

# Connectivity to be trusted.

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Annual Report 2019



**Bittium**



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# Overview 2019

## Tactical Communications

Bittium specializes in military radio and communication solutions by providing advanced products and services for wireless and wire line tactical communications.

## Secure Communications & Connectivity

Bittium provides highly secure communications and connectivity solutions for public safety & security, defense, and other professionals' markets.

## Medical Technologies

Bittium offers medical technology for monitoring biosignals in the areas of cardiology, neurophysiology, rehabilitation, sports medicine, and occupational health.

## R&D Services

Bittium offers professional R&D engineering services and technology expertise in the areas of wireless devices, network infrastructure, and IoT solutions.



Personnel

**655**

in total

Net Sales

**75.2**

MEUR

Products

**49.4**

MEUR

Services

**25.9**

MEUR

Operating Profit

**6.3**

MEUR

Cash and Other Liquid Assets

**35.2**

MEUR

Equity Ratio

**73.4**

%

Net Gearing

**-11.2**

%

Earnings per Share

**0.214**

EUR

Dividend per Share (proposal)

**0.10**

EUR

# CEO's Review

The year 2019 represented an important year of growth to Bittium. Our strategy of investing in internationalization began to be seen in business. We started the deliveries of tactical communication system to the Austrian Defence Forces. Bittium's tactical backbone network forms the core of the Austrian Defence Forces' new tactical communication system. This was an important step in the internationalization of our tactical communications product portfolio targeted to the defense market.

In the field of medical technology products, growth in the international market was reflected in significant deliveries of remote cardiac monitoring devices to our customer Preventice in the United States. Together with Preventice we have developed a solution that enhances doctor and patient experience in remote cardiac monitoring.

In order to enable the growth, we continued significant investments in the development of our own products. This year we aim at decline in the level of the R&D investments relative to the net sales. The investments focused mainly on the development of the

tactical communication system and its products targeted to the defense industry, and different authorities' and special terminal products and their related security software, and medical technology products.

The development of the new Bittium Tough SDR soldier and vehicle radios has taken slightly longer than expected. Field tests of the products have been conducted during the last half of 2019, and we aim to start the actual product deliveries to the customers in the early 2020. The products have been designed to operate under extreme conditions. They have a very wide frequency range with unique interference tolerance and strong security.

In May we launched a new ultra secure Bittium Tough Mobile 2 smartphone. The core of the information security of the new Bittium Tough Mobile 2 is its multilayered security structure designed for customers with ultra security needs. The new phone will be positioned next to Bittium Tough Mobile 1, which has authority approval for handling and sending confidential information wirelessly.

The product deliveries started in the second half of the year. Modern smartphone design combined with world's highest security attracted the market interest. Continuous cyber security attacks raise awareness of the importance of mobile security.

The delivery volumes of the satellite smartphone developed to the Mexican authorities fell short of last year's target. We aim at volume deliveries during 2020.

The sale of the product development services decreased year-on-year affected by the company's own significant large R&D projects that tie experts into internal product development. During 2020 we have developed our ways of working as well as our organization to become more self-directing, which is expected to bring better operational efficiency. We aim to grow the amount of product development projects and expand our customer base. The most significant market segments for Bittium's product development services are industry, medical technology and car industry.

Our vision is to be a significant international provider of secure and safe communication and connectivity solutions especially in the defense and public safety markets, as well as a significant international provider of outside hospitals' biosignal's measuring and analytics solutions. First steps towards this vision have been taken, which creates a good foundation for the future growth. We will continue to invest in our strategy to enable the company to grow internationally, both in product development and in the development of our operations.

I would like to thank our customers and partners for the past year and their trust in our company. I would like to thank our personnel for the hard work and commitment to our mutual goals. I would also like to thank our owners for their perseverance and confidence. Together we can enable our future success.



**Hannu Huttunen**  
CEO



# Business and Operating Environment

## Bittium in Brief

Bittium is a technology company specializing in the development of reliable, secure communications and connectivity solutions, leveraging its 30-year legacy of expertise in advanced radio communication technologies. Bittium provides innovative products and services, customized solutions based on its product platforms and R&D services. Complementing its communications and connectivity solutions, Bittium offers proven information security solutions for mobile devices and portable computers. Bittium also provides healthcare technology products and services for biosignal measurement in the areas of cardiology, neurology, rehabilitation, and occupational health.

Bittium, formerly known as Elektrotbit Corporation, was established in 1985. It changed its name to Bittium after selling its Automotive business and giving up the rights to brand name Elektrotbit on July 1, 2015. Bittium is a publicly listed company on Nasdaq Helsinki as BITTI.

Bittium operates in Finland, Germany, the United States, Mexico and Singapore. Bittium headquarters is located in Oulu, and the company's other Finnish offices are in Espoo, Kajaani, Kuopio and Tampere.

At the end of 2019, Bittium had 655 employees, of which the majority were R&D engineers. In 2019, the Company did not undergo any significant changes in relation to its size, structure, operating areas, ownership, distribution of shares, income formation or the maintenance of operations.

Bittium operates globally. With regards to sustainable business, Bittium's products and services comply with the statutory requirements, directives, general standards and frameworks, such as SA 8000 (social responsibility), ISO 14001 (environmental systems), ROHS I, II, III (hazardous substances), REACH (chemicals regulations), WEEE (recyclability of waste electrical and electronic equipment), ETJ+ / ISO 50001

(energy efficiency), EICC (Electronic Industry Citizenship Coalition) and GRI G4 (reporting guideline for sustainable development). As a global enterprise, the Company also takes the special requirements of its international customers into account.

## Bittium's Purpose

Bittium's purpose is to adapt our deep knowledge to deliver superior technology innovations to enhance connectivity, bring safety and improve health in the society.

## Bittium's Vision

Bittium's vision is to become a global enabler of secure and reliable connectivity for people and things.

# Business Model

## Megatrends and Their Phenomenons

Connectivity as an enabler of digitalization, Internet of Things (IoT) and digitalization, aging population, information security



## Customer Groups

Companies of different sizes, OEMs, system integrators; Defense and governments; Hospitals and hospital districts; Other public administration and organizations; Research institutes; Universities



### Effects on the Customer

- Reliable Finnish partner
- Products and solutions that represent the latest technology
- High product performance and long lifecycle
- Scalable product platforms
- Short customization times and fast market entry of solutions
- Lower costs and risks in customer's own R&D projects



### Effects on Bittium

- Long-term projects and customer relationships build stability
- Service projects enable applying new technologies that strengthen the expertise of both the company and its customers
- Extensive understanding of commercial technologies and the customized communications systems used by authorities
- Integrated expertise in mobile and online technologies
- Good growth opportunities



### Products, Services and Solutions

- Products and services in tactical communications
- Secure phones and the related software and systems
- Information security software
- Design services for wireless communications
- IoT and digitalization services
- Biosignal measuring and monitoring equipment in the areas of cardiology and neurology



**Bittium's Vision**  
is to become a global enabler of secure and reliable connectivity solutions.

### Income Streams

- Products and product platforms, systems and the services related to these
- R&D services
- Maintenance fees
- Licenses



## Enablers

### Key Resources

- Experts
- Own products
- IPR
- Partners
- Strong balance sheet
- Efficient processes
- Quality and environment systems

### Key Focus Areas

- Personnel
- R&D
- Sales and marketing
- Way of working
- Digitalization

### Expertise

- Wireless technologies
- Software
- Mechanics and software solution integrations, testing and verification
- Extensive expertise in systems and specialist areas
- Information security
- Measurement of biosignals
- Way of working

### Channels

- Own sales
- Retailers
- System sales
- Integrators
- Web shop

## Bittium's Mission

is to adapt our deep knowledge to deliver superior technology innovations to enhance connectivity, bring safety and improve health in the society.

## Strategic Guidelines, as Published in November 2016

In November 2016, Bittium Corporation has updated its strategy to strengthen its position in the global markets and to speed up its growth. During 2017, 2018 and 2019, Bittium has made no updates or changes in its strategy and continued systematically on its path towards the Company's strategic goals. Strategic Guidelines published in November 2016 can be found on the company's internet pages at: [www.bittium.com](http://www.bittium.com)

Bittium's business operations are divided in three product and service areas: Defense & Security, Connectivity Solutions and Medical Technologies.

### Defense & Security

In the Defense & Security product and service area Bittium offers globally leading products and services for its customers in the defense, security and public safety markets. Bittium aims to significantly increase investments in various authority and special terminals as well as in related software development and extend its tactical communication product portfolio for defense

industry. Growth in the net sales is sought especially from own products and product platforms that Bittium offers for international defense and public safety markets.

Bittium's competitiveness in these markets is based on trust and reliability, high quality of the products and services, as well as on advanced technology and security know-how developed within the Company during the last 30 years. Bittium offers its customers in the defense market new kind of efficiency for their management systems with products that enable faster data transfer, better mobility, and superior compatibility with other communication systems.

In the public safety markets the transition towards LTE-based technology is expected to accelerate in the next few years. As the security threats are growing, increasingly more security demands are set for the communication systems. Bittium increases investments in developing its product offering further for these markets. The Company also continues offering public safety markets R&D services to develop special terminals and related systems that use both terrestrial and satellite networks.

In the defense, security and public safety markets, there are signs of unification regarding technologies as well as in security demands. Also many customers, partners and supply chains are mostly the same and the trend towards this is strengthening. Bittium merged two separate product and service areas into one and with that synergy Bittium is able to serve better the customers in defense and security technology.

The defense, security and public safety markets are slowly evolving markets by their nature. They are characterized by long sales cycles driven by the national governments' long preparation periods of projects and purchase programs. The purchases of the selected products are typically executed over several years.

### Connectivity Solutions

The development of wireless technology continues and digitalization creates growing need for wireless connections. Bittium offers R&D services and wireless connectivity solutions for its customers, and the demand is expected to increase within the next few years. The competitiveness of the Company in these markets is based on



the strong technology and security competence, as well as on trust, reliability and quality. The more critical the system is, the more significant role Bittium's strengths have.

The demand for developing 4G technology-based network equipment is decreasing as the technology and market reach their maturity. However, Bittium is already strongly involved in the development of 5G technology, which in the long run gives the Company a good position to offer even more advanced connectivity solutions also for customers in other markets.

#### Medical Technologies

In the healthcare sector, remote monitoring and home care markets are growing strongly. Patient monitoring in the hospital environment is also changing into wireless. These trends create demand for the digitalization of services, wireless capability and secure connections. For these markets Bittium decided to establish a new product and service area around healthcare technology. As the first step to build the competencies in healthcare technology, on November 10, 2016 Bittium acquired Mega

Electronics Ltd., a company specialized in measuring and monitoring biosignals.

Combining healthcare technologies with Bittium's long-term experience and competence in wireless and security technologies gives Bittium good conditions to serve its customers in healthcare sector by offering them new kinds of products and services.

Bittium plans to strengthen its product and service offering for these markets also by searching for acquisition targets that complements the whole.

#### Financial Targets, as Published in November 2016

Bittium has announced earlier that it targets 10 percent annual growth in net sales and to reach EBIT level 10 percent of net sales in the year 2017 at the latest. The Company believes that in the coming years it is able to grow its net sales even more than the earlier announced target, and therefore sets up a target to exceed the annual 10 percent growth target of the net sales.

However, Bittium believes, that during the year 2017 it is not yet able to reach the targets set for the growth in the net sales and EBIT level. The reason for this is the termination of significant customer cooperation with a global network equipment manufacturer, of which Bittium announced earlier in October, that is expected to materialize faster and more extensively than the Company estimated earlier. According to the information received by Bittium, the net sales from this customer cooperation will end completely in the beginning of the second quarter of the year 2017. To this extend this kind of extensive and rapid decrease in the services business net sales is most likely difficult to be replaced in short term. In addition, the operating profit level of the year 2017 is also affected by the planned investments to enable the future growth.

Bittium targets further to increase the share of net sales generated from own products and product platforms. According to the targets Bittium announced earlier, in the year 2017 the share of net sales generated from own products and product platforms is clearly higher than in the year 2014, when the product based net sales was 26.7 percent of the net sales.



# Bittium Products and Services

## Defense & Security

### Tactical and Secure Communication Systems

In the Defense & Security product and service area Bittium offers globally leading products and services for its customers in the defense, security and public safety markets. Bittium's competitiveness in these markets is based on trust and reliability, high quality products and services, as well as on advanced technology and security know-how developed within the company during more than 30 years.

#### **Bittium Tough Mobile™ product family**

At the core of the information security features of the Bittium Tough Mobile smartphones lies their multilayered security structure, which is based on hardened Android™ operating system, unique hardware solutions, and the information security features and software integrated in the source code. The phones are fully designed and manufactured in Finland and Bittium ensures supervised and secure manufacturing and supply of the smartphones to customers. Bittium Tough Mobile smartphones together with Bittium Secure Suite device management and encryption software product

can be certified for secure use of different national government authorities. Bittium Tough Mobile C smartphone together with Bittium Secure Suite back-end system form the first smartphone based communication solution in the world that has been certified for CONFIDENTIAL security level (NCSA-FI). As the smartphones have been designed for use by authorities, they have a significantly longer availability and lifespan and better availability of security updates compared to conventional smartphones.

**Bittium Secure Suite™** is a device management and encryption software product that complements Bittium Tough Mobile smartphone with a scalable set of new software services for remote management, remote attestation and securing the network connections of the device. Bittium Tough Mobile smartphone and Bittium Secure Suite form a unique, complete, reliable system for processing and transferring sensitive and classified material and securing critical communication.

**Bittium Tough Mobile HybridX™** extension is a solution meant for authority use, where Bittium Tough Mobile smartphone is coupled with a functional accessory that is integrated to a PMR device (TETRA/P25). The solution also includes a holder with a wide angle lens, which enables authorities to share real-time situational awareness over the LTE network. Bittium Tough Mobile HybridX extension can be used to operate both the secure Bittium Tough Mobile smartphone and PMR device, and communicate with both LTE and PMR network users.

**Bittium Specialized Device Platform™** is a versatile device platform leveraging latest mass market mobile device hardware and software technologies. The platform enables companies to roll-out fully customized mobile devices in various form factors (incl. module, smartphone, tablet and smart watch) faster and with lower development risks. The platform has been productized to public safety, security, industrial and smart watch markets. One of the major products based on this platform is the secure Bittium Tough Mobile smartphone.



**Bittium SafeMove® Mobile VPN** software enables the utilization of all IP based applications and networks by securing the connections between the work station and corporate services immediately from startup of the phone. With Bittium SafeMove, for instance home care workers are allowed to have full access to the same systems and applications they would have on a hospital desktop, enabling safe and real-time access to patient records.

**Bittium SafeMove® Analytics** is an advanced monitoring and reporting module that helps organizations to monitor network connectivity and performance to improve productivity and user experience. The analytics tool continuously gathers connectivity data such as connectivity status, speed, throughput and bytes transferred, network type and Wi-Fi network information. It is also easy to enhance the tool with positioning information if GPS data is available. In addition, the new security features enable immediate report of possible security deviations in the mobile phones used by the employees.

This enables reacting to the cyber threats without any delay, for example by disconnecting device that reported the deviation, from the company network for the time of clearance of the situation.

**Bittium Tactical Wireless IP Network™ (TAC WIN)** is a Software-Defined Radio based wireless broadband network system intended for military and public safety use. With the system MANET (mobile ad hoc network), link, and connection networks can be formed into one logical IP network quickly, no matter where the location is. Bittium TAC WIN is compatible with existing fixed and wireless network infrastructures. The core of the system is a tactical router that enables users to freely form both wired and wireless broadband data transfer IP connections. Tactical router enables also connections to different types of terminals and other communication systems connecting them into one communication network. In addition to the router, the system comprises of three types of radio heads, and each radio head covers its own frequency band area and can be used for

flexible formation of optimized network topologies for different communication needs. All the products of the system are designed for harsh conditions, and thanks to the system's automated functions the implementation of the system can be done quickly. Due to the software-based functionality of the Bittium TAC WIN system, it can be easily updated with additional performance cost-efficiently during the whole lifespan of the system.

**Bittium Tough VoIP™** product family's products enable tactical IP calls and broadband data transfer even in demanding conditions. Products are easily integrated into existing IP infrastructure. The product family consists of a range of tactical IP-based communication products, including distributed VoIP service network for tactical environment, Bittium Tough VoIP Service; Voice over IP clients, Bittium Tough VoIP Field Phone and Bittium Tough VoIP Terminal; a network extension unit, Bittium Tough VoIP Network Extender; and Bittium Tough VoIP Service and Bittium Tough VoIP Softphone software products.

**Bittium Tough VoIP Field Phone™** is a SIP (Session Initiation Protocol) compliant client that provides interoperability with other SIP clients and server implementations available in the market, and incorporates functionality that enables introduction of VoIP services in dynamic self-forming networks independent from server.

**Bittium Tough VoIP Terminal™** is a wireline VoIP phone that can be operated either as an part of Bittium Tough VoIP solution or as an IP terminal together with a third-party equipment.

With the **Bittium Tough VoIP Network Extender™**'s SHDSL (Symmetric-High-Speed Digital Subscriber Line) connectivity, an IP network can be extended over long distances using conventional field wire. The Network Extender also features Ethernet and SHDSL connections to external networks and devices.

**Bittium Tough VoIP Service™** is a software product, which can be used to connect both fixed data network users and wireless tactical data network users to the same voice service network.

**Bittium Tough VoIP Softphone™** is a VoIP software product designed especially for tactical use. It can be used for VoIP calls, instant messaging, conference calls and screen sharing in the Bittium Tough VoIP Service network either with a PC or smartphone.

**Bittium Tactical LTE Access Point™** is a solution providing LTE access to the Bittium TAC WIN network. With the solution, different troops can benefit from cost-efficient and high-speed multimedia data and VoIP services by using commercial smartphones as well as special terminals intended for authority use.

**Bittium Tough Comnode™** fulfills the data transfer needs for mobile troops by functioning for example as a VoIP phone (Voice over IP), an IP router (Internet Protocol), and an SHDSL repeater (Symmetrical High-speed Digital Subscriber Line). Additionally, Bittium Tough Comnode also provides SIP (Session

Initiation Protocol) server functionalities of the tactical voice network for commercial VoIP terminals and enables using also legacy Combat Net Radios (CNR) as part of the IP-based tactical communication system (Radio over IP, RoIP).

**The Bittium Tough SDR™** product family of tactical radios consists of Bittium Tough SDR Handheld™, handheld radio for individual soldiers, and Bittium Tough SDR Vehicular™, tactical radio for vehicle installations. Bittium Tough SDR products help to produce and share real time situational awareness (location, image, voice, video, and sensor data) to all levels of the organization. Together with the SDR based Bittium TAC WIN system, it is possible to bring broadband data and voice to all mobile troops starting from brigade level and all the way across the battlefield.

## Year 2019

During the first half of the year, Bittium launched a new ultra secure Bittium Tough Mobile 2 smartphone. The core of the information security of the new Bittium Tough Mobile 2 is its multilayered security structure, which is based on the hardened Android™ 9 Pie operating system, unique hardware solutions, and the information security features and software integrated in the source code. The multilayered information security ensures that both the data stored in the device and data transfer are protected as effectively as possible.

The customer deliveries of the Bittium Tough Mobile 2 smartphone started during the second half of the year. Modern smartphone design combined with the world's highest security has attracted market interest. Continuous cyber security attacks raise awareness of the importance of mobile security. Also the deliveries of the first generation Bittium Tough Mobile smartphones continued to the customers.

Bittium announced a new Multicontainer feature for the Bittium Tough Mobile smartphone. It enables the use of several secure container workspaces. The users of secure

workspaces can safely download approved applications from their own organizations' application libraries. It enables the users to easily handle confidential information of several organizations as well as their personal data and applications with the same Bittium Tough Mobile smartphone.

Also a new version of Bittium SafeMove® software with important new features to support cyber resilient field operations under disruptions was launched.

The delivery volumes of the satellite smartphone developed to the Mexican authorities fell short of last year's target. However, in 2020, Bittium aims at volume deliveries of the products.

The development work of the new Bittium Tough SDR soldier and vehicle radios has taken slightly longer than expected. Field tests of the products have been conducted during the last half of 2019, and the actual product deliveries to the customers are expected to begin in the early 2020. The products have been designed to operate under extreme conditions. They have a very wide frequency range with unique interference tolerance and strong security.

The product deliveries of tactical communication system to Austrian Defence Forces began in the second half of the year. This cooperation has been a major step in the internationalization of Bittium's tactical communication product portfolio. Bittium's tactical backbone network forms the core of the Austrian Defence Forces' new tactical communication system. In addition, Bittium also deploys Bittium Tough Comnode and Bittium Tough VoIP products.

Cooperation with the Finnish Defence Forces continued strong and Bittium received multiple orders from the Finnish Defence Forces during 2019. The orders included maintenance and further development of tactical communication systems and products during 2019; and Bittium TAC WIN products and Bittium Tough Comnode terminals as well as narrowband waveform development work for the tactical Bittium Tough SDR radios.



Bittium Tough SDR Vehicular™  
 Bittium Tough SDR Handheld™  
 Bittium Tough Comnode™

The Finnish Defence Forces also ordered porting the European ESSOR (European Secure Software-defined Radio) program's OC1 (Operational Capability 1) phase wide-band waveform to the Bittium Tough SDR radios that will be delivered to the Finnish Defence Forces. The porting of the waveform to the national software-defined radios enables compatibility between radios used in European coalition operations, in accordance with the goals of the ESSOR programme.

From the Estonian Defence Forces Bittium received an order for the Bittium Tough SDR radios and Bittium TAC WIN system products. Bittium Tough SDR radios and Bittium TAC WIN products complement the tactical communications system that has been delivered to the Estonian Defence Forces already previously.

Bittium was granted ISO 27001:2013 Information Security Management Certificate that includes Bittium's business and support processes, information security, personnel and premises safety, as well as continuous improvement methods. ISO 27001:2013 specifies the requirements for establishing, implementing, maintaining and continually improving an information security

management system within the context of the organization. It also includes requirements for the assessment and treatment of information security risks tailored to the needs of the organization.

## Market Outlook

The following factors are expected to create demand for Bittium's products and services in 2020 and beyond:

- In the defense sector's tactical communication market the governments' defense forces and other authorities need networks that troops, who are more and more constantly on the move, can use for transferring growing amounts of data securely. This creates demand for Bittium Tactical Wireless IP Network broadband network and for other Bittium's IP-based (Internet Protocol) tactical communications solutions, as well as for Bittium's new tactical communication handheld and vehicle radios that fulfill the needs of data transfer of moving troops or individual soldiers. Bittium continues its efforts to bring its defense market targeted products and services also to the international defense markets and aims to get new international customers for its tactical communica-

tion system in 2020. Due to the long sales cycles driven by purchasing programs of national governments, will take time to receive purchase orders.

- The use of LTE technology, smartphones and applications continue to increase in special verticals such as public safety creating demand for Bittium Tough Mobile secure LTE smartphone and other customized special terminals based on Bittium's own product platform. The awareness of mobile security risks is growing and the interest towards secure mobile devices is increasing. The implementation of LTE-based devices in Public Safety markets has been slower than expected due to the delay of the device functionalities required by the authorities and due to the slow progress of the market. The sale of the secure terminal products is expected to develop moderately according to the nature of public safety markets.
- Using public network connections in portable devices is increasing also in demanding professional use, such as in the public sector. This creates requirements for network connections to be easy to use and secure. The products in the Bittium SafeMove product family enable the ease of use of the devices and security in demanding use.



## Connectivity Solutions

Professional R&D Services and Technology Expertise

In the Connectivity Solutions product and service area Bittium provides professional design services and technology expertise in the areas of wireless devices, network infrastructure, and IoT solutions. Bittium also conducts R&D in the technology areas of 5G, Artificial Intelligence (AI), Robotic Process Automation (RPA), and Cloud Solutions. Bittium has long experience in system design, technology integration, wireless radio and antenna technologies, and power optimized, small form-factor device development. The understanding of industry-specific requirements, strong competence in R&D services, wireless devices, digitalization and information security along with the ISO 13485:2016 quality certificate, covering the devices, and equipment for health care enable Bittium to create solutions which bring clear added value to our customers and partners.

### Year 2019

Bittium continued to develop 5G technology and various connectivity solutions for its customers, mainly in Europe.

Along with its innovative product development services, Bittium launched a software robotics solution based on its own secure platform. Robotic Process Automation (RPA) is a method for streamlining business processes by automating laborious manual tasks, which are time-consuming, repetitive and prone to errors.

### Market Outlook

Bittium's customers operate in various industries, each of them having their own industry specific factors driving the demand. A common factor creating demand among the whole customer base is the growing need for higher quality and secure data transfer. Due to the technology competences accrued over time and long history in developing mobile communication solutions, Bittium is in a good position to offer customized solutions for its customers.

The following factors are expected to create demand for Bittium's products and services in 2020 and beyond:



- In the mobile telecommunications, the demand for 5G technology development work has stabilized and the implementation of 5G is accelerating in pace. Investments in developing new features continue and the importance of software development in the 5G network development expands. This creates demand for Bittium's R&D services. There is a wide range of frequencies allocated for the 5G technology thus creating the need to develop multiple products to cover the market and creating demand for R&D services for development of product variants. Also the development of new devices utilizing 5G technology increases the demand for Bittium's services.
- As the digitalization evolves, the secure IoT (Internet of Things) has become a significant development area in almost every industry. The increasing need of compa-

nies to digitalize their operations, collect data wirelessly and transfer it to the internet and cloud services generate need for Bittium's services and customized solutions. The new radio systems customized to IoT are being used all over the world and the amount of digitalized devices increase continuously. 5G brings also new features in the IoT that enable i.e. remote control of machines. Therefore, the integration of different systems and technologies play an important role in enabling the complete digitalization service. To ease and speed up the processing of large data amounts there are different kinds of learning systems and devices under development that use different kinds of artificial intelligence (AI) technologies.

- Changes in the digitalization of the automotive industry and new business models and automation of automotive operations

create a need for technological development. Most significant technology trends such as intelligent mobility, self-driving cars, electric cars and connectivity are guiding need for innovative software development. The share of software in cars is increasing in speed and software is becoming a major enabler and a differentiator. The use of Android™ Automotive operating system in the In-Vehicle Infotainment (IVI) systems is strongly entering the market. Several carmakers have announced the launch of cars with Android Automotive. Bittium's more than a decade of experience with the Android operating system and the Google ecosystem combined with security know-how creates good business opportunities for this market.



## Medical Technologies

### Devices and Applications for Biosignal Monitoring

In the Medical Technologies product and service area Bittium offers its customers healthcare technology products and solutions in biosignal measuring in the areas of cardiology, neurology, rehabilitation, occupational health and sports medicine. Combining healthcare technologies with Bittium's long-term experience and competence in wireless and security technologies gives Bittium good basis to serve its customers in healthcare sector by offering them new kinds of products and services.

**Bittium Faros™** is a versatile waterproof ECG device that is used for early detection of cardiac abnormalities in everyday life. Bittium Faros is ultra-small and lightweight, which enables precise full disclosure ECG measurements for long-term holtering, cardiac event monitoring, mobile cardiac telemetry and assessing autonomic nervous system functions. Bittium Faros outpatient monitoring solutions include several soft-

ware options for cardiac monitoring. The built-in arrhythmia detection algorithms on the Bittium Faros device are used for event recording and cardiac event monitoring. Bittium's solutions enable the earlier discharge of patients and the ability to react to detected arrhythmias faster.

**Bittium Cardiac Navigator™** is a completely new type of solution for the analysis of clinical Holter ECG recordings. Its user-friendly and informative data presentation and intuitive analysis tools make the software efficient and easy to use when analyzing multiple days of ECG recordings. Bittium Cardiac Navigator is designed for scanning longer measurements efficiently in a shorter time and thus speeding up the final diagnosis.

**Bittium Cardiac Explorer™** offers a quick and flexible way of working with event-based ECG arrhythmia analysis. The big-

gest benefits of the software are having full disclosure ECG always available, full access to the events identified by the device, total control on the reporting content and the ability to analyze an unlimited amount of measurement data.

**Bittium HolterPlus™** is a web based remote cardiac monitoring solution, consisting of a Bittium Faros ECG device and Bittium HolterPlus mobile application integrated into a secure smart device. Bittium HolterPlus enables remote monitoring and earlier discharge of the patient, and allows the ECG measurement data of the remotely monitored patient to be wirelessly transferred securely from the monitoring device to the medical remote diagnostics service platform. From the platform the ECG recording can be downloaded to a cardiologist for diagnosis and the diagnosis will be uploaded for the treating physician for further patient care.



Bittium BrainStatus™

**Bittium BrainStatus™** is a wireless compact EEG amplifier, which is used together with a disposable easy and quick to wear Bittium BrainStatus electrode headband for example to diagnose epileptic seizures and brain stroke. Bittium BrainStatus enables quick measurement in field conditions as well as in hospitals, thus making the treatment process of the patient faster. Bittium BrainStatus can be used for wireless real-time remote EEG monitoring or data can be recorded to the device memory.

Bittium BrainStatus with Cerenion C-Trend is the world's first practical method for measuring the brain function of intensive care patients. C-Trend technology aims to reveal the status of the brain as one simple and easy to interpret score. Bittium BrainStatus measures and monitors the EEG signal and

C-Trend interprets the signal into a simple score by using advanced machine learning algorithms and artificial intelligence.

**Bittium NeurOne™** is one of the quickest and most accurate EEG measuring devices in the world designed for clinical and research use. Bittium NeurOne system enables fully synchronized group measuring of up to 30 persons simultaneously for example in different types of psychological studies. The

solution is optimized for use with transcranial magnetic stimulators (TMS-EEG), with optional possibility to use it during magnetic resonance imaging procedures (fMRI-EEG).



## Year 2019

Cooperation with the major US cardiac remote monitoring provider Preventice continued to be significant. Bittium and Preventice have together developed a solution that enhances doctor and patient experience in remote cardiac monitoring. The deliveries of ECG devices based on Bittium Faros ECG technology to Preventice for this complete solution, continued to be significant during the year.

Bittium launched Bittium HolterPlus™ remote cardiac monitoring solution. Bittium HolterPlus solution extends the physician's

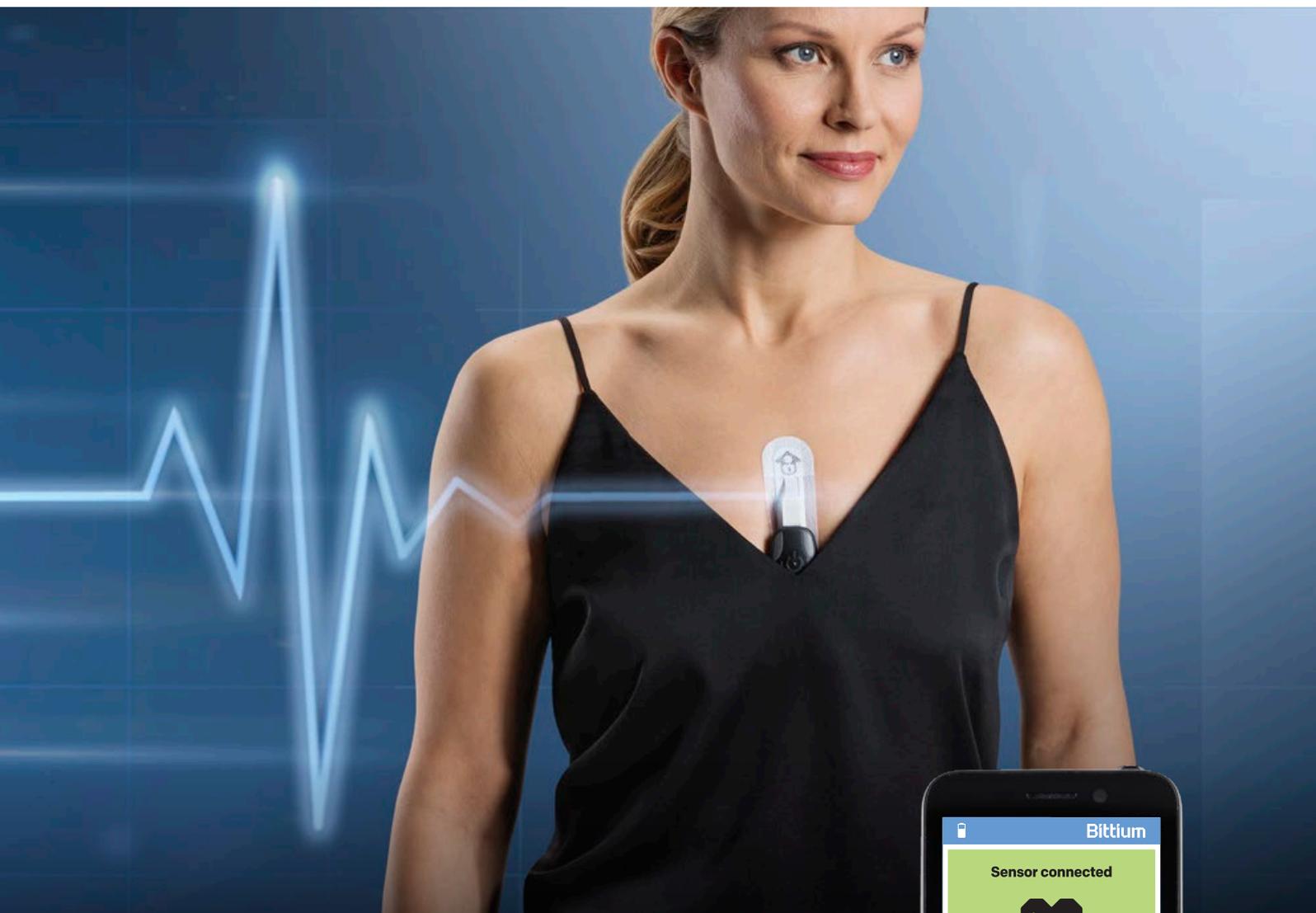
reach outside of the hospital or medical institution by remotely monitoring the discharged patient from for example home or nursing home. Bittium HolterPlus allows the remotely monitored patient's ECG measurement data to be stored and transferred securely from the monitoring device to the medical remote diagnosis service platform. From the platform the ECG recording can be downloaded to analysis software for a cardiologist to diagnose, after which the treating physician receives the diagnosis and possible instructions for further patient care.

In 2019 Bittium won several new customers in Australia, Asia and Europe.

## Market Outlook

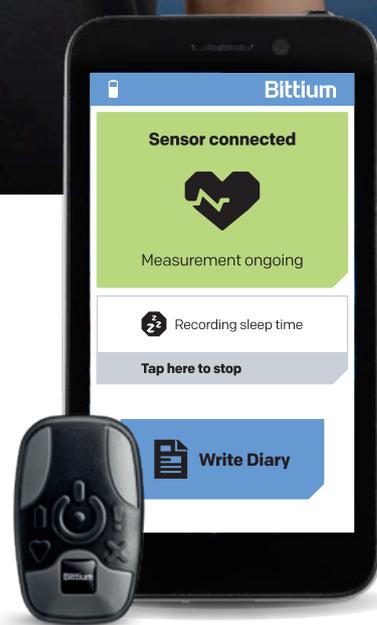
Over thirty years of experience and extensive competence in measuring of biosignals also act as a basis for Bittium's medical technology solutions. The following factors are expected to create demand for Bittium's products and services in 2020 and beyond:

- The heart and brain failures are among the most frequent causes of serious complications and recognizing those symptoms early on, based on information gathered by measuring, enables the start of effective treatment in time. Also the prevention of diseases and health problems are being increasingly invested in.



- In the healthcare technology market there is ongoing a significant change in the patient care both inside the hospitals as well as in homecare. The repatriation of patients is being pursued earlier than before which may enable significant cost savings in the healthcare. A prerequisite for early repatriation is the enabling of accurate and precise follow-up and measurement in home conditions through remote monitoring. For this purpose, Bittium offers its Bittium Faros product family for remote heart monitoring and Bittium BrainStatus for measuring the electrical activity of the brain. One of the growing application areas in the wireless and remote systems is healthcare technology that enables implementing these changes for its part.

- Remote monitoring and remote diagnostics together with wireless and remote-controllable systems bring effectiveness to the healthcare performance and cut costs as the diagnoses from specialists are available regardless of time and place. Various diagnostic solutions have been introduced to facilitate and speed up the work of physicians. These are for example Bittium’s analytics software in the field of cardiology and neurology. This enables also new service providers to enter the chain of medical treatment services offering wider availability of medicine, without bargaining the quality of specialists i.e. cardiologists and neurologists.



Bittium Faros™  
Bittium HolterPlus™

# Shares and Shareholders

## Shares

The shares of Bittium Corporation are quoted on the Nasdaq Helsinki. The Company has one series of shares. All shares entitle their holders to dividends of equal value. Each share has one vote. The share does not have a nominal value. The Company's shares have been entered into the Euroclear Finland Ltd's book entry system.

At the end of the financial period, the fully paid share capital of the Company entered into the Finnish Trade Register was EUR 12,941,269 and the total number of the shares was 35,693,166. The accounting par value of the Company's share is EUR 0.10. The Company does not have its own shares in its possession.

### Share Price and Trading in 2019

The closing price of Bittium Corporation's share was EUR 6.50 at the end of 2019; the share reached a high of EUR 8.03 and a low of EUR 5.91. During the year, a total of 7.7 million shares with the value of EUR 51.5 million changed hands on the Nasdaq Helsinki. This is 21.5 percent of the share capital. Bittium Corporation's market capitalization on December 31, 2019 was EUR 232.0 million.

### Dividend and Dividend Policy

Bittium Corporation follows a dividend policy that takes into account the group's net income, financial situation, need for capital and financing growth.

In 2019, Bittium Corporation paid EUR 0.05 per share as dividend based on the adopted balance sheet for the financial period of January 1, 2018–December 31, 2018, representing approximately half of the result of the financial period, and in addition, EUR 0.10 per share as additional dividend, totaling altogether to EUR 0.15 per share. The dividend was paid to the shareholders who are registered as shareholders in the Company's register of shareholders as maintained by Euroclear Finland Ltd on the dividend record date Friday, April 12, 2019. The dividend was paid on April 23, 2019.

The Board of Directors proposes that the Annual General Meeting to be held on April 1, 2020 resolve to pay EUR 0.10 per share as dividend based on the adopted balance sheet for the financial period of January 1, 2019–December 31, 2019. The dividend will be paid to the shareholders who are registered as shareholders in the company's register of shareholders as maintained by Euroclear Finland Ltd on the dividend record date, April 3, 2020. The Board of Directors proposes that the dividend be paid on April 14, 2020.

