

# Terranet

Mangold Insight – Commissioned research - 23 February 2023

## End phase for cutting edge technology

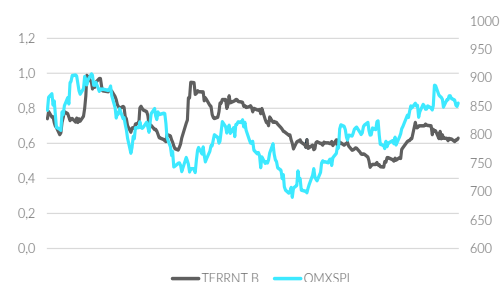
Terranet, which developed BlincVision for advanced driver support in vehicles, will complete a prototype in 2023 that can be implemented in vehicles. This is expected to increase interest among OEMs and Tier1 companies that can enter into cooperation or conclude licensing agreements. Such a scenario is expected to significantly increase the value of the company. Mangold recommends Buy for Terranet at a target price of SEK 2.50 per share, which entails a large upside in the stock. The stock is considered speculative, but high risk high reward if Terranet succeeds with BlincVision.

## Advantage BlincVision

Several factors suggest that BlincVision may become a standard feature in vehicles and complement current technology such as lidar and radar. It is faster and can easily identify objects in dense traffic such as urban environments compared to competitors. This allows BlincVision to help significantly reduce the risk of collisions. Regulations and goals of fewer accidents on the roads are developmental driving forces, which is to Terranets' advantage.

## Capital required to reach finish line

Terranet has a new CEO with experience from technology companies in similar stages, which together with new recruitments can take BlincVision to the finish line. During March, the company potentially can raise capital through warrants. However, in order to succeed, the company is in need of a capital raise.



Priceperformance %	1m	3m	12m
TERRNT	-10,5	11,3	-22,9
OMXSPI	1,8	6,6	-2,0

## Key Data

Price target (SEK)	Buy 2,50
Risk	High
Price (SEK)	0,66
Market value (MSEK)	204
No. of shares (million)*	326,3
Free float	77%
Ticker	TERRNT B
Next earnings report	2023-05-17
Website	terrnet.se
Analyst	Jan Glevén

\* TO5 not included

Ownership structure	Shares	Capital
Maida Vale Capital	57,8	17,7%
Avanza Pension	19,5	6,0%
Knutsson Holdings	10,1	3,1%
Fredrik Olsson	10,0	3,1%
Oliver Aleksov	7,7	2,3%
IBKR Financial	7,2	2,2%
Nordnet Pension	6,1	1,9%
Clearstream Banking	5,0	1,5%
Per Hultbom	4,1	1,3%
SKISPAB	2,9	0,9%

Key ratios (TSEK)	2021	2022	2023E	2024E	2025E
Sales	10 790	3 839	4 000	67 793	271 173
EBIT	-41708	-29371	-32937	-16817	520
Profit before tax	-44 732	-32 287	-36 122	-22 401	-7 222
EPS, adjusted (SEK)	-0,13	-0,10	-0,11	-0,07	-0,02
EV/S	nm	nm	nm	1,8	0,3
EV/EBITDA	neg	neg	neg	neg	neg
EV/EBIT	neg	neg	neg	neg	neg
P/E	neg	neg	neg	neg	neg

# Terranet Investment case

## End phase for cutting edge technology

Mangold recommends Buy in Terranet with a target price of SEK 2.50 over 12 months. Terranet develops BlincVision for advanced driver assistance systems in vehicles to complement radar and lidar.

*Target price of SEK 2.50 - huge upside*

## Close to cooperation

The BlincVision system has been in development for a number of years but now faces the crucial step of being implemented in vehicles. After change of CEO, Terranet is at step closer towards reaching the market. Once Terranet turns BlincVision into a product, Mangold believes that OEMs and Tier1 companies will be interested in entering into a partnership. Hence, their active search for alternative technology to lidar and radar due to their limitations. A cooperation or licensing agreement is expected to increase the value of Terranet.

*Finished prototype 2023*

*For holoxide and Mercedes-Benz see Appendix s.12*

## Competitive technology

Although competition is fierce and technology is developing rapidly, there is much to be said for Terranet. BlincVision has several advantages over radar and lidar. The speed to classify and track items in urban environments makes it unique. It is also cheaper and easier to integrate into vehicles, which means that the technology can easily become standardised in vehicles as a supplement to lidar and radar.

*BlincVision has several advantages over lidar and radar*

## Rapidly growing ADAS market

The market for Advanced Driver Assistance System (ADAS) is driven by the fact that regulations and organizations are issuing targets for reducing accidents and injuries on the roads. The level of safety in vehicles is progressively increasing and new technologies are being rapidly implemented. The ADAS market is expected to grow by an annual average of 16 percent until 2029 when it is expected to be worth over \$124 billion.

