

Measuring your return on technology investment

What the research says about efficiency and productivity gains on capital improvement programs



aurigo®



10% to 30%

reduction in engineering hours

5% to 10%

reduction in build costs

10% to 20%

reduction in operating costs

10% to 20%

reduction in decommissioning times

Investing in a capital program management software system saves money by boosting productivity and collaboration. So much so that the White House has allocated \$20 billion of Infrastructure Investment and Jobs Act (IIJA) funds specifically for implementing new technology systems and helping to better manage capital programs. Using a capital program management solution reduces project costs pre- and post-implementation. And there is plenty of data available to support these statements.

In its report, [*The capital project of the future*](#), Deloitte suggests that implementing a digital solution means more than adopting ad hoc technologies and building them into an existing delivery framework. The report also states that the implementation of a digital solution can result in the following savings:

- Design, finance, and procurement solutions can reduce engineering hours by **10% to 30%**
- Construction solutions can reduce build costs by **5% to 10%**
- Operations and asset management solutions can reduce operating costs by **10% to 20%**
- Decommissioning solutions can save **5% to 10%** of decommissioning time

This guide presents further examples of the return potential on investment that cloud-based capital program management solutions can deliver in terms of time, resources, and money saved. From enterprise-level solutions to mobile software, all things digital are good for your productivity.



The cloud

Let's start with a brief history lesson. Connected systems would not be possible without the cloud. The term 'cloud computing' gained popularity in the early 2000s when companies such as Amazon and Google launched server hubs that made cloud servers more easily accessible. Cloud computing pay-as-you-go models enable you to pay only for the services you need. Fast forward to the present, and Web Tribunal's [Cloud Adoption Statistics for 2022](#) predicts the public cloud service market could reach a global value of **\$623.3 billion** by 2023.

Software as a service (SaaS) is a delivery mechanism that enables customers to operate the software through a web browser or similar application, which typically means they can access the system from any of their devices with an internet connection (desktop, laptop, tablet, or phone). The end user can only manage and modify the configuration and tools given by the app, not the underlying cloud infrastructure.

With the increased use of cloud and SaaS products came the rise of capital program management solutions (and projects). McKinsey has dubbed this period the '[platform era](#).' Even before the COVID-19 pandemic and the rise of remote workplaces, using the cloud to manage the day-to-day operations of a business was the norm, with **93% of enterprises** using the cloud. Thanks to the pandemic and virtual workplaces, late adopters eventually jumped into cloud technology at some level or another. And it's no surprise why most use the cloud for business operations. According to **61% of IT leaders**, the top reason for implementing these systems was a **cost-cutting initiative**.

**Benefits of using
cloud-based capital
program management
software**

25%

gain in productivity with detailed execution planning. A \$5 billion project can gain a \$450 million net benefit

30%

higher labor productivity is seen in construction projects with higher levels of automation

\$6 trillion

can be lost over five years in global construction, following a delivery delayed by one year

Productivity

In a recent COAA survey, it's reported that, on average, only **37% of the day** is spent on productive work. With so much time being 'unproductive' it's no surprise that having a capital program management solution in place would significantly boost productivity levels within an organization. COAA estimates that with more detailed [execution planning](#), agencies can see a **25% gain** in productivity. To put this into perspective, the net benefit on a \$5 billion project would be \$450 million.

Productivity through automation

According to the [National Institute of Standards and Technology](#), labor productivity increased by around 30% in construction projects with high levels of automation when compared to those with lower levels. With the comprehensive solutions available today, automation can quickly speed up processes that would once have taken days, months, or years.

Delivery

[Delayed delivery](#) by one year in global construction can result in a **loss of \$6 trillion** over five years.

Being on time and budget is any construction project's ultimate goal. Cloud-based technologies enable the use of real-time data to help facilitate faster and more accurate decision-making throughout the entire project's lifecycle. With every productivity improvement, your project moves closer to being on time and within budget.



