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Self Managed Cells (SMC)
Realising Autonomic Management in Ubiquitous eHealth Systems

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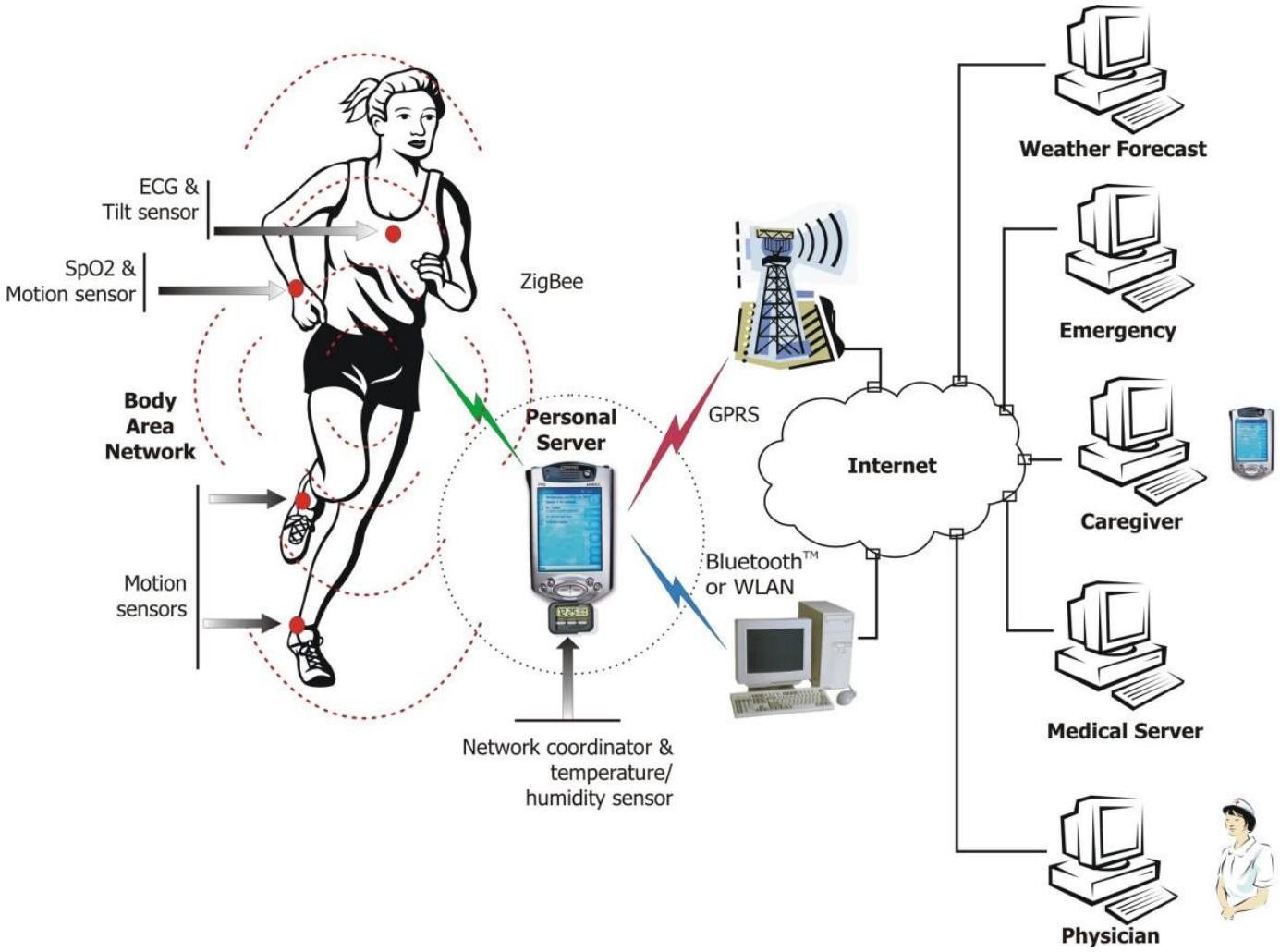
Introduction