*Incentives for better road technology*

*For more information on ADAS - see Appendix s.12*

## Multiple value drivers

There are several scenarios that can increase the value of Terranet, for example various types of collaborations, license deals or a structure deal being the most likely. Mangold believes that BlincVision will be licensed and that Terranet will take a small share of the lidar and radar market. Our scenario is based on a product being completed and implemented into cars by 2024. In order to obtain a fair value, Mangold uses a DCF model where revenues are discounted to a risk-adjusted rate of return. The fair value is an approximation of the value of the company on basis of a going concern.

*High likelihood of cooperation or M&A*

# Terranet – Update

## A safe path

Terranet has left the development stage and now enters the phase of turning its driver assistance system BlincVision into a finished product. The company expects to have a prototype of BlincVision ready in 2023. BlincVision consists of a laser scanner, sensor and a computer module. Production of the laser scanner prototype has begun with Prevas Development. The goal is for an A-sample of BlincVision to be developed together with a Tier1 that has extensive experience in the automotive industry and is specialized in laser technology. For the company’s sensor module, Terranet has begun a prestudy with two international partners. The next step is to develop a prototype for the sensor module. When the prototype and the sensor module are ready, Terranet will complete the software unit. Work to complete the software unit will take place simultaneously. When a prototype of BlincVision is assembled, talks with Tier1 and OEM manufacturers will begin. Mangold believes that a likely scenario is that Terranet enters into a licensing agreement.

*BlincVision is completed in three steps*

*Prototype completed in 2023*

*See Appendix s.13 for explanation of A-sample, OEM and Tier1*

### TERRANET - BLINCVISION DEVELOPMENT

	2020	2021	2022	2023
<b>Produktsteg</b>	Concept Design	Proof of Concept	Development	Prototype/A-sample

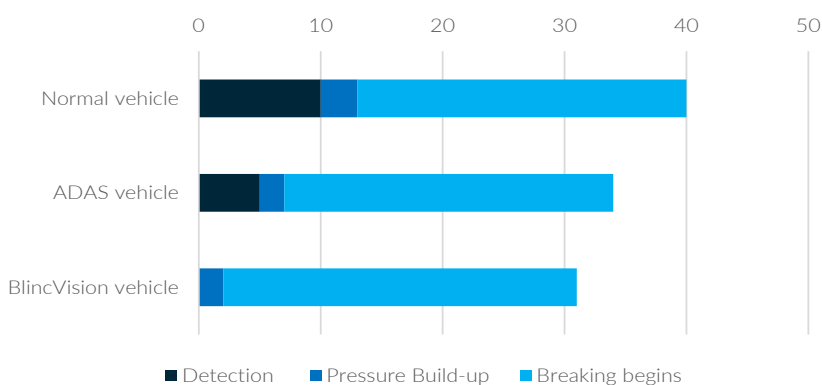
Source: Terranet

## Enhanced security

Terranets anti-collision system BlincVision has been developed to improve safety on roads and protect road-users from injury. The system combines laser, camera and AI-based detection of objects on roads. BlincVision is a complement to the sensor technology available on the market. The advantage is that the system is able to define the type of objects or obstacles that arise in a short time and thus reduce the risk of collision. The system is based on VoxelFlow, which is a software for 4D image analysis of moving objects. BlincVision can scan up to 35 meters in front of the vehicle and detect objects and obstacles within 20ms.

*BlincVision reduces risk of collision*

BlincVision breaking distance (meter)



Source: Terranet

# Terranet – Update

## BlincVision uniqueness

BlincVision has higher precision and faster reaction time than the ADAS-systems currently available on the market. This makes BlincVision a competitive complement. Competing ADAS systems are mainly based on lidar, radar and cameras. The current technology does not have the same fast reaction and detection capability compared to BlincVision, which is of great importance where traffic is dense. BlincVision differs from other ADAS systems in that it works better in urban environments where non-vehicle road users move around. Existing ADAS systems are mainly developed to avoid collisions with other vehicles.

*BlincVision has advantages in urban traffic*

## Potential revenue streams

Terranet intends to license BlincVision. An OEM or Tier1 company (see appendix) may sign a license with Terranet to access new technology. License agreements are common in the automotive industry. Among Swedish players, Gapwaves has entered into a licensing agreement with German Bosch, Hella and Veoneer regarding high-resolution vehicle radar antennas. OEM uses OTA-updates (over-the-air) to update software, which is expected to be a revenue source for Terranet. OTA updates are a more effective way for OEMs to fix bugs and update software than manually upgrading each individual device. OTA updates can catch issues before devices are released, making life easier for OEMs. Additional revenues can be obtained through service agreements (SLAs).

