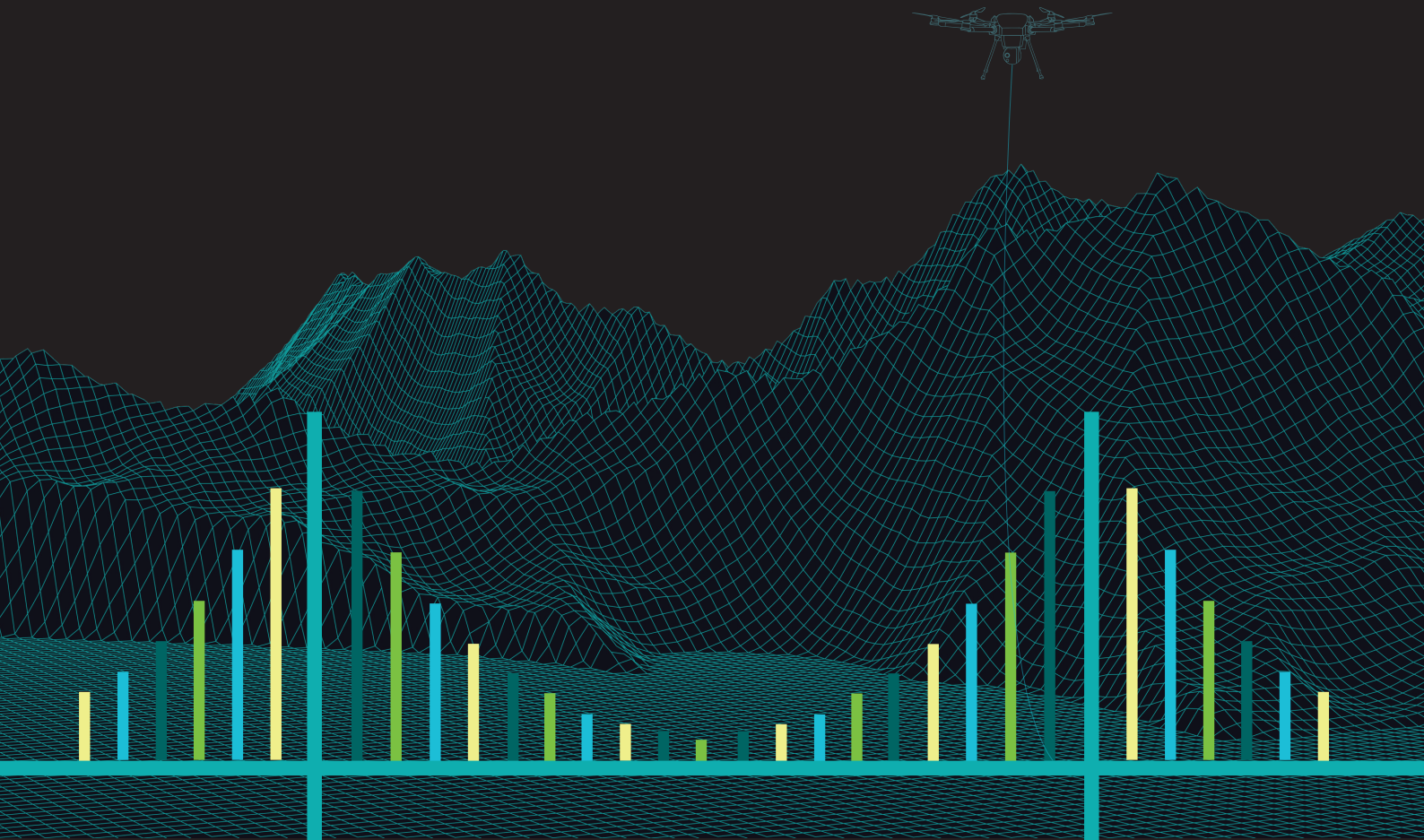


NORTHCOM

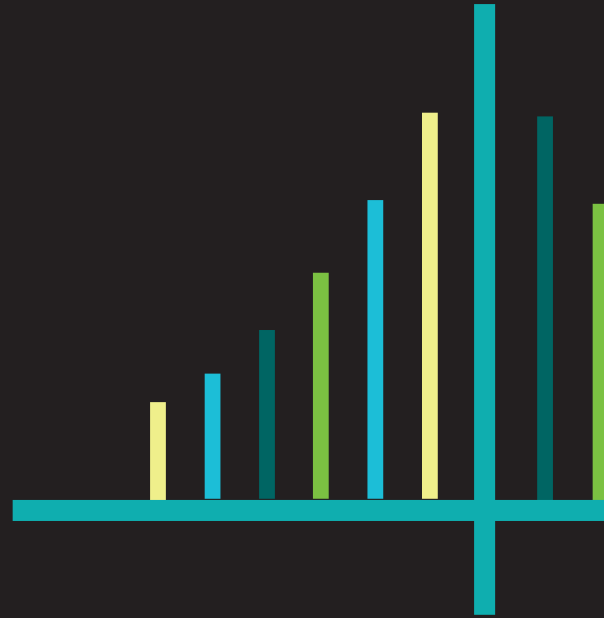
YOUR BRIDGE FROM TETRA TO LTE

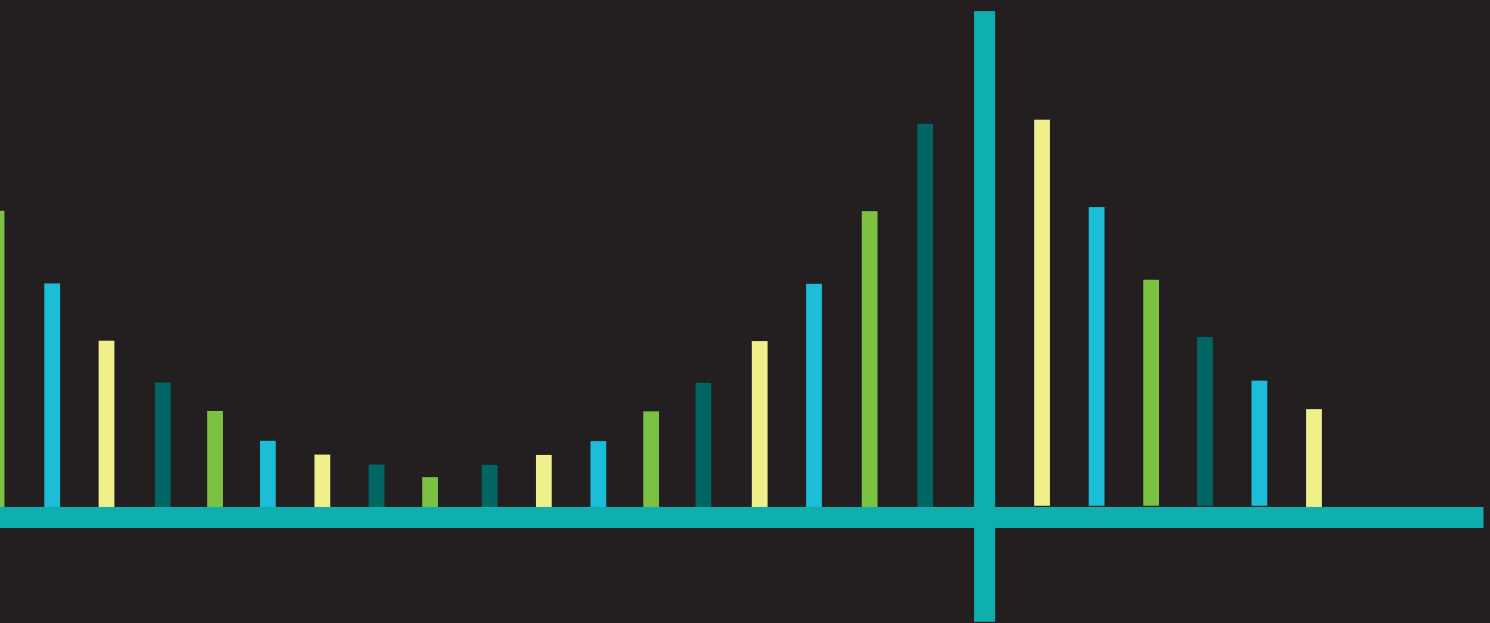


NORTHCOM
WHEN COMMUNICATION MATTERS

NORTHCOM
WHEN COMMUNICATION MATTERS

YOUR TRUSTED PARTNER FROM **TETRA** TO **LTE**





CONTENT

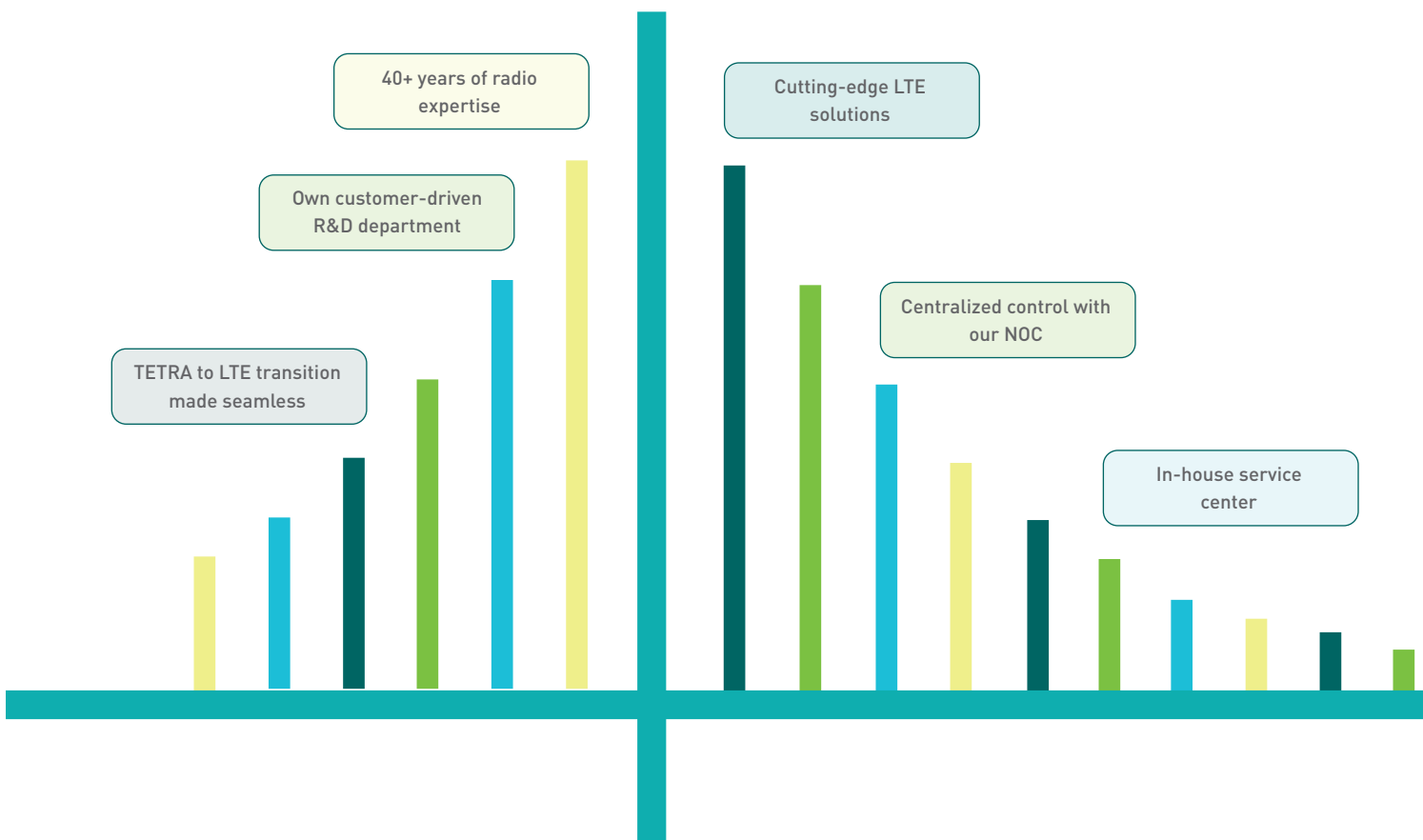
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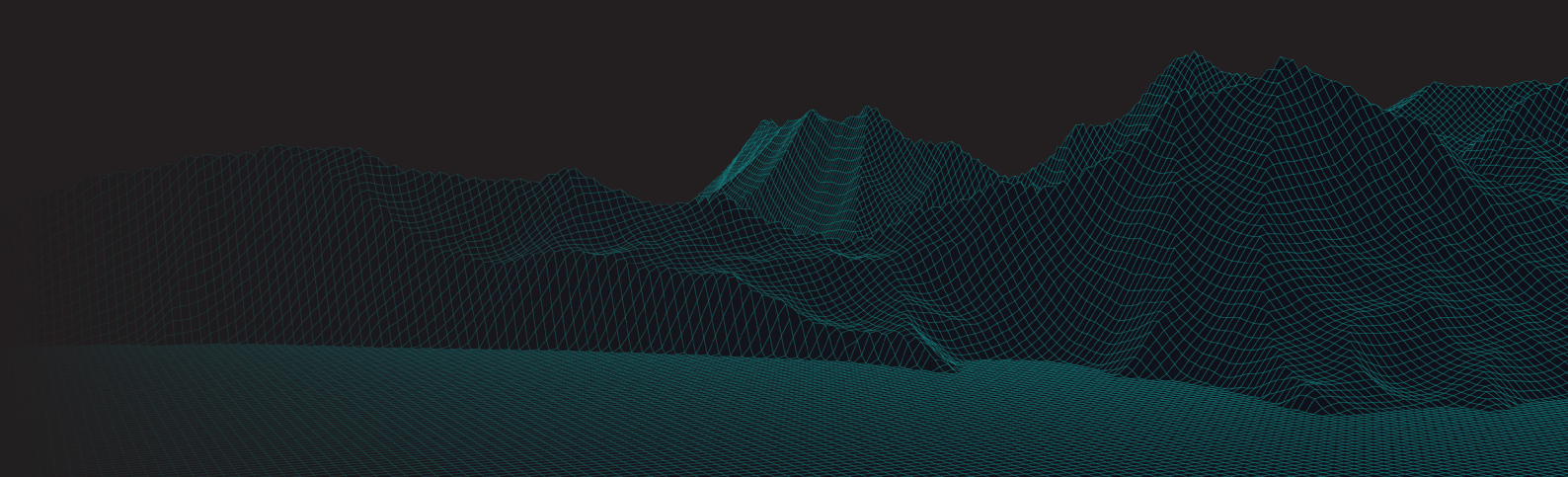
NORTHCOM - LEADING NORDIC SUPPLIER

Northcom stands as your trusted partner in smoothly transitioning from TETRA to LTE communication. With over 40 years of radio communication experience, we possess the expertise to guide and support you through this critical transition.

Our commitment to cutting-edge technology is evident through our Research and Development (R&D) department. This ensures that we stay at the forefront of innovation, enabling us to deliver tailored solutions that integrate seamlessly with LTE and 5G technologies. Through close collaboration with our customers, we explore new possibilities and cocreate communication systems that meet your specific requirements.

To ensure a seamless transition, our dedicated Northcom Operation Center (NOC) provides centralized control and monitoring of your communication infrastructure. This efficient management approach guarantees a smooth transition process, enabling you to focus on your core operations with confidence. Leveraging our powerful Portalify platform for app control, we offer customized and optimized communication solutions. This platform enables us to tailor your communication systems precisely to your needs, facilitating a seamless transition from TETRA to LTE.



