



International Digital Cooperation-ICT Standardization Mobile Services - 5G

Presented by: InDiCo Project Team and G&A Consultores



Agenda

01. Introduction

02. 5G Market & Standardization activity in Chile

03. 5G Market & Standardization activity in Colombia

04. 5G Market & Standardization activity in México

05. 5G Market & Standardization activity in Peru

06. Conclusions



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"ETSI requested to G&A Consultores to gather intelligence and data on standardization in Chile, Colombia, Mexico and Peru. This report is a synthesis of the findings by G&A Consultores.

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The information contained in this report is intended solely to provide general guidance on matters of interest for the personal use of the reader, who accepts full responsibility for its use."

- The INDICO Project was created in order to **establish and stimulate cooperation** with key countries and regions in the domain of **ICT standards**.
- In Latin America, INDICO has been working with direct resources, focused mainly in Brazil, but there is a need to **expand the knowledge and understanding** of the information and communication Technologies (ICT) standardization landscape in other countries like **Chile, Peru, Colombia and México**.
- **G&A Consultores**, a Chilean specialized firm is supporting INDICO to **enhance the scope of this work** to this additional countries, focused mainly in 3 key technologies for the region: **5G, Internet of Things (IoT)** and **Cybersecurity**.
 - ✓ In 2020 G&A developed a study to gather and analyze information related to ICT local policies, standards and ecosystems, including a review of activities both in public and private entities.
 - ✓ In 2021 INDICO asked G&A to do a second part of the study, that includes an **update of the situation of ICT standardization** for 5G, IoT and cybersecurity in the same countries.
- This presentation is focus in **5G technology** and includes the relevant information collected by G&A since 2020.

5G mobile networks in Latin America



The first 5G tests in Latin America started in 2016 by Ericsson and Claro in Brazil and expanded to other Latin American countries.

- › Fifth-generation mobile networks, commonly referred to as **5G**, can improve the end-user experience, reaching speeds up to **10 Gbps** with very low latency periods.
- › In **Latin America** there are **13 5G networks deployments**, that represents current live commercial networks which fit the definition of 5G as defined by 3GPP standards.
- › GSM Association (**GSMA**) expects that by 2025, **10%** of total mobile connections will be in **5G networks** in the region (around **MM connections**).



- › Currently regulators in the region are dealing with **spectrum allocation processes** for **5G deployment**, focused mainly in **3.5Ghz. frequency bands**.
- › It is expected that **for the late 2021**, regulators will **allocate the 3.5Ghz frequency bands** in most of the countries.
- › Chile has already allocated spectrum for in the early 2021, but the reality of the region is that it has been affected by the pandemic according to maintain the planned schedules.

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5G Network in Chile



Subtel launched the 5G process in 2020, publishing 4 tenders and *more than 400 Mhz of spectrum*.

The economic auctions of the 4 tenders were performed on February 2021 *collecting more than MM USD 450*.

- › 5G tests with operators were performed to validate network operation.
- › In July 2020, the Supreme Court defines **new spectrum limits** per operator.
- › **The 5G tender** is the **first spectrum auction** in Chile.
- › Chile had only carried out “*beauty contest*” bids (that assign the frequency to the best technical proposal).
- › The spectrum allocated for 5G was (20 Mhz) of **700 MHz**, (30 MHz) of **AWS**, 3 x 150 MHz) of **3.5 GHz** and (1200 MHz) of **26 GHz**.
- › Entel Chile launched in 2021 an **experimental 3,5 Ghz** based on 5G network in some areas of Santiago this year.
- › Subtel issued in 2020 a **technical norm** with general guidelines of cybersecurity for the design, deployment and operation of networks and systems for telecommunication services to support the **5G deployment plan**.



Standardization Ecosystem

- › **High level of investment** is expected to deploy a full **national coverage** 5G network.
- › The 4 tenders will comply with **Release 15 or higher of 3GPP standards**.
- › 5G tenders follows **GSMA** recommendations from its report “Spectrum 5G: GSMA's position on public policies” regarding **5G spectrum**.
- › **Backwards compatibility** are also mandatory to interoperate 5G with 3G and 4G networks. .

