



Connected Living

What's unique about the IoT?

Understanding the differences

IoT is different from traditional voice and data services as it is truly global, connecting local resources with platforms on the other side of the globe. Moreover, it covers a wide variety of services, including health, logistics, automotive and energy management to name a few.

Its value chain is far more complex and articulated; it involves service providers, module manufacturers, connectivity providers, system integrators and device manufacturers. The great news for consumers and businesses is that all these players not only co-operate in innovative partnerships, but also compete with one another to own the relationship with the end-user, thus creating an extremely competitive market.

IoT uses different business models, the most common one being Business to Business to Consumer (or B2B2C). This is when the mobile operator provides connectivity as one of the input to a service provider. The service provider then packages and offers the end product or service directly to the end user. In other words, the mobile operators generally hold a relationship with another business, but no longer directly with the end-user.

It is also different from traditional voice and data because in IoT the real value proposition is the entire service offering, providing an end-to-end service where connectivity is only an enabler, whereas in traditional telecom it is the core service provided.

Evolving strategies

In an evolving ecosystem, mobile operators have the challenge to develop their strategies to maximise the IoT opportunity. They need to open a positive dialogue with regulators and policymakers, highlighting the potential benefits that governments and businesses can gain from the IoT, demonstrating the significant socio-economic benefits that the IoT can generate and educating them on how these innovative services represent an opportunity to improve living standards and business competitiveness.

Operators also need to advance their competencies. The IoT offers opportunities for operator revenues beyond connectivity, such as device management and security. However deploying new end-to-end services means developing new partnerships and requires acquiring new skills to be competitive in a dynamic marketplace. For example, an operator wanting to provide connected car services will have to work in close contact with automakers and/or the car component manufacturers industry.

Ensuring the security and privacy of data for IoT connected devices is also a key to success. Industry players need to build trust and take measures to protect the integrity of customers and network communications, as well as respond to emerging requirements in a prompt, comprehensive and collaborative manner.

The role of the GSMA, and in particular of the GSMA Connected Living programme, is to facilitate the roll-out of these services and remove the barriers that obstruct the progression of the IoT globally, may this be of an administrative, regulatory or technical nature.

For example, the Connected Living team has worked on defining the GSMA Embedded SIM Specification for remote SIM provisioning which is an open set of specifications aimed at facilitating over-the-air provisioning for IoT specific applications.

The GSMA Embedded SIM Specification

The GSMA's Embedded SIM Specification provides a standard mechanism for the remote provisioning and management of machine to machine (M2M) connections, allowing "over the air" provisioning of an initial operator subscription, and the subsequent change of subscription from one operator to another. This has been developed with the requirements of IoT devices in mind. In the IoT market the SIM may not easily be changed via physical access to the device or may be used in an environment that requires a soldered connection; thus there is a need for 'over the air' provisioning of the SIM with the same level of security that is achieved today with the traditional removable SIM.

The latest version of the GSMA Embedded SIM Specification (V3.0) now includes Profile Interoperability that will simplify the process of connecting IoT devices and enhance the flexibility of how mobile network operators and original equipment manufacturers (OEMs) do business in the future. The specification has been backed by over twenty operators, two leading M2M Alliances and a host of OEMs. The complete set of documents relating to the GSMA Embedded SIM Specification can be accessed via the IoT Knowledgebase.¹

To find out more

To find more information on the Embedded SIM and the technical challenges of connecting IoT devices to a network, access the "Remote SIM Provisioning" section of the Knowledgebase.

Policy and regulatory themes

When engaging with governments and regulators, members should emphasise that a growing IoT provides a vast range of socio-economic benefits. Governments and regulators can unlock these benefits by implementing policies that promote innovation and investment, as well as introducing regulatory frameworks that build trust and are technology neutral. This will give confidence to consumers and the industry which will help drive adoption of the IoT.

