WE MEET @ DIGITAL DAYS

Thu, Feb 24, 2022 11:00 AM - 11:45 PM CET
Thu, Feb 24, 2022 10:00 AM - 10:45 PM GMT
https://register.gotowebinar.com/register/9793695123751726 22

CONNECT FROM ANYWHERE - SURPRISE! PRE-ANNOUNCEMENT OF A GLOBAL CONNECTIVITY PRODUCT

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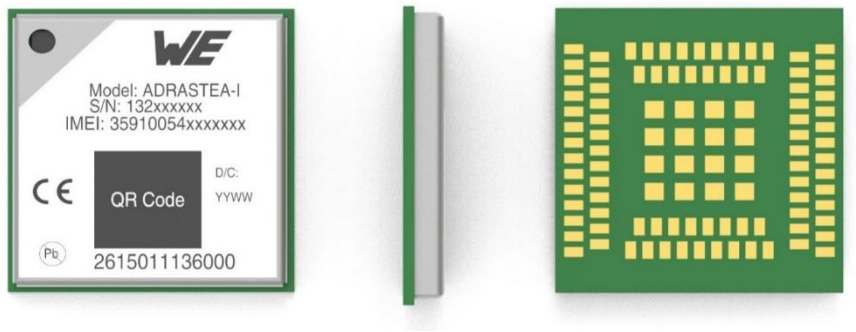
AGENDA

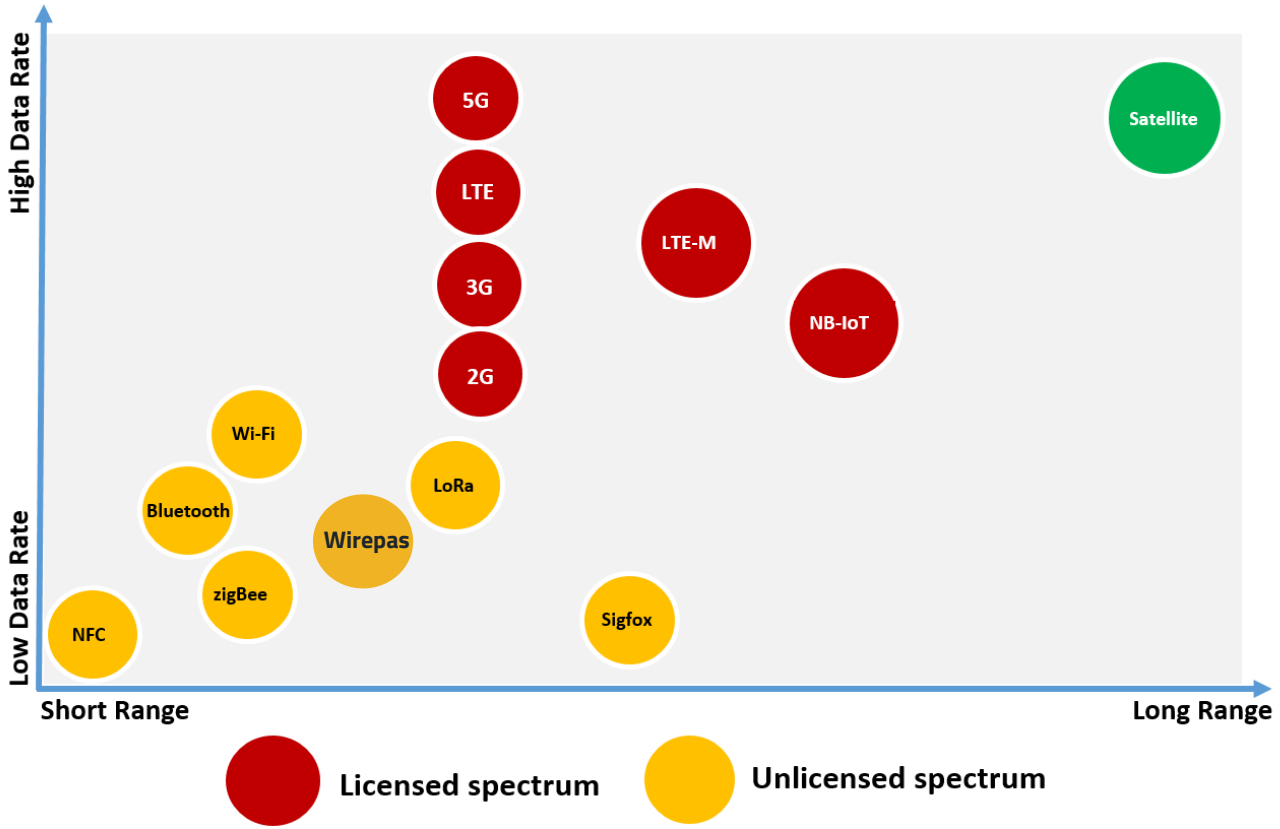
Connect from Anywhere - Surprise! Pre-Announcement of a Global Connectivity Product

- IoT CONNECTIVITY OPTIONS
- WE IoT CONNECTIVITY OPTIONS
- ADVANTAGES OF CELLULAR CONNECTIVITY
- EVOLUTION FROM 1G TO 5G
- 2G AND 3G ARE PHASING OUT
- LTE NETWORK ARCHITECTURE
- COMPARISION OF LTE-M AND NB-IoT
- CELLULAR CERTIFICATION PROCESS
- ADRASTEA-I KEY FEATURES
- Q&A