*License deal a likely scenario*

## MANGOLD - THE TIER-SYSTEM

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<b>OEM</b> - Vehicle manufacturer	Tesla, Toyota, GM, Volkswagen
<b>Tier1</b> - Subcontractors	Bosch, Denso, ZF, Hyundai Mobis, Magna
<b>Tier2</b> - Tech companys within the ADAS space	Intel, Nvidia, NXP, Infineon

Source: ACEA

## Broad usage

Terranet is primarily aimed towards the automotive market, but its laser scanner and sensor has the potential to be used within other industries. Terranet can also customize the BlincVision system according to the customer's needs.

*Scanner and sensor can reach other industries*

# Terranet – Market

## **ADAS market in growth**

The Advanced Driver Assistance System (ADAS) market is growing at a high rate. It was valued at \$37.3 billion in 2021 and is expected to increase to \$124.3 billion in 2029. This translates into a 16.1 percent annual average (CAGR) increase from 2022 to 2029 according to Fortune business insights. New ADAS technology is driven by rules and recommendations. Technologies such as ABS (Anti-lock Brakes), ESC (Anti-Cord Systems) and reversing cameras have reached market saturation. In the coming years, market growth for ADAS is expected to be driven primarily by vision-based technology. Major OEMs and Tier 1 players are dominant in ADAS. Premium OEMs implement self-driving capabilities as soon as they are developed to strengthen the brand. The shift to electric vehicles (EVs) also drives growth through an increased demand of ADAS.

*ADAS market is expected to grow by 16% on average per year*

## **Regulations and rules drive the ADAS market**

Authorities such as the National Highway Traffic Safety Administration (NHTSA) in the United States and organizations such as the EU and Euro NCAP, a road safety cooperation between a number of European countries, imposes rules and recommendations to increase safety.

*Safety-enhancing rules*

The EU has developed a long-term plan to reduce road accidents. The number of serious injuries and deaths should reach zero by 2050. An interim target is a 50 per cent reduction by 2030. The UN also has a vision of reducing the number of car accidents by 50 per cent by 2030, with safer cars forming part of its strategy for increased road safety. In order to achieve these objectives, vehicles must be developed using new technologies such as ADAS.

*The EU wants to see a reduction in road accidents*

The EU Commission introduced updated rules in July 2022, the Vehicle General Safety Regulation, with the aim of improving road safety and enabling self-driving cars in the EU. The new rule is embodied in improvements such as automatic braking and warning to prevent collisions with pedestrians and cyclists for buses and trucks. These new rules will be implemented in new cars on July 7, 2024.

*Protecting pedestrians and cyclists*

NHTSA updates ongoing recommendations for ADAS under a long-term vision "A Vision for Safety". Following an initiative by the U.S. Department of Transportation's National Highway Traffic Safety Administration, 20 vehicle manufacturers will have implemented automatic braking systems (AEBs) in their vehicles by September 2022. These systems use sensors in vehicles to prevent a collision. Automatic braking systems have been shown to reduce pedestrian collisions by 27 per cent, according to a study by IIHS (Insurance Institute for Highway Safety). Although automatic braking systems reduce the number of accidents, it can be improved. In particular, systems need to be developed in order to improve function in the dark and at higher speeds (over 50 mph), that the study shows. Terranet develops systems that can increasingly handle these challenges.

*US initiatives reduced number of accidents*

# Terranet - Market

## ADAS - Data fusion

Data fusion or sensor fusion is a merging of sensors. The ADAS market for Sensor Fusion is expected to increase from \$1.1 billion in 2021 to \$6.7 billion in 2031. This market is expected to grow by 20.9 per cent on average per year from 2022 to 2031.

The ADAS market relies on lidar, radar, and camera systems to obtain data. This data is analyzed by a system that operates the vehicle. A challenge is that systems are influenced by factors such as traffic, which can be dense in cities and various types of weather such as snow, fog and rain. Integration of different types of systems such as radar, lidar and camera is expected to be significantly safer than the solutions currently available on the market. Level 3 (see appendix) and above in automated driving (AD) requires a fusion of lidar, radar and camera sensors. Most vehicle manufacturers have decided to add lidar sensors in future models. An alternative is to use camera and machine vision (gives automatic systems the ability to see the environment surrounding the driver). This technology entails significantly lower costs than lidar, which involves high costs.

*Sensors connect*

*Integration increases security*

## Lidar Market - consolidation in the sector

The market for Lidar (Light detection and ranging) reached \$1.4 billion in 2021 according to Markets and Markets. It is projected to grow by 19.3 per cent annually on average between 2022 and 2030 to \$6.9 billion. The advantage of Lidar is that it can measure distances more accurately than cameras and radar. Chinese manufacturers on the global ADAS market account for 50 per cent of the market. Between 2020 and 2022, a number of companies using Lidar technology grew, some were also listed on Nasdaq (Velodyne, Luminar, AEye, Innoviz and Ouster). Lidar is not considered to be the only technology to be used within ADAS and a change of perspective is expected to lead to a consolidation. Consolidation has already started where Ouster and Velodyne have chosen to merge and more are expected to follow. An underlying factor is the automotive industry's desire for a mix of different types of sensors with radar, lidar and cameras. Various segments in the automotive industry such as airbags and brake systems have had this development in the past. This will benefit Terranet, whose systems can be easily integrated with other types of systems.

