ANNUAL REPORT 2021

Building **Smart, Safe** and **Smooth** Future

TELESTE

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NEW 1.8 GHZ AMPLIFIERS FOR NORTH AMERICAN MARKET

In October 2021, we introduced two intelligent 1.8 GHz ICON series broadband amplifiers for North American cable multi-system operators (MSOs) looking for a future-proof solution for adopting higher frequencies in their networks.

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LIBERTY GLOBAL SELECTED TELESTE'S DISTRIBUTED ACCESS SOLUTION

Liberty Global, one of the world's leading converged video, broadband, and communications companies, chose Teleste's Distributed Access Architecture (DAA) solution for a trial in their GIGAbit network.

Link to Teleste's financial statement 2021

courtesy APRR/Gilles Leimdorfer

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The APRR Group, a subsidiary of Eiffage, selected Teleste's S-VMX Video Management System for upgrading the safety and surveillance infrastructure on its motorways in France.

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The new Tampere Tramway in Finland is being equipped with Teleste's information displays and their management system.

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MANAGING GLOBAL CHANGE

2021 was another exceptional year for operations, logistics, and sourcing globally, as well as at Teleste. While manufacturers worldwide have struggled to source the components needed, several measures were taken at Teleste in 2021 to maintain a high operative level and ensure our delivery capabilities on a day-to-day basis.

Key Figures

Teleste is an international technology group that offers an integrated product and service portfolio that makes it possible to build a networked and secure society while reducing negative impacts on the environment. Our solutions enable television and broadband services, secure safety in public places and support the smooth use of public transport.

With solid industry experience and drive for innovations, we are a leading international company in broadband, security and information technologies and related services. Our customer base consists of data communications operators, train manufacturers, public transport operators and public sector organisations. We are the world's leading technology company in our operating areas.

The income statement figures for the comparison period presented in this report only include continuing operations, except where otherwise noted.

Net sales, M€	**Adjusted operating result,** M€	**Earnings per share,** €	**Orders received,** M€	**Dividend,** €
144.0	5.5	0.39	175.5	0.14*
(2020; 145.0)	(2020; 5.1)	(2020; 0.16)	(2020; 148.8)	(2020; 0.12)
				*board proposal

CEO'S REVIEW

A strong foundation for growth

In 2021, the direct and indirect impacts of the global COVID-19 pandemic were still present. The constantly changing situation and related restrictions posed challenges to business throughout the world. In spite of the challenges, Teleste's order backlog grew substantially, and profitability improved compared to the previous year. The growth of the order backlog, investments in product development and confidence in positive market development create a solid foundation for success.

One of the most significant challenges to the company's operations in 2021 was the component crisis, caused by uncertain availability, price increases and longer delivery times of components, which all resulted in delivery difficulties. To manage the situation, the company took measures to ensure the availability of components and to increase buffer stocks. Close cooperation with customers and suppliers in accordance with Teleste's operating model proved to be crucial in overcoming these challenges. Largely due to the component crisis, the company's sales remained at the previous year's level, but profitability improved.

DETERMINED EFFORTS TO EXPAND TELESTE'S BUSINESS

In the European market, we have long been the leading player in technology solutions for broadband cable networks. During the year, we continued our efforts to expand into the North American markets. For example, we introduced new smart next-generation amplifiers specifically designed for that market. The company's network technology expertise is in clear demand in North America, and there are also opportunities for growth in video security and information systems.

In spite of the challenges faced by the industry as a whole, we continued our R&D efforts in smart digital systems, which strengthens our position in the market. To improve our delivery capacity, we also started an expansion investment at our production facilities in Littoinen. This expansion, which is expected to be completed late 2022, will support the growth of our production capacity and will also enable insourcing of selected manufacturing tasks.

INCREASED ACTIVITY IN THE NETWORKS BUSINESS

The COVID-19 pandemic has led to significant changes in the volume of network traffic and the nature of internet use. The growth of remote work, videoconferencing and online gaming, for example, has brought a shift towards two-way traffic, creating pressure to increase network capacity. However, during the pandemic and the component crisis, network operators have focused mainly on securing existing operations instead of making major investments.

The situation began to change in 2021, as network operators started to make investments in areas such as distributed access architecture and prepared for 1.8 GHz network development enabled by the DOCSIS® 4.0 broadband standard. This was reflected in our business particularly in the form of increased orders for next-generation products compared to the previous year. Our service business, which focuses on network design, installation, commissioning and maintenance, continued to be relatively stable in Finland and Switzerland, whereas in the UK the net sales of the service business declined due to changes in the customer environment, among other reasons.

SIGNIFICANT CONTRACTS IN THE VIDEO SECURITY AND INFORMATION SYSTEMS BUSINESS

Although passenger volumes in public transport have temporarily declined due to the pandemic, train manufacturers and public transport operators continued to invest in the development of passenger information systems. Significant new agreements were signed for train solutions to be delivered to France, Italy and the United Kingdom, for example. Station and central systems were delivered especially to public transport operators in Finland, Sweden, Denmark and Germany. The global megatrends such as urbanisation and ecological thinking contribute to the growth and development of public transport, creating demand for Teleste's video security and information systems.

The public authorities also continued to invest in technical solutions that improve people's safety, and our order backlog for video security systems grew. During the year, we received significant follow-up orders for the delivery of video security systems to Scandinavia, France and the Middle East, for example.

TOWARDS SMARTER, SAFER AND SMOOTHER EVERYDAY LIFE

The second consecutive year of exceptional circumstances was full of challenges in many respects, but we nevertheless managed to improve the profitability of our business. By international comparison, we are a medium-sized company that is agile enough to take quick actions when the situation requires it, but also large enough to cope with major fluctuations in the market. The credit for this agility belongs especially to our highly motivated employees, who have shown strong commitment to our shared goals under changing circumstances.

One key factor that strengthens our operating capabilities is our sustainability agenda, which is put into action through our products as well as our operating practices. In addition to producing the best possible solutions for our customers' business operations, we also invest heavily in ecologically and socially sustainable operations and products. Our high-quality technology also supports positive development in our society as a whole, creating better conditions for smart, safe, smooth and also sustainable everyday life.

As our sustainable operating practices are essential for establishing and maintaining long-term customer relationships, they also contribute to our profitability. During the year, we continued to invest in ESG (Environmental, Social and Corporate Governance) themes through organisational development and product development as well as energy-efficient and environmentally friendly products.

We continued to build our foundation for future success during 2021. Our strong order backlog puts us in a good position as we enter 2022. We have strong, trust-based cooperation with our customers and we believe that our customer-focused approach will continue to be one of the cornerstones of our operations going forward. The near-term outlook is still characterised by exceptional circumstances and component availability issues, which continues to create uncertainty in our operating environment in 2022. We hope a more normal operating environment to be gradually restored over time.

We want to take this opportunity to thank all Teleste employees for their excellent work and our customers, partners and shareholders for their trust in Teleste. We also wish to thank Teleste's Board of Directors for its support.

Jukka Rinnevaara, CEO until the end of 2021
Esa Harju, CEO from the beginning of 2022

"I am convinced that Teleste will continue to achieve success in the future. We can be confident that our highly capable Management Group, under Esa's leadership, will successfully navigate the company through technological transformations and other unpredictable challenges."

- Jukka Rinnevaara,
CEO until the end of 2021

"As the company's new CEO, I take up my post full of enthusiasm and energy. Building on our solid foundation, I will continue to develop our strategy according to the needs of our customers."

- Esa Harju,
CEO from the beginning of 2022

Teleste’s year 2021

WE WERE AWARDED a silver medal in the EcoVadis business sustainability rating.

OUR NEW CAREER WEBSITE was launched with the primary goal of supporting smooth application process and sharing insights on daily life as a Telestian.

GLOBAL REMOTE WORK STANDARD operating procedure was launched to guide new, more flexible way of working.

Q1

Q2

INNOVATION CHALLENGE 2021 invited Telestians to cocreate in two categories: IPR and Innovations.

300 TELESTIANS nurtured their social media skills by participating in LinkedIn training. The second phase of the training was organised in autumn.

EXPANSION of the Littoinen factory started. It brings additional space for operations and warehousing and supports our strategy and business growth.

OUR NORTH AMERICAN TEAM attended APTA TRANSform Conference and Expo, our first live event since the spring 2020, to meet the customers and discuss our public transit and video solution.

Q3

HANNO NARJUS, Head of our Networks business, was recognized by Omdia and Light Reading as one of the top 50 broadband influencers propelling the next generation of broadband networks and services forward.

Q4

TELESTE NETWORK SERVICES in Switzerland reached an important milestone and celebrated its 10th Anniversary as part of Teleste.

10 ANS 2011-2021 TELESTE SUISSE

81.3

TELESTIANS have highlighted great colleagues as one of Teleste's strenghts. In the annual MyPulse survey **good team spritit** reached a score of 81.3.

Year 2021 and the way forward

Teleste's strategy

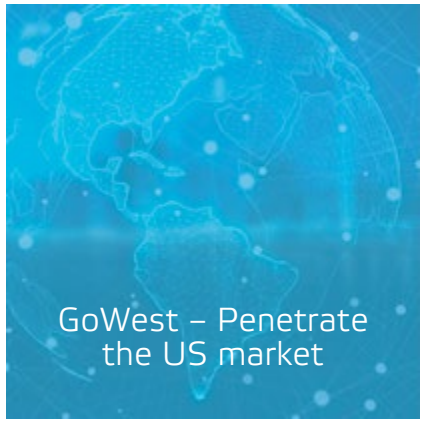
KEY DRIVERS BEHIND OUR STRATEGY:

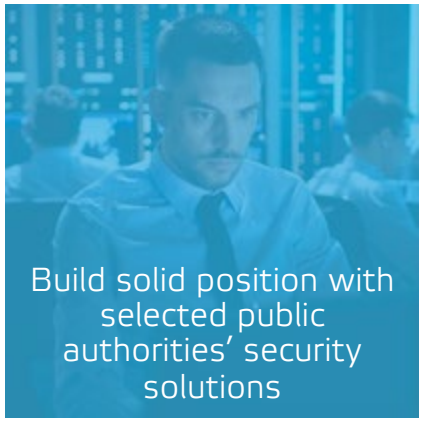
- **Climate change**
  The immediate need to slow down the climate change drives everyone to find ways to reduce CO_2 emissions. At Teleste our solutions drive the use of the public transportation and high quality, intelligent communication networks that play important role in achieving the goal.

