



Foresight

A global infrastructure perspective

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Visualization: the future of decision-making in capital projects

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Virtual video tours of construction sites, complete with compelling 3D graphics, are set to revolutionize project management and increase the chances of on-time, on-budget outcomes.

How often do senior executives of major project owners request a first-hand view of the construction site — only to receive a vast report full of unintelligible data?

Thankfully, this is all about to change. Rapid adoption of visualization means that virtual ‘tours’ will soon become the norm, offering short videos that provide a high-level picture of what’s going on — and indicating where the most urgent action is needed.

Increasing interconnectedness, not just between people and processes, but also between physical objects and their environment, is changing how we look at the world. Many of us already use mobile phone apps to calculate how many kilometers we should walk to burn off lunchtime calories, set the temperature for our living room when we arrive home, and predict the weather for that upcoming family barbecue.

As tech-enabled interfaces become a more integral part of daily life, they feed into our intrinsic human desire to predict and control the future. To do this effectively, we need to physically see what lies in store, and compare this with current states to project expected outcomes.

The same is true of large capital projects — only more so, given that millions or even billions of dollars rest on their successful completion on time and on schedule.

Today’s mega projects are hugely complex, with an incredible array of interdependencies. They involve many

interacting parties, in the form of owners, engineers, contractors, suppliers, consultants, equipment manufacturers, operators and assemblers. Interactions are often non-linear, meaning that minor changes can be disproportionately impactful.

Critically, solutions cannot always be imposed; rather they emerge from circumstances and continuous analytical reviews, as project managers encounter issues and bottlenecks. If we want to stay within striking distance of desired outcomes, we need to keep abreast of ongoing progress.

Having studied many such projects at close hand, in boardrooms and onsite, I firmly believe that technology can make a sizeable difference to success rates. By providing a more accurate view of what’s happening on the ground, overlaid with visual analysis, managers get a single version of the current and projected state.

When it comes to technology and automation, the engineering and construction industry is fast losing its tag of ‘late adopter,’ and embracing innovation across the project lifecycle. Where it falls short is in reporting, monitoring, reviewing and controlling capital projects through construction and commissioning up to handover stage.

Yet it is only at the site that everything converges, for the final planner or field superintendent to execute. Construction is typically the most time- and effort-consuming activity, deploying a wide range of

software, sophisticated fabrication and erection equipment, superior construction techniques and materials. This creates considerable potential for workflow improvements, but these can only happen if executives have the tools to make fast decisions, along with a robust, transparent escalation process.

Visualization can help pull together all the information from multiple stakeholders, from start to finish, and translate this into meaningful and easy-to-understand graphic analyses. If

employed effectively, the potential savings could amount to millions of dollars.

Owners, contractors, consultants and project managers are more frequently using camera-mounted radio-controlled 'quad' devices (quad-cams): which give a 24/7 view, to monitor their construction activities. These give real-time data on construction site progress, can identify potential hazards or quality issues, as well as other valuable information. They are particularly useful on sites that are large or spread out.

How can a radio-controlled quad-cam save you time and money?

Executive reports as virtual tours of the project site

These whistle-stop, audio-visual tours of the key points in the site can get over key messages clearly in a few minutes — far preferable to a 30-page monthly report.

Workflow and on-site interface improvement

Detailed video reports, complete with 3D representations, help to spot problems or bottlenecks to enable decisive action.

Optimizing operational efficiency and productivity for large equipment like cranes

By reviewing and recording the performance of large cranes and associated lifts, along with material movement and erection activities, project managers can improve net throughout and prioritize the deployment of these assets across a large project.

Aerial surveying and imagery

With a radio controlled quad-cam we can quickly and more accurately survey large tracts of land, define boundaries and lay out movement patterns, without using expensive and

time-consuming surveying tools. We can even plan out route surveys for heavy, critical over-sized shipments and time-sensitive deliveries, to avoid last minute surprises — like a tight turning radius or low-voltage crossings.

Safer and more secure sites

A regular active 'virtual' surveillance typically costs much less than traditional surveillance methods and is able to spot breaches and hazards more accurately, contributing to overall site safety and security.

As with all breakthrough technologies, the use of quad-cams will evolve and eventually become mainstream, with clear regulations and protocols. For those tasked with reviewing capital projects, the clarity and accuracy of virtual tours have to be seen to be believed, and should make a huge contribution to project efficiency and ultimate success.

Talking points

- Have you suffered underperforming, late or over-budget projects in the past year?
- Can you confidently say that you're completely satisfied with your current project and site status reporting?
- How accurate are your predictions for project outcomes?

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