### Trading Codes

Bittium Corporation has been listed on Nasdaq Helsinki since 1998. Bittium Corporation's company code and trading code in the Nasdaq Helsinki INET system is BITTI and the trading code BITTI.

### Trading codes are:

Nasdaq Helsinki Oy	BITTI
Reuters	BITTI.HE
Bloomberg	BITTIFH

### Shareholders

At the end of 2019, Bittium Corporation had 21,822 shareholders. The ten largest shareholders owned 27.5 percent of the shares. Private ownership was 76.3 percent. The percentage of foreign and nominee-registered shareholders was 3.0 percent at the end of 2019.

### Shareholding of the Board of Directors and CEO

At the end of 2019, the shareholding of the Board of Directors, CEO and the companies controlled by them was 1,539,029 shares, corresponding to 4.3 percent of all shares.

## Information to Shareholders

Press releases, reports, earnings estimates, share price ticker, contact details of analysts and other current investor material are available on the Company's website at [www.bittium.com](http://www.bittium.com). An email-based subscription service for press releases and publications can be found from the Company's website as well.

Trading Volume and Average Share Price 2015–2019



Share Price Development in Nasdaq Helsinki 2015–2019



## Financial Reports in 2020

Bittium Corporation changed its financial reporting practice as of January 1, 2020. The company will continue to publish its half year financial reports and annual financial reports as before, and starts publishing Business Reviews from the financial periods of January–March and January–September. The structure of the Business Reviews will be lighter than that of the financial reports.

In 2020, Bittium Corporation will publish its half year financial report and Financial Statement Bulletin as follows:

- Financial Statement Bulletin 2019: on February 13, 2020, at 8.00 am (CET+1)
- Half Year Financial Report January–June 2020: on August 6, 2020, at 8.00 am (CEST+1)

In 2020, Bittium Corporation will publish its Business Reviews as follows:

- Business Review January–March 2020: on April 30, 2020 at 8.00 am (CET+1)
- Business Review January–September 2020: on October 30, 2020 at 8.00 am (CET+1)

Financial reports will be published simultaneously in Finnish and in English at 8.00 a.m. (CET+1) on Bittium's website at [www.bittium.com/investors](http://www.bittium.com/investors).

## Silent Period

Bittium Corporation observes a three week silent period prior to announcing its financial reports. In 2020 the silent periods are as follows:

January 23–February 13, 2020  
 April 9–April 30, 2020  
 July 16–August 6, 2020  
 October 9–October 30, 2020

## Bittium Corporation's Annual General Meeting 2020

Notice is given to the shareholders of Bittium Corporation to the Annual General Meeting to be held on Wednesday April 1, 2020 at 1.00 p.m. at the University of Oulu, Saalastinsali, at the address Pentti Kaiteran katu 1, 90570 Oulu, Finland.

### Shareholders Registered in the Shareholders' Register

Each shareholder, who is registered on March 20, 2020 in the shareholders' register of the company held by Euroclear Finland Ltd, has the right to participate in the General Meeting. A shareholder, whose shares are registered on his/her personal Finnish book-entry account, is registered in the shareholders' register of the company.

A shareholder, who is registered in the shareholders' register of the company and who wants to participate in the General Meeting, shall register for the meeting no later than on March 27, 2020 by 10.00 a.m. by giving a prior notice of participation. The notice has to be received by the company before the end of the registration period. Such notice can be given:

- a) on the company's website at [www.bittium.com](http://www.bittium.com) as from February 13, 2020 at 10.00 a.m.
- b) by telephone +358 40 344 3322 or +358 40 344 5425 on weekdays between 9.00 a.m. and 3.00 p.m. or
- c) by regular mail to the address Bittium Corporation, General Meeting, Ritaharjuntie 1, 90590 Oulu, Finland.

In connection with the registration, a shareholder shall notify his/her name, personal identification number or business identity code, address, telephone number and the

name of a possible assistant or proxy representative and the personal identification number of a proxy representative. The personal data given to Bittium Corporation is used only in connection with the General Meeting and with the processing of related registrations.

The shareholder, his/her authorized representative or proxy representative shall, where necessary, be able to prove his/her identity and/or right of representation at the General Meeting.

### Holders of Nominee-registered Shares

A holder of nominee registered shares has the right to participate in the General Meeting by virtue of such shares, based on which he/she on March 20, 2020 would be entitled to be registered in the shareholders' register of the company held by Euroclear Finland Ltd. The right to participate in the General Meeting requires, in addition, that the shareholder on the basis of such shares has been registered into the temporary shareholders' register held by Euroclear Finland Ltd at the latest on March 27, 2020 by 10.00 a.m. As regards nominee registered shares this constitutes due registration for the General Meeting.

A holder of nominee registered shares is advised to request without delay the necessary instructions regarding registration in the temporary shareholder's register, the issuing of proxy documents and registration for the General Meeting from his/her custodian bank. The account management organization of the custodian bank has to register a holder of nominee registered shares, who wants to participate in the General Meeting, into the temporary shareholders' register of the company at the latest by the time stated above.

Further information on the General Meeting and participation in the General Meeting is available on the company's website at [www.bittium.com](http://www.bittium.com).

### Proxy Representative and Powers of Attorney

A shareholder may participate in the General Meeting and exercise his/her rights at the meeting by way of proxy representation. A proxy representative shall produce a dated proxy document or otherwise in a reliable manner demonstrate his/her right to represent the shareholder. If a shareholder participates in the General Meeting by means of several proxy representatives representing the shareholder with shares at different securities accounts, the shares by which each proxy representative represents the shareholder shall be identified in connection with the registration for the General Meeting.

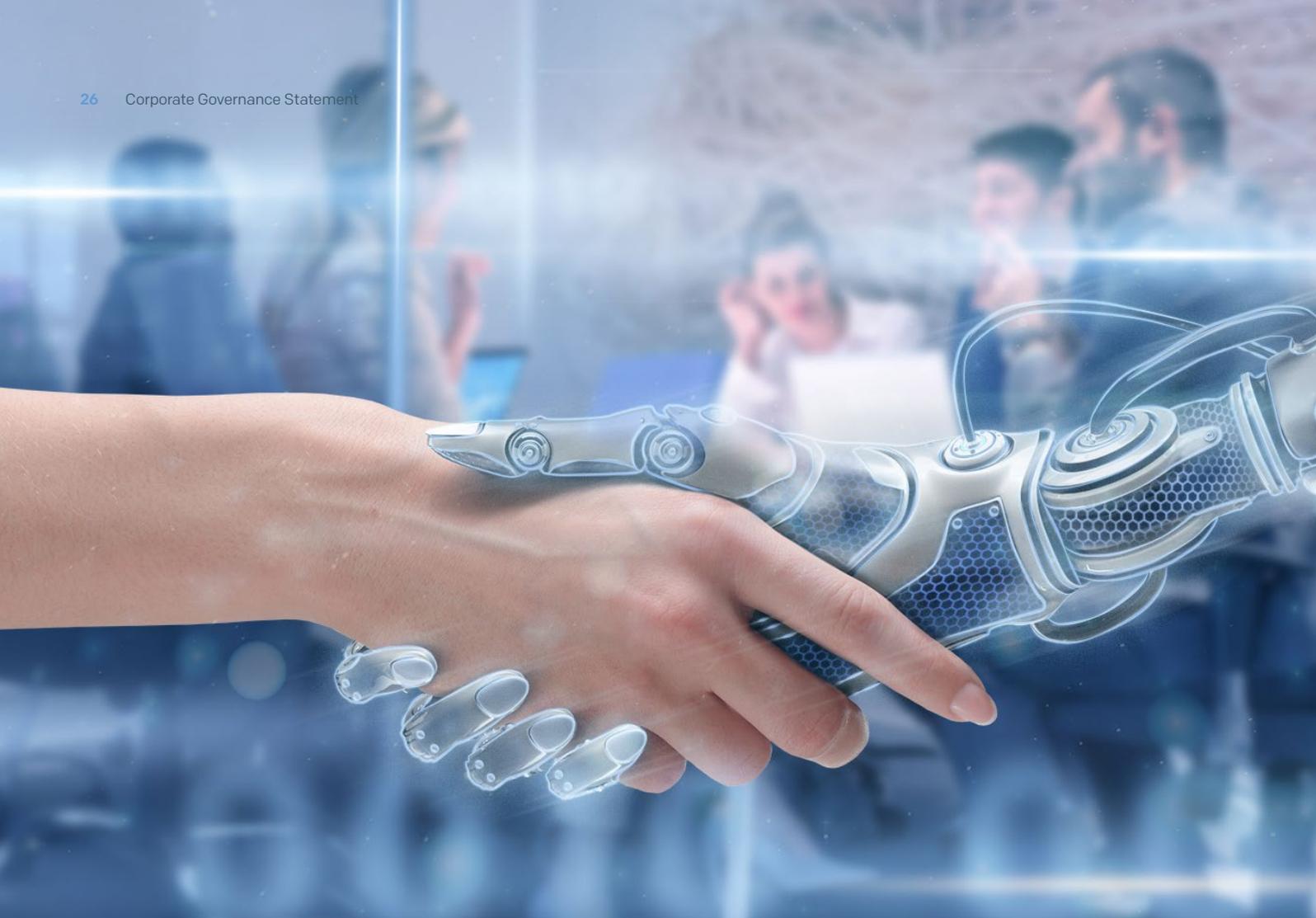
Possible proxy documents should be delivered to the address Bittium Corporation, General Meeting, Ritaharjuntie 1, 90590 Oulu, Finland, before the end of the registration period. The original proxy document should be presented at the general meeting at the latest, if required.

### Documents of the General Meeting

The above-mentioned proposals for the resolutions on the matters on the agenda of the General Meeting as well as this notice are available on Bittium Corporation's website at [www.bittium.com](http://www.bittium.com).

The annual report of Bittium Corporation, which includes the company's annual accounts, the report of the board of directors and the auditor's report, as well as the company's corporate governance statement, and the company's remuneration policy are available on said website no later than on March 11, 2020. The proposals for decisions and other documents mentioned above are also available at the General Meeting. Copies of these documents and of this notice will be sent to shareholders upon request. The minutes of the General Meeting will be available on the above-mentioned website as from April 15, 2020, at the latest.





## Corporate Governance

The governance of Bittium Corporation (hereinafter 'Company') is determined by the Company's Articles of Association, the laws of Finland (such as the Finnish Companies Act and Securities Market Act) and the Company's Corporate Governance Code. The Company follows the Finnish Corporate Governance Code 2020 prepared by the Finnish Securities Market Association and entered into force on January 1, 2020. The Governance Code may be viewed, inter alia, at the Finnish Securities Market Association website at [www.cgfinland.fi](http://www.cgfinland.fi).

In the assembly meeting held on April 10, 2019, the new Board of Directors elected on the same day considered the continuation of the Audit Committee and concluded that the extent of the Company's business still requires that a group with a more compact composition than the Board of Directors deals with the preparation of matters per-

taining to financial reporting and control. The Governance Code recommends that a Committee shall have at least three members. In the assembly meeting held on April 10, 2019, the new Board of Directors resolved to elect Juha Putkiranta (Chairman of the Committee) and Riitta Tiuraniemi as members of the Audit Committee, and to invite authorized public accountant Seppo Laine as external advisor of the Board of Directors. The composition of two members and an external advisor was considered to be in compliance with the recommendation as authorized public accountant Seppo Laine brings continuity and expertise needed in the Committee.

This Statement is made separately from the Report by the Board. The Board's Audit Committee and the Company's auditor have reviewed this Statement.

The statutory governing bodies of the Company are the Shareholders' meeting, Board of Directors, Chief Executive Officer and the Auditor. The Management Group supports the statutory governing bodies of the Company. The Company's domicile is Oulu.

This Statement may be viewed on the Company's website at [www.bittium.com](http://www.bittium.com).

## The Board of Directors

The Board of Directors is responsible for the Company's governance and proper organization of the operations. The Board of Directors comprises of three to seven (3–7) members and in addition it may have one to three (1–3) deputy members. The Annual General Meeting shall elect the members of the Board of Directors for a term which expires at the end of the following Annual General Meeting. The number of terms for the members of the Board of Directors is not limited. The Board of Directors selects a Chairman among its members.

The Board conducts an annual evaluation of the independence of its members in accordance with recommendation 10. A member of the Board is required to submit to the Company the information necessary to conduct the evaluation of independence. A Board member is also required to notify the Company of any changes in information relating to independence.

The Annual General Meeting held on April 10, 2019 decided that the Board of Directors shall comprise six (6) members. Ms. Riitta Tiuraniemi, Mr. Seppo Mäkinen, Mr. Juha Putkiranta, Mr. Petri Toljamo and Mr. Erkki Veikkolainen were re-elected as members of the Board of Directors for a term of office expiring at the end of the next Annual

General Meeting. Further, Mr. Pekka Kempainen was elected as the new member of the Board of Directors for a corresponding term of office. At its assembly meeting held on April 10, 2019, the Board of Directors has elected Mr. Erkki Veikkolainen Chairman of the Board. Further, the Board has resolved to keep the Audit Committee. Mr. Juha Putkiranta (Chairman of the committee) and Ms. Riitta Tiuraniemi were elected as members of the Audit Committee and authorized public accountant Seppo Laine was invited to the Audit Committee as external advisor of the Board of Directors.

## Description of Activities

The Board of Directors has defined a working order and evaluates its performance annually. The Board of Directors shall implement the decisions of the General Meeting. The Board of Directors supervises the operations and management. The Board of Directors makes decisions on the Company's guiding principles for operation, strategy and budget. The Board of Directors decides on mergers and acquisitions and other strategic alliances as well as significant investments and significant matters regarding

organization and finance. The Board of Directors supervises that the control of the Group companies' accounting and financial affairs is duly organized. The Board of Directors appoints the CEO and possible Deputy for him or her as well as approves the Company's organizational structure.

The CEO, CFO and Chief Legal Officer (who acts as secretary of the Board of Directors) attend the meetings of the Board of Directors. Other management attends the meetings when necessary or upon invitation by the Board of Directors. The Chairman of the Board approves the agendas of the meetings of the Board of Directors. The agendas are prepared by the CEO and the Secretary of the Board of Directors.

An annual clock, according to which the regular subjects to be handled are determined, is applied in the Board's work. In addition to the regular subjects of the annual clock, the most important subjects of the Board during the year were seeking for international growth and focusing R&D investments.

The Annual General Meeting decides on the compensation of the members of the Board of Directors and the compensations can be publicly reviewed on the Company's website at [www.bittium.com](http://www.bittium.com).

In 2019, the Board convened 13 times.

The Board members attended to the meetings as follows:

January 1–December 31, 2019	Board	Audit committee
Erkki Veikkolainen	13/13	
Juha Putkiranta	13/13	6/6
Seppo Mäkinen	11/13	
Pekka Kempainen	10/10	
Riitta Tiuraniemi	13/13	6/6
Petri Toljamo	12/13	
Tero Ojanperä	3/3	
Seppo Laine (external advisor of the Board)		6/6

## Diversity Principles of the Board of Directors

In the Company, diversity is seen as an essential part of corporate responsibility and as a factor in success, that enables achievement of strategic targets and continuous improvement of customer intimacy.

In planning the composition of the Board of Directors, the requirements of the Company's business operations, the phases of development and the competence requirements of the Board committees are taken into account. In appointing members of the Board the target is to ensure that the Board as a whole supports the development of the Company's current and future business operations. Diversity plays a part in supporting this goal, so the Company aims to reach a situation where the facts supporting diversity are taken into account as significant criteria in planning the composition of the Board of Directors.

Diversity is considered from different perspectives. From the Company's point of view it is important to have Board members with diverse backgrounds in terms of competence, training, and experience of differing business operations, of varying stages of business development, and of leadership as well as diverse personal characteristics. Experience of international business environments and different cultures in addition to consideration of age and gender will support the diversity of the Board. The objective is that both genders are represented in the Board and the Company aims to maintain a good and balanced distribution of genders.

To fulfill the diversity principles, the diversity principles are taken into account in the process to find and assess member candidates and representatives of both genders are looked for to the process. The status of diversity and progress of the goal mentioned above is monitored in the self-assessment discussions of the Board. A person elected as a Board member of the Company must have the competence required for the position and be able to devote a sufficient

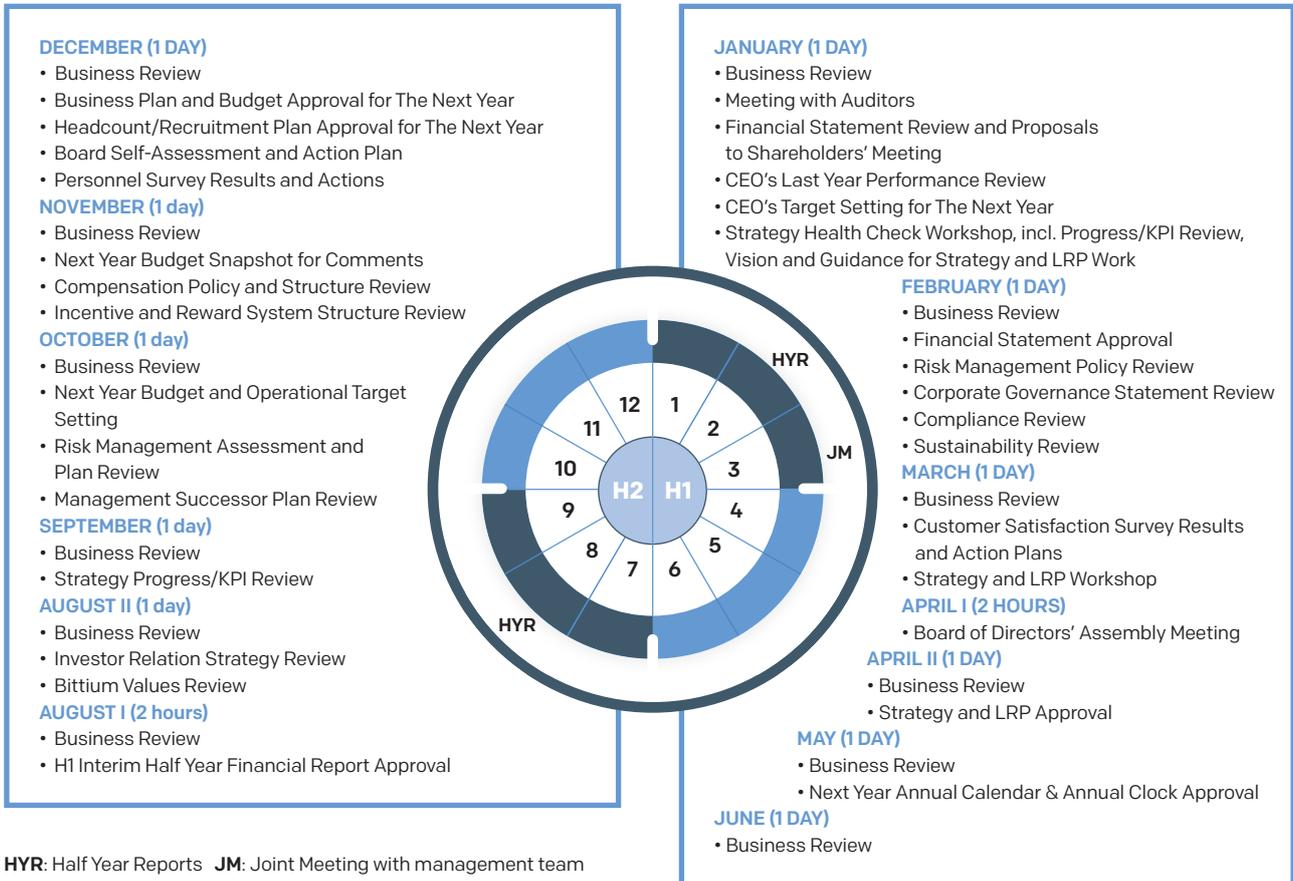
amount of time for the duties required. In forming the composition of the Board long-term needs and successor planning will be taken into account.

According to the Articles of Association, the Board of Directors comprises three to seven (3–7) members and in addition it may have one to three (1–3) deputy members. The composition of the Board and the number of members shall be such that they enable the Board to perform its duties efficiently. The members of the Board are appointed annually at the Company's Annual General Meeting.

During the financial period of January 1, 2019–December 31, 2019, the Board of Directors has comprised six members. Five of the members have been male and one female. The self-assessment discussions of the Board have concluded that the members of the Board are so different in their special skills, backgrounds and age and gender that the Board as a whole has therefore been able to effectively support the business of the Company and its development.

# Board of Directors' Annual Clock 2019

Key topics to be covered during the year



# Bittium Corporation

## The Board of Directors



### Erkki Veikkolainen

b. 1952, M.Sc. (EE), eMBA  
Full-time occupation:  
Mevita Invest Oy, CEO

#### Positions of trust:

- Bittium Corporation (prev. Elektrobitt Corporation), Member of the Board 2008–2015, Chairman of the Board 2015–.
- Lumous lighting Oy, Member of the Board 2019–.
- Elcoflex (Suzhou) Co. Ltd, Member of the Board 2007–.
- Elcoflex Oy, Member of the Board 2015–, Chairman of the Board 2006–2015.
- Maustaja Oy, Member of the Board 2006–.

#### Previous work history:

- Bittium Technologies Ltd. (prev. Elektrobitt Technologies Ltd.), Member of the Board 2011–2015.
- Elektrobitt Corporation, Executive Vice President, Contract R&D and Test Business Units 2002–2003.
- Elektrobitt Technologies Ltd., Managing Director 2001–2003.
- Elektrobitt Ltd., Vice President, Business Development 1998–2001.
- Nokia Mobile Phones, various positions 1985–1998, latest Vice President.

#### Holdings Dec. 31, 2019:

Holds 1,507,539 shares in Bittium Corporation. Independent as regards both the Company and its significant shareholders.



### Pekka Kempainen

b. 1954, Lic.Sc. (Tech.)  
Full-time occupation:  
Professional Board Member

#### Positions of trust:

- Valmet Corporation, Member of the Board 2018–.
- Junttan Ltd, Member of the Board 2018–.

#### Previous work history:

- KONE Corporation, Executive Vice President, Service business 2010–2017.
- KONE Corporation, Executive Vice President & Area Director Asia Pacific, 2004–2010.
- KONE Corporation, Senior Vice President, New Elevator and Escalator Business, 1999–2004.
- KONE Corporation, various positions 1984–1999, last R&D and Technology Director.

#### Holdings Dec. 31, 2019:

Does not hold any shares in Bittium Corporation. Independent as regards both the Company and its significant shareholders.



### Seppo Mäkinen

b. 1952, M.Sc. Physical Chemistry  
Full-time occupation: Professional Board Member

#### Positions of trust:

- Bittium Corporation, Member of the Board 2015–.
- Optomed Corporation, Member of the Board 2019–.
- VideoVisit Oy, Member of the Board 2018–.
- Pathena S.A., Partner 2017–.
- Neurotar Oy, Member of the Board 2015–.

#### Previous Work History:

- Evondos Oy, Member of the Board 2016–2019.
- CBRA Genomics S.A., Member of the Board 2016–2019.
- Valirix Plc, Member of the Board 2013–2017, Advisor 2017–.
- MedGroup Oy, Member of the Board 2013–2018.
- Ginolis Oy, Member of the Board 2011–2018, Chairman of the Board 2011–2014.
- Taikon Advisor, Managing Partner 2010–2016.
- Merieux Développement, Regional Partner, Nordics 2010–2016.
- Ventac Partners, Partner 2012–2016.
- Magnasense Technologies Oy, Member of the Board 2011–2015.
- Arcdia International Oy, Member of the Board 2011–2014.
- Balonco, Senior Advisor, owner 2012–2013.
- Mediracer Ltd., Chairman of the Board 2010–2013.
- RSP Systems, Member of the Board 2010–2011.
- Bio Fund Management Oy, Founding/Managing Partner 1997–2010.
- Sitra, Director in Life Science 1987–1997.
- Millipore/Waters, Sales & Marketing 1983–1987.
- State Institute of Agricultural Chemistry, Chemist 1980–1983.
- Served as a Chairman or Member of the Board in Egalet A/S, SpinX Inc., Chempaq, Profos AG, Ilochip A/S, Exiqon A/S, KSH-Productor Oy, Merlin Diagnostika GmbH, Primex ASA, Rumen Oy, Millimed Inc., BioPorto A/S, Wallace, Kone Instruments, Rados Technologies, MAP Medical Technologies, Pharming NV, Bio-Orbit, Labmaster Oy, Viable Bioproducts, Fluilogic Oy.

#### Holdings Dec. 31, 2019:

Holds 4,308 shares in Bittium Corporation. Independent as regards both the Company and its significant shareholders.



## Juha Putkiranta

b. 1957, M.Sc. Engineering  
Full-time occupation:  
Saafricon Oy, CEO

### Positions of trust:

- Bittium Corporation, Member of the Board 2015– and Chairman of the Audit Committee 2018–.
- Variantum Oy, Chairman of the Board 2016–.
- Aspocomp Oyj, Member of the Board 2016–.
- Nordcloud Oy, Member of the Board 2015–.

### Previous work history:

- Saafricon Oy, CEO and owner 2015–.
- Microsoft Corporation, Corporate Vice President, Company Integration, 2014.
- Nokia Oyj, Executive Vice President, Operations, 2013–2014.
- Nokia Oyj, Senior Vice President, Head of Nokia Supply Chain 2008–2012.
- Nokia Oyj, Senior Vice President, Head of Multimedia, Product Marketing and R&D 2006–2007.
- Nokia Oyj, Senior Vice President, Head of Imaging Business Unit 2003–2005.
- Nokia Oyj, Senior Vice President, Head of Cellular Telephones Unit 2000–2003.
- Symbian Ltd, Member of the Board 1998–2001.
- Nokia Oyj, Vice President, Corporate Planning and Business Development 1997–2000.
- Hewlett-Packard Corporation, Director of Marketing Europe and Africa, electronic measurement solutions 1992–1997.
- Siar Oy, consultant 1986–1987.
- Nokia Oyj, various project, sales and marketing management positions, information solutions unit 1979–1986.

### Holdings Dec. 31, 2019:

Holds 14,308 shares in Bittium Corporation. Independent as regards both the Company and its significant shareholders.



## Riitta Tiuraniemi

b. 1962, M.Sc. Electrical Engineering  
Full-time occupation:  
Professional Board Member

### Positions of trust:

- Bittium Corporation, Member of the Board, Member of the Audit Committee 2018–.
- Finnish Industry Investment Ltd, Member of the Board and Remuneration Committee 2014–.
- Skoggi Oy, Founder and Chairman of the Board 2019–.

### Previous work history:

- HealthOperator Ltd., CEO, Founder and Member of the Board 2014–2019.
- DNA Ltd, CEO 2009–2013.
- DNA Finland Ltd, CEO 2005–2008.
- DNA Networks Ltd, CEO 2004–2005.
- DNA Networks Ltd, CTO, Member of Management Group 1999–2005.
- Omnitele Oy, Department Head, Mobile Communications Consultancy, Member of Management Group 1990–1999.
- Technology Development Centre, TEKES, Finland Senior Technical Adviser, Information Technology 1996–1997.
- Nokia Telecommunications, Mobira Thesis, System Designer, Chief System Designer 1986–1990.

### Holdings Dec. 31, 2019:

Holds 1,437 shares in Bittium Corporation. Independent as regards both the Company and its significant shareholders.



## Petri Toljamo

b. 1974, M.Sc., Radio Engineering, eMBA  
Full-time occupation:  
Keysight Technologies Inc., NEMO Wireless Network Testing, Vice President and Keysight Finland Oy, Managing Director

### Positions of trust:

- Bittium Corporation, Member of the Board 2018–.
- Keysight Finland Oy, Chairman of the Board 2017–.
- Manea Capital Oy, Chairman of the Board 2016–.

### Previous work history:

- Anite Finland Oy, Managing Director and Anite Network Testing Business Unit, Managing Director 2013–2017.
- Pulse Electronics, Mobile Division Director and Pulse Finland, Managing Director 2011–2013.
- Elektrobit Wireless Communications, Vice President, Device and Network Solutions Business Area 2010.
- Elektrobit Wireless Communications, Vice President, Mobile Device Solutions Business Area 2008–2009.
- Elektrobit Wireless Communications, Cellular Terminal Solutions Business Area, Director 2007–2008.
- Elektrobit Wireless Communications, Platform R&D and Head of Terminal Programs, Director 2005–2006.
- Elektrobit GmbH, Business Development, Director 2004–2005.
- Elektrobit Oy, various product development, project management and business positions 1996–2004.

### Holdings Dec. 31, 2019:

Holds 1,437 shares in Bittium Corporation. Independent as regards both the Company and its significant shareholders.

## The Board Committees

The proper function of the corporate governance of a company requires that Board work is organized as efficiently as possible. For this reason, the Company has established an Audit Committee.

The Directors on the Committee can concentrate on the matters delegated to the Committee more extensively than the entire Board of Directors. The purpose of the Committee is to enhance the efficient preparation of matters within the competence of the Board, increase transparency and ensure the quality and efficiency of the decision-making of the Board.

The Committee assists the Board by preparing matters falling within the competence of the Board. The Board remains responsible for the duties assigned to the Committee. The Committee has no autonomous decision-making power, and thus the Board makes the decisions within its competence collectively.

The Committee shall regularly report on its work to the Board. The reports shall include at least a summary of the matters, addresses and measures taken by the Committee.

The central duties and operating principles of the Audit Committee are described below. The Annual General Meeting decides on the compensation of the members of the Board Committee and such compensations can be publicly viewed on the Company's website at [www.bittium.com](http://www.bittium.com).

### Audit committee

The Audit Committee has the following duties:

- to monitor and assess the reporting process of financial statements;
- to monitor and assess the financing reporting system;
- to supervise the financial reporting process and risk management process;
- to monitor and assess the efficiency of the Company's internal control, internal audit, if applicable, and risk management systems;
- to monitor and assess how agreements and other legal acts between the Company and its related parties meet the requirements of the ordinary course of business and arm's -length terms;
- to handle the Company's corporate governance statement and non-financial report;
- to monitor the Company's auditing;
- to monitor and evaluate the independence of the auditor and, in particular, the offering of services other than auditing services by the auditor; and
- to prepare the appointment of the Company's auditor.

The Chairman and the members of the Audit Committee are appointed by the Board of Directors of the Company. At least one member of the audit committee must have expertise in accounting or auditing. The Board of Directors elected in the Annual General Meeting held on April 11, 2019 decided in its assembly meeting held on the same day to elect Mr. Juha Putkiran-ta (Chairman of the Committee) and Ms. Riitta Tiuraniemi as members of the Audit Committee. All members of the Committee are independent from immediate interest of both the Company and its significant shareholders and they have long term experience in business management.

The Board of Directors decided further in its same meeting to invite authorized public accountant Seppo Laine as external advisor of the Board of Directors.

In addition to Committee members, other regular participants to the committee meetings are CEO, CFO and CLO who acts as the Committee's secretary and optionally external auditors. Further, the Committee members may meet the external auditors without the operative management being present in such meetings. In 2019, the Audit Committee convened six (6) times to ordinary meetings. The Committee has evaluated, prepared and reviewed, inter alia, the following subject matters during the financial period of January 1, 2019–December 31, 2019:

- Financial Statements of 2018;
- Half Year Financial Report of 2019;
- Annual audit plan for 2019;
- Observations based on auditing during the financial period;
- Starting to prepare the appointment of the Company's auditor;
- Observation by the internal control;
- Cash flow monitoring and evaluation of sufficiency of financing;
- M&A related issues and their effects on the result, balance sheet and financing status of the Group;
- Group legal structure related questions; and
- Impairment testing of the subsidiary shares and goodwill.

During 2020 the Committee's focus areas are:

- R&D process's analyzing, further development and improvement of predictability; and
- Improvement of business's awareness of net working capital and cash flow items, and taking them better into account in decision making and financial reporting.

## Chief Executive Officer (CEO)

The CEO is in charge of the operative management of the Company in accordance with the Finnish Companies Act, the Articles of Association as well as the instructions and orders given by the Board of Directors. The CEO is responsible for the preparation of the Board meetings and implementation of any decisions made therein. Further, the CEO is responsible for ensuring that the Company's accounting methods comply with the applicable law and that the financial matters are being handled in a reliable manner. The CEO prepares strategy, long-term planning, investments, mergers and acquisitions, financing and makes decisions thereof to the extent that such decisions are not tasks of the Board of Directors. The CEO is responsible for financial planning, the Company's communications and investor relations.

The Board of Directors defines and approves the essential terms of the service of the CEO, including the CEO's remuneration, in the form of a written agreement. The CEO's service contract is effective until further notice and can be terminated by the Company with twelve (12) and the CEO with six (6) months' written notice.

The pension security of CEO is statutory and he does not have supplementary pension. According to the pension legislation, the lowest limit of the pension age for CEO is 65 years and 3 months at the moment.

### Hannu Huttunen

Chief Executive Officer, 2015–.  
b. 1966, M.Sc. (Econ.)

#### Positions of trust:

- Technology Industries of Finland, Member of the Board 2017–.
- Advisory Board of Oulu University 2019–.

#### Previous work history:

- Elektrobit Technologies Ltd., President, Wireless Business Segment 2010–2015.
- Tekniseri Oy, Member of the Board 2012–2016.
- EXFO Inc., Vice President, Wireless Division (previously NetHawk Oyj) 2010.
- NetHawk Oyj, CEO 2003–2010, NetHawk Oy, Executive Vice President 2002–2003.
- Nokia Mobile Phones Oy, Vice President, IP Convergence 2002, Vice President Special Products Business 1998–2002, NMT450 Business unit leader 1995–1998.

#### Holdings Dec. 31, 2019:

Holds 10,000 shares in Bittium Corporation.





## Management Group

The management group supports the CEO in his tasks and consists of the CEO as the chairman, CFO, Chief Legal Officer, Director Corporate Communications and Marketing, Directors responsible for product and service areas, Vice President responsible for Engineering and Senior Vice President responsible for Sales. The management group supports the CEO in operative management, implementation and follow-up of the CEO's competence area, in particular as regards the operative business, the management and development of the business portfolio, asset management and taxation, internal audit, Corporate Governance of the Company, investor and marketing communications and risk management.

### Karoliina Fyrstén

Vice President, Communications and Marketing, 2015–. b. 1977, M.A. International Business Communications

**Previous work history:**

- Elektrobit Corporation, Corporate Communications Manager, 2015.
- Elektrobit Automotive GmbH, Corporate Communications Manager, 2013–2015.
- Elektrobit Corporation, Corporate Communications Manager, 2009–2013.
- Elektrobit Corporation, Internal Communications, 2006–2008.
- Elektrobit Group Plc, Communications, 2002–2006.
- JOT Automation Group Plc, Investor Relations and Communications, 2001–2002.

**Holdings Dec. 31, 2019:**

Holds 1,600 shares in Bittium Corporation.

### Jari-Pekka Innanen

Vice President, Engineering, 2015–. b. 1968, M.Sc. (ME)

**Previous work history:**

- Elektrobit Wireless Communications Ltd., Vice President, Engineering, Wireless Business Segment, 2011–2015.
- Elektrobit, Senior Manager, WS Global Resourcing, 2007–2010.
- Elektrobit, Manager, Head of Global HW, 2006–2007.
- Elektrobit, Manager, Mobile Terminal Solutions, Head of HW Competence areas, 2006.
- Elektrobit, Manager, Mechanical Competence Center, 2003–2005.
- Elektrobit, Project Manager, 1999–2003.
- Elektrobit, Mechanical Designer, 1998–1999.
- Outokumpu Stainless Steel, Supervisor Cold Rolling Mills, 1994–1997.

**Holdings Dec. 31, 2019:**

Holds 7,000 shares in Bittium Corporation.



## Kari Jokela

Chief Legal Officer, 2014–.  
b. 1969, LL.M., trained on the bench,  
Mag.lur. (Saarbrücken)

### Previous work history:

- Elektrobit Technologies Ltd., Senior Legal Counsel, 2012–2014.
- Elektrobit Corporation, Senior Legal Counsel, 2010–2012.
- Elektrobit Automotive GmbH, Senior Legal Counsel, 2008–2010.
- Elektrobit Corporation, Senior Legal Counsel, 2008.
- Polar Electro Ltd., Group Legal Counsel, 2000–2007.
- Asianajotoimisto Gilbert, Segall and Young Oy, Attorneys at Law Helsinki, attorney, 1998–2000.

### Holdings Dec. 31, 2019:

Holds 1,100 shares in Bittium Corporation.



## Tommi Kangas

Senior Vice President,  
Connectivity Solutions, 2019–.  
b. 1971, Master of Engineering,  
Machine Automation

### Previous work history:

- Bittium, Sales Director, Connectivity Solutions Product and Service Area and Sales, 2015–2019.
- Elektrobit, Senior Account Manager, Wireless Solutions Business Segment, 2010–2014.
- Elektrobit, Key Account and Business Line Manager, Mobile Infra Solutions Business Area, 2009–2010.
- Elektrobit, Business Line Manager, Radio Network Solutions Business Unit, 2006–2008.
- Elektrobit, Project Manager, Radio Network base station project, 2004–2005.
- Elektrobit, Mechanical Chief Designer and Specialist, 2000–2004.
- Elektrobit, Mechanical Designer, 1998–2000.

### Holdings Dec. 31, 2019:

Holds 100 shares in Bittium Corporation.



## Pekka Kunnari

Chief Financial Officer, 2015–.  
b. 1967, M.Sc. (Econ.), LL.M.

### Positions of trust:

- Partnera Ltd, Member of the Board, 2019–.

### Previous work history:

- Elektrobit Technologies Ltd., Vice President, Finance, 2011–2015.
- Elektrobit Corporation, Director, Finance, 2005–2011.
- Elektrobit Inc., Group Controller, 2004–2005.
- Elektrobit Group Corporation, Group Controller, 2003–2004.
- Elektrobit Ltd., Business Controller, 2001–2003.
- RPC Rapid Prototyping Center Oy, Finance Manager, 2000–2001.
- Tilintarkastajien Ltd. - Ernst & Young, Auditor, 1998–2000.
- Tuottotieto Ltd., Business Consultant, 1994–1998.

### Holdings Dec. 31, 2019:

Holds 3,000 shares in Bittium Corporation.



