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Autodesk Tandem™ (Project Constructwin) Delivering the Value of BIM to Owners with a Digital Twin

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Learning Objectives

- Digital Twin Opportunities and Challenges
- Start Digital and Stay Digital with Autodesk's Digital Twin Platform
- Achieving Better Outcomes with Autodesk's Digital Twin Platform

Description

[Add your class description.]

Speaker(s)

Robert "Bob" Bray
As the General Manager of Autodesk Tandem™, Bob is incubating a new business initiative within Autodesk. Our mission is to transform the built asset lifecycle with Digital Twin technology and solutions. In the past 23 years at Autodesk, Bob has served in several critical product development roles and has led the product development of BIM360 Design and Autodesk InfraWorks. Bob holds a BS in Computer Science from the University of Missouri.

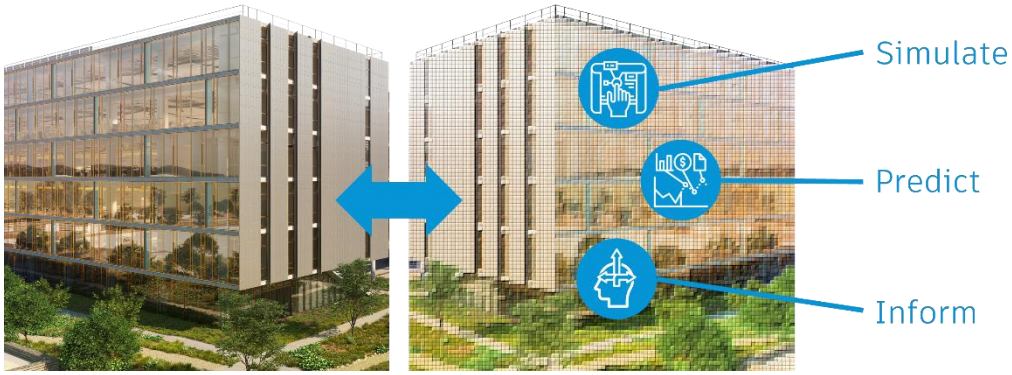
Tim Kelly
As the Product Manager of Autodesk Tandem™, Tim is responsible for shaping the product and workflows. Tim has a wealth of industry and product experience having worked as a BIM Manager for Satterfield & Pontikes Construction, and as a Product Manager at Assemble Systems and Autodesk. Tim holds a BS in Construction Science from Texas A&M University.

Autodesk Tandem™ and Constructwin

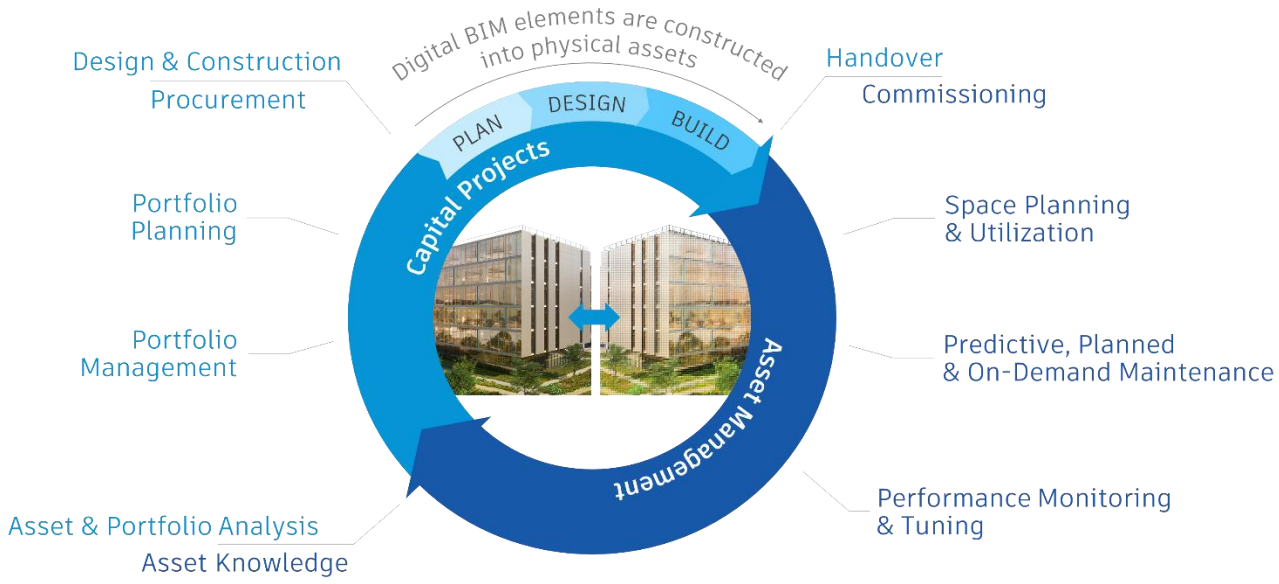
Some of the slides and material for this class may refer to Constructwin or Project Constructwin. Please note that Constructwin was the former project codename for the product that is now called Autodesk Tandem. For the purposes of this class please consider Project Constructwin and Autodesk Tandem two different names for the exact same solution.

