



# NOT YOUR GRANDPA'S CONSTRUCTION BUSINESS PLAN

HOW TO SAVE TIME AND MAKE MORE MONEY IN YOUR  
CONSTRUCTION BUSINESS.







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# INTRODUCTION

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THE CONSTRUCTION INDUSTRY FACES MOUNTING PRODUCTIVITY HEADWINDS: RAZOR THIN MARGINS, SKILLED LABOR SHORTAGES, REGULATORY RED TAPE AND EVER-CLIMBING INSURANCE PREMIUMS JUST TO NAME A FEW.

In the face of these challenges, your customers continue to demand higher and higher rates of productivity and larger and more sophisticated construction companies continue to consolidate and threaten your business.

How can you possibly compete? You've got to have a plan as well as a set of technology tools that will help you build and implement your plan and track its success across your entire organization.

Before you stop reading: don't worry — this guide isn't an infomercial for Struxi's software. Our goal here is to help you see the opportunity for our industry to embrace what the heart of ERP — enterprise resource planning — is really supposed to be about. Not just bookkeeping, not just a time clock, but a set of tools for planning across your entire business.

Our advice is universal, regardless of the digital platform that's running your business, and the ultimate intention of this guide is to give you actionable advice so you can build a plan and better leverage the technology tools you already have in place so you can survive and thrive amidst the mounting headwinds that threaten your business.



CHAPTER ONE

# BARRIERS TO SUCCESS CONTINUE TO MOUNT







While automation and technology have radically transformed other industries, our labor-intensive industry for all intents and purposes looks nearly the same as it did 10, 20, even 30 years ago, but the world we operate in has transformed dramatically, and market forces are now making it impossible to continue to just keep doing things the same old ways — construction companies that don't re-evaluate their processes and systems risk impending extinction. The bottom line is that it's getting really expensive to get large projects built — it's time to pick up every dollar you've been leaving on the table. Succeeding in construction isn't getting any easier.







**FEWER THAN 9.4%**  
**OF CONSTRUCTION WORKERS**  
**ARE UNDER THE AGE OF 25**



**THE INDUSTRY ESTIMATES ONLY .5%**  
**ANNUAL GROWTH TO THE WORKFORCE**  
**OVER THE NEXT 10 YEARS**

**CONSTRUCTION MATERIAL PRICES**  
**INCREASED NEARLY 10% YOY<sup>^</sup> IN 2018**



# THE PRODUCTIVITY REVOLUTION IS UPON US

By now, you're surely familiar with the McKinsey study, *Reinventing Construction through a Productivity Revolution*, which suggests that the global construction industry has a \$1.7 trillion productivity capture opportunity through:

- Rewiring the contractual framework to reshape industry dynamics
- Rethinking design and engineering processes
- Improving procurement and supply-chain management
- Improving on-site execution
- Infusing digital technology, new materials and advanced automation
- Reskilling the workforce

The much-examined study lays out a broad strokes game plan for construction companies looking to take advantage of the profitability this industry has historically left on the table.

According to McKinsey, early adopters of their framework are seeing productivity gains of 50-60%.

While McKinsey lays out what you should be doing, we're going to dig into ways you can build your own game plan and infuse digital technology to help gain efficiencies in your procurement processes, supply chain management and on-site execution.



# UNLOCK EFFICIENCIES WITH BETTER PLANNING

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To unlock efficiencies and the profitability that come along with them, you need to have a realistic plan in place upfront. The better your processes are aligned to turning that plan into a reality, the greater the likelihood that you're going to come out the other side of a large construction project on time, on budget and with double-digit margins in your pocket.

## ERP ISN'T JUST FOR YOUR BOOKKEEPER

While many see ERP as a substitute for paper bookkeeping, there's a real opportunity to leverage your ERP as a single source of truth to build and track your plan.

