

Internet of Things

Unit 3

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Functional View

- The Internet of Things concept refers to uniquely identifiable things with their virtual representations in an Internet-like structure and IoT solutions comprising a number of components such as:
- Module for interaction with local IoT devices
- Module for local analysis and processing
- Module for interaction with remote IoT devices
- Module for application specific data analysis and processing
- Module for integration of IoT-generated information
- User interface (web or mobile)

- The complete system will have to include supporting tools providing security and business mechanisms to enable interaction between a numbers of different business entities
- Design of open APIs on all levels of the IoT
- Design of standardized formats for description of data generated by IoT devices to allow mashups of data coming from different domains and/or

Operational View

- In operational view, various options pertaining to IoT system operations are defined such as,
 - Service hosting options
 - Storage options
 - Device options
 - Application hosting options
- Operational view specifies
 - devices,
 - communication API,
 - Protocols
 - services(controller, mode and state),
 - application(web application, application server, data server),
 - security(authentication, authorization) and
 - management(application, database, device) to be used in IoT system.

Information View

- Information view defines flow and structure of information in IoT system.
- It does not specify how the information would be presented or stored.
- To define information model, first the list of virtual entities in the domain is prepared.
- Information model adds more detail to the virtual entities by defining

IoT and Semantic Technologies

- Semantic technologies are important towards discovering devices, as well as towards achieving semantic interoperability.
- During the past years, semantic web technologies have also proven their ability to link related data while relevant tools and techniques have just emerged.
- Semantic technologies will also have a key role in enabling sharing and re-use of virtual objects as a service through the cloud.
- The semantic enrichment of virtual object descriptions will realise for IoT what semantic annotation of web pages has enabled in the Semantic Web.
- Associated semantic-based reasoning will assist IoT users to more independently find the relevant proven virtual objects to improve the

Value Creation from Big Data and Serialization

- Industries are maturing at a faster rate than ever before — manufacturing is increasingly distributed and outsourced
- Companies are increasingly looking to optimize savings across the total product lifecycle
- Serialized identifiers are the keys to building an Internet of Things; just as unique IP addresses are integral to the web itself
- Product identifiers on a label can serve as a “key” to information about the processes and conditions through which the product has travelled

