

Analyst Day 2018

November 21, 2018

u-blox Holding AG



Agenda

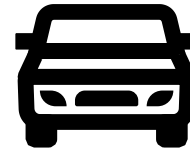


10.00	Welcome	
10.05	Connecting the world	Thomas Seiler
10.20	Strategy	Thomas Seiler
10.40	R&D – the growth engine of u-blox	Roland Jud
10.55	Connecting the world: Cellular	Andreas Thiel
11.10	Coffee Break	
11.25	Connecting the world: Short Range	Herbert Blaser
11.40	Connecting the world: Positioning	Daniel Ammann
11.55	Connecting the world: Services	Thomas Seiler
12.05	Driving growth	Thomas Seiler
12.20	Open to any further questions	
12.30	Lunch	

Connecting the world

Connecting the world: It's like a tide

Already today, **u-blox technology can be found everywhere**: in drones, in devices that track people or things, inside home-surveillance systems, in your car, in health-care devices – and daily there are more applications.



Furthermore, we are convinced that the **Internet of Things** will change every aspect of our societies, our businesses, and our everyday lives. That's why we develop reliable and innovative positioning and wireless communication solutions that **securely connect** vehicles, industries, things, and millions of people around the world.



Megatrends and IoT growth areas



Mobility



Industry 4.0



Urbanization



New health



Connected vehicle



Connected industry



Connected city



Connected consumer

Megatrends are driving our growth



246m

Mobility

More and more automation enables the autonomous driving car.

A quarter billion connected cars delivered between 2019 – 2023.
BI Intelligence 2018



1bn

Urbanization

Infrastructure becomes smart for better usage and service of the increasing population living in cities.

1 billion smart meters installed between 2019 - 2023.
ABI research 2018



2bn

Industry 4.0

Automation is linked with the cloud for closer control loops that enhance process efficiency.

More than 2 billion connected devices in 2023.
BI Intelligence 2018



500m

New health

The cloud delivers services to the mobile users and enhances insights into a healthy life.

Over a half billion sports and wellness trackers will be sold in the next 5 years (2019-2023).
TSR 2018



Connected vehicle

The connected vehicle is a term for a vehicle equipped with wireless connectivity. Special technologies are often used in the vehicle so that this connectivity results in benefits for the driver.



Connected industry

The industry is aiming to achieve its next revolution: Industry 4.0. The vision is a production environment in which production facilities and logistics systems largely organize themselves without human intervention.



Connected city

The connected city approach looks beyond isolated technological solutions in the search for intelligent systems geared to individual behavior patterns and individual needs. Connected cities aim to provide holistic solutions to a variety of problems in the city and to overcome these with interconnections.



Connected consumer

Connected consumers wear computers that are placed on the body. With digital networking and innovative sensors, items of clothing, armbands, eyewear, etc., can respond to changes either in the body of the wearer or in the environment.



Connected vehicle

Typical applications

- Vehicle telematics
- Emergency call systems
- Insurance boxes
- Autonomous vehicles



Connected industry

Typical applications

- Asset tracking
- Automation
- Precision timing
- Smart metering
- Point-of-sales terminals



Connected city

Typical applications

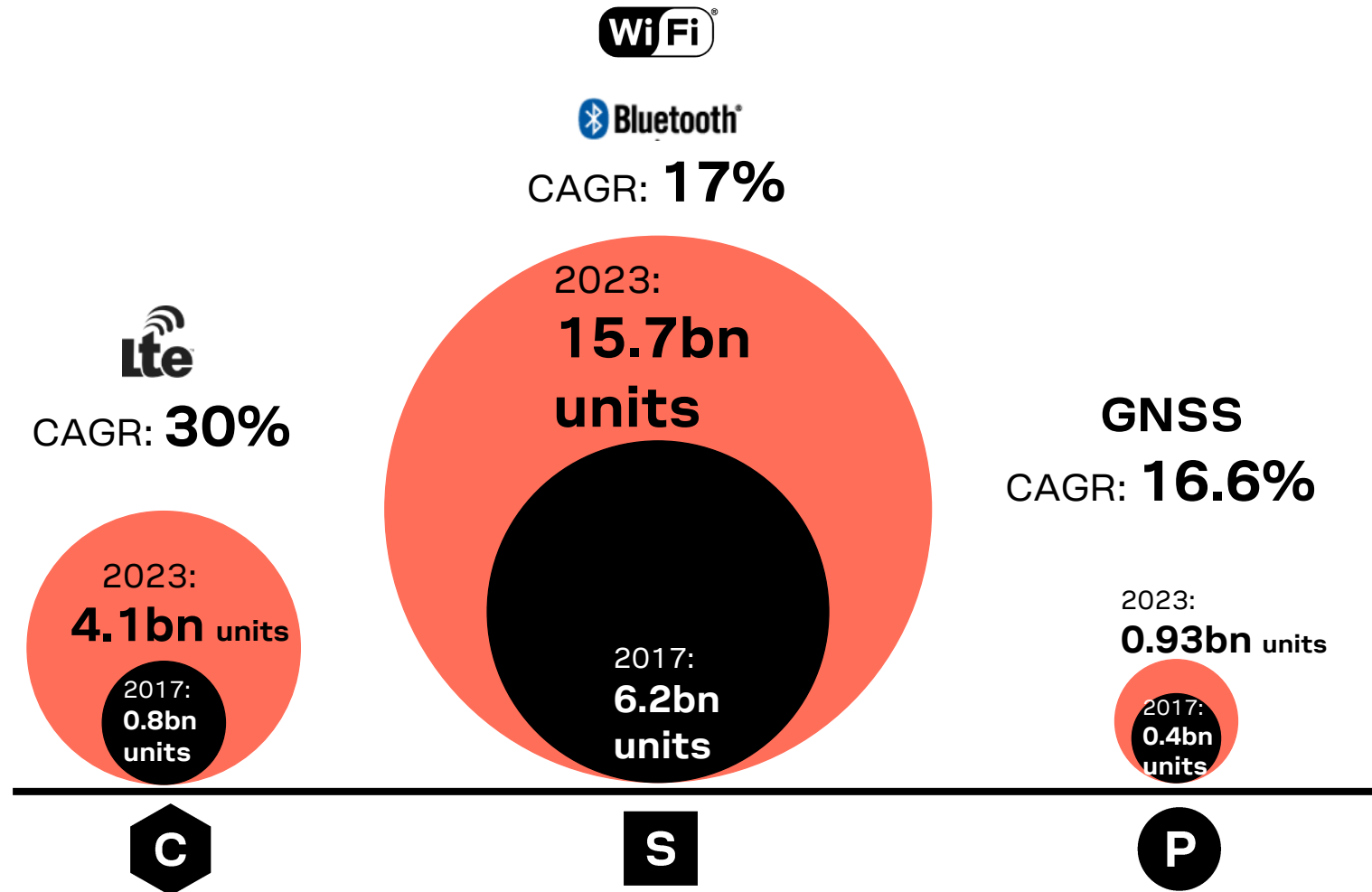
- Gas and water metering
- Smart traffic
- Security surveillance



Connected consumer

Typical applications

- Wearables
- Drones
- People and animal tracking
- Car accessories
- Mobile hotspots and routers



“Internet of Things (IoT) market worth USD 2,488 billion by 2022 at 20% CAGR”

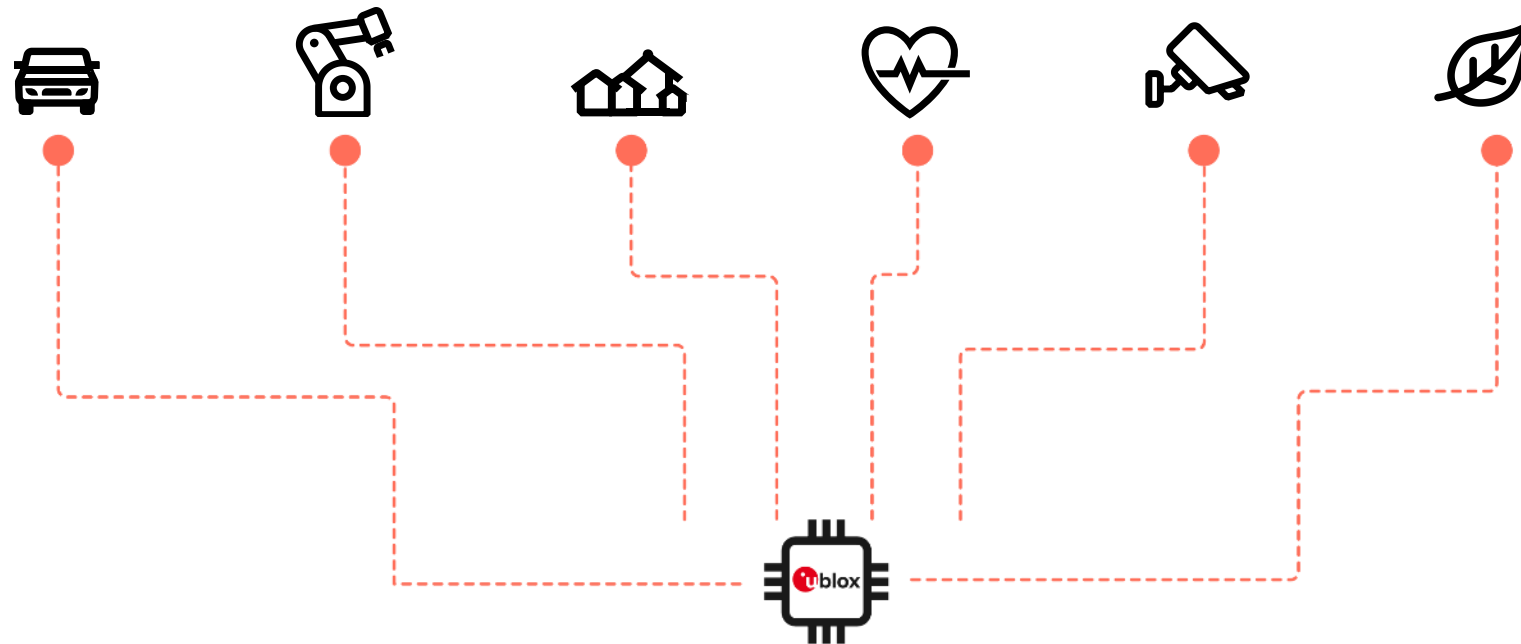
Marketresearch, 2018 (end user value)

Source: Ericsson Mobility Report 2018, ABI 2018

Strategy



Our vision



We deliver leading **wireless technology** to reliably locate and connect people and devices.