Digital Twin Opportunities and Challenges

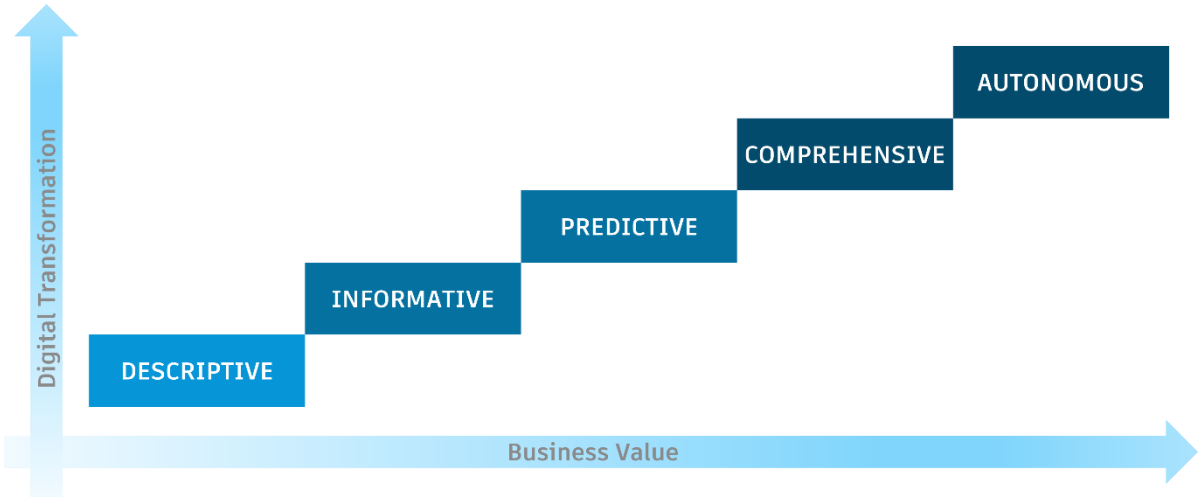
Autodesk defines a Digital Twin as a dynamic digital reflection of its physical self. They possess operational and behavioral awareness necessary to simulate, predict, and inform decisions based on real world conditions.



Most important however is the opportunity to transform the asset lifecycle with a Digital Twin. Autodesk is of course best known for our design and construction software. Owners typically contract our customers today to perform these services. The first opportunity is to enable digital handover so that owners can commission a new facility with a data rich digital twin made up of object and asset data. With the digital twin, we then have the opportunity to transform asset management activities, including space planning, maintenance, as well as understanding the performance of the facility. Through his phase of the lifecycle, the twin is becoming more federated and enriched, linking to operational and performance data and may also include system models and simulation which enables predictive insights. At this point the twin contains significant knowledge about the facility which can be leveraged to inform the capital planning portion of the lifecycle, giving owners additional insight into what investments may lead to the best ROI for their business.