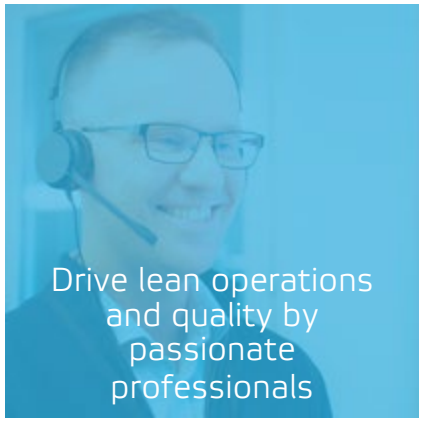
- **Globalization and urbanisation**
  Urbanisation drives the demand of public transportation and highlights the need for public security. Utilising smart technologies for data communication networks and real-time sharing of information, our solutions enable smooth and safe living environments for people, while creating grounds for the networked society on a global scale.

- **Digitalization and technological development**
  Digitalisation and technological development are key enablers for new, increasingly personalised, services over the internet, and phenomena such as IoT requiring high level of connectivity. Our technologies ensure multi-gigabit connectivity and networks evolving in pace with the demands for more capacity and more reliable, high-quality services.

OUR STRATEGIC CORNERSTONES:







Year 2021 and the way forward

Teleste is part of a global shift into a new era and our products and services are related to socially important and even critical functions, such as high-speed broadband connections, public transport solutions and security. Our mission is to create added value for society and people: with our products and services, we build and maintain many of the central, critical functions of society and make your everyday life smart, safe and smooth.

GROUP OPERATIONS, JANUARY-DECEMBER 2021

Orders received by the Group grew by 17.9% and amounted to EUR 175.5 (148.8) million. Orders increased in access network products as well as public transport information solutions and video security solutions. The order backlog increased by 40.9% compared to the end of the reference period and reached a new all-time record of EUR 108.6 (77.1) million at the end of the financial period.

Net sales reached the level of the comparison period and amounted to EUR 144.0 (145.0) million. Net sales increased in access network products but declined in network services. The adjusted operating result increased by 8.8% to EUR 5.5 (5.1) million, representing 3.8% (3.5%) of net sales. The operating result totalled EUR 8.7 (4.5) million, an increase of 93.0%. The operating result includes non-recurring insurance compensation in the amount of EUR 3.2 million, which is reported as an adjustment item.

Investments by the Group totalled EUR 11.1 (6.6) million, representing 7.7% (4.5%) of net sales. Of the investments, EUR 5.7 (3.9) million was related to product development while gross R&D expenses amounted to EUR 11.3 (10.8) million.

OUR MISSION:

We make your everyday life smart, safe and smooth.

OUR VISION:

To be the best partner for the networked society.

OUR VALUES:

- Customer centricity
- Respect
- Reliability
- Result orientation

Teleste Networks

We offer broadband network and video headend solutions and technologies for telecommunications and cable operators. Our smart and innovative portfolio allows operators to ensure top-quality broadband and TV services for their subscribers while reducing the total cost of network ownership and maintaining flexibility towards technology changes.

We have decades of experience in broadband network and video headend technologies and how they are best utilised for offering future-proof services with extremely high availability. Our main market areas are in Europe and North America. In selected markets we offer comprehensive scope of professional services for the design, construction and maintenance of access networks.

THE PANDEMIC YEAR WHEN HIGH-SPEED INTERNET BECAME MISSION CRITICAL

As the COVID-19 continued challenging societies during 2021, high-speed broadband connectivity has proved its immense value. With high-speed internet, work at home has been possible with enriched video communications; schools and universities have been able to offer virtual courses; families separated due to long-term travel restrictions have been able to maintain rich contact with each other; even health care has been exploiting virtual patient work. Economies have been less hit when virtualised work has been a possibility for many organisations and fewer people have been unemployed.

Modern broadband networks have made all this possible. Cable infrastructure has shown its potential in delivering well over 100 Mbps services to households and coping with the sudden surge in traffic. In Europe, millions of households are receiving their high-speed internet through networks built with Teleste products. We at Teleste feel pride in helping societies to maintain their daily operations while social distancing has been a necessity.

On the other hand, the supply-chain challenges have been growing during the year to unprecedented levels towards the end of the year, with several electronic component suppliers, particularly Integrated Circuit suppliers, confirming delivery times of longer than a year. Combatting this phenomenon has created lots of extra work across our organisation from sourcing and manufacturing to R&D and sales. Thanks to our well-integrated demand-supply processes and holding our manufacturing and R&D in our own hands, the impact on Networks' delivery times has been so far limited and we believe our delivery capability has remained on a higher level compared to our competitors.

BREAKTHROUGH YEAR IN EUROPE FOR DISTRIBUTED ACCESS NETWORKS

Regardless of the COVID-19 pandemic, operators continued to upgrade their traditional HFC networks during 2021. We strengthened our market position in the category, although the sales volume declined in line with expectations. The technological transition from HFC networks to the use of distributed access architecture (DAA) started finally in volume deliveries to major customers, including Liberty Global. This is very satisfying after years of hard work in R&D as well as in customer laboratories ironing out all interoperability details, guaranteeing robust and reliable access network operation.

While the first customers in Europe have started DAA rollouts, several operators are still working on their readiness to deploy this technology. We are continuing to support our wide customer base on their journey to building these future-proof networks with more field-trials and deployments expected during 2022.

DOCSIS 4.0 MAINTAINS CABLE INDUSTRY'S COMPETITIVENESS

While distributed access architecture is reaching maturity, cable industry has outlined its technology roadmap for the next decade under the DOCSIS 4.0 version of the cable broadband standard. This next version of DOCSIS introduces a set of technologies promising 10 Gbps speeds to consumers over existing last-mile coax networks. With this promise, cable infrastructure will maintain its competitiveness compared to fibre-to-the-home networks for the next 10+ years.

We are expecting that this industry roadmap will create an investment wave to increase speed and capacity particularly in the North American networks. In Europe, with imminent competition from fibre-to-the-home infrastructure, we are expecting several operators with cable assets to overbuild their existing last-mile coax with fibre during the next 10 years. As a result, the upcoming investment wave in Europe for DOCSIS 4.0 will be more limited compared to the DOCSIS 3.1 wave, which generated good volumes for Teleste during 2015–2020.

We are expecting the demand for DOCSIS 4.0 & 1.8 GHz-capable network passives to start in minor volumes during 2022 – ramping up in volumes during subsequent years, while the amplifier market will start in volumes in 2023 when both new products and operators are ready for mass deployments. The deployments are expected to start first in North America due to existing network constraints. Our innovations and experience on intelligent network devices are unique in the North American market and hence we are seeing significant business potential for them once the 1.8 GHz market takes off.

To speed up the industry's move to DOCSIS 4.0 and 1.8 GHz networks, we have conducted extensive research studying how existing systems can be successfully upgraded to carry 10 Gbps speeds to consumer homes. Particularly North American cable operators have been pleased to see the results of our research, giving assurance that 1.8 GHz transmission is realistic over existing coax lines.

With our research data we have also contributed to the industry's move to 1.8 GHz by proactively participating in a standardisation project for 1.8 GHz amplifiers, working under the Society of Cable Technology Engineers (SCTE). As the next step, during 2022 we will work in partnership with North American operators to further prove the 1.8 GHz feasibility in lab trials, using early product prototypes developed by Teleste. Teleste has proven its thought leadership globally around 1.8 GHz transmission technologies and we believe we are the clear industry leader in launching compatible products in coming years.

NETWORK SERVICES

Our Network Services business was still negatively impacted by the COVID-19 pandemic as several network operators were cautious about launching new network upgrade projects. Furthermore, the UK Fibre-to-the-Home market was facing resource challenges in new network building activities, resulting in instability also in network planning services, our core focus in the UK market. As a result, 2021 Services business volume was below expectations. We are expecting significant demand improvement during 2022 to drive our volumes up, as well efficiency improvements improving the margins.

STRATEGIC FOCUS FOR 2022

Our strategy for Networks' business is focused on distributed access architecture solutions and entering the North American market. The customers need to develop the capacity, quality and reliability of their networks to provide more comprehensive services and an improved user experience for their customers. Distributed access architecture enables the more cost-efficient development of an increasingly smart and powerful network that will meet the future bandwidth needs. Expectations are high regarding the commencement of distributed access architecture investments within the next few years.

At the same time, the industry is getting prepared for the DOCSIS 4.0 technology wave. Our R&D programmes are on track to launch passive products next year and amplifiers the year after. In parallel with our own R&D work, in 2022 we are going to proactively work with operators both in the Americas as well as well as in Europe to speed up customers' readiness to deploy 1.8 GHz network upgrades once the products are available for shipping. Thanks to our earlier strategy decision to focus on the 1.8 GHz market in North America, we believe we are ahead of our competitors in launching working products. To maximise the business benefits of this advantage, we are supporting the pioneering operators on their journey to launching 10 Gig capable networks.

"We continue to support our customers on their journey to build these future-proof networks."

***Hanno Narjus**, Head of Teleste's Networks business area*

Video Security and Information

We deliver a broad range of video and information management solutions to the public safety and mobility industry. The product range covers passenger information management solutions, display technologies, as well as video surveillance and situational awareness solutions. Our main customer segments include public transport operators, rolling stock manufacturers and the public security sector.

The product offering builds on scalable product platforms, supplemented with project-specific system design, customisation and configuration, project management, technical integration, installation and commissioning, software and hardware support and maintenance, as well as training.