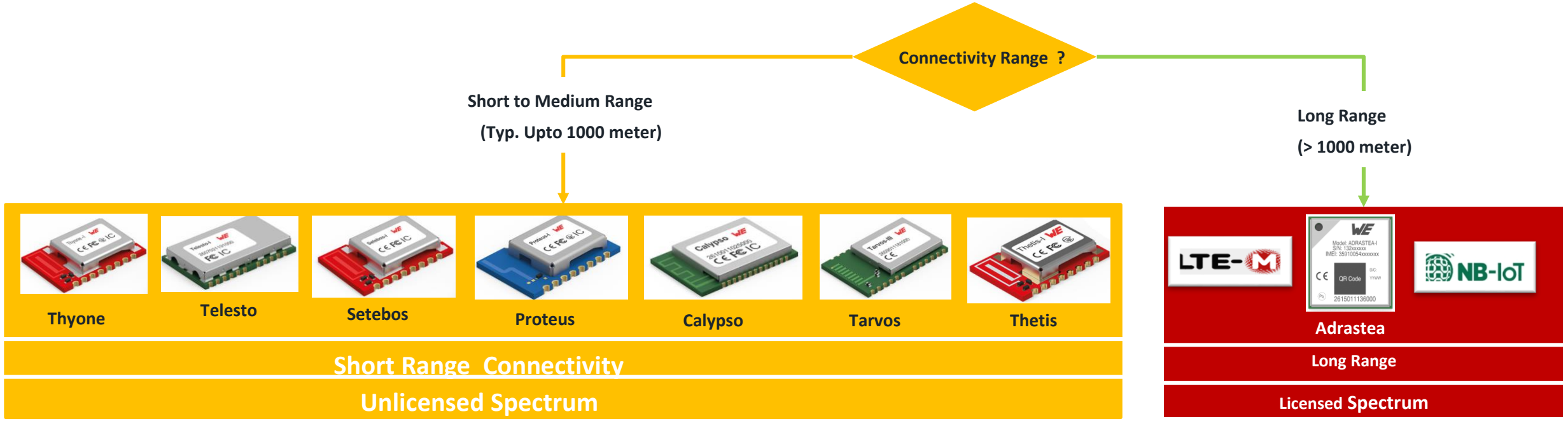
BTY: there are no breaks, questions in the end and you will get a copy of this material.

IoT CONNECTIVITY OPTIONS:



- ✓ NFC
- ✓ Bluetooth
- ✓ WiFi
- ✓ ZigBee
- ✓ LoRa
- ✓ Sigfox
- ✓ Wirepas
- ✓ 2G – 5G
- ✓ LTE-M
- ✓ NB-IoT
- ✓ Satellite

WE IoT CONNECTIVITY OPTIONS:

