

**Hands-on NB-IoT Experience!**

 **NB|USB**



# Cellular IoT Market Growth

2016 0.4 billion Devices

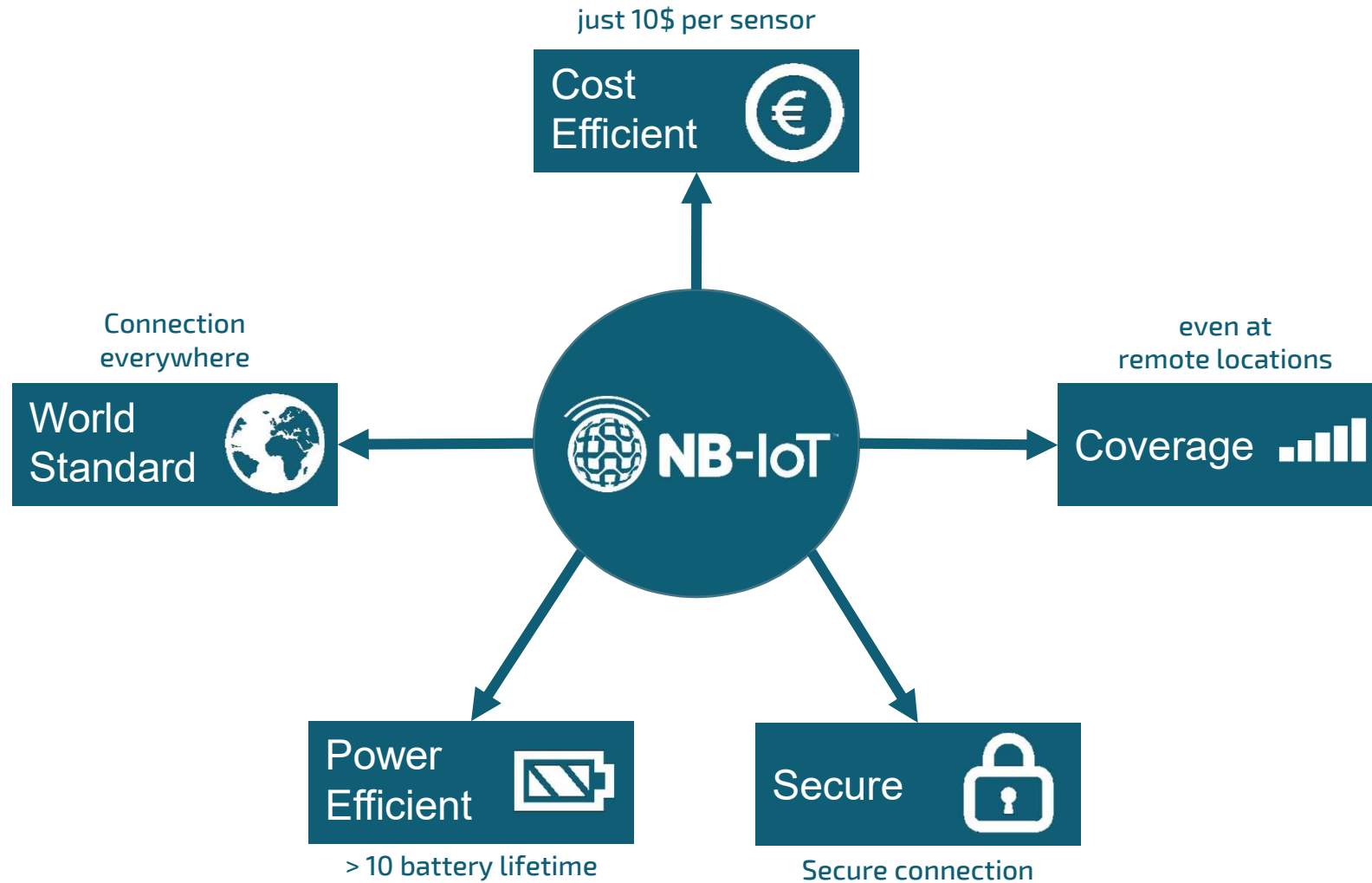
# 2022 1.5 billion Devices

Source: Mobility Report Ericsson





# Five Reasons Why Customers Should Switch to NB-IoT!



# NB|USB Features

- Modem: u-blox SARA-Cat-NB1/M1 module

## USB-Interface

- AT-Command IF
- Debugging IF
- External Antenna Connector (SMA)
- SIM-Card Slot





