



Nordic Semiconductor

BlueTooth and cIOT Update

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Nordic Semiconductor at a glance



Key Facts:

Founded in 1982, HQ in Norway

> 600 employees

R&D in Norway, Finland, Poland and US

Publicly Listed: OBX:NOD

Key partners: TSMC, AMKOR, ASE

Fabless semiconductor company

Specialized in low power wireless connectivity and embedded processing for IoT

Market leader in Bluetooth low energy

The driving technology in short-range low power IoT

Expanding offering with 802.15 / Thread and Zigbee

Shipped more than 2 billion short-range ICs since 2002

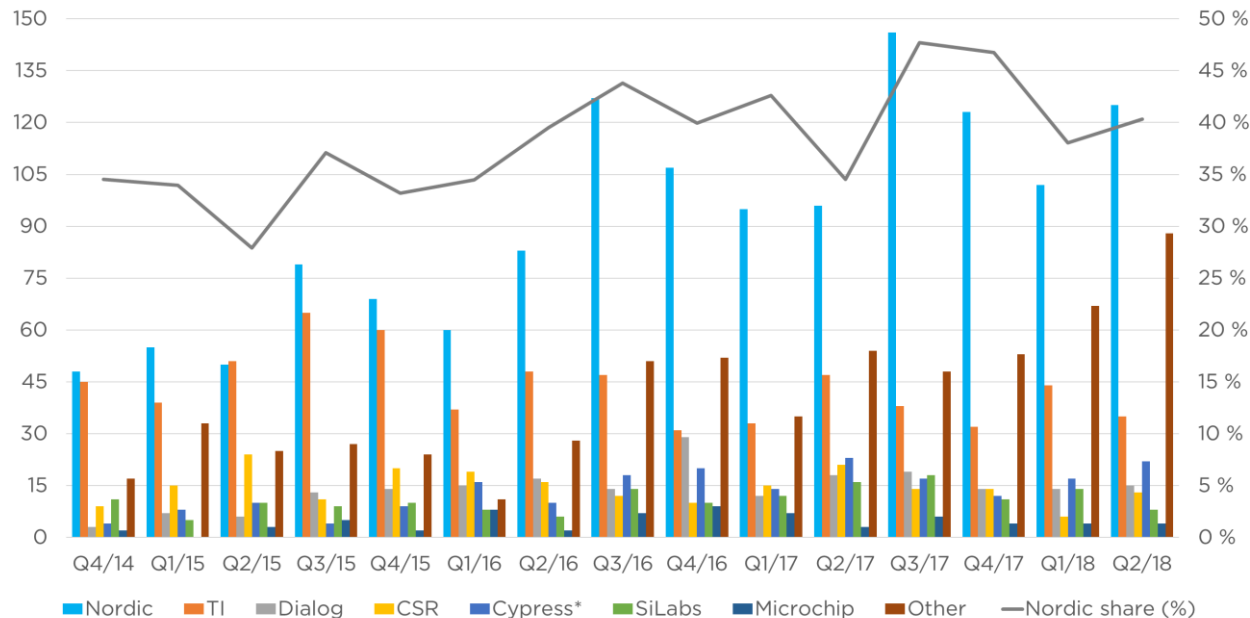
Expanding into low power cellular IoT

Emerging LTE-M and NB-IoT technologies

Seasoned R&D team in Finland

Leading and broad position in Bluetooth

Bluetooth low energy end-product certifications*



End-product
certifications,
Nordic Q2 18

125

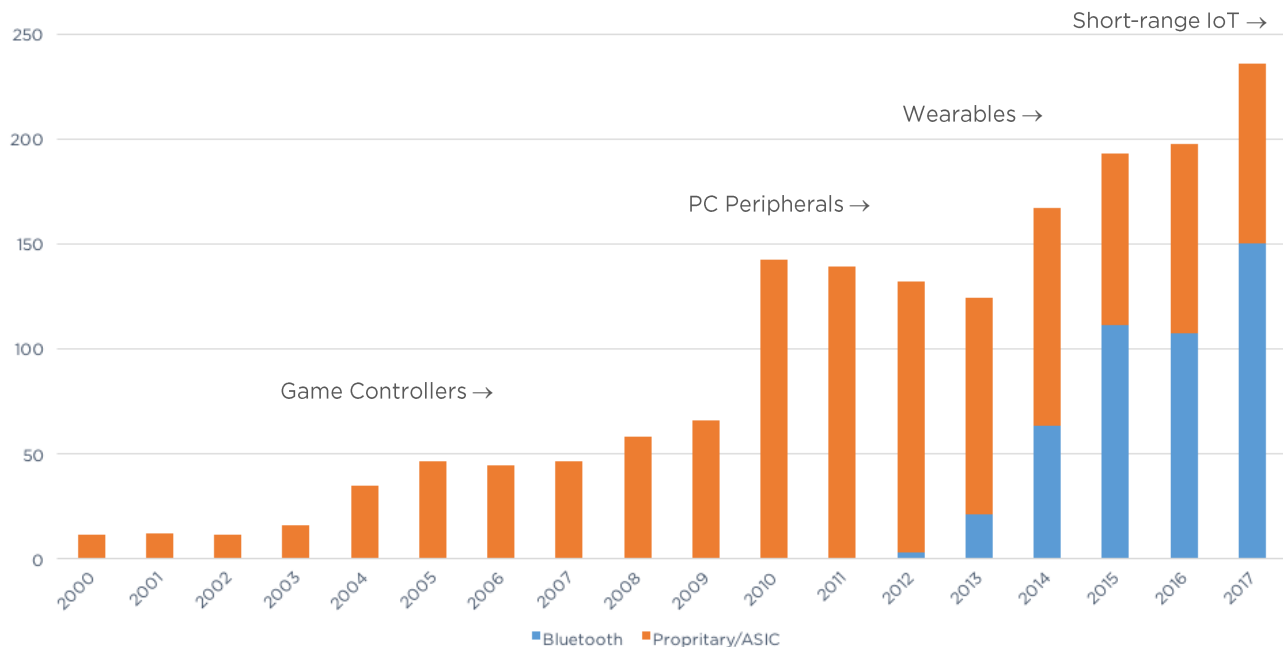
+30%
y-o-y

+23%
q-o-q

*Source: DNB Markets

IoT fueling our fourth growth cycle

Revenue 2000 - 2017 (MUSD)



Q1 2018

+58%

Bluetooth growth (y-o-y)

