Small Business Standards

Data & information is the key to BIM success

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Built Environment has suffered decades-old problems combined with very low digitization

Low profit margins
Low productivity
High cost of failure

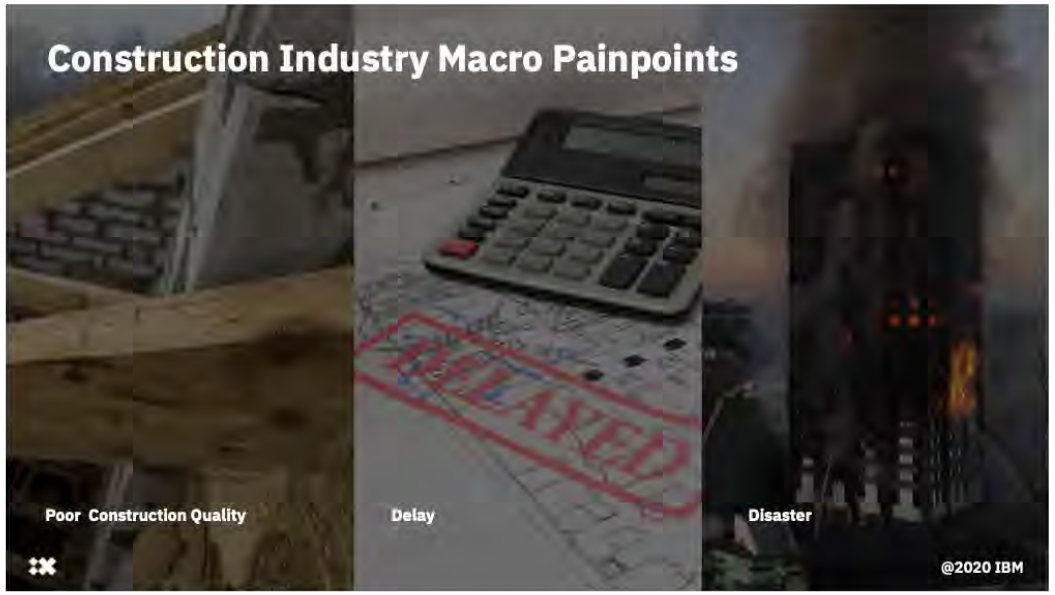
Disruption and disintermediation

- New materials
- New equipment
- New ways of working

Complex ecosystems
Low collaboration
Low visibility
Low transparency

Talent shortage and skills gap

https://www.ibm.com/industries/construction



Carbon emissions from buildings, assets are on average 3.8 times higher than they were designed to achieve**

Lack of intelligence across project lifecycle stages, value chain and asset operations

We need to build better performing buildings, with less resource, and quicker!

Source: *UN. **Innovate UK

Manufacturers face fundamental data-related strategic requirements

New applications of enhanced data

- **Enhanced data** (e.g. time, cost, material performance, geometry, sustainability, availability)
- **Comprehensive track and tracing** to enable lifecycle monitoring based on **product data combined with logistics and construction data**
- **Extended platform** to supply chain partners to **broaden reach and lock-in**

New data formats & interfaces

- Manufacturers need to be able to **flexibly provide data in different formats for different platforms** (e.g. regulators, BIM providers) in real time to ensure continued access to customers mandating BIM
- New interfaces **provide additional data** (e.g. customer and usage data from BIMs, Digital Twins) to manufacturers
- **Data and Information Management**

