International Telecommunications Union "Forum on Internet of Things (IoT): Smarter Living in the Caribbean"

Spectrum Management Issues for Caribbean IoT Deployment

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The Spectrum Management Issues affecting IoTs

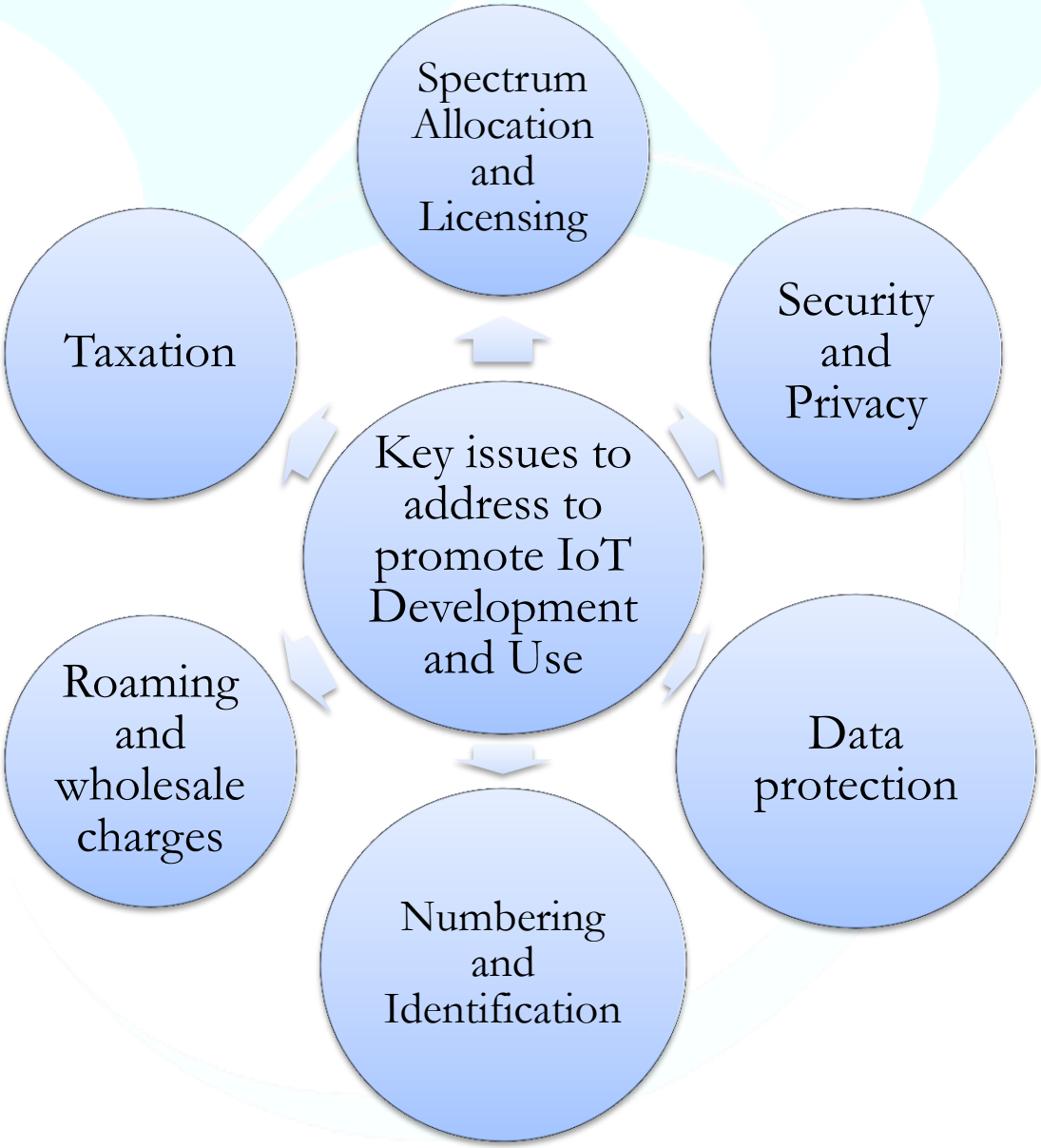
Telecommunications Authority of Trinidad and Tobago

