

Telefonica

IOT SECURITY

_BEYOND CONNECTIVITY



INTERNET OF THINGS

ANDREAS STAUBER

PRODUCT MANAGER M2M & IOT

since 2016 Product Manager M2M & IoT, Telefónica

Areas of responsibility:

- IoT Roadmap
- IoT Platforms
- Security Products (IoT VPN Connect MPLS, APNs, IP-Sec)

2011-2015 IT-Product Manager, Telefónica

2015-2016 Master of Business Administration
at University of Applied Sciences
Munich
(main areas: Product Management &
IT-Security)



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Telefónica weltweit

49

49 Mrd. Euro
Umsatz in 2018

336

336 Mio. Kunden weltweit in
2018

10

Eines der 10 größten
Telekommunikations-
unternehmen der Welt

120.000

Über 120.000 Mitarbeiter in
2018

16

Geschäftsaktivitäten
in 16 Ländern

49,6

49,6 Mio
Kundenanschlüsse in
Deutschland

Telefónica Kite Platform

10

million* connected devices worldwide

- Global SIM - worldwide connectivity
- In house developed
- Worldwide used (Europe, Latam, RoW)
- Designed for M2M & IoT usecases

* Stand 01.02.2019 konsolidierte Zahl für Telefónica weltweit

**TELEFÓNICA KITE
PLATFORM
PRODUKT DES
JAHRES
2017 & 2018**



EXKURS: WAYRA – VERNETZUNG MIT STARTUPS

Mit der Venture-Einheit Wayra fördert Telefónica Deutschland Start-ups aus dem Bereich „Innovative B2B-Digitaltechnologien – zum Beispiel Internet der Dinge (IoT), Datenanalytik, Cybersicherheit und künstliche Intelligenz“.



IOT SECURITY ***_BEYOND CONNECTIVITY***

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WE LIVE A NEW REALITY IN A **HYPER CONNECTED** WORLD

7,900 M₁
mobile phones,
> world pop.

3,500 M₂
daily searches
in Google

215,000 M₃
daily emails
sent

1. Source: GSMA Intelligence
2. Source: Internet Live Stats
3. Source: The Radicati Group



NEEDS  ***CHALLENGES***

SECURITY IS A CRITICAL BUSINESS ISSUE IN IOT

THERE HAVE BEEN 3 SIGNIFICANT IOT SECURITY INCIDENTS WITH A HIGH COST

2015

Jeep Grand
Cherokee



Security analyst were able to control remotely the car

Fiat recalled
1.4 Million vehicles

2016

Mirai
Botnet



DDoS against Dyn DNS and affected Spotify, Paypal ...

XiaonMai recalled
10 000 US cameras

2017

Cloud
Pet



2M parent-kids voice messages leaked and accounts ransomed

Spiral toys Inc.
collapsed

SECURITY IS YOY THE MAIN CONCERN FOR EVERYONE

FROM EXECUTIVES TO DEVELOPERS, ALL STAKEHOLDERS ARE WORRIED

#1

Barrier

“What barriers do companies see to investing in the IoT?”

39% execs chose “Security and privacy” as the main stopper

Business Intelligent report Dec 2014

90%

uncertain

“Are you fully confident that your connected devices are secure?”

Just 10% companies replied they are “fully confident”

AT&T State of IoT Security survey, 2015

46%

Concerned

“What is your main concern developing and IoT solution?”

46% developers named security as the main concern

Eclipse Foundation IoT Developer Trends Survey, 2017

WHEN CUSTOMERS DESIGN AN IOT SOLUTION FIVE MAIN CHALLENGES APPEAR



COST CONTROL

"I need to reduce costs. I want to have total **visibility over my communication expenses** and I need tools to control them"



SECURITY

"I am worried about **security breaches** in my communications, devices and IoT applications"



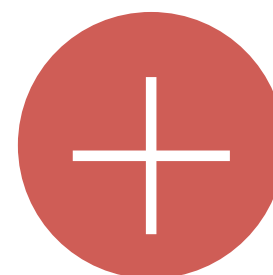
EFFICIENCY

"I would like to **reduce time to market** of my solutions and to have **full control** over the devices and connectivity, being able to act remotely faster"



