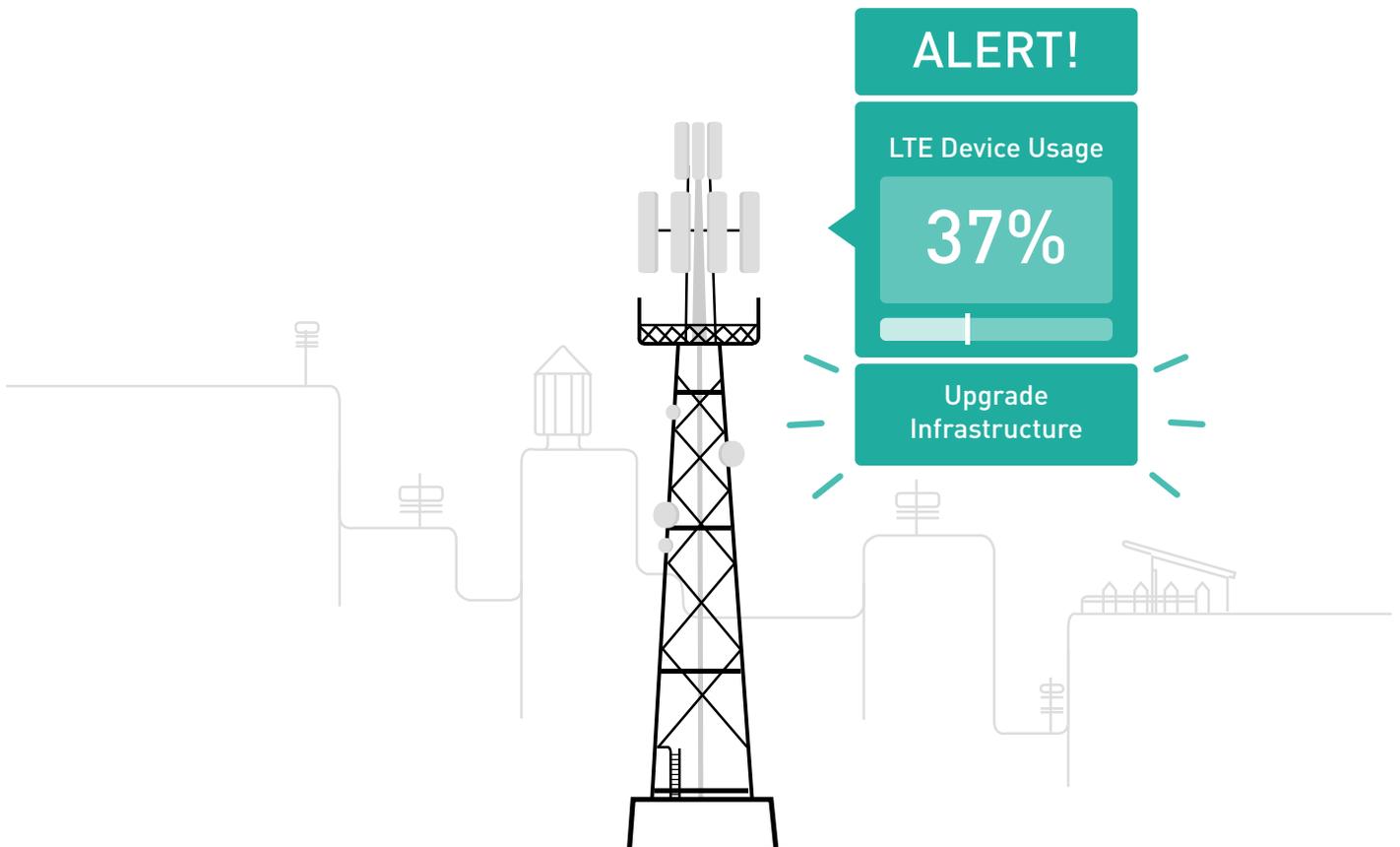


# WHY DEVICE AWARENESS IS ESSENTIAL FOR THE OPERATOR ENVIRONMENT

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HOW TO DEAL WITH THE INHERENT COMPLEXITY OF THE DEVICE LANDSCAPE

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# INTRODUCTION

Understanding all devices on your network used to be relatively simple, given that early mobile phones were used mainly for making phone calls and texting. Today you can easily get lost in the maze of mobile operating systems, screen sizes, and connectivity options that all impact user experience as well as network usage. Awareness of device capabilities is a major consideration for Network Operators but not easy to get right.