IT & OT Security RISKS

New business models

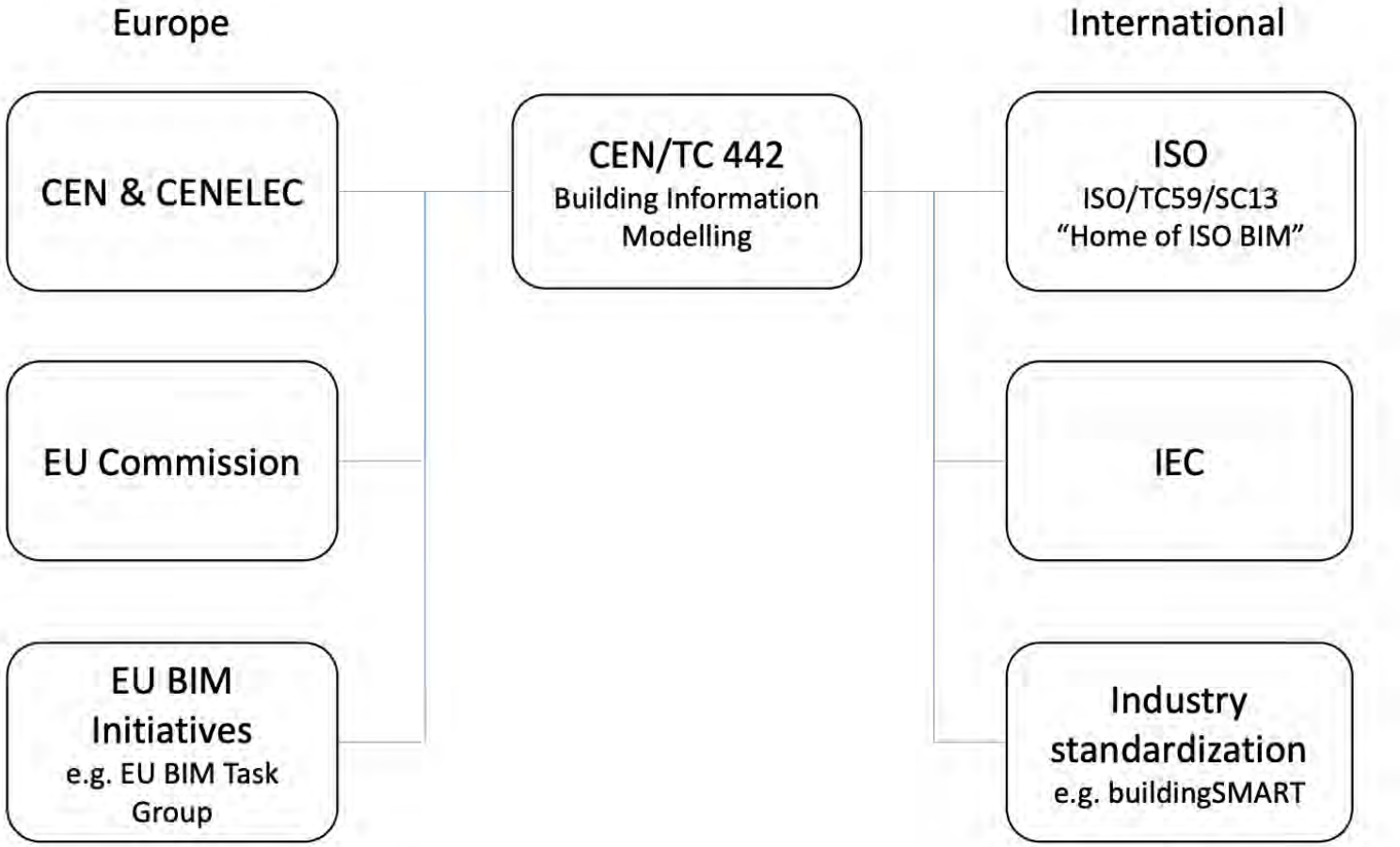
- New data interfaces open up opportunities to launch **new products and services with significant potential** (e.g. customized production based on BIM data, building operations and maintenance support based on lifecycle data).
- **Servitization** leading to increased margins and volume

New capabilities

- **Industry 4.0 and plan automations**
- **New skills** required to manage new data use cases (e.g. digital marketing based on customer data)
- **Accessibility of data** as differentiator for commodity products

Relations in international BIM standardization

Link to the CEN TC 442 work program



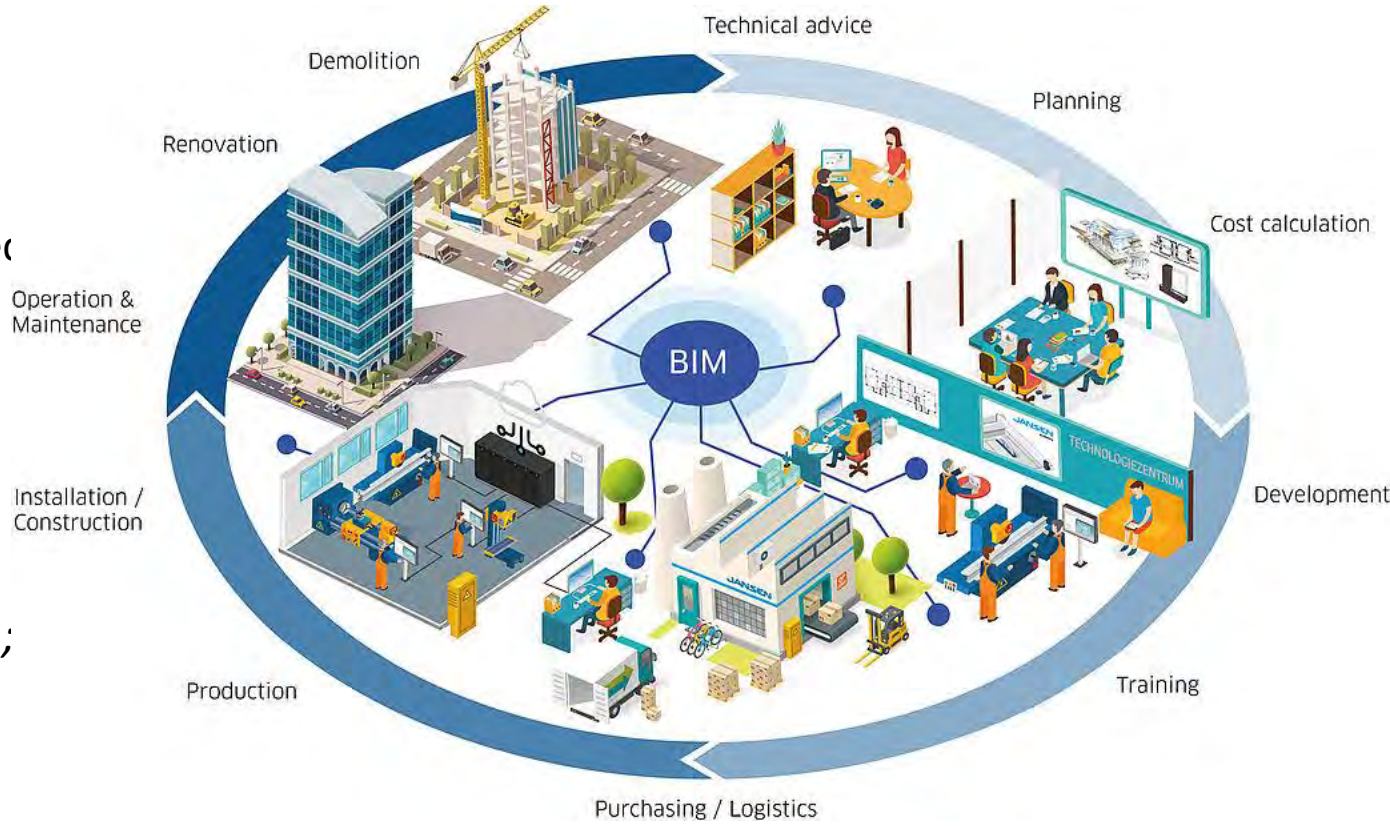
BIM standardization can not be done within CEN/TC 442 alone. It is a complex structure of committees within ISO, CEN, CENELEC, IEC and other industry and Government standardization bodies that needs to collaborate.
The Vienna Agreement and the liaison system are important tools to achieve good collaboration.