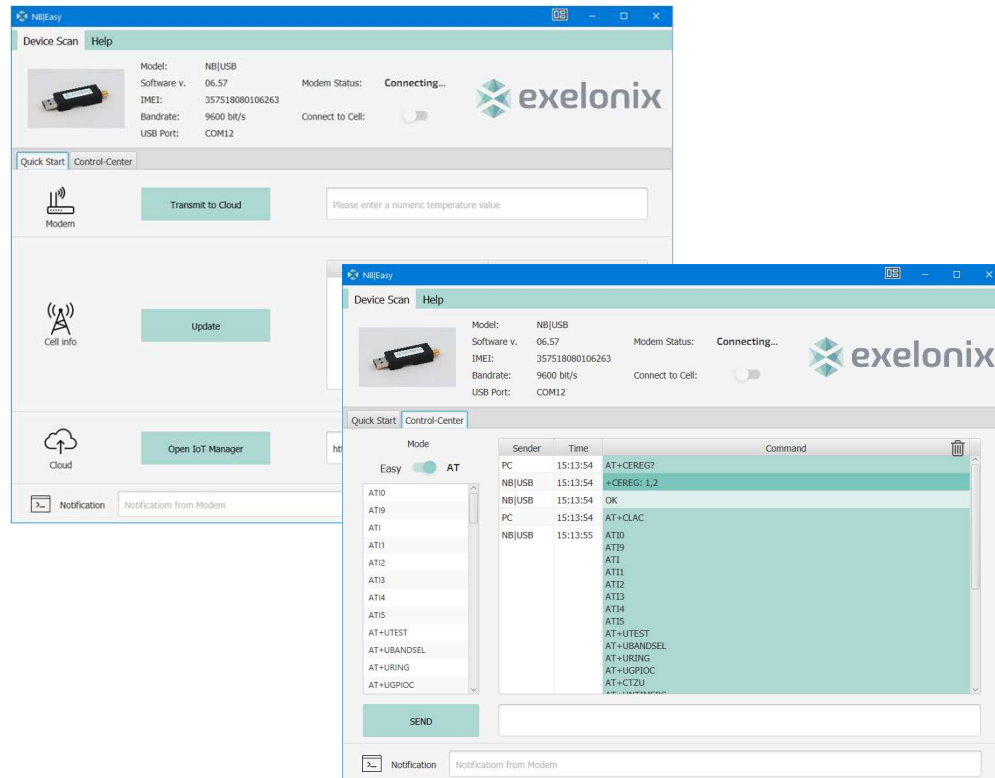


# Hardware Specification

	NB USMB 211	NB USB 410
Modem	Ublox SARA N211	SARA-R410M-02B
Frequency Bands	8, 20	2, 3, 4, 5, 8, 12, 13, 20, 28
Chipset	Neul	Qualcomm
Standards	Cat NB1	Cat NB1/M1
3GPP Release	R13	R13
Antenna connector	SMA	SMA
AT Interface Spec	<a href="https://www.u-blox.com/sites/default/files/SARA-N2_ATCommands_%28UBX-16014887%29.pdf">https://www.u-blox.com/sites/default/files/SARA-N2_ATCommands_%28UBX-16014887%29.pdf</a>	<a href="https://www.u-blox.com/sites/default/files/SARA-R4_ATCommands_%28UBX-17003787%29.pdf">https://www.u-blox.com/sites/default/files/SARA-R4_ATCommands_%28UBX-17003787%29.pdf</a>
Modem Spec	<a href="https://www.u-blox.com/sites/default/files/SARA-N2_SysIntegrManual_%28UBX-17005143%29.pdf">https://www.u-blox.com/sites/default/files/SARA-N2_SysIntegrManual_%28UBX-17005143%29.pdf</a>	<a href="https://www.u-blox.com/sites/default/files/SARA-R4_SysIntegrManual_%28UBX-16029218%29.pdf">https://www.u-blox.com/sites/default/files/SARA-R4_SysIntegrManual_%28UBX-16029218%29.pdf</a>