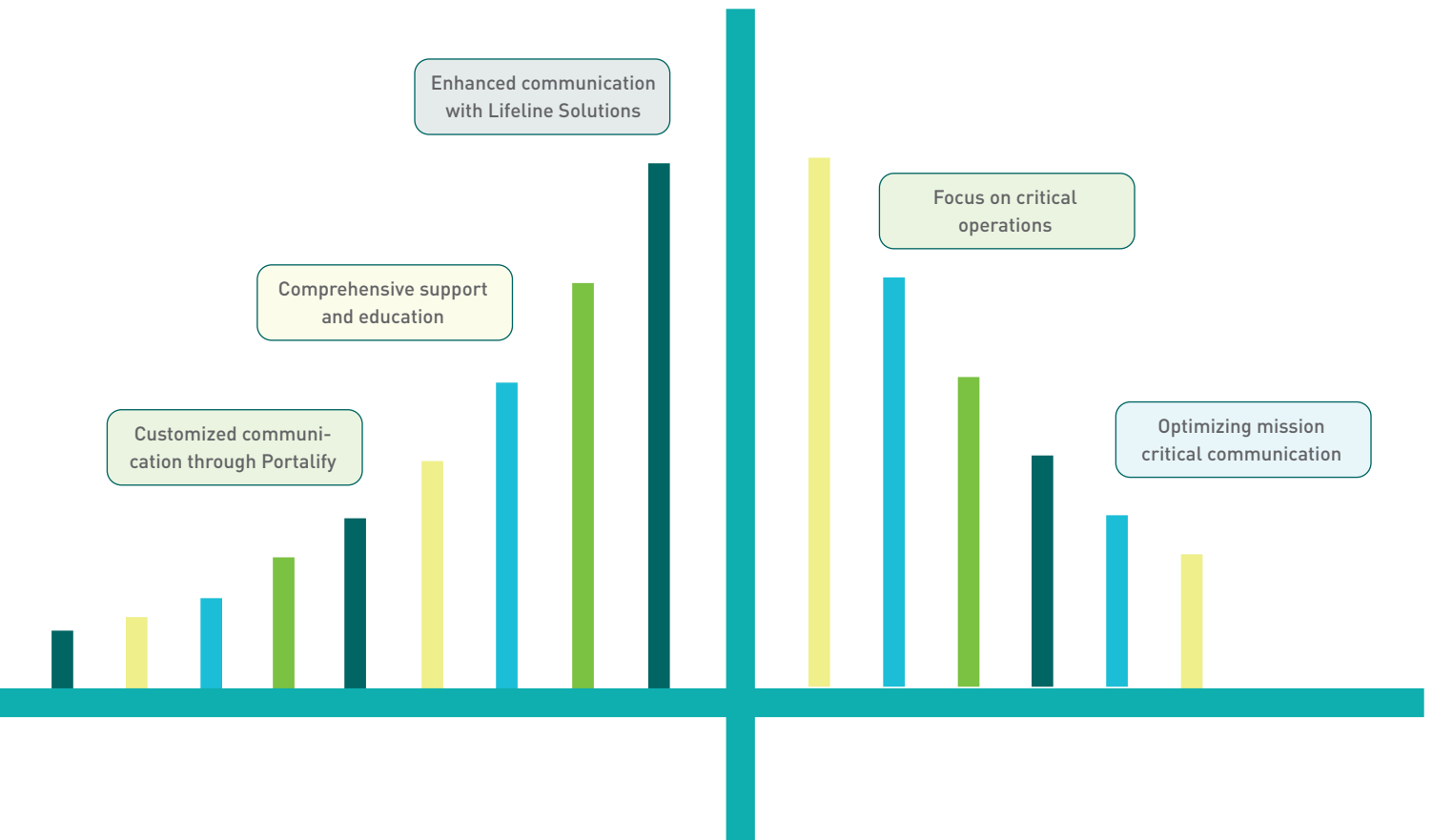


We understand the importance of comprehensive education and support. That is why we provide training programs to equip your team with the necessary knowledge and understanding to fully leverage the potential of LTE and 5G communication technologies. Our goal is to empower your organization to embrace the new communication landscape with confidence and efficiency.

With Northcom, you can rely on our in-house service center for your warranty repairs and regular maintenance needs. Our skilled technicians ensure that your communication equipment is always in optimal condition, minimizing downtime and maximizing efficiency.

Through our collaboration with Lifeline Solutions, a leading provider of communication solutions for critical operations, we enhance the Lifeline Communication Platform. This partnership combines our strengths, including NOC services, collaborative R&D, and customization through Portalify, to deliver exceptional communication solutions tailored to critical operations.

Choose Northcom as your expert partner for a seamless transition from TETRA to LTE communication. With our extensive experience, cutting-edge technology, and customer-centric approach, we are committed to optimizing your mission critical communication capabilities, ensuring efficient and reliable communication in critical operations. Say goodbye to limitations and embrace the endless possibilities of TETRA to LTE transition.



