INTERNATIONAL CONFERENCE

INDUSTRY 4.0
IN PRACTICE

May 29, 2019
INNOVATION AND BUSINESS
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Raja 15, Tallinn, Estonia

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Dear Guest,

It is hard to believe that this is already the fifth year that leading organisations such as TalTech, Estonian Association of Information Technology and Telecommunications (ITL), Estonian Electronics Industries Association, Enterprise Estonia (EAS) and numerous flagship technology companies have joined forces to promote the opportunities emerging from the Industry 4.0 framework. The event has a strong track record of bringing together and benefitting manufacturers, ICT vendors, academia and policymakers.

In the future, industry competitiveness will, in large part, depend on the ability to use ICT in every possible way and with its knowledge and skills, Estonia is at the forefront of this. Industry 4.0 in Practice conference is also an excellent opportunity to showcase the competitive edge of Estonia's world-class electronics industry, an ever-growing sector thanks to continuous digitalisation across all areas driving research, product development and production.

We wish you a pleasant conference and hope you come away with some great new ideas and opportunities!

Organisers and Partners
Industry 4.0 in Practice Conference

Program

09:00 **Registration, Morning Coffee and Partner Expo**

09:30 **Conference Opening**
     Louis Zezeran, Conference Chair

09:45 **Welcome**
     Jaak Aaviksoo, Rector, TalTech

FUNDING
10:00 **EU support to innovation and Industry 4.0**
     Signe Ratso, Deputy Director General, European Commission Directorate General for Research and Innovation

PANEL DISCUSSION
10:30 **How can we support industrial innovation?**
     Signe Ratso, Deputy Director General, European Commission Directorate General for Research and Innovation
     Tauno Otto, Professor of Production Engineering, TalTech
     Andrei Shishkin, Researcher, Riga Technical University and Research Coordinator, MagnesiumCom
     Václav Smítka, Programme Manager, AMIRES

11:15 **Break, Networking and Partner Expo**

AUTONOMOUS VEHICLES
11:45 **AI Cruising down our streets – autonomous vehicles are already here!**
     Krister Kalda, Technology Transfer Officer, TalTech
     Johannes Mossov, CEO, AuVe Tech

COOPERATION
12:15 **Data science and AI from bench to workbench**
     Jaak Vilo, Head of Institute of Computer Science, University of Tartu

ESTONIAN CASES

12:45 **Examples of digitalisation in Estonian manufacturing companies**

Jaanus Aal, Site Manager, Enics Elva

Peeter Põder, Mill Manager, Toftan 2

13:15 **Lunch, Networking and Partner Expo**

CONNECTIVITY

14:00 **Expecting your IoT data to arrive on the doorstep – the fundamental importance of secure connectivity in IoT**

Risto Eerola, IoT Technical Solutions Architect, Cisco EMEAR North

SIMPLIFYING IOT

14:30 **Building intelligent edge solutions**

Dmitry Teteruk, IoT Solution Architect, Microsoft

SMART MANUFACTURING

15:00 **This is why we do it – Smart Manufacturing at Ericsson Eesti**

Lars Ottoson, Head of Supply Site Tallinn, Ericsson

Welix Klaas, IoT Program Manager, Ericsson

15:30 **Break, Networking and Partner Expo**

STANDARDS

16:00 **Why the IPC Connected Factory Exchange Standard (CFX) is critical for successful industry 4.0?**

Michael Ford, Sr. Director Emerging Industry Strategy, Aegis Software

DIGITALISING SME

16:30 **When you race against competitors who have significantly greater resources, you need to work smarter**

Manuel Berglund, ERP Manager, Koenigsegg Automotive AB

Jonas Persson, Director of Business Development, Monitor Group

17:00 **Close**

Welcome

Jaak Aaviksoo, Rector, TalTech

Academician Jaak Aaviksoo was elected Rector of Tallinn University of Technology in September 2015. Former roles have included being Minister of Education and Research and Minister of Defence in Estonia. He has also been elected twice as the Rector of Tartu University and serves as an EUA Board member. Before becoming Rector of Tartu University he was a professor of optics and spectroscopy at Tartu University heading the Institute of Experimental Physics.

EU support to innovation and Industry 4.0

Signe Ratso, Deputy Director General, European Commission Directorate General for Research and Innovation

For the next long-term EU budget 2021-2027, the Commission is proposing €100 billion for research and innovation. A new program – Horizon Europe – is the most ambitious research and innovation program ever. We asked Signe Ratso, Deputy Director General of the European Commission Directorate General for Research and Innovation, what we should do in Europe in order to stay ahead of the competition at the frontier of cutting-edge research and innovation.

What should we do in Europe, in order to stay ahead of the competition at the frontier of cutting-edge research and innovation?

- First, we need to acknowledge that governments around the world are investing in R&I in all areas of the economy, but especially into technologies that are set to dominate the future. Global competition is, therefore, excessive and challenges the leading competitive position of Europe in key industrial sectors.

- In order to remain competitive, Europe needs to invest more in R&I, especially in new, transformative technologies. And although investment figures are slowly increasing, we have not yet reached the 3% GDP target for R&I in the EU-28 (one of the key objectives of the EU2020 strategy), and are falling behind our major competitors i.e. the US and China.

- The European Commission has put forward a proposal for the biggest ever EU Research and Innovation Framework Program. Horizon Europe proposes to invest €100 billion in 2021-27 in strengthening the EU's scientific and technological base, in boosting Europe's innovation capacity and competitiveness and delivering on priorities defined by citizens. At this stage, the European Parliament and the European Council have agreed the broad lines of the proposal, leaving aside the budget which depends on the overall budget of MFF (multiannual financial framework).

- The European Innovation Council, as part of the Horizon Europe program, will support high potential innovators in creating marketable products and services from their disruptive solutions, and will help them scale up quickly to become European or global champions.

- There are plenty of opportunities for harnessing new technological developments such as AI, robotics, cloud computing, blockchain – to name but a few – for greater economic and societal benefits, yet our responsibility as governments and European policy makers does not stop with R&I investment.

- It is equally important to create framework conditions conducive to innovation and technological change, including innovation-friendly regulatory environments to facilitate access of disruptive solutions.

- Furthermore, many of our most pressing challenges today are caused by outdated and dysfunctional systems that no longer serve economic development and modern societies. No single actor, whether private or public, can solve those challenges alone. It is only by convening all actors in the innovation ecosystem that transformational change can successfully be created within systems through the collaboration of both public and private actors.

Boosting innovation for EU industry

In Horizon Europe FP we aim to encourage local innovation or technology transfer nodes to attract new actors; to increase networking opportunities; and to deploy best practices in attracting newcomers.

The EU budget on Widening (now under the Spreading Excellence and Widening Participation part of Horizon 2020) will be doubled in the new Framework Programme. Newcomers will be brought into all parts of Horizon Europe. In that context, we will discuss how to create new forms of innovation, to provide better access to research, to reduce the costs of assessing new ideas and concepts and to develop those innovative ideas in order to bring them as products (and processes) to the market in the Baltic Region and specifically Estonia.

