



European Construction Sector Observatory

Policy fact sheet

Estonia

The Estonian Digital Construction Cluster

Thematic objectives 2 & 4

November 2020



In a nutshell

Implementing body	Estonian Digital Construction Cluster Management Board (44 companies). Supported by Enterprise Estonia and the European Regional Development Fund (ERDF).
Key features & objectives	A digital construction cluster initiative that brings together value chain stakeholders to create smart construction solutions, support their uptake and improve the sector's competitiveness.
Implementation date	2019 – 2023
Targeted beneficiaries	The construction value chain in Estonia.
Targeted sub-sectors	All construction sub-sectors and related (sub)sectors – e.g. real estate, ICT, higher education, public sector.
Budget (EUR)	1.2 million ¹ (50% from ERDF)
Good practice	★★★★☆
Transferability	★★★★★

Digitalisation has the potential to create significant growth opportunities for the construction sector². Increased productivity, process/lifecycle efficiency and innovation, and reduced operating costs, are some of the main advantages. Using digital technologies construction companies can, for example, improve building designs, increase project communication, control and transparency, rapidly configure building systems (e.g. air quality, energy efficiency). Digital technologies also inspire and enable product and service creativity. They also ultimately benefit society (e.g. living standards, health and well-being)³.

In spite of the economic downturn at the end of the last decade, total investment in the Estonian construction sector grew by 10% during

2010-2016⁴. Between 2016 and 2019, the construction sector also recorded strong economic growth⁵, with a 20% increase in domestic construction output⁶.

Estonia is an established provider of online public services and is accustomed to using digital technologies and internet services⁷. The importance of digitalisation is well recognised and is embedded in Estonia's Digital Agenda 2020⁸. This strategy aims to guide the creation of a mature and secure environment for the widespread use and development of smart ICT solutions across all sectors in Estonia⁹. The digitalisation of industry is also an important objective in the Green Paper on Industrial Policy in Estonia. It targets an increase in enterprise added value in the industrial sector to 80% of the EU average by 2030¹⁰.

In 2015, the E-difice Digital Construction Cluster was launched to bring together private and public stakeholders to initiate the digital transformation of the Estonian construction sector. The E-difice Cluster was superseded by the Estonian Digital Construction Cluster (EDCC), which launched in 2019. The new cluster is building on the work of the previous cluster. Its main purpose is to develop an innovative digital construction environment that encompasses the entire construction lifecycle and value chain. Ultimately, the cluster aims to help its members to significantly increase their sales revenues and international competitiveness¹¹.

The EDCC has the potential to be a very successful initiative. Early achievements suggest that it will be. Eight working groups have been established to develop solutions to important digital transformation challenges in the construction sector.

How to best support the adoption of Building Information Modelling (BIM) solutions in Estonia, manage data, improve regulations and practices, and grow exports?

These are some of the key questions the EDCC is seeking to answer.

1.

General description

The EDCC was launched in 2019 with a four-year workplan. It aims to increase the use of smart construction solutions and support the digital transformation of the construction sector.

The EDCC brings together a broad range of stakeholders from across the construction lifecycle value chain. Members¹² include construction companies, property developers, architecture and engineering firms, research institutions, IT companies, construction material producers and property service providers. The membership is currently composed of 45 companies and three higher education institutions.

The EDCC has established partnerships¹³ with four government bodies – Estonian Ministry of Economic Affairs and Communications, Estonian Road Administration, Tallinn City Council and Enterprise Estonia (national investment agency) – as well as with the Estonian Association of Information Technology and Telecommunications (ITL).

The EDCC's principal objectives¹⁴ are to support the development of:

- Smart construction solutions / products / tools, including new Virtual Digital Content Manager (VDCM), Grid and an eConstruction platform;
- A domestic market for smart construction solutions;
- A digital and automated construction sector;
- A more competitive and export-focused construction sector;
- A more innovative and technology-driven construction sector that is attractive to students and young people.