*The lidar market is dominated by China*

*Ouster and Velodyne join forces*

## MANGOLD - LIDAR COMPANYS

Company	Collaboration/M&A
Indie Semiconductor	GEO Semiconductor
Luminar Technologies	Polestar
Ouster	Velodyne
Aurora	Ours Technology

Source: Frost & Sullivan

# Terranet - Market

## Radar market - 4D growing

The radar market for ADAS is expected to reach \$8 billion by 2025, rising to \$12 billion by 2030 with an average annual growth rate of 10.5 percent (CAGR). The market is dominated by microcontroller manufacturers such as Texas Instrument, NXP Semi, STMicro and Infineon. In the coming years this market is expected to be driven by better technology like 4D radar. 4D image radar is a long-range, high-resolution sensor technology that offers significant advantages over 3D radar, especially in identifying an object's height. The 4D radar market can be seen as a niche market within the radar market. It is expected to make up about 7 per cent in 2 to 3 years' time. Leading players in 4D radar include Vayyar Imaging, Arbe Robotics, Uhnder and RFISee. 4D Imaging Radar contributes to continuous SIG transmission and provides an improved function of previous generation radar and is expected to be fundamental in the next generation of ADAS. Continental and ZF have models in production but better technology is expected and will be seen as next generation models. Arbe Robotics has started working with Veoneer and expects to have a prototype 4D radar by mid-2023. Uhnder launched its 4D radar solution in March 2022 together with Magna. The company is the first to massproduce 4D radar.

*Better technology*

*4D radar reaches the market*

## Terranet competitors

Competition is fierce within the field that Terranet operates in. New technologies in ADAS are developing at a rapid pace. Below are a number of companies that are close to the market with new ADAS technology.

**Hesai**, a China-based company, was listed at Nasdaq in February 2023. The company, backed by Chinese Baidu and Xiaomi, raised \$190 million at the listing. Hesai is the first lidar company to have started to produce lidar with a long range. The company mainly sells to Chinese manufacturers but with its listing in the US, the company wants to reach a wider market.

*Lidar company Hesai from China listed at Nasdaq*

**Mobileye**, an ADAS company that primarily develops self-driving technology but has also developed a new type of radar, True Redundancy, which is expected to be in production within two years (2025). This radar is intended to improve the detection of pedestrians, cars or obstacles that other sensors miss even in urban environments. Mobileye expects revenue of \$17 billion beyond 2030. Mobileye, formerly an Intel Corporation, was listed at Nasdaq in the fall of 2022 through a spin-off from Intel.

*New radar from Mobileye*

**Nodar**, a leading player in 3D vision technology, is developing a long range camera solution that has attracted capital. The company has secured \$12 million for further development and sales. The company estimates that its product Nodar Hammerhead may be used in all types of vehicles as standard. Its purpose is to warn of frontal collisions, flight planning, automatic braking and traffic congestion. The system can detect obstacles that are 10 cm at a distance of 150 meters and objects at a distance of up to 1250 meters.

*New player with a long range solution*

# Terranet - Estimates

## Financing

Terranet issued a rights issue in 2020 of SEK 70 million, which also included warrants in several series. The subscription for TO3 has provided the company with SEK 40 million and TO4 SEK 6.4 million. In March 2023, the warrants program TO5 will be implemented. The sharedilution is estimated to be about 4 per cent. Mangold believes that it is reasonable to assume that the company receives an amount that was on par with the TO4 series. Further capital raising is reasonable to assume. Terranet believes that the company has secured the capital required through its owners to take BlincVision to a finished product. The largest owner is Maida Vale Capital, which owns 17.7 percent and was involved in the rights issue. Knutsson Holdings also came in as a new owner now owns 3.1 per cent of the capital. Terranet also states that it is in dialog for external financing. Mangold has chosen to enter loans on the balance sheet in order to avoid negative cash.

*Need of capital*

*Dialog on funding*

## Estimates

Mangold has based estimates on the number of passenger cars and trucks that may be equipped with BlincVision technology as a share of the radar and lidar market. The volume is represented by passenger cars and trucks sold in the markets North America, the EU and China. These provide the basis for assumptions about future revenues for Terranet. Of these, cars with driver assistance at level 2 have been selected (level 2 - see appendix). In North America and the EU, the proportion is 25 per cent and 35 per cent respectively. For China we use 5 percent and for trucks 15 per cent worldwide.