In parallel, the EU is designing a comprehensive strategy on technology infrastructure – pilot lines, digital innovation hubs, Open Innovation Test Beds, KET centres, etc. The rationale for measures such as Open Innovation Test Beds (OITB) is that they address technological innovation before it is marketable and when ideas and concepts still need testing and validation, they are not yet ripe for commercial investment. The speed and complexity of technological innovation is constantly increasing. Large-scale capital investment is often needed in budgets that are too high for SMEs and industrial start-ups. Availability and access to state-of-the-art technology infrastructures, whether public or private, is essential to accelerate technology diffusion and access to emerging markets.

Ten OITB projects have begun so far in 2019 (in Lightweight, Med Tech Health and Characterisation), with an EU contribution

of EUR 98.9 million and a total budget of over EUR 250 million planned for OITBs in the work programme in 2018-2020. The participants in the ongoing projects are SMEs (34%), large enterprises (20%), research and technology organisations (RTOs, 40%) and others (6%). Estonia is also involved in at least one OITB already.

For more information on OITBs, see:

http://ec.europa.eu/research/participants/data/ref/h2020/other/guides_for_applicants/h2020-im-ac-innotestbeds-18-20_en.pdf

The European Commission has put forward a proposal for the biggest ever EU Research and Innovation Framework Program. Horizon Europe proposes to invest €100 billion in the period of 2021-27 in strengthening the EU's scientific and technological base.
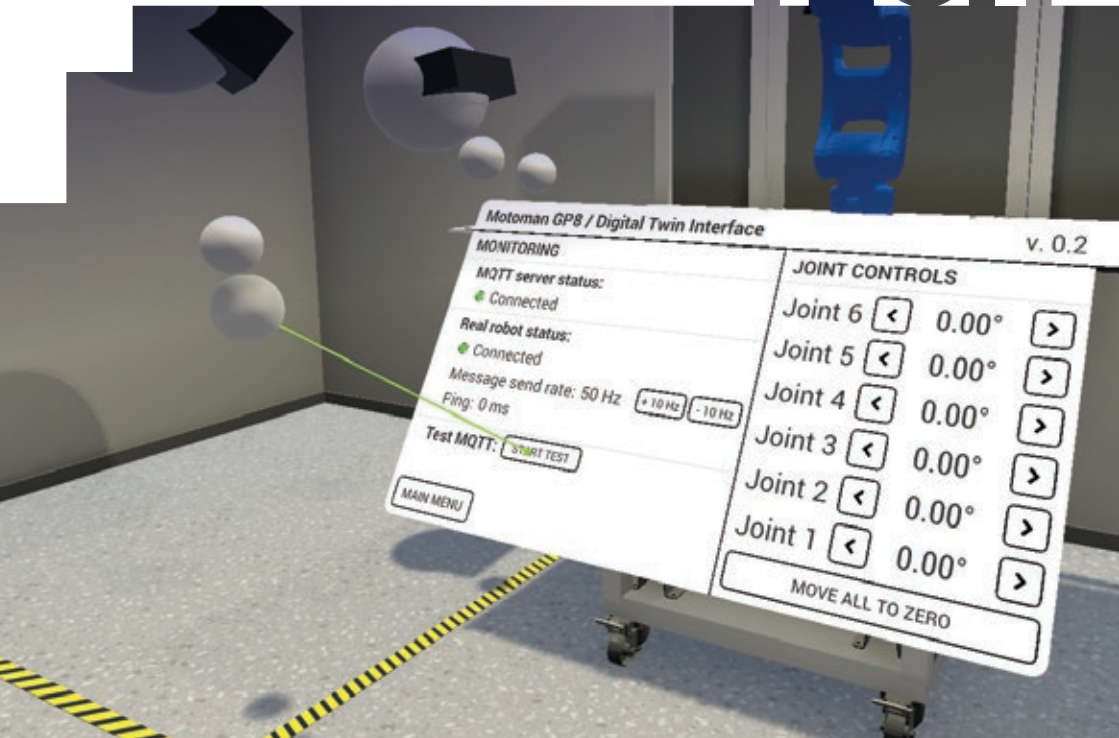
INDUSTRY 4.0 IN PRACTICE

TALLINN UNIVERSITY OF TECHNOLOGY

Digital Twin middle layer for industrial robotics, developed and implemented by Smart Industry Centre (SmartIC) at TalTech Department of Mechanical and Industrial Engineering
(screenshot by Vladimir Kuts)

WWW.TALTECH.EE/EN

TAL
TECH

How can we support industrial innovation?

Signe Ratso, Deputy Director General, European Commission Directorate General for Research and Innovation
Tauno Otto, Professor of Production Engineering, TalTech
Andrei Shishkin, Researcher at Riga Technical University and Research Coordinator, MagnesiumCom
Václav Smítka, Programme Manager, AMIRES

In the framework of Horizon 2020, Open Innovation Test Beds projects are subject to Horizon 2020 rules for participation. We asked our panelists about the Open Innovation Test Beds and how they will support innovation.

What are the Open Innovation Test Beds for material upscaling, characterisation, modelling, and safety?

Open Innovation Test Beds are entities, established in at least three Member States or Associated Countries, offering access to physical facilities, capabilities and services required for the development, testing and upscaling of nanotechnology and advanced materials in industrial environments. The objective of the Open Innovation Test Beds is to bring nanotechnologies and advanced materials within the reach of companies and users in order to advance from validation in a laboratory (TRL 4) to prototypes in industrial environments (TRL 7).

Open Innovation Test Beds will upgrade existing or support the setting up of new public and private test beds, pilot lines, and demonstrators to develop, test and upscale nanotechnologies and advanced materials for new innovative products and services in some particular domains.

They will typically be run by profit making organisations. Users might be industrial, including SMEs, or innovators and start-ups.

How many Open Innovation Test Beds will be funded and in which domains?

The call is expected to create about 20 Open Innovation Test Beds for materials development and upscaling in six technology domains:

- Lightweight nano-enabled multifunctional materials and components

- Safety Testing of Medical Technologies for Health

- Nano-enabled surfaces and membranes

- Bio-based nano-materials and solutions

- Functional materials for building envelopes

- Nano-pharmaceuticals production

Four Open Innovation Test Beds for materials characterisation and four Open Innovation Test Beds for modelling will be also funded, in addition to the already existing NanoSafety Platform. These are expected to contribute to setting the foundation for a European ecosystem.

Which activities of Open Innovation Test Beds will be eligible for funding?

The Open Innovation Test Beds will cover all activities from prototyping to industrial production, and especially testing in an industrial environment, the validation of the characteristics of the materials and the control of the respect of legal and regulatory constraints.

EU funding will mainly support the above described upscaling and engineering process. Support is available also for a number of demonstration cases and dissemination activities to showcase capabilities and services to ensure sustainability. It is up to the consortium to identify the allocation of resources needed to ensure the best possible delivery of the call requirements and show the likelihood for progress towards sustainability.