NORTHCOM OFFERING PORTFOLIO

WE PROVIDE SERVICES TO SOLVE CUSTOMERS CRITICAL COMMUNICATION NEEDS

RADIO

MISSION
CRITICAL
COMMUNI-
CATION



BUSINESS
CRITICAL
COMMUNI-
CATION



MCX/POC



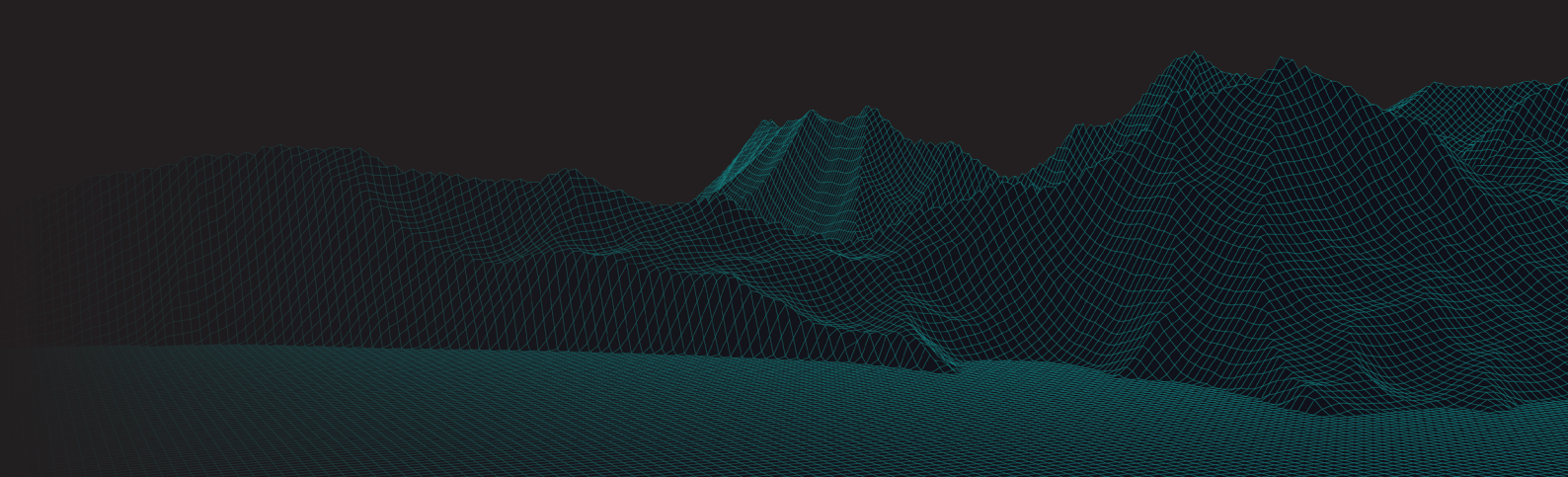
CONNECTIVITY

PRIVATE 5G



SD-WAN





SOLUTIONS/PLATFORMS

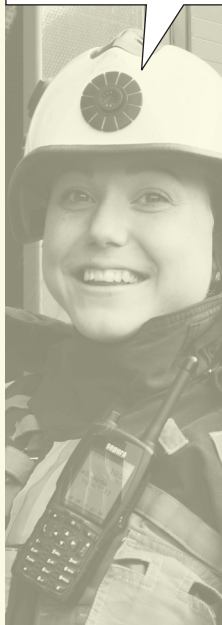
NOC



PORTALIFY



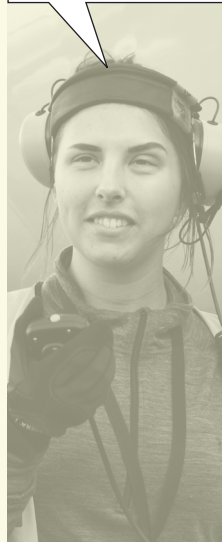
LIFELINE



COMMAND CONTROL



MIMER



VALKYRIE BY NORTHCOM



MISSION CRITICAL COMMUNICATION

Northcom offers mission critical communication designed to ensure that customers can handle the most demanding and high-risk situations with confidence and efficiency. Our reliable and secure communication solutions are crucial for maintaining your organizations core mission.

With our specialized communication systems and partners, you can rely on immediate and seamless communication in emergencies, critical operations, and rapidly changing environments. Our solutions have been successfully tested in real-life scenarios, providing you with the assurance you need to make fast and well-informed decisions when communication matters the most.



EXAMPLES OF SUPPLIERS

SEPURA

Sepura has extensive experience delivering communication solutions to mission critical users globally, including public safety, transport and utilities. This has enabled them to develop a deep understanding of the challenges faced by mission critical organisations and to develop solutions that meet their unique needs. With over 2.5 million devices supplied to critical communications users, Sepura's products are proven and designed to be reliable, robust and secure, ensuring outstanding performance at all time.

Designed in collaboration with real users, Sepura's suite of devices, accessories, applications and programming tools are proven in the field, tested beyond market requirements and trusted to ensure every user in the field stays connected.



sepura

INVISIO

INVISIO is a global market leader within advanced tactical communications and hearing protection systems. INVISIO products enable professionals in noisy and mission critical environments to communicate and work effectively while protecting their hearing. INVISIO products are suitable for especially public safety, defence and fire brigades.



INVISIO®

PROEQUIP

The ProEquip series is created by Northcom to meet the high demands from the European radio communication market. Northcom has today a firm grip of the market and over 30 years of experience of closely working together with the Scandinavian police force in order to produce tailor made, customized accessories that meets the most demanding radio user group in the market.

Northcom sells over 200.000 accessories to users due to listening to what the users want and several years of working together with specially chosen suppliers in Asia.



PROEQUIP



REGION STOCKHOLMS AMBULANCE HELICOPTERS

Region Stockholms helicopter staff in Norrtälje use, among other things, the Sepura SC20 during their shifts. Sepura SC20s are mounted in each helicopter, which the crew uses throughout the work shift to receive alarms from SOS and to communicate with SOS from the accident site.

In the Norrtälje hangar, there is also reinforced indoor Rakel coverage and GPS installed.

They use helicopters from Airbus of the model H145 and in these there are also two Sepura SRG3900 vehicle terminals mounted. One terminal is mounted in a Carl's product called HSE767 and the other terminal is connected to HSE767. In the panel from Carl's there is a virtual console and in the Sepura terminal there is a license for this.

All equipment is approved for use in helicopters and all assembly of Carl's products as well as external Sepura SRG3900 is made at the Airbus factory in Germany, and is tested and approved for this helicopter model. Carl's display is approved for use with NVG binoculars which stands for Night Vision Glasses (binoculars/glasses) and amplifies the light in the display.

With this solution, communication is always possible through the handheld terminal at the patient's side regardless of whether the helicopter has to land within some distance, which significantly increases the safety of both staff and patients.



THE SWEDISH POLICE USE SEPURA IN ALL DIVISIONS

The Swedish Police is the largest radio user in the Nordics and has been Northcom's single largest customer since 2006. The Swedish Police today has roughly 35,000 active Sepura terminals, and of these, approx. 6,300 are vehicle terminals, the rest are handheld terminals.

Since the introduction of Sepura to the Police, there has been a very large focus on accessories and especially accessories that should fit the different types of work that an individual policeman performs. It is everything from working in riot gear to civilian work with hidden gear. Regardless of the work assignment, the same high demands are placed on being able to communicate safely and securely with both colleagues and the contact center.

This sets high demands on Northcom as a supplier of equipment, so in order to meet the customer's requirements, we started to develop our own, specially designed accessories in collaboration with the end users. This entire fleet of accessories was named ProEquip and represents today by far the largest volume in terms of accessories for the Police.

In addition to accessories for the handheld terminals, we also work closely with the customer regarding Sepura equipment in Police cars, both painted and civilian cars. Volvo Cars in Gothenburg will build several thousand Police cars over the next years, all built with Sepura wiring and equipment directly in the factory.

Even though Sepura's terminals maintained a high level in relation to the competitors in 2006, the Police has always had many requests for improvements and new functions. Throughout the years we have had a close dialogue with Sepura and many of the improvements and new functions that Sepura has launched over the last 15 years have been requests from the Swedish Police.



SÖDERTÖRN RESCUE SERVICE HAS USED SEPURA SINCE 2017

Södertörn Rescue Service uses all its equipment in the Swedish public safety network, Rakel. This network is owned and operated by The Swedish Civil Contingencies Agency (MSB). Rakel has been expanded throughout Sweden to strengthen society's crisis management capabilities and to facilitate daily communication with organizations that work with public order, security or health.

In 2017, Northcom was commissioned to equip the fire stations around the federation with new communication equipment. Through terminals from Sepura, Northcom was able to offer an overall solution for safe and secure communication that met all the high requirements. They received a solution with very high security and the best products for the purpose with unique functionality and ease of use.

As handheld terminals, they use Sepura SC20 and SC21, currently around 300 handheld terminals. The vehicles have the Sepura SRG3900 mobile station, currently they have around sixty vehicle terminals. Operations leaders and other personnel can use several handheld terminals during an emergency for different purposes, and the devices can be marked with colorcoded shells for easy identification.

As far as other accessories are concerned, speaker mics from Sepura and accessories connected with Hirose connectors are mainly used. Smoke diving equipment from Interspiro with Bluetooth® connection to radio is also used.



BUSINESS CRITICAL COMMUNICATION

Northcom offers customized communication solutions to support business critical needs and ensure smooth and efficient operation for all organizations. Our solutions help customers optimize their daily business processes, facilitate collaboration, and to drive success.

With Northcom's communication tools, customers achieve efficient exchange of information, improve collaboration across departments, and maximize their team's productivity. Our customer communication solutions help build strong relationships by providing high-quality responses for all customers needs.



EXAMPLES OF SUPPLIERS

SEPURA

Communications are key to keeping businesses and events safer, more secure and efficient.

Sepura's product portfolio provides powerful voice and data solutions that can automate and streamline essential business processes improving site security, end user efficiency and increasing asset protection.

Sepura's business critical solution has the flexibility to add additional features through the AppSPACE applications environment, tailoring products to individual needs.



sepura

DAMM

DAMM is a world-leading provider of scalable, flexible and user-friendly digital radio infrastructure systems to industrial, commercial and public safety customers. DAMM has 40 years of experience in critical radio and broadband communication, and two main values have shaped their products: simplicity and flexibility.

These values are channeled into advanced solutions that have a strong reputation of being easy to deploy and expand.

The same philosophy applies to DAMM's ability as a company to develop products that constantly push the boundaries of radio communication, as an important link in virtually any business process.



DAMM

ICOM

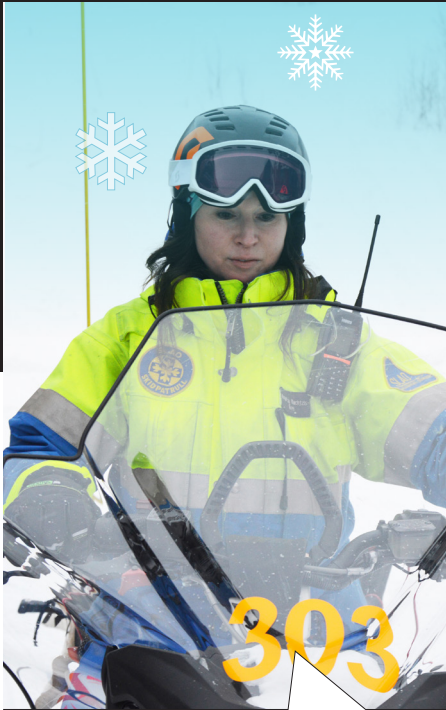
Providing solutions that support a safe and prosperous society through wireless communication technology is Icom's motto. This describes the strength of Icom in a good way and they have been providing wireless solution for 60 years now.

In the Great East Japan Earthquake of 2011, everything was lost. Communication infrastructure, including cell phone lines, was no exception. In the "no coverage area" as far as the eye can see, it was two-way radios that supported the exchange of life-saving information without the need for relay stations or power lines.

The final fallback must always be radio. Icom make products that support communication in such situations.



ICOM



NORTHCOM HAS SUPPLIED COMMUNICATION SOLUTIONS TO MOST OF SKISTAR FACILITIES

The environment on the mountain is extremely tough, where radio communication can be life changing and the technology just has to work.

Northcom has delivered digital TETRA systems to several of Skistar ski facilities. Thanks to the digital technology, you get very high functionality, e.g. you can send text messages, specify the status of users and manage different types of alarms are standard functions in the system. The speech quality is also very high in a TETRA system and the system removes ambient noise in an effective way that makes use very pleasant.

The TETRA solution is scalable in all its forms and there are basically unlimited possibilities for expanding the system if the need arises, e.g. you can add as many talk groups as you need.

The system consists of a number of DAMM base stations that are deployed in the ski areas. Thus, you have great coverage over the large and hilly area. Skistar facilities have visitors all year round, but occupancy and staffing are significantly lower during the summer season than during the most intensive weeks such as Christmas, Easter and sports holidays.



SSRS HAS UPGRADED ITS TERMINAL FLEET WITH SEPURA OTAP

Since 2011, SSRS (Swedish Sea Rescue Association) has used Rakel and Sepura in its operations to be able to effectively communicate with its own units and to be able to cooperate together with other units from e.g. healthcare, coast guard, rescue services, and more, in a safe way.

SSRS is now improving its existing Sepura solution for critical communication by upgrading and supplementing it with OTAP (Over the Air programming) from Sepura. OTAP saves time, reduces costs and increases the programming capacity.