Cost savings

Only 31% of projects come within 10% of their budgets. Cost control is key. Cost and schedule length go hand-in-hand. Typically, if one increases, the other follows. Having a robust, cloud-based solution in place will help you stay on top of your projects, with real-time reporting available at every stage of your capital project—from planning to maintenance. The Construction Industry Institute reports **average cost savings of 4.3%** on project budgets and **schedule acceleration** of around **7.5%** from implementing enterprise-wide best practices.

4.3% average cost savings from implementing an enterprise-wide capital program management solution

10% to 20%

savings in IT spend by
switching to a cloud-based
system

The “cloud” advantage

One of the most significant benefits of a cloud-based solution comes in the form of immediate cost savings, which ultimately equate to long-term cost savings. However, on-premise systems demand an extremely high initial investment due to the expense of server hardware, software licensing, deployment, and IT support staff requirements. On-premise solutions require ongoing physical infrastructure maintenance and time for routine software maintenance, backups, and updates. A cloud-based, pay-as-you-go model eliminates these costs. Everything saves to the cloud, the service provider controls updates and maintenance, and all you must do is pay the subscription fee.

[Deloitte](#) identifies a steady growth in cloud adoption among government agencies over the past decade. Shifting to cloud-native technologies allows your agency to replicate current internal processes and develop new ones, automating and delivering capabilities anywhere, at any time. In addition to the software system benefits we have identified, [switching to a cloud-based system](#) can **reduce annual IT spending by between 10% and 20%**, according to KPMG.



The City of Las Vegas
generates its CIP book
automatically, saving

3 to 4

months

each year during the
capital planning process

Cost savings through the capital program lifecycle

Bringing the planning, design, procurement, and field operations together can help achieve project objectives and realize savings.

Plan

Using an integrated system during the capital planning phase boosts efficiency and productivity. When the capital planning process is automated, all stakeholders can access the most accurate and reliable data at any point. Strategic decision-making during the planning phase can result in both cost and schedule savings. The City of Las Vegas, for example, uses a capital planning solution to automate and manage its capital planning process. The agency automatically generates its CIP book, saving three to four months each year during the capital planning process. Everyone from project managers to City Council members has a real-time view of funding sources, project schedules, and budgets.



Build

As has been said—bad processes lead to bad outcomes. Keeping your project on schedule will impact your bottom line. McKinsey [estimates](#) that each year delayed projects cost \$6 trillion globally. Using a digital solution capital program management allows tool customization that meets your organization's needs and optimizes its current processes. Automated workflows drastically reduce approval times and thus can help keep a project on track. In addition, capital program management solutions also speed up bidding and estimation processes, leading to time and cost savings. Managing change and computing payments with automated workflows ensure costs fall within the contract and quickly generate pay estimates based on work done, materials on hand, advances, retention, and adjustments.

If your stakeholders are all using different systems to manage their part of the project, spending increases and schedule overruns are inevitable. With the growing popularity of real-time mobile apps, your team can instantly update [everything](#), including work- and change-order management, time and material tracking, dispatching, scheduling, productivity measurement, and incident reporting. Equipping your project teams with mobile devices and connected systems helps keep them and the project on track.

The Utah Department of Transportation (UDOT) implemented a system that has generated a collaborative approach across business units, improved the quality of work, increased productivity, and significantly reduced the number of errors in all UDOT's projects. Based on economic analysis, UDOT is saving **\$19.5 million** annually (or \$100 million over five years) from greater visibility, better reporting, and increased control during planning, construction, and maintenance.

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Organizations that implement an asset lifecycle management solution can achieve around

8% to 12%

in annual savings

Operate

The most successful project managers ensure [*the commissioning schedule drives project execution*](#). They encourage regular checkpoints with commissioning and operations teams throughout the construction phase.