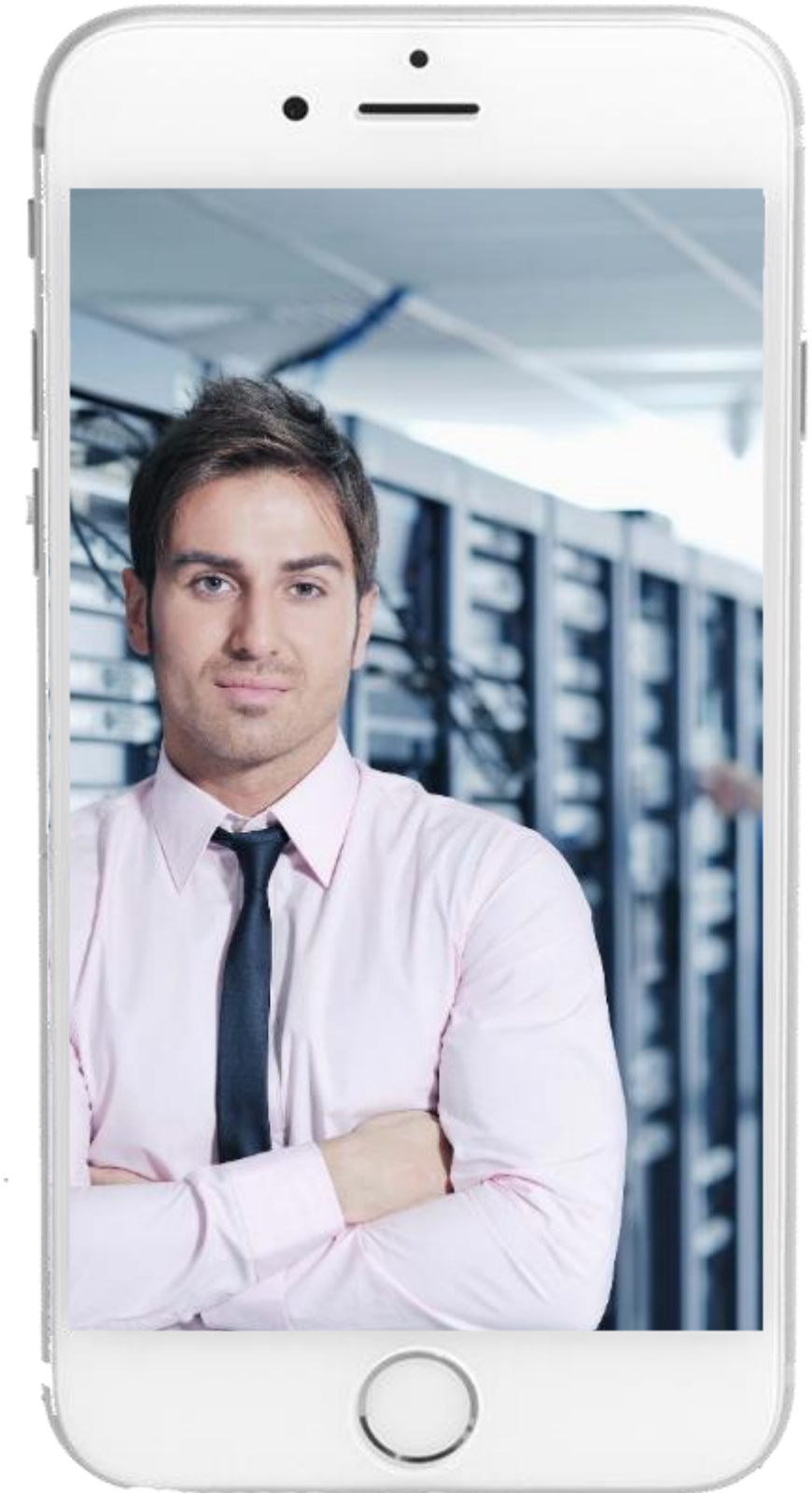
AVAILABILITY

"I need my IoT solution working **24/7**. The lack of connectivity means losing money"



MORE REVENUES

"I would like to find new revenue streams by exploring **new business models** or **new dimensions of my product** that connectivity may enable"



OUR  ***SOLUTION***

OUR ASSETS ARE RELEVANT IN IOT SECURITY

IN THIS COMPLEX SCENARIO WE CAN BE THE REFERENCE PARTNER IN SECURITY



We have telco assets that can reduce complexity

- Identity: we can extend network security and simplify
- Cloud integration: we can provide ready-to-go secure cloud connections



There is no integration effort for network based security

- We can isolate customer devices from the Internet and reduce the attack surface
- We can detect suspicious network activity and deactivate the hacked device






We can help customers beyond connectivity

- ElevenPaths products can protect customer infrastructure and devices
- When devices are provided by us, best practices can be implemented

Principle 3: adapt measures to use case

Different business require different security levels

High Security level	Computer controlling a high value assets with life risk 	<ul style="list-style-type: none">• Autonomous car• eHealth remote control• Retail energy control• Traffic lights control
Medium Security level	Application controller with confidential data or theft risk 	<ul style="list-style-type: none">• Surveillance alarms• Fleet tracking• Wearable activity trackers• POS connectivity
Basic Security level	Microcontroller sensing ambient data & non critical asset tracking 	<ul style="list-style-type: none">• Pollution sensing• Domestic energy monitoring• Non critical asset tracking• Pet tracking

TELEFÓNICA KITE PLATFORM

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**TELEFÓNICA KITE
PLATFORM
IS TELEFÓNICA'S
RESPONSE TO
CUSTOMER CHALLENGES
IN ALL IOT ECOSYSTEM
DIMENSIONS (DEVICE,
CONNECTIVITY,
APPLICATION, SECURITY
AND ANALYTICS)**

Telefónica



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TELEFÓNICA KITE PLATFORM GOES BEYOND CONNECTIVITY



SECURITY

It has capabilities and tools that help to prevent, detect, and correct situations that compromise the security of devices or connectivity.



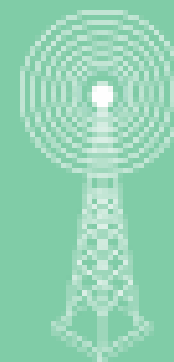
END-TO-END APPLICATION

Facilitates the integration with vertical and sectorial solutions, as well as with the leading IoT platforms in the market, through APIs and toolkits. Kite Platform also eases the integration with Public Clouds through the Cloud Ready solution.



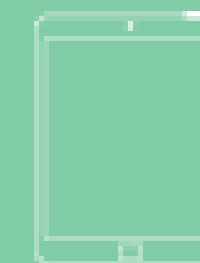
MANAGED CONNECTIVITY

It offers an extensive set of connectivity management features such as inventory and control of use and real-time expenses, alarms, reports...



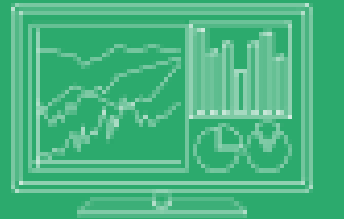
NETWORK TECHNOLOGIES

Integrates 2G, 3G, 4G / LTE cellular network technologies, as well as networks designed for IoT, such as, LTE-M, NB-IoT, and even industrial sensor networks such as industry ready.



DEVICES

Customers have access to a bundle including communication hardware from leading device manufacturers through our Things Ready offering. Kite Platform performs essential management of the communication devices, such as restarting them or downloading the firmware.



ANALITYCS

Extracts value from connectivity data to display it in visual panels that make it easier for our clients to make decisions.