Eligible costs could notably include:

- Acquisition, adaptation, installation and calibration of upscaling and testing equipment 1

- Definition of access conditions to facilities and services

- Networking activities between Open Innovation Test Beds and similar initiatives
- Communication and dissemination activities
- Design and Development of OITB Services
    - Technology expertise
    - Legal / regulatory expertise related to materials/products tested
    - Modelling tasks
    - Characterisation tasks
    - Facilitation of access to funding for test beds' customers

The following costs are not eligible: building costs; research costs, including acquisition of equipment, if not used for upscaling materials as described in the Open Innovation Test Beds topics; costs already paid by a national, regional or European subsidy

What is the European added value of Open Innovation Test Beds?
Open Innovation Test Beds, besides being collaborative projects requiring participation from at least 3 Member States or Associated Countries, have the further European Added value of being open and accessible to any interested party from the EU or outside the EU.

On top of that, Open Innovation Test Beds will stimulate collaboration by pooling resources and existing knowledge at the EU level while supporting all kinds of users independently from their geographical location, and thus contributing to the creation of a more open and connected European innovation ecosystem.

Open Innovation Test Beds will also set up networks amongst themselves, to offer additional services, to allow experiments and knowledge to be shared, and to provide users with a single entry point for their capabilities and services in materials development.

The European added value of the Open Innovation Test Beds can be summarised as follows:

• Single entry point for any user to materials facilities and services across Europe

• Broad access to materials development facilities and services across Europe

• Accelerated maturity of products for a faster market entry

• Reduced costs for accelerating materials production for both industry and users

• Harmonised conditions for testing and procedures for materials upscaling,

• Characterisation and modelling to improve internal market accessibility

• Increased return on investment in materials research

• Early stage access to intelligence on EU regulations making the materials development process more efficient

• Easier marketability of products in Europe (e.g. non-European products to be tested in accordance with EU regulations to enter the market)

Who are the potential applicants?
Proposals can be submitted by a consortium, which is free to involve any relevant partner from Members States and Associated Countries, provided that it respects Horizon 2020 rules and the conditions specified in the Work Programme. This means that private entities can apply, as well as Research and Technology Organisations, Research Centres, or Higher Education Establishments.

What will "single entry point" mean for the users?
As test beds aim at providing a full service along all steps of the technological development of a physical innovation, all needed expertise has to be provided to users through a single entry point to the OITB. If necessary, each test bed must acquire complementary services from other entities, for instance on characterisation and or modelling, in order to offer a full service package to users.

What is the link / synergy with regional funding?
Open Innovation Test Beds should become an element of an overall eco-system on materials upscaling, which already contains some regional facilities, and therefore should cooperate together. The sustainability analysis and the business study which are part of the proposals will ensure there won't be duplication of facilities and activities at the regional level.

When funding facilities and services through Open Innovation Test Beds, the principle of no double funding will apply - https://ec.europa.eu/research/regions/index.cfm?pg=synergies

If a Member State or a region wishes to support entities with the costs for acceding to the Open Innovation Test Beds, this is possible within the remit of the EU and national rules on state aid.

What is the link/difference with the Digital Innovation Hubs (DIH)?

Digital Innovation Hubs focus primarily on helping SMEs to master their digital transformation and advise on the choice of technologies for digitisation.

Open Innovation Test Beds are complementary to Digital Innovation Hubs as they concentrate on the upscaling, demonstration, characterisation and modelling of advanced materials, including nanomaterials.

Open Innovation Test Beds can acquire, when there is the need, digital services on a specific technology development. Synergies based on complementarities are possible.

The Open Innovation Test Beds will cover all activities from the prototyping to industrial production, and especially testing in an industrial environment, the validation of the characteristics of the materials and the control of the respect of legal and regulatory constraints.

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What?

The digital diagnostics grant supports the processing industry and mining companies with digitalisation and compiling automatisation diagnostics.

Why?

An entrepreneur may not have an option alongside his/her everyday business to receive a detailed overview of activities which could be easily made more efficient with the help of digitalisation and automatisation. For that reason, we have created a more favourable option for entrepreneurs for ordering digital diagnostics which determines the course of next investments.

» eas.ee/digidiagnostika

NORWAY GRANTS GREEN ICT PROGRAMME

What?

The cooperation programme supports the development of Estonia's entrepreneurs' new products and services with high added value and digitalisation of production processes of industrial companies.

Why?

When realising innovative ideas, an entrepreneur sometimes needs the knowledge and competence of another industry. Encouraging collaboration projects in the fields of information and communication technology (ICT), industrial innovation, and health technology helps to create prerequisites for achieving success.

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AI Cruising down our streets – autonomous vehicles are already here!

Johannes Mossov, Chief Executive Officer, AuVe Tech OÜ
Krister Kalda, Technology Transfer Officer, TalTech

The purpose of the Iseauto is to raise levels of expertise and share information created within the project with anyone who is interested. There are more than 20 students involved in developing artificial intelligence software, controller electronics and embedded low level software. A lot of effort goes into the security, data protection and autonomous charging solutions. We asked Johannes Mossov and Krister Kalda what they had learned so far and what the future developments of autonomous vehicles might be.

How far has the Iseauto project evolved until now?

Johannes: The first prototype was built as a nod to TalTech's 100th birthday. Starting from September 2018, there was a half-year period when we were looking for potential business cases and funding. The latter has now been and gone and we can move forward with manufacturing. Our first production car is almost ready, hence it's time to figure out a way to copy the same vehicle in volumes of over 20.

Krister: On top of that, we just received European funding for our smart city 'Finest Twins' project and the self-driving car is just one part of this ecosystem. Our car will be tested and connected with other automated vehicles like package robots, etc. Cyber security tests are also part of the agenda for us. We had the honour of driving the Lord Mayor of London prior to the Industry 4.0 event in our creation.

What has been the role of AI and Machine Learning in this project?

Johannes: AI is an integral part of our car software. We're talking picture recognition, sensor data allowing the vehicle to identify obstacles on the road, logistics and much more. I would say AI is a core element of this vehicle.

Krister: The same goes for Machine Learning. It starts from pre-mapped information, but the vehicle will keep

learning with each new trip. I really love this one particular example where the AI is able to differentiate small vehicles from kids and animals. The car predicts how fast each commuter moves and is able to adjust its speed and direction accordingly. Technology makes this vehicle much safer.

What has been the experience for TalTech and AuVe Tech with regard to this project?

Krister: TalTech and Silberauto signed an agreement back in June 2017 and it took exactly one year for the car to be ready, as it is today – together with the bodywork. It all came together quite quickly. Most importantly, our students had a chance to be part of something really big - creating the first autonomous car in Europe outside France. And of course, there's the positive PR factor for TalTech and our partners.

Johannes: It was certainly good for Estonia as a brand as well. This project allowed us to combine our strengths and gain new capabilities. We used to be all about hardware, but now we have fresh knowledge from the software side. Our technological skills are on a completely different level. From a regular hardware producer to an influencer-player, creating products that demonstrate a high level of both hardware and software.

What will be the future plans for your co-operation and project?