*Estimates based on radar and lidar market share*

### MANGOLD - ESTIMATES BLINCVISION

(M)	Volume vehicles	Level 2	Total	Radar	Lidar	Total market
NA	10	25%	2,6	2,1	0,5	
EU	11	35%	3,8	3,0	0,8	
Kina	23	5%	1,2	0,9	0,2	
Trucks	4	15%	0,6	0,5	0,1	
Market share (MUSD)				0,3256	0,3256	0,651

Source: ACEA, Statista, Terranet

Terranet intends to generate license revenue for its software which is assumed to amount to 100 dollars per vehicle. A completed system is expected to be ready for integration from 2024. Mangold estimates that Terranet takes 5 per cent of the radar and 20 per cent of the lidar market. This is expected to happen in 2027. The market has been calculated in dollars which have then been converted into SEK with a price of SEK 10.5.

### TERRANET - ESTIMATES REVENUE

(MSEK)	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues BlincVision	68	272	456	680	1088	1700	2720
Growth		300%	68%	49%	60%	56%	60%

Source: Mangold Insight



# Terranet - Valuation

## DCF-valuation

Mangold assumes the number of cars and trucks that may be equipped with BlincVision technology as a share of the radar and lidar market. These projections have then been used in our DCF model to estimate a fair value.

*Fair value amounts to SEK 2.63 per share*

Mangold has chosen to use an IRR of 16 per cent (based on PwC recommendations). In the analysis, Mangold has chosen to take into account the upcoming dilution (TO5) of shares. Fair value amounts to SEK 2.63. Mangold chooses to use a target price at SEK 2.50 per share.

### TERRANET - DCF

(TSEK)	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EBIT	-32 937	-16 814	536	38 582	105 792	184 215	306 045	509 280
FC	-41 978	-33 965	-32 583	-556	45 626	86 359	156 564	265 168
Terminal value								1 894 061

Assumptions	IRR	Growth	Tax
	16%	2%	22%

### Motiverat värde

Enterprise value	905 231
Equity value	892 116
Fair value	2,63

Source: Mangold Insight

## Sensitivity analysis

Mangold has conducted a sensitivity analysis to see how it affect fair value. Basecase represents 16 per cent. Lower yield requirement increases fair value and higher reduces fair value.

*High risk high reward*

### MANGOLD - SENSITIVITY ANALYSIS

IRR %	15%	Basecase	17%
	2,98	2,63	2,34

Source: Mangold Insight

# Terranet – Appendix

## Management

**Magnus Andersson** is CEO and has over 20 years of international experience in building and leading technology companies within the automotive industry and the energy sector. Before, he held the role of interim CEO at the transport tech company Pilotfish, which offers a cloud platform for vehicle communications to public transport. Magnus has a BA in computer science from Skövde University and a Master from Curtin University Business School in Australia.

**Nihat Küçük** is CTO and has over 30 years of experience in mobility technology, including ten years as responsible for research and development within maps and navigation at Daimler. He also ran two startups and was responsible for Daimler's innovation laboratory with a passion for innovative business development and product management. Nihat holds a master's degree in engineering from the Baden-Wuerttemberg Cooperative State University Stuttgart.

**Thomas Falkenberg** is CFO and has extensive experience in international industry and media companies, where he has held the roles of CFO for Bauer Media Audio and CFO and CEO for Airtime Sales. Thomas is educated as a business economist from Stockholm University.

## Board

**Göran Janson** is chairman of the board and is a serial entrepreneur, mentor and adviser to management groups, boards and individual leaders, as well as founder and co-founder of multiple companies and foundations. Göran has more than 40 years of experience in areas such as research and development, product management, marketing and sales, and executive management. Overall, Göran has 30 years of experience in roles as CEO and CTO, board member and chairman, and in these contexts also worked with acquisitions and mergers. Göran has a Master of Science in Engineering from the Royal Institute of Technology.

**Anders Blom** is a member of the board and has more than 25 years of experience in international financing and business development from the medical industry, which includes roles such as business controller at Pharmacia & Upjohn, corporate controller and head of business and corporate development at Q-Med AB (today Galderma), partner and CEO at the private equity firm Nexttobe and executive vice president and chief financial officer at Oasmia Pharmaceutical. Anders also has extensive management experience from many companies within the pharmaceutical and technology sectors. Anders is now Chairman of Maida Vale Capital and Board Member of Hunterhex International Ltd., HunterHex, Wonderboo, Challenge-hop Inc., Alzinova and Emotra. Anders has a degree in economics from Uppsala university.

