



OPTIGA™ Connect IoT

Enabling large-scale IoT deployments with global cellular connectivity

TATA COMMUNICATIONS



Presenters



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Infineon Technologies



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Tata Communications

Agenda

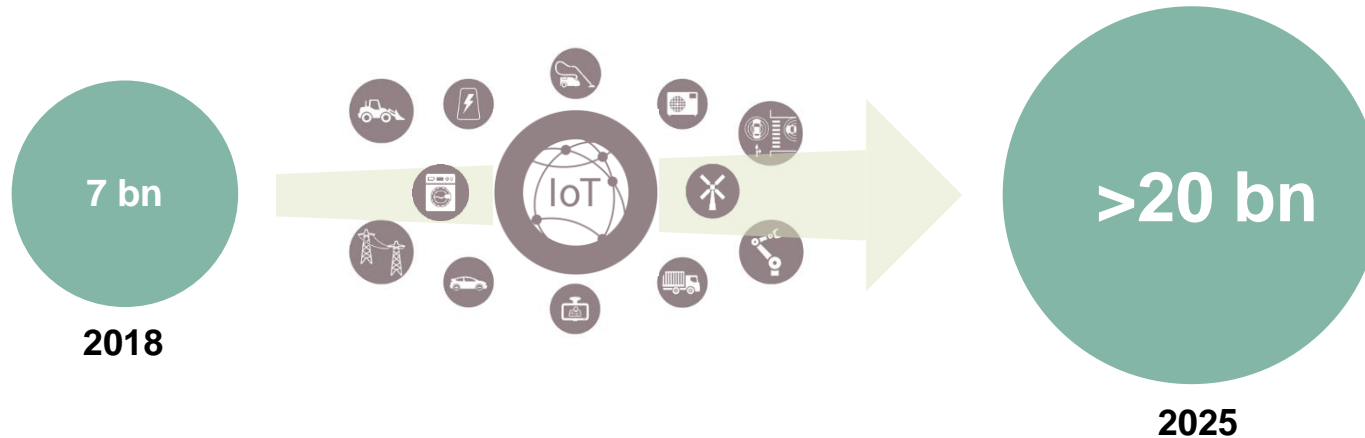
- 1 Cellular IoT, Market trends and opportunities
- 2 Cellular IoT and eSIM
- 3 OPTIGA™ Connect IoT, easy to make your project flying
- 4 Tata communications, a new world of communications
- 5 Customer journey and support tools
- 6 Key takeaways
- 7 Q&A

Cellular IoT – Market trends & opportunities



IoT a world of new opportunities

- › More and more devices of many different types are being connected (via LAN, LPWAN or Cellular) all around the world.



Cellular connectivity allows to easily deploy and manage devices at scale worldwide



Cellular connectivity enables the **collection of highly sensitive data** from devices **wherever they are.**

70%

of wide-area IoT devices will use **cellular technology** in 2022.


(Source: Ericsson)

Cellular connectivity makes it **easier and less costly** to track large numbers of assets.

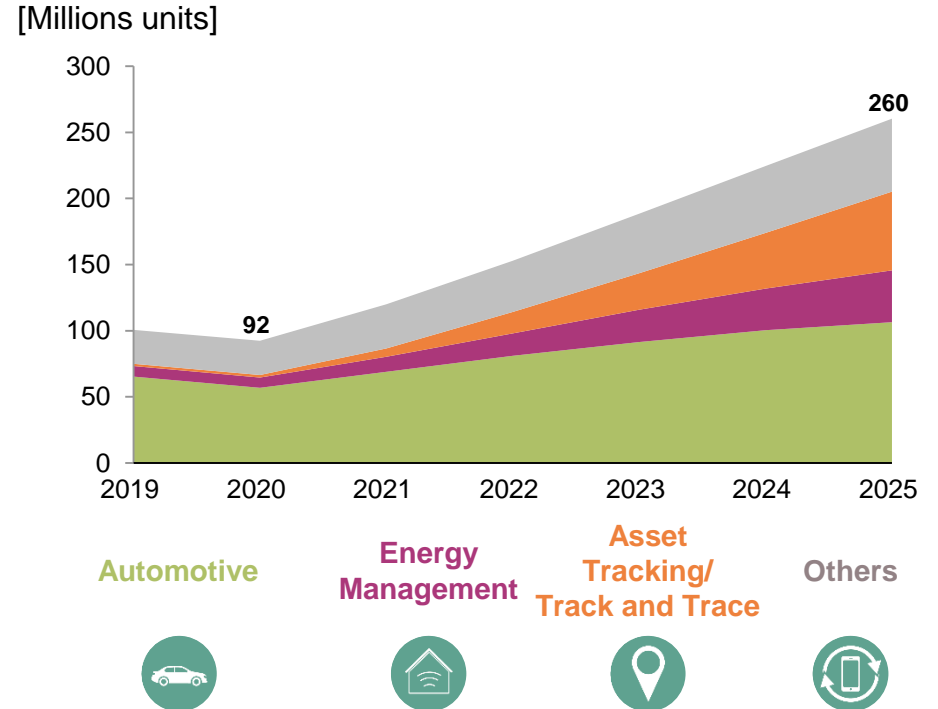
Cellular connectivity enables **reliable remote maintenance** in whichever region wind power stations will operate.

eSIM provides new opportunities for IoT applications

M2M / IoT

-  Safety & Autonomy
-  Energy Management
-  Track & Trace
-  Others

M2M / IoT eSIM Enabled Device Shipments



Source: ABI Research, <https://go.abiresearch.com/lp-the-true-value-proposition-of-the-esim>; ABI Research, eSIM in the Consumer and M2M Markets Q3-2020

Cellular IoT & eSIM



The SIM Card (Subscriber Identity Module)