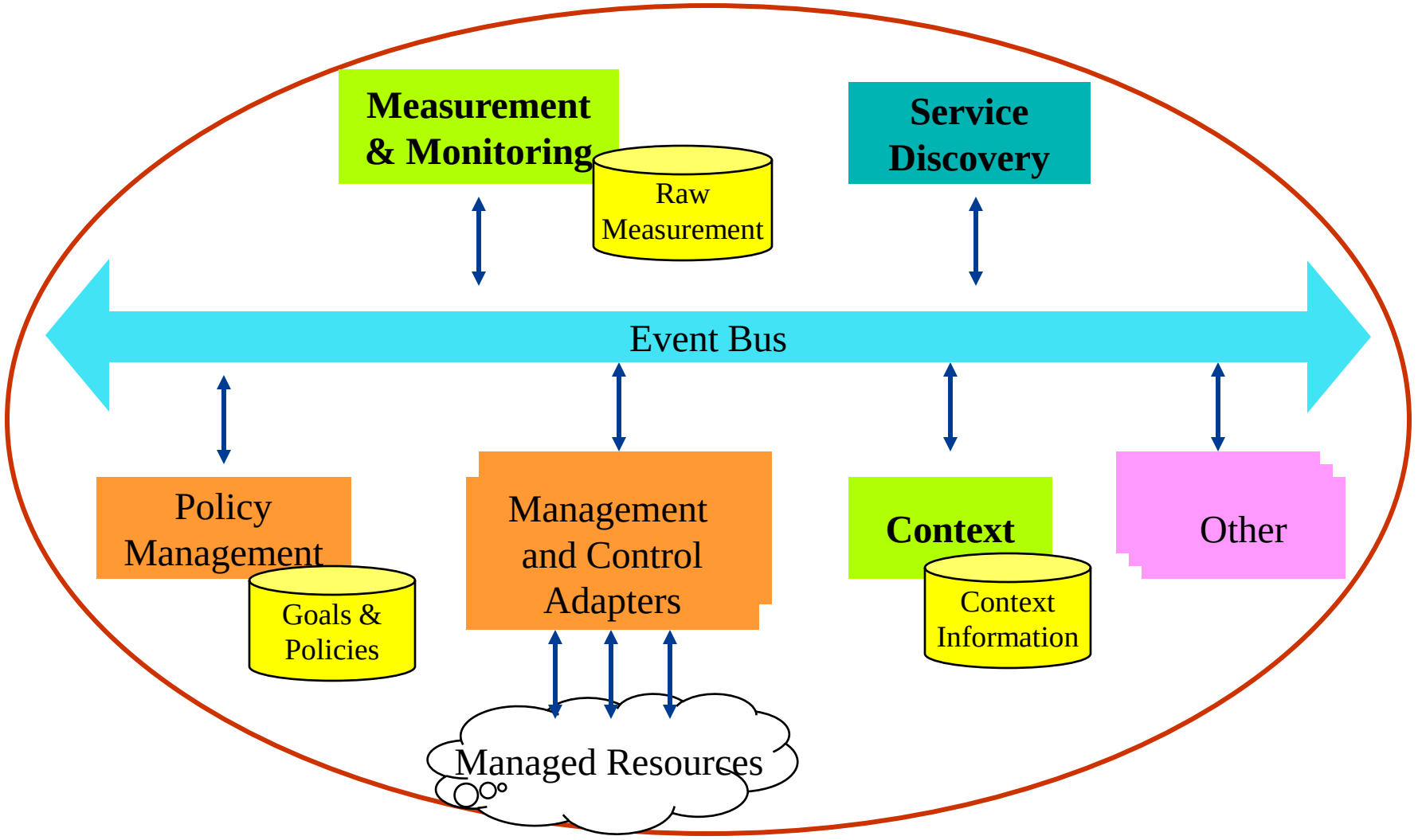
On-body Networks for e-Health Systems

- Heart monitoring, blood pressure, oxygen saturation, blood glucose, etc.
- Implantable and wearable sensors.
- Need for **continuous adaptation**:
  - Sensor failures, new sensors and diagnostic units
  - Changes in user activity and context
  - Changes in the patient's medical condition
  - Interactions with other medical and non-medical equipment, e.g., nurse visits at home