Source: CEN-CENELX Webinar: "Building Information Modelling (BIM) supports the digitalization of standards for the construction sector" © CEN-CENELEC 2021

BIM is relevant for every stakeholder

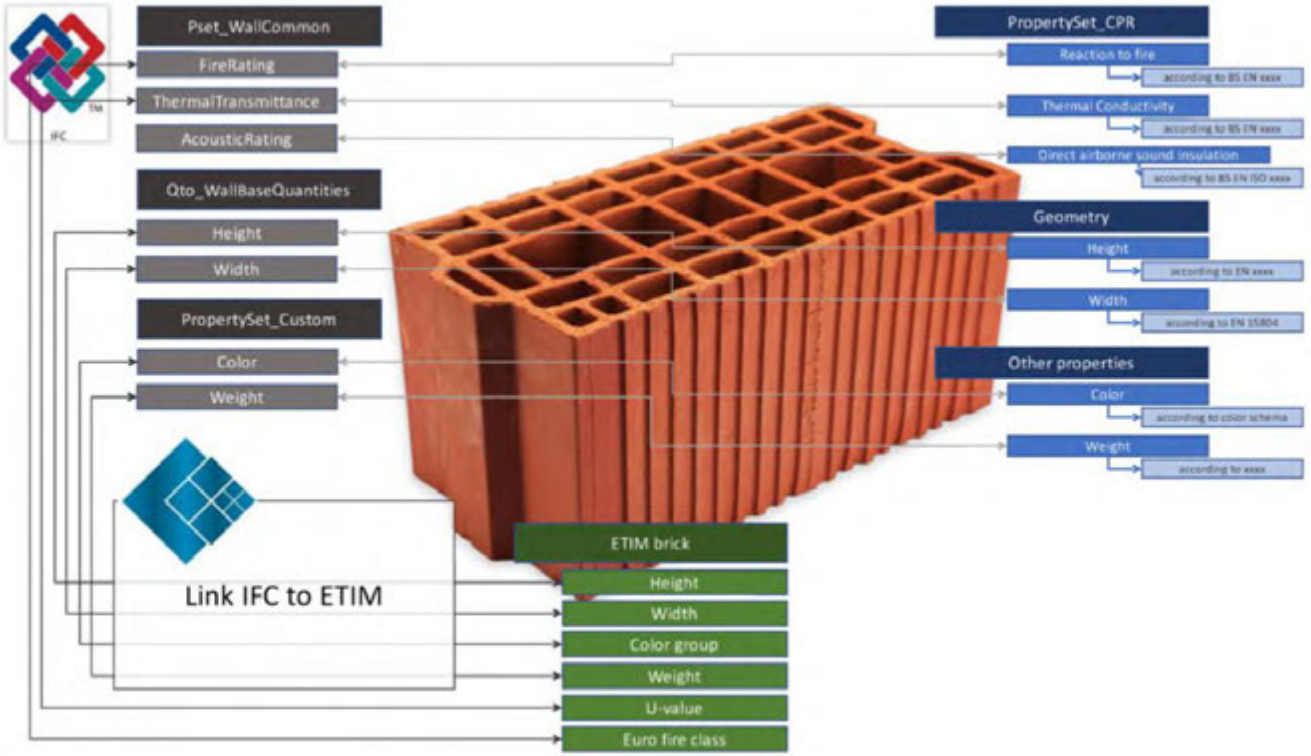
- Building Information Model – **What** thing is produced
- Building Information Modelling – **How** the thing is produce(
- Building Information Management – **Who** produces **What** thing and **When**

*'BIM expands from 3D modelling to genuine collaboration; **from design and construction into operations**; **from individual buildings to cities** and their systems; and onto wherever digitizing the built environment may take us.*



Source: coBuilder, ISO19650, BIMlevel2.org

These trends clash with the operational reality of building material manufacturers