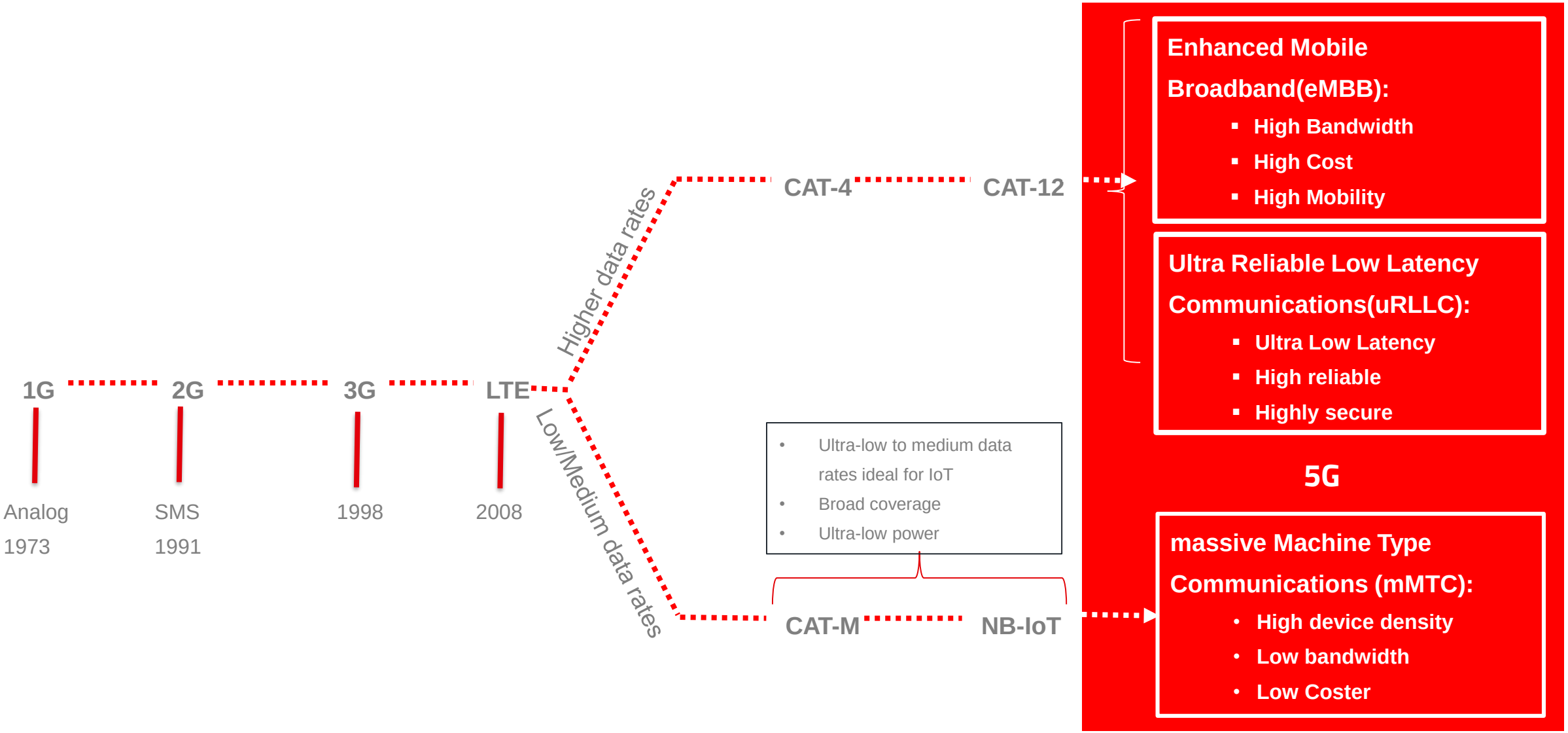


https://www.we-online.com/catalog/en/wco

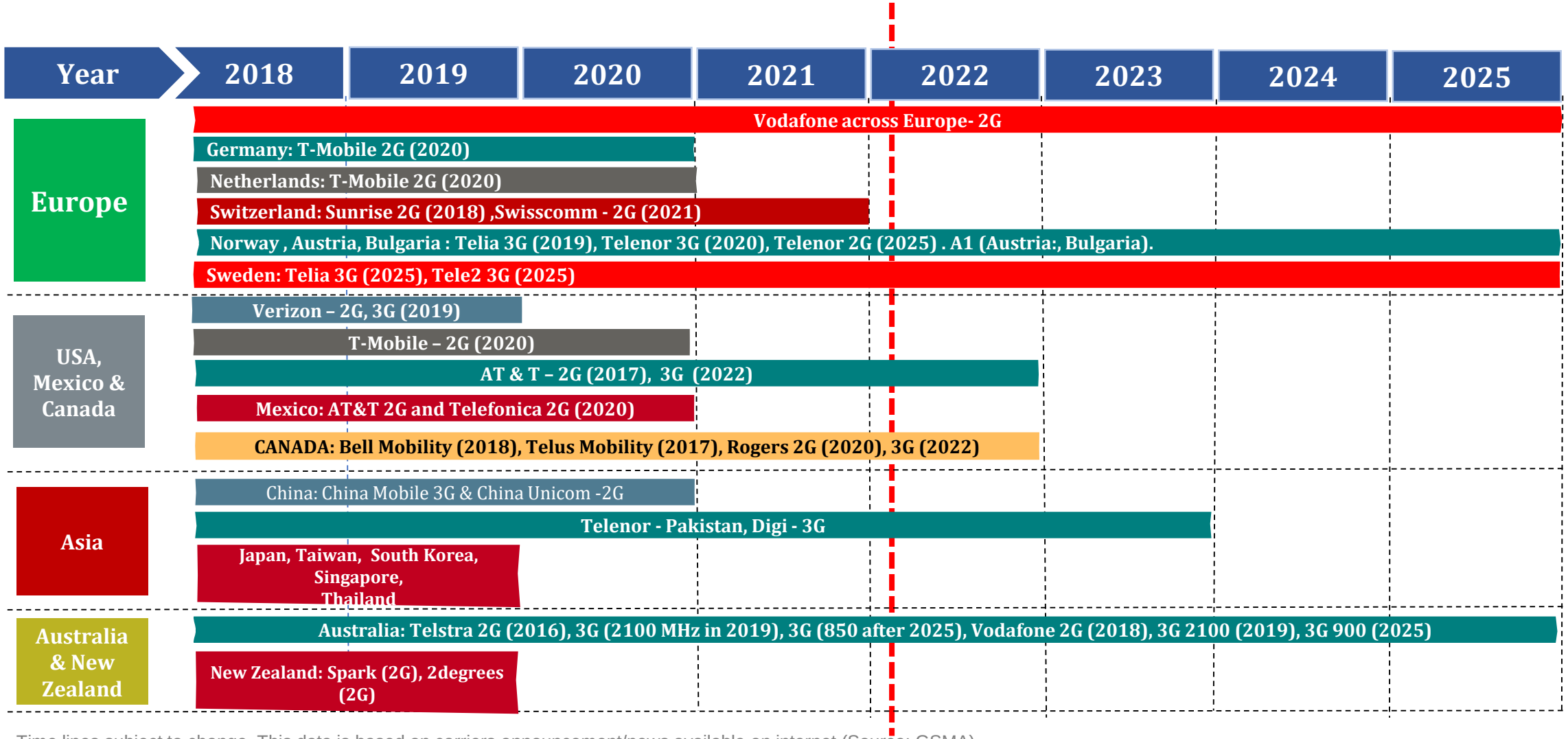
ADVANTAGES OF CELLULAR CONNECTIVITY

Global Coverage and Roaming	**Global Coverage and Roaming:** Cellular networks are available globally, global coverage of cellular technologies makes companies to deploy their IoT devices globally. In-addition global presence of cellular networks enables roaming and mobility.
Secure and Reliable Transmission	**Secure and Reliable Transmission:** Cellular technologies have default security procedures enabled, this procedure make sure only certified, subscribed and authenticated devices can access mobile network for data, SMS and voice services.
Standardized	**Standardized:** 3rd Generation Partnership Project (3GPP) develops standards for cellular communication. These standards are internationally agreed standards. The device manufactures and network service providers follows cellular communication standards.
