

# VELOCITY

INNOVATION AND LEADERSHIP FOR CAPITAL PROJECTS

## VELOCITY INTERVIEWS

Your Project Predictability Breakthrough with Arno Jansen



THE CAPITAL PROJECT PREDICTABILITY ISSUE

# PREDICTABLE PROJECTS

FRESH IDEAS FOR DELIVERING CAPITAL PROJECTS ON-TIME AND ON-BUDGET

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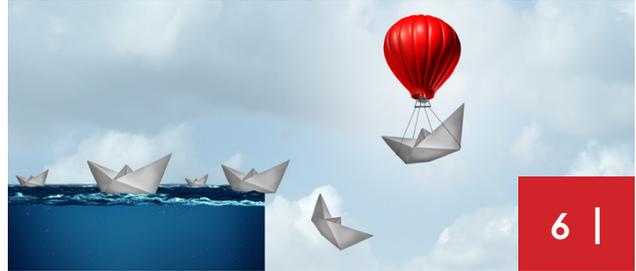
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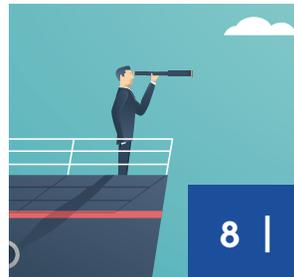
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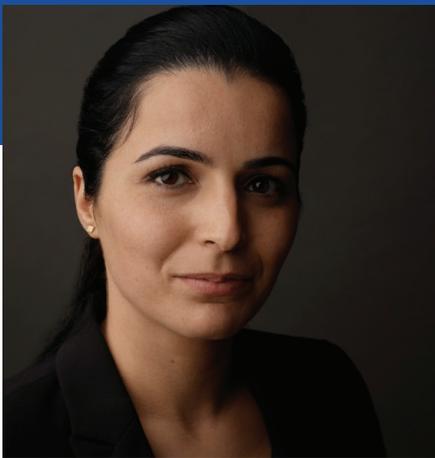
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EDITORIAL

# Chaos in Capital Projects is Bad for Business

BY OLFA HAMDI



## An Open Letter to Leadership in the Capital Projects Industry

Last fall, as Fluor stock prices started on a precipitous decline, former Chairman and CEO David Seaton held a call with analysts. He said the company’s financial problems could be traced to two troubled projects, one in Florida, the other in Europe. The teams on those projects “did not follow the rules,” he said. He had tried to change out management on the flagging projects, but failed.

Seaton told the analysts he was frustrated and that the company “had done a lot of soul searching.” Then came his explanation, reported by only a handful of news outlets, buried deep in the middle of the story: With respect to the Florida project, Seaton said it was “taking us double the hours to do the work that it is taking us in Virginia to do the same thing.”

### Double the hours.

This would be an astonishing admission from any businessperson, but it is especially startling coming from the leadership of one of the world’s largest, oldest and most powerful EPC companies. No

business can operate sustainably when labor costs inexplicably double between or among projects, not even a Forbes 500 multinational with over \$19 Billion in annual revenue. This throwaway sentence reveals something important: Predictability in project delivery cannot be ignored.

To be clear, I’m not picking on Fluor; I’m highlighting it here because the company’s story should be a warning to us all. Today, predictability simply isn’t on our collective agenda. Most companies don’t view predictability as an absolute, but rather as a goal — a goal that they will try to meet if all the other criteria fall into place. For centuries, it seems that our industry has operated on the unspoken assumption that “in chaos lies profit.” It worked for a long



time, when commodity prices were high and transparency minimal. This is no longer sustainable.

Today, investors demand more transparency than ever before. They fought for and won access to details of your environmental policies, and now they would want more access to your execution information and how you are managing project risks. They want predictable forecasts rooted in solid data. They may want your work to be lump sum, because cost-reimbursable has become too expensive. As we move forward, predictability equals accountability.

Do you have projects on which labor costs have inexplicably doubled? Would you even know if you did?

Many of the organizations we work with have unwittingly encouraged chaos and complexity in their organizations, while paying very little attention to coherent, principled and strategic thinking and execution. They use multiple contracting strategies and staffing methodologies, make business and project decisions in isolation or without relevant data, and buy new digital tools without understanding how (or if) they will work in their organizations. At any given time,

they operate a constellation of improvement efforts, often without an overarching strategy or clear goal in mind.

This kind of chaos may have worked in the past, but the future belongs to the predictable organizations that can deliver on-time and on-budget with fit-for-purpose initiatives. At some point in the near future, execution is going to be #1 in your risk profile, just as it is for Fluor.

What is the solution? As Albert Einstein said, we cannot solve our problems with the same thinking we used when we created them. At Concord, we are focused on helping executives adopt *Predictability Thinking™* and become more knowledgeable about the strategies that underpin project delivery, technology, management systems and change management.

For example, how will you select your next piece of technology? If you are like most industry leaders, you're not a technology expert by you're still charged with making decisions and allocating budget. As a leader, you must work to develop a comprehensive understanding of emergent technologies and related variables — there's no way around it.

Why? Because we've seen this very scene play out time and time again: The purchase is made, overhead goes up because of the multi-million dollar technology purchase, and indirect costs go up because the technology amplifies your inefficiencies instead of minimizing them. In a year or two years, you'll be in crisis management mode.

Concord doesn't just come and sell you tools. Our Predictability Package™ helps you establish the guidelines and protocols that underpin a well-structured digital transformation, or lay the groundwork for the adoption of Advanced Work Packaging, or both. We help you position your company to intelligently navigate change. Only then will we discuss what tool is best for the job. We do something that nobody else does: We empower your teams to deliver predictable projects, from start to finish.