### Sammy Loitto

Senior Vice President, Sales, 2018–.  
b. 1980, MBA, M. Eng. (Industrial Management)

**Previous work history:**

- Bittium Corporation, Director, Corporate Business Development, 2017–2018.
- Jolla Oy, Vice President, Sales & Business Development, 2016–2017.
- Gryphon Secure Oy, Vice President, Sales & Business Development, 2015–2016.
- Airbus DS Finland Oy, Senior Vice President, Sales, Solution & Product Management, 2009–2015.
- Telia Finland Oyj, Product Development Manager, 2004–2009.

**Holdings Dec. 31, 2019:**

Holds 200 shares in Bittium Corporation.

### Arto Pietilä

Senior Vice President,  
Medical Technologies, 2016–.  
b. 1958, M.Sc. (Applied Electronics)

**Previous work history:**

- Bittium Wireless Ltd., Senior Vice President, Operations, 2015–2016.
- Elektrobit Wireless Communications Ltd., Senior Vice President, Operations, Wireless Business Segment, 2010–2015.
- Elektrobit Wireless Communications Ltd., Senior Vice President, Operations, Wireless Solutions Business Unit, 2008–2010.
- Elektrobit Wireless Communications Ltd., Executive Vice President, Mobile Terminal Solutions Business Unit, 2006–2008.
- Elektrobit Wireless Communications Ltd., Executive Vice President, Contract R&D Business Unit, 2004–2006.
- Elektrobit Technologies Ltd., Managing Director, 2004–2006.
- Elektrobit Ltd., Managing Director, 2002–2004.
- Elektrobit Ltd., Vice President, Contract R&D, 2001–2002.
- Polar Electro Oy, President & CEO, 1999–2001.
- Polar Electro Oy, Executive Vice President, 1996–1999.
- Polar Electro Oy, Technical Director, 1992–1996.
- Polar Electro Oy, Product Development Manager, 1986–1992.
- Polar Electro Ky/Oy, SW/HW Design Engineer, 1980–1986.

**Holdings Dec. 31, 2019:**

Holds 80,000 shares in Bittium Corporation.

### Jari Sankala

Senior Vice President,  
Defense & Security, 2016–.  
b. 1966, M.Sc. (Electrical Engineering,  
Digital Communications)

**Previous work history:**

- Bittium Corporation, Senior Vice President, Sales, 2015–2016.
- Elektrobit Wireless Communications Ltd, Senior Vice President, Sales & Marketing, Wireless Business Segment, 2014–2015.
- Elektrobit Wireless Communications Ltd, Executive Vice President, Defence and Security, 2011–2014.
- NetHawk Group, Executive Vice President of Sales & Marketing, 2005–2011.
- NetHawk Germany, Managing Director, 2001–2005.
- Siemens AG, Sales Director Northern Europe, Mobile Networks, Germany, 1996–2001.

**Holdings Dec. 31, 2019:**

Holds 27,500 shares in Bittium Corporation.

## Election and Remuneration of the Auditor

The Company shall have one (1) auditor that has qualified as Certified Public Accountant and if the auditor is not an auditing company as defined by the law, one (1) deputy auditor shall be elected. The term of office of the auditor expires at the end of the following Annual General Meeting.

The General Meeting 2019 re-elected Ernst & Young Oy, authorized public accountant firm, auditor of the company. Ernst & Young Oy has notified that Mr. Jari Karppinen, CPA, will act as the responsible auditor. The General Meeting decided that the remuneration to the auditor shall be paid against the auditor's reasonable invoice.

The auditor's fees in 2019 amounted to EUR 114,000 (EUR 112,000 in 2018). Of the aggregate fees, EUR 92,000 was attributable to auditing (EUR 90,000 in 2018), EUR 7,000 to tax advice (EUR 16,000 in 2018) and EUR 15,000 to other services (EUR 6,000 in 2018).

## Main Features of Internal Control and Risk Management Processes Related to Financial Reporting Processes

### Risk Management

The purpose of risk management is to secure positive development of earnings of the Company and the continuation of the business by implementing risk management cost-effectively and systematically throughout the different businesses.

Risk management is part of the Company's strategic and operative planning, daily decision making process and internal control system. Business objectives, risks and risk management operations are combined through risk management as one chain of events.

### Main Principles of Organizing Risk Management

Company adheres to the risk management policy approved by the Board.

Risk management contains all actions, which are connected to setting up targets, identification of risks, measurement, review, handling, reporting, follow-up, monitoring and reacting to risks.

#### The Aim of Risk Management of the Company is to:

- systematically and thoroughly identify and assess all major risks, which threaten the achievement of objectives, including risks related to business operations, property, agreements, competence, currencies, financing and strategy;
- optimize business opportunities and secure continuation of business;
- recognize and identify uncertainties and subsequently develop the prediction of risks and measures needed to manage risks;
- take only calculated and assessed risks with respect to e.g. expanding the business, increasing market share and creating new businesses;
- avoid or minimize liability risks;
- ensure the safety of products, solutions and services;
- establish a safe working environment for the employees;
- minimize possibilities for unhealthy occurrences, crimes or misconduct by operating procedures, control and supervision;
- inform interest groups of risks and risk management; and
- be cost-effective in risk management.

#### The Aim of Risk Management is not to:

- exclude all risks at their entirety;
- adopt unnecessary control and management procedures; or
- take bureaucratic processes and procedures into use.

### Main Principles of the Risk Management Process

In connection with the strategy process and annual planning the CEO reviews business risks which could endanger the achievement of strategic or financial targets. Risk assessment reports are produced to support the strategy process. Strategic and operative risks are monitored through monthly reporting by businesses in the Board of the Company. Businesses must produce assessments of risks in their designated areas of responsibilities and provide action plans to manage risks as well as to report on measures taken including the stage and effectiveness of such measures.

### General Description of Internal Control and Operational Procedures

Internal control is a process applied by the Board of Directors, management and all levels of personnel in the Company to ensure that management has reasonable assurance that:

1. operations are effective, efficient and aligned with strategy;
2. financial reporting and management information is reliable, complete and timely made; and
3. the Company is in compliance with applicable laws and regulations as well as the Company's internal policies and ethical values including sustainability.

The first category addresses the basic business objectives, including performance and profitability goals, strategy, implementation of objectives and actions and safeguarding resources. The second category relates to the preparation of reliable published financial statements, including half year financial reports and condensed financial statements and selected financial data derived from such statements, such as earnings releases, reported publicly. The third category deals with complying with those laws and regulations to which the Company is subject to.



## Internal Control Framework of the Company

Bittium's internal control framework consists of:

- the internal control, risk management and corporate governance policies and principles set by the Company's Board of Directors;
- management overseeing the implementation and application of the policies and principles;
- finance function and business controllers monitoring the efficiency and effectiveness of the operations and reliability of the financial and management reporting;
- enterprise risk management process identifying, assessing and mitigating risks threatening the realization of the Company's objectives;
- monitoring possible agreements and other legal acts between the Company and its related parties;
- compliance procedures making sure that all applicable laws, regulations, internal policies and ethical values (including sustainability) are adhered to;
- effective control environment at all organisational levels including control activities tailored for defined processes and creating group minimum requirements for product and service areas as well as for geographical areas;

- shared ethical values and strong internal control culture among all employees; and
- internal audit assignments reviewing the effectiveness of the internal controls as needed.

## Risks and Controls in Core Business Processes

Risk management procedures are in place for business processes in the form of defined control points:

- relevant process risks are identified;
- common control points/Company's minimum requirement control points are identified;
- common control points are implemented in business processes; and
- additional control points can be determined as needed at business or functional levels.

Control activities are the policies and procedures that help ensure that management directives are carried out. They help ensure that necessary actions are taken to address risks to achievement of the Company's objectives. Control activities are set throughout the organization, at all levels and in all functions. They include various range of activities including but not limited to approvals, authorizations, verifications, reviews of

operating performance, securing of assets and segregation of duties.

## Internal Controls Over Financial Reporting

The Company's external financial reporting process, internal control and risk management systems are briefly described in this section. The main focus is on financial accounting and related controls.

### Financial Reporting Organization

The financial management of the Company is responsible for organizing the accounting, money transactions and other daily financial operations of the companies belonging to it as well as organizing the internal reporting that supports the business.

The tasks of the Company's financial administration consist of, inter alia, monthly consolidation of the Group entity, preparation of half-year financial reports and consolidated financial statements, management and investment of monetary assets of the Group, management of liabilities, protection against exchange risk, and transfer pricing. The finance function of the Company implements operative supervision under the CFO who reports any supervisory findings to the Audit Committee. The tasks and

responsibilities of the accounting function of the parent company and each subsidiary are included in the job descriptions of the teams and employees.

### Financial Reporting Systems

Consolidated financial statements are prepared by using the chosen consolidation tool. The accounting of the Group's subsidiaries is done by using the local accounting systems from which the actual figures are reported either manually or by automatic transfer to the group consolidation system. The accounting system in use includes general ledger accounting, accounts payables and accounts receivables. Current assets and payroll accounting is organized through various programs or purchased as an outsourced service. Purchase invoices are circulated through electronic invoice processing system. Global forecasts and budgets are prepared by using the forecast and reporting program managed by the finance function.

### Internal Controls

The Company's internal control mechanisms are based on policies, instructions, limited process descriptions, authorization matrix, financial reporting review meetings, and segregation of key accounting duties.

### Compliance Procedures

Compliance processes are in place at all levels of the organization to ensure that all applicable laws, regulations, internal policies and ethical values including sustainability are adhered to. The management and businesses are responsible for following up developments in legislation and regulations in their respective areas and communicating them to the organization. The members of the Management Group are responsible for setting up adequate compliance controls and compliance related training in their units. Chief Legal Officer of the Company coordinates the appropriateness and compliance of the compliance processes.

## Roles and Responsibilities Regarding Risk Management and Internal Control

The key roles and responsibilities regarding the Company's internal control and risk management are defined as follows:

### Board of Directors

The Board of Directors is ultimately responsible for the administration and the proper organization of the operations of the Company. According to good corporate governance, the Board also ensures that the Company has duly endorsed the corporate values applied to its operations. The Board approves the internal control, risk management and corporate governance policies and guidelines. The Board establishes the risk-taking level and risk bearing capacity of the Company and re-evaluates them on a regular basis as part of the strategy and goal setting of the Company. The Board reports to the shareholders of the Company.

### Audit Committee

Audit Committee is responsible for the following internal control related duties:

- to monitor the reporting process of financial statements;
- to supervise the financial reporting process;
- to monitor the efficiency of the company's internal control, internal audit, if applicable, and risk management systems;
- to review the description of the main features of the internal control and risk management systems pertaining to the financial reporting process, which is included in the company's corporate governance statement; and
- to monitor the statutory audit of the financial statements and consolidated financial statements.

More detailed descriptions how the Audit Committee is fulfilling its monitoring role are defined in the Committee's annual plan. The Audit Committee reports to the Board of Directors of the Company.

### Chief Executive Officer

CEO is in charge of the day-to-day management of the Company in accordance with the instructions and orders given by the Board. The CEO sets the ground for the internal control environment by providing leadership and direction to senior managers and reviewing the way they are controlling the business. The CEO is in charge of the risk management process of the Company and its continuous development, allocation of resources to the work, review of risk management policies as well as defining the principles of oper-

ation and overall process. The CEO reports to the Board on risk management as part of the monthly reporting. The CEO and the Management Group, which operates under the CEO, are responsible for the management of risks endangering the fulfillment of objectives set for the Company.

### Management Group

The members of the Management Group are responsible for internal control implementation in their responsibility areas. More specific internal control policies and procedures are established within the principles set by the Board and CEO. Additionally, the members of the Management Group are responsible for implementing risk management practices in planning cycle and daily operations, and ensure the adherence of:

- laws;
  - regulations;
  - internal policies; and
  - ethical values
- in their designated responsibility areas.

The CFO:

- ensures a setup of adequate control activities for product and service areas in cooperation with the business management;
- follows the adequacy and effectiveness of control activities; and
- ensures that external reporting is correct, timely and in compliance with regulations.

Finance function does not have a separate internal control function. CFO reports any supervisory findings to the Audit Committee.

Chief Legal Officer ensures that the Group's corporate governance practices comply with the law and that legal matters of the Group are handled appropriately, in particular the contractual risks relating to business operations.

### Internal Audit

The Company has no specific internal audit organization. This is taken into account in the content and scope of the annual audit plan. On the one hand, external auditing focuses on specific areas in turn to be audited, and on the other hand, on separately agreed priority areas.

## Insider Guidelines

The Company adheres to the Insider Guidelines for Listed Companies prepared by Nasdaq Helsinki Ltd (previously NASDAQ OMX Helsinki Ltd, OMX Nordic Exchange Helsinki Ltd and Helsinki Stock Exchange), the Central Chamber of Commerce and the Confederation of Finnish Industries. The Company has complemented the Guidelines by its internal insider guidelines. The insider and trading guidelines approved by the Company include regulations on insiders, publication and postponement of publication of inside information, prohibited use of inside information, insider registers, duty of notification of managers' and their closely associated persons' transactions, and personnel's own trading with the Company's financial instruments. The purpose of the guideline is to explain the content of the guideline published by Nasdaq Helsinki Ltd and other regulations and restrictions relating to the matter, and to unify and coordinate the processing of insider and trading matters within Bittium.

The managers of the Company must comply with the EU Market Abuse Regulation's prohibition on dealing in the Company's financial instruments (closed period). In accordance with the Company's Board of Directors' decision, the Company has in addition determined certain time periods during which persons taking part in the preparations of the Company's financial reporting, and other persons who have access to information pertaining to the Company's financial status, are prohibited to trade the Company's financial instruments. The purpose of the trade restrictions is to control trading of the Company's financial instruments, and thereby increase trust to the Company and the operation of the securities market. Trading with the Company's financial instruments is completely prohibited for the aforementioned persons for a period of 30 days before the publication of earnings information of the Company. The most common publications are the release of half year report and release of the Company's financial statements. The restriction is applicable also to any possible preliminary information regarding the financial statements and half year report.

Persons included in a project-specific insider register are prohibited from all trading and business transactions until the project has expired or has been publicly announced. If the project falls upon another listed company or may affect the price of the financial instruments of another listed company, the project-specific insiders have no right to trade with such company's financial instruments.

The Company voluntarily maintains on its website a list of the financial instruments owned by the Company's managers or by the institutions operating under the authority of the managers. The list is updated on the last day of each month.

## Related Party Transactions

The purpose of Company's Guidelines on Related Party Transactions is to ensure that any business transactions involving persons belonging to the Company's related parties are made independently and based on market terms. This also applies to business transactions that otherwise may raise suspicions on whether the transaction was made on market terms. The Company assesses and monitors that any related party transactions promote the purpose and interests of the Company and are commercially justified and overall in the best interests of the Company and that any conflicts of interest are duly taken into account when making decisions on related party transactions.

According to the definition in the Limited Liability Companies Act, a related party transaction is not part of the company's ordinary course of business or is made in deviation from customary commercial terms. This kind of related party transactions are uncustomary in the company's business. In addition to the general monitoring concerning related party transactions, the Company prepares a special report on transactions that are not part of the Company's ordinary course of business or are made in deviation from customary commercial terms.

The Company has defined its related parties according to the IAS 24.9 standard and maintains an up-to-date register of major business transactions between the Company and its related parties, the parties, and the key terms of such transactions. The information about the related parties is collected annually from the persons belonging to the Company's related parties and serving the Company. The Company monitors possible related party transactions as a part of its internal control. Roles and responsibilities regarding internal control are described on the Company's internet site. In addition, the above mentioned persons are obliged to notify the Company's related party administration of any related party transactions which have come to their knowledge. Such notification must be made without delay after receiving such information. The transactions are considered major if their total amount exceeds € 20,000 during the financial period.

The Company's related party register is not public, and any information entered in it will not be disclosed to third parties, with the exception of any authorities and the auditor entitled to receive such information. Any major transactions to be performed with the Company's management and its related parties shall be approved by the Board of Directors.

The Company discloses the related party transactions relevant to the shareholders at the latest when the transaction is binding on the Company.

The principles of the Guidelines on Related Party Transactions are observed throughout the Bittium Group and in the decision-making concerning all of the Group companies.





OVER 1,000  
STUDENTS  
VISITED  
BITTIUM



**CUSTOMER  
SATISFACTION  
SURVEY**  
NPS



**EMPLOYEE SURVEY  
RESPONSE RATE**



**SUSTAINABILITY SURVEY**  
Sustainability NPS



**ELECTRICITY  
CONSUMPTION**



**CARBON FOOTPRINT**  
1,755 kg CO<sub>2</sub>e  
/ person / year



**ISO 27001**  
information security  
certificate for Bittium's  
operations

**SHARE OF SOLAR POWER**  
As high as 11.9% of the energy  
requirements of the Oulu office  
on a monthly basis

**SUSTAINABILITY HIGHLIGHTS IN 2019**

# Sustainability at Bittium

Bittium is a global technology company whose sustainability is reflected in its operations, products, product life cycles, supply chains and the way the company creates value for the surrounding society. The sustainability is based on Bittium's strategy and values, and it is part of the company culture.

# Sustainability Management

## Sustainability Organization and Risk Management

The Board of Directors of Bittium Corporation discusses sustainability issues on the basis of the Management Group's proposals, and the Audit Committee discusses and prepares sustainability-related matters as needed.

The Management Group discusses sustainability issues, monitors the effectiveness of sustainability measures and sets sustainability targets in its twice-yearly management review. The Management Group is also responsible for implementing sustainability plans and actions in day-to-day operations.

Bittium also has a separate sustainability working group that is responsible for monitoring and the impact assessment of sustainability measures and reporting as well as risk management and assessment. The working group has six (6) members: CEO; Chief Legal Officer; Vice President, Communications and Marketing; Director, Human Resources; CFO; and Head of Quality, the Environment and Technology Management. The responsibility working group holds quarterly meetings and prepares the sustainability report. The Bittium management and the Board of Directors review the sustainability report annually.

The sustainability report describes the applicable methods that guarantee a sufficient level of diligence. The management of risks related to operations and the operating environment as well as the relevant processes are described in Bittium's Corporate Governance Statement.

## Stakeholder Cooperation

Bittium's operations affect many different stakeholders. Understanding their views and expectations is important for our operations and success. Open dialogue with our stakeholders helps us to develop our operations, products and solutions as well as the way in which we, as a company, take a goal-driven approach to finding solutions to social challenges.

Bittium works in cooperation with national as well as international stakeholders. Our stakeholders include our employees, customers, different actors and other third parties, partners, the authorities, shareholders and analysts as well as different communities. Our stakeholder-related activities are guided by good management practice as well as our ethical principles and Code of Conduct.



### Personnel

We arrange several different personnel events each year where our employees get the opportunity to ask questions and give feedback. We also collect feedback from our personnel annually through anonymous employee survey. Equal treatment and open interaction are important to our employees. They expect us to offer interesting and meaningful work and opportunities for professional growth.

### Customers

We get constant feedback from our customers, primarily by continuously staying in touch with them and through various annual surveys. The Scrum and Agile methods we use — along with the real-time systems that support them — enable ongoing monitoring and open dialogue. This enables us to quickly react to potential problems. Our customers value competitive and reliable products and services as well as our sustainable and real-time approach to our operations.

### Suppliers and Partners

When it comes to our suppliers and other partners, we have often worked with them in close cooperation for a long time following established rules and ways of working. Constant communication enables open dialogue. Our suppliers and partners expect fair and sustainable operations and long-term cooperation from us. As for us, we expect our suppliers and partners to work in a sustainable way, and we monitor this on a regular basis.

### Authorities

Bittium maintains a regular line of communication with the authorities, for example, with regard to export control and information security issues. We regularly monitor our compliance with the laws and regulations. Applying them to our business operations requires open and ongoing interaction with the authorities.

### Local Cooperation

As part of our sustainable corporate citizenship, Bittium actively collaborates with different communities. We meet the expectations of different communities in a variety of ways. We regularly support educational institutions and schools to introduce young students to working life – and not forgetting the teachers. Thanks to this collaboration, we are also able to recruit new and enthusiastic graduates. Research and development cooperation with companies and research institutions broadens our expertise and makes it possible to mutually promote development.

### Shareholders and Investors

Shareholders, investors and analysts expect Bittium to provide long-term value and act in a sustainable manner. We hold discussions with them at various events and the Annual General Meeting.

## Our Value Creation Model

### Our Key Resources

#### People

- Almost 700 specialists
- Investments in personnel well-being and competence development

#### Customer Relationships

- Wide customer base in the public and private sector

#### R&D and materials

- A corporate culture that supports innovation
- Investments in product development
- IPR management
- Sustainable materials purchasing

#### Profitable and Responsible Business

- Strong balance sheet
- Investments
- Sustainable way of working
- Comprehensive quality, environment and safety systems
- Sustainable use of natural resources (energy and water)
- Compliance processes

#### Stakeholders

- R&D cooperation
- Cooperation with stakeholders and the authorities
- Trust-based partnerships

### Our Mission

We adapt our deep knowledge to deliver superior technology innovations to enhance connectivity, bring safety and improve health in the society.



Our product and service areas deliver solutions that enable our customers to respond to the changes and opportunities created in the operating environment by new technologies.



### Our Values

Trust. Courage. Innovation.

## Outputs and Impacts

### Customers, Products and Services

- Customer relationships based on trust
- Long-term partnerships
- Secure products with long life cycles featuring state-of-the-art technology
- Secure communication and connectivity solutions
- Reliable and advanced solutions for remote monitoring in health care
- Minimizing product life cycle impacts
- Quality, productivity and information security

### Society and the Environment

- Taxes, salaries and wages
- Active role in the partner network
- Added value created by R&D
- High-end technology solutions to meet the growing needs of society
- Optimizing energy and water consumption in our operations and in all stages of the life cycle of our products
- Enabling cost savings in health care through technology solutions

### Innovative Experts

- Innovative experts with a high level of well-being
- Continuous competence development
- Meaningful work and a supportive working environment

### Investors

- A profitable and stable investment

## The Megatrends That Affect Our Business

A megatrend that has a huge effect on our operations is digitalization, whose different manifestations create both business threats and business opportunities.

### Rapid Technological Development as an Enabler of Digitalization

The emergence of embedded software, the management of complex systems and the rapid development of technology create opportunities for us to provide added value to our customers. To maintain our competitive edge, we need to keep intensifying our own technological development.

### The Internet of Things (IoT)

The growing importance of IoT requires the integration of operating processes and secure IoT solutions to achieve efficiency advantages. The tools and approaches we use in developing our own operations include robot process automation, testing automation and data visualization. For our customers, we develop challenging IoT solutions that require a high level of information security.

### Digitalization and the Ageing Population

The ageing of the population and population growth make the digitalization of health care crucial for maintaining the productivity and coverage of services. Remote monitoring, wireless solutions, new home-based care methods as well as faster and more efficient health data analysis are among the technological solutions we have developed for our customers.

### Information Security

The progress of digitalization and technologies brings with it an increase in information security threats. This has made cyber security one of the most significant threats associated with digitalization. Stricter information security and regulatory requirements are reflected in our operations as well as those of our customers. The requirements are also expanding to cover new sectors and applications and the importance of information security certification is growing. We recognize these rapidly increasing sector-specific requirements and our product development efforts keep us on the leading edge of our industry in responding to them.

## Economic Impact

For Bittium, economic impact means ensuring the long-term profitability of the company’s business. This enables us to create added value for our various stakeholders and the society around us. Profitable operations create economic benefits for shareholders, employees, partners, subcontractors, distributors, customers, municipalities and the state.

Legal compliance is the basic premise of economic responsibility. However, in many respects, Bittium’s sustainability and impact exceed the legal requirements.

### Ensuring Added Value for Stakeholders

When it comes to Bittium’s economic impact, the local dimension is the one that matters most. Local added value is generated especially through Bittium’s direct and indirect employment impact. In addition to the local effects, our impact extends via tax payments, dividends and business impacts from the national level all the way to the countries in which we operate around the world.

Bittium operates in Europe, the Americas and Asia. The majority of our employees work in Finland, more than half of them in the city of Oulu.

Ensuring added value means securing long-term growth and financial stability, comprehensive risk management and a long-term commitment to the development of society and local communities. In addition to financial risks, risk management must take into consideration other risks related to the valuation of the company, such as reputational risks.

Our business must respond to the changes in the operating environment to maintain profitability and future competitiveness. The technological transformation and the resulting technology solutions create both opportunities and threats – changes that we must take into account already during the product development stage.

We already make use of robotics, for instance, in our financial administration. As robotics and AI become more routine, they will have a greater effect on the development of our operations in the future. This also involves a change in job descriptions; what kinds of specialists we will require and how we will recruit the best talent in the future.

## Tax Footprint

Taxes are part of Bittium’s business process, and tax management supports the company’s strategy. Bittium operates in five different countries and our business profits and the resulting taxes occur locally.

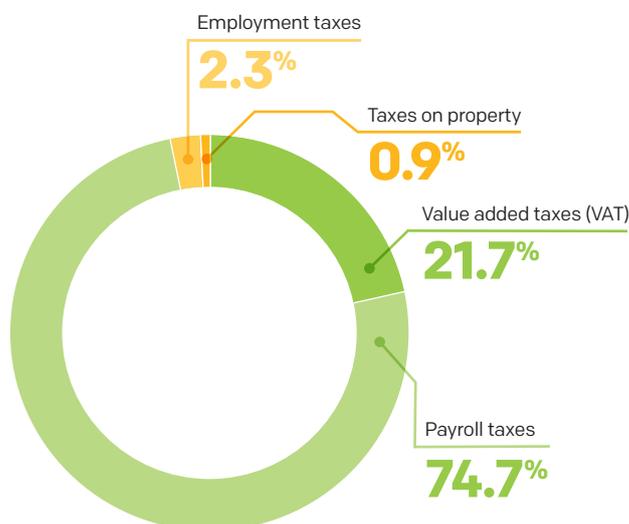
Bittium’s tax strategy is to support business decisions and ensure their proper execution also from the perspective of taxes. Tax planning supports business efficiency and productivity, creating added value for shareholders and ensuring regulatory compliance. Our tax planning is not aggressive and it is not based on artificial arrangements. It is always based on our actual business needs.

Our tax strategy aims at making sure that we calculate, report and pay our taxes correctly to the authorities, conforming to the established regulations. Bittium is committed to complying with the laws of our operating countries as well as lower-level regulations, such as the OECD transfer pricing guidelines. Good corporate citizenship is part of Bittium’s set of values. Accordingly, the quality of our tax processes is an important cornerstone of Bittium’s tax strategy. Our guiding principle is to be open and transparent with the tax authorities in

### Tax Footprint in 2019

MEUR

	2019	2018
<b>Taxes collected</b>		
Value added taxes (VAT)	-2.9	-3.0
Payroll taxes	-10.1	-8.6
<b>Total</b>	<b>-13.0</b>	<b>-11.7</b>
<b>Taxes borne</b>		
Employment taxes	-0.3	-0.4
Taxes on property	-0.1	-0.1
<b>Total</b>	<b>-0.5</b>	<b>-0.5</b>
<b>Taxes total</b>	<b>-13.5</b>	<b>-12.2</b>



**Stakeholders and Economic Impact in 2019**

all of the countries in which we operate. For its part, Bittium seeks to influence the development of tax systems to make them clearer, fairer and more consistent.

In Finland, Bittium works in close cooperation with the Large Taxpayers' Office of the Finnish Tax Administration.

**R&D Investments**

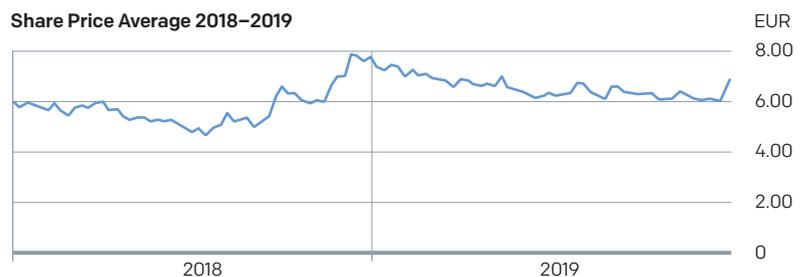
We operate in a sector that creates products and services for the future through continuous development, innovation and cross-sector cooperation. We play an important role at the leading edge of technological development, and active cooperation with academic researchers increases our understanding of significant new technologies and promotes the digitalization of society. Bittium has a close and long-established cooperation relationship with the University of Oulu.

In 2019, we took part in several national projects financed by Business Finland as investors and research partners. On the broader European stage, our cooperation activities included, for instance, the H2020, ITEA and EIT cooperation projects. The focus areas of these cooperation projects included technologies that are critical for Bittium's future product and service business, such as communications solutions for the public authorities based on LTE and 5G technologies, information security, machine learning and high-quality software development methods.

Our product development investments represented 33.4 percent of our 2019 net sales (34.4 percent in 2018). The investments focused mainly on the development of the tactical communication system and its products targeted to the defense industry, and different authorities' and special terminal products and their related security software, and medical technology products.



**Share Price Average 2018-2019**



# Focus Areas in Sustainability

For the first time we identified the material aspects of sustainability in our operations in 2017. At the time, we defined the material aspects of sustainability with respect to Bittium's strategy as follows: innovative and developing people; confidential customer relationships and secure products; and corporate citizenship and sustainable business practices.

## Materiality Analysis

We conducted a materiality analysis on sustainability in 2019. The aim of the analysis was to establish an understanding of our stakeholders' views regarding our previously selected focus areas in sustainability. To support the materiality analysis, we carried out a stakeholder survey in the form of an online questionnaire for customers, partners, investors, employees, the management and other stakeholders. A total of 125 people completed the survey.

In our materiality analysis, we assessed the significance of Bittium's selected focus areas of sustainability to the company's business and evaluated the content of each focus area to assess the company's performance in taking each focus area into consideration. We also assessed whether there were any other areas of sustainability that were previously not included in Bittium's selected focus areas and that the company should take into consideration.

To increase our understanding of our stakeholders' perceptions of Bittium's sustainability, we asked the respondents to compare Bittium with other companies from the perspective of sustainability. Bittium's average score was 8.3 on a scale of 1–10.

We also asked the participants to indicate their willingness to recommend Bittium as a sustainable company to determine our Net Promoter Score (NPS) for sustainability. The stakeholders gave Bittium's sustainability an NPS of 37, which can be considered to be a good score. NPS scores range from -100 to +100, and all scores above 0 are considered good.

After establishing the priorities of the identified material aspects, the final outcome of the analysis was a materiality matrix confirmed by the Management Group and the Board of Directors. The matrix summarizes the views of the company's internal and external stakeholders regarding Bittium's material aspects of sustainability as well as the company's impacts and areas of development. After the priorities had been determined, the materiality matrix was approved in discussions held between Bittium's Board of Directors and the Board's Audit Committee.

As a result of the materiality analysis, we updated our focus areas of sustainability and created Bittium's sustainability program for 2020–2022.

**BITTIUM'S SUSTAINABILITY**  
compared to other companies

**8.3**

average, scale 1–10

**SUSTAINABILITY NPS**  
Net Promoter Score

**37**

scale -100 – +100

## Bittium’s Sustainability Focus Areas

### #1 Innovative and Developing People

- We promote an open, equal and diverse working culture
- We take care of the well-being of our employees
- We invest in the development of competencies and leadership skills

### #2 Confidential Customer Relationships and Secure Products

- We meet the special sector-specific and technological requirements of our customers (quality and security)
- We invest in innovative and agile product development
- We ensure the sustainability of our supply chain

### #3 Corporate Citizenship and Sustainable Business Practices

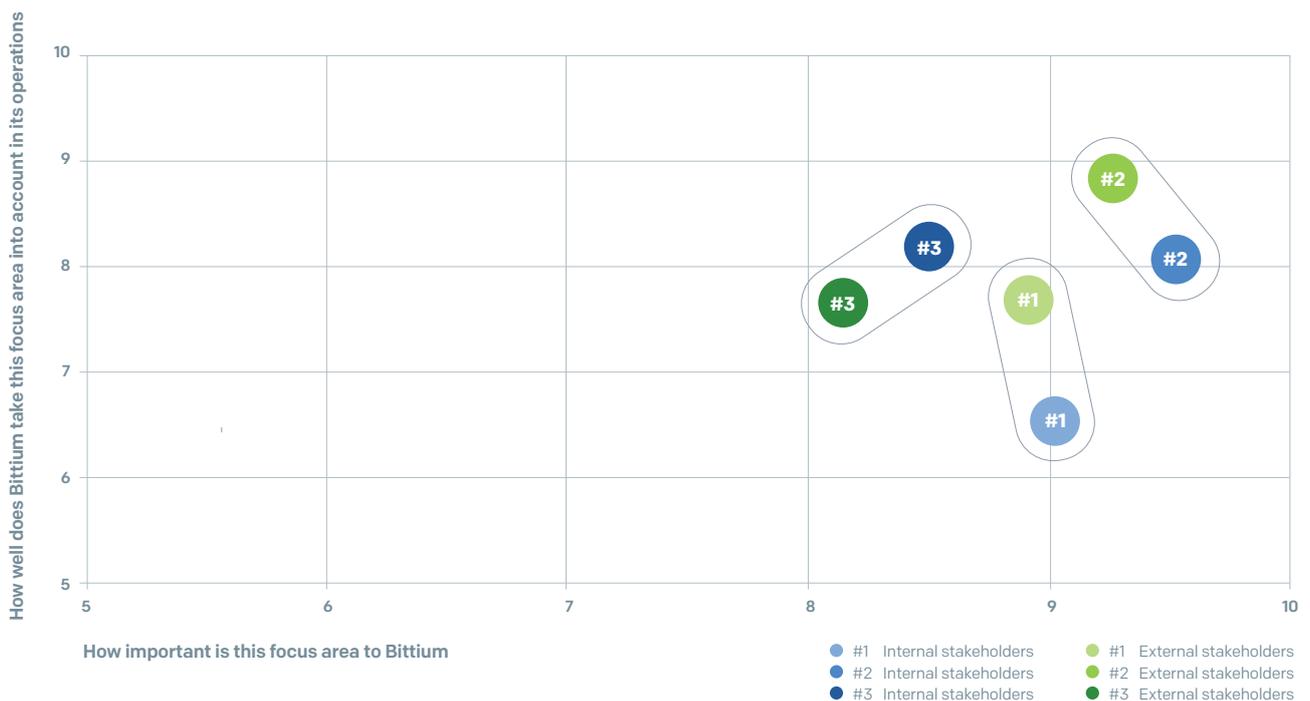
- We engage in open dialogue with our stakeholders and support the local communities in which we operate
- We conform to sustainable business practices
- We create added value for our stakeholders through profitable and sustainable business operations

### #4 Environmental Responsibility\*

- In accordance with the objectives set out in our environmental program, we strive to minimize the environmental impacts of our operations.
- We aim to optimize the service life and recyclability of our products.

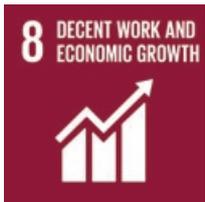
\* Environmental responsibility was selected as a new focus area based on the stakeholder survey.

### Materiality Matrix of the Focus Areas





**THE GLOBAL GOALS**  
For Sustainable Development



We monitor the progress of each focus area using selected indicators in accordance with our sustainability program and continuously develop our operations and performance.

The most important resources of our business are highly competent people, a diverse work community free of discrimination and taking care of employee well-being and competence. We offer our employees challenging and motivating work and are committed to supporting their development and investing in their well-being.

We are a reliable operator for all of our stakeholders. Our stakeholder engagement is guided by good corporate governance as well as our ethical principles and Code of Conduct. In customer relationships, sustainability is reflected in the way we work, the quality of our products and the trust that characterizes our customer relationships. Trust is the starting point for Bittium's operations.

Sustainable business practices are a cornerstone of our operations. It provides a solid foundation for risk management and represents a core value as well as a competitive advantage for us. Sustainability helps us with long-term value creation.

Responsibility for the environment, the mitigation of climate change and resource-efficient solutions is a key aspect of our operations and their development. By maximizing the service life and recyclability of our products, we can influence their total life cycle impact. We also strive to minimize the environmental impacts of our operations. We monitor our performance through our environmental program.

## Alignment with the UN's Sustainable Development Goals

We have evaluated the themes associated with the focus areas of our sustainability with the UN Sustainable Development Goals and identified goals that we are already taking into consideration and promoting in our operations. Based on our selected focus areas of sustainability, the following UN SDGs are of particular relevance to us:

- 3** Good health and well-being
- 8** Decent work and economic growth
- 9** Industry, innovation and infrastructure
- 12** Responsible consumption and production
- 16** Peace, justice and strong institutions
- 17** Partnerships for the goals

## Sustainability Program 2020–2022

Bittium's sustainability program is based on the materiality analysis conducted in 2019 and the company's redefined focus areas of sustainability. The program is based on sustainability targets and actions as well as related performance indicators. The targets have been grouped according to the focus areas.

The achievement of the targets specified in the sustainability program are monitored annually against various performance indicators. Progress with the program and toward the targets is reported annually in Bittium's sustainability report.





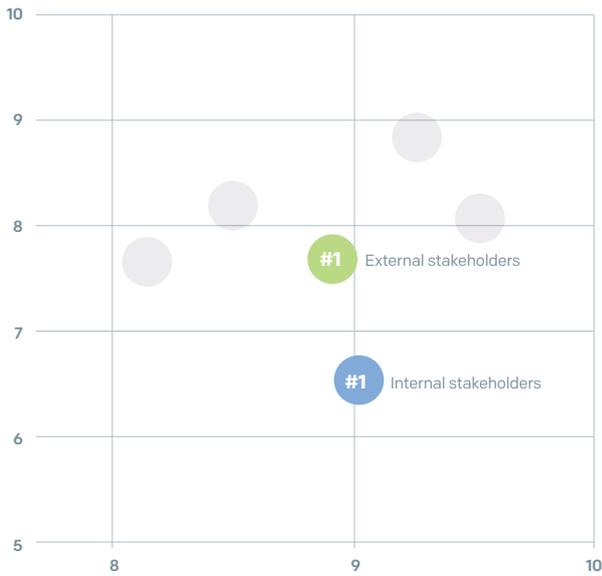
**FOCUS AREA #1**

# Innovative and Developing People

Innovative professionals with a high level of well-being are key to our success. Ensuring the well-being of our employees, competence development and the recruitment of future professionals are important priorities for us.

