Dynamic Design and Feasibility Workflow

How to Optimize Concept Iteration to Realize Extraordinary Projects

Perkins&Will | ZAHNER®

Dynamic Design and Feasibility Workflow

Always striving for excellence in design process and delivery, Perkins&Will has once again set out to raise the bar. Together with fabrication partner A. Zahner Company, the firm has innovated a dynamic design process that speeds up decision-making, allows for more creative iterations, and ultimately delivers clients the highest quality solutions. This process—the first and only of its kind in the industry—allows for greater design fidelity in shorter time frames, more precise cost and lead time estimating, and more transparency for all stakeholders.

As building designs grow ever more ambitious with complex geometries, specialty materials, and highly scrutinized timelines, architects and designers are increasingly seeking the help of trusted engineers, contractors, and fabrication partners who can provide expert guidance on constructability and costs in the earliest stages of conceptual design.

The risks are high. Time and speed are always at a premium. Plus, owners and contractors expect design feasibility assurances without enduring multiple cycles of laborious—and expensive—design modifications and reviews.

At Perkins&Will, determination and imagination push the envelope of design possibilities with every project. And when aspiration and inspiration combine in just the right way, the firm's work reaches new heights in originality, beauty, and complexity. But complexity, as impressive as it might make a project, can also be difficult (and costly) to achieve in the built environment. Managing and mitigating the risks of complexity is key.

In response to this challenge, designers at Perkins&Will began inquiring:

What if we could choose to work with the best fabricators during design to better understand what is feasible in terms of constructability, materials, and costs in the design of exterior metal wall systems and building envelopes?

The brainstorming continued.

Wouldn't it be even better if we could exchange model/design data directly with that fabricator to help them better understand our design intent? That way, we could also better understand the fabricator's process and constraints.

And what if we had a set of digital collaboration tools that would allow us to analyze our designs together, do quantity takeoffs for cost estimating, and make adjustments on the fly to improve the accuracy and cost-effectiveness of both?

Perkins&Will found a motivated partner in A. Zahner Company, an architectural metals and fabrication company. Together, the two firms have created the tools and workflow to collaborate on design, feasibility, and costing, and improve the entire design and delivery process for everyone involved, including architects, designers, contractors, and owners.

The Case for Collaboration

Perkins&Will's promise to clients to "Deliver Different"—a global commitment to constant innovation and creative risk-taking that enhances the client experience—set the stage for its collaboration with Zahner.

Goals included:

› **Changing the paradigm** of design and delivery.

› **Developing a collaborative, digital-first process** of design and delivery.

› **Harnessing the competitive advantage** of this collaboration to win more work and deliver continued excellence to clients.

Perkins&Will and Zahner first had to address the interdependent relationships of design parameters, cost, and quality. In an active conceptual design phase, things change quickly—the geometry is adjusted; materials are explored; resilient strategies are analyzed; applications, penetration points, and attachment points are approximated—and risks (as well as opportunities) regularly crop up.

All of this typically occurs in a design bubble, where cost and quality are addressed separately. Builders and fabricators aren't normally involved at this stage to provide assessments on feasibility and costs.

This is where the innovation partnership between Perkins&Will and Zahner makes all the difference.

Because when designs go beyond the limits of engineering and budgets, time-consuming and costly revisions are required to find a balance that retains design intent while conforming to budget and engineering requirements. When that happens, a snowball effect can occur: Designers must review and revise their plans, and trust that their revisions will be acceptable in the next feasibility review. Sequencing and communication can break down, in turn leading to feasibility problems that drive loops of rework for the design team. Revisions are often shared in low fidelity formats, which then drives unusually high estimates from fabricators that are hedging against a lack of visibility and understanding.

In this scenario, design time is wasted. Estimates are inflated. And the design experience becomes tedious, unpleasant, and more costly for clients, all while limiting design possibilities and potential.
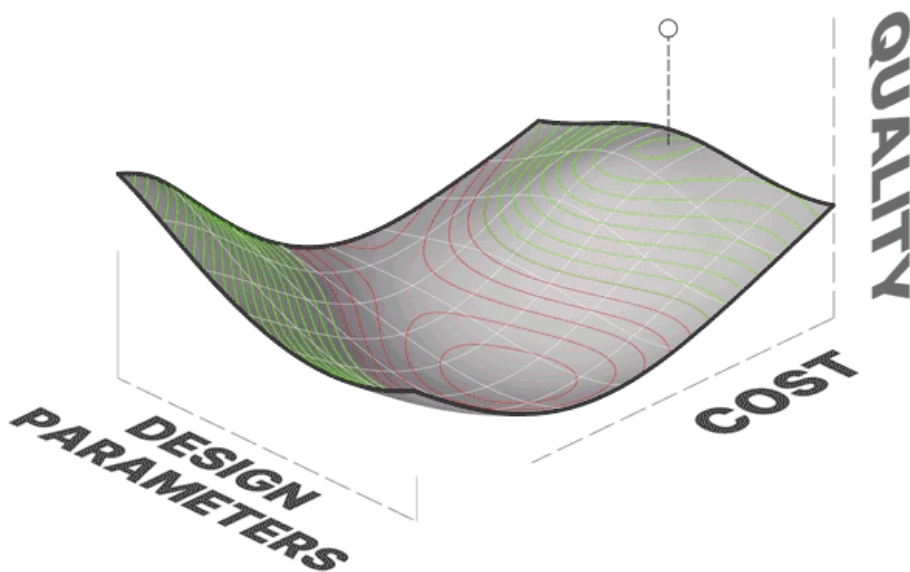
Reinventing Design and Delivery:
Dynamic Design and Feasibility Workflow

