

# The Evolution of Project Communications and Information Management in the AEC/O: The Integrated Data Environment.

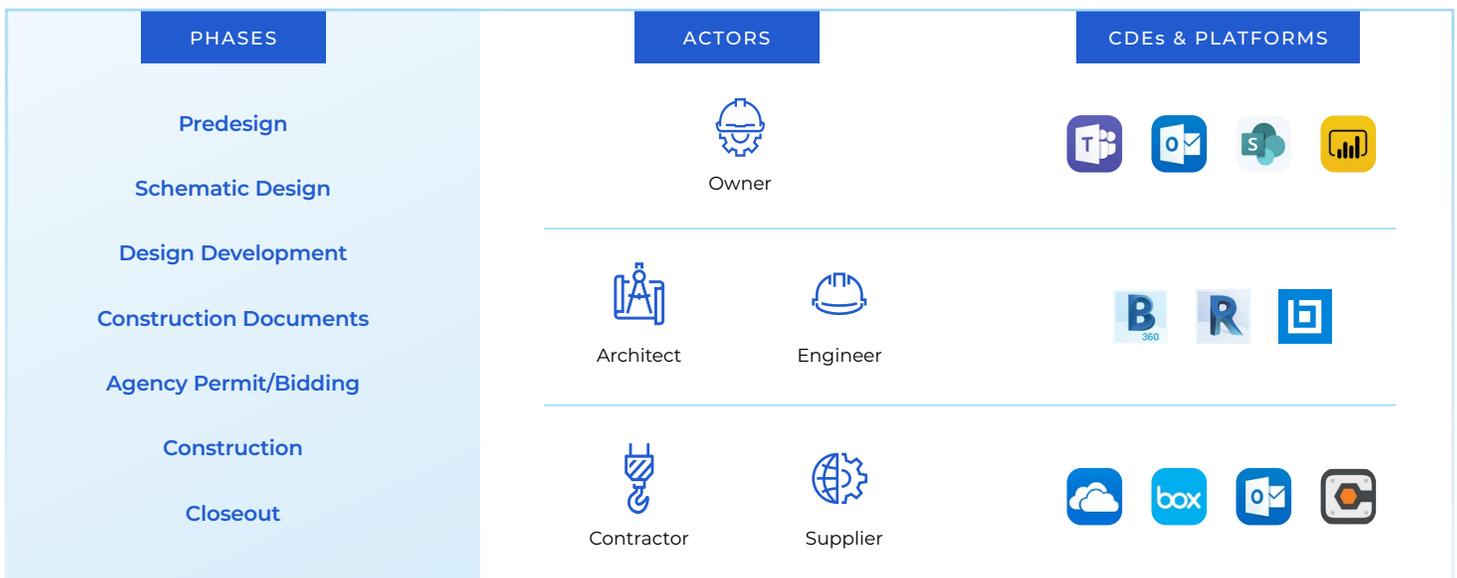
## Introduction

The Integrated Data Environment (IDE) is the next stage in the evolution of project communications to consume, manage, and deliver project information across the various stake holders, actors, phases, and common data environments (CDE) in any project. The objective of an Integrated Data Environment is to securely connect data from inception to conclusion and hand-off, while providing a centralized communications layer that delivers search, auditing and reporting within a single application and common user experience in the context of a single project, regardless of phase, actor or where data resides.

*“Communication effectiveness and standardisation are the foundation of the next major disruptive innovation in AEC industries through creative application of existing technologies and data and access concurrency.”<sup>1</sup>*

Our industry has seen significant investment in ConTech solutions over the past few years to drive innovation and integration. However, while the results have helped unify point solutions and phase based CDEs, the efforts only yielded incremental progress on interoperability between CDEs and platforms. Our industry thought leaders regularly present a vision of a more distributed and collaborative design process which leads to increased usage of industrialized construction. Pairing these concepts ultimately facilitates a powerful Digital Twin that drives value for owners over the lifespan of the structure. If we hope to achieve this vision, **our industry must focus on improving interoperability.**

This paper will outline the necessary steps the AEC/O industry needs to take to improve interoperability and project communication through the Integrated Data Environment.