We have a solid market position among the leading rolling stock manufacturers, public transport operators and public authorities. Our primary market areas are in Europe and North America.

ANOTHER EXCEPTIONAL YEAR – STRONG MARKET POSITION SECURED DESPITE DELIVERY CHALLENGES

In 2021, the public transport information systems market was still impacted by the reduced use of public transport services caused by the COVID-19 pandemic. Decreased passenger ridership resulted in certain investment postponements by public transport operators. Public infrastructure funding programmes in several countries helped to partially compensate for this. The market development for the public safety and security sector remained quite stable.

During the year, we saw an unprecedented global shortage of electronic components and other materials. We believe that this will continue during 2022 as well. The impact was two-fold: On the one hand, lead times for components were getting longer and more unpredictable. On the other hand, prices for certain components were increasing. The software-oriented projects were less impacted and continued largely as planned.

Our order book continued to grow quite steadily, and we ended the year with a record-high order book. We also had a record number of customer development projects ongoing, which led to increased project resourcing needs. These projects will deliver volumes over the coming years. Remote working caused by the pandemic imposed certain challenges on the project execution, productivity, and customer engagement. We hope that we will be able to restore a higher degree of normality in our operating environment during 2022.

In summary, the 2021 net sales in Video Security and Information business remained on a par with the previous year. Our order book continued to grow and, as usual, a considerable proportion of deliveries will be distributed over several years.

SUSTAINABLE DIGITAL TECHNOLOGIES FOR THE PUBLIC SAFETY AND MOBILITY INDUSTRY

The global macro trends remain very favourable to us. Rapid urbanisation and the need to ensure people's safety in public places, environmental consciousness as well as accelerated adoption of smart digital systems provide a solid foundation for innovation and growth.

Public transport operators and other authorities must ensure smooth operation of services and infrastructure as well as the safety of people in public places. To achieve this, public transport information systems, as well as video surveillance and situational awareness solutions are becoming increasingly smart, fuelled by intelligent software. Safe and smooth people flow in public places is setting new requirements on real-time information management systems. Cybersecurity has also become increasingly important in such real-time digital environments, creating a new imperative for any modern information system.

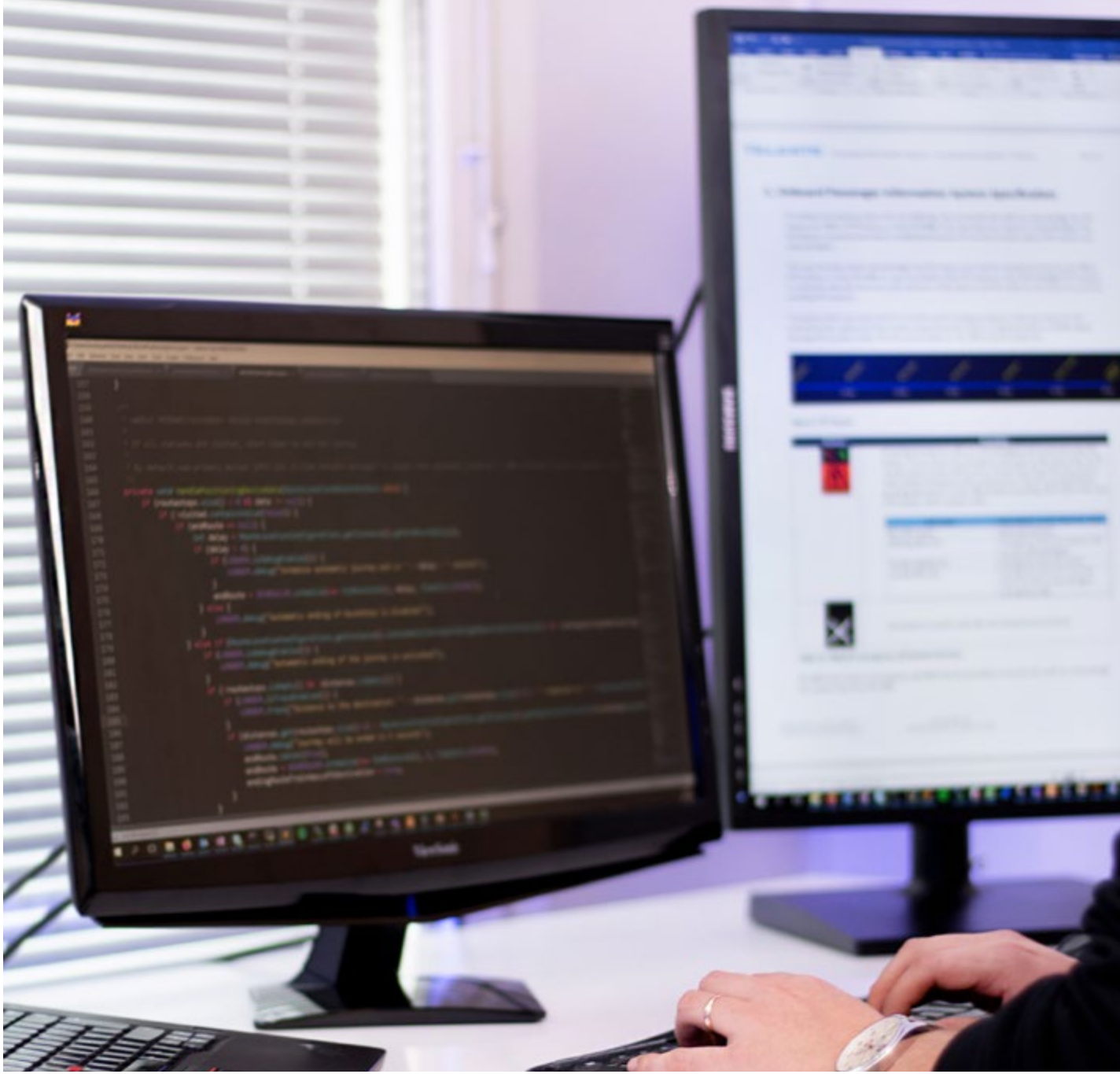
WORLD-CLASS ENGINEERING COMBINED WITH TRUST-BASED CUSTOMER RELATIONSHIPS

In our typical customer projects, real-time software is being deployed alongside hardware into complete systems which integrate into customers' operating environments. These projects often include a certain degree of customisation but are typically built on scalable product platforms. Ensuring competitiveness requires us to continuously make R&D investments into our product portfolio. Disciplined project execution, scalability of our offering and cost-efficiency of operations are also necessary.

We always work to maintain a collaborative, trust-based relationship with our customers. This requires open and continuous dialogue at all organisation levels. Our success is closely linked to the success of our customers, and through collaborative engagement we can best ensure that customers' needs are being satisfied.

"Our mission is to 'make your everyday life smart, safe and smooth'. In a trusted way."

***Esa Harju**, Head of Video Security and Information business area*



Building on technologies and innovations

TELESTE NETWORKS

Distributed Access momentum realised

For the cable industry, the year 2021 was characterised by the long-term effects of the COVID-19 pandemic. The use of the Internet continued at a record-high, and the increasing reliance on connectivity accelerated operators' need to invest in advanced network technologies. For us at Teleste, the year provided an opportunity to harvest from our learnings from the previous stages of the cable network evolution and elaborate the next technology steps.

COMMERCIAL DISTRIBUTED ACCESS DEPLOYMENTS STARTED

Deploying Distributed Access architecture (DAA) has become a mandatory step for all coax-based network evolution strategies targeted to ensure cable's competitiveness with full fibre-to-the-home (FTTH) networks. The technology provides operators a feasible roadmap towards 10G broadband speeds with the existing coaxial assets and enables automation through virtualisation and next-generation telemetry tools.

Commercial deployments of DOCSIS 3.1-based distributed access solutions took off during 2021 and we are working intensively with our customers to scale the first generation of DAA devices in field. Our next focus will be on the strategic development of the second-generation devices targeted especially to the North American market to unlock the significant opportunities DAA provides for operators to lower CAPEX and OPEX per subscriber of their infrastructure.

PROGRESS ON THE 1.8 GHZ TECHNOLOGY FRONT

In parallel to DAA deployments, one of our 2021 highlights was the introduction of two intelligent 1.8 GHz ICON series broadband amplifiers targeted to North American cable multi-system operators (MSOs) that are already taking steps towards 1.8 GHz HFC infrastructure. Taking the lead in the 1.8 GHz market, the amplifiers have been widely recognised by the industry's media and operators.

Today, typical North American cable MSOs can offer a peak broadband speed of approximately 1 Gbps downstream and less than 100 Mbps upstream, which is not sufficient to fulfil consumers' connectivity expectations in the post-COVID-19 world. To make up the divide, the 1.8 GHz deployments are expected to start first in North America, whereas in Europe, the 1.2 GHz networks will be able to meet the capacity requirements longer, especially when pushed up by DAA. However, plans for the European style 1.8 GHz amplifiers also exist, and our development projects have already started.

The 1.8 GHz technology will further emphasise the technical challenges that the previous movement to 1.2 GHz networks revealed. Having developed the 1.2 GHz amplifiers for European operators has given us an advantage in comparison to North American amplifier vendors that have not participated in the European 1.2 GHz wave. We have grouped our learnings, innovations, and results of thorough testing work under the label "Intelligent Networks", a set of technologies that will help operators solve the challenges and make the most out of their infrastructure investments.

ALL SET FOR 1.8 GHZ RF PASSIVES

Introduced already in 2020, our 1.8 GHz RF passives are currently being evaluated by our customers across Europe, and we are in pole position to start shipping the products once the market takes off. The products are fully compatible with existing, lower frequency technologies and they can be installed in existing networks without any changes. The demand for 1.8 GHz RF passives is expected to be ramped up in subsequent years, as it pays off for operators to opt for them already today as technicians replace old components.