The takeaway here is that there is no substitute for executive leadership in this regard — you can't fake your way into AWP, digital transformation and predictability. If you're ready to take the next step, get in touch and ask us about our executive coaching options. 🇺🇸

# YOUR PROJECT PREDICTABILITY BREAKTHROUGH

VELOCITY INTERVIEW WITH ARNO JANSEN



*The Concord team recently sat down with Arno Jansen, an engineer and veteran capital project manager who currently leads a megaproject in the Gulf Coast of the United States. With more than three decades in the industry, he has an in-depth understanding of and experience in capital project development, project*

*management and structuring, and engineering management.*

*In our recent interview, Jansen traces the origins of the project predictability movement, explores the current state of affairs and looks to the future, where he considers which organizations are set up to thrive, and why.*



**Executive education, rigorous definition and shared goals are the keys to project predictability, says Arno Jansen.**

**VELOCITY MAGAZINE:** What does capital project predictability mean to you?

**ARNO JANSEN:** The traditional view of project predictability is that the project achieves performance in terms of cost and schedule that is relatively close to what was expected when the project team set out on the project journey. In my opinion, project predictability is far more than the traditional view articulated above.

The foundation of project predictability begins in the development of a very robust project premise that sets out the project's predicted business performance in terms of Internal Rate of Return (IRR) and Net Present Value (NPV), its operational parameters, class of facility together with a well-defined high-level scope.

This information then becomes the basis against which the project team develops and defines the scope, leading to the cost and schedule for the project.

To predictably deliver a project, the project must achieve its business performance quickly, which by definition means that it must deliver expected operability, Total Investment Cost (TIC) and be brought online within expectations. Project predictability is a journey where the project must be evaluated for completeness of definition, robustness of the project estimate and schedule at crucial project stages throughout the project development. This means that the team must be fully formed and must contain — as part of the team — members of the business development group together with operations and maintenance representatives that ensure all elements of project input are covered.

Project predictability begins with the “end in mind”, meaning that the project is developed from how it will be turned over to operations,

which in turn defines the construction sequencing or Path of Construction. Establishing this view of the project early, defines its path and its success and “casts in stone” a process that will lead to being able to predict project outcomes accurately. With these cardinal steps early in the process, project predictability becomes a mindset that is ingrained in process and project team culture.

**VM:** How does a capital project leader inspire his team to delivery predictable outcomes?

**AJ:** Project predictability is a mindset, or culture. Project leaders and the project team want to do a good job, and this means having a project that is successful and meets the project premise set out in the beginning.

Armed with a very comprehensive and achievable Project Premise, the project leader uses this to align the team, articulate his vision of project success, and paint the path forward for the team. As part of this, the project leader must clearly set out the project deliverable expectations for each of the project stage gates, and the quality of the project definition at each stage.





Achieving consistency and predictability starts with the education of senior executives within Owner organizations who are shaping capital expansion projects.”



Project teams want to be involved in a successful project they can be proud of. By setting out a clear path to project predictability, the project leader establishes a culture around predictable outcomes at each project stage gate, and the team can see that that hard work along with a commitment to quality and completeness becomes a self-fulfilling prophecy.

**VM:** Where do you see the capital projects industry going in terms of its ability to deliver safe, on-time and on-budget projects?

**AJ:** This is tough question, as the capital deployment industry continues to suffer from poor project execution performance. Significant strides have been made in defining the causes of poor project performance and the ability to achieve some consistency in project predictability by organizations such as IPA, CII, COAA and many others. Tools,

benchmarks, process have been developed and have been introduced by both Owners and Contractors alike, but project predictability and consistency still remain elusive.

Achieving consistency and predictability starts with the education of senior executives within Owner organizations who are shaping capital expansion projects, because it is often at this level that project decisions are taken early on without an adequate understanding of what is required to make projects predictable and achieve the ultimate business performance. Contractors, on the whole, have been slightly more successful in being able to predict the performance of their projects as they have employed leading industry tools — or created their own — to achieve a more predictable margin in the case of lump sum EPC contracts.

The organizations that have institutionalized the need for defining their project premises, adherence to rigorous and robust stage gate reviews and constant benchmarking of project definition and maturity, have demonstrated a more consistent ability to predictably meet the projects, cost, schedule and operational performance.

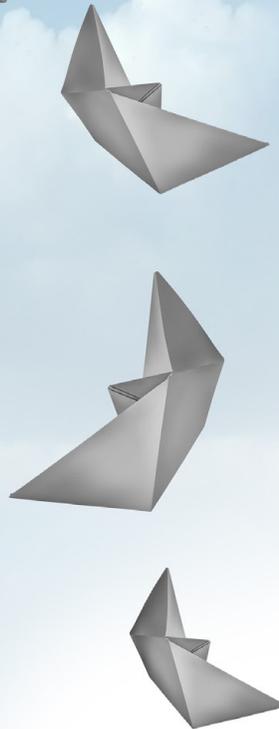
There are current initiatives within the capital deployment industry that look to align the Owners and Contractors with a common set of goals that are grounded in the principles mentioned above, to drive better predictability and more consistent positive outcomes for project performance. This encourages early collaboration between all project stakeholders to set the project up early for success, defining the business performance and creating an environment of trust against which the project is implemented and its progress monitored, and ultimately delivered. 🌐

# HERE'S WHY YOUR PROJECT IS LATE AND OVER BUDGET

BY OLFA HAMDI



**OLFA HAMDI  
EXPLAINS HOW  
YOUR ORG CHART  
AND YOUR  
CONTRACTING  
STRATEGY ARE  
UNDERMINING  
PROJECT  
PREDICTABILITY  
– AND HOW  
TO FIX THEM**



**Concord was born out of a passion for Advanced Work Packaging or AWP. Before co-founding this company, I was the Executive Director of the Institute for Advanced Work Packaging, published my thesis in Advanced Work Packaging and was a member of the CII research team that produced IR-272, which is widely regarded as the industry bible for AWP implementation.**

As I worked with organizations to implement AWP, however, I began to realize that it is not a panacea. Construction-driven projects using AWP are far more efficient than other types of projects, but there was still plenty of room for improvement. I came to believe that, as an industry, we had to expand our thinking beyond work packages and begin to consider all the factors that influence project predictability.

*Predictability Thinking™* evolved out of my desire to identify and understand all the levers that can be pulled in our efforts to execute a capital project on-time and on-budget. It profoundly changed the way my team understands and addresses our clients' challenges, and it can do the same for you.

