

ANNUAL REPORT 2020

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NTRODUCTION

This annual report summarizes 2020, the 13th operational year of DIMECC Ltd. The mission of DIMECC is to be the leading European co-creation platform for digital transformations.

2020 witnessed a significant speed-up of digitalization. The transformation itself was, at least partly, expected, but not its cause, the COVID-19 pandemic. In Spring 2020 many expected that all matchmaking and networking would be banned and disappear. This actually happened to almost all physical events, but as DIMECC was able to change its activities very fast to be carried out on new digital platforms and with new tools, we actually increased the number of events in many of our services.

2020 was also a year of new strategic targets for our company. As part of the annual strategy process our Board of Directors decided that DIMECC aims to grow significantly in the coming years. Growth was selected as a target both in terms of turnover as well as in terms of number of personnel. This change reflects the long-term evolution of DIMECC from the original, R&D-oriented search for radical breakthrough technologies, initiated in 2008, towards facilitating the formation of new business ecosystems, and the growth and efficiency of our customers' technological and commercial renewal.

The Intelligent Industry ecosystem focused on enabling and promoting growth in industrial data sharing, while the One Sea ecosystem initiated a plan for global standardization of new autonomous maritime traffic rules. We also launched Finnish Additive Manufacturing Ecosystem (FAME) with the support from more than 20 companies and the Finnish Ministry of Economic Affairs and Employment. As an outcome of the One Sea ecosystem, we started a new program, DIMECC Sea for Value (S4V), a systemic R&I program with 20 partner companies, 7 research institutions and ca. 50 SMEs, and with a volume of 15 M€. As part of the Intelligent Industry ecosystem, we organized in November Industrial Data Sharing Day together with Business Finland. We expanded the concept of DIMECC Academy, that was started with Machine Learning Academy in 2018, by designing the concept of Business Model Academy for tailored coaching of companies in designing and deploying novel digital business models. In addition, we have eight on-going R&I program preparations in the beginning of 2021.

DIMECC Ltd. is a non-profit company, and the form of our annual report primarily supports the documentation of the most important impact, outcomes, and activities. Economic analysis is not in focus because our long-term objectives are related to development of company-university cooperation, knowledge creation, and impact of innovation activities rather than to the financial aspect of our operations. For more information about DIMECC, see www.dimecc.com.

DIMECC IN NUMBERS 2020

- Founded 2008, 12 employees, 66 Shareholders (43 companies, 23 research institutes)
- 1 affiliated company (Demola Global Ltd.)
- 3 offices in Finland (Helsinki, Tampere, Turku) and 16 Demola sites globally
- 3 business ecosystems (FAME, Intelligent Industry, One Sea)
- 4 EU trademarks (™, MPD, PoDoCo, DemoBooster, One Sea)
- ca. 300 customers, ca 2 000 persons involved in DIMECC activities
- ca. 800 M€ of facilitated RDI programs since 2008

FUTURE WILL BE CO-CREATED

The next years will be extremely R&I oriented time, at least in Europe. The climate change and target of carbon neutrality call for versatile innovation activities. The public recovery funding to build resilience to societies after COVID-19 is expected to be very strong from 2021 on. European Commission will start the era of ca. 100 B€ R&I investment with Horizon Europe and digital transformation deployment initiative with Digital Europe programmes. Hence, very soon there will be public incentives more than ever to companies, that are willing to co-create the Future with other companies and universities.

Competition in the market and for the public funding will still be tight. More companies are active, and more organizations and persons have the knowledge and competence to change the world. This is what we call democratization of innovation. Democratization takes place mostly due to the transparency and digital availability of all data, decision-making processes, resources, and global news. Publicly available data and information sources make it possible for anyone to see and read the same all the time globally.

What makes the difference then? It is the ability and capability to connect things smartly and innovatively. Industrial Innovation in Transition study led by Prof. Erkki Ormala proves that 90-95% of innovation takes place in ecosystems, where many kinds of organisations and persons are present simultaneously. Triple Helix (academia, companies, government acting together) seems to be prevailing successful paradigm behind well-executed systemic change. Systemic change consists of several independent innovations, that are collaboratively targeted towards the same direction technologically, financially, socially, and environmentally. What makes the difference then? It is the ability and capability to connect things smartly and innovatively.

For 13 years, DIMECC has successfully facilitated R&I activities in the spirit of Triple Helix model. We have extremely solid and strong track-record in leading our customers towards innovations in our ecosystems and positioning the innovations to form elements of systemic change. As an example, three One Sea members introduced autonomous ship tests in December 2019, in 2020 we launched the Sea for Value program to pave the way, or fairway, towards autonomous shipping, and IMO has listened to us in regulatory issues.

In 2020, DIMECC led about 10M€ value of R&I programs and supported ca. 200 customers. We changed the physical meeting world to fully digital very fast, and we managed to reorganize our cost structure so that DIMECC makes profit again. After losing ca. 90% of our business in 2015 with one single very unfortunate governmental decision of removing PPP from the innovation policy toolkit, we have in five years carried out significant renewal and progress with the help of loyal customers and personnel. There are not too many companies surviving after such a disappearance of business volume overnight! This proves, that

our customers really believe, that the Future will be co-created.

I would like to thank DIMECC's customers, program participants, investors, shareholders, stakeholders, service suppliers, and our personnel for the digitally active year 2020!

Harri Kulmala, CEO





IMECC OPERATIONAL MODEL

During the 2019 strategy round DIMECC's Board of Directors formulated a new purpose statement for the company:

> DIMECC co-creation services accelerate exploration of new business ecosystems and efficient development of new capabilities in technology companies.

In other words, DIMECC's role in the technology innovation landscape is to help companies resolve challenges related to high-risk research activities, disruptive business transformation, and capability development needs by offering to them focused, mission-driven co-creation services. In order to fulfill this promise, DIMECC provides its customers with tools, services and networks that make their innovation better – faster, more comprehensive, and with reduced overall risk.

> **Ecosystems** offer to their participants opportunities to open new markets and create radically new business opportunities with like-minded companies. By using an ecosystem approach and collaborative operating model, companies can combine their forces and competences to achieve targets on their jointly agreed roadmap. Also, they can leverage research organizations and innovative start-up companies in developing cutting-edge knowledge and gaining new skills, while controlling their risk through support from public funding.

> **Programs and Projects** accelerate companies' R&D&I activities by setting up a shared effort between companies, universities, and research institutions both for program preparation and execution.

DIMECC provides its customers with tools, services and networks that make their innovation better.

DIMECC programs follow the principles of open innovation and agile development, and their management process is effective and cost-efficient.

Co-creation Services allow companies to share experiences, ideas, and viewpoints, and learn from others in an environment of trust. These services shorten time-tomoney and speed up sales. This category also includes commissioned projects which DIMECC executes for third parties, as their results support the whole customer base and even wider audiences.

Networks boost companies' innovation capacity by making it easier to identify and capture critical external innovation and enabling more effective and impactful use of partners in strategic R&D&I activities. These connections form the foundation for building solid business ecosystems and leveraging insights and capabilities of start-up companies.

All these activities drive towards commercialization of their results, enabling the long-term competitiveness of the targeted industries.

DIMECC's personnel constantly scans and follows relevant industry trends and global forces of

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DIMECC ecosystems, programs, and projects are built and implemented openly together with companies, universities and research institutions. They follow the principles of open innovation, co-creation and agile development.

Towards breakthroughs - even faster - DIMECC

DIMECC Co-creation services create competitiveness for the future, and boost new business creation and new market entries. No matter, if your challenge is small or big, DIMECC co-creation services guarantee you faster time-to-market and increased number of ideas compared to working alone.

More brains – more innovation – more business – DIMECC

Through DIMECC networks customers can boost their innovation capacity and business growth. Boosting innovation capacity means both increased number and variety of high-quality partners. Business growth comes through wider geographical area of business and new partnerships in the R&D phase.

