Canterbury Institute of Management (CIM)
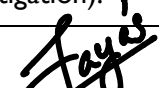## ASSESSMENT COVER SHEET

1. Personal Details

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Campus	Darwin Campus		
Course Title and Code	MBIS404 Networks and Communications		
Assessment Title	Assesment Task - *Week 11*		
Due Date & Time	15/12/2024		

Course Lecturer/Tutor Name:	Assessment Word Count (if applicable):
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MBIS404 Networks and Communications
Assesment Task - *Week 11*

Ayesh Jayasekara - CIM12137

1. What is IoT?

Internet of Things emphasizes inter-connected devices with built-in sensors & capabilities to capture information, connect and share them with other devices through various networking models.

IoT is widely adopted in all major technological aspects including automation, wearable technology, agriculture and so on with purpose built electronic devices and technology.

How it differs from traditional networks

The traditional devices are built around the purpose of computational power whereas IoT devices are built around target application with size, energy consumption, connectivity.

These devices are often networked in large quantities to create a cluster of IoT devices. When compared to traditional networks, IoT networks are;

- Low energy consumption - Smaller devices often uses less power

- Purpose built - Devices are networked to achieve a highly specific outcome

- Support for specific communication modes & protocols - Limited connectivity methods are supported that are required for the purpose the devices are built

2. Key Technology Enablers of IoT

The whole concept of IoT depends on underlying base concepts. As to which IoT is a reimagined networked micro devices in some sense.

Some key enabler technologies can be classified as,

- Connectivity

    - Bluetooth - Low power short range connectivity
    - Wifi - High bandwidth WAN capabilities
    - NFC & RFID - Short range passive & active communication

- Cloud Computing - Provides supporting infrastructure to install, operate IoT networks with scalability options

- AI/ML - Facilitate processing of large chunks of upstream data to produce valuable insights

- Communication

    - HTTP/HTTPS
    - Web APIs
    - MQTT protocol

3. Role of RFID in IoT

RFID stands for *Radio Frequency Identification.* The reader does not need line-of-sight which sets RFID apart from conventional barcode systems.

The reader emits a radio frequency to which the passive tag responds with a simple universally unique identifier. In the context of IoT RFID plays a significant role in IoT applications relating to supply chain management alike.

Low energy consumption, no requirement of line-of-sight, smaller device size works in favor of RFID in IoT

According to (Deshpande et al., 2024), Amazon & UPS uses RFID in conjunction with IoT to facilitate their smart warehouses, some of which are fully automated with zero human interaction in some departments.

4. Contribution of NFC in IoT

Near Field Communication can be identified as an extension of RFID technology. Comparatively, NFC operates in much shorter range as close as 4 to 5 centimeters.

Some of the features that contribute to the context can be listed as,

- Security - NFC is often used as digital presence and supports encrypted communication

- Cost - Relatively lower manufacturing costs reduce entry barriers for IoT devices and applications

- Compatibility - NFC is widely adopted within the industry enabling compatibility with various kinds of devices such as smartphones, key fobs, wearable technology etc.

Bibliography

Deshpande, A., Sarkar, B., Dave, D., & Dave, R. (2024). *Advanced Manufacturing and Supply Chain with IoT* [https://www.perlego.com/book/4351973(visited 2024-12-09)]. BPB Publications.