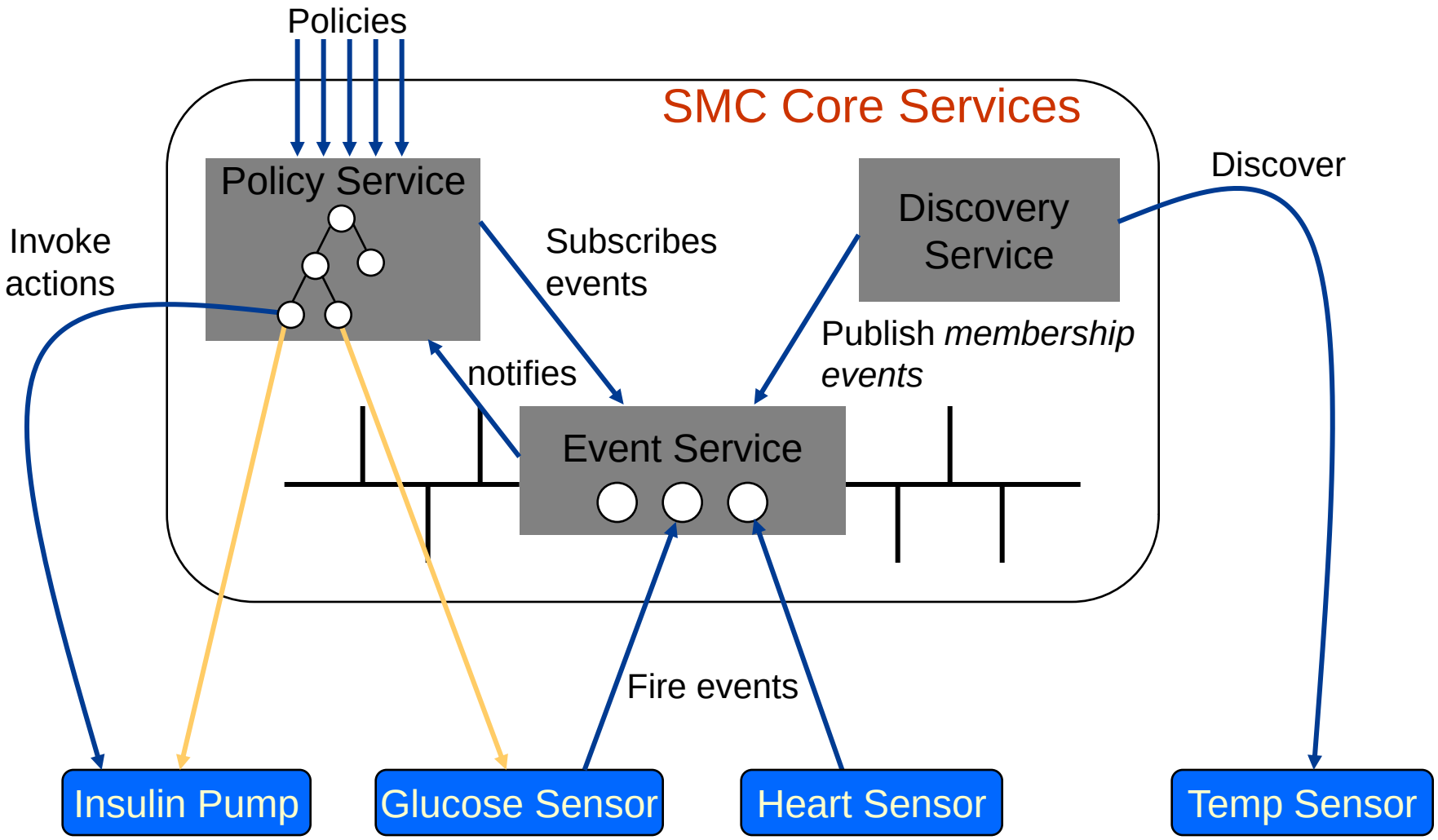
Self-Managed Cell (SMC)

- A set of hardware and software components forming an administrative domain that is able to function autonomously and thus capable of self-management.
- Management services interact with each other through asynchronous events propagated through a content-based event bus.
- Policies provide local closed-loop adaptation.
- Able to interact with other SMCs and able to compose in larger scales SMCs.

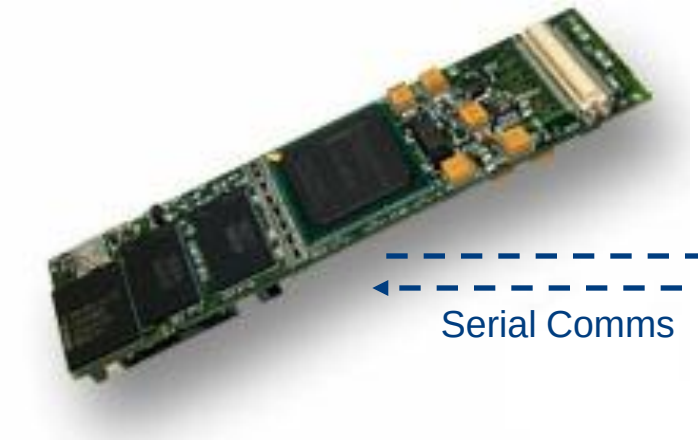
SMC Architectural Pattern



Realising Self-Management



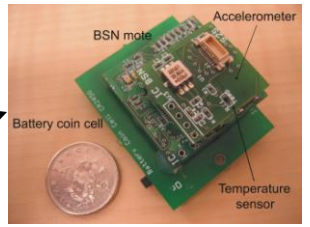
Prototype Implementation



Serial Comms

BSN Node
802.15.4 gateway

Accelerometer/Temperature Sensor



ECG Sensor

Glucose Sensor

Gumstix running:
- Discovery service
- Policy service
- Event bus

Conclusion and Future Work

- SMC as an architectural pattern that aims to provide local feedback control and autonomy.
- Policies in the form of ECA rules, provide a simple and effective encoding of the adaptation strategy required in response to changes of context or changes in requirements.
- Inter-SMC interactions, i.e., peer-to-peer interaction and composition.
- Exchanging policies between SMCs.
- Security for SMCs, including key management and authentication.

Thank you

- Project website: http://www.dcs.gla.ac.uk/amuse
- **Contact:**

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http://www-dse.ic.ac.uk/Research/Policies/