Here are two simple examples of how a *Predictability Thinking™* paradigm

can shift the way you think about your capital project organization.

## **Organizational Structures that Undermine Predictability**

Most companies view their org charts as a visual representation of departmental responsibilities, as well

as a guide to established, hierarchical reporting structures. This is a useful lens for many applications, but it doesn't support predictable project delivery.

Here at Concord, we know that predictability is inextricably linked to accountability, and so, we view org charts through an accountability lens. Try it yourself. Pull out your org chart and consider: How does accountability flow through your organization? Is everyone rowing in the same direction?

Probably not. In most capital project organizations, departments are structured in such a way that each department operates under its own set of accountability measures. For example, the procurement department may reward its employees for finding good deals and securing long-term purchasing agreements — both of which are objectively good goals for a procurement team. By this accountability measure, a procurement professional who saves \$500,000 on a key project component will be in line for a solid quarterly bonus.

The trouble is that, in the absence of accountability measures that support predictable project delivery, even a well-run, successful procurement department can unwittingly undermine project predictability.

Here's how. Perhaps saving that \$500,000 on a key project component means waiting an extra six weeks to get it. That doesn't concern the procurement professional, since his bonus is contingent on his ability to find and secure good deals. However, the cascading impact of that seemingly innocuous delay increases the schedule risk of the project and may set it back two months, costing an extra \$2 million in overtime or penalties.

Is the procurement professional held accountable for these impacts? Is he even aware of them? Are you?

This is how siloed accountability structures undermine predictable project delivery, and this is why they're not a good fit for project-centered organizations. By definition, capital project organizations are multidisciplinary, and your accountability structures will determine whether everybody is working toward predictable project delivery — or not.

### Contracting Strategies that Undermine Predictability

Your contracting strategy is a key driver for predictable project delivery. You simply cannot expect people and companies to act with predictable project delivery in mind unless your incentive structures encourage, support and reward predictability. The most powerful leverage here is financial: the best contracts link predictable results to financial reward. If your contractor makes more money when delays and problems arise, you can be sure that you'll encounter more problems and delays.

A classic example of this is the standard time-and-materials contract. Most of these contracts tie financial gain directly to time spent, which means the longer the project takes, the more money the contractor makes.

Companies committed to predictable project delivery build cash-flow expectations, clear milestones and meaningful incentives and penalties into these types of contracts, so that the on-time and on-budget delivery benefits significantly outweighs the cost of the delay.

### The Power of Predictability Thinking™ for Your Project

Organizational structures and contracting strategies are just two of the project areas that benefit from *Predictability Thinking™*. There are management tools and approaches that hinder predictable project delivery, as well as business planning methodologies and financing options that undermine predictability.

Today, Concord has developed an innovative framework and powerful new tools to support predictable project delivery. This promising new model has been successfully deployed at some of the largest petrochemical organizations in the world.

Our vision is to empower and support our clients in achieving predictable outcomes on 100 percent of their projects. It is a bold vision, but we believe it can be achieved with hard work, solid research and development, a commitment to excellence and, most importantly, visionary capital project leaders like you. 🚀

“We have to expand our thinking beyond work packages and begin to consider all the factors that influence project predictability.”

# How Predictability Thinking™ Reveals **INVISIBLE THREATS**

BY CONCORD RESEARCH TEAM

**STANDARD  
CAPITAL PROJECT  
MANAGEMENT  
PARADIGMS  
RENDER MANY  
RISKS INVISIBLE.**



Imagine if you could reliably deliver your site's revamp projects on-time and on-budget. How would that change your business?

Would your ability to execute projects predictably be a potent market differentiator, distinguishing you from the crowd? Might it be a powerful competitive advantage? Could it boost the bottom line? Yes, yes, and yes.

Predictability is the new buzzword in capital projects: Old-fashioned, but more relevant than ever. Site-based revamp projects are notoriously complex, and therefore especially prone to seemingly unpredictable budget overruns and delays. Let's look at how *Predictability Thinking™* can directly impact your outcomes, and make it more likely that you'll one day be able to say: "Our team reliably delivers on-time and on-budget."

## **Invisible Threats**

There are many threats to predictable project delivery, but we're not going to list them here because they manifest differently in every organization and, more importantly, because the threats themselves are not the problem.

The petrochemical engineering and construction industry is replete with competent leaders who have the knowledge, skill and talent required to address threats and risks that they can see. You're probably one of them.

The real problem is that standard capital project management paradigms render many risks invisible. Unfortunately for us all, these invisible risks are often the most insidious.

Here's an example. Imagine there's a man named Brent working in your construction management department: he's an old-school, 40-year industry veteran who worked his way up from the field. Now imagine a woman named Beth working in engineering: she's a Stanford grad and Rhodes Scholar who was recently recruited away from your top competitor. They're both seasoned professionals who command premium salaries and are charged with executing high-level, mission-critical work. The quality of their collaboration is central to the project's success.

Your org chart will tell you their titles and job descriptions, it will tell you who they report to and who reports to them. Your Primavera schedule will tell you what Brent and Beth have been assigned to do (resource allocation), when it's due, and it will show you how their work fits within the larger project plan in terms of engineering hours and construction milestones.

None of these standard project management mechanisms will reveal to you that Brent and Beth do not have a shared understanding of their joint objective, or that they are not tracking their work effectively because Brent is a hunt-and-peck typist who can spend hours writing a 20-page construction work package, and because Beth refuses to be saddled with sole responsibility for project documentation on top of her engineering duties.

Standard capital project management structures and paradigms render all of these problems invisible; they won't surface until the collapse of the collaboration between Brent and Beth has irremediable consequences.

There are countless Bets and Brents working in your organization, and there are hundreds of invisible problems like this one. The cumulative impact is debilitating for organizations.

### Surface Invisible Risks with Predictability Thinking™

The solution is to set a Predictability Agenda™. Make predictability the cornerstone principle of your project management philosophy, and undertake a systematic effort to incent and support predictability across key project activities.