Why a SIM Card

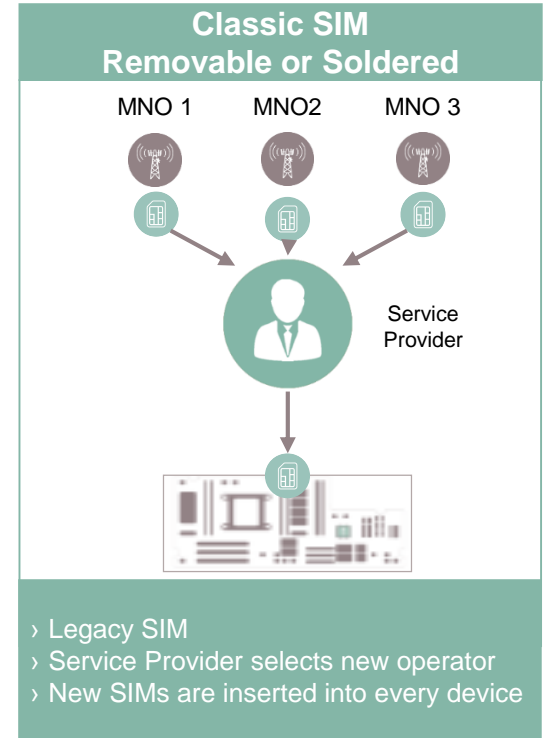
- › Stores an operator defined profile
- › Identification and authentication with the selected mobile network
- › Soldered (MFF2) or removable



Limitations of the Classic SIM

- › Need to contract with multiple MNO*s for multi-national coverage
- › Maintenance, supply chain management, risk of theft
- › Robustness and interoperability
- › Cost of SIM switch when change of operator contract

*MNO: Mobile Network Operator



eSIM M2M and Remote SIM Provisioning

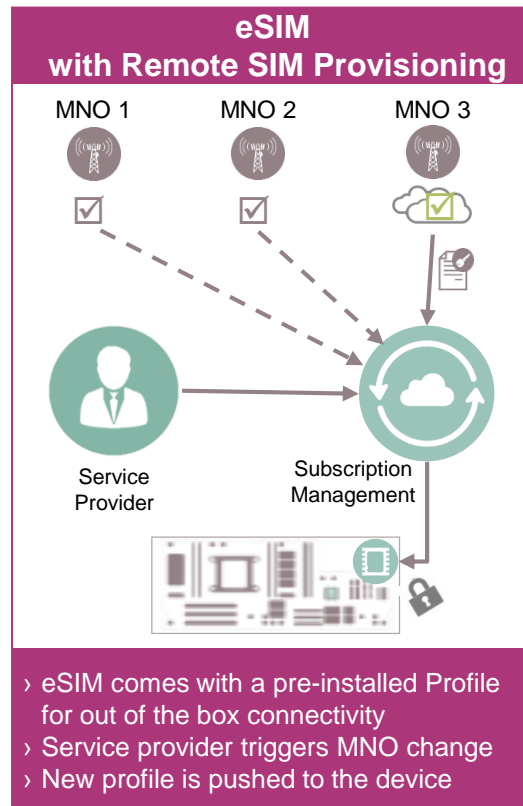


eSIM with Remote Sim Provisioning

- › True SIM with Remote Provisioning Over The Air through a subscription management portal
- › GSMA Standard
- › 2G/3G/4G/LPWA/5G Compliant
- › Removable or solderable

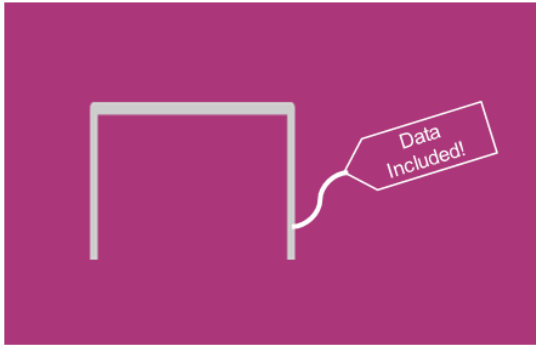
Benefits of eSIM

- › One SKU can be used all over the world
- › Can hold multiple MNO Profiles.
- › Interoperability, Security
- › Ideal for tiny modules, ruggedized devices and rough conditions
- › Anti-Theft (can be soldered on the Circuit Board)
- › Offers an increased Life Span



eSIM, the next wave of growth

Enabling New Business Model



Enabling managed devices for large corporations with global data included

Accommodate the next generation of devices



Embedded SIM is expected to be the standard as IoT devices continue to shrink (in Size)

Simpler Management

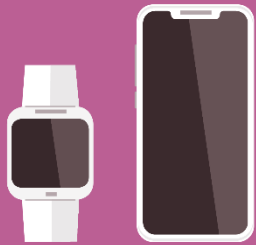


Embedded SIM provides organizations with a simpler option of managing connectivity on devices

OPTIGA™ Connect
IoT easy to make
your project flying



Every IoT solution has its own specific needs



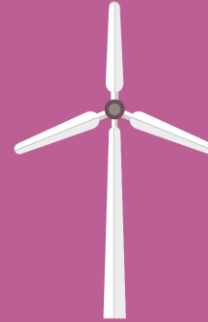
Mobile/ Wearables

Smallest size



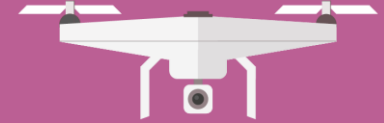
Asset tracking

High interoperability



Remote Maintenance

Robustness



Remote Control

Reliability

Combining key components to provide a turnkey eSIM solution



OPTIGA™ Connect IoT

Standard access over 230+ territories



Americas

EMEA

Asia-Pacific

> United States	> Suriname
> Puerto Rico	> Bolivia
> Guadeloupe	> Trinidad & Tobago
> Guyana	> Ecuador
> Venezuela	> Jamaica
> Argentina	> Anguilla
> Brazil	> Antigua & Barbuda
> Canada	> Barbados
> Chile	> Bermuda
> Colombia	> Cayman Islands
> Costa Rica	> Dominica
> Dominican Republic	> Montserrat
> El Salvador	> St Kitts & Nevis
> Guatemala	> St Lucia
> Honduras	> St Vincent & The Grenadines
> Mexico	> Turks & Caicos islands
> Nicaragua	> Virgin islands (British)
> Panama	> Belize
> Peru	> Cuba
> Uruguay	> Haiti
> Paraguay	> Bahamas
> Aruba	
> Netherlands Antilles	