5G Stakeholders in Chile

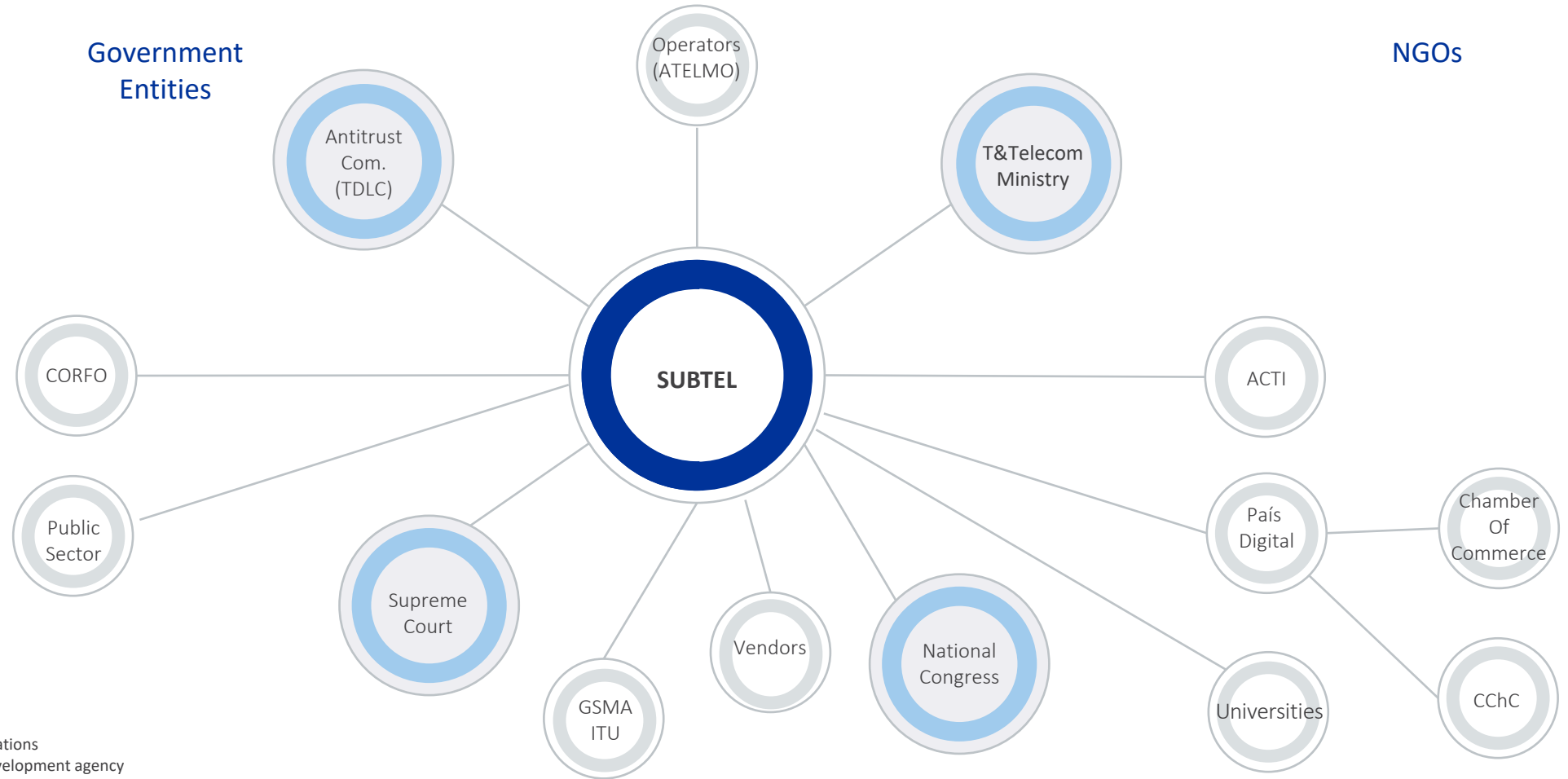


Type of Stakeholder: 	Regulation and Standardization	Research, development and promotion	Deployment, execution and operation	Cybersecurity 5G
Government 	› Undersecretariat of Telecommunications (SUBTEL) › National Congress ⁴ › Ministry of Transport and Telecommunications	› CORFO	› -	› Undersecretariat of Telecommunications (SUBTEL)
Local NGO's & Private Sector 	› Universities: University of Chile, Pontifical Catholic University of Chile, Metropolitan Technological University	› Mobile Op. Association (Atelmo) › IT Companies Association (ACTI) › País Digital Foundation. › Construction Chamber (CCHC) › Chamber of Commerce (CCS)	› Telecommunications Operators (Entel, Telefonica, Claro, WOM)	› -
International 	› GSMA	› International Telecommunications Institute (ITU)	› Technology vendors (Huawei, Ericsson, NSN (Nokia Solutions and Networks), others)	› Ericsson, Nokia and Huawei

5G Development



ICT Stakeholders 5G Ecosystem - Chile



SUBTEL - Undersecretariat of Telecommunications
 CORFO - Ministry of Economy through its development agency
 ACTI - Chilean Association of Information Technology Companies
 CChC - Chilean Chamber of Construction

- : Recommend regulatory and standardization Policies as subject matter experts
- : Participate and collaborate in the creation of regulatory and standardization policies
- : Direct responsible of regulatory or standardization policies making

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5G Network in Colombia



In 2019 MinTIC issued the *5G Plan* in order to create a roadmap, which considers the situation of Colombia's current infrastructure, in order to deploy 5G networks from 2019-2022.

- › In 2019 CRC presented the **Regulatory Agenda for 2020 - 2021**, with initiatives that are identified for ICT development considering technical and economical objectives.