Johannes: We are focusing on production and finding real life applications for the car i.e. actual clients. As part of the smart city project, TalTech has an opportunity to join up with other companies interested in developing smart city solutions.

Krister: For the time being, we're still at the early stages of development. Self-driving cars require a certain kind of infrastructure, hence it will be some time before we see these vehicles in general traffic. Our university just signed an agreement with Florida's Polytechnical University allowing us to use their testing tracks and validation equipment.

Given that it will be commercialised, what do you see as the most predictable use case for your vehicle?

Krister: The car we have today is regarded as a "last mile" vehicle: you will arrive at your location using different transportation and the self-driving car will cover the last bit of your journey. From here, the distances will continuously grow. Self-driving cars are much safer than the transportation we use today. I believe our grandchildren will be amazed by today's hazardous traffic. These cars will change the world. I used to have a bread maker which you could put on a timer the evening before and by the time you woke up, you had fresh bread waiting for you ready to be served for breakfast. In the future, you will be able to sleep in your car while it takes you to Warsaw for example. The possibilities really are endless.

Johannes: Our main vision lies in the notion that the car will help regular public transportation. Even if the weather is bad you can just leave your car at home and have a self-driving car drive you to the nearest bus station. There are also potential

applications on large campus sites, hospitals, airports, harbours, etc.

Krister: Our cars are just standing idle 95% of the time. Why own a car if you could pay a monthly fee and have a car at your doorstep within a minute?

Johannes: We are thinking about new infrastructure as well. New developments in urban areas can already integrate last mile transport systems into their infrastructures. Make fewer parking spaces and create a safer environment for people living in the area.

Self-driving cars require specific infrastructure, hence it will take some time until we see these vehicles in general traffic.

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Data Science and AI
from bench to workbench

Jaak Vilo, Head of Institute of Computer Science, University of Tartu

Professor Jaak Vilo heads the Institute of Computer Science and is the Chair of Data Science at the University of Tartu. The Institute of Computer Science is the leading IT research unit in Estonia, with two ERC grants and numerous joint research projects with industry. The Chair of Data Science is responsible, more broadly, for machine learning, big data and various applications. We asked Professor Vilo to explain the role of data science and AI in the 4th industrial revolution, and to describe the expertise of the Institute of Computer Science.

The field of data science and AI has taken serious leaps forward thanks to breakthroughs in increasing the amounts of data available for training deep neural networks powered by cloud and GPU (scalable computer resources) and the overall advancement of machine learning techniques. Advances in AI often emerge from tackling scientific data analysis or "toy problems" in limited settings, like for example playing chess, GO or computer games.

The challenge, in adoption, to new business fields is to study new domain-specific requirements and to select the right tools for tasks. This may or may not be a scientific question, but it requires a joint effort with domain experts and data scientists.

Entrepreneurs should already be proactive in approaching artificial intelligence rather than just waiting for it to arrive. This can be done by thinking through some basic needs, tasks and opportunities to collect business critical data in their field of business which will be needed for decision making at the scale of an enterprise, marketing and/or production. In this way, companies can work in conjunction with universities to apply methods of artificial intelligence, machine learning, or data science in general.

The Institute of Computer Science at University of Tartu is now the leading IT research unit in Estonia, with two ERC grants and numerous joint research projects with industry. The Chair of Data Science is responsible, more broadly, for machine

learning, big data and various applications like natural language processing, business process mining, imaging and autonomous driving, computational neuroscience, health data analytics, IoT and distributed (HPC, cloud, edge) computing architectures from first principles to full implementations and improvements of current applications.

Next year, a brand new Data Science MSc curriculum will be launched, increasing the importance of the field at the University of Tartu. In the creation of the new curriculum, the Institute of Computer Science has been working closely with researchers from other fields. Companies and public sector representatives are also involved in the development of the subject and will gain by having trained data science specialists as potential employees.

For collaboration with industry, we have set up special programmes such as an Industrial Master's and Doctorate, Delta Sandbox digital product innovation framework, and a Digital Innovation Hub Tartu to create dialogue between the industries, university and support organisations to raise the awareness of advantages of digitalisation, help develop digital strategies and identify R&D needs relevant to local industries.

The Industrial Master's Programme offers students and companies the opportunity to collaborate throughout the curriculum in the form of a prolonged internship, practical course assignments, and Master's thesis while performing tasks that are relevant both to the company and the academic curriculum.

The Industrial PhD programme links each PhD student to an area of research important to their company. In that case, sharing the IP can be agreed in return for supporting the student's work in that area. We have had many successful examples of that with various degrees of involvement in the company's internal working process. Some of the best examples are those where the student is embedded in the university's research culture and environment but deals with challenges proposed by the company. This combines the best of both worlds.

Delta Sandbox provides industry partners with digital product innovation and co-creation in collaboration with students and researchers. We are developing the programme in collaboration with Design Factory Global Network (dfgn.org).

Digital Innovation Hub Tartu (DIH Tartu) supports the digitalization of Estonian industry by mapping the needs and ambitions of Estonian companies and creating necessary services and networks for adopting innovative digital technologies. Being part of the network of digital innovation hubs in EU, DIH Tartu learns from digitally more mature countries and introduces methods and tools in Estonia by customising these based on the needs of local industry. Services vary from consultations, prototyping, technology and process audits to strategy development.

Once the links with companies are strong and both sides know their needs, bigger R&D projects can be set up. Currently, in Estonia, there are funding schemes that support companies in such projects, e.g. the so-called Smart Specialisation applied

research grant scheme or Competence Centres (like STACC) where the university also collaborates with industry partners.

Our various existing partners are, for example, Milrem (off-road autonomous driving), PerkinElmer (deep learning for microscopy imaging), Mooncascade (intelligent transportation), Bolt (intelligent transportation), Telia (IoT, machine learning), Positium (location-based services and data analytics), Datel (remote sensing), ReachU (intelligent transportation), Fujitsu, Fortumo, Swedbank (business process mining and business data analytics) and Pipedrive.

Overall examples, as outlined above, range from collaboration projects such as finding innovative solutions to urban mobility, using deep surveillance networks in cell image analysis, and developing the ability of remote-controlled vehicles to perceive their surroundings and locations outside the regular urban environment. Designing new application areas takes courage and willingness from both researchers and students as well as companies.

In a small country, one university probably cannot cover all the necessary topics, but there is certainly some level of expertise to consult and help find the right partners. If you are interested in collaborating with the leading IT research unit in Estonia, contact us or find more information about the programmes on www.cs.ut.ee.

Entrepreneurs should already be proactive in approaching artificial intelligence rather than just waiting for it to arrive.

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The Estonian Electronics Industries Association is a voluntary non-profit organisation, which has the primary objective of promoting cooperation between member companies, schools, and the public sector in order to increase the competitiveness of the Estonian electronics industry. More information: www.estonianelectronics.eu

ESTRONICS cluster is a collaboration platform for Estonia's leading electronics engineering and manufacturing companies and R&D institutions. It is operating under the Estonian Electronics Industries Association. More information: www.estronics.eu

Association, cluster and their companies deliver a full range of services throughout the product life cycle:

- A single point of contact for potential customers, suppliers, partners, and investors;
- Joint marketing activities for our members;
- Product design and prototyping;
- Introducing new products into mass production;
- EMS: Electronic Manufacturing Services;
- Supply chain management and optimisation;
- Post-production support;
- Professional training and business development support for commercialisation.

