# Roland Berger Focus

September 2018

## Hot trends in construction

A new era of opportunities

Roland Berger

# Management summary

**NEW BUILDINGS**

Materials have always driven key evolutions in the building sector. Wood is now fashionable for its isolating and esthetic properties. Besides the rehabilitation of wood, the image of concrete is also changing. New concrete blocks can be imbricated easily and cut $CO_2$ emissions in half. The European Union wants to have new buildings approach energy neutrality by 2020. Keeping up with such requirements is a challenge for many professionals in all segments of the construction value chain, in particular for smaller players.

**NEW CONSTRUCTION PROCESSES**

Other changes are revolutionizing the construction industry. BIM (Building Information Modeling), combined with the maturing of technologies such as the IoT (Internet of Things), VR (Virtual Reality) or 3D printing, are bringing construction into a new era. Modular construction makes it possible to provide a quality response to urgent needs in record time, at a reasonable cost – e.g. temporary housing for refugees in Germany or France. Longtime constraints of the construction sector almost disappear with modular construction: accidents, bad weather, regulatory compliance issues are problems no more.

**NEW CUSTOMER RELATIONSHIPS**

B2B and B2C relationships are shifting and new players like Amazon or Alibaba are challenging traditional distribution models. This is just the beginning: two in every three people will be buying online by 2020. This digital era is challenging the traditional selling business model. End customers, who are increasingly educated and demanding, play a role in this paradigm shift that also affects designers, craftsmen and retailers. These trends are structural and will permanently transform the complete value chain of the construction industry. Construction industry players who fail to adapt will most likely disappear.

**The building sector accounts for a value of USD 10.4 trillion in 2017 and that figure is expected grow to USD 18 trillion by 2030. There are many reasons for such rapid growth, but a few hot trends are key contributors on the supply side. We take a closer look at them in this report.**

# Contents



Cover photo: iStockphoto / A330Pilot

## Section 1:

# The building of tomorrow

From grey and dumb to green and smart.

Builders and construction companies are called upon to think "green" and "smart" – a once-in-a-lifetime opportunity to escape commoditization and create superior value for players who embrace that trend. → A

## THINK GREEN

With society requiring increasingly energy-efficient, renewable and health-neutral materials, a flood of legislation is expected in the coming years to boost eco-friendly construction. Beyond the competitive danger of a wait-and-see attitude, building materials manufacturers and construction companies will soon face legal barriers if they don't move swiftly. Under the European Energy Efficiency Directive, "EU governments should only purchase buildings which are highly energy efficient". The market shares of players who can offer cost-effective materials and construction methods will see fast growth.

Standards are evolving as well. Leadership in Energy and Environmental Design (LEED), established in 1998 in the United States, laid the foundations for current construction. Assessment criteria include energy efficiency, water efficiency, heating efficiency, the use of locally sourced materials and the reuse of surplus materials. In France, another standard, BBC (low energy consumption building) set a maximum consumption target for new residential buildings (50 kWhPE / $m^2$ / year) three times lower than a decade ago. With the 2010 EPBD (Energy Performance of Buildings Directive), Europe is planning for all new buildings to be nearly zero-energy by December 31, 2020, and two years earlier for buildings occupied and owned by public authorities. All new public buildings must therefore be nearly zero-energy by 2018.[1] Complying with these objectives requires using new materials and implementing recycling processes.

**"Buildings are responsible for 40% of energy consumption and 36% of $CO_2$ emissions in the EU. While new buildings generally need fewer than 3 to 5 liters of heating oil per square meter per year, older buildings consume about 25 liters on average."**