Concord's one-of-a-kind Project Predictability Package™ applies our own proven methods and technologies to these problems, and it has been used successfully by some of the world's leading owner companies. We apply the principles of Advanced Work Packaging and other proven formulas related to cost, schedule, productivity, engineering, procurement and construction, and we also leverage industry-specific change management principles. All of these come together in a scripted method to help a project continuously build the capacity to deliver a predictable project.

What does this look like in practice? For instance, the Project Predictability Package™ focuses in part on teaching executives how to engage in *Predictability Thinking™*. In part, this means studying the implications of some of the

day-to-day decisions that all project executives and managers make. At one company, we may investigate workflow issues; at another, we may hone in on contract structure, new technology, or team tensions. Our relentless focus on the unique threats to predictability at each individual organization helps us to identify and mitigate those invisible risks long before they show up on the bottom line.

### Making it Visible: a New Line Item

Your team is ready for this. Talk to your experienced project managers — the people with three or four major projects under their belts. They'll understand intuitively that we need to expand our thinking about risk beyond just safety risk and market risk. We need to start thinking and talking about project management and execution risk.

To do that, you need a separate line item in your project management budget, allocated to predictability assurance efforts. When you do that, predictability suddenly transforms from a "nice to have" to a "key deliverable," from wishful thinking to a team and company culture. That's how you transform an organization. 🎯



R I S K

**EXECUTIVE PERSPECTIVE:**

**THE KEY TO CAPITAL PROJECT PERFORMANCE**

**IN AN ERA OF PROFOUND TECHNOLOGICAL DISRUPTION AND INTERGENERATIONAL CHANGE, PERSPECTIVE MATTERS MORE THAN EVER**

**BY OLFA HAMDI**

Capital projects leadership is not a well-researched topic, even though it's one of the most challenging, important subjects for executives and managers in this industry. In working with some of the top leaders in capital projects, I've been privileged to witness firsthand how their approach differs from those who are less successful. Much of their advantage boils down to one thing: They have perspective.

Extraordinary leadership demands perspective. This sounds trite, but it isn't — it's a sorely needed reminder in an era of profound technological disruption and intergenerational change. The ability to put things into

perspective is not an inborn trait, it is a skill that must be cultivated and honed through both focused training and practical experience. It takes work, and those who master it become effective, sought-after capital project leaders.

Here are four of the most common traits I see in executives who effectively employ perspective on a daily basis.

**They Consider All Relevant Factors**

These leaders have the unique ability to put things into perspective on all levels. When assessing a situation, collecting information and making a decision on

behalf of a project or company, they consider all relevant factors, including:

- geography
- context
- subject matter
- future
- risks
- trade-offs
- re-alignment of priorities

They can look at multiple data points — both quantitative and qualitative — and make a decision that considers both short and long-term impacts. As Stephen Covey famously said, they begin with the end in mind.

## They Take Time to Think

Perspective doesn't appear out of thin air, it must be sought out, and earned. Gaining perspective often requires retreating to a quiet place, alone, and either reading or thinking. During this time, leaders give themselves space and time to marshal facts and opinions, cultivate insight, and weigh likely outcomes.

You cannot do this kind of deep, strategic thinking when you are running between meetings, talking on the phone or replying to emails. There is certainly a place for brainstorming meetings, fact-gathering missions and other focused work with groups of people, but gaining perspective almost always requires solitary time to sit and think. One has to do her homework.

## They Master Modern Project Delivery Systems

If you're a leader in the capital projects industry, you should strive to understand modern project delivery and technology systems. If you and your leadership team are contemplating a cloud transformation, blockchain,

Advanced Work Packaging (AWP), Integrated Project Delivery (IPD) or another way of delivering capital projects, it's important to make an effort to master the system first, so that you'll have a good understanding of the potential impacts across your organization. You'll also garner a better understanding of the maturity of your organization, and it's readiness to adopt a new system — you'll be able to see that some of the inefficiencies and risks that present themselves are linked to your current stage of maturity.

In the case of AWP, the most successful companies we've worked with here at Concord are those led by Chief Operating Officers, Site Managers and other top-level executives who seek out and engage deeply in AWP training and strategic *Predictability Thinking™* — ideally before the pilot, and certainly before the company-wide roll-out. Why do these organizations succeed where others fail? Because they enter into the transition with leaders who have a solid understanding of AWP mechanics and they can better manage the transition to a new way of thinking and doing business. In other words, these executives succeed because they develop perspective.

## They Understand that Perspective is About People, too

So many capital project initiatives fail simply because they're led by the wrong person. The person assigned to the task doesn't have the clear vision, can't connect, or can't move the agenda forward. As a capital project leader, you need to have a working appreciation of each person on your team to avoid situations like this. Study character, strengths and weaknesses, leadership styles, and you'll have the perspective you need to put the right people in the right roles. Most of us aren't born with this ability, but we can develop it over time, through coaching and practice.

In sum, what I've learned from top capital project leaders is that cultivating and exercising perspective requires conscious, sustained effort. We must think broadly and deeply, leverage cutting-edge training and insights, and always remember that it is people — not technology or methodology — that drive real results. 🌐

“ The ability to put things into perspective is not an inborn trait, it is a skill that must be cultivated and honed through both focused training and practical experience. It takes work, and those who master it become effective, sought-after capital project leaders. ”



# YOUR CRYSTAL BALL:

## THE POWER OF PREDICTABILITY IN CAPITAL PROJECTS

BY OLFA HAMDI

WE'RE IN THE BUSINESS OF MAKING CAPITAL PROJECTS MORE PREDICTABLE, SO WE SPEND A LOT OF TIME THINKING ABOUT THE PRINCIPLES AND PRACTICES THAT HAVE THE POWER TO ESTABLISH AND REINFORCE PREDICTABILITY.

We call this *Predictability Thinking™*, and it's a work in progress — after all, capital projects are still woefully unpredictable the world over. We have a lot of work to do.

We can't change this overnight, but what we can do — and what we have committed to doing — is to take you along with us as *Predictability Thinking™* evolves.