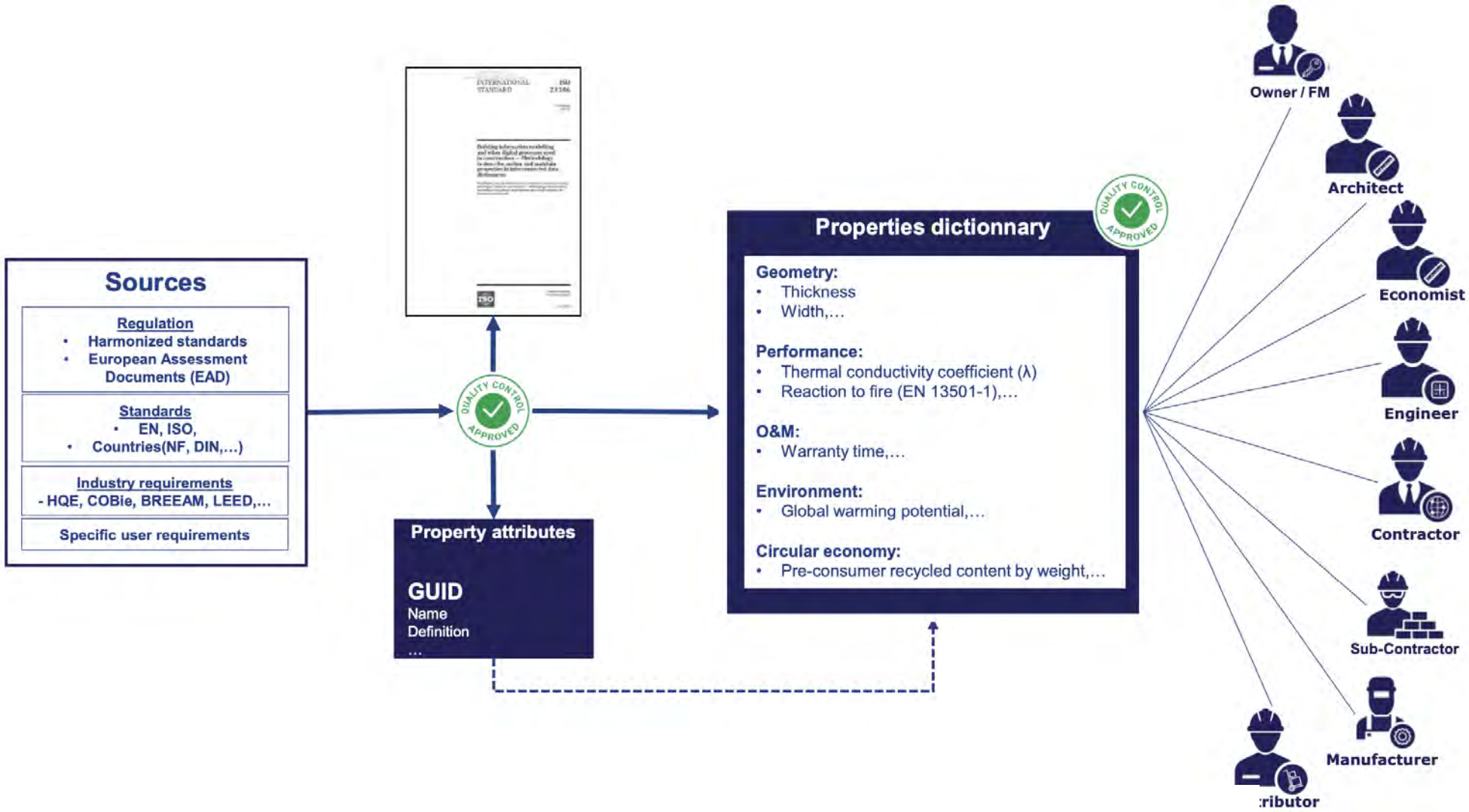


Challenges for building material manufacturers

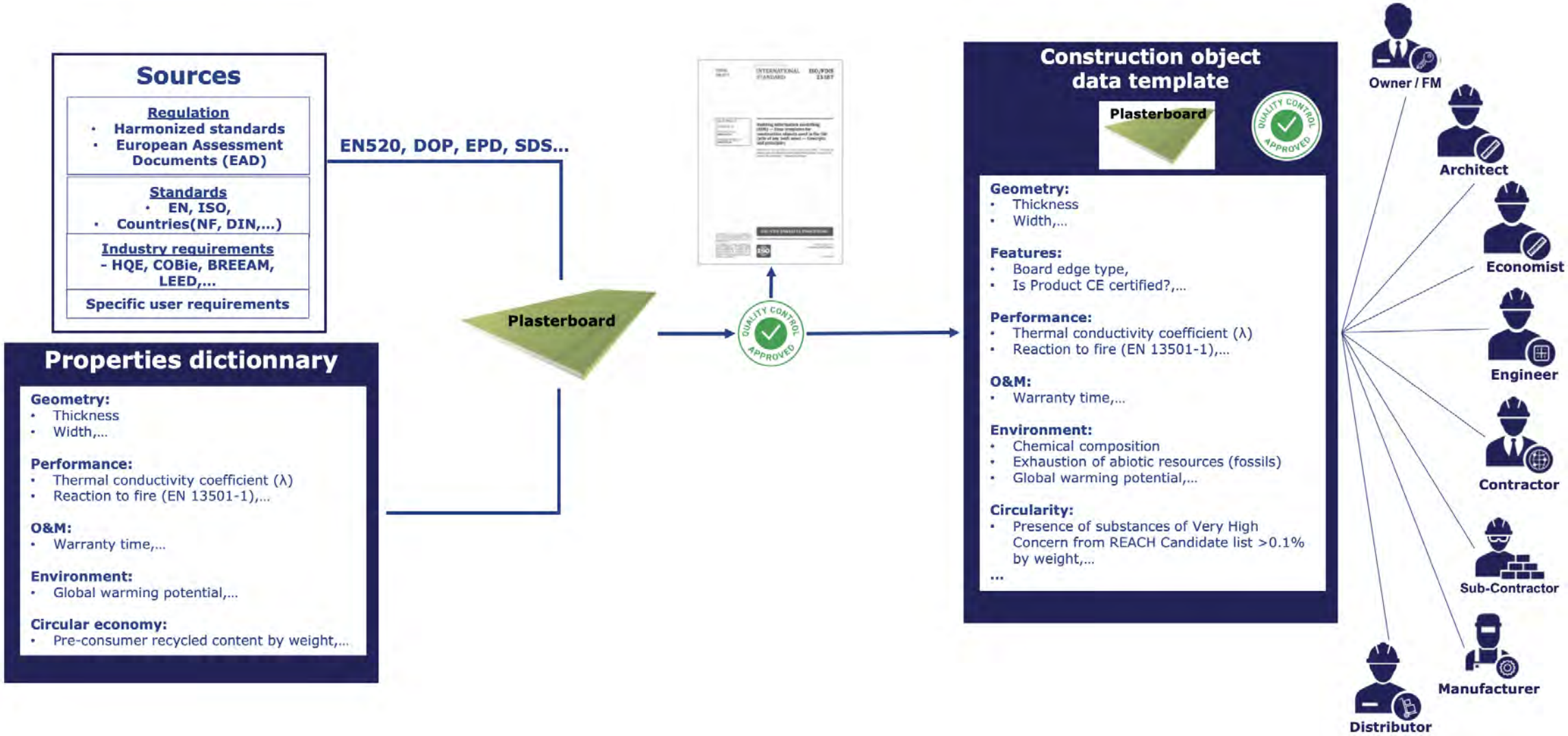
- **Siloed data** in inconsistent formats
- **Low data quality** and lack of data governance
- **Over 30 classification systems – BauClass, Uniclass, NRM**
- **Fragmented BIM landscape** with different standards (To BIM or not to BIM)
- Fragmented vendor landscape with **limited interoperability**
- **Lack of standards** for parts/equipment catalogues
- Lack of **IT & OT security** of Digital Twins and Models
- Sites **lack infrastructure to leverage data**
- Install base **lacks sensors and embedded** monitoring to benefit from IoT
- **Insufficiently skilled labor** to implement complex data projects