At the end of 2019, Bittium had 655 employees in Finland, the United States, Mexico, Singapore and Germany. 99% of our employees are based in Finland. Most of our employees are R&D engineers.

Goals	Actions	Performance Measures	Examples of Results
Employee well-being and engagement	Continue to invest in creating a good employee experience and a strong sense of community	Results and scope of the employee satisfaction survey	The results of the employee satisfaction survey improved slightly from the previous year, by 0.1 points (scale 1–5)
			The response rate of the employee satisfaction survey rose to 80 percent
Competence development	Increasing and enabling training and taking special competencies into consideration	Time spent on training per employee	3.4 days/employee
Developing the employer image	Increasing awareness of Bittium and communicating the company's strengths	External employer image survey	Planned for 2020/2021
	Developing the employer image internally	Internal employer image survey	Orientation training program for new employees updated



## Observations Related to the Results of the Stakeholder Survey

- Both internal and external stakeholders consider the focus area to be important for Bittium. Opinions regarding Bittium's performance in taking the focus area into consideration in its operations varied slightly between the groups of respondents, with the internal stakeholders being more critical than the external stakeholders. The focus area remains one of the company's focus areas of sustainability.
- Internally organized training opportunities were seen as important and motivating, although the continuous time pressures associated with projects were seen as a challenge with respect to training. Finding the right balance in this regard was seen as important from the perspective of innovation and development.
- The responses by the external stakeholders conveyed the impression that Bittium takes good care of people as well as their well-being and development. From the external perspective, looking after the well-being of employees was seen as important.



**THE GLOBAL GOALS**  
For Sustainable Development

Alignment between the Focus Area and the UN's Sustainable Development Goals



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.**

**8.7** Take immediate and effective measures to eradicate forced labor, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labor, including recruitment and use of child soldiers, and by 2025 end child labor in all its forms.

**8.8** Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

- We ensure that our subcontractors operate in accordance with our Supplier Manual, which include the observance of human rights in activities that are directly related to our operations. We have published our Supplier Manual on our website.
- We monitor employee well-being in various ways and the company has clear practices for supporting work ability. We maintain up-to-date safety plans as well as an equality plan. Safety issues are taken into account in the orientation training program. The employee benefits provided by the company have been selected in such a way as to support mental and physical well-being and build a strong sense of community.



**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.**

**9.5** Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.

- We make significant investments in our R&D activities to support our renewal and maintain an innovative and competitive portfolio of products. In 2019, R&D activities represented 33.4 percent of our net sales.
- We create opportunities for our personnel to continuously develop their competence through studying as well as internal and external training. Our diverse and varying tasks enable continuous on-the-job learning and development and we encourage our employees to share their knowledge openly.

## Company Culture and Innovation

Since it was first established, Bittium has been a strongly values-driven company. Our values are an integral part of our day-to-day work and company culture. Our company culture is defined by a flat organization, low hierarchy, agility and openness. Bittium's employees share a passion for technology and learning.

We believe in a culture of participation and discussion, which creates space for continuous development. This also provides the foundation for innovation, which is one of our values.

Innovativeness is an integral aspect of our operations. We support innovation in various ways, including our encouraging and diverse company culture, operating methods and business premises. Ultimately, our innovative approach is reflected in our R&D and work with customers. For example, in 2009, Bittium developed the world's first smartphone that uses both terrestrial and satellite networks.

In 2019, we continued to develop our organization and operating methods according to the principles of autonomy, agility and a coaching approach to leadership. Approximately 100 employees from various levels of the organization participated through various working groups in a change project launched in the previous year in cooperation with the Finnish Work Environment Fund. Based on the initial survey conducted as part of the project, the working groups chose topics whose development was seen as important in creating a foundation for future autonomy and agility as well as strengthening well-being and the employee experience in the organization.

The selected development areas included meeting practices, orientation training processes, strategy communications and the launch of change agent activities. As part of the project, we also launched a pilot called Kilta ("Guild") related to the renewal of our organizational model. The aim is to increase the autonomy and influence of the personnel in the competence areas with regard to the organization of their work and the development of their competencies. The development efforts on this front will continue in early 2020.

## Employee Survey and the Employee Experience

Innovation requires motivated employees with a high level of well-being, good managerial work and a sense of community. The annual Bittium Employee Survey (BES) is an important tool for developing well-being at work and job satisfaction and to enhance the employee experience. The results of the survey are discussed at all levels of the organization, from the Board of Directors and Management Group to individual teams.

In the employee survey completed in late 2019, the response rate rose to 80 percent, compared to 67 percent in the previous year. The overall results for 2019 showed a slight improvement on the previous year. The category with the biggest improvement was supervisory work, which was also among our strengths in the previous year. The other strengths highlighted in the employee survey included our cohesive team spirit and sense of community. Areas highlighted in the survey as requiring further development included, as in the previous year, the time pressures associated with projects, process agility and internal communication.

The investments made in competence development were reflected favorably in the employee survey.

The focus areas for 2020 highlighted in the employee survey include the development of project management and process agility as well as the improvement of internal communication at different levels of the organization.

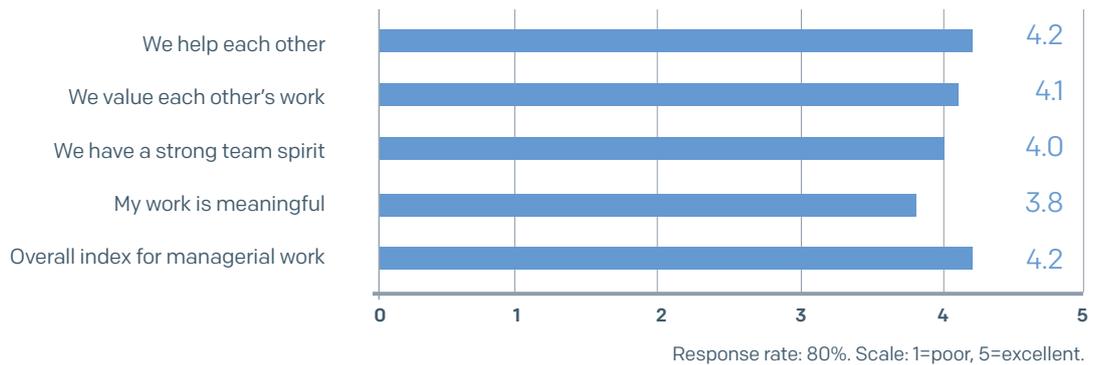
## Competence Development and Performance Reviews

We revised our performance review model back in 2016. Under the new model, subordinates and supervisors have an informal quarterly discussion (Quarter Chat). The employees also have the option to agree to have a separate longer conversation, especially with regard to a long-term competence development plan. This actual performance review is held at a time that effectively supports competence development.

A key objective of the switch to more frequent, regular discussions has been to take into consideration individuality, support well-being at work and build trust in the relationships between supervisors and subordinates.

A coaching style of leadership by supervisors is an important tool that promotes the development of individual skills. In 2019, we organized training for supervisors focused on improving their managerial and coaching skills. The six-part coaching program covered the various areas of managerial work, such as improving the employer image in recruitment, early-stage support, the management of different kinds of teams and individuals as well as self-management. The training was

### Bittium Employee Survey 2019: highlights related to sustainability



implemented in cooperation with the employee pension insurance company Varma. Based on the results of the employee survey conducted near the end of the year, the quality of managerial work continued to improve and it is now one of Bittium's strengths.

In recent years, Bittium has focused its competence development measures on training related to the latest programming languages and various standards, the development of agile and efficient operating models and, for example, software life cycle processes, and on the enhanced use of open-source methods. Bittium is also actively involved in the development of new technology skills, for example, in the areas of 5G, wireless communications technologies, software robotics, machine learning and AI.

Various methods that enable learning are included in our daily operations, such as learning on the job, internal and external courses, the sharing of expertise and individual studying alongside work. In 2019, the average number of training days was 3.4 per employee. This figure comprises both internal and external training, including orientation and independent studies.

## Well-Being and Occupational Safety

The vast majority of the work performed at a high-tech expert organization involves R&D – and software development in particular – which means that the physical risks associated with manufacture and manual work are a relatively minor concern. Therefore, in our field, the most typical risks to an employee's ability to work include musculoskeletal diseases, coping at work and mental well-being. Project-based work is prevalent at Bittium, and the schedules and workload may vary greatly depending on the situation.

Employee well-being is supported by comprehensive occupational health care services and other employee benefits. In the design of our business premises, we have emphasized not only good ergonomics but also a good work environment that encourages direct interaction and mutual innovation.

Bittium's OHS Committee holds regular meetings and it includes representatives from each of our offices in Finland. Its activities are geared toward preserving the occupational health and work ability of our employees and improving the quality of their working life.

All Bittium offices have appropriate safety plans in place. Some of our employees perform duties in which it is of particular importance to ensure electrical safety. The Close Call reporting channel on our intranet enables our employees to report potential safety and 'close call' concerns.

Bittium's HR management and OHS function analyze occupational accidents at regular intervals and whenever particular risks emerge. In 2019, there were 11 occupational accidents reported at Bittium's companies in Finland. About half of the accidents occurred during commutes and three occurred at the workplace. Two of the accidents resulted in a temporary disability to work.

## Human Rights, Equality and Diversity

We treat all employees and applicants equally regardless of their gender, age, ethnic background, political views or other background factors. Our equality plan is based on the Finnish Act on Equality Between Men and Women. We evaluate the realization of equality at work from the perspective of pay, career development and recruitment.

A separate equality and non-discrimination survey was conducted in late 2018 and the results were processed in 2019. The survey had a response rate of 51%. Equality and non-discrimination were given good ratings in the survey. The overall score of the survey was 5.3 on a scale of 1–6. The responses to open-ended questions indicated that further development is needed on issues related to pay, the allocation of duties and the filling of new positions. Based on the results of the survey, the company made updates to the equality plan and action plans, which were approved by the OHS Committee.

From the aspect of managing and developing diversity, it is important to take into account different backgrounds and skills and to put them to good use. Participatory and coaching supervisor work plays an important role in this.

The principles concerning the diversity of the Board of Directors are defined in the Corporate Governance Statement.

The vast majority of Bittium's employees work in countries with progressive human rights legislation. Human rights monitoring mainly concerns Bittium's subcontractors and suppliers, and Bittium has issued framework agreements and Supplier Requirements that serve as guidance in human rights issues. Bittium's main partners are evaluated by means of self-assessments and audits in accordance with an annual plan. In 2019, no violations or significant non-conformities related to the use of child labor, forced labor, inappropriate disciplinary action, physical punishment, or health-related discriminatory practices were observed in Bittium's or its subcontractors' operations.

## Enhancing the Employer Image

The technology sector is characterized by intense competition for high-end talent, and Bittium is involved in that competition. Bittium's strengths as an employer include diverse tasks and development opportunities through work on various technologies, products and projects.

The importance of meaningful work is emphasized among our existing and potential employees, and we pay special attention to this by trying to be better at taking into consideration individual expectations and experiences regarding the factors that give work meaning.

In the future, we will focus even more on enhancing our image as an employer, improving the application experience and clarifying our employer promise to ensure our ability to attract and retain the best people.

## Active Engagement

In addition to performance reviews and employee surveys, our internal engagement channels include discussion-based orientation training and team meetings, events for the whole staff as well as our social intranet. We place a particular emphasis on events for the entire personnel. We support our employees' community spirit and activities also outside working hours in the form of various clubs, physical exercise and activities. We engage in active cooperation with educational institutions. We are keen to showcase the fascinating opportunities that our sector provides for young people as early as possible. Cooperation with schools is also an important recruitment channel for future professionals. Company visits are a good way for young people to get a concrete idea of the content and nature of the work. More than a thousand students have visited Bittium during the past couple of years. In December 2019, we received special recognition from the city of Oulu for our efforts in this area.

In 2019, we organized our second official "bring your kids to work" event. Our employees' children visited us in the morning to see where their parents work. The event program included general presentations on Bittium's operations customized for young audiences, Bittium product demonstrations and children's meetings.



## Personnel in 2019

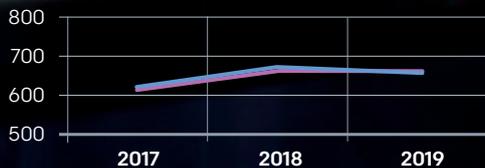


**655**  
at the end of  
the year

**664**  
on average

**564**  
engineers

persons



### AVERAGE AGE

**42.7**

### YEARS AT BITTIUM

**7.8**

### RETIRED

**3**

### WOMEN

**12.8%**  
total

**11.9%**  
as supervisors

**11.1%**  
in the  
Management  
Group

**16.7%**  
on the Board  
of Directors

### TRAINING

**86%**  
Master's  
degree/  
Bachelor's  
degree

**2%**  
Licentiate/  
PhD

### DAYS OF TRAINING

**2,260**  
total

**3.4**  
/employee



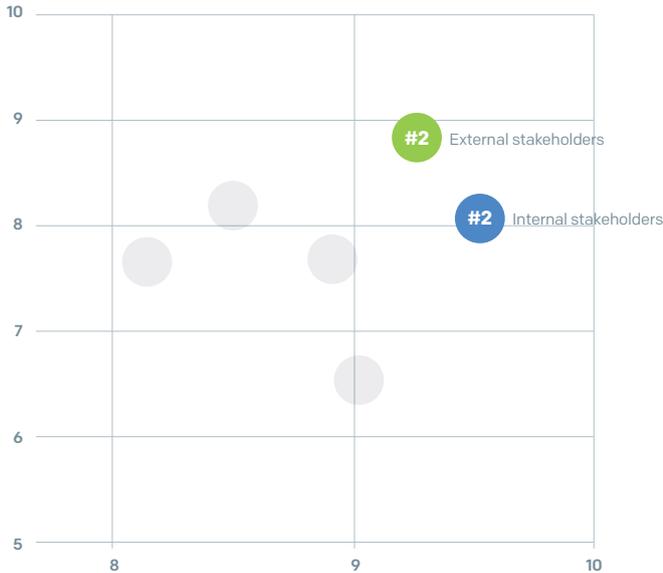
**FOCUS AREA #2**

# Trust-Based Customer Relationships and Secure Products

Bittium specializes in the development of reliable, secure communications and connectivity solutions as well as mobile data security solutions. We also offer our customers health care technology products and services. Sustainability and responsibility are evident throughout the whole life cycle of our products, from material choices to maintenance, confidentiality and data security.

Trust is one of our values and a cornerstone of our business. It is an essential element of our customer relationships, products, services and operating methods. The continuous improvement of our operations, innovative and agile product development, meeting the customer’s wishes and expectations as well as development in cooperation with our customers form the foundation of our sustainable business model and competitive advantage.

Goals	Actions	Performance Measures	Examples of Results
Building deeper trust with customers	Continued development of trust-based and performance-driven operating methods	Customer satisfaction survey NPS (Net Promoter Score)	49.3
		Project satisfaction survey NPS (Net Promoter Score)	62
Enhancing the added value of information security	Continuous development of the information security of products and operations	Auditing and certification of products, business premises and business functions	ISO 27001 certificate and various information security certificates
	Information security management systems		
	Highlighting information security threats and the importance of information security with various stakeholders and participating in information security development projects and forums.		



### Observations Related to the Results of the Stakeholder Survey

- Both internal and external stakeholders consider the focus area to be important for Bittium. Bittium’s performance in taking this focus area into consideration in operations was characterized as fairly good. The focus area remains one of the company’s focus areas of sustainability.
- The internal responses highlight a concern regarding the challenges created by tight schedules in product development and customer projects.
- The responses from external stakeholders highlight the company’s strong performance in building trust and achieving success together with customers.



**THE GLOBAL GOALS**  
For Sustainable Development

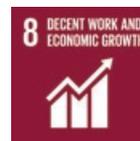
### Alignment between the Focus Area and the UN’s Sustainable Development Goals



**Ensure healthy lives and promote well-being for all at all ages.**

**3.4** By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being.

- Bittium’s medical technology products improve the quality of modern health care and are safe to use.
- The products emphasize prevention, for example, in the context of serious complications caused by disruptions in cardiovascular function and brain function.
- Our product portfolio supports remote diagnostics, which improves efficiency and enables cost savings in the healthcare.



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.**

**8.7** Take immediate and effective measures to eradicate forced labor, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labor, including recruitment and use of child soldiers, and by 2025 end child labor in all its forms.

**8.8** Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

- We operate sustainably in our purchasing activities. We avoid the use of minerals from conflict zones and counterfeit materials. These issues are covered by our monitoring processes.

## Customer Relationships Built on Trust

Taking into account our customers’ specific requirements pertaining to our sector and technology is the cornerstone of a trust-based customer relationship. As our operating environment changes, we face new expectations and requirements in our business. We must be in the vanguard of meeting these requirements. For example, to be able to respond to material inquiries within a tight schedule, we need to further develop our management of product information. Our challenge and area of development is to implement the new requirements throughout the supply chain.

Our operating methods are characterized by a strong focus on information security and ensuring the confidentiality of our customers’ data. Our products are designed to be secure, always taking our customers’ needs into account. Described in more detail under ‘Corporate citizenship and sustainable business practices’, our Code of Conduct is also an important element of our secure and responsible way of working with our customers and other stakeholders.

## Systems and Standards

Standards define the industry’s common operating methods that make life easier for the authorities as well as the companies in the industry. Standardization also makes it easier to promote global exports.

For us, certified integrated management systems are an important tool with which we can improve our efficiency and reliability, transparency and customer satisfaction. More and more, our customers also expect our products and operating methods to be standardized and certified.

We had six certified systems in use at the end of 2019. All in all, we take into account approximately 400 different standards in our operations. We were awarded an ISO 27001 compliance certificate for our information security system in June 2019.

## Secure Products

The working lives of our products are long, and our products are designed to last throughout their life cycle. In addition to the environmental impact of our products, we take into account the safety and security of our products, materials and components as well as compliance with product liability regulations in our target markets.



We apply the relevant industry standards in the design of the electrical safety and performance features of our products. Customer, country and market-specific requirements are also taken into account in our hardware development.

The products are tested, verified and approved as part of the R&D process by both internal and external auditors. For example, in Europe, our products are expected to carry the CE label and the related Declaration of Conformity (DoC).

We also audit our product development projects in accordance with the PSSSL (Product Safety, Security and Liability) audit procedures as part of Bittium's End Product Process (EPP) requirements. Our employees receive PSSSL product liability training. In addition, we systematically assess product and life cycle risks as part of our product development processes.

## Sustainable Purchasing

Bittium's products contain a range of electronic and mechanical components. We ensure the sustainability of our procurement chain, for instance, in the form of material and component supplier requirements and material assessments. We conform to a sustainable way of working and require the same of our suppliers. Our partners must comply with Bittium's Code of Conduct as well as the Bittium Supplier Manual and

Bittium Supplier Requirements. We systematically develop our supplier relationship management and always review the CSR principles with our suppliers and partners.

We also audit our suppliers according to pre-defined criteria. Audits are carried out as a self-assessment based on the Bittium Supplier Manual or as an audit conducted by Bittium.

Employee training is also an important part of ensuring sustainable purchasing. Sustainable purchasing is part of the environmental training package that our employees are complete independently using learning materials provided by the company.

### Conflict Minerals Policy

The aim of conflict minerals laws and regulations is to stop funding conflicts through the minerals trade and, ultimately, to address human rights violations and environmental destruction in conflict areas.

We urge our suppliers to comply with the legislation on conflict minerals and the relevant recommended reporting practices. This way, we can ensure that the minerals used in Bittium products do not originate from conflict or risk zones.

In practice, the legislation requires sustainable purchasing and transparent supply chains with respect to certain minerals, such as tin, tantalum, wolfram and gold from conflict areas.

These minerals are typically used in household goods, and they are particularly common in electronics such as mobile devices and computers.

In 2019, one of Bittium's suppliers reported a suspicion that the components supplied by them may have contained conflict minerals. The timely report prevented potential conflict minerals from being used in Bittium's products.

### Avoiding Counterfeit Materials

Counterfeit materials are any materials whose origin, age, composition, configuration, certification status or other feature is presented falsely and with misleading markings on the material, packaging or container.

We are aware of the risks associated with counterfeit materials, both when purchasing materials as ready-to-use components and when using the previously mentioned raw materials. Bittium is committed to taking the necessary steps to avoid using counterfeit materials in its products. We have developed our supplier reporting methods further to avoid the use of counterfeit materials. The procedures address different stages of the purchasing process, starting from the selection of suppliers. We also provide training on the detection of counterfeit materials for our employees.

No counterfeit materials were found in Bittium's products in 2019.

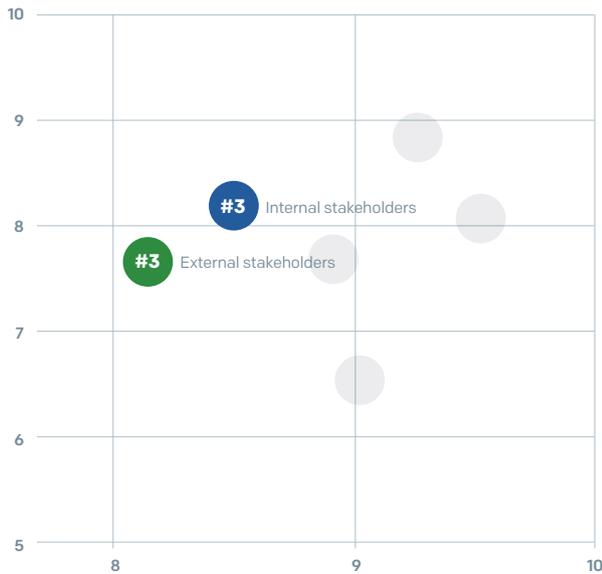


**FOCUS AREA #3**

# Corporate Citizenship and Sustainable Business Practices

We operate as a responsible corporate citizen within the society around us. We are a reliable local partner and employer. We engage in active and open dialogue with our stakeholders, act in accordance with our harmonized operating principles, create added value for our shareholders and seek operating methods and solutions that promote sustainable development.

Goals	Actions	Performance Measures	Examples of Results
Anti-corruption	Internal anti-corruption training	Rate of participation in training	Anti-corruption training is part of the orientation training for all Bittium employees
	Incorporating anti-corruption principles into cooperation agreements		The company continued to provide anti-corruption training to its personnel groups
	Using an external background evaluation tool to identify corruption or other ambiguities among business partners	Observations of ambiguities or anti-corruption activities	No observations
Responsible corporate citizenship	We are actively involved in the development of local business and supporting schools and educational institutions	Participation in various working groups, supporting non-profit organizations	Closest cooperation partners: Technology Industries of Finland, Oulu Chamber of Commerce, University of Oulu
		Number of visits to educational institutions	More than 1,000 students visited Bittium in 2019
	Compliance with management systems, such as export control systems	Compliance with the export control regulations introduced in 2019	The export control system has been updated and audited
	Compliance with laws and regulations	Monitoring laws and regulations that are of relevance to Bittium	Ongoing monitoring of laws and regulations of relevance to Bittium, standards
Developing stakeholder cooperation	Further improving Bittium's understanding of stakeholder views and expectations	Developing even more open dialogue between stakeholders	The decision to switch from half-yearly reporting to quarterly reporting improves dialogue with shareholders



## Observations Related to the Results of the Stakeholder Survey

- The internal and external stakeholders both consider the focus area to be important for Bittium. However, the responses from both groups of stakeholders indicate that there has been a dip in Bittium's performance in this respect. The focus area remains one of Bittium's focus areas of sustainability.
- The responses to open-ended questions from internal stakeholders were mostly positive. The respondents also indicated they want Bittium to participate in more local events and social projects.
- The feedback from external stakeholders, especially shareholders and investors, pointed to disappointment with the company's insufficient communication. However, customers indicated that the company has performed very well in this respect.



**THE GLOBAL GOALS**  
For Sustainable Development

## Alignment between the Focus Area and the UN's Sustainable Development Goals



### Ensure sustainable consumption and production patterns.

**12.6** Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

**12.7** Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

- We set an example by reporting on the planning, implementation and results of our sustainability actions in our annual sustainability report. We take a systematic approach to the development of our sustainability efforts and the reliability of our reporting.
- We cooperate with our customers to ensure that we can take sustainability into consideration in our products and operations to the greatest possible extent, including environmental responsibility.



### Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

**16.5** Substantially reduce corruption and bribery in all their forms.

- We are committed to the prevention of corruption in accordance with our anti-corruption statement and we report corruption incidents as part of our sustainability reporting.



### Strengthen the means of implementation and revitalize the global partnership for sustainable development.

**17.17** Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.

- We engage in dialogue with our customers and partners regarding the solutions we develop so that we can produce appropriate and resource-efficient products that benefit our customers and society while reducing waste.

We continuously monitor the impacts of our operations and the added value we create for different stakeholders. Our key stakeholders include our shareholders, customers, employees, partners and other suppliers as well as the public sector. More information on our stakeholder cooperation is provided under 'Sustainability management'.

Ever since Bittium first started its operations, it has adhered to the values that were defined as its guiding principles by its founders. The values have been refined over the years and the new values that guide Bittium's business were announced in fall 2017. Bittium's revised values are summarized in three keywords: trust, courage and innovation.

## Good Corporate Governance Guides Sustainability

The management of Bittium Corporation is governed by the Articles of Association, Finnish law and Bittium's governance guidelines. Bittium observes the Finnish Corporate Governance Code 2020 prepared by the Finnish Securities Market Association and entered into force on January 1, 2020. Bittium's Corporate Governance Statement is available at [www.bittium.com](http://www.bittium.com).

GRC (governance, risk management and compliance) refers to the skills and abilities that enable an organization to meet its targets, address uncertainties and operate with integrity. Bittium's GRC measures also include the framework for internal control, which begins with our core values and extends all the way to the principles set by our Board of Directors.

## Bittium's Ethical Principles and Code of Conduct

Our ethical principles comprise the following areas of sustainability:

### 1) Anti-corruption

Due to our market areas and business sectors, corruption is a significant risk in the areas of social responsibility and human rights. We do not condone any forms of bribery or corruption in our operations or those of our partners.

We use our internal and external anti-corruption guidelines that were updated in 2017. We provide our employees with training on the subject as part of our employee training program and we expect our partners to comply with the instructions.

We use a monitoring tool for detecting corruption and other ambiguities in the operations of our partners.

We provide our external and internal stakeholders with a channel for reporting violations of anti-corruption rules. There were no cases of corruption reported to Bittium in 2019.

### 2) Information security and data protection

Bittium's information security and data protection policies specify the methods employed in the classification, storage and disclosure of information.

### 3) Fair business, advertising and competition

We follow the rules on fair business, advertising and competition. We have access to different methods of securing our customers' information in accordance with information security procedures.

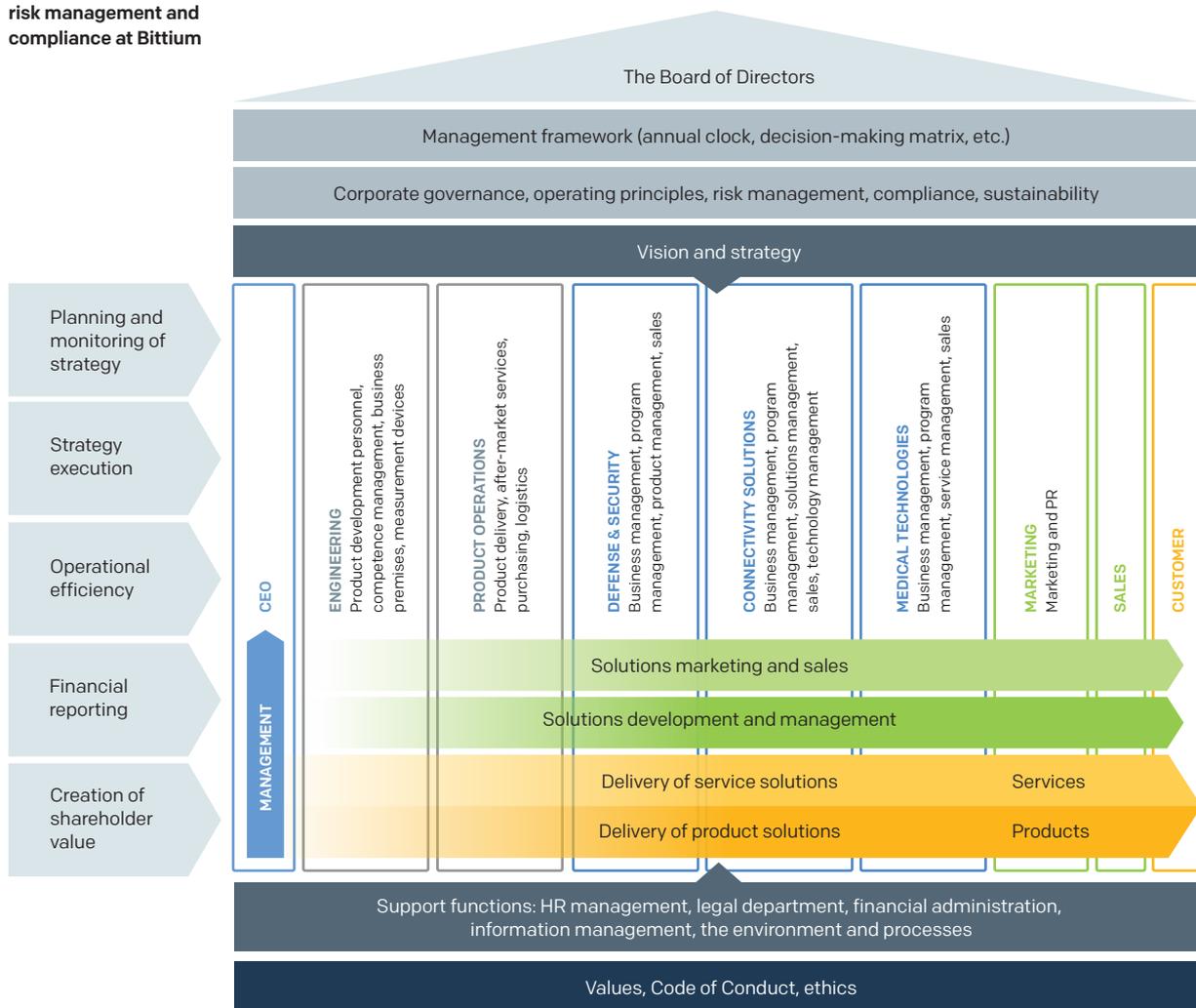
### 4) Corporate citizenship

The company supports community involvement in order to promote social and economic development.

### 5) Protection of intellectual property rights

We respect intellectual property rights and apply our IPR strategy and guidelines to all of our operations.

**Corporate governance, risk management and compliance at Bittium**



## Export Control

Sustainable purchasing is also an essential part of our sustainable approach to business. The principles of sustainable purchasing have been described in greater detail in ‘Confidential customer relationships and secure products’.

In 2019, we developed Bittium’s export control system and the related practices from various perspectives, including sustainability. Bittium has always complied with the export control instructions and regulations, for instance, when operating in the defense and information security sectors, where the functionality of the export control system is a precondition for

successful cooperation with the authorities as well as the customers.

Alongside the development of our export control system, trained dozens of employees from the sales, marketing, product management and logistics functions on the principles of export control.

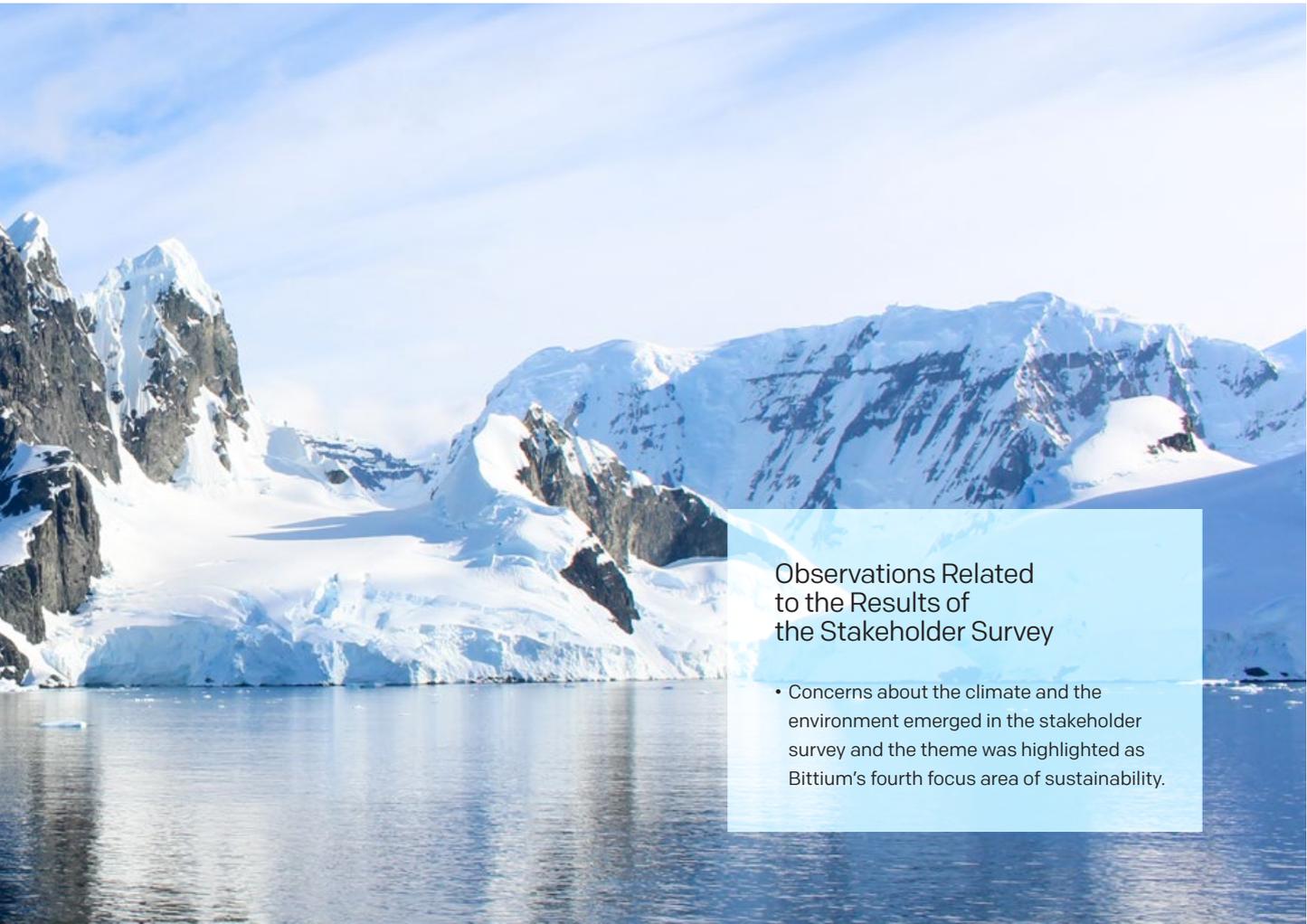


**FOCUS AREA #4**

# Environmental Responsibility

Our business is mainly focused on product design, assembly by manufacturers, sales and marketing. These processes only account for a small share of the products' life cycle impacts. The greatest environmental impact occurs during the last stage of the product life cycle, i.e. recycling. Responsibility for the environment, the mitigation of climate change and resource-efficient solutions are nevertheless key aspects of our operations and their development. By maximizing the service life and recyclability of our products, we can influence their total life cycle impact.

Goals	Actions	Performance Measures	Examples of Results
Reducing climate impacts	Continuous improvement of the waste recovery rate	Recovery rate	99.9%
	Reduce the total carbon footprint per employee	Carbon footprint/employee (CO <sub>2</sub> e/kg)	1,755
	Maximize the use of renewable energy	Using solar power at the Oulu office	Average of 10% during the summer months
	Taking the energy profiles (renewable energy) of purchased energy into account	Evaluating energy consumption at each location	



### Observations Related to the Results of the Stakeholder Survey

- Concerns about the climate and the environment emerged in the stakeholder survey and the theme was highlighted as Bittium's fourth focus area of sustainability.



**THE GLOBAL GOALS**  
For Sustainable Development

Alignment between the Focus Area and the UN's Sustainable Development Goals



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.**

**8.4** Improve progressively, through 2030, global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

- We recognize the need for resource efficiency and respond by observing various environmental standards in our operations. Ecological design is the starting point of our product development.



**Ensure sustainable consumption and production patterns.**

**12.2** By 2030, achieve the sustainable management and efficient use of natural resources.

**12.5** By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

- We pay special attention to the use of renewable energy, our waste recovery rate and the reduction of waste at our operating locations and report them as part of our sustainability reporting.

### Management of Environmental Responsibility and the Environmental Program

In line with our environmental policy, we are committed to minimizing the environmental impact of the production, use and disposal of the products we design. We apply the ISO 14001 standard to our environmental management system and observe the principles of sustainable development in accordance with the ISO 14001 standard, for example, in the following ways:

- Monitoring and observing amendments to the laws and regulations concerning environmental protection. This also covers to use of energy-efficient solutions in R&D (ecological design) and premises.
- Minimizing the environmental impacts of the production, use and disposal of products. The development of instructions and practices related to ecological design supports these principles.
- Encouraging suppliers and partners to implement environmental management systems. Compliance with the principles that limit the use of hazardous substances supports these goals.

We regularly monitor the international environmental requirements that govern our products as well as the local regulations derived from these. The requirements also extend to our major suppliers. We have applied the provisions of the ROHS directives (I, II and III), the REACH regulation (on hazardous substances) as well as the WEEE (recycling of waste electronic and electrical equipment) directive in our design since 2002. In 2019, our ETJ+ energy efficiency system was audited in accordance with the ISO 50001.2018 standard.

Although the use of halogens is not yet forbidden in electronics, we strive to provide halogen-free products in order to meet the growing demand in the field and minimize the environmental impact of our products. Bittium’s halogen-free statement conforms to the IEC (International Electrochemical Commission) definition of halogen-free materials (IEC 61249-2-21).

### Environmental Program Achievements in 2019

Our objective for the 2019 environmental program was to manage environmental information in our Oulu office and the ETJ+ certification of our energy efficiency system in accordance with the ISO50001.2018 energy efficiency system standard.