FUTURE-PROOF SOLUTION FOR BROADCAST TV SERVICES

Another warm welcome from the customers was given to Luminato 4X4, our new-generation digital headend platform that represents the latest technologies and design for broadcast TV distribution in cable access networks. As some video headend vendors have withdrawn from the market or shut off development of their platforms anticipating the end of broadcast TV, the key competitive advantage of Luminato 4X4 is its ensured continuity and compatibility with both centralised and distributed access networks.

CLOSE COOPERATION TO ENSURE VALUE CHAIN

In 2021, multiple industries felt the impacts of global component shortage, and the situation is forecast to continue as difficult throughout 2022. Some component changes have been made also in Teleste's products to tackle the availability issues and ensure successful product projects. However, the changes have not been significant by this time, and we have been able to successfully continue our strategic work for future network technologies.

One of Teleste's best practices is the close, day-to-day cooperation between the R&D and manufacturing operations that are mostly located under the same roof in Finland. In addition to combining the expertise and knowhow of our excellent teams, holding such a major part of the value chain in-house improves our resilience and works as a hedge against supply chain disruptions and unpredictable situations. During the COVID-19 pandemic, the way of working has proven invaluable as we strive to continue as our customers' best partner for building the networked society.

New 1.8 GHz amplifiers for North American market

In October 2021, we introduced two intelligent 1.8 GHz ICON series broadband amplifiers for North American cable multi-system operators (MSOs) looking for a future-proof solution for adopting higher frequencies in their networks.

Maintaining backward compatibility has been one of key design principles in the new ICON3100 1.8 GHz line extender and ICON4300 1.8 GHz system amplifier. They support future DOCSIS 4.0 rollouts and can also be used in lower frequency networks. In such cases, our award-winning Power Save technology enables lower power consumption.

The amplifiers are capable of high network performance under all circumstances. Their native intelligence facilitates true plug-and-play functionality, providing operators easy alignments in the field with the press of a single button.

Additionally, remote monitoring and control, as well as advanced network diagnostics, are enabled with an optional transponder. With this technology, operators can almost completely dispense with on-site maintenance visits and achieve operational benefits ranging from reduced truck rolls to fewer help desk calls.

VIDEO SECURITY AND INFORMATION

Long-term development work for the benefit of customers

Global megatrends were not thwarted in 2021 despite the COVID-19 pandemic. Environmental concerns are spreading at greater speed, and the continuous urbanisation urges the development of smarter and more interconnected city infrastructures. At Teleste, we focused on the long-term development work that will help our public transport and security customers evolve alongside the changing needs.

TOWARDS DEEPER SYSTEM INTEGRATION IN VIDEO MANAGEMENT

One of our key focus areas in 2021 was to further improve our toolset for security operators and public authorities through deeper integration of multiple video management systems, including Teleste S-VMX, into our S-AWARE® situational awareness platform. The target is to create a highly functional platform that utilises the possibilities of both systems to help ensure the safety and security of people and fluency of operations across versatile infrastructures.

Launched in 2018, the S-AWARE® situational awareness platform works by collecting real-time information from various subsystems, data sources and sensory inputs to provide security authorities with a unified and real-time view of their entire operational infrastructure. Combined with advanced video management features, the system can be utilised to achieve a comprehensive understanding of what is happening in the surroundings, improve operational efficiency, and sharpen decision making especially in unforeseen circumstances.

DEVELOPMENTS IN PASSENGER SYSTEM TECHNOLOGY

In 2021, we also added some very significant innovations to our passenger information and data management software to retain our leading position in the public transport industry. Our central management system received a new, even more modern user interface and was complemented with several new features including an event management function. The function allows public transport operators to plan for scenarios and events such as sports games that have impact on the public transport service and tailor all needed activities already ahead of the event.

On top of the development of the central management system, we successfully adopted our one-of-a-kind display software, originally designed for station displays, for onboard displays as well. The result is a unified, centrally managed system enabling the delivery of high-quality visual information across stations and moving vehicles. The system ensures that passengers will have access to the right information in the right place at the right time and it results in the best possible passenger flow and user experience for the riders.

STANDARDISED COMMUNICATION SYSTEM FOR RAILWAYS

In the railway branch, we have continued work towards the Future Railway Mobile Communication System (FRMCS) standard. The FRMCS will form a global standard for operational communications on railways that will comply with European regulation as well as with the needs and obligations of rail organizations globally. The benefits of the FRMCS standard are expected to be significant for the industry as standardisation typically increases market access and removes barriers of, e.g., building larger public transport ecosystems.

Recently we were also invited to participate in the EU-funded 5GRAIL project aiming at the implementation of first prototypes according to the FRMCS standard. Our focus area in the project is the FRMCS compliant integration of the patented wireless offload technology and some video-related applications. In future, for example, standardised interfaces will enable reception of live footage from the approaching station to the train, giving the train driver an upfront outlook on the situation on the platforms.

Participating in the standardisation process and related research activities provides us an important opportunity for close collaboration with our key industry customers as well as for a relevant exchange of information between the numerous actors of the rail sector globally.

MANAGING HIGH OPERATIONAL REQUIREMENTS WITH RAM AND LCC

One of the main characteristics of public transport systems is that their expected lifetime is very long, and hence their total cost of ownership to transport operators is formed during many years of operation. To help our customers make choices for the longer term, we have focused on developing our in-house RAM and LCC practices for improved environmental, quality and cost control.

Referring to Reliability, Availability and Maintainability, RAM aims to fulfil customers' needs for products and systems capable of serving whenever and wherever they are intended to be used for the time required. RAM actions cover the entire product lifetime from requirement management to monitoring of the field reliability of the products. This helps us design products with a built-in reliability that makes them robust against the changing operational environments typical for public transport.

Life Cycle Cost, LCC, is used to estimate the total cost of a product and it comes into play when we strive for the most cost-efficient way to deal with the entire product life cycle. RAM and LCC practices are commonly linked together, since product reliability easily becomes the biggest influencer to the LCC for products designed with a long lifetime. By managing RAM and LCC carefully, there is significant potential to improve the competitiveness of the public transport sector against other forms of transportation. Extending the lifetime of the products also benefits the environment by saving on materials and other manufacturing resources.

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One of Teleste’s best practices is the close, day-to-day cooperation between the R&D and manufacturing operations that allows us to combine the expertise and knowhow of our excellent teams. During the COVID-19 pandemic, this way of working has proven invaluable as we strive to continue as our customers' best partner for building smart, safe, and smooth infrastructure and services.”

Pasi Järvenpää,
Head of Teleste’s R&D

INNOVATION

Versatile innovations driving the networked society

The landscape of Teleste innovations has been versatile during the past decade. In our Innovation portfolio we have innovations ranging from 5G to fixed CATV networks. Interestingly enough, there is a synergy between the two, as fixed network infrastructure is an enabler for 5G networks to exist as it serves as a backbone to the wireless links. Recently, there have been studies of using HFC networks as 5G Backhaul and hence the tie-in between 5G and fixed network infrastructure becomes an even more interesting area for our innovations.

In the age of 5G, fixed network infrastructure becomes even more important when gigabit level connections need to be guaranteed for the 5G infrastructure. Teleste has always been in the forefront of developing technologies that enable greater network capacities and, lately, the focus has been on the novel 1.8 GHz Extended Spectrum DOCSIS (ESD) compatible technology, which allow the required features.

One of the most known of our 5G related activities has been the almost 5-year long Luxturrim5G project that was recently completed. The Nokia driven ecosystem engaged major Finnish companies and research organisations in building the digital backbone for a smart city. Within the project, 5G network based holistic solutions were developed covering the smart pole and sensor network, data platform and need-based data-driven services.

We were excited to work as a supplier of one of the key solutions for the smart pole concept, involving video surveillance, analytics, and situational awareness. For us, the innovative ecosystem provided an excellent opportunity to collaborate in developing new digital infrastructure and services that will help people feel safe and comfortable in public spaces.

In connection with public transport, we are actively involved in verifying and validating the Future Railway Mobile Communication Systems (FRMCS) standard in the EU project called 5GRAIL, together with some of the key players in the industry including Alstom, CAF, Deutsche Bahn and Nokia and many others. We are also taking part in a project called SMARTER, which is focusing in utilising 5G and other technologies in Smart Terminals.

Our goal is to innovate further within the domains of public transport and public safety, where we are aiming to create smart, smooth and safe services and solutions. 5G has an important role as one of the key enablers to achieve our goal. Innovation is in our DNA.

Sharing future happiness at Dubai World Expo

Recently, we have been proudly part of the LuxTurrim5G consortium at Dubai World Expo, where the ecosystem has been well presented at the Finland pavilion, Snow Cape. The LuxTurrim5G ecosystem is contributing to the major theme of the pavilion, which is sharing future happiness. The ecosystem helps cities to tackle the challenges of urbanisation and climate change and boost sustainable development, enabling their digital transformation into thriving smart cities.

Getting smarter with SMARTER!

In October 2020, Teleste joined a Business Finland funded research project focusing on digitalising ports, terminals and port operations. The project is now at full speed and lab and field trials are anticipated during summer 2022. Our focus is on the development of the situational awareness platform, which combines data provided by video management, video analytics and various sensors. The target is to increase operational efficiency in terminals by improving passenger flow.

Customer cases

TELESTE NETWORKS

Liberty Global selected Teleste's Distributed Access solution

Liberty Global, one of the world's leading converged video, broadband, and communications companies, chose our Distributed Access Architecture (DAA) solution for a trial in their GIGAbit network. The target is to give subscribers the benefit of increased reliability and capacity enabled by the new DOCSIS technology.

Already used successfully in Coventry and Warrington in the UK, DAA is now being rolled out in Baguley, UK. It is a new way of building DOCSIS networks and is being trialled to allow Data Core and Edge Devices to bring data and video services to Liberty Global customers in a real operational environment at speeds of over 1Gbps.

We have worked closely with the engineering teams of both Liberty and Virgin Media to fully integrate the technology that is designed to improve the performance of Liberty Global's Access network – the network used in the last mile between technical facilities and customers' homes – and which will provide customers with a more reliable service and better experience.

