



Implementing Digital Design Delivery



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Your Guide to **Implementing Digital Design Delivery**





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A Simplified Path to Digital Transformation

This is a pivotal moment. The way infrastructure is designed, built, and operated is changing. Some are calling it “disruptive innovation.” But that misses the point. The goals of digital transformation are practical: efficiency, sustainability, and continuity across the asset lifecycle. They can’t be realized through disruption.

Building upon an established foundation is a more prudent approach. Current processes can be improved rather than replaced. With more than 40 application integrations, ProjectWise®, powered by iTwin® leverages existing workflows and design processes for a seamless transition to digital design delivery and other

advanced capabilities. Instead of adopting an entire suite of new applications to ensure compatibility, ProjectWise users achieve digital transformation by optimizing their existing processes, followed by incrementally adding new features to their workflows without restructuring their tech stack.

Having the right technology is only one piece of the puzzle. The next big challenge is implementation. After all, no software can transform an organization on its own. But with the right framework, digital transformation can become a progressive element of an organization’s development instead of a disruption.

Optimize Engineering Work-in-Progress (WIP)

Engineering WIP is the bedrock of a solid digital strategy. Going digital does not require abandoning your files and documents in favor of models, but it is important to streamline how those files are managed. Before advancing to digital design delivery, the flow of files and data must connect technical professionals, subcontractors, and clients with the data they need to make informed decisions and keep projects moving.

ProjectWise has been a leading solution to these challenges for over 20 years. Now, ProjectWise, powered by iTwin, includes an intuitive and integrated common data environment accessible anywhere in the world, making it easy to implement best practices across dispersed teams.

Before an organization is ready to move on to digital design delivery, there are three WIP best practices that must be fully implemented and optimized, laying the foundation for a successful digital transformation.



**Store All
Project Data in a
Secure, Accessible
Repository**



**Set
Enforceable
Standards**



**Monitor
Project Status
Effectively**



Store All Project Data in a Secure, Accessible Repository

Siloed data is inefficient and puts projects at risk. To prevent this, store and distribute all 2D, 3D, BIM, and even non-engineering files such as spreadsheets and text documents in ProjectWise. Reference file management and co-authoring of Microsoft 365 documents will simplify collaboration and keep everyone up to date. Next, avoid delays by implementing workflow automations that ensure the right people receive the right information at the right time.

*“What we see with ProjectWise is the versatility of the tool, and the platform allows us to handle the complexity of all our data types. And honestly, we know not every project that we do is strictly full of Bentley tools and solutions. We have to live in a pretty agnostic environment where we’re able to have us or our partners working in different platforms, and ProjectWise allows us to **consume and manage those other data types very, very effectively.**”*

— Steve Ross, CIO, EXP





Set Enforceable Standards

Don't just hope that every designer and subcontractor adhere to project guidelines – ensure it! In ProjectWise, managed workspaces promote design consistency by defining the properties required to meet project standards. Change log history makes it easy to maintain compliance with BIM requirements throughout the design process.



Monitor
Project Status
Effectively

Monitor Project Status Effectively

Stay ahead of deadlines by maintaining visibility on all aspects of engineering WIP. A fully traceable audit trail will remove any mystery about how files were altered or where they currently stand. And with ProjectWise deliverables management, contractual exchanges can be easily monitored to prevent delays.

Make a Commitment to Model-based Design

The future of design is a hybrid of files and models. This is why it makes sense to extend and enhance engineering work-in-progress workflows rather than replace them. But even with a hybrid of old and new technologies, adopting model-based design is a significant transition that requires clear goals, leadership, and commitment.

Start by considering the near-term benefits of model-based design and how they align with current business objectives. Outline those connections, making them explicit to ensure that stakeholders recognize the immediate value and prepare to measure return-on-investment.

*“The reason we want to go digital and why we want to create models is to **control costs, become more efficient and understand the lifecycle of our components.***

If I know what type of guardrail it is, then I can work with an engineer to say that because that guardrail has a specific gauge of thickness and strength elasticity, it may be 10 years before you know it degrades to a point where it can't do its job anymore.”

— Tom Coleman, Vice President, WSP USA



Next, think about the future. Where is your organization heading? What will model-based design enable later that might take some time to grow into? Now is the time to identify those foundational workflows and tactics that will create a competitive advantage in the years ahead.