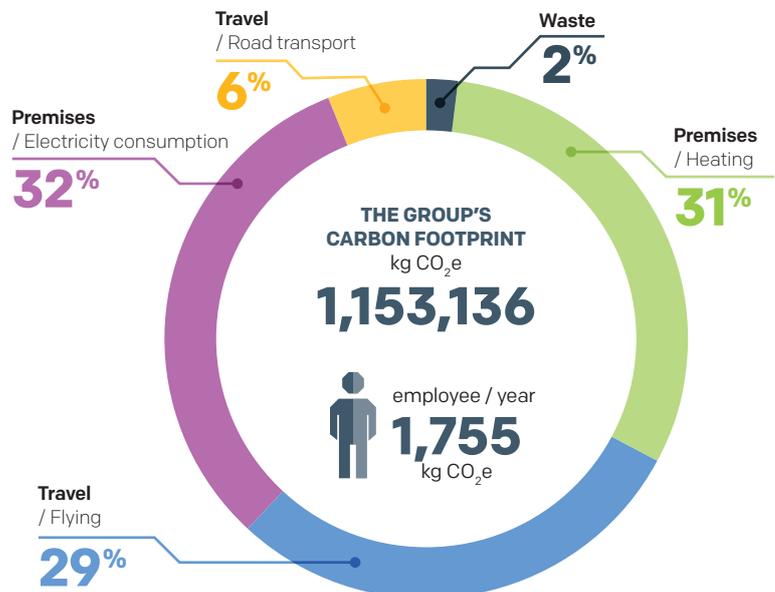
We reached our environmental responsibility objectives in 2019.

- Up to 11.9 percent (2018: 12%) of the electricity used at the Oulu office was solar power.
- Our total carbon footprint was 1,153,136 kg CO<sub>2</sub>e (2018: 1,219 tCO<sub>2</sub>e, 2,865 kg CO<sub>2</sub>e/employee).
- Our energy efficiency system is ISO 50001.2018 compliant; however still certified against ISO 50001.2011.

### Environmental Responsibility Indicators

We continuously monitor the level of environmental protection. The following were selected as the key environmental responsibility indicators:

Bittium’s environmental responsibility indicators 2019, Oulu office



**Significant Improvement Achieved at the Oulu Office during 2017–2019**

In 2019, we continued to optimize the energy efficiency of the new premises we opened in Oulu in late 2017. For example, replacing office equipment and optimizing our lighting systems – such as LEDs controlled by motion detectors – enabled us to significantly reduce our energy consumption.

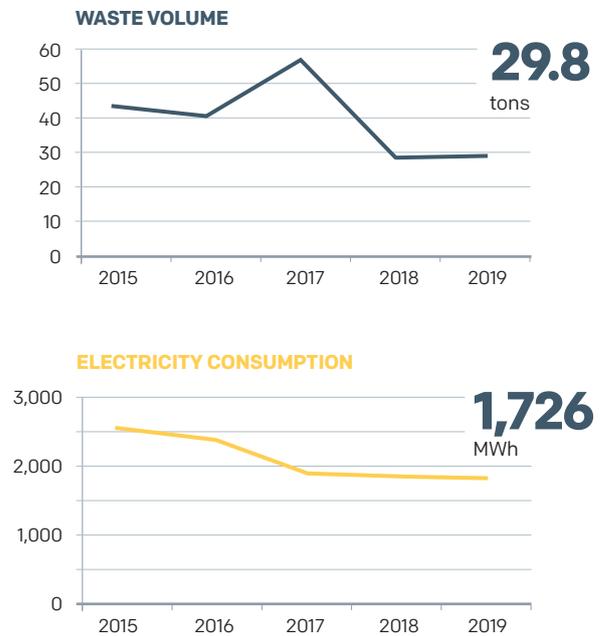
In addition, we centralized our product testing and development laboratories and IT servers to achieve efficiency benefits, also with regard to energy consumption.

We continued to use solar power at our Oulu office, where up to 11.9% (2018: 12%) of the electricity used came from solar power. We are one of the pioneers in the use of solar power in our area, having started using solar power solutions in 2017.

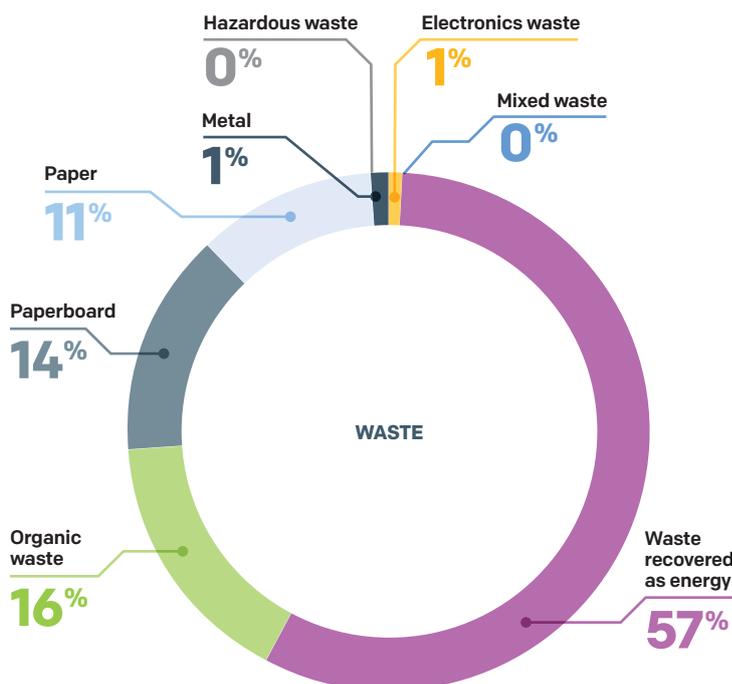
The waste recovery rate remained high at 99.9 percent (2018: 99%) thanks to a significant reduction in burned waste and a substantial increase in product delivery volumes in 2019.

We expanded our monitoring of energy and waste consumption as well the volume and types of waste in 2019 to cover the other properties we own. The information for operating locations other than the Oulu office, with comparison figures, will be published in our sustainability report for 2020.

**Environmental Responsibility Indicators 2015–2019 (Trend), Oulu Office**



**Waste Treatment and Recycling in 2019 (Breakdown), Oulu Office**



# Reporting

## Reporting Basics and Principles

### Scope of Reporting

This sustainability report, as part of the annual report, is the second extensive report on the management and implementation of sustainability at Bittium. We have developed our sustainability metrics, providing more information on impacts and expanding the scope of reporting. In 2019 we conducted a Materiality Analysis of Responsibility aimed at gaining an understanding of stakeholders' views on previously selected sustainability focus areas. With the materiality analysis, we updated our responsibility focus areas and created a responsibility program for Bittium for the years 2020–2022.

In order to enable comparability, Bittium's sustainability report is based on the Global Reporting Initiative (GRI) Standards framework. The table at the end of the report contains references to the relevant elements of the GRI Standards framework. The report covers all four sustainability focus areas, a description of Bittium's financial effectiveness. The financial data is collected from Bittium's financial information systems, and the majority of personnel data is from HR management systems. The reported financial figures are based on Bittium's audited financial statements from 2018 and 2019.

Bittium selected its reporting model on the basis of Bittium's sustainability principles, taking into account the GRI framework and the focus areas of the Company's business: wireless, secure communications in B2B operations. Bittium has customers both in Finland and in other countries. However, the majority of operations and most of the personnel are located in Finland.

This report will be published in electronic form in connection with the Group's annual report at [www.bittium.com](http://www.bittium.com) and <https://annualreport.bittium.com>.

### Scope of the Report

The period covered by the sustainability report is the same as the financial period, January 1–December 31, 2019. Environmental data is not reported from offices where the Company only uses a part of the office premises.

The report does not cover all suppliers or service providers. In other respects, the report covers all the operations of Bittium Corporation and its subsidiaries.

## Reporting Principles and Instructions

Financial reports are governed by the International Financial Reporting Standards (IFRS), and governance reports comply with the legislation on listed companies and the Finnish Corporate Governance Code that applies to listed companies.

The reported financial data is based on audited financial statements.

## Principles and Practices for External Verification

The 2019 sustainability report follows the core level of the GRI Standards guidelines. The sustainability report has not been verified by an independent third party. The figures presented in the "Financial effectiveness" section are based on the Group's audited financial statements.

## Sustainability Contact at Bittium:

Karoliina Fyrstén, Vice President,  
Communications and Marketing  
karoliina.fyrsten@bittium.com

## GRI 102 GENERAL DISCLOSURES

G4	Title	Location	Additional info/comments
<b>Organization</b>			
102-1	Name of the organization	Bittium in Brief	page 8
102-2	Activities, brands, products, and services	Bittium in Brief; Bittium Products and Services	page 8 page 12–21
102-3	Location of headquarters	Bittium in Brief	page 8
102-4	Location of operations	Bittium in Brief	page 8
102-5	Ownership and legal form	Corporate Governance	page 26
102-6	Markets served	Bittium in Brief	page 8
102-7	Scale of the organization	Overview 2019	page 4–5
102-8	Information on employees and other workers	Innovative and Developing People	page 54–59
102-9	Supply chain	Stakeholder Cooperation; Suppliers and Partners	page 45
102-10	Significant changes to the organization and its supply chain	Significant Events during the Reporting Period	No major changes page 78–79
102-11	Precautionary Principle or approach	Corporate Citizenship and Sustainable Business Practices Corporate Governance Statement	page 64–67 page 25
102-12	External initiatives		None
102-13	Membership of associations		Technology Industry Association

## GRI 102 GENERAL DISCLOSURES

G4	Title	Location	Additional info/comments
<b>Strategy</b>			
102-14	Statement from CEO	Statement from CEO	page 6
102-15	Key impacts, risks, and opportunities	Business and Operating Environment Main features of Internal Control and Risk Management Processes related to Financial Reporting Processes Report by the Board of Directors	page 8 page 37 page 85
<b>Ethics and Integrity</b>			
102-16	Values, principles, standards, and norms of behavior	Corporate Citizenship and Sustainable Business Practices Value Creation Model	page 64 page 46
102-17	Mechanisms for advice and concerns about ethics	Corporate Citizenship and Sustainable Business Practices	page 64
<b>Governance</b>			
102-18	Governance structure	Corporate Governance	page 26
102-19	Delegating authority	Sustainability Management	page 44
102-20	Executive-level responsibility on economic, environmental and social topics	Sustainability Management Sustainability Organization and Risk Management	page 44
102-21	Consulting stakeholders on economic, environmental, and social topics	Stakeholder Cooperation Materiality Analysis Corporate Governance Statement	page 44 page 50 page 26
102-22	Composition of the Board	Corporate Governance	page 26
102-23	Chairman of the Board	Corporate Governance	page 26
102-24	Election of the Board	Corporate Governance	page 26
102-31	Review of economic, environmental and social topics	Sustainability Management	page 44 Reviewed yearly
102-32	The Board's role in sustainability reporting	Sustainability Management	page 44
102-35	Remuneration policies	Corporate Governance Statement: Remuneration	page 26 <a href="http://www.bittium.com/investors/corporate-governance">www.bittium.com/investors/corporate-governance</a>
<b>Stakeholder Engagement</b>			
102-40	List of stakeholder groups	Stakeholder Cooperation	page 44
102-42	Identifying and selecting stakeholders	Stakeholder Cooperation	page 44
102-43	Approach to stakeholder engagement	Stakeholder Cooperation	page 44
102-44	Key topics and concerns raised	Stakeholder Cooperation	page 44
<b>Reporting Principles</b>			
102-45	Entities included in the consolidated financial statements	Notes to the Consolidated Financial Statements note 32: Related Party Disclosures	page 129
102-46	Defining report content and topic boundaries	Sustainability at Bittium Reporting	page 43 page 72
102-47	List of material topics	Sustainability at Bittium Focus Areas in Sustainability	page 43 page 51
102-48	Restatements of information	GRI Standards content index	Enhancement of information
102-49	Changes in reporting	Changes in reporting	No major changes
102-50	Reporting period	Reporting period	page 72

## GRI 102 GENERAL DISCLOSURES

G4	Title	Location	Additional info/comments
102-51	Date of most recent report	GRI Standards Content Index	March 11, 2020
102-52	Reporting cycle	Reporting	Report is published annually, page 72
102-53	Contact point for questions regarding the report	Karoliina Fyrstén Director, communications and marketing karoliina.fyrsten@bittium.com	page 73
102-54	Claims of reporting in accordance with the GRI Standards	Reporting Basics and Principles	page 72
102-55	GRI content index	GRI Standards content index	page 73
102-56	External assurance	Reporting Basics and Principles	page 72

## GRI 103 MANAGEMENT APPROACH

103-1	Explanation of the material topic and its boundary	GRI Standards Content Index Focus Areas in Sustainability	Calculation boundary: Bittium Corporation
103-2	The management approach and its components	Sustainability Management Focus Areas of Sustainability	page 44 page 51
103-3	Evaluation of the management approach	Sustainability Management	Management Review page 44

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205 Anticorruption			
205-3	Confirmed incidents of corruption and actions taken	Corporate Citizenship and Sustainable Business Practices	No violations page 64

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302-4	Reduction of energy consumption	Environmental Responsibility	page 70
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303-1	Water withdrawal by source	Environmental Responsibility	Total consumption and water usage / person page 70
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305-3	Direct (Scope 1) GHG emissions	Environmental Responsibility	Reported carbon footprint page 70

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<b>307 Environmental Compliance</b>			
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<b>404 Training and education</b>			
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404-2	Programs for upgrading employee skills and transition assistance programs	Innovative and Developing People	page 56
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<b>419 Socioeconomic Compliance</b>			
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# Report by the Board of Directors and Financial Statements 2019

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# Report by the Board of Directors

Unless otherwise mentioned, the figures in brackets refer to the corresponding period in the previous year.

## Year 2019 in Brief

### Net Sales Grew and Operating Result Improved in 2019

Bittium's net sales in January–December 2019 grew by 19.7 percent year-on-year to EUR 75.2 million (EUR 62.8 million).

The share of the product-based net sales increased to 65.6 percent and was EUR 49.4 million (EUR 30.8 million). The net sales resulted mainly from the deliveries of the tactical communication system and products, Bittium Faros ECG devices, and secure Bittium Tough Mobile smartphones and their related security software. The growth of the product-based net sales was driven in particular by increased sales of Faros devices.

The share of the services-based net sales decreased to 34.4 and was EUR 25.9 million (EUR 32.1 million). The decrease in the services business net sales was caused by the company's own significant large R&D projects that tie experts into internal product development.

Operating profit was EUR 6.3 million (EUR 2.8 million).

### Significant Events during the Reporting Period

February 14, 2019–Bittium Wireless Ltd, a subsidiary of Bittium Corporation, received a purchase order from the Finnish Defence Forces for products included in the Software Defined Radio based Bittium Tactical Wireless IP Network™ (TAC WIN) system and Bittium Tough Comnode™ terminals, which are meant for tactical communications. The total value of the purchase order is EUR 11.5 million of which the share of the Bittium TAC WIN system's products is EUR 9.9 million and the share of the Bittium Tough Comnode terminals is EUR 1.6 million.

The share of the purchase order including Bittium TAC WIN system's products is based on the Framework Agreement signed by Bittium and the Finnish Defence Forces on August 9, 2017. According to the Framework Agreement, the Finnish Defence Forces will order products included in the Software Defined Radio based Bittium TAC WIN system during the years 2018–2020. If materialized in full, the total value of the Framework Agreement is EUR 30 million. Finnish Defence Forces will issue separate purchase orders for the products each year. The products ordered in February will be delivered to the Finnish Defence Forces during the year 2019.

The share of the purchase order including Bittium Tough Comnode terminals is based on the Framework Agreement signed by Bittium and the Finnish Defence Forces on November 5, 2018. According to the Framework Agreement, the Finnish Defence Forces will order Bittium Tough Comnode terminals and related accessories during the years 2018–2022. If materialized in full, the total value of the Framework Agreement is EUR 8.3 million. Finnish Defence Forces will issue separate purchase orders in several batches during the validity of the Framework Agreement. The products ordered in February will be delivered to the Finnish Defence Forces during the year 2019.

On March 1, 2019 Mr. Klaus Mäntysaari, Senior Vice President Connectivity Solutions of Bittium Corporation, a member of Bittium Management Group, decided to leave to another company. Mr. Mäntysaari has been working for Bittium since 2004 in several positions in the wireless services business. He continued at Bittium until April 30, 2019. Temporarily Mr. Hannu Huttunen, CEO of the company, was leading the Connectivity Solutions business. As of May 1, 2019 Bittium management group consisted of following persons: Mr. Hannu Huttunen, CEO (chairman); Mr. Pekka Kunnari, CFO; Mr. Kari Jokela, CLO; Ms. Karoliina Fyrstén, Director, Corporate Communications and

Marketing; Mr. Sammy Loitto, Senior Vice President, Sales; and heads of product and service areas: Mr. Jari Sankala, Senior Vice President, Defense and Security; Mr. Arto Pietilä, Senior Vice President, Medical Technologies; and Mr. Jari-Pekka Innanen, Vice President, Engineering.

On September 5, 2019 Mr. Tommi Kangas (48) was appointed as Senior Vice President, Connectivity Solutions product and services area at Bittium Corporation and as a member of the Bittium Corporation's Management Group, effective immediately. Previously at Bittium, he has been responsible for Connectivity Solutions product and services area's significant key customers as well as worked in several management positions in telecom business and sales. Mr. Kangas reports to Mr. Hannu Huttunen, CEO of Bittium Corporation. As of September 5, 2019 Bittium management group consists of following persons: Mr. Hannu Huttunen, CEO (chairman); Mr. Pekka Kunnari, CFO; Mr. Kari Jokela, CLO; Ms. Karoliina Fyrstén, Director, Corporate Communications and Marketing, Mr. Sammy Loitto, Senior Vice President Sales, and heads of product and service areas: Mr. Jari Sankala, Senior Vice President, Defense and Security; Mr. Arto Pietilä, Senior Vice President, Medical Technologies; and Mr. Tommi Kangas, Senior Vice President, Connectivity Solutions, and Mr. Jari-Pekka Innanen, Vice President, Engineering.

## Financial Performance in January–December 2019

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME, MEUR	2019	2018
	12 months	12 months
Net sales	75.2	62.8
Operating profit / loss	6.3	2.8
Financial income and expenses	-0.4	-0.1
Result before tax	5.9	2.7
<b>Result for the period</b>	<b>7.6</b>	<b>4.0</b>
<b>Total comprehensive income for the period</b>	<b>7.7</b>	<b>4.1</b>
Result for the period attributable to:		
Equity holders of the parent	7.6	4.0
Total comprehensive income for the period attributable to:		
Equity holders of the parent	7.7	4.1
Earnings per share from continuing operations, EUR	0.214	0.113

- Cash flow from operating activities was EUR 9.6 million (EUR -0.5 million).
- Net cash flow during the period was EUR 4.3 million. As the most significant items the net cash flow includes withdrawing a EUR 20.0 million bank loan, EUR 15.6 million investments made into own product development and the EUR 5.4 million dividend payment (EUR -32.0 million, including as the most significant items EUR 15.1 million investments made into own product development and the EUR 10.7 million dividend payment).
- Equity ratio was 73.4 percent (84.7 percent).
- Net gearing was -11.2 percent (-26.7 percent).

## Half Year Figures

GROUP'S NET SALES AND OPERATING RESULT, MEUR	2H/19	1H/19	2H/18	1H/18
Net sales	42.2	33.1	34.5	28.3
Operating profit (loss)	4.7	1.7	3.7	-0.8
Result before taxes	4.4	1.5	3.5	-0.8
Result for the period	6.1	1.5	4.8	-0.8

DISTRIBUTION OF NET SALES BY PRODUCT AND SERVICES, MEUR AND %	2H/19	1H/19	2H/18	1H/18
Product based net sales	30.8	18.6	19.0	11.8
	73.1%	56.1%	54.9%	41.8%
Services based net sales	11.4	14.5	15.6	16.5
	27.1%	43.9%	45.1%	58.2%

DISTRIBUTION OF NET SALES BY MARKET AREAS, MEUR AND %	2H/19	1H/19	2H/18	1H/18
Asia	0.1	0.2	0.4	0.5
	0.3 %	0.5 %	1.1%	1.7%
Americas	12.7	5.8	5.0	3.0
	30.2%	17.5%	14.6%	10.6%
Europe	29.3	27.1	29.1	24.8
	69.6%	82.0%	84.3%	87.7%

## Research and Development

Bittium continued significant investments in its own products and product platforms. In January–December 2019 the investments were EUR 25.1 million, representing a 33.4 percent of net sales.

The investments focused mainly on the development of the tactical communication system and its products targeted to the defense industry, different authorities' and special terminal products and their related security software, and medical technology products.

A significant part of the capitalized R&D investments is related to developing software defined radio based tactical communication handheld and vehicle radios (Bittium Tough SDR product family), further development of tactical networks, development of the secure smartphones and related security software, as well as development of medical technology products.

R&D INVESTMENTS, MEUR	2019 12 months	2018 12 months
<b>Total R&amp;D investments</b>	<b>25.1</b>	<b>21.6</b>
Capitalized R&D investments	-15.6	-15.1
Depreciations and impairment of R&D investments	3.1	0.4
Cost impact on income statement	12.6	6.9
<b>R&amp;D investments, % of net sales</b>	<b>33.4%</b>	<b>34.4%</b>

CAPITALIZED R&D INVESTMENTS IN BALANCE SHEET, MEUR	2019 12 months	2018 12 months
Balance sheet value in the beginning of the period	26.6	11.9
Additions during the period	15.6	15.1
Depreciations and impairment of R&D investments	-3.1	-0.4
Balance sheet value at the end of the period	39.1	26.6

## Statement of Financial Position and Financing

The figures presented in the statement of financial position of December 31, 2019, are compared with the statement of the financial position of December 31, 2018 (MEUR).

	Dec. 31, 2019	Dec. 31, 2018
Non-current assets	80.5	65.9
Current assets	73.8	66.5
Total assets	154.2	132.4
Share capital	12.9	12.9
Other capital	99.4	97.1
Total equity	112.3	110.0
Non-current liabilities	22.1	1.9
Current liabilities	19.9	20.5
Total equity and liabilities	154.2	132.4

<b>CASH FLOW OF THE REVIEW PERIOD</b>	Jan.–Dec. 2019	Jan.–Dec. 2018
+ profit of the period +/- adjustment of accrual basis items	14.3	7.9
+/- change in net working capital	-4.2	-8.4
- interest, taxes and dividends	-0.4	-0.0
= net cash from operating activities	9.6	-0.5
- net cash from investing activities	-18.6	-19.8
- net cash from financing activities	13.2	-11.7
= net change in cash and cash equivalents	4.3	-32.0

The amount of gross investments in the period under review was EUR 21.3 million. Net investments for the review period totaled to EUR 21.3 million. The total amount of depreciation during the period under review was EUR 8.0 million. The amount of interest-bearing debt, including finance lease liabilities, was at the end of the reporting period EUR 22.6 million (EUR 1.5 million). Bittium's equity ratio at the end of the period was 73.4 percent (84.7 percent).

Cash and other liquid assets at the end of the reporting period were EUR 35.2 million (EUR 30.9 million). Net cash flow during the period was EUR 4.3 million. The net cash flow resulted as the most significant items

from the withdrawal of a EUR 20.0 million bank loan, the EUR 15.6 million investments made into own product development and the EUR 5.4 million dividend payment (EUR -32.0 million including EUR 15.1 million investments made into own product development and the EUR 10.7 million dividend payment as most significant items).

Bittium has a EUR 20.0 million senior loan and a EUR 10.0 million committed overdraft credit facility agreement with Nordea Bank Finland Plc. Maturity date for the senior loan is May 24, 2024 and the credit limit agreement is valid until May 24, 2024. Bittium has EUR 10.0 million committed overdraft credit facility agreement with OP Corporate Bank

Plc valid until May 24, 2022. At the end of the review period, EUR 0.0 million of these facilities were in use.

Bittium follows a hedging strategy that has an objective to ensure the business margins in changing market circumstances by minimizing the influence of exchange rates. According to the hedging strategy principles, the net position in the currency is hedged when it exceeds the euro limit defined in the hedging strategy. The net position is determined on the basis of accounts receivable, accounts payable, order book and budgeted net currency cash flow.

## Business Development in January–December 2019

During the first half of the year, Bittium launched a new ultra secure Bittium Tough Mobile 2 smartphone. The core of the information security of the new Bittium Tough Mobile 2 is its multilayered security structure, which is based on the hardened Android™ 9 Pie operating system, unique hardware solutions, and the information security features and software integrated in the source code. The multilayered information security ensures that both the data stored in the device and data transfer are protected as effectively as possible.

The customer deliveries of the Bittium Tough Mobile 2 smartphone started during the second half of the year. Modern smartphone design combined with the world's highest security has attracted market interest. Continuous cyber security attacks raise awareness of the importance of mobile security. Also the deliveries of the first generation Bittium Tough Mobile smartphones continued to the customers.

Bittium announced a new Multicontainer feature for the Bittium Tough Mobile smartphone. It enables the use of several secure container workspaces. The users of secure workspaces can safely download approved applications from their own organizations' application libraries. It enables the users to easily handle confidential information of several organizations as well as their personal data and applications with the same Bittium Tough Mobile smartphone.

Also a new version of Bittium SafeMove® software with important new features to support cyber resilient field operations under disruptions was launched.

The delivery volumes of the satellite smartphone developed to the Mexican authorities fell short of last year's target. However, in 2020, Bittium aims at volume deliveries of the products.

The development work of the new Bittium Tough SDR soldier and vehicle radios has taken slightly longer than expected. Field tests of the products have been conducted during the last half of 2019, and the actual product deliveries to the customers are expected to begin in the early 2020. The products have been designed to operate under extreme conditions. They have a very wide frequency range with unique interference tolerance and strong security.

In the defense business the product deliveries of tactical communication system to Austrian Defence Forces began in the second half of the year. This cooperation has been a major step in the internationalization of Bittium's tactical communication product portfolio. Bittium's tactical backbone network forms the core of the Austrian Defence Forces' new tactical communication system. In addition, Bittium also deploys Bittium Tough Comnode and Bittium Tough VoIP products.

Cooperation with the Finnish Defence Forces continued strong and Bittium received multiple orders from the Finnish Defence Forces during 2019.

The first purchase order was EUR 3.4 million, for maintenance and further development of Bittium TAC WIN™ and Bittium Tough VoIP™ systems during 2019–2020. The second purchase order was EUR 11.5 million in total, for Bittium TAC WIN™ products and Bittium Tough Comnode™ terminals. The third purchase order was for porting the European ESSOR (European Secure Software-defined Radio) program's OC1

(Operational Capability 1) phase wideband waveform to the Bittium Tough SDR radios that will be delivered to the Finnish Defence Forces. The porting of the waveform to the national software-defined radios enables compatibility between radios used in European coalition operations, in accordance with the goals of the ESSOR programme. The value of the purchase order was approximately EUR 1.1 million. The purchase order also included options for the years 2020–2021 with the total value of approximately EUR 2.5 million. The fourth order was narrowband waveform development work for the tactical Bittium Tough SDR radios. Along with the ordered waveform development work, the Finnish Defence Forces can start field tests with the radios and further waveform development in co-operation with Bittium for the needs of the Finnish Defence Forces.

From the Estonian Defence Forces Bittium received an order for the Bittium Tough SDR radios and Bittium TAC WIN system products. Bittium Tough SDR radios and Bittium TAC WIN products complement the tactical communications system that has been delivered to the Estonian Defence Forces already previously.

Bittium was granted the ISO 27001:2013 Information Security Management Certificate that includes Bittium's business and support processes, information security, personnel and premises safety, as well as continuous improvement methods. ISO 27001:2013 specifies the requirements for establishing, implementing, maintaining and continually improving an information security management system within the context of the organization. It also includes requirements for the assessment and treatment of information security risks tailored to the needs of the organization.

Cooperation with the major US cardiac remote monitoring provider Preventice continued to be significant. Bittium and Preventice have together developed a solution that enhances doctor and patient experience in remote cardiac monitoring. The deliveries of ECG devices based on Bittium Faros ECG technology to Preventice for this complete solution, continued to be significant during the year. In addition Bittium won several new customers in Australia, Asia and Europe.

Bittium launched Bittium HolterPlus™ remote cardiac monitoring solution. Bittium HolterPlus solution extends the physician's reach outside of the hospital or medical institution by remotely monitoring the discharged patient from for example home or nursing home. Bittium HolterPlus allows the remotely monitored patient's ECG measurement data to be stored and transferred securely from the monitoring device to the medical remote diagnosis service platform. From the platform the ECG recording can be downloaded to analysis software for a cardiologist to diagnose, after which the treating physician receives the diagnosis and possible instructions for further patient care.

Bittium continued to develop 5G technology and various connectivity solutions for its customers, mainly in Europe. Along with its innovative product development services, Bittium launched a software robotics solution based on its own secure platform. Robotic Process Automation (RPA) is a method for streamlining business processes by automating laborious manual tasks, which are time-consuming, repetitive and prone to errors.

In a total, the sale of the product development services decreased year-on-year affected by the company's own significant large R&D projects that tie experts into internal product development.

## Significant Events after the Reporting Period

There were no significant events after the reporting period.

## Outlook for 2020

The amount of wireless data transfer applications is expanding and diversifying. Also the amount of data transfer and the need for secure data transfer are growing. These all create demand for Bittium's leading edge technology products and solutions. The digitalization of healthcare and the increasing use of remote care, make the healthcare services more efficient, creating demand for Bittium's medical technology products and solutions. During the next years, Bittium aims at strong growth especially in the international markets.

Bittium expects that the net sales in 2020 will grow from the previous year (EUR 75.2 million in 2019) and the operating profit to be at the same level than in the previous year (6.3 million in 2019). The level of the operating profit in 2020 will be impacted by the investments in the international growth and depreciations of the R&D investments.

More information about Bittium's market outlook is presented in the section "Market outlook" in this report.

More information about other uncertainties regarding the outlook is presented in this report in the section "Risks and uncertainties" and on the company's internet pages at [www.bittium.com](http://www.bittium.com).

## Market Outlook

Bittium's customers operate in various industries, each of them having their own industry specific factors driving the demand. A common factor creating demand among the whole customer base is the growing need for higher quality and secure data transfer. Due to the technology competences accrued over time and long history in developing mobile communication solutions, Bittium is in a good position to offer customized solutions for its customers. Over thirty years of experience and extensive competence in measuring of biosignals also act as a basis for medical technology solutions.

The following factors are expected to create demand for Bittium's products and services in 2020 and beyond:

- In the defense sector's tactical communication market, the governments' defense forces and other authorities need networks that troops, who are more and more constantly on the move, can use for transferring growing amounts of data securely. This creates demand for Bittium Tactical Wireless IP Network (TAC WIN) broadband network and for other Bittium's IP-based (Internet Protocol) tactical communications solutions, as well as for Bittium's new tactical communication handheld and vehicle radios that fulfill the needs of data transfer of moving troops or individual soldiers. Bittium continues its efforts to bring its defense market targeted products and services also to the international defense markets and aims to get new international customers for its tactical communication system in 2020. Due to the long sales cycles driven by purchasing programs of national governments, it takes time to receive purchase orders.

- The use of LTE technology, smartphones and applications continue to increase in special verticals such as public safety creating demand for Bittium Tough Mobile secure LTE smartphone and other customized special terminals based on Bittium's own product platform. The awareness of mobile security risks is growing and the interest towards secure mobile devices is increasing. The implementation of LTE-based devices in Public Safety markets has been slower than expected due to the delay of the device functionalities required by the authorities and due to the slow progress of the market. The sale of the secure terminal products is expected to develop moderately according to the nature of public safety markets.
- Using public network connections in portable devices is increasing also in demanding professional use, such as in the public sector. This creates requirements for network connections to be easy to use and secure. The products in the Bittium SafeMove product family enable the ease of use of the devices and security in demanding use.
- In the mobile telecommunications, the demand for 5G technology development work has stabilized and the implementation of 5G is accelerating in pace. Investments in developing new features continue and the importance of software development in the 5G network development expands. This creates demand for Bittium's R&D services. There is a wide range of frequencies allocated for the 5G technology thus creating the need to develop multiple products to cover the market and creating demand for R&D services for development of product variants. Also the development of new devices utilizing 5G technology increases the demand for Bittium's services.
- As the digitalization evolves, the secure IoT (Internet of Things) has become a significant development area in almost every industry. The increasing need of companies to digitalize their operations, collect data wirelessly and transfer it to the internet and cloud services generate need for Bittium's services and customized solutions. The new radio systems customized to IoT are being used all over the world and the amount of digitalized devices increase continuously. Along with the 5G technology is being used, there will also be new features in the IoT that enable i.e. remote control of machines. Therefore the integration of different systems and technologies play an important role in enabling the complete digitalization service. To ease and speed up the processing of large data amounts, there are different kinds of learning systems and devices under development that use different kinds of artificial intelligence (AI) technologies.
- Changes in the digitalization of the automotive industry and new business models and automation of automotive operations create a need for technological development. Most significant technology trends such as intelligent mobility, self-driving cars, electric cars and connectivity are guiding need for innovative software development. The share of software in cars is increasing in speed and software is becoming a major enabler and a differentiator. The use of Android™ Automotive operating system in the In-Vehicle Infotainment (IVI) systems is strongly entering the market. Several carmakers have announced the launch of cars with Android Automotive. Bittium's more than a decade of experience with the Android operating system and the Google ecosystem combined with security know-how creates good business opportunities for this market.
- The heart and brain failures are among the most frequent causes of serious complications and recognizing those symptoms early on, based on information gathered by measuring, enables the start of the effective treatment in time. Also the prevention of diseases and health problems are being increasingly invested in.
- In the healthcare technology market, there is ongoing a significant change in the patient care both inside the hospitals as well as in homecare. The repatriation of patients is being pursued earlier than before which may enable significant cost savings in the healthcare. A prerequisite for early repatriation is the enabling of accurate and precise follow-up and measurement in home conditions through remote monitoring. For this purpose Bittium offers its Bittium Faros product family for remote heart monitoring and Bittium BrainStatus for measuring the electrical activity of the brain. One of the growing application areas in the wireless and remote systems is healthcare technology that enables implementing these changes for its part. Remote monitoring and remote diagnostics together with wireless and remote-controllable systems bring effectiveness to the healthcare performance and cut costs as the diagnoses from specialists are available regardless of time and place. Various diagnostic solutions have been introduced to facilitate and speed up the work of physicians. These are for example Bittium's analytics software in the field of cardiology and neurology. This enables also new service providers to enter the chain of medical treatment services offering wider availability of medicine, without bargaining the quality of specialists i.e. cardiologists and neurologists.

## Risks and Uncertainties

Bittium has identified a number of business, market and finance related risk factors and uncertainties that can affect the level of sales and profits.

### Market Risks

The global economic uncertainty may affect the demand for Bittium's services, solutions and products and provide pressure on e.g. pricing. In the short term such uncertainty may affect, in particular, the utilization and chargeability levels and average hourly prices of R&D services. Growing political uncertainty may also affect the demand for Bittium's services, solutions and products and the price competitiveness in the different geographical areas. Bittium is also increasingly exposed to legal, economic, political and regulatory risks related to the countries in which its suppliers and other cooperation partners are located. Such risks may result in delays in deliveries, currency losses, elevated costs, or litigations and related costs.

As Bittium's customer base includes, among others, companies operating in the field of telecommunication, defense and other authorities, as well as companies delivering products to them, and companies operating in the healthcare sector, the company is exposed to market changes in these industries.

A significant part of Bittium's net sales accumulates from selling products and R&D services to defense and other authorities, as well as companies delivering products to them. Deviation in anticipated business development with such customer concentrations may translate as a significant deviation in Bittium's outlook, both in terms of net sales and operating result, during the ongoing financial period and thereafter.

Bittium seeks to expand its customer base on a longer term and reduce dependence on individual companies and hence the company would thereby be mainly affected by the general business climate in the industries of the companies belonging to Bittium's customer base instead of the development of individual customer relationships. The more specific market outlook has been presented in this report in the "Market Outlook" section.

### Business Related Risks

Bittium's operative business risks are mainly related to following items: uncertainties and short visibility on customers' product program decisions, their make or buy decisions and on the other hand, their decisions to continue, downsize or terminate current product programs, execution and management of large customer projects, ramping up and down project resources, availability of personnel in labor markets, accessibility on commercially acceptable terms and on the other hand successful utilization of the most important technologies and components, competitive situation and potential delays in the markets, timely closing of customer and supplier contracts with reasonable commercial terms, delays in R&D projects, realization of expected return on capitalized R&D investments, obsolescence of inventories and technology risks in product development causing higher than planned R&D costs, and risks related to the ramp-up of product manufacturing. Revenues expected to come from either existing or new products and customers include normal timing risks. Bittium has certain significant customer projects and deviation in their expected continuation could result also significant deviations in the company's outlook. In addition, there are typical industry warranty and liability risks involved in selling Bittium's services, solutions and products.

Bittium's product delivery business model faces such risks as high dependency on actual product volumes, timing risks and potential delays in the markets. The above-mentioned risks may manifest themselves as lower amounts of products delivered or higher costs of production, and ultimately, as lower profit. Bringing Bittium's products to international defense and other authorities markets may take longer than anticipated because the projects are typically long and the purchasing programs are prepared in the lead of national governments and within the available financing. Once a supplier has been selected, product deliveries are typically executed over several years.

Some of Bittium's businesses operate in industries that are heavily reliant on patent protection and therefore face risks related to management of intellectual property rights, on the one hand related to accessibility on commercially acceptable terms of certain technologies in the Bittium's products and services, and on the other hand related to an ability to protect technologies that Bittium develops or licenses from others from claims that third parties' intellectual property rights are infringed. Additionally, parties outside of the industries operate actively in order to protect and commercialize their patents and therefore in their part increase the risks related to the management of intellectual property rights. At worst, claims that third parties' intellectual property rights are infringed could lead to substantial liabilities for damages. In addition, the progress of the customer projects and delivery capability may be also affected by potential challenges in global accessibility of key technologies and components on commercially acceptable terms, as well as by the acceptance of the necessary export licenses. The company changed its name to Bittium

Corporation as of July 1, 2015 and started using the new trademark. The registration and the use of the new trademark can include customary risks involved in taking in use a new trademark.