42%

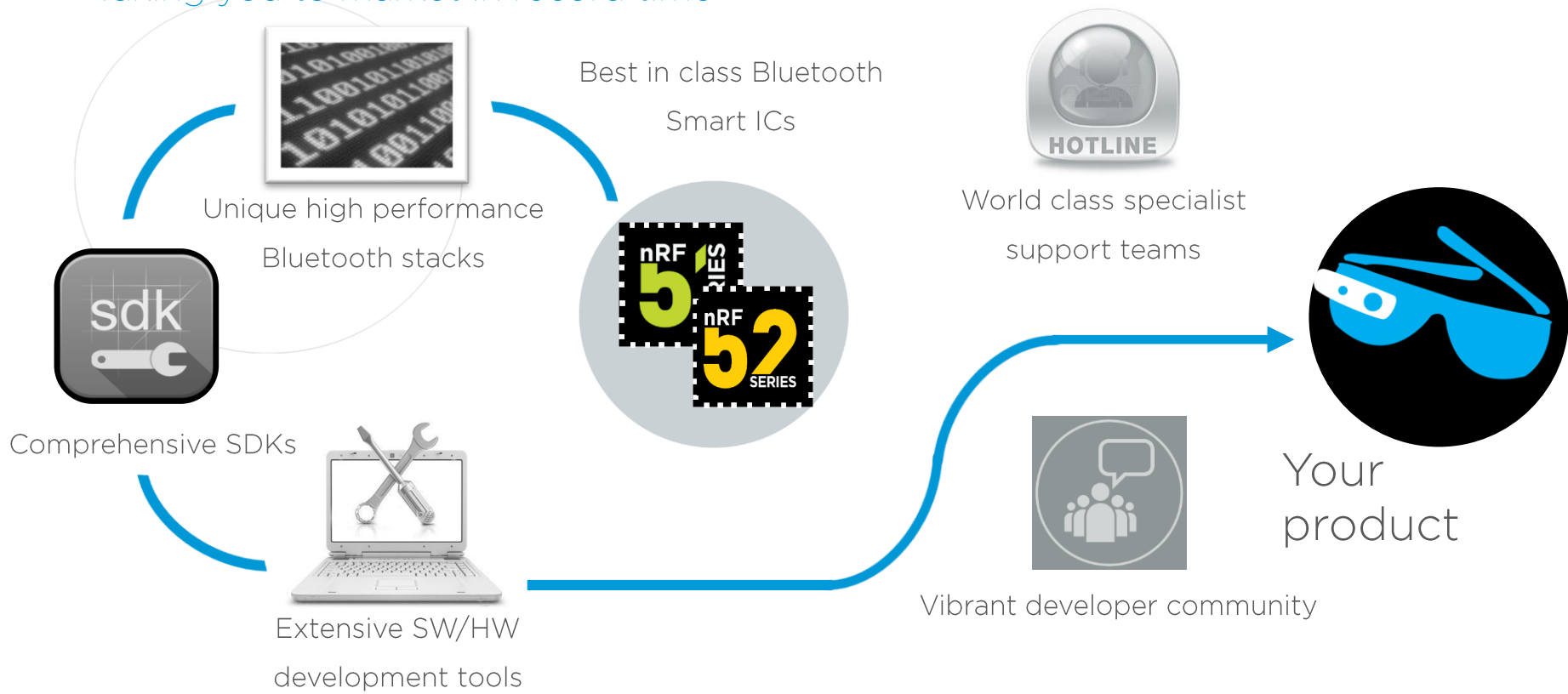
Non-consumer markets
(% of total revenue)

