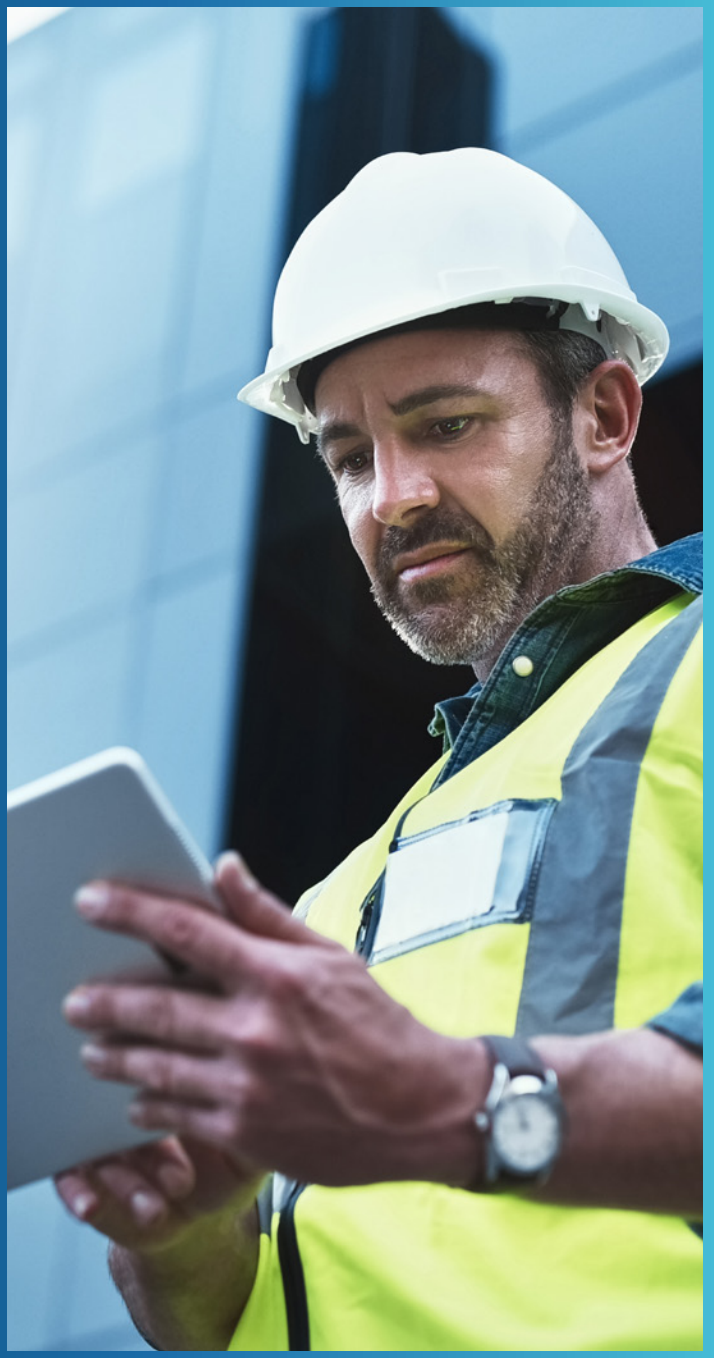
Measure Twice, AI Once: There Are No Shortcuts to Implementing AI in Construction



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Neglecting the foundational steps in AI implementation leads to misaligned expectations, disappointing results, and frequent project failures.

In the high-stakes arena of capital-intensive project management, artificial intelligence (AI) holds remarkable potential to transform operations. However, when it comes to AI in construction, **you can't just skip to the "good part."** There are no shortcuts.

It's all too easy to focus on "the art of the possible" — chasing new technology without a clear focus on measurable, practical outcomes. This approach often leads to overly complex systems, misaligned goals, and an overwhelming influx of data that may cloud decision-making instead of clarifying it.

According to a 2024 BSI report, 76% of construction companies are investing in AI technology. However, not many of those initiatives are likely to succeed. A report from RAND estimates that up to 80% of AI projects fail due to:

- Lack of clarity or miscommunication about the problems AI is intended to solve.
- Inadequate data quality or accessibility to train AI models effectively.