> Austria	> Norway	> Jersey island	> Kenya
> Belgium	> Poland	> Andorra	> Kuwait
> Bulgaria	> Portugal	> Bosnia & Herzegovina	> Liberia
> Croatia	> Romania	> Georgia	> Tunisia
> Cyprus	> Russian Federation	> French Reunion	> Yemen
> Czech Republic	> Slovakia	> French Guyana	> Bahrain
> Denmark	> Slovenia	> Senegal	> Egypt
> Estonia	> Spain	> Mozambique	> Ghana
> Finland	> Sweden	> Qatar	> Ivory Coast
> France	> United Kingdom	> Democratic Republic of the Congo	> Rwanda
> Germany	> Armenia	> Malawi	> Uganda
> Gibraltar	> Faroe island	> Nigeria	> Burkina Faso
> Greece	> Man island	> South Africa	> Chad
> Hungary	> Moldova	> Saudi Arabia	> Congo Republic
> Iceland	> Switzerland	> Niger	> Gabon
> Ireland	> Ukraine	> Togo	> Grenada
> Israel	> Albania	> Benin	> Jordanian
> Italy	> Montenegro	> Botswana	> Madagascar
> Latvia	> Turkey	> Cameroun	> Morocco
> Liechtenstein	> Greenland	> Guinea	> Tanzania
> Lithuania	> Belarus	> Guinea-Bissau	> Algeria
> Luxembourg	> Macedonia	> Iraç	> Angola
> Malta	> Serbia		> Burundi
> Netherlands			> Cape Verde

> Bangladesh	> Philippines
> Cambodia	> Vietnam
> India	> Kazakhstan
> Japan	> Mongolia
> Macau	> Myanmar
> South Korea	> Seychelles
> Sri Lanka	> Laos
> Australia	> Tajikistan
> Azerbaijan	> Uzbekistan
> China	> Bhutan
> Hong Kong	> Cook islands
> Malaysia	> Fiji
> Singapore	> French Polynesia
> Taiwan	> Guam
> Thailand	> Maldives
> Indonesia	> Timor-Leste
> New Zealand	
> Pakistan	
> Brunei Darussalam	
> Afghanistan	
> Kyrgyzstan	
> Nepal	
> Papua New Guinea	

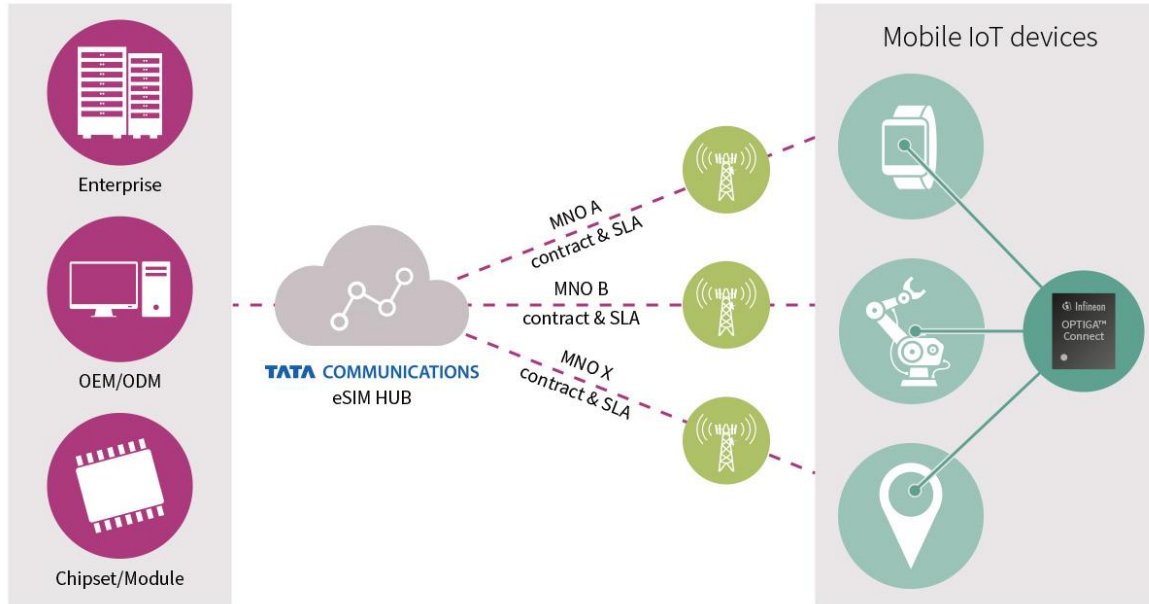
OPTIGA™ Connect IoT

A different approach to deploy industrial IoT at scale



Bringing eSIMs and Management Platforms together

Combine eSIM technology with a single contract, and single interface to manage connected services globally during the various stages of the hardware lifecycle.





Tata Communications connectivity offering makes **easier** and **less costly** to deploy large numbers of assets.

TATA COMMUNICATIONS



A NEW WORLD OF COMMUNICATIONS™



WE ARE PART OF THE TATA GROUP

A global business group with products and services in over 150 countries



Group revenue of \$100bn with 60% generated outside India



More than 150 years experience

Over 695,000 employees



A global leader in several sectors (including IT, banking, healthcare and manufacturing)