Prior to launching new devices, device manufacturers must apply for an official TAC (Type Allocation Code) that becomes the initial 8-digit part of the IMEI code. Mobile Network Operators (MNOs) typically use TACs to build device databases that can be used throughout the organisation.

However, TACs are a problematic source of device data, given that multiple TACs are often related to the same device and because of inconsistent and sometimes inaccurate data. Thus building your very own TAC-based database is challenging and time-consuming especially in terms of manual research, and management of multiple sources both from within your organization and from third parties. And with new devices coming to market every day, the device database needs to be constantly updated and reviewed for inconsistencies.

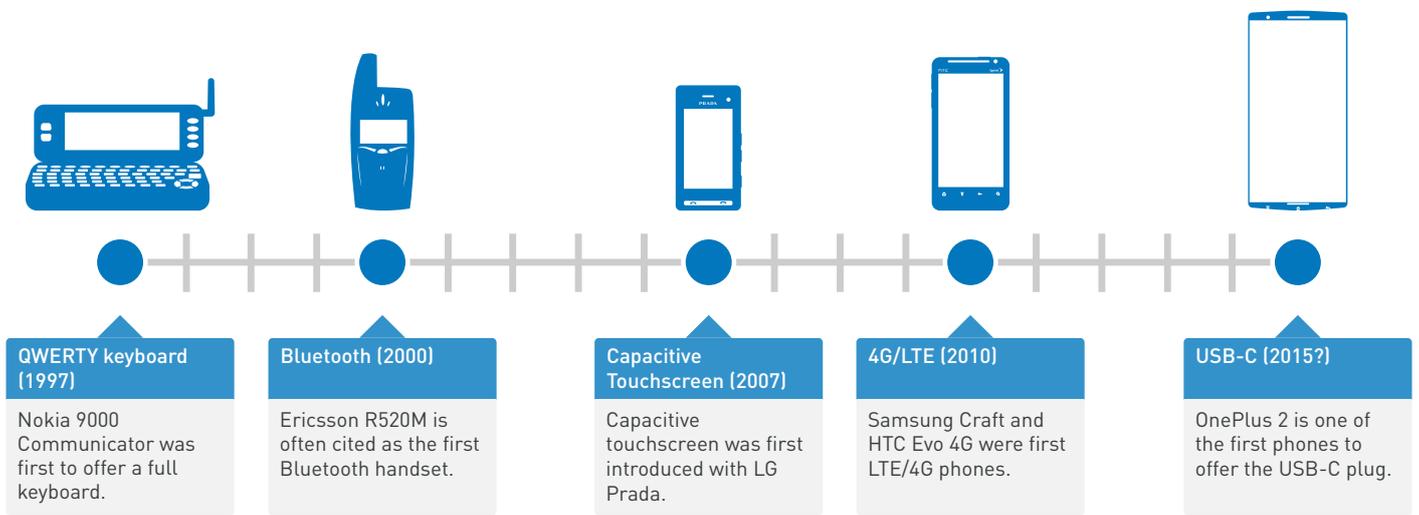
In this paper we'll discuss:

- Why today it is essential to understand all devices on the network
- How Network Operators can utilize deep device awareness
- What are the difficulties preventing operators from building, and maintaining in-house TAC-based device databases

Read on as we explore the device intelligence issues, and use cases that are especially important from an MNO's point of view.

# UNDERSTANDING THE DIVERSITY OF DEVICES ON YOUR NETWORK

With the number of cell phone connections overtaking the number of people living on our planet, it is important to bear in mind how different today's devices are from what used to be called 'mobile phones'. The list of technical improvements made to mobile phones has been growing ever since the early days of the industry.



While some of the new features may have been seen as largely marketing gimmicks, many entirely changed the way we interact with our mobile devices.