An organization can save around **8% to 12%** annually by implementing an asset lifecycle management solution. Improving efficiencies before and during the project's lifecycle sets your agency up for further [*productivity increases and cost savings*](#) once the project is complete. Having access to an asset's historical data can [*reduce maintenance costs*](#) and limit unexpected failures. When the information is stored in a central location and systems are integrated into a single solution, information becomes the glue that holds the asset management lifecycle together. Solutions with built-in mobile apps and mapping or Building Information Modeling (BIM) technology can increase efficiency, improve sustainability, and extend your assets' values. The capability to better track labor usage can save an agency between **10% and 20%** on their budget and reduce asset utilization time by **3% to 5%**.



Connectivity and collaboration

Increased collaboration

91% of contractors and owners agree that increased collaboration *reduces risk on construction projects*.

Collaboration is critical in this day and age. A Construction Owners Association of America ([COAA](#)) [survey](#) reported that, on average, employees spend only 37% of a normal working day on productive work. This is mainly due to a lack of connectivity between stakeholders, project team members, and systems. With the software in place to manage the entire capital construction lifecycle, you'll be able to eliminate the various workplace silos and slow information processing that cause delays and hold-ups. Collaboration among stakeholders, from clients to executive decision-makers, is essential during any process that leads to the successful completion of a capital project.

Seamless interaction

According to [Deloitte](#), the use of the cloud as an integrator technology has also increased as cloud application programming interfaces (APIs) can integrate datasets, applications, and devices, enabling seamless interactions between the various parts of an agency.

Increased visibility

Using the capital program management software's customized dashboards and real-time reports, enable all stakeholders to operate from a common standpoint. With increased efficiency and visibility supporting better decision-making, agencies such as [Aurigo](#) save clients around 5% on their capital project budgets.

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work



Resource management

98% of projects face the prospect of being over budget and delayed due to the procurement process.

According to [McKinsey](#), many project delays result from sourcing issues such as recruiting the right people and sourcing appropriate materials and equipment. These delays soon add up, pushing project schedules significantly off track and thus escalating project costs. Using cloud-based systems can help track resource availability and coverage across projects ensuring resources aren't over- or under-allocated. You can also make sure resources are used optimally by making adjustments based on real-time changes as a project evolves.

An effective resource management tool gives you a bird's-eye view of every project. You can track the availability of resources over time using real-time reports and dashboards that allow you to drill down to the most granular details. With the capability of better tracking labor usage, an agency can drive down overall costs by anything between **10% and 20%**.

10% to 20% of a budget can be saved through better resource management

Data storage and management

Construction is a heavily data-driven industry, generating and exchanging many different types of data everyday, such as design documents, project progress reports, asset utilization, right of way, and jobsite audits. The amount of data generated by the industry has doubled in the last three years, making [data storage and management](#) a key focus for the decision-makers at public agencies.

Data

An Autodesk/FMI Corp. study found that bad construction data in 2020 may have caused [\\$1.8 trillion in losses worldwide](#) and may be responsible for **14% of avoidable rework**, amounting to \$88 billion in costs. The amount of data shared in the construction space is monumental. A capital program management solution makes sharing documents, files, images, videos, etc., related to your construction project an almost instant process. It can store all of it in one easy-to-access location.

Eliminate poor data

In the U.S. capital facilities industry, \$15.6 billion a year is wasted by inadequate data interoperability. There is so much data shared on any project, from approvals, certifications, and contracts through designs, schematics, and inspections. Having one central location for the numerous forms of data allows the information to work together and provide a holistic picture of a project or program.

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90%

reduction in time for
document transmittals

Eliminate paper documents (and the paper chase)

[McKinsey](#) reports that one reason behind the industry's poor productivity record is its reliance on paper for managing processes and deliverables, including blueprints, design drawings, procurement-related paperwork, supply-chain orders, equipment logs, daily progress reports, and punch lists. By digitizing its processes and systems, one organization reportedly **reduced report generation times by 75% and sped up document transmittals by 90%**.