To achieve these objectives, the cluster plans to organise training and study trips to gain

international experience. It also aims to promote cooperation and support the development of a regulatory framework to underpin the digital technology developments.

The work of the EDCC was initially divided into six working groups. Each group is tasked with developing solutions to address important digitalisation challenges facing the Estonian construction sector¹⁵:

1. The **Integrated Project Implementation (IPT) Working Group** is analysing IPT principles, with a view to applying them in the Estonian market;
2. The **BIM Working Group** is focusing on BIM solutions for the Estonian construction sector. Examples include the harmonisation of BIM requirements, software standardisation and localisation, and the sharing of best practices on the use of BIM;
3. The **Export Working Group** is exploring how to increase the export capacity of EDCC partners. Incentive activities include joint customer visits, sharing export-related information, and the search for joint export opportunities;
4. The **Government Cooperation Working Group** is examining existing and entrenched regulations and practices in the construction sector, with the aim of working with national and local government to create a new development framework;
5. The **InfraBIM Working Group** is dealing with infrastructure BIM by creating a unified project documentation management platform and archive environment, developing InfraBIM guidelines and modernising procurement procedures;
6. The **Culture and Communication Working Group** is focusing on the development of a digital culture in the construction sector and the communication of digital opportunities to target groups and the public.

2.

Achieved or expected results

Implementation of Estonian Digital Construction Cluster activities began in 2019 and are due to continue through to 2023, based on the current funding package. As a new initiative, reported results are currently rather limited.

Main results in 2019

The EDCC organised high-level executive study visits to learn from the experience of international organisations around the world, from Silicon Valley to the UK to Singapore. The cluster also organised **training for its members on collaborative procurement models**¹⁶ to help increase knowledge within the cluster. It aimed to provide additional incentives to enable cluster members to make the best use of their capabilities and resources¹⁷.

The EDCC has been working with the Ministry of Economic Affairs and Communications (MEAC), providing insight on the construction sector and its digital needs. For example, EDCC cluster members provided input to support the creation of a classification system for BIM requirements for public sector customers. This work was based on best practices work¹⁸. The EDCC also provided input to the “Analysis of Productivity, Added Value and Economic Impact of the Construction Sector”¹⁹, a government commissioned study.

The **list of working groups was extended from six to eight**, with the set-up of a further two groups: **Material Manufacturing** and **Parametric Design**. The Material Manufacturing working group manages cooperation between building material manufacturers and other stakeholders within the construction sector. The Parametric Design Working Group is focused on automated solutions for routine work sections to speed up work processes.

The EDCC launched an **export-orientated website** (<https://www.estoniandcc.com/>) to promote

Estonian companies and their products and services to foreign markets. It helps to generate contacts with companies in international markets and it supports the search for international cooperation projects for the cluster and its members. All enquiries received through the website are managed by the Export Working Group²⁰.

Main results in 2020

In 2020, the EDCC has launched another working group. The **Data Working Group** is tasked with developing smart data-driven construction solutions that create value.

The EDCC presented its vision and activities at the 2020 **World Summit on the Digital Built Environment (WBBE)**. It was held virtually on 29-30 September 2020 and attracted 522 attendees²¹. The EDCC is also participating in the **EXPO 2020** in the UAE (Oct 2020-Apr 2021). The EDCC will join the Estonian pavilion from November 2020.

To extend its knowledge sharing and collaborative R&D relationships, the EDCC has also initiated **cooperation with international organisations and initiatives**:

- KiraDigi²² (Finland) – a digitalisation accelerator for the construction and real estate sector and a flagship government project targeting the digitalisation of public services;
- Buvid²³ (Latvia) – a public, non-governmental association for construction industry digitalisation;
- BloxHub²⁴ (Denmark) – the Nordic Hub for Sustainable Urbanisation. Digitalisation is one of the hub’s eight activity agendas;
- Nordic buildingSMART group²⁵ – a collection of buildingSMART organisations in Denmark, Finland and Sweden.