The technology also delivers more capacity efficiency, allowing Liberty Global to continually deliver wide-scale Gigabit speeds quickly and more cost effectively. It is powered by CIN (Converged Interconnect Network) technology, which digitises the optical links, and will replace traditional analogue transmission in this space. The CIN will also support growing B2B services, mobile backhaul and 5G, and is a key enabler in LG's Fixed Mobile Convergence journey.

We are proud to support Liberty Global with their first European deployment of the DAA technology. It is exciting to see this new technology successfully deployed and provide new opportunities and bandwidth within the existing HFC Network.

"In today's rapidly changing competitive landscape, it is vital that Liberty Global continues to deploy new and innovative solutions to ensure network continuity and ever-increasing bandwidth capacity for our customers. We are pleased to be working with Teleste in our deployment of Distributed Access Architecture, they have enabled us to continue to be at the forefront of network development."

Colin Buechner, *Chief Network Officer, Liberty Global*

TELESTE NETWORKS

Kabelplus chose Teleste’s RPHY and video solution to expand coverage

Kabelplus implemented Remote PHY-based distributed access architecture and a separate auxiliary video core utilising Teleste's DAN300 R-PHY node and Luminato video headend together with the Cisco CCAP core.

Kabelplus was looking for a very flexible and scalable distributed access architecture (DAA) solution to work together with its already successful Cisco CMTS platform. The target was to provide Gigabit broadband and video services to subscribers, while extending into new geographical areas in a flexible and scalable way. To achieve these objectives, Conscia, a long-time Cisco Gold partner and systems integrator, suggested the implementation of DOCSIS 3.1 based Remote PHY technology in Kabelplus’ network.

Teleste's DAN300 R-PHY node was the obvious choice for the implementation as it has already reached a mature and proven market-ready level together with the Cisco cBR8 CCAP core. Apart from the R-PHY node, implementation also included a dedicated Luminato 4X4 video core to handle the video distribution. Its flexibility and scalability are ideal for serving different sizes of networks and perfectly suited for the varying channel mix that Kabelplus may encounter.

The new infrastructure allows Kabelplus to expand access throughout the whole of Denmark, providing true nationwide coverage and easy access for the company’s potential new customers. There are also several advantages to separating the video feed into an auxiliary core. First, it provides better readiness to the changing video distribution requirements. Separating the video distribution from the data distribution is also a major operational advantage, especially in larger organisations where parts of the networks are handled in different departments.

Kabelplus has chosen to make full use of the new digital infrastructure and has implemented all the TV and Data services on IP. With the help of Conscia, integrating the Cisco CCAP core and Teleste R-PHY and Luminato headend into Kabelplus’ current operating environment was accomplished in record time, securing continuous and seamless operation even in the transition phase. This provides Kabelplus with a very modern, future-proof and flexible CaTV infrastructure that will last for many years to come.

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We are pleased to see that the interoperable Cisco CCAP core and remote PHY technology from Teleste together with the separate Teleste Luminato auxiliary core is able to provide us with a future-proof and tested platform for carrying out gigabit and video services for our subscribers in the coming years.”

***Henrik Lind**, CTO, Kabelplus*

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Getting the Teleste RPD working with the Cisco cBR8 was easy, in my opinion. The interop is great — thanks to CableLabs standards! — and both Teleste and Cisco are eager to help, if needed. The guys at Teleste deserve a lot of credit for their level of commitment. They clearly want the customer experience to be as good as possible. They are a pleasure to work with.”

***Thomas Bützau**, System Engineer, Conscia Denmark*

TELESTE NETWORKS

Telenor upgraded to the latest edge QAM technology

Telenor, the second biggest Cable TV operator in Sweden, upgraded its edge QAM platform utilising the Teleste Luminato 4X4 headend.

Telenor Sweden is the second largest provider of Cable TV services to the consumer market in Sweden. The company delivers analogue and digital TV services over its CATV networks to around 250,000 households.

Following the end-of-life of the company's previous edge QAM platform, Telenor needed a future-proof digital headend for the delivery of broadcast TV throughout its nationwide network. Our Luminato 4X4 platform was selected for the deployment for its versatile features and ensured continuity.

Luminato 4X4 is the newest headend in the market, providing cable TV operators with a compact and ultra-dense edge QAM platform. The future-proof platform ensures availability of high-performance broadcast TV services for years to come and allows operators to freely scale up their video services when the need for channels such as high quality 4K increases.

Luminato 4X4 enables operators to manage all their TV channels in one rack unit. Combined with proven reliability and features such as reduced power consumption, this makes the platform an ideal choice for operators that are looking for a high-performance, sustainable solution for TV delivery.

Installation of the edge QAMs in Telenor's network was carried out quickly and easily as the devices were partially preconfigured by Telenor before delivering those to separate locations. After installation, final tuning of the devices was done remotely, thus avoiding time-consuming on-site visits and unnecessary truck roll.

We were also able to meet Telenor's specific requirements for 24/7 technical support during and after the installation. A comprehensive training prior to the rollout ensured that possible technical, operating, maintenance and troubleshooting aspects were covered well in advance of field deployments. Continuous availability of software updates and improvements as well as immediate support in technical issues are guaranteed by our technical support, backed up by our own R&D.

"The cooperation between Telenor and Teleste has been superb throughout the whole journey. Really good support and training. The project proceeds well and goes beyond our expectations. We have had minimal customer impact, in principle none at all. The fact that we have had the project planned, procured, trained, configured, rolled out, and migrated under just one year is amazing."

Thomas Nordh, *Project leader TV services at Telenor*

VIDEO SECURITY AND INFORMATION

Improved safety on APRR motorways in France

Our S-VMX video surveillance system improves road safety and traffic fluidity on APRR motorways in France.

The APRR Group, a subsidiary of Eiffage, selected our S-VMX Video Management System for upgrading the safety and surveillance infrastructure on its motorways in France. The objective was to replace APRR's soon-to-be-obsolete video traffic management system with a modern and evolutionary system to help monitor its motorway network and ensure traffic fluidity and safety.

The S-VMX system offers APRR an effective and future-proof solution for monitoring and securing the Centre & East of France Motorways network, including the motorway routes, as well as a platform for extensions to car parks and rest areas. The platform is modular and scalable by design, so that it can extend and scale up, fitting in with the increasingly complex requirements for security and operations control systems in real time.

Currently, the implementation of S-VMX for APRR supports 2,500 video cameras, as well as 150 operating sites and video walls in the field. In addition to the powerful video core, the system can control large amounts of information from multiple sources within the operating environment.

The system ensures that the right information is made available to the right people, when and where needed, and that the correct action is taken promptly whenever unexpected situations occur. Cooperation and sharing information between various stakeholders are also supported, and state-of-the art cryptographic technologies ensure that all data stays safe and protected against cyber threats.

The S-VMX system provides APRR with a long-term solution based on an evolving roadmap. The platform is capable of handling multiple third-party devices and software applications, and it is ready to grow in the number of system components and features, when the operational and road safety requirements change.

The system is implemented for APRR by a consortium composed of Teleste and EQUANS (formerly named ENGIE-Ineo Infracom, a part of leading worldwide energy provider the ENGIE group).

"We appreciate the good communication and cooperation with Teleste's team during the system implementation. Their determined work resulted in the best possible solution for our operational environment."

***Davy Debreuve**, Project Manager, APRR*

© Jonas Vacquel

VIDEO SECURITY AND INFORMATION

Passenger information system to guide users on Tampere Tramway

Tampere Tramway is a unique project in Finland in which a new tramway system is being built from scratch. We are pleased to contribute to the project with our experience and know-how regarding modern passenger information systems.

The new Tampere Tramway in Finland is being equipped with our information displays and their management system. Delivered as-a-service together with JCDecaux 90 double-sided TFT LCD displays are being installed at the tramway stops and shelters, and Teleste will also take care of maintaining and upgrading the hardware throughout the seven-year agreement period.

Tampere Tramway is the first project in Finland since the 1910s in which a new tramway system is being built from scratch and will be accommodated as part of city-wide public transport infrastructure. The project was launched in 2017 and the tramway began operations in August 2021.

The key goals of the tramway system include making everyday life and transportation easier for users, supporting the growth and development of the area, and increasing the appeal of the city. Our passenger information system is well-equipped to advance these targets by offering a state-of-the-art platform for the delivery and management of travel information with an interface to the City of Tampere's real-time transit data feed. The system ensures excellent visibility and availability of travel information across the tramway's stops and shelters and city-related content can also be shared.

For customers and public transport operators, the passenger information system as-a-service will provide increased flexibility towards technology changes while lowering the threshold for new deployments. The practical maintenance and upgrade work are carried out by our experienced professionals in our Tampere and Forssa units.

Local presence and know-how result in higher service quality, shorter reaction times and agile operations for the customer. Among the key benefits achieved will also be increased agility in obsolescence management, reinforced with easier control of the entire system infrastructure, including both hardware and software.

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Tampere Tramway has been designed for a smoother everyday life and easier use of public transport for the residents and the city. New stops and shelters play an important role in achieving this and establishing the tramway services as an integral part of the daily city life. They will also provide the City of Tampere with a new channel for sharing information, such as diverse topics concerning the city and its residents."

***Petri Hakala**, Engineer,*
Public Transport for City of Tampere

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Tampere Tramway is a unique construction project in Finland, in which building up new public transport infrastructure in the city sets high requirements for system operation and integration. We are confident that Teleste is able to meet the challenging conditions and guarantee the high availability of passenger information to tramway users for years to come."

***Matti Viitala**, City Relations and Technical Director,*
JCDecaux Finland

VIDEO SECURITY AND INFORMATION

Information displays to Banedanmark stations

Banedanmark, the governmental body responsible for maintenance and traffic control on the entire state-owned Danish railway network, selected our next-generation TFT LCD displays for their station infrastructure upgrade. During 2021–2026, Banedanmark and other ordering entities are upgrading their station infrastructure with up to 4500 of our next-generation outdoor TFT LCD displays, in which high screen readability and advanced technical parameters play a significant role.

