# 3. The Industry As a Whole Needs to Drive Transformation

## 3.1 Industry collaboration

### Mutual consent on standards across the industry

Standards are desirable for different reasons. Adherence to standards helps to ensure that products are safe, interoperable and good for the environment. Harmonizing technical specifications of products and services can make industries more efficient, and can break down barriers to trade. For instance, the Transatlantic Trade and Investment Partnership, a proposed trade agreement between the European Union (EU) and the United States, aims at promoting trade and multilateral economic growth by harmonizing differing standards and regulations.

The construction industry lacks robust global arrangements on standards. As a result, it has forfeited the productivity gains that a proper modernization of the industry would have brought. And it could in future forfeit the potential inherent in digital technologies: if it remains such a fragmented industry, unable to agree on internal standards, it is hardly likely to have much influence in determining cross-industry standards. The E&C sector as a whole should take concerted action, along the following lines:

- *Affiliate and organize.* For E&C companies it already means a great deal to establish standards within their companies when working on different projects with a single client, and even more when working on different projects across different clients or even industries. E&C companies should strive to form organizations, representing all stakeholders along the value chain, at a national, international or even global level. They should also make sure that relevant experts (from academia, for instance) are represented, and that the organizations are large enough and varied enough to truly represent the interests of the sector as a whole.
- *Identify key standardization topics and develop a common stance.* Given the huge potential for improving collaboration among the different stakeholders in construction projects, it is vital that companies act in concert, and that all the stakeholders are on board and speak with one voice. The industry as a whole should define key areas to work on and should agree on a common perspective:
  (i) Standards in software systems, interfaces and communication protocols will facilitate the digitalization of the industry as a whole: in particular, companies should establish standards in machine code for robots and automated construction equipment, and in interfaces between different systems such as BIM and Geographic Information Systems.
  (ii) Standard interfaces between prefabricated modules and components will enhance system compatibility, provide economies of scale for suppliers, act as a powerful productivity driver and thus accelerate the industrialization of the sector.
  (iii) The standardized definition of costs, classifications and measurements along the whole life cycle will lead to greater comparability and compatibility among projects.
  (iv) Standards in legal arrangements, such as alliances and IPD contracts, will reduce initial costs and pre-empt legal complications for individual companies.

  ***EXAMPLE:*** The *DGNB*[90] (*German Sustainable Building Council*), an organization concentrating on sustainable construction, with members along the value chain, has developed certification schemes that provide a uniform basis for evaluating the planning, construction and operations of sustainable buildings.

  ***EXAMPLE:*** *Australia* is pioneering the standardization of project alliance agreements to reduce the initial costs involved in establishing these agreements.[91]
- *Shape the agenda.* To define and set standards across different industries is a complex, multidimensional endeavour, involving multiple and sometimes competing interests. Standard-setting organizations are established for industries or specific topics, nationally, regionally or globally. The E&C sector has to make sure that it is represented in the relevant industry bodies and consortia, and can make its voice heard and drive the agenda.

  ***EXAMPLE:*** *Atkins* is providing a convenor for an ISO Steering Group (with members from private construction companies, government and academia) advising on industry standards for information management, specifically on the use of BIM during the construction phase of projects.

In many cases, industry standards are referred to in regulatory frameworks, either directly or indirectly, and they are sometimes incorporated into national building codes. For this reason, the industry must strive to set optimal standards ahead of regulation, so that it can shape the public agenda.

## More data exchange, benchmarking and best-practice sharing

In the past, proprietary knowledge was the key differentiator of companies in many industries. Now, the pressure is increasingly on companies to join forces with other companies to create new products and services in an increasingly complex world. That applies especially to fragmented industries such as E&C, with so many facets and challenges. But it is not so easy to put this imperative into practice.

To promote partnerships or even informal sharing among individual companies, a large-scale, even global, effort is needed. Increased knowledge sharing among peers can help to close the gap between technological development and application. For this purpose, the industry should establish a platform – perhaps a formal association – comprising top E&C firms across all regions. That platform, from its neutral and respected position, could encourage the regular sharing of best practices, benchmarking across peers, and could optimize data by ensuring its availability, comparability and protection. If offered the right incentives, companies will readily share knowledge and advice.

***EXAMPLE:*** The *Construction Industry Institute* in the United States collects best-practice insights and makes them available to its members; topics range from partnering models to project planning and constructability.

The benefits of many technological advances, such as BIM, will materialize only if the whole ecosystem is ready, but investments have to be made on an individual company level, of course. As a consequence, first movers are at risk, yet if nobody dares to move, the industry as a whole will be the loser. To break this vicious circle and avoid stagnation, the industry needs to agree on common targets. A joint effort based on shared commitments – on deploying new technologies, for instance – could help to reduce the risk for individual companies and provide an opportunity for an industry-wide boost.

Bear in mind that all forms of collaboration between companies have to take appropriate precautions against violating antitrust or competition legislation. It is the companies' responsibility to ensure that the government authorities or the courts do not interpret "cooperation" as "conspiracy".

## Cross-industry collaboration along the value chain

Better collaboration is needed not just between peer companies but also between companies of different types along the value chain. The current tendency is to push risk down the value chain instead of pulling innovations out of it. A good way to encourage cross-industry collaboration among companies along the value chain is through industry-wide initiatives, such as joint R&D efforts and data-generation projects. Platforms could be established to facilitate knowledge exchange across the value chain, and to align perspectives on design, construction and operations. And measures should be introduced to enable independent certification and quality assurance, and thereby accelerate the adoption of new technologies.

***EXAMPLE:*** In late 2014, the *German Association for the Construction Industry* established the initiative "Planen und Bauen 4.0", involving various industry associations, such as those of architects, machinery suppliers and real estate. The aim was to create a national centre of competence and a communication partner for research, advice on regulation and market implementation. The initiative, with its multistakeholder cross-industry approach, should take a trailblazing role in the implementation of BIM and other digital innovations in the German construction industry.

More specifically, great benefit can be had from creating permanent industry-wide bodies or institutions involving all participants along the value chain. Such entities would stimulate collaboration and foster horizontal and vertical linkages, and would establish common rules and frameworks in an unbiased way. They could also incorporate trade associations (which currently tend to focus on transactional issues within their own technical specialist silos), interest groups, academics, and local associations and trades.

***EXAMPLE:*** *Desso* (a *Tarkett* company) works closely with one of its yarn suppliers, which turns recovered post-consumer carpet fibres into new yarn. The two companies have shared their experiences within the *Circular Economy 100 network* – an innovation programme bringing together companies, governments, cities and academic institutions – in an effort to inspire circular-economy thinking among other companies.

***EXAMPLE:*** The *Canadian Construction Association*, the national voice for the construction industry in Canada, represents more than 20,000 member firms in an integrated structure of about 70 local and provincial associations. Its Lean Construction Institute, founded in 2015, provides a platform for all supply-chain participants – owners, designers, contractors, traders and allied services – to collaborate on the development and application of lean tools and techniques along the building life cycle.