This upgrade means that the SSRS terminal fleet with Sepura SC series can be reprogrammed or updated as soon as they are connected to approved Wi-Fi networks instead of without each individual radio having to be physically connected to a programming unit.

With terminals based in different locations or for on-call service, for example, the terminal is made available for updating and reprogramming regardless of where it is located, which minimizes the risk of devices in the terminal fleet having incorrect or different software versions.

Reprogramming and updating becomes much easier, more efficient and more flexible. Using Sepura Radio Manager programming tool, administrators can upgrade all terminals in the fleet, whether they are in vehicles, stationed in control rooms, handheld or out in the field.



NASJONALMUSEET USE SEPURA INDOOR LOCATION SMARTVIEW APPLICATION

It is critical that the museum management can instantly understand where their teams are located within the museum and what they might be engaged with.

This enables smarter decisions to be made on resource management and emergency response. Given the size and complexity of the building, GPS data is not available and cannot distinguish between floor levels.

Sepura Indoor Location solution comprises a software application that reports real time location of TETRA terminals and smartphones relative to a network of Bluetooth® beacons positioned across the museum's 54,600m² site. The terminals automatically connect with Bluetooth® beacons positioned around the building, sending automated location data back to the control room.

The application provides an immediate overview of the location and team status. Since they were already using SC21 TETRA radios, the application required no hardware changes.

Staff can now direct resources to react to emergencies, security risks, lone workers in distress or if additional resources are needed.

The museum is a dynamic environment that changes to reflect the exhibits on display. The solution offered by Northcom and Sepura is flexible to support this changing space, yet powerful to provide improvements to operational efficiency and quicker reaction to emergency situations.

MCX/POC

Northcom offers the new way of communication with LTE radios or PoC (Push-to-Talk) app for smartphones. App or LTE radio provides instantaneous, wide area communication using an LTE (4G/5G) and 3G network. LTE radio does not require its own repeaters or IP network, therefore reducing the cost of building, and maintaining a wide area radio network.

Northcom solutions have been developed in conjunction with the most critical users. Point of departure: clear, easy to use, essential functions readily accessible and easy to find. Features for critical use like multiple talk groups or conference call groups can be activated. Fully scalable communication platform with superior audio quality.



EXAMPLES OF SUPPLIERS

ICOM

Icom has been involved in wireless LAN-related products since the 1990's, when the term IoT was still not in common use. Icom's knowledge of network and IP technologies has accumulated since that time. With RF (radio frequency) technology, which is the core technology of Icom, they have eagerly adopted new technologies to create unprecedented products. For example, Icom have developed LTE transceivers that use cellular phone communication networks and satellite communication transceivers that use satellite lines to talk to each other, solving the problems of interference and range.



The rapid trend toward digital transformation and the IoT are also changing the business environment.



SEPURA

Sepura is a global leader in critical communications, with world-leading product development and innovation shaped by customer feedback. Sepura is involved in the standardisation of 3GPP Mission Critical Push-to-Talk (MCPTT) technologies and developing solutions to fit the needs of Mission and Business critical users.

Sepura's hybrid solutions provide a future proof platform for migration to mission critical broadband allowing the use of TETRA for voice, ensuring critical communications reach users when needed, and additional connectivity over LTE for applications which need a broadband connection such as video streaming, access to databases and mapping tools.



LIFELINE MCS

The Mission Critical Solutions Group (MCS) has more than 25 years of experience in professional radio and data communication and an outstanding track record.

MCS team is a group of more than 100 radio and engineering specialists who work on a daily basis with passion and commitment towards a single objective: to deliver high-quality solutions to the most demanding of users.

Read more about Lifeline on page 23.





SKI TEAM SWEDEN ALPINE USE LTE FOR EXTENDED COMMUNICATION

For almost a decade, the Swedish alpine national team has used radio from Northcom to be able to communicate quickly during training and competitions.

Although alpine skiing boils down to the fact that the skiers are at the start all by themselves, all results are based on a collaboration between the skiers, coaches and service technicians.

In training and competitions, coaches are stationed on the slope and give information to the riders and service technicians about speed, is it icy, good or difficult grip, is it as inspected or are there any changes? The information is extremely important, as ski racing is very much about being tactical and "push" in the right places and riding "smart" in other places.

During a race, the surface often changes as racers drive on the course - racers with starting numbers 1 to 70 usually have completely different conditions to ride the set course. This is where the team comes in, riders, coaches and the service technicians constantly provide new information from the track to the riders at the start.

Communication is the most difficult and important thing for most companies and it is the same for Ski Team Sweden, being able to give "last minute" information to the skiers at the start is invaluable and an absolute must.



BICYCLE DELIVERY COMPANY VELOPAK USES LTE RADIO

Velopak is a Danish courier company who delivers packages and catering on their cargo bikes to all kinds of companies. They also deliver letters and recommended mail. Each bike messenger has up to 20 stops per hour which demands a stable and reliable communication between the bike delivery and the dispatcher central.

Earlier on Velopak used an app for their cell phones to communicate. The solution was free but the phones got wet or cold depending on the weather. They tried different alternative products and solutions but none of them suited their wants and needs regarding reliable communication.

Velopak was recommended to contact Northcom and together we went through their wants and needs. Together we decided on the Icom LTE radio. The Icom IP503H radio is a PoC (Push to Talk over Cellular) radio with a built-in sim card connected to a closed and encrypted data network. This way the radio functions the same way as a cell phone with the same advantages. The Icom LTE radio has a compact size and good sound quality and provides good coverage and reach. The dispatch software is web browser based and shows the bike messengers route via a cell phone. All oral communication is through the radios so the bike messengers can concentrate on a fast and secure delivery.

"When we were recommended Northcom we were told that it works - and it does. We are very satisfied with the radio solution from Northcom", states Pernille Lundholm, co-owner of Velopak.



STENA RECYCLING TRANSFORMS THEIR RADIOSYSTEM

Today, Stena Recycling is doing an important job of collecting all conceivable residual material arising from both operations and production. The materials are refined and can live on as raw materials for new products or new energy. With 1,700 employees and nearly 90 facilities, they are one of Sweden's leading recycling companies.

Radio communication has for a long time been an important work tool to cope with everyday challenges and now they take a step into the future by switching into using the Icom LTE radio system. Now when they switch to a modern LTE based system they can communicate freely between selected offices at a way that has not been possible before which creates a flexible and safer workplace.

With the help of the new system, Stena Recycling has also been able to introduce distance weighing of residual material arriving at each recycling station. This was an important part of why the introduction of a new system was important.

Another important part of the radio system is the ability to communicate between other radio users or drivers that arrive at the recycling centers. With the new system, they can also introduce emergency alarm for the users with positioning and also dispatcher function that increases security at every workplace.

Northcom has been involved in developing a stable and reliable communication platform for a complex work situation to make the employees workday a little easier and more safe.

PRIVATE 5G LTE

In collaboration with Nokia, we are proud to introduce top-tier private wireless solutions and groundbreaking network technologies that enable mission critical communication for a safer, more connected society across the Nordic region. By leveraging scalable and future-proof Industry 4.0 advancements, such as 4.9G LTE and 5G RAN technology, we are committed to exceeding our customers expectations and leading the charge in digital transformation.

Our joint solutions not only facilitate seamless connectivity and efficient operations but also provide our customers with a competitive edge in their respective industries. By prioritizing innovation and adaptability, we ensure that our cutting-edge solutions remain at the forefront of the ever-evolving technological landscape, empowering businesses to thrive in an increasingly digital world.



EXAMPLES OF SUPPLIERS

NOKIA

Together with Nokia, we are committed to driving digital transformation by creating technology that empowers the world to act together. In collaboration with our strategic partner Nokia, a trusted leader in critical networks, we focus on innovation and technological excellence across mobile, fixed, and cloud networks. Our combined efforts create value through long-term research led by the award-winning Nokia Bell Labs.

Together with Nokia, we deliver comprehensive end-to-end solutions within Private 5G, deployable tactical 5G bubbles, IP/MPLS, and more to serve our mission and business critical customers. This partnership enables us to provide cutting-edge technology and unparalleled support for seamless connectivity and efficient operations across various industries.



NOKIA

SEPURA

Sepura understands that different users have different needs. Today TETRA networks provide a high grade of availability, reliability, and security for voice and low latency data services. However, there is an increasing need for the use of high-speed data services for applications such as video and situational awareness applications, delivered by 4G/5G cellular connectivity.

Sepura's powerful, future-ready hybrid critical communications devices combine both narrowband and broadband access as well as off network communications ensuring that users always stay connected.



sepura

PORTALIFY

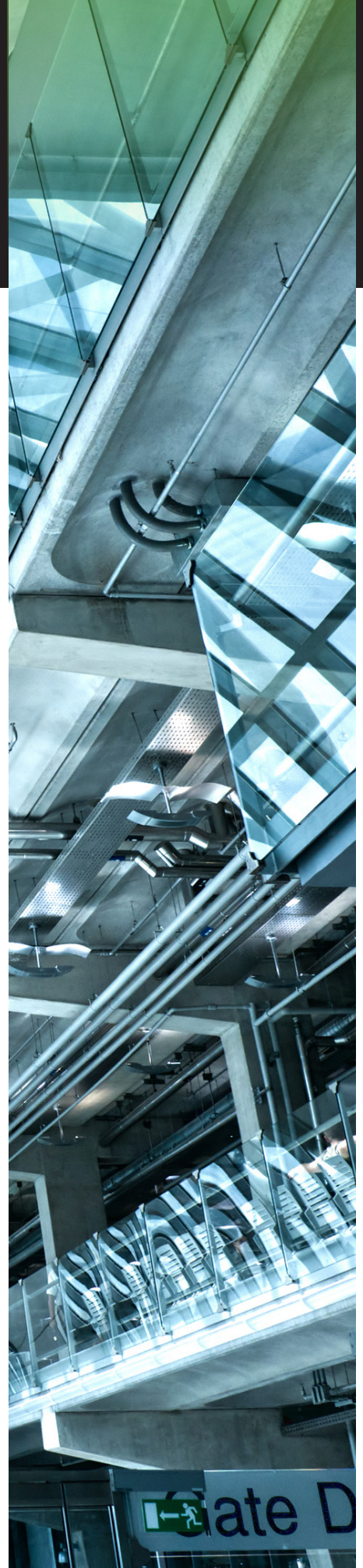
Portalify was founded in 2000 and is located in Helsinki, Finland. The company's solutions increase operational efficiency and security for defence, blue light and commercial customers.

Portalify command and control, location and data integration solutions for mobile broadband and TETRA networks deliver the right information to the right people at the right time, streamlining essential processes, helping to keep your staff safe, increase operational efficiency and security for public safety, public safety network operators, military, commercial and other professional customers.

Read more about Portalify on page 20.



PORTALIFY
Part of Northing



SD-WAN

SD-WAN

SD-WAN is short for Software-Defined Wide Area Network. The network can use several types of connections between the nodes, depending on circumstances and policy. If one connection is down or has problems, communication can be redirected to another connection.

SD-WAN can also handle multiple cloud services and mobile users more easily, as such connections do not need to be routed through the headquarters node. You can say that SD-WAN acts as a "traffic manager" that very intelligently routes data in real time as it travels across different connections. This flexible routing allows organizations to make the best use of their network, compute and storage resources and helps improve performance, availability, security, stability and redundancy.