- Enterprise
- Resource
- Planning

## PLANNING IS KEY!

The missed opportunity that a lot of other industries have successfully captured in the last 30 years is that you need to really embrace the digital system that runs your business as the tool that you use to do better resource planning on every project that you execute.



If you really want to leverage your investment in your ERP to its fullest potential, don't use it as a digital accounting system; use it as a digital enterprise resource planning tool.

Successful construction businesses are using ERP as a single source of truth to help them plan and optimize their productivity and profitability across the entire business. Over the next few pages, we'll take a closer look at how they're leveraging the digital toolset.





A man and a woman are sitting at a desk in an office, smiling and looking at a laptop. The man is on the left, wearing a blue button-down shirt, and the woman is on the right, wearing an orange long-sleeved shirt. They appear to be collaborating on a project. The background shows a window with a grid pattern.

CHAPTER TWO

# CONNECTING THE JOB SITE TO THE BACK OFFICE



35% of construction professionals' time (over 14 hours per week) is spent on non-productive activities including looking for project information, conflict resolution and dealing with mistakes and rework. [PlanGrid + FMI]



#### They spend their time:

- Finding materials
- Waiting on their vendor
- Waiting on a change process to occur
- Waiting. Waiting. Waiting. And waiting costs you a lot of money.

The digital platform (or platforms in many cases) that you run your business on should create a link between the back office and the job site helping you to manage everything from engineering, procurement, on-site labor and more.



## TECHNOLOGY OVERLOAD

On one hand, our industry is embracing technology with an explosion of digital toolsets designed to capture and present actionable data back to the job site. On the other hand, deploying digital tools without a clearly identified game plan can actually reinforce and in some cases create additional silos between departments and functions.



So, before you sit through a single software demo that presents a solution to a problem your company might not even have, it is critical to build your game plan and identify some strategic initiatives that you can go back to your current technology vendors and discuss adding to your technology roadmap.

Over the next pages, we'll walk you through inspirational examples of how other leading construction companies are leveraging tech-enabled strategies to maximize their profitability and productivity.



# IMPROVING PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

We're all familiar with the messy and sometimes downright dangerous conditions of the construction lay down yard, but imagine a future where this inefficient resource suck is a thing of the past.

The construction industry is used to winning a project and building a plan that takes the job from day one to completion with everything that has to get done, but innovative contractors are starting to adopt a more agile construction methodology.

They're taking that project plan and starting to segment it out into smaller chunks leveraging automation to build deeper supplier relationships to better orchestrate major purchases, so they're getting just what they need exactly when they need it.





## CASE STUDY: KATERRA K90 R&D PROJECT

A great example of this is the Katerra K90 R&D Project. The company bills its services as manufacturing for construction, and the K90 project completed a major construction project in under 90 days. The job site looked like a manufacturing plant without a roof.

The project didn't have a lay down yard at all. Deliveries were timed to within a half-hour window and when a truck pulled up, it looked like a well-orchestrated ballet.

The workers descended upon that truck, and they took everything off the truck and delivered it directly to the point of installation.

While this example may feel like worlds away, there are absolutely things you can begin to do today to increase the efficiency of your procurement and supply chain management process.

- You can digitize the three-way match process confirming your original purchase order, your invoice and packing slip all match-up
- You can digitize your receiving
- You can use work packages to do a better job scheduling deliveries to the job site
- And you can eventually eliminate your lay down yard by having those things come right off the truck and go immediately to installation



## OPTIMIZING VENDOR RELATIONSHIPS

When a mis-ordered product shows up on the job site, the tendency on the part of most construction companies is to blame the vendor, but perhaps you should consider taking a note from Toyota's manufacturing playbook.

If an order ever shows up and it's not exactly what was ordered, if it's not 100% high quality, if it's not there on time, Toyota is the one that assumes the responsibility. Why? Because selecting the vendor, its products and ultimately planning that shipment from the supplier was their responsibility.