INTERNET OF THINGS



TELEFÓNICA KITE PLATFORM GOES BEYOND CONNECTIVITY



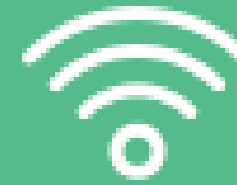
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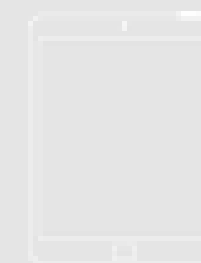
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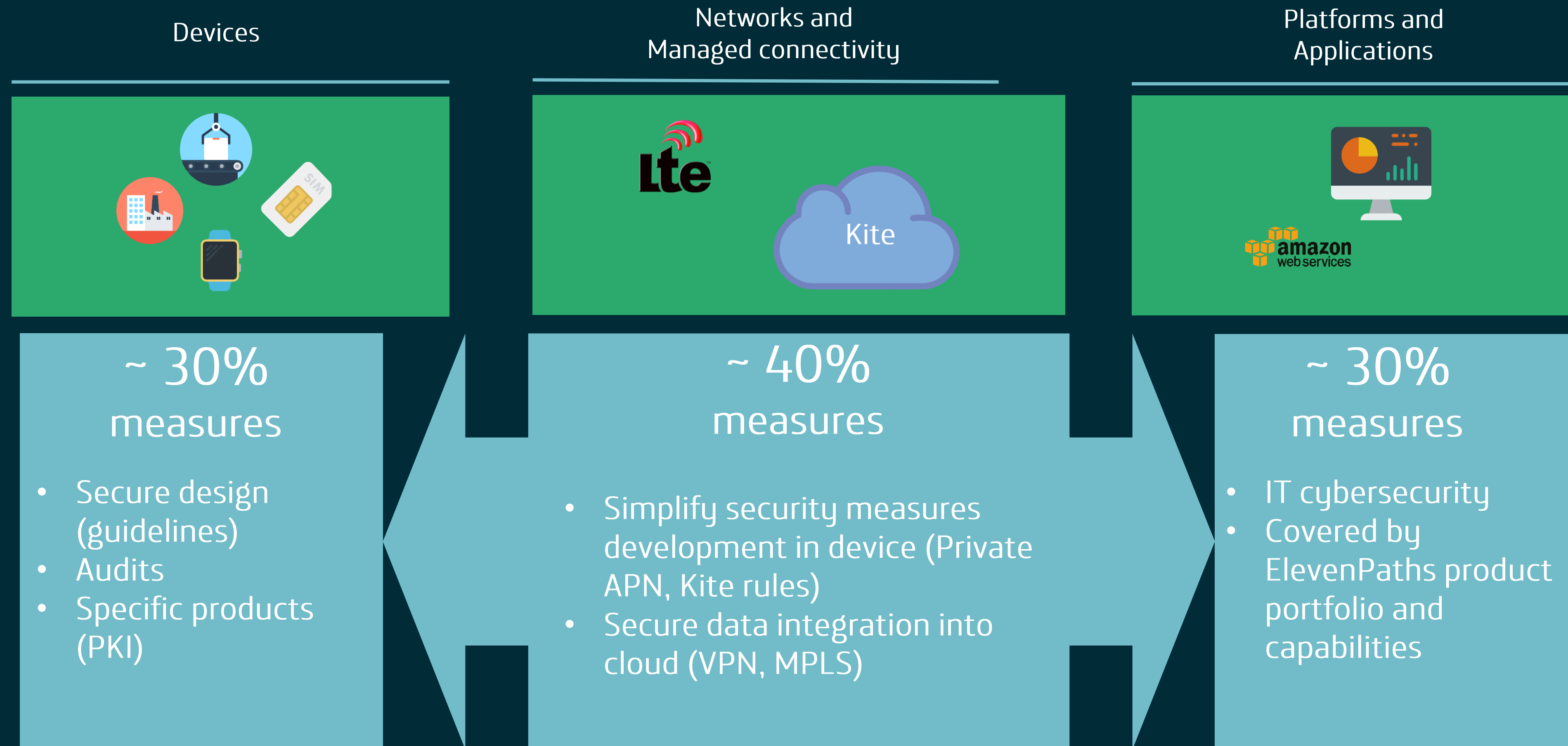
ANALYTICS

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THE OPPORTUNITY: SECURING THE END TO END

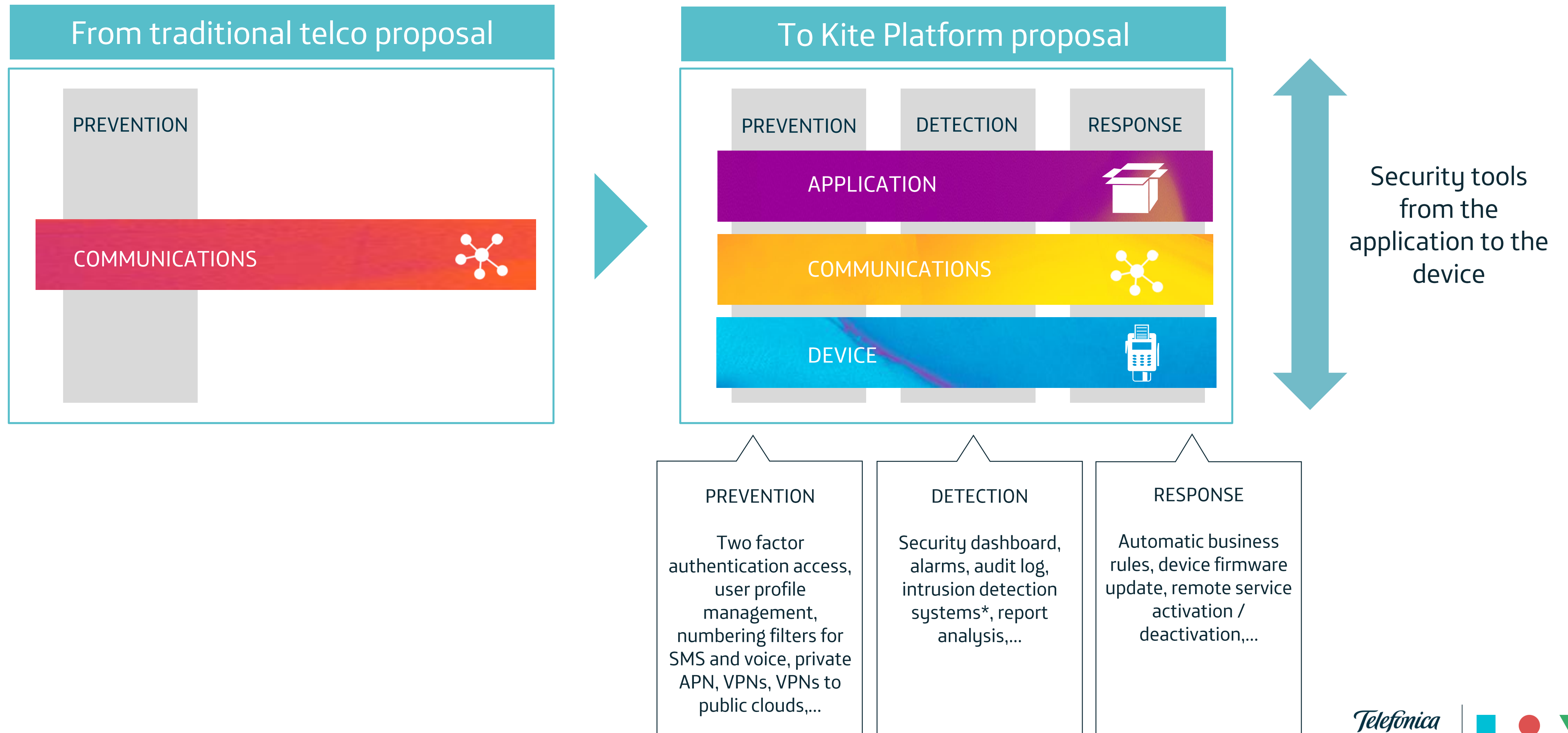
BEING A PARTNER IN SECURITY MEANS HELPING THE CUSTOMER TO PUT IN PLACE ALL THE MEASURES REQUIRED TO HAVE A SECURE PRODUCT