### Financing Risks

Global economic uncertainty may lead to payment delays, increase the risk for credit losses and weaken the availability and terms of financing. To fund its operations, Bittium relies mainly on income from its operative business and may from time to time seek additional financing from selected financial institutions. In May 2019 Bittium Corporation has agreed with Nordea Bank Finland Plc and OP Corporate Bank Plc on financing arrangement where total financing amount has been raised from EUR 30.0 million to EUR 40.0 million. With the financing arrangement, Bittium has EUR 20.0 million senior loan and EUR 10.0 million committed overdraft credit facility agreement with Nordea. Maturity date for the senior loan is May 24, 2024 and the credit limit agreement is valid until May 24, 2024. Bittium has EUR 10.0 million committed overdraft credit facility agreement with OP Corporate Bank Plc valid until May 24, 2022. These agreements include customary covenants related to, among other things, equity ratio, transferring property and pledging. There is no assurance that additional financing will not be needed in case of investments, networking capital needs or clearly weaker than expected development of Bittium's businesses. Customer dependency in some parts of Bittium's business may translate as an accumulation of risk with respect to outstanding receivables and ultimately with respect to credit losses.

## Environmental Factors

Bittium's business operations focus mostly on the design, assembly provided by the manufacturing partners and marketing of products. This represents only a minor part of the environmental impacts over the entire life cycle of the products. Products of the Company have only minor general environmental impacts.

Bittium Corporation renewed its global environmental management system certification according to ISO 14001:2015 standard in June 2016. Company is monitoring globally the environmental requirements for products and derived national regulations to the extent that they are related to the company operations. Bittium has also observed and applied the requirements of the ROHS (use of hazardous substances) and WEEE (recycling of electrical and electronic equipment) directives in design since 2002.

The applied environmental standards and regulations in company operations have been consolidated as uniform Bittium substance list, applicable also to Bittium's significant suppliers. The biannually updated substance list includes, in addition to the compliance of ROHS (I, III and III) and REACH directives, the substance requirements applicable in different market areas against which identification of materials is made if needed. Further, materials declaration list observes certain customer specific requirements. Company has further updated the requirements mainly on a biannual basis and applied the proper environmental requirements to the products or solutions, in which Bittium has partial or total responsibility depending on the application scope. The imposed requirements will be observed in business operations on a country-specific basis.

During 2019 Bittium's energy efficiency system was updated to cover also international ISO 50001:2018 energy efficiency standard requirements. In addition, environmental management system ISO 9001:2015 was recertified to extend the certification validity until June 2022. Energy efficiency system certification is going to be updated according to ISO 50001:2018 standard during 2020. Bittium has also official energy efficiency review responsible person in its service authorized by Finnish Energy Office.

Bittium has further developed company environmental reporting, based on which the 2019 environmental objectives have been followed. Company has observed the sustainability reporting requirements and published the environmental information as part of its sustainability report. The energy efficiency of Bittium's Oulu facilities has been clearly improved due to new site opened in October 2017. As an example of the energy efficiency actions the energy powered by solar cells was reaching over ten percent of the whole energy consumption at its best during 2019. In the other Bittium facilities no major impacts to energy efficiency were observed during the reporting period. The waste recycling ratio was reaching high level of 99.9% in Bittium's Finnish offices during 2019.

## Personnel

The Bittium group employed an average of 665 people in 2019. At the end of December 2019, the company had 655 employees (674 employees at the end of 2018).

## Changes in the Company's Management

On March 1, 2019 Mr. Klaus Mäntysaari, Senior Vice President, Connectivity Solutions of Bittium Corporation, a member of Bittium Management Group, decided to leave to another company. Mr. Mäntysaari has been working for Bittium since 2004 in several positions in the wireless services business. He continued at Bittium until April 30, 2019. Temporarily Mr. Hannu Huttunen, CEO of the company, was leading the Connectivity Solutions business.

On September 5, 2019 Mr. Tommi Kangas (48) was appointed as Senior Vice President, Connectivity Solutions product and services area at Bittium Corporation and as a member of the Bittium Corporation's Management Group, effective immediately. Previously at Bittium, he has been responsible for Connectivity Solutions product and services area's significant key customers as well as worked in several management positions in telecom business and sales. Mr. Kangas reports to Mr. Hannu Huttunen, CEO of Bittium Corporation. As of September 5, 2019 Bittium management group consists of following persons: Mr. Hannu Huttunen, CEO (chairman); Mr. Pekka Kunnari, CFO; Mr. Kari Jokela, CLO; Ms. Karoliina Fyrstén, Director, Corporate Communications and Marketing; Mr. Sammy Loitto, Senior Vice President Sales, and heads of product and service areas: Mr. Jari Sankala, Senior Vice President, Defense and Security; Mr. Arto Pietilä, Senior Vice President, Medical Technologies; Mr. Tommi Kangas, Senior Vice President, Connectivity Solutions; and Mr. Jari-Pekka Innanen, Vice President, Engineering.

## Incentive Systems

### Variable Pay

Variable pay is paid based on the achievement of the set targets. In 2019, earning period for the variable pay was the calendar year. The targets are determined separately for each earning period. The setting of targets and the review of their achievement is decided on a one-over-one basis. The criteria for the short-term merit pay are the financial and strategic targets of the Company. In 2019, gross margin and cash flow formed the financial targets. In addition, part of the targets may be other Company objectives or personal targets. Personal targets vary between duties.

## Authorizations of the Board of Directors at the End of the Reporting Period

### Authorizing the Board of Directors to Decide on the Repurchase of the Company's own Shares

The General Meeting held on April 10, 2019 authorized the Board of Directors to decide on the repurchase of the Company's own shares as follows.

The amount of own shares to be repurchased shall not exceed 3,500,000 shares, which corresponds to approximately 9.81 percent of all of the shares in the company.

Only the unrestricted equity of the company can be used to repurchase own shares on the basis of the authorization. Own shares can be repurchased at a price formed in public trading on the date of the repurchase or otherwise at a price formed on the market.

The Board of Directors decides how own shares will be repurchased. Own shares can be repurchased using, inter alia, derivatives. Own shares can be repurchased otherwise than in proportion to the shareholdings of the shareholders (directed repurchase).

The authorization canceled the authorization given by the General Meeting on April 11, 2018 to decide on the repurchase of the company's own shares.

The authorization is effective until June 30, 2020.

### Authorizing the Board of Directors to Decide on the Issuance of Shares as well as the Issuance of Special Rights Entitling to Shares

The General Meeting held on April 10, 2019 authorized the Board of Directors to decide on the issuance of shares and special rights entitling to shares referred to in Chapter 10 Section 1 of the Companies Act as follows. The amount of shares to be issued shall not exceed 7,000,000 shares, which corresponds to approximately 19.61 percent of all of the shares in the company.

The Board of Directors decides on all the conditions of the issuance of shares and of special rights entitling to shares. The authorization concerns both the issuance of new shares as well as the transfer of treasury shares. The issuance of shares and of special rights entitling to shares may be carried out in deviation from the shareholders' pre-emptive rights (directed issue).

The authorization canceled the authorization given by the General Meeting on April 11, 2018 to decide on the issuance of shares as well as the issuance of special rights entitling to shares referred to in Chapter 10 Section 1 of the Companies Act.

The authorization is effective until June 30, 2020.

## Shares and Shareholders

The shares of Bittium Corporation are quoted on Nasdaq Helsinki. The Company has one series of shares. All shares entitle their holders to dividends of equal value. Each share has one vote. The share does not have a nominal value. The Company's shares have been entered into the Euroclear Finland Ltd's book-entry securities system.

At the end of the financial period, the fully paid share capital of the Company entered into the Finnish Trade Register was EUR 12,941,269.00 and the total number of the shares was 35,693,166. The accounting par value of the Company's share is EUR 0.10. The Company does not have its own shares in its possession.

Shareholding and control related information is presented in section 36 of the notes to the Financial Statement.

## Flagging Notifications

There were no changes in the ownership during the period under review that would have caused flagging notifications which are obligations for disclosure in accordance with Chapter 2, section 9 of the Securities Market Act.

## Notifications of Managers' Transactions

There were no managers' transactions during the reporting period.

## The Board, Board Committees and the Auditor

The Annual General Meeting held on April 10, 2019 decided that the Board of Directors shall comprise six (6) members. Ms. Riitta Tiuraniemi, Mr. Seppo Mäkinen, Mr. Juha Putkiranta, Mr. Petri Toljamo and Mr. Erkki Veikkolainen were re-elected as members of the Board of Directors for a term of office expiring at the end of the next Annual General Meeting. Further, Mr. Pekka Kempainen was elected as the new member of the Board of Directors for a corresponding term of office.

At its assembly meeting held on April 10, 2019, the Board of Directors has elected Mr. Erkki Veikkolainen Chairman of the Board. Further, the Board has resolved to keep the Audit Committee. Ms. Riitta Tiuraniemi (Chairman of the committee) and Mr. Juha Putkiranta were elected as members of the Audit Committee and authorized public accountant Seppo Laine was invited to the Audit Committee as external advisor of the Board of Directors.

Ernst & Young Oy, authorized public accountants, was re-elected auditor of the Company for a term of office ending at the end of the next Annual General Meeting. Ernst & Young Oy has notified that Mr. Jari Karppinen, authorized public accountant, will act as responsible auditor.

## Corporate Governance Statement

The Board of Directors has issued the corporate governance statement separate from this report.

## Dividend from 2018

The Annual General Meeting held on April 10, 2019 decided in accordance with the proposal of the Board of Directors to pay EUR 0.05 per share as dividend based on the adopted balance sheet for the financial period of January 1, 2018–December 31, 2018, representing approximately half of the result of the financial period, and in addition, EUR 0.10 per share as additional dividend, totaling altogether to EUR 0.15 per share. The dividend was paid to the shareholders who were registered as shareholders in the Company's register of shareholders as maintained by Euroclear Finland Ltd on the dividend record date Friday, April 12, 2019. The dividend was paid on April 23, 2019.

# Consolidated Statement of Comprehensive Income

Continuing operations, 1000 EUR	Notes	Jan. 1– Dec. 31, 2019	Jan. 1– Dec. 31, 2018
<b>NET SALES</b>	1, 3	<b>75,216</b>	<b>62,840</b>
Other operating income	4	923	1,263
Change in work in progress and finished goods			
Work performed by the undertaking for its own purpose and capitalized		170	337
Raw materials		-17,148	-10,214
Personnel expenses	7	-31,531	-29,717
Depreciation	6	-7,999	-4,650
Other operating expenses	5	-13,447	-17,120
Share of results of the associated companies	15	143	105
<b>OPERATING PROFIT</b>		<b>6,326</b>	<b>2,845</b>
Financial income and expenses	9	-415	-136
<b>PROFIT BEFORE TAX</b>		<b>5,912</b>	<b>2,709</b>
Income tax	10	1,733	1,315
<b>PROFIT FOR THE YEAR FROM CONTINUING OPERATIONS</b>		<b>7,644</b>	<b>4,024</b>
Profit for the year from discontinued operations	2		
<b>PROFIT FOR THE YEAR</b>		<b>7,644</b>	<b>4,024</b>
<b>Other comprehensive income:</b>			
Items that may be reclassified subsequently to the statement of income			
Exchange differences on translating foreign operations		29	46
<b>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</b>		<b>7,673</b>	<b>4,070</b>
<b>Profit for the year attributable to</b>			
Equity holders of the parent		7,644	4,024
<b>Total</b>		<b>7,644</b>	<b>4,024</b>
<b>Total comprehensive income for the year attributable to</b>			
Equity holders of the parent		7,673	4,070
<b>Total</b>		<b>7,673</b>	<b>4,070</b>
<b>Earnings per share for profit attributable to the shareholders of the parent company</b>	11		
<b>Earnings per share from continuing operations, EUR</b>			
Basic earnings per share		0.214	0.113
Diluted earnings per share		0.214	0.113
<b>Earnings per share from discontinued operations, EUR</b>			
Basic earnings per share			
Diluted earnings per share			
<b>Earnings per share from continuing and discontinued operations, EUR</b>			
Basic earnings per share		0.214	0.113
Diluted earnings per share		0.214	0.113
Average number of shares, 1000 pcs		35,693	35,693
Average number of shares, diluted, 1000 pcs		35,693	35,693

# Consolidated Statement of Financial Position

Assets, 1000 EUR	Notes	Dec. 31, 2019	Dec. 31, 2018
<b>Non-current assets</b>			
Property, plant and equipment	12	24,238	23,448
Goodwill	13	5,825	5,821
Intangible assets	13	41,803	29,691
Investments in associated companies	15	1,661	1,480
Other financial assets	16	112	112
Non-current receivables	19	1,353	1,578
Deferred tax assets	17	5,473	3,747
<b>Total</b>		<b>80,465</b>	<b>65,877</b>
<b>Current assets</b>			
Inventories	18	18,219	14,585
Trade and other receivables	19	20,412	21,061
Financial assets at fair value through profit or loss	20	5,675	21,576
Cash and short-term deposits	21	29,479	9,305
<b>Total</b>		<b>73,785</b>	<b>66,527</b>
<b>Total assets</b>		<b>154,250</b>	<b>132,404</b>
<b>Equity and liabilities</b>			
Equity attributable to equity holders of the parent	22		
Share capital		12,941	12,941
Translation differences		1,112	1,083
Invested non-restricted equity fund		25,953	25,953
Retained earnings		72,321	70,058
<b>Total</b>		<b>112,327</b>	<b>110,035</b>
<b>Total equity</b>		<b>112,327</b>	<b>110,035</b>
<b>Non-current liabilities</b>			
Deferred tax liabilities	17	337	405
Interest-bearing loans and borrowings (non-current)	25	21,351	769
Other non-current liabilities, non-interest bearing	27	374	685
<b>Total</b>		<b>22,062</b>	<b>1,859</b>
<b>Current liabilities</b>			
Trade and other payables	27	16,859	18,121
Provisions	24	1,754	1,643
Interest-bearing loans and borrowings (current)	25	1,247	747
<b>Total</b>		<b>19,861</b>	<b>20,510</b>
<b>Total liabilities</b>		<b>41,922</b>	<b>22,369</b>
<b>Total equity and liabilities</b>		<b>154,250</b>	<b>132,404</b>

# Consolidated Statement of Cash Flows

1000 EUR	Notes	Jan. 1– Dec. 31, 2019	Jan. 1– Dec. 31, 2018
<b>Cash flow from operating activities</b>			
<b>Profit for the year from continuing operations</b>		<b>7,644</b>	<b>4,024</b>
<b>Profit for the year from discontinued operations</b>			
Adjustments			
Effects of non-cash business activities	29	8,003	5,018
Finance costs	9	765	1,412
Finance income	9	-350	-1,276
Income tax	10	-1,733	-1,315
Change in net working capital			
Change in short-term receivables	19	870	-4,284
Change in inventories	18	-3,545	-3,909
Change in interest-free short-term liabilities	27	-1,572	-175
Interest paid on operating activities		-741	-1,412
Interest and dividend received from operating activities		350	1,276
Income taxes paid		-43	92
<b>Net cash from operating activities</b>		<b>9,649</b>	<b>-548</b>
<b>Cash flow from investing activities</b>			
Acquisition of business unit, net cash acquired	14		
Purchase of property, plant and equipment	12	-2,277	-3,697
Purchase of intangible assets	13	-16,141	-15,958
Sale of property, plant and equipment	12	8	
Sale of intangible assets	13	15	31
Purchase of investments/associated companies	15	-182	-208
<b>Net cash from investing activities</b>		<b>-18,578</b>	<b>-19,832</b>
<b>Cash flows from financing activities</b>			
Share option plans exercised	23		
Proceeds from borrowings	25	20,000	
Repayment of borrowing	25		-5
Payment of finance lease liabilities	25, 26	-1,444	-944
Dividend paid and capital repayment		-5,354	-10,708
<b>Net cash from financing activities</b>		<b>13,202</b>	<b>-11,657</b>
<b>Net change in cash and cash equivalents</b>	21	<b>4,273</b>	<b>-32,038</b>
Cash and cash equivalents at 1 January		30,881	62,919
Change in fair value of investments			
<b>Cash and cash equivalents at the end of the year</b>		<b>35,154</b>	<b>30,881</b>

Cash and cash equivalents include liquid and low risk financing securities.

# Consolidated Statement of Changes in Equity

## Equity attributable to equity holders of the parent

1000 EUR	Share capital	Invested non- restricted equity fund	Translation difference	Retained earnings	Non- controlling interests	Total
<b>Shareholders' equity Jan. 1, 2019</b>	12,941	25,953	1,083	70,058	0	110,035
<b>Comprehensive income for the period</b>						
Profit for the period				7,644		7,644
Exchange differences on translating foreign operations			29			29
<b>Total comprehensive income for the period</b>	0	0	29	7,644	0	7,673
<b>Transactions between the shareholders</b>						
Dividend distribution				-5,354		-5,354
<b>Other changes</b>				-27		-27
<b>Shareholders' equity Dec. 31, 2019</b>	12,941	25,953	1,112	72,321	0	112,327
<b>Shareholders' equity Jan. 1, 2018</b>	12,941	25,953	1,036	76,747	0	116,678
<b>Comprehensive income for the period</b>						
Profit for the period				4,024		4,024
Exchange differences on translating foreign operations			46			46
<b>Total comprehensive income for the period</b>	0	0	46	4,024	0	4,070
<b>Transactions between the shareholders</b>						
Dividend distribution				-10,708		-10,708
<b>Other changes</b>				-5		-5
<b>Shareholders' equity Dec. 31, 2018</b>	12,941	25,953	1,083	70,058	0	110,035

# Notes to the Consolidated Financial Statements

## Corporate Information

The company's field of activities is the development, production and selling of software, equipment and other products for the automotive and electronics industry, the production of R&D services and other services as well as other industrial operations. The company may administer product and other rights and conduct research and development operations, hold and trade securities and real-estate and conduct other investment activities.

The parent company of the Group is Bittium Corporation, which is a Finnish public company. The parent company is domiciled in Oulu and its registered address is Ritaharjantie 1, 90590 Oulu.

## Accounting Principles for the Consolidated Accounts

### Basis of Preparation

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as well as the SIC and IFRIC interpretations in force at December 31, 2019. The financial statements are presented in thousands of euro. The consolidated financial statements have been prepared on a historical cost basis unless otherwise indicated.

## Consolidation Principles

The consolidated financial statements of Bittium include the financial statements of the parent company Bittium Corporation and its subsidiaries.

### Subsidiaries

The consolidated financial statements include Bittium Corporation and its subsidiaries financial statements. Subsidiaries are companies in which the Bittium Corporation has a controlling interest. A controlling interest arises when the Group holds more than half of the voting rights or it otherwise has the power to govern the financial and operating policies of the entity. The existence of potential voting rights is taken into account in assessing the conditions under which control arises whenever instruments conferring potential voting rights can be exercised at the review date.

### Associated Companies

An associated company is a company in which the Group has a significant influence. A significant influence exists, when the Group has a right to participate in the decision making in regards of financing or operative business of the associated company but has no sole or common control of such decisions. In the consolidated financial statements the investments in the associated companies are accounted for using the equity method according to the IFRS 11: Joint Arrangements standard. The investment in associated companies is recorded using the acquisition price, adjusted for the Groups' share of changes in the associated companies' equity after the date of acquisition. If the Groups' share of associated companies' losses exceeds the carrying amount of the investment, the investment in the associated company in the balance sheet shall be written off. The losses exceeding the carrying amount are consolidated only if the Group has a binding obligation of covering the associated companies' liabilities. Investments in the associated companies include the goodwill emerging upon the acquisition. The unrealized profits or losses

between the Group and the associated companies are eliminated according to the share of Groups' ownership.

The Groups' share of results in the associated companies is recorded as an item above the operating result if the result arises from the operative business. The Groups' share of associated companies' other comprehensive income is recorded in the other items of comprehensive income in the consolidated statement of profit and loss.

The carrying value of investments in the associated companies is tested by comparing the carrying amount and the recoverable amount of the associated companies. An impairment loss is recognized if the carrying amount of the investment in associated companies exceeds the recoverable amount. An impairment loss is recognized in the income statement.

### Elimination of Intra-Group Transactions

Intra-Group share ownership has been eliminated by means of the purchase method. Acquired subsidiaries are included in the consolidated financial statements from the time when the Group has obtained control, and divested subsidiaries up to the time when control ceases. The excess of the acquisition cost of the subsidiary shares over fair value of the net assets acquired is allocated partly to the identifiable assets and liabilities. Any excess is recorded as goodwill. Business combinations that occurred before the implementation of IFRS, in 2004, the carrying amount of the goodwill has been treated according to the Finnish GAAP in accordance with the exemption under IFRS 1. According to IFRS goodwill is not amortized but tested annually for impairment.

Intra-Group transactions, receivables, liabilities and margins are eliminated in preparation of the consolidated financial statements.

## Foreign Currency Transactions

Figures relating to the financial statements of Group entities are measured in the currency that is the currency of each entity's main operating environment ("functional currency"). The consolidated financial statements are presented in euros, which is the functional currency of the Group's parent company.

Transactions denominated in foreign currency are recorded in euros using the exchange rate on the date of the transaction. Monetary items denominated in foreign currency are translated to euros using the European Central Bank exchange rates at the balance sheet date. Gains and losses arising from transactions denominated in foreign currency and the translation of monetary items are recorded in the income statement.

Income statements and cash flows of subsidiaries, whose functional and reporting currency is not the euro, are translated into euros at the average exchange rates during the financial period. Their balance sheets are translated at the exchange rates prevailing at the balance sheet date. Translating the profit for the period using different rates in the income statement and the balance sheet leads to a translation difference that is recorded in equity. The translation differences arising from the elimination of the cost of foreign subsidiaries are recorded in equity. When a subsidiary is sold, the cumulative translation differences are entered in the income statement as part of the capital gain or loss.

Cumulative exchange differences arising from the translation of internal long term loans, which are in actual terms net investments in foreign operations, are taken directly to a separate component of equity.

The goodwill arising from the acquisition of foreign operations as well as fair value adjustments made to the carrying amounts

of the assets and liabilities of said foreign operations in connection with an acquisition are treated as the assets and liabilities of said foreign operations and translated to euros using the exchange rates at the balance sheet date.

## Property, Plant and Equipment

Property, plant and equipment are measured at historical cost less depreciation and impairment losses. Assets of acquired companies are stated at their fair values at the date of acquisition. Assets are depreciated using the straight-line or reducing balance method over their useful life.

The residual value of assets and their useful life are reviewed periodically in connection with each set of financial statements and the interim report and, if necessary, they are adjusted to reflect changes that have occurred in the expectations for the asset's useful life. Ordinary repair and maintenance costs are charged to the income statement during the financial year in which they incurred. Gains and losses on sales and disposals are determined by comparing the received proceeds with the carrying amount and are included in operating profit.

## Intangible Assets

### Goodwill

After January 1st, 2004 the cost of goodwill is the excess of the cost of the business combination over the acquirer's interest in the net fair value of the identifiable assets. The goodwill arising from the business combinations prior to this represents the amount recorded under previous GAAP, which has been used as the deemed cost. The classification and accounting treatment of these business combinations has not been adjusted when the Group's opening IFRS balance sheet has been prepared.

Goodwill is tested annually or, if necessary, more frequently to determine any impairment. For this purpose, goodwill has been allocated to cash-generating units. The recoverable amount of a cash generating unit is compared to its carrying amount and an impairment loss is recognized if the carrying amount of the assets exceeds the recover-

able amount. An impairment loss is recognized in the income statement.

### Research and Development Expenditure

Research expenditures are recorded as an expense as they are incurred. Expenditure on development activities is capitalized if they meet the criteria defined in IAS 38 Intangible Asset. Capitalized development expenses include mainly materials, supplies and direct labor costs. They are amortized on a systematic basis over their expected useful lives.

Capitalized development expenses are reviewed for potential impairment regularly by comparing the carrying amount to their recoverable amount. Significant changes in the technological environment are taken into account. If the carrying amount of the development expenses is greater than the recoverable amount, an impairment loss is recognized immediately.

### Other Intangible Assets

Patents, trademarks, licenses and other intangible assets having a finite useful life are entered in the balance sheet and the amortized expense is recorded in the income statement over their useful life. If indications on possible impairment exist, the recoverable amount is determined and an impairment loss is recognized if necessary. Intangible assets with an indefinite useful life are not amortized but tested annually or, if necessary, more frequently to determine any impairment.

## Inventories

Inventories are stated at the lower of initial cost or net realizable value. Net realizable value is the estimated selling price in the normal course of business less the estimated costs of sale.

The value of raw material inventory is determined using a weighted average cost formula. The initial cost of finished and semi-finished products comprises of raw material, direct labor and other direct expenses as well an appropriate share of fixed and variable production overheads, based on the normal capacity of the production facilities.

## Borrowing Costs

Borrowing costs are recognized in the income statement as they accrue.

## Government Grants

Government grants are recognized when there is reasonable assurance that Group will comply with the conditions attaching to them and the grant will be received. Government grants received from public corporations are presented as other income in the income statement.

## Leases

IFRS 16 Leases standard has come into force on 1st of January 2019. According to the standard in principle all lease contracts of the Group are recognized as assets and liabilities in Group's Balance Sheet. Bittium adopted the standard using the retrospective approach and did not restate the comparative periods.

When the Group is a lessee, lease liabilities are recognized at the present value of the future lease payments at the contact date which the leased asset is available for use by the group. Lease payments are discounted by using lessee's incremental borrowing rate. Corresponding asset to the lease liability is recognized on the historical cost basis. According to the historical cost basis model, depreciation and amortization costs are deducted from the initially recognized right-of-use asset. When adjustments to lease payments take effect, the lease liability is reassessed and adjusted against the right-of-use asset.

The Group determines the lease term as a period when a lease contract cannot be terminated. In determining the lease term, all facts and circumstances are considered that create an economic incentive to exercise an extension option, or not exercise a termination option. The Group adjusts the lease term if the period when a lease contract cannot be terminated changes. Payments associated with short-term leases and all leases of low-value assets may be recognized on a straight-line or other systematic basis as an expense in profit or loss.

The right-of-use assets are presented within the same line item as the corresponding underlying assets would be presented if they were owned. Lease liabilities are included in interest-bearing liabilities.

## Impairment of Assets

At each balance sheet date (including interim reports) the Group estimates whether there is any indication that an asset may be impaired. If any such indication exists, the recoverable amount of the asset is estimated. The recoverable amount is estimated annually regardless of any indication of impairment to the following assets: investments, goodwill, intangible assets with an indefinite useful life and for intangible assets which are not yet ready for use. The recoverable amount is based on the future discounted net cash flows, which are equivalent with the expected cash flows generated by the asset.

An impairment loss is recognized whenever the carrying amount of an asset exceeds its recoverable value. The loss is booked to the income statement. A previously recognized impairment loss is reversed only if there has been a change in the estimates used to determine the recoverable amount. However, the reversal must not cause that the adjusted value is higher than the carrying amount that would have been determined if no impairment loss had been recognized in prior years. Impairment losses recognized for goodwill will under no circumstances be reversed.

## Employee Benefits

### Pension Liabilities

Group companies in different countries have pension plans in accordance with local conditions and practices. The plans are classified as either defined contribution plans or defined benefit plans.

In Finland, the Group has organized pension coverage for its staff through independent pension insurance companies. The Finnish system under the Employees' Pensions Act and the disability portion are treated as a defined contribution plan. The contributions to defined contribution plans are charged to the income statement in the year to which

they relate. After this the Group has no other obligations for additional payment. Also the pension arrangements of the foreign subsidiaries are classified as defined contribution plans.

### Share-Based Payment

The Group has applied IFRS 2: Share-Based Payment standard. Part of the remuneration for the Board of Directors is paid in shares of Bittium. Share-based incentives are measured at fair value at the time they are granted and entered as an expense in the income statement when right is granted.

## Provisions

A provision is recognized when the Group has a legal or constructive obligation as a result of a past event, it is probable that a payment obligation will be realized or cause a financial loss and the amount of the obligation can be estimated reliably. Provisions can arise from restructuring plans, onerous contracts, warranty repairs and allowances and from environmental, litigation or tax risks.

The amount recognized as a provision is the best estimate of the expenditure required to settle the present obligation at the balance sheet date. If the time value of money is material, provisions will be discounted.

If a reimbursement can be obtained from a third party for part of the obligation, the reimbursement is treated as a separate asset when it is virtually certain that the reimbursement will be received.

## Taxes

Tax expense in the Group's income statement comprises the current tax and change in deferred taxes of each group company. Current tax is calculated based on the taxable income using the tax rate that is enacted in each country at the balance sheet date.

Deferred tax liability is calculated on the temporary differences between the carrying amounts and the amounts used for taxation purposes. Deferred tax assets are recognized for deductible temporary differences and tax losses to the extent that it is

probable that taxable profit will be available against which tax credits and deductible temporary differences can be utilized. In calculating deferred tax liabilities and assets, the tax base which is in force at the time of preparing the financial statements or which has been enacted by the balance sheet date for the following period, has been applied.

## Revenue Recognition

Bittium identifies and reviews the customer contracts and the revenue recognition principles for the different contract elements using the five step method presented in IFRS 15. According to Bittium principles the signed contracts and purchase orders are customer contracts in accordance with IFRS 15. Frame contracts and Letters of intent can be classified as customer contracts only when the conditions of the contract are otherwise fully in accordance with the IFRS 15..

Bittium has recognized following IFRS 15 contract elements: product and license sales, sales of R&D services, maintenance

and support services of products and extended warranties of the products. Bittium has listed prices for the products and their maintenance and support services as well as for their extended warranties. If the contract does not define a single price of a contract element, the price can be estimated using the market price method or using a cost base method. The prices for the sales of services are defined in each service contract. Bittium has not activated any costs of gaining a contract nor has it allocated them for the projects or products as part of the revenue to be recognized. These additional costs have been minor and the possible assets borne as a result would have a depreciable lifetime of less than one year.

The revenue of the services is recognized as the service has been performed. In this case the contract element is delivered over time. Revenue from long-term construction contracts is recognized based on the stage of completion when the outcome of the project can be reliably measured. The stage of completion is measured by using the cost-to-cost method under which the percent-

age of completion is defined as the ratio of costs incurred to total estimated costs. This requires an accurate forecasting of future sales and costs during the lifetime of the contract. The forecasts are a basis for the revenue recognized and they contain the latest estimates of the contract sales, costs, and the risks related to the contract. The forecasts are also subject to remarkable changes due to possible changes in contract scope, cost estimate changes and change in customers' plans as well as other factors affecting the forecast.

The revenue of product sales is recognized when the significant risks and rewards normally connected with ownership, have been transferred to the buyer. Neither the Group retains a continuing managerial involvement to the degree usually associated with ownership, nor effective control of these goods. In this case the contract element is transferred in a point in time. Sales are presented net of indirect sales taxes and discounts.

The following matrix states the different aspects of estimating and classifying the revenue recognition of different contract elements:

Type of Contract	Contract Element	The Principle for Revenue Recognition and Possible Estimates
Sales of services	Customer contract, fixed price	Percentage of completion defined as the ratio of costs incurred to total estimated costs.
Sales of services	Customer contract based on time, price per hours	Revenue based on the work performed, recognition based on regular invoicing.
Product/licence sales	Product, off shelf	The revenue based on product delivery as the customer has achieved the control of the goods delivered.
Product/licence sales	Product, customized	The revenue based on product delivery as the customer has achieved the control of the goods delivered. The customization work is accrued over time according to the percentage of completion or based on the time as mentioned above in the sales of services.
Product/licence sales	Product + maintenance	The revenue based on product delivery as the customer has achieved the control of the goods delivered. Maintenance accrued over the maintenance period.
Product/licence sales	Product support services	Over time, based on the work done.
Other contracts	Rental agreements	During the rental period, according to the rental agreement.

In case Bittium receives prepayments from customers, the income related to them is recognized according to above mentioned principles. For the product warranties Bittium makes warranty provisions that are reversed over time during the warranty periods. The extended warranties paid separately are accrued as income over time during the warranty period.

### Assets Held for Sale and Discontinued Operations

The Group classifies a non-current asset or disposal as held for sale if its carrying amount will be recovered principally through a sale transaction rather than through continuing use. Non-current assets and asset items related to discontinued operations, which are classified as held for sale, are measured at the lower of their carrying amount and fair value less costs to sell. Depreciation and amortization on these asset items is discontinued at the time of classification.

## Financial Assets, Financial Liabilities and Derivative Contracts

The hedge accounting according to the IFRS 9 Financial Instruments standard has not been applied for the financial statement period or for the comparative period.

As presented in IFRS 9, Bittium has three classes of financial assets and liabilities: those measured at amortized cost, financial assets and liabilities at fair value through other comprehensive income and financial assets and liabilities at fair value through statement of income. The classification is made based on the business models and based on the analysis of cash flows. The financial assets and liabilities are classified as they are initially recorded. After this no reclassifications are made unless the business model of asset management changes.

At the financial statement date Bittium had a marginal amount of financial assets other than those measured at amortized cost. As an exception to this, the cash and short-term deposits include a low risk short-term investment portfolio that is assessed at fair value through statement of income.

The financial assets are written off when:

- The agreement based right for the cash flows of the financial asset is terminated or;
- The group has either transferred all the relevant risks and rewards related to the financial assets or it has transferred their control outside the group.

### The Impairment of Financial Assets

IFRS 9 had a small effect on assessment of group financial assets. Based on the simplified approach allowed by IFRS 9 standard the group assesses and writes off the amount of expected credit losses from accounts receivables. There are no significant financing components contained into Bittium's accounts receivables.

For assessing the expected credit losses, Bittium applies a provision matrix that is based on historical realized loss rates adjusted by forward looking estimates of lifetime of accounts receivables. All the components of the provision matrix are updated for each reporting date. The expected credit losses are presented in the group of provisions in the balance sheet. The changes in the expected credit losses are presented in the profit and loss statement.

### Cash and Short-Term Deposits

Cash comprises cash on hand, bank deposits and other highly liquid investments with low risk. Assets classified as cash and short-term deposits have a maximum maturity of three months from the date of acquisition. Cash and bank deposits are measured at amortized cost, the short-term

investment portfolio is assessed at fair value through statement of income.

### Financial Liabilities

Financial liabilities include trade and other payables, loans and other financial liabilities. All financial liabilities are measured at amortized cost. The loans are initially recognized at fair value. Transaction costs are entered in the profit and loss. Subsequently the loans are measured at the amortized cost by using the effective interest rate.

Financial liabilities are not reclassified after the initial recognition. Non-current financial liabilities are due after one year whereas the current financial liabilities are due within one year.

Financial liabilities are disposed as the liability related to the contract is declared void, cancelled or due. As the terms of the financial liability are substantially changed or when a new contract with the existing creditor is made, the change is entered as disposal of the old liability and as an entry of a new liability. The changes in the balance sheet values are entered through profit and loss.

## Significant Accounting Estimates and Judgments

The preparation of financial statements requires management to make estimates and assumptions about the future that affects the reported amounts. Used estimates and assumptions are based on prior experience and presumptions, which reflect the circumstances and expectations prevailing at the time of the preparation of the financial statements. Materiality and judgment in assessing the effect of uncertainties and the application of accounting principles have been observed in the preparation of the financial statements.

The management has exercised judgment during the financial year in applying e.g. in assessing the future cost forecasts in the percentage of completion projects, assessing the value of intangible assets in business acquisitions and also when assessing the future prospects of Group companies in conjunction with standards IAS 12: Income Taxes and IAS 36: Impairment of Assets. Based on the management judgment, the majority of the capitalized R&D investments are depreciated over their expected useful lives. Part of the capitalized R&D investments is depreciated based on production amounts of the goods.

Financial statements may include non-recurring income or expenses that are not related to normal operative business or that occur only infrequently. Such items are among others sales profits or losses, substantial changes in asset values, like impairment or reversal of impairment, substantial restructuring costs or other substantial items that are considered as non-recurring by the management. Substantiality of the item is based on the item's euro amount and the relative share of total value of the asset.

standard using the retrospective approach and did not restate the comparative periods. According to the standard, basically all the Group lease agreements are presented as assets and liabilities in the balance sheet. The adoption of the standard increased the value of assets in the opening balance sheet 1 January 2019 by EUR 1.5 million. The adoption of the IFRS 16 standard did not have material effect on Bittium EBITDA (EUR 0.5 million) nor Bittium operating profit (EUR 0.0 million). The adoption of the IFRS 16 standard increased cash flow from operating activities in the reporting period by EUR 0.5 million and interest-bearing liabilities by EUR 1.1 million.

The other forthcoming revisions or amendments of the standards are not expected to have significant impact on the consolidated financial statements.

## The Application of New and Revised IFRS Regulations

The consolidated financial statements are prepared in accordance with International Financial Reporting Standards (IFRS) effective at the end of the period.

### **The Application of IFRS 16 Leases Standard**

IFRS 16 Leases standard has come into force on 1st of January 2019. It replaced the former IAS 17 standard and its interpretations. The standard constructs a common model for the accounting treatment of all lease contracts in both lessee's and lessor's financial statements. Bittium adopted the

# Notes to the Consolidated Financial Statements

## 1. OPERATING SEGMENTS

Bittium has one reporting business segment, the Wireless business, that includes three product and service areas supporting each other. These areas are as follows: Defence & Security, Connectivity Solutions and Medical Technologies.

Wireless business is focused on creating reliable and secure communication and connectivity solutions, as well as on developing healthcare technology solutions

for biosignal measuring. For its customers Bittium offers innovative products and solutions based on its product platforms, and R&D services. Bittium also offers high quality information security solutions for mobile devices and portable computers. For customers in biosignal measuring in the areas of cardiology, neurology, rehabilitation, occupational health and sports medicine Bittium offers healthcare technology products and services.

The highest operative decision-making body of the company is the Board of Directors of Bittium which is responsible for allocating resources to and evaluating the results of Bittium's operating segment. Income statement and balance sheet information of the Wireless business are equivalent to corresponding information of the Bittium group.

**Wireless****Geographical areas**

Bittium operates in three geographical areas which are Europe, Americas and Asia. In presenting the geographical information, the revenue is based on the geographical location of customers. Geographical assets are based on the geographical location of the assets.

