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INVESTORS HOUSE

Value from Digitalization

Petri Roininen, CEO of Investors House, has recognized three big factors that have changed the real estate investment market: urbanization, low returns from other asset classes, and digitalization. Digitalization, from an investor's point of view, must lead to a better investment value. Petri highlights four opportunities for digitalization:

- 1 Building automation can increase the efficiency and thus returns of a property. It can also make a property more desirable to a potential investor.
- 2 Information management improves the efficiency of processes and the quality of information, but the value potential is limited.
- 3 Transactions, buying and selling of real properties, are ripe for digitalization. "Most sales still take place manually, through paper documents, and the transaction costs are high," Petri reminds.
- 4 The societal dimension is essential. Petri praises Estonia as a pioneer in digitalizing the society and property-related information, e.g., ownerships and mortgages. He urges Finland to follow suit.

Petri walks the talk. His company is launching a new service for small investors—a platform that connects 10,000 private investors, apartments, and rental services.

HENRIK STEINBRECHER

My Tips for Startups

HENRIK STEINBRECHER IS AN independent advisor and investor with a 22-year career in leading positions at PwC. He's worked both in the Nordics and internationally on strategies, deals, and advisory projects. Henrik argues that the whole concept of proptech has developed immensely during the last three years. Early stage investments in proptech are far more frequent than five

years ago.

Henrik singles out four promising areas of proptech. First, software development for managing properties and analyzing data is quite traditional, but still necessary. Second, the more recent discoveries are around investments, funding, and crowdfunding. The third category is marketplaces where you connect with tenants and provide spaces

for rent. Lastly, there are new ways of designing and visualizing projects and buildings with VR and related technologies.

To make introduction and development of technology efficient, Henrik has a suggestion. He'd like to see a platform or model that would ease collaboration between traditional property owners, the construction industry, and the startup scene. ■

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- ▶ 2
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Analyze what your innovation can bring to the company and its customers

Build and manage connections and partnerships within the industry

Go beyond PowerPoint presentations; learn about the customer's business and get involved

Meet with independent and experienced business and industry people, and use mentors

Attend meetups like Slush and ReCoTech; they provide opportunities for useful conversations

REDSTONE



Growing Interest in Proptech

SAMULI SIRÉN IS THE CEO OF REDSTONE, a Berlin-based VC firm working with multiple corporate venture funds. He has experienced the buzz around proptech firsthand at conferences and through collaboration with clients. Despite this grown

interest, many in the industry still seem to be happy with their businesses as they are. Properties are the biggest asset class in the world, but there are no global trailblazers among the relatively small players. Samuli has noticed that most

proptech startups focus on either boring smart building technologies or transactions (i.e., selling or renting), when in actuality, a property's life cycle offers many more opportunities. Redstone is especially interested in SaaS businesses. Samuli highlights PlanRadar, a documentation and defect management app that helps in construction and maintenance.

Samuli warns that properties could be the biggest bubble in the world. "What is the value of a property? It's a stack of stones with more costs than revenues," he says.

When the adjustment happens, digitalization will come in like a storm. The Nordics have great companies that could succeed internationally in the evolving proptech market. As proof, Redstone is opening a Nordic office in Helsinki and to start scanning for promising investments. ■

BLOXHUB

The Urban Innovation Hub



PICTURED Torben Klitgaard

Coworking spaces have become popular in the Nordics, but few of them are focused on a certain vertical. Torben Klitgaard, director of BLOXHUB, describes the unique initiative from Denmark. It invites architects, designers, contractors, and tech companies to create better cities.

"BLOXHUB is an urban innovation lab; it's a coworking space and community providing a platform for companies within the open built environment," Torben says.

BLOXHUB was founded on June 3, 2016, by Realdania; the City of Copenhagen; and the Ministry of

Matchmaking is the core competence of BLOXHUB

Industry, Business, and Financial Affairs. The hub has a physical space downtown Copenhagen. In full scale, BLOXHUB will have about 10,000 square meters of brand new space and roughly 500 desks, of

which 20 percent are dedicated to startup companies. Torben expects 50 to 60 companies to be residents and about 150 companies to be part of the community.

Matchmaking is the core competence of BLOXHUB. "We want to create an ecosystem of built environment stakeholders: startups, SMEs, and corporations," says Torben. BLOXHUB hosts programs for business development, acceleration, and innovation challenges. The hub's ultimate mission is to help Danish companies dealing with urban issues to work closer together, work on projects, and collaborate in order to grow. ■

INREV

Startups are the Innovation Leaders

Maurits Cammeraat is director of professional standards at INREV, a European association for the real estate investment industry. He sees real estate tech as serving both decision-making and building operations.

"The real estate industry has already changed quite a bit over the last 10 years. But today, the real innovation comes from startups and new entrants," Maurits claims.

Real estate investors and investment managers can work with startups, but they also have to make sure that their own businesses are sufficiently digitalized as this generates new business and new investment models. Consequently, real estate investors are becoming Venture Capitalists, and construction firms are turning into tech companies. For example, OVG Real Estate, the developer of The Edge in Amsterdam, presents itself as a tech company.

Maurits highlights three consecutive stages in introducing real estate tech. The first step is to digitalize existing lease processes and documents. Then comes process automation, which increases the efficiency of businesses. The third wave is strategic decision-making with AI and machine learning. AI and machine learning can eventually replace humans for property valuation and investment decisions, which can then incorporate information like employee wellness data and data from open sources.

Maurits thinks that blockchain will impact the industry, but it's still unclear exactly how and how fast. Banks and tech companies, among others, are introducing competing solutions. Maurits believes that we'll need standards, and INREV can play a role in instituting them. ■

For more Industry Stories

SPONDA

The Future is MOW

Sponda does not want to just wait for the future; it wants to make it.

During her career at Sponda, Pia Arrhenius has been involved in investor relations, strategic planning, and envisioning the future of the real estate company. "Around 2013, we noticed changes in the property market. Online businesses were starting to affect brick-and-mortar retailers. We wondered if a similar development would be possible for offices," Pia recalls. At the same time, companies were looking for smaller premises and flexible lease contracts. That was against the tradition of an industry in which a lease lasting a minimum of five years was a norm.

The idea of providing easy-to-obtain and flexible work spaces inspired Sponda to start developing a coworking concept. A property on Pieni Roobertinkatu, downtown Helsinki, was fit for the task. It

became MOW, Mothership of Work. The venture seemed chancy at first. Pia has experienced firsthand how easily potential risks start to dominate decision-making in the industry. Even she, "the MOW Mama," imagined dozens of reasons why the new concept could fail.

However, all the partners involved in the development of MOW felt that they were trailblazers of the future of work. "We continue the development with our tenants, or members, as we call them. We got a head start, and I think that we still stand out from other coworking spaces in the world," says Pia proudly.

At MOW, Sponda wants to create the best possible conditions for collaboration in the physical and virtual office environment. It provides mentoring and arranges events to encourage people to work together, even if they come from different companies. Even so, however, the Finnish culture sometimes kicks back. Small entrepreneurs buy the idea of coworking, but still want to have their own private rooms. Pia believes that the culture will change gradually, but emphasizes that it's the members who will ultimately



PICTURED Pia Arrhenius

define how and for what they want to use MOW.

Flexible premises are not just for startups and small companies. Sponda recently opened another MOW, called Stargate, in Ruoholahdi. There, Sponda has also provided for the temporary needs of large firms. In the future, this concept may change the way Sponda develops offices. Some customers have already come to Sponda with a request: "We've not found appropriate facilities anywhere. Can you make us a MOW?"