Simply investing in BIM is insufficient to address the data challenges faced by manufacturers

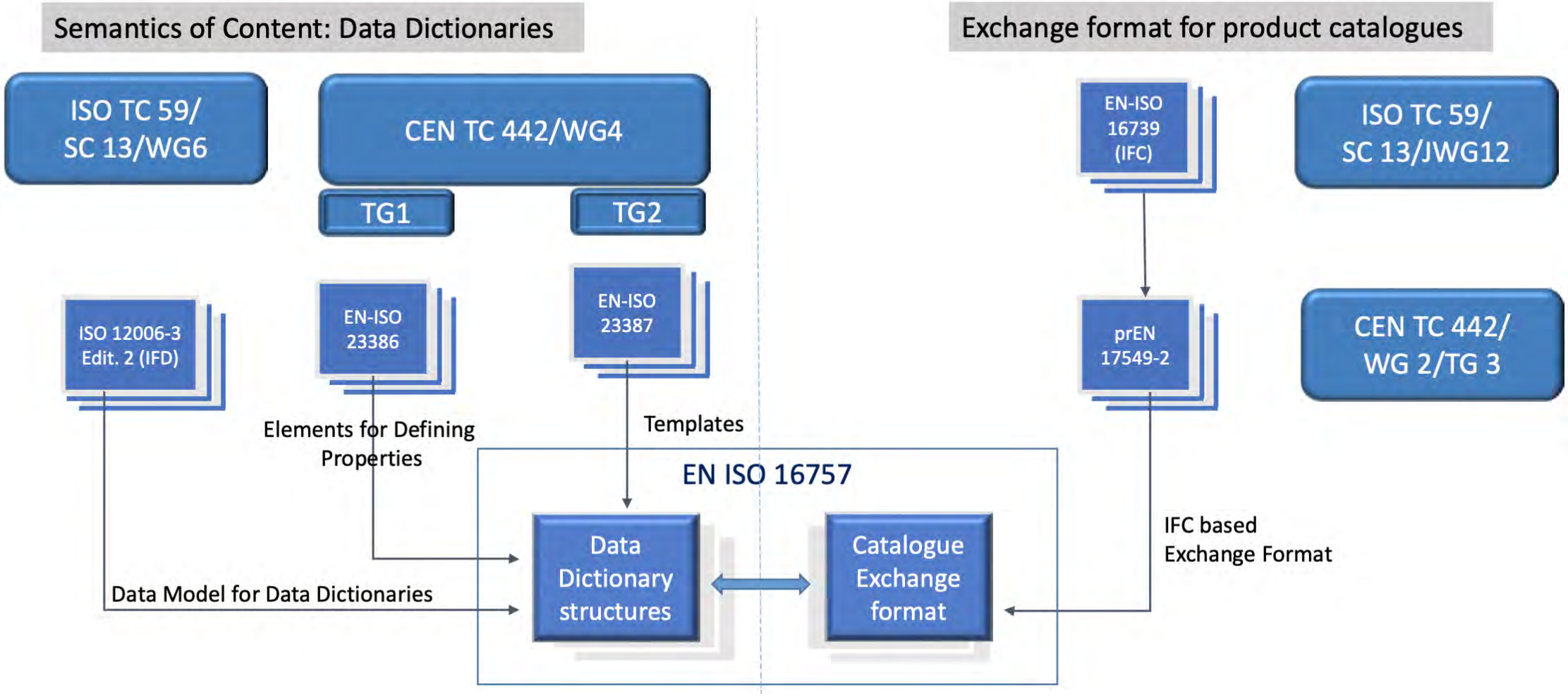
EN ISO 23386 - Building information modelling and other digital processes used in construction - Methodology to describe, author and maintain properties in interconnected dictionaries(published in March 2020)



