



Construction industries - from traditional to digital

The construction industries are facing major digital transformation challenges. They have long been under internal pressures to increase productivity but have gained very little so far. In addition to struggling with efficiency challenges, there are now external pressures created by new customer expectations of digital solutions. Expectations are high for all lifecycle phases from planning to construction and to facility services.

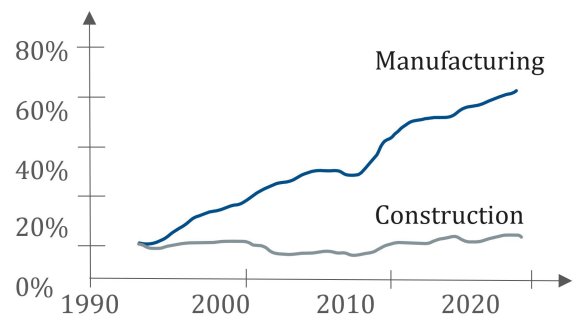
New technologies, analysis of data and data exchange in ecosystems are needed to create new digital solutions. New business models enable cooperation in the construction ecosystem. However, they also shape the industry, for example, by changing traditional facility services time and material contracts to service level contracts with digitally enabled transparency to the service. The construction industries must be prepared to change their core business processes, operating model and run digital transformation programs to deploy changes.

Striving for efficiency

Unlike many other industries, construction processes are not necessarily 100% repeatable in every project. A construction project is always more or less unique and can typically also change during the project run because unknown conditions, inadequate plans, decreased funding or changed customer demands cause replanning and corrective actions. However, the more standardized and repeatable processes the company has, the more capable it is of surviving the changes.

Construction contracts are also typically often divided into parts of which contractees are running bids according to lifecycle phases and branches of contractors' specialization. This model causes sub optimizing, poor quality and loss of data in between lifecycle phases of the project when all parties are just cutting costs and optimizing their share. A great number of unanticipated changes with poor planning data and economically tough sub-contracts might be a reason for poor productivity development compared, for example, to the manufacturing industry over recent decades.

Luckily new models of cooperation have been introduced in past years and more holistic approaches to support data exchange between planning, main contracting and material vendors now exist.



Graph 1: Productivity improvement over time (manufacturing vs. construction). Source: Joint Research Centre (JRC), the European Commission's science and knowledge service 2019

Fundamentals

Human resources and materials are the main cost pools in the industry. The efficiency of related key processes is an obvious starting point for a company. Human resources can be saved in projects and field service via optimization and automation of planning tasks. Increased transparency to resources and load is a prerequisite. Materials can be saved by more efficient procurement and better management of material flows and logistics. However, the real efficiency enabler for all companies in the value chain, would be a capability to collaborate and provide better data to each other.

External and internal pressure for fundamental changes is rising in construction industries

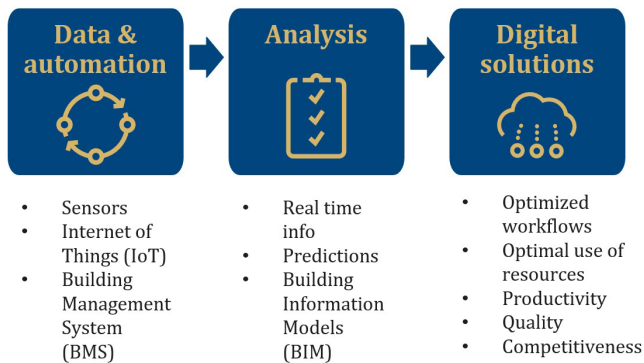
Fundamentals must be in place for a digitalized construction business. Mastering a project, project portfolio and services are necessity. However, orchestrating the whole value chain, single phases and interfaces between phases is the key. General management should have a strong position: planning and execution and support functions must be governed as a whole and as elements. Situational leadership needs more real-time data to be successful.

Heated expectations

External pressures are rising when customers of construction industries are seeking similar benefits as industrial customer everywhere after digital transformations. For example, this includes energy efficiency, cost efficiency and predictiveness in maintenance. Customers of the customers increase pressure by demanding transparency and focusing on the tenant experience.

Value during whole lifecycle

Facility owners and contractees have understood the value of facility data assets. Keeping up to date all lifecycle data as-planned, as-built and as-maintained secures life cycle services of buildings and customer investments.



Digital operating model

Development of a new data-based solution itself does not mean a productivity increase unless the operating model or business model is also changed at the same time. New digital solutions can offer scalability that enable more customers, more assets or more projects with the

same resources, if the operating model is adapted to new capabilities. Availability of data can lead to digitally enabled contracts that could change the operating models of the whole industry, by turning time and material-based contracts into service level agreements by which customers are buying a certain service level instead of resources. Data and building information model (BIM) based building-lifecycle-management can offer a new level of efficiency through the buildings' lifecycle but requires new openness towards partners and joint operating models.

Changing operating models is about changing core business processes and, therefore, requires a proper transformation program that ensures successful changes at all organization levels and functions.

Game-changer ecosystem

Sharing data in an ecosystem would include collaborating on shared plans from planning to construction and maintenance. A practical example of this would be that a main contractor of a building site should open all planning and timing elements to every subcontractor for common success. New business models, that are based on sharing risks and benefits of the projects, would also benefit from shared data.

New technologies utilized

In construction industries, the amount of data and existing data sources is massive because of decades of history of building management and automation systems. New technology is needed to systematically produce analysis of data and turn it into new digital solutions to ensure the smooth operation and maintenance of buildings. New solutions could include efficiency improvements through the building lifecycle by optimizing resources and workflows and equipping digital field workers with the right data and digital tools. Last and not least, new solutions can help the facility owner to provide top tenant experience that attract new customers and more business.

Midagon's offering for the construction industries is based on experience gained on delivering services across various industries. Midagon's key service areas ensure a successful digital transformation program from planning to execution.