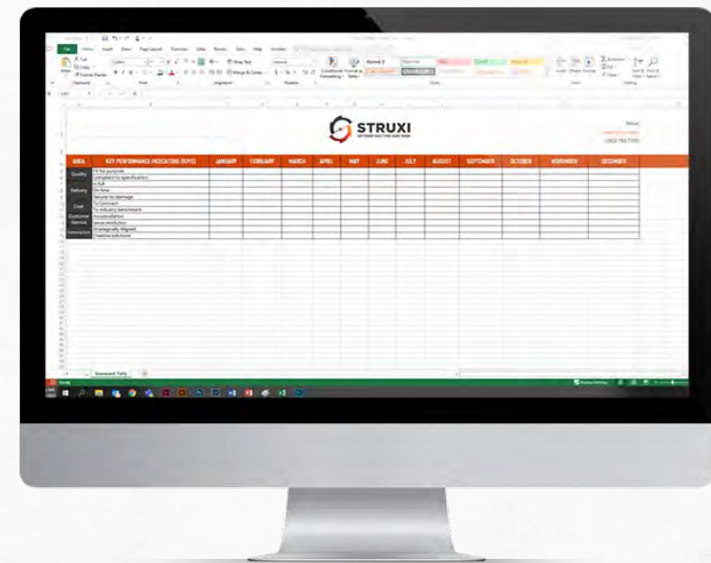
It isn't your vendor's job to make sure you're getting the most out of your relationship — it is your responsibility, and your digital toolset makes it easier than ever before to leverage the data that you have at your disposal to create better, more productive relationships with your suppliers.



## THE VENDOR SCORECARD

We highly recommend utilizing a [vendor scorecard](#) to help you rate the quality and effectiveness of your relationships with your vendors. We've created a template you can download for free [at this link](#) which will help you rate your vendor in key KPIs across five areas:

- **QUALITY:** The goods delivered are compliant to your specifications and fit for the job.
- **DELIVERY:** Goods are delivered in full, on time and undamaged.
- **COST:** The goods are invoiced at the contracted rate or less and are price competitive in the market.
- **CUSTOMER SERVICE:** Issues are resolved quickly, customer service personnel is friendly and helpful, account management is accommodating of rush orders and change orders.
- **INNOVATION:** Senior management demonstrates an understanding of the business and suggests creative solutions to increase efficiencies for your business.



Reporting from your ERP should make filling out this scorecard on a monthly basis a reasonably objective exercise. This exercise will help you gain control of your supply chain by giving you visibility into the number vendors that you have, the quality of your relationships, and if you actually even need all those vendors!



## SUPPLY CHAIN EVALUATION

You should meet with your largest supply chain vendors on a quarterly basis to walk through your evaluations to develop an action plan to increase performance across these key metrics. Your most innovative vendors will appreciate the conversation and the opportunity to use digital tools to collaborate more efficiently and effectively.

You'll likely start seeing them give you discounts on points when you show up to the table more organized armed with data from your systems and the results of our vendor scorecard assessment.

Take the example scenario of working with a supplier to adopt vendor managed inventory. This would allow you to execute a blanket purchase order and the job foreman could release material from the field in real-time with the vendor issuing you a guarantee that they'll get it delivered to the site same-day.

A scenario like this will actually allow that vendor to run a more efficient business on their end of things, and they're going to be willing to give you a few more points if you work together to develop mutually beneficial technologically enabled vendor relationship.



## ORDERING COMMODITIES

Some contractors have gone as far as having their top three suppliers maintain offices on the premises, so they're actually managing all the inventory and all their trucks. As a result, the supplier maintains ownership of the inventory until it leaves the truck with that contractor's logo.

How do you get there? You get there by getting all the paper, manual transactions and waste out of your commodity ordering processes right now.





## AUTOMATING WORKFLOWS

Lean construction is a hot topic. A concept that is worth embracing from the lean methodology is the idea of developing a transactional value stream map which charts the value of every single activity it takes to complete a transaction.