EN ISO 23387 - Building Information Modelling (BIM) — Data templates for construction objects used in the life cycle of any built asset — Concepts and principles (published in July 2020)



EN ISO 16757 Data structures for electronic product catalogues for building services



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GS1

Essential characteristics

- Watertightness
  - EN XXXXX
  - ISO XXXXX
- Reaction to fire
  - EN XXXXX
- Effectiveness
  - EN XXXXX

None-Essencial characteristics

- Property 1
  - EN XXXXX
- Property 2
  - EN XXXXX

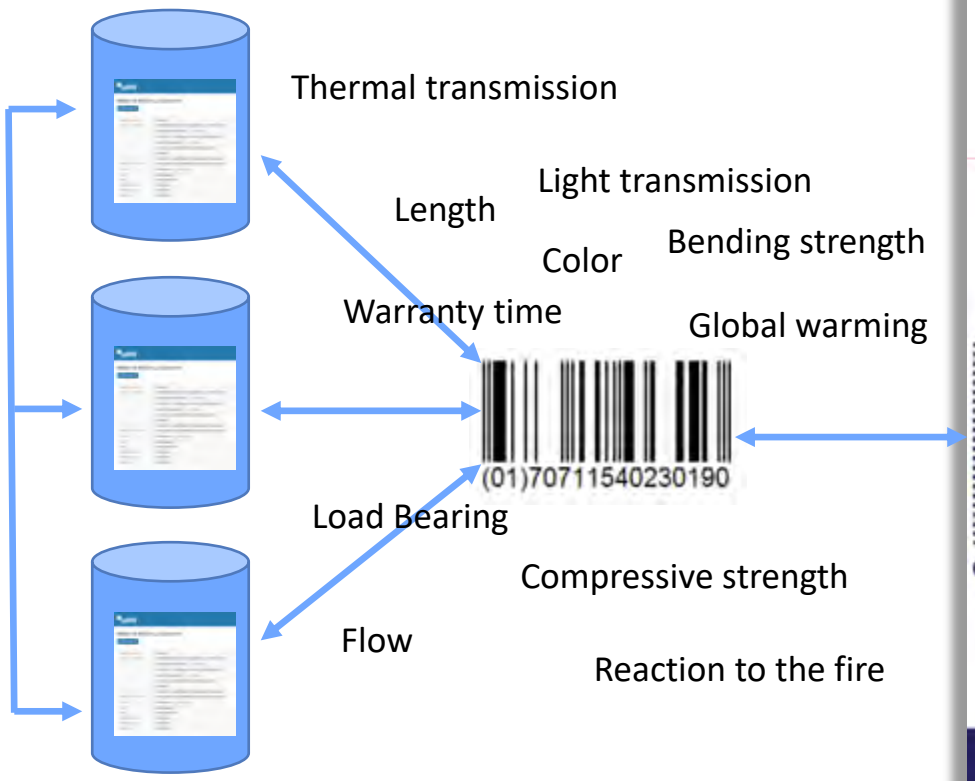
Common technical language in a data dictionary based on EN ISO 12006-3