In this article, we're sharing three pillars of *Predictability Thinking™* that we think can have a marked impact on the way you build and conduct your next capital project.

Here's the thing: Predictability is old-fashioned. Uncool. It went out of style a long time ago. But just because predictability is no longer *en vogue* does not mean that it

has lost its value. On the contrary, its rarity makes it even more valuable as a competitive advantage. Why? Because what is *en vogue* these days is a move-fast-and-break-things mindset that simply doesn't work for capital projects. Capital projects will never be 100% agile, because by their very nature they are slow-moving beasts that evolve over long periods of time.

## Capital Projects are Different.

A capital project is an entire economy built from scratch: people, salaries, scope; corporate, governmental and non-governmental involvement; armies of engineers; materials and equipment. We manage temporal complexities, cost complexities, environmental, regulatory and political complexities. This capital project economy will never be agile — but it can be predictable.

How? What protocols, methods and states-of-mind can help us manage these interconnected complexities? How can we begin to intelligently manage this economy so we can reliably produce macro-level results ten years down the line? Here are three pillars of *Predictability Thinking™* to get you started — your very own crystal ball.

### 1 | Measure and Manage Threats to Predictable Delivery

These new economies of capital projects are rife with conditions that threaten predictability. For example, we see many engineering, procurement and management operations that are increasingly virtual, with project leaders leveraging

overseas engineering centers, remote teams and ever more virtual collaboration. This is a double-edged sword, and a sharp one: Poorly managed off-site labor can quickly destabilize a project and become a significant threat to predictability.

Leaders can prevent this by actively working to identify and manage threats to predictable project delivery. In this case, project leads can study remote teams, learn how they differ from co-located teams, and put in place practices that drive quality communication and productivity across the miles. That kind of risk management through disciplined collaboration is key to reliably driving predictable results.

### 2 | Build Systems that Support and Enhance Predictable Behaviour

Ultimately, the predictability of a project comes down to each individual executing their work in a predictable way. Leaders need to consider whether and how their systems support and encourage predictable behavior among individual members of the team — regardless of whether those team members are on the payroll, or work for contracted organizations.

This is about developing career path and compensation structures that incentivize predictable behavior — for example, by making on-time, on-budget delivery a key performance indicator from which economic bonuses are calculated and paid to senior project managers. It is about developing contractual incentives that reward companies that deliver predictable results — and penalizing companies that do not. Management systems can also be leveraged to incentivize predictability.

### 3 | Look for and Lock in Repeatable Processes

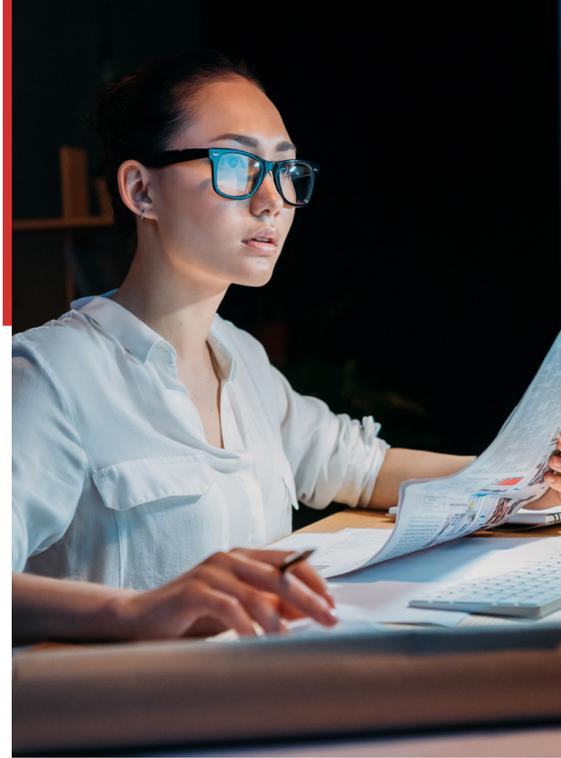
Capital projects leaders talk a lot about standardization, and that's an important discussion to have — but that's not what we're talking about here. For the purposes of predictability, you need to create repeatable processes that can be leveraged across multiple projects and refined over time. The goal here is to identify core processes that can be repeatable in the context of multiple projects with minimal reconfiguration. In addition to boosting predictable capital project delivery, these will allow you to scale your operation more efficiently. 🌐

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**The three pillars of  
*Predictability Thinking™*  
are your very own crystal ball.**

# DEEP WORK: THE PRODUCTIVITY SOLUTION FOR CAPITAL PROJECT ENGINEERS

BY OLFA HAMDI



HOW TIME, COMPETENCE AND FOCUSED CONCENTRATION COME TOGETHER TO SUPPORT THE PREDICTABLE DELIVERY OF CAPITAL PROJECTS

Highly productive engineers are the holy grail in predictable capital project delivery. The disciplined, organized release of drawings, estimates, reports and work packages is a powerful engine on well-run capital projects, and a productivity multiplier of the highest order. If you're struggling with cost overruns and delays, engineering productivity is a big part of the predictability solution.

How do you make engineers more productive? The best answer we've found can be summed up in just two words: Deep Work. This groundbreaking concept, pioneered by professor and author Cal Newport,

posits that high quality work is a function not just of time spent, but also level of focus. For capital projects, I'd add competency as well. Here's the formula:

$$\text{High Quality, On-Time Engineering Work} = (\text{Time Spent} \times \text{Intensity of Focus}) \times (\text{Skill/Competence})$$

You will no doubt find this is true in your own life, as I did. I am an engineer by training, and I can attest to the fact that I produced more high-calibre work product when I focused my energy and attention over significant stretches of time.

This remains true in my work as an entrepreneur in Silicon Valley today.

Unfortunately, many capital project engineers today work in environments that conspire against focused attention. Distractions are ubiquitous in most modern offices. Email alone is an enormous problem, soaking up an estimated 28% of every working day. Add in Slack, Sharepoint, phone calls, meetings, interruptions and social media, and you can quickly see why engineers struggle with productivity.