Verdantix proposed a maturity model for Digital Twins comprised of 5 levels. The base level they call a Descriptive Twin, which is comprised of a live editable version of the design and construction data. Informative Twins add operational and sensor data to the twin making them a single pane of glass, and Predictive Twins begin to leverage that operational data for insights. Comprehensive Twins add simulation for future what-if scenarios, and Autonomous Twins have the ability to learn and act on behalf of users. Each level requires a greater degree of BIM maturity and digital transformation, but each level also offers greater value to your business.



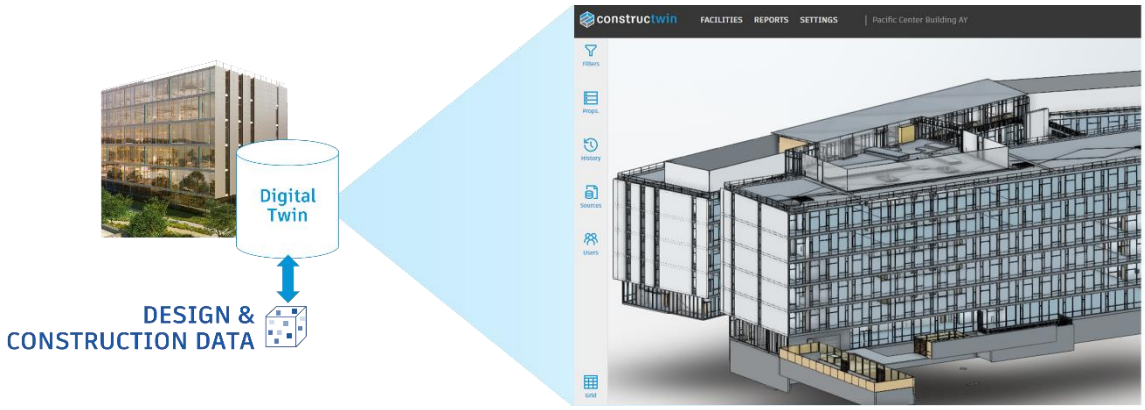
A significant challenge to adoption is the fact that 2D plans and specifications remain the industry standard contract deliverables for construction documents. One of the transformative industry challenges we need to address is the broken and fragmented flow of data. A common problem we have heard from AEC firms is that owners often ask for BIM without a way to articulate what they actually need. The typical result is project teams spending countless unbilled hours updating Revit models, which at the end of the day are not useful to the owner because the data is trapped in files.

The handover of analog, unclassified, and disconnected data leaves owner/operators an insurmountable challenge in terms of creating an integrated solution for monitoring, managing, and tuning their asset. The result is that owners and operators are unable to realize the benefits of smart buildings and instead end up with siloed data and systems, inaccurate information, a lack of transparency, and poor insight.

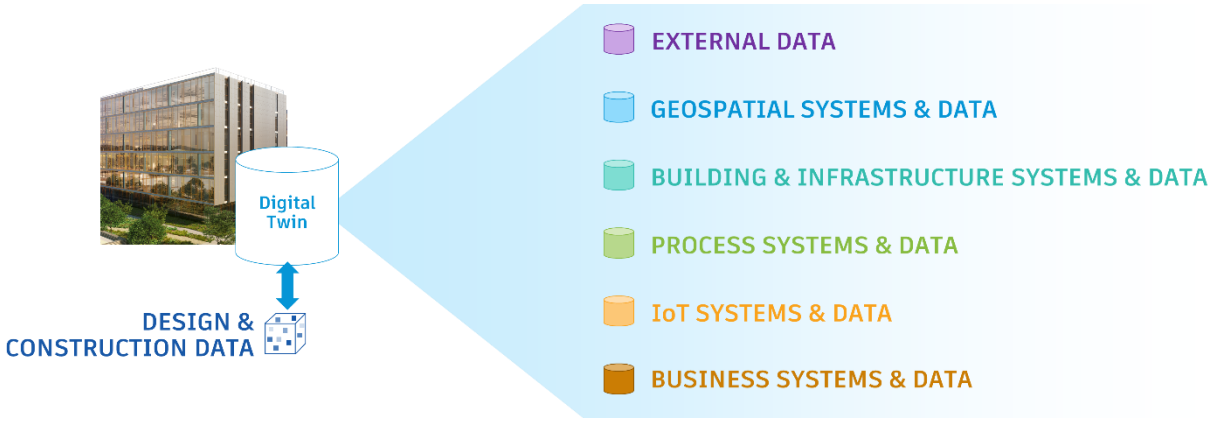
The question then becomes – How do we deliver on BIM's long unmet promise of a more connected, data-centric workflow?