30%

Top ten Bluetooth customers
share of Bluetooth revenue

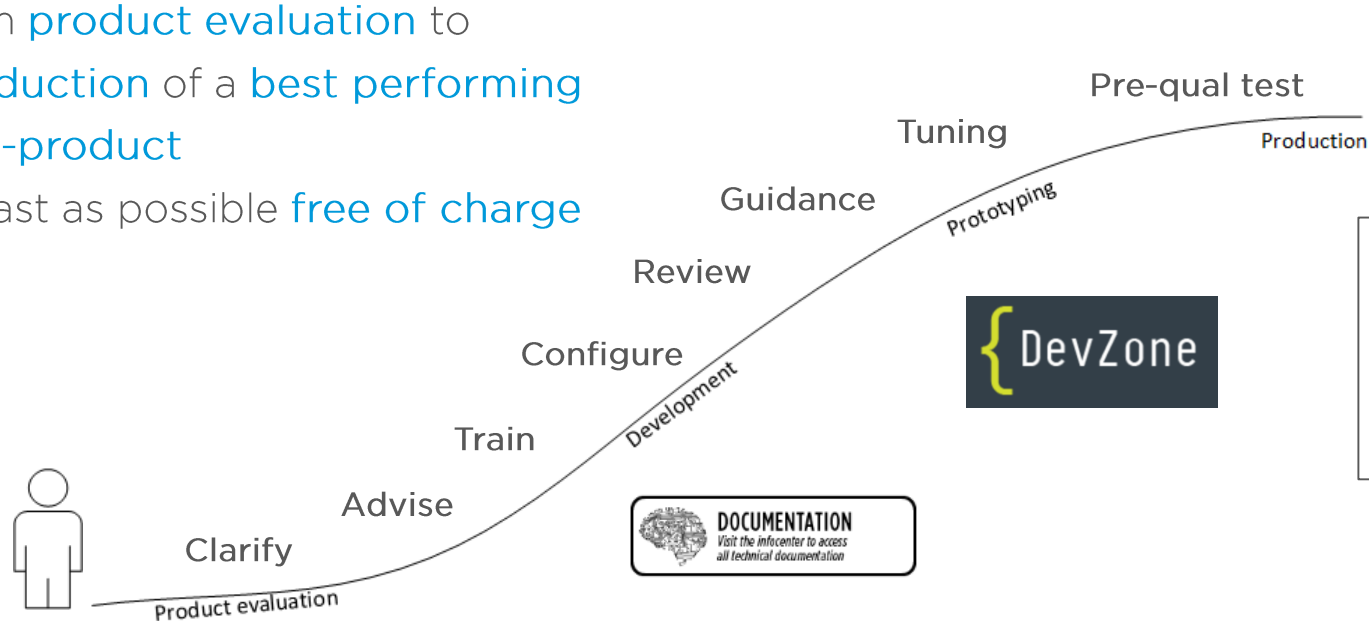
The Complete Bluetooth® Smart solution

Taking you to market in record time

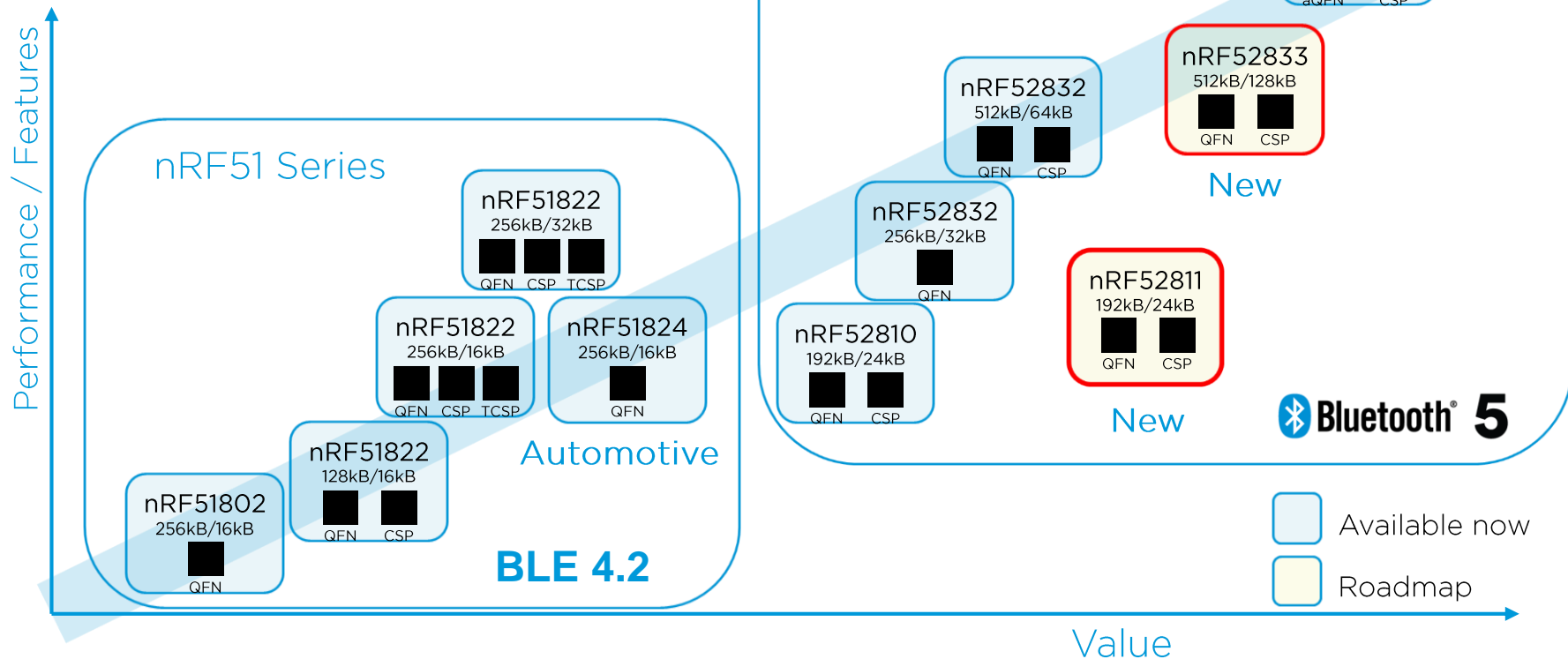


Free Technical Support – Our mission

Our goal is to get every customer
from **product evaluation** to
production of a **best performing**
end-product
as fast as possible **free of charge**



Nordic SoC offering



nRF52 and nRF53 IC Roadmap

	Now	2018	2019
High-end SoCs	<div>52</div> <div>nRF52840 M4F 1MB/256kB BT5/15.4/2.4GHz RF Security</div>		<div>5x</div> <div>nRF5x Next generation SoC</div>
Mainstream SoCs	<div>52</div> <div>nRF52832 M4F 512/64kB BT5/2.4GHz RF</div>		<div>52</div> <div>nRF52833 M4F 512/128kB BT5/15.4/2.4GHz RF 105°C</div>
Baseline SoC / Network Processors	<div>52</div> <div>nRF52810 M4 192/24kB BT5/2.4GHz RF</div>	<div>52</div> <div>nRF52811 M4 192/24kB BT5/15.4/2.4GHz RF</div>	

Tentative timelines for 1st engineering samples

3rd Party Module Partners



Huge Variety in Form, Fit and Function

- nRF52 & nRF51 series available
- 25+ Module partners
- Modules + sensors variants available

Module solutions are:

- Minimized development efforts
- Pre-qualified
- Very competitive option even in medium level volumes

World-Wide Coverage



Cellular IoT Overview

What is it and where does it fit?

New low power LTE technologies

	LTE-M	NB-IoT	