Regardless of skill or competence, if you can't stay focused on engineering work for more than a few minutes

**High Quality, On-Time Engineering Work = (Time Spent x Intensity of Focus) x (Skill/Competence)**

before getting interrupted, you're not going to get very much done. This is why, despite myriad productivity tools, apps and "hacks," engineers often feel like they're less productive than ever. Distraction kills productivity.

Context switching is another big problem. In his book, *Deep Work*, Newport explains that when you switch your attention from one task to another — even for a second or two — you generate what's known as *attention residue*. Attention residue is a kind of mental hangover that you carry from one task to another, and it impacts your ability to fully apply yourself to the task at hand. For instance, imagine you're working on a critical drawing, and you decided to quickly check your email to make sure you're not missing anything. Switching contexts like this gives you a cognitive handicap for the next few minutes, because when you return to working on the drawing, your brain is still processing what you saw in your inbox.

Organizations that value engineering productivity create conditions in which engineers can accomplish deep work, spending extended periods of time focused on tasks that move the project forward in a meaningful way. They have offices with doors that close, and cultural mores that encourage and support focused attention, like respect for "Do Not Disturb" signs and the option to forward calls to a receptionist. A culture that supports deep work does not demand immediate responses to emails, Slack messages or phone calls.

Here at Concord we work with organizations to help establish KPIs that support deep work. Many engineering offices still operate without clear performance measures, and managers unwittingly reward the

wrong things. For example, managers often preach teamwork and praise those who engage frequently with colleagues, respond quickly to emails and maintain an open-door policy. Unfortunately, all of these practices mitigate against deep work, and so undermine productivity.

As a capital project leader, you must decide what you value most from your engineers, and then establish performance measures that reinforce those values. Ask yourself: What distinguishes a high performer?

On most capital projects, the most valuable engineer is the one who consistently delivers high-quality work product — the drawings, estimates, reports and work packages that move a project forward. If you institute performance measures that reward those who consistently deliver high-quality work, your culture will adjust and

your engineers — who are smart, educated and driven — will find ways to meet those new standards.

You can support that cultural adjustment by modeling deep work for your team: Shut the door, forward calls to the receptionist, and get something important done. Give them permission to log out of email, turn off Slack and focus on critical work; tell them you value high-quality work product over always-on availability. Reinforce these values often.

Achieving predictability is a complex process, and establishing the conditions for deep work is a critical part of Concord's *Predictability Thinking™* matrix. While this article is about engineers, we have also worked with change management professionals and others to establish deep work as a keystone habit at capital project organizations. It can work for you. 🚀

## Olfa Hamdi presenting at the Gas Power Plant Engineering & Construction Conference in Pittsburgh, PA



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# PRE-PLANNING FOR PREDICTABLE GAS POWER PLANT DEVELOPMENT

BY OLFA HAMDI

## DISCOVER HOW TO DISTINGUISH YOUR ORGANIZATION FROM THE COMPETITION BY CULTIVATING THE ABILITY TO DELIVER ON-TIME AND ON-BUDGET

The vast majority of major capital projects are late and cost millions more than anticipated. By some estimates, fewer than one in 10 organizations can get the job done on-time and on-budget. It follows that one of the most powerful ways to distinguish yourself from the competition is to focus on predictability, so you become one of the elite few who can reliably deliver on-time and on-budget.

Achieving predictable project delivery like this requires a great deal of focused effort on the part of leadership and the organization as a whole. This work must begin in the pre-planning stage, months and often years before the shovels hit the ground. In this article, we'll explain why.

### **Influencing Predictability**

Your ability to influence the predictable delivery of your capital project diminishes over time. In the very early stages of pre-planning, your power to influence cost and schedule is at its peak, and it declines as the project progresses. Once procurement begins, your ability to control costs drops precipitously, and once construction



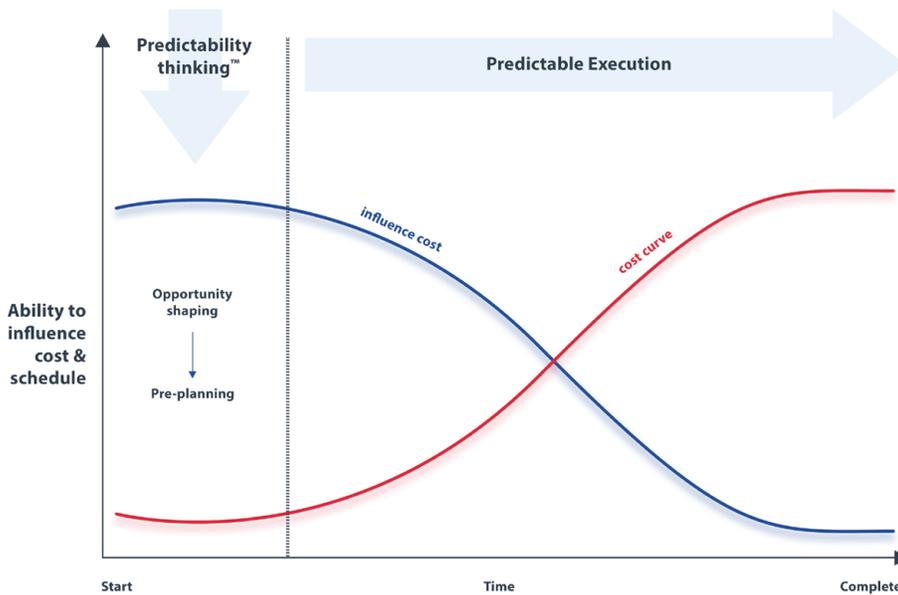
begins your ability to influence timelines dwindles by the day.

At Concord, we have built a proven model for *Predictability Thinking™*, helping Owner teams assure predictable project delivery from the early stages of the project.

*Predictability Thinking™* is most powerful when applied in the very early stages of the project's business opportunity shaping and pre-planning. In the very beginning, you have the most leverage over costs and timelines — it is when you are establishing systems, adopting

protocols and signing contracts. If you want to deliver a predictable project, start early.