- › **5G Pilots** are ongoing, MinTIC gave authorization to 6 operators granting a temporary permit for the use of 3.5 GHz spectrum.

- › **Public tender** is scheduled for **Q3 – 2021**, but it is believed that it will not be held on 2021, mainly due to how the pandemic has financially affected the operators.

- › The spectrum band to be auctioned will be **3.5 GHz**

- › In September 2020, DirecTV with Ericsson, Gemtek and Qualcomm, launches **the first 5G Wireless Fixed Internet Plan for homes**, using 2.5 GHz.

- › In May 2020 **CRC** published “Study on Regulatory Conditions to encourage the adoption of 5G technology in Colombia” with **recommendations of create internal policies and standardization** based on widely accepted industry guidelines such as ISO 27000 **for the deployment of 5G**.



Standardization Ecosystem

- › 5G plan follows **GSMA** recommendations “Spectrum 5G: GSMA's position on public policies”
 - › First band to be auctioned will be the **mid band 3.5 GHz**
 - › There is a recognition of the **importance** from the operators of **low bands** such as **600 MHz for 5G**.
 - › Regarding **millimetric bands**, there is an interest from the operators in **26 GHz and 37 GHz**, but for a **mid or long term**.
- › Regarding 5G network deployments, authorities follows **3GPP Release 15** or higher standards.

5G Stakeholders in Colombia



Type of Stakeholder:



Government

- › Ministry of Information Technology and Communications (MinTIC)
- › **Communications Regulation Commission (CRC)**
- › National Spectrum Agency (ANE)



Local NGO's & Private Sector

- › Universities: Pontifical Javeriana University, Autonomous University of Bucaramanga, Bolivar Technological University, others.