Outline

- Key Issues to promote IoT development for a Policymaker/ Regulator/ Spectrum Manager
- A closer look at the Spectrum Management Issues
- A Trinidad and Tobago Perspective
- Embracing IoTs

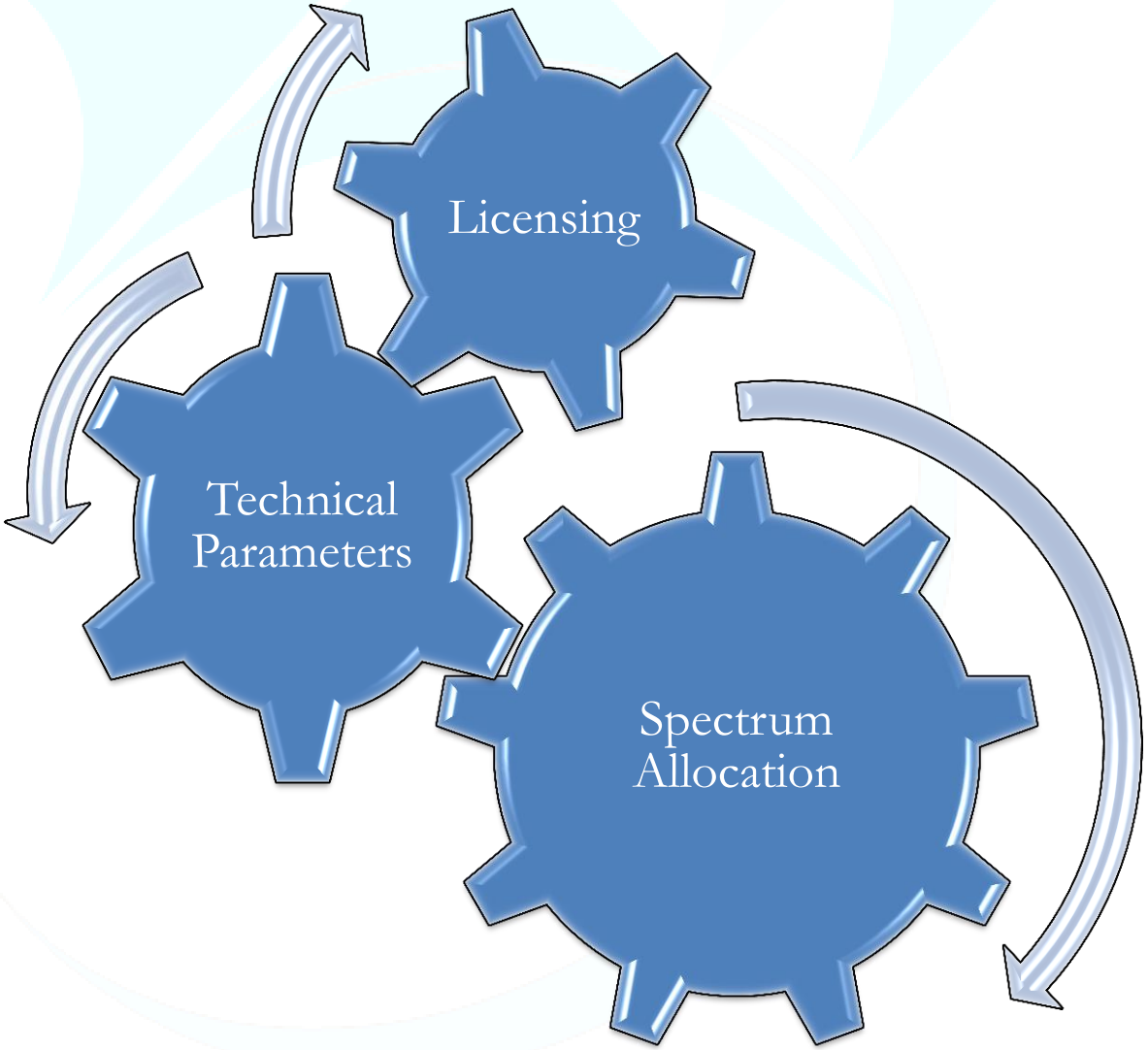
Key Issues to promote IoT development for a Policymaker/ Regulator/ Spectrum Manager