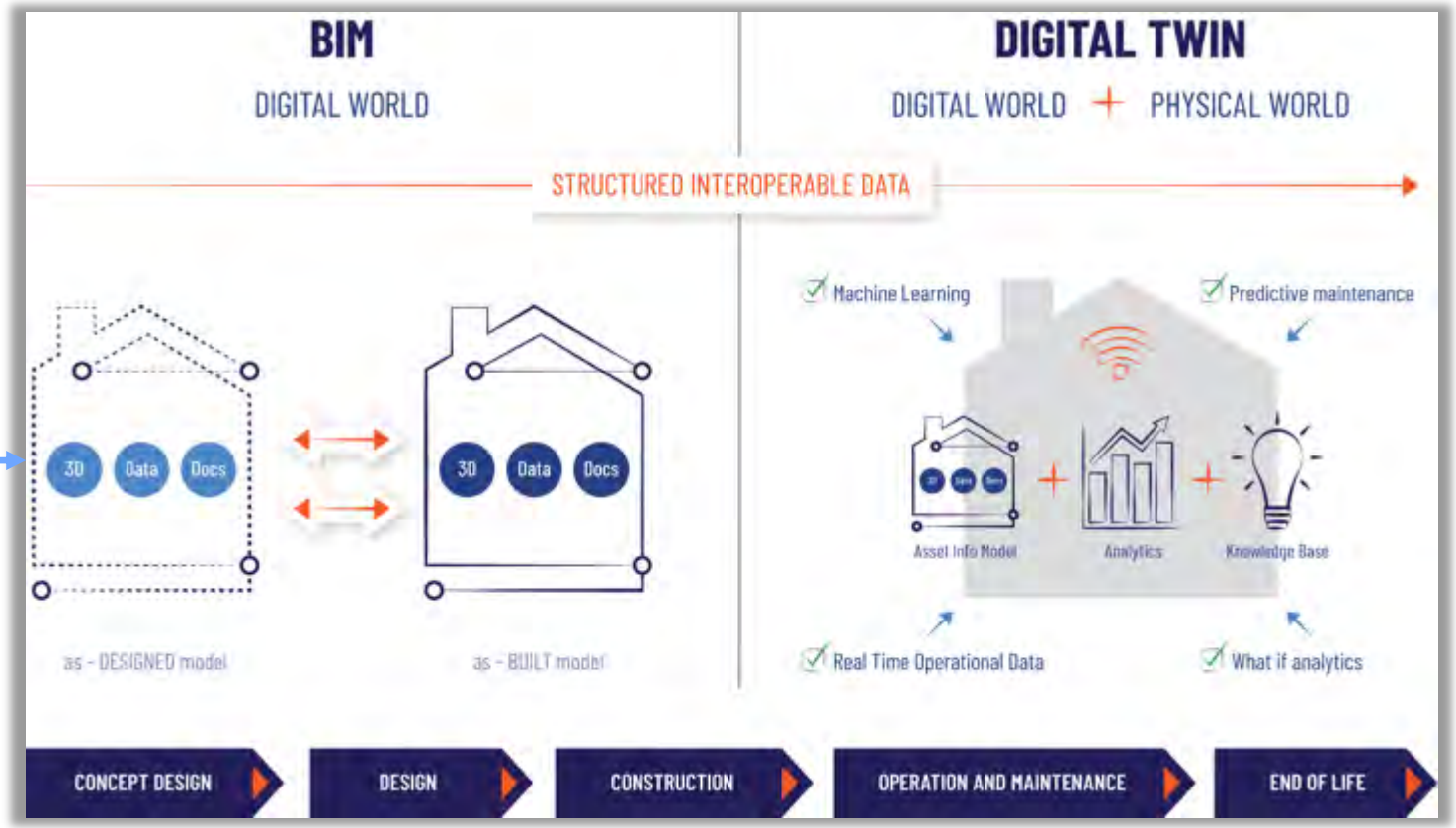
EN ISO 16739

IFC

Source: coBuidler

Standards and regulations combined with digital technologies



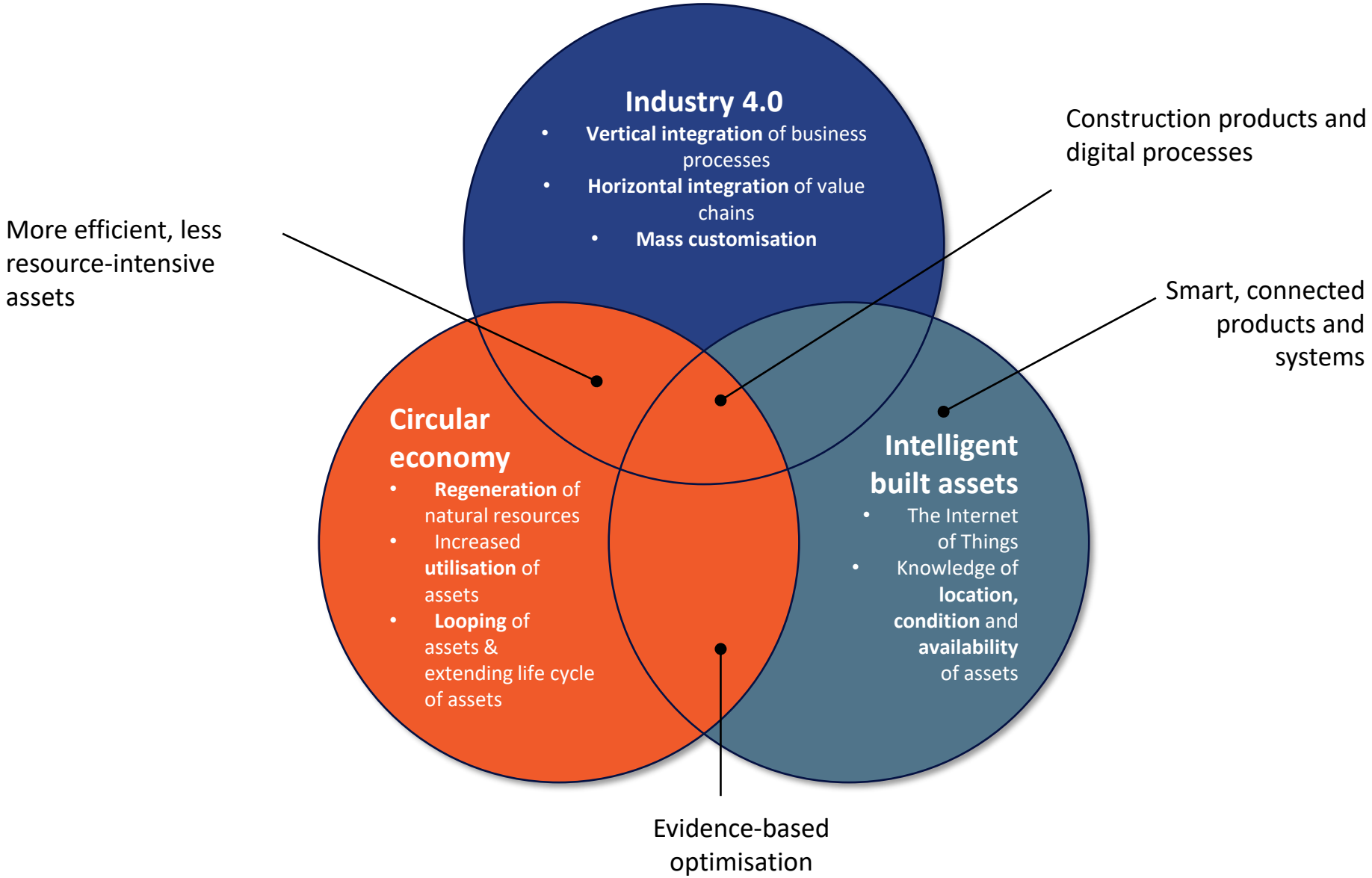


The as-designed model is based on input from the design teams which ultimately forms the basis for the as-built model that contains all the characteristics of a building.