Network Quality of Service	**Network Quality of Service:** Licensed spectrum is assigned exclusively to network service providers for independent usage. In this licensed spectrum service provider deploys his network. IoT devices has to subscribe for data or SMS services to network service provider, they are contractually bound to provide quality of Service for subscribers.
Certified Device Access	**Certified Device Access:** Certified devices access the cellular network this enables efficient utilization of licensed spectrum and minimizes the risk. Secured connectivity and strong authentication of IoT devices.

EVOLUTION FROM 1G TO 5G

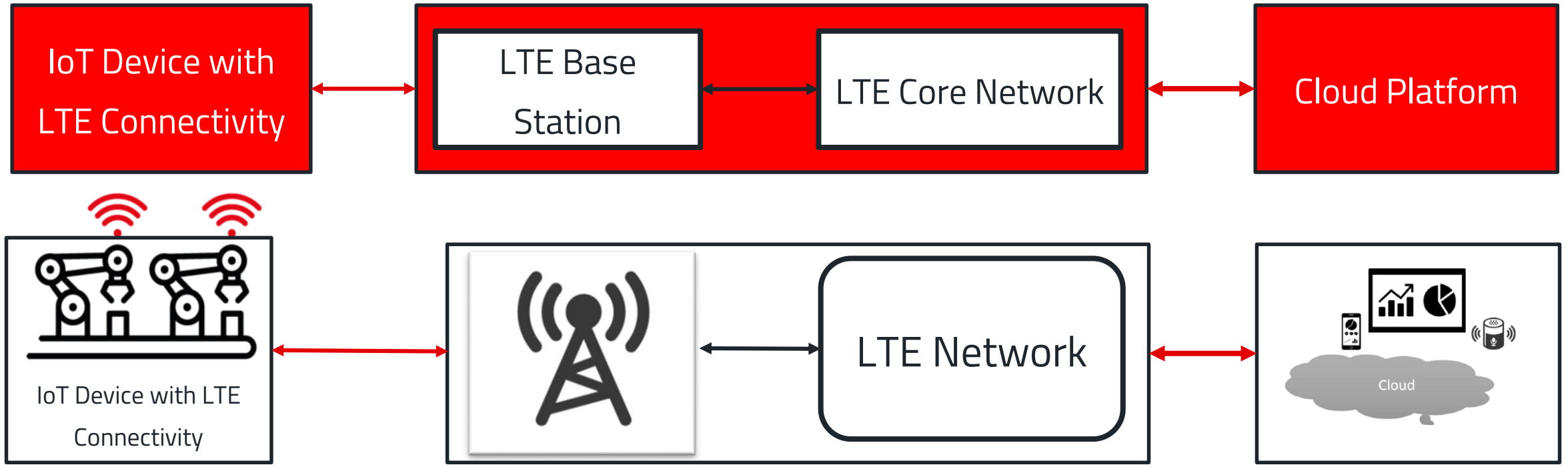


2G AND 3G ARE PHASING OUT



Time lines subject to change. This data is based on carriers announcement/news available on internet (Source: GSMA)