# Terranet – Appendix

**Magnus Edman** is a member of the board and has more than 30 years of experience in the fields of electronics, mechanics and software engineering as well as executive management, product management and sales. Magnus is the founder and managing director of Prevas Development, which provides innovative solutions, including prototype development of complex systems and development of all its electronics, mechanics and software components. They are often based on different types of sensor technologies. Furthermore, Magnus is one of the founders of Aims, which develops advanced inertial measurement systems that are now part of KEGNI where Magnus sits on the board. Prior to founding Prevas Development, Magnus worked with Daimler Chrysler GmbH and Bofors/SAAB Dynamics. Magnus is now CEO of Prevas Development, Board member of KEGNI and ASTGW. Magnus is a certified electrical engineer at Bergslagen High School.

**Karolina Bjurehed** is a board member with over 15 years of experience in IT, business and innovation in the automotive and telecomb industry. She has a well-developed global network within automotive and has worked globally for many years. Karolina is active as a startup mentor and is involved in several startup accelerators worldwide. Previous positions include several roles within IT and Digital at Volvo Cars, but also Product Owner Web and Mobile at Ericsson in Borås and Project Manager Web and Mobile at the University of Borås. Previously also active as a global investor (responsible for Europe) during his time at Volvo Cars Tech Fund. Karolina is now a VC investor with the position as Investment Director at Industrifonden. Karolina is trained as a systems scientist from the University of Borås and the University of Gothenburg.

**Nils Wollny** is a board member and has extensive experience in strategy, digital business and innovation through his current role as executive director of holoride, a spin-off from Audi focused on the next generation of in-car entertainment systems. Nils co-founded holoride and since then, holoride has been named “Best of CES 2019” and recognized by TIME Magazine as one of “The 100 Best Inventions of 2019”. In 2020, Nils was named a “Rising Star” by Automotiv News Europe. In 2018, the German Automobilwoche named Nils a “40 under 40-ceo” with high potential. Nils has a diploma in foreign trade and international administration at the University of Applied Sciences Hamburg.

**Tarek Shoeb** is a board member. His professional background is in venture capital investments. He has carried out transactions in Europe, America, India and the Middle East. Tarek has worked at Goldman Sachs, One Equity Partners, Cerberus, and Vitol. Tarek has invested in several industries such as healthcare, services, industry and distribution. During the time at Vitol, investments were made in the energy and O&G sectors. Parallel to that, Tarek has been an active personal investor in growth companies and has completed investments in, among other things, fintech, service tech, renewable packaging, seafood, cellular leather and sports. Tarek received his B.A. from American University in Cairo, Egypt, and his M.B.A. from Harvard Business School.

# Terranet – Appendix

## **Ownership in hologide**

In 2021, Terranet chose to invest in the German startup hologide, which provides technology in VR/AR (virtual reality). Holoride is a spin-off of Audi. Its technology can transfer the car's position, surroundings and direction of travel to VR. Its VR/XR product was launched in November 2022 as well as a retrofit version at CES in Las Vegas during January 2023 where the company also won the "CES Innovation Awards Honoree". Terranet owns 10.4 per cent in hologide. The purpose of investing in hologide was that the two companies were considered to benefit from each other's technology and are seen as an important collaborating partner. Co-financiers of hologide also included Audi, Schell Games and two Asian players.

## **Samarbete med Mercedes-Benz**

Terranet has showed its patented Voxelflow sensor technology at Startup Autobahn in a joint presentation with Mercedes-Benz on two occasions. Startup Autobahn is an innovation platform for mobility startups.

## **ADAS (Advanced Driver Assistance Systems)**

ADAS uses camera-based sensors and software to help the driver become more aware of the driving environment. ADAS technology has been created through automatic early warning alarm systems (RAS), thus increasing security and response time. Because human error causes most traffic accidents, ADAS has been designed to automate and improve driving processes and reduce human error.

The ADAS functions are controlled by either a front camera or a stereo vision camera. Sometimes camera data is supplemented with information from other devices, such as light detection and range (LIDAR) or radio detection and range (Radar). These systems can take control from the driver in the event of a collision, perform simple tasks (such as cruise control), or challenging maneuvers (such as overtaking and parking). Lane departure warning system or blind spot warning system.

ADAS uses sensors and monitoring systems to send signals about reflected objects to the front, to the side and to the back of the car. The aim of these safety systems is to increase road safety and reduce injuries by reducing the number of road accidents. In order to avoid collisions with the front (front crash prevention), lidar, radar and cameras are used. If the vehicle gets too close to an obstacle or vehicle, the system reacts with a warning and automatic braking is switched on unless the driver reacts (Forward collision warning).

# Terranet – Appendix

## A-sample (prototype)

The automotive industry works with different samples (A, B, and C) for the development of prototypes. These samples represent different phases of development.

