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Digitalisation of the Energy sector



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TALK TO SETIS

A strategic approach to digital construction

What is the role of the European Digital Platform in support of the evolution of the construction industry towards a digital era, and what are the main challenges in this process?

The European Digital Platform for construction is intended to facilitate the uptake of digital tools and support the digital evolution of the sector. It is indeed widely recognised that digital processes included (but not limited to) Building Information Modelling (BIM)^{1,2} can provide added value when applied along the complete value chain, during planning, design and engineering, construction and operational phases. Overall, digitisation of the construction sector is expected to reduce the total building life-cycle cost and construction time significantly. This means increasing productivity and delivering the desired business outcomes. Yet, the construction industry has been slow in adopting digital technologies, in changing the working environment of its employees and processes.

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Recent statistics show that while more than 50% of European companies working in IT, telecommunications and media are highly digitised, this is true for only 10% of companies working in construction³. What we also know is that 91.9% of construction companies are micro-enterprises with fewer than 10 employees. It goes without saying that the main challenge of every initiative to facilitate the digitisation of the construction sector is the level of involvement of these companies.

The good news is that European industry at large is increasingly adopting digital solutions and is currently facing digital transformation. This process, also known as the fourth industrial revolution, is led by a host of technology providers, most of which are ICT small and medium-sized enterprises (SMEs). These digital SMEs are the main actors that bring technologies to the industrial companies (including other SMEs) in all the other sectors.

Digital SMEs are ready to offer innovative solutions and services for new markets created by the dawn of technology in the construction sector, complementing existing activities within the entire value chain. The creation of

¹ EU BIM Task Group (2017), Handbook for the Introduction of Building Information Modelling by the European Public Sector.

² Joint Research Centre (2017), Building Information Modelling (BIM) standardization.

³ European Commission (2017), Integration of Digital Technology, Europe's Digital Progress Report 2017.

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Oliver Grün is a German engineer and entrepreneur. He is the founder and CEO of GRÜN Software AG in Aachen and President of European Digital SME Alliance, the largest network of the ICT small and medium sized enterprises in Europe. He is also President of the Federal Association of IT-SMEs of Germany (BITMI), the only information technology industry association which exclusively represents the interests of small and medium-sized enterprises (SME) in Germany. Since 2013, he is member of the Advisory Council for IT of the Federal Ministry of Economy, which gives advice on issues concerning the digital economy.

a European Digital Platform for construction should therefore build on the skills and expertise of digital SMEs; next to software and highly specialised solutions, they make knowledge and support available to non-IT small companies, such that the latter can benefit from digitisation.

I see the European Digital Platform as a reference tool for the creation of an open market for all companies and professionals in the construction sector willing to exchange products and services in a digital format. For instance, BIM offers the opportunity to digitise construction products and building projects. Powerful marketing tools like goBIM, for example, use open standards and are now available to provide construction products with a 'digital passport' that can be used by anyone at any stage within BIM-based construction processes. Construction companies and designers can already benefit from technologies based on commonly recognised open standards, such as Industry Foundation Classes and International Framework for Dictionaries (openBIM standards), allowing them to choose digital objects that correspond to the products supplied by the manufacturers on the building site. The European Digital Platform will be the perfect place to match these needs and competences, contributing to the evolution of the construction industry towards a new digital era.

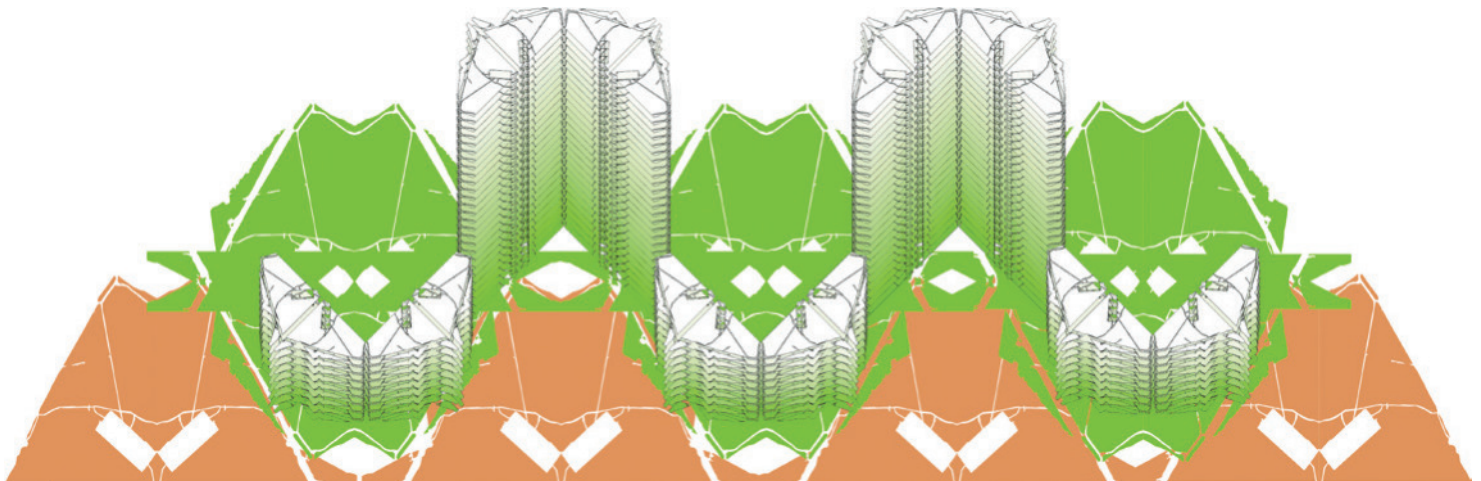
How can energy consumers benefit from the adoption of open standards in Building Information Modelling (BIM)?