## Background

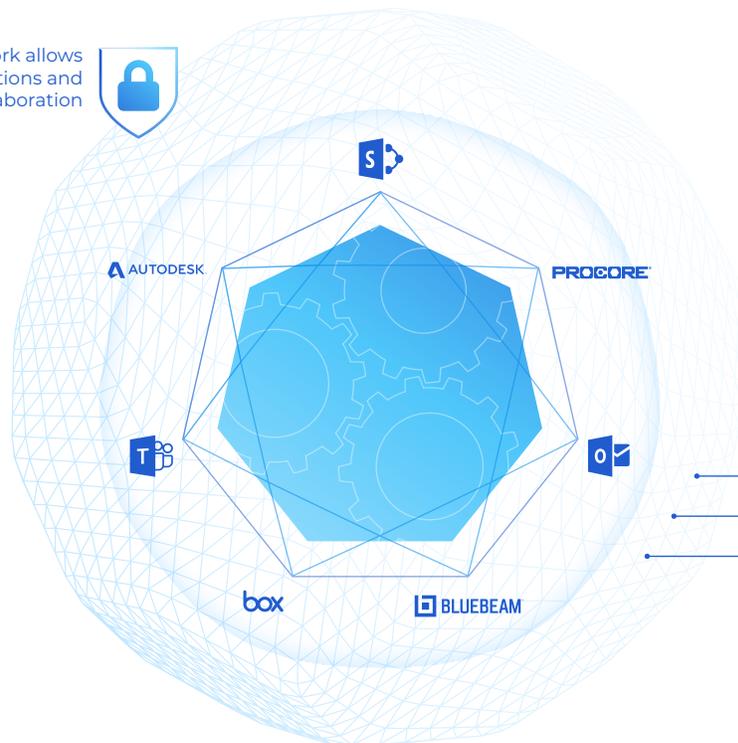
Using cloud technology, IDEs function as middleware for data capture and provide a common security layer to exchange data across what are otherwise data silos. This is done by providing connected workflows in a common application and interface which is driven in the context of end user interaction and modern collaboration. Examples of this would be a project owner monitoring and actioning digital assignments from both design platforms and build platforms through a single, secure pane of glass or a document controller compiling and distributing content from those same multiple connected platforms.

IDEs build on the concepts of Project Information Management (PIM) which typically focuses on the orchestration of content such as email and documents, and Common Data Environments (CDE). A Common Data Environment, while ostensibly provides a “single source of truth”<sup>2</sup> or information for a project, is typically specific to a certain phase and/or actor involved on a project.

**Workflows across connected project data systems and the facilitation of security, governance, communications and collaboration is the key distinction of an Integrated Data Environment.** It's the bridge between technology and process. IDEs facilitate Integrated Project Delivery (IPD)<sup>3</sup> to deliver an integrative approach to project execution—accomplished by adding a consistent layer of security and communications within a single application and user interface.

### INTEGRATED DATA ENVIRONMENT

Secure framework allows for communications and collaboration



One Project

One Team

Secure Collaboration

The 2018 International Organization for Standards ISO 19650-1: 2018 Part 1 provides recommendations for a framework to manage information including exchanging, recording, versioning and organizing for all actors. An Integrated Data Environment satisfies these requirements in a more complete way than a Common Data Environment can. According to the UKBIM Alliance, “There is a common industry misconception that the CDE is a technology solution only and that it is always a single solution. ISO 19650-1 Clause 11.1 clarifies that a range of technologies might be required. It is therefore important to establish the functionality needed, and how single or multiple systems might support this functionality, early in a project. Where multiple systems are needed, consideration should be given to how they interface with each other as necessary. This common misconception that the CDE concept is a technology or solution overshadows the most important aspect which is the process or ‘workflow.’”<sup>4</sup>