**A-sample:** A first working prototype with limited functionality.

**B-sample:** Prototype with full functionality that is close to a finished product.

**C-sample:** Fully functional prototype that is serially produced.

## Vehicle OEM and supply chain (Tier 1 and Tier 2)

OEM (original equipment manufacturing) is in the automotive industry made up of car manufacturers. They are at the top of an imaginary pyramid. OEMs design and market vehicles. These are the people who assemble the car and who to some extent manufacture parts. At the bottom of the chain there are sub-contractors that are counted in Tier 1. These are closely related to car manufacturers. Tier 1 companies provide OEMs with products specifically for vehicles. Tier 2 companies, provide Tier 1 with specific products such as semiconductor devices. Tier 3 companies in the automotive market are commodity companies and can supply all parts of the chain with, for example, metals and plastics.

## Grading of autonomous vehicles

Driver assistance systems are an important part of making vehicles self-driving. It is also the first degree of self-driving vehicle. Five levels describe the development of self-driving cars.

### MANGOLD – LEVELS OF SELFDRIVING CARS

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<b>Level 1: Assistant driving</b>	Provides assistance to the driver to assess distance or speed and lane or parking assistance
<b>Level 2: Partial automation</b>	Assistance that interacts with steering and brakes
<b>Level 2: Partial automation</b>	The vehicle can drive by itself for shorter periods of time
<b>Level 4: Full Automation</b>	A driver can take over but does not necessarily have to
<b>Level 5: Self-driving cars</b>	The vehicle can do without a driver

Source: Volkswagen

# Terranet – SWOT

## Strenghts

- Product with unique technology
- Affordable price compared to competitors
- Management experience

## Weaknesses

- Weak balance sheet
- Key person dependency

SWOT

## Opportunities

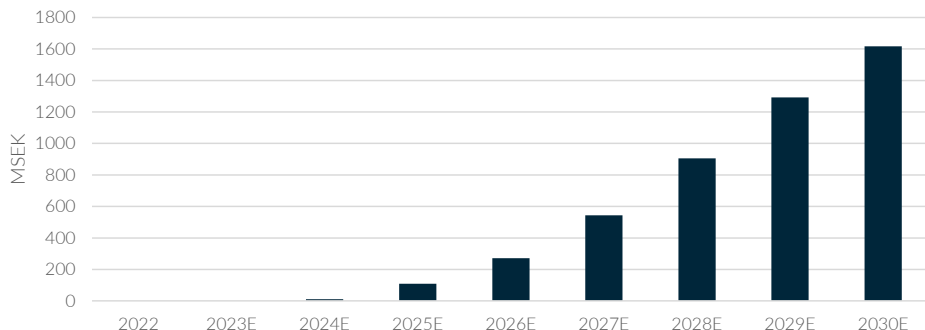
- Market in need of new technologies
- Change in mentality around accidents, zero tolerance
- Collaboration with OEMs and Tier1 companies

## Threats

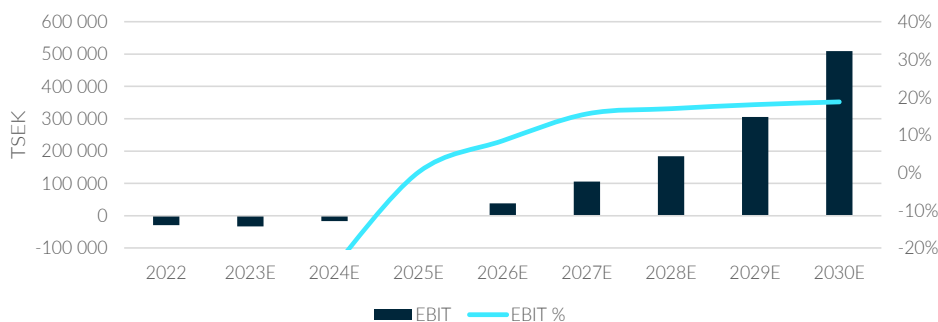
- Vehicle manufacturers develop their own technology