If you want to deploy AI effectively, then there's a specific, systematic path to follow.

Rushing to adopt the latest AI tools and technologies — an approach often referred to as a *"capabilities-based"* AI strategy — can initially seem attractive, promising quick deployment and the allure of cutting-edge capabilities. However, it frequently results in costly setbacks, unreliable insights, and flawed decisions. Without a carefully constructed foundation, the excitement of new AI tools can quickly turn into frustration and failure.

AI's success demands an **outcomes-based strategy** that begins with identifying a specific business problem, formulating key questions, and building a strong data foundation to support precise, actionable insights. All of these foundational steps MUST occur BEFORE applying a technology solution. Preparation is essential; financial investment alone cannot guarantee AI success. Without a structured, data-focused foundation, the likelihood of disappointment is high. To deploy AI effectively, there's a specific, systematic path you must follow.

This guide outlines four essential steps to ensure results, paving the way for AI success in construction.

1. Define Your Business Problem and Key Questions That Must Be Answered

"You can't chase AI just because it's supposed to do something cool or you want to keep up with the competition," says Jim Smith, cofounder and Chief Customer Officer at LoadSpring.

Instead, you must **identify a problem that needs to be solved** within your organization. Deciding to boost productivity, reduce safety hazards, or improve quality isn't enough. You need to choose a specific issue that can be measured and tracked over time.

When your goal is too broad, it's hard for AI to help. "As much as people would love to throw all their data into an AI system and have it come back and tell them how to fix all their problems, that's not how AI works," describes LoadSpring Chief Commercial Officer, David Taylor.

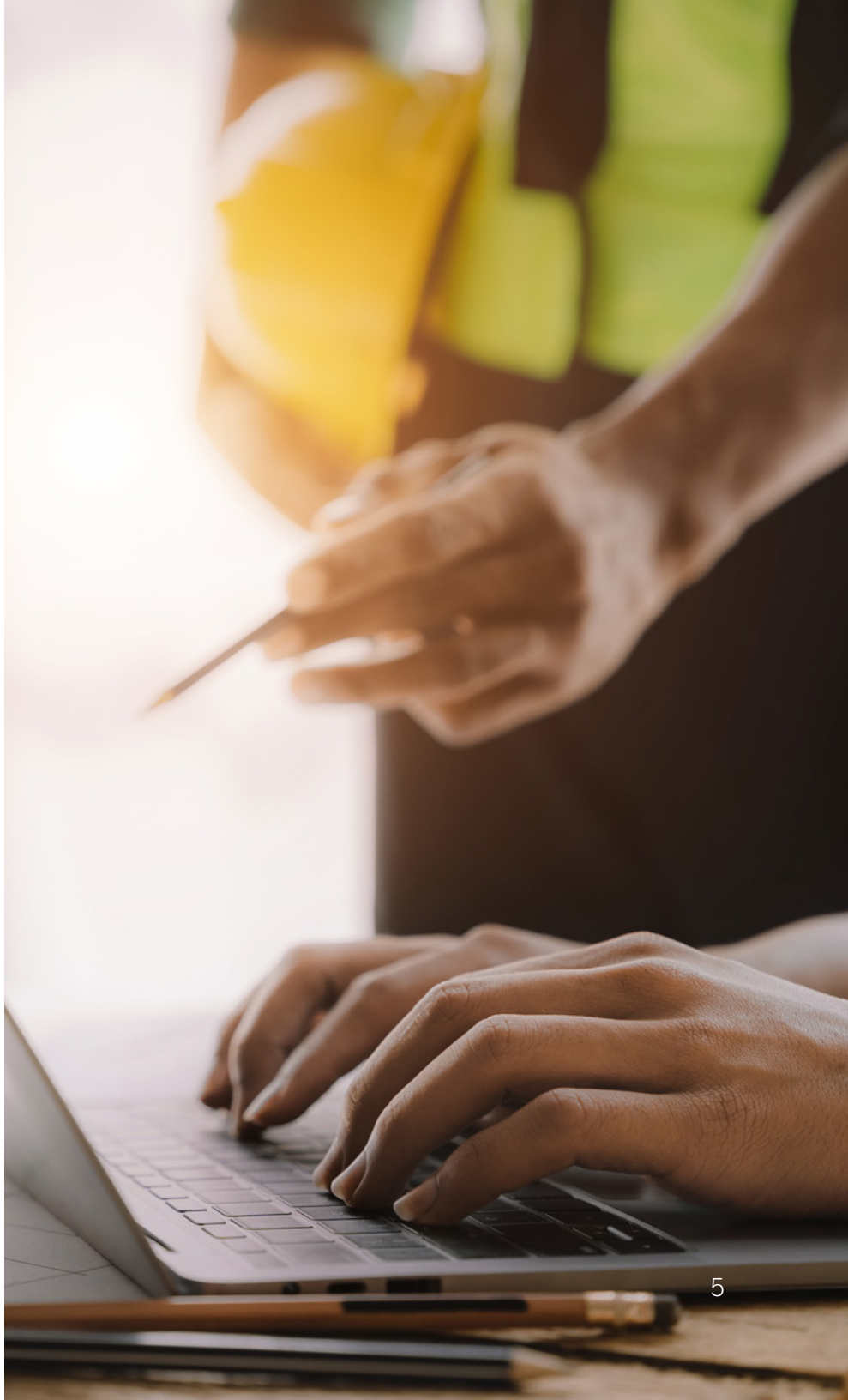
For example, he explains, saying you want to improve company revenue isn't precise enough. Instead, deciding that you need to reconcile schedules and costs is a problem that AI can solve by addressing the gaps between the two to help you make faster, better decisions.