Digital technology is an essential element of coworking and the future real estate industry at large.

Digital technology is an essential element of coworking and the future real estate industry at large.

Pia sees Sponda today as both a user and an experimenter. However, in the future, through learning and partnerships, it aims to become a technology provider. To achieve that goal, it works with tech startups to test ideas and experiment with new things.

Pia says that she would not be surprised to see disruption to current real estate businesses. The asset-heavy business model, she predicts, may be challenged by agile, asset-light players that can use technologies and platforms to offer services, but don't have to own a single property. Pia reminds us, however, that even in that scenario, somebody must provide capital and physical assets. ■

TIETO

Symbiotic Buildings by Tieto

It took a software developer to tell property owners that their thinking is flawed.

Nerd, IoT sensor, Leader, Superhero – these are the terms that Tomi Teikko uses to describe himself in his LinkedIn profile. Admittedly, Tomi does not feel like a typical software developer when he talks enthusiastically about his discovery. "Every real estate app that I've encountered is made for the building. None of them focused on the user," Tomi cries out. Tomi noticed that the same thinking penetrates the whole industry. "My innovation in this industry is to place the user in the center of design," Tomi declares. He's slogan is *humans as IoT sensors*.

Tomi is the developer of Tieto's Intelligent Building platform, which people queued to see at Slush. "I registered for ReCoTech last year, but could not go because



PICTURED Tomi Teikko

Placing the user in the center will have a deep impact on real estate business models



our demo stand was so popular that I could not leave," says Tom. Tomi entered the proptech scene one and a half years ago from Tieto's Digital Channel's business. At first, he and his colleagues tried to get customers for Tieto's IoT platform, but soon realized that fleet and property management had the most promising use cases. "I decided that I'll start developing Tieto's intelligent building product for non-residential buildings."

Tieto's platform collects data from building users and, with that data, measures and optimizes the services of the building. Tomi demonstrates the first version of the app on a big screen. In addition to space-related information, it shows where individuals are. On a floorplan, you see the information that's relevant to you at any moment. For example, if you want to work in a certain temperature, the app shows that information across the building. Tomi thinks that optimizing HVAC is a symbiosis of people and technology. Instead of trying to create certain indoor conditions in a room with technology, we should show the users the conditions at every workplace and let them

choose where they want to work.

Tomi believes that placing the user in the center will have a deep impact on real estate business models. The focus will shift from ownership to providing service throughout the life cycle of a building. Software businesses have moved from waterfall projects to continuous, agile development. The same principles should be prevalent in the real estate industry. "When the physical construction of a building is completed and people move in, you have the first, minimum viable version of the building," says Tomi. From there on, the process is endless development.

How cleaning is procured and measured is Tomi's pet peeve. Cleaners' work often takes place off-hours and it is measured by surface square meters or through inspection. "Why not make cleaning visible and buy it based on user satisfaction? The time spent on cleaning or the number of people doing it then loses its importance," Tomi wonders. Similarly, reception services could be bought, simply, by specifying that we want a service to which our visitors give the highest satisfaction score.

Today, over ten customers are

using Tomi's platform in activity based office environments. Schools and other facilities will join in next year. The app itself will get new features – for example, fault alerts. The most important new feature is the metering of user happiness. Tomi has developed an app that uses AI to analyze the free-form feedback from the users. It simply asks if the user is happy or not and lets them write comments. "I don't believe in surveys with fixed questions. They are a form of top-down management where a manager comes up with a question. It only measures the question and does not allow you to talk about something really meaningful," Tomi says. The AI tool reports the results of four factors of employee happiness; physical spaces, tools, work culture, and the substance of work.

Happier building users are more efficient and productive for the business. Investing in your employees will create better business results. "I strongly believe that time is over when individual needs are not served. If I feel that something is bothering me, it's a fact. An employer who cares about the employees will fix it one way or another," Tomi points out.

Tieto has a data incubation program and Tomi's product is a platform that students and startups can use to develop their own apps. Tieto also has several partners that specialize in different aspects of proptech, like 720 Degrees with their air quality analytics. "It does not make sense for us to start competing in the red sea of technical property management and control. However, I'm happy to share data through my API with other businesses in the ecosystem." Tomi sees great opportunities in the future in using real-time, personal bio data to control a property. Tomi predicts that the ultimate result is a symbiosis between the user and building. ■

GRANLUND

The Most Innovative Company Will Win

Granlund shows how an established company can be an innovator, year after year.

The construction industry in Finland has been thriving over the last couple of years. "Business is going so well now that there's a danger of complacency," says Pekka Metsi, CEO of Granlund. "I see too little organized innovation taking place within the industry. Tools and information management have evolved profoundly over the last 10 to 15 years, but business processes have remained the same. That leaves doors wide open for outsiders to radically change the business." Granlund, on the other hand, has been at the technological forefront for decades and wants to keep the leading position.

Pekka does not believe that outsourcing innovation is the solution. "If you think that instead of having ideas of your own you [will] let startups do the innovation, you're not going to get optimal results." Pekka points out that innovation is like any other business process. You need to have goals, organization, and resources to do it. To prove the point, Granlund has an enterprise-level innovation strategy and implements it rigorously. It has a dedicated innovation team that acquires funding and collaborates with startups.

Pekka says that direct investments in startups are not on their agenda right now. Instead, they can introduce startups to their very extensive client and partner base, and support the commercialization of



PICTURED Pekka Metsi

new technologies. For example, PULSE™, Granlund's well-being service, uses software developed by a startup.

Construction is local, but proptech is global. Granlund has opened offices in Dubai and Shanghai, and is offering expertise in building energy management and maintenance. Chinese companies are very enthusiastic about technologies such as BIM and IoT, but the reality in building maintenance, for example, is quite bleak. As the cost of labor is going up in China and the economy is not growing as fast as it used to, demand for productivity enhancements and energy efficiency will grow. That creates great opportunities for Granlund. So far, it has served Western companies, but that may change soon.

Granlund's innovation strategy aims at a building that communicates with the user. "How an individual user experiences the building

could be the new performance metric. By measuring and monitoring the users and collecting their feedback, we could understand how to control and maintain building services optimally," says Pekka. This would require a total overhaul of how the user interfaces with the building. The next step could be applying artificial intelligence and machine learning to let the building anticipate the users' needs.

Robotization of design will free designers and consultants from routines. Creativity and new ways to create value for customers, wherever they are, will become a competitive advantage, Pekka believes. ■

Disrupting the Maintenance Business

Teemu Hausen, Business Area Director at Granlund, is planning the launch of a new model for property management. It will reduce manual operations and effectively use real-time data coupled with the best expertise and software tools. "Until now, Granlund has been a consultant and software provider for property owners. Now we want to extend our service to building performance and service management," says Teemu. Granlund will not add any service personnel to its payroll. Instead, it will provide an online platform for the management of operations. The needs and feedback from the end user are at the top of the hierarchy. The new service stands out from the competition, as Teemu explains: "Our promise is to increase the cash flow of a property. We bring our core knowledge to the business." Granlund will not only provide strategic consulting but will also be responsible for field services in the future. Even the biggest players in the industry don't master that combination today. "We won't just react to problems, but dig into the root causes," says Teemu. This will open new business opportunities for small maintenance teams or even individuals, as the partnership with Granlund will provide access to bigger clients and ease of management. ■

NEWSEC

The Digital Future for Newsec

Newsec is the largest Advisory and Property Asset Management firm in Northern Europe.



