

# The Internet of Things – Technical Challenges for Interoperability

## Keynote Talk

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**Abstract.** In this talk, we look at the various players in the Internet of Things ecosystem and explain the critical role of an information broker in an open ecosystem. We look at the challenge of data interoperability in the IoT context and describe the HyperCat standard, a specification for representing and exposing Internet of Things data catalogues to improve data discoverability and interoperability. The central idea is to enable distributed data repositories (data hubs) to be used jointly by applications through making it possible to query their catalogues in a uniform machine-readable format. This enables the creation of “knowledge graphs” of available datasets across multiple hubs that applications can exploit and query to identify and access the data they need, whatever the data hub in which they are held. This is achieved through employing the same principles on which linked data and the web are built: data accessible through standard web protocols and formats (HTTPS, JSON, REST); the identification of resources through URIs; and the establishment of common, shared semantics for the descriptors of datasets. We exemplify by way of several live demonstrations of IoT applications which use data from HyperCat-enabled data hubs.

**Keywords.** Internet of Things, Information Broker, Data Interoperability, Distributed Data Repository, Data Discovery, Data Cataloguing

**Key Terms.** Interoperability, Integration, ICT Infrastructure, InformationTechnology, KnowledgeRepresentation