Examples of digitalisation in Estonian manufacturing companies

Jaanus Aal, Site Manager, Enics Elva
Peeter Põder, Mill Manager, Toftan 2

Peeter Põder and Jaanus Aal will present some examples of digitalisation in Estonian manufacturing companies. Jaanus Aal has over 15 years of experience in multinational companies, managing businesses worth millions of Euros in Europe and Asia. He has been responsible for IT and production related project management as well as transfering design and production from one continent to another. Peeter Põder believes it is possible to achieve great results by combining Maintenance (CMMS) and OEE. He is a strong operations professional and an aircraft maintenance graduate from Tartu Aviation College.

INDUSTRY 4.0 IN PRACTICE

Digital
Manufacturing

Expecting your IoT data to arrive on the doorstep – the fundamental importance of secure connectivity in IoT

Risto Eerola, IoT Technical Solutions Architect, Cisco EMEAR Nort

Risto Eerola works as a Technical Solutions Architect in Cisco's global IoT team, playing his part in making the Internet of Things era a reality. He helps clients adopt an architectural approach to developing ICT and OT infrastructure, enabling them to build enterprises that will be fit for purpose in the next wave of connectivity – the Internet of Things. We asked Risto Eerola to explain the fundamental importance of secure connectivity in IoT.

Artificial Intelligence (AI) and Machine Learning (ML) are among the most interesting new technologies, promising numerous benefits for the organizations that adopt them. These emerging technologies will potentially transform businesses faster than ever before. One of the much-hyped technologies of recent years, Internet of Things (IoT) is more and more becoming a reality, and we see it tightly linked to AI and ML. As one definition puts it, IoT is about leveraging machine generated data for business benefit. Furthermore, the success of an organization will be based on using analytics to discover insights which are currently locked away in the massive volume of data being generated today. AI and ML are the tools that data scientists can use to refine data and transform it into value faster. IoT, enabling new data on a massive scale to be captured, thus accelerates the need for AI and ML.

The point to emphasise is the importance that AI and ML will have on, well, almost everything. In fact, Cisco has, for a long time, leveraged machine learning capabilities and AI-enabled features in many of its core products and solutions, including networks, collaboration and security. These capabilities are truly transforming industry and bringing significant benefits for our customers as they leverage these technologies. However, while we are at the advent of a new era where the AI & ML capabilities can be applied in industrial environments (to all that data, courtesy of the Industry 4.0 and IoT advances), we also need to get the fundamentals right.

Cisco has been privileged enough to attend this conference in the past as well,

and last time we discussed the need for a "data fabric". To derive value from the growing amount and types of data that we require, in addition to a network fabric, a "data fabric" that allows us to capture the data, move it to where it is needed, transform it to suit the target, deliver it to meet consumer's needs, and do all this reliably and securely, with high performance – despite the immense volume of data.

Yet this year, our presentation is about looking even deeper to the fundamentals, and touches upon how to build that network fabric itself. The "Internet" in Internet of things, if you will. It has been said that while embracing IoT development, everyone expects the data to appear on their doorstep. Yet after initial trial-and-error and proof of concepts, it turns out not to be a trivial accomplishment – considering the scale and security requirements. Thus, we will revisit the fundamentals of secure connectivity at an IoT scale and present real-life use cases. This is what we can and should be doing today, to make sure we have a strong foundation for the future and will hit the ground running when embracing all the new technologies that are becoming more viable every day. After covering the fundamentals, it is time to see how concepts of AI and ML are transforming the network and its management as well as monitoring new innovations in running AI/ML across the IoT network and data fabric.

IoT is about leveraging machine generated data to benefit business.

University-industry collaboration opportunities

University of Tartu Institute of Computer Science offers a variety of collaboration formats for companies, including:

- Student internships
- Industrial Master's in IT
- Data science seminars

- IT product innovation projects
- Joint R&D projects
- Consultations and trainings

In 2020, University of Tartu will open its Delta centre that brings together University of Tartu's studies and research in information technology, computer science, computer engineering and robotics, economics and business administration, mathematics and statistics, and a business park with extensive opportunities for different forms of cooperation.

More information: cs.ut.ee

Building intelligent edge solutions

Dmitry Teteruk, IoT Solution Architect, Microsoft

Dmitry Teteruk has been working since 2017 as an IoT solutions architect helping Microsoft partners in EMEA region, specializing in embedded solutions with Windows 10 IoT, Edge devices and IoT solutions using Azure IoT services. We asked him how to make Industry 4.0 and IoT accessible for smaller manufacturers and what the future holds for them as far as IoT is concerned.

In practice, what you see as the greatest challenges in getting manufacturers to trust and invest in IoT?

Right now, I see several reasons that prevent the active implementation of IoT solutions. Stakeholders expect to receive useful information and business impact from IoT solution as soon as possible, while implementation of the solution can take from 6 to 18 months or even longer. At the same time, it is extremely important to provide highly secured devices and solutions.

What are you doing in order to make Industry 4.0 and IoT accessible, for small manufacturers too?

Microsoft is simplifying IoT. Over the last year, we've made several significant additions to our IoT platform to address these needs, including the launch of Azure Digital Twins and Azure Sphere and the general availability of Azure IoT Central and Azure IoT Edge. Earlier this year, we announced Azure Security Center for IoT, the world's first comprehensive security offering for IoT. With Azure Security Center for IoT, customers can benefit from a holistic view of their IoT security and take action aligned with industry best practice. Azure has unique threat intelligence sourced from the more than 6 trillion signals that Microsoft collects every day and makes that available to customers in Azure Security Center. To accelerate Industrial IoT Solutions we've announced OPC Twin, which creates a digital twin for OPC UA-enabled machines, makes their information model available in the cloud, and enables machine interaction from the cloud.

What are the concrete examples you are most proud of?

What I really like in IoT projects is scale.

Usually at pilot or proof of concept stages, the number of devices and objects are limited, but after successful implementation you can see how thousands and millions of devices working as one unit.

What will the future bring for smaller manufacturers as far as IoT is concerned?

It is important for small manufacturers to find their niche and IoT eco-system partners. Moreover, it is critical to demonstrate live solutions to potential customers. With Microsoft IoT Central and Azure IoT solution accelerators, every manufacturer can prepare and do live demos simply and easily.

Usually at pilot or proof of concept stages the number of devices and objects are limited, but after successful implementation you can see how thousands and millions of devices working as one unit.