International

- › GSMA

Research, development and promotion

- › Ministry of Science, Technology and Innovation (Minciencias)
- › National Planning Department (DNP)

- › Mobile Op. Associations (Asomovil and Andesco)
- › Colombian Chamber of Informatics and Telecommunications (CCIT)

- › GSMA
- › International Telecommunications Institute (ITU)

Deployment, execution and operation

- › -

- › Telecommunications Operators (TIGO, Telefonica, Claro)

- › Technology vendors (Huawei, Ericsson, NSN (Nokia Solutions and Networks), others)

Cybersecurity 5G

- › Ministry of Information Technology and Communications (MinTIC)
- › Communications Regulation Commission (CRC)

- › -

- › -

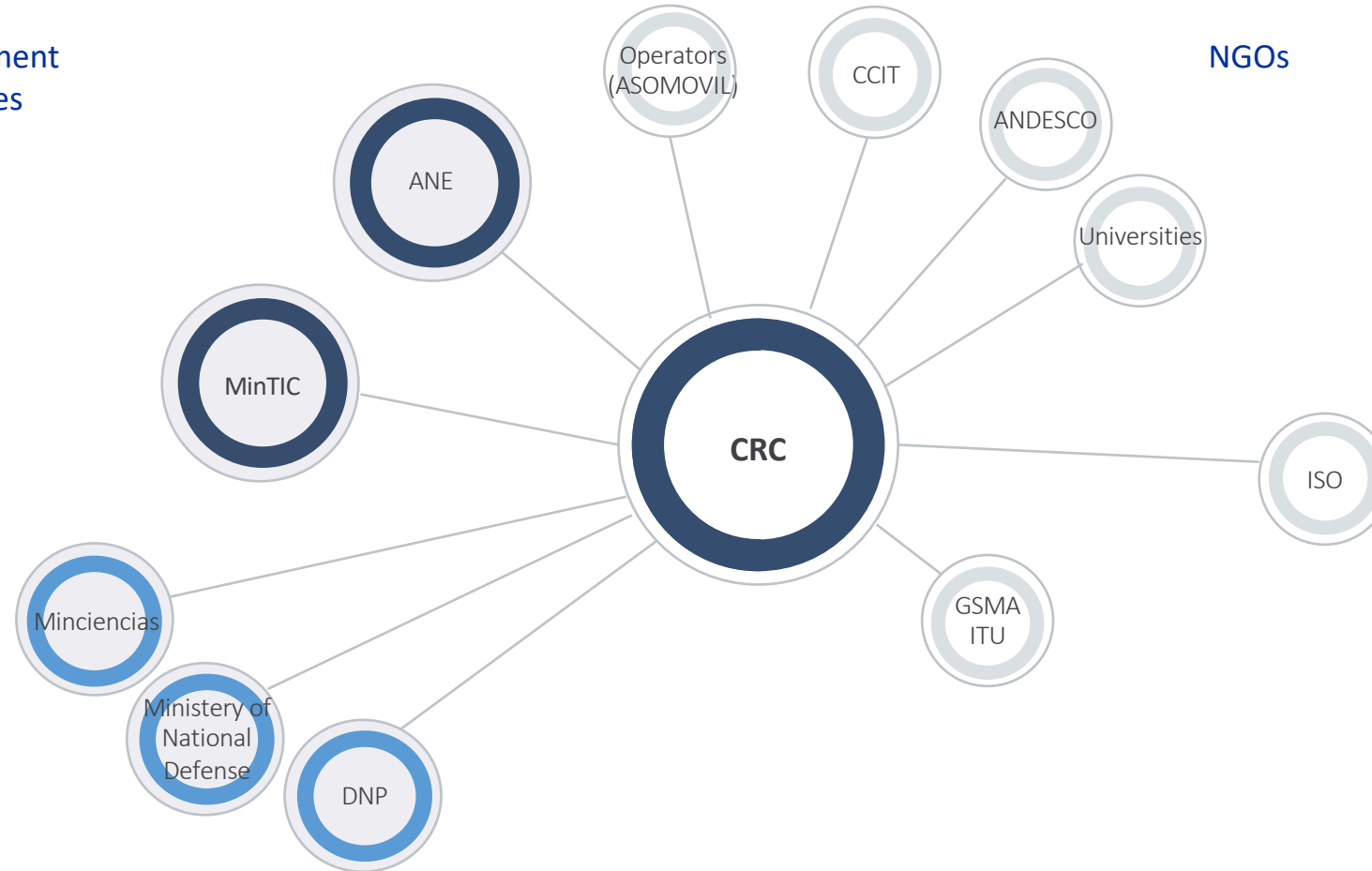
5G Development

ICT Stakeholders Ecosystem - Colombia



Government
Entities

NGOs



CRC - Communications Regulation Commission

DNP - National Planning Department

ANE - National Spectrum Agency

CCIT - Colombian Chamber of Informatics and Telecommunications

ISO - International Organization for Standardization

- : Recommend regulatory and standardization Policies as subject matter experts
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5G Network in México



The Federal Telecommunications Institute (IFT) is the technical entity responsible for standards and certifications.

- › The Technical Committee of Spectrum (**CTER**) is a **specialized technical support** body , consultative and non-binding, that **promotes the interaction** between IFT, the Industry and universities in spectrum matters.
- › **IFT** plans to award **more 5G frequencies** in 2021.
- › The band to be up for bidding is **3.5Ghz**, the most used worldwide for 5G. There are 3 operators in Mexico that already hold some spectrum blocks in the band, although in insufficient quantities to provide adequate 5G services
- › Mexico is at the early stages of the implementation of 5G networks, **Telcel is one of the first companies that has already deployed 5G** technology in a few states in Mexico, however, still has not made an official announcement.