Start Digital and Stay Digital with Autodesk's Digital Twin Platform

Autodesk Tandem will help you start digital and stay digital. Autodesk Tandem will leverage and normalize project data - tracking a **digital thread** of information for each component of your facility from the time it's designed to the day it's decommissioned

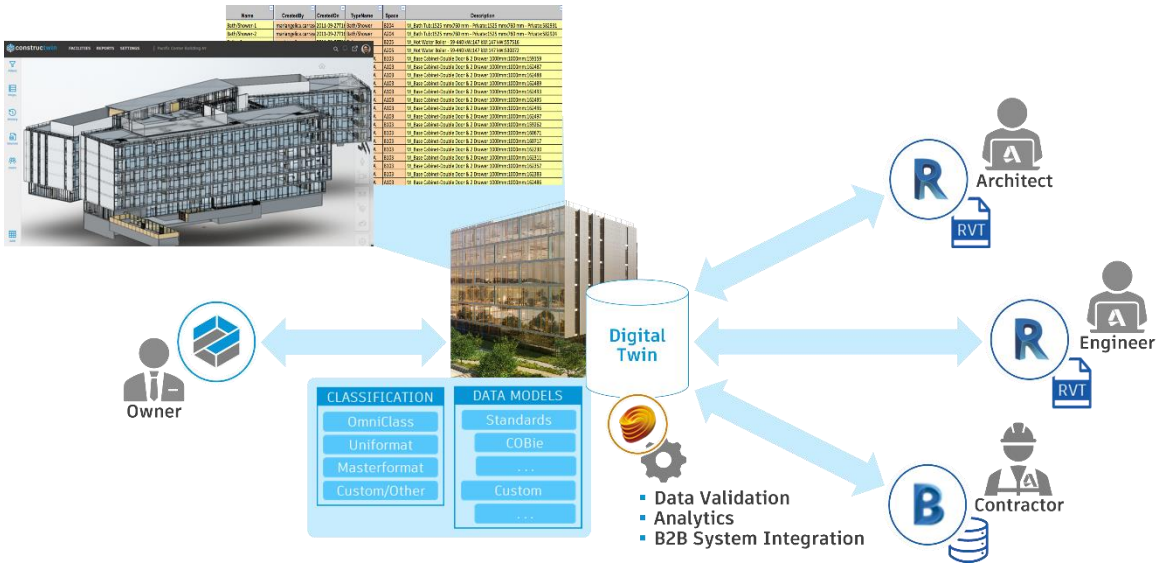


Autodesk Tandem then becomes a **digital hub** integrating with new and existing systems to connect the digital twin to the operational and performance data of its physical counterpart. One thing is very clear, there is no one single source of truth – digital twins are a connected ecosystem. However, by integrating federated systems you can create a cohesive digital twin solution.