Here are five tips on the dimensions of pre-planning to consider as you set up your next gas power plant project.



## DIMENSION #1

### Your Business Case

Above all, you must understand your opportunity very well. What is your plant's competitive advantage, what market will you be tapping into, what financing strategies and structures will you employ? We could, of course, list hundreds of items under this heading, but suffice it to say that Owners and Developers must have a good understanding of this in their high-level dashboard, and pay the closest attention to the risks and constraints they are facing.

“If you want a predictable project, start early.”

## DIMENSION #2

### Your Physical Site

This dimension casts a wide net, and captures everything related to the front-end definition of your location. Consider site layout and surveys, civil and geotechnical information, as well as governing regulatory requirements. Have you completed an environmental and social assessment? Are there conditions attached to utility sources? What is the local labor availability?

You already know what makes your location a good location, perhaps you got a great deal on the land or a government grant. Now ask: What are the roadblocks to succeeding there?

## DIMENSION #3

### Your People

A project opportunity is only as good as the people leading and executing that opportunity. Who is on your team? As an executive, you need to develop a deep understanding of your team's history and core competencies. Do they have what it takes? Do you need to hire people with new or different skill sets? Does your staffing make sense?

When it comes to people, one of the most common mistakes we see is a failure to hire a project manager

early in the project life-cycle. Owners and Developers confuse the role of a lead engineer with the role of a project manager; the process engineer drives the early studies and a project manager is hired much later in the process. We recommend hiring a Project Engineering Manager and a Project Execution Manager at the same time, early on in the process. This liberates your engineer from project planning, and helps establish the right staff for *Predictability Thinking™*, from the very beginning.

## DIMENSION #4

### Your Project Delivery System & Strategy

When designing for predictability, Owners and Developers need to keep both the contractual and execution elements in mind from the outset.

### Contracts

First, people and companies won't perform predictably when incentives are not aligned with *Predictability Thinking™*. Consequently, it's critical for gas power plant project leaders to incentivize predictability in the contractual setup. When you're splitting your scope and structuring your agreements, consider:

"Have I given this contractor a reason to perform in a predictable way, both in terms of cost and schedule?"

“ A project opportunity is only as good as the people leading and executing that opportunity. ”

## Execution

Your management system and related tools should keep everybody aligned. Many companies looking to achieve predictability will formally adopt the Advanced Work Packaging system, but it's absolutely possible to achieve predictability with other systems, too, as long as you're applying the principles of predictability.

When it comes to execution, the major risk is that companies will put off adopting a formal strategy because money is tight and teams are lean in the early stages of project development. This is why we recommend that

predictability tools and project management systems be budgeted as a separate line item in preparing to execute and build a gas power plant — or any capital project. You need to focus on these elements as early as possible in the project life-cycle.

The overarching goal is to establish a clear understanding of the risks, and to develop a plan for navigating those risks. You'll never be able to eliminate every risk, but the best project leaders are those who are conscious of the critical ones and who make informed decisions about how to address them (or not). Knowing your project has

a weakness in a given area gives you power and control, and you're far less likely to be blindsided with unforeseen problems.

In our experience, the failure to establish a clear project delivery system aligned with *Predictability Thinking™* is the Achilles heel of most capital projects. If you start hiring and developing your project plan without these two elements in place, you might start off quickly, but the farther you get, the harder it will become to walk, and the slower you'll get. 🚦

Knowing your project has a weakness in a given area gives you power and control, and you're far less likely to be blindsided with unforeseen problems.

# THE PREDICTABLE GAS POWER PLANT

## THREE POWERFUL NEW STRATEGIES TO SUPPORT THE PREDICTABLE DELIVERY OF GAS POWER PLANTS

BY CONCORD RESEARCH TEAM

We know how to construct natural gas power plants. They are largely proven, fast to build, and they capitalize on a shale gas boom that has transformed the global energy landscape. Taken together, these factors present Owners and Developers with an unrivaled opportunity to leverage predictability as a competitive advantage in a crowded field.

What does it mean to ensure the predictable delivery of natural gas power plants? The concept of predictable delivery is simple enough: we're referring to the on-time, on-budget delivery of the project, followed by an issue-free startup. Because the technology involved in gas power plant construction is so

well-developed, we have an excellent opportunity to reduce costs through the application of *Predictability Thinking*<sup>™</sup>.

In this article, we'll share three strategies that can help you achieve predictability on your next gas power plant construction project. These three predictability drivers are not exhaustive — each business case is different, and the work of achieving predictability is complex. That said, these three strategies will get you thinking about predictability in your organization, which is half the battle.

**Your success in achieving full operability at startup is as much a result of your business efforts as it is a result of your technical efforts.**

**PREDICTABILITY DRIVER #1**

**Begin with the End in Mind**

If you're building a natural gas powered plant, your goal is a simple one: To achieve an issue-free startup, on-time and on-budget. This holds whether you're an Owner or a Developer, and it should guide all your actions, starting in the opportunity-shaping stage and continuing all the way to startup. You must keep your eye on the prize.

Unfortunately, the prevailing wisdom in our industry is that these plants are quick and cheap to build, and so the entire process inadvertently becomes cost-driven. Managers develop a scarcity mentality and corners get cut. The way your team works is a function of your key business drivers, so if the unspoken goal is to deliver a project cheaply, you get a cheap project — and you are more likely to encounter problems at startup and beyond. At this point, the issue is often blamed on technical failures, but the real cause is a business failure. This is a trap, and many gas power plant developers fall into it due to a lack of project delivery maturity.

The reality is that your success in achieving full operability at startup is as much a result of your business efforts as it is a result of your technical efforts — and perhaps even more so. If your stated aim is to predictably deliver an operational plant, on-time and on-budget, that goal will inform how you staff your team and how you design the flow of operations information. Most importantly, it will also drive critical business decisions, starting with discussions around scope, continuing through the development of contracting strategies and finally

in the selection and application of project delivery systems and management methods.

In short, if you apply *Predictability Thinking™* to your hiring, procurement and execution decisions, you'll not only improve your construction process, but also help to ensure full operability at startup and beyond.