Document control

In any construction project, a great deal of construction documentation is produced and must be stored. Historically, everything was printed on reams of paper (extremely non-eco-friendly) and then stored in the office in a row of filing cabinets. Now, however, we can [store all documents virtually](#) in the cloud, instead of taking up space in the office (or your dining room at home). It also means you can access any documentation or information wherever you are, allowing for more efficient business processes. No running back to the office to look things up or phoning someone at the office, explaining what you're after and waiting for them to find it. All of that is wasting your precious time. With construction software, you can access everything from your phone or tablet.

The other advantage to management software document control is that you can upload templates that standardize all your business construction documents. These make sure your construction company and your team always look like the construction industry professionals that you are.



A photograph of several wind turbines in a field during sunset or sunrise. The sky is a mix of orange, yellow, and blue, with some clouds. The turbines are silhouetted against the bright sky. The foreground shows a line of green trees.

Sustainability

53% of construction executives say the drive for sustainability is expected to accelerate. Your agency is likely [*moving toward a more sustainable and 'greener' way*](#) to do business, both in the office and on the jobsite. Using the cloud as an anchor for your digital systems can help reduce waste (think less paper). In addition, building, operating, and maintaining many of the new sustainable building materials will require cloud-based technologies.

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Reducing risk

Thanks to increased connectivity and productivity, you are more likely to identify and reduce risks on your capital projects. According to the CII, there are more than [*100 potential risks you can run into during a project*](#). While some risks will be out of your hands (e.g., acts of god), many risks can be avoided with an installed capital program management solution. There are three key strands of risk management:

- **Risk identification** — defining both known and unknown risks
- **Risk measurement** — establishing the potential cost impacts of the risks
- **Risk control** — steps to mitigate the potential impact of risk and the use of contingency funds

Capital program management solutions can help manage these elements by retaining all submittals, RFIs, RFPs, change orders, and issues in a single view. Automated bidding, estimating, and contracting processes will help to avoid any cost overrun risks, and instant notification of any issues from contractors and vendors will help keep the project on schedule.

There are more than **100** potential risks you can run into during a project, according to the Chartered Insurance Institute (CII)



Final thoughts

Flexibility and scalability are at the root of why the cloud space is important, but using multiple solutions can hinder that capability if the systems are not integrated. According to a [2020 study](#) by McKinsey, when looking at the various phases of a project, most current solutions maintain a “significant focus on field productivity, engineering-design tools, planning, scheduling, facility management, and improvement-focused solutions.” Implementing a cloud-based capital program management solution allows you to have one system into which other technologies, such as BIM technology, can integrate. As McKinsey states, “The near-real-time collection of project data coupled with the integration of design, project management, and scheduling tools further unlocks the promise of platform solutions as companies strive for truly end-to-end digital projects.” Striving for such a goal is all possible because of the cloud.

By bringing everyone involved in your capital and maintenance projects into one seamlessly connected construction planning, design, and building experience, you will see cost and schedule savings due to the efficiencies created through these systems. From initial planning and design to the construction lifecycle and real-time contractor integration, with a complete lifecycle capital planning solution, everyone will have the most up-to-date information at their fingertips.

About Aurigo Software

Aurigo builds software that helps build the world. Aurigo is an AI-native company that helps capital owners connect planning, construction, and operations in a single environment, improving decision-making and execution. Trusted by over 300 organizations across infrastructure and facilities, Aurigo manages more than \$450 billion in capital programs, with over 40,000 projects throughout North America. Aurigo is a privately held U.S. corporation headquartered in Austin, Texas, with global offices in Canada, South Africa, and India.

Learn more at www.aurigo.com

Schedule a demo

Schedule your demo today to learn how Aurigo Masterworks can help your organization streamline information, accurately track, forecast, and prioritize projects and help you save time and money.



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