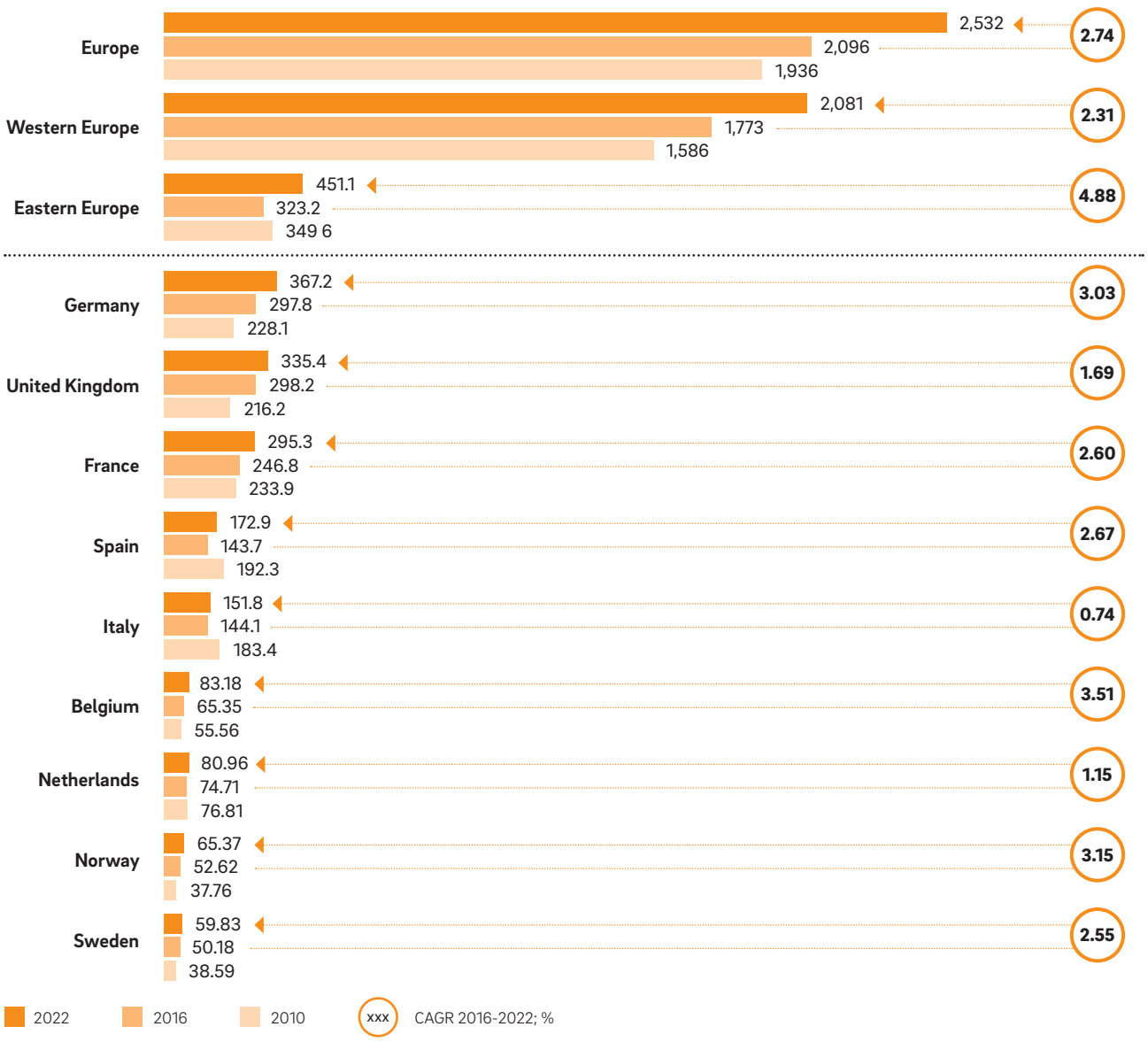
European Commission

## NEW MATERIALS

There is a general consensus that the use of wood in construction should be massively increased. But for other materials, there are two conflicting options: should they be improved or completely replaced?

[1] European Commission

**A: Construction industry revenue trends in European countries.**
[EUR m]




Source: National statistics

There are no practical limits to wooden construction, although there is a psychological one. New wood technologies increasingly enable wood to compete with artificial or sophisticated materials. Brikawood, for example, is a brick made of wood that is easy to assemble, offers a high level of insulation and costs 20% less than a traditional brick. Since the adoption in September 2013 of a European directive called "A new EU forest strategy: for forests and the forest-based sector", designed to guide policy to 2030, the production of roundwood is expected to increase every year.

A multitude of new materials is emerging in the construction market (mycelium, ashcrete, hampcrete, bamboo, etc.). Nevertheless, the materials already on the market are being reengineered to make them greener and cheaper. Concrete is the most widely used synthetic material, but it is held responsible for about 5% of global $CO_2$ emissions. However, a team of interdisciplinary researchers at University of California Los Angeles (UCLA) has designed a unique solution that may eliminate concrete-related greenhouse gases. The plan is to create a closed-loop process: capturing carbon from power plant smokestacks and using it to create a new building material – concrete – that would be applied with a 3D printer. "Green thinking" also goes along with increasing people's quality of life. In its high-rise building at La Défense in Paris, Saint-Gobain's employees will benefit from a new kind of comfort. They will experiment with smart glazing that can adapt to outside brightness thanks to a very low-voltage electrical flow, as well as a new air purification system.

