



Tomasz Tajmajer

supervised by
Jarosław Domaszewicz

Migration from distributed to centralized SAN middleware

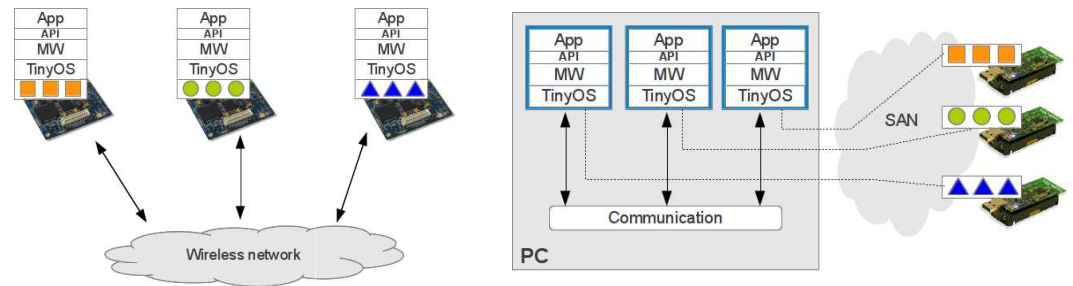
Keywords:

Wireless Sensor/Actuator Networks Internet of Things Distributed computing
POBICOS Linux TinyOS C POSIX threads IPC TCP/IP

Abstract:

The thesis describes a reusable method of migrating a complex Wireless Sensor/Actuator Network (WSAN) middleware to a centralized proxy environment. The original middleware runs on a WSAN node and provides access to the node's sensors and actuators. As a result of the migration, the middleware is transformed into a process executed on a PC. This so-called *proxy process* is connected to *remote* sensors and actuators of a „legacy” SAN device. The proxy exposes these resources to the application layer without any change to the original middleware API; in fact, binary compatibility is preserved. The proxy environment consists of proxies, as well as utilities providing communication and management services. The proxy environment makes it possible to use the middleware, originally designed for WSANs, on top „legacy” sensor and actuator networks. If certain guidelines are followed, the migration process requires only minimal changes to the middleware source code.

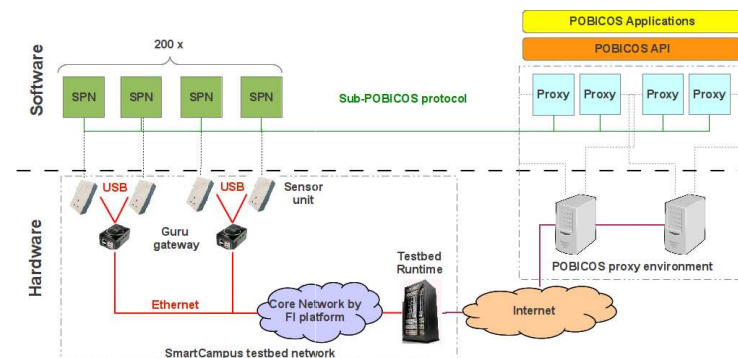
The middleware is migrated from a WSAN to a centralized proxy environment, so that applications can use legacy sensor and actuator resources.



Key results and highlights:

- Successful migration of the POBICOS middleware to POBICOS Proxy Environment
 - migration from an embedded system to a process executed on a PC
 - implementation of infrastructural elements of POBICOS Proxy Environment
 - distributed, scalable, and efficient solution
- SACCOM project case
 - successful deployment over a large Sensor/Actuator Network
 - the SmartCampus testbed at the University of Surrey, Guildford, UK
- A general method for **integrating complex WSAN middlewares with „legacy” SANs**

POBICOS Proxy Environment was deployed over SmartCampus, a large SAN at the University of Surrey, UK.



Partners:



Center for Research and Technology Thessaly, Greece