We are convinced that the **Internet of Things will change every aspect of our societies**, our businesses, and our everyday lives.

That's why we develop **reliable and innovative positioning and wireless communication solutions** that securely connect vehicles, industries, things, and millions of people around the world.

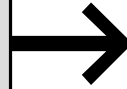
Four pillar strategy delivers

Market position



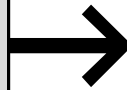
- ✓ Large product range **C**, **S**, **P**
- ✓ High quality and reliability

Technology and innovation



- ✓ Strong product road map
- ✓ Deep intellectual property

Operational excellence



- ✓ Fabless with strong long-term partners
- ✓ Lean organization

Strategic partnerships



- ✓ Many partnerships
- ✓ 14 acquisitions for acceleration so far

Our core intellectual property (IP)



Cellular Technology:

We are the only IoT supplier of chipsets and modules for a broad variety of cellular technologies, and we are a technology leader in NB-IoT and LTE-M.



Short Range Technology:

We offer the broadest portfolio of Bluetooth and Wi-Fi modules for industrial markets with superior built-in software. We provide a V2X chip that is enabling the next level of autonomous driving.











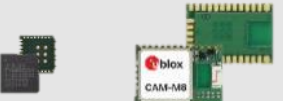
Positioning Technology:

We are the leading supplier of positioning chips and modules in the Industrial Internet of Things. We are the disruptive power that provides high precision positioning technology for mass markets.

Unique technology and product line-up

Strong wireless technology IP



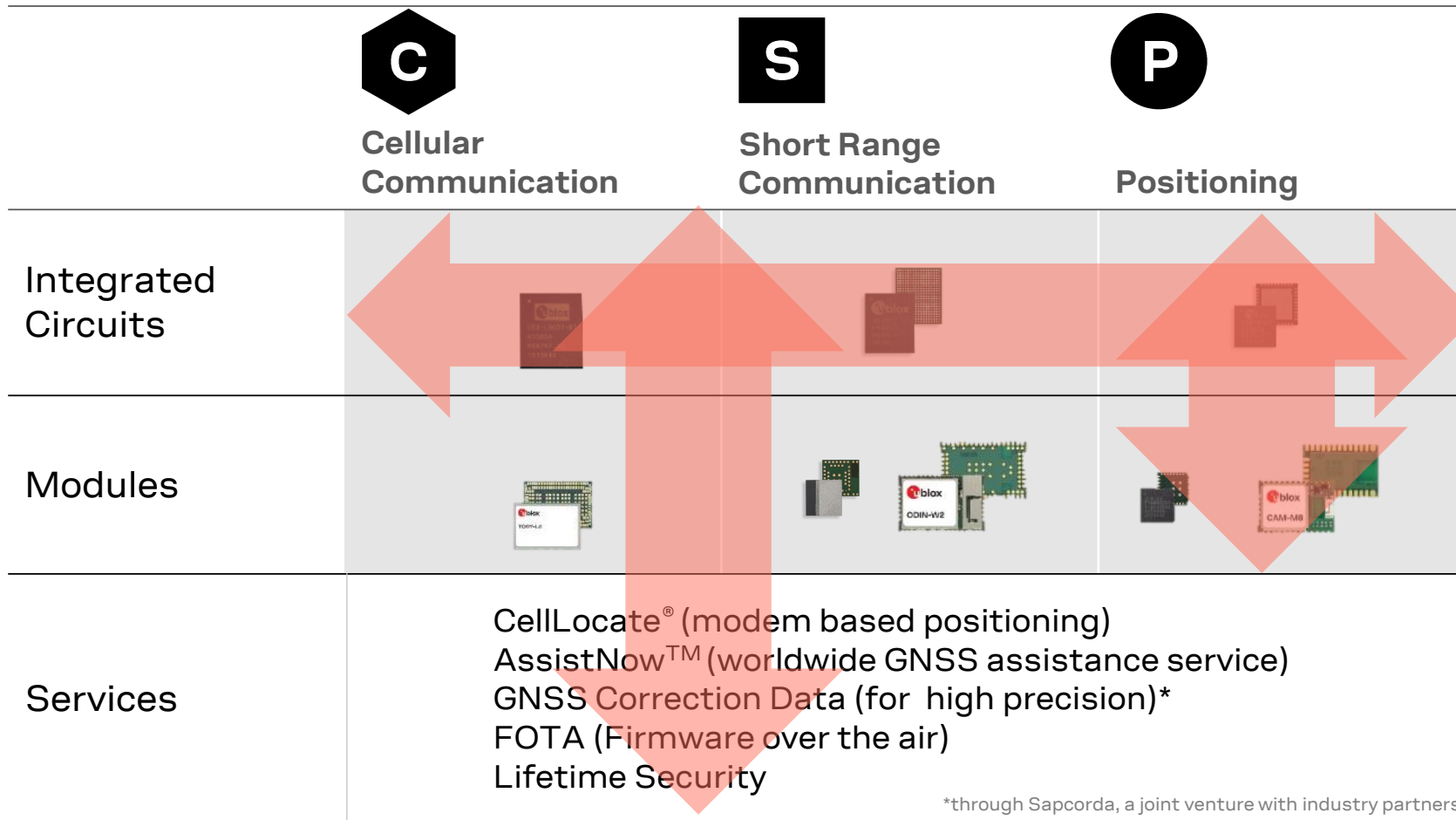
	 Cellular Communication	 Short Range Communication	 Positioning
Integrated Circuits			
Modules			
Services	CellLocate® (modem based positioning) AssistNow™ (worldwide GNSS assistance service) GNSS Correction Data (for high precision)* FOTA (Firmware over the air) Lifetime Security		

*through Sapcorda, a joint venture with industry partners

- u-blox wireless and positioning technologies are available in a unique combination of chips and modules
- Combining technologies provides for solutions that deliver extra value not available otherwise
- This strategic core delivers our inimitable market placement and drives our profitability

Unique technology and product line-up

Important strategic benefits



Important **strategic benefits** from the unique u-blox line-up:

- Long-term sustained competitive position
- Strong synergies between the technologies
- Long-term control over product road map
- Sustained margins

Why we are competitive

Efficient use of available resources



- Since our foundation as a spin off from ETH, we have maintained our **innovative spirit**. Our **still-present founders** are the guarantors of this attitude; their constant **enthusiasm** is the central driver in our product centers.
- We focus on our markets and customers with **high dedication**.
- We are **lean and agile** - we make innovative products with less resources and shorter turnaround times.
- Our large competitors focus on their large customers – not our realm.
- We have **important markets shares** in our market sectors and are often the **undisputed leader**.
- There is **no comparable company with our unique strategic line-up**.

2018 product highlights



Cellular Communication



SARA-R410M
Ultra-compact LTE-M / NB-IoT module with multi-regional coverage.



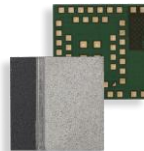
SARA-R412M
Ultra-compact multi-mode LTE-M / NB-IoT module with 2G fallback and multi-regional coverage.



Short Range Communication



UBX-P3 platform
The industry's smallest V2X communication chip for active safety and autonomous driving technologies.



ANNA-B1
Ultra-compact Bluetooth 5 module designed for applications for the Industrial Internet of Things (IoT).



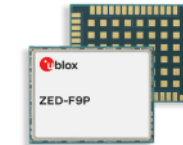
NINA-W15
Multiradio and gateway modules with concurrent Wi-Fi and dual-mode Bluetooth connectivity.



Positioning



u-blox F9 platform
High precision positioning solutions for mass market industrial and automotive applications.



ZED-F9P
First high precision GNSS delivering centimeter-level accuracy in seconds.

Industry leaders select u-blox



Autonomous driving



Industrial automation



Industrial tools



Unmanned aerial vehicles



XIRGO TECHNOLOGIES

Tracking solutions

Guidance 2018, and outlook 2019



- **Guidance for 2018** updated
 - Decline in APAC in H1 2018 reversed
 - Flat trend in Americas, but stronger H2
 - Strong growth in EMEA, slower in H2
- **Outlook 2019** based on strong growth perspective
 - APAC solid business in automotive, telematics, and infrastructure
 - EMEA expanding with telematics and infrastructure
 - Americas taking off with LTE-M1 deployments
 - R&D amortizations increasing over 2018

	Actual FY 2017	Updated Guidance 2018 (IFRS)	Guidance 2019 (IFRS)
Revenue	403.7m	400m...410m	460m...490m
EBITDA	87.4m	70m...75m	70m...90m
EBIT	65.1m	47m... 52m	30m... 45m
	CHF	CHF	CHF

Exchange rate assumptions for 2019:

- EUR/CHF: 1.12 USD/CHF: 0.99 GBP/CHF: 1.27

FX-sensitivity against CHF:

+ 10% of	USD	EUR	GBP
Revenue	+ 9%	+ 1%	0%
EBITDA	+ 16%	0%	-1%
EBIT	+ 22%	- 1%	- 2%

An aerial photograph of a white wind turbine in a field with distinct circular patterns in the soil. The turbine's shadow is cast long and dark across the field. The text "R&D The growth engine of u-blox" is overlaid in white on the left side of the image.

R&D The growth engine of u-blox

Roland Jud, CFO

Megatrends reflected in R&D



Mobility:

Highly precise and safe positioning and dead reckoning technology for next generation automated driving.



Industry 4.0:

Secure connectivity for the Industrial IoT (IIoT).



Urbanization:

Connectivity solutions for Low Power Wide Area networks.