## MORE RECYCLABILITY

In 2016, construction generated 880 million tons of waste in Europe.[2] Construction and demolition account for approximately 30% of all waste generated in the EU.[3] It includes concrete, bricks, gypsum, wood, glass, metals, plastic, solvents, and other materials, most of which can be recycled. There is a growing amount of demolition, renovation and deconstruction activity. The renovation potential of buildings in the EU is expected to total 110 million buildings in the coming years.[4] According to the 2016 Directorate-General for Internal Policies report "Boosting Building Renovation: What potential and value for Europe?", "The current renovation rate of existing buildings is low, with only about 1-2% of the building stock renovated each year, although it is estimated that renovation accounts for 57% of all construction activity. The vast majority of these renovations do not use the full potential energy savings that could be achieved." At the same time, deconstruction instead of demolition makes it possible to recover up to 80% of the materials rather than disposing of everything.[5] This trend is making a major contribution to the broader objective of cutting annual primary energy consumption in Europe by 30% by 2030.

## BE SMART

End users are not only counting on energy-efficient and cost-effective final products over the long term, they are also expecting builders to create buildings with embedded services. The global Smart Home market is expected to double in volume within 5 years and exceed a value of EUR 45 billion in 2022.[6] Consumer spending on Smart Home systems and services should rise by 70% to 80% in North America, Asia and Europe by 2022, with North America leading the trend, followed by Asia and then Europe.

## OPPORTUNITY FOR PROFESSIONALS

The Smart Home and home automation markets are still in their infancy and need to be structured: prime movers will gain a sizeable competitive advantage. There is still a lot to do: people spend 80% of their time indoors.

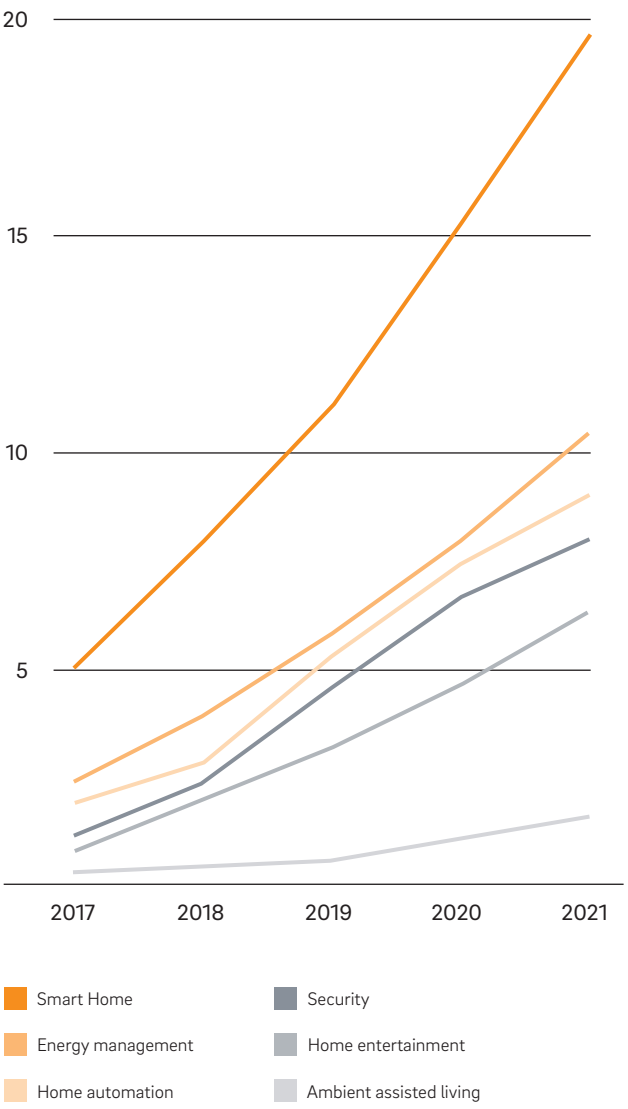
[2] Euromonitor / [3] European Commission / [4] European Parliament / [5] Roland Berger Business Intelligence / [6] Statista

The Smart Home market penetration rate is estimated to be only 5% of new constructions in Europe in 2017, while it is expected to reach 20% by 2022. → B
The home automation market penetration rate should grow from 1.5% to 9%.[7] This second path aims at getting rid of useless gadgets by replacing them with artificial intelligence for buildings to become self-learning. Though all elements in a building can be affected by Smart Home technologies, some of them are more susceptible, such as doors, windows, and ventilation and water consumption systems. Bouygues, for example, has launched Wizom, a program of 1,000 connected homes. People can easily control their heating from their smartphone or report an elevator failure in real time. In the long term, the company wants to equip all of its new real estate programs with home automation. Arkema has launched its Smart House, "a life-size laboratory for the Arkema group's researchers and scientists" aimed at innovating and anticipating changes in the building industry, in partnership with key players in the sector such as Caldeo, Total and Velux, as well as public entities (European Union, French government). Every floor of this house is a true laboratory dedicated to Smart Home R&D.