*“Especially with respect to infrastructure assets, where we’re focusing is not just about creating that model in the environment in which our clients can consume that type of information, but how can we leverage that digital twin in the future with respect to simulations, performance analysis, and conditions monitoring? ProjectWise is part of that conversation because of the data integration, collaboration model, visualization, and these powerful integrations for dashboards and connectivity... **It’s not just about a single application.** It’s not just about the model within there, but digital twins as a service”*

— Jessica Chambers, Associate VP, Director of Engineering and Design Technologies, Michael Baker International

With the value of model-based design clearly defined, it’s time to communicate and promote these concepts across the organization. Successful change management depends on culture as much as technology, so it’s important to establish a shared vision for the future. The key is to have executive management evangelize digital transformation and bring it to reality.





Empower a Team to Lead the Charge

Think big but start small by designating a task force to experiment with creating models and digital twins. Rather than adhering to a strict, step-by-step process, this team will likely need to work by trial and error, applying creativity and critical thinking to discover the simplest, most effective, and least disruptive workflows for adopting models and digital twins across the organization. It is crucial that the team is not assigned to build a digital twin for a high-stakes project right from the start. Be sure to allocate resources for collaboration and experimentation so that the team can concentrate on developing ideal solutions for the organization without the additional pressure of strict deadlines and client demands.

The composition of this team is very important. A common mistake is to overrepresent IT and engineering services, but a broader array of perspectives will yield better results. Remember that this group will instigate change across the organization: who they are and what they contribute matters. It is also vital to keep in mind that having too many members can cause bottlenecks, while having too few may hinder valuable insights and learning.

So, what are the components of an ideal task force?

- ◆ 3-5 people
- ◆ Representation from various parts of the organization
- ◆ A strong leader
- ◆ 3D modeling skills
- ◆ Positive attitude

// Culture and leadership are of primary importance. *A culture that supports investment in digital transformation, an environment where open and honest conversations about these is encouraged is of critical importance"*

— **Pratibha Basrao,**
VP, Applied Technology
Office Director,
HDR Inc



Refine and Master Digital Twin Creation

The task force should now work toward seamlessly and confidently creating digital twins from original engineering source data, including geospatial data, geometry/models, attributes, and metadata. One or two successful digital twin designs are not enough at this stage. The team should experiment with different approaches, leveraging experience and knowledge of existing workflows to determine optimal processes based on the organization's unique strengths and weaknesses. As procedures are developed, document them. Soon this institutional knowledge will make implementation scalable across the organization.

This phase of digital transformation might only take a week, or it could take months. It depends on your team, resources, and the current state of your data. That is why the previous foundational stages are so crucial.

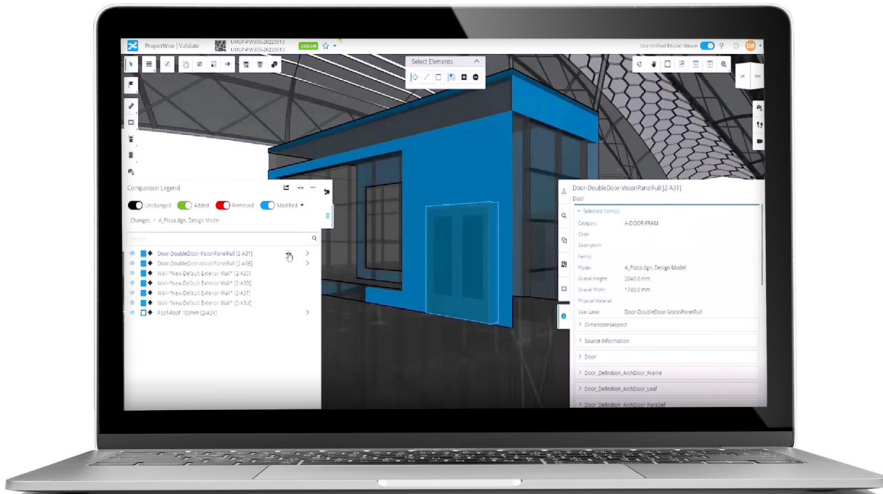
Before implementing digital twins more broadly across the organization or moving on to other advanced capabilities that ProjectWise, powered by iTwin, enables, be sure that the team can confidently and consistently accomplish the tasks below:

- ◆ Load files into a digital twin
- ◆ Transfer files from traditional workflows into digital twins
- ◆ Document good housekeeping practices around creating and curating digital twins
- ◆ Design custom workflows tailored to the organization
- ◆ Build connections from ProjectWise data sources to create digital twins