New health:

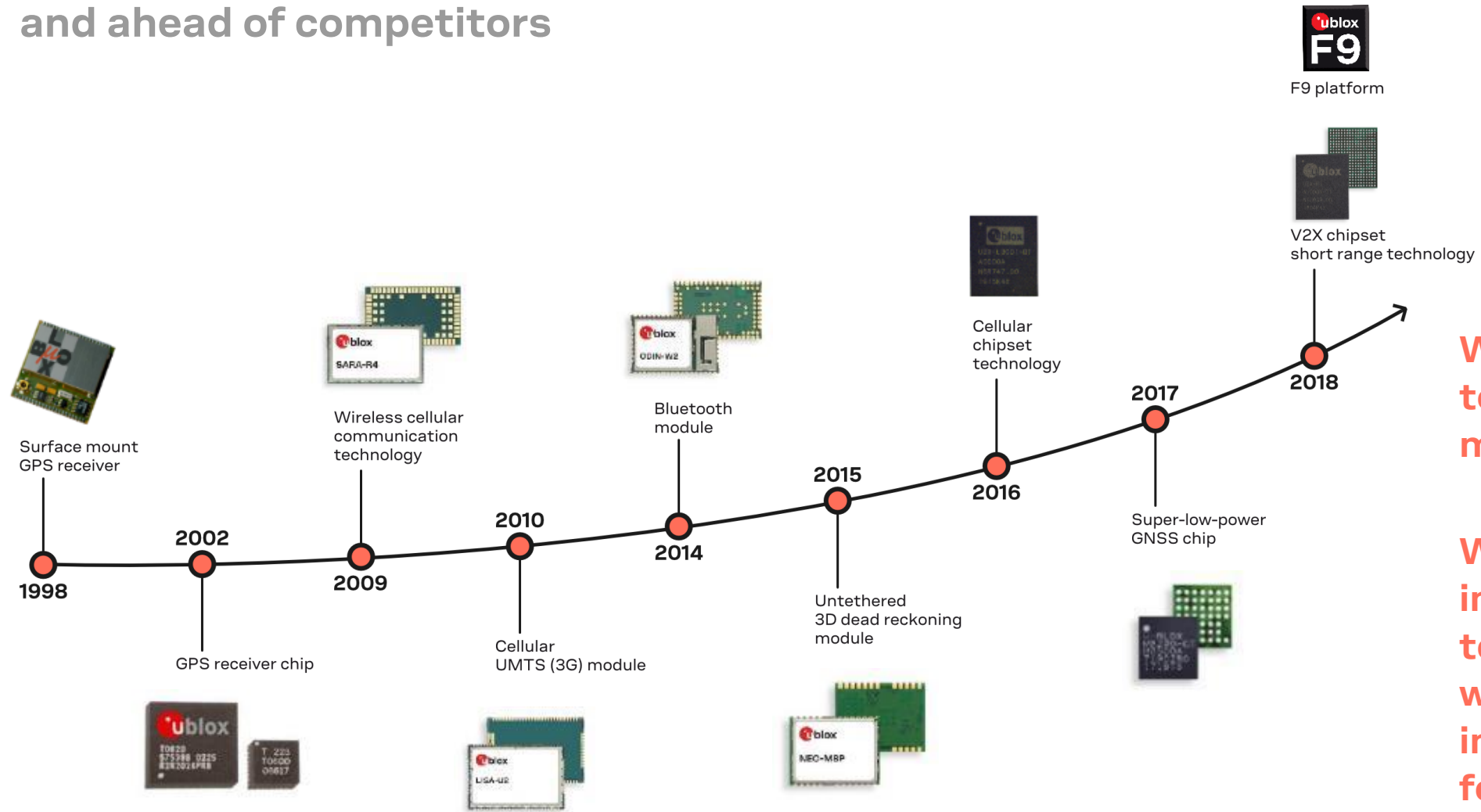
Low power chips and Systems in Package (SiPs) for wearable applications.

SiP: System in Package: Several dies are packaged into one small case.

Innovation is our lifeblood



Our R&D investments keep us at the forefront of innovation and ahead of competitors



We have been first to market with many technologies.

We continue to invest in technologies that will push the industry forward for years to come.

u-blox proprietary wireless technology is unique



- **Long-term attitude:** Wireless chips and modules in the industrial and automotive markets have a 5-10 year life-cycle.
- **Mixed signal competence:** Analog radio and digital signal processing on one piece of silicon are our core technology and difficult to replicate.
- **High software content:** The specific software can only be developed by experts. It takes 70% of our R&D cost.
- **Core IP re-used:** Between generations of products and across the product portfolio. No risk of obsolescence.
- **Value adding services enabled:** Many types of services are based on our deep intellectual property (IP).



14
R&D centers
globally



700+
engineers

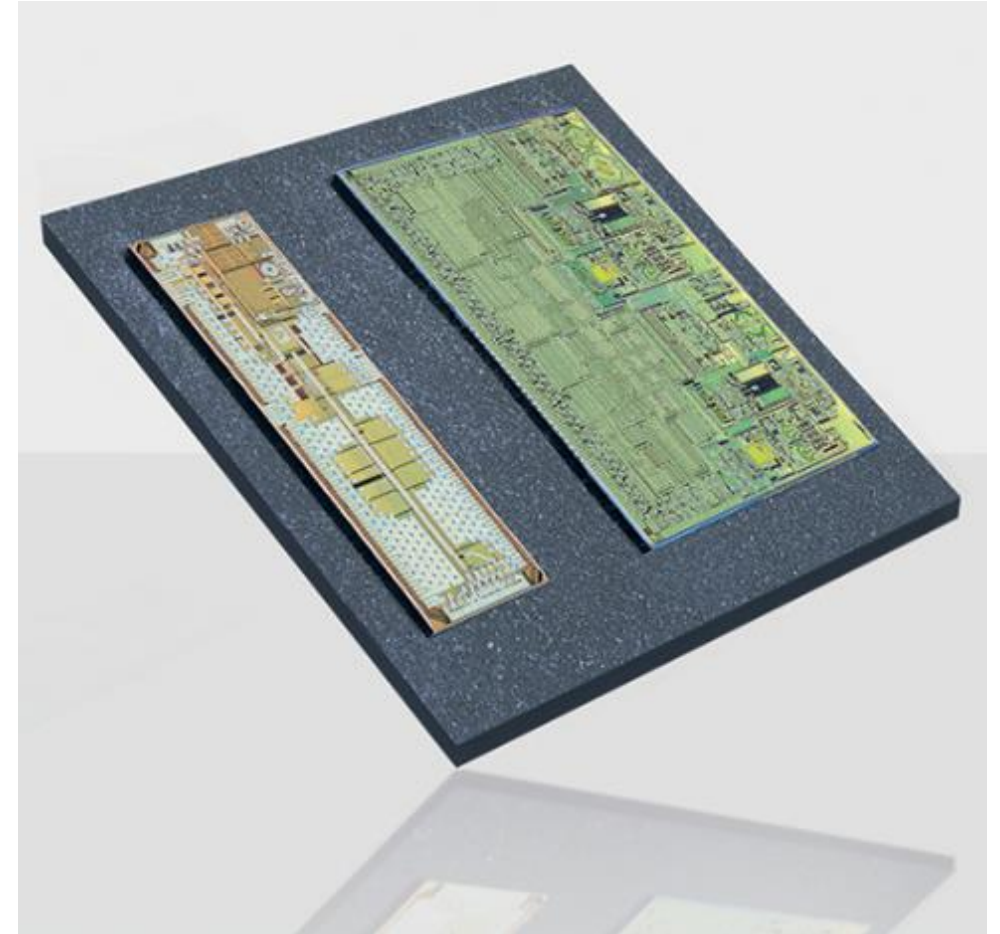


CHF 100m+
annual investment
(2018)

Why do we do this?

Achieving sustainable competitive advantage and value creation

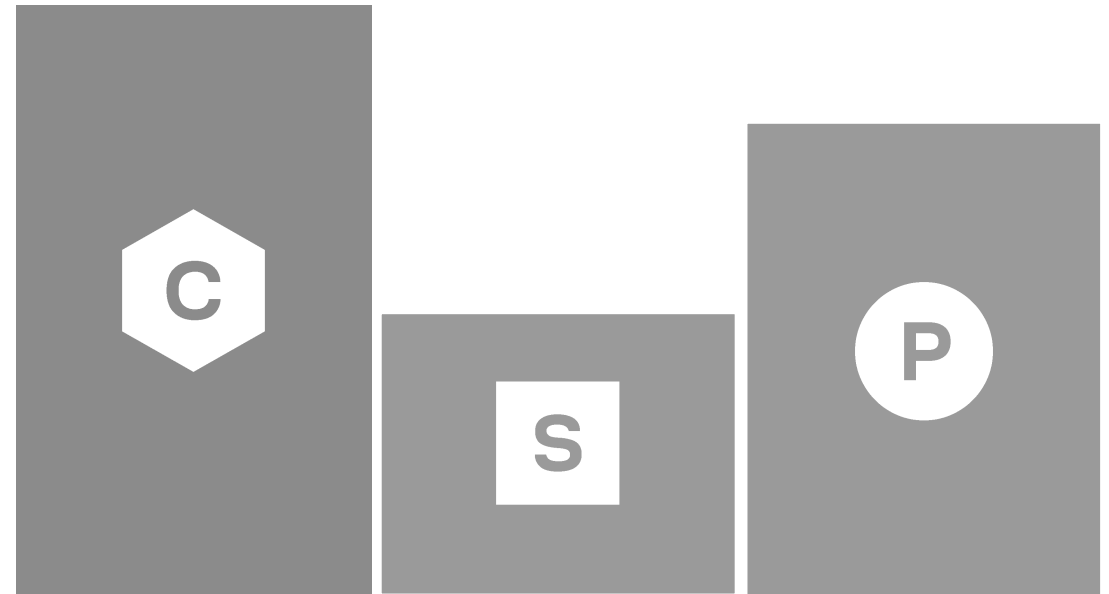
- We **derive a larger part of the value chain** because we deliver more:
 - Enhanced functionality
 - Lower cost of ownership
 - Added services
- We **increase margins** over the lifetime of the product.
- **Independency** from 3rd party chipset roadmaps: Better fit to customer demand.
- Customers take **long-term commitment** with u-blox because of our control of core intellectual property (IP).
- **Better customer support** thanks to full insight and control.