PICTURED Tomi Ventovuori

With 2,000 co-workers in seven markets, Newsec covers the commercial property market extensively. Innovation and experimentation are strategic to Newsec.

Tomi Ventovuori is Head of Digitalization within Newsec Property Asset Management, one of Newsec's two service areas. His responsibilities include creating a new strategy that defines how the company will do property management in the future. Digitalization is a key element of the strategy. It will improve productivity and create opportunities for new business models. "My task is to facilitate the implementation of the strategy, take part in projects, and make sure that our country organizations adhere to the strategy," says Tomi. "I'm also involved in PropTech venturing activities. That may include investments in startups and identifying startups that help us do a better job. Sometimes it can be a single technical solution. For example, we could choose a firm with a 3D visualization tool that we can utilize in our renting process." Experimentation is an essential part of Newsec's innovation strategy. Piloting is a great way for both the customer and the startup to gain experience and further develop the product based on real use cases.

The owner of Newsec, Stronghold Invest, is committed to advancing innovation in the real estate industry. It's building a Nordic PropTech community (nordicproptech.com) and hosts meetups for the network. With the help of the Swedish company Result, Newsec runs Innovation Labs with both coworkers and clients. Today, there are on-going Customer Innovation Labs in Sweden, Norway and Finland. The Customer Innovation Lab is initiating pilot projects with Newsec's clients. In Finland, Newsec recently introduced four startups to the clients and is now commencing test projects with them.

Working at the Nordic level makes learning efficient and allows exploring many technologies at the same time. Tomi mentions two examples of their latest pilots with startups. The first one is an application for managing parking lots and optimizing their revenue streams. The other one is an app for creating accurate interior models using a smartphone instead of heavier

laser scanners. The architects who design interiors for tenants can use the model as a starting point. In addition, tenant improvements costs can be calculated for rent proposal based on scanning measures. It speeds up the process and improves productivity between clients, designers and Newsec staff.

Today's property management systems date back from the 1980s and 1990s. They have been enhanced using complex integrations with more recent systems. "Unfortunately, I don't see that the small companies that built the legacy systems can quickly meet the demands of the future with AI, machine learning, and robotics, for example," Tomi points out. Newsec is looking for a platform that can support digitalization for the next ten years. "This means that we'll have to talk with big vendors that invest seriously in

Experimentation is an essential part of Newsec's innovation strategy

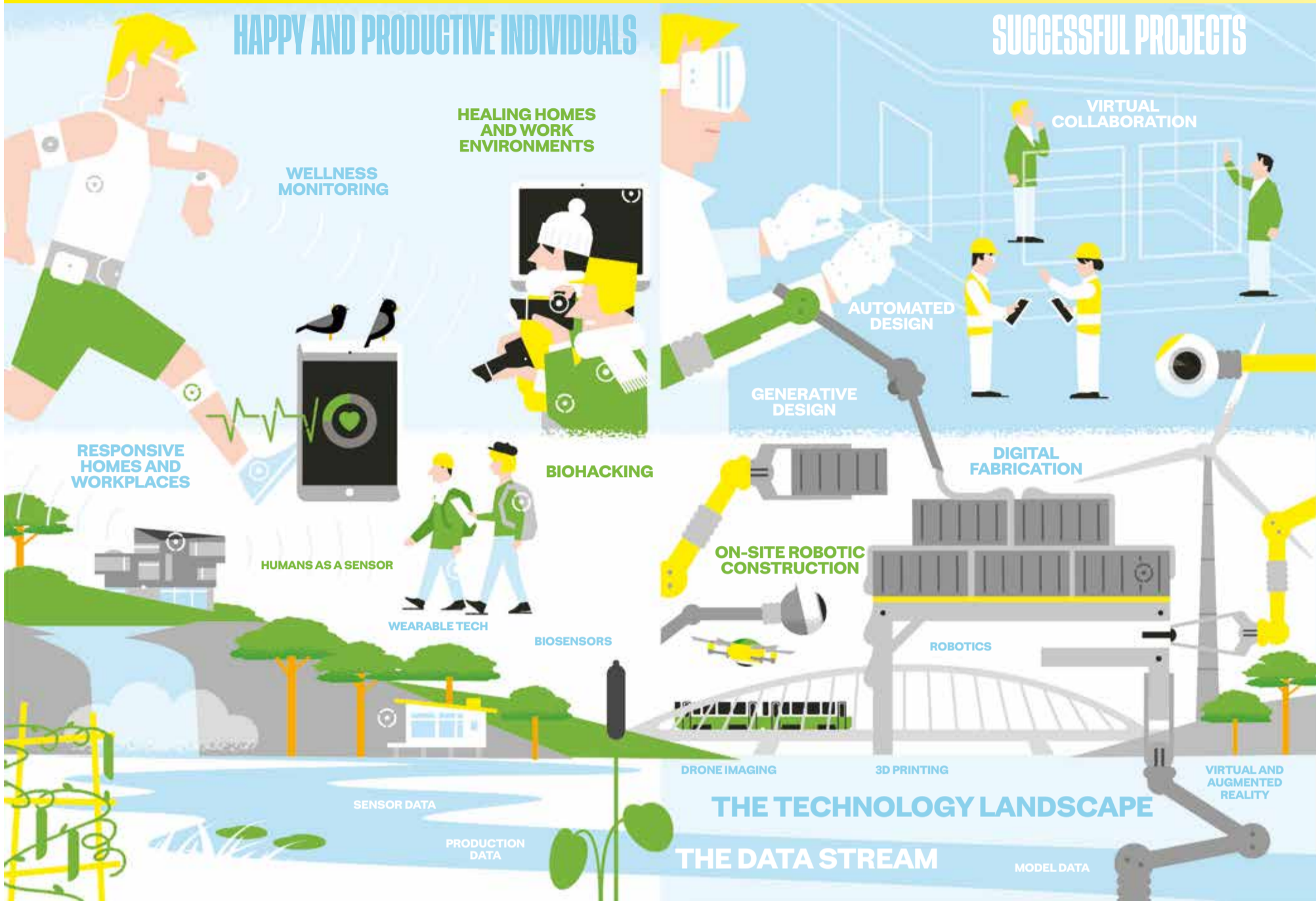


new technologies and solutions. In the industry and in certain companies, this can lead to a total modernization of ERPs and lease management systems." Once the platform is in place, Newsec can start connecting buildings and value-adding apps with the platform so that they form a manageable ensemble.

Tomi notes that the real estate industry is now at the same point where the financial industry was ten to fifteen years ago and the music industry some additional five to ten years back. Demand for extreme productivity is driving innovation and digitalization. Tomi believes that Newsec has what it takes to be a digital leader in their field in the Nordics. "We manage 27 million square meters of properties, which is more than any of our clients. We must be at the leading edge; we must know our customers, properties, tenants and the industry better than anybody. Using that data in the future is our goal." ■



HOW REAL ESTATE AND CONSTRUCTION TECH CREATES VALUE IN THE BUILT ENVIRONMENT



RAMBOLL

From Data to Business Value

Ramboll's advice at ReCoTech: create with us killer apps that customers can't resist to buy.