The process can be relatively simple:

**STEP 1:** Build a rough flowchart of your process for ordering commodities.

**STEP 2:** Evaluate if each step generates unique value (there's likely a lot of unnecessary paper pushing and rubber stamping).

**STEP 3:** Digitize and automate as many steps as possible with automated workflows.

This is an ideal way you can better leverage the digital platform you're already using to eliminate waste. Automate as much as possible!

This exercise will also help you identify areas where you can gain more efficiencies from your vendors. For example, traditionally, electrical contractors buy fixtures that arrive in three pieces. Here's a great opportunity to push back on that vendor and ask for complete fixtures to be dropped off on the site — saving you unnecessary on-site labor.



# RETHINKING DESIGN AND ENGINEERING PROCESSES

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The link between the office and the field continues to strengthen as digital twins have begun to transform not only design and engineering processes but everything that's happening downstream.

Consider just a few possibilities enabled in a future where 3D digital models are integrated with your ERP:

**ELIMINATE THE MANUAL 2D TAKE-OFF PROCESS:** Construction innovators are already slicing their 3D digital twins into component parts and then they are automatically generating purchase orders that get sent to their vendors.

**STREAMLINE JOB SITE ACTIVITY:** 3D models are also being used to break projects into smaller components allowing companies to issue labor instructions to project managers that then get turned into daily and weekly activity logs with foreman.

**MOVING TO A MODULAR MODEL:** Smart businesses are investing in prefabricating more and more off-site, investing in modular construction that helps limit risks due to commodity delays and weather.



These are game-changing shifts for the industry, and they start with rethinking the role of design and engineering in your business – you're not just designing the BIM model to kick out a bunch of 2D prints to hand to a guy who's sitting at a drafting table to do your take offs.

You're doing all this hard work to build a highly accurate 3D model – start thinking about all the other ways you can use that asset inside your business to run more efficient operations.

Companies that are embracing this shift are seeing productivity gains through better planning almost immediately.



# **DIGITIZING DOCUMENTS**

Paper is inherently inefficient, and technology is helping to eliminate the rolls and rolls and reams and reams of paper our industry wastes on a daily basis! Let's look at a few innovative ways construction companies are eliminating paper today:

1. One of the biggest time sucks on a job site is the paper time card. Foremen who should be in the business of marshalling labor productivity are instead chasing people around the job site to find out when they showed up, when they left, whether they had all their breaks, and whether or not they got hurt. All of this can and should get digitized.
2. Construction companies are eliminating double-entry. Enabling job site employees with direct access to automated data loads from the ERP that prevent errors and eliminate the need for paper, emails and excel spreadsheets to be sent back to the office to be re-keyed.
3. In addition to eliminating double entry, this reduces timecard adjustments since it reduces the chance of keypunch errors that would have occurred in the double entry process.
4. Tech innovator PlanGrid built a digital hub that allows everybody to work off the same drawing in real-time and collaborate around them on a fully digital platform.
5. You can also digitize the RFI submittal processes, and you should be using digital tools to substantiate change orders with video and photographs.

It doesn't stop there, though. These are just a few of the thousands of use cases for digitizing paper on construction jobs that are possible today, and the common pushback we hear when we suggest moving away from paper is that people just aren't going to embrace technology.



## IT IS TIME FOR A DIGITAL WAKEUP CALL.

Almost 90% of people over the age of 13 in the United States have a smartphone. So, 90% of people above the age of 13 have an email address and know how to use their finger to navigate the Internet on a digital device.

It is time to give your people more credit than you're giving them today. If you introduce digital tools and show your teams how they will make their lives easier, they're going to embrace technology, and it will be a much more seamless transition than you may have ever expected. Businesses that are willing to take that the chance can get these digital tools installed with their people on the job site over a tool box talk. The results are impressive as the productivity savings are massive.

In many instances you'll find your teams asking, "what took so long?"