What the balance sheet reflects

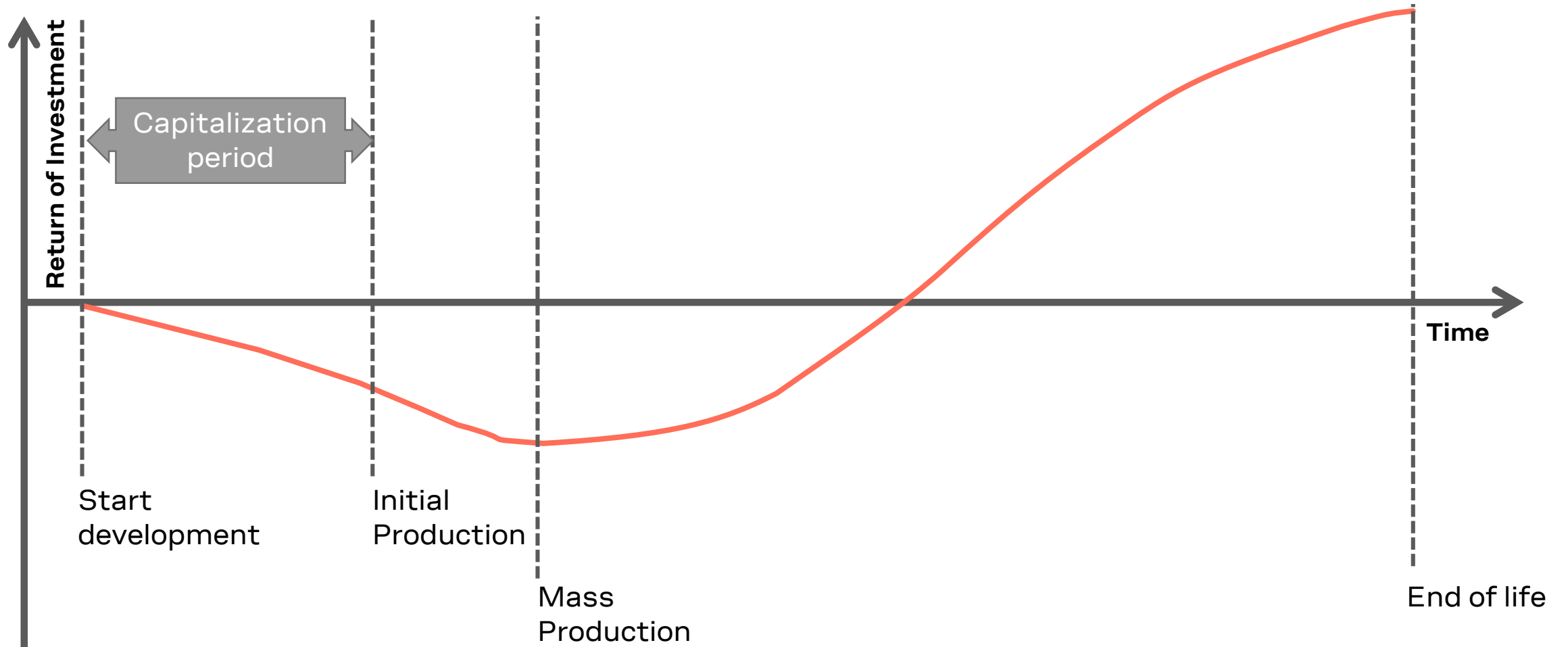
A rich technology socket comprised of highly valuable IP

- All technologies reflected in capitalized R&D – **our core value.**
- We capitalize R&D expense according to IFRS:
 - Between **start of development** and **initial production**, R&D expenses are capitalized
- New technology platforms require investments between CHF 20m and 35m.
- Currently we are capitalizing **six new platforms**, the **core value of u-blox.**
- Cellular technology takes a higher share because this technology offers strong expansion potential.



Surface represents approximate share in activated R&D cost

Our development cycle



Free Cash Flow

R&D intensity managed for positive free cash flow

- **Free cash flow is our key KPI**
- **R&D intensity managed** to achieve positive free cash flow
- From 2015 intense R&D periods for establishing **cellular and short range chipsets** – now turning to harvesting and positive free cash-flow
- **Temporary supply issues requiring use of cash in 2017/2018**, with very small risk of inventory obsolescence



Input to modeling R&D cost:

- Cash expense assures positive free cash flow
- Reflection in income statement:
 - 45% capitalization rate
 - Amortization lags capitalization by 2 - 3 years

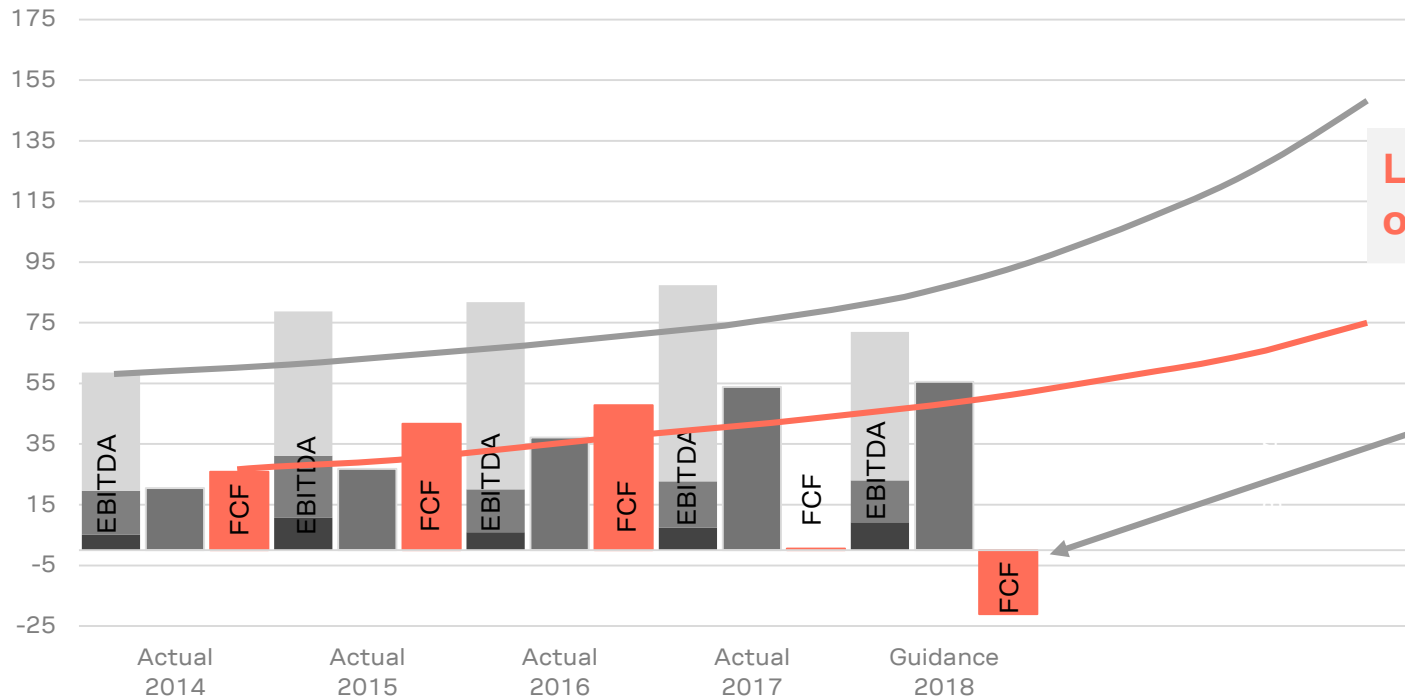
EBITDA and Free Cash Flow



After intense R&D spending turning again to positive free cash-flow

EBITDA - Capitalized R&D - Free Cashflow

(million CHF)



Long-term outlook on slide 76

- Free cash flow negatively impacted by
- intense R&D periods for establishing cellular and short range chipsets
 - supply issues requiring higher inventories for maintaining high delivery service level

■ Amortization Cap. R&D ■ D&A other ■ EBIT ■ R&D capitalization ■ FCF (before Acquisition)

Cellular

Andreas Thiel, Co-Founder, Head of Product Center Cellular



Product Center Cellular overview



Wide area connectivity

- **2G, 3G, and LTE (4G, 5G) solutions for**
 - Industrial Internet of Things
 - Healthcare applications
 - Metering
 - Automotive and telematics
- The only IoT supplier with **chipset** and **module intellectual property** and product offer
- Broad portfolio of **cellular technologies**
- Technology leader in **NB-IoT** and **LTE-M**
- Adding **services** starting with a focus on security

Megatrends in Cellular



Mobility

The connected car improves the driving experience through **high speed LTE**.



Urbanization

NB-IoT and **LTE-M** technologies provide cost-effective connectivity for smart cities and utilities.



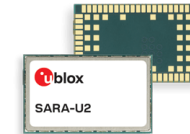
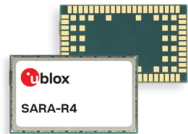
Industry 4.0

NB-IoT, **LTE-M**, **LTE Cat 1** and **LTE Cat 4** monitor and control machinery deep within buildings, increasing efficiency.



New Health

Health monitoring provides better and more automated data to providers via **LTE-M** and **LTE Cat 1**.



LTE Low Speed (NB-IoT, LTE-M and LTE Cat 1)

- Ultra low to medium data rates
- Broad spectrum of data, voice, and video-centric applications
- Low power consumption and low cost of ownership
- Connecting the IoT

LTE High Speed (LTE Cat 4, Cat 6, and 5G)

- Highest data rates
- Best for video transmission and infotainment
- Connecting cars, factories, and homes

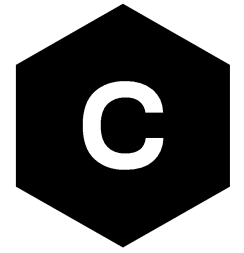
2G / 3G Modules (GSM, UMTS, HSPA)

- Legacy network support, including data and voice

We make a difference

- Ownership of the core technology
- Reduced system complexity
- Global certifications
- Focus on security

Product highlights 2018



SARA-R410M

Ultra-compact **LTE-M / NB-IoT** module with multi-regional coverage.

SARA-R412M

Ultra-compact multi-mode **LTE-M / NB-IoT module with 2G fallback** and multi-regional coverage.

SARA-G450

Global GSM / GPRS in industry-proven SARA form factor, ideal for cost-optimized solutions.

Customers who chose u-blox in 2018



Xirgo Technologies – a leading provider of tracking solutions

- Xirgo embeds a global 3G module and GNSS chips from u-blox.
- Solutions comprise
 - Container tracker for one of the world's largest container shipping companies
 - Insurance tracker for “pay as you drive”
 - Commercial vehicle & long haul trucking
 - Driver behavior monitoring and modification



Connecting the world

Vast market potential for cellular connectivity



2bn

The OEM-equipped **Connected Car** market will reach \$2B in annual global market revenue by 2022, an ideal environment for high speed LTE devices.



700m

u-blox serves the **Connected City** with a broad portfolio of LPWA products, reaching global market revenue of \$700M in 2022.



500m

Industry 4.0 will see sustained growth, relying on **LTE-M and LTE Cat 1** and reaching \$500M market revenue by 2022 in industrial asset tracking alone.