## OPPORTUNITY FOR CONSUMERS

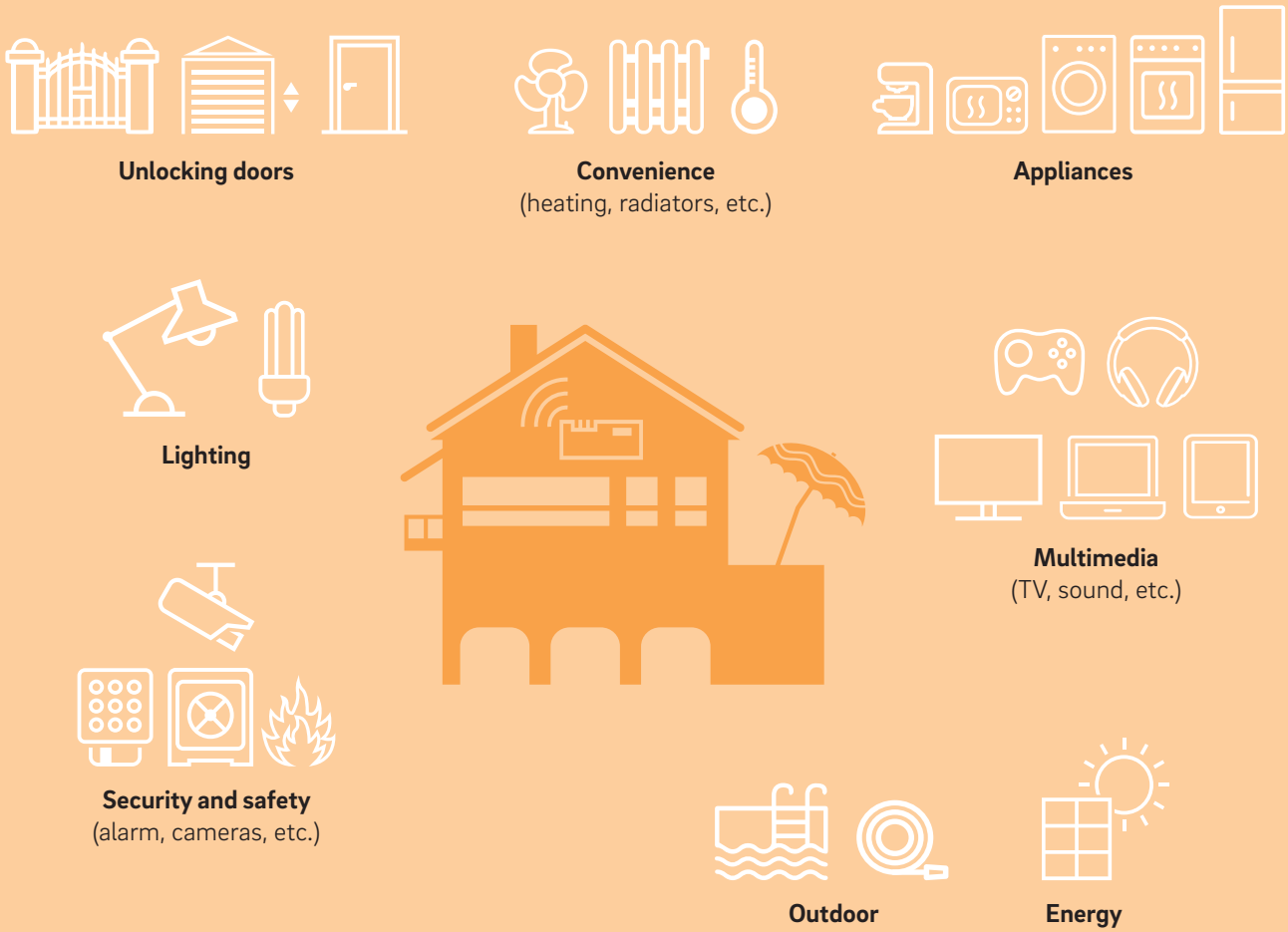
The B2C Smart Home market (home automation, security, home entertainment, ambient assisted living and energy management) was created a few years ago by IoT but most of the potential still lies ahead. → C
Domotics and IoT enhance security, enable better energy management, offer new types of entertainment and generate savings. Smart Home is not just about having a connected home (Smart Home devices), but also a clever one (home automation).

**B: Smart Home is becoming part of our daily life and an important market for professionals.**
[in %]




[7] Statista

**C: Smart Home affects the entire house.**



Section 2:

# Tomorrow's construction methods

New trends require new construction methods.

Building techniques on construction sites are undergoing major upheavals, such as BIM, modular construction or 3D printing. It's a radical change for builders and manufacturers.