The adoption of open standards in the BIM ecosystem has the potential not only to reduce operational⁴ barriers for SMEs operating in the construction industry, but also to meet the needs of consumers who expect services and products to get better and cheaper over time. This includes energy management of buildings, of course.

For example, we can think about BIM applications that allow the visualisation of building energy performance. Open standards allow applications to process data from the different building components and, thus, display energy performance information to users in an effective and easily understandable way. In this way, occupants of a given building can be better informed about their energy consumption and might contemplate alternative design decisions which could make a significant impact on the energy performance of their assets.

Without a standard form or structure, the time taken to sort and structure that data to make it usable might not be convenient. In some cases, non-standard proprietary interfaces

⁴ Related to on-site collaboration of construction companies, with particular reference to SMEs.



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may not allow the exchange of data between actors along the construction value chain. Open standards can serve this purpose without distorting market competition. And what energy consumers definitely do not want is to be subject to solutions based on proprietary technology that would limit their choices and confine them in technological silos.

What is the potential impact of digitalisation in the heating and cooling sector?

Digitisation in the heating and cooling sector is based on sensors and connectivity. We see this going more and more into what is called the 'Internet of Things', which gives consumers full control of their energy consumption. However, the main challenge that digitisation can significantly help to overcome is the management of heating and cooling processes in the framework of more complex systems like smart grids and energy systems based on demand-side flexibility.

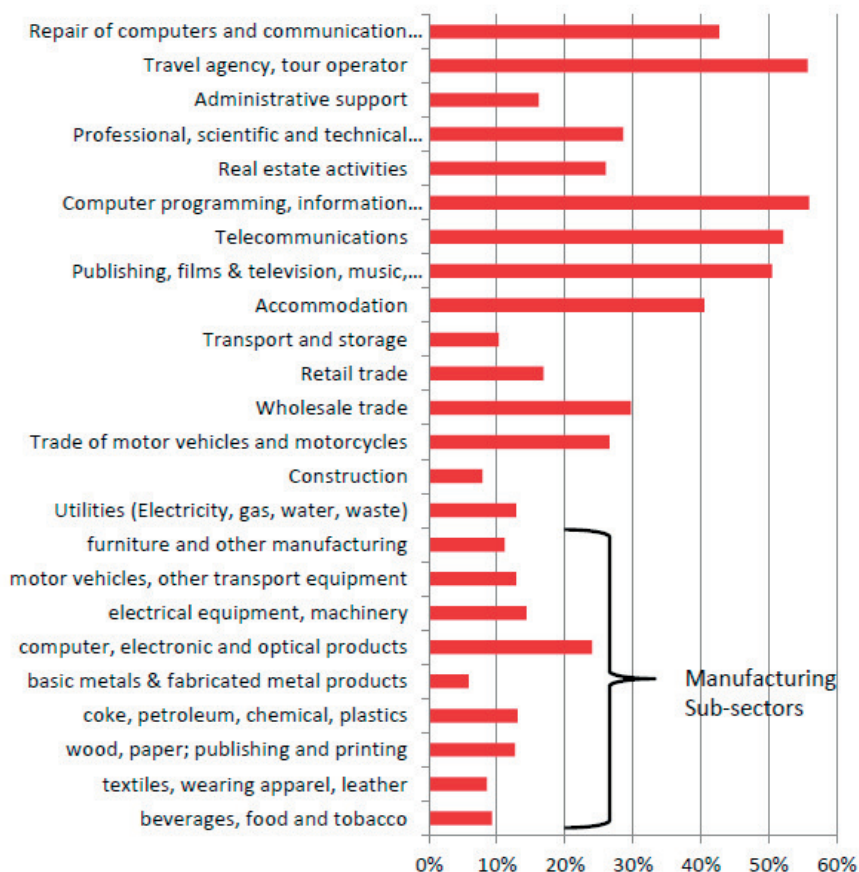
The European DIGITAL SME Alliance is deeply involved in the operational phases of the

SABINA Horizon 2020 project that, among other objectives, aims at providing synergies between electric and thermal networks, through the optimisation of electric usage for cooling and heating purposes. Here, digitisation is key to the development of high quality thermal models to predict building thermal behaviour and to capture the heat dynamics of buildings. The benefits of such digitised models are expected to amount to 5-70% of energy savings and 10-45% peak power savings⁶.

I usually repeat that for most innovations, 70% of the innovation is related to IT. The heating and cooling industry, similarly to other industries, should definitely collect data, but also use them to create new business models. In order to do so, the industry must extend its scope along the value chain and cooperate with new partners like digital SMEs, the real enablers of (r)evolutions in every sector.

⁶ Henze, G. P., & Krarti, M. (2003). Predictive optimal control of active and passive building thermal storage inventory. Architectural Engineering- Faculty Publications, 1.

Percentage of EU enterprises with high (>6) Digital Intensity Index across economic sectors (2016)



Europe's Digital Progress Report 2017. Source: European Commission