We are convinced that SD-WAN is the communication technology of the future that can pave the way for a 5G future while solving existing network challenges by delivering a more reliable connection.

SPEEDFUSION

Peplink SpeedFusion is a patented VPN technology for stable and reliable connection. When it comes to VPN tunnels, two or more SpeedFusion compatible devices are required.

One of SpeedFusion's most powerful features is that it can use multiple WAN links to create a VPN tunnel between devices.

All connected WAN links to a device with SpeedFusion can work simultaneously together as a single VPN connection. If a link breaks, SpeedFusion can detect this failure and seamlessly reroute traffic at the packet level over other available links. This packet level WAN error detection allows SpeedFusion to provide highly reliable VPN connections.

EXAMPLES OF SUPPLIERS

PEPLINK

Peplink is a leader in SD-WAN solutions. Peplink SpeedFusion SD-WAN routers have been deployed around the world, helping thousands of customers from various industries increase bandwidth, improve lower case internet reliability and reduce costs.

Peplink's complete product line includes models for businesses of all sizes and they are specialized in making complicated technologies easy to use. Their proprietary VPN technology enables customers to configure complex Multi-Connection, Multi-Site Wide Area Network with just a few clicks. InControl2, Peplink's cloud-based monitoring and management platform, enables enterprise customers to manage thousands of devices through a single interface.



ZEBRA

For more than 50 years, Zebra has been a global market leader in rugged mobility. Decade after decade, they have been committed in the long run to providing you with the best in enterprise technology. That is why organizations trust Zebra for enterprise mobile computers.

Give workers the right tools to complete work faster, smarter and better with Zebra's portfolio of mobile computing hardware and software tools.



STARLINK

Starlink is the world's first and largest satellite constellation using a low Earth orbit to deliver broadband internet capable of supporting streaming, online gaming, video calls and more.

Leveraging advanced satellites and user hardware coupled with their deep experience with both spacecraft and on-orbit operations, Starlink delivers high-speed, low-latency internet to users all over the world. Starlink is a constellation of satellites that orbit the planet much closer to Earth, at about 550km, and cover the entire globe. Because Starlink satellites are in a low orbit, latency is significantly lower.





BOREAL CHOOSES NORTHCOM FOR NETWORK ACCESS

Secure network is key to operating transport along the Norwegian coast. Boreal chose Northcom as its supplier of virtually unbreakable network access. Boreal operates 52 vessels along the coast that travel in demanding waters when it comes to data coverage.

- We depend on solid solutions that ensure both uptime and the integrity of the networks they operate, says Morten Nenseth, CIO at Boreal. He states that they must secure data traffic in the best possible way due to requirements set by the authorities.

Boreal choose SD-WAN routers from Peplink and monitoring from Northcom's InControl2 system. In the control centre, you monitor network traffic, and can act if there are any technical challenges, security threats etc. Everything can be controlled from the cloud. Northcom offers on-site support and monitor the system around the clock.

Northcom deliver end-to-end encryption, which ensures that the data traffic is encrypted all the way with AES-256 encrypted VPN. The system uses networks from several overlapping sources and ensures that you always have coverage where 1 of the 3 Norwegian operators operates. Also, it allows you to set up separate networks for passengers, crew, and mission critical tasks.

- We believe that our passengers will notice a difference. In addition, we satisfy the requirements in upcoming tenders in a good way, says Nenseth.



JÖNKÖPINGS LÄNSTRAFIK OFFERS WI-FI ON BOARD WITH THE HELP OF A PEPLINK SOLUTION

Jönköpings Länstrafik, JLT has renewed its bus fleet, and in connection with this has procured equipment and subscriptions to be able to offer its passengers Wi-Fi through 4G on board the buses.

Northcom has delivered a Peplink solution with mobile broadband to travelers through Wi-Fi. Jönköpings Länstrafik has 300 buses within the region and currently 180 buses are equipped with a Pepwave MAX Transit for this purpose. MAX Transit is built for public transport and publishes a login portal where travelers choose to join.

MAX Transit supports both 2.4 GHz and 5 GHz. All MAX Transit units are administered and monitored centrally from Peplink's InControl2 service.

In a vehicle installation, high demands are placed on equipment in the form of resistance to extreme temperatures, vibrations, voltage variations etc. By installing Pepwave MAX Transit in the buses, all this can be fulfilled.

- With the new regional buses, we are seriously taking up the fight against the car. With high comfort and Wi-Fi on board, the buses can function as the traveler's workplace during the trip. We believe that many will discover these advantages when the buses are in service. Also note that the new buses are powered with 100 percent fossil- and palmoil-free fuel, says Charles Tholin, Business Developer, Jönköpings Länstrafik.

Northcom has supplied communication equipment to JLT since 2012, when they introduced the Sepura SRG3900 for secure communication between buses and the command center. In order to be able to offer travelers a wireless connection to the Internet, Jönköpings Länstrafik chose to expand the previously established collaboration with Northcom.



WE HAVE DELIVERED PEPLINK TO THE CLINTON MARINE SURVEY

Clinton Marine Survey works with scanning the seabed and is based in Gothenburg. The company focuses on geophysical services and costeffective solutions for the offshore exploration industry.

When the Clinton Marine Survey contacted Northcom, it was because they needed smarter data transfer equipment. The need to transfer large amounts of data from sea to land meant they used multiple available connections. On the other hand, they lacked a system that took care of the traffic control in the way that the business needed.

There was a desire to optimize the use of all available connections, and make them work together in a way they previously had not done. Data packet loss issues were experienced when the system switched between 4G and VSAT, and automatic switching did not work satisfactorily.

The solution was a system consisting of:

- Peplink Balance 310X on board the boat. This device has a built-in 4G modem, as well as the ability to connect two external WAN connections. The device is also modular, which in this case means that the 4G modem can be upgraded to a 5G modem.
- Peplink AP One AX Lite. Wireless access points used for some of the mobile clients on board the boat.
- Peplink Balance 305. A Balance router was placed in the office, which receives all data sent from the boat.

With the new system, data is sent over all available connections to maximize efficiency, and traffic is automatically rerouted when connections are lost and regained. On board, you use a 4G connection when you are within range of the mobile network, a Starlink connection at sea where it is expanded, and a VSAT link when nothing else works or is available.



NORTHCOM OPERATION CENTER (NOC)

At Northcom, we take pride in our dedicated Northcom Operation Center (NOC), which operates 24/7/365. Our NOC serves as a central hub for managing and monitoring the services, systems, and solutions deployed at our customers' sites. With a focus on proactive management, we ensure smooth operations and swift issue resolution.

Geographical Visualization for Quick Insights

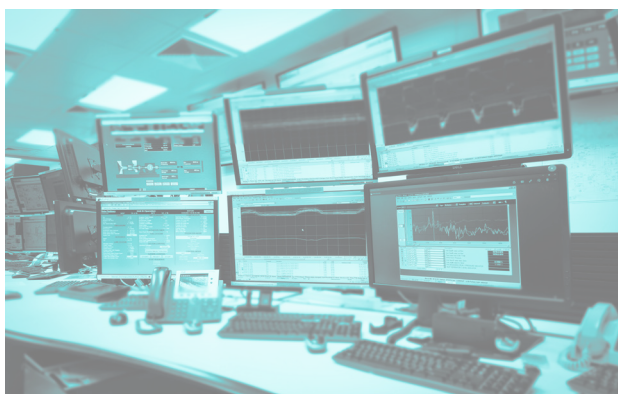
One of the key features of our NOC is the creation of a geographical visualization tool. This tool provides a clear overview of the type of deviations and their respective geographical locations. It allows us to swiftly assess incidents, identify potential third-party causes such as power outages or network disruptions, and take prompt actions to minimize impact.

Proactive Issue Detection and Resolution

At the NOC we do not just wait for customers to report issues – we proactively monitor customer sites to identify and address deviations before they impact operations. Our team of skilled professionals uses advanced monitoring tools and techniques to detect anomalies, ensuring that potential problems are resolved swiftly, often before the customer is even aware of them.

Customer-centric Incident Management

We understand the importance of efficient incident management. Our NOC handles incoming support issues promptly and efficiently. Whether it is through phone calls, emails, or our user-friendly incident management system, we provide a seamless experience for customers to report and track their incidents. Our customer-specific views make it easy to create and manage incidents, ensuring clear communication and effective problem-solving.



Comprehensive Reporting for Transparency and Insights

All incidents and their resolutions are meticulously recorded and reported in ticket form. This allows us to maintain complete control over the incident lifecycle and provide customers with the transparency and historical data they need. Through detailed reporting, we offer valuable insights into incident patterns, resolutions, and performance, fostering continuous improvement and empowering our customers with actionable information.

Trust in Northcom's Service Center

In addition to our NOC services, we take pride in our in-house service center. Our skilled technicians are equipped to handle warranty repairs and perform regular maintenance to keep your communication equipment in optimal condition. With our service center, you can trust that your equipment will receive expert care, minimizing downtime and ensuring uninterrupted communication.

Choose Northcom for Proactive Monitoring and Reliable Support

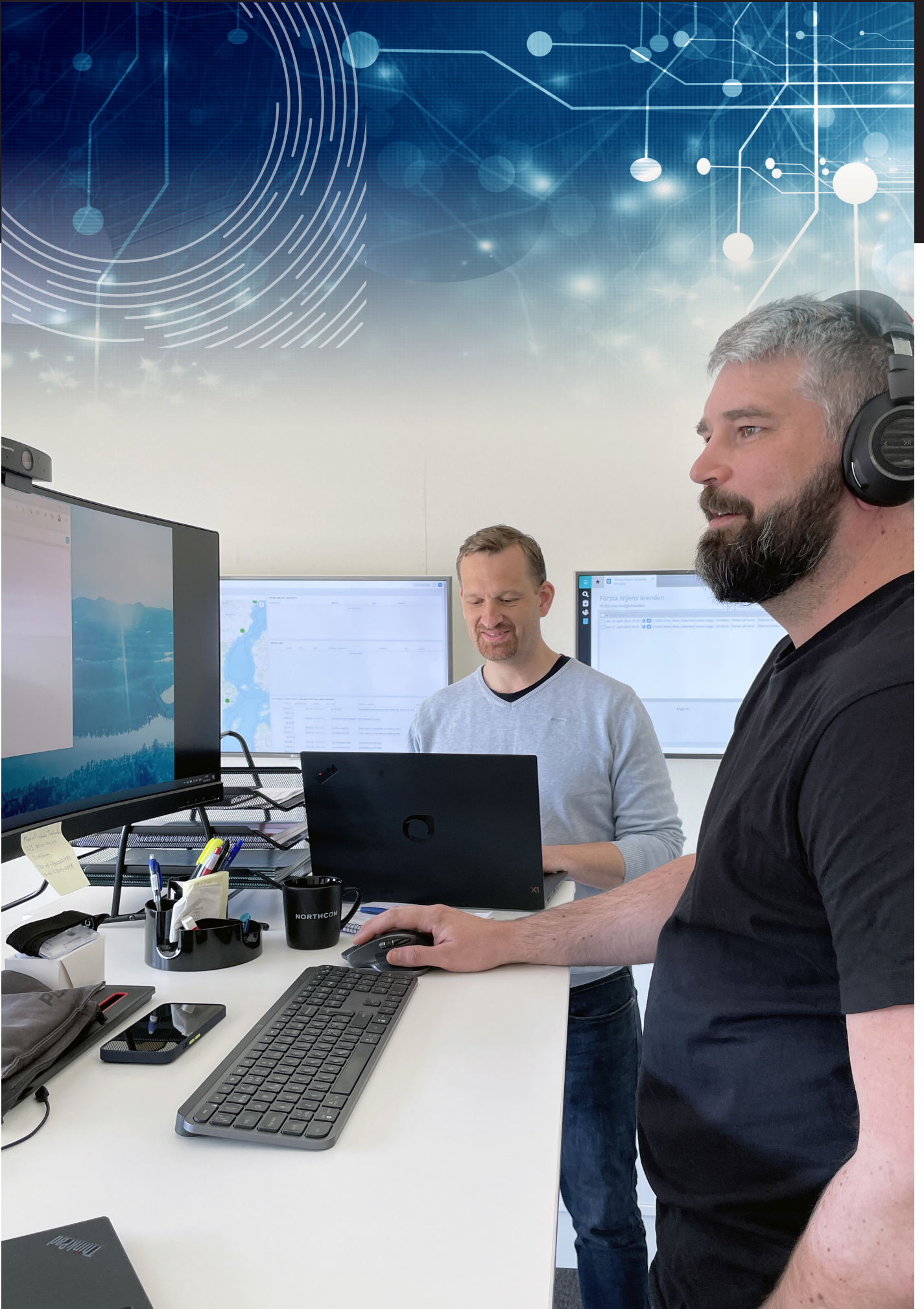
Our NOC combines cutting-edge technology, proactive monitoring, and efficient incident management to deliver exceptional support to our customers. With our geographical visualization, proactive issue detection, and customer-centric approach, we strive to ensure uninterrupted communication and empower our customers with the reliable support they deserve. Trust Northcom as your partner in maintaining seamless operations and achieving your communication goals.

