

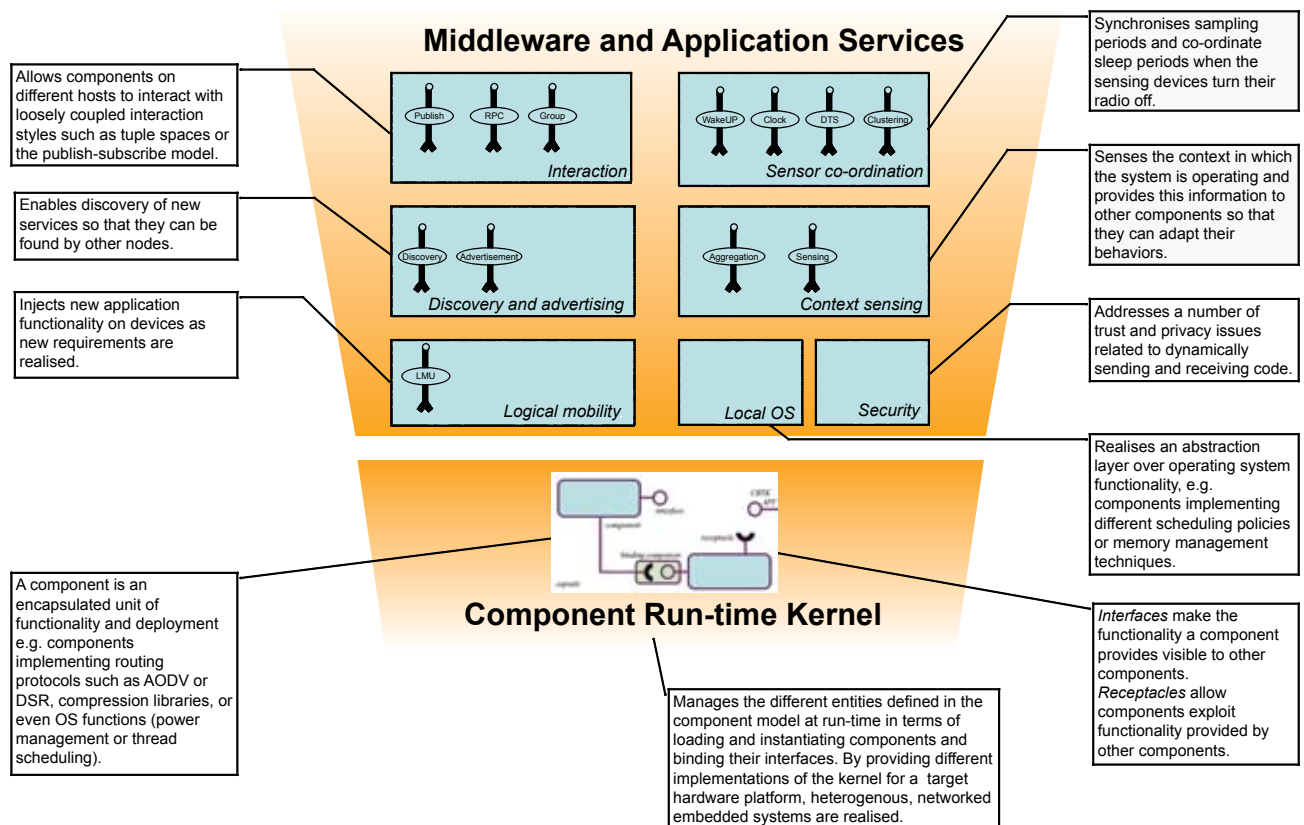
RUNES

Reconfigurable Ubiquitous Networked Embedded Systems

Component-based Middleware

Middleware in RUNES is built around Component Frameworks (CF)

- CFs are re-usable and dynamically-deployable software architectures
- Services and application-specific mechanisms can be built as compositions of components and/or CFs



Characteristics

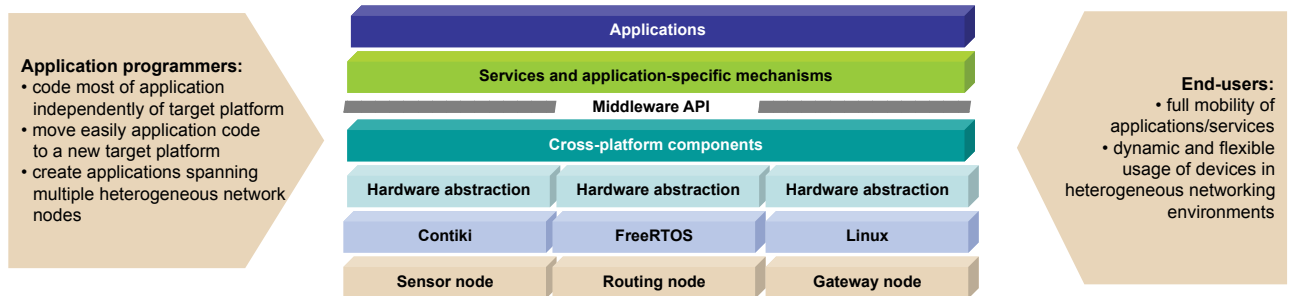
- Small and efficient middleware kernel (implemented in both Java and C)
- Support of highly modularised and customisable component-based middleware services
- Services tailored to specific embedded environments and reconfigurable runtime to support adaptation
- Validated in the context of the Road Tunnel Fire scenario and deployed on devices ranging from PCs to PDAs to tiny sensor devices running the Contiki OS

RUNES



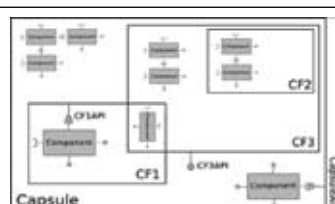


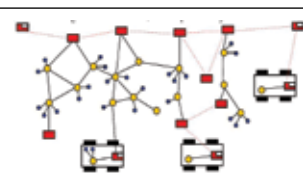
Reconfigurable Ubiquitous Networked Embedded Systems

Objective

Provide a standardised architecture that enables heterogeneous networked embedded systems that interoperate and adapt to their environments



Recent outputs

Roadmapping	Roadmaps covering the sectors of building and home automation, medical care, disaster management and emergency response and industrial control and automation	
Design Method	Scenario-based modelling and model based code generation to the RUNES Platform	
Middleware	Component-based middleware for self-configuration, increased reusability	
Hardware	Sensor routing node and motemaster gateway	
Contiki OS	<ul style="list-style-type: none"> • Run-time dynamic linking, code relocation and loading of programs and drivers • Selective reprogramming • Proto-threads, optional multi-threading on a per-application basis • Small TCP/IP stack 	
Control	Advanced control methods applied to support network connectivity	
Networking	Light-weight and optimised protocols and routing algorithms for networked embedded systems	
Evaluation	Studying real-world scenarios and emulating large scale systems	