Networking – co-creating – marketing – selling – DIMECC

Figure 1: DIMECC services.

change that are shaping the future of selected industries – metals, manufacturing, maritime, and ICT – and their common areas of interest. Views and insights from the shareholders define the focus areas, and often these activities are also carried out in close collaboration with DIMECC shareholders. DIMECC-led ecosystems have an important role in collecting, producing, and sharing foresight to their respective industry domains. When needed, DIMECC's R&D board is used to analyze the foresight data and convert key findings into meaningful and actionable business insights.

Business insights sometimes lead into various types of collaborative activities, such as joint training and competence development programs, lobbying for critical standards, policies and/or regulation, common platform development, or even shared commercialization activities, that help companies prepare themselves for future changes in their marketplace.

DIMECC's programs focus on company-driven development activities that turn business insights into strategic business opportunities

DIMECC

that ensure the competitiveness of the Finnish industry. Programs enable large companies and SMEs to co-operate with the leading national and international universities and research teams. The work conducted in DIMECC's programs and projects is often transversal with respect to the chosen areas. For individual companies, key motives for joining DIMECC's programs are opportunities for learning, development, transformation, and growth. However, DIMECC's long-term purpose is to drive systemic digital change which goes above and beyond the success of individual companies.

Overall, DIMECC aims to build ecosystems and consortia through which individual companies can develop their business and capabilities in a collaborative manner. The systemic R&D&I programs and projects focus mainly on precompetitive research, while many co-creation services are closer to specific market needs and requirements. Since all DIMECC's R&D&I programs and projects are industry-driven, their results are strategically important for the participating companies with built-in go-tomarket interest.

DIMECC key operation responsibilities

DIMECC's operational model is based on lean operations through which network-based cocreation activities are effectively steered and managed. This operational model requires strong commitment from customers, partners and other stakeholders, which is ensured on a strategic level through typical limited company processes, i.e. steering and governance from the Board of Directors.

The core content is steered by shareholder experts in the R&D council and by committed customers in the Management Boards of DIMECC's ecosystems and programs. Both the BoD and R&D council are used also as communication channels towards DIMECC's stakeholders.

The operating infrastructure of DIMECC (employees, IT infrastructure, offices, etc.) is paid through various types of service fees.

DIMECC Ecosystems, programs and projects

This chapter introduces shortly the activities and volume of DIMECC's programs and ecosystems in 2020. In 2020, DIMECC had three on-going ecosystems – One Sea, Intelligent Industry, and Finnish Additive Manufacturing Ecosystem (FAME, established in 2020) – and three on-going research programs (LIFEX, InDEx, and S4V). S4V (Sea-For-Value) was launched in 2020 as part of the One Sea ecosystem's portfolio. Research programs welcome new participants, provided that the existing consortium members accept the new applicant and the new applicant accepts the existing consortium agreement.

Following figures illustrate how companies' (Figure 3) and research institutes' (Figure 4) participated in DIMECC's ecosystems and research programs in 2020. The budgetary division of DIMECC's program portfolio in 2020 is presented in Figure 5.



DIMECC Programs & Ecosystems

Figure 2: DIMECC's Public-Private-Partnership based co-creation programs and ecosystems.

Private investment in programs, M€ (2020)



Research institute budgets, M€ (2020)



Total 27,3 M€

Figure 5: Total budget division of ongoing DIMECC portfolio in 2020.



Finnish Additive Manufacturing Ecosystem - FAME is a full-scale and easy-to-access ecosystem which increases information sharing between companies, private investment in cocreation, and co-utilization of shared facilities and infrastructures. This collaboration forms a critical mass on AM knowledge & expertise and a hub for foreign investment in Finland, and a fullservice AM offering of Finnish know-how that can be exported.

FAME was officially established in September 2020 in co-operation with private and public partners. The ecosystem is funded by the participating companies and the Finnish Ministry of Economic Affairs and Employment. The ministry wanted to fund the ecosystem, because 3D printing contributes well to Finland's long-term targets, like shift to green economy and digitalization. Founding members of the FAME are 3D-Step, 3D Formtech, ANDRITZ Savonlinna Works Oy, CITEC, DBE Core, Delva, Elomatic, EOS Finland, Etteplan, Huld, Lillbacka Powerco, MiniFactory, Nordic Industries, Origo Engineering, Patria, Raute, Salon Metalelektro, Valmet, Vossi and Wärtsilä. In addition, AirFaas became a FAME member in December 2020. These forerunner companies represent the complete AM value chain from raw materials to end users, which creates the best



Figure 6: 3D serial printing objects. Image: Delva

DIMECC

possible backbone for a functional ecosystem.

FAME has defined that its core activities will be R&D&I programs and projects, pilots and PoCs, participating in discussions about standards and regulation, information sharing, competence development and shared facilities. Through these activities FAME's vision, "Finland's share of the total global AM market is 5%", will be reached in 2030.



DIMECC Ecosystems

NTELLIGENT NDUSTRY Turning digital into practical

Intelligent Industry is an innovative ecosystem connecting leading Finnish industrial companies and providers of digital solutions to drive and realise the immense opportunities of the emerging new era of intelligent industry. The ecosystem is leading the way towards a new era of networked, information driven and autonomous value systems that adapt flexibly to changing operating environments and user needs. The vision of the Intelligent Industry ecosystem is to make Finland a global leader in intelligent industrial systems and related business ecosystems by 2028.

The strategic core partners of the Intelligent Industry Ecosystem during 2020 were Konecranes, Fastems, HT Laser, Elekmerk, Nokia, Prima Power, Raute, Melkki, Innofactor, Glaston, and TietoEVRY, all leading companies in their own fields. The ecosystem is funded by the participating companies and Business Finland.

Intelligent Industry ecosystem is driving collaborative activities in four focus areas: Data and advanced analytics. Autonomous systems. Value co-creation in ecosystems, and Human-Machine collaboration. Core activities include R&D&I programs and projects, pilots and PoCs, participating in standards and regulation discussions, and competence development. The ecosystem builds, for example, holistic operating models and standards for data sharing in industrial value networks, fostering industrial data economy. The first ecosystem program, Industrial Data Excellence (InDEx), was launched in September 2019 and several other program preparations are underway. The purpose of the two-year InDEx program is to build an industrial data community and common data space to Finland focusing on data sharing. Artificial Intelligence and Machine Learning as well as New Business Model competences are fostered by the DIMECC Machine Learning and Business Model Academies, which provide tailored

training for manufacturing company personnel. The Intelligent Industry ecosystem is shaping the future of the Finnish manufacturing industry.



DIMECC Ecosystems



One Sea ecosystem is an alliance of leaders in marine industry as well as information and communications technology companies, who work closely together to promote their common goal of driving for an autonomous maritime system by 2025. One Sea has again increased the number of its international members during 2020. The list of current members includes ABB, Awake.AI, Cargotec, Ericsson, Finnpilot Pilotage, Fintraffic (VTS Finland), Haltian, Inmarsat, Kongsberg Maritime, MTI (Monohakobi Technology Institute -NYK Group's research subsidiary), NAPA, TietoEVRY and Wärtsilä. Other partners include Finnish Marine Industries, Finnish Port Association, Finnish Shipowners' Association, Shipbrokers Finland and The Royal Institution of Naval Architects (RINA). One Sea is an open ecosystem that can be joined by anyone who intends to do business in and drive for autonomous shipping. Financing is provided by participating companies and Business Finland.

Ship owners and operators are under pressure to lower ship emissions and operating costs, and digitalization and automatization are efficient tools to achieving those goals. Marine industry suppliers and shipyards are actively looking for opportunities to be the first to offer ship owners the latest competitive edge of digitalization. The companies and organizations collaborating in One Sea are forerunners in their respective fields and the knowledge they share sets them apart from other likeminded projects. The ecosystem ensures a well-researched, tested and highly capable autonomous shipping network. The co-creation ecosystem seeks to harmonize the regulations and standards, interfaces and testing regime necessary to deliver a safe and commercially viable highly automated logistics system. A system comprising of both physical infrastructure (ships, ports, freight and communication infrastructure), data infrastructure (cloud services, data interfaces and platforms), as well as services enabling the interoperable travel and transport chains. One Sea aims at minimizing maritime accidents, decreasing the environmental footprint of marine traffic, and advancing possibilities for new commercial ventures.