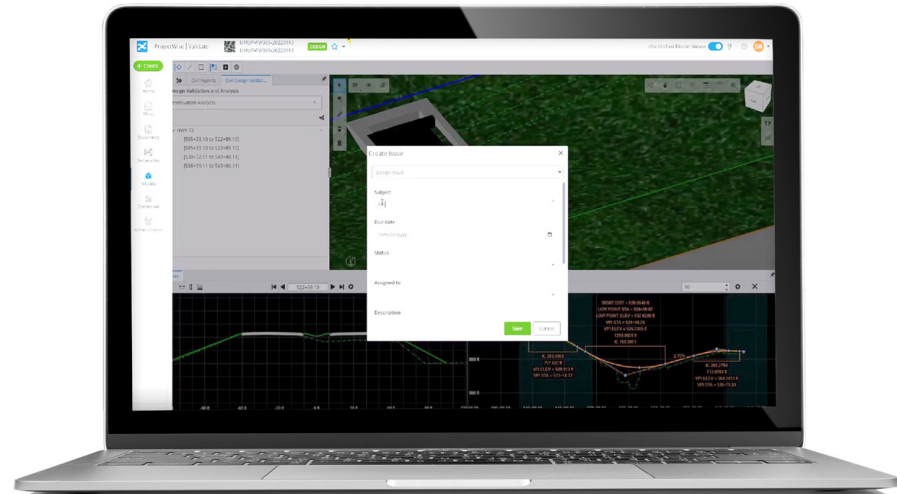
Adopt Advanced Capabilities One at a Time

It is time to begin leveraging the full potential of digital transformation with ProjectWise, powered by iTwin. Continue utilizing the digital twin implementation task force to expand the organization's capabilities, mastering and operationalizing each one before proceeding to the next.



Web-based Interdiscipline Design Reviews

Conduct multidiscipline design reviews on any device, from anywhere in the world. Using the cloud-based web portal, ProjectWise users can navigate and interrogate models, use measuring tools, create custom visualizations using any BIM property, and examine model updates using version compare.



Round-Trip Issue Resolution

Identify design issues, create 3D markups, assign and notify users for corrective action, all within ProjectWise, powered by iTwin. Those issues are then accessible within compatible design applications – even if they are not Bentley programs! Once corrected in the CAD application, the changes are seamlessly pushed back into the iTwin.

Adopt Advanced Capabilities One at a Time



Civil Validation

ProjectWise civil validation tools enable users to perform advanced interrogations of IModels such as section and profiling, vertical clearance, super elevations, drive simulations, and generating civil reports.



Clash Detection

Perform clash tests within the web-based interface to identify and address problems in the design stage before they result in costly delays. Clash clusters simplify the process of aggregating clashes of a given object, and the streamlined integration with issues resolution can accelerate workflows.

Next Steps

Digital transformation is an ongoing process of preparedness for what lies ahead. For organizations that have successfully implemented the technologies already outlined, there are still opportunities to leverage ProjectWise, powered by iTwin, for new competitive advantages and positioning for the future.

Portfolio Intelligence and Component Reuse

Reduce design time from days to hours using cloud-based digital component management and library services. Then leverage data across the organization's portfolio to glean insights that can be used to optimize performance and develop new business models.

// **The topic today is data-centric environments for enterprise collaboration.** *The discussion has been moving beyond the project scope to the enterprise scope, and that is so timely in a world that's talking about generative AI. We're at the beginning of sharing ideas for what will be possible with the data we're stewarding today as it becomes valuable at an enterprise level beyond just the project level."*

— Greg Bentley, CEO, Bentley Systems



Next Steps

Enhanced Model Visualization

Win more projects and keep stakeholders engaged by producing high-impact visualizations with ease. ProjectWise, powered by iTwin, enables users to connect iModels directly to [Bentley's LumenRT for NVIDIA Omniverse](#), eliminating the need for time-consuming exports with rapid change propagation not possible with stand-alone CAD/BIM files.



Image courtesy of Hatch





Are You Ready to Start Your Transformation?

Digital transformation is a major undertaking but there is no reason to do it alone. Bentley has the service team, training resources, and passion for going digital to help your organization achieve its goals.

Contact us now for help with developing a tailor-made plan to advance digital transformation in your organization using ProjectWise, powered by iTwin.

Consult the Experts Today >>

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