3.

Perspectives and lessons learned

The EDCC is helping its members to better understand and make use of digitalisation.

EDCC members have joined the cluster because they recognise the importance of digital technologies and solutions to the competitiveness of their businesses. They are therefore working together to better understand, develop and apply digital solutions. The key benefits they highlight include enhanced communication, better planning and design, greater process control and transparency, and the ability to achieve efficiency savings (resources, costs)²⁶.

As value chains become more technology-driven, the amount of data generated requires smart construction solutions that can make use of it.

According to a member of the Estonian Digital Construction Cluster, "with the use of technology, BIM etc., we create a lot of data throughout the design, build and maintenance process. With all the data collected, we are in need of a fresh insight into every link of the value chain in order to put these insights into good use"²⁷. The work being developed by the EDCC has the potential to significantly enhance data management and exploitation in construction sector value chains. Supporting the use of BIM in Estonia, for example, is an important step towards digital proficiency and more sustainable construction processes.

The EDCC's clustering activities are helping to improve collaboration.

According to the Head of the Development Department at the Port of Tallinn, participation in the EDCC has enabled members to engage with each other and collaborate more effectively: "We

get knowledge from the digital construction cluster in a concentrated form that we would not get from the market or elsewhere". Communication between collaborating parties continues to improve, resulting in better planning, more accurate scheduling and cost reduction²⁸.

Digital solutions are only effective with the requisite knowledge and skills to exploit them.

According to the Development Manager at Nordecon AS and the organiser of BIMsummit Estonia, "Knowledge is the most important component for the use of model designing - the presence of modern technology alone is not enough; it is necessary to know how to put it to work for your benefit. BIM is certainly one of the ways to improve the quality of buildings and make both construction and maintenance more efficient: both the customer, the builder and the user and caretaker of the building must be knowledgeable. Otherwise it is simply just cool technology that no one can actually use"²⁹.

Although Estonia is one of the leading European providers of digital public services and has one of the most digitally connected societies in the world, a substantial number of companies continue to encounter problems finding skilled employees. There is a lack of digitally skilled personnel working on construction sites which results in poor document and information management³⁰. The development and supply of digital skills across the construction sector is an important challenge that needs to be addressed.

4.

Conclusion and recommendations

The EDCC is proving to be a successful initiative that demonstrates the potential to advance the digital transformation of the Estonian construction sector over the coming years.

It has successfully brought together 45 companies from across the construction value chain, as well as three higher education providers and four government bodies. Together, they are working to build a digital knowledge base, to create smart solutions and support their uptake, with the aim of making the Estonian construction sector more competitive and export-orientated.

The EDCC has set up eight working groups to develop solutions to key digitalisation challenges such as the use and exploitation of BIM and infrastructure BIM solutions, data management, parametric design, material manufacturing, integrated project implementation, regulatory frameworks and working practices, culture and communication, and increasing export capacity.

The relevance of the work being progressed by the EDCC working groups is evidenced by, for example, the insight they have been able to provide to government on the construction sector and the digital challenges it faces. The EDCC has also provided input into a government initiative to develop a public sector classification system for BIM requirements.

The EDCC has run a number of management level study visits to international organisations to promote learning and experience sharing. Training on collaborative procurement models has also been provided to its members.

Looking forward, three recommendations are suggested to help improve the impact of the Estonian Digital Construction Cluster:

- The value of the EDCC to its members, especially as it grows, would benefit from a greater focus on digital skills training. The

cluster already has three higher education providers within its membership. Increased cooperation with those members and others would help to provide a more prominent training component for those members that wish to upskill their workforce;

- The EDCC should consider increasing its engagement with other initiatives across Europe to maximise its access to two-way learning opportunities (best practices, use cases, experiences, tools, methods, R&D, innovation, training, etc.);
- The EDCC should consider developing a cluster evaluation framework that links objectives with performance indicators and milestones. This would enable the cluster to measure its own progress, its value to its members, and identify and resolve any issues that may arise.