LTE NETWORK ARCHITECTURE

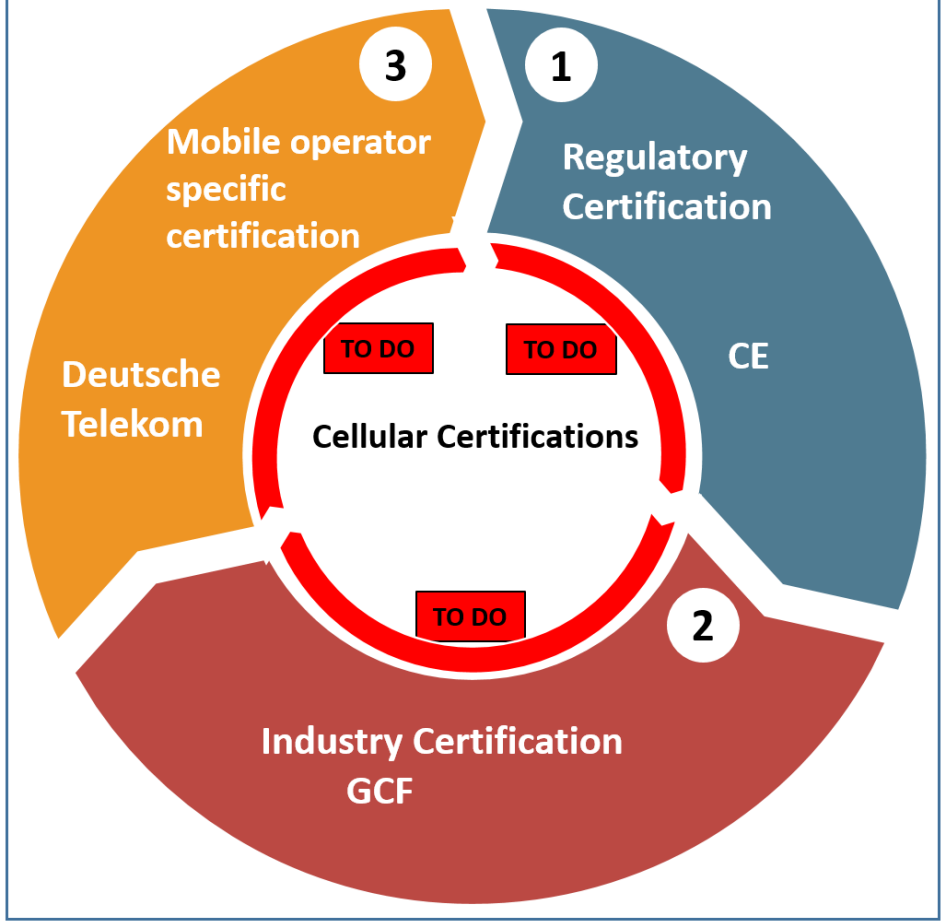


COMPARISION OF LTE-M AND NB-IoT

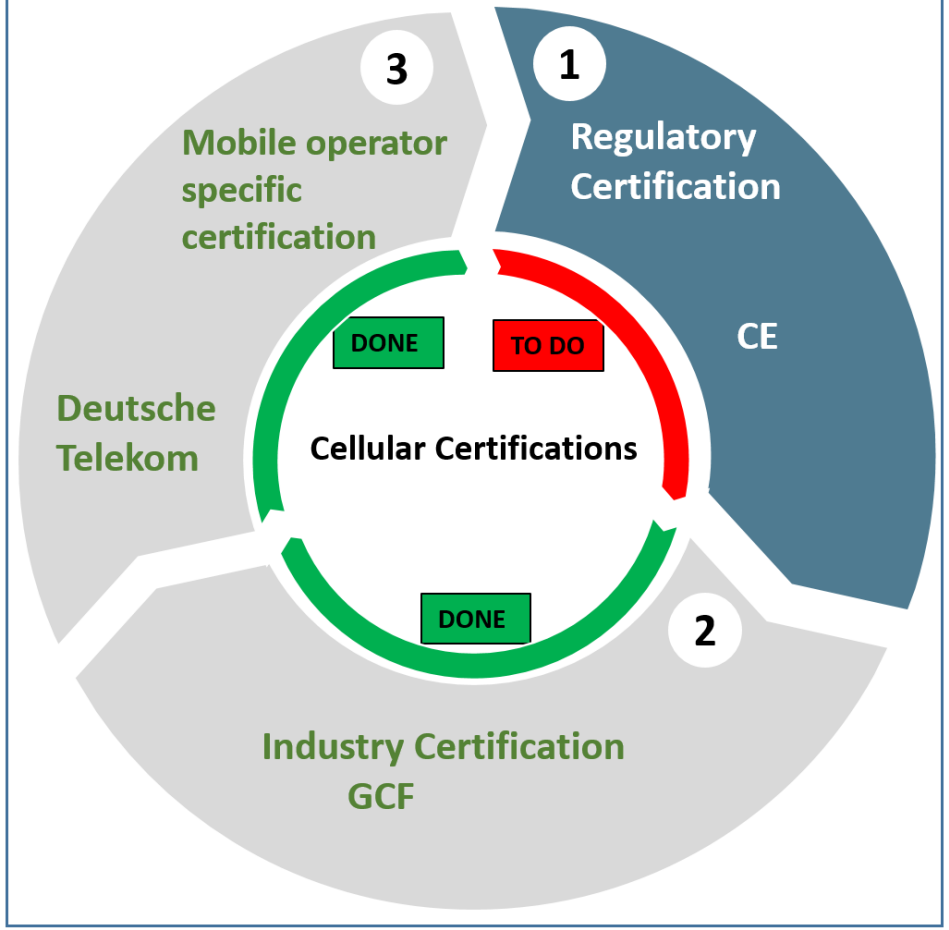
	NB-IoT	LTE-M
Bandwidth	180 KHz	1.08 MHz
Max Uplink Peak data rate (3GPP R14)	158 Kbps	1 Mbps
Max Downlink Peak data rate (3GPP R14)	127 Kbps	588 Kbps
VoLTE Support	No	Yes
Latency	High	Low
Mobility Support	No	Yes
Deployment Type	In-band LTE, LTE guard bands, Stand-alone	In-band LTE