Narrowing in on a specific problem generates a return on investment, too. “In a highly competitive environment where costs increase as profit margins stay low, margin is critical. **There’s no room to waste money on investments that aren’t delivering results**,” Smith emphasizes.

Once your business problem is identified, it’s time to **outline the questions** that your AI solution needs to answer to address it effectively.

In the case of reconciling schedules and costs, this could include questions like:

- What project timelines and milestones currently exist?
- What are the costs incurred at each phase of the project?
- How do actual costs compare to the budgeted costs?
- Are there delays or deviations from the original schedules?
- What factors contribute to cost overruns and/or schedule delays?



2. Pinpoint Required Analytics and Data Inputs

Before diving into data preparation, determine the required analytics and data inputs. Instead of trying to "boil the ocean," focus on the specific data and sources that will answer your key question(s). This prevents your AI solution from being overloaded with unwanted data, so it can give you accurate results faster. These sources may include:

- **Analytics:** What tools, techniques, and processes are needed to analyze and interpret data?
- **Inputs:** What datasets need to be fed into analytics tools so they can be examined?
- **Data:** What specific pieces of data must feed your data inputs?

In some cases, required data may not be available. For example, to predict risk potential, your AI solution first needs access to data about:

- Accidents and incidents
- Schedules
- Project performance
- Workforce
- Environment and weather

While this data likely exists somewhere, it may not be input into or captured within a system because no one deemed it important. This must be remedied before you can move your AI initiative forward.

3. Assess Your Data Readiness

To understand your data's current state and readiness for AI use, you must examine your data infrastructure. To be sure your data will result in accurate and reliable AI outcomes, there are two questions to answer:

Question #1: Where is your data located?

Centralized data is key to effective AI use. But how can this be accomplished when different work streams — cost, risk, and schedule management — use different tools and structure data in different ways?

Data often sits in different locations: laptops, servers, and even in the cloud. On top of that, it doesn't tell the same story. This makes it nearly impossible for leaders to gain visibility into operations.

"Having a unified structure that standardizes across all your systems isn't going to work," says LoadSpring Managing Director Dr. Asif Sharif. "Instead, individual disciplines should be able to structure data however appropriate but **have technology and tools that allow them to align datasets for reporting**. You can celebrate the fact that each tool needs to be unique. Reporting can give you consistency."

Question #2: Is your data clean, relevant, complete, and accurate?