Overall, the Estonian Digital Construction Cluster is rated a “4-star good practice measure” on a scale of 1 (low) to 5 (high).

This score is based on the early successes achieved by the EDCC, from the whole value chain representation of its membership to the progress being made by its working groups, as well as its engagement activities with international organisations and initiatives (visits and cooperation).

The Estonian Digital Construction Cluster is rated a “5-star transferable measure” on a scale of 1 (low) to 5 (high).

Cluster initiatives are quite common across many countries, which implies that the concept is easily transferable. There are also many and varied cluster initiatives across the EU that are directly or indirectly focused on digital technologies. The key to developing a successful cluster is to adopt a “bottom-up” approach to collaboration, challenges and solutions.

Endnotes

- 1 50% funding (EUR 600,000) is sourced from the European Regional Development Fund as part of the 'Supporting the development of clusters' measure.
- 2 High performing countries are Denmark, Finland, Sweden, the Netherlands, Belgium, the UK, Ireland, Luxembourg and Estonia. European Commission, Digital Single Market, Europe's Digital Progress Report (EDPR) 2017 Country Profile Estonia, (2017): <https://ec.europa.eu/digital-single-market/en/scoreboard/estonia>
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- 4 ECSO, Country Profile, Estonia, 2018: <http://ec.europa.eu/DocsRoom/documents/23537/attachments/1/translations/en/renditions/native>
- 5 SwedBank, 2019. The construction sector will not contribute to economic growth this year: https://www.swedbank-research.com/english/estonian_economy/2019/december/index.csp
- 6 Ibid
- 7 High performing countries are Denmark, Finland, Sweden, the Netherlands, Belgium, the UK, Ireland, Luxembourg and Estonia. European Commission, Digital Single Market, Europe's Digital Progress Report (EDPR) 2017, Country Profile, Estonia, 2017: <https://ec.europa.eu/digital-single-market/en/scoreboard/estonia>
- 8 Government of the Republic of Estonia, Digital Agenda for Estonia 2020 (2018). https://www.mkm.ee/sites/default/files/digitalagenda2020_final.pdf
- 9 Ibid
- 10 EAS: Digitalization of industry (2020) <https://www.eas.ee/teenus/digitalization-of-industry/?lang=en>
- 11 Digital Construction Cluster (2019) <https://www.tallinn.ee/eng/clustersinestonia/Digital-Construction-Cluster>
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- 13 Ibid
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- 18 Lühidalt klatri tegemistest. (2020): <https://digitaalehitus.ee/ajaveeb/luhidalt-klatri-tegemistest>
- 19 Ibid
- 20 Digital Construction Cluster (2019): <https://www.tallinn.ee/eng/clustersinestonia/Digital-Construction-Cluster>
- 21 On Behalf of the WDBE 2020 Organising Team(2020): <https://kirahub.org/en/a-message-from-teemu-lehtinen-on-behalf-of-the-wdbe2020-organising-team/>
- 22 KiraDigi, Finland: <http://www.kiradigi.fi>
- 23 BUVID, Latvia: <https://buvid.lv/>
- 24 BloxHub, Denmark: <https://bloxhub.org/urban-sustainability/>
- 25 Lühidalt klatri tegemistest. (2020):

- 26 <https://digitaalehitus.ee/ajaveeb/luhidalt-klatri-tegemistest>
Digitization of the construction sector – more questions than answers (2018):
<https://garage48.org/blog/digitization-of-the-construction-sector-more-questions-than-answers>
- 27 Ibid
- 28 Hele-Mai Metsal, Digitaalehituse klastrist saame teadmisi, mida me turult kontsentreeritud kujul mujalt ei saaks (2020):
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