In 2020 One Sea has focused on building the research program Sea4Value, that received funding for its first part during the year. One Sea has also joined the Waterborne technology platform and participated in the creation of a European research agenda for Waterborne. The ecosystem has also followed closely the regulatory scoping exercise work of IMO (International Maritime Organization) regarding increased automation on ships.



DIMECC Programs and projects

DIMECC Program InDEx – Industrial Data Excellence

The Industrial Data Excellence, DIMECC InDEx – program is the first program initiative under the Intelligent Industry ecosystem. The vision of the InDEx program is to unlock the value of data as an enabler for the next industrial revolution centered around artificial intelligence in the Finnish manufacturing industry. InDEx was started in September 2019.

Unlocking the value of data is much more than one enterprise making better use of their existing data. It requires that the entire industry will operate using the principles of intelligent use and sharing of data. InDEx program will take this unique perspective and opportunity focusing on data sharing in manufacturing networks between multiple partners.

Currently only a fraction of the value of data has been captured in manufacturing sector and for this reason InDEx program aims to build a data community and a Common Data Space for industry in Finland. This requires effective data sharing, including adequate analytics, between the value network partners.

PROGRAM PARTICIPANTS

Industrial partners:

Konecranes, Cargotec, Danfoss, Elekmerk, Fastems, HT Laser, Nokia, PrimaPower, Raute, SSAB, and TietoEVRY

Research organisations

Aalto University, Tampere University, University of Turku, University of Helsinki, University of Jyväskylä, University of Vaasa, and VTT Technical Research Centre of Finland.

Schedule: 2019-2021 Volume: 8,5 M€













NOKIA



SSAB





۲- Tampere University











BUSINESS

FINLAND

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DIMECC Programs and projects

DIMECC Community Building INDUSTRY & CYBER

Industry & cyber community and program building. DIMECC started the "CyberTRE" project (funded by Business Tampere) in October 2019 in the field of industry and cyber security and this work continued during 2020. The aim of this work is to explore opportunities for coinnovation projects between industrial and cyber companies and strengthen the emerging cyber security community in the Pirkanmaa region. DIMECC arranged several networking and information sharing sessions (e.g. two Cyber Security Morning - sessions in cooperation with SYK, a visit to Tampere University of Applied Science Field Lab, and several program building workshops). During the second half of the year we were able to confirm a consortium of seven companies and four research institutions. Key focus areas for the "Industry and Cyber" program are related to smart industry (industrial cyber security, digital identity management, SIEM solutions and new business models. The aim is to submit funding applications to Business Finland in early 2021.



LIFEX program focuses on advancing digitalization and Industrial Internet in Finnish industry. The program is positioned in the crossroads of industry needs and emerging technology trends. The joint research projects typically consist of 4-8 core partners, who with subcontractors, form 15-30 partner ecosystems. In recent years LIFEX program has focused on Artificial Intelligence and industry applications of Augmented Reality and Virtual Reality technologies.

During 2020 the most important activity was Alfocused MIDAS project. Its participants included among others Epec, Glaston, Novatron, Nokia Technologies and Tampere University. The program was funded by the companies and Business Finland. Current project preparation focuses also on industrial Al and a new program is expected to start during spring of 2021.

Schedule: 2016 -> Volume: 11 M€



BUSINESS FINLAND



The Sea4Value / Fairway (S4VF) program is based on the national strategies and programs. Firstly, the Ministry of Transport and Communications has envisioned that "good maritime connections are vital for the competitiveness of Finland's businesses and its economy and for Finnish society in general." Secondly, the national growth programme for the transport sector (2018-2022) has been established for "creating conditions where a service structure developing around knowledge and expertise leads to new international business." Finally, the Finnish government has set as one of its goals to "investigate possibilities for smart fairway solutions also for maritime transport, such as the remote pilotage possibilities".

The vision of Sea4Value / Fairway program is to maintain Finland's leadership in the development and utilization of smart and autonomous marine solutions.

The mission of the Sea4Value / Fairway program is to provide blueprints towards digitalisation, service innovation and information flows in maritime transport. Its longer term mission is in preparing for advanced autonomous operations and navigation. A key step towards autonomous transport system is to ensure safe, sustainable, and efficient channel for ships to enter and leave harbours. S4VF program improves the safe navigation in fairways for existing vessels and lays foundation for autonomous vessels of the future.

Today safe navigation is a team effort consisting of the master and crew, pilots, vessel traffic services (VTS), and aids to navigation. Controlling the ship movement in all situations is essential and requires timely decisions as the ships in movement cannot be stopped very fast. In the future the decision making will become physically distributed with the introduction of remotely operated and piloted ships. Sea4Value / Fairway program improves the safe navigation for existing vessels and lays foundation for autonomous vessels of the future. The key questions answered in the program are:

- What are the future teams that will ensure safe navigation in fairways?
- How to build the necessary situational awareness to enable decision-making to assist the navigation work in the future?
- Which part of the intelligence should be built on the fairway and surrounding infrastructure and which on the ship?
- What are the changes to be done in fairways and existing navigational and communication equipment within short and medium term?

S4VF is a transformative program that aims for wide societal influence by providing concrete researchbased recommendations on regulation, business, data usage & sharing and for standardization. In particular, the program targets on demonstrations and experiments, which are important milestones on the journey towards smart and autonomous maritime transport system. Experiments are related to smart fairway navigation and its technology solutions and the ePilotage-case will be demonstrated at the end of the program. The program is funded by the companies and Business Finland.

PROGRAM PARTICIPANTS

Industrial partners:

Awake.ai, Brighthouse Intelligence, Finnpilot Pilotage, Ericsson, Meyer Turku, TietoEVRY

Supporting industrial partners

ESL Shipping, Neste, Port of Helsinki, Port of Rauma, Port of Turku

Research organisations

Aalto University, Novia University of Applied Sciences, Tampere University, University of

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DIMECC Programs and projects

Jyväskylä, University of Turku

Governmental authorities and associations

The Finnish Meteorological Institute, Finnish Shipowners' Association, Transport and Communications Agency Traficom, Finnish Transport Infrastructure Agency, The Finnish Border Guard

awake.ai

BRIGHTHOUSE

INTELLIGENCE

FINNPILOT

MEYER T

tieto Evry

ESL Shipping

RKU

Schedule:2020-2022 Volume: 6,1 M€



Turun yliopisto University of Turku

YRKESHÖGSKOLAN



Finnish Shipowners' Association

TRAFICOM Finnish Transport and Communications Agency

Finnish Transport Infrastructure Agency







|| PORT OF || || HELSINKI ||

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PORTOFTURKU

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DIMECC Programs and projects



DIMECC with its customers and shareholders started the company's very first project in Sweden in November 2018. In Smart Steel project, SSAB, Sandvik, and Siemens will create new digital marking, fingerprint, and identity for steel and its use cases. These are aimed to change the way how customers can analyse and use the information related to steel through data systems and mobile applications. The target is standardization of digitally identified steel. The idea of Smart Steel is brought to publicity by SSAB, the biggest investor of the project. Smart Steel will also lead to new digital business models between the producers and users of steel. First pilots of such models were designed in 2020.

Swedish research institute Swerim will carry out technological research and marking tests together with specialised technology supplier companies. Swedish industry network FindIT disseminates the results fast to a network of more than 200 manufacturing and IT companies in the Dalarna region. In 2020, FindIT released a video called "If steel could talk". DIMECC brings the co-creation mechanisms to the leadership and management of the project, and to the ecosystem's new business creation.