## BUILDING INFORMATION MODELING

Building Information Modeling (BIM) is a platform that consolidates and links up all of the data relevant to a given building, thus producing a digital model of the whole structure. → D

It allows every player involved in a construction project to take a virtual walk-through of the building during the planning and design phase, enabling any necessary modifications to be made there and then. It also permits construction firms to make early decisions on what materials to use and which companies to contract the work out to – all on the basis of information and quotes available the BIM system.

Cloud-based computing makes BIM possible with rapid simulation and real-time updates on design changes and project timelines. Global infrastructure spending is expected to exceed USD 9 trillion a year by 2025.[8] A conservative estimate is for BIM to reduce costs by 10%.

## OPERATIONAL IMPACT

BIM will impact all stakeholders throughout the entire process, from the design and engineering phase to construction and building operations. Each party will have to collaborate on projects in new and different ways, using access controls to ensure that only one party is changing design or project management information at any one time.

BIM redefines the entire value chain. Decision-making by architects and developers will be strengthened by BIM. Other players will see their roles in the value chain challenged and risk entering a spiral of "commoditization" if they don't make a significant effort to anticipate change – especially among building materials manufacturers and distributors.

**"Infrastructure spending will reach USD 9 trillion by 2025 and BIM could reduce the envelope by 10%."**

"Disruptive impact of Building Information Modeling", Roland Berger, 2017

At the same time, the competitiveness of contractors will depend on their ability to use BIM to optimize task scheduling and resource utilization on construction sites. For instance, BIM saved Swedish construction company Skanska two months in a complex hospital expansion project in the US, and German rail operator Deutsche Bahn is using BIM for infrastructure projects and expects it to cut costs by 10 percent.

The global market for BIM software, consulting and other solutions was USD 2.7 billion in 2014, and is expected to reach USD 11.5 billion by the end of 2022.[9]

## CHALLENGES TO BIM ADOPTION

Using BIM leads to major internal and external process and organizational changes, and this requires more skilled personnel who can work effectively with the models.

[8] Oxford Economics / [9] Transparency Market Research, 2016 report

## D: BIM facilitates and changes collaboration in construction.

### BIM STATUS QUO

"BIM is essentially value-creating collaboration through the entire lifecycle of an asset, underpinned by the creation, collation and exchange of shared three-dimensional (3D) models and intelligent, structured data attached to them."

**UK BIM Task Group**

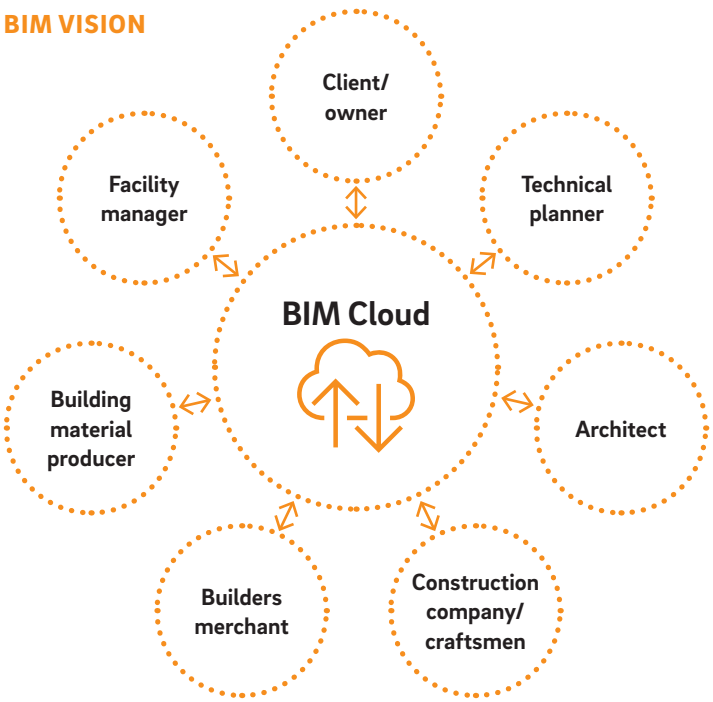
"BIM is a digital representation of physical and functional characteristics of a facility. As such, it serves as a shared knowledge resource for information about a facility, forming a reliable basis for decisions during its lifecycle from inception onward."

**National BIM Standard United States**

BIM is a digital planning tool combining all data and planning details needed to create a building on one platform.

BIM serves as a knowledge resource and a data management platform.

### BIM VISION




Source: Roland Berger

BIM will be the one tool in construction that allows for joint and efficient collaboration during the whole lifecycle of a building.

We see two key new roles here: BIM managers, responsible for defining and implementing the model in their organization and using it to optimize internal processes, and project BIM managers, who will be the decision makers for their company throughout a BIM project. Project BIM managers will interact and coordinate with team members from other companies on the same project.