Cognitive Enterprise enables to provide data to create Digital Twins. This opens a new digital market on planned development, where assets are sold. It also enables maintenance, energy optimization, machine learning, real time data = lower OPEX

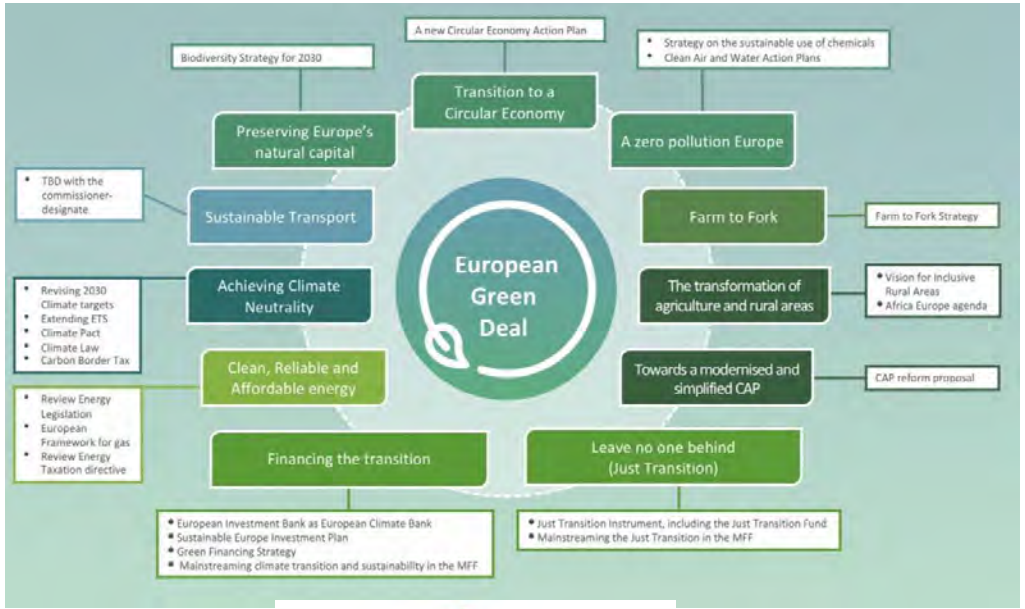
Source: coBuilder, GS1, IBM

Holistic approach is the key to successfully increase the productivity and efficiency



Source: CPA (2016) – Future for Construction Product Manufacturing: Digitalization, Industry 4.0 and the Circular Economy

Some EU initiative worth paying attention to



STRATEGY 2030
CEN & CENELEC

DigiPLACE
TOWARDS A EUROPEAN DIGITAL PLATFORM FOR CONSTRUCTION

2050
CONSTRUCTION ALLIANCE

openbuilt

Deep Expertise

doing smarter things...

Software
Product open market

Services & data
Build your own solution barcode scanning, telemetry, BIM

BIM | Telemetry | Barcode scanning

with different use cases...

Track and trace | Logistics | Survey
Asset management | Finance | Contract management

for different verticals...

Manufacturera
Government & Private
Supply Chain

New Ways of Working
Intelligent Workflows
IT/OT Integrated
Data Ready

doing things smarter...

Orchestrate Integrated Operations Value Transformation

Work Transformation

Enterprise Strategy | IBM Garage | Scale: Agile DevOps, Modernisation, Migration | App Support: Rationalisation & Management

Technology Transformation

AI & Analytics | Security | Robotics & Automation | IoT, 5G & Edge | Hybrid Multi-cloud | User Experience | Blockchain

Unique Proprietary Data

Work and Technology Platforms

Engineering & Operations					Commercial	Enterprise	
Supply Chain	Production Excellence	Asset Effectiveness	Operations Excellence	Integrated Planning	Trading	Finance & Accounting	Customer Relationship Management
Engineering & Reliability	Safety & Process Reliability				Treasury	Human Resources	Enterprise Asset Management
Design & Build	Process Control & Automation				M&A & Expansion	Procurement	Enterprise Planning & Budgeting

OpenBuilt to address the challenge are based on a functional/technology interlock in key areas to build new capability and ways of working in the construction industry

openbuilt

Key Takeaways

Building Information ~~Modelling~~ **Management** (BIM) is about transforming data to information enabling digitalization of the Construction Industry value chain in the lifecycle of assets.

Data must be structured and managed to become useful information that can be shared and support decisions in the whole lifecycle of an asset.

- In many ways TC442 is only a facilitator
- Standardize TC442 methods on how data can be shared, and information managed digitally

Industry Digitalization has benefited from the emergence of new **digital technologies** that are completely redefining the possibilities in construction, operations and manufacturing

COVID-19 has exposed fragility in supply chains and highlighted the importance of Data

Manufacturers must treat their data as an asset and monetize it

Talk to us! Comment on the blog posts
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Thank you

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