Vinnova, the Swedish governmental RDI funding institution, has granted the 50% public funding for the project. Smart Steel is part of the Swedish strategic innovation program (Strategiska Innovationsprogram SIP) and its center PIIA (Process Industry och Industrial Automation, headed from Luleå Tekniska Högskolan). SIPs were established in Sweden in the mid-2010s after benchmarking the high-impact experiences in Finnish PPPs. DIMECC now continues the Public Private Partnership once started in Finland also in Sweden. After two years of execution, it looks that Smart Steel program will be enlarged and continued after 2020.

Schedule: 2018-2021 Volume: 10 MSEK





Figure 7: In Smart Steel project steel gets a new digital marking, fingerprint and identity.

DIMECC Co-creation services

DIMECC's co-creation activities aim at reducing the time-to-market, accelerating companies R&D&I, supporting technology transfer, and bringing together companies and research organizations into ecosystems facilitating the large-scalesystemictransformationofindustries.

DIMECC Demobooster ™

DIMECC Demobooster[™] is an innovation service for rapid commercialization. It provides a collaboration platform for companies hunting for killer applications through strategic partnerships: an innovation highway from ideas to products.

Demobooster in a nutshell

• A marketplace where demand and supply of software demos efficiently meet

• Immediate feedback on the functionality and applicability of the demo

• Forster product development process through "succeed or fail fast" principle

The mission of Demobooster is to demonstrate new ideas in practice. The outcome is not a "slide show presentation", but a concrete solution. Demobooster creates a specialists' network for the development and marketing of new ideas between Appliers (engineering industry) and Producers (software enterprises and expert organizations). We've had altogether 14 successful Demodays with 46 different challenges presented by the Applier companies. The Producers have pitched 122 innovative solutions to the problems, 26 of which resulting in a concrete demo (with a few additional ones currently under development). In total, there have been participants from 64 different companies. Demobooster is a registered trademark of DIMECC.

www.demobooster.com



Figure 8: DIMECC Demobooster service cycle.

DIMECC Co-creation services

РоДоСо тм

Post Docs in Companies, PoDoCo[™] is a matchmaking program supporting long term competitiveness and strategic renewal of Finnish companies and employment of young doctors in the private sector.

Grants awarded by PoDoCo foundation pool are intended for academic research investigating new innovative ideas to boost the strategic renewal of Finnish industry. PoDoCo program is funded by PoDoCo foundation pool and companies participating in the program. The duration of PoDoCo project is 1-2 years and it consists of two phases: research period and targeted research period. PoDoCo foundation pool offers research grants of 6-12 months for the research period. After the research period the company hires the Post Doc to deepen the research results and to create company specific insight. The result is a win-win situation where academic research is supporting the long term competitiveness and strategic renewal of Finnish companies and young doctors get industrial experience.

PoDoCo program is a joint initiative of Finnish universities, industry, and the foundations. Eleven foundations allocate altogether almost 1M€ to the program yearly, which enables around 35 PoDoCo grants each year. The program's foundations are Finnish Cultural Foundation, Jenny and Antti Wihuri Foundation, Maa- ja Vesitekniikantuki ry, Svenska Kulturfonden, Finnish Foundation for Technology Promotion, Maj and Tor Nessling Foundation, The Foundation for Economic Education, KAUTE Foundation, Paulo Foundation, Helsingin Sanomat Foundation, and The Society of Swedish Literature in Finland. DIMECC operates the PoDoCo program and facilitates the matches and meetings between companies and Post Docs. PoDoCo is a registered trademark of DIMECC.

Year 2020 was significant for PoDoCo. First of all, PoDoCo reached the age of five. During 5 years PoDoCo has granted over 4,6 M€ funding for 168 collaborative projects between companies and Post Docs. Half of the postdocs that received

DIMECC

funding were hired in the company after the project. This year's DIMECC Prize winner was Orion Pharma because of their PoDoCo strategy. In 2020 PoDoCo-programme received 62 funding applications and 34 of them were funded. The share of SMEs has been increasing during the years and it was 2020 over 85 %. Because of COVID19, most PoDoCo events were held digitally over internet and webinars gathered over 300 participants in the Autumn application round.

www.podoco.fi

MPD 2019 Paved the Way for Ecosystem Economy - the Next Frontier of Industry

Manufacturing Performance Days (MPD®) is an international top level B2B summit, which is organized every second year in Tampere, Finland. MPD is an executive and visionary event for digital and manufacturing industries, researchers, and technology & service providers worldwide. This highly appreciated event brings together top management of manufacturing and digital business companies, internationally recognised experts in the field of digitalisation, and academia to discuss and represent best industrial practices and operational excellence, novel business concepts, as well as scientific and technological breakthroughs in the field. Company visits, side-events, meetings, and potential networking nourish for R&D&I collaboration over the borders, and grows opportunities for new business contacts.

MPD was organized for the 7th time in 2019. MPD 2019 was an executive and visionary industry summit which guided the 800+ participants through digitalization, business leadership and the future of work to the business landscape of Ecosystem Economy. The strategic partners of MPD 2019 were Also, Beckhoff, Business Finland, DIMECC, Fastems, Intelligent Industry ecosystem, McKinsey&Company, Siemens, Technology Industries Finland, Tampere University, VTT, and

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DIMECC Co-creation services

Wapice. MPIDEA competition was organised for the 2nd time. Electric snow scooter by Forest Manor Oy won the competition. MPIDEA focuses on how to create growth and jobs through digital solutions.

Due to the COVID-19 pandemic, MPD 2021 has been postponed. Even though we had decided and announced in 2019 that there will be a new edition of MPD during the early summer of 2021 with the well-established event concept, COVID-19 forced us to announce to all MPD partners, that we cannot announce safe and realistic schedule for this globally integrating event. It is very likely, that the 8th edition will take place earliest in 2022, and it will have some physical and some digital elements. We will be back with the 8th edition of MPD, and more information will be available in spring 2021.

www.mpdays.com



Al-heräämö

DIMECC implemented during 2019 and 2020 a local, Pirkanmaa focused, Al acceleration activity entitled Al-heräämo, "Al Wake-Up" This activity aimed at de-mystifying Al and supporting SME companies to take their first steps to develop new products, product features and services based on available data. Al-heräämö organized workshops for companies in Kangasala, Sastamala, Valkeakoski, Tampere, Ylöjärvi, Nokia and Lempäälä. More than 100 persons from more than 80 companies participated in the training workshops and in the final on-line seminar.

Al-heräämö was partly funded by Council of

Tampere Region (Pirkanmaan liitto), which wants to improve the overall competitiveness of local SMEs by increasing their AI-savviness and encourages them to implement concrete AI pilots and solutions.



Al Morning

DIMECC

DIMECC has been organising in co-operation with Suomen Yliopistokiinteistöt and Nokia Technologies a series of events entitled AI-Morning (http:// www.aiaamu.fi). Since February 2017 over 1000 representatives from industry and academia have participated in these half day events with top quality Artificial Intelligence and Machine Learning presentations. During 2020 events focused on industrial applications and activating SME companies to take their first Alsteps. The popularity of the events indicates that the interest in Artificial Intelligence opportunities and skills is growing steadily. An increased number of private and public sector actors consider artificial intelligence as a key enabler towards next generation intelligent products and services.



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DIMECC Co-creation services

Demola – mobilize the best brains of generation Z for positive change

Demola Global helps businesses and organisations to explore future impacts and driving forces to build future-proof strategies. Since 2011, Demola has worked with more than 1,500 corporations, growth companies and public organisations.

Year 2020 changed Demola's operating model to be completely global and online. The students work in globally distributed online teams guided by professional Demola facilitators. Teams are even more multidisciplinary and multicultural, and they bring authentic insights from global perspective or targeted markets.

This online transformation has brought a wider base of participants and scaled up project volumes, which enables the gathering of future information, trends and future signals for the needs of Demola and DIMECC partner organizations. A year in the online environment has given Demola a tremendous lesson on how quickly the young generation learns to work effectively in distributed teams.