ALMOST

**90%** OF  
U.S.

CITIZENS OVER 13  
Y.O. HAVE  
SMARTPHONES



# RESKILLING THE WORKFORCE

Digital tools have the power to collect vast sums of data from your job sites on a daily basis, and as we're starting to see, you can use that data to do a heck of a lot more than run your financials.

Imagine using video to do your site walks for safety. If you've got a particularly immaculate job site run by a great project manager and set of foremen, you can then show that video to the next crew, and the next crew, and the next crew. That has a lot of power.





If we look at a manufacturing example, technology has been enabling training for decades. 20 years ago, if you walked into General Electric of Europe, every single work cell had a flat panel monitor above it that would walk people through the assembly of an HPC motor controller, step-by-step. The tools were all connected to a computer. It was physically impossible to assemble those products the wrong way.

A big fear that people have is that technology will steal their jobs, and it's not about automating people off the job site. That's never going to happen. If you think about our manufacturing example, GE didn't just replace everybody with a manufacturing robot – you still need people to do the work.

Using the digital tool kit to digitally empower the people doing the work is where the magic happens.

A great example of a technology-enabled workforce may be a lot closer to home than you think. If you're running a field service business, you're already digitally enabling your field service guys if you're running a service management application.

You can do for your job site what you're done for your field service teams. And the more you have the tech that's enabling your workforce tied into your ERP, the better off you're going to be.



A construction site with a drone flying in the sky and workers in the foreground. The workers are wearing hard hats and safety vests. One worker is holding a remote control, another is holding a tablet, and a third is holding a large sheet of paper. A surveying instrument is visible in the foreground.

CHAPTER THREE

**MAKING THE DIGITAL  
DREAM A REALITY**



All of this sounds great, but how can you get from where you are today to this shiny, digital-enabled, productive future?

## LEADERSHIP CHAMPIONS ARE ABSOLUTELY CRITICAL.

The construction industry is going to look radically different five years from now than how it looks today. It's going to be one of the most exciting industries to work in in this country, and you need smart people spending a good chunk of their time carrying an agenda of progress forward inside your business.

So, who should those champions be? We've worked with people with titles like CTO, CIO, Director of Strategic Initiatives or even Process Champion... No matter what you decide to call them, the key is that your leadership champions need to be thinking about where your entire business is headed in the next three to five years, not just its software and hardware.

Leadership champions need to understand:

- The financial and strategic goals of the organization
- The challenges faced by every department – in the office and on the job site
- The disparate systems used throughout the company
- The workflows used to get processes done throughout the company



To truly move your organization forward, you need champions that will help blaze the trail forward for your company, and this can be a huge shift for traditional construction organizations to embrace.

Whether you're in the process of implementing a new ERP or if you're looking to take advantage of the systems you've already made a huge investment in, it's time for your organization's technology leadership champions to challenge the status quo.



# 7

WHAT ARE WE TRYING TO ACCOMPLISH **IN THE FIRST PLACE?**

HOW CAN WE GET BETTER DATA **OUT OF THE BUSINESS?**

HOW CAN WE ADD EFFICIENCY AND PROFITABILITY **TO OUR BUSINESS?**

HOW CAN WE ELIMINATE **ALL OF THIS** MANUAL PAPER PUSHING?

WHY ARE WE INVESTING **IN THESE DIGITAL TOOLS?**

HOW CAN WE BE MORE CONSISTENT **WITH THE THINGS WE DO?**

HOW CAN WE AUTOMATE **MORE?**

## QUESTIONS LEADERSHIP MUST ASK

To answer these hard questions and make a strategic digital transformation, you need people that are really passionate about pushing your business into the future.



## THE DANGERS OF THE STATUS QUO

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Unfortunately, the status quo is more often than not a pretty protected beast in most traditional construction businesses. We've seen it happen time and again where a construction company makes a major investment in an ERP system, only to immediately set about replicating every single process that already exists in their business to keep on doing things the same exact way. This often happens because technology teams are seen primarily as tech support, and they don't hold a strategic seat at the table.