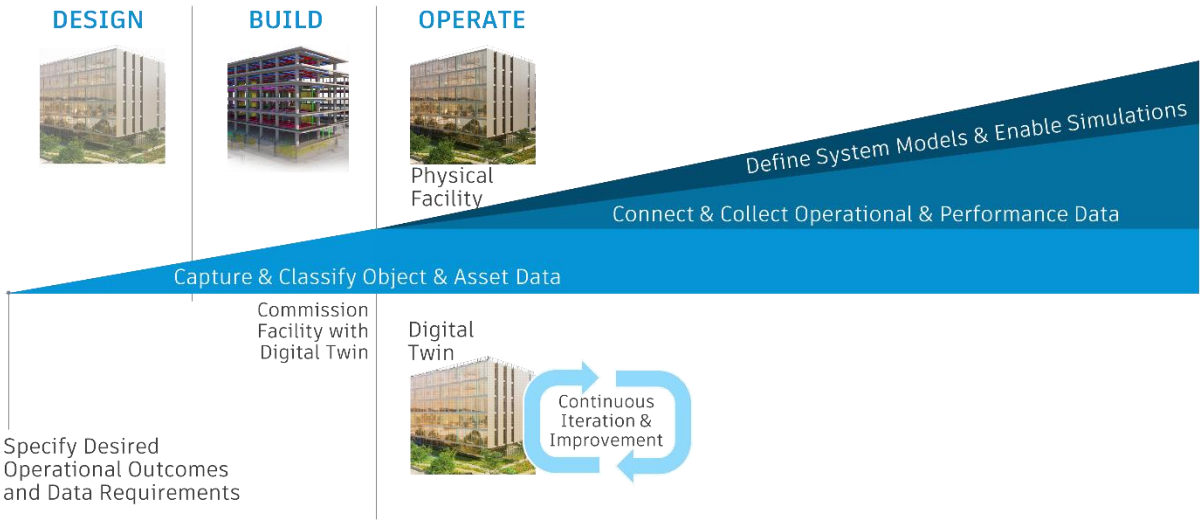


The challenge with creating a Digital Twin from BIM and project data is the lack of data standards. Each design firm often has their own standards for classifying data and the set of parameters they use in the modeling process. Aggregating multiple Revit files from multiple firms results in data soup which complicates the problem. To make the data useful to downstream users and systems, we need to normalize the data within Autodesk Tandem.
If we truly want projects to start digital and stay digital, then we need to enable "digital handovers" of normalized data. Project teams create data in Revit and BIM360 and as that data is loaded into the Digital Twin it is normalized by classifying and mapping the data into the Classification schemes and Data Models established in collaboration with the Owner. By having

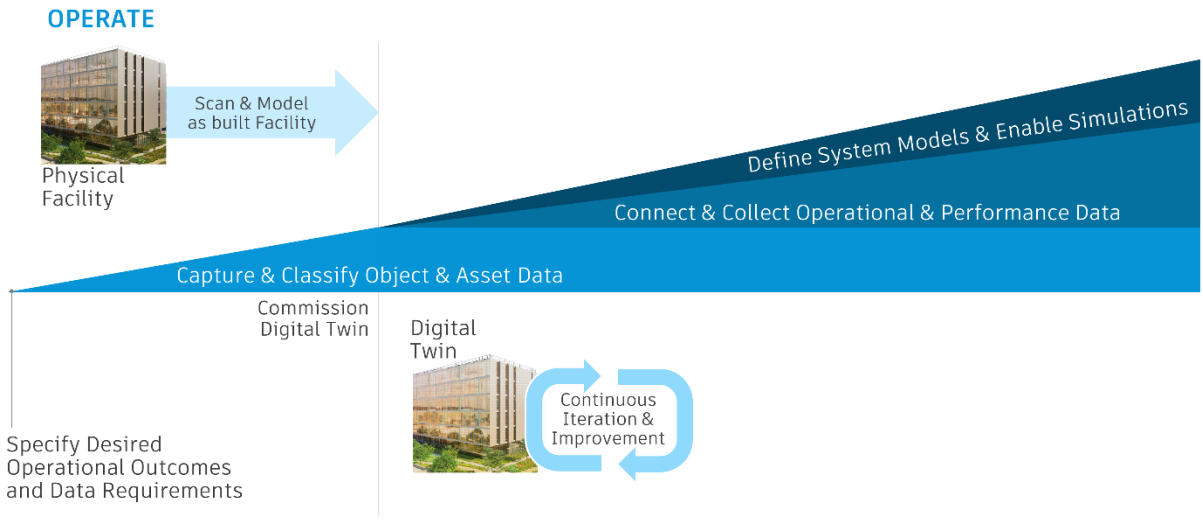
normalized data in the Digital Twin, we'll enable access to a much broader set of Data Users in either graphical or tabular formats. And finally, because the data has a uniform structure, we can use machines to validate it against project requirements, perform analytics, and more easily support integration with an owner's asset management systems.



