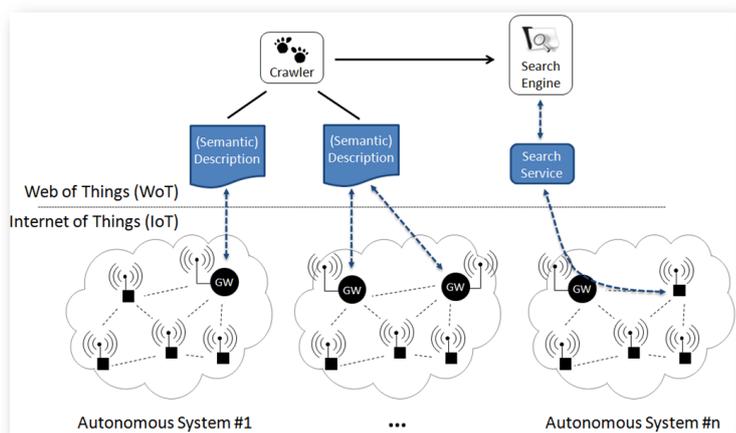


# SpitFIRE

## Project Overview

We are currently witnessing the integration of two long-lost relatives: on the one hand general purpose computing and its networking backbone, the Internet, and on the other hand embedded computing. However, the development of applications exploiting this merged infrastructure is currently exceedingly difficult. The goal of this project is hence to investigate unified concepts, methods, and software infrastructures that facilitate the efficient development of applications that span and integrate the Internet and the embedded world. The key metric of success for our project is the effort required for development of robust, interoperable, and scalable applications in the Internet of Things (IoT).



## Research Description

By design, the Internet combines two opposing aspects: On the one hand, it works in a highly decentralised manner, allowing easy expansion and replacement; on the other hand, it has become a central unifying force for global information exchange. This paradox yields a constant stream of new problems and solutions, demonstrated, for example, by the range of projects within the FIRE initiative.

In the meantime, embedded computing has also seen a tremendous development, using tiny autonomous devices to build distributed sensing systems. However, limited node capabilities and the tedious task of implementing applications

### Testbed Infrastructure

**Realistic testbeds provided by the FIRE initiative, such as WISEBED, Smart Santander, and PlanetLab.**

### Contract number

258885

### Project coordinator

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### Project website

[www.spitfire-project.eu](http://www.spitfire-project.eu)

### Community contribution to the project

2,181,500 Euro

### Project start date

01 July 2010

### Duration

36 months

still make it demanding to integrate them into large and powerful distributed networks. Hence, sensor networks and related areas still give rise to a large spectrum of research problems. Only very recently, serious attempts have been made to integrate these two long-lost relatives. One such activity is the WISEBED project: Building on the experimental facilities developed in WISEBED and consisting of a tightly knit team of experts in semantics, embedded systems, middleware, algorithms, and two cutting-edge SMEs, SPITFIRE endeavours to go one step further towards progress that can be felt by the general public. The overall objective is to investigate unified concepts, methods, and software infrastructures for the efficient development of applications that span and integrate the Internet and the embedded world. Thus, SPITFIRE will drastically lower the effort required for developing robust, interoperable, and scalable applications in the Internet of Things (IoT).

The embedded component of the IoT is largely affected by its surrounding real-world environment. Therefore, experimentation on real platforms in realistic environments is a key for successful IoT research. The FIRE initiative and its large-scale experimental facilities provide the unique opportunity to evaluate and drive SPITFIRE research at large scale and in a realistic environment.

## Target Users and Benefits

SPITFIRE works towards the realization of a stronger connection between the natural and the digital worlds. It will investigate unified concepts, methods, and software infrastructures that allow the efficient development of robust applications that span and integrate the Internet and the embedded world. Essentially SPITFIRE will significantly reduce the effort required for development of robust and interoperable applications in the Internet of Things. This will facilitate building new kinds of applications and services that were not possible before thus having an impact on research, industry, and private households. Industry will be able to evaluate new solutions and pick those that operate satisfactorily under realistic conditions. As a result, the architecture developed in SPITFIRE that unifies the IoT and the WoT domains has the potential to increase European competitiveness in ICT technology. Due to the enabling technologies provided by SPITFIRE, IoT related technology could permeate private households and enterprises in a way not seen to date.

<b>Project partners</b>	<b>Country</b>
<a href="#">National University of Ireland, Galway</a>	<a href="#">Ireland</a>
<a href="#">University of Lübeck</a>	<a href="#">Germany</a>
<a href="#">Braunschweig Institute of Technology</a>	<a href="#">Germany</a>
<a href="#">Research Academic Computer Technology Institute</a>	<a href="#">Greece</a>
<a href="#">Interdisciplinary Institute for Broadband Technology</a>	<a href="#">Belgium</a>
<a href="#">Daysha Consulting</a>	<a href="#">Ireland</a>
<a href="#">Coalesenses GmbH</a>	<a href="#">Germany</a>

### **Key Objectives**

- A minimal set of services to act as a unifying abstraction between the large varieties of applications built and the large variety of available technologies..
- Enabling search, interpretation and transformation of sensor data by giving it explicit semantics.
- Develop the concept of semantic entities as a common abstraction of real-world entities and devise services to process queries on them.