TATA CHEMICALS



TATA COMMUNICATIONS



TATA CONSULTANCY SERVICES



TATA MOTORS



TATA POWER



TATA STEEL



TATA GLOBAL BEVERAGES





TATA COMMUNICATIONS

OUR MOBILE ADVANTAGE IN NUMBERS

Comprehensive reach to
~900 MNOs
worldwide

50%+ MNOs
connected for one
or more IP an/or
TDM-based services

All MNOs
reachable
for GRX

1 in 3
MNOs
on-net signalling

1 in 3
MNOs
on-net for voice

1 in 6
MNOs
connected with managed VPNs

Carrying
50%
of global roaming traffic

Global reach for A2P
message termination

Global connectivity for
4 out of 5
mobile subscribers

250
client-facing
personnel

Connecting MNOs
with MVNOs, enterprises,
OTTS, SMS aggregators
and others

BUSINESS THEMES ENABLING DIGITAL TRANSFORMATION



CLOUD AND
DATA CENTRE



BUSINESS
COLLABORATION



MANAGED
SECURITY



NETWORK



MOBILITY



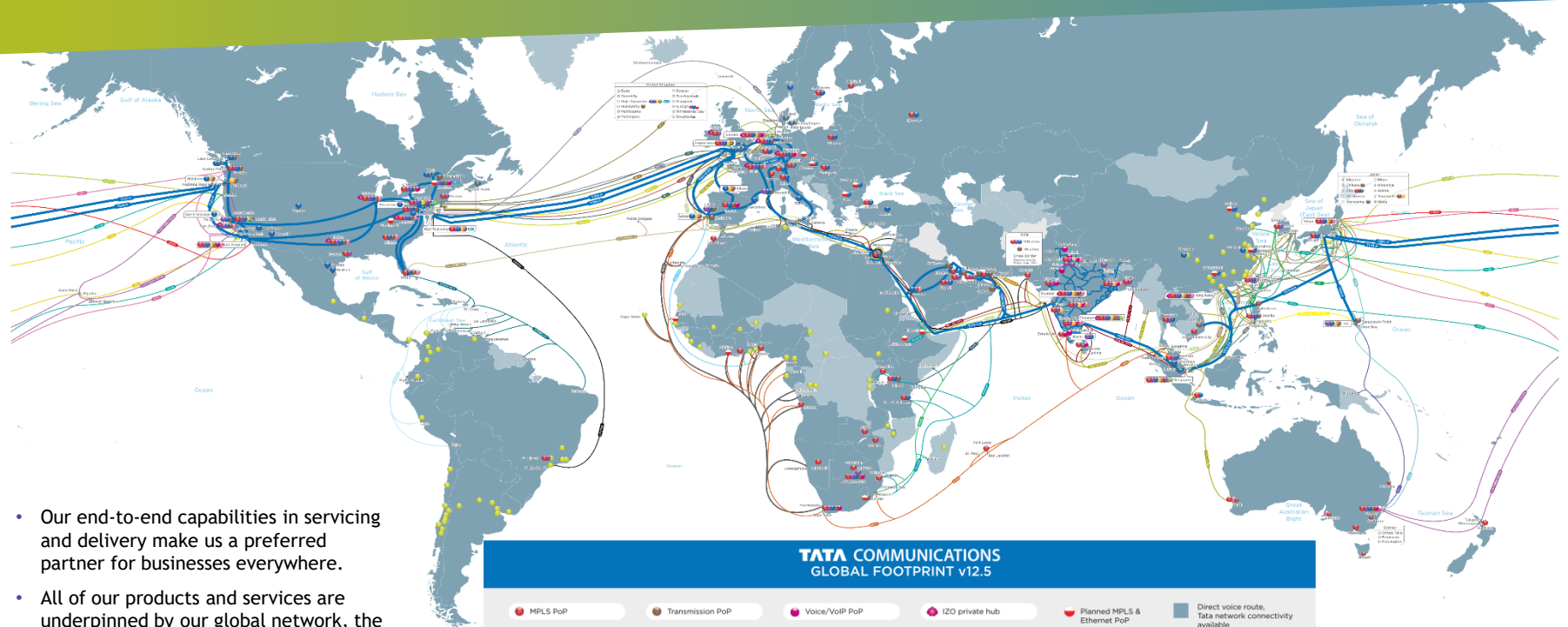
VOICE



MEDIA

How we do it

OUR GLOBALLY LOCAL DIGITAL INFRASTRUCTURE



- Our end-to-end capabilities in servicing and delivery make us a preferred partner for businesses everywhere.
- All of our products and services are underpinned by our global network, the largest world's largest wholly-owned subsea fibre backbone and a Tier-1 IP network.