# Current AEC/O Environment

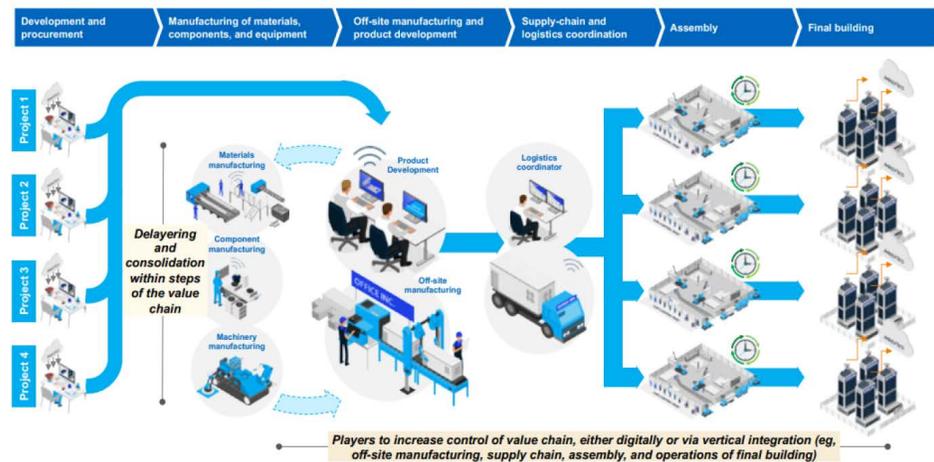
A recent McKinsey 2020 report “The Next Normal in Construction”<sup>5</sup>, discusses the current state of the industry, their vision of the future and the necessary disruption required to advance the industry in terms of the required methodologies and technological approach to allow the industry to evolve and to drive profitability.

The report surmises that **today’s construction ecosystem is highly complex, fragmented and project-based, with a limited use of end-to-end digital tools and processes.** A traditional laggard in innovation, the industry relies on “designs planned from scratch...with limited degree of repetition”<sup>6</sup> and a “value chain and player landscape that are local and highly fragmented vertically and horizontally.”<sup>7</sup>

## IDE & FUTURE OF THE AEC/O

McKinsey advocates that the industry needs to evolve to the following model<sup>8</sup>

**The construction ecosystem of the future**  
 ... A more standardized, consolidated, and integrated construction process



The construction process is increasingly **product based**, meaning structures will be products and manufactured off site by branded product houses **specializing** in certain end-user segments

Developers choose **entire designs or specific components** from a **library** of options developed in house or offered externally on the market

**Value chain is more consolidated, both vertically (delaying) and horizontally**, with increased degree of **internationalization**

**Disintermediation** takes place through digital marketplaces and direct channels

Contractors focus on **lean, on-site execution and assembly of products**

**Data and analytics** on customer behavior generated after completion to optimize total cost of ownership and future designs

While the diagram above speaks to a connected supply chain and productization of construction, IDEs will play an integral role in the realization of a productized value chain. The connected workflows and overarching common security layer provide the necessary framework for the collaborative elements that are a fundamental prerequisite to achieving the desired industry vision and goal. **The white lines in the productized value chain diagram below are where IDE’s and their role, help realize this future state. The white lines are where various systems come together and require governance to create a system of systems.**<sup>9</sup>



[See full McKinsey report >](#)

# BIM

BIM triggered an evolution in design from 2D to 3D creating a digital container to collect and powerfully communicate much more information about an asset. IDE builds on the great job design-focused platforms have done unifying the myriad of tools required to author, coordinate and surface issues during the design process by helping the industry evolve to cross platform integration and interoperability.