## MODULAR CONSTRUCTION

Modular construction refers to the assembly and fit-out of prefabricated buildings in a factory. These sections, in the form of containers, are then transported to the construction site, where they are assembled and stacked. Between 2015 and 2016, revenues in the modular construction industry grew by more than 11%[10] and totaled EUR 700 million in 2016. Modular building sales are more concerned by this evolution than the rental business.

Revenues in modular sales grew by 18% while those in rentals grew by 7%. Modular construction is attractive for company profitability: it results in faster occupancy, cost savings, quality products, reusable/relocatable materials, significantly easier installation and esthetic appeal. Additionally, modular construction requires less labor – an attractive consideration in an industry that is challenged by labor shortages.

## NEW ARCHITECTURE

With quickly built and high-quality buildings, modular construction is proving to be an effective solution, for example to provide dwellings for refugees. For example, in Germany, the influx of more than a million refugees pushed cities to resort to this method of construction. In Hamburg, Koma Modular built seven buildings with a surface area of 5,000 square meters in eight weeks: four weeks of manufacturing and four weeks of assembly. Each building is made of 43 modules with four housing units on the ground floor and two on the second floor. In each of these units there are three individual rooms with a shared toilet and a bathroom. These buildings for Brookkehre Str. are clearly designed with an eye to the long-term accommodation of over 120 people.

## INDUSTRIAL CONSTRUCTION

Creating an ephemeral museum for a few weeks that gives the impression that it has been established for several years, fashion podiums to accommodate several hundred people and viewing stands for parades, or fabricating a restaurant just for a season are significant opportunities for culture, tourism and fashion professionals. In Spain, the city of Gijon has used modular construction to develop tourism and provide its medieval castle with a 200-seat restaurant.

This modular construction is also shaking up the professional world. Algeco, a European leader in its field, compared the views of traditional office workers with the opinions of those who had already experienced a prefabricated module. While 63% of employees are familiar with this type of work environment, only 21% have already tested it. Of the people who have tried out a modular building at least once, 64% believe that it is suitable for all sectors of activity, compared to 54% for all employees.

Today, more than half of the modular buildings sold are for offices, whereas five years ago this share accounted for only 30%.[11]

## READY TO ASSEMBLE

Precast concrete is another industrialized way of erecting buildings. It allows the transfer of work from construction sites to factories, thus improving productivity and quality and reducing construction time. In short, precast concrete lowers total construction costs considerably.

[10] ACIM (Association des Constructions Industrialisées et Modulaires) / [11] Le Moniteur

# With TBlocks, around 88% less excavation is required. And the blocks can be laid in about 20% of the time.

Precast also has lower lifetime costs than any other building solution. This is made possible by the consistently high quality of industrially produced products. Precast also minimizes structural and facade maintenance and logistics requirements. Precast floors, walls, frames and foundations are transported to a construction site ready to install.

In the United Kingdom, Tarmac, a CRH company, created TBlocks, an innovative concrete modular construction system. Its aim is to build quickly and in a scalable way several kinds of structures for uses such as coastal defense, flood prevention and earth retention. It also offers a highly resistant and maintenance-free solution. "According to estimates, around 88% less excavation was required and the blocks were laid in about 20% of the time."[12]

## 3D PRINTING

3D printing has the potential to increase onsite construction efficiency. Originally, professionals used it for spare parts. Gradually, experiments led to its adoption for prototypes. Whole houses were built with 3D printing using a software file. The process uses various materials such as concrete, metals, plastics or resins.

While construction companies today may consider 3D printing to be a sideline activity – it only represents 3.5% of the additive manufacturing market – its share is bound to increase strongly.[13] 3D printing is a good way to reduce waste as it only uses the necessary resources. Moreover, as the additive elements or even whole buildings are mostly built onsite, this can significantly reduce transportation costs. The need for labor is also lower and the risk dimension is reduced tenfold. Finally, designs that are more original and better adapted to the

[12] Lafarge Tarmac / [13] Roland Berger Business Intelligence

environment also allow companies to redesign their offerings thanks to this technology.
3D printing does face challenges such as the cost of 3D printers, insufficient experience using various materials, and the size and bulk of 3D printers, which complicates their presence on sites that are small or difficult to access.

## ADDITIVE PRINTING

Additive objects represent the main use for 3D printing in construction. Their quality is recognized and this technology is a real threat to traditional players. This market is for now mostly dominated by startups in alliance with large construction groups. The additive printing market is expected to reach USD 20 billion in 2020, average growth of 31.5% per year since 2014.[14] More than 200 families of patents were filed last year in additive construction for the building sector.
XtreeE is one of the leaders on the market. Others include Construction 3D and BatiPrint 3D in France, WASP in Italy or DUS Architects and Cybe Construction in the Netherlands. XtreeE is a partnership with ABB, 3DS, Lafarge and other buildings construction companies. For the Yris project, XtreeE built four three-meter poles, designed in the spirit of a tree trunk, in five hours in its workshop in Paris.