Compliance with GDPR Regulations

We are fully committed to complying with the General Data Protection Regulation (GDPR). As a customer-centric organization, we prioritize the protection of personal data and adhere to the strict guidelines outlined in the GDPR. Rest assured, your data is handled in accordance with the highest industry standards.

Secure Data Storage

All customer data is stored in secure and monitored environments. Our data centers and infrastructure are designed to provide optimal protection against physical and virtual threats. We continuously monitor and update our security measures to stay ahead of emerging risks and ensure the highest level of data protection.



PORTALIFY

A COMPREHENSIVE DATA INTEGRATION PLATFORM FOR PUBLIC SAFETY AND MISSION CRITICAL USER ORGANIZATIONS

Portalify deliver critical applications and data integration solutions to enhance safety and operations for professional users on Broadband and TETRA networks. With over 20 years of experience, Portalify specialize in integrating the public safety and mission critical vendor ecosystems, providing full-service solutions to the customers. Through their data services, Portalify offer insights for decision-making and development.

Portalify helps customers

- Reduce costs
- Automate processes
- Improve safety
- Minimize errors

DEPLOY PORTALIFY SOLUTIONS VIA

CLOUD

The easiest way to deploy ready-to-run applications. All you need to do is add users and configure functionality.

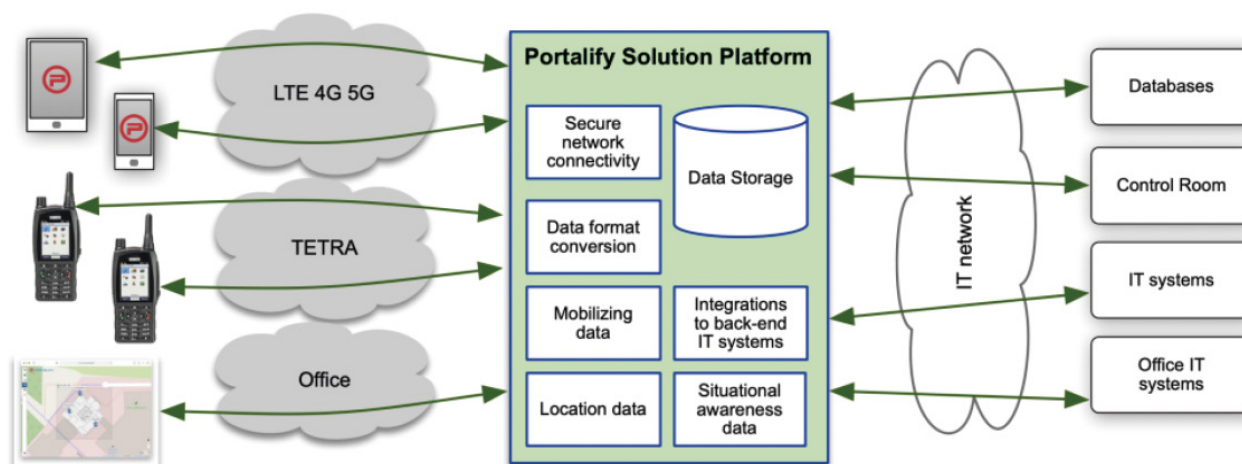
MANAGED SERVICE

Get your private cloud server hosted by us, our partner, or your trusted service provider. It's dedicated to you only.

ON-PREMISE

Install Portalify solutions on-site, where you can run and control the server. With all data under your control, this is the most secure option for integrating with your other IT systems.

PORTALIFY MISSION CRITICAL DATA COMMUNICATION PLATFORM



Portalify provides comprehensive network connectivity for both broadband and TETRA radio networks. Their platform includes a wide range of proven services, including apps for smartphones and TETRA radios, so you can use only what you need. Quick deployment is possible by utilizing existing services, and the platform can be configured to handle customer data format conversions and adaptations between different systems.

INCREASE OPERATIONAL EFFICIENCY

MULTI-DATABASE ACCESS FROM FIELD

Get the information you need, when and where you need it.

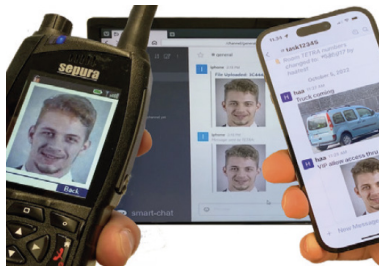
- Easily search for information by sending a persons ID or vehicle license plate.
- The Portalify back-end searches multiple databases, including person, vehicle, wanted, known violent, taxes, vehicle check, etc.
- The information retrieved is combined into one response prioritizing the most important and actionable information.
- The user receives a response within 2 seconds that contains actionable information.



OPERATIONAL CHAT MESSAGING

Communicate efficiently between office, vehicles, and field officers with task-focused information sharing.

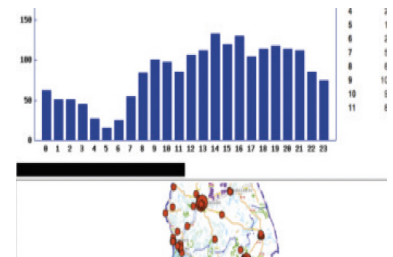
- Police officers belong to multiple relevant chat rooms for incidents, their team, and big picture information.
- Any police officer can share information from any device.
- Information is received on all devices, including TETRA radios, vehicle PCs, and office users.
- After the incident, chat logs provide a timestamped activity record.



BIG DATA ANALYTICS

Get an operational picture from current and historical data, updated automatically.

- The Portalify system receives data from multiple other systems and stores it for historical use.
- When new data arrives, the Portalify solution provides updates to users, showing new data on current incidents and updated crime information, among others.
- Users can run custom reports of incidents and crimes, combining the newest and oldest information into informative reports, including statistics and map views.
- Machine learning (ML) analysis provides insights.



INCREASE SAFETY AND OPERATIONAL EFFICIENCY

OFFSHORE WIND FARM USER SAFETY

Offshore wind farms are high-risk workplaces, and it is critical to know the location of every worker for safety reasons.

- Users log in to the TETRA radio with their employee ID.
- The Portalify solution tracks the radios indoors in the office, at the ships, and wind turbines with Bluetooth® beacon-based indoor location and outdoor with GPS location, showing the user's location.
- At the end of the shift, users return the radio to the radio room, and the radio automatically logs the user off.



LOCATION TRACKING OUTSIDE AND INDOORS

For operational efficiency and worker safety, electricity network operators need to know the location of their staff in case of any incidents. This allows them to respond quicker.

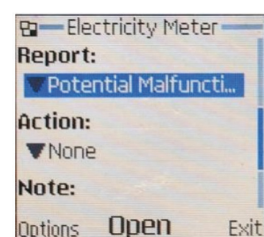
Portalify location tracking solutions provide both outdoor (satellite) and indoor (Bluetooth® beacon) location tracking, covering all important locations where people work. TETRA radios can be programmed to send location data only when an emergency is initiated, such as an emergency call or a man-down alarm. This feature provides both safety information and privacy.



REPORTING ISSUES FROM THE FIELD

People often need to report problems from the field. With location knowledge, reporting can be done quickly and easily, providing better information for actions. The Portalify solution provides an easy way to report from the field using TETRA radios and smartphones, with location information automatically added based on the user's location.

Having more information quickly available at the control room enables more efficient planning of operations.



MIMER

Mimer SoftRadio will help you to build a small or medium size command centre without expensive leased lines and without the operators needing to learn more than how to use a mobile radio.

Mimer SoftRadio uses fixed mobile TETRA radios that are remote controlled from a PC dispatcher or are shared between several PC dispatchers. On the dispatchers PC there is a simple way to use Graphical User Interface (GUI) with straight forward transmit and listen keys, and when needed a virtual control head resembling the radio, pops up. If you are familiar with handling the mobile radio itself, it is just as easy to do it on the PC.

Apart from radios in the Public Safety radio system also other types of radios, phones and more, can be connected. This makes it possible for the dispatchers to handle all their communication from the same PC and the same headset.

Mimer SoftRadio is basically set up by connecting a network interface to each fixed radio and connecting that interface to an IP infrastructure. The interface communicates with the radio and transforms both the control of the radio and the audio into IP data traffic. The PC dispatch software works the other way around and presents the information to the user.

The only thing needed between the radio and the dispatcher is ordinary IP infrastructure. Mimer SoftRadio will work both in a local LAN, a large WAN and/or over the Internet.

Since the intelligence is distributed to the network interface and the dispatch software the system needs no central processor, making it very robust and much less vulnerable than other systems.

Mimer SoftRadio can also be equipped with analogue radio channels, voice recording, logging, map systems etc. There are also special add-ons for DSC signalling on the marine band, connection of telephone lines and much more.



Mimer  SoftRadio



PERSTORP HAS A RELIABLE COMMUNICATION SOLUTION

For Perstorp OXO in Stenungsund, natural gas is a necessary raw material. It is used to manufacture chemical intermediates for the plastics, paint and varnish industry. The natural gas is delivered in a gas line directly into the factory.

When Perstorp OXO was to replace its old analogue radio system with a modern and robust communication platform, several alternative solutions were compared. Other companies in the same region, with which Perstorp OXO regularly communicates, already use radio systems from Northcom.

Also for Perstorp OXO, the choice fell on Northcom, which was thus trusted to meet the needs identified.