For a case in point, let's consider capacitive touchscreen. Introduced back in 2006 with the release of LG Prada, capacitive touchscreen allowed users to operate their smartphones without a stylus, using just their fingers. This completely changed mobile web browsing and, as a result, it compelled businesses to identify touchscreen-equipped devices to address them in a different way.

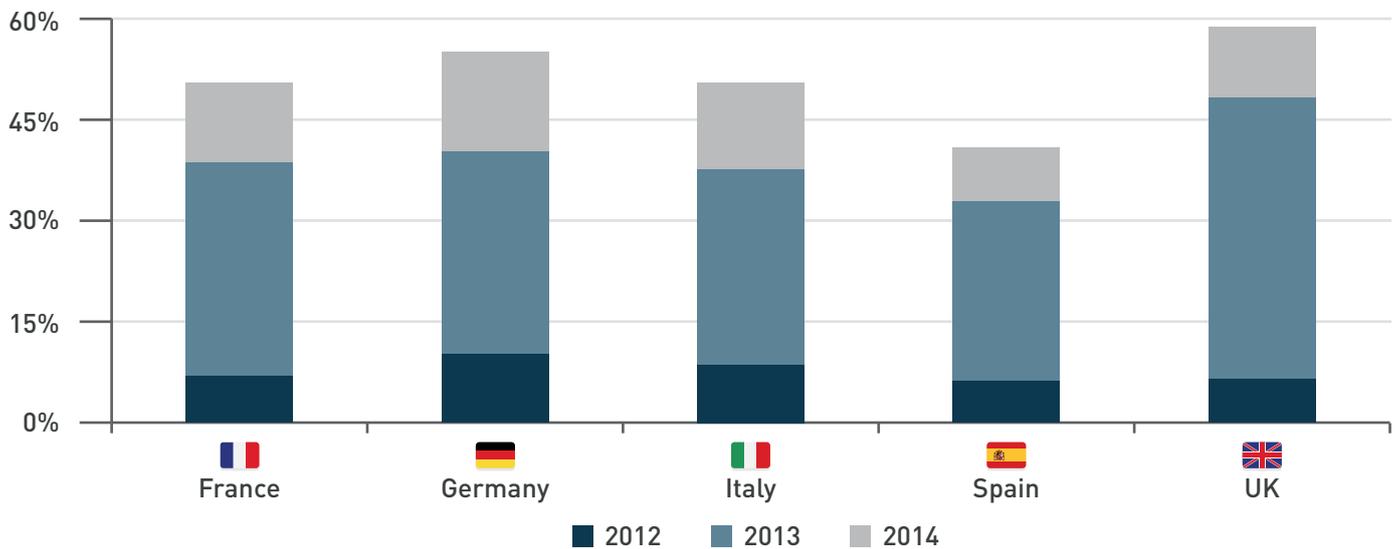
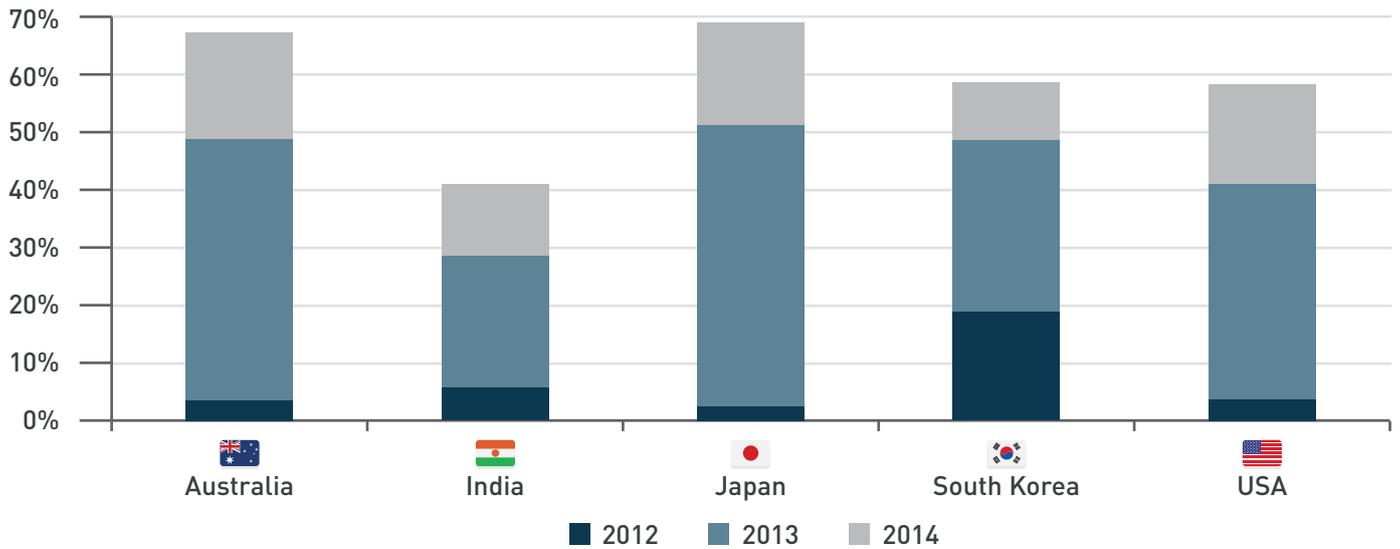
A much more recent device landscape characteristic refers to screen sizes. While early mobile phones didn't require large screens, today's smartphones are typically equipped with screens larger than 4.7 inches making mobile web browsing comfortable.