Everybody in construction is talking about digitalization. Markku Moilanen, Executive Director at Ramboll Group, says that it's just one facet of the industry's change: "The way we think about design and consulting as businesses could soon become obsolete. Value chains will be reconfigured and new businesses will enter the market." Existing companies must change, and Ramboll is willing to meet the challenge.

Digitalization, from Ramboll's point of view, covers three topics: BIM, automatization, and AI. BIM as a replacement to traditional CAD is becoming business as usual. BIM as a means of collaboration is still evolving. Ramboll uses modeling to distribute work globally, for example to their service center of 300 employees in India. Some challenges remain; models from different disciplines don't always match and they predominantly serve the design phase. "We've brought BIM to



Data connects all the industry players

the construction site. Next, we're introducing it to facilities management," says Timo Hautakoski, Director of Sales and Marketing.

BIM is an enabler of automatization. Many routines that designers do today will be automated. Markku mentions an example from their UK team. They've completely automatized the design of highway gantries. An engineer can now design a complete gantry in a few minutes, instead of hours or even days. Automatization does not end in structural design. "We've seen automatization in medical and juridical services. The same solution providers could very well enter consulting," Markku envisions. Timo reminds that Ramboll already uses a bot to do basic F&A transactions.

Artificial intelligence goes further than design automation: it can learn. Markku believes that AI will progress faster than we've anticipated. Tech giants like Google pour huge sums of money into developing AI. Coupling AI with BIM, IoT, and construction robotics can create something revolutionary. "We're testing new technologies in pilot project in Helsinki where we collect IoT data, well-being information, and air quality data," says Timo.

To Markku, disruptive technologies are an opportunity, not a threat. "Consequently, we'll see the arrival of new roles and professions, for example that of a BIM coordinator. Some job functions will disappear, but that has happened throughout history. We have to be vigilant, especially in education," he says. He mentions Slush and ReCoTech as great forums for cross-breeding ideas and finding new ways to collaborate with startups. "We want to work with startups that want to both understand our business environment and create wow experiences for the users."

Ramboll has a long history in continuous development with

academics and clients. They also systematically engage employees in innovation. Currently, they invest especially in digitalization and sustainability. Their Livable City concept aims at creating better cities for people. In addition, they study smart mobility, drones, and other technologies. "We want to invest in development to increase our company's value in the future, just like any tech investor would," says Markku.

The real estate and construction industry is made of a myriad of players and processes. The thing that connects them is data. Ramboll is launching a new service that uses big data and provides value to all the participants of the building life cycle. "We learned about the pain points of property owners. Property yield and user satisfaction were on top of the list," says Timo Hautakoski. Ramboll accumulates a lot of data over the life cycle of a property, but a big portion of it remains unused. By adding data from open sources, they can provide a new service platform. "At ReCoTech, we're looking for startups to partner with. They can refine and enrich the data with their technologies." Ramboll has recruited their first ever Chief Data Scientist and a Partner Manager to start building the new ecosystem around their platform. ■



PICTURED Markku Moilanen

SENAATTI

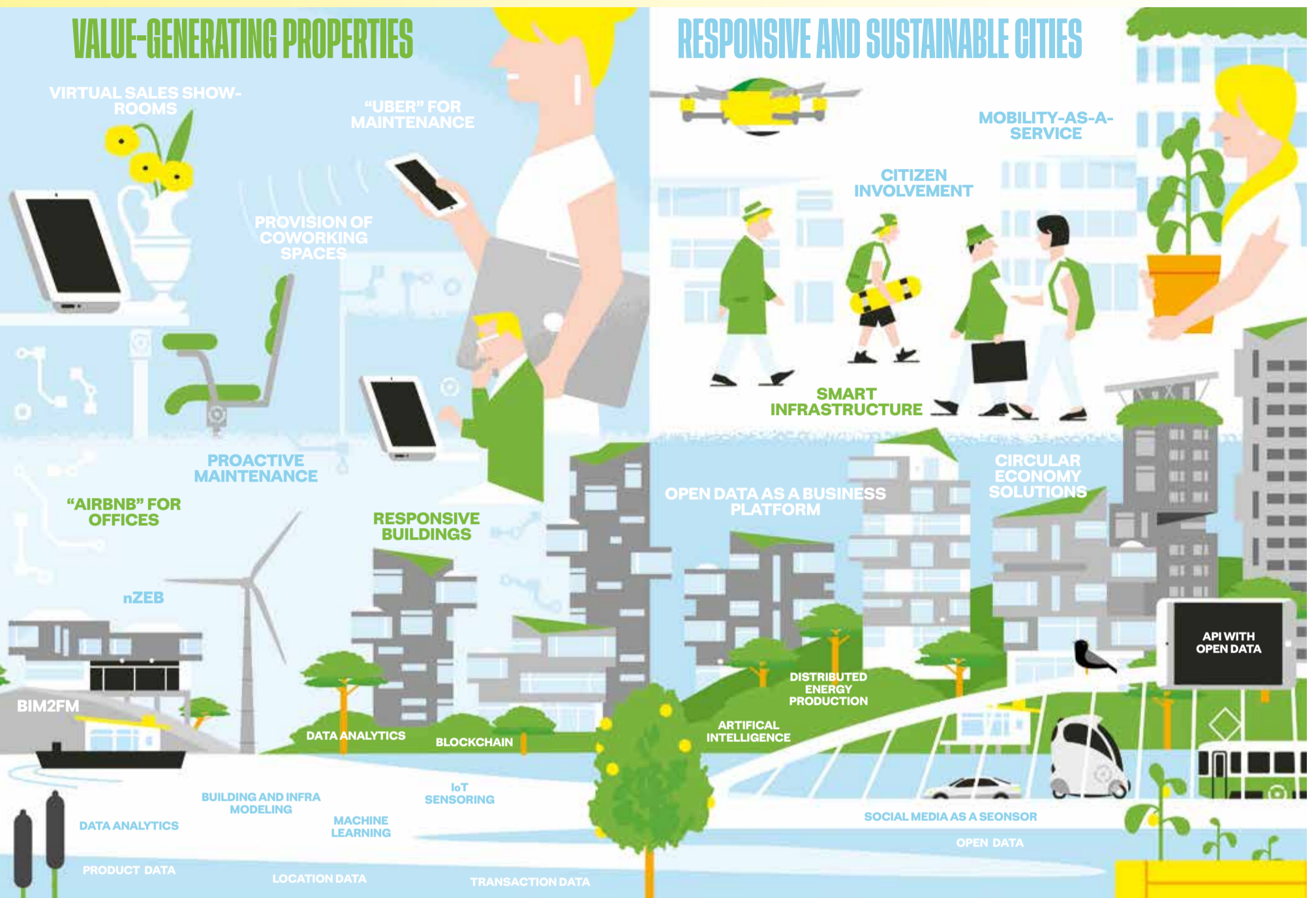
From Properties to Work Environments

Digitalization is changing how people work in governmental organizations, and Senate Properties wants to make the most of that shift.

JUSSI HIRVELÄ, CIO AT SENATE, HAS noticed how IT as a corporate function has changed. "A few years back, IT could independently figure out what to do next. Today, the core business is setting the pace. Almost every business development initiative now has an IT connection," says Jussi.

Jussi's project portfolio is quite thick and demanding. Senate is both dismantling legacy systems and incorporating new solutions, such as replacing the old F&A system with an ERP and implementing a financial planning system. On the other hand, it is also pilot testing intelligent building technologies for co-working and building automation. In addition, Jussi mentions that Senate is working with Steerpath, the winner of Senate's 2016 hackathon, to explore a new technology, indoor positioning.