For a new build facility the Digital Twin lifecycle starts at the beginning of the project with a collaboration to understand the desired operational outcomes and the data required to deliver those outcomes. Data is then captured through the project lifecycle and a Digital Twin is provided at handover. The twin can then be connected to other systems to collect operational and performance data, and system models can be defined to perform simulation. Finally, keep in mind that the Digital Twin must evolve over time. You may start wanting to monitor and tune energy consumption and carbon emissions, and in the future evolve the solution to support new needs like facility utilization and contract tracing.

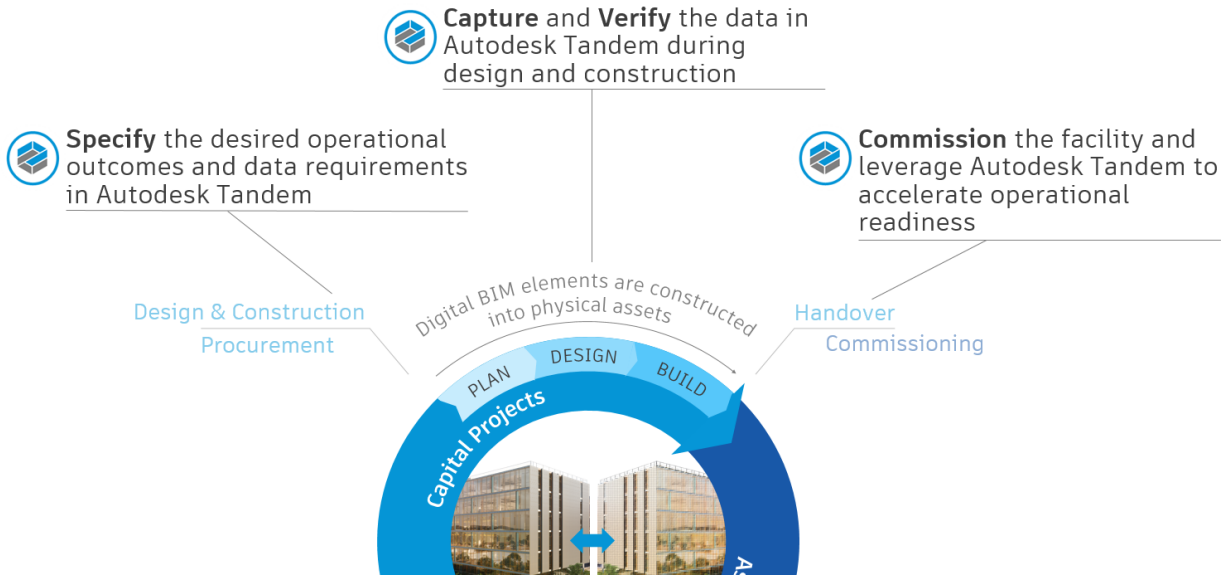


This solution is not limited to new build facilities. For existing facilities, the lifecycle is fundamentally the same and starts with understanding the desired operational outcomes and the data required to deliver those outcomes. Then the digital twin of the existing facility can be created by either leveraging existing data or having the facility scanned and modeled.



Achieving Better Outcomes with Autodesk's Digital Twin Platform

Enabling Digital Handover is the first step toward achieving better outcomes and transforming the asset lifecycle. Autodesk Tandem enables a proactive and collaborative workflow to capture data about a facility and its components, rather than a reactive data collection exercise. This starts with a collaboration with the owner to specify the desired operational outcomes for the facility, and the resulting data requirements. Once the project team knows the requirements, we can provide workflows and integrations that enable project teams to easily capture the required data, and verify at each handover point. This enables a highly-accurate digital twin to be commissioned along-side the facility.



Join the Autodesk Tandem community to learn the latest on these workflows and get early access to the Autodesk Tandem Beta. As part of the community you'll have an opportunity to stay informed through monthly webinars and engage in forum discussions.

Use this link to join: https://feedback.autodesk.com/key/tandem-participant

We hope that inspires you to imagine your next big project where you have:

- A data-centric platform for collaboration between the owner, the architect, and the contractor
- Easy access to detailed facility information through a Digital Twin that can rapidly accelerate the operational readiness of your facility

If you are an AEC professional imagine a day when you can deliver more value to your customers. As an owner/operator imagine a day when you have a digital twin to give you more insight and control of your assets.