When Perkins&Will and Zahner analyzed the standard design process, they identified numerous opportunities to enhance communication and sequencing in design and concepting. Alignment between the design and fabrication teams became their primary focus. What they realized is that transparent and continuous vetting of designs and their constructability—also known as feasibility loops—had to be incorporated into the design process. Easily accessible, real-time communication and shared digital workspaces are also needed to connect architects and designers with engineers, fabricators, and installers

This led to the creation of a unique process called **Dynamic Design Feasibility**, which is rooted in three key concepts:

01 ——
Design Data Accessibility

3-D modeling tools are the common language of collaboration. Fluency and interpretation protocols across teams are crucial.
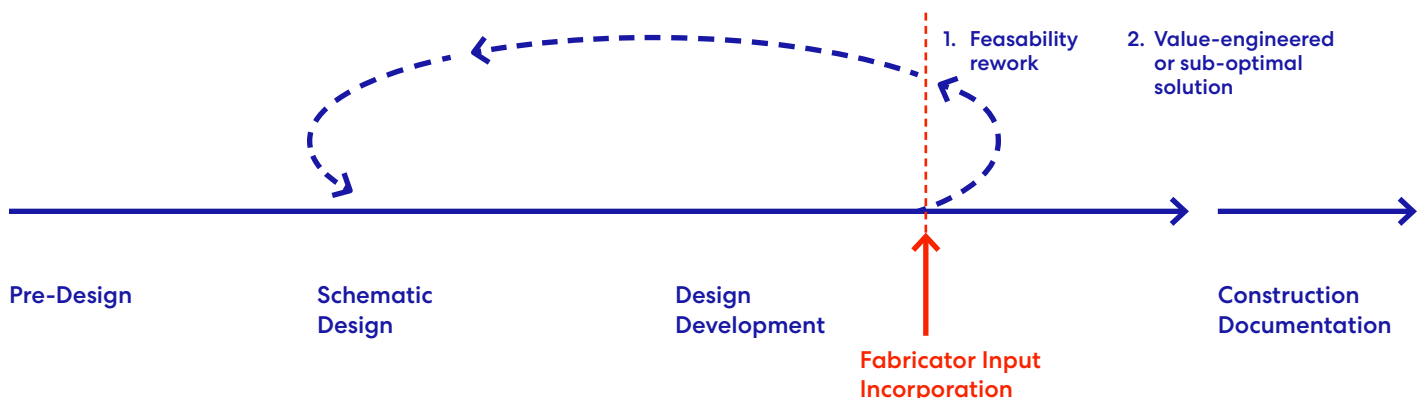
02 ——
Digital Workflow

Cloud-enabled workspaces allow for data sharing, documentation, and secure audit trails of versioning and revisions. Access for all stakeholders is essential.

03 ——
Consistent Cadence

Design sprints and feasibility reviews were both scheduled and conducted ad hoc. Rapport and repetition among the teams increased speed, clarity, and quality.

1. Feasability rework

2. Value-engineered or sub-optimal solution

Pre-Design

Schematic Design

Design Development

Fabricator Input Incorporation

Construction Documentation

The Results Are In

To date, the structure and streamlined workflow of Dynamic Design and Feasibility Workflow have been well-received by design teams at Perkins&Will. The firm's principals are recommending the more active feasibility process and partnership. They're also signing off on additional funds needed to carry out the process, considering it a worthwhile investment to protect against potential losses from rework and revisions.

Benefits include:

Design Productivity

Teams can expand thinking, iterate more quickly, and confidently evaluate the best design options, all without the fear of designing the "unbuildable."

Design Fidelity

From initial concept, design, and construction documents to fabrication, the use of digital technology maintains the highest design fidelity, which translates into efficiency and accuracy in estimating, scheduling, and fabrication.

Design Excellence

More time and more rigorous vetting contribute to higher quality and happier clients.

Complex projects—those with intricate geometries, specialty materials, and aggressive timelines—leave little room for errors or design missteps. Hitting the mark the first time, or as early as possible in the design process, is the key to overall productivity, profitability and success. With Dynamic Design and Feasibility Workflow, designers have more time to explore, experiment, and iterate with confidence, knowing that their technical fabrication partner can quickly validate or counsel caution when needed. Tighter connections and real-time communications eliminate "dead drawings" and outdated models. And clients receive more thoughtful designs with the added assurances of estimating accuracy and constructability.

Deliver Different.

Interested in learning more about Dynamic Design and Feasibility Workflow and how it could help your project?

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