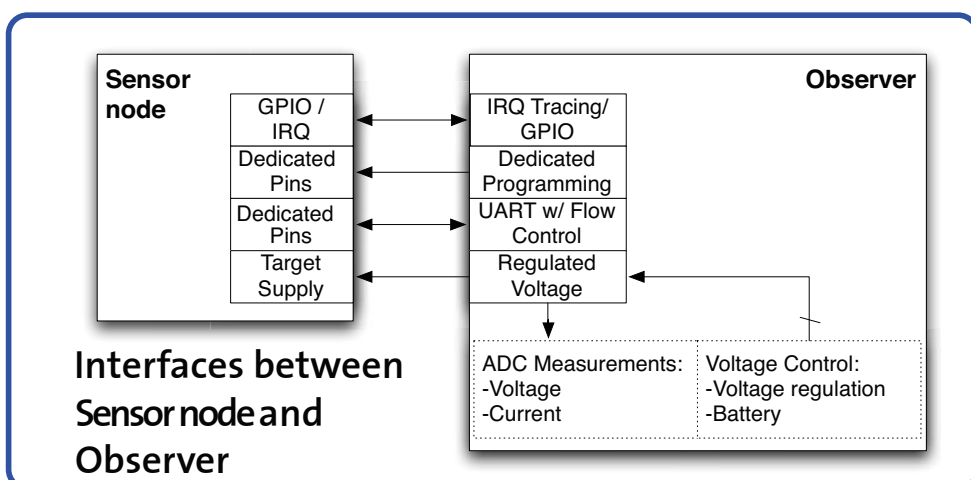
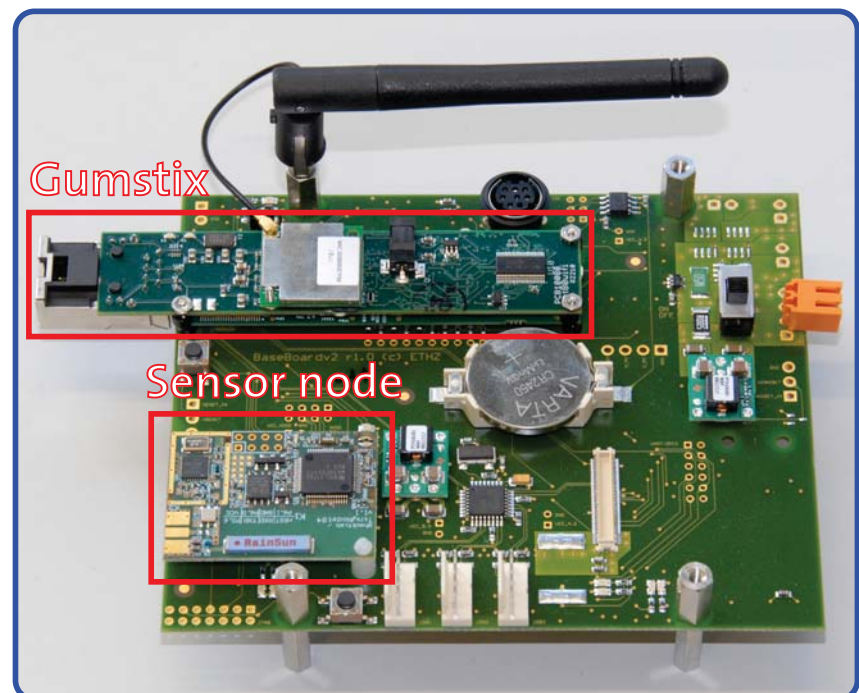


Gumstix Features:

- Powerful XSCALE processor (600 MHz, 128MB RAM)
- Persistent flash storage (SDHC memory card)
- WLAN or Ethernet backend
- Runs OpenEmbedded Linux
- Language support (C, Python)

FlockLab provides:

- Power measurements
- Voltage control (battery emulation)
- GPIO setting and monitoring
- Serial port access (logging, programming)



FlockLab enables novel test case formulations:

- Radio state is extracted with GPIO monitoring for displaying state changes over time, e.g., between sleep, idle listening, sending and receiving.
- Accurate power profiling is expensive in terms of (post) processing and storage. This can be reduced by focussing on particular events or system states. FlockLab allows for triggered measurements, e.g., based on a radio interrupt.

FlockLab uses an observer concept for detailed monitoring and stimulation of sensor nodes. A powerful observer provides software services to allow for formulating novel testcases.