## BUILDING PRINTING

R&D departments are now also considering 3D printing for houses. We are still mostly in the experimental phase, but builders already have some success stories. In 2014 in the Netherlands, DUS Architects started to build the Canal House by entirely printing its parts with their Kamer-Maker engine, to create a 13-room demonstration house. This three-year "Research & Design by Doing" project aims to revolutionize housing solutions worldwide.

More recently, BatiPrint3D launched the construction of Yhnova in Nantes in September 2017, with the contribution of LafargeHolcim and Bouygues and other private as well as public sector players. The construction of the 95-square-meter, four-meter-high house takes 33 hours of 3D printing. This one is intended to be inhabited unlike its peers in the United States or in China, for example. Its Y Shape is explained by the building's location in a field on which there were trees to avoid. The site is scheduled to take until December until it is inhabitable.

[14] Ouest Valorisation

## Section 3:

# The customer relationship of tomorrow

A digital era that changes relationships.

Nowadays, four stakeholders are strongly affected by digitalization: contractors, retailers, the designer community and the end customer. If the customer experience definitely needs to be improved, when will digital direct distribution become a reality for manufacturers and retailers? There is no alternative: construction companies must catch up, and quickly.

Digital in construction is driven by two main factors. First, people are now used to being connected in their daily life, and they expect to be connected in their professional life, too. Second, a number of online services are emerging, such as online sales or online training.

Digitalization offers the opportunity for businesses to redefine their supply chain. New activities must be developed to face this game changer.

## E-COMMERCE

### A SECTOR THAT KEEPS ON GROWING…

The number of digital buyers is being mainly boosted by fast-growing internet connectivity. In 2016, the internet penetration rate worldwide exceeded 50%, while it should reach two-thirds of the population by 2020.

Online shopping is therefore easily promoted. More than 2.6 billion people are expected to regularly buy online by 2020. It is estimated that Europe and North America both represented 25% of total online sales in 2016, while Asia represented more than 45%.[15] While China is the largest market, US retailers remain the leading global players.

In Europe, e-commerce is expected to exceed EUR 600 billion next year, an increase of more than 50% in four years. The UK, France and Germany account for 50% of the e-commerce market, while Ukraine, Turkey and Belgium are the fastest growing. The number of internet users who bought or ordered goods or services in Europe reached 65% in 2016.[16] Other strengths of e-commerce are the possibility to sell direct to the final customers and the potential to reach international buyers, but these require three challenges to be faced: legal, logistics and taxation. Lastly, while online sales have shown little reaction to economic fluctuations, currency volatility affects retailers' results.

Amazon has already penetrated the Smart Home market. It recently reiterated its objective of being present in all the rooms of the home thanks to its Smart Home assistant Alexa and the launch of four new products, coupled with an aggressive pricing strategy.

**"100% of building materials firms believe they have not yet exhausted their digital potential, while 93% of construction industry players agree that digitalization will affect every process."**

"Digitalization of the construction industry", Roland Berger Study, 2016

[15] Xerfi report / [16] Eurostat

# Customers have access to a lot of information that they used to obtain from specialists. Thus, the customer is no longer a novice and industry experts are challenged.

**...DOMINATED BY THE GIANTS?**

Amazon and Alibaba definitely lead the e-commerce B2C market. Amazon alone weighed in at more than EUR 120 billion in 2016. However, almost half of the most visited websites are those of traditional distributors.

As for building materials, their supply is growing in both of these two main channels. Amazon, for example, has a catalog of more than two million items in DIY, but without any client services, contrary to physical distributors. On the other hand, Leroy Merlin's e-commerce platform generated more than EUR 100 million in revenues last year in France, while it had more than five million visitors on its website every month in Italy. Still, online sales of building materials remain quite small: less than 5% of building materials in Europe were sold on the internet in 2016.[17]

Manufacturers need to choose between their own or a third-party platform. They should develop a diversification strategy by implementing a partnership with at least one e-commerce company and in the meantime develop their own marketplace. Multichannel distribution gives online retailers a competitive edge: while offering some products on Leroy-Merlin's or Amazon's websites, manufacturers should also consider selling other products in their own marketplace. This will allow them to gain visibility, diversify risks and reduce their dependence on distributors.