Manufacturing a better future: Microsoft announces intelligent industry innovations

Microsoft is announcing several improvements to our trusted, innovative manufacturing solutions, including:

- **Azure is now the first major public cloud with** end-to-end security for IoT for your devices, hubs and cloud resources. We are adding advanced threat protection for IoT to three key services: Azure Security Center for IoT can now be used to implement security best practices and mitigate threats across entire IoT projects including hubs, compute and data. Azure Sentinel, the first cloud-native security information and event management (SIEM) offering, can now protect the entire enterprise from threats including those affecting IoT devices. Azure IOT Hub now integrates with Azure Security Center for IoT to provide IoT security information directly inside the hub portal experience.

- The introduction of OPC Twin and OPC Vault in our Azure Industrial IoT Cloud Platform solution, which respectively provide manufacturers a digital twin of their OPC UA-enabled machines and significantly enhance security and certification management. We're also announcing important enhancements to the Connected Factory solution accelerator, which now integrates with OPC Twin to greatly simplify the process of installing IoT Edge.

- An expansion of Azure IP Advantage to IoT, which extends Azure IP Advantage benefits to Azure customers with IoT devices connected to Azure, and devices that are powered by Azure Sphere and Windows IoT. Additionally, qualified startups who join the LOT Network have the ability to acquire Microsoft patents through LOT for free.

Please find out more from our representatives at Industry 4.0 Conference and visit our contact point for a chat and demos.

Microsoft

This is why we do it – Smart Manufacturing at Ericsson Eesti

Lars Ottoson, Head of Supply Site Tallinn, Ericsson
Welix Klaas, IoT Program Manager, Ericsson
Sirli Männiksaar, Head of Operational Efficiency, Ericsson
Erik Simonsson, Head of Technology, Ericsson
Tähve Lõpp, Head of Smart Manufacturing, Ericsson

The baseline for automation is a mobile network. Ericsson Eesti offers connectivity solutions together with its partners. It also maintains and and tests the newest 5G technology and products. We asked Lars Ottoson, Sirli Männiksaar, Erik Simonsson, Tähve Lõpp and Welix Klaas to tell us about the meaning of Industry 4.0 for Ericsson.

What is the influence on industry of 4.0 & Smart Manufacturing?

Lars Ottosson: Industry 4.0 and Smart Manufacturing will play a key-role in staying efficient in today's increasing competitive landscape. The number of options together with product complexity is growing day by day and the time to market is getting shorter as well as the product lifecycle. This challenge applies to Ericsson just as it does for most industry players today.

Our mission is to facilitate the full value of connectivity. Information and Communication technology - this is where the heart of Ericsson lies and is at the heart of whatever we provide to our customers.

At the same time, we ourselves are also the users of the solutions in our own factories. This digitalization journey enables us to be the base point for trials and the partner for industry connectivity.

Why is smart manufacturing part of our strategy?

Erik Simonsson: We are transforming traditional manufacturing into a digitalized environment where decisions are purely data driven and where actions are preventive and based on prediction models. We see that the connected infrastructures open up harnessing and handling the massive amounts of data we generate in the production flow. Adding big data analytics to our prediction models increases our opportunities to detect and then act to improve our offerings to new levels.

Sirli Männiksaar: We focus on smart manufacturing from two angles – technological development and cultural

change to enable the sustainability of our business. Automation and cognitive solutions support our priorities of safety and security within production processes. Digitalization and use of data enables us to become proactive instead of reactive in decision making. Both companies and customers are focussing even more on quality, sustainability and environmental aspects. It's up to us to guarantee that our offerings represent our values.

How will our solutions support smart manufacturing?

Tähve Lõpp: We are challenging an accepted "way of working". Technology is changing our thinking and brings along a unique mode of information visualisation and how we interact with each other or with machinery. Digitalisation enables a non-traditional approach to organising supply chains and managing and maintaining our production. We are developing a new perspective for new generations to build fully automated manufacturing.

Welix Klaas: We experiment, fail and learn while developing new concepts, which is unheard of within traditional industry standards and ways of working. Our goal is to "cut the cables" and go wireless with tens of thousands of connected devices inside our factory. Together with our production people we have defined and built use cases for Augmented Reality, IoT sensors, cloud connected robotics and machine learning that help us to save time and costs as well as improve our own products and services".

Digitalization and use of data enables us to become proactive instead of reactive in decision making.
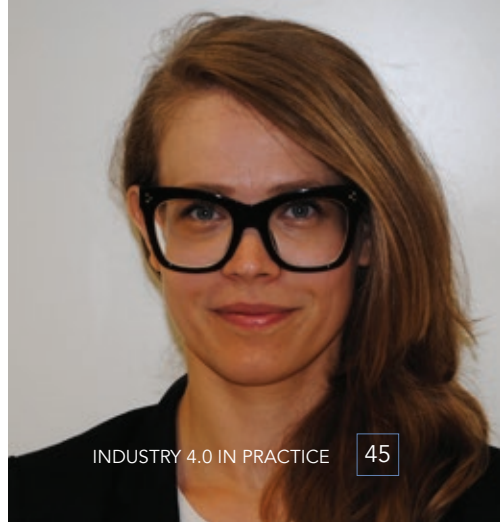
ERICSSON

Smarter factories need smarter connectivity

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Gain transparency and flexibility in production, empower workers, and redesign operations.

ERICSSON INDUSTRY CONNECT

Why the IPC connected factory exchange standard (CFX) is critical for successful industry 4.0

Michael Ford, Sr. Director Emerging Industry Strategy, Aegis Software

Michael Ford is an established thought leader for Industry 4.0 and digital Smart Factories and an active contributor to IPC industry standards, including the Connected Factory Exchange (CFX) "plug and play" IIoT standard. He and chairs the IPC-1782 manufacturing traceability standard, promoting a complete IPC standards-based digital factory platform. We asked him to explain why the IPC CFX standard is critical for a successful Industry 4.0.

Although Industry 4.0 has been evolving for some time, many companies continue to experience declining productivity as product-mix and customer demand volatility increase. Industry 4.0 is centered around the ability to utilize real-time data as an increasingly key part of the factory management and decision-making process. Without the extensive data definition, as uniquely provided by the CFX standard, there is no practical way to drive sustainably, cost-effectively with Industry 4.0.

It is a fact that most production equipment spends less than 50% of its operational time adding value in production. In some very high product-mix cases that figure drops to less than 10%. Productivity and equipment utilization could easily be doubled, tripled and more, if the time spent making planning decisions, preparing resources, materials and engineering data in between products, could be optimized in line with live demand from the customer. The decision-making process is severely strained when having to make changes extremely quickly, without the knowledge of the full status of every process and resource, or knowledge of potential consequences. No matter the skill and experience of the management and engineering teams, current practice, based on today's level of visibility and understanding, is very limited, and destined not to deliver on Industry 4.0 business needs and goals.

The current state of factory visibility and control, is based on individual machine vendor legacy bespoke interfaces, that have evolved over time in line with demands

from each customer. The data content of each interface from each vendor differs, requiring extensive data interpretation and restructuring at the factory level in order to get only a lowest common denominator of value. Such has been the case for many years.