Senate has a dual role; it is both



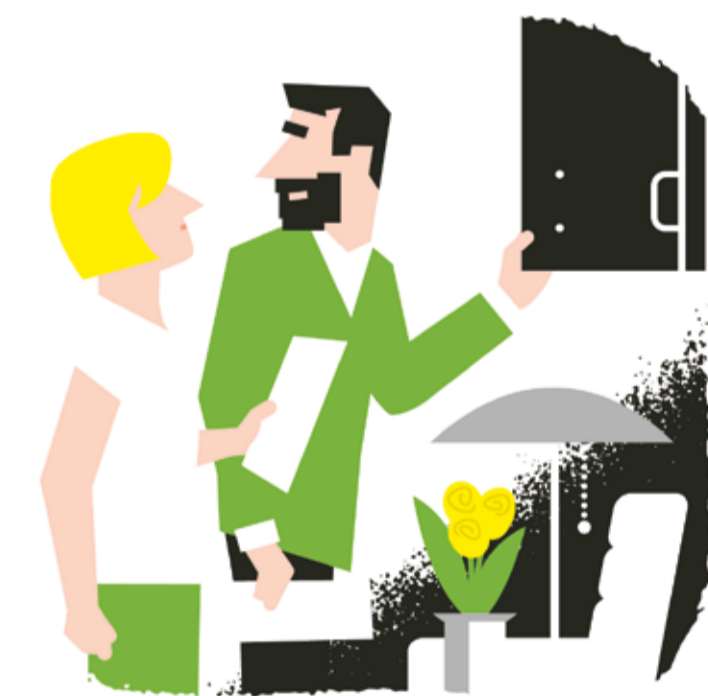
the Finnish government's workplace specialist and its property asset manager. Jussi sees a shift in Senate's customers' expectations. "We're used to delivering a building and having the customer create a work environment in the premises. But today's customer wants to walk into a ready-made work environment with everything from furniture and coffee machines to ICT and ventilation in place. The customer also needs our support in adopting new agile ways of working as well as managing change and transforming the organizational culture."

Digitalization is a strong trend in governmental organizations. It can have radical consequences for the way people work and the spaces they demand. Properties are becoming more like services. Especially in the private sector, owners must come up with new revenue models instead of simply offering a 15-year lease. Jussi thinks that Senate is in a perfect position to support this change with its expertise and simulation and analysis capabilities. For example, Senate can use VR and AR to simulate operations and measure the performance of special

Today's customer wants to walk into a ready-made work environment



PICTURED Jussi Hirvelä



purpose facilities when making design decisions.

Senate takes part in and follows the development of proptech, such as BIM norms, IoT, and digital signatures. These technologies not only speed up processes, but also mitigate risks. Jussi thinks that IoT provides the biggest value to the property owner and users, because it allows the owner to maintain buildings proactively and measure performance in real time. Users get services that support their daily activities.

Senate has outsourced most of the services that it offers to its customers. Partners are valuable in more than one way. "I require that our partners be so advanced in their fields that they set new standards for us as well," says Jussi. The current legislation makes it difficult to collaborate with startups commercially, since purchases must be put

out to tender. Senate can point out candidates for collaboration in its network and, in some cases, pilot test new solutions.

To prepare for the upcoming Senate strategy update next year, Senate Properties has launched an internal educational program on digitalization called Studia Digitalia. It includes lectures by well-known experts from various areas of digitalization. The program also features several proof-of-concept and pilot projects that advance new ways of working and develop digital platforms. This, and other initiatives, have spurred development projects, such as projects to improve the quality of data. Not all the information collected during the 200-year history of Senate is up to date. "We're exploring software robotics to learn whether it could convert existing data to make it useful for our future needs," Jussi concludes. ■

HUB13

A Hub's Operating System

Ola Sundell, Chief Entrepreneur Officer and Founder of HUB13, talks about the coworking space scene.



PICTURED Ola Sundell

"Coworking has become institutionalized, but coworking hubs lack an internal service concept. Building the space first and then thinking about what to do with it is a poor strategy." His own hub has been providing both the space and the support for Finnish startups to start growing.

Ola was an early adopter of the concept of coworking. By 2013, he had already started following the international coworking hub network, Impact, and had become the CEO of the network's local partner, The Hub Helsinki. Ola now thinks that a successful hub should be built around a strong growth facilitation program. It should focus on an industry vertical and be active systematically around the year, not just organizing random events and providing a place to work. A hub should be a

service that you can offer not only to startups, but also to large corporations and other organizations.

Both the facilitation of content for the hub and maintenance of the premises themselves require strong operators, Ola notes. A hub is, after all, a serious business venture. HUB13 had its own premises in Helsinki, but that changed recently. "We have withdrawn from providing physical space and concentrate on facilitation. That has improved our productivity tremendously," Ola says. He advises that if you want to build a hub, you should start with the program, the operating system. Only then acquire the space, the hardware. An operating system can be ported to another hardware; it's not tied to a specific place.

HUB13 organizes events, hackathons, and accelerator programs. Many organizations provide similar activities in Finland. Ola would love to see more collaboration in that sector, but that's challenging. Not even the biggest cities and universities are willing to work together. "Everyone is bowing at the government, but the public sector is unwilling to be an operational party," Ola exclaims. "I don't believe that running hubs should be the public sector's business. I'd leave it to commercial enterprises."

HUB13 is in the process of launching a spin-off called WorkSpa, which is now piloting its model in the governmental KIRA-digi program. WorkSpa will give companies the means to flexibly share their premises. Ola sees great potential in this undertaking: "Our vision is to be better than WeWork," he says. "In fact, we expect to disrupt its business model altogether!" ■

STRONGHOLD

Investing in the Digital Transformation



PICTURED Daniel Kraft

Stronghold Invest owns, invest, and develops real estate and companies in Northern Europe. Since launching Datscha in 1999 Stronghold has been active in property technology, proptech.

“My background is management consulting and strategy. I used to work on projects in financial services, insurance as well as the public sector throughout the Nordics, including the government of Sweden,” says Daniel Kraft, Head of Proptech Ventures at Stronghold. He’s been at the company since 2013, working with diverse business development projects. In 2014, Stronghold initiated a study on how technology will impact the real estate industry. “We came to the conclusion that this will really take off. So, we started a new business unit called Proptech Ventures.” Today, Daniel divides his time between developing digital strategies with the companies in their group and meeting with startups.

Stronghold has both “classic” and “digital” real estate companies in their portfolio. “We, as a group, have always been involved in proptech, even before it really existed as a concept,” Daniel explains. “It’s really a part of our DNA”. Of the proptech companies, Daniel mentions Datscha, Tessin, and WorkAround. Datscha is a spinoff from Newsec in 1999, the leading advisory and



Most proptech startups don’t fully understand the dynamics of this sector

asset property management firm in Northern Europe. Tessin is a crowdfunding platform that has introduced a new way of funding development projects in real estate. “It’s a very strategic area for us which we need to understand,” Daniel points out. Workaround has a new solution for leasing out office space. The traditional leasing process is property owner-focused. It does not offer what the companies want – flexibility. Workaround targets the sublease segment, making the lease process flexible and at least 80% digital.