# Terranet – Appendix

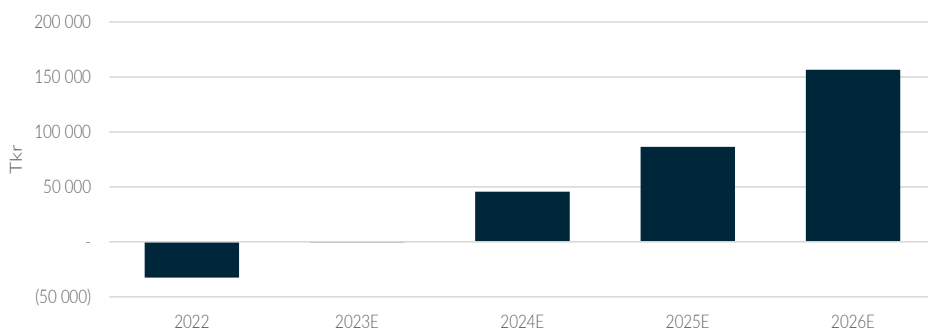
Terranet - Sales BlincVision



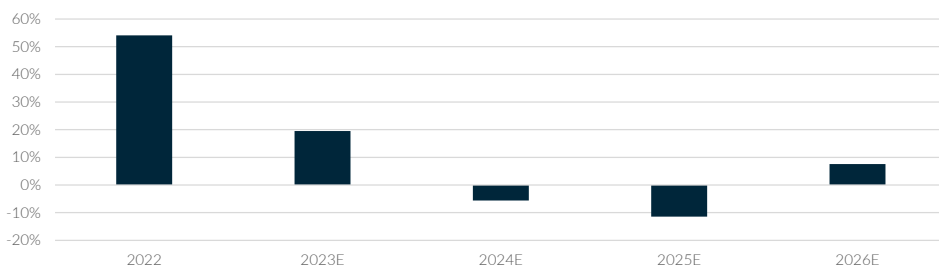
Terranet - EBIT och margin



Terranet - Free Cashflow



Terranet - Equity/Asset Ratio



# Terranet – Resultat & balansräkning

Income statement (TSEK)	2021	2022	2023E	2024E	2025E	2026E	2027E
Revenues	10 790	3 839	4 000	67 968	271 871	455 384	679 678
Cost of goods sold	0	0	0	-40 781	-163 123	-250 461	-339 839
<b>Gross profit</b>	<b>10 790</b>	<b>3 839</b>	<b>4 000</b>	<b>27 187</b>	<b>108 748</b>	<b>204 923</b>	<b>339 839</b>
<i>Gross margin</i>	100,0%	100,0%	100,0%	40,0%	40,0%	45,0%	50,0%
Personnel cost	-16 014	-17 682	-20 250	-21 600	-24 300	-27 000	-27 000
Other op exp	-27 978	-14 273	-15 000	-20 390	-81 561	-136 615	-203 903
Depreciation	-8 506	-1 255	-1 687	-1 997	-2 297	-2 588	-2 870
<b>Operating result</b>	<b>-41 708</b>	<b>-29 371</b>	<b>-32 937</b>	<b>-16 800</b>	<b>590</b>	<b>38 720</b>	<b>106 065</b>
<i>Operating margin</i>				-25%	0%	9%	16%
Net interest income	-3 024	-2 916	-3 185	-5 583	-7 742	-7 742	-7 742
<b>Profit after net financial items</b>	<b>-44 732</b>	<b>-32 287</b>	<b>-36 122</b>	<b>-22 383</b>	<b>-7 152</b>	<b>30 977</b>	<b>98 323</b>
Taxes	0	0	0	0	0	-6 815	-21 631
<b>Net profit</b>	<b>-44 732</b>	<b>-32 287</b>	<b>-36 122</b>	<b>-22 383</b>	<b>-7 152</b>	<b>24 162</b>	<b>76 692</b>

Balance Sheet	2021	2022	2023E	2024E	2025E	2026E	2027E
<b>Assets</b>							
Cash and bank balances	62 788	26 715	19 552	7 002	-33 316	-41 557	-3 525
Accounts receivable	4 068	3 152	658	11 172	44 687	74 851	111 718
Inventory	0	0	0	3 352	13 406	20 584	27 930
Other assets	0	0	0	0	0	0	0
Fixed assets	49 044	59 568	66 556	76 559	86 262	95 674	104 804
<b>Total assets</b>	<b>115 900</b>	<b>89 435</b>	<b>86 765</b>	<b>98 084</b>	<b>111 039</b>	<b>149 553</b>	<b>240 927</b>
<b>Liabilities</b>							
Accounts payable	5 900	1 223	0	6 703	26 812	41 168	55 859
Liabilities	36 469	39 830	69 830	96 830	96 830	96 830	96 830
Total liabilities	42 369	41 053	69 830	103 533	123 642	137 998	152 689
<b>Equity</b>							
Restricted equity	118 263	80 669	88 669	88 669	88 669	88 669	88 669
Unrestricted equity	-44 732	-32 287	-71 734	-94 118	-101 272	-77 114	-431
Total equity	73 531	48 382	16 935	-5 449	-12 603	11 555	88 238
<b>Liabilities and equity</b>	<b>115 900</b>	<b>89 435</b>	<b>86 765</b>	<b>98 084</b>	<b>111 039</b>	<b>149 553</b>	<b>240 927</b>

Source: Mangold Insight



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Buy – An upside in the share of at least 20%

Increase – An upside in the share of 10–20%

Neutral – An upside and downside in the share of 0–10%

Decrease – A downside in the share of 10–20%

Sell – A downside in the share of at least 20%