- › Discussions about **cybersecurity associated with 5G** are mainly taking place at industry forums reaching out consensus that 5G by itself does not present higher threats that the existing in 4G networks but the inherent dangers of the **millions of devices and users that will be accessing the network**, thus the need to enforce public policies and regulation.



Standardization Ecosystem



- › The **new technical standard**, IFT-012-2019 for Specific Absorption Ratio (SAR) testing and certification, since February 2021.
- › Mexico on the path to WRC-19 (CPM-19-2) 3GPP and following International specifications, best practices, ITU reports and recommendations.
- › Mexico will implement “**Sensor 5G**” a tool that will **document the deployment of 5G** in Mexico and provides data and information on standardization, evolution and innovation.

WRC: World Radiocommunication Conference

5G Stakeholders in Mexico



Type of Stakeholder:



Government

- › **Federal Telecommunications Institute (IFT)**
- › Undersecretariat of Information Technology and Communications (ICT)
- › Federal Telecommunications Institute
- › Secretary of Economy



Local NGO's & Private Sector

› -



International

- › GSMA
- › Inter-American Telecommunication Commission (CITEL)

Regulation and Standardization

Research, development and promotion

Deployment, execution and operation

Cybersecurity 5G

- › Undersecretary of Information Technology and Communications ICT
- › Ministry of Economy
- › National Council for Science and Technology (CONACYT)

- › Mobile Association (Anatel)
- › Technical Committee on Radio Spectrum Matters (CTER)
- › National Chamber of Telecommunications and IT (CANIETI)

- › International Telecommunications Institute (ITU)

› -

- › Telecommunications Operators (Telcel, Telefonica, AT&T, ALTAN)

- › Technology vendors (Huawei, Ericsson, NSN (Nokia Solutions and Networks), others)

