Integration of Event-Driven Embedded Operating Systems into OMNeT++
A Case Study with REFLEX

Sören Höckner, Andreas Lagemann and Jörg Nolte

Brandenburg University of Technology Cottbus

06.03.2009
Motivation

- WSN are inherently event driven (Typical applications: sense and send or monitoring)
- Evaluation and testing on a single node basis is impossible
- Simulation of Algorithms on an abstract layer is not sufficient: implementation is not evaluated
- Simulation must provide means to evaluate the actual implementation
- OMNeT++ provides flexibility and a great amount of ready-to-use modules
- Integration of operating system (REFLEX) into discrete event simulator (OMNeT++)
Wireless Sensor Network Simulators

Network Layer
- NS-2 Simulator
- TOSSIM

OS Layer
- Avrora and MSPsim

Hardware Layer
- COOJA
- OMNeT++ and Reflex

Integration of Event-Driven Embedded Operating Systems
OMNeT++

Integration of Event-Driven Embedded Operating Systems into OMNeT++
A Case Study with Reflex
Integration of Event-Driven Embedded Operating Systems into OMNeT++: A Case Study with Reflex
Reflex for OMNeT++

OmNeT++

- Channel Control
- OmnetNode
- Radio

Reflex

- Scheduler
- Power Manager
- Serial Port

- sleep
- wait f. msg
- interrupt
- schedule received task
- message data
- send or recv. message
Sören Höckner, Andreas Lagemann and Jörg Nolte

Integration of Event-Driven Embedded Operating Sys