Just like DIMECC, Demola brings people together and enables new tools and practices for business renewal. By building a bridge between the decision-makers of yesterday, today, and tomorrow, DIMECC and Demola drive improved and more democratized ability to react to changes as a society. Demola thrives by inspiring organizations to create a better future for shareholders, society, and the planet.

Demola's learnings from global remote work:

 Pace of communication – Remote work enables us to rethink our traditional ways of communication. In Demola, instead of 2-3 hour team meetings, we have shifted to short, 15-30 minutes meetings and it has accelerated the flow of information immensely.

- Documentation In the remote work, you are forced to document your thoughts and ideas in much more detailed fashion. People understand that without the face-to-face interaction, you need to push the team to document the previously invisible thought work.
- Competence reach in the global remote work, you are much more likely to find the most motivated and competent people to work with. People seem to be much more open and flexible with their schedules.

www.demola.net



DIMECC Networks

DIMECC Networks

DIMECC supports its shareholders and customers in increasing their international research, development and innovation collaboration with excellent and high-performing international networks and strategic cooperation partners. DIMECC is closely and deeply embedded in the wide European innovation ecosystem.

DIMECC works especially actively in public private partnerships (PPP) in Europe. DIMECC is member of EFFRA ("European Factories of the Future Research Association", discrete manufacturing and industrial digitalisation), A.SPIRE ("Sustainable Process Industry through Resource and Energy Efficiency", process manufacturing, mining, metals, circular economy, and materials), and Waterborne ("European research and innovation platform for waterborne industries", maritime equipment and business). DIMECC ensures with its customers that there will be topics of interest for digitalizing industries in the roadmaps of these PPPs, and DIMECC helps to find partners and public funding within these topics.

In 2020, International Data Spaces Association (IDSA), Digitala Stambanan (SWE) and Gaia-X became important frameworks for DIMECC to proceed with data sharing issues. DIMECC supports the Industry–University Cooperative Research Centers Programme of the US National Science Foundation (NSF) by initiating US-Finnish knowledge creation, deployment, and funding collaboration. Two of NSF centers, CVDI (at Tampere University) and S2ERC (at the University of Oulu), are initiated by DIMECC's programs. capacity of policymakers, industry associations and industrial SMEs to enable faster and more efficient uptake of digital solutions both in public and private sector. The focus is specifically on promoting uptake of ICT in the business sector, developing innovative and interoperable digital public services, and facilitating 'Digital Single Market' -related policy discussions on the BSR level. DIMECC, together with the Finnish and Estonian project partners, has raised the topic of Real Time Economy (RTE) on the project's agenda.

DIMECC has been leading one of the four DIGINNO showcases, i.e. 'Borderless Real Time Economy (RTE) - Spearhead eReceipt'. The goal of this showcase was to demonstrate the basic idea behind RTE solutions, i.e. to fully automate G2B business data exchange processes and transfer them to machine-to-machine communication without any human interruptions in the process. On September 23, 2020 DIMECC organized a full-day online dissemination workshop, which focused on harmonizing the policies and longterm RTE implementation roadmaps in the BSR countries. On December 15, 2020 DIMECC's showcase was presented in the DIGINNO project's final workshop.

DIGINNO partners: 14 full partners and 10 associated partners from seven BSR countries. Finnish partners: DIMECC as full partner, Finnish Ministry of Finance and Technology Industries of Finland as associated partners.

Schedule: 01 October 2017 – 31 March 2021 Volume: 3,5 MEUR

www.diginnobsr.eu

DIGINNO

The objective of Digital Innovation Network (DIGINNO) is to advance the digital economy and to speed up the process of moving towards the single digital market in the Baltic Sea Region (BSR). The project aims to increase the



DIMECC Networks

FIIF

FIIF (Finnish Industrial Internet Forum) was founded by Technology Industries of Finland (TT) in 2014 to speed up new businesses enabled by digitalization. It is a company-driven activity that brings together appliers and providers of digital solutions with innovative startups and research organizations. It also offers an open platform for sharing experiences, identifying new business opportunities and future trends, exploring testing and piloting activities, and formulating collaborative development actions. DIMECC is the owner of the FIIF concept and it has been responsible for its operations since 2018.

Annual FIIF Survey was conducted in the spring and it received 27 responses. This year focus was on FIIF services and their use. Based on the survey results, FIIF Newsletters and Events are regarded both interesting and useful (Newsletters: 56 %, Events: 66 %). We also received good suggestions for topics for future FIIF events: sustainability, circular economy, industrial use of AR, and IoT and AI in data analysis to name a few.

On February 13, 2020, FIIF organized in cooperation with IBM Oy and the Finnish Software and e-Business Association an event on industrial process optimization ("Bit by bit – improving competitiveness through industrial process optimization"). A similar event was planned for more technical people in March, but due to the COVID-19 pandemic that event was first postponed to fall of 2020 and then put on hold.

On March 10, 2020 FIIF organized a cyber security event at TAMK's annual IoT Seminar.

On May 14, 2020 FIIF organized an online event with KOTEL titled "Reliability & Testing".

In the spring of 2020 FIIF launched a new type of events called "FIIF Flash": a short online event with 1-2 presentations from a single company

	FIIF EVENTS IN 2019	
Month	Торіс	Location
February	Bit by bit – improving competiti- veness through industrial process optimization	Helsinki
March	Cyber security	Tampere
April	FIIF Flash: Taival Advisory Oy	Online
April	FIIF Flash: Top Data Science Oy	Online
Мау	Reliability & Testing (with KOTEL)	Online
Мау	FIIF Flash: Melkki Oy	Online
Мау	FIIF Flash: Sensorfleet Oy	Online
Мау	FIIF Flash: Augumenta Oy	Online
September	FIIF Flash: VTT Oy	Online
October	Data summit for built environment (with 6Aika community)	Online
October	FIIF Flash: Ainak Oy	Online
November	FIIF section at DIMECC's Annual Se- minar	Online

promoting expertise and improving visibility to the other FIIF partners. Seven companies used this opportunity during 2020: Taival Advisory Oy (April 16, 2020), Top Data Science Oy (April 29, 2020), Melkki Oy (May 6, 2020), Sensorfleet Oy (May 15, 2020), Augumenta Oy (May 20, 2020), VTT Oy (September 1, 2020), and Ainak Oy (October 27, 2020).

On October 6, 2020 FIIF organized a data summit for built environment with 6Aika community as part of their "Energiaviisaat kaupungit" ("Energywise cities") and "Ilmastoviisaat taloyhtiöt" ("Climate-wise houses") projects.

On November 10, 2020 FIIF participated in DIMECC's annual seminar with its own exhibition area featuring presentations from five FIIF partners (Augumenta Oy, KOTEL r.y., Melkki Oy, Taival Advisory Oy, and VTT Oy).

Six issues of FIIF Newsletter and two issues of FIIF Alert were published. During 2020 FIIF's web pages were viewed 642 times in 849 sessions. As of December 31, 2020 FIIF had 145 partner organizations and 427 names on its mailing list for Advanced New Technologies). The High Level Forum was initiated in 2012. Tampere is the Finnish city invited to attend the HLF among more than 30 internationally recognized cities in innovation. The goal of the High Level Forum is to share policies, strategies and experiences about innovation management and promotion between leading campuses, to encourage and strengthen collaboration between the world's most powerful innovation ecosystems, and to develop common initiatives for maximizing the social and economic benefits of innovation programs from the participating campuses.

DIMECC is responsible for the Finnish delegation. In 2020, the High Level Forum was attended by DIMECC, Tampere University, VTT, Baltic Institute of Finland, and Demola. Dr. Peter Ylen from VTT and Dr. Harri Kulmala from DIMECC highlighted in two panel discussions the Finnish innovation ecosystems' recovery from COVID-19 and some of the effects of the pandemic on digitalisation and innovation work in practice. In 2020, Harri Kulmala was nominated to the HLF Steering Committee.



