

Resource management for embedded multi-core platforms



C. Ykman-Couvreur, R. Obermaisser, C. El Salloum, M. Goedecke, R. Zafalon, L. Benini

CONTEXT

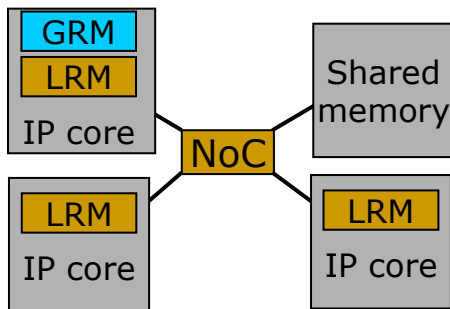
- ARTEMIS strategic research agenda
- GENESYS (GENeric Embedded SYStem) Project
- Develop a cross-domain architecture for embedded systems

MISSION

Specify a **resource management** framework to facilitate the application development:

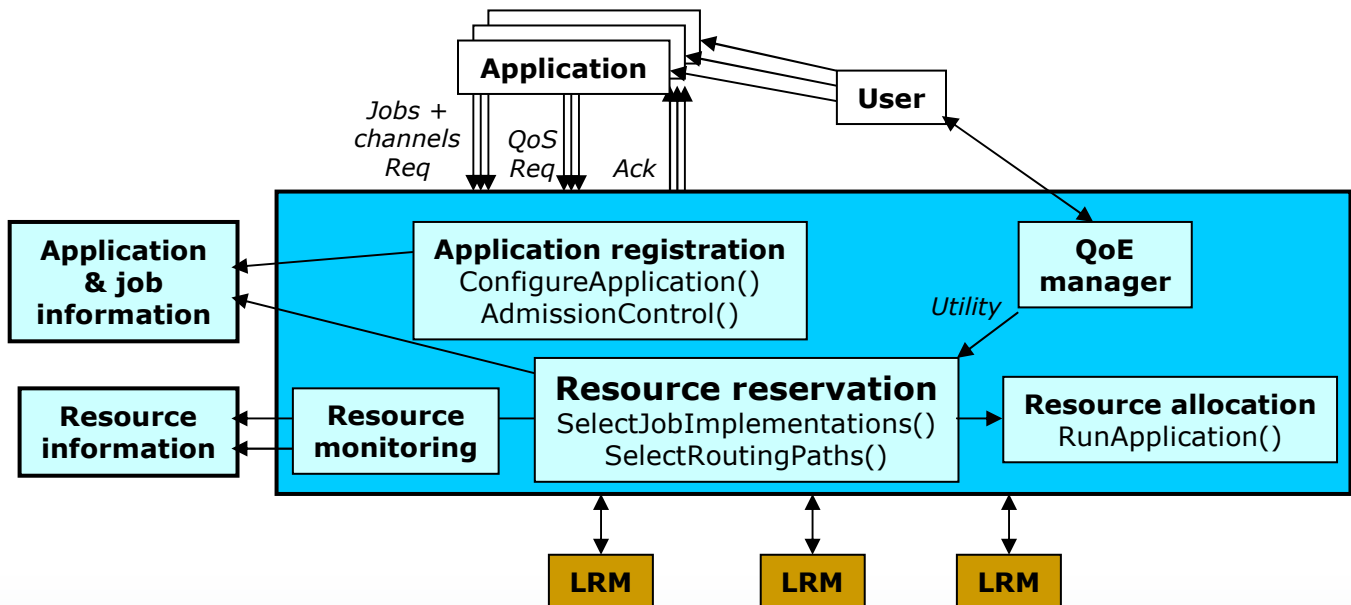
- Provide generic services as basis for a multi-core resource manager
- Dynamically adapt to changing context
- Transparently optimize resource usage
- Consider diverse application domains (mobile phones to safety-critical avionics)

APPROACH



LRM
Local Resource Manager
inside each IP core

GRM
Global Resource Manager
Support holistic view of resource usage
Mediate resource reservation/allocation
Negotiate QoS



STATUS

Service APIs **called by GRM**:

- Application/job managers
- Communication manager
- Resource monitoring

Service APIs **called by user**:

- QoE manager

Service APIs **called by applications**:

- Job execution
- Common time
- Message exchange
- Timer interrupts
- Shared memory access