However actual usage figures can be different from shipment statistics because users aren't that swift to update their mobile devices with the latest arrivals. There are huge differences between local markets, given that some countries are faster to adapt large screens. Screen size diversity also can vary depending on the country. The following data, based on hundreds of sites using DeviceAtlas, shows you the most popular screen sizes and device age in different countries.

**Some selected Screen Sizes popularity in different countries (the table shows the percentage of web traffic in May and June 2015)**

Country	3.5in	4.7in	5.5in
Australia	36.42%	10.28%	2.76%
India	9.93%	6.35%	7.83%
Japan	44.19%	6.93%	3.01%
South Korea	18.19%	6.04%	15.35%
USA	33.16%	9.49%	4.2%
France	32.13%	6.72%	2.67%
Germany	25.16%	6.36%	2.23%
Italy	22.14%	5.59%	3.72%
Spain	18.47%	5.22%	4.23%
UK	33.67%	8.58%	2.25%

## Top yearReleased in different countries



While the device landscape has been developing rapidly a deep device awareness is essential to understand all the intricacies of the devices on your network which may not be the same for every market. In the Mobile Network Operator's environment this knowledge can be used in a myriad of ways described in the next section.

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# HOW DEVICE AWARENESS CAN AUGMENT OPERATOR DECISION MAKING

Having a sound understanding of all devices on the network, including detailed characteristics, can be a great asset to any organisation, provided that the right departments have access to this data.

Typically it's most useful to Business Intelligence, Data Insights, Data Warehousing, and Marketing teams.

## Rich Device Data augments Big Data solutions

A large Network Operator may generate hundreds of millions of CDRs per day. Consistent and up-to-date device characteristics can complement CDR data by providing more data points allowing better analysis of on-network activity. This makes for more complete data to generate opportunities and drive better business decisions and.

Rich device data in a Mobile Network Operator's environment can power big data solutions processing large amounts of data to uncover valuable insights on customer behaviour and lifecycle.

Device awareness helps Mobile Network Operators better understand customer choices, and requirements driving decisions on personalized offerings, infrastructure rollout, and customer support. Here are some examples illustrating how these insights can be utilized in an Operator's environment.