Manufacturers must develop their online offering and move first on new indirect distribution channels. They should also leverage digital technology to establish a strong direct business using sales-oriented contractor

[17] Roland Berger Business Intelligence

apps (configuration, ordering, delivery slot booking, real-time tracking) and direct delivery through fourth party logistics.
Klöckner & Co chose to transform its steel distribution business by establishing a digital marketplace on the principle that: "We sell steel online so that you are more efficient offline". The end-to-end flow of digital information from producers down to customers provides transparency to all players on aggregated supply information. The company also developed several digital solutions with a customer-centric approach in order to understand customers' needs and pain points and perform rapid prototyping.

## DIGITALIZATION FOR SALES

To offer a scalable and modular product to their clients, manufacturers should strive to go beyond traditional selling models. Clients do not want to systematically visit stores anymore; they want showrooms to come to them. Sales forces need to be equipped with tablets and smartphones, enabling them to help customers project themselves into their new house or office.

## NOMADIC SELLERS

Connectivity and digital access are essential to take advantage of digitalization's potential. Sales forces must be equipped with mobile tools, they must be able to share images instantaneously with their clients and influencers and they must have easy access to helpful apps. Mobile access to the company's internal networks and synchronizing as-yet separate activities will allow sales personnel to provide customers with more immediate service. For example, they can show a complete overview of the company's product range at any given point. Yet, in construction, more than 70% of companies don't equip their sellers with tablets or smartphones.[18]

## EDUCATED CUSTOMERS

Thanks to the internet, smartphones and tablets, customers have access to masses of information that they used to obtain from specialists. Thus, the customer is no longer a novice and industry experts are challenged.
The customer, too, can be digitalized thanks to mobile apps. The number of smartphone users worldwide is expected to reach 2.87 billion in 2020. As for the tablets market, it is expected to grow by 70% in volume between 2014 and 2020.[19]
With a good app, customers can prepare their purchase, order it and track it until it's delivered to their home or office. This complete service, if well managed, adds value and cements customer loyalty (or "stickiness"). → E
Saint-Gobain, for its part, has more than 30 apps dedicated to its cus-tomers, shareholders and employees. Saint-Gobain Eurocoustic and Plafometal launched "Plafonds Designer", an augmented reality application for acoustic suspended ceilings. Users take a picture of their ceiling via the app, measurements are made automatically and the user can try out different products. Customers receive an e-mail recapping on what they looked at with the app, with "before and after" pictures, technical information for selected products, and an estimate of the quantities needed.

[18] Roland Berger study / [19] Statista

**E: A digital solution for every potential customer.**

| | **Motives for product choice** (selection) | **Potential digital channels** (selection) |
|---|---|---|
| **Construction material wholesale** | **Minimal stock**<br>**Working capital transfer**<br>**Sales volumes**<br>**Margin**<br>Professional handling<br>Reliable logistics<br>etc. | **Real time stock (JIT)**<br>**Sales data analysis**<br>Topic portal<br>etc. |
| **Construction company/ craftsmen** | **Time and reliability**<br>**Workability (easy and fast to use)**<br>Price/margin<br>Quality<br>Technical support/training<br>etc. | **Training apps**<br>Delivery status apps<br>Call center<br>etc. |
| **Architect/project developer** | **Esthetic appeal/simulation capability**<br>Simplified tenders<br>Quality, energy efficiency, inflammability, acoustics etc.<br>Attractively priced overall solution<br>etc. | **3D CAD/BIM configurator**<br>Design software<br>Web seminars<br>etc. |
| **Building investor/ building owner** | **Lifecycle cost and quality**<br>Green aspects<br>Esthetic appeal<br>etc. | **Aftersales portal**<br>B2C online retailers<br>Real estate portals<br>etc. |

Source: Roland Berger

Photo: iStockphoto / A.J_Watt

# Credits

## WE WELCOME YOUR QUESTIONS, COMMENTS AND SUGGESTIONS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# About us

Roland Berger, founded in 1967, is the only leading global consultancy of German heritage and European origin. With 2,400 employees working from 34 countries, we have successful operations in all major international markets. Our 50 offices are located in the key global business hubs. The consultancy is an independent partnership owned exclusively by 220 Partners.

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Roland Berger has been helping its clients to manage change for half a century. Looking forward to the next 50 years, we are committed to supporting our clients as they face the next frontier. To us, this means navigating the complexities that define our times. We help our clients devise and implement responsive strategies essential to lasting success.

**Think:Act Booklet**
**Digitalization of the construction industry**
(2016)


Construction sites are being digitalized and modernized thanks to data. Roland Berger and FINALCAD evaluate their impact on the entire value chain.

**Focus**
**Disruptive impact of Building Information Modeling**
(2017)


Building Information Modeling (BIM) represents a turning point when it comes to digitalization. This report takes a closer look at BIM technology and offers an in-depth analysis, as well as recommendations based on our research.

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