Designed for the most challenging outdoor environments, the displays provide passengers with outstanding readability of shared information at stations and platforms. For the transport operator, their high technical quality and expected lifetime of over ten years are strengthened by advanced features such as remote diagnostics and preventive maintenance. We are pleased to support the customer also with collaborative partnership, previous experience in the Danish railway market and services such as component repair.

On-board solution to Alstom for Metro Marseille

Alstom selected our on-board solution for the Marseille automated metro network in France, ordered by the Aix Marseille Provence Metropole, AMP. The deliveries will include on-board TFT displays as well as systems for passenger information, public address, CCTV, and wireless train-to-ground functions for 38 4-car driverless metro trains, with an option for an additional 5 vehicles. The system deployments will start in 2021, and the first trains will enter into service in 2024.

One Teleste – our passionate professionals

Hybrid work and high team spirit

In 2021 the world has gradually been adapting to post-pandemic life. The “new normal” is said to be far more technology-based than before, and among the lessons learnt are the many methods of digital and remote work that are here to stay. At HR, we have been excited to see that Telestians have been ready to master the change.

While the COVID-19 pandemic has not yet been defeated, this year has provided us an opportunity to evaluate the pandemic situation’s effects on the ways we work. The rapid outbreak of the pandemic caused millions of people, including many Teleste employees, to shift to remote work almost overnight and new procedures and guidelines were quickly introduced for the safety of those who continued at their workplaces.

While work life changed at an unprecedented scale and speed, Teleste’s global footprint and existing ways of working enabled agile and smooth adaptation to the new situation. Tools for efficient remote work were already widely adopted and the technical readiness of the personnel was on a high level. Company-wide and country-specific guidance against the pandemic was quickly introduced, and the situation has been monitored on a regular basis to guarantee the safety of the employees and continuous operation of the company.

The aftermath of the pandemic shows that Teleste has remained fully operational from an employee perspective. Special thanks for this go to Telestians in all our teams and operating countries: indeed, you have demonstrated what committed and responsible individuals can achieve together for the benefit of the company and us all.

HYBRID AND DIGITAL WAYS OF WORKING

Teleste premises are places for cooperation, brainstorming and working together. However, the pandemic has challenged us to consider new permanent ways of working to ensure a high level of productivity and well-being at work and to achieve our operative and strategic objectives. Digital tools allow us to stay connected with our customers and colleagues and we have introduced a hybrid working initiative that gives teams and employees greater flexibility in working arrangements and the possibility to balance between work and personal needs.

With the new initiative, teams have more responsibility and freedom to influence their own work and working conditions. Equally important is that we continue to value each other’s input to our common goals and meet each other face-to-face to keep building a strong team spirit. All Teleste teams,

Personnel

The Group's continuing operations employed an average of 863 (856) people during the review period. At the end of the review period, the Group employed 847 (858) people, of whom 45% (47%) worked abroad. Approximately 3% (3%) of the Group's employees were working outside Europe.

HR mission

Telestians enjoy and succeed in their daily work and achieve common goals while building a smart, safe and smooth future.

The cornerstones of our people strategy

- Talented Telestians
- Smart and harmonised HR processes
- Positive employee experience
- High quality leadership and management

operating units and even roles are different, and are appreciated for their contribution to the company, and everyone, whether working at Teleste premises or remotely, needs to be supported and included in communications.

LEADERSHIP FROM PRINCIPLES TO PRACTICE

Developing leadership skills across the company continues as one of our focus areas. Good leadership creates favourable conditions for high employee engagement, motivation, and satisfaction. This, in turn, allows us to serve our customers better. While striving for business success, we also want to provide our managers with the readiness to make a positive impact on employee experience in their teams.

Our global Leadership Training programme with Aalto University Executive Education was finalised in March. Based on a combination of academic framework and practical experience, the programme was tailor-made to support our objectives. Almost 130 Teleste managers graduated from it with generally excellent results and the programme also created a platform for ongoing work on leadership.

According to the feedback from Telestians, our focus on building effective leadership has been well received. The results of our biannual myPulse survey indicate that satisfaction towards management and leadership at Teleste have improved in all areas, which we are very proud of. Leadership principles created during the training programme have already been applied to Teleste's Success and Growth discussions, survey metrics and recruitment processes. Work on bringing the principles into practice continues.

INVESTING IN #TELESTETEAM AND TEAM SPIRIT

The company is about people and interaction. New initiatives such as the Employee Sounding Board and Global Leader Forum have been launched this year to help us keep a finger on the pulse of what is happening in our local teams and offices. According to Telestians globally, team and team spirit are the best thing experienced when working with the company, and our mission is to strengthen the sense of collaboration and communication within the company even further.

Tuomas Vanne
Senior vice president,
People and competence

Employee sounding board – a new forum for engagement

Our new employee sounding board gives employees an established forum to share experiences of our teams in operating countries, as well as discuss and exchange views with the company's management. With its 10 members from teams and operating countries, the board started working in September.

Leader Forum brings managers together

Our global Leadership Training programme with Aalto University Executive Education was finalised in March when the first Teleste Leader Forum was arranged. The forum brings Teleste managers together to discuss leadership work and share experiences and good practices. The forum continues as a permanent process for interaction.

Building on strengths to improve employee experience and attract new talent

As societies and technologies evolve, we need to ensure that we are ready to meet the future expectations of our employees and new talent. We believe that by building on our strengths and understanding the areas of improvement, we can provide excellent employee experience and be the employer of choice today as well as in the future.

Long careers and a low employee turnover rate indicate that Telestians are typically happy with their careers with the company. To understand which factors the high commitment is based on, our Global Employee Experience Survey 2020 asked Telestians to evaluate the company as an employer.

The outcome of the survey highlights Teleste's teams and team spirit as the company's strenghts. Interesting assignments, flexible working arrange-ments and international environment are also listed among the most valued aspects of the company. Identifying our strenghts and areas for improvement helps us recognise where to focus for our employees and the company to thrive and succeed.

We have also identified that we need to strengthen Teleste's employer brand awareness among potential employees. We want to communicate about Teleste as an employer and what it means to build a career with us. Our newly published careers website, active presence on social media, as well as positive feedback from applicants are concrete results of this work.

*Employee Survey 2020: Global outcome of Teleste's strengths

Working at Teleste: High commitment and interesting assignments

79.9*
MY CO-WORKERS SUPPORT MY SUCCESS IN MY WORK

85.5*
MY LINE MANAGER TRUSTS IN MY ABILITY TO FULFIL MY ASSIGNMENT

** MyPulse Survey 2021. Average, scale 0–100*

Our way of working

OPERATIONS, LOGISTICS AND SOURCING

Managing global change

2021 was another exceptional year for operations, logistics, and sourcing globally, as well as at Teleste. Challenges initiated by the COVID-19 pandemic continued, and the growing shortage of materials and components on the market has hit industry heavily throughout the year, resulting in material availability problems, price increases, and delays in product deliveries.

While manufacturers worldwide have struggled to source the components needed, several measures were taken at Teleste in 2021 to maintain a high operative level and ensure our delivery capabilities on a day-to-day basis. By thinking ahead, and allocating and prioritising the available capacities, we were able to avoid a significant impact of material availability on sales in 2021, and our delivery times remained at a relatively good level throughout the year.

RELYING ON A FAR-SIGHTED PLANNING PROCESS

Teleste has developed and maintained a precise sales and operations planning process for some years now. The carefully thought-out process maps all our sourcing and operational planning activities to enable a far-sighted overview of the upcoming component and material needs. In 2021, the scope of the process was extended to 12-18 months to help us manage our supply and delivery balance as efficiently as possible.

In addition, the new data analytics tools, developed and introduced in our operations at the beginning of the COVID-19 pandemic, were further improved for the needs of sourcing and material procurement. Understanding how many products and components there are in our different sales channels, as well as in our suppliers' and their suppliers' channels, and how these are moving around, has enabled us to allocate and prioritise the available capacities in the challenging global situation.

ENSURING A RESILIENT SUPPLIER NETWORK

Our 2021 quality activities aimed to ensure a resilient partner network. The quality control process for incoming materials was renewed, and a regular procedure for reviewing suppliers' quality improvement activities was introduced alongside a new way to conduct an audit remotely.

Given the rapidly changing pandemic situation, the remote way of working has enabled us to execute the auditing of our suppliers' processes on a regular basis. The method also saves a considerable amount of our experts' time and benefits the environment through reduced travel.

CONTINUOUS DIGITALISATION AND ENLARGEMENT OF LITTOINEN FACILITIES

Digitalisation projects in our manufacturing are continuing at full speed, and to complement the intelligent picking system launched in 2020, a new warehouse management system is being developed at our facilities in Littoinen, Finland.

In autumn 2021, we launched an enlargement of the Littoinen manufacturing facilities to support Teleste's strategic objectives. The project will enable us to organise our functions and supply chain even more efficiently than before. While the global component availability challenges are forecast to continue throughout 2022, our focus is on forward-looking processes that will ensure effective operations for the company's current and future needs.

Markus Mattila
Senior Vice President of Operations, Logistics & Sourcing

OPERATIONS, LOGISTICS AND SOURCING

Joining forces for a successful sourcing process

The supply chain has a fundamental role in the value that Teleste provides to our customers, and it is significant from the quality assurance point of view, as well. During the COVID-19 pandemic, the importance of the supply chain has been further emphasised as global disruptions present a risk to the availability of components. A thorough Sales and Operations Planning (S&OP) process has helped us to tackle the challenges and ensure a successful sourcing process for us, our suppliers, and our customers alike.

To maintain and continuously improve our capability to meet our customers' expectations, Teleste has adopted a precise Sales & Operations Planning process (S&OP) focusing on several aspects essential for successful product delivery. Developed over the course of several years, the S&OP process today includes our best practices for regular sales forecasts, active procurement work, and review of critical components, and it provides us with an integrated way to balance upcoming demand with supply needs.