The facility has a control room where inhouse technicians can now communicate via Mimer SoftRadio with their employees who are out in the facility. In order to solve the need for communication with one of the partner companies, Northcom has bridged three voice groups between the two systems, so that specific communication can be carried out between interested parties exactly as desired.

Northcom has the opportunity to remotely configure the new radio system in order to be able to quickly assist, e.g. in case of change.

The new system includes a DAMM Outdoor node with two radio transmitters for high fault tolerance, six operator seats with Mimer SoftRadio with robust table microphones, a system for signal amplification to a mountain room to guarantee radio communication even there, TETRA DMO repeaters and about sixty Sepura STP8X ATEX handheld terminals with support for Bluetooth®.

LIFELINE

PUSH TO TALK FOR 4G/5G WITHOUT COMPROMISE

Lifeline is not just an ordinary app. After several years of development, it has been created as a platform that differs from many other PoC apps on the market.

Lifeline has a modern codec that compresses the sound in a superior way, generating a sound of the highest quality. The application can handle three different speech groups simultaneously, which can also be used in full duplex like a telephone conference.

When developing the Lifeline application, they also looked at how TETRA users today use their radios and copied the handling to simplify the transition to modern technology. You will also be able to use important accessories that are used, for example, for reconnaissance purposes, which facilitates the daily work of blue light users.

TRANSITION TO MISSION CRITICAL POC FOR SEPURA USERS

Lifeline is created for typical Sepura users looking for a mission critical application that operates in 4G/5G mobile phone systems with functions from the TETRA world.

Lifeline builds a bridge between the current proven standard and the future with 5G technology. The Lifeline PTT app offers a wide range of unique features and superior sound quality.

With Lifeline, you get a cross-border platform that is not tied to any national system that limits international cooperation. Users can move freely across national borders and communicate with other blue light organizations.



LifeLine is 100% developed within the EU and created as a modular and adaptable application, which enables you to grow step by step with the platform.



COMMAND CONTROL

The Command Control management system is a comprehensive platform that meets all authority requirements and manages the entire chain from incoming alarms to completed events. The platform is a modular platform developed together with, and for, everyone active in community protection and preparedness.

The solution strengthens the cooperation and coordination within the own organization and various authorities as well as the connection between units and resources so that rescue operations can be carried out in an orderly, fast and efficient manner. The platform integrates today's most advanced technology in critical communications to establish regional or country-wide management systems. Our customers place high demands on information and accessibility wherever they are.



DISPATCHER

Dispatcher is a module in our large Command Control platform that offers many functions for a secure connection in a command center that handles critical communications, regardless of size. Dispatcher can be used in organizations that have a centralized or decentralized structure for alarms and management. The dispatcher has a modern, simple userfriendly and flexible interface for a quick and efficient overview of its radio resources.

To further facilitate and streamline daily work, each organization and operator can create their own view in which they want to work.



ALERTING AND STATION CONTROL

Alerting and station control is a module in our large Command Control platform that offers many functions to receive and present alarms at the station as well as forward these by alerting resources in several robust communication paths.

The module also allows functions at the station to be controlled based on status, such as gates, traffic lights, saunas and turning on and off alarms, etc.

Alarming equipment is installed at the station consisting of an alarm computer with a relay card to control functions at the station. The equipment is installed locally for each station for safety reasons in order to operate.



SITUATION AWARENESS

Situation awareness is a module from our platform in Command Control. Flexibility and ease of use with access to critical information such as case data, resource overview, position, status, and allocation of resources, wherever you are are some of the features.

Automatic display of the alarm's position on the map as well as alarmed resources and devices connected to the same event and display of resources. Option to open several map windows as collaboration may require monitoring of several areas. In combination with an alarm event, for example, the damage location, object card and start of the video camera on the resource can be displayed from the interface.





VASALOPPET USING A COMMAND CONTROL SOLUTION

Northcom has installed a Command Control solution for positioning in the Rescue Center before the Vasaloppet weeks together with Region Dalarna and Vasaloppet (Vasaloppet is a long-distance cross-country ski race held annually in Sweden).

During all races, you will have the opportunity to use the positioning solution in real time to locate all your resources on a map and thus simplify. This will simplify so that rescue quickly can respond in event of an incident.

The operators at Vasaloppet's radio center now have the opportunity to position even more Rakel terminals, as the number of functions has been increased. This means that Rescue scooters in the track and medical personnel on controls are positioned. During a rescue operation along the track, the Dalarna Region Ambulance Service collaborates with Vasaloppet's rescue scooters on assigned talkgroups.

- It is a great improvement to see where the nearest medical resource is in the event of an alarm and the biggest winner is the victim in the race who can get help faster, says Thomas Lindberg, Operations Manager of emergency at Mora Hospital.



KAROLINSKA UNIVERSITY HOSPITAL HAS A NEW DISPATCHER FOR ITS SECURITY CENTER

Region Stockholm needed a new dispatch solution for the security center that handles communication with Karolinska University Hospital's security company. The dispatch operators at the security center monitor the day-to-day operations of the security companies.

The Swedish public safety net Rakel is used as a radio communication platform with handheld Sepura terminals for the guards. Rakel is a proprietary communication system and is built to function even when other systems, such as mobile phone network and the internet, suffer from disturbances. It has high availability and operates in a robust and secure network. Rakel is owned and operated by Swedish MSB.

The operators follow the active calls via our dispatcher solution and have the opportunity to follow several talkgroups and events at the same time. It is intensive activity for the operators, where they can help the guards link talkgroups, send text messages and manage alarms so the guards can concentrate on carrying out their duties. The operators and security guards are also active when helicopters arrive at the hospitals. The dispatcher solution has a simple and efficient handling where everything is logged and recorded in order to be able to follow up on events. The dispatcher solution can be scaled up with requested functions such as indoor positioning with map support.



RESCUE CENTER LULEÅ USE COMMAND CONTROL

Räddningssamverkan Nord (Rescue Cooperation North) is an operational management organization with a common Rescue Center in Luleå (RC Nord). From the rescue center, the overall management of all efforts is carried out by the duty officers of the rescue services in close cooperation with Swedish SOS Alarm, which sits in the same premises.

RC Nord has been equipped with a Command Control solution in a dispatcher for radio communication in Rakel and the ability to see all resources on a map. Internal commanders can communicate in Rakel and follow several talkgroups at the same time and also carry out individual calls. During an ongoing stake, internal management can also help group combine talkgroups within their organizations to facilitate those participating in the same event. To be able to cooperate with Räddningssamverkan Nord, it is staffed around the clock by personnel from the included rescue services.

Räddningssamverkan Nord covers a total of 19 municipalities in Norrbotten and Västerbotten. In Luleå, the new rescue station was completed in 2021 to better meet today's operations and requirements.

VALKYRJE BY NORTHCOM

Valkyrje by Northcom is a tethered drone, with a flexible and customized design with interchangeable modules. It is easily customized to your systems and needs, such as camera, radio- and network solutions. The system is easy to ship and set up, with user friendly plug and fly system.

- Up to 24 hours continuous flight time
- Continuous power supply via cable
- Camera in high quality
- Up to 30x optical zoom
- Secured transfer of data in real time
- Quick access to the information you need

In the field a quick overview and secure access to information is crucial. The requirements for reliable equipment and secure systems are essential for maintaining critical communications and the ability to maintain an overview in demanding situations and areas.

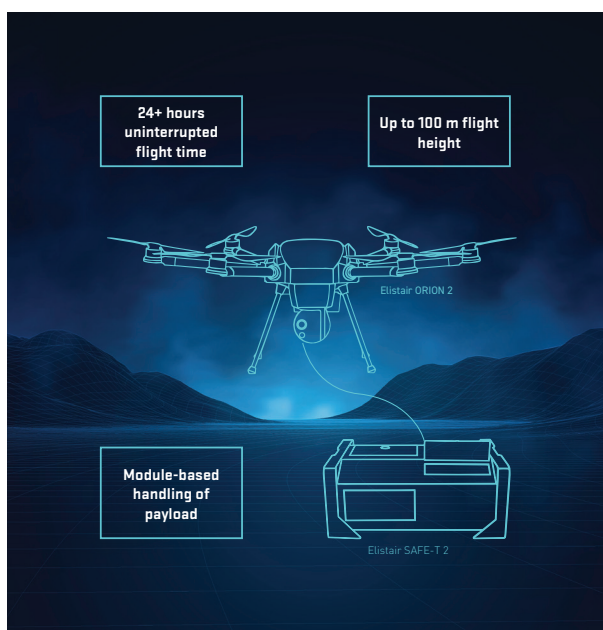


VALKYRJE BY NORTHCOM SUPPORTS

- Different camera solutions, incl. full HD, 30x optical zoom and heat seeking technology
- Secure radio- and network solutions for tactical communication
- Network solutions which enhance network access and quality
- Secure transfer of data between recording and storage
- Trouble-free integration between your systems

It also provides overview and security for

- Search and rescue
- Rough and inaccessible terrain
- Unclear situations and areas
- Traffic- and border surveillance
- Sport and events with large crowds



VALKYRJE
BY NORTHCOM

TETHERED DRONE – FLEXIBLE SOLUTION

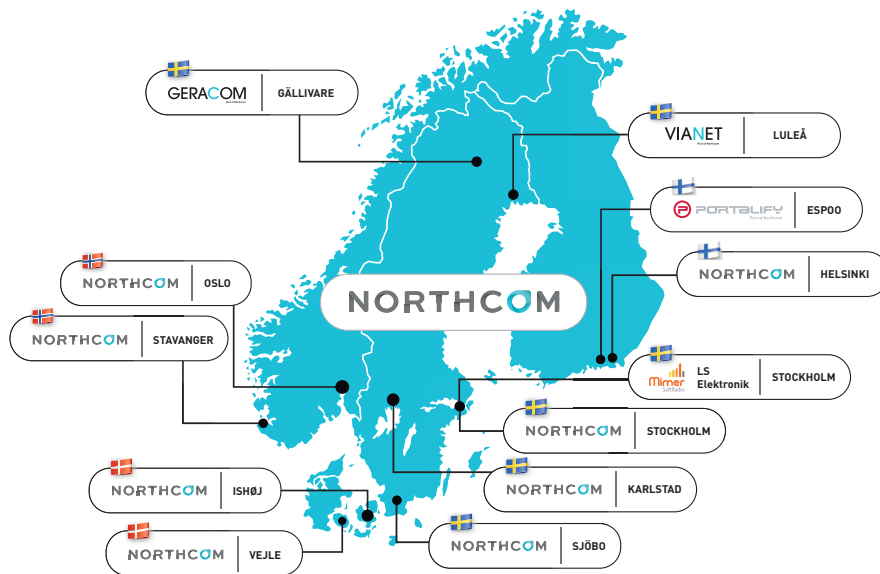
- **Up to 24 hours of uninterrupted flight time**
Continuous power supply via cable
- **High quality camera** Up to 30x optical zoom
- **Expanded radio and network coverage**
Smart connection when you need it
- **Secure transfer of data in real time**
Quick access to the information you need



Valkyrje by Northcom is build on the rugged technology in Elistair ORION 2 and Elistair SAFE-T 2 and has been adapted and further developed to the nordic environment.