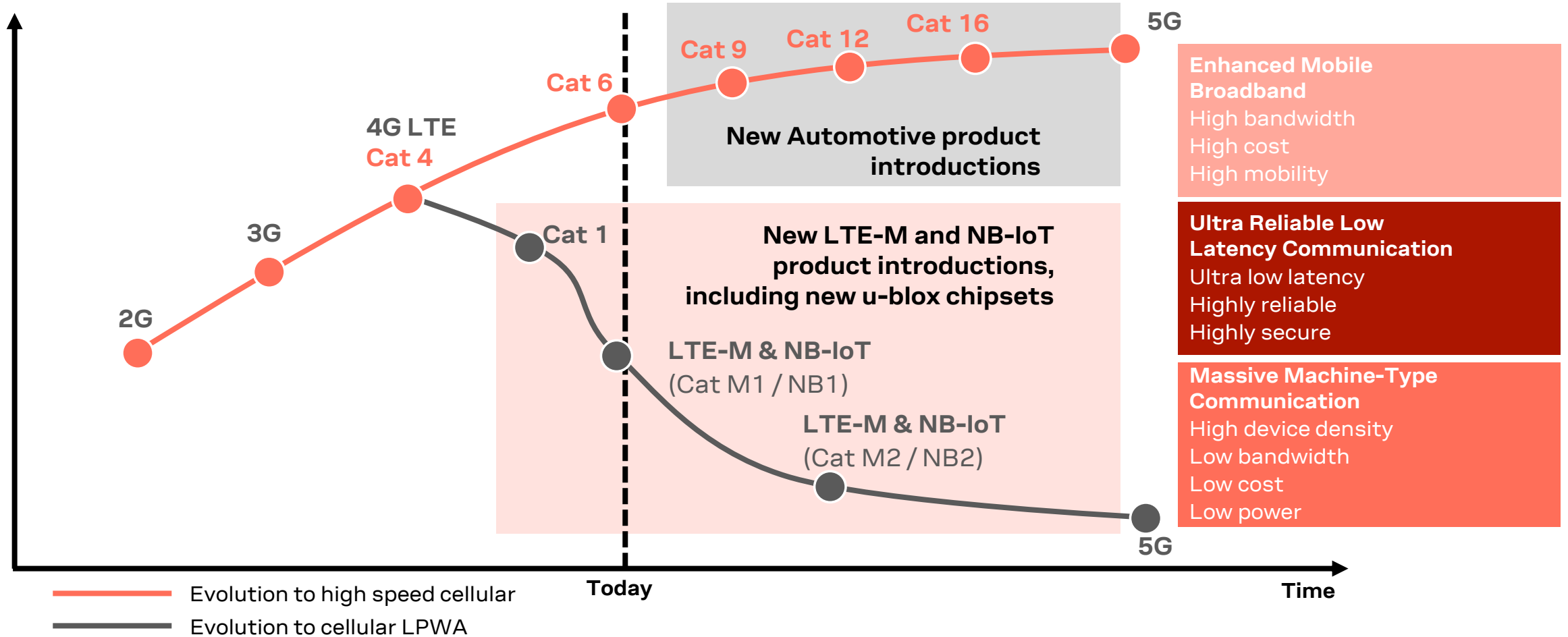
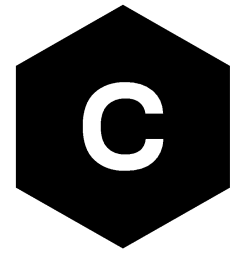
225m

With global market revenue of **\$225M** in 2022 and the need to securely transmit critical or sensitive data, u-blox is an ideal partner for the **Connected Health** market.

Source: ABI 2018 and u-blox analysis

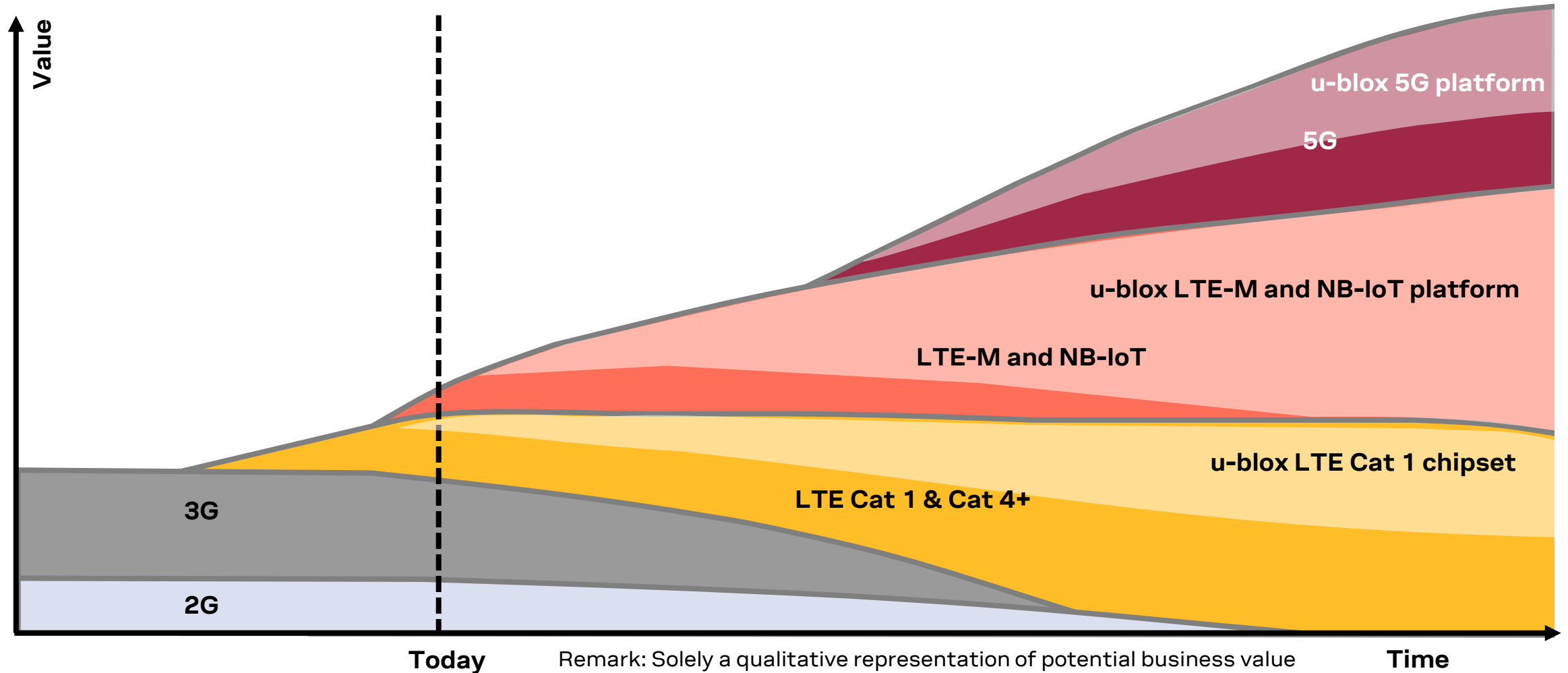
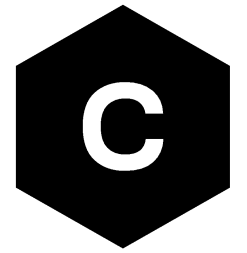
Cellular technology evolution

Continued evolution of the LTE standard towards 5G



Cellular product road map

Important business additions with LTE based products

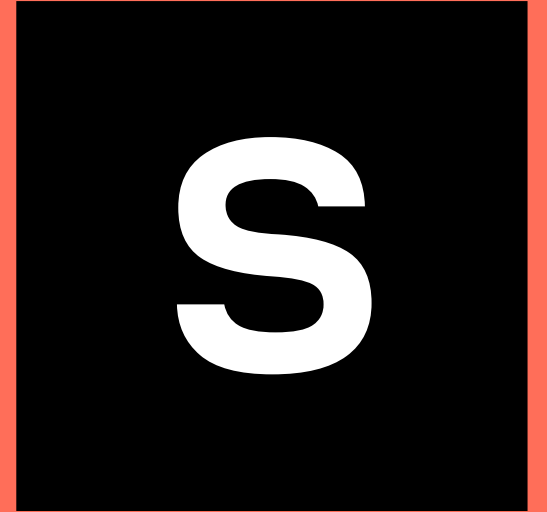


An aerial photograph of a large agricultural field with two combine harvesters. The harvesters are moving from left to right, leaving a dark, straight path through the golden-brown crops. Dust is being kicked up behind each harvester. The text "Coffee break" is overlaid in the center of the image.

Coffee break

Short Range

Herbert Blaser, Head of Product Center Short Range



Product Center Short Range overview

Point-to-point connectivity



- **Wi-Fi and Bluetooth modules** for
 - Industrial automation
 - Healthcare applications
 - Smart city/building/home
 - Telematics and in-car connectivity systems
- **Vehicle to everything (V2X) chips and modules** for
 - Traffic safety
 - Autonomous driving

Megatrends in Short Range



Mobility

Cars communicate with each other and infrastructures. **V2X solutions** will make transportation safer, more efficient, and more sustainable.



Urbanization

Mesh networks enable a large number of devices to be connected. Data can hop from device to device to create a dynamic network.



Industry 4.0

Connected machines and tools allow for higher levels of efficiency, maintenance, and quality.



New health

Treatment and monitoring are moving out of hospital, and health & fitness solutions **connect with the smart phone.**



Modules

- Fast design-in and time to market
- Superior security with secure boot function
- Lower inventory costs and risk

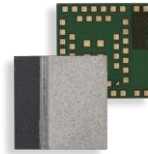
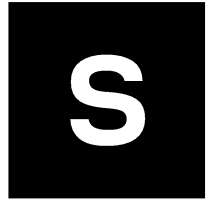
Chips

- Specific V2X chip for next generation automotive solutions
- Optimized for high volume applications
- Expert knowledge needed

We make a difference

- Broad and flexible portfolio
- Outstanding connectivity software
- Global certifications
- Supports high level of security

Product highlights 2018



UBX-P3 platform

The industry's smallest **V2X communication chip** for active safety and autonomous driving technologies.

ANNA-B1

Ultra-compact **Bluetooth 5 module** designed for applications for the Industrial Internet of Things (IIoT).

NINA-W15

Multiradio and gateway module with concurrent Wi-Fi and dual-mode Bluetooth connectivity.