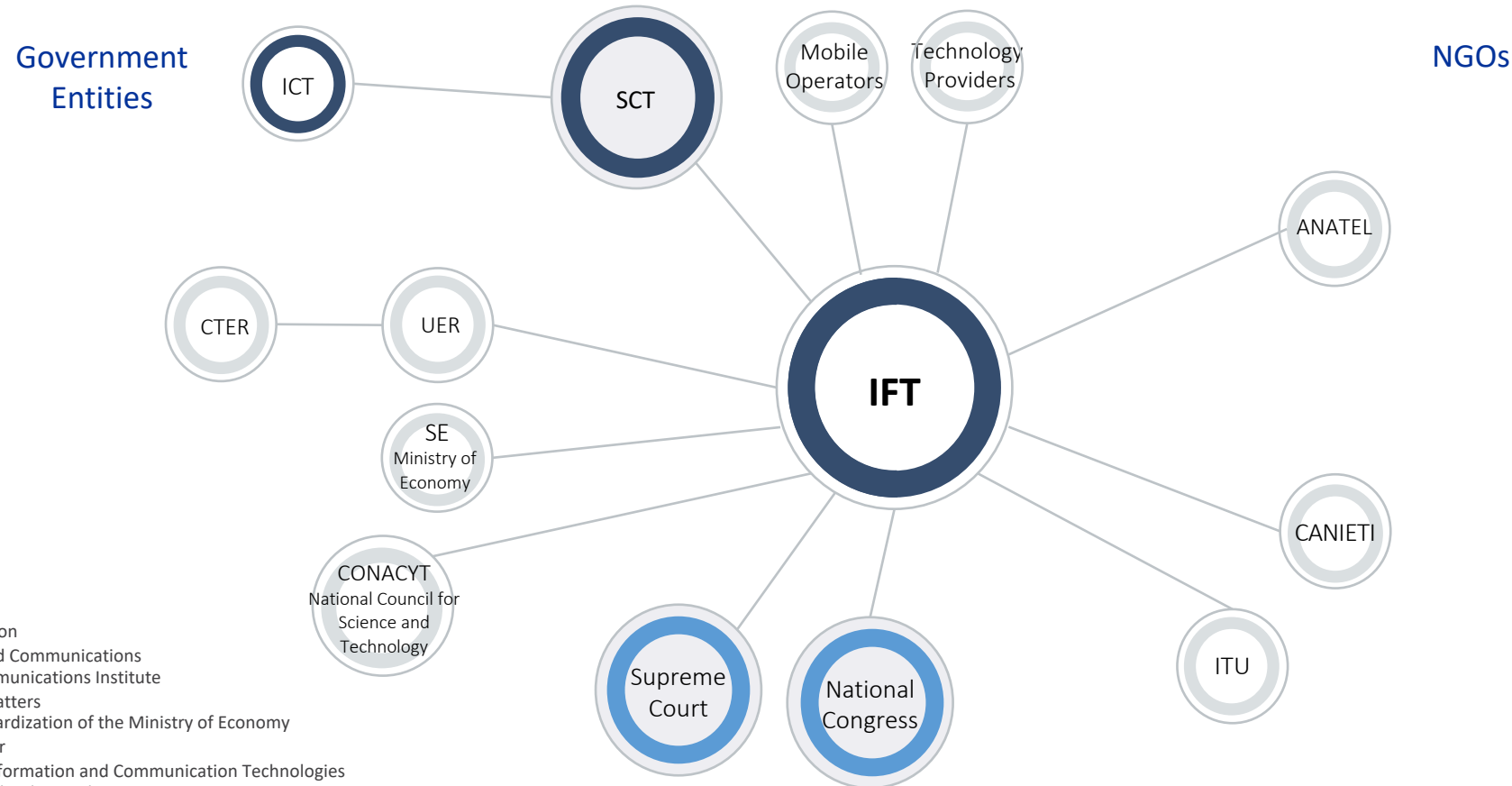
- › Federal Telecommunications Institute (IFT)

- › Industry forums

› -

5G Development

ICT Stakeholders 5G Ecosystem - Mexico



IFT - Federal Telecommunications Institute
 SCT - Ministry of Communications and Transportation
 ICT - Undersecretary of Information Technology and Communications
 UER - Radio Spectrum Unit of the Federal Telecommunications Institute
 CTER - Technical Committee on Radio Spectrum Matters
 CCONNSE - National Advisory Committee for Standardization of the Ministry of Economy
 CERT-MX - National Cyber Incident Response Center
 INFOTEC - Center for Research and Innovation in Information and Communication Technologies
 AMITI - Mexican Association of the Information Technology Industry

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5G Network in Peru



OSIPTEL is responsible for issuing the guidelines regarding the rational use of spectrum, promote investment and establish standards for 5G network deployment.