Stronghold works with startups, but not necessarily as an investor right away. “We don’t just put

money on the table, we are a strategic investor that can add much more value than capital alone,” Daniel reminds. Most proptech companies are very young, the success of their technology is uncertain and their business model or product most likely needs pivoting. To understand how and if a new solution works, Stronghold can, for example, do pilot tests in one of the buildings in their portfolio. That way, they can evaluate the solution, how it fits in their strategy, and if they can bring direct value to the table as well.

Daniel argues that it’s hard to think of an area that would not have potential and opportunities for proptech development. He focuses especially on the smart building segment. “That will have secondary impacts on many business processes; how we work and what kind of services it will enable.” Most traditional companies, however, are not ready to embrace the opportunities. They are not used to taking the risks involved in innovation and startup collaboration. It’s difficult to calculate the ROI with so many uncertainties.

People are inherently reluctant to change and want to move in baby steps. When a new technology emerges, companies usually start

by applying it in an existing process, making it 10-20% better. Daniel gives an example: “We can start doing a manual process digitally – for example, handle 50 invoices instead of 35. Eventually, there will be a big change that allows us to do things ten or a hundred times better. We can handle 500 or 50,000 invoices at the same time.” Incremental change happens within a company or an industry, but disruptive change comes from outside. This takes time, but you can see the same pattern in hundreds of examples.

Stronghold has launched the Nordic Proptech Initiative, a platform for startups and network for all proptech people. They’re cooperating with the Central European Proptech Initiative in Germany, as well as with those in the UK and the Netherlands. Daniel thinks that the best way for startups to get access into the industry is to find a partner in that industry. “Most proptech startups don’t fully understand the dynamics of this sector. In some ways, that’s good because they have a different perspective; they’re not just digitizing existing processes. But, in terms of gaining traction, scale, and growth, it’s important that they have a partner that can guide them through that process.” ■

FIRA

Fira is Building a Movement

Fira is a Finnish construction company that focuses on people instead of buildings.



PICTURED Mikael Långström, Ville Wikström

Ville Wikström, VP Strategy, says that Finland is a country of four Ps; product development, the product, production, and productivity. The local construction industry is no exception, even though it’s lagging in productivity. The key to making the industry evolve is to start thinking about people, not the product. “We call this new way of thinking Building Movement,” says Ville.

Building Movement is about establishing a community that creates value and solves problems in the built environment. Mikael Långström, Leader of Fira Starters, explains that Fira is the initiator, but the community is open to every citizen and company. The focus is on solving people’s everyday problems,

and not just those of the building contractor.

Ville and Mikael believe that the biggest challenge in changing the industry is to find the right questions. Once you’ve found a question with a solution that people really want, you have pull. “If you have a problem and a solution has enough pull, an engineer can resolve it, for sure,” Ville chuckles.

There are two complementing routes to strategy: you can following your current track and reacting to changes or imagining the future and “reasoning back”. The latter approach typically builds on the insight from new people that you bring into your organization. That’s exactly what Fira is doing with their FiraPlace concept. It is both a community and technological platform utilizing and providing information generated in construction processes. Artificial intelligence startups, among others, could use the information to create new products or services.

Fira Starters

Mikael Långström believes that the biggest drivers for change come from outside the industry. That’s why Fira wanted to open a channel, Fira Starters, to bring new talent and ideas into the construction industry. It’s part of the FiraPlace concept. “Starters provides the interface with our data and



processes,” Mikael explains.

Mikael claims that the typical dilemma with construction tech startups is that they solve a superficial problem, because they are not familiar with the context. Starters is a place for an innovator or startup to meet with industry pundits, discuss the problem, and describe the solution and the team. If Fira finds the problem to be valid and team capable, they carry out the Discovery process, probing the idea and team thoroughly to create the first solution to the problem. Fira is not interested in acting merely as an investor. In fact, Fira can also be a customer, matchmaker, mentor, or employer, depending on the situation.

Currently, Fira Starters hosts four startups. SiteDrive improves productivity with its software for

construction information management and scheduling. Fira Modules is a production facility and test lab for HVAC prefabrication. Fira Kotyo wants to raise the industry’s customer experience to the next level and extend it over the life cycle of a building. Subsequently, Fira’s customer service team transferred to Kotyo. The fourth startup is just launching. It will revolutionize the heating of buildings with distributed energy production. Each startup is tied to building Fira’s Movement, but they also support each other.

In November, at ReCoTech, Fira will be looking for new technologies and new teams, especially for the construction phase. “If you have an idea that solves a valid problem, we could be your partner,” Mikael assures. ■

PONTOS

An Active and Patient Investor

Pontos is a family-owned investor with both real estate and growth company stocks in its portfolio.

CEO TIMO KOKKILA SAYS THAT robotics, AI, and other digital technologies are certainly coming, but there’s no shared vision of where they will take the industry.

“In construction, BIM has become the leading technology,” he says. “For an investor, market data for decision-making is of great value, especially if you’re entering a new market.”

Pontos wants to diversify its portfolio, hence it makes direct private equity investments in growth companies from different industries. However, it’s not investing in startups for practical reasons. “We want to be an active owner. With a small team, we would not be able to work with many startups,” Timo explains.

Ficolo, a data center company, is an example of a desirable Pontos investment. Ficolo has a strong management team, a reputable co-investor is involved, and Pontos can bring expertise to the board level. Pontos can use its knowledge in the real estate industry to boost the firm’s growth.

Timo hopes that companies see Pontos as an enthusiastic and active growth investor. Pontos is also a patient owner, which many companies find reassuring. ■

NAAVA

Nature as a Service

Entering the Naava office feels like you've stepped into a forest. Naava promises to bring nature inside and make you feel better.

"My passion and mission is to improve people's health, happiness, and performance," says Aki Soudunsaari, the Founding Partner and CEO of Naava. Aki is a former teacher and headmaster; a behavioral scientist in a startup. During his teaching career, he suffered from chemical hypersensitivity with annoying symptoms. The reason behind his predicament was poor indoor air quality. That led him to study the air-cleaning qualities of green walls with Niko Järvinen, an environmental scientist. After prototyping the concept successfully, Naava was born. Aki says that starting a company from your own experience puts you in the customer's shoes. You're looking for a solution to a problem, not a market for your technology.

Aki thinks of Naava as a health



technology startup, even though their product is used in built environments. Their technology purifies air, controls humidity, and creates a natural environment that has a positive effect on the psyche. When people feel better they perform better, and that is essential for the success of any company and organization. Aki has received thousands of



PICTURED Aki Soudunsaari

testimonials from their customers, praising the almost life-changing effects of their product.

From the initial versions in 2012 onwards, ease of use was a guiding star for Naava. Any actions that users would have to perform could make the product less desirable. Adding water every two, four, or six weeks is the only maintenance that the green walls require. Naava takes care of the rest for a fixed monthly fee. The green wall uses typical indoor plants, but its air-purifying effects come from microbes on the roots. The wall has a fan to make the air flow through the roots and sensors that measure 14 different data points of the unit and send them to the cloud every five minutes. Naava's uniqueness comes from a combination of patented biological units and AI powered cloud service that optimizes the quality of the air.

The path from the idea to a successful startup has had many

hurdles, as Aki explains. For the first three years, the company was self-financed. "We had sold twenty green walls already before the product was ready. It was quite a leap-of-faith from the customers. We gave a money-back guarantee if the product would not work as expected." Luckily, everything went well, and the first customers became co-developers of the product. Initially, the company was self-contained. They made their own software, assembled the electronic parts, did biological and chemical tests, and so on. Building the business in this manner resulted in a culture where both mental and physical work are appreciated.

