



Towards Energy and Resource Efficient Multi-Radio Access for Internet of Things Connectivity

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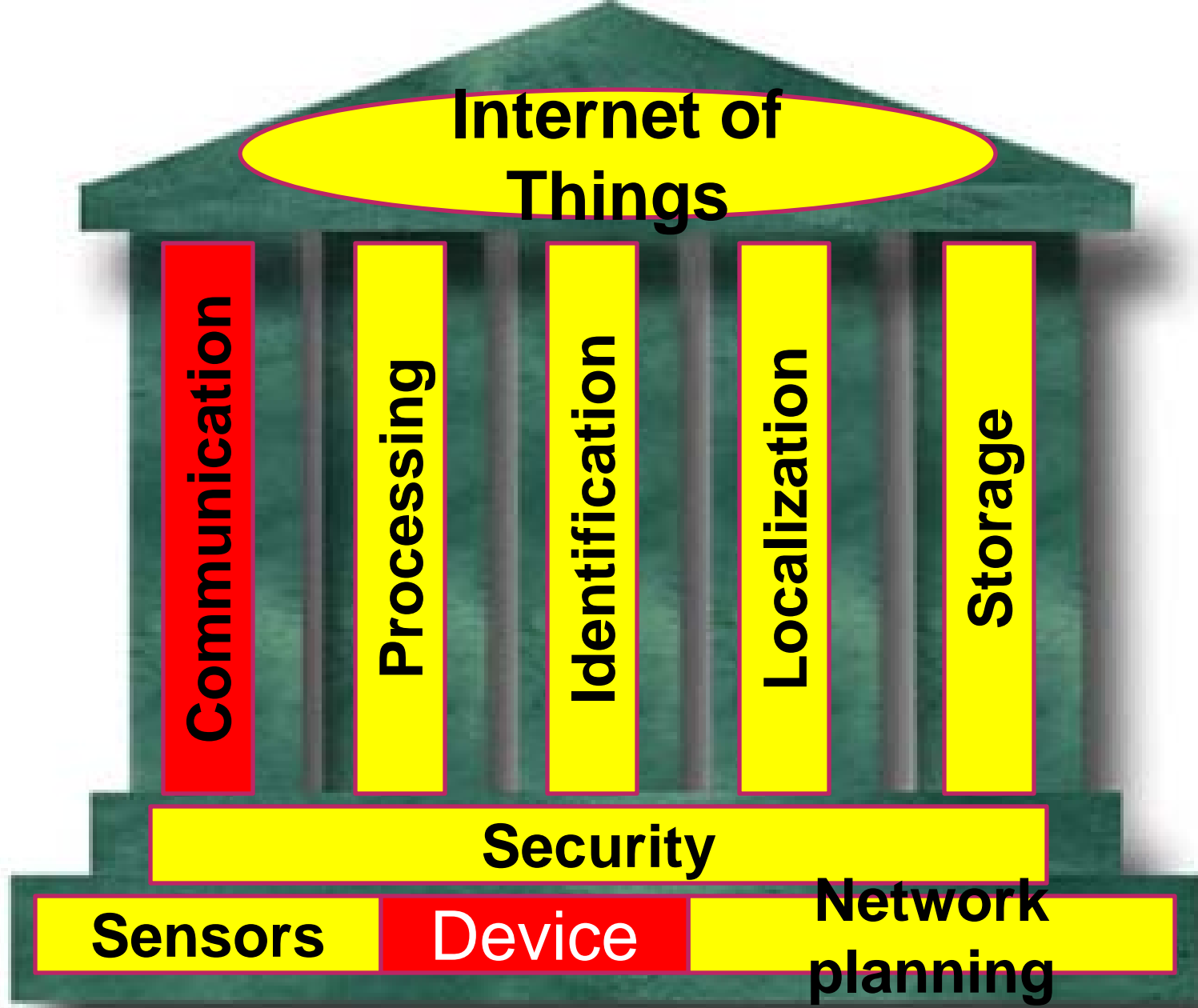
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Outline

- Introduction
- Background
- Project Objective
- Technical Approach
- Expected Outcome
- Towards Possible solution
- Challenges



