



Overview

Mission

The mission of Entwine is to provide a platform to enable the scalable machine-to-machine communications required for the Internet of Things. The Centre aims to lead in the design of the architectural framework to support the Internet of Things, and to contribute significantly to the development of the necessary standards.

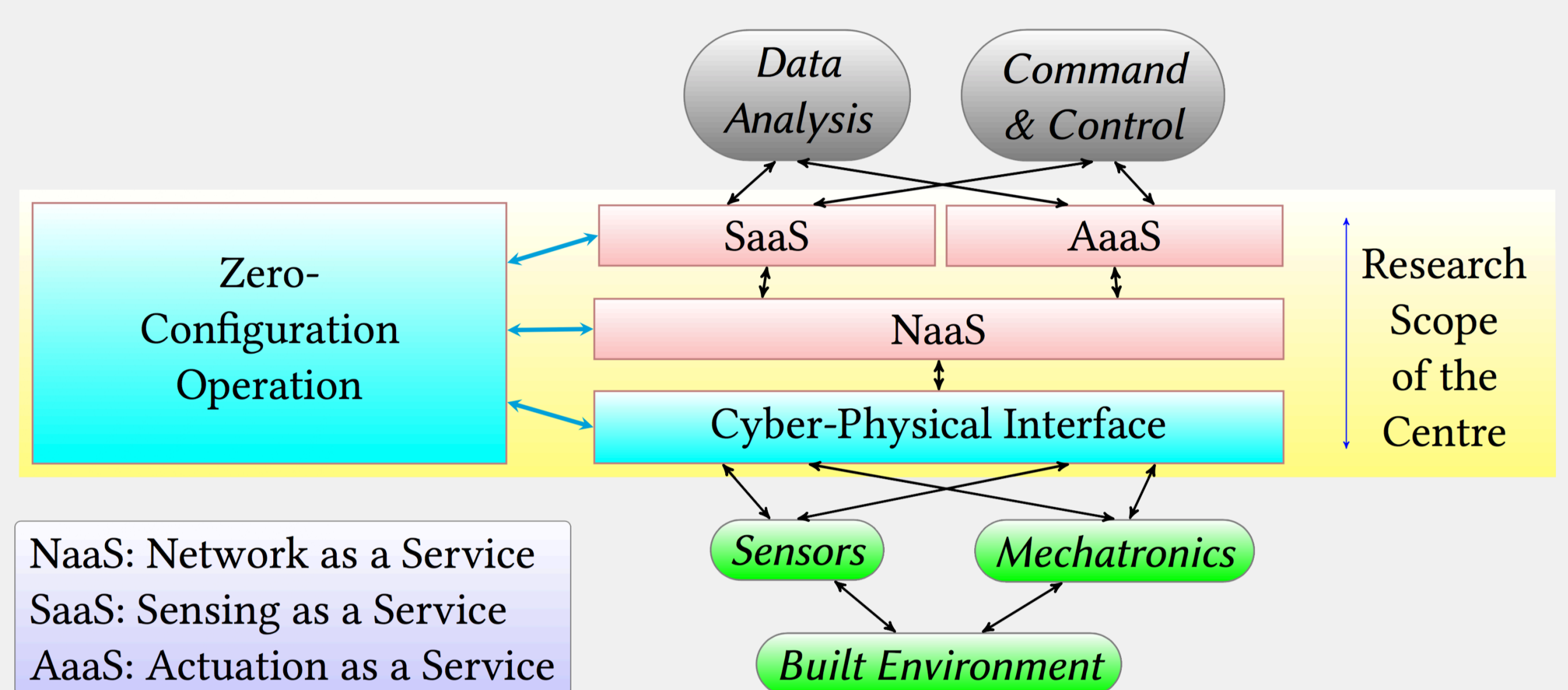
Innovation

We carry out research that clearly and significantly advances the state of the art. This research will generate IP, contribute to standards, enhance expertise in employees, nurture potential startup leaders/innovators, and create new technologies.

Research Areas

Several proprietary as well as open source solutions to IoT deployment are available. Even where these solutions are not encumbered by hardware or OS lock-in (which fundamentally limits their scalability beyond a finite 'ecosystem'), they overlay the existing network (typically the Internet) with their architecture, limiting the nodes of their network to being at the edges of the existing network. This restricts the scalability and efficiency of the deployed solution.

The approach in Entwine involves *entwining* the additional functionality required with existing router (and other middlebox) functions. This allows the infrastructural support required to be embedded in the existing network rather than overlaid upon it. This is achieved by exploiting recent and ongoing advances in Software Defined Networking (SDN) and Network Function Virtualisation (NFV), which allow network functionality to be injected by (trusted) third parties.



Entwine is the only centre using the concept of enhancing SDN/NFV to scalably deliver infrastructural support for IoT applications.

Why work with us?

Centre members are working on frameworks capable of supporting the level of connectivity needed by, for example, a smart city. This framework will support autonomous operation, so that the Internet of Things can be managed by the things themselves. Individual projects will provide the framework with such facilities as:

- resource discovery
- authenticated data delivery
- intra-network processing including data aggregation
- data confidentiality and security.

This interface will support Sensing as a Service, so that the naive expectation that sensor data can simply be collected by 'The Cloud' will be met, hiding the underlying complexity behind the developed framework. Associated activities in Actuation as a Service and Networking as a Service will close the loop to allow the full realization of the Internet of Things as futurists imagine it might be, a vision impossible with current technology.

Centre Members

Martin Collier, Director
Research background in network protocols and switching for telecomms and data centre networks.

Jennifer Bruton
Interests include control systems, databases and cybernetics.

Conor McArdle
Interests include mathematical methods for network modelling, resource optimisation and dimensioning.

Liam Meany
Interests include network security and intrusion detection.

Derek Molloy
Interests include Internet-attached embedded systems, end-user vision systems, and embedded Linux.

Gabriel-Miro Muntean
Interests include mobile radio networks, network performance and Quality of Experience.

Noel Murphy
Interests include modelling of complex systems using advanced mathematics.

Darragh O'Brien
Interests include secure software development and network security.

Robert Sadleir
Research background in data processing for medical applications, image analysis and visualisations.

Xiaojun Wang
Interests include energy efficient networking, information and network security, and hardware acceleration of lightweight cryptography algorithms.