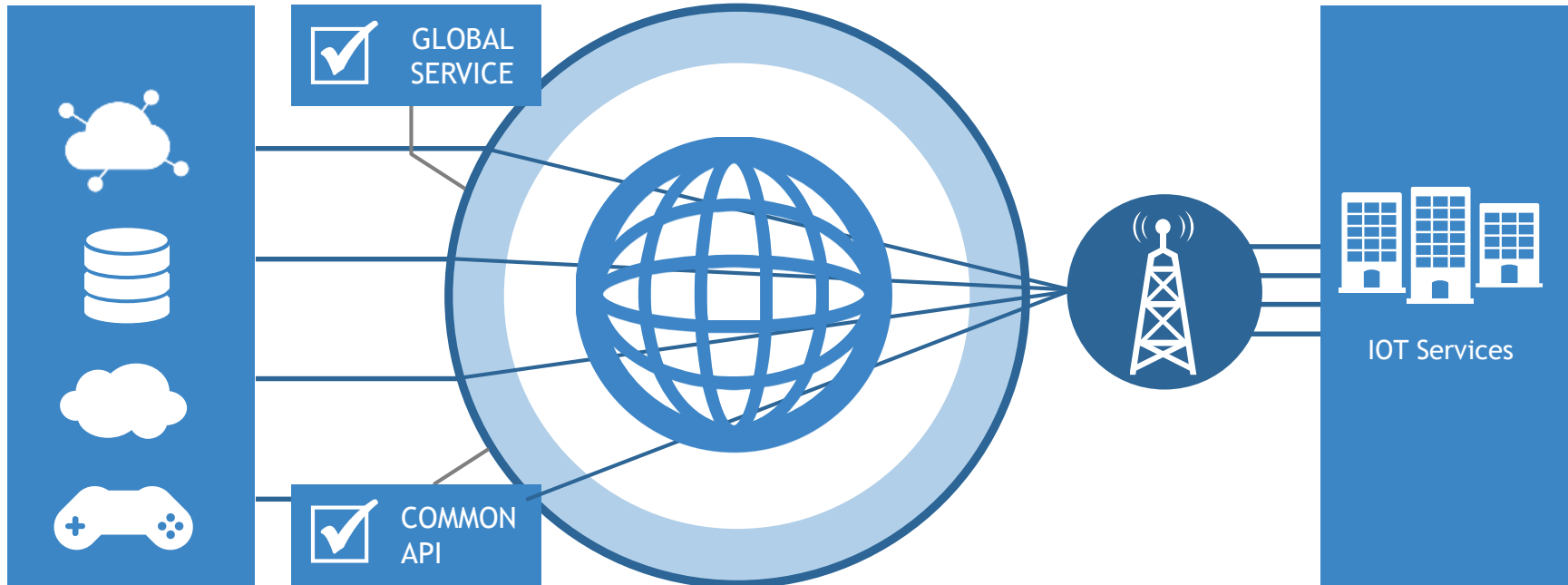
COMPLEX OPERATOR AGREEMENTS AND RELATIONSHIPS

HOW TO DEAL WITH MULTIPLE MOBILE NETWORK OPERATORS AND INTERFACES TO MAINTAIN SERVICE CONTINUITY



A NEW APPROACH: TATA COMMUNICATIONS MOVE

SINGLE RELATIONSHIP TO MANAGE GLOBALLY DEPLOYED IOT SERVICES



TATA COMMUNICATIONS MOVE™ eSIM COMMERCIAL FLEXIBILITY

SERVICE OPTIONS

OptigaConnect from Infineon



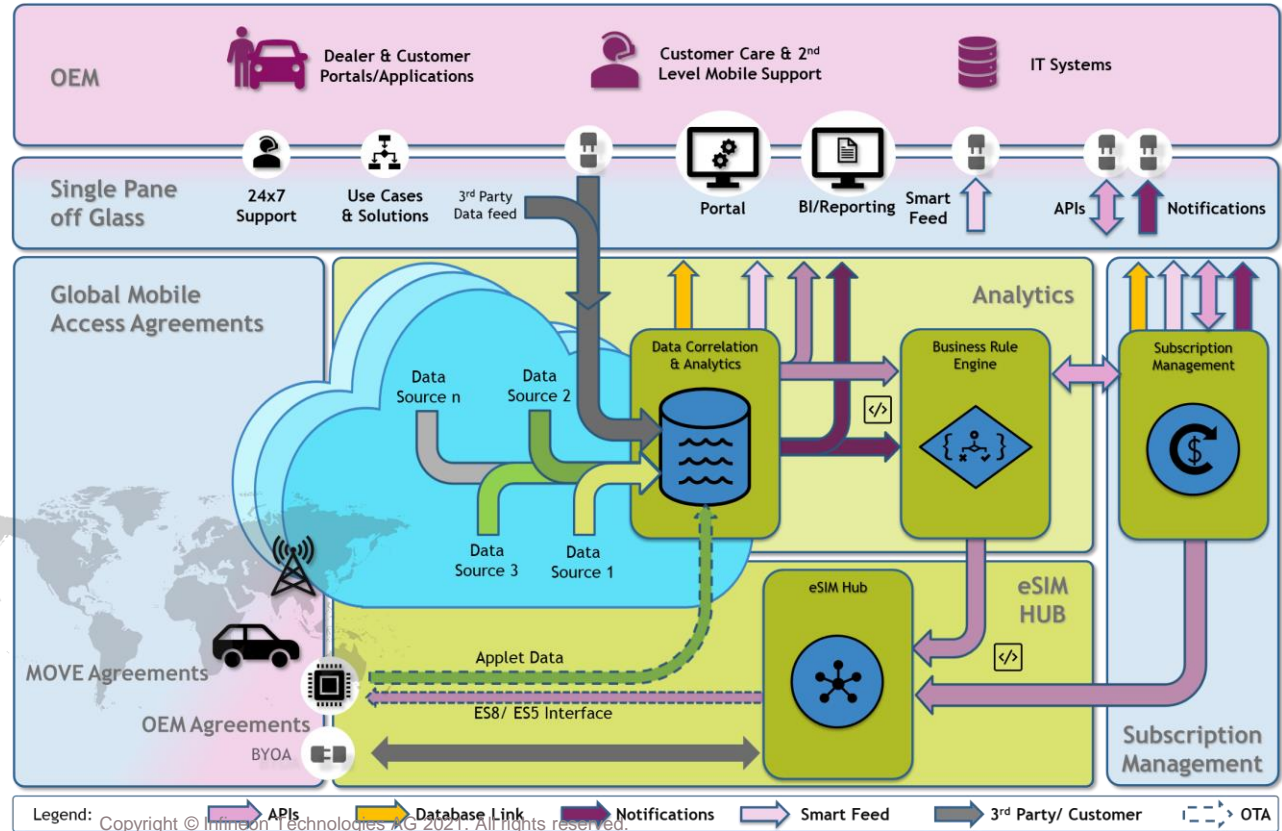
Baseline Device Profile

Extending Baseline to Operational Connectivity

Full access to eSIM Hub for inter-operability and global connectivity

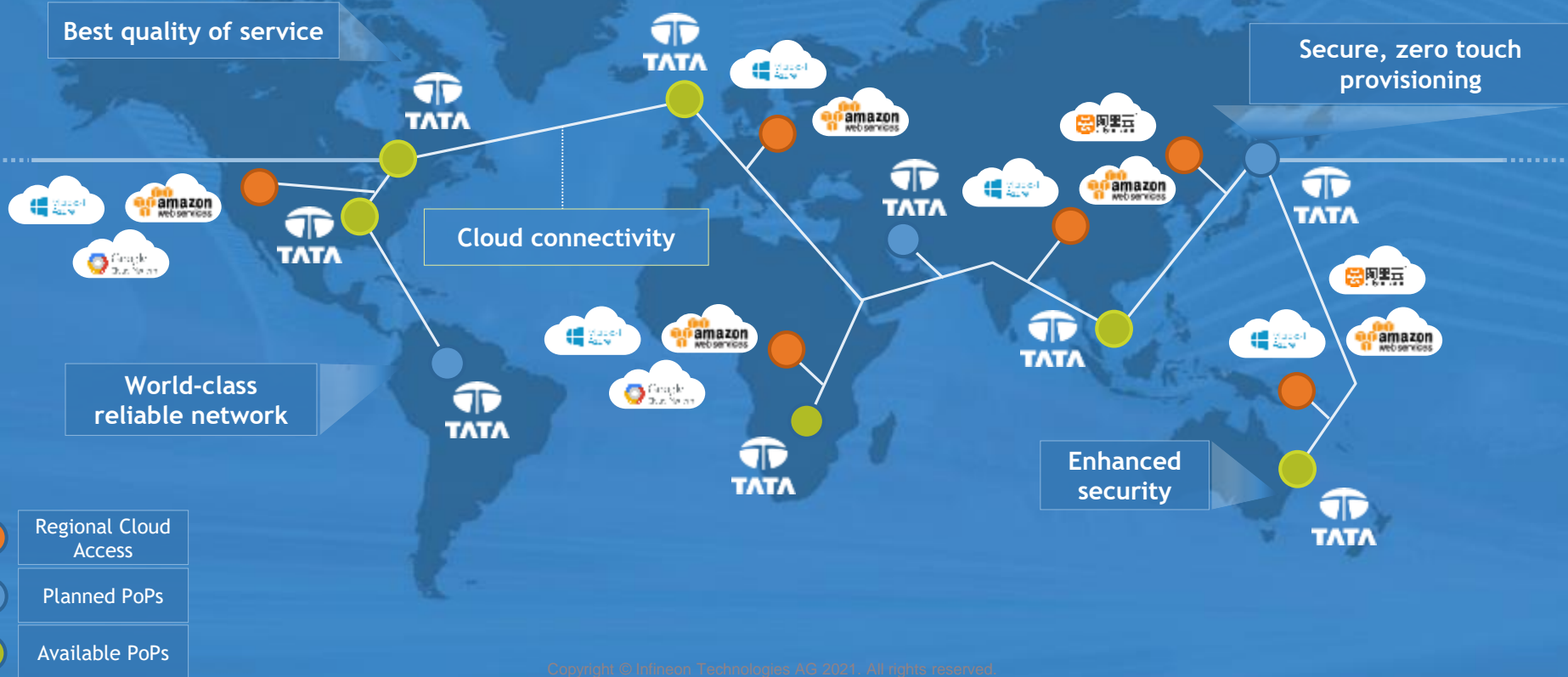
MOVE INTELLIGENT MOBILITY (IM) PLATFORM

- Key Elements of the Platform
- Connectivity Menu Options
- eSIM Hub & Subscription Management
- Network Connectivity Analytics & Insight
- Single Pane of Glass
- Use Cases and Solutions



TATA COMMUNICATIONS MOVE™

SINGLE ARCHITECTURE, DISTRIBUTED GLOBALLY



MULTIPLE DEVICES, ASSETS / USES CASES USING A VARIETY OF CONNECTIVITY OPTIONS /PROTOCOLS - VIEWED FROM A SINGLE PORTAL

PROVIDES AN OVERVIEW OF CONNECTED DEVICES USING TATA or 3rd PARTY SUBSCRIPTIONS

The screenshot shows the IoT Admin Portal interface. On the left is a search filter panel with fields for Asset Name, Asset Type, Device Profile, Status, and Parent Group. The main area features an 'Asset KPI' section with a donut chart for 'Asset Status' (showing 643 JOINED and 186 INITIAL assets) and a bar chart for 'Asset Type' (GATE_WAY: 47, STREET_LIGHT: 548, SENSOR: 79, METER: 55). Below these is an 'ASSETS LIST' table with 729 items.

