GSMA

Real-world solutions to key connectivity problems

Want to launch a successful 5G service or spectrum strategy?
First, you need accurate device data

Drawing on GSMA Device Database, Invigo is helping mobile operators prioritise 5G technologies and spectrum bands to ensure network optimisation

As mobile operators roll out multi-faceted 5G networks, they need to know the full capabilities of their customers' devices. Without that data, it can be hard to ensure the new networks have the optimum coverage and capacity to determine which 5G technologies and spectrum bands to prioritise.

That's where Invigo comes in. *"Identifying the device model enables our Automatic Device Management (ADM) solution to properly configure subscribers' devices for several data services,"* explains Ibtissam Hajjar, VP Products at Invigo. *"It also allows its data analytics module to generate a rich set of device-related statistics, which the operators use continuously."*
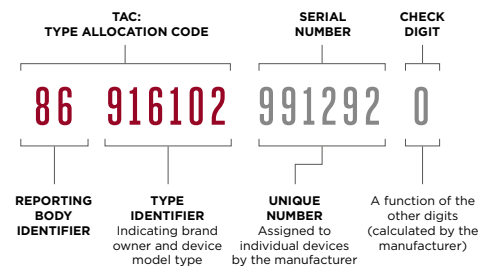
"With a single click, an operator can find out the penetration rate of any technology among the devices on their network."

How is Invigo using GSMA Device Database?

The Beirut-based company is serving more than 50 mobile operators across the world with its ADM solution, which provides valuable data about their customers' handsets. The ADM service draws data from GSMA Device Database, which identifies a device's manufacturer and model, as well as other characteristics, from its TAC (Type Allocation Code)[1].

"The GSMA is the authority that's allocating the TAC and that's the main source of information related to the mapping between the serial number and the device model," says Ibtissam Hajjar.
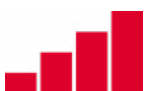
The TAC forms the first 8 digits of the International Mobile Equipment Identity (IMEI) which identifies each individual device on a network.

TAC: TYPE ALLOCATION CODE		SERIAL NUMBER	CHECK DIGIT
86	916102	991292	0
REPORTING BODY IDENTIFIER	TYPE IDENTIFIER Indicating brand owner and device model type	UNIQUE NUMBER Assigned to individual devices by the manufacturer	A function of the other digits (calculated by the manufacturer)

"One of the key differentiators between us and our competitors is the accuracy and the richness of the device repository, as well as what kind of information we can provide to the operator."

Ibtissam Hajjar, VP, Products at Invigo

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1. The GSMA issues the TAC used to identify device types, which all devices require. During this process, the GSMA collects data from all device manufacturers, which is collated to create Device Database. This can be updated by manufacturers in real-time, so the data is always accurate.

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What are the use cases for Invigo's ADM?

This device analytics tool is used by multiple different teams within mobile operators:

- The technical team can use the data generated by ADM to make informed decisions before investing in a specific technology (such as 5G or eSIM)

- The marketing team can target their campaigns at specific subscribers based on the device they use and its characteristics

- They can also offer specific bundles based on the device model or device capabilities (with some offers valid for only 5G devices, for example)

What GSMA data is in demand?

Customised reporting for IoT	Tracking 5G and spectrum	Knowing which technologies to focus on	Planning a successful strategy
Through Invigo's ADM interface, mobile operators can use GSMA Device Database's data to generate customised reports about the devices using their network. Recently, Invigo has seen strong demand for reports related to devices': • **Dual-SIM** • **VoLTE** • **eSIM capabilities**	With regulators auctioning more spectrum for 5G in low, mid and mmWave frequency bands, operators are keen to track the following, to maximise the potential of 5G: • **Which spectrum devices can support** • **5G device penetration** • **Specific frequency bands**	Operators can see the technologies with the highest penetration to improve capacity planning, through insights on: • **MIMO (multiple-input + multiple-output antennas)** • **Carrier aggregation (CA)** • **Embedded SIM capability or not** • **SIM card quantity** • **Number of IMEIs** • **Modulation schemes + frequency**	Operators are using Invigo's ADM and GSMA Device Database's data to inform their: • **Network design** • **Spectrum acquisition strategies** • **Service launches**

2G-5G manufacturer and model identification

Uplink/downlink MIMO and QAM band performance

Operating system identification

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> "Every time they need to launch a service, whether it's IoT, 5G, eSIM or VoLTE, they come back to us just to confirm that the figures they have are good enough to launch the service. For eSIM in particular, we have recently received a lot of requests from customers."
>
> **Walid Badaoui,** VP, Technical at Invigo

Competitive in mobile device management

Invigo has had a GSMA Device Database Service Provider License for 10 years. Founded in 2004 by six former Orange executives and engineers, including Ibtissam Hajjar and Walid Badaoui, it provides remote device and SIM management solutions to mobile operators worldwide. *"We are able to offer robust products at competitive prices thanks to our cost-effective operation,"* says Ibtissam Hajjar.

Invigo has had a GSMA Device Database Service Provider License for 10 years. Pull out quote: ***"We couldn't have developed our ADM solution without GSMA Device Database, as we need accurate mapping between the device TAC and the device model,"*** notes Walid Badaoui.

Device Type — Device Identification — Hardware Information — Operating System — Band Performances

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