Customers who chose u-blox



Leica Geosystems' reliable cable-free instrumentation

- Leica Geosystems provides highly reliable geodetic instruments used in construction environments
- Utilizing wireless technology became particularly interesting for cable-free operation
- u-blox could offer reliable products, future-proof and backwards compatible over different module generations and with international approvals
- Benefits
 - Convenience of not having to find the right cable
 - Save weight of portable equipment
 - Highly reliable solution



Customers who chose u-blox



HMS enable industrial machines and devices to communicate

- HMS Industrial Networks has been connecting machines to industrial control systems for more than 25 years
- The wireless products – strong and fast growing members of the Anybus family
- Anybus Wireless Bolt awarded “Best Network Technology” by readers of Automation Inside portal
- Benefits
 - Flexible wireless technology choice (Wi-Fi / Bluetooth / Bluetooth low energy)
 - Form factor and functionality
 - Long-term availability



ODIN-W2 included in Anybus Wireless Bolt and Anybus Wireless Bridge



206m

Mobility

DSRC/802.11p penetration in new light vehicles is projected to reach an accumulated volume of **157 million** units by 2026 (US/EU/APAC). Adding smaller regions and aftermarket volumes reaching **206 million** units in total.



360m

Urbanization

Expected **1.1 billion** Bluetooth smart home device shipments by 2022. **360 million** annual Bluetooth smart building device shipments by 2022. **192 million** annual Bluetooth smart city device shipments by 2022.



253m

Industry 4.0

Significant growth expected in industrial wireless sensor networks. Smartphones and tablets are replacing the machine UI. **253 million** annual Bluetooth device shipments by 2022. 7x increase from 2017-2022.



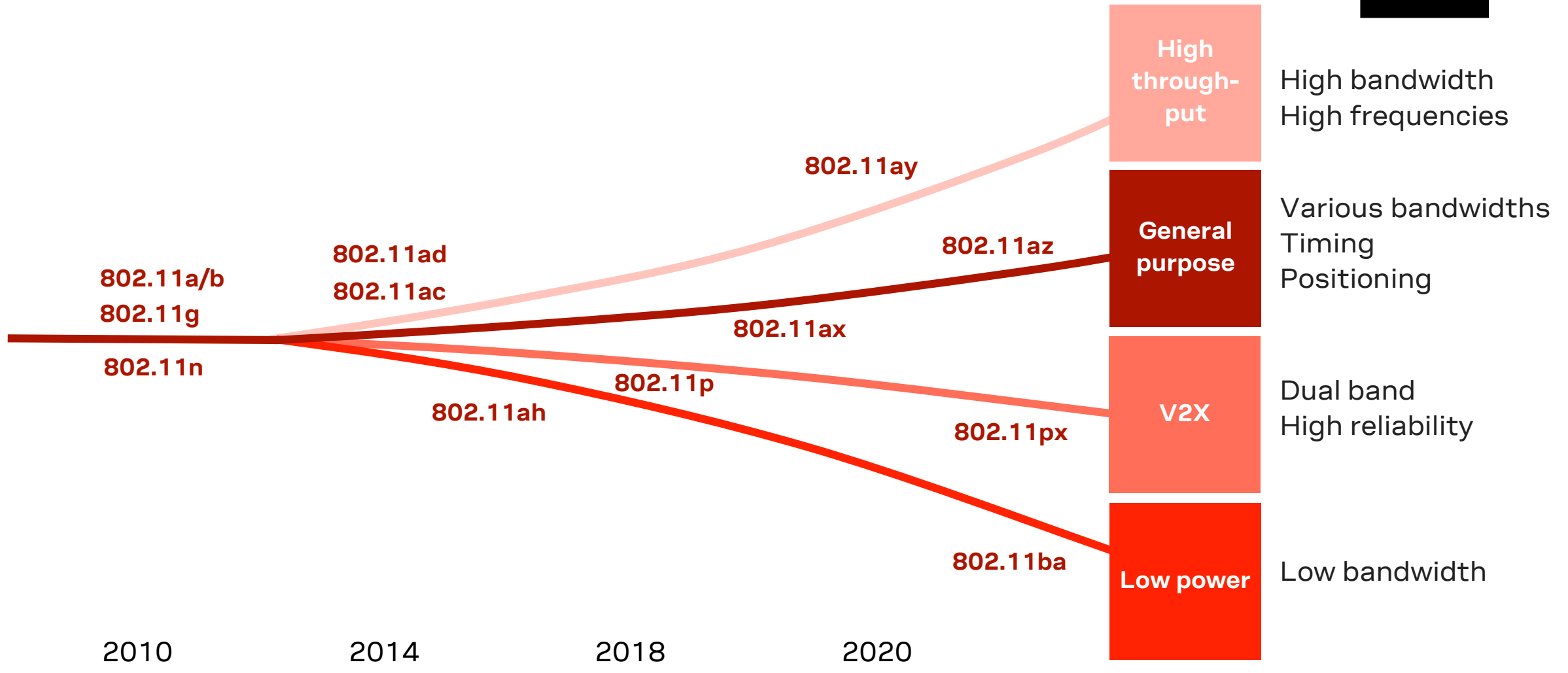
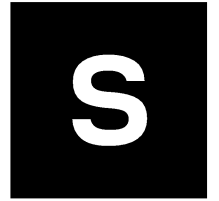
670m

New health

Medical grade devices are on a steady climb. Consumer wearables are getting more sophisticated. **670 million** annual Bluetooth device shipments by 2022.

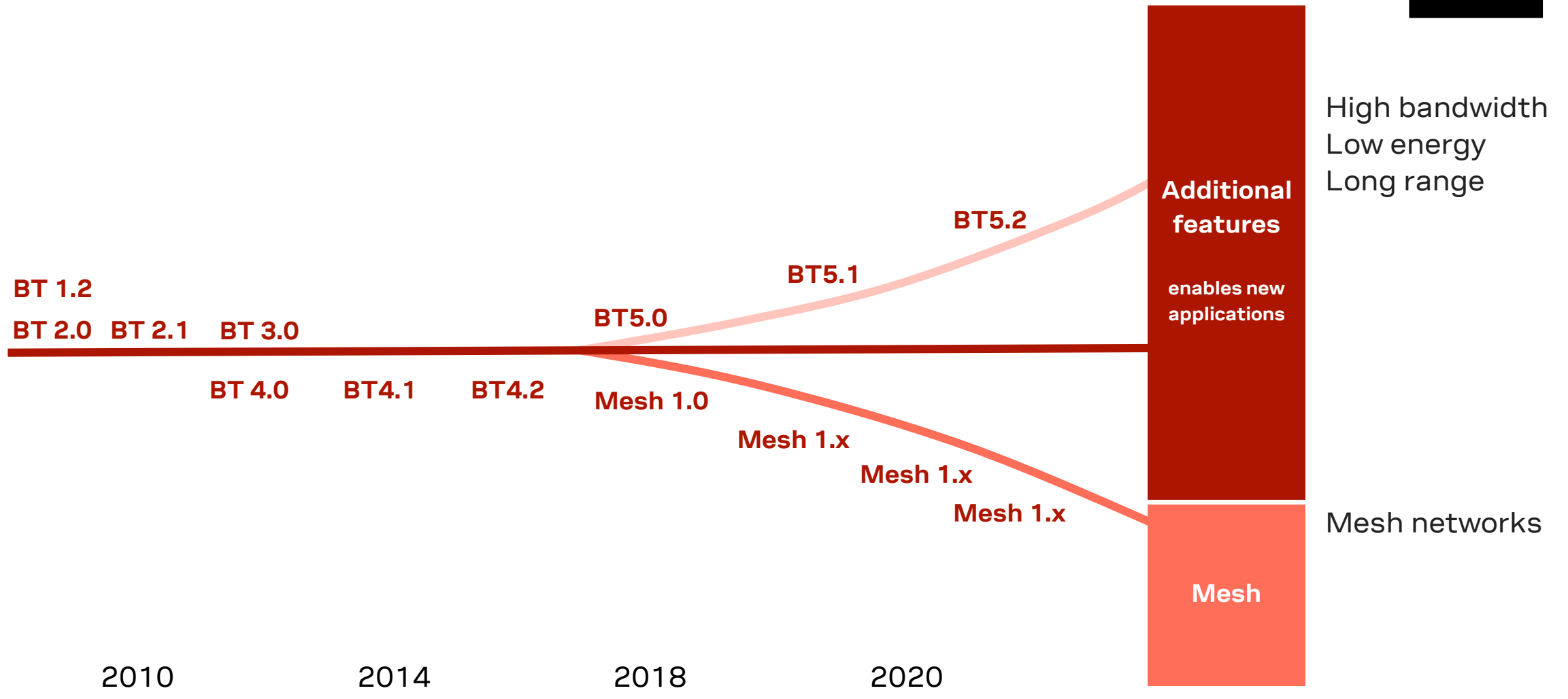
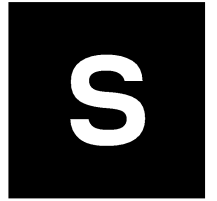
Technology roadmap: Wi-Fi

More possibilities with Wi-Fi



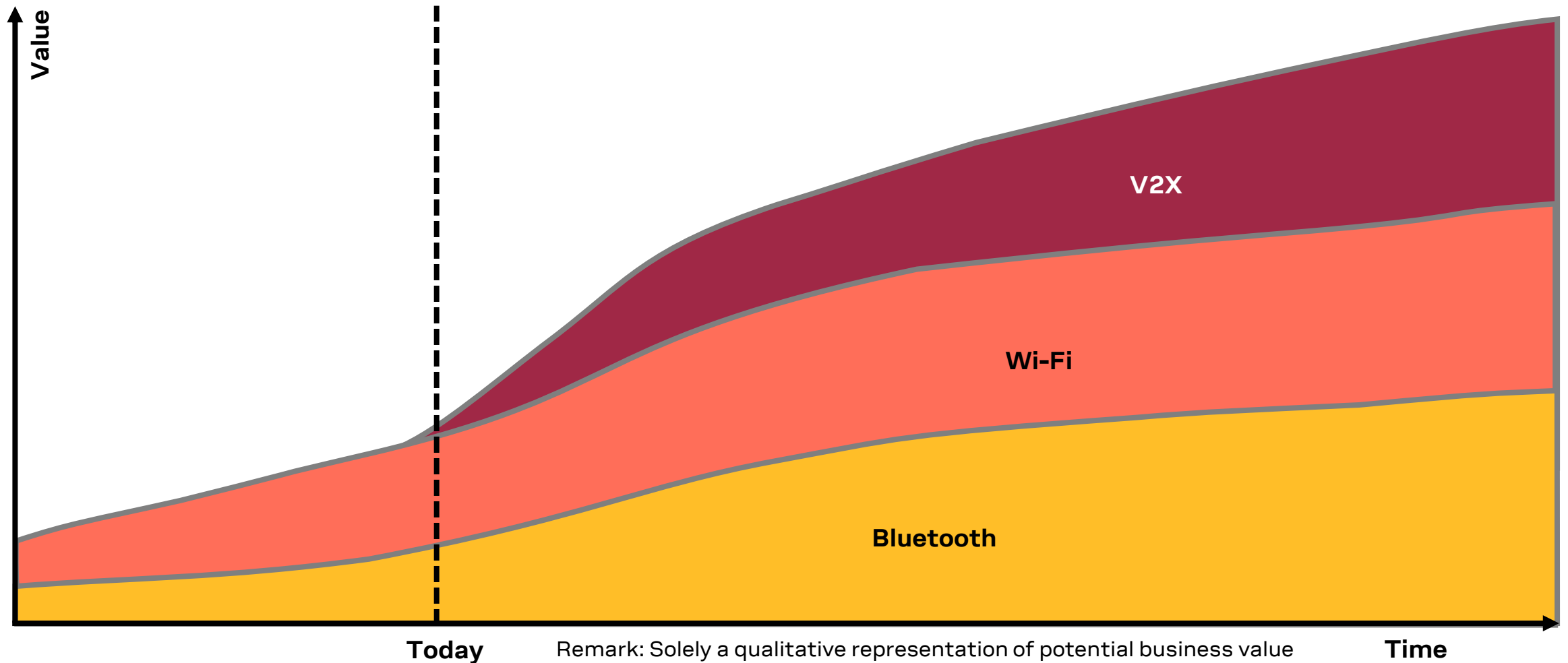
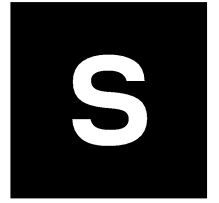
Technology roadmap: Bluetooth