## Use Case 1: Device-related insight for sales and marketing, and device portfolio management

Access to detailed device data allows identification of specific groups of devices in order to run compelling marketing campaigns making the offerings more targeted and personalized. Examples of device related insights based on rich device data:

- **Phone upgrades**

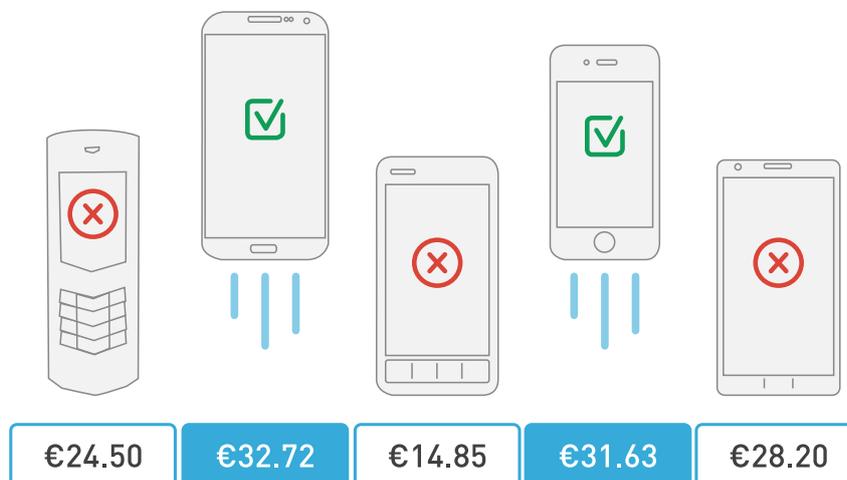
Device data can help you identify which phone owners are the most likely to upgrade their devices. For instance, this group may include owners of high-end Android phones that are at least 2 years old. Device data can be coupled with other indicators (such as contract expiry, or others) to identify very specific target segments.

- **Targeted service offerings**

Device characteristics can help Operators craft targeted service offerings tailored for particular device types, for example data add-ons for LTE-enabled handsets.

- **Managing device portfolio**

Operators can determine which devices deliver the highest ARPU rate to help manage the device portfolio.



## Use Case 2: Network optimization and planning

As Operators carry ever-growing volumes of data traffic, making further demands on the network, it becomes more complex and costly to plan and introduce infrastructure improvements. By having an accurate map of device characteristics on your network, you can effectively plan network infrastructure developments, and market introduction of new products, and services.

Examples of network optimization and planning decisions that can be made with device data:

- **Infrastructure rollout**

Device data helps Mobile Network Operators identify areas where an LTE rollout is likely to deliver value by analysing the amount of device that support LTE in a given area. Knowing what technology is used on the network is vital for planning infrastructure upgrades.

- **Handling heavy traffic loads**

Knowing which device characteristics typically drive usage of data services more than others (e.g. certain operating systems, screen sizes, high usage of certain devices etc.), Mobile Network Operators can identify transceiver stations that may be faced with heavy usage.

- **New services rollout**

Device characteristics, such as make and model, yearReleased or screenSize, can all help Mobile Network Operators make crucial decisions on where to roll out new services targeted at certain customers.

## Use Case 3: Troubleshooting and Customer support

Having highly accurate and detailed device data available can improve customer support services. It allows you to identify recurring problems, or customer behaviour patterns and link them with device characteristics to provide fast customer support and shorter resolution .

Examples of customer issues solved with device data:

- **Mobile hotspot problem**

Problem: The mobile hotspot feature doesn't work on Windows Phone devices. Knowing that the customer device is based on Windows Phone, the customer support team may quickly identify what causes the tethering problems.

- **Low-end phone problem**

Problem: A customer can't access certain services on a low-end phone. Knowing accurately the device model and marketing name, and for example that the yearReleased is less than 2012, the customer support team can solve the customer's problem faster.