Asset Name	Asset Type	Status	Group Name	Average Messages	First Joined	Application Name	Business Id
00CATE21	SENSOR	JOINED	ITEM	273	2015-11-23 19:02:13.649	MWC2016	
BMW_X6	SENSOR	INITIAL	IoT	0		Libellium_Gateway_Madrid	
BMW_X5	SENSOR	INITIAL	IoT	0			
LaPosteTest-App	GATE_WAY	INITIAL	Smart Postal Services	0			
Sensor	SENSOR	INITIAL	SmartBuilding	0		Grenoble-ISC	
FireDetector	SENSOR	INITIAL	SmartATMs	0		Grenoble-ISC	
00CCE001	SENSOR	INITIAL	SmartBuilding	0		Aberway	
Aberway	GATE_WAY	INITIAL	SmartBuilding	0			
AMR	SENSOR	INITIAL	SmartBuilding	0		Grenoble-ISC	
Grenoble-ISC	GATE_WAY	INITIAL	SmartBuilding	0			

KEY ASSETS

Tata Communications MOVE™ is an Intelligent Mobility Platform combining a **single pane of glass** for efficient management of **independent and agnostic connectivity** with analytics to enable rich human and machine communication with **unparalleled control** and end **quality of experience**.

Key takeaways





Customer Journey & Support tools

OPTIGA™ Connect IoT for large-scale IoT deployments

An easy way to benefit from cellular IoT

Simplification and security of all process steps give customers the satisfaction that its main challenges have been considered before, during and after deployment of its IoT devices.



Easy to buy

OC2321 turnkey solution allows a simplification of the supply chain (reduced interfaces, contracts, cost)



Easy to design

OC2321 is delivered in MFF2 package industry standard to enable easy design-in and possible multi-sourcing.



Easy to deploy

OC2321 has a single SKU for all regions (230+ territories coverage). No specific set-up to implement per regions of deployment.