**Geographical areas****Jan. 1–Dec. 31, 2019**

1000 EUR	Finland	Other Europe	Americas	Asia	Eliminations	Group total
<b>Net sales</b>						
Sales to external customers	41,389	15,039	18,501	288		75,216
Non-current assets	74,632		359			74,991
<b>Total non-current assets *)</b>	<b>74,632</b>		<b>359</b>			<b>74,991</b>
*) does not include deferred tax assets						
<b>Capital expenditure</b>						
Tangible assets	733		56			790
Intangible assets	12,113					12,113
Investments	181					181
Goodwill			3			3
Non-current receivables	-225					-225

**Geographical areas****Jan. 1–Dec. 31, 2018**

1000 EUR	Finland	Other Europe	Americas	Asia	Eliminations	Group total
<b>Net sales</b>						
Sales to external customers	48,637	5,311	8,041	851		62,840
Non-current assets	61,828		303			62,131
<b>Total non-current assets *)</b>	<b>61,828</b>		<b>303</b>			<b>62,131</b>
*) does not include deferred tax assets						
<b>Capital expenditure</b>						
Tangible assets	1,509		-7			1,503
Intangible assets	14,742					14,742
Investments	27	210				237
Goodwill	-8		9			1
Non-current receivables	1,368					1,368

**Information of primary customers**

Group's revenues from the 10 largest customers in period 1.1.–31.12.2019 were EUR 65.0 million (EUR 51.9 million in 2018) representing 86.4 per cent of the net sales (82.6 per cent in 2018).

# Notes to the Consolidated Financial Statements

## 2. DISCONTINUED OPERATIONS

1000 EUR	2019	2018
Other operating income	0	0
<b>Profit for the year from discontinued operations (ASW)</b>	<b>0</b>	<b>0</b>
Cash received	0	221
<b>Cash flow impact</b>	<b>0</b>	<b>221</b>
The cash received 2018 includes VAT returns related to sale of Automotive-segment shares (2015) which have been returned due to changes in legal interpretation.		

## 3. NET SALES

1000 EUR	2019	2018
Services	25,849	32,068
Products	49,368	30,772
Other		
<b>Total</b>	<b>75,216</b>	<b>62,840</b>

The services include the project sales with fixed prices and with hourly rates.

The product sales includes all the sales affected by products:

the sales of products, the product maintenance, extended warranties and licence sales.

### Construction contracts

The contract revenue is recognized in the income statement in proportion to the stage of completion of the contract. The stage of completion is defined as the ratio of costs incurred to total estimated costs. The turnover of construction contracts is, depending on the contract elements, recognized over time or at point in time. The principles of revenue recognition based on IFRS 15 are presented in detail in the accounting principles of the consolidated financial statements.

Income recognized from construction contracts	11,638	12,293
Net sales other	63,578	50,547
<b>Total</b>	<b>75,216</b>	<b>62,840</b>
Income recognized over time based on the stage of completion of long-term construction contracts	11,638	12,293
Revenue recognized from long-term construction contracts in progress amounted to	9,943	5,511
Advances received from long-term construction contracts recognized in the balance sheet amounted to	246	100
Receivables recognized from long-term construction contracts amounted to	2,505	1,909

The net sales by geographical areas is presented in the note 1.

**4. OTHER OPERATING INCOME**

<b>1000 EUR</b>	<b>2019</b>	<b>2018</b>
Government grants	816	1,193
Other income	106	69
<b>Total</b>	<b>923</b>	<b>1,263</b>

**5. OTHER OPERATING EXPENSES**

External services	2,077	2,779
Voluntary staff expenses	1,027	984
Premises expenses	863	1,386
Travel expenses	1,426	1,318
IT expenses	2,989	3,080
Other expenses	5,065	7,572
<b>Total</b>	<b>13,447</b>	<b>17,120</b>
Expense relating to short-term leases under IFRS 16	15	
<b>Auditor's charges</b>		
<b>Ernst &amp; Young</b>		
Auditing	66	66
Tax advice		9
Other services	15	5
<b>Total</b>	<b>81</b>	<b>81</b>
<b>Others</b>		
Auditing	26	24
Tax advice	7	7
Other services		1
<b>Total</b>	<b>33</b>	<b>31</b>

# Notes to the Consolidated Financial Statements

1000 EUR	2019	2018
<b>6. DEPRECIATIONS AND IMPAIRMENTS</b>		
<b>Depreciations</b>		
Intangible assets		
Capitalized development expenditure	3,117	371
Intangible rights	456	432
Customer relations and technology	253	221
Other intangible assets	187	169
Tangible assets		
Buildings and constructions	879	439
Machinery and equipment	3,107	3,018
<b>Total</b>	<b>7,999</b>	<b>4,650</b>
<b>Depreciation on property, plant and equipment acquired by leases</b>		
Buildings and constructions	440	
Machinery and equipment	980	941
<b>7. EMPLOYEE BENEFIT EXPENSES AND NUMBER OF PERSONNEL</b>		
<b>Number of personnel</b>		
Average number of personnel during the fiscal period		
Continuing operations	665	660
<b>Personnel expenses 1000 EUR</b>		
Personnel expenses		
Managing Director	322	333
Board of Directors *	169	169
Other salaries and wages	24,283	22,305
<b>Total</b>	<b>24,774</b>	<b>22,808</b>
Pension expenses, defined contribution plans	5,776	5,781
Other personnel expenses	981	1,128
<b>Total</b>	<b>31,531</b>	<b>29,717</b>

\*Including the share-based incentives. Further information in the note 32.

1000 EUR	2019	2018
<b>8. RESEARCH AND DEVELOPMENT EXPENSES</b>		
The research and development expenses total	25,112	21,596
Capitalized to the balance sheet	-15,641	-15,105
Recognition as an asset	3,135	371
<b>The expensed research and development expenses recognized in the income statement amounted to</b>	<b>12,606</b>	<b>6,862</b>
<b>9. FINANCIAL EXPENSES (NET)</b>		
Interest expenses	-225	-98
Interest income	0	2
Dividend income	0	0
Exchange gains and losses	-126	-120
Change of financial assets and liabilities at fair value through profit or loss	275	1,257
Other financial expenses	-414	-1,193
Other financial income	75	17
<b>Total</b>	<b>-415</b>	<b>-136</b>
Interest expenses on lease liabilities under IFRS 16	38	
<b>10. INCOME TAXES</b>		
Income taxes, current year	-118	-58
Other taxes	-24	
Income taxes, previous years	-13	-2
Deferred taxes	1,888	1,376
<b>Total</b>	<b>1,733</b>	<b>1,315</b>
A reconciliation between the effective tax rate and domestic tax rate (20.0 percent) of the Group:		
<b>Profit before taxes</b>	<b>5,912</b>	<b>2,709</b>
Tax at the domestic tax rate	-1,250	-544
Effect of tax rates of foreign subsidiaries	-5	-1
Taxes for prior years	-13	-2
Tax free income	202	50
Non-deductible expenses	-206	-2,088
Utilization of deferred tax assets from previous years	1,220	2,622
Reassessment of deferred tax assets	1,888	1,374
The deferred tax assets from tax losses	-79	-96
Others	-24	
<b>Income taxes in the consolidated income statement</b>	<b>1,733</b>	<b>1,315</b>

# Notes to the Consolidated Financial Statements

	2019	2018
<b>11. EARNINGS PER SHARE</b>		
<b>Basic</b>		
Basic earnings per share amounts are calculated by dividing net profit for the year attributable to ordinary equity holders of the parent by the weighted average number of ordinary shares outstanding during the year.		
Profit attributable to the equity holders of the parent, continuing operations (1,000 EUR)	7,644	4,024
Profit attributable to the equity holders of the parent, discontinued operations (1,000 EUR)	0	0
Profit attributable to the equity holders of the parent, continuing and discontinued operations (1,000 EUR)	7,644	4,024
Weighted average number of ordinary shares during the financial year (1,000 PCS)	35,693	35,693
<b>Basic earnings per share, continuing operations, EUR</b>	<b>0.214</b>	<b>0.113</b>
<b>Basic earnings per share, discontinued operations, EUR</b>	<b>0.000</b>	<b>0.000</b>
<b>Basic earnings per share, continuing and discontinued operations, EUR</b>	<b>0.214</b>	<b>0.113</b>
<b>Diluted</b>		
Diluted earnings per share is calculated by dividing the net profit attributable to ordinary equity holders of the parent by the weighted average number of ordinary shares outstanding during the year plus the weighted average number of ordinary shares that would be issued on the conversion of all the dilutive potential ordinary shares into ordinary shares. The Group had no share-based payment schemes which would have a diluting effect on the number of shares.		
Profit attributable to the equity holders of the parent, continuing operations (1,000 EUR)	7,644	4,024
Profit attributable to the equity holders of the parent, discontinued operations (1,000 EUR)	0	0
Profit attributable to the equity holders of the parent, continuing and discontinued operations (1,000 EUR)	7,644	4,024
Weighted average number of ordinary shares during the financial year (1,000 PCS)	35,693	35,693
Effect of dilution (1,000 PCS)		
Weighted average number of ordinary shares during the financial year (1,000 PCS)	35,693	35,693
<b>Diluted earnings per share, continuing operations, EUR</b>	<b>0.214</b>	<b>0.113</b>
<b>Diluted earnings per share, discontinued operations, EUR</b>	<b>0.000</b>	<b>0.000</b>
<b>Diluted earnings per share, continuing and discontinued operations, EUR</b>	<b>0.214</b>	<b>0.113</b>

## 12. PROPERTY, PLANT AND EQUIPMENT

The Group has not revalued property, plant and equipment, hence the Group has not recognized any impairment losses directly to equity or recorded any reversals of those.

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Land and water</b>		
Acquisition cost Jan. 1	1,091	1,091
Additions during the period		
<b>Acquisition cost at the end of the period</b>	<b>1,091</b>	<b>1,091</b>
<b>Carrying amount at the end of the period</b>	<b>1,091</b>	<b>1,091</b>
<b>Buildings and constructsures</b>		
Acquisition cost Jan. 1	17,445	17,284
Translation differences	5	3
Additions during the period	1,631	159
<b>Acquisition cost at the end of the period</b>	<b>19,081</b>	<b>17,445</b>
Accumulated depreciations Jan. 1	-3,317	-2,878
Translation differences	0	0
Depreciation for the period	-855	-439
Depreciations on disposals	-27	
<b>Carrying amount at the end of the period</b>	<b>14,881</b>	<b>14,128</b>
No revaluations or capitalizations of interest costs have been done.		
<b>Machinery and equipment</b>		
Acquisition cost Jan. 1	54,603	49,813
Translation differences	-1	-9
Additions during the period	3,180	4,800
Disposals during the period	-39	
<b>Acquisition cost at the end of the period</b>	<b>57,744</b>	<b>54,603</b>
Accumulated depreciations Jan. 1	-46,462	-43,452
Translation differences	3	11
Depreciation for the period	-3,119	-3,022
Depreciations on disposals	11	
<b>Carrying amount at the end of the period</b>	<b>8,178</b>	<b>8,141</b>
<b>Other tangible assets</b>		
Acquisition cost Jan. 1	88	88
<b>Acquisition cost at the end of the period</b>	<b>88</b>	<b>88</b>
<b>Carrying amount at the end of the period</b>	<b>88</b>	<b>88</b>

# Notes to the Consolidated Financial Statements

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Property, plant and equipment total</b>		
Acquisition cost Jan. 1	73,227	68,097
Translation differences	4	-6
Additions during the period	4,811	5,008
Acquisition of business unit	0	0
Disposals during the period	-39	0
Transfer to assets	0	0
<b>Acquisition cost at the end of the period</b>	<b>78,003</b>	<b>73,099</b>
Accumulated depreciations Jan. 1	-49,779	-46,201
Translation differences	3	11
Depreciation for the period	-3,973	-3,461
Depreciations on disposals	-16	0
<b>Carrying amount at the end of the period</b>	<b>24,238</b>	<b>23,448</b>
<b>Leases</b>		
The Group had the following amounts of property, plant and equipment acquired by finance leases:		
<b>Machinery and equipment</b>		
Acquisition cost	8,814	7,807
Accumulated depreciations	-7,294	-6,317
Carrying amount at the end of the period	1,520	1,490
<b>Buildings and constructures</b>		
Acquisition cost	1,487	
Accumulated depreciations	-441	
Carrying amount at the end of the period	1,046	

Additions of property, plant and equipment include assets acquired by leases of EUR 2.5 million in 1.1.–31.12.2019 (EUR 0.9 million in 2018).

## 13. INTANGIBLE ASSETS

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Capitalized development expenses</b>		
Acquisition cost Jan. 1	31,724	16,619
Additions during the period	15,641	15,105
<b>Acquisition cost at the end of the period</b>	<b>47,366</b>	<b>31,724</b>
Accumulated depreciations Jan. 1	-5,122	-4,751
Depreciation for the period	-3,117	-371
<b>Carrying amount at the end of the period</b>	<b>39,127</b>	<b>26,602</b>
<b>Intangible rights</b>		
Acquisition cost Jan. 1	4,888	4,244
Additions during the period	225	649
Disposals during the period	-7	-5
Transfer to assets		
<b>Acquisition cost at the end of the period</b>	<b>5,107</b>	<b>4,888</b>
Accumulated depreciations Jan. 1	-3,437	-3,005
Depreciation for the period	-456	-432
<b>Carrying amount at the end of the period</b>	<b>1,213</b>	<b>1,452</b>
<b>Customer relations and technology</b>		
Acquisition cost Jan. 1	1,780	1,688
Acquisition of business unit		92
<b>Acquisition cost at the end of the period</b>	<b>1,780</b>	<b>1,780</b>
Accumulated depreciations Jan. 1	-635	-414
Depreciation for the period	-253	-221
<b>Carrying amount at the end of the period</b>	<b>892</b>	<b>1,145</b>

# Notes to the Consolidated Financial Statements

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Other intangible assets</b>		
Acquisition cost Jan. 1	4,050	3,955
Translation differences	2	5
Additions during the period	265	91
<b>Acquisition cost at the end of the period</b>	<b>4,317</b>	<b>4,050</b>
Accumulated depreciations Jan. 1	-3,558	-3,385
Translation differences	-2	-5
Depreciation for the period	-187	-169
<b>Carrying amount at the end of the period</b>	<b>570</b>	<b>492</b>
<b>Intangible assets total</b>		
Acquisition cost Jan. 1	42,443	26,506
Translation differences	2	5
Additions during the period	16,131	15,845
Acquisition of business unit	0	92
Disposals during the period	-7	-5
Transfer to assets	0	0
<b>Acquisition cost at the end of the period</b>	<b>58,570</b>	<b>42,443</b>
Accumulated depreciations Jan. 1	-12,752	-11,555
Translation differences	-2	-5
Depreciation for the period	-4,013	-1,193
<b>Carrying amount at the end of the period</b>	<b>41,803</b>	<b>29,691</b>
<b>Goodwill</b>		
Acquisition cost Jan. 1	5,822	5,820
Translation differences	3	9
Disposals during the period		-8
<b>Carrying amount at the end of the period</b>	<b>5,825</b>	<b>5,821</b>

### Impairment Test

The cash flow forecasts employed in impairment test calculations are based on the budgets for 2020 and the Long Range Plans (LRP) for 2021–2022 approved by management for the strategical period and management estimations for 2023–2024. Cash flows beyond five-year period are calculated by using the terminal value method. Future cash flows are exposed to the risks that are discussed in section “Risks and uncertainties” in the Report by the Board of Directors.

The used discount rate in impairment testing is Weighted Average Cost of Capital (WACC) before tax defined for Bittium. WACC defines average costs of equity and debt by noticing the risks belonging to the each component. The components of

WACC are risk-free interest rate, market risk premium, beta, cost of debt, corporate income tax rate and target capital structure. WACC calculated according to these parameters amounted to 9.8% (9.8% in 2018).

In 2019, Wireless business did not reach the cash flow forecasted in the impairment test calculation in 2018. This was mainly because of greater than expected additions in capitalized development expenses, slower than expected growth in the business and increase in working capital. There were no fundamental changes in the business environment that would make an impact to the cash flow expectations compared to the previous financial year.

The impairment test is done when needed, but at least once a year. Impairment tests

made in December 2019 did not indicate need for impairment bookings. Recoverable amounts exceed significantly the book value of goodwill and other assets. The terminal value represents 79% of business value. Product business market grew slower than expected and also investments to the development of a new products move focus of forecasted net present value based cash flows from the near future to further in the future.

Sensitivity analysis was also carried out during the impairment test. Cash flow forecast was either decreased by 20% or the discount factor was increased by 5%. It was noticed that cash flows are relatively sensitive to increase in discount factor. However, there are no expectations for impairment losses in the future.

# Notes to the Consolidated Financial Statements

## 14. ACQUISITIONS

### Acquisitions in 2019

In 2019 or in the comparative period 2018 the Group did not have acquisitions to be reported according to the IFRS standards.

## 15. SHARES IN ASSOCIATED COMPANIES

Bittium Group owns 25% of Coronaria Analyysipalvelut Oy shares in the end of 2019. Through this joint ownership Bittium and Coronaria aim at gaining synergies from Bittium's device and system development and the interfaces formed by Coronaria's clinical medicine and services. Coronaria Analyysipalvelut Oy has been consolidated using the equity method using the information that was available for the Bittium financial statements. The domicile of the company is Oulu.

Bittium has expanded its medical remote diagnostics service offering to Switzerland by investing during years 2018 and 2019 in evismo AG, a Swiss medical remote diagnostics service provider. Evismo AG has been consolidated using the equity method using the information that was available for the Bittium financial statements. The domicile of the company is Zurich and Bittium group has 25% of the shares of the company in the end of 2019.

1000 EUR	2019	2018
<b>Shares in associated companies</b>		
Coronaria Analyysipalvelut Oy	1,347	1,271
evismo AG	292	187
Other associated companies	22	22
<b>Assets total</b>	<b>1,661</b>	<b>1,480</b>
Coronaria Analyysipalvelut Oy		
Current assets	1,237	1,597
Non-current assets	1,358	1,385
Non-current liabilities	153	217
Turnover	5,846	5,003
Net profit	1,203	936
evismo AG		
Current assets	93	112
Non-current assets	80	93
Non-current liabilities	24	23
Turnover	115	21
Net profit	-247	-142
<b>Shares in associated companies</b>		
Acquisition cost Jan. 1	1,480	1,242
Translation differences	-1	
Additions during the period	372	314
Disposals during the period	-190	-77
<b>Carrying amount at the end of the period</b>	<b>1,661</b>	<b>1,480</b>

# Notes to the Consolidated Financial Statements

## 16. OTHER FINANCIAL ASSETS

1000 EUR	2019	2018
At 1 January	112	112
<b>At the closing date</b>	<b>112</b>	<b>112</b>

## 17. DEFERRED TAX LIABILITIES AND ASSETS

1000 EUR	Jan. 1, 2019	Recognized in the income statement	Acquisitions and disposals of subsidiaries	Dec. 31, 2019
<b>Deferred tax assets</b>				
Unutilized losses in taxation	523	3		526
Other items	3,224	1,723		4,947
<b>Total</b>	<b>3,747</b>	<b>1,726</b>	<b>0</b>	<b>5,473</b>

On December 31, 2019 the Group had EUR 79.7 million tax losses and non-depreciated depreciations of which it had not booked deferred tax receivables in full amount due to the uncertainty of the future profits, their timing, taxation or location. The amount of these non booked deferred tax receivables is approximately EUR 15.9 million. The aging of these tax losses begins from year 2020.

1000 EUR	Jan. 1, 2019	Recognized in the income statement	Acquisitions and disposals of subsidiaries	Dec. 31, 2019
<b>Deferred tax liabilities</b>				
Customer and technology assets	405	-68	0	337
<b>Total</b>	<b>405</b>	<b>-68</b>	<b>0</b>	<b>337</b>

1000 EUR	Jan. 1, 2018	Recognized in the income statement	Acquisitions and disposals of subsidiaries	Dec. 31, 2018
<b>Deferred tax assets</b>				
Unutilized losses in taxation	523	0		523
Other items	1,940	1,284		3,224
<b>Total</b>	<b>2,463</b>	<b>1,284</b>	<b>0</b>	<b>3,747</b>

On December 31, 2018 the Group had EUR 83.9 million tax losses and non-depreciated depreciations of which it had not booked deferred tax receivables in full amount due to the uncertainty of the future profits, their timing, taxation or location. The amount of these non booked deferred tax receivables is approximately EUR 16.8 million. The aging of these tax losses begins from year 2019.

1000 EUR	Jan. 1, 2018	Recognized in the income statement	Acquisitions and disposals of subsidiaries	Dec. 31, 2018
<b>Deferred tax liabilities</b>				
Customer and technology assets	377	-57	85	405
<b>Total</b>	<b>377</b>	<b>-57</b>	<b>85</b>	<b>405</b>

# Notes to the Consolidated Financial Statements

## 18. INVENTORIES

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
Raw materials and supplies	11,210	8,635
Work in progress	4,760	4,188
Finished products	1,575	1,132
Other inventories	674	631
<b>Total</b>	<b>18,219</b>	<b>14,585</b>

## 19. TRADE AND OTHER RECEIVABLES (CURRENT)

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
Non-current receivables	1,353	1,578
<b>Non-current receivables total</b>	<b>1,353</b>	<b>1,578</b>
Current receivables:		
Trade receivables	15,397	16,125
Receivables from construction contracts	2,505	1,909
Prepaid expenses and accrued income	1,639	2,213
Other receivables	872	814
<b>Current receivables total</b>	<b>20,412</b>	<b>21,061</b>

Receivables are valued at nominal value or probable current value, whichever is lower.

During the financial year, Group has booked impairment losses from accounts receivable EUR 0.0 million (EUR 0.1 million 2018)

Age distribution of accounts receivable		
Current	14,877	11,894
Aged Overdue Amounts		
0-3 months	132	3,454
4-6 months	23	291
7-12 months	14	485
> 12 months	351	1
<b>Total</b>	<b>15,397</b>	<b>16,125</b>

**20. FINANCIAL ASSETS AT FAIR VALUE THROUGH PROFIT OR LOSS**

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Interest rate funds</b>		
Balance sheet value on Jan. 1	21,576	56,401
Disposals	-16,012	-34,952
Changes in fair value	112	127
<b>Balance sheet value at the end of the period</b>	<b>5,675</b>	<b>21,576</b>
<b>Financial assets at fair value through profit or loss total</b>		
Balance sheet value on Jan. 1	21,576	56,401
Disposals	-16,012	-34,952
Changes in fair value	112	127
<b>Balance sheet value at the end of the period</b>	<b>5,675</b>	<b>21,576</b>
<b>21. CASH AND SHORT-TERM DEPOSITS</b>		
Cash and short-term deposits	29,479	9,305
<b>Total</b>	<b>29,479</b>	<b>9,305</b>
<b>Cash and cash equivalents at consolidated cash flow statement consist of:</b>		
Interest rate funds	5,675	21,576
Cash and short-term deposits	29,479	9,305
<b>Total</b>	<b>35,154</b>	<b>30,881</b>

Fair value of cash and cash equivalents does not significantly differ from the carrying amount.

# Notes to the Consolidated Financial Statements

## 22. ISSUED CAPITAL AND RESERVES

	Shares 1000 PCS	Share premium 1000 EUR	Premium fund 1000 EUR	Invested non- restricted equity fund 1000 EUR	Total 1000 EUR
On December 31, 2018	35,693	12,941	0	25,953	38,894
On December 31, 2019	35,693	12,941	0	25,953	38,894

### Shares and the Share Capital

The shares of Bittium Corporation are listed on the NASDAQ Helsinki Ltd. The Corporation has one series of shares. All the shares entitle their holders to dividends of equal value. Each share has one vote. The share does not have a nominal value. The company's shares have been entered into the Finnish Central Securities Depository Ltd's book-entry securities system.

At the end of the financial period, the fully paid share capital of the company entered into the Finnish Trade Register was EUR 12,941,269.00 and the total number of the shares was 35,693,166. The accounting per value of the company's share is EUR 0.10. The company is not in the possession of its own shares.

### Translation Differences

The translation reserve comprises all foreign exchange differences arising from the transition of the financial statements of foreign subsidiaries.

### Dividends

The Board of Directors proposes that the Annual General Meeting resolve to pay EUR 0.10 of dividend per share based on the adopted balance sheet for the financial period of January 1, 2019–December 31, 2019.

### 23. SHARE-BASED PAYMENT PLANS

During the financial year 2019 the group did not have share-based payments.

During the financial year 2018 the Group has paid 40 percent of total remuneration of the Board of Directors of Bittium Corporation by the shares of Bittium. The shares were acquired from the stock exchange.

The main terms of the remuneration arrangement are presented in the table below.

#### Share-based remuneration of the Board of Directors

Form of the reward	Shares
Grant date	Nov. 28, 2018
Total amount of the executed shares	9,699
Share price at the grant date, EUR	6.68
Total expenses of the reward, EUR million	0.1
Vesting conditions	Ownership of the shares was transferred to the recipients at once but the recipients have agreed the lock-up undertaking until the membership in the board have ceased.
Execution	In shares

### 24. PROVISIONS

1000 EUR	Guarantee provisions	Expected credit losses	Others	Total
December 31, 2018	1,479	158	6	1,643
Increase in provisions	658	0		658
Utilized provisions	-96	-7	-6	-109
Reversal of utilized provisions	-437			-437
<b>Dec. 31, 2019</b>	<b>1,604</b>	<b>151</b>	<b>0</b>	<b>1,754</b>
Current provisions	1,604	151	0	1,754
<b>Total</b>	<b>1,604</b>	<b>151</b>	<b>0</b>	<b>1,754</b>

# Notes to the Consolidated Financial Statements

## 25. FINANCIAL LIABILITIES

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Non-current loans</b>		
Non-current loans from financial institutions	20,000	
Finance lease liabilities	1,351	769
<b>Total</b>	<b>21,351</b>	<b>769</b>
<b>Current loans</b>		
Lease liabilities	1,247	747
<b>Total</b>	<b>1,247</b>	<b>747</b>
Repayment schedule of long-term loans:		
2020		467
2021	747	171
2022	398	109
2023	108	23
Later	20,098	
<b>Total</b>	<b>21,351</b>	<b>769</b>

The interest-bearing non-current loans are distributed by currency as follows:

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
EUR	21,315	769
MXN	36	
<b>Total</b>	<b>21,351</b>	<b>769</b>

The interest-bearing current loans are distributed by currency as follows:

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
EUR	1,191	747
MXN	57	
<b>Total</b>	<b>1,247</b>	<b>747</b>

Maturities of the finance lease liabilities:

<b>1000 EUR</b>	<b>Dec. 31, 2019</b>	<b>Dec. 31, 2018</b>
Lease liabilities - minimum lease payments		
Within one year	1,300	780
After one year but no more than five years	1,304	793
After five years	108	0
Lease liabilities - Present value of minimum lease payments	2,598	1,516
Within one year	1,247	747
After one year but no more than five years	1,267	769
After five years	83	0
Future finance charges	114	58
Total amount of finance lease liabilities	2,711	1,573

# Notes to the Consolidated Financial Statements

## 26. CHANGES IN LIABILITIES ARISING FROM FINANCING ACTIVITIES

1000 EUR	Jan. 1, 2019	Cash flows	New leases	Dec 31, 2019
Lease and financing contracts	1,516	-1,444	22,526	22,598
<b>Total</b>	<b>1,516</b>	<b>-1,444</b>	<b>22,526</b>	<b>22,598</b>

## 27. TRADE AND OTHER PAYABLES

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>Non-current liabilities</b>		
<b>Other non-current liabilities, non-interest bearing</b>		
Non-current advances received		155
Other non-current liabilities, non-interest bearing	374	530
<b>Total</b>	<b>374</b>	<b>685</b>
<b>Current liabilities</b>		
<b>Trade and other payables</b>		
Trade liabilities	4,747	5,707
Accrued liabilities, deferred income	8,674	7,450
Other liabilities	3,438	4,964
<b>Total</b>	<b>16,859</b>	<b>18,121</b>
Material of accrued expenses and deferred income consist of personnel expenses and other accruals.		
Fair value of the other liabilities than derivatives doesn't significantly differ from the initial carrying value, because the impact on discounting is not significant when taking into account the maturities of the loans.		
<b>Financial liabilities at fair value through profit or loss</b>		
Liabilities based on derivatives		
Balance sheet value on Jan. 1		
Changes in fair value		
<b>Balance sheet value at the end of the period</b>	<b>0</b>	<b>0</b>

## 28. FINANCIAL RISK MANAGEMENT

Under its normal business activities, Bittium Corporation is exposed to several financial risks. The primary financial risks are foreign exchange rate risk, interest rate risk, investment risk and default risk. The goal of the Group's financial risk management function is to reduce adverse effects of price fluctuations and other uncertainties on earnings, balance sheet and cash flows as well as to ensure sufficient liquidity. In its risk management, the Group uses financial instruments such as forward exchange agreements and interest rate swaps. External professional portfolio managers are employed for investing activities.

The Group's general risk management principles are approved by the Board of Directors. The responsibility for their implementation lies with the group finance department together with operational units. The group finance department identifies and assesses risks and obtains relevant financial instruments for hedging them in close co-operation with the operative units. Management evaluates risk concentrations from the viewpoint of business activities, taking into consideration shared factors between underlying variables such as those arising from changes in economic conditions or other variables. Operations and funding programs executed in the financial markets are mainly concentrated into the parent company. Subsidiaries are mainly funded through intra-company loans and group account overdraft credit limits.

The Group's financial risks are divided into market, default and liquidity risk.

### Market risks

Market risks are caused by changes in foreign exchange rates, interest rates and the price of securities. Fluctuations in these may have an impact on the Group's income statement, cash flow or balance sheet.

### Foreign exchange rate risk

The Group operates globally and is exposed to transaction risk from foreign exchange positions as well as to risks due to the translation of investments in different currencies to the functional currency of the parent company. The most relevant currencies for the Group are the Euro and the US dollar. Foreign exchange rate risk is caused by commercial activities, monetary items on the balance sheet and net investments in foreign subsidiaries. A business unit's functional currency or generally used currencies (EUR, USD) are used as invoicing currency. Additional information on functional currency and foreign currency conversion is available in the accounting principles section of the consolidated financial statements.

The Group follows a currency strategy that aims at securing the margin of business activities in changing market conditions by minimizing the effect of fluctuations in foreign exchange rates. According to the

principles of the currency strategy, surely considered and the most probable net cash flow in a particular currency is hedged as net position. The cash flow is defined based on the net position of the trade receivables, trade payables, order intake and forecasted net currency cash flow. According to the currency strategy the degree of hedging can vary from approximately 50% to 100% of the forecasted net position when net position exceeds EUR 1 million. The Group could also apply hedge accounting as defined in the IFRS 9 standard. Hedge accounting was not applied during 2019. At the end of the financial period the counter value of the hedged net position was EUR 1.5 million. During the financial year the amount of the hedged position has been EUR 1.5 million.

The Group has hedged the transaction risk related to its income statement and the translation risk related to equity on the balance sheet or economic risk has not hedged. Foreign currencies denominated equities of foreign subsidiaries on December 31, 2019 was EUR 2.8 million (EUR 2.2 million in 2018) from which dollar denominated equities of foreign subsidiaries was EUR 1.9 million (EUR 1.2 million in 2018).

## Notes to the Consolidated Financial Statements

On the closing date, the Group had the following foreign exchange derivative contract nominal amounts outstanding (the nominal amounts do not represent the amounts exchanged by the parties):

1000 EUR	2019	2018
Forward contracts		
Market value	26	0
Nominal value	1,500	0

Dollar denominated assets and liabilities translated to euros using the closing date's value:

1000 EUR	2019	2018
Long-term assets	0	0
Long-term liabilities	0	0
Current assets	4,007	4,004
Current liabilities	2,064	2,789

The table below describes the 10 percent appreciation or depreciation of the Euro against the US dollar, other variables remaining constant. The sensitivity analysis is based on foreign currency denominated assets and liabilities as of the closing date. The change in dollar denominated trade receivables and debt would primarily have been due to fluctuations in the foreign exchange rate.

1000 EUR	Changes in income statement before tax		Changes in equity before tax	
	2019	2018	2019	2018
EUR appreciates	-200	-100	-200	-100
EUR depreciates	200	100	200	100

**Interest Rate Risk**

Part of the Group's debt is tied to fixed interest rates.

At the closing date, the Group had the following fixed interest rate debts outstanding:

1000 EUR	2019	2019
Fixed interest rate debts	2,598	1,516

The table below describes the interest rate risk of debts should there have been a  $\pm 1$  percent change in interest rates of short term reference interest rate debts, other variables remaining constant. The figures presented indicate the change in yearly interest expense calculated using the average amount of debt during the financial period.

1000 EUR	Changes in income statement before tax		Changes in equity before tax	
	2019	2018	2019	2018
Loan stock January, 1	1,500	1,200		
Loan stock December, 31	22,600	1,500		
Average loan stock	12,100	1,400		
Change in interest	+/- 100	+/- 0	+/- 100	+/- 0

**Market Risk of Investment Activities**

The Group's interest investments result in interest rate exposure, but their effect is not considered significant. The Group's revenue and operative cash flows are mainly independent of market rate fluctuations.

The Group invests in low-risk interest rate funds and therefore it has not been exposed to security price risk of fluctuations in the stock markets. According to the Group's principles, investments related to cash management are made in liquid and low-risk money market or bond instruments and thus have not been hedged using derivatives.

The table below describes the distribution of investments in securities at the closing date.

	2019	2018
Stock shares	0.0%	0.0%
Bonds	61.5 %	66.9%
Money market investments	38.5 %	33.1%
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

## Notes to the Consolidated Financial Statements

The combined value of the above instruments during the financial period has ranged from approximately EUR 5.6 million to EUR 21.6 million. At closing date their value was approximately EUR 5.7 million. This risk concentration has been managed by investing in well spread and low-risk money market funds.

The table below describes the price risk of the investments if they had exhibited a  $\pm 1$  percent change in a market rate of interest, other variables remaining constant. Financial assets that are recognized at market value in the income statement affect net income. Changes in the value of for-sale financial assets affect equity. In the cal-

culations it is presumed that the Group's investments change with the interest rate level in question. The sensitivity analysis describes the total market risk of investment activity because all investments are in the interest rate instruments.

1000 EUR	Changes in income statement before tax		Changes in equity before tax	
	2019	2018	2019	2018
Interest investments	+/- 0	+/- 100	+/- 0	+/- 100

### Default risk

Group's credit risks are mainly related to accounts receivable, cash, financial investments and derivatives used in hedging. In its deposit, financial investment and hedging activities Bittium operates only with well-known partners who have good credit rating.

About 85% of the Group's trade receivables are from ten customers. The other trade receivables are distributed among a wide customer base and across several geographical areas. Credit risk is mitigated for example by documentary credits or bank guarantees when needed. Default risk concentration is mainly assessed as a single customer's share of total trade receivables but also according to the receivable's date of maturity.

Bittium's significant default risk concentration is EUR 0.4 million which represents approximately 2.5% of the total accounts receivable.

During the past financial year the amount of recognized credit losses was approximately EUR 0.0 million (EUR 0.1 million in 2018). The amount of loans granted to affiliated companies were EUR 0.0 million at the end

of 2019 (EUR 0.0 million in 2018). Group did not have capital loans granted outside of the Group at the end of 2019 (EUR 0.0 million in 2018).

The amount of the Group's counterparty default risk is consistent with the book value of financial assets at the closing date. For the maturity distribution of trade receivables, see note 19.

### Liquidity risk

The Group and business segments strive to continuously evaluate and monitor the amount of liquid funds needed for business operations and loan repayments. The Group strives to guarantee the availability and flexibility of financing by its strong financial position and liquid investments. Bittium has EUR 20.0 million senior loan and EUR 10.0 million committed overdraft credit facility agreement with Nordea Bank Finland Plc. Maturity date for the senior loan is May 24, 2024 and the credit limit agreement is valid until May 24, 2024. Bittium has EUR 10.0 million committed overdraft credit facility agreement with OP Corporate Bank Plc valid until May 24, 2022. These agreements include customary covenants related to, among other things, equity ratio,

interest bearing debt to EBITDA, and transferring property and pledging. These credit facilities were in use EUR 0.0 million at the end of the reporting period. For the maturity distribution of the Group's debt, see note 25.

### Capital structure management

The Group strives to optimize its capital structure and thus support business activities by ensuring normal operating conditions under all circumstances. An optimal capital structure also ensures that the cost of capital is minimized.

The capital structure is affected by dividend policy and share issuance. The Group can alter and adjust dividends paid to shareholders as well as share repurchases. The Group can also alter and adjust the amount of shares issued, or make decisions on the sale of assets.

The management has continuously monitored the development of the Group's net gearing and solvency ratio. The Group's interest bearing net debt at the end of 2019 was EUR -12.6 million (EUR -29.4 million in 2018) and net gearing was -11.2% (-26.7% in 2018). The Group's solvency ratio at the end of 2019 was 73.4% (84.7% in 2018).

## Fair Values of Financial Assets and Liabilities

This section presents the Group's fair valuing principles for all financial instruments. The table below presents book values for each item in detail. Their fair values are not considered to materially differ from the book values presented in the consolidated balance sheets.

1000 EUR	Note	Book value 2019	Fair value 2019	Book value 2018	Fair value 2018
<b>Financial assets</b>					
Other financial assets	16	112	112	112	112
Deferred tax assets	17	5,473	5,473	3,747	3,747
Non-current receivables	19	1,353	1,353	1,578	1,578
Trade receivables and other receivables	19	20,412	20,412	21,061	21,061
<b>Financial assets at fair value through profit or loss</b>					
Cash and cash equivalents	21	29,479	29,479	9,305	9,305
Currency forwards	28	26	26	0	0
<b>Financial liabilities</b>					
Bank loans	25	20,000	20,000		
Finance lease liabilities	25	2,598	2,598	1,516	1,516
Trade payables and other debts	17, 24, 27	19,325	19,325	20,854	20,854
Currency forwards	27	0	0	0	0

### Investments in Shares and Funds and Other Investments

For-sale financial assets consist mainly of money market investments that fair values are based on the quotes of the closing day (IFRS 7: fair value hierarchy level 1; quoted prices (unadjusted) in active markets for identical assets or liabilities).

### Derivatives

The fair values of forward contracts are defined based on publicly quoted currency and interest rate information and using commonly accepted valuation methods (IFRS 7 fair value hierarchy level 2; instruments

whose fair value is observable either directly (i.e. as prices) or indirectly (i.e. derived from prices)). These calculations have been carried out by an outside professional party.

### Bank Loans

Book values are considered to closely approximate fair values.

### Finance Lease Liabilities

Book values are considered to closely approximate fair values.

### Trade Receivables and Other Receivables

The original book value of receivables is considered to equal their fair values, since the effect of discounting is non-significant considering the maturities of the receivables.

### Trade Payables and Other Debts

The original book value of payables and other debts is considered to equal their fair values, since the effect of discounting is non-significant considering the maturities of the receivables.