A key target of the S&OP process is to create a unified business plan drawing on input from our various teams, ranging from Sales and Sourcing to Logistics, R&D, and business management. Factors including firm and potential orders from customers, lead times, and prices, as well as identified risks and problems, are considered, and an active dialogue with internal teams, suppliers, distributors, and brokers is encouraged. The cross-functional collaboration ensures that all our functions share the same understanding of the situation and are committed to the plan going forward.

Amidst the global supply chain disturbances in 2021, the S&OP process has proven a key force behind our successful product deliveries. With its scope now extended to cover the first half of 2023, the process enables us to project the need for components in the long term, which, in turn, helps us to take proactive steps with suppliers to ensure availability. Another example of the benefits of the process is the possibility to identify critical component issues and quickly response to them, even in the R&D design board.

The cornerstone of the S&OP process is formed by advanced data analysis tools, developed in-house to utilise the huge amount of data gathered in operations. This data-driven approach supports integrated decision-making, and issues such as data availability and integrity will continue to grow in importance in the future. We have therefore put the focus on them in several operations, such as in quality assurance, where data from incoming inspections is today at hand for all our sites, enabling a unified understanding of the quality of received components.

As the global supply chain disturbances are projected to remain difficult into 2023, Teleste is well prepared to navigate through the challenge, while holding on to our principles of sustainable and ethical procurement. Data, dialogue, and in-depth processes will be our formula to achieve the target.

Local and remote presence to ensure quality

Consisting of experienced quality professionals, Teleste's local office in China, Teleste Electronics (TSIP), carries responsibility for our sourcing and quality management in the area. Focusing on our suppliers' processes and the quality of components, and especially newly introduced items, the TSIP team collaborates with suppliers, arranges regular audits, and follows up on the improvement of our material and component quality.

Since the beginning of the COVID-19 pandemic, travel and meeting restrictions have made factory visits far more difficult. To maintain a systematic way of monitoring quality even in the difficult circumstances, we introduced a method that utilises the local presence and competence of the TSIP team, as well as the expertise of offices in other countries, to conduct audits remotely through videoconferencing. With careful scoping and planning, the method fosters communication during audits and allows us to acquire an adequate view of suppliers' manufacturing processes.

Key tasks of the auditing process are ensuring continuous and fruitful discussions with suppliers and taking a preventative approach to possible quality defects. A successful sourcing process helps to guarantee the high quality of our products and results in a win-win situation for us, our suppliers, and our customers alike. In the pandemic conditions, the remote method has proven effective in achieving the target. In addition, the method helps us to deliver environmental benefits by reducing the need for travel in the future, too.

OPERATIONS, LOGISTICS AND SOURCING

Building on the digital transformation

One of Teleste's strategic focus areas is to invest in the retraining and upskilling of existing workers to better adapt to the digital transformation and drive the future of our industries, especially by the means of digitalisation, data analytics, and robotics. This has required a substantial transformation of our working methods, our work culture, and the ways we approach innovation.

WAREHOUSE MANAGEMENT SYSTEM FOR SPECIFIC NEEDS

An example of our digital transformation efforts is our new Intelligent Picking System, which was initially conceived in 2020 and fully implemented in practice in 2021. During the year, we also launched a WMS (warehouse management system) project, which began with benchmarks of existing WMS systems and targeted the creation of a WMS system so easy and intuitive to use that the time required to familiarise oneself with the tasks would be less than five minutes.

After conducting detailed research into technologies such as voice control, AR (augmented reality), mobile solutions, RFID, and electronic shelf labels, it became clear that no existing WMS solution on the market was able to meet our specific requirements, or agile enough to evolve alongside our strategy and goals. Therefore, the decision was made to design and build an entirely new warehouse management system from the ground up.

The development project was set on the foundation of the Minimum Viable Product principle, a technique in which a working version of a new product or tool is developed with a sufficient set of core features and then iterated towards the goal, while utilising feedback from users. We were quickly capable of bringing new functions to the WMS software on a regular basis, and our goal remains to have a new software version with new functions released at least every two weeks.

The new WMS provides us with a digital system that guides the user to receive, shelve, pick, and deliver the right materials, from the right place, at exactly the right time. What sets our WMS solution apart is that our software team is closely connected to our logistics workers. In addition to user feedback, a significant amount of data is generated for further development and innovation. Together, our teams have created a build-measure-learn feedback loop that is constantly evolving.

Staying ahead of the curve in our industry requires constant research and education in new and future technologies. We need to continuously update our competencies to ensure that we have sufficient understanding of emerging technologies that may enable new business opportunities. While it is important for us to have the latest technology in place, our adoption and implementation model is based on true and tangible needs, instead of digitalisation just for the sake of digitalisation.

CORPORATE RESPONSIBILITY

Sustainability efforts continued with holistic assessment and new set of goals

Corporate responsibility has an important role in Teleste's operations, and we believe that our solutions play a key role in building a sustainable future. Our technologies enable ultra-fast and reliable broadband networks leading to improved connectivity that allows, for example, less business travel and more remote work. Our information and video security solutions secure safety in public places and enable smart, safe, and smooth mobility especially in urban environments and encourage the use of public transport.

During 2021, we continued our sustainability efforts with a holistic assessment, including the assessment on the eligibility of Teleste's operations to the EU taxonomy of sustainable activities. The EU Taxonomy regulation has been made to increase understanding on whether an economic activity is environmentally sustainable in the context of the European Green Deal. We are pleased to note that today, 34% of our turnover is eligible to the taxonomy and 50% of our capital expenditures and 52% of operating expenses are related to activities that are considered environmentally sustainable.

During the year, we also set new goals to guide our corporate responsibility work and refreshed many of the principles leading our sustainability actions. The new targets cover ESG (environmental, social and governance) topics more widely than before and they were set for a longer period.

For the period of 2019 to 2021 we had three key targets:

1. Include a power saving feature in 65 per cent of new network products installed outdoors (2021: 100%)

2. Reduce energy consumption in properties by 10 per cent compared with the 2018 level (2021: -4%)

3. Reduce the carbon footprint from air cargo below the level of 2018 (2021: -36%)

During the period we met and exceeded the goal of including a power saving feature into our products and today all our network products installed outdoors have a power saving feature. We were also able to decrease the carbon footprint of air cargo. We were able to cut the energy consumption of our own premises less than we anticipated and ended with a decrease of four percentages compared to the 2018 level.

During the sustainability assessment we defined the most relevant areas for Teleste's corporate responsibility. The results were summarized to the materiality matrix covering the areas that are considered to have the most impact on Teleste and our stakeholders.

At Teleste, we also have a wide set of policies and principles guiding our sustainability efforts. Telestians across the company are committed to building a sustainable future from the environmental, social and corporate governance perspectives every day.

CLIMATE AND ENVIRONMENT

At Teleste, we are committed to protecting the environment and fighting the climate change. To make the commitment a reality, our R&D teams work every day to cut the energy consumption of products or increase their energy efficiency. The teams continuously innovate features that enable automation, remote monitoring and control in network management, minimising physical truck-rolls and on-site visits. We also aim to extend the product life cycle and, for example, modular solutions support backwards compatibility in product updates and therefore prevent their unnecessary scrapping from customer systems. Easy dismantling and recyclability are taken into consideration in the early design phase.

We also work to ensure that materials used in our products come from ethically and environmentally sustainable sources and avoid and phase-out the use of substances of very high concern (SVHC). We avoid the use of single-use plastic in our products and packages, and we prefer the use of recycled materials when possible. We also do our best to use all our resources efficiently. For example, in 2021 92% of the aluminium delivered in own-made products was recycled.

The most important environmental aspects related to our normal operations are CO2 emissions, use of natural resources and material waste.

SOCIAL SUSTAINABILITY

In the area of social sustainability, Teleste is committed to internationally recognised human-rights standards. We do not tolerate, in any context, the use of forced labour, human trafficking or child labour.

To ensure an inspiring and respectful workplace for our employees, we promote a diverse and equal working culture where any form of discrimination, harassment or other inappropriate behaviour is not tolerated.

We believe that well-being at work arises from meaningful tasks, good atmosphere, teamwork, high-quality leadership, and a good balance between work and leisure.

CORPORATE GOVERNANCE

At Teleste, we are also committed to honest, transparent, and reliable business as well as compliance with all applicable national and international laws and regulations. We require our suppliers and business partners to respect the same.

We are compliant with laws, regulations and standards that pertain to bribery, corruption, money laundering and the financing of illegal activities.

We want to continuously improve our practices and we regularly monitor our performance in the areas of Environmental, Social and Governmental responsibility.

Teleste's materiality matrix on ESG themes was updated during 2021. The matrix is used to identify the most relevant ESG areas that should be measured, monitored and require actions during the coming years. During the materiality assessment we also identified issues on which the company is not expected to have a significant impact.

Our CO2 emissions are mostly generated from the energy used on our premises, cargo and transportation. Energy consumption created during product life cycle was estimated to have the largest impact on CO2 emissions. The magnitude of the impact is dependent on the CO2 intensity of the energy used. The other environmental aspects that are important to the company are the use of natural resources and the generation of waste.

Environmental

1. Deforestation
2. Loss of biodiversity
3. Water consumption
4. Pollution
5. Waste
6. Energy consumption
7. Transportation emissions
8. Use of natural resources
9. GHG emissions
10. Product energy consumption

Social

11. Community relations and charity
12. Employee remuneration
13. Health & safety
14. Employer responsibility & integrity
15. Wellbeing of employees
16. Commitment to employee growth & development
17. Inspiring company culture
18. Attract and retain talent
19. Innovating

Corporate Governance

20. Collective Bargaining
21. Board Diversity & Independence
22. Data Privacy
23. Supplier Code of Conduct
24. Ethics & Anti-Corruption

Our Management

Board of directors

TIMO LUUKKAINEN

M.Sc. (Econ.), M.Sc.(Eng.), MBA, Born in 1954,
Chairman of the Board since 2020
Member of the Board 2016–2020

Non-independent of a significant shareholder, Chairman of the Board in Tianta Oy.