- **LTE/4G problem**

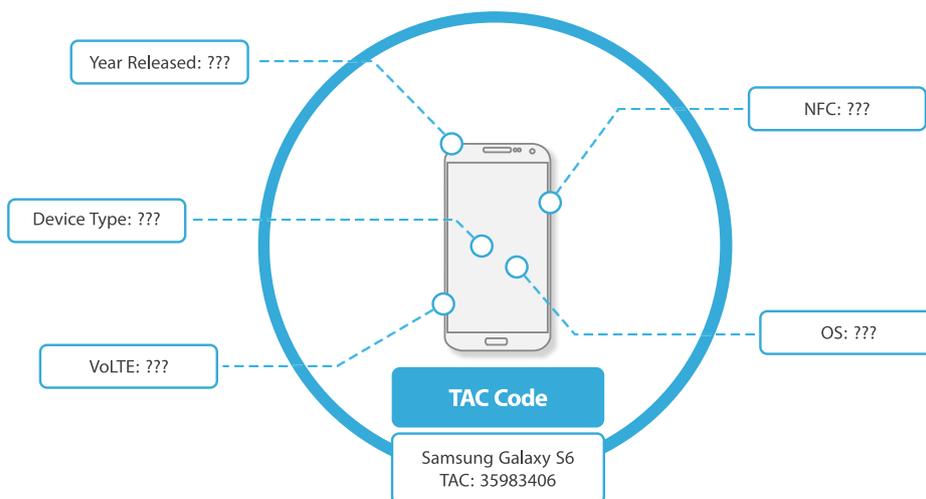
Problem: No LTE/4G connection. Some customers may come across LTE offers but may not be aware that their phones don't support LTE/4G. With rich device data the customer support team knows if the customer phone comes with LTE/4G capability.

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## WHAT ARE THE CURRENT METHODS USED TO MAINTAIN DEVICE DATA?

Prior to launching new devices, manufacturers must apply for an official TAC from the GSMA which are the authorized global source of TACs. On supplying a limited set of data to the GSMA, a TAC is issued and becomes the initial 8-digit part of the IMEI code used to identify devices operating on the GSM standard, or other IMEI-based network.

Given that TAC device data is populated directly by the device manufacturers manually, it can be inconsistent from one OEM to another. In some cases the device data can be incomplete, or even erroneous due to device manufacturers' desire to maintain control over some of the information, and also because TACs are often applied for at an early prototype stage.



### Inconsistent naming conventions and standards

Maintaining an accurate, and up-to-date device database can involve costly and time consuming research, manual updates and management of multiple sources both from within your organization and third parties. Making sense of device information and mapping it to multiple TACs in a consistent way can be a particularly difficult task given that different TACs are released for multiple iterations of the same device.

For instance the GSMA database includes many different TACs for the iPhone 5 while there are no technical differences between these devices. From the Operator's perspective all these TACs should be linked with one accurate and structured set of device characteristics for iPhone 5.

TAC	GSMA Marketing Name	Marketing Name
01370900	Apple iPhone 5 (A1429)	iPhone 5
01371000	Apple iPhone 5 (A1429)	
01371100	Apple iPhone 5 (A1429)	
01371200	Apple iPhone 5 (A1429)	
01371300	Apple iPhone 5 (A1429)	
...	...	
35261706	Samsung GT-I9505	Samsung Galaxy S4
35274506	Samsung GT-I9505	
35283606	Samsung GT-I9505	
...	...	
35316505	Samsung GT-I9300	Samsung Galaxy S3
35316605	Samsung GT-I9300	
35331705	Samsung GT-I9300	
35331805	Samsung GT-I9300	
...	...	

These issues typically lead to inconsistencies in naming conventions and standards in an Operator environment. Different versions of data sets can be in use in various parts of the organization. This can prove problematic when dealing with network rollouts, crafting targeted offers, or providing customers with network support programmatically.

Once the database is built it needs to be constantly updated with new releases, as well as changes made to the devices already on the market. This requires additional workload in data management, research and manually updating databases.

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# THE AUTHORITATIVE SOURCE OF DEVICE DATA FOR THE MOBILE OPERATOR ENVIRONMENT

Device Map provides Operators with a consistent device database that addresses the issues described in section 3.

Device Map is a high-quality, high-accuracy device intelligence product from the GSMA in partnership with DeviceAtlas that combines rich device information with TAC (Type Allocation Code). You can easily integrate it with your existing Business Intelligence, Data Warehousing or Analytics solutions to find out more about the devices on your network.

With over 100 actionable device data points for every TAC, Device Map brings a new level of device awareness to the Mobile Network Operator environment, where TAC is the standard way to identify devices. The data includes hardware information, OS, browser, radio capabilities, screen sizes, network protocols, multimedia capabilities and much more.

**If you would like to apply for a Device Map data sample, head over to the data trial page and complete the form providing as much detail as possible.**

[Get Data Sample](#)