**OUR *TELEFÓNICA KITE* PLATFORM
DELIVERS INCLUDED SOLUTIONS
FOR SECURITY NEEDS**

SECURITY END-TO-END

Telefónica Kite Platform has a wide set of features to prevent, detect and correct security threats at every step of the IoT path.



(*)check availability

TELEFÓNICA KITE PLATFORM SECURITY DASHBOARD

Do you want to detect anomalous accesses to your Kite account? Do you need to control your device base? Do you want to control that the communications are performed only in the authorized devices?

You will have **visibility of a diverse compilation of security indicators** through a **simple** panel

KITE SECURITY DASHBOARD ALLOWS TO CONTROL THE FOLLOWING KPI'S:

- COUNTRY FROM WHERE API AND PORTAL ACCESES ARE PERFORMED
- IMEI ADQUISITION AND REPLACEMENTS
- SESSION PATTERNS
- INSTALED DEVICE BASE



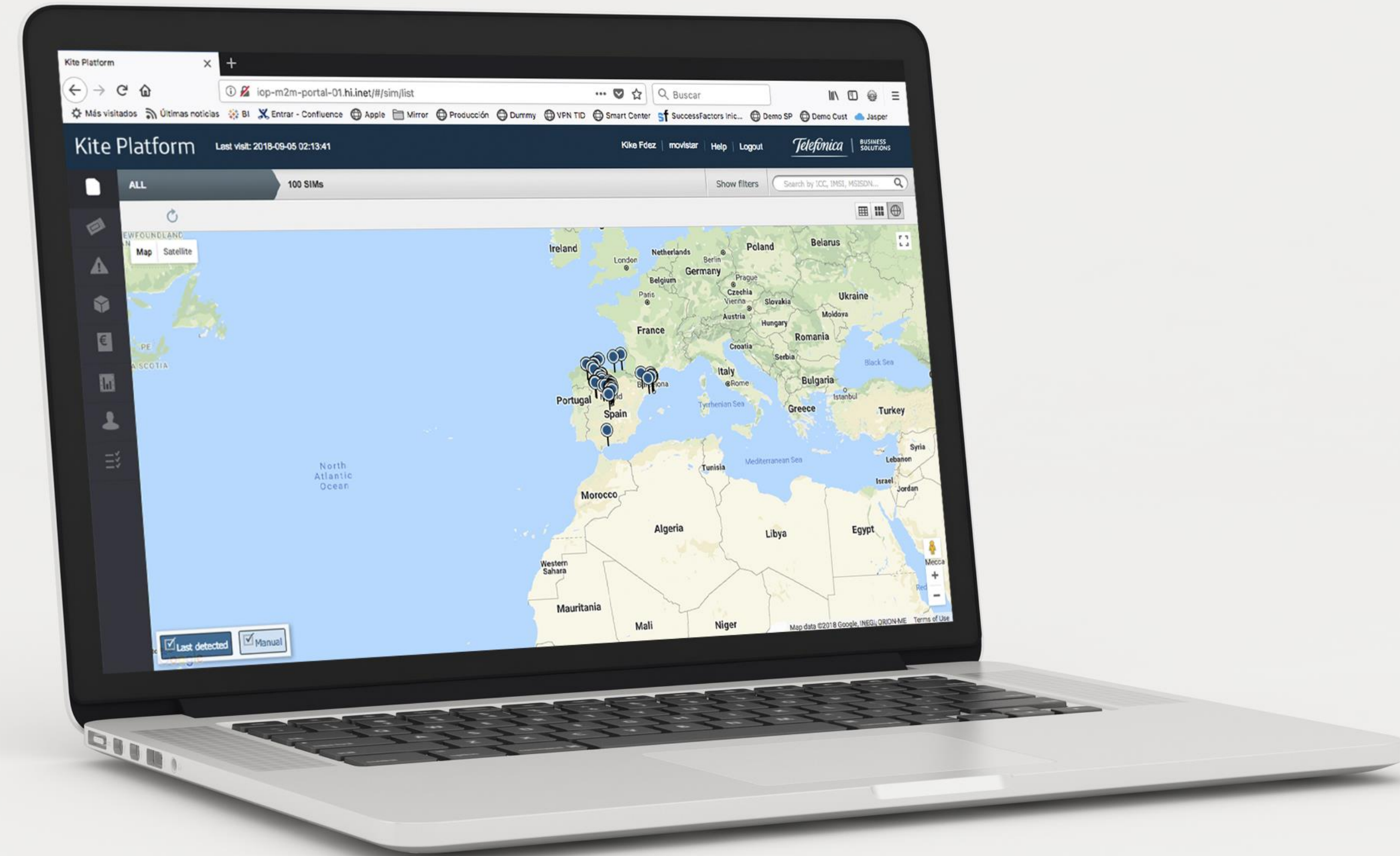
SIM GEO – LOCATION

Do you want to prevent unauthorized devices and increase efficiency in device replacement and operations?

You will be able to know the **geographic position of each SIM** in and devices and be informed if the **expected location of the SIM** has changed.

