

FROM DESIGN TO DONE: CONNECTING YOUR SOLIDWORKS MANUFACTURING OPERATIONS FOR GROWTH

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INTRODUCTION: THE SMB MANUFACTURING LANDSCAPE

Manufacturing has changed more in the past decade than in the 30 years before it. Industry 4.0 brought automation, connected machines and data-driven decisions to the factory floor. Digital continuity, the unbroken flow of data from concept through production and service, is now a standard expectation rather than an advanced goal. Virtual twins let teams test and refine products and processes before committing time and material.

Large manufacturers adopted these ideas first, backed by big budgets and dedicated IT teams. But the pressure to modernize falls just as hard on small and midsize businesses. SMBs make up the backbone of the manufacturing supply chain. They build components, assemblies and finished goods for industries ranging from industrial equipment to medical devices to consumer products. When an SMB can't move fast or guarantee quality, the effect ripples up the chain.

Most of these companies design their products in SOLIDWORKS. It's the tool engineers trust to model parts, build assemblies and produce the drawings that drive production. SOLIDWORKS gives them a strong foundation. The challenge is everything that happens around the design data: managing revisions, sharing files with suppliers, planning the factory and keeping engineering and manufacturing working from the same information.

This is where many SMBs hit a wall. The design work is excellent. The connections between design and the rest of the business are weak. As order volume grows, product complexity rises and customers demand faster turnarounds, those weak connections turn into bottlenecks that cap growth.



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Small and midsize manufacturers face a defining moment. Demand swings faster, supply chains stay fragile and customers expect more customization at lower cost. For the thousands of SMBs that rely on SOLIDWORKS as their primary design tool, the engineering work is already strong. The problem sits in what happens after design: the handoff to manufacturing, the management of changes and the flow of accurate data across teams that still depend on email, spreadsheets and disconnected files.

This eBook makes the case for closing that gap. When design data lives in one place and connects directly to manufacturing planning, sourcing and the shop floor, you reduce errors, speed up production and scale without adding headcount for every new order.

We look at the real challenges SOLIDWORKS-based manufacturers face day to day, the cost of leaving them unaddressed, and how the **3DEXPERIENCE** platform with SOLIDWORKS cloud integration creates a single, connected source of truth. You'll see the specific capabilities that matter most for SMBs, the business returns other manufacturers have measured, and a practical path to get started without disrupting the work your teams do today.

The takeaway is direct. Connected operations aren't a luxury reserved for large enterprises. They're now within reach for SMBs, and they've become a requirement for competing in a market that rewards speed, quality and flexibility.



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KEY CHALLENGES FOR SOLIDWORKS-BASED MANUFACTURERS

The pain points below appear again and again for small- to mid-sized manufacturers. Each one carries a measurable cost in time, money and quality.

Siloed Data and the Lost Source of Truth

When design files, bills of materials, supplier information and production schedules live in separate systems or on local drives and shared folders, no one can be sure which version is correct. Engineers update a part. Purchasing works from an older BOM. The shop floor builds to a drawing that's already been superseded. The result is rework, scrap and missed deadlines.

A single mistaken revision can cost thousands in wasted material and lost production hours. Multiply that across a busy year, and the financial drag becomes serious.

Disconnected Engineering-to-Manufacturing Workflows

The handoff from engineering to manufacturing is one of the most error-prone moments in the entire process, with nearly 60% of product developers citing it as one of the biggest challenges today. Design intent lives in the CAD model. Manufacturing needs that intent translated into a manufacturing bill of materials (MBOM), process plans and shop floor instructions. When this handoff relies on manual exports, PDFs and verbal communication, details get lost.

Engineering change orders make it worse. A change that takes seconds to make in SOLIDWORKS can take days to propagate through the business if there's no connected system to carry it forward. Manufacturing teams often don't learn about a change until they're already building the old version.

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Supply Chain Disruption and Sourcing Risk

The past few years have exposed how fragile supply chains can be. Material shortages, shipping delays and supplier instability force manufacturers to adapt quickly. SMBs feel this acutely because they have less buffer and fewer alternative sources.

Without good visibility into part data, supplier performance and inventory, sourcing becomes reactive. Teams scramble to find substitutes, requalify parts and adjust production plans, all while the clock runs. Better data and the ability to reuse proven, available parts reduce this risk significantly.

Scaling Operations Without Scaling Chaos

Growth should be a good problem. For many SMBs, though, growth multiplies the chaos. More orders mean more BOMs, more changes, more supplier interactions and more coordination across people. Systems that worked fine with 10 active projects break down at 50.

When the answer to growth is hiring more people to manage spreadsheets and chase information, margins suffer and the business becomes harder to run. Scaling profitably means scaling the systems, not just the staff.

Limited Visibility into Factory Performance

Many SMB leaders run their operations with limited real-time insight into what's actually happening on the floor. Where are the bottlenecks? Which machines sit idle? Where does quality slip? Without this visibility, decisions rely on instinct and after-the-fact reports rather than current data.