CELLULAR CERTIFICATION PROCESS: TWO ROUTE TO MARKET

Normal Cellular Certification Procedure

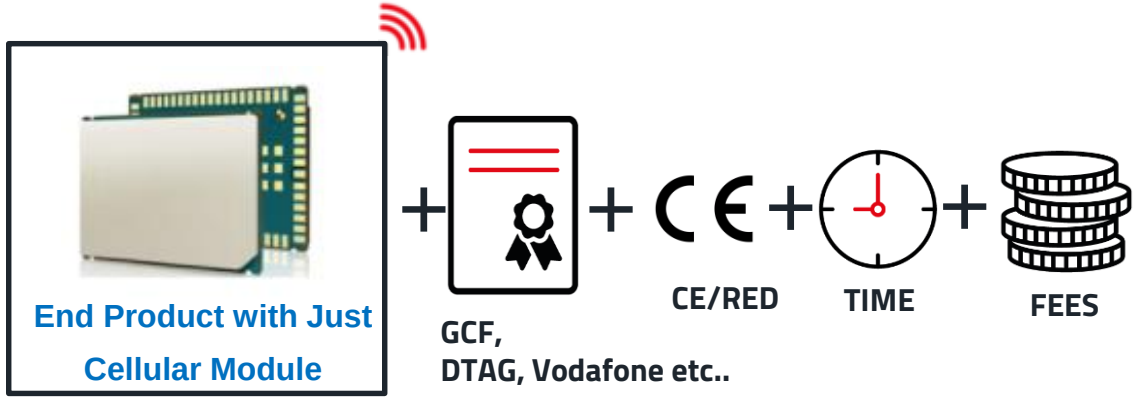


WE - Deutsche Telekom Certification



CELLULAR CERTIFICATIONS:

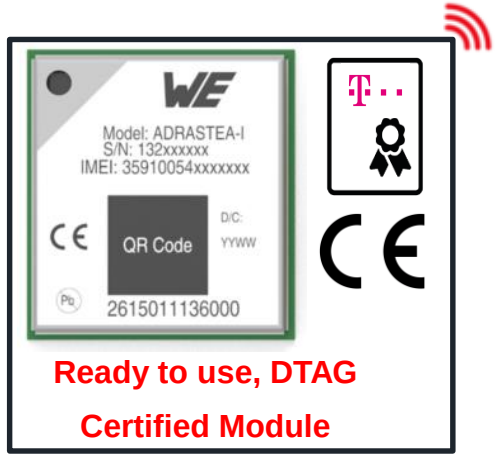
Normal Cellular Certification Procedure



THREE types of Certifications:

1. **Regulatory Certification:** CE
2. **Industry Certification:** GCF
3. **Network Operator Certification:** Vodafone, Deutsche Telekom etc..
4. Cost lot more time and money

WE - Deutsche Telekom Certification



Require only end product certifications:

1. Regulatory Certification: **CE**

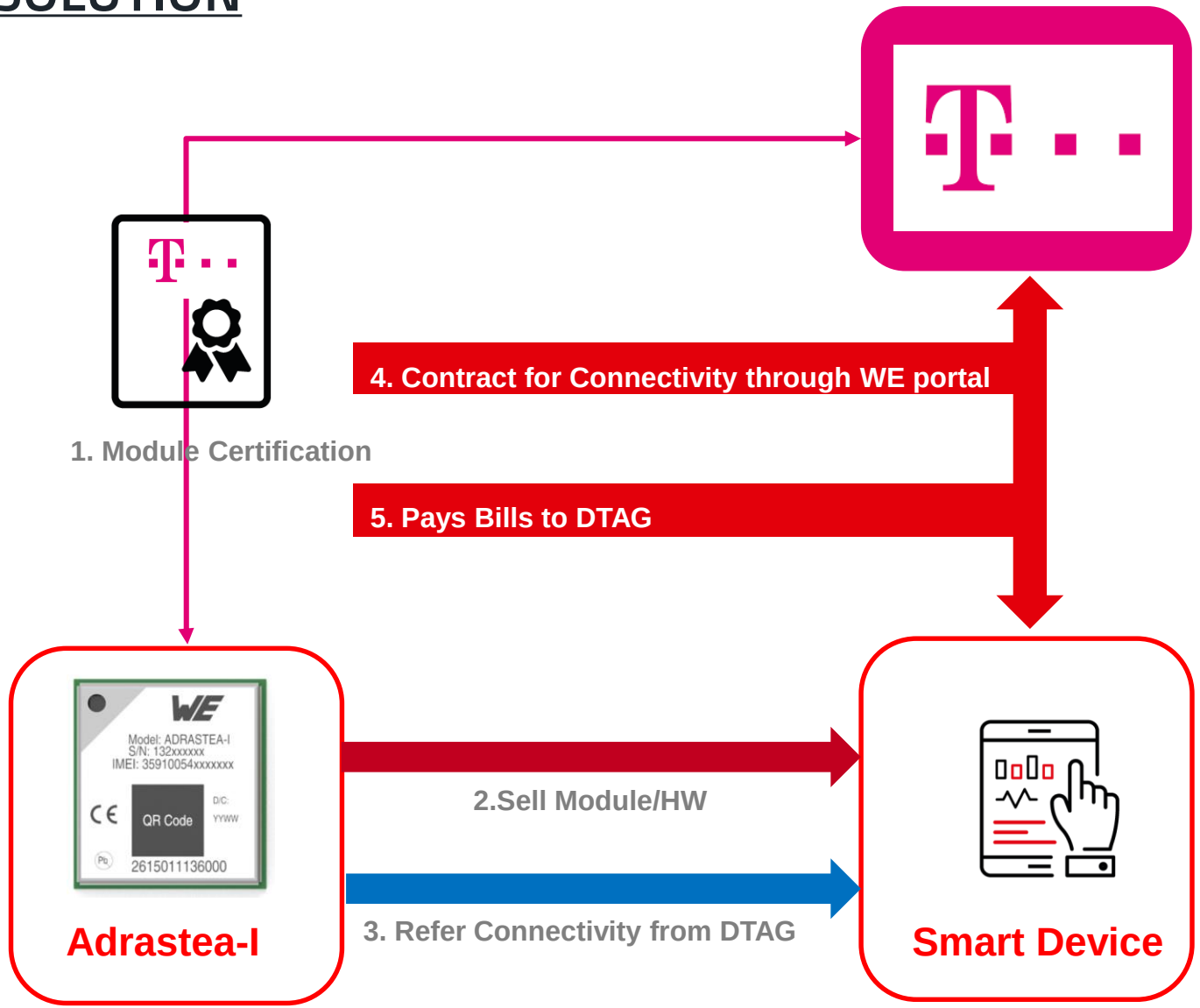
Benefits of WE - Deutsche Telekom Certified Module

Be smart and ensure that your product does not require certification again.