# NB|USB Tools: NB|EASY Software



## Start-up GUI

- Network information
- Display UE-statistics
- Check connectivity
- Send data to any IoT cloud

## EASY Interface

- Control modem functionality with just 10 commands using our simplified messaging interface
- much simpler than AT-commands

## Advanced

- AT-Commands
- Get modem traces

## Platform Support:

- Windows
- Linux
- Android (Q2 2018)



# NB|USB Tools: M-Cetner (u-blox)

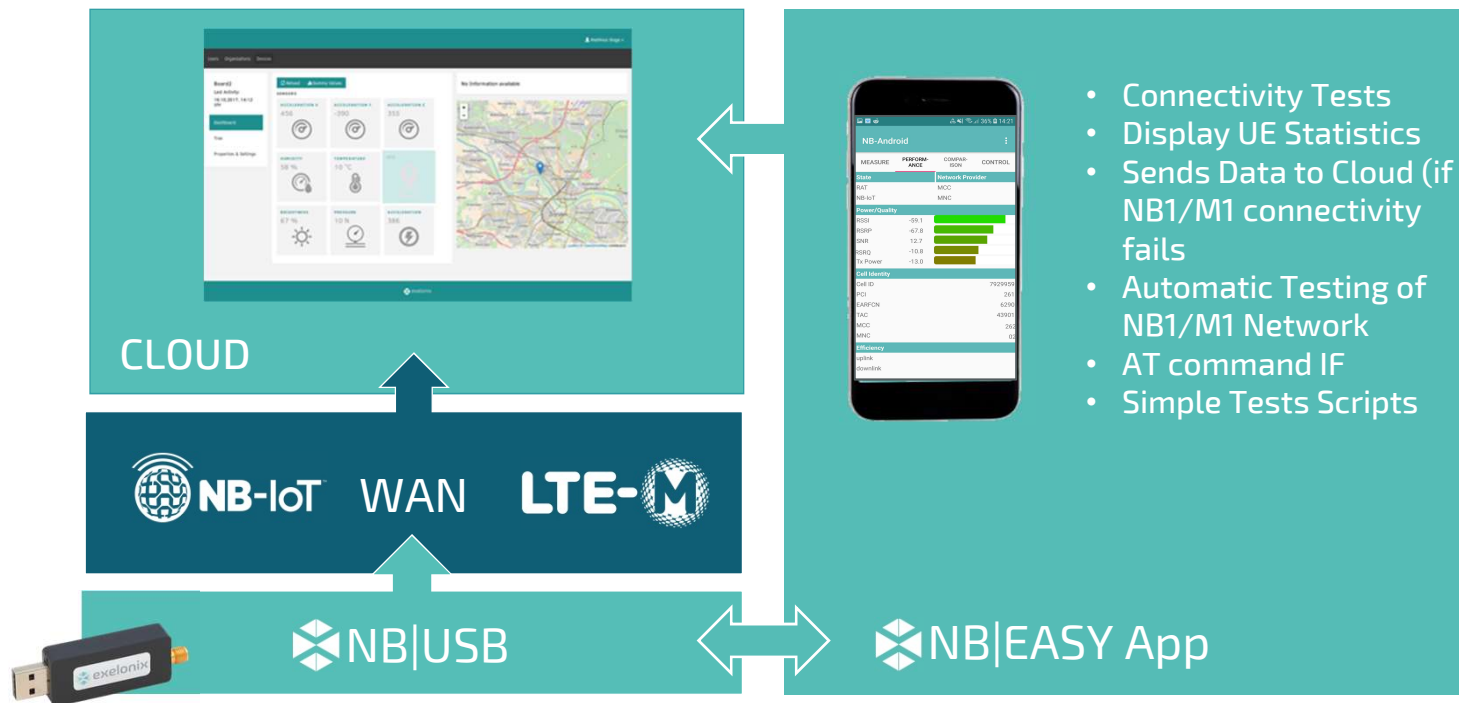
## Standard Tooling: ublox m-center

- Interactive and easy to use Windows-tool for
  - evaluation
  - Configuration and
  - testing of NB-IoT connectivity
- Access to main functionality and configuration parameters
- Learn AT commands using the GUI interfaces thanks to embedded AT Terminal
- Trace NB-IoT modem activity
- Free of charge from u-blox