KITE ALLOWS TO PERFORM THE FOLLOWING ACTIONS:

- IMPLEMENT **ALARMS** BASED IN GEOGRAPHIC POSITION
- **BLOCK THE SIM TRAFFIC** WHEN A DEVICE COMES OUT OF THE DEFAULT AREA WHERE IT SHOULD OPERATE (e. g. CHECKS WHETHER THE POSITION MATCHES THE LOCATION WHERE THE DEVICE IS DEPLOYED)
- GEOGRAPHICAL DATA CAN BE **INTEGRATED** IN THE **FIELDWORK PLANNING SYSTEMS** TO IMPROVE THE EFFICIENCY OF THESE ACTIVITIES
- IDENTIFIES **SUSPICIOUS DISPLACEMENTS** TO BE ABLE TO APPLY SECURITY MEASURES



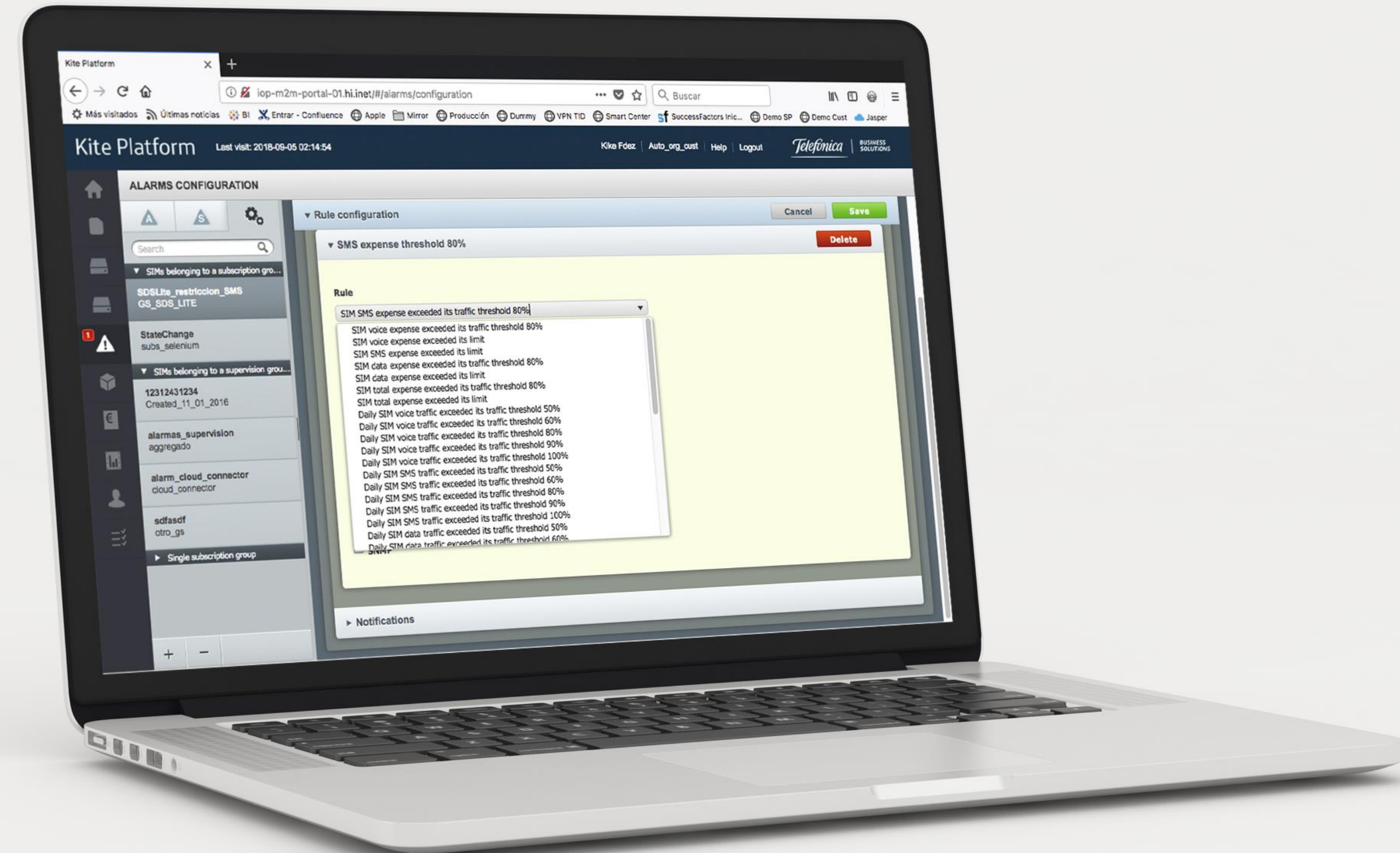
REAL TIME ADMINISTRATIVE ALARMS

Do you want to have cost savings and be quicker when reacting during any incident?

You are **informed** and you have a **fast reaction to critical events or situations** where there is a potential incorrect use of the SIM.

Kite **ALLOWS YOU TO:**

- DEFINE WHICH ALARMS TO ACTIVATE AND THE METHOD OF NOTIFICATION (SMS, E-MAIL SNMP TRAPS) TO DETECT RELEVANT ANOMALIES AND OUTLIERS, SUCH AS EXPENDITURE OR USE
- ACCESS TO DIFFERENT TYPES OF ALARMS (OF USE, LIMIT OF EXPENDITURE, PRESENCE, ETC.)