# Notes to the Consolidated Financial Statements

## 29. ADJUSTMENTS TO NET CASH FROM OPERATING ACTIVITIES

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
Business transactions without payments		
Depreciations	7,999	4,646
Share of profits in associated companies	-143	-105
Other adjustments	147	477
<b>Total</b>	<b>8,003</b>	<b>5,018</b>

## 30. OPERATING LEASE AGREEMENTS

### The Group as Lessee

The total of future minimum lease payments under non-cancellable operating leases for each of the following periods:

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
Not later than one year	6	554
Later than one year and not later than five years		748
After five years		128

The Group owns its facilities in Oulu and Kuopio. The facilities in other locations are rented. In average the maturities of the lease agreements are from 1 month to 5 years and normally they include an option to extend the rental period from originally agreed end date. IFRS 16 Leases standard has come into force on 1st of January 2019. According to the standard in principle all lease contracts of the Group are recognized as assets and liabilities in Group's Balance Sheet.

**31. SECURITIES AND CONTINGENT LIABILITIES**

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
Against own liabilities		
Floating charges		1,000
Guarantee limits at the maximum	108	135
Other contractual liabilities		
Falling due in the next year	1,921	2,414
Falling due after one year	847	2,132
Mortgages are pledged for liabilities totaled		
Other liabilities (guarantees issued)		135
Material purchase commitments	16,020	12,605

**32. RELATED PARTY DISCLOSURES**

The Group has the following structure:

	Country of incorporation	Owned by Parent %	Owned by Group %
<b>Parent</b>			
Bittium Oyj	Finland		
<b>Subsidiaries</b>			
Bittium Technologies Oy	Finland	100.00	100.00
Bittium Wireless Oy	Finland	0.00	100.00
Bittium Safemove Oy	Finland	0.00	100.00
Bittium Biosignals Oy	Finland	0.00	100.00
Bittium Medanalytics Oy	Finland	0.00	100.00
Kiinteistöosakeyhtiö Oulun Ritaharjuntie 1	Finland	0.00	100.00
Bittium Germany GmbH	Germany	0.00	100.00
Bittium Mexico S.A. de C.V.	Mexico	0.00	100.00
Bittium USA, Inc.	USA	0.00	100.00
Bittium Technology (Beijing) Co. Ltd.	China	0.00	100.00
Bittium Singapore Pte. Ltd.	Singapore	0.00	100.00

Information on the associated companies is presented in the note 15.

**Related party transactions and balances:**

1000 EUR	2019	2018
Associated companies		
Net sales	489	319
Receivables	1,692	2,101
Debts	350	413

# Notes to the Consolidated Financial Statements

1000 EUR	2019	2018
<b>Employee benefits for key management</b>		
Salaries and remuneration		
Managing director of the parent		
Hannu Huttunen 1.1.–31.12.2018, 1.1.–31.12.2019	322	333
<b>Total</b>	<b>322</b>	<b>333</b>
Remuneration of the members of the board of the parent, the financial committee and the managing directors of the business segments		
Staffan Simberg 1.1.–11.4.2018	0	5
Erkki Veikkolainen 1.1.–31.12.2018, 1.1.–31.12.2019	43	25
Kirsi Komi 1.1.–11.4.2018	0	5
Riitta Tiuraniemi 11.4.–31.12.2018, 1.1.–31.12.2019	28	12
Pekka Kempainen 10.4.2019–31.12.2019	21	0
Petri Toljamo 11.4.–31.12.2018, 1.1.–31.12.2019	24	10
Juha Putkiranta 1.1.–31.12.2018, 1.1.–31.12.2019	27	17
Seppo Mäkinen 1.1.–31.12.2018, 1.1.–31.12.2019	23	14
Tero Ojanperä 1.1.–31.12.2018, 1.1.–10.4.2019	4	14
<b>Total</b>	<b>169</b>	<b>103</b>
<b>Share-based incentives</b>		
Board of Directors	0	66
<b>Total</b>	<b>0</b>	<b>66</b>
There have not been any business transactions or open balances between the related parties.		
<b>Members of the group executive board</b>	<b>1,047</b>	<b>1,038</b>

## Loans and guarantees to related party

There are no loans or guarantees granted between the related parties.

### 33. SIGNIFICANT EVENTS DURING THE FINANCIAL PERIOD 2019

February 14, 2019–Bittium Wireless Ltd, a subsidiary of Bittium Corporation, received a purchase order from the Finnish Defence Forces for products included in the Software Defined Radio based Bittium Tactical Wireless IP Network™ (TAC WIN) system and Bittium Tough Comnode™ terminals, which are meant for tactical communications. The total value of the purchase order is EUR 11.5 million of which the share of the Bittium TAC WIN system's products is EUR 9.9 million and the share of the Bittium Tough Comnode terminals is EUR 1.6 million.

The share of the purchase order including Bittium TAC WIN system's products is based on the Framework Agreement signed by Bittium and the Finnish Defence Forces on August 9, 2017. According to the Framework Agreement, the Finnish Defence Forces will order products included in the Software Defined Radio based Bittium TAC WIN system during the years 2018–2020. If materialized in full, the total value of the Framework Agreement is EUR 30 million. Finnish Defence Forces will issue separate purchase orders for the products each year. The products ordered in February will be delivered to the Finnish Defence Forces during the year 2019.

The share of the purchase order including Bittium Tough Comnode terminals is based on the Framework Agreement signed by Bittium and the Finnish Defence Forces on November 5, 2018. According to the Framework Agreement, the Finnish Defence Forces will order Bittium Tough Comnode terminals and related accessories during the years 2018–2022. If materialized in full, the total value of the Framework Agreement is EUR 8.3 million. Finnish Defence Forces will issue separate purchase orders in several batches during the validity of the Framework Agreement. The products ordered in February will be delivered to the Finnish Defence Forces during the year 2019.

On March 1, 2019 Mr. Klaus Mäntysaari, Senior Vice President Connectivity Solutions of Bittium Corporation, a member of Bittium Management Group, decided to leave to another company. Mr. Mäntysaari has been working for Bittium since 2004 in several positions in the wireless services business. He continued at Bittium until April 30, 2019. Temporarily Mr. Hannu Huttunen, CEO of the company, was leading the Connectivity Solutions business. As of May 1, 2019 Bittium management group consisted of following persons: Mr. Hannu Huttunen, CEO (chairman); Mr. Pekka Kunnari, CFO; Mr. Kari Jokela, CLO; Ms. Karoliina Fyrstén, Director, Corporate Communications and Marketing; Mr. Sammy Loitto, Senior Vice President,

Sales; and heads of product and service areas: Mr. Jari Sankala, Senior Vice President, Defense and Security; Mr. Arto Pietilä, Senior Vice President, Medical Technologies; and Mr. Jari-Pekka Innanen, Vice President, Engineering.

On September 5, 2019 Mr. Tommi Kangas (48) was appointed as Senior Vice President, Connectivity Solutions product and services area at Bittium Corporation and as a member of the Bittium Corporation's Management Group, effective immediately. Previously at Bittium, he has been responsible for Connectivity Solutions product and services area's significant key customers as well as worked in several management positions in telecom business and sales. Mr. Kangas reports to Mr. Hannu Huttunen, CEO of Bittium Corporation. As of September 5, 2019 Bittium management group consists of following persons: Mr. Hannu Huttunen, CEO (chairman); Mr. Pekka Kunnari, CFO; Mr. Kari Jokela, CLO; Ms. Karoliina Fyrstén, Director, Corporate Communications and Marketing, Mr. Sammy Loitto, Senior Vice President Sales, and heads of product and service areas: Mr. Jari Sankala, Senior Vice President, Defense and Security; Mr. Arto Pietilä, Senior Vice President, Medical Technologies; and Mr. Tommi Kangas, Senior Vice President, Connectivity Solutions, and Mr. Jari-Pekka Innanen, Vice President, Engineering.

# Notes to the Consolidated Financial Statements

## 34. SIGNIFICANT EVENTS AFTER THE REPORTING PERIOD

The Group management is not aware of any significant events after balance sheet date, that would have had impact on the consolidated financial statements.

## 35. KEY RATIOS

	IFRS 2019	IFRS 2018	IFRS 2017	IFRS 2016	IFRS 2015
<b>INCOME STATEMENT, MEUR</b>					
Net sales, MEUR *)	75.2	62.8	51.6	64.2	56.8
Net sales change, %	19.7	21.7	-19.6	13.0	7.8
Operating profit/loss, MEUR *)	6.3	2.8	-6.2	2.5	2.3
% of net sales	8.4	4.5	-12.0	4.0	4.1
Profit/loss for continuing operations before taxes, MEUR	5.9	2.7	-5.8	3.1	2.1
% of net sales	7.9	4.3	-11.3	4.9	3.7
Profit for the year from continuing operations, MEUR	7.6	4.0	-4.8	3.5	2.3
% of net sales	10.2	6.4	-9.2	5.5	4.1
Profit after tax for the year from discontinued operations, MEUR			1.7	0.0	539.0
% of net sales	0.0	0.0	3.2	0.0	948.7
Profit for the year attributable to equity holders of the parent, MEUR	7.6	4.0	-3.1	3.5	541.3
% of net sales	10.2	6.4	-6.0	5.5	952.8
<b>BALANCE SHEET, MEUR</b>					
Non-current assets	80.5	65.9	46.7	30.3	14.4
Inventories	18.2	14.6	10.6	4.1	2.2
Current assets	55.6	51.9	81.1	118.9	142.8
Shareholders' equity	112.3	110.0	116.7	130.6	137.6
Non-current liabilities	22.1	1.9	1.5	3.1	2.0
Current liabilities	19.9	20.5	20.2	19.6	19.8
Balance sheet total	154.2	132.4	138.4	153.3	159.4

	IFRS 2019	IFRS 2018	IFRS 2017	IFRS 2016	IFRS 2015
<b>PROFITABILITY AND OTHER KEY FIGURES</b>					
Return on equity % (ROE)	6.9	3.6	-3.9	2.6	2.0
Return on investment % (ROI)	5.0	3.7	-4.5	2.6	2.5
Interest-bearing net liabilities, (MEUR)	-12.6	-29.4	-61.7	-91.8	-121.4
Net gearing, %	-11.2	-26.7	-52.9	-70.3	-88.2
Equity ratio, %	73.4	84.7	85.6	87.0	90.5
Gross investments, (MEUR) *)	21.3	21.2	20.1	18.5	7.4
Gross investments, % of net sales	28.3	33.8	38.8	28.8	13.1
R&D costs, (MEUR) *)	25.1	21.6	15.0	6.9	7.3
R&D costs, % of net sales	33.4	34.4	29.1	10.8	12.9
Average personnel during the period, parent and subsidiaries *)	665	660	614	569	511
<b>STOCK-RELATED FINANCIAL RATIOS</b>					
Earnings per share from continuing operations, EUR					
Basic earnings per share	0.214	0.113	-0.133	0.098	0.020
Diluted earnings per share	0.214	0.113	-0.133	0.098	0.020
Earnings per share from discontinued operations, EUR					
Basic earnings per share			0.046	0.000	4.687
Diluted earnings per share			0.046	0.000	4.685
Earnings per share from continuing and discontinued operations, EUR					
Basic earnings per share	0.214	0.113	-0.087	0.098	4.708
Diluted earnings per share	0.214	0.113	-0.087	0.098	4.706
Equity per share, EUR	3.15	3.08	3.27	3.66	3.86
Dividend per share EUR **)	0.10	0.15	0.3	0.3	0.3
Dividend per earnings, %	46.7	132.7	-344.6	305.3	6.4
P/E ratio	30.4	53.0	-64.9	57.7	344.3
Effective dividend yield, %	1.5	2.0	5.3	5.3	4.3
Market values of shares (EUR)					
Highest	8.03	8.10	7.88	7.40	7.80
Lowest	5.91	4.71	5.55	5.15	3.27
Average	6.70	5.98	6.55	6.05	4.92
At the end of period	6.50	7.61	5.65	5.67	7.01
Market value of the stock, (MEUR)	232.0	271.6	201.7	202.4	249.6
Trading value of shares					
MEUR	51.5	75.4	83.1	126.4	8371
1000 PCS	7,689	12,608	12,684	20,888	169,993
Related to average number of shares %	21.5	35.3	35.5	58.6	147.8
Adjusted number of the shares at the end of the period (1000 PCS)					
	35,693	35,693	35,693	35,693	35,600
Adjusted number of the shares average for the period (1000 PCS)					
	35,693	35,693	35,693	35,670	114,983
Adjusted number of the shares average for the period diluted with stock options (1000 PCS)					
	35,693	35,693	35,693	35,670	115,037

\*) Continuing operations. Excluding Automotive business income statements from periods Jan. 1–July 1, 2015.

\*\*) Proposal of the Board of Directors for 2019.

# Notes to the Consolidated Financial Statements

## CALCULATION OF KEY RATIOS

<b>Return on equity % (ROE)</b>	=	$\frac{\text{Profit for the year} \times 100}{\text{Total equity (average for the accounting period)}}$
<b>Return on investment % (ROI)</b>	=	$\frac{\text{Profit before tax} + \text{interest and other financial expenses} \times 100}{\text{Balance sheet total} - \text{interest-free liabilities (average for the accounting period)}}$
<b>Net gearing, %</b>	=	$\frac{\text{Interest-bearing liabilities} - \text{cash and cash equivalents} \times 100}{\text{Total equity}}$
<b>Equity ratio, %</b>	=	$\frac{\text{Total equity} \times 100}{\text{Balance sheet total} - \text{advances received}}$
<b>Earnings per share</b>	=	$\frac{\text{Profit attributable to equity holders of the parent}}{\text{Share issue adjusted number of the shares average for the period}}$
<b>Equity per share</b>	=	$\frac{\text{Equity attributable to equity holders of the parent}}{\text{Share issue adjusted number of the shares at the end of the period}}$
<b>Dividend per share</b>	=	$\frac{\text{Dividend for the period (Board's proposal) per share}}{\text{Adjustment coefficient of post-fiscal share issues}}$
<b>Dividend per earnings, %</b>	=	$\frac{\text{Dividend per share} \times 100}{\text{Earnings per share}}$
<b>P/E ratio</b>	=	$\frac{\text{Share issue adjusted share price at the end of the period}}{\text{Earnings per share}}$
<b>Effective dividend yield, %</b>	=	$\frac{\text{Dividend per share} \times 100}{\text{Share issue adjusted share price at the end of the period}}$

### 36. SHAREHOLDINGS AND SHARES

#### Breakdown of Shares by Shareholding, December 31, 2019

Number of shares	Number of shareholders	Percentage of shareholders	Number of shares	Percentage of shares and votes
1 - 100	9,310	42.7	434,420	1.2
101 - 500	6,973	32.0	1,835,114	5.1
501 - 1000	2,268	10.4	1,780,231	5.0
1001 - 5000	2,430	11.1	5,546,609	15.5
5001 - 10000	420	1.9	3,061,944	8.6
10001 - 50000	358	1.6	7,344,464	20.6
50001 - 100000	34	0.2	2,324,712	6.5
100001 - 500000	22	0.1	4,769,354	13.4
500001 - 999999999999	7	0.0	8,596,318	24.1
<b>Total</b>	<b>21,822</b>	<b>100.0</b>	<b>35,693,166</b>	<b>100.0</b>
Nominee-registered	9		1,002,014	2.8

#### Breakdown of Shareholders by Shareholder Type, December 31, 2019

Shareholders by shareholder type	Number of shareholders	Percentage of shareholders	Number of shares	Percentage of shares and votes
Non-financial corporations	494	2.3	3,034,713	8.5 %
Financial sector and insurance corporations	17	0.1	998,842	2.8 %
General government	5	0.0	3,162,817	8.9 %
Non-profit institutions	28	0.1	180,175	0.5 %
Households	21,211	97.2	27,241,628	76.3 %
Foreign owners	58	0.3	72,977	0.2 %
Nominee-registered shares	9	0.0	1,002,014	2.8 %
<b>Total</b>	<b>21,822</b>	<b>100.0</b>	<b>35,693,166</b>	<b>100.0 %</b>

# Notes to the Consolidated Financial Statements

## Major Shareholders, December 31, 2019

	Number of shares	Percentage of shares and votes
<b>Number of shares total</b>	<b>35,693,166</b>	<b>100.0</b>
1. Veikkolainen Erkki, Chairman of the Board	1,507,539	4.2
2. Hulkko Juha	1,506,870	4.2
3. Ponato Oy	1,501,300	4.2
4. Varma Mutual Pension Insurance Company	1,365,934	3.8
5. Ilmarinen Mutual Pension Insurance Company	1,296,529	3.6
6. Nordea Bank ABP (PUBL), Finnish Branch	760,146	2.1
7. Hildén Kai	658,000	1.8
8. Elo Mutual Pension Insurance	500,000	1.4
9. Hirvilammi Hannu	394,821	1.1
10. Karhunen Marko	341,000	1.0
<b>Total</b>	<b>9,832,139</b>	<b>27.5</b>
Others (incl. nominee-registered shares)	25,861,027	72.5

## The Board and CEO

Veikkolainen Erkki, Chairman of the Board	1,507,539	4.2
Kemppainen Pekka, Member of the Board	0	0.0
Mäkinen Seppo, Member of the Board	4,308	0.0
Putkiranta Juha, Member of the Board	14,308	0.0
Tiuraniemi Riitta, Member of the Board	1,437	0.0
Toljamo Petri, Member of the Board	1,437	0.0
Huttunen Hannu, CEO	10,000	0.0
<b>Total</b>	<b>1,539,029</b>	<b>4.3</b>

# Income Statement, Parent

1000 EUR	Notes	2019	2018
<b>NET SALES</b>	1, 2	<b>811</b>	<b>704</b>
Other operating income	3	0	0
Personnel expenses	4	-1,232	-1,157
Depreciation and reduction in value	5	-12	-11
Other operating expenses	6	-709	-745
<b>OPERATING PROFIT</b>		<b>-1,142</b>	<b>-1,208</b>
Financial income and expenses	7	1,101	1,129
<b>PROFIT (LOSS) BEFORE APPROPRIATIONS AND TAXES</b>		<b>-40</b>	<b>-79</b>
<b>Appropriations</b>	8	<b>4,800</b>	<b>6,300</b>
<b>PROFIT (LOSS) BEFORE APPROPRIATIONS AND TAXES</b>		<b>4,760</b>	<b>6,221</b>
<b>NET PROFIT FOR THE FINANCIAL YEAR</b>		<b>4,760</b>	<b>6,221</b>

## Balance Sheet, Parent

1000 EUR	Notes	Dec. 31, 2019	Dec. 31, 2018
<b>ASSETS</b>			
Non-current assets			
Intangible assets	9	92	71
Tangible assets	10	72	72
Investments	11	39,750	39,750
Non-current assets total		39,913	39,893
Current assets			
Receivables			
Current receivables	12	81,425	63,842
Receivables total		81,425	63,842
Financing securities	13	5,675	21,576
Cash and bank deposits		26,973	6,958
Current assets total		114,073	92,376
<b>TOTAL ASSETS</b>		<b>153,986</b>	<b>132,268</b>
<b>SHAREHOLDERS' EQUITY AND LIABILITIES</b>			
Shareholders' equity			
Share capital	14	12,941	12,941
Invested non-restricted equity fund		25,953	25,953
Retained earnings		86,046	85,179
Net profit/loss for the year		4,760	6,221
Shareholders' equity total		129,700	130,294
Provisions			
Provisions, non-current	15		
Provisions, current			
Liabilities			
Non-current liabilities	16	20,000	
Current liabilities		4,286	1,974
Liabilities total		24,286	1,974
<b>SHAREHOLDERS' EQUITY AND LIABILITIES TOTAL</b>		<b>153,986</b>	<b>132,268</b>

# Cash Flow, Parent

1000 EUR	2019	2018
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>		
Profit (loss) before taxes +/-	4,760	6,221
Adjustments		
Depreciation according to plan +	12	11
Effects of non-cash business activities	-4,993	-6,507
Financial income and expenses +/-	-1,101	-1,129
Cash flow before change in net working capital	-1,323	-1,404
Change in net working capital		
Change in interest-free short-term receivables	-3	-13
Change in interest-free short-term payables	-49	-28
Cash flow before financing activities	-1,375	-1,446
Interest paid -	-654	-1,331
Dividends received +	0	0
Interest received +	1,755	2,459
<b>Net cash from operating activities</b>	<b>-273</b>	<b>-317</b>
<b>CASH FLOW FROM INVESTING ACTIVITIES</b>		
Purchase of tangible and intangible assets -	-32	-13
<b>Net cash used in investing activities</b>	<b>-32</b>	<b>-13</b>
<b>CASH FLOW FROM FINANCIAL ACTIVITIES</b>		
Change in interest-free short-term financial receivables in Group	6,952	-21,019
Change in interest-free short-term financial payables in Group	2,281	7
Received Group contributions	540	540
Dividend paid and capital repayment	-5,354	-10,708
<b>Net cash used in financial activities</b>	<b>4,419</b>	<b>-31,180</b>
<b>NET CHANGE IN CASH AND CASH EQUIVALENTS</b>	<b>4,114</b>	<b>-31,510</b>
Cash and cash equivalents at beginning of period	28,534	60,044
Cash and cash equivalents at end of period	32,648	28,534
Change in cash and cash equivalents in balance sheet	4,114	-31,510

Cash and cash equivalents include liquid and low risk financing securities.

# Accounting Principles for the Preparation of Financial Statements, Parent

The financial statements have been prepared in accordance with the Finnish Accounting Act.

## Valuation Principles

### Valuation of Non-current Assets

Non-current assets are capitalized in the balance sheet at the original acquisition cost deducted by accumulated depreciation. Depreciations according to the plan is calculated either using the straight-line method or the reducing balance method, taking into consideration of the useful life of assets. The depreciation periods are:

Intangible assets	3–10 years
Tangible assets	3–5 years

### Valuation of Financial Securities

Financial securities are valued at fair value. The fair value of forward exchange are defined based on forward exchange prices on balance sheet date and option contracts are defined based on market prices on balance sheet date.

### Pensions

The Company has organized pension coverage for its personnel through independent pension insurance companies. The pension insurance expenditures are included into personnel expenses.

### Leasing Agreements

Leasing agreements and fixed-term rental agreements are reported as contingent liabilities off the balance sheet.

### Income Tax

Taxes of the financial year have been reported in the income statement as income taxes. Deferred tax or liabilities or receivables has not been recorded on the financial statement.

### Foreign Currency Items

The transactions in the income statement have been converted into euro using the exchange rate of the transaction date. Receivables and payables denominated in foreign currency have been converted into Euro by using the exchange rate of the European Central Bank at the balance sheet date.

### Net Sales

Sales of goods is recorded when goods have been handed over to the customer or the services have been rendered. Sales are shown net of indirect sales taxes and discounts.

# Notes to the Financial Statements of the Parent Company

1000 EUR	2019	2018
<b>1. NET SALES BY SEGMENTS</b>		
Other functions	812	704
<b>Total</b>	<b>812</b>	<b>704</b>
<b>2. NET SALES BY MARKET AREAS</b>		
Europe	706	671
Americas	106	33
Asia		
<b>Total</b>	<b>812</b>	<b>704</b>
<b>3. OTHER OPERATING INCOME</b>		
Other operating income	0	0
<b>Total</b>	<b>0</b>	<b>0</b>
<b>4. NUMBER OF PERSONNEL AND PERSONNEL EXPENSES</b>		
Average number of personnel during the period		
Other functions	8	7
<b>Total</b>	<b>8</b>	<b>7</b>
Number of personnel at the end of the year		
	8	7
Personnel expenses *		
Management salaries	322	333
Board of Directors	169	169
Other salaries and wages	589	531
<b>Total</b>	<b>1,080</b>	<b>1,034</b>
Pension expenses	141	113
Other social expenses	12	11
<b>Total</b>	<b>1,232</b>	<b>1,157</b>
* The Board of Directors salaries include the share-based compensation.		
<b>5. DEPRECIATION AND REDUCTION IN VALUE</b>		
Intangible rights	10	8
Other capitalized long-term expenditures	1	2
Machinery and equipment	0	1
<b>Total</b>	<b>12</b>	<b>11</b>

# Notes to the Financial Statements of the Parent Company

1000 EUR	2019	2018
<b>6. OTHER OPERATING CHARGES</b>		
IT equipment and SW expenses	89	84
Premises expenses	16	15
Administrative services	274	265
Travel expenses	74	63
Voluntary staff expenses	32	21
Other business expenses	224	297
<b>Total</b>	<b>709</b>	<b>745</b>
Auditor's charges		
Auditing	23	23
Tax advice	0	9
Other services	1	5
<b>Total</b>	<b>24</b>	<b>37</b>
<b>7. FINANCIAL INCOME AND EXPENSES</b>		
Income from investments		
From Group companies		
From others	319	1,269
<b>Total</b>	<b>319</b>	<b>1,269</b>
Other interest and financial income		
From Group companies	1,404	1,084
From others	32	106
<b>Total</b>	<b>1,436</b>	<b>1,190</b>
Other interest and financial expenses		
To Group companies	4	2
To others	650	1,329
<b>Total</b>	<b>654</b>	<b>1,331</b>
Reduction in value of investment	0	0
Net financial income and expenses	1,101	1,129
Net financial income and expenses including exchange gains and losses	0	0
<b>8. APPROPRIATIONS</b>		
Received Group contributions	4,800	6,300

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>9. INTANGIBLE ASSETS</b>		
<b>Intangible rights</b>		
Acquisition cost Jan. 1	288	275
Investments during the period	32	13
<b>Acquisition cost at the end of the period</b>	<b>320</b>	<b>288</b>
Accumulated depreciations Jan. 1	-218	-211
Depreciation for the period	-10	-8
<b>Book value at the end of the period</b>	<b>92</b>	<b>70</b>
<b>Other capitalized long-term expenditures</b>		
Acquisition cost Jan. 1	6	6
Investments during the period		
<b>Acquisition cost at the end of the period</b>	<b>6</b>	<b>6</b>
Accumulated depreciations Jan. 1	-5	-3
Depreciation for the period	-1	-2
<b>Book value at the end of the period</b>	<b>0</b>	<b>1</b>
<b>Intangible assets total</b>		
Acquisition cost Jan. 1	295	281
Investments during the period	32	13
<b>Acquisition cost at the end of the period</b>	<b>326</b>	<b>295</b>
Accumulated depreciations Jan. 1	-223	-213
Depreciation for the period	-11	-10
<b>Book value at the end of the period</b>	<b>92</b>	<b>71</b>

# Notes to the Financial Statements of the Parent Company

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>10. TANGIBLE ASSETS</b>		
<b>Machinery and equipment</b>		
Acquisition cost Jan. 1	5	5
Investments during the period	1	
<b>Acquisition cost at the end of the period</b>	<b>6</b>	<b>5</b>
Accumulated depreciations Jan. 1	-5	-4
Depreciation for the period	-1	-1
<b>Book value at the end of the period</b>	<b>0</b>	<b>1</b>
<b>Other tangible assets</b>		
Acquisition cost Jan. 1	71	71
<b>Acquisition cost Dec. 31</b>	<b>71</b>	<b>71</b>
<b>Book value at the end of the period</b>	<b>71</b>	<b>71</b>
<b>Tangible assets total</b>		
Acquisition cost Jan. 1	76	76
Investments during the period	1	
<b>Acquisition cost at the end of the period</b>	<b>77</b>	<b>76</b>
Accumulated depreciations Jan. 1	-5	-4
Depreciation for the period	-1	-1
<b>Book value at the end of the period</b>	<b>72</b>	<b>72</b>
<b>11. INVESTMENTS</b>		
<b>Investments in subsidiaries</b>		
Acquisition cost Jan. 1	39,749	39,749
<b>Book value at the end of the period</b>	<b>39,749</b>	<b>39,749</b>
<b>Investments in other shares</b>		
Acquisition cost Jan. 1	1	1
<b>Book value at the end of the period</b>	<b>1</b>	<b>1</b>
<b>Investments total</b>		
Acquisition cost Jan. 1	39,750	39,750
<b>Book value at the end of the period</b>	<b>39,750</b>	<b>39,750</b>

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>12. CURRENT RECEIVABLES</b>		
Accounts receivable		
From Group companies	71	23
<b>Total</b>	<b>71</b>	<b>23</b>
Other receivables		
From Group companies	70,170	57,458
From others	48	46
<b>Total</b>	<b>70,219</b>	<b>57,504</b>
Prepaid expenses and accrued income		
From Group companies	11,100	6,300
From others	33	14
<b>Total</b>	<b>11,134</b>	<b>6,314</b>
<b>Current receivables total</b>	<b>81,424</b>	<b>63,842</b>
<b>13. FINANCING SECURITIES</b>		
Cash and cash equivalents include liquid and low risk financing securities.		
Financial assets at fair value through profit or loss	5,675	21,576
<b>14. SHAREHOLDERS' EQUITY</b>		
Share capital at the beginning of the period	12,941	12,941
<b>Share capital at the end of the period</b>	<b>12,941</b>	<b>12,941</b>
Invested unrestricted equity fund at the beginning of the period	25,953	25,953
Share issue		
<b>Invested unrestricted equity fund at the end of the period</b>	<b>25,953</b>	<b>25,953</b>
Retained earnings at the beginning of the period	91,400	95,887
Dividend distribution	-5,354	-10,708
Net profit for the period	4,760	6,221
<b>Retained earnings at the end of the period</b>	<b>90,806</b>	<b>91,400</b>
Distributable earnings at the end of the period	116,759	117,353
<b>Shareholders' equity total</b>	<b>129,700</b>	<b>130,294</b>

# Notes to the Financial Statements of the Parent Company

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>15. PROVISIONS</b>		
Provisions		
Provisions, current		
<b>Total</b>		
<b>16. LIABILITIES</b>		
<b>Current liabilities</b>		
Accounts payable		
To Group companies	159	128
To others	40	93
<b>Total</b>	<b>200</b>	<b>221</b>
Other short-term liabilities		
To Group companies	3,660	1,379
To others	79	68
<b>Total</b>	<b>3,739</b>	<b>1,447</b>
Accrued expenses and deferred income		
To others	347	306
<b>Total</b>	<b>347</b>	<b>306</b>
<b>Current liabilities total</b>	<b>4,286</b>	<b>1,974</b>

1000 EUR	Dec. 31, 2019	Dec. 31, 2018
<b>17. SECURITIES AND CONTINGENT LIABILITIES</b>		
On behalf of Group companies		
Guarantee limits	115	86
of which guarantees in use total		86
Leasing liabilities		
Falling due in the next year	1,155	1,107
Falling due after one year	1,275	1,244
Rental liabilities		
Falling due in the next year	9	6
Contractual liabilities		
Falling due in the next year	62	73
Falling due in 1–5 years		0

1000 EUR	31.12.2019	31.12.2018
<b>18. NOMINAL VALUE OF CURRENCY DERIVATES</b>		
Foreign exchange forwards		
Market value	26	
Nominal value	1,500	

	Owned by Parent, %	Owned by Group, %	Book value 1000 EUR
<b>19. SHARES AND HOLDINGS</b>			
Subsidiaries			
Bittium Technologies Oy	100.00	100.00	39,749
Other holdings by Parent			
Partnera Oy			1

## Proposal by the Board of Directors on the Use of the Profit Shown on the Balance Sheet and the Payment of the Dividend

According to the parent company's balance sheet at December 31, 2019, the distributable assets of the parent company are EUR 116,759,025.98 of which the profit of the financial year is EUR 4,759,958.60. The Board of Directors proposes that the Annual General Meeting to be held on April 1, 2020 resolve to pay EUR 0.10 per share as dividend based on the adopted balance sheet for the financial period of January 1, 2019–Decem-

ber 31, 2019. The dividend will be paid to the shareholders who are registered as shareholders in the company's register of shareholders as maintained by Euroclear Finland Ltd on the dividend record date, April 3, 2020. The Board of Directors proposes that the dividend be paid on April 14, 2020. Bittium Corporation follows a dividend policy that takes into account the Corporation's net income, financial status, need for capi-

tal and financing of growth. There have not been any substantial changes in the company's financial position after the financial year. Company has good liquidity and according to the Board of Directors, the proposed distribution of profits does not danger the company's solvency.

In Oulu, February 12, 2020



Erkki Veikkolainen  
Chairman of the Board



Seppo Mäkinen  
Member of the Board



Pekka Kemppainen  
Member of the Board



Juha Putkiranta  
Member of the Board



Riitta Tiuraniemi  
Member of the Board



Petri Toljamo  
Member of the Board



Hannu Huttunen  
CEO

## Auditor's Note

Auditor's Report has been issued today.

In Oulu, February 12, 2020

Ernst & Young Oy  
Authorized Public Accountant Firm



Jari Karppinen, Authorized Public Accountant

# Auditor's Report

(Translation of the Finnish original)

## To the Annual General Meeting of Bittium Oyj

### Report on the Audit of Financial Statements

#### Opinion

We have audited the financial statements of Bittium Oyj (business identity code 1004129-5) for the year ended 31 December, 2019. The financial statements comprise the consolidated balance sheet, statement of comprehensive income, statement of changes in equity, statement of cash flows and notes, including a summary of significant accounting policies, as well as the parent company's balance sheet, income statement, statement of cash flows and notes.

In our opinion

- the consolidated financial statements give a true and fair view of the group's financial position as well as its financial performance and its cash flows in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU.
- the financial statements give a true and fair view of the parent company's financial performance and financial position in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements.

Our opinion is consistent with the additional report submitted to the Audit Committee.

#### Basis for Opinion

We conducted our audit in accordance with good auditing practice in Finland. Our responsibilities under good auditing practice are further described in the *Auditors Responsibilities for the Audit of Financial Statements* section of our report.

We are independent of the parent company and of the group companies in accordance with the ethical requirements that are applicable in Finland and are relevant to our audit, and we have fulfilled our other ethical responsibilities in accordance with these requirements.

In our best knowledge and understanding, the non-audit services that we have provided to the parent company and group companies are in compliance with laws and regulations applicable in Finland regarding these services, and we have not provided any prohibited non-audit services referred to in Article 5(1) of regulation (EU) 537/2014. The non-audit services that we have provided have been disclosed in note 5 to the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

#### Key Audit Matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period. These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

We have fulfilled the responsibilities described in the *Auditor's responsibilities for the audit of the financial statements* section of our report, including in relation to these matters. Accordingly, our audit included the performance of procedures designed to respond to our assessment of the risks of material misstatement of the financial statements. The results of our audit procedures, including the procedures performed to address the matters below, provide the basis for our audit opinion on the accompanying financial statements.

We have also addressed the risk of management override of internal controls. This includes consideration of whether there was evidence of management bias that represented a risk of material misstatement due to fraud.

**KEY AUDIT MATTER****Revenue Recognition**

*We refer to the Group's accounting policies and to the note 3*

Fixed price contracts in long-term construction contracts are part of the Group's business practice. These projects constitute a significant portion of the consolidated net sales. In the financial statements 2019 the revenue recognized from these projects was 11.6 million euro, which is 15 percentage of the total net sales. The group applies the percentage of completion method for recognizing revenue from long-term construction contracts, which involves the use of significant management estimates. E.g. the following estimates include significant management judgement for each project: stage of completion, total contract costs and the project margin. During the performance phase, the financial outcome of a project is based on the estimates made by the management and will come more accurate when the project advances.

In the group net sales is a key performance indicator, which might generate an incentive to prematurely recognition of revenue. Revenue recognition was determined to be a key audit matter and a significant risk of material misstatement referred to in EU Regulation No 537/2014, point (c) of Article 10(2), because of the risk related to correct timing of revenue.

**HOW OUR AUDIT ADDRESSED THE KEY AUDIT MATTER**

Our audit procedures in which risk of material misstatement on revenue recognition has been taken into account included, among other:

- assessment of the accounting principles of the group on revenue recognition and comparing them with the applied accounting standards;
- examination of the nature of revenue, stage of completion and financial contract terms behind the revenue recognized in the long-term projects;
- tests of revenue recognition, which included testing of the calculations and the estimates used in the revenue recognition;
- analytical procedures on revenue and
- tests of the notes of revenue recognized.

## Responsibilities of the Board of Directors and the Managing Director for the Financial Statements

The Board of Directors and the Managing Director are responsible for the preparation of consolidated financial statements that give a true and fair view in accordance with International Financial Reporting Standards (IFRS) as adopted by the EU, and of financial statements that give a true and fair view in accordance with the laws and regulations governing the preparation of financial statements in Finland and comply with statutory requirements. The Board of Directors and the Managing Director are also responsible for such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the Board of Directors and the Managing Director are responsible for assessing the parent company's and the group's ability to contin-

ue as going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting. The financial statements are prepared using the going concern basis of accounting unless there is an intention to liquidate the parent company or the group or cease operations, or there is no realistic alternative but to do so.

## Auditor's Responsibilities for the Audit of Financial Statements

Our objectives are to obtain reasonable assurance on whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with good auditing practice will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reason-

ably be expected to influence the economic decisions of users taken on the basis of the financial statements.

As part of an audit in accordance with good auditing practice, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the parent company's or the group's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of the Board of Directors' and the Managing Director's use of the going concern basis of accounting and based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the parent company's or the group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the company to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events so that the financial statements give a true and fair view.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements re-

garding independence, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

## Other Reporting Requirements

### Information on Our Audit Engagement

We were first appointed as auditors by the Annual General Meeting on April 12, 2002, and our appointment represents a total period of uninterrupted engagement of 18 years.

### Other Information

The Board of Directors and the Managing Director are responsible for the other information. The other information comprises information included in the report of the Board of Directors and in the Annual Report, but does not include the financial statements and our report thereon. We obtained the report of the Board of Directors prior to the date of the auditor's report, and the Annual Report is expected to be made available to us after the date of the auditor's report.

Our opinion on the financial statements does not cover the other information.

In connection with our audit of the financial statements, our responsibility is to read the other information identified above and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. With respect to report of the Board of Directors, our responsibility also includes considering whether the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

In our opinion, the information in the report of the Board of Directors is consistent with the information in the financial statements and the report of the Board of Directors has been prepared in accordance with the applicable laws and regulations.

If, based on the work we have performed, we conclude that there is a material misstatement in the information included in the report of the Board of Directors, we are required to report this fact. We have nothing to report in this regard.

Oulu, February 12, 2020  
Ernst & Young Oy  
Authorized Public Accountant Firm



Jari Karppinen  
Authorized Public Accountant

# Bittium

Connectivity to be trusted.  
[www.bittium.com](http://www.bittium.com)

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