Introduction

- Many “things” will not have permanent network connectivity and some “things” may have no network connectivity but depend on supporting intelligence in their local environment or in remote information systems
- The multimedia application has many requirements in terms of quality of service and users always want to be best connected anywhere, anytime, and anyhow.
- Variety of access technologies has become available to satisfy these demands like WiFi, WiMAX and Cellular networks

Illustration of IoT with physical objects

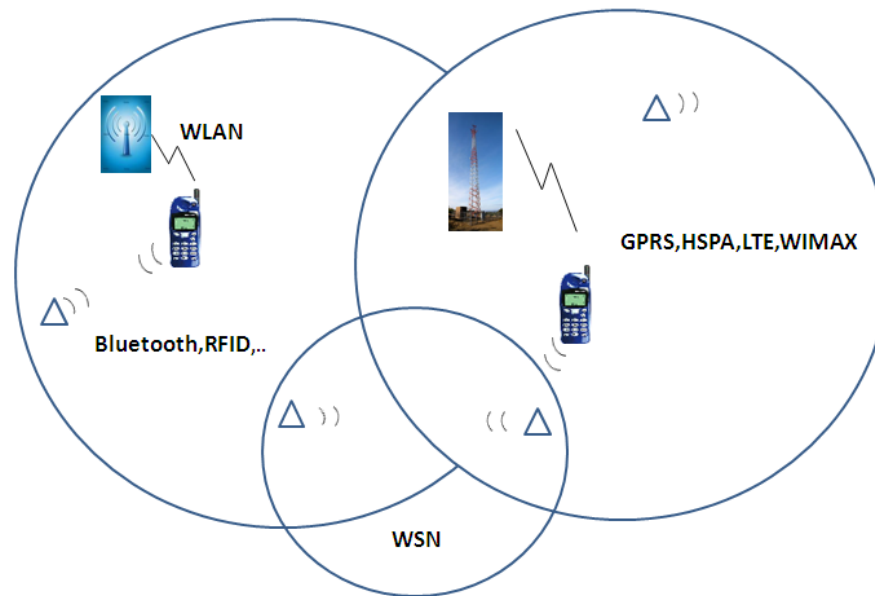


Figure Illustration of IoT with physical objects in the environment (“things”) being connected to the internet through multi-radio cellular technology

Project Objectives

- **Offer Quality of service** : connectivity time per day, latency in delivering data, amount of data transferred per session, cost per bit transferred and maybe other specific requirements
- **Architecture / Framework**: The architecture or framework is designed for connectivity of 'Things' to the internet.
- **Energy and Cost Efficiency** : The energy consumption and cost is to be minimised by using algorithms for energy consumption and Radio Resource management. Thus minimises cost of the research.
- **Radio Resource Management (RRM)**: Algorithms are designed to maximize the efficiency of the system radio resource usage, e.g. multi-radio access selection, while providing and controlling QoS according to the different IoT QoS requirements.

Technical Approach

- Design of Radio Network Architecture or Framework
- Communication protocols.
- Traffic handling/traffic management.
- QoS
- Multi-radio access
- Resource management.

Towards Possible solution

- Theoretical approach based on sample models for Internet of Things.
- Synthesis and design of Internet of Things using existing wireless infrastructure.
- A simulation model is set up for IoT using existing wireless infrastructure for the investigation of QoS (coverage, latency, data rates and traffic handling/traffic management).

Expected Outcome (1/2)

- By using existing infrastructure how the network connectivity is possible for Internet of things connectivity
- Network framework or architecture using cellular radio access technologies for connectivity of internet of things.
- Algorithms for efficient Radio Resource Management in Internet of Things.

Expected Outcome (2/2)

- Performance related to Internet of things for QoS, energy, latency, data rates, energy consumption, traffic handling (traffic management).
- Appropriate Selection of radio access techniques for connectivity of 'things' to the internet.

Challenges

- The main challenge is how to do connectivity of internet of things to WLAN & cellular technologies
- Due to the steadily increasing traffic volume from mobile Internet applications, challenge faced to provide more air interface and backhaul capacity
- Appropriate Selection of radio access techniques

Thank you!!

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