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THE CASE FOR A CONNECTED PLATFORM

Each challenge above shares a common root: disconnection. Data sits in separate places. Teams work from different versions. Decisions happen without the full picture. The fix isn't another point solution bolted onto an already complicated setup. It's a connected platform where design, engineering, manufacturing and sourcing share one trusted source of truth.

A connected platform delivers digital continuity, the unbroken thread of data that runs from the first design concept through production and beyond. When an engineer changes a model, the change flows automatically to the BOM, the suppliers and the shop floor. Everyone works from current information. The errors caused by stale data simply disappear.

This approach also makes virtual twins practical for SMBs. A virtual twin is a digital model of your product or your factory that

you can test and refine before spending real money. You can simulate a new production line, validate a factory layout or check a process change in software first. You catch problems early, when they're cheap to fix, rather than late on the floor, when they're expensive.

Research backs the value of connected work. A study with the MPI Group found that manufacturers who connect engineering and manufacturing across disciplines see measurable gains in productivity and quality. The principle is straightforward. When people work from the same data and collaborate in real time, they make fewer mistakes and move faster.

For SMBs, the most important shift is one of access. Cloud delivery means a small manufacturer can get the same connected capabilities that used to require enterprise budgets and large IT teams. You don't buy and maintain servers. You don't run a months-long deployment. You connect your existing SOLIDWORKS work to the cloud and build from there.

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SOLIDWORKS Manufacturing solutions, based on the 3DEXPERIENCE platform, extend the SOLIDWORKS you already use, connecting your design data to a cloud platform that brings engineering, manufacturing and the wider business together. You keep designing the way your team knows. You add the connected backbone that turns good design into efficient, scalable production. Here are the capabilities that matter most for SMB manufacturers using SOLIDWORKS.

Cloud PLM: One Source of Truth

Cloud-based product lifecycle management (PLM) connects your SOLIDWORKS data to a secure platform where every file, revision and approval lives in one managed place. Cloud PLM Standard and Professional provide your team with controlled access to the latest version of every design, anywhere, without the cost and overhead of running your own data management servers. Revision control, change management and approval workflows happen in the platform. No more guessing which file is current. No more lost work from conflicting edits. The single source of truth becomes real.

Collaborative BOM Management

The bill of materials (BOM) is the bridge between engineering and manufacturing. Collaborative BOM management on the platform lets you build, manage and share both engineering and manufacturing bills of materials (MBOMs) connected directly to your SOLIDWORKS design data. When the design changes, the BOM reflects it. Engineering and manufacturing teams work from the same structured product definition rather than passing exported files back and forth.



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This connection closes the most error-prone gap in the whole process. Changes flow through automatically, and manufacturing always knows what to build.

Virtual Factory Simulation

Before you rearrange a line, add a machine or commit to a new layout, you can model it virtually. Virtual factory simulation lets you plan and test factory changes in software, validating throughput, spotting bottlenecks and confirming a layout works before you move a single piece of equipment. This is the virtual twin applied to your operations, and it removes much of the risk and guesswork from change.

MES and ERP Integration

Connecting manufacturing operations to your planning and business systems closes the loop between the floor and the front office.

Integrated MES and ERP capabilities, including DELMIAWORKS for SMB manufacturers, replace spreadsheets with real-time shop floor data. You see what's running, what's queued and where quality stands as it happens. ERP fundamentals tie production to inventory, purchasing and finance, so decisions across the business rest on the same current information.

Platform-Based Manufacturing

Platform-based manufacturing ties all of this together. With integrated tools and real-time data access on the **3DEXPERIENCE** platform, engineering and manufacturing collaborate directly, errors drop, and the work flows from design to production without the breaks that cause delays today. This is the connected operation in practice: design, plan, source and build, all on one platform, all from one source of truth.

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Connecting your operations isn't a technology project for its own sake. It's an investment that pays back in the metrics manufacturing leaders care about most.

Reduced Operational Costs

Eliminating rework from bad data, cutting the time spent chasing information and reducing scrap all flow straight to the bottom line. When teams stop building the wrong version and stop rekeying data between systems, those recovered hours and saved materials add up fast.

Faster Time to Market

Connected workflows compress the cycle from design to production. Changes propagate in seconds rather than days. Virtual validation catches problems before they reach the floor. Manufacturers using connected design and simulation consistently report meaningful reductions in development and ramp-up time.

Improved Product Quality

When manufacturing always builds from the current, correct design, and when quality data connects to the rest of the operation, defects drop and consistency rises. Better quality means fewer returns, stronger customer relationships and lower cost of poor quality.

Scalable Growth

A connected platform lets you take on more orders, more complexity and more customers without multiplying your administrative overhead. You scale the systems, not just the headcount, which protects your margins as the business grows.



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Lower Total Cost of Ownership

Cloud delivery removes the cost of buying, running and maintaining your own servers and data management infrastructure. You get enterprise-grade capability on a subscription model that fits SMB budgets and scales with you. The combination of lower IT overhead and higher operational efficiency makes the ROI case compelling.