More than just replacing a cable



Short Range product road map

Expansion with widening standards and added V2X



Positioning

Daniel Ammann, Co-Founder, Head of Product Center Positioning



- **Market leader in GNSS for**
 - In-car navigation systems
 - Time synchronization for cellular base stations
 - Unmanned aerial vehicles (drones)
 - People trackers
 - Asset tracking
- **Benchmark in performance and cost-effectiveness**
- **Innovator in high precision, anti-spoofing, power efficiency, small size, and low cost**

Megatrends in Positioning



Mobility: Reliable and safe positioning information is crucial for next generation automated driving.



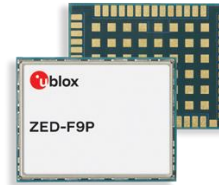
Industry 4.0: Trend towards unmanned vehicles and robots increases the need for **highly precise positioning**.



Urbanization: 5G networks that make megacities need more **accurate timing**.



New Health: Extremely low power consumption fuels all battery driven small devices.



Chips

- Minimal cost of ownership for high volumes
- Configurable to specific customer needs
- Expert knowledge needed

Modules

- Fast design-in & time to market
- Less testing and low production set-up effort
- Less external components needed, low BoM cost
- Lower inventory costs and risk

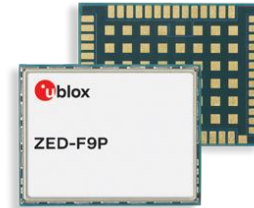
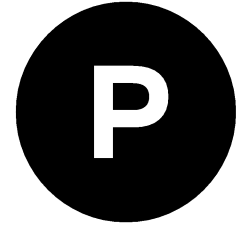
Smart Antennas

- All of the above, plus no antenna integration or GNSS know-how needed

We make a difference

- Broad and versatile portfolio
- Reliable products with high performance
- Cost-efficient solutions
- Built-in security for highest robustness

Product highlights 2018



u-blox F9 platform

High precision positioning chipset for mass market industrial and automotive applications.

ZED-F9P

First **high precision GNSS module** delivering centimeter-level accuracy in seconds.

Partnership with Bosch

The position system for highly automated driving

- “Our new vehicle motion and positioning sensor (VMPS) will hit the road in 2020 and will be one of the first GNSS inertial positioning systems using correction data for highly automated driving.”
- “We are working in partnership ...with **u-blox** for **automotive safe** positioning...”
- “Together with Mitsubishi Electronics and Geo++, we are a stakeholder of the **Sapcorda** joint venture, whose target is worldwide safe and precise correction data.”

Michael Baus, Program Director at Robert Bosch GmbH
<http://insidegnss.com/munich-hot-licks/>



BOSCH



High precision GNSS: NEO-M8P, ZED-F9P

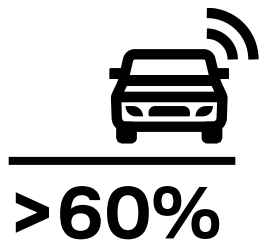
Getting a lot of market traction



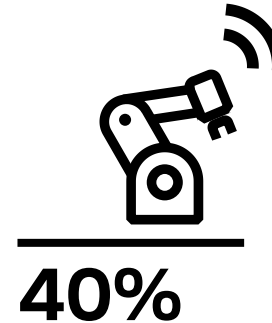
- HighGreat, a company based in Shenzhen, China
- 400 drones with the u-blox NEO-M8P to celebrate opening of World Intelligent Congress
- **u-blox high precision technology at the core of these ecological fireworks**



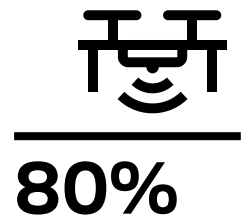
The leading GNSS provider



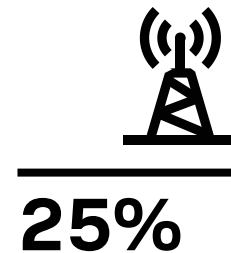
Total GNSS sales to the automotive market (factory fit) was 58 million units in 2017. **We have > 60% market share** in head units.



Total GNSS sales to industrial tracking and telematics market is 45 million units. We have **40% market share**.



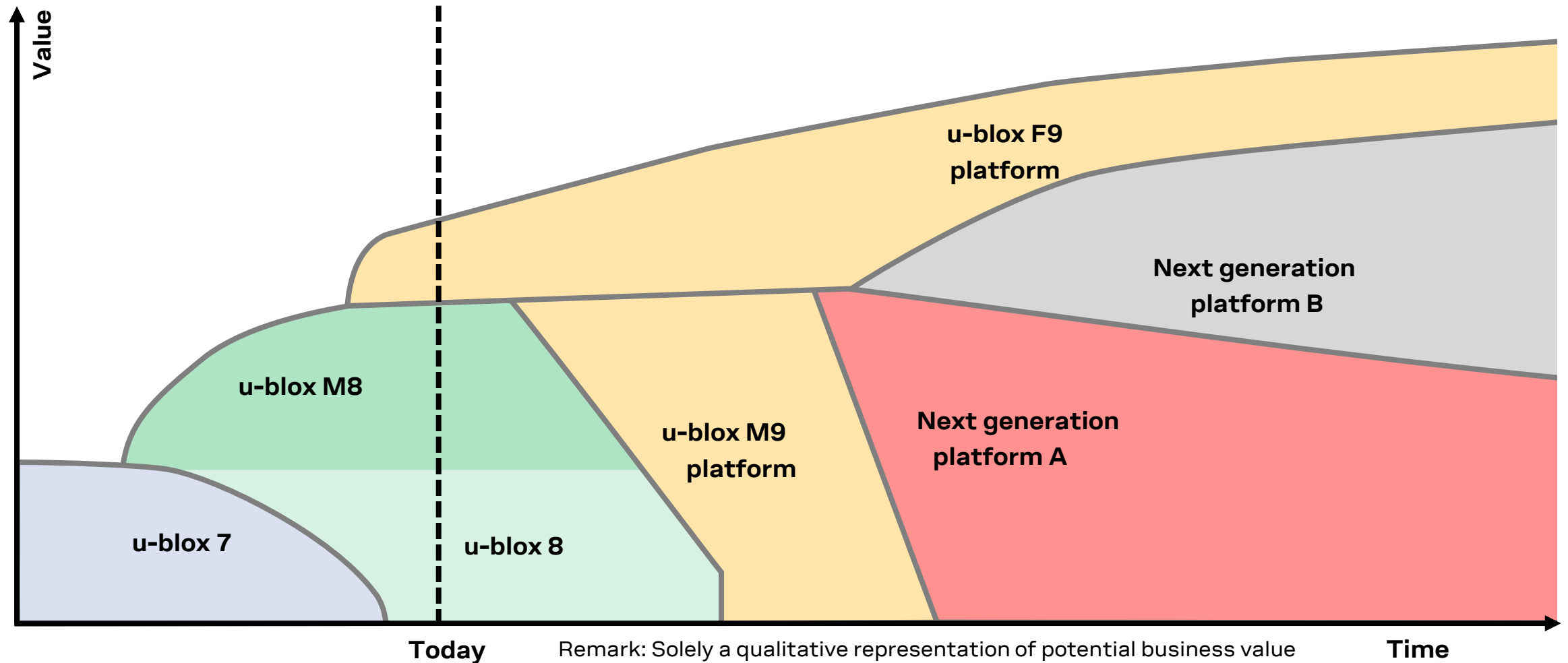
Drone market was 18 m units in 2017 and is expected to grow at a CAGR (17-22) of 26.8%. u-blox has **80% share of the prosumer drone market**.



The GNSS timing and synchronization market is around 8 million units in 2017. u-blox has **25% market share**.