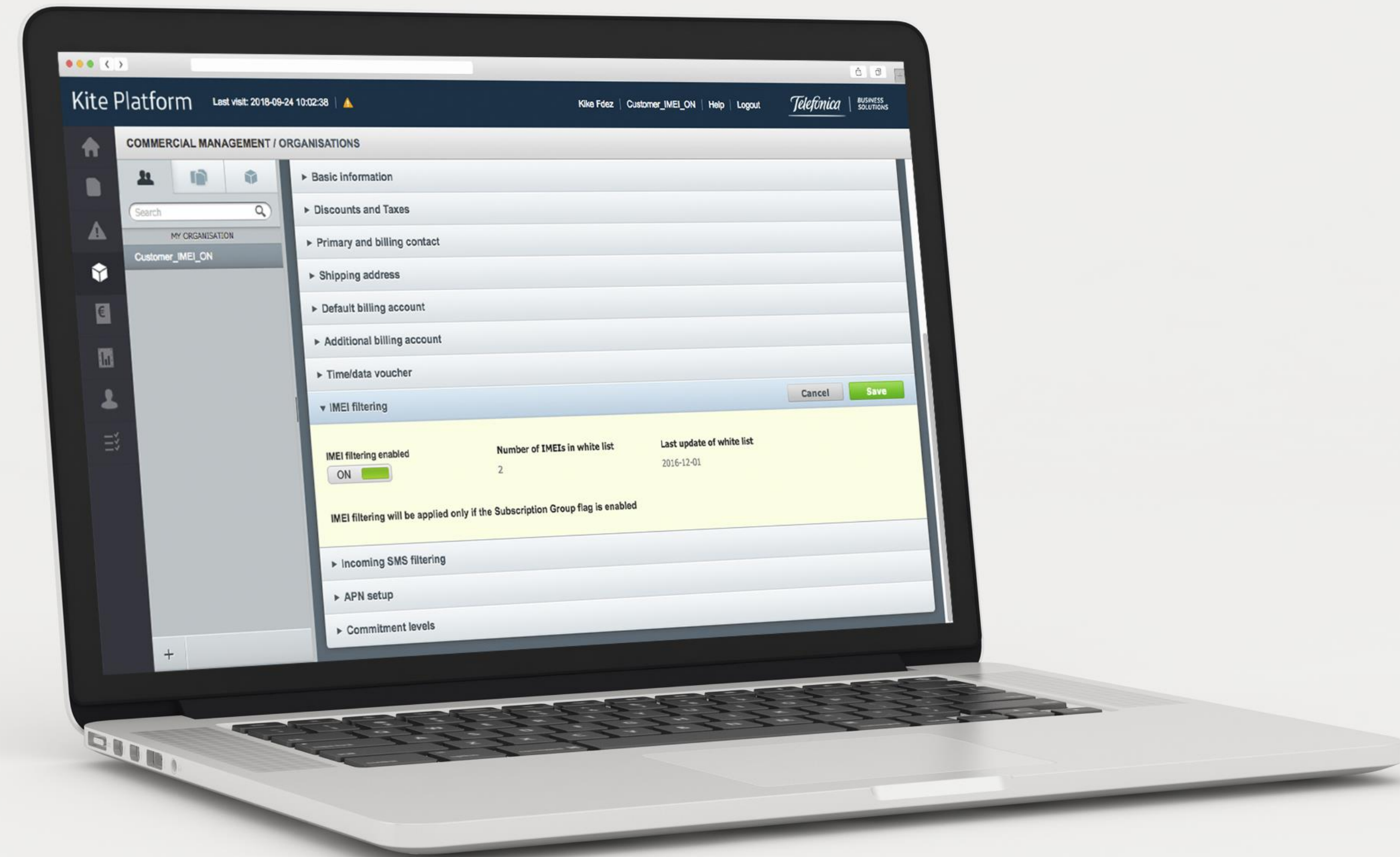
IMEI CONTROL

Do you want to control that the communications only can be performed on the authorized device?

You'll be able to **ensure SIMs are deployed in the correct device** and that **are not used in other non-authorized devices**.

TELEFÓNICA KITE PLATFORM ALLOWS TO:

- HAVE AN **UPDATED INVENTORY OF IMEIS**, ALLOWING TO CONFIGURE **WHITE LISTS** OF IMEIS THAT CAN BE USED BY THE CLIENT'S SIMS
- **SET ALARMS** TO DETECT IMEI CHANGES
- HAVE AN **UP-TO-DATE LISTING** OF SIM-DEVICE ALLOCATION
- LIMIT THE USE OF THE SIMS **EXCLUSIVELY ON THE AUTHORIZED DEVICE**



PRIVATE APN & VPN

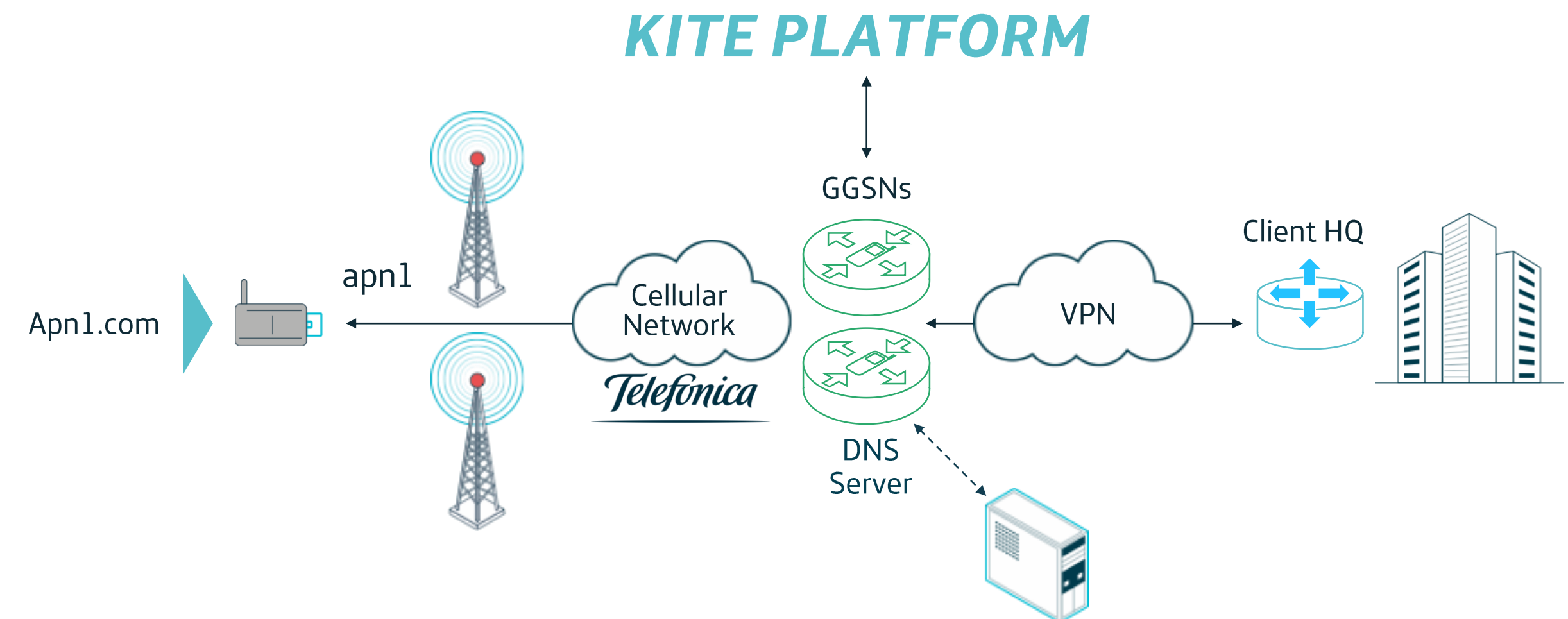
Do you want to prevent your data to be stolen in the communications path?

You will have the possibility of guaranteeing your data privacy in the communications.