At a recent Project Controls Expo US (PCE) event, LoadSpring's CEO asked a room full of construction professionals how confident they are in their data. Eighty percent of them were not at all confident and the remaining 20% were semi-confident. **It was very clear no one in the room felt very confident in their company's data.**

These confidence levels need to change before AI can be deployed. Being confident about the data your company captures is just as critical as being confident in the raw materials your team uses to construct a building.

"Imagine not being sure about the steel, concrete, or plywood you're using but deciding to put up a massive facility with it anyway," he says. "That would never happen — just like AI should never be deployed without confidence in your data."

How can you be confident in your data? If you think your data is ready for an AI solution, test it first. This can be done by:

1. **Transferring** data from its original source to a staging area
2. **Loading data** into a system to be processed and analyzed
3. **Extracting** analysis for closer examination
4. **Applying** filters to get rid of irrelevant or incorrect information
5. **Assessing accuracy** and reliability

"Once you verify the level of accuracy, then you can auto-remediate some of it to make it even more accurate so you can report from it," explains Dr. Sharif.

4. Implement the Technical Solution

Implementing the technical solution should only occur after completing the critical groundwork of defining the business problem and key questions, pinpointing the required analytics and data inputs, and thoroughly assessing your data readiness.

With these steps in place, the next phase involves connecting and translating your data sources into a unified format suitable for analysis. Once the data is cleansed and structured, calculations can be performed to prepare it for advanced processing. At this point, AI technologies, such as machine learning models or large language models (LLMs), can be applied to analyze the data, derive insights, and communicate results.

This approach ensures that AI-driven outputs are directly aligned with the original business questions, providing clear, actionable information to address the specific problem at hand.

Choosing the Right AI Partner

While you may be able to handle some of these implementation steps internally, working with a partner can help you do it "faster, quicker, cheaper, and more effectively," explains Smith. "We see companies that put data scientists to work on some of these tasks, but it doesn't make sense to pay a fortune for a data scientist to collect, clean, or connect your data."

Look for a partner to guide your AI journey. Here's what to look for in an AI advisor that will lead you down the right path.

Expertise in Construction

Understanding AI is one thing — but understanding AI in construction is another. “Construction’s supply chain is very different compared to other industries,” Dr. Sharif points out. “AI providers must be subject-matter experts in this domain. Construction deals with different types of projects, different levels of capital investment, and very long timelines. And what construction companies create is operated and maintained for sometimes hundreds of years.” Be sure you choose a partner who understands the construction industry and the applications used to carry out construction activities. They should have tools and solutions specifically for the industry.

Transparency About Data Ownership

Data privacy and ownership are other important considerations if you want to maintain control of your data. “Who owns your data? Who owns your AI model? What are they going to do with that information? These are all critical questions to ask,” advises Smith.

Some AI providers use their customers’ data to build databases and share benchmarks and baselines with the entire industry. While this can be useful in many cases, AI shines when it’s built around your organization and its data.

“When you can create large language models based on quality data from your company, you’re going to get quality answers that are specific to you,” he explains. “Over time, the answers will become even more specific to your business, your applications, your processes, and your data. It will speak your language.”