Positioning product road map

Expanding platforms for value differentiation



Services

Thomas Seiler, CEO

Services – new opportunities for growth

Services enhance products

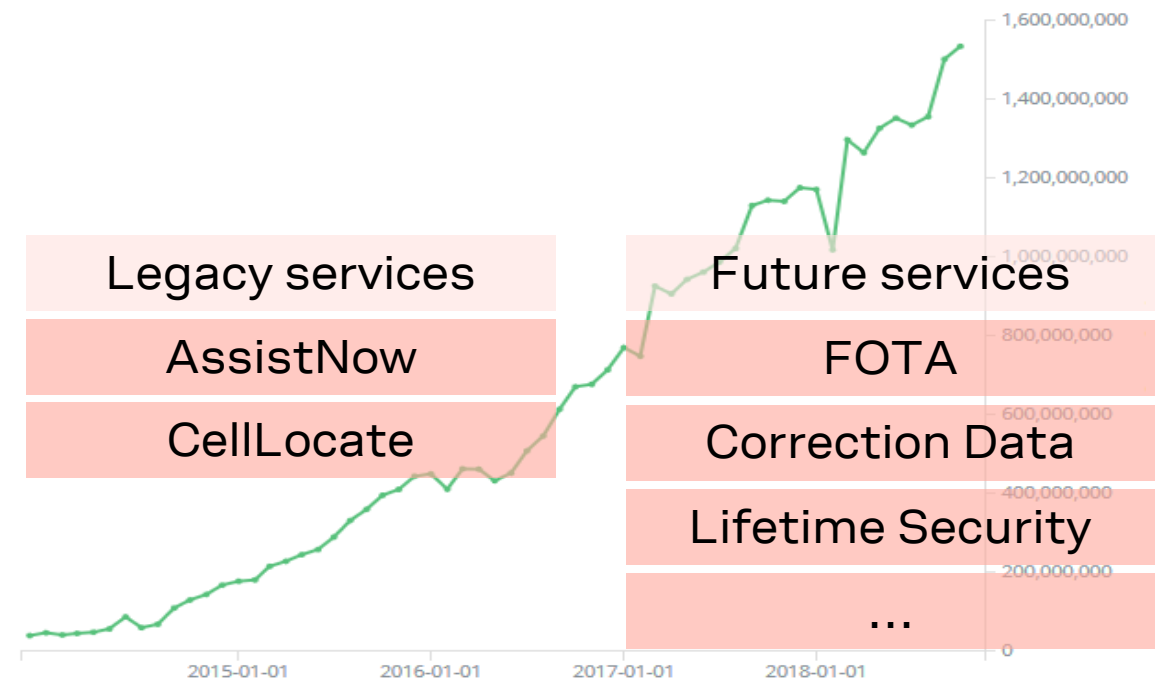
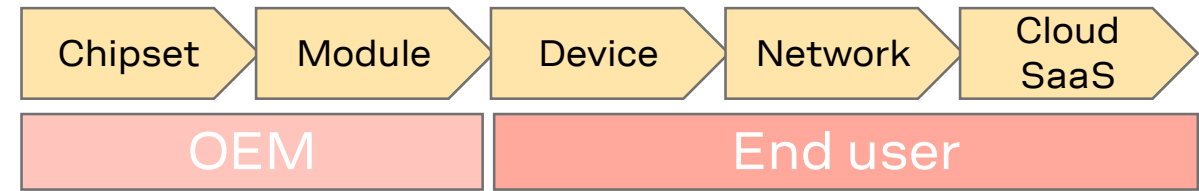
- Services enhance the **performance and robustness** of our products.
- **Deep value resides in our core technology:** highly differentiating.
- Service will be **monetized** over lifetime of products.
- Our **customers are our partners**, not our competitors.
- **Economies of scale** in service components – re-use common components across vertical market segments.
- Partnerships assure **covering the full value chain.**



Services apply to the whole ecosystem

Increase of performance and robustness

- At **OEM level**
 - Lifetime management
 - Assuring root of trust
 - Enhance product performance hence differentiation
- At **end user level**
 - Lifetime product availability
 - Continued upgrades
 - Trusted secure data handling
 - Lower cost of ownership
- We build on a **long lasting service experience** that we haven't yet monetized



Requests per month for existing services

Services – source of future recurring revenue

Services carry high customer value

- Recurring revenue over lifetime of product
- Pricing will follow perceived value by customers
- Services reported in the service segment
- Service platform under construction
- Sapcorda and Kudelski are our partners and serve our end customers



IoT security - a core service offer

Providing trust and integrity based on several elements



Unique device identity

An immutable chip ID and hardware-based Root-of-Trust provides the foundational security.

Trusted boot sequence & secure updates

Only authenticated and authorized firmware and updates can run on the device.

Hardware-backed crypto functions

Secure libraries allow generation of crypto functions and keys that securely connect to the cloud.

Root-of-Trust based authentication

HW protected, unique keys authenticate communications to ensure integrity and confidentiality.

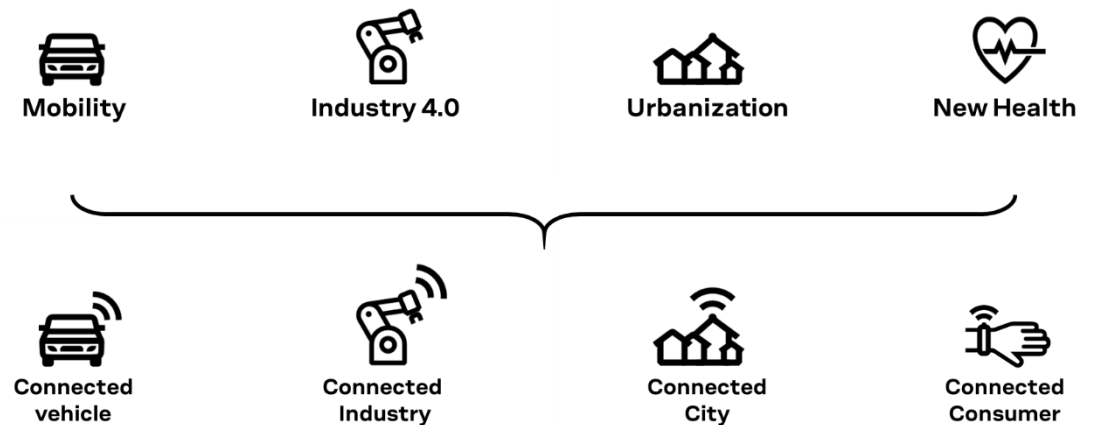
Driving growth and outlook

An aerial photograph of a kayaker in a narrow, turbulent section of a river. The water is dark blue and turbulent, with white foam from the rapids. The kayaker is positioned in the center of the frame, navigating the narrow channel. The surrounding water is dark and textured with ripples.

Megatrends guide our strategy










Exciting technologies form our intellectual property

- Megatrends guide our long term business strategy :
 - Mobility, urbanization, and Industry 4.0 are driving the **expansion of cellular networks toward 5G.**
 - Autonomous driving, mobility, and unmanned vehicles **need robust, reliable, and safe connectivity and positioning technologies.**
 - New health and urbanization need a **seamless connectivity** for the many types of devices.
 - **Secure and lifetime connectivity from a trusted supplier** becomes core in the automotive and industrial field.



u-blox has solutions for our markets



	 Cellular Communication	 Short Range Communication	 Positioning
Integrated Circuits			
Modules			
Services	CellLocate® (modem based positioning) AssistNow™ (worldwide GNSS assistance service) GNSS Correction Data (for high precision)* FOTA (Firmware over the air) Lifetime Security		

*through Sapcorda, a joint venture with industry partners

- **Off-the-shelf products** make it possible to serve the broad market
- **Unique cross selling power**
- **Solutions as product combinations** deliver strong customer value

Driving growth

Extract more from the value chain



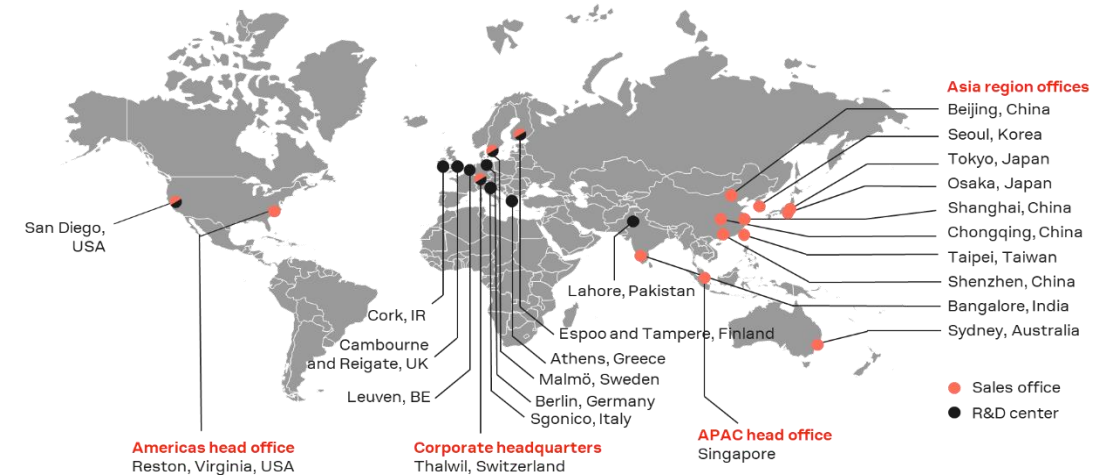
- Continuous technology innovation
 - More technological capabilities open new application possibilities.
 - Innovation at IP core assure continued margin expansion.
- New standards expand application possibilities
 - 5G → higher performance requirements.
 - Bluetooth and Wi-Fi standards expansion → capillary IIoT.
 - New satellite signals → higher availability and precision.
- Cloud enables adding services with recurring revenue on top of our product sales
 - Sold to OEM (u-blox customer).
 - Sold to end customer (via partners).



Regional outlook

Strong geographical diversification

- APAC
 - Strong technology momentum in China, boosted by increased investment into technology.
 - Japan, Korea, and Taiwan entail rich territory for IIoT and automotive, and profiting from China growth motor.
 - Innovation front-runner in consumer products.
- EMEA
 - The automotive world leader.
 - Huge industrial potential for IIoT.
- Americas
 - Cellular network issues resolved.
 - Industry expanding driven by tax reform.
 - Strong potential in tracking and automotive.



Our product origins stand outside the US-CN trade tensions.

IIoT: Industrial Internet of Things

Solid basis for growth

Our many product initiatives pave the way into expanding markets

- We **participate in market expansion** driven by increasing mobility and expansion of cloud services.
- Our **product initiatives** preempt important megatrends in the industry – we have invested in new platforms in all our technologies
- We are preferred by the **leading customers** for our technology IP and innovation leadership.
- Our technology core assures the basis for **resilient value adding services.**
- Our product diversification by customers, applications, and geography **assure stability in growth.**
- Economies of scale **strengthen profitability.**

Positive impact on financial position

Continued long term investments pay off

- With our several new platforms we have created important pillars of IP that will allow to **sell at premium prices.**
- Next generation product will profit from **increased R&D efficiency** due to re-use of IP blocks.
- All our six new platforms allow the creation of **services that we can monetarize.**
- **Cross selling effects** are further strengthened.
- Our business volume delivers sizable **economies of scale.**

Long term outlook - 2022

Substantial growth ahead



Revenue
M CHF

Free Cash
Flow %

EBIT
%

EBITDA
%

700
800

7%
10%

12%
15%

22%
25%

Before acquisitions and extra-ordinary effects

Our promise



Wireless technology for industry leaders



Solid strategy execution aligned with market megatrends



Broad and diversified access to markets



Excellence in product quality and performance



Outlook for strong growth in 2019



Mid term growth to CHF 800m revenue

Connecting the world!