Key IoT policy and regulatory principles

The GSMA believes that governments should develop policies that enable growth by:

- **Creating a pro-investment environment:** Governments and regulators should recognise that the IoT is a nascent industry. They should establish and maintain a pro-investment environment across the IoT value chain that avoids technology restrictions as well as fosters

¹ [https://infocentre2.gsma.com/kb/Internet%20of%20Things%20-%20\(IoT\)/Pages/Other-GSMA-resource-.aspx](https://infocentre2.gsma.com/kb/Internet%20of%20Things%20-%20(IoT)/Pages/Other-GSMA-resource-.aspx)

innovation and promotes adoption. This could include things like relaxing licensing requirements or incentivising IoT investment through subsidies or lower tax schemes.

- **Adopting the IoT in the public sector:** Governments can realise significant benefits through implementing IoT services in the public sector in areas such as intelligent transport systems, energy management and personalised healthcare. They can also promote innovation through R&D funds or collaboration initiatives.
- **Promoting interoperability:** Interoperability is relevant at both technical and policy level. At a technical level, interoperable platforms and services reduce deployment costs and complexity, facilitate scalability and enable consumers to enjoy intuitive connected experiences. With regards to policy, it is valuable to adopt consistent approaches across countries and regions to facilitate the deployment of services.
- **Allocating sufficient harmonised spectrum:** Policy makers should lend their full support to the action from WRC-15 to ensure the WRC-19 agenda includes an item on identifying spectrum for 5G, with M2M as one of the prime motivations.

Regulators should also promote policies and measures that build trust in the IoT by:

- **Maintaining commercial flexibility:** Operators require flexibility when developing new and innovative models that meet the requirements of partners and customers. Consumer protection regulation plays an important role in ensuring trust. However, the customer in IoT might be an enterprise rather than a consumer, requiring flexibility in regulatory approaches.
- **Enabling global IoT business models:** It is important that regulators and policymakers recognize the truly global nature of IoT services. Their users most often require global distribution coverage and managed platforms for economic viability and the provision of consistent global services. All parties should be able to select a model that best suits their needs and no specific provisioning model should be mandated, promoted or imposed by regulatory action.
- **Ensuring technology and service neutrality:** The IoT ecosystem is composed of a large number of diverse players. Governments and regulators should ensure that policy frameworks are based on a fair regulation of equivalent services and are technology and service neutral.
- **Applying data protection frameworks consistently:** Data protection and privacy frameworks should be applied consistently to all parties in the IoT value chain as well as support self-regulation, risk management-based approaches and privacy management programmes. Privacy framework implementations should ensure that protections are practical and proportionate, are designed and built into IoT services (privacy by design) and lead to business practices that provide transparency, choice and control for individuals.

Market engagements to date and lessons learnt

During 2014 -2015 the GSMA has engaged with governments and regulators around the world on specific issues. The questions that regulators are asking and the answers that GSMA have provided in co-operation with local operators are documented in the knowledge base:

- In Brazil, the GSMA lobbied for and obtained a reduction on taxes applicable to M2M devices
- In Singapore, the GSMA provided details on the functionalities and the potential of the Embedded SIM and on the regulatory best practice
- In India, the GSMA contributed to the discussions on a number of topics during the definition of the M2M roadmap

- In Europe, the GSMA actively engaged with BEREC on a number of topics such as numbering, privacy, spectrum, roaming
- In the Americas, The GSMA contributed to the debates in CITELEPCC working group dedicated to M2M

The intensifying frequency of enquires suggests that there is a growing interest in IoT by regulators and ministries. The most common areas of enquiry are numbering, switching, privacy and security, Embedded SIM and Spectrum.

Clearly, policymakers are keen to understand the implications that IoT devices will have on their citizens and businesses in their everyday life. Most governments, particularly in emerging markets, tend to issue guidelines and propose regulations that will increase their oversight and impose rules which force service providers to 'localize' services, such as additional registration requirements, SIM Know-your-customer rules² and rules on lawful intercept. Implementing these type of policies may result in increased market fragmentation; additionally, the loss of the global dimension in a business that generates relatively low per device ARPU, means that scale is key. Enabling sustainable business models and building on existing or innovative platforms is key to mobile operator's success.

To find out more

For more information on specific regulatory areas such as Data protection and Privacy, Numbering, and Taxation, visit the appropriate sections accessible from the main page of the Knowledgebase.

² These are rules imposing end-users to register their SIM to a specific users normally requiring some form of ID.