NORTHCOM SOLUTIONS



- Headquarter in Oslo, Norway
- Supplier of critical communications throughout the Nordics
- Stable revenue growth since 2013
- ProEquip - our own accessory range
- Exclusive distributor of market-leading technology
- Collaborates with key solution partners

SOME OF OUR
SOLUTION PARTNERS

sepura

OODAMM

ICOM

LIFELINE

NOKIA

Panasonic

INVISIO®

peplink

ZEBRA

PRO
EQUIP
by Northcom



VALKYRJE
BY NORTHCOM

Mimer
SoftRadio

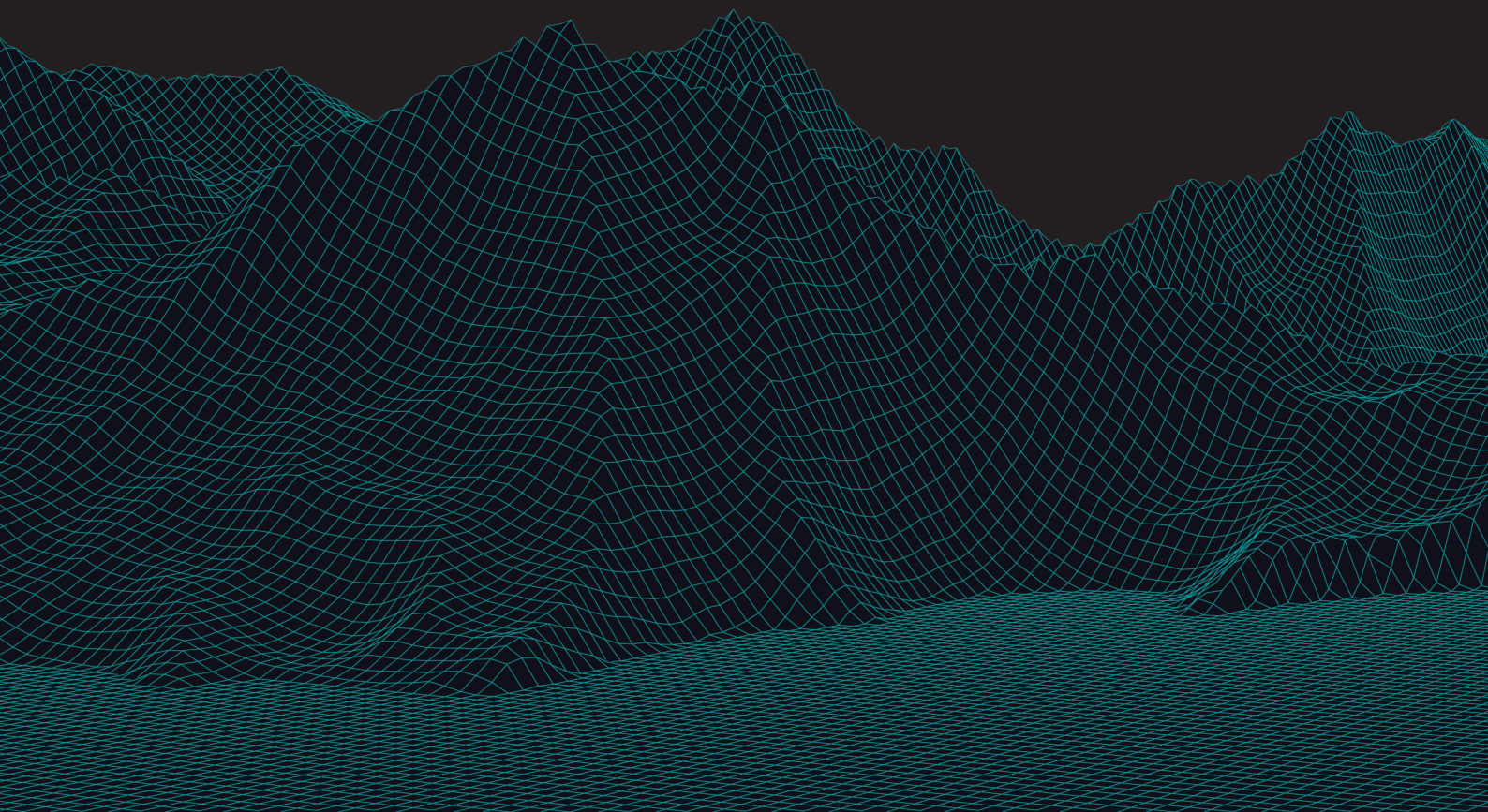
STARLINK

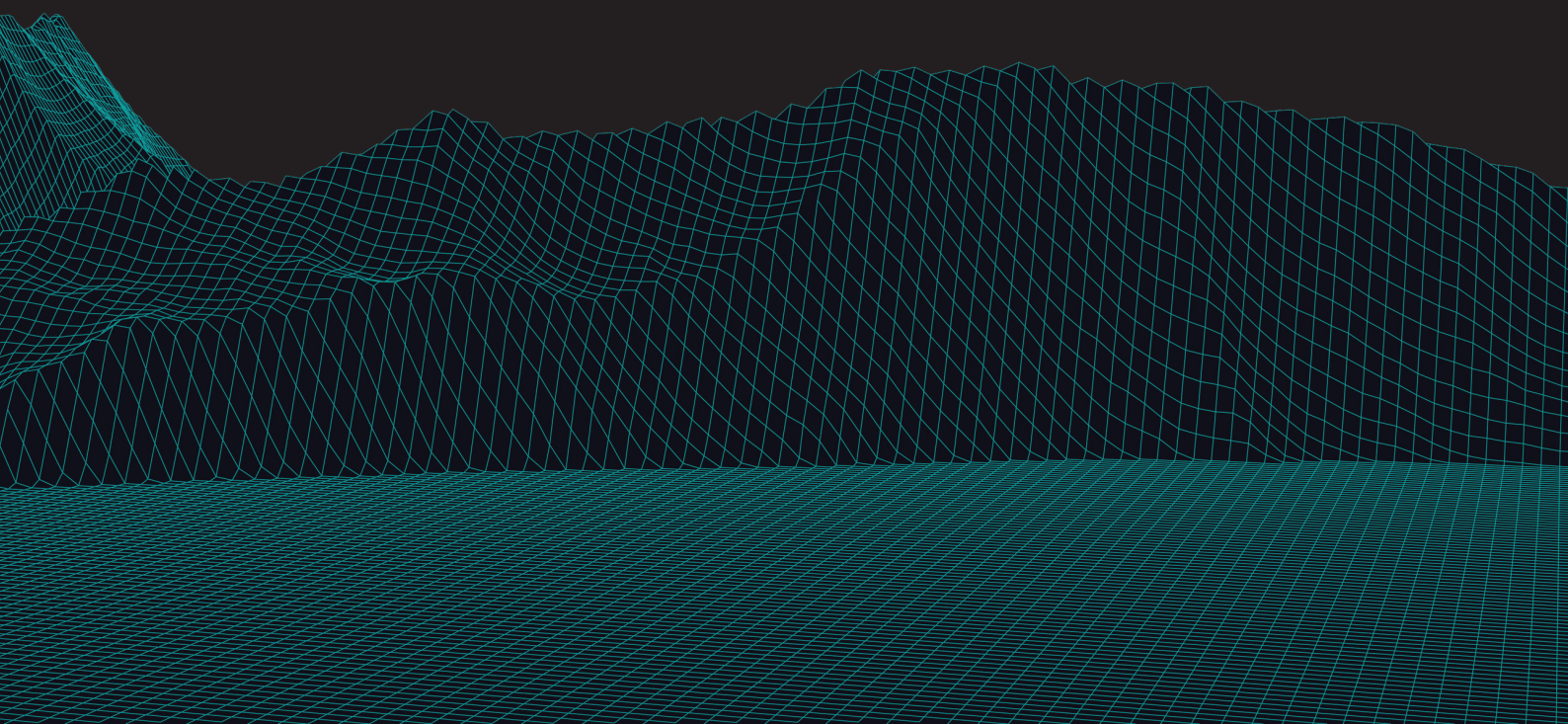
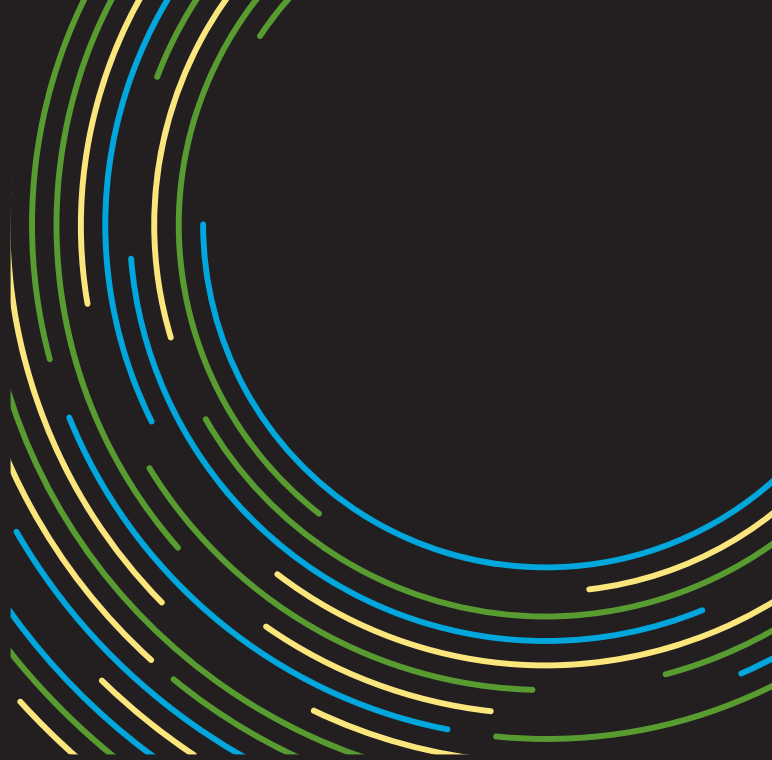
IWCS
COMMUNICATION CAN SAVE LIVES

3M
PELTOR™

AMPHENOL
PROCOM
connect with confidence

PHONAK





Northcom is one of Northern Europe's leading suppliers in critical communications and has its headquarter in Oslo, Norway. The group has a comprehensive network of partners in Sweden, Norway, Denmark and Finland as well as exclusive partners in Iceland and the Baltics - something that provides great flexibility and simplicity for those who move across national borders. In a world where communication technology is constantly developing, we always contribute by creating solutions that work. From the beginning with analogue communication radios, we have developed to build complex digital communication solutions within TETRA, DMR, IP/LTE and integrated solutions.

In addition to this, we are today a significant supplier in wireless communication via 4G/5G and mobile routers. We know that these are solutions that the market requires today. We have a strong product portfolio, but the most important thing we offer you as a customer is our expertise. We are innovative, technology-driven and want to create security in our customers' everyday lives.

Northcom has a close collaboration with leading suppliers such as Sepura, Peplink, 3M Peltor, DAMM, Amphenol Procom, Phonak and Japanese Icom, for which we also hold the general agency for the nordic region.

We work closely with all these suppliers, and as a result we have access to good product support as well as feedback from the market. This also means that we are responsible for and perform warranty service for Icom and Sepura, among other things. This gives us cutting edge expertise in our products, which means that we can maintain a very high level of support for our customers as we always have deep knowledge of the technology. Our goal is to deliver solutions that work seamlessly. Communication should not be something you have to think about. It should just work. Always.

For more information about Northcom visit:

www.northcomsolutions.com

NORTHCOM
WHEN COMMUNICATION MATTERS