

## How Project Controls Improves Infrastructure Project Outcomes

Written by: InEight Blog Editors

The sheer size and complex nature of infrastructure projects and other substantial long-term builds requires careful planning and budgeting. Yet despite all good intentions and efforts, project outcomes rarely mirror exactly the expectations set at the beginning. And project owners, having grown weary of all-too-frequent runaway costs and delays, are rather apprehensive about taking on any more risk.

For these two outcomes to wind up far off the mark so frequently is a clear sign that the methods being used to track and manage these variables aren't as effective as they need to be. It's resulted in:

- » Lots of data siloed across tasks and departments, rendering it unactionable
- » Lack of continuity of past data into current projects
- » Insufficient cost and schedule reporting to close knowledge gaps
- » Disconnect between change requests and their role in adding to costs and timelines

With highly anticipated infrastructure projects getting under way in the U.S. and around the globe, the focus going forward must be on how to keep such inefficiencies in check and deliver those projects on time and within budget. It's going to come down to project controls.

Project controls is the set of processes and systems used to measure and monitor performance throughout the life of the project. Its main goal is to ensure that projects are completed



on time, within budget and according to specifications. In the context of infrastructure projects, it can help in the following ways.

### Provide a Baseline Set of Data For Current and Future Planning

Plans provide the structure against which to assess, track, and adjust elements of a project as it progresses, with the goal of winding up near the initial baseline by project's end. Where can you get this baseline information? By turning to historical data from previous projects or phases of an existing infrastructure project, you can plan out similar projects or subsequent phases with more certainty.

So, for example, if there are issues with one phase, that data can be used as a point of comparison when planning out other phases of the project. Having access to and analyzing past data on how things played out before will give you an idea of what to expect, and serves as a guide when developing budgets, timelines, and risk registers. Of course, projects are dynamic in nature, but with project controls in place, you're better able to control anticipated risks and respond quickly to problems as they arise, making it easier to maintain budgets and schedules and meet original expectations.

---

## Accurately Track Progress Against Key Performance Indicators (KPIs)

---

Every decision, every proactive and corrective action taken, and every forecast are based on the performance data continually gathered throughout the project life cycle. To manage infrastructure projects effectively all that data has to be tracked properly, and that's been an arduous process when traditional tracking methods are used. Project controls is making this much easier to get a grip on from a data management and processing perspective.

Among the most critical KPI data points to monitor are cost performance index (CPI) and schedule performance index (SPI). These can be calculated and reported on using the widely accepted earned value management (EVM). EVM is regarded as a reliable method to help you know how these two metrics are working together, where exactly your project stands in terms of its schedule and cost and understand how they're performing compared to what you planned for.

---

## Identify Risks and Their Causes Early On

---

A well-managed infrastructure project will typically have a strong focus on risk management. That's why project controls starts at the planning stage so you can take an anticipatory approach to risk – identifying and managing risks from the outset and preventing them from negatively impacting budget and timeline. This applies to both design and data. With respect to design, project controls avails the visualization capabilities of 3D modeling (building information modeling,

or BIM) to spot design clashes and errors, and experiment with design variations and even proposed changes to evaluate their potential effect on costs and schedules or even other parts of the structure.

On the data side, look at past project performance metrics to analyze the type, frequency, and severity of risk factors throughout the build and ultimately on project outcomes. Identifying risks early on isn't limited to the planning stage; it's also about detecting them early as they emerge once construction is underway. This is where CPI and SPI rise to the occasion. Their real-time responsiveness to internal and external risk factors highlights evolving trends, potential risks or concerning issues sooner – when they're easier to address and mitigate before they become problematic.

---

## Forecast Potential Cost and Schedule Impact of These Risks

---

What happened in prior projects that can provide insights into how to plan around identified risks? What's happening now that's indicating where the project is likely headed and where action may be required? How might a proposed change, whether suggested or required, impact costs and schedules? Project controls enables you to take a proactive approach to addressing all of these scenarios.

Leveraging a combination of early risk identification, past project data and real-time performance metrics, accurate forecasts can be created that help you understand what effect potential risks or changes may have on future deliverables and resources needed to complete the project successfully.

For risk-based scenarios, these forecasts become the basis for data-driven, risk-adjusted contingency plans, whether they're developed before the project begins so they're ready to launch when necessary or created as unexpected risks surface during construction. For change-based instances, it informs decisions on how and whether to accommodate them in terms of budget, time, and resource allocation.

---


## Provide Transparency Into Project Performance and Progress

---

Infrastructure projects are complex and involve many stakeholders. When you factor in the need for transparency, collaboration, and certainty, the value of project controls becomes clear.

The first step is understanding what's happening with the project at any given time. Project controls provide transparency into key metrics such as schedule, cost, and risk so that you know where things stand at any given time. This enables you to make informed, collaborative decisions about how resources should be allocated as well as detect early signs of potential issues before they become significant problems.

Infrastructure projects are often subject to industry standards or regulation that require certain quality metrics be met throughout the course of the project. These requirements may include things like safety regulations, environmental compliance, or other contractual obligations. Project controls help ensure compliance with these requirements by providing feedback on key performance metrics such as safety incidents or environmental events during construction.

For project teams and stakeholders to stay on top of progress and performance, setting up dashboards with real-time data helps keep everyone in the loop. Dashboards and regular reports allow for quick, timely analysis of trends so problems can be identified proactively rather than after-the-fact when it may be too late for effective mitigation efforts. 



---

### About the Article

---

This article is republished from the [InEight Behind the Build online blog](#). [InEight](#) provides field-tested construction project management software for the owners, contractors, engineers and architects who are building the world around us. Customers worldwide rely on InEight for real-time insights that help manage risk and keep projects on schedule and under budget across the entire life cycle.

Any views and opinions expressed in this article may or may not reflect the views and opinions of the Construction Management Association of America (CMAA). By publishing this piece, CMAA is not expressing endorsement of the individual, the article, or their association, organization, or company.