Principal occupation:
Board professional

Primary working experience:
Ensto Group, President and CEO 2009–2016
Evervent Oy, CEO 2007–2009

In France, UK and in Switzerland during 1992–2008:
Member of the Management Group of French subsidiary of General Motors, EMEA director of Hyster and Mouvex -consortiums

CEO of Irrifrance

CEO of ABB subsidiary 1985–1992

CEO of UPM Kymmene subsidiaries 1981–1985

Other elected positions of trust:
Fondita Fund Management Company Ltd, Member of the Board 2021-

Tianta Oy, Chairman of the Board 2018–

JUSSI HIMANEN

M.Sc. (Industrial Engineering), born in 1972
Member of the Board since 2019

Independent of Teleste and its significant shareholders.

Principal occupation:
Ramboll Finland, Director Business Development 2018–

Primary working experience:
Comptel Corporation, Senior Vice President, Strategy 2012–2017

Nokia, Nokia Networks, Nokia Siemens, various positions 1998–2011

Sonera 1997–1998

VESA KORPIMIES

M.Sc. (Econ.), Born in 1962
Member of the Board since 2019

Non-independent of a significant shareholders, CEO and Board member in Tianta Oy.

Principal occupation:
EM Group Oy, CEO 2018–

Primary working experience:
Kymppi Group Oy, COO 2015–2017

Exel Composites Oyj, CEO 2008–2014

Exel Composites Oyj, several positions in Finland and in Germany 1987–2007

Other elected positions of trust:
Axopar Boats Oy, Member of the Board 2020–

Tianta Oy, CEO and Member of the Board 2019–

Efla Oy, Chairman of the Board 2018–

Meconet Oy, Member of the Board 2016–

Scanpole Oy, Member of the Board 2015–

MIREL LEINO-HALTIA

PhD (Econ.), CFA, Born in 1971
Member of the Board since 2020
Chairman of the Audit Committee 2020–

Independent of Teleste and its significant shareholders.

Principal occupation:
Professor of Practice, Aalto University 2019–
Board Professional

Primary working experience:
PwC Finland, Partner, consulting 2009–2018
PwC Finland, several positions 2000–2008

Other elected positions of trust:
Sitowise Oyj, Member of the Board and Audit Committee 2021–

Euroclear Finland Ltd., Member of the Board, Chairman of the Audit Committee, Member of the Governance, Nomination & Remuneration Committee 2018–

Member of the Board in several companies within LocalTapiola Group 2019–
LocalTapiola Group, Member of the Audit & Risk Committee 2019–

Indufor Ltd, Chairman of the Board of Directors 2019–

Savings Banks Research Foundation, Member of the Board 2020–

HEIKKI MÄKIJÄRVI

M.Sc. (Eng.), Born in 1959
Member of the Board since 2018

Independent of Teleste and its significant shareholders.

Principal occupation:
Telia Ventures, CEO 2018–

Primary working experience:
Airbus Ventures, General Partner, 2015–2016

Deutche Telekom AG, Senior Vice President, Venture Capital & Group, Business Development and Venturing, 2011–2014

T-Venture, Chairman of the Supervisory Board, 2011–2014

Openwave systems INC, Senior Vice President, Business Development, 2009–2011

Accel Partners, Venture Partner, 2002–2009

Cisco Systems, Technical Director, 1998–2001

Nokia, several management positions in Finland and in Germany, 1983–1998

KAI TELANNE

M.Sc. (Econ.), Born in 1964
Member of the Board since 2008

Independent of Teleste and its significant shareholders.

Principal occupation:
Alma Media Corporation, CEO 2005–

Primary working experience:
Kustannus Oy Aamulehti,
Managing Director 2001–2005

Kustannus Oy Aamulehti,
Deputy MD 2000–2001

Other elected positions of trust:
Tampere Chamber of Commerce and Industry, Member of the Board 2018–

The management group

JUKKA RINNEVAARA

President and CEO until 31.12.2021
M.Sc. (Econ.)
Born in 1961

Joined Teleste in 2002

Primary working experience:
ABB Building Systems, Group Senior Vice President 2001–2002

ABB Installaatiot Oy,
President 1999–2001

Other elected positions of trust:
Vaisala Corporation,
Member of the Board 2019–

Technology Industries of Finland,
Member of the Board 2019–

ESA HARJU

Video Security and Information,
Senior Vice President M.Sc. (Eng.)
Born in 1967

Joined Teleste in 2016

Member of the Management Group since 2016

President and CEO as of 1.1.2022

Primary working experience:
Independent Consultant 2015–2016

Ixonos Plc, President and CEO 2013–2015

Nokia Siemens Networks Finland Oy, CEO 2012

Nokia Siemens Networks, Head of Nordic & Baltic Region 2010–2012

Employment by Nokia and Nokia Siemens Networks since 1991

Other elected positions of trust:
Taiste Oy, Chairman of the Board 2016–

JUHA HYYTIÄINEN

CFO
M.Sc. (Econ.)
Born in 1967

Joined Teleste in 2013

Member of the Management Group since 2013

Primary working experience:
Nokia Corporation, Business Controller and Director positions in Finance and Control 2000–2013

Ensto Saloplast Oy, Finance Director 1998–2000

OMG Kokkola Chemicals Oy,
Finance Manager 1994–1998

PASI JÄRVENPÄÄ

Research and Development,
Senior Vice President, M.Sc. (Eng.)
Born in 1967

Member of the Management Group since 2013

Primary working experience:
Joined Teleste in 1994

MARKUS MATTILA

Operations,
Logistics & Sourcing, M.Sc. (Eng.)
Senior Vice President
Born in 1968

Joined Teleste in 2008

Member of the Management Group since 2008

Primary working experience:
Nokia Mobile Phones/Nokia -Corporation, Manager and Director positions in Operations, Logistics and Sourcing 1993–2008

HANNO NARJUS

Networks,
Senior Vice President M.Sc. (Econ.)
Born in 1962

Joined Teleste in 2006

Member of the Management Group since 2007

Primary working experience:
Nokia Corporation, various managerial positions 1996–2006

Teleste Corporation, Director, Sales/ Continental Europe 1989–1996

TUOMAS VANNE

People and Competence,
Senior Vice President
M.Sc. (Military Science),
Born in 1979

Joined Teleste in 2019

Member of the Management Group since 2019

Primary working experience:
Lidl Latvia and Estonia, Head of HR 2018–2019

Lidl US LLC, Director/Senior Director - HR 2016-2018

Finnish Defence Forces, various officer positions 2004–2012

JOHAN SLOTTE

Deputy CEO until 31.3.2021
LL.M, EMBA
Born in 1959

Information for shareholders

TELESTE SHARE

Teleste Corporation is listed on Nasdaq Helsinki in the Technology sector and is quoted in the small cap segment. The company shares are included in the book-entry securities system. The company has one series of shares. In Annual General Meeting each share carries one vote and confers an equal right to a dividend.

On 31 December 2021 Teleste's registered share capital stood at EUR 6,966,932.80 divided in 18,985,588 shares.

As to the company share price in 2021, the low was EUR 4.47 (3.51) and the high EUR 6.66 (5.78). Closing price on 31 December 2021 stood at EUR 5.24 (4.49).

- Trading code TLT1V
- ISIN code FI0009007728
- Reuter's ticker symbol TLT1V.HE
- Bloomberg ticker symbol TLT1VFH

FINANCIAL RELEASES IN 2022

Teleste Corporation Financial Statement 2021 was released on 10 February 2022.

Other releases during 2022

- Interim report January–March at 5 May 2022
- Half year financial report January–June at 11 August 2022
- Interim report January–September at 3 November 2022

Financial reports are published as stock releases. Publications are available on Teleste's website both in English and in Finnish.

Teleste meets investors, analysts and representatives of the media in news conferences set up in connection with releases of financial reports.

Silent period

Silent period begins 30 calendar days before the publishing of the Interim reports, Half year financial report, and Financial statement release and lasts until the publishing of the Interim reports, Half year financial report, and Financial statement release. During silent periods, Teleste's spokespersons refrain from discussing and commenting on issues related to the company's financial performance or meeting with capital market representatives.

ANNUAL GENERAL MEETING

Teleste Corporation's Annual General Meeting (AGM) will be held on 6 April 2022 at 14:00. The meeting will be held under special arrangements without shareholders' or their proxy representatives' presence in the company's headquarters, at the address Telestenkatu 1, 20660 Littoinen, Finland.

The Board of Directors of the company has resolved on an exceptional meeting procedure based on the temporary legislation approved by the Finnish Parliament on 8.5.2021. In order to limit the spread of the COVID-19 pandemic, the Annual General Meeting will be held without shareholders' or their proxy representatives' presence at the meeting venue. This is necessary in order to organize the General Meeting in a predictable way while taking into account the health and safety of the company's shareholders, personnel and other stakeholders.

More information:
www.teleste.com/AGM

or by e-mail
investor.relations@teleste.com

PROPOSAL FOR DISTRIBUTION OF DIVIDEND

The Board of Directors proposes to the AGM that, based on the adopted balance sheet, a dividend of EUR 0.14 per share be paid for the fiscal year that ended on 31 December 2021.

- Dividend ex date at 7 April 2022
- Dividend record date at 8 April 2022
- Payment of dividend at 19 April 2022

More information:
www.teleste.com/AGM

CHANGES IN SHAREHOLDERS' CONTACT INFORMATION

The shareholder register is maintained by Euroclear Finland Oy. Shareholders are kindly requested to inform the custodian of their book-entry account of any changes in contact details.

For more information:
www.teleste.com/investors

Teleste Corporation was listed on Nasdaq Helsinki 30 March 1999. Listing price was 8.20 EUR

www.facebook.com/telestecorporation
www.twitter.com/telestecorp
www.linkedin.com/company/teleste
www.slideshare.net/telestecorporation
www.youtube.com/telestecorporation
www.vimeo.com/teleste

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