Also known as	“eMTC”, “LTE Cat-M1”	“LTE Cat-NB1”	
Max throughput	~ 360kbps	~ 30/60kbps	
Max Coupling loss	155 dB	164 dB	
Bandwidth	1.08 MHz	180 kHz	
Range	Up to 4X	Up to 7X	
Mobility	Yes	Limited	
Deployment density	Up to 200,000 per cell		
Module size	Suitable for wearables		
Power consumption	Up to 10 years of battery lifetime		

Cellular IoT Applications

Asset Tracking



Predictive Maintenance



Medical Monitoring



Wearable devices



Home Automation

Live stock monitoring



Products as a service



Residential and commercial metering



The nRF91 Advantage in Cellular IoT

Low Power



Designed for Low Power with
advanced chip architecture
Produced for Low Power with
low leakage process technology
Integrated memories

Ease of Use

**WE
MAKE IT
EASY.**

Enable self-service for
thousands of customers and
hundreds of applications

Integration



Integrate all primary system
blocks and use advanced
packaging techniques to reduce
solution size



The nRF91 Size Advantage

Typical modem module sizes represented in red.

nRF91 Solution is the new industry benchmark for size.

nRF91 Solution adds an **application processor** and **application memories**

16x26x2.5mm



10x16x1.0 mm

The nRF9160 Cellular IoT Solution of choice!



Highest level of integration



Lowest power consumption



Smallest form factor



Nordic Semiconductor - Ultra-Low Power Connectivity

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