FINNISH INDUSTRIAL INTERNET FORUM

High Level Forum

High Level Forum (https://hlf-giant-grenoble. org/) is an international forum devoted to co-learning between the leading innovation ecosystems. It is managed by the Grenoble Innovation Campus GIANT (Grenoble Innovation GIANT HIGH LEVEL FORUM Leading Innovation Ecosystems

International Data Spaces Association (IDSA)

DIMECC is a member of International Data Spaces Association (IDSA). The association takes an active part in designing a trustworthy architecture for the data economy. More than 100 companies and institutions of various industries and sizes from 20 countries, including several Fortune 500 companies, global acting mediumsized companies, and software and system houses are members of the association. The IDSA aims to guarantee data sovereignty by an open,

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vendor-independent architecture for a peer-topeer network, which provides usage control of data from all domains.



NSF

DIMECC and its partners have created new opportunities of international cooperation for Finnish researchers and companies. US National Science Foundation's (NSF) I/UCRC (Industry/University Cooperative Research Centers Program) provides a unique possibility for co-creation between research and industry. The National Science Foundation (NSF) is an independent federal agency created by the US Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense...". NSF is vital because it supports basic research and people to create knowledge that transforms the future.

Starting from 2015 Finland has participated (as the fifth country outside USA) in the Program in the field of Big Data and the CVDI-center (Center for Visual and Decision Informatics, https://iucrc.org/center/center-visual-anddecision-informatics) dedicated to the topic. CVDI conducts research on data science, big data, analytics, including visual analytics, augmented intelligence, and decision informatics. Finnish Site of CVDI center was created within DIMECC Data to Intelligence program. Currently 11 industry members participate in the work of the center. Tampere University is working as the Finnish Site for the center and all Finnish Universities may participate in the center through TUNI.

US and Finland have also agreed on a significant cyber security partnership based on DIMECC's Cyber Trust program. In 2017 site of Security and Software Engineering Research Center (S2ERC, https://www.serc.net/) was opened at University of Oulu. The center is conducting applied and basic research on software security, system security, and software engineering problems in order to enable technology gains in member organizations. Currently 24 industry partners are involved in the work of the center. Similarly to CVDI center, other Finnish universities may participate in S2ERC center as well.



DIMECC Strategic Partnerships

DIMECC supports its shareholders and program participants in increasing their international research collaboration, especially together with strategic cooperation partners:



DIMECC was member or facilitator of international collaboration networks in 2020 as follows:

Artemis Industry Association A.Spire (Sustainable Process Industry through Resource and Energy efficiency) Demola Global Ltd. ECSEL Joint Undertaking EFFRA (European Factories of the Future Research Association) FIIF Finnish Industrial Internet Forum HLF High Level Forum of Innovation Ecosystems IDSA International Data Spaces Association IIC Industrial Internet Consortium (U.S.) ManuFuture European Technology Platform Waterborne (The European research and innovation platform for waterborne industries)

In these networks, DIMECC's goal is to ensure that these networks' research priorities are of interest for DIMECC's shareholders. DIMECC organises excursions to various foreign innovation locations and organisations regularly. All DIMECC programs include systematic and continuous researcher exchange.

DIMECC seeks to be a major node in European Digital Industry Hub landscape. We operate two DIHs: Intelligent Industry DIH and One Sea DIH. In 2020, DIMECC prepared three proposals for European Digital Innovation Hub eDIHs to the forthcoming Digital Europe program's, which are to be launched in 2022.

SHAREHOLDERS 2020

SHAREHOLDER	N. OF	Metso Oyj	120
	SHARES	Meyer Turku Oy	120
Aalto-korkeakoulusäätiö	150	Murata Electronics Oy	24
ABB Oy	120	Nokia Oyj	120
Andritz Oy	50	Nokia Solutions and Networks Oy	84
Bittium Technologies Oy	120	Oulun yliopisto	64
Boliden Kokkola Oy	50	Outokumpu Oyj	120
Cargotec Oyj	120	Outotec Oyj	50
Centria Ammattikorkeakoulu Oy	12	Prizztech Oy	12
CSC-Tieteen tietotekniikan keskus Oy	12	Rautaruukki Oyj	120
Cybercom Finland Oy	12	Raute Oyj	50
Digita Oy	52	Reaktor Innovations Oy	12
Elisa Oyj	120	Sanoma Oyj	120
Oy L M Ericsson Ab	120	SSH Communications Security Oyj	12
EXFO Oy	12	Stiftelsen Arcada	9
Fastems Oy Ab	50	Stiftelsen Svenska Handelshögskolan	40
FIMA Forum for Intelligent Machines ry	50	Suunto Oy	12
Finn-Power Oy	50	Tampereen Ammattikorkeakoulu Oy	40
F-Secure Oyj	12	Tampereen korkeakoulusäätiö	76
Haaga-Helia Oy Ab	12	Technopolis Oyj	60
Helsingin yliopiston rahastot	24	Teknologian tutkimuskeskus VTT Oy	210
nno-W Oy	12	Teleste Oyj	12
ltä-Suomen Yliopisto	12	Telia Finland Oyj	120
Juridiska Personen Åbo Akademi	40	Tieto Finland Oy	120
Jyväskylän ammattikorkeakoulu	12	Tuotekehitys Oy Tamlink	64
Jyväskylän yliopisto	52	Turun Ammattikorkeakoulu	52
Kaakkois-Suomen ammattikorkeakoulu	12	Turun yliopisto	64
KONE Oyj	120	Vaasan yliopisto	40
Konecranes Oyj	120	Wapice Oy	50
Kongsberg Maritime	50	Wärtsilä Finland Oy	120
Kumera Oy	50	Åbo Akademi	24
Lapin Ammattikorkeakoulu Oy	40	Älykkään liikenteen verkosto	12
Lapin Yliopisto	24	- ITS Finland ry	
Lappeenrannan teknillinen yliopisto	64	1	
Laurea Ammattikorkeakoulu Oy	52]	
Medialiitto	12]	
Metropolia Ammattikorkeakoulu Oy	52	1	



BOARD OF DIRECTORS

Board of directors was elected in the annual general meeting in April 27th, 2020. The board had ten meetings in 2020.

In 2020, the remuneration paid to board members was 150€/meeting (200€ for the chairman). Due to the challenges with the profitability, the Board decided to work without the remuneration. PricewaterhouseCoopers Oy, and Mr. Tomi Moisio as the auditor in charge, continued as the auditor of the company.



Karno Tenovuo Mika Toikka Markku Haakana Rauno Hatakka Jari Still (chair) (vice chair)

Tapani Tilus

Deputies

Tomas Hedenborg Tapani Kiiski

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MANAGEMENT



Dr. Harri Kulmala

Chief Executive Officer

External positions in 2020:

- Finnish Academy of Technical Sciences, vice chairman
- Member of The Royal Society of Arts
- Member of high-level group, EU ManuFuture technology platform
- Associate professor (docent), LUT
- Member of innovation and competitiveness council, Finnish Technology Industries
- Demola Global Ltd. member of the board
- Linz Center of Mechatronics, member of strategic advisory board



Päivi Haikkola (M.Sc. Nav. Arch, M.Sc. Econ.) Senior Ecosystem Lead

External positions in 2020:

- Member of the Research Committee of Finnish Marine Industries
- Member of The Royal Institute of Naval Architects
- Member of the Board of the Finnish Society of Naval Architects



Risto Lehtinen (M.Sc.Eng.) Head of Co-creation

External positions in 2020.

• Auditor for KOTEL r.y.