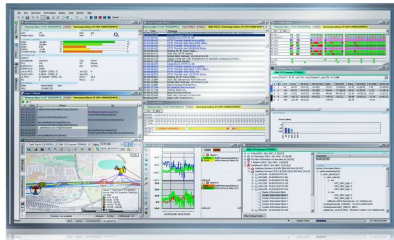
<https://www.u-blox.com/sites/default/files/products/tools/m-center-01.10.00.exe>

# Cloud Architecture





# Drive Test SW Integration



ROMES

available from  
Rohde & Schwarz



TEMS



NEMO

available from  
Keysight

# NB|USB Use Cases

## Customer Demonstration / NB1 & M1 Network Checker

- Check E2E connectivity
- Demonstrate NB1/M1 experience
- Displays NW-parameter (signal strength, cell ID, ...) in Android app



## NB-IoT Network Roll-Out Support

- Displays NW-parameter (SNR, RSSI, RSRP, Cell ID, ECL ...)



## Drive Tests

- Automated testing (every minute)
- UE statistics & GPS location



## M2M Data Transmission

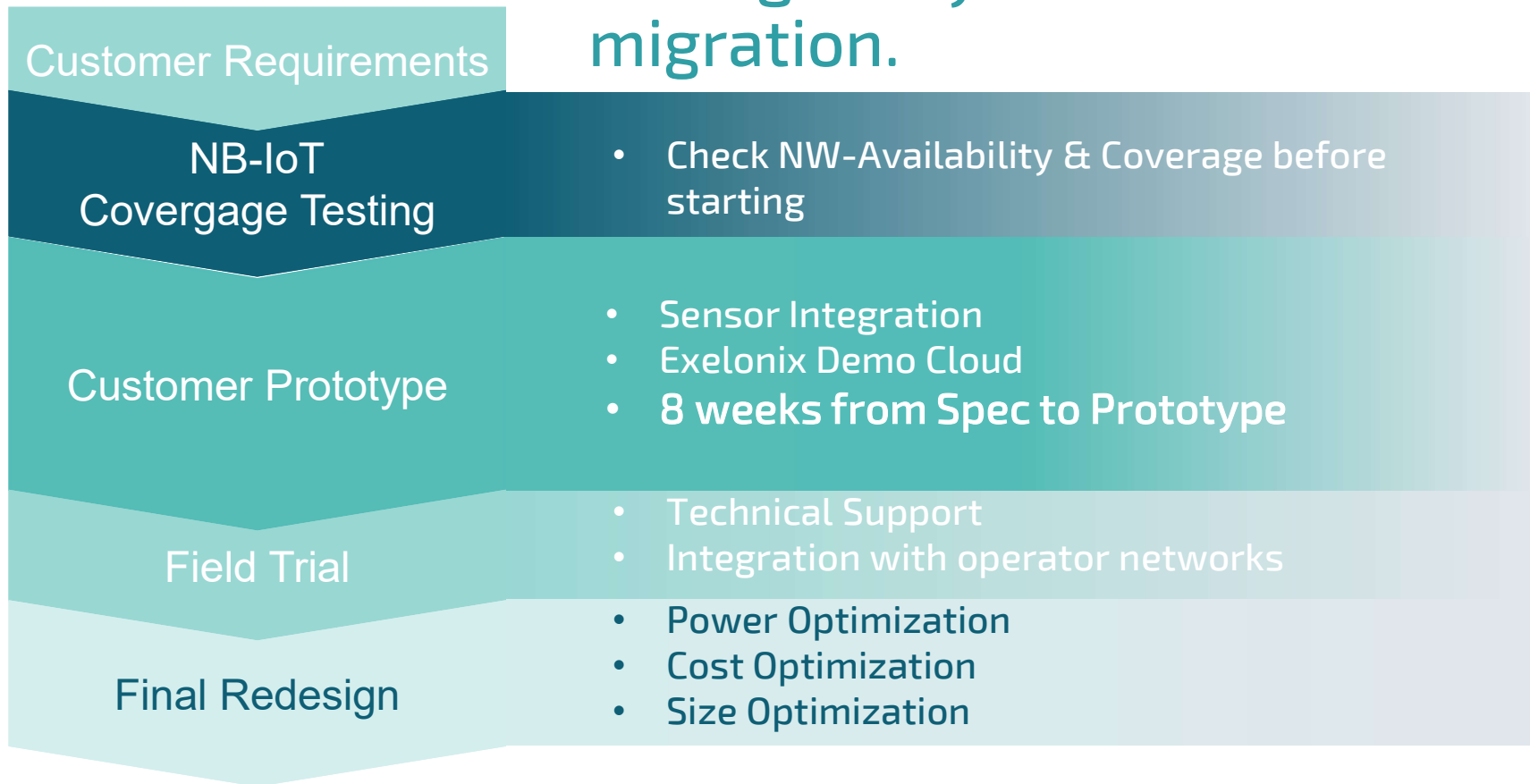
- Low cost alternative for 3G/4G surf-sticks
- Transmission of small data packets
- For industry PC solutions