And then because the ERP hasn't actually solved any problems, teams solve their own problems by buying their own point solutions and building solutions in spreadsheets. As a result, your data gets locked up in all these various black boxes inside your business.

While the technological platforms that are serving this market are getting better at having more open architectures where information can be shared between all these different disparate systems, your company still needs someone to do the plumbing work to connect all these systems together.

In an industry where we're spending on average less than 1% of revenue on IT, and a lot of that 1% of revenue gets consumed with actual hardware, it's time to start investing in the leadership and the tools it will take to move your business forward.



## DEMAND MORE FROM YOUR CURRENT INVESTMENT

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But before you invest another nickel (and you probably are going to need to get quite a few nickels together), just like we challenged you to sit down and demand more from your commodity vendors, you need to demand more from your current ERP provider.

Your ERP vendor is not just another technology vendor. Your ERP vendor should:

- Understand your entire business
- Understand your industry and its challenges
- Help you put together a personalized technological roadmap for your business
- Act as counsel when you're buying software adjacent to the solutions they offer
- Be able to articulate their vision for the next 3-5 years for the construction market

The bottom line is that if your ERP vendor isn't providing value as a strategic partner invested in your success, it may be time for your technology leadership champions to find a partner better aligned with your company's vision and goals.



## HOW MUCH MONEY SHOULD I SPEND ON TECHNOLOGY?

So, this is the million-dollar question that you're probably asking yourself right now: **If 1% of my revenue isn't a big enough of an investment in technology, how much should I be spending?**

The answer is: **It depends.** You probably should be spending more on technology than you are today, but it should be money that you feel good about spending.

When you buy a new backhoe, you're buying it for a reason. The value proposition for investing in that piece of capital equipment is inherent in the capital equipment: we're going to be able to dig holes faster. The same economics apply to your technology spend.



## THE ZERO-BASED BUDGET

Zero-based budgeting is a really great tool to help you make better spending decisions that are tied to a financial return on investment. Instead of just pulling out last year's budget and using it as a template for next year's spending, you're starting with a clean slate and making strategic investing decisions for your business.

Here's how this could work in practice:

- Ask your management team to develop a list of everything they'd like to invest in for the year ahead
- Walk through the list line by line and understand why it's important to make these investments
- Get a promise of a return on each investment with a very specific time horizon

So, for a backhoe, for example, if you're capitalizing the equipment expense over three years, you hope to capture the productivity gains from that cash outlay inside that capitalized investment window.

You should be thinking the exact same way about software. The amazing thing about software is your investment horizons can be a lot narrower than they are for capital expenditures. You can ask people to justify a return on investment for a software purchase in as quickly as 30 days.



## TIME TO WORK YOUR PLAN

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We've covered a lot in this guide, so let's circle back and recap the major takeaways:

**PLANNING IS THE HEART OF ERP:** Your ERP isn't just an accounting system: it should be your primary planning tool and the single source of truth for your business.

**TECHNOLOGICAL TRANSFORMATION IS THE KEY TO SURVIVAL:** Barriers to your success continue to mount, but examples of companies increasing their productivity and profitability with tech tools abound. Follow their lead to ensure technology is the bridge between your back office and your job site.

**IT'S TIME TO DEMAND MORE:** Demand more from all of your vendor relationships. Whether you're evaluating commodities or technologies, ensure you're aligning your business with vendors who are strategic partners invested in your success.



**TECH LEADERSHIP WILL DRIVE YOUR SUCCESS:** If you take our advice, you'll give tech leadership a seat and the table and hold your technology leadership champions accountable to deliver payback on your investment. If that investment doesn't deliver the ROI you're looking for, re-evaluate your game plan and fast! Learn from your mistakes and move on to do a better job. It happens every day on the job site – make sure you're just as agile in your front office!

**BOTTOM LINE:** Planning will never be a 'set it and forget it' proposition. Continually evaluating and updating your plan as well as the partners and the tools you need to execute is the key!





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