WE RECOMEND TO INCLUDE IN TELEFÓNICA KITE PLATFORM'S CONNECTIVITY:

- PRIVATE APNS AND VPN (MPLS, IP SEC) TO ENSURE THE PRIVACY OF COMMUNICATIONS
- IP SEC, FOR CLIENTS WITH LOW DATA TRAFFIC
- MPLS, FOR CLIENTS WITH HIGH DATA TRAFFIC AND THAT REQUIRE THE HIGHEST QUALITY STANDARDS

IN THE CASE OF CUSTOMERS WHOSE APPLICATIONS ARE HOSTED ON A PUBLIC CLOUD, THE CUSTOMER VPN COULD BE EXTENDED TO THE PUBLIC CLOUD TO GUARANTEE TOTAL PRIVACY THROUGH THE COMMUNICATIONS PATH



IOT SECURITY – STATE OF THE ART DEVICE SECURITY WITH IOT VPN CONNECT MPLS_

1 STANDARD APN

- Basic –
- ✓ Standard APN
 - ✓ Telefónica Kite Platform



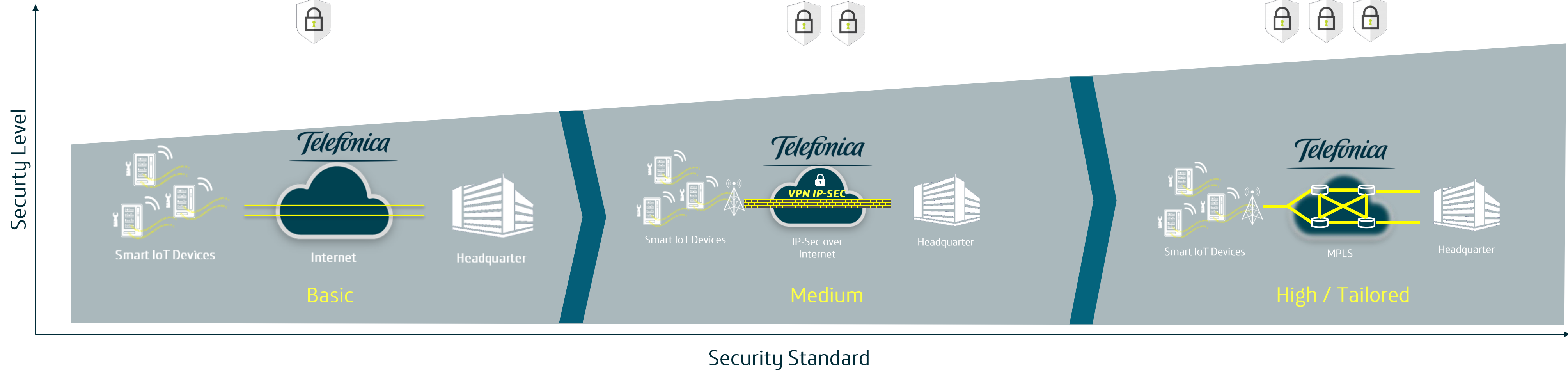
2 CS-APN IP-SEC

- Medium –
- ✓ Customer Specific APN (csAPN) Connection
 - ✓ Dedicated APN per customer via IP-Sec



3 VPN MPLS APN

- High/Tailored –
- ✓ Security in end to end communications
 - ✓ MPLS Connection to customer site
 - ✓ Traffic is totally separated and isolated from each other



* Telefónica Business Solutions (B2B)

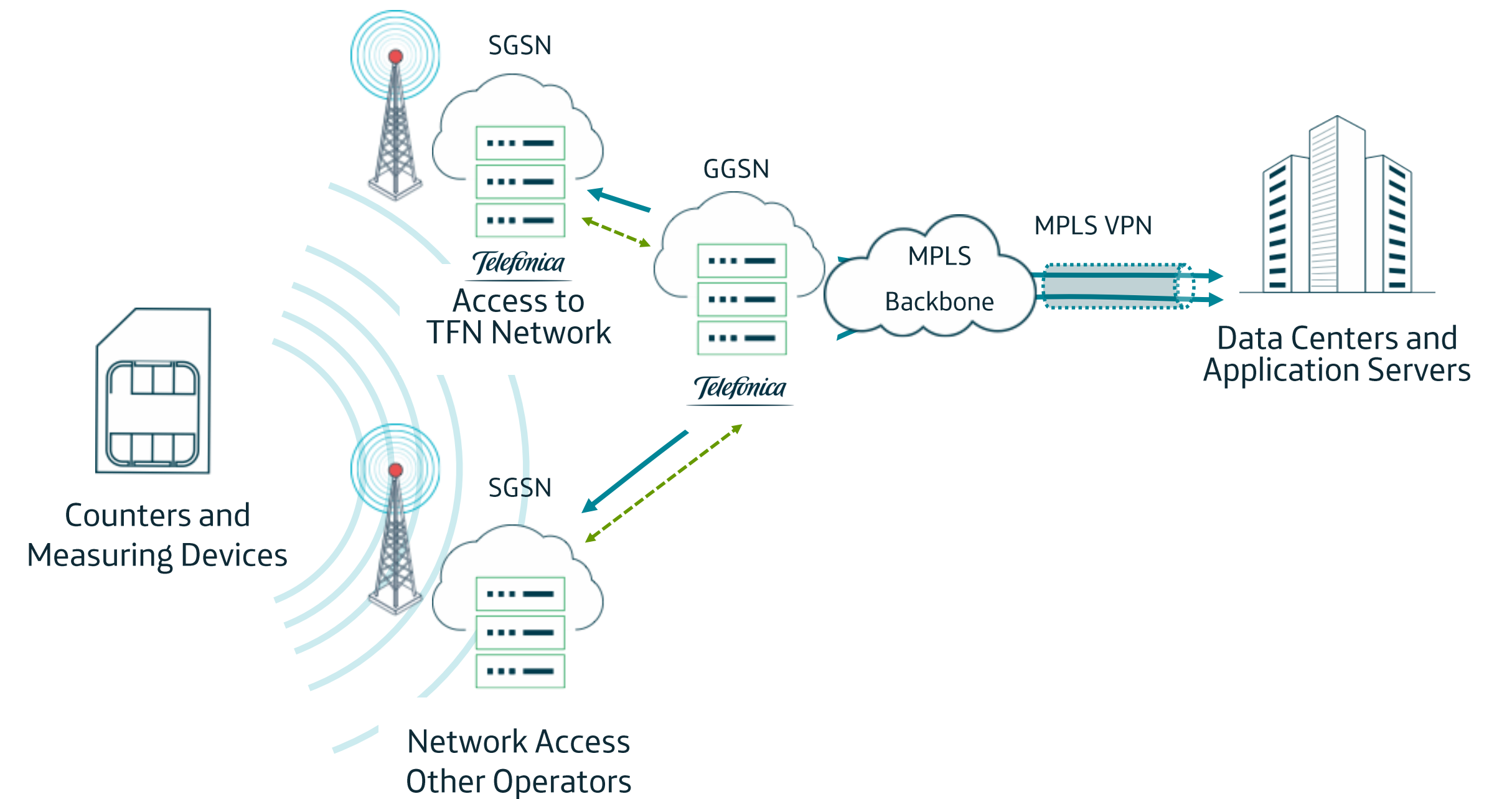
IOT VPN CONNECT MPLS

Do you want to ensure reliability of your critical communications, maximize coverage and simplify logistic processes?