The new IPC Connected Factory Exchange (CFX) is the break-through technology, that delivers a new paradigm of IIoT data exchange. Defining specific message content, across the whole scope of assembly factory communication, CFX drives a plug and play environment where machine and line configurations can be matched at a moment's notice, to meet changing customer needs. Detailed, consistent CFX data is exchanged between machines and systems, irrespective of vendor. Each machine knows its internal world perfectly, but not the causes or effects of issues externally. The new

generation digital MES platform, specifically designed for Industry 4.0 IIoT, now provides contextual qualification of data, by combining data across all machines and processes and creating a meaningful live view of manufacturing. This aids advanced manual and automated decision-making, as well as edge-based data preparation for transfer to the cloud, avoiding the issue of "digital landfill". With the impediment of lack of operational data quality resolved using CFX, today's high-mix and demand-volatile assembly factory can now retain world-class productivity levels, with the ability to adapt and re-optimize at a moment's notice.

Anyone considering a current or future Smart Industry 4.0 project, establishing practical digital manufacturing and supply-chain "best practices", must first understand the most significant step forward in terms of IIoT available for everyone.

The new IPC CFX standard is unique in that it defines precise data content, as well as the protocol, for all messages
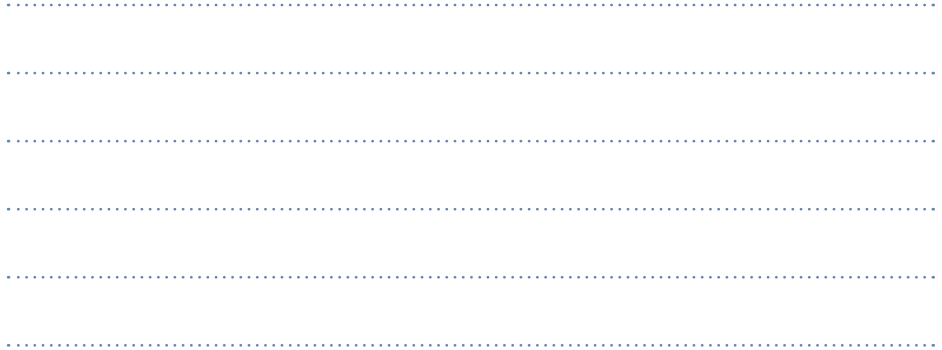
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siemens.com/digital-enterprise

When you're racing against competition which has significantly greater resources, you need to work smarter

Manuel Berglund, ERP Manager, Koenigsegg Automotive AB

The Koenigsegg is known as the world's fastest supercar. Behind its success lies programming and technology, as well as service, aftermarket and sales. We asked Manuel Berglund, ERP Manager at Koenigsegg Automotive AB, about the story behind the Koenigsegg brand and what robotization, AI and IoT mean to the company.

What is the story behind Koenigsegg as a car brand?

As a small boy Christian von Koenigsegg saw a movie called Pinchcliffe Grand Prix, which is centred around a bike mechanic who wanted to build a race car and compete in a Grand Prix. That is when Christian got interested in supercars. His passion for supercars stayed with him throughout his life, up until the point in 1994 when he established his company. He used his own personal resources and the first prototype was built in a small place called Olofström. The team consisted of just a couple of guys, one of whom is still active in the company. Later, Christian moved to a property just outside Ängelholm and the first cars for sale were built in that small classical Swedish building. Sadly, that place burned down in 2003 but the cars under construction were saved before the fire consumed the entire building. Koenigsegg then moved to its current home – a former Air Force base in Angelholm. The company has been growing steadily ever since, introducing many world-first technologies and producing record-breaking cars that take on some of the biggest names in the world. Koenigsegg is the current world-record holder for the fastest production car in the world (Agera RS) and builds the world's most powerful performance hybrid vehicle (Regera).

Koenigsegg is a classic SME. What gave you the courage to go up against big industry names?

Christian always aimed to keep processes as simple as possible and to keep learning throughout the journey. New knowledge was kept strictly under wraps inside the company. Every single process was developed from scratch by a small team. Despite that, they worked quickly without compromising on quality, which is

something big companies often fail to do.

How would you describe Koenigsegg's digitalisation timeline?

The first big step happened 16 years ago when Koenigsegg bought its first ERP system, called Monitor. Step by step we learned to work with the ERP system, but it took more than 10 years to utilise the full potential this technology has to offer. The company grew gradually. The Agera & Regera brought us our first drastic spike in sales and along came the realisation that the company would grow to 200-300 people. In order to keep up we had to lift our game in terms of processes and digitalisation. At this point the focus switched to the ERP system in order to deliver better results.

Firstly, it was about giving the customers a better view of the company with our car configurator. This also enables us to specify different details. Secondly, we worked hard to improve the system, to get the computers to work for us and not the other way around. Now we are reviewing the whole IT ecosystem to improve our digital environment.

Nowadays, we're all talking about buzzwords like robotization, AI and IoT. What do those terms mean for your company?

Koenigsegg is still all about craftmanship. We're talking about a very complex product, low volume production with few machines of any type (and no robots) involved in our process. Parts are sourced from suppliers, but everything else is built by hand. We are trying to implement digital tools in order to help our people in their daily work, but robotization is out of the picture in this context as it would be more costly for us.

What is the relationship between ERP partners (in your case MONITOR) and modern factories like Koenigsegg?

Our ERP supplier plays a huge role in our daily work. By purchasing the system you receive thousands of processes, but you don't need all of them, hence allocating the optimal ones can be a bit tricky without regular consultations with your ERP partner. We have regular discussions with MONITOR on how we can use the best type of processes, develop new ones or whether we could improve some of them to fit our criteria better. The same applies to all ERP system suppliers around the world.

Most SMEs are afraid of rapid digitalisation and believe it's not something they can benefit from. What would your advice or words of encouragement to them be?

Most importantly, don't be afraid of making your company more digital. The investment can be a bit costly in the initial stages, but it will quickly pay off in terms of quality and efficiency. You should value each situation separately and analyse whether you can be more efficient by enabling digital tools. Calculate the benefits in terms of investment, quality, efficiency as well as customer satisfaction.Text

You should value each situation separately and analyse if you can be more efficient by enabling digital tools.

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We will take care of the daily data exchange of the company so that you can take care of your customers and partners.

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20
countries

Services and projects
85
countries

R&D
100 million
in a year

Two ways machine learning can benefit real time location system technology

Sander Ulp, PhD, Research Scientist, Eliko

Eliko offers a precise indoor positioning system as well as applications to boot. Distance and location information can be expanded to define paths and movement patterns, estimate speed and measure the duration of events and processes. This data enables us to build applications, analyse and solve problems and optimise the location of assets, paths or layouts in various industrial settings. All of this requires data analysis and knowledge of the details of the underlying processes. Machine learning can mainly benefit indoor positioning technology in two ways: it can either be applied in the location system itself or using the output data of the location system. We asked Sander Ulp to explain two ways machine learning can benefit real time location system (RTLS) technology.