Easy to connect

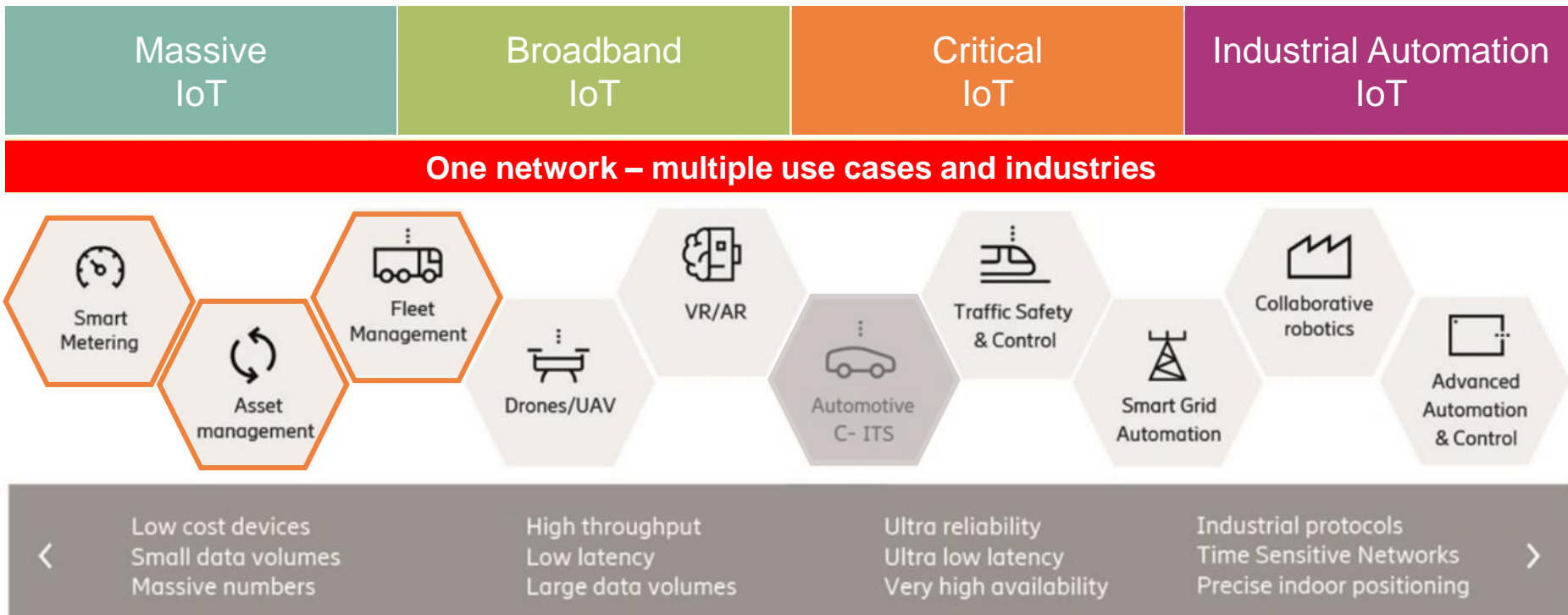
Infineon partners with Tata Communications which offers dedicated connectivity data plan acc. to customer, application and use case requirements.



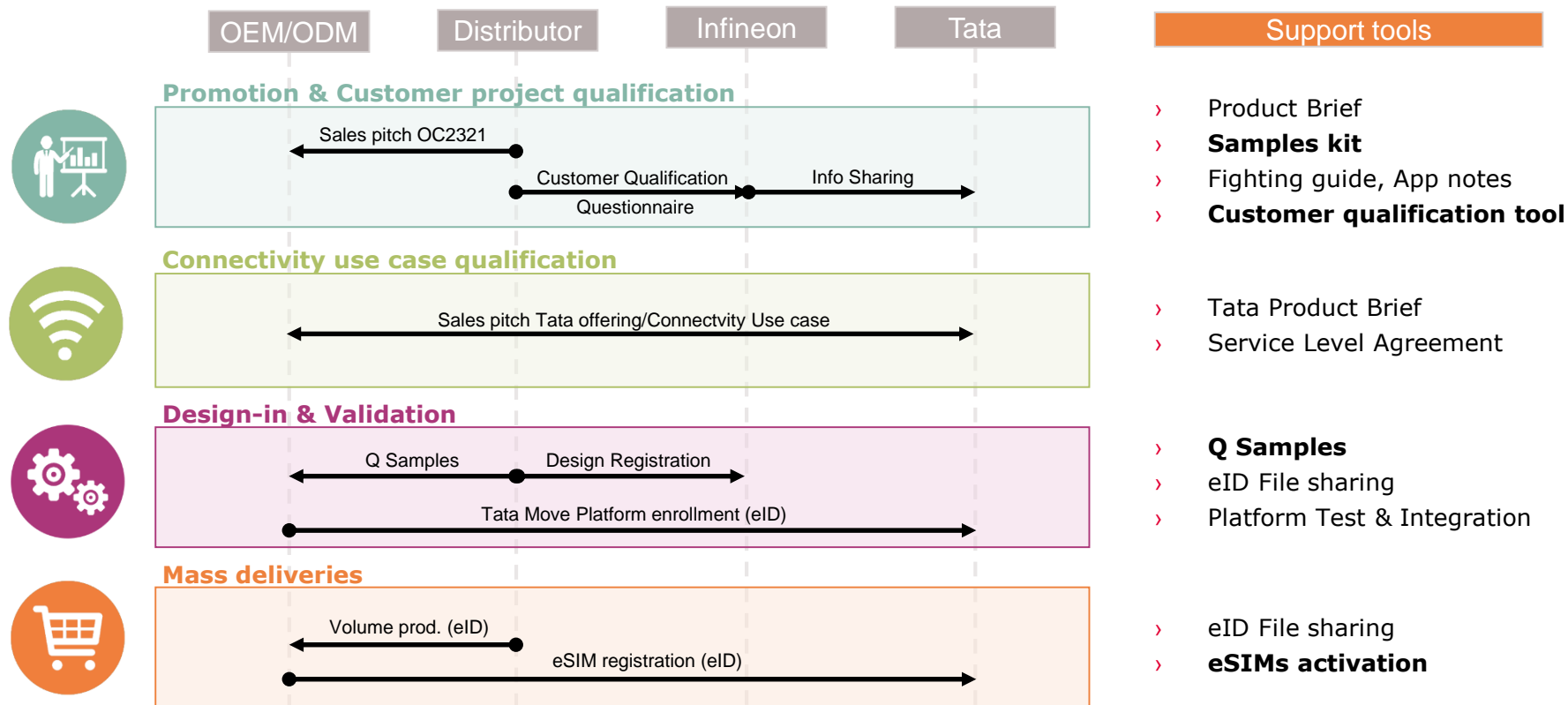
Easy to manage

Tata MOVE™ platform allows a centralized management of connectivity and other IoT services (e.g. Cloud service)

OPTIGA™ Connect IoT, a real value added to IoT devices



OPTIGA™ Connect IoT, a success in 4 steps



OPTIGA™ Connect IoT support material

NDA free documentation available on www.infineon.com/optiga-connect-iot as well as on myinfineon.com

Collaterals and brochures

- Product briefs
- Presentations
- Press releases, ads
- Webinars

Technical material

- Starting guide
- Integration guides
- Datasheets
- White Papers

Evaluation kits

- Evaluation boards
- Demonstrators
- Samples kit

The screenshot shows the product page for OPTIGA™ Connect OC2321. The page includes a navigation menu with 'Overview', 'Diagrams', 'Parameters', 'Partners', and 'Support'. The main content area features a 'NEW' badge, a description of the eSIM solution, and a diagram illustrating the system architecture. The diagram shows a 'Tera Communications MODE™ eSIM profile' connected to 'Mobile IoT devices' via 'OTA' updates. Below the diagram is a 'Parameters' table and a 'Potential Applications' list.