Obtain assurance – Pre-certified module reduces the final test effort.

Save time and money - the end product does not require to go through complex cellular certification process again.

WE CELLULAR SOLUTION



CONNECTIVITY KEY FEATURES:

powered by

NB-IoT
LTE-M

- ✓ Technology independent Charges
- ✓ No Roaming Charges
- ✓ Message Based Pricing
- ✓ Standard SIM cards + eSIM

STARTER

FREE

Includes: **1 connection** and **1 SIM card**

Message-brokerage with NB-IoT connectivity **OR** plain LTE-M connectivity

UDP Protocol

Neul Messaging Protocol

API Access

Forum Support

Roaming

LET'S START FOR FREE

DTAG - COVERAGE: EUROPE & UK

Country	Operator	LTE-M	NB-IoT
Germany	Deutsche Telekom	X	X
	Vodafone		X
Netherlands	T-Mobile	X	X
	KPN	X	
	Vodafone Libertel	X	X
Belgium	Orange	X	X
	Telenet		X
Austria	Magenta Telekom	X	X
France	Orange	X	
Sweden	Telia	X	X
Switzerland	Swisscom	X	X
Latvia	LMT	X	
United Kingdom	Vodafone		X

Country	Operator	LTE-M	NB-IoT
Czech Republic	T-Mobile Czech		X
Slovakia	Slovak Telekom		X
Poland	T-Mobile Poland		X
Croatia	Hrvatski Telekom		X
Hungary	Magyar Telekom		X
Greece	Cosmote		X
Liechtenstein	Swisscom		X
Italy	Vodafone		X
	TIM		X
Finland	Telia		X
Denmark	Telia		X
Spain	Vodafone		X
Norway	Telenor	X	
	Telia		X

ADRASTEA-I KEY FEATURES

✓ Supported Cellular Technologies:

LTE-M NB-IoT

Benefits of Dual Mode:

- ✓ Enable international multi-regional coverage (In some country (region) LTE-M is not available then Module will select NB-IoT and vice versa)

✓ Positioning

Embedded GNSS

GPS | GLONASS

- ✓ Adrastea-I supports GPS and GLONASS satellite systems.
- ✓ This allows GNSS positioning for asset management applications where infrequent position updates are required.

✓ Integrated MCU (Exclusively for Customer Application's Firmware)

ARM® Cortex® M4 | 1 MB FLASH | RAM

Benefits of Integrated MCU:

- ✓ Cost (External micro controller is not required)
- ✓ Size

ADRASTEA-I KEY FEATURES

✓ Interfaces:

- ✓ USIM
- ✓ UART
- ✓ I2C
- ✓ SPI
- ✓ GPIO
- ✓ ADC
- ✓ JTAG

✓ Protocols:

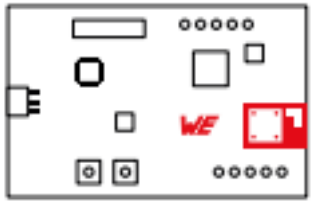
- ✓ IPV4/IPV6
- ✓ TCP/UDP
- ✓ TLS/DTLS
- ✓ COAP
- ✓ HTTP/HTTPS
- ✓ MQTT
- ✓ LwM2M