› **3.5 GHz** and **26 GHz** frequency bands are expected to be *tendered in 2022*.

› During 2019, operators performed experimental tests of 5G mobile technology, with NSA standard in the 3.5 GHz. frequency bands.

› In November 2020, Ministry of Transport and Communications (**MTC**) published a **5G roadmap** "Proposal for the allocation of 3.5 GHz and 26 GHz frequency bands and Identification of 6 GHz frequency band for the development of 5G"

› In March 2021, **Entel and Claro** announced a **commercial offer for 5G** Wireless Fixed Internet service in **3.5 GHz** band and 5G NSA network.



› The National Cybersecurity Policy, Law of Cybersecurity, Legislative Decree and Supreme Decree, they all refer to cybersecurity, information security and privacy of personal data matters in general terms, there is no specific reference on 5G.



Standardization Ecosystem

› **5G Roadmap** document makes an analysis of new radioelectric spectrum, where it follows:

› **3GPP standards (Release 15)**

› **WRC-19**, where new frequency bands in millimeter waves were identified

› **GSA** (Global Mobile Suppliers Association)

› **ITU** (International Telecommunications Union)

› **ECC** (Electronic Communications Committee)

› **CEPT** (European Conference of Postal And Telecommunications Administrations)

› On April 2021, **MTC authorized Claro, Entel and Movistar** to implement **5G** for **mobile services**, under the **NSA standard**.

WRC: World Radiocommunication Conference

5G Stakeholders in Peru



Type of Stakeholder:

Regulation and Standardization

Research, development and promotion

Deployment, execution and operation

Cybersecurity 5G



Government

- › **Supervisory Agency for Private Investment in Telecommunications (OSIPTEL)**
- › Ministry of Transport and Communications (MTC)

- › PROINVERSION

- › -

- › Ministry of Transport and Communications



Local NGO's & Private Sector

- › -

- › Mobile Op. Associations (AFIN)

- › Telecommunications Operators (ENTEL, Telefonica, Claro, BITEL)

- › -



International

- › GSMA

- › International Telecommunications Institute (ITU)

- › Technology vendors (Huawei, Ericsson, NSN (Nokia Solutions and Networks), others)