You'll have the best network coverage available in each location – including National Roaming in Germany.

WITH IOT VPN CONNECT MPLS YOU'LL GET:

- FULL REDUNDANCY
- MAXIMIZED TAILORED NETWORK SECURITY
- HIGH SECURITY DUE TO PRIVATE, FROM INTERNET SEPARATED NETWORKS
- HIGH PERFORMANCE; FLEXIBILITY AND AVAILABILITY DUE TO DIFFERENT CONNECTIVITY VARIETIES
- USE THE BEST CONNECTIVITY AVAILABLE (FROM Telefónica OR FROM THIRD PARTIES)



SUMMARY

A UNIQUE PLATFORM WITH MULTIPLE BENEFITS

COST CONTROL & SERVICE ALERTS

Expense decision making and management in real time over a SIM or group of SIMs, with total visibility of the full inventory.

SECURED COMMUNICATIONS

End-to-end secured connectivity, from the device to the public clouds, ensuring that only authorised services and device activity is happening. Alert capabilities to identify outlier services and automatic actions to fix any security threat.

SERVICE EFFICIENCIES

Autonomous and remote SIM & device monitoring, with the possibility of triggering automatic actions which mitigate service deviations. Integration with other IoT platforms through APIs.



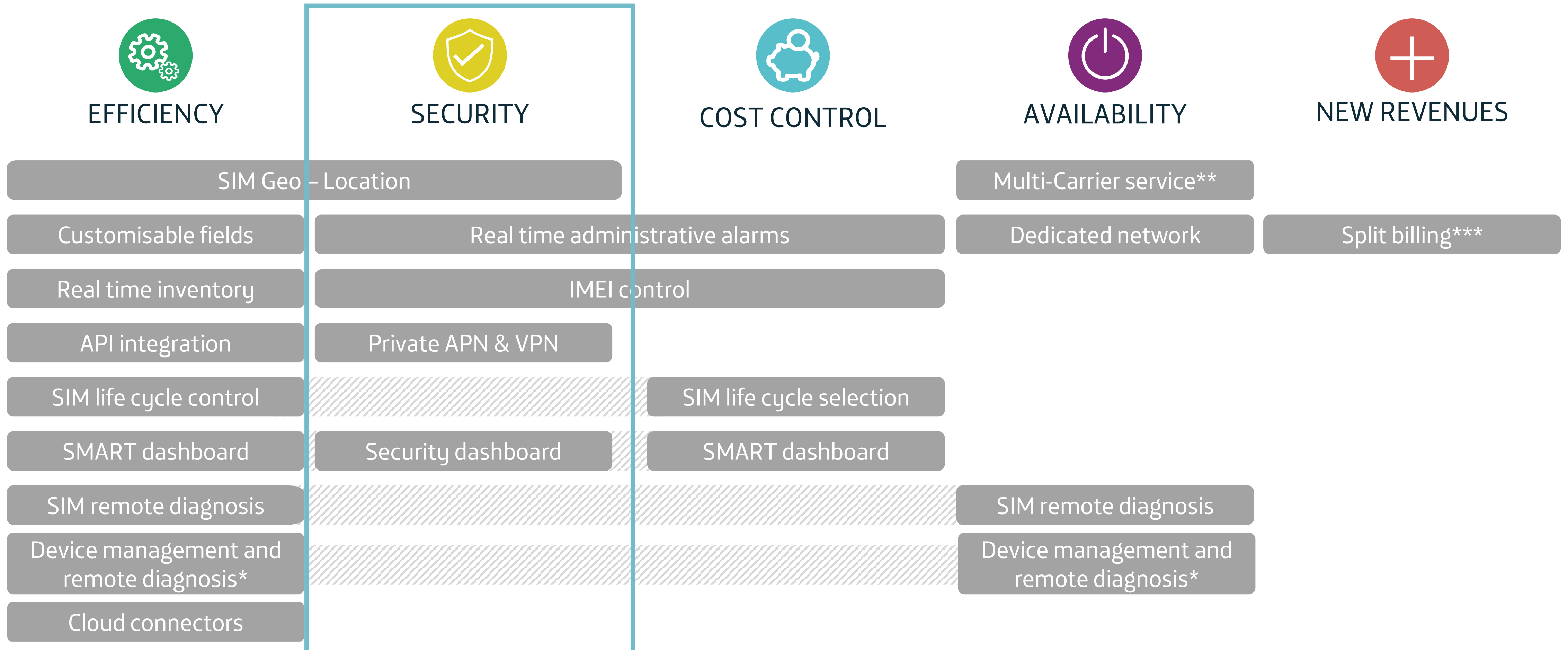
SERVICE AVAILABILITY

Maximum coverage & connectivity with global SIMs and a dedicated and redundant network infrastructure to be compliant with the industry standards.

BUSINESS GROWTH

Enhanced service using network tools and data to enrich customer's value proposition, thus enabling new business models like reselling the connectivity.

TELEFÓNICA KITE PLATFORM HAS GOT THE RIGHT MEAN FOR EVERY NEED



* Only for selected devices ** Brazil excluded *** Country network integrations are needed

FURTHERMORE, TELEFÓNICA KITE PLATFORM TAKES ADVANTAGE OF TELEFÓNICA'S STRENGTHS

- Dedicated redundant network.
- Worldwide connectivity through Telefónica's extensive roaming partners network.
- In house development to faster respond to customer demands in an ever-changing market
- Continuous product evolution to fits every existing and upcoming IoT technology (new IoT connectivity technologies, new devices, new SIMs, public IoT clouds, ...).
- Carrier class end-to-end service support.

THANK YOU

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and German version



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**TAKE
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