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PERSONNEL (AS OF DECEMBER 31, 2020)



Antti Karjaluoto (M.Sc. Econ., M.Sc. Admin.) Disruptive Renewal Officer



Doris Pryjma (M.Sc. Eng.) System Manager



Jukka Merenluoto (M.Sc. Tech., MBA) Senior Ecosystem Lead



Prof. Seppo Tikkanen Senior Ecosystem Lead



Kari Muranen (B.Sc. Eng.) Senior Ecosystem Lead



Kari Aunola (B.Sc.Econ.) Financial manager (until 30.9.2020)



Kaisa Kaukovirta (M.A.) Manager, marketing and communications (maternity leave substitute for Marika Moilanen)



Prof. Reijo Tuokko Manager, international relationships (part-time, until 30.3.2020)



Dr. Arto Peltomaa Program Manager



Marika Moilanen (BBA) Manager, marketing and communications (maternity leave)

DIMECC FELLOWS

DIMECC Fellow is a public recognition to a person, who represents the official set of DIMECC values in force at the time of nomination and forwards these with his/her behaviour.

DIMECC values consist of **openness & transparency**, **efficiency & effectiveness** in all activities, and expressed cooperation and **respect and recognition** of competence and expertise.

The person to be nominated as "DIMECC Fellow" must fulfil the following criteria:

- Many years of work for and publicly shown support to DIMECC Ltd. (no need to be formally DI-MECC employee).
- Experienced by colleagues and others as a strong supporter for openness, transparency, and renewal.
- Effective and efficient work for the generic and overall success of ICT, manufacturing & engineering industries.
- Willingness and capability to combine scientific and practical interests.
- Positive and open mind towards new, radical, and non-traditional ways to organize R&D&I and management of these.

DIMECC FELLOWS

Nomination year

#1	Pentti Karjalainen, Professor, University of Oulu	2013
#2	Ilkka Niemelä, Director, The Federation of Finnish Technology Industries	2013
#3	Matti Sommarberg, CTO, Cargotec Oyj	2013
#4	Arto Ranta-Eskola, R&D director, SSAB	2015
#5	Ismo Vessonen, Senior Research Scientist, VTT	2015
#6	Janne Järvinen, R&D director, F-Secure	2017
#7	Markku Korkiakoski, Director, Sales and Business Development, Bittium	2017
#8	Sauli Eloranta, EVP, Rolls-Royce	2017
#9	Miia Martinsuo, Professor, Tampere University of Technology	2018
#10	Tomas Hedenborg, President & CEO, Fastems	2018
#11	Yrjö Neuvo, Professor, Aalto University	2018

ESULTS AND NEWS OF THE YEAR 2020

This chapter introduces results, outcomes and news from DIMECC programs in 2020.

DIMECC Prize winner: Orion Pharma for systemic use of PoDoCo™ program to speed up building comptencies in R&D

The award-winning systemic collaborative approach of Orion to use DIMECC services as a mechanism to speed up recruitment and competence building in R&D has been achieved through the PoDoCo program (Post Docs in Companies[™]). Prof. Antti Haapalinna VP, External Research and Partnering, R&D at Orion received the DIMECC Prize in Helsinki. The annual award was presented by DIMECC CEO Harri Kulmala at the company's 13th annual seminar. The Data Sharing -themed seminar on industrial data utilization and sharing was organized together with Business Finland, the governmental Finnish innovation agency.

Orion Oyj has hired highly educated and doctoral degree persons to work both at their R&D and business development for a long time. Since the launch of PoDoCo program in 2015, Orion has funded 6 post docs out of which five work now have either permanent or temporary vacancy at the company.

"We use PoDoCo in a very pragmatic way: Whenever a new soon-to-be-doctor or Post Doc suggests a new challenge and collaboration with us, we use PoDoCo program as an instrument to start a two-year project during which the post doc gets research funding from foundations and



Figure 9: DIMECC CEO Harri Kulmala handed the Prize to Professor Antti Haapalinna VP, External Research and Partnering, R&D at Orion Photo: Risto Lehtinen, DIMECC

a position inside our company. We cannot predict and plan, what kind of topics and doctors may pop up, but when candidates occur, we support and jointly made such a plan on a topic we see interesting. In that way, we can systematically use DIMECC as a mechanism, which brings high probability of channeling external funding and new talent to Orion", says Professor Antti Haapalinna.

"Orion is one of the most active and systemic users of PoDoCo throughout the program's history. For a large company, this seems to reduce cost, risk, and time needed to increase competence and the number of very highly educated personnel", says Professor Seppo Tikkanen, Program Manager of PoDoCo.

DIMECC InDEx improves processes with AI: Case examples from Prima Power and Elekmerk, Konecranes and Raute

InDEx program improves process efficiency through data sharing. An example of this is a project by Prima Power, which specializes in sheet metal working machines and systems, and Elekmerk Oy, which specializes in sheet metal mechanics, machining, surface treatments and assemblies.

Companies are working together to develop a tool to optimize the ordering and manufacturing process using artificial intelligence. The result is a platform that automates pricing, parts orders, manufacturing scheduling, and bidding.

"The new cloud manufacturing platform will support our customers by automating their manual and time-consuming daily operations, such as calculating quotations and processing orders. The main idea behind the platform is the Al-driven digitalized production flow from order to delivery, which we have been testing together with Elekmerk Oy (HT Laser). By using the new cloud solution, our customers will enter a new era of digital manufacturing and will benefit from improved lead response time and cost savings.", says Valeria Boldosova, the Digital solutions and strategy developer of Prima Power.

Konecranes hoisting rope

Konecranes utilizes image data and Artificial Intelligence to determine the condition and performance of the hoisting rope. The condition and the proper time of its replacement are determined based on images taken of the hoisting rope. In this way, sudden breakdowns of the hoist and resulting disturbances in production can be avoided, as well as the cost of unnecessary rope replacements.

"Utilizing a neural network -based algorithm we can identify damage and normal wear in the rope. This information improves safety of the hoist and ensures smooth production by minimizing downtime", says Research Engineer Roope Mellanen from Konecranes.

Raute raw materials

Raute is studying the optimization of the manufacturing process with an artificial intelligence-based system that optimizes the use of raw materials and the quality of the end product. The system uses data collected at the beginning of the process, from which the properties of the final product can be assessed on historical data. This information can be used to increase yield and reduce waste and improve the quality of the final product.



Figures 10 and 11: New rope (left) and rope at the end of its lifecycle (right). Images Konecranes

LIFEX:NokiaTechnologiesachieved significant results in international standardisation forums such as MPEG

Within the scope of the MIDAS project, Nokia successfully developed new capabilities in audio-visual AI algorithms and deployed them for trials on different platforms. Collaboration and discussions with other partners proved to be valuable in understanding the real-life deployment challenges and requirements. As a result, several of the developed AI algorithms are productized by Nokia.

Many results have actively been contributed to various ISO standards such as MPEG Network Based Media Processing (ISO/IEC 23090-8) and Coded Representations of Neural Networks (ISO/ IEC 15938-17), enabling a leadership role to Nokia and Finland in these standards which are also expected to be utilized in 5G services via 3GPP standards.

Innovative image coding solutions

"In MIDAS project Nokia put special focus and effort into the international impact of project results, especially in world-wide standardization platform of Al and related processing technologies. We managed to archive significant results in standardisation forums such as MPEG. The resulting standards can be used in several future 5G services of Nokia and other vendors. In addition to this world-wide achievement. MIDAS ecosystem also significantly accelerated the establishment of AI competencies for the whole Tampere region companies that participated in MIDAS and took them to the next level in AI technologies", says Ville-Veikko Mattila, Head of Research at Nokia Technologies.

Nokia's knowhow development on AI based media compression has been one of the key outcomes of MIDAS project. Nokia contributed to several academic challenges such as CLIC (Challenge of Learned Image Compression) and significantly contributed to the progress of this promising field, which is now also under exploration by MPEG for video compression and JPEG for image compression. For the later, Nokia recently won the "most Innovative image coding solution" award which is awarded by the JPEG-AI challenge.

Effective industrial-academic Al ecosystem

With the help of MIDAS, Nokia contributed to the establishment of one of Finland's most effective industrial-academic AI ecosystems. With correct partnerships with academia and SMEs, competence and know-how of all contributing parties have significantly progressed. This aspect is an important impact of the project which would last beyond the project's timeline and hopefully trigger new partnerships and innovations on the emerging field of AI and its applications both domestically as well as internationally.