- › -

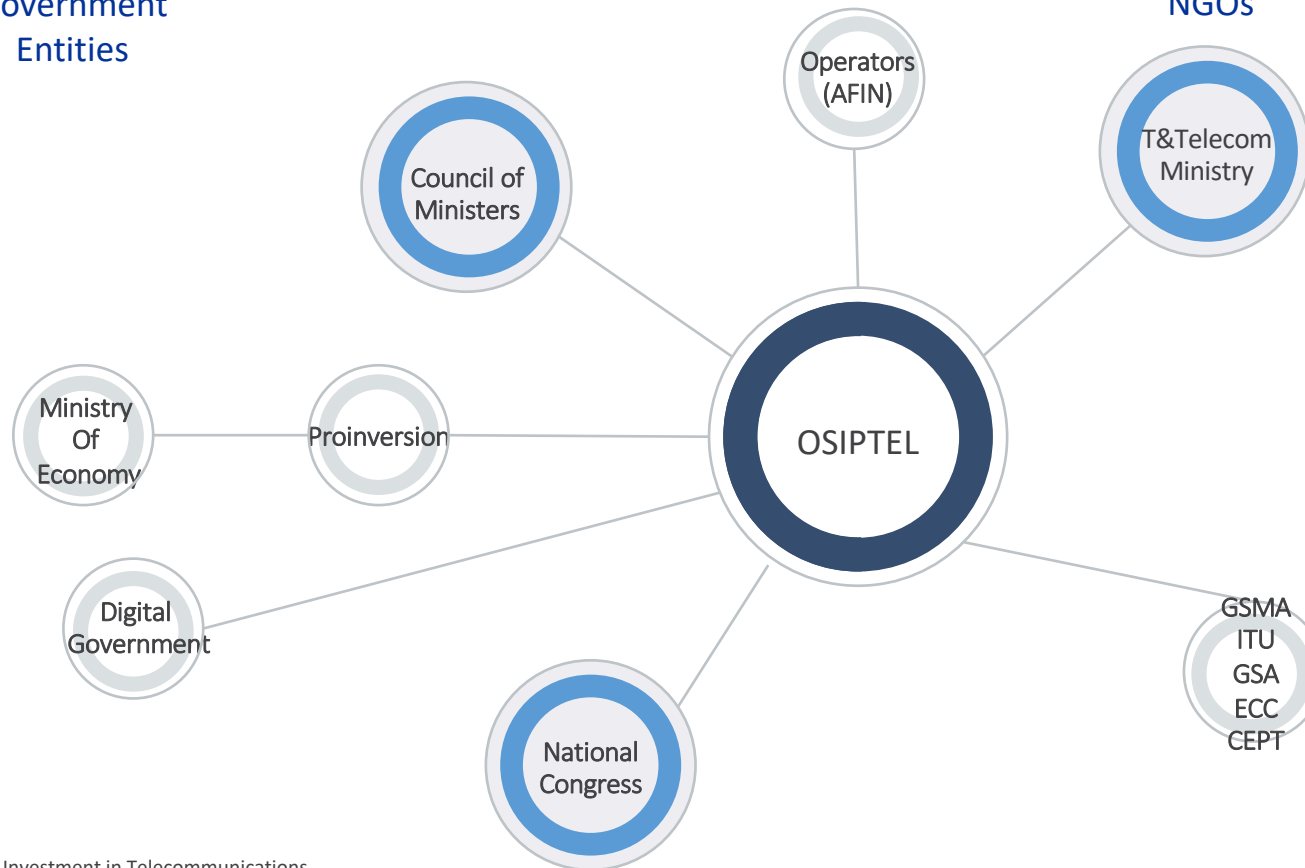
5G Development

ICT Stakeholders 5G Ecosystem - Peru



Government
Entities

NGOs



OSIPTEL - Supervisory Agency for Private Investment in Telecommunications

Concytec - Council of Science, Technology and Innovation

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Key ICT Standardization stakeholders per country

Key Stakeholders:

	Chile 	Colombia 	Mexico 	Peru 
 Government	› Under secretariat of Telecommunications (SUBTEL).	› Telecommunications Regulation Agency (CRC). › Technology Ministry (MinTIC),	› Federal Telecommunications Institute (IFT). › Under Secretariat of Information Technology and Communications (SCT).	› Under Secretariat of Telecommunications (OSIPTel).
 Local NGO's & Private Sector	› Mobile Operators Association (ATELMO). › País Digital foundation.	› Mobile Operators Association (ASOMOVIL) › National Association of Public Service Companies (ANDESCO).	› Mobile Operators Association (ANATEL). › IT and Electronics Chamber (CANIETI). › Cybersecurity association (AMECI).	› Mobile Operators Association (AFIN).
 International	› GSM Association (GSMA). › Pacific Alliance.	› GSM Association (GSMA). › Secretariat of the Inter-American Telecommunication Commission (CITEL). › Pacific Alliance.	› GSM Association (GSMA). › Pacific Alliance.	› GSM Association (GSMA). › Pacific Alliance.

- In the last year regulation and standardization **discussions** about 5G **are still open**, and the deployment of these technologies is still in an **early stage**.
- In general, **Pandemics delayed standardization** discussions and policy making in all the region, however put a lot of pressure in fixed and mobile networks deployment.
- **Due to this pressure, during the last year 5G was the technology more developed**, where regulators tendered spectrum and required for fast network deployments in all the region.
- **Local regulators maintained the participation** of **NGOs and private entities** through **public-privates committees** in order to create regulations and standards for ICT.



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