Machine learning algorithms can be applied to improve RTLS performance and accuracy

When using RTLS technology in an empty room, it's easy to measure correct location coordinates. In the real world, however, there are often obstructions in the tracking area, such as walls, people, machines and other assets that have an effect on the accuracy of the location coordinates. Therefore, in the system itself, machine learning algorithms can be used to improve system performance by increasing the robustness and accuracy of the measurements. For example, in complex environments where line-of-sight (LOS) measurements are not always possible, machine learning algorithms can be applied to mitigate the problem of inaccurate measurements. By collecting data and training algorithms to detect and classify LOS and non-LOS situations, we are able to discard, weigh or even correct measurements according to the classification and, therefore, improve system performance.

Optimising manufacturing processes by matching patterns and predicting behaviour

One of the main ideas behind Industry 4.0 is to be more flexible and efficient in manufacturing. It requires knowledge of the details of the underlying processes. Therefore, there are processes which need real time tracking to provide accurate data for decision makers. However, it's a challenge to analyse and read the collected data for decision-making. Therefore, the second application is on the data side. Based on a particular application and location data which the system generates, we can train machine learning algorithms to match patterns, predict behaviours and optimise system parameters. For example, by analysing the paths and frequency of accessing various manufacturing materials, the system can, in real time, suggest optimal locations for storing the specific material roll or pallet in manufacturing or the warehouse.

In conclusion, coordinating error corrections on one hand and output data analysis on the other hand are the two main reasons why machine learning is beneficial in an indoor location system. With the help of those machine learning algorithms, it's possible to give an important boost to manufacturing efficiencies in Industry 4.0.

It's a challenge to analyse and read collected data for decision-making.

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KIO Real Time Location System

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Anchor

Anchor

Anchor

Anchor

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INDUSTRY 4.0 IN PRACTICE

sTARTUp DAY 2020

29 — 31 JANUARY IN TARTU, ESTONIA

Bringing together startup-minded people, innovation and good vibes

sTARTUp Day is the biggest business festival in the Baltics and the most innovative festival in Estonia. It brings together 100 world-class speakers and 4000 attendees.

We believe that innovation comes through collaboration between startups, corporates, and academia. Startup-mindset is something that unifies the attendees of sTARTUp Day.

Our aim is to focus on the matchmaking, idea sharing and introduction of the newest innovative solutions. That can be experienced through inspirational-educational stage program with world-class keynote speakers, hands-on seminars, large demo area, organized matchmaking area, special programs for the investors and executives.

This years' program has nearly 15 different focus topics: AI, space tech, smart cities, science to business, smart manufacturing, founders' psychology, corporate innovation, biotech, medtech etc.

sTARTUp Day has previously hosted Swedish 1st and only astronaut Christer Fuglesang, ex-IKEA Head of Design Marcus Engman, Oliver Leisalu — CTO & Co-Founder of Bolt — a ride-hailing unicorn that raised $175M, ex-Google Play Marketing Manager Patrick Mork to name a few.

sTARTUp Day is a community-based cooperation which is organized by the City of Tartu, University of Tartu, Tartu Science Park and the local startup community.

🔗 **startupday.ee**

📷 📘 **@startupdayfest**

Early Bird tickets of sTARTUp Day are already available and 2=1 offer is valid for the first 100 tickets or until 20th of June.

Organisers

Tallinn University of Technology

Tallinn University of Technology (TalTech) is a modern university of technology, whose strength lies in the synergy between technological, natural, exact, social and health sciences. TalTech is responsible for ensuring the next generation of engineers and advancing engineering culture in Estonia, contributing to the sustainable development of the society and increased national prosperity with its innovative services.

www.taltech.ee

Enterprise Estonia

Enterprise Estonia (EAS) contributes to the achievement of long-term strategic goals of the Estonian economy. EAS promotes business and regional policy in Estonia and is one of the largest institutions within the national support system for entrepreneurship by providing financial assistance, counselling, cooperation opportunities for foreign investments and training for entrepreneurs, research institutions, the public and non-profit sectors.

www.eas.ee

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Estonian ICT cluster - your gateway to the e-Estonia powerhouse. We are a collaboration platform for more than 90 enterprises, in Estonia. Cluster is gathering companies that have created most of Estonia's world-recognized e-governance solutions. We help countries and organizations achieve world-class digital societies.

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Estonian Electronics Industries Association

Estonian Electronics Industries Association is a voluntary non-profit organisation that aims to increase competitiveness of Estonian electronics industry. Association's 50 member companies cover all aspects of electronics value chain from supplies, training and product development to manufacturing and aftersales. Association also governs ESTRONICS – export cluster for smart electronics.

www.estonianelectronics.eu

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EXEX is an innovative conference format that unites knowhow and finances of leading organisations to create a flagship event. In the spirit of sharing economy this enables to bring better and bigger industry events to life with lover cost. EXEX format is created and managed by conference and marketing company Confent. EXEX events cover topics and industries such as manufacturing, payment solutions, mobility and fleet management, road transport, education technology. EXEX events take place in Estonia, Latvia and Lithuania.

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University of Tartu Institute of Computer Science supports digital transformation of industries through innovation services in the areas where scientific research and R&D contribution is needed. We provide consultations, prototyping, joint R&D projects and high performance computing power in the fields of Data Science, Business Process Management, Cyber Security, Distributed Systems, Cyber-Physical Systems, etc.

www.ut.ee

Microsoft

Microsoft enables digital transformation for the era of an intelligent cloud and an intelligent edge. Its mission is to empower every person and every organization on the planet to achieve more. As of 2003, Microsoft has its local office also in Estonia.

www.microsoft.com

Ericsson

About 40% of the world's mobile traffic runs via our networks. Ericsson develops, delivers and manages telecommunication networks by providing hardware, software, and services to provide the full value of connectivity. Our strategy focuses on: enhancing efficiency via digitalization and automation, user experience improvement by boosting and simplifying services and net configuration, increasing turnover via key technologies as IoT (Internet of Things) and 5G.

www.ericsson.com

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Siemens creates benefits for customers and society through our passion for technology, the power of innovation and entrepreneurial spirit. Electrification, automation and digitalization from Siemens help improve quality of life and create lasting value for future generations. Together with our customers we enable sustainable energy, future of manufacturing and intelligent infrastructure.

www.siemens.com
www.siemens.com/digitalization
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Tartu City

Tartu is a city that promotes innovation via competitive enterprises, an attractive investment environment and the facilitation of entrepreneurship and knowledge-based production and services. Tartu is a city in constant motion, empowered by innovative changes with a substantial influence on citizens' welfare and business growth.

www.tartu.ee/en

European Commission

The European Commission develops policies that interlink innovation, research, technological development and industrial policy. A strong and modern industry is of key importance for Europe's prosperity. One of the main barriers for industrial transformation is the lack of scale-up and technology diffusion. Considering the revolutionary technological developments, European Commission supports industry and notably SMEs to scale-up and to access to the right technology infrastructures to quickly develop and test their innovations and successfully enter the market.

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Eliko is an embedded electronics and software company dedicated to building a smarter world. Since 2004, Eliko has been one of the most trusted names in applied R&D for the Estonian IT and electronics industry. The company offers proven, ready-to-use technologies, as well as customisation and applied R&D to help in creating new and more competitive IoT products.

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