Easy-to-Use Tools

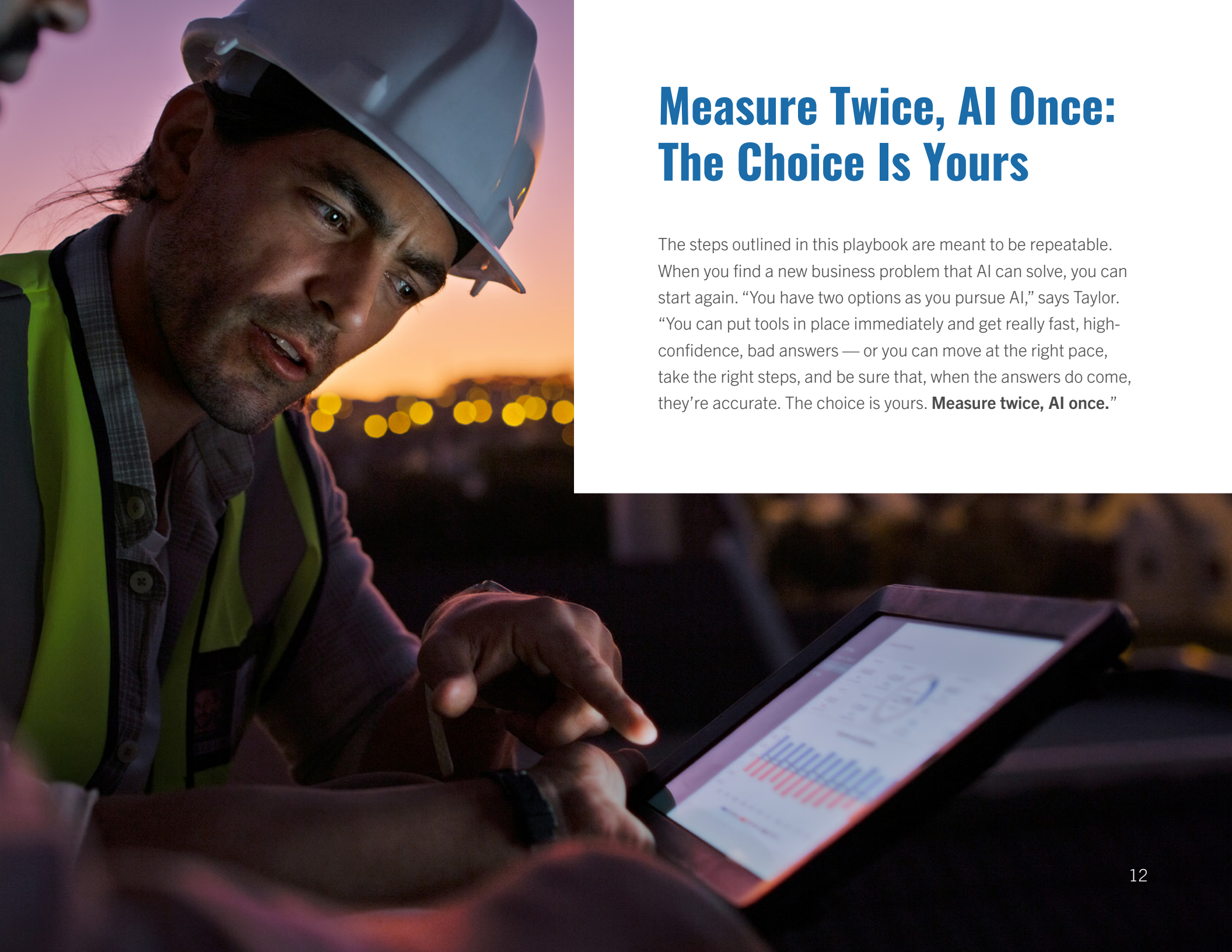
Today, it's not uncommon for different datasets to be managed by different teams. When you need an answer to a question, you must contact specific people, ask for their help, and wait for them to pull the portion of the data you need and then explain it to you.

When done right, the insights provided to you by AI shouldn't require an explanation. A support model built into the system should not only give you the information you want but also explain how those insights were generated.

Work with an AI partner who will ensure that everyone in your organization can interact with the data and find answers to their questions.

Supportive of Pilot Projects

Work with a company that will let you start small with a pilot project or proof of concept, Taylor advises. That gives you enough time to see how AI will (or won't) deliver before you invest more time and money into the initiative. "Your AI world should be full of tests," he explains, "and even the tests should have ROI. Point them against a specific problem for which there's a clear ROI. If it solves your problem, then it's a proof of concept that works. And you can do it all over again."



Measure Twice, AI Once: The Choice Is Yours

The steps outlined in this playbook are meant to be repeatable. When you find a new business problem that AI can solve, you can start again. “You have two options as you pursue AI,” says Taylor. “You can put tools in place immediately and get really fast, high-confidence, bad answers — or you can move at the right pace, take the right steps, and be sure that, when the answers do come, they’re accurate. The choice is yours. **Measure twice, AI once.**”

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