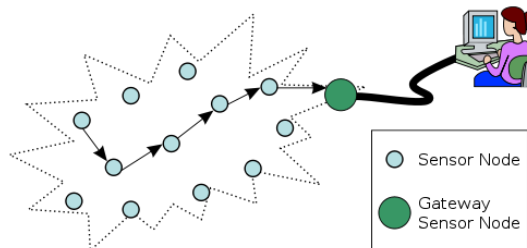


Non-Volatile Computing

Wing-kei S. Yu, Shantanu Rajwade, Edwin C. Kan and G. Edward Suh
Cornell University

Embedded systems are everywhere



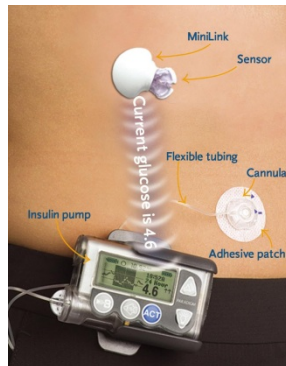
Autonomous wireless sensor networks



RFIDs and RFID readers

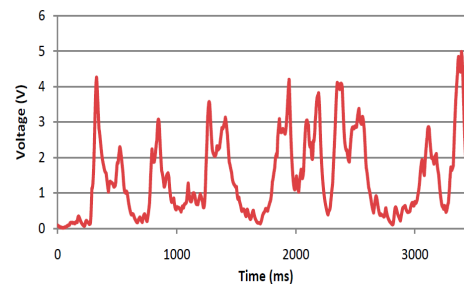
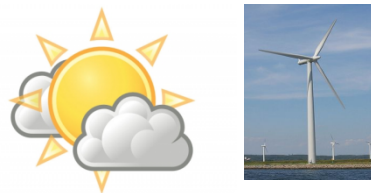


In-body sensors & Health monitoring



Challenges:

Unstable power sources
Limited battery lifetime



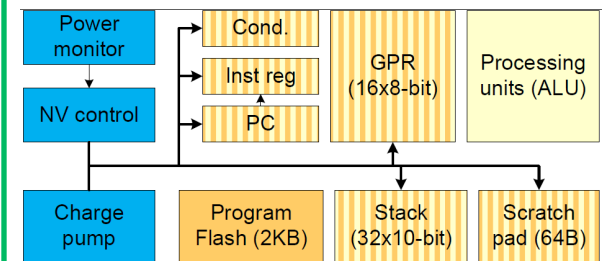
Voltage trace from an RFID
Receiving radiated energy

Can we eliminate
dependence on
batteries?

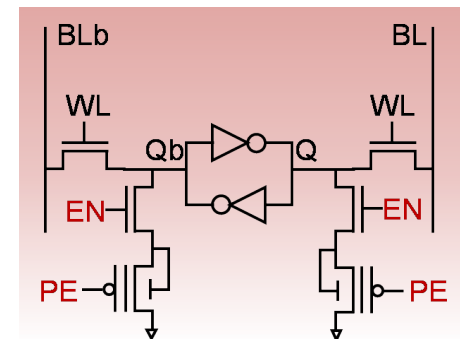


Non-volatile architecture enables:

Computation across power outages
Idle time power saving
Fast checkpointing and recall



Non-volatile microcontroller block diagram.
Hashed areas indicate NV modification.



SRAM hybridized with non-volatile flash.