OPTIGA™ Connect OC2321 NEW

eSIM with pre-integrated connectivity for cellular IoT devices

OPTIGA™ Connect is a ready-to-connect embedded SIM (eSIM) solution for cellular IoT devices. This turnkey solution allows easy, secured and cost-optimized deployment and management of cellular-enabled IoT devices at scale. It comes with a pre-installed GSMA-compliant operating system and pre-integrated connectivity capabilities. Supported by our partner Tera Communications, this eSIM offers global cellular network coverage (2G, 3G, 4G, CATM and other LTE services) spanning 640+ networks across 200 countries.

End-to-end connectivity management extending from design through manufacture to deployment reduces complexity, offers full visibility into IoT devices and simplifies control. It addresses today's key pain points in connectivity management, namely interoperability, technical support, cost, and coverage.

Diagrams

Infineon's OPTIGA™ Connect eSIM IoT solution is pre-integrated with a bootstrap Tera Communications MODE™ eSIM profile

Potential Applications

- Cloud devices (IoT end nodes & edge gateways)
- Connected cars (commercial telematics)
- Industry automation (security cameras, factory automation, asset tracking)
- Smart Energy (metering, storage, distribution)
- Smart Home (security, alarm, HVAC, access control)
- Smart city infrastructure (security, lighting, parking sensors)
- Wearables (health monitoring)

Parameters

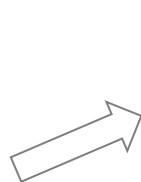
Parameter	OPTIGA CONNECT OC2321
Additional Information	It consists of first in class security micro controller in QFN 8 package including GSMA compliant eSIM operating system and pre-installed worldwide bootstrap connectivity
Ambient Temperature	-40 to 105 °C
Part No.	
Applications	Industrial, Lighting, Medical, Automation, Smart Building, Smart Home
QFN	1234
Certifications	CC EAC3-certified Hardware

Whitepaper - Unleashing cellular connectivity for IoT applications
[Download here](#)

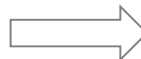
Leverage eSIM standards evolution for a business model revolution
[Watch now](#)

OPTIGA™ Connect IoT, customer qualification tool

Self-assessment tool to step-into a customer project:



- Customer use case fits with OPTIGA™ Connect IoT.
- The project **can be 'officially' registered**





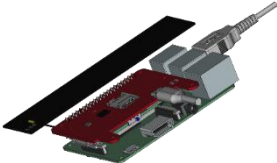

- Customer use case partially fits with OPTIGA™ Connect IoT.
- The project details **to be further discussed**, please contact the support team.



- Customer use case does not fits with OPTIGA™ Connect IoT.
- The project opportunity has **to be declined**.

OPTIGA™ Connect IoT Evaluation kits



Name	OPTIGA™ Connect KIT1 SAMPLE KIT	OPTIGA™ Connect IoT Evaluation Board	OPTIGA™ Connect IoT Plug & Play EVAL KIT	OPTIGA™ Connect IoT Cube DEMONSTRATOR
Photo				
Description	<ul style="list-style-type: none"> > 5 pcs VQFN-8/MFF2 > 2 pcs ID1 Cards (multi form factor, FF2, FF3, FF4) > 10 MB of connectivity > 150 countries worldwide coverage (Americas, APAC and EMEA) 	<ul style="list-style-type: none"> > LTE shield for Raspberry Pi including OPTIGA™ Connect IoT OC2321 VQFN-8 soldered > Cellular connectivity via any modem available as miniPCIe form factor 	<ul style="list-style-type: none"> > Enables customer without any cellular connectivity background to establish a internet connection with OPTIGA™ Connect IoT > LTE modem shield > (Incl. OPTIGA™ Connect IoT VQFN-8 soldered) > Mini PCIe modem > LTE antenna > Raspberry Pi 3B+ > Power supply > Micro-USB cable > Micro-SD card 	<ul style="list-style-type: none"> > Broadcasts pressure and temperature data (DPS310 sensor) via cellular connection (LTE modem with OPTIGA™ Connect IoT) to AWS (Amazon Web Service) cloud > Data visualization website to be located by QR code/ NFC tag
ISAR SP Nr.	SP005428213 (October 2020)	SP005546781 (November 2020)	On request for Demo purpose (November 2020)	On request for Demo purpose (November 2020)

OPTIGA™ Connect IoT Orderable SP#



› Following SP numbers are visible in SAP used for quoting / ordering

Status	SP#	OPN	MOQ	Remark
Active and preferred	SP005420213	OC2321VQFN8XTMA1	18k	Standard production Packing unit = 3000pcs
Active and preferred	SP005433185	OC2321VQFN8XTMA2	3k	Standard production Packing unit = 500pcs
Active and preferred	SP005434491 SP005434493	OC2321	1	None pre-provisioned samples
Active and preferred	SP005428213	OPTIGA CONNECT KIT1	1	OPTIGA™ Connect Samples kit: 7x Pre-provisioned samples (7MB data pool, worldwide coverage)
Active and preferred	SP005546781	OPTIGA CONNECT IoT BRD1	1	OPTIGA™ Connect IoT Evaluation board

OPTIGA™ Connect IoT, a real value added to IoT devices

Simplified hardware BOM,

Optimized design

Single SKU for global out-of-the-box cellular service personalization

Simplified supply chain,

Operational efficiency

Global cellular enablement & operational connectivity management

No compromise on

Quality & Security

Industrial grade (-40 to +105°C), Common Criteria EAL5+



Product status:

- Q-Samples: Available
- Mass production: Q1 2021
- Samples Kits: October 2020
- Eval & Demo boards: November 2020

Call to actions



Add to your cart...



Search opportunities...



Pitch it wide...



For further information, please contact us



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Questions & answers





Part of your life. Part of tomorrow.