After a couple of years of development, Naava's team presented their product and ideas on several forums. The reception was not encouraging. They were told that neither the business model nor the technology were feasible since no

one has done it before. "It was a typical response to a disruptive idea. In all fairness, we could not explain clearly why it worked, even we had witnessed its dramatic effects empirically. Later, we discovered that it used the same principles as biological water purification, composting, or our digestion - with microbes," Aki describes. The claims of lacking scientific validation still pop up occasionally, but results speak for themselves.

In late 2013, Naava started preparing their first investment round to get resources for further developing their design and technology. Since then, funding has come from a wide spectrum of investors: VCs, corporate VCs, crowdfunding, and so on. Funding is an on-going struggle in a startup that's committed to growth. However, growth is not simply a money issue. "In a startup, a person must grow mentally faster than the company. A company seldom grows by itself," Aki points out. Naava's business model is like that of KONE; they sell and maintain the product throughout its life cycle. It's a challenging model to scale up and internationalize for a 64-person team that currently takes care of all aspects of their business.

"Our long-term vision is that in 2025 a billion people can breathe Nordic air," Aki proclaims. "Reaching that vision is not possible with green walls alone. It can be done by using biological air purification that combines the imitation nature with technology. We're currently developing the next technology that does not use plants, and have received funding for it." In Naava's technology vision, biological air filters have surpassed mechanical filters in the built environment by 2025. Poor indoor air quality is a \$500 billion a year problem in Western countries alone. The future with six hundred megacities yearns for Naava's smart and green solutions. Naava could certainly become the next Tesla, as Aki envisions. ■

SAAS

Going International with SaaS

Datscha proves the point: proptech is not a fad.

DATSCHA'S ORIGIN CAN BE TRACED back to the Swedish property crash in the early '90s. In its wake, Swedish banks realized they needed a way of keeping track of all their repossessed commercial properties. So, in 1996 Datscha was born, at first as a client-server solution. As internet evolved, Datscha developed into a web-based solution.

In the spring of 2000 Datscha's

current Head of Product, Magnus Svantegård, joined the company. It was a perfect match. His background with a M.Sc. in civil engineering and experience from the IT and management sector was a great combination when developing state-of-the-art web services and features for the property sector. Since then the company has had an annual growth of 20 percent and started an international expansion beginning with Finland in 2010 and continuing into the United Kingdom in 2015.

"It's been quite a journey. Our revenues have grown dramatically,

year after year, and so has our solution. But the most gratifying is that we have achieved it without losing out on customer satisfaction," says a very pleased Magnus Svantegård.

Datscha is a SaaS company that provides complete information to industry professionals on commercial properties, their owners, property transactions, valuation and city plans. They get the data from several sources, refine it, and distribute it through their intuitive web service. The company serves over 700 businesses, has 50 employees in Finland, Sweden and the United Kingdom, and have users from more than 7 countries. It's owned by Stronghold Invest. Magnus explains their international strategy: "One driving factor for our success is the transaction volume. The more buyers, sellers, agents, and banks you have, the more deals there are on the market, the better it is for us. The UK is about 10 times bigger than Finland in that respect."

Coming to Finland was not a huge step, since access to property data is quite similar to Sweden. Entering other countries can be a more cumbersome process. "In Germany, it will be very hard to launch a product that increases transparency," says Magnus. In the UK, it took Datscha five years to negotiate with all the suppliers and one year to do the development. "They don't have the same transparency and data

quality as we have here in the Nordics—their Land Registry had never released data openly before."

Datscha is not alone in the real estate information market. In fact, they originally had a competitor in Sweden with exactly the same service. Several startups in Sweden and the UK are currently trying to offer the same service. "In the UK, we're fighting the copycats," says Magnus. "We've been able to continuously improve the product, which is extremely user friendly, intuitive and effective. We've also been successful in building our brand and customer relationships."

"We've been 20 years in the business in Sweden, and we're still doing a record number of new sales each year. Over the last couple of years, we've added over 100 companies to our client list. In a way, that doesn't make sense," Magnus explains and adds, "But it only shows how useful Datscha's solution is to a broader target audience within the commercial real estate market!"



PICTURED Magnus Svantegård

The Nordic Proptech Initiative

Along with his role as Head of Product for Datscha, Magnus Svantegård is also a partner of Stronghold Invest the company that owns Datscha. Stronghold has a focused strategy when it comes to investing in proptech, or property technology, companies and Magnus has been

instrumental in Stronghold's internal and external digitalization and proptech activities.

In his role and during his travels to various proptech conferences, Magnus has learned about UK, German, Swiss, Dutch, and US proptech communities. "Seeing what they offer and their products, I became convinced that we have, here in the Nordics, projects that we could market and talk more about internationally," he says.

As a result of talks within Stronghold, Datscha and Newsec, the Nordic Proptech Initiative was born in spring 2017. It is an informal network of proptech companies that want to start marketing internationally, get inspired, and learn from each other. After a small event in June, a second bigger event, took place in October in Stockholm. The Nordic Proptech Summit had some 300 attendees and got fantastic reviews. During the Nordic Proptech Summit world leading authorities shared their views, and startups presented what they were doing.

The Summit venue was Epicenter Stockholm, one of over 10 coworking spaces in Stockholm City. Epicenter is focused on "scale-ups" and large companies that want to have a place for internal development, undisturbed by the daily business. Stronghold is using the premises for their internal business digitalization labs.

"I think Datscha and the Nordic Proptech Initiative are two of many examples which show that proptech is not a fad but on the contrary is a result of the digitalization megatrend sweeping over the globe. Digitalisation will affect all aspects of our life, and has already started to do so, and the property sector will not be able to hide from that fact much longer," concludes Magnus Svantegård. ■



WATSON IOT



PICTURED Claire Penny

IBM Makes Buildings Cognitive with Watson IoT

Claire Penny is Global Industry Leader at Watson IOT for Buildings.

She started as an Environmental Manager in 2000, working for the Real Estate and Site Operations Group which is responsible for managing IBM's real estate portfolio. In 2008, Claire and her colleague, Niall Brady, embarked on an innovation project to take data from air handling units and chillers. "It was an energy saving and environmental project, using Lean Six Sigma as its basis to understand how the equipment was running so that we would make sure it was running effectively," Claire explains. The project resulted in saving both energy and money in operations. The project led to an IT product and, therefore, the people in IBM's software group wanted Claire to join them as their leader.

IBM is predominantly a software and services company, but their interest in real estate technology is nothing new. They have had software solutions, especially for property management, for some time. "The natural progression for us is the explosion of IoT devices. We take advantage of the dynamic data from energy, airflow, VOCs, and so on. Traditional systems deal with static metadata that does not change that often. We add richness to that data with IoT and tie the two together," says Claire.

IBM is notorious for its artificial intelligence platform, Watson. The reason why IBM now uses an AI platform for processing IoT data is quite practical. Traditional software solutions thrive in scenarios that are prescriptive and predictable. The IoT landscape is fast and furious, producing huge amounts of data. Regular software cannot manage that successfully. Claire defines AI as a cognitive system that is not programmed. "We use the machine learning capabilities in Watson and the Watson IoT platform." From streaming IoT data, Watson learns and can be taught about a building and how factors, such as weather and the number of people, affect its technical systems and performance. Based on the analysis, the cognitive building can adjust the, for example, heating and ventilation proactively.