# Customer Projects

Exelonix can support you throughout your NB-IoT migration.





# Exelonix Product Portfolio



**NB|DESK**  
NB-IoT Demonstration  
Evaluation Starter Kit

**Operators,  
OEM-Customers,  
Universities**

**Features**

- 6 Sensors
- Plug'n Play Demo Kit
- Display with eNB Parameter
- Cloud Integration

**Use Cases:**

- Sales Demo Kit
- Customer Evaluation Kit
- in Field Troubleshooting
- Drive Test UE
- Telematics



**NB|USB**

**Drive-Test Provider  
Test Houses  
Operators**

**Features:**

- Pure NB-IoT Modem
- AT-Command Interface
- Supports ublox m-center
- Grain Trace Data

**Use Cases:**

- Customer Evaluation Kit
- in Field Troubleshooting
- Drive Test UE



**NB|DEV-KIT**

**Operators  
OEM-Customers**

**Features:**

- Digital Sensor IF (SPI , UART , I2C , GPIO, PWM)
- Cat-NB1 Modem (ublox)
- Low Power ARM Cortex M0  $\mu$ C

**Use Cases:**

- Integration of Sensors & Modem



**OEM-Customer  
Applications**

**OEM-Customers**

**Features:**

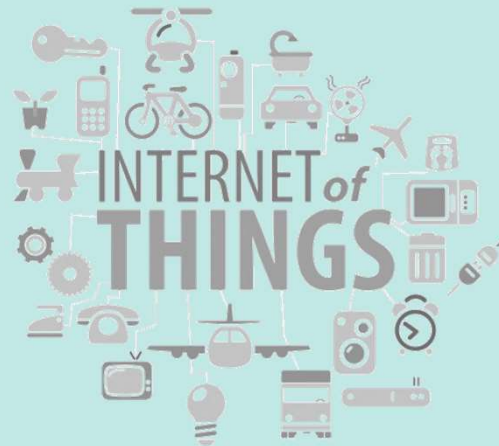
- Cellular IoT Toolbox
- Rapid Prototyping (8 weeks for Prototype)
- POC
- Series Production

**Use Cases:**

- Professional service offering for customers without wireless experience



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