✓ Other Features

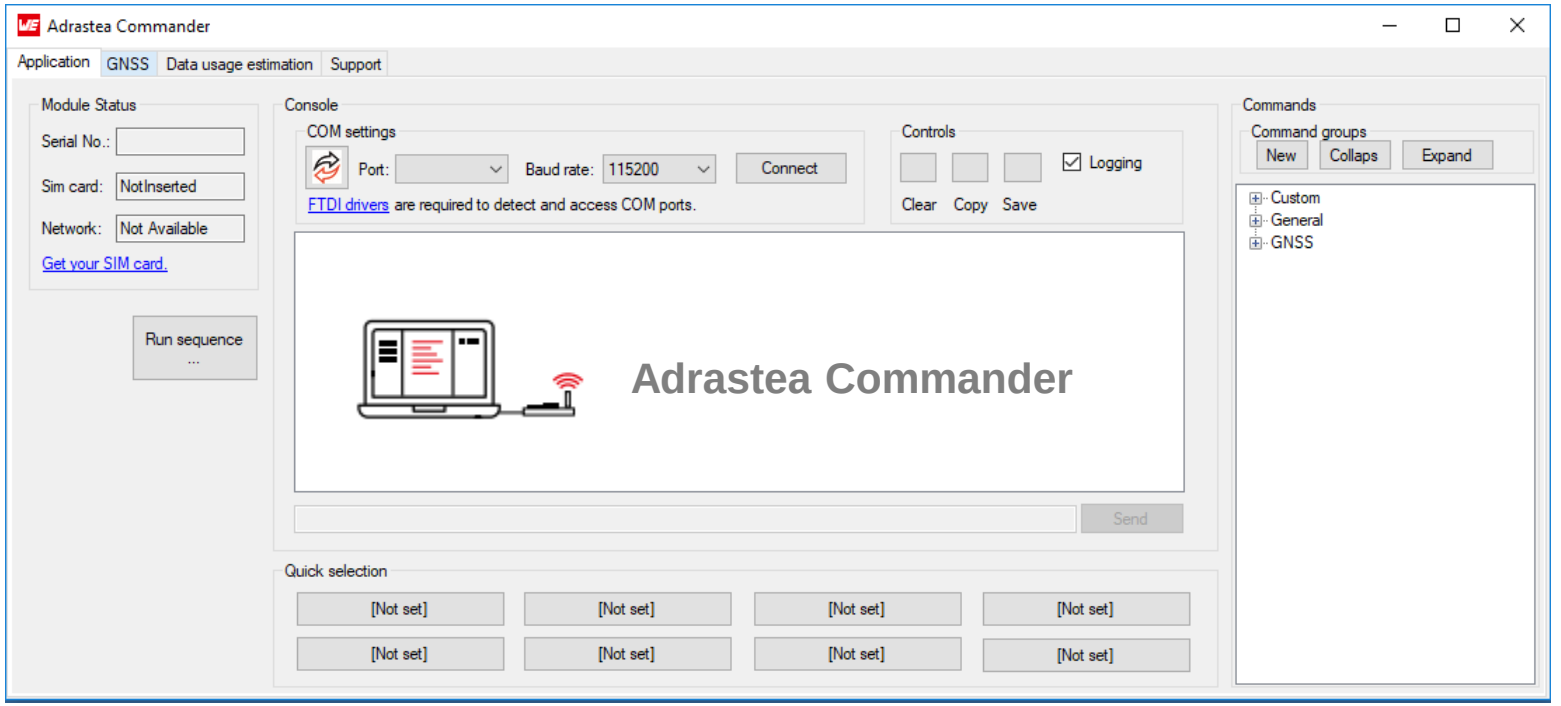
- ✓ Maximum Data Rate (LTE-Cat.M1):
  - Downlink: 300 Kbps
  - Uplink 375 Kbps
- ✓ Maximum Data Rate (LTE-Cat.NB1):
  - Downlink: 127 Kbps
  - Uplink 158 Kbps
- ✓ 3GPP Release 13 compliant, Upgradable to Release 14
- ✓ AT Command Support:
  - 3GPP TS 27.007 and 3GPP TS 27.005 AT commands.
  - Würth Elektronik's enhanced AT commands.
- ✓ Firmware upgrade over USB interface
- ✓ Firmware upgrade over air

ADRASTEA-I: ADDED VALUES

Eval Boards:

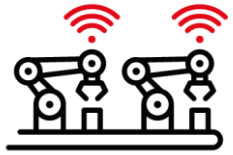


- ❑ 4G technology for every engineer
- ❑ Easy & rapid prototyping testing
- ❑ Integrated GPS
- ❑ FTDI UART to USB
- ❑ Key GPIOs are on header
- ❑ Current measurement
- ❑ Nano SIM card holder
- ❑ SMA Antennas Connector
- ❑ AppNotes
- ❑ Webinars
- ❑ GitHub and Sony SDK



- ❑ Complete control of module over UART.
- ❑ Evaluate GNSS functionality of module.
- ❑ URL to access the WE-DTAG connectivity portal.
- ❑ Approximate data consumption calculator.
- ❑ Save and execute AT commands.
- ❑ Run sequence of AT commands.
- ❑ Logging of serial output

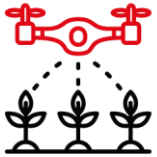
APPLICATIONS EXAMPLES



Industrial equipment monitoring:

Wearable devices

Smart Home Applications



Agriculture Applications

Asset Tracking Applications

Smart Metering

JARDON BUSTER ABBREVIATIONS:

Term	Description
3GPP	3rd Generation Project Partnership
IoT	Internet of Things
LPWA	Low Power Wide Area
LTE	Long-Term Evolution
LTE-M	Long-Term Evolution Machine Type Communications
MME	Mobile Management Entity
NB-IoT	Narrowband IoT
PSM	Power Save Mode
SIM	Subscriber Identity Module
PSM	Power Save Mode
UE	User Equipment (User Device)
UART	Universal Asynchronous Receiver Transmitter
SPI	Serial Peripheral Interface
I2C	Inter Integrated Circuit
DTAG	Deutsche Telekom AG
MQTT	Message Query Telemetry Transport
HTTP	Hyper Text Transfer Protocol
HTML	Hypertext Mark-up Language
DNS	Domain Name System

SUMMARY:

Now we know…

- ✓ Many ways to send sensor data to cloud (IoT)
- ✓ 2G/3G phase-out plan
- ✓ What to do with different cellular technologies
- ✓ Certifications are important
- ✓ Benefit of Adrastea-I Cellular module
- ✓ You know how simple it is

Thank you for your attention

WE hope you learn something new to make business

Now we welcome ***any*** question


Thanks