Tesco Ireland demonstrates the power of machine learning. The 160 Tesco stores, with 100.956 data objects, produced 678TB of IoT data in a year. With IBM's help, the retail company could reduce the amount of energy used by chillers and indoor refrigerators by 20%. The results were so compelling that Tesco are starting to roll the solution out across all their stores, and if the same percentage level of savings are observed at across the entire UK & Ireland stores could result in financial savings of up to 20-million pounds in one year. IBM also has corporate clients that are looking at historic and real-time IoT



The IoT landscape is fast and furious

data to learn how their spaces and meeting rooms are used. That enables them to rethink how they stack their buildings and use the spaces.

How should property owners and users start using the new IoT and machine learning technologies? Claire suggests that they should start by evaluating and understanding the information that they already have about their buildings. Next, they should define what they want to achieve: the use case and the value. The low hanging fruits could include, for example, predictive maintenance and use of space. They should then study what kind of data and data sources for the use case that they already have, for example, in their building management

system. If that data is not sufficient or accurate enough, they can start supplementing it with IoT devices. Additional meters or PIR devices are cost-effective and can provide the needed data granularity. If they want to drill down and know, for example, how many office desks are in use and where they are, they need to invest in under desk sensors. Ultimately, they'll have to pull all the information together. Claire recommends using one secure platform for storing and analyzing the data to gain insight about the building and its users.

Startups play an important role in the IoT transformation. "We absolutely embrace startups and what they can offer," Claire explains. "They have a fresh look on things, and that's where disruption often comes from. They are a very important part of the ecosystem. A lot of IoT technologies that we use are coming from startups." IBM offers the Bluemix platform on the cloud for startups to develop their solutions.

"There's a shift to not precluding but including the people. Having the capability to use the building data as an employee, as a user, is becoming much more prevalent in the next five years," Claire believes. Natural language processing will be an essential part of the building's user interface. Another big change will come when BIM data, the digital twin of the building, is connected to the building's lifecycle. How a design performs will not be a matter of opinion but clearly understood from IoT data and employee feedback. This will allow us to create more enjoyable and productive work environments. ■

AREO

Interface with the Digital Twin

Areo is a Norwegian SaaS startup providing a user-friendly browser interface with the digital twin of a building.

CEO HANS KRISTIAN GRANI SAYS that the number of projects using BIM is increasing, as are the potential use cases for Areo's platform. Areo is involved in several projects with public sector organizations and lately with building contractors. Working in a real-life environment has inspired them to make their app more focused and simpler.

Orchestrating the collection of BIMs and data from separate sources is Areo's strong point. Hans Kristian thinks that building owners

VARJO

The Bionic Design Tool

Varjo's exceptional story demonstrates how a group of experienced professionals can make a great idea fly.



PICTURED Niko Eiden

Niko Eiden, a co-founder of Varjo, shares a little-known fact: "At Nokia, I lead a product program team in 2006-2007. Together with researchers from Nokia Research Center we developed the basis for the optical technology that later became Microsoft's HoloLens!" After his career at Nokia and Microsoft, Niko got interested in the VC and startup scene. That led him and Urho Konttori meet with Lifetime Ventures, and present their revolutionary idea for AR, augmented reality. The idea materialized in a quick demo that Urho put together in 24 hours. After showing it to the investors and getting an enthusiastic response, they decided to start up Varjo. At the same time, Niko joined Aimotoive, a Hungarian autonomous vehicle AI startup, but took part in Varjo as a board member.

Niko explains that the problem with typical AR is that it's difficult to produce darkness or shadows. "It leads to an unrealistic experience, especially if you're in a well-lit space. Another problem is the limited field of view, which is annoying if you're looking at a large model, e.g. a building. We believe that VST, video-see-through technology, can overcome those challenges in AR." AR and VR glasses have, so far, not had a good enough resolution to create a realistic enough experience. "We set ourselves a goal: you must be able to read a real newspaper or virtual monitor with our glasses," Niko says. "That requires a very high resolution display. This idea led us to the concept of Human Eye Resolution."

In summer 2017, Varjo demonstrated the technology to some media representatives. It had a really accurate area in the middle of the field of vision. All the journalists specialized in AR/VR testified that they had never seen anything like this in their career. Curiously enough, no-one had done the same before and Varjo could file a patent for their human eye resolution

technology. First time in augmented reality's history, architects can see minute details of a texture with AR capable gear. Combined with real-time rendering, designers can view a 3D model and see realistic materials and lighting generated on the fly. In the final product, Varjo will use eye tracking technology to create an image with human eye resolution wherever the user looks.

Commercializing the technology requires that Varjo must produce a headset of their own. Until now, they've hacked existing products. "Our team is very good at fast prototyping, that's what we specialized in at Nokia's and Microsoft's Forward labs," Niko mentions. "Commercializing is of our second strength, which is not typical for a startup. Investors have realized that ours is quite a unique team! This is thanks to our Nokia-Microsoft history." The original founder team had four members: Urho, the CEO, Klaus Melakari, Roope Rainisto and Niko. Timo Toikkanen joined in as a COO and President. The team members have substantial experience in design, technology, and mass production. Varjo designers and software developers are also top notch, including Ville Miettinen, founder of Hybrid Graphics and Microtask.

Varjo aims its first product at professional, high-end business users. This allows them to concentrate on perfecting the technology and not trying to make the unit price as low as possible. Product and building design and simulation are key application areas. Media and entertainment are also on their radar. Varjo's product would work perfectly in marketing homes and offices at virtual showrooms. Starting with the premium model first is a strategic choice for Varjo, because volume markets don't exist yet.

Varjo's marketing and branding efforts have been exceptional for a startup. Jussi Mäkinen was responsible for marketing Nokia's phones and Rovio's movie before becoming Head of Marketing. Varjo started off as if it were a large corporation launching a new product. "I claim that the publicity we gained this summer would have satisfied any marketer at Apple or Microsoft," Niko says enthusiastically. "My advice to any startup is to include someone in the team or as an advisor with experience of doing things big time. Another important thing is to have fun!"

In September 2017, Varjo raised an \$8.2 million series A round. Swedish EQT Ventures and Lifeline Ventures were among the investors. "Making our product work with existing 3D software is critical. During the next 12 months, we'll partner with companies that want to test our gear and give feedback," Niko explains. Large architectural design firms are among potential partners.

Varjo plans to launch its commercial product by the end of 2018. Varjo's short term vision is to have the best professional VR/AR device in the market. Niko sees that in the long term, Varjo could be much more. "At Varjo, we've realized that we're not just talking about VR/AR business. If we succeed, every digital display in the world has potential to be replaced with Varjo's product," Niko envisions. ■

realize the benefits from keeping the life cycle data up-to-date and available. Handovers, building operations and maintenance, sustainability audits, and technical due diligence are some of the uses for that data. Areo is looking for partners that would use their platform in conjunction with professional services., e.g., BIM management. The company has been self-funded but is soon interested in talking with potential investors.

"When we started, four years ago, being a startup in Norway was a bit

weird. Now startups are hot; there are several incubators, accelerators, and coworking spaces," says Hans Kristian. He sees a growing interest in construction and proptech. In fact, the traditional oil, gas, and shipbuilding industries are losing talent to the construction domain. In addition to buildingSMART- and BIM-related firms, like Areo, new tech companies entering the industry. "Big players, like ISS, CBRE, Accenture, and Cap Gemini, are also moving into this space," Hans Kristian adds. ■