Stronger Supply Chain Resilience

Better part data and the ability to reuse proven, available components help you respond to supplier disruptions faster. Sourcing intelligence tools identify parts you can reuse and optimize procurement, reducing both risk and cost.

HOW TO GET STARTED

Modernizing your operations doesn't require a risky, all-at-once overhaul. The most successful SMBs move in deliberate steps, each one delivering value while building toward a fully connected operation.

Step 1: Connect your SOLIDWORKS data to the cloud. Start by bringing your existing design data into the **3DEXPERIENCE** platform via Cloud Services, which is included with new SOLIDWORKS Design licenses. This gives you immediate control over revisions, secure access from anywhere and the single source of truth that everything else builds on. Your team keeps designing in SOLIDWORKS exactly as they do today.

Step 2: Connect engineering to manufacturing. Add collaborative BOM management to close the gap between design and the floor. Get engineering and manufacturing working from the same product definition and watch the change-related errors fall away.

Step 3: Bring visibility to the shop floor. Introduce MES and ERP capabilities to replace spreadsheets with real-time data. Start seeing what's actually happening in your operation and use that insight to find and fix bottlenecks.

Step 4: Plan and optimize virtually. As you grow, use virtual factory simulation to test changes before you make them, taking the risk out of expansion and improvement.

To build the case and the knowledge inside your organization, draw on resources designed for SMB leaders. [The Smart Manufacturing Starter Guide](#) walks small and midsize manufacturers through practical Industry 4.0 adoption. Resources on [this web page](#) can help leadership teams understand virtual twins, automation and factory planning in business terms. Together, these resources help you align your team and chart a path that fits your business.



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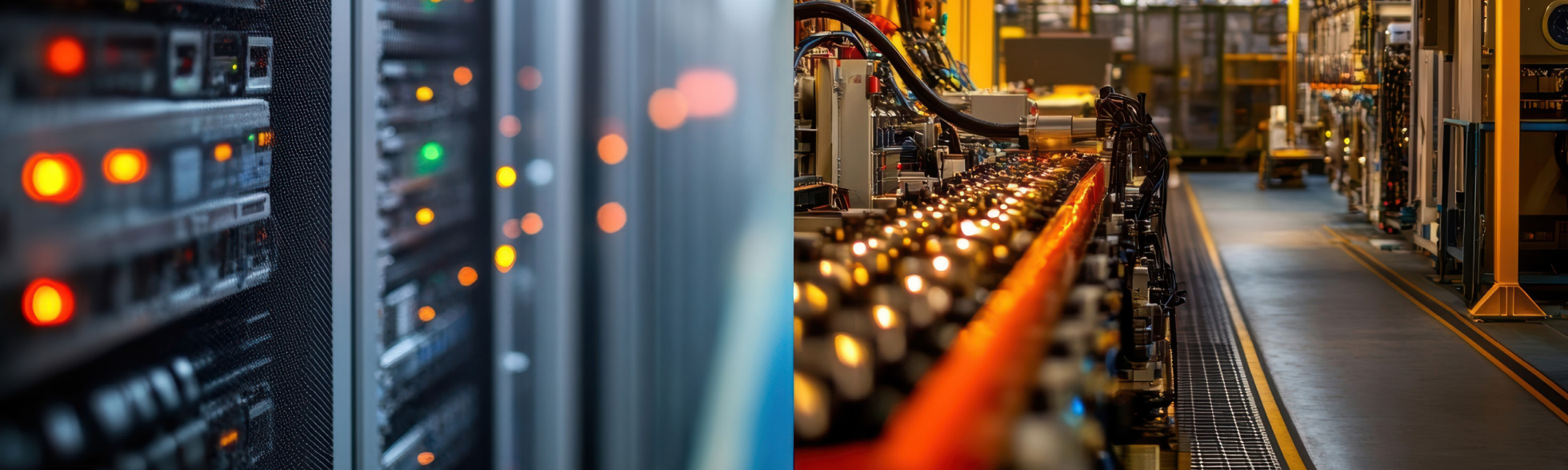
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Small and midsize manufacturers compete on speed, quality and flexibility. The companies that win are the ones that turn excellent design into efficient, scalable production without the friction of disconnected data and manual handoffs.

If your business already runs on SOLIDWORKS, you have a strong foundation. The opportunity now is to connect that foundation to the rest of your operation. Cloud PLM, collaborative BOM management, virtual factory simulation, and integrated MES and ERP, all delivered on the **3DEXPERIENCE** platform, give you one source of truth and the digital continuity that modern manufacturing demands.

This capability isn't reserved for large enterprises anymore. Cloud delivery puts it within reach of SMBs, on budgets that make sense and timelines that don't disrupt the work you do today. The manufacturers who connect their operations now will set the pace, and the ones who wait will spend the coming years chasing information while their competitors ship product.

The path forward is clear, the tools are ready, and the returns are proven. The next step is yours to take.

Learn more about how you can improve efficiencies, overcome challenges, and get product built faster with the SOLIDWORKS Advantage in Manufacturing. Learn more here: <https://www.solidworks.com/domain/manufacturing-production>

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