Sea4Value: Sensor test station collects data for the smart fairway

When a ship rolls out from the port of Turku to the archipelago, a sensor station along the fairway detects the movement and starts recording data. It makes observations about maritime traffic and produces information related to the fairway. The cameras of the test station record both video and thermal images. In addition, the sensor test station stores information, such as the direction of sea currents and wind, speed, barometric pressure, and temperature. The station is used to learn what kind of equipment is needed to build a smart fairway and how the situational awareness it transmits can be utilized.

"The data collected gives a more accurate picture of what is happening on the fairway. In this way, safety of the the smart fairway is increased. Of course, this alone does not make the sea safe, but when there is a better picture of the traffic situation on the fairway, skippers can be warned of dangerous situations," says Markku Sahlström,

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Figure 12 The archipelago's sensor test station has withstood well the snow and frosts of winter. Images Brighthouse Intelligence

CEO of Brighthouse Intelligence. The company produces solutions for remote-controlled and autonomous maritime transport systems.

The development of the smart fairway is part of the Sea for Value (S4V) program, which began in the spring of 2020. The first part of the program, the Fairway project, focuses on the development and testing of future fairway services and remote pilotage.

More intelligence along the fairway

The test station was installed in place in the summer and will store data for a year and a half. The station has withstood well the snow and frosts of winter. The seawater flow meter was raised as the sea began to freeze.

The sensor test station itself has some computing power. After preprosessing the data, it sends it via an LTE modem through mobile network to the cloud service, from which the data can be downloaded by all program participants for research and development purposes. The data will be used to develop, among other things, pattern recognition algorithms and to study the effect of sea currents and winds.

"The shipbuilding industry has focused a lot on developing onboard technology, but now we're bringing more intelligence along the fairway," says Markku Sahlström.

From a Demobooster pitch to a Veikkaus product

In Veikkaus, the target is to get new innovations on market every year – and not just any innovations, but the ones that bring significant extra value to customers and the company. To get something brilliant out to the customers every year, the new business innovation needs to be efficient.

"We need many innovation partners and a great deal of candidates for the innovation funnel in order to get something new out to customers each year", says Kimmo Koskinen, Innovation Manager at Veikkaus Oy.

In the process, only a few of the ideas pass through the proof of concept (PoC) phase and customer testing. Two candidates have been found through DIMECC's Demobooster. The first is already reaching the end of the funnel and is about to appear as a final product soon and the second one is about to enter the funnel.

Nortal and Game Family cooperation

Veikkaus representatives visited Demobooster



Figure 13: Demobooster was organized virtually.

Demo Day in Otaniemi, Espoo in 2018, and decided it was a concept worth trying out. The first challenge Veikkaus presented was on the technology track.

"We hoped that the propositions would use any trending technology, such as block chain, and use this technology to bring something new to our customers", Koskinen explains.

The Demobooster process ended up with an agreement with Nortal and in a year the idea proceeded all the way from the pitch to the proof of concept (PoC) phase and beyond.

"With the results from the PoC, we are now building a new solution to make the Veikkaus and Veikkaus Game Family cooperation more efficient", Koskinen says.

Mirum and Excitement as a Service

The second candidate found in another Demo Day went through PoC's and customer testing in autumn of 2020. According to Veikkaus, Mirum's proposal about Excitement as a service sounded like something that had potential and the company proved to have a team big enough to bring it through. The proposal will proceed into PoC and closed customer testing before end of the year 2021.

"The end of the year will show if this turns out to be something that our customers are fond of and if we are going to proceed with it", Koskinen explains.

"If that's the case, the product could come out in 2022".

In Demobooster, the companies were contacted and screened by the Demobooster crew and the challenge and pitches were presented in a virtual meeting.

"Our job was to listen, analyze and discuss. It could not get any easier than that", Koskinen recalls.

STAKEHOLDER RELATIONSHIPS

Support and assistance from following nonshareholder organisations supported in DIMECC strategy and operations:

Beijing Academy of Science and Technology **Business Finland** CECIMO Chinese Academy of Sciences – Qingdao Academy of Intelligent Industries (CAS-QAII) Clic Innovation Ltd. **Confederation of Finnish Industries EK** DFHK Finnish German chamber of Commerce EFFRA **Finnish Marine Industries** Finnish Ministry of Employment and the Economy Flanders Make It'sOWL Clustermanagement GmbH Linz Centre for Competence in Mechatronics (LCM) MADE - Manufacturing Academy Denmark Metallinjalostajat ry Ohjelmistoyrittäjät ry Orgalime PiiA. Sweden Politecnico di Milano Production2030, Sweden **RWTH** Aachen SPIRE SYMME, France **Tampere Chamber of Commerce Technology Industries of Finland** Upper Austrian Research GmbH ZPark

Following suppliers were used for services:

Datalink - PoDoCo[™] Fondia Oy - Legal services Gaia Consulting Oy - Demobooster[™] Hopiasepat Oy - Impact analysis & communications Inno-W Oy - Web pages & research portal Koodiviidakko Oy - Communication platforms Meom Oy - Web pages Triuvare Oy - IT infrastructure Talenom Oy - Accounting

COMMUNICATIONS

The primary communications between DIMECC and public media were through website www. dimecc.com. Several DIMECC personnel interviews, articles and technology policy comments were published in Finland and internationally.

DIMECC was active through following communications:

- DIMECC In-Brief information package was updated
- Five DIMECC Newsletters and six FIIF newsletters were published in digital form
- Co-creation service leaflets were branded and printed
- Industrial data economy for Finland paper was published online
- DIMECC was active in social media channels in Twitter and LinkedIn
- DIMECC Youtube channel was actively used for sharing recordings
- DIMECC Annual Seminar 2020 Industrial Data Sharing Day was organized with Business Finland



Figure 14. DIMECC's Annual Seminar 2020 – Data Sharing Day was held together with Business FInland. The event was hosted by Head of Co-creation Risto Lehtinen.

KEY FINANCIAL INFORMATION

The financial year 2020 of DIMECC ended December 31st. Due to the special role of DIMECC as a non-profit company, the key financial information is presented in short form and without traditional business performance measures.

Income	
Net sales DIMECC program management fees Other income Total income	576 251,34 242 000,00 599 786,79 1 418 038,13
Expenses Materials and services Staff costs External program management cost Other expenses from operations Total expenses	-112 842,15 -997 574,61 -0,00 -267 508,60 -1 377 925,36
Operating profit Financial income	40 112,77 6 863,24
Profit of the year	46 976,01
Assets	
Assets Stocks, shares, and fixed assets Long-term investments Short-term receivables Cash and bank balances Total assets	499 500,00 6 124,90 546 416,34 2 281 638,18 3 336 283,42
Assets Stocks, shares, and fixed assets Long-term investments Short-term receivables Cash and bank balances Total assets Liabilities and shareholders' equity Restricted equity	499 500,00 6 124,90 546 416,34 2 281 638,18 3 336 283,42 1 146 500,00
Assets Stocks, shares, and fixed assets Long-term investments Short-term receivables Cash and bank balances Total assets Liabilities and shareholders' equity Restricted equity Non-restricted equity Not losses from provious years	499 500,00 6 124,90 546 416,34 2 281 638,18 3 336 283,42 1 146 500,00 2 302 113,91 558 898 45
Assets Stocks, shares, and fixed assets Long-term investments Short-term receivables Cash and bank balances Total assets Liabilities and shareholders' equity Restricted equity Non-restricted equity Net losses from previous years Net profit of the year Liabilities	499 500,00 6 124,90 546 416,34 2 281 638,18 3 336 283,42 1 146 500,00 2 302 113,91 -558 898,45 46 976,01 399 591,95



ANNUAL REPORT 2020

DIMECC LTD.

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