**PREDICTABILITY DRIVER #2**

**Constraint-Driven Scope Creation**

Here at Concord, we believe that scoping should be an exercise in constraints analysis. One of our most effective innovations has been a *Project Predictability Package™* which is adopted by the Owner or Developer and applies a systematic constraint analysis to all facets of the organization.

We believe Owners should start with a foundational review of financial, labor, safety and procurement constraints. Then, we move into a highly refined analysis of constraints unique to your organization and your project, which further helps to define your execution and construction strategy, and shape your work areas. Together, these constraints inform the way your gas power plant is scoped and packaged for execution. It can be transformational.

Capital project organizations have a tendency to skip the constraint analysis, and we view this as a red flag. When we see this happening, we coach project sponsors and executives in understanding the effect of constraints on early scoping and opportunity shaping, and then we walk them through the execution. It works.



### COMPLEXITY #3

#### Executive-Supported AWP Implementation

One of the most damaging myths in modern capital project management is that Advanced Work Packaging is just a fancy new name for workforce planning or field planning.

We routinely encounter organizations who believe that implementing Advanced Work Packaging is a simple matter of creating work packages to organize construction. Service providers also focus on that, but in most cases, engineering issues have already occurred and predictability is already long gone when you start getting ready to organize and conduct field planning. Field planning is an

important step in the adoption of AWP, to be sure, but it is only one step. Effective AWP implementation demands the creation of sophisticated business structures and work processes that align business drivers and organize the flow of information from scoping and engineering, through procurement and on to construction and startup.

Poor or incomplete AWP implementation carries serious risks, particularly if you're building a one-off project, though organizations who have multiple gas powered plants under construction will feel the impacts, too.

Concord is one of just a few service companies in the process industry that has applied Advanced Work

Packaging on an industrial construction project from early definition. One of the most important things we have learned is that it is absolutely critical for the Owner and Developer to understand the role that sponsors and executives have in the implementation of Advanced Work Packaging. If there is a gap there, and it is not addressed, you've got a weak link because AWP is not just about project management and construction, it is also about the business. In some applications, it is primarily about the business.

Everything that impacts cost and schedule predictability should concern the project's sponsor. 🚀





# CAPITAL PROJECT COSTS DON'T LIE



## OLFA HAMDİ EXPLAINS HOW PREDICTABILITY-BASED ASSURANCE CAN HELP CAPITAL PROJECT LEADERS PRIORITIZE WORK AND REIN IN COSTS

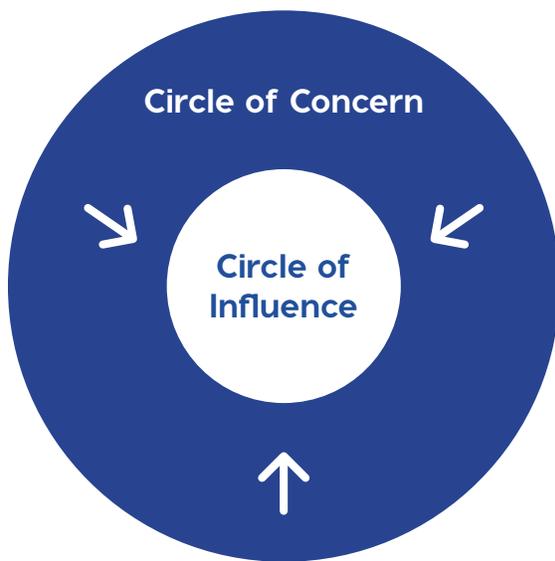
Predictable project delivery boils down to behaviour. Leaders must set clear expectations, so the entire team understands that predictability is paramount. Then, every person working on the project, from the in-house team to the sub-contractor, must work to adopt a predictability

mindset. But how can we know if we're achieving this goal?

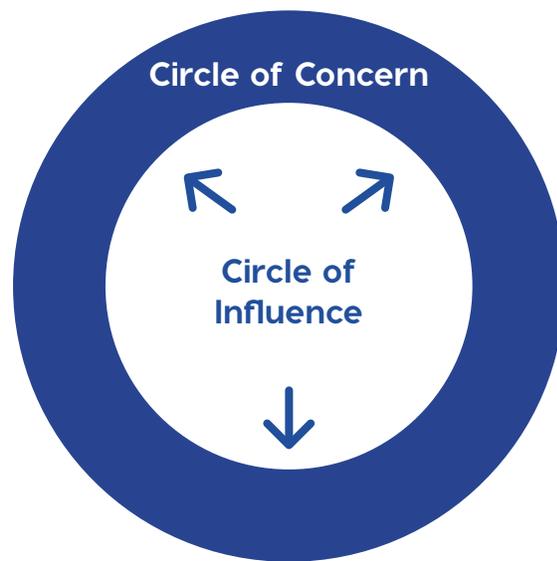
Capital project costs can be a powerful diagnostic tool. From the very outset, they can help you understand whether you're on track to deliver your project on-time and

on-budget. They can also point the way to more predictable project delivery. The key to leveraging this tool — and gaining the benefits of predictability-based assurance — is to expand the way you think about project costs. Here's how.

## Focus on your Circle of Influence



Reactive focus reduces circle of influence.



Proactive focus enlarges circle of influence.

In his bestselling book, *The 7 Habits of Highly Effective People*, renowned management thinker Stephen Covey introduced the concept of the circle of influence. To refresh your memory, Covey posits that your circle of concern is much larger than your circle of influence. Those who focus their attention and resources on their circle of influence see their influence expand, while those focus on the circle of concern see their influence diminish.

In the context of a capital project, your many project costs fall into the circle of influence. These are the project costs you have the ability to control or influence. Project leaders who focus on these types of project costs will see their circle of influence grow. Practically speaking, that means costs could come under tighter control and become more transparent, supporting leaders in leveraging cost data as a transformative diagnostic tool.

### The 3 Cost Categories of Capital Projects

For our purposes here, there are three cost categories: external, combined and project costs. Categorizing costs is the first step