## Digital Twins

Realizing the rapid value proposition of Industrialized Construction and the future opportunity with Digital Twins also hinge upon the growth of IDE as a secure framework. Industrialized construction is the manifestation of the “productized value chain” above. The intersections between all companies in the chain, who use different systems, require governance to maintain data integrity. **IDE adds the missing layers from the diagram—communication, search, reporting and audit layers that span the systems to build efficiency, trust and transparency.**

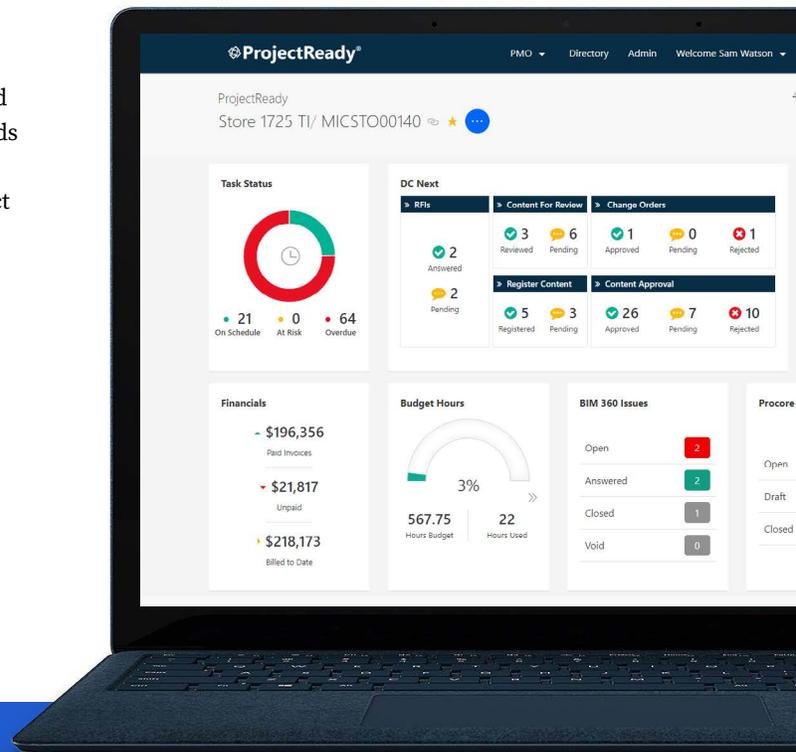
Though Digital Twin standards and tooling are in its early days, they will evolve to support a full digital building lifecycle. According to Gartner, in Gartner Identifies the Top 10 Strategic Technology Trends for 2019: “There will be more than 20 billion connected sensors and endpoints and digital twins will exist for potentially billions of things. Organizations will implement digital twins simply at first. They will evolve them over time, improving their ability to collect and visualize the right data, apply the right analytics and rules, and respond effectively to business objectives.”<sup>10</sup> As technology providers develop the necessary sub-systems to feed the digital twin, IDEs will be a key foundation for owners to establish a secure framework at the inception of the project to accommodate the expanding set of available variables and required connected workflows.

## ProjectReady and IDE

ProjectReady is a next generation SaaS collaboration platform designed to meet the unique workflow, management and document control needs of design firms and owners. Connecting workflows and facilitating security, governance, communications and collaboration across project data systems are the key distinctions of ProjectReady, the first truly integrated data environment.

### Sources

- 1 Oliver, S. *Communication and trust: rethinking the way construction industry professionals and software vendors utilise computer communication mediums*. Vis. in Eng. 7, 1 (2019).
- 2 *Single Source of Truth*
- 3 *Integrated Project Delivery*
- 4 UKBIM Alliance, *Information Management According to BS ENISO 19650*
- 5 McKinsey Report, *The Next Normal in Construction*
- 6 *ibid*
- 7 *ibid*
- 8 *ibid*
- 9 *ibid*
- 10 Gartner, *Gartner Identifies the Top 10 Strategic Technology Trends of 2019*



## Conclusion

IDEs are vital for the future of the AEC/O. The evidence from McKinsey and the ISO Standard 19650 referenced above, states a clear vision of the future with a connected, consolidated value chain. An integrated data environment, with its overarching security layer and workflow processes will facilitate that communication and reporting needed to seam together the tools and systems already in place to consolidate that value chain.

Learn how you can use ProjectReady to improve your company's workflow. **Request a demo today.**