Key Issues


Spectrum Allocation and Licensing
Security and Privacy
Data protection
Numbering and Identification
Roaming and wholesale charges
Taxation
Key issues to address to promote IoT Development and Use

A closer look at the Spectrum Management Issues

Key Facets of Spectrum Management



Spectrum Allocation

- **For the most part…**
  - IoT devices communicate wirelessly
  - IoT communication is narrowband
  - Existing wireless technologies are employed (e.g. WiFi, ISM applications, GSM, LTE)
  - Existing Spectrum Allocations are used
  - Existing networks are utilised (e.g. Cellular Mobile Operators, Satellite Systems)

Spectrum Allocation

- **However...**
  - Some IoT applications require the use of new technologies (e.g. 5G, Low Power WAN)
  - More spectrum is needed by existing and new networks
  - More spectrum needed for new short range applications
  - Spectrum Harmonization critical to IoT globalization

Technical Parameters

- **For the most part…**
  - IoT devices utilize wireless technologies already type approved or certified (e.g. WiFi, LTE)
  - The technical operating parameters of IoT devices compare with existing radiocommunication services (e.g. ISM applications)

Technical Parameters

- **However...**
  - New wireless technologies that can support IoTs are still being standardized for adoption (e.g. 5G, LPWAN, TV White Spaces)
  - Spectrum allocation may determine the technologies and associated technical parameters available for consideration

Licensing

- **For the most part…**
  - IoT devices that utilize existing networks comply with the existing licensing framework that regulate those networks
  - IoT devices can be grouped under existing licence classifications (e.g. licence exempt/class licence, spectrum licence)
  - Licensing frameworks have evolved from apparatus licensing to licensing spectrum use

Licensing

- **However...**
  - A technology neutral approach to licensing the use of spectrum will allow IoTs the flexibility to develop and take advantage of new wireless technologies
  - A light-handed or flexible licensing approach needed to IoTs beyond the early stages of market development towards maturity, particularly machine-to-machine devices

A Trinidad and Tobago Perspective

Spectrum Allocation

Spectrum Allocation to Support IoTs

- IMT Spectrum (700 MHz Band, AWS Band)
- 2.4 and 5 GHz (WiFi) Bands (e.g. WiFi connected devices)
- 433 MHz, 902- 928 MHz and other ISM Bands (e.g. automated meter readers)
- Planning for TV White Spaces
- Integrally involved in the Caribbean Spectrum Harmonization efforts

Technical Parameters

Equipment Certification to Accommodate IoTs

- Certification of devices, by make and model, based on adopted Standards
- Determines type of devices that can be used in the country and the type of licensing required.
- Some IoT devices have been certified, on a case-by-case basis, based on the radiocommunications device evaluated (e.g. satellite telemetry devices for asset management, vehicle sensors)

Licensing

Licensing to enable use of IoTs

- Licensing of spectrum use
- Class Licence / Licence-exempt / general authorisation category for mass market, low-power interference potential devices
- Technology neutral approach to licensing (e.g. IMT bands can be used by any cellular technology that conforms to frequency assignments and technical operating parameters)

Embracing IoTs

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Key Considerations

- Identification of the various modes of connectivity for IoT devices within your jurisdiction
- Understanding of the nature of use and priorities for IoTs within your jurisdiction
- Assessment of additional spectrum requirements to support IoT connectivity, for existing and new networks.
- Licensing regime that reflects the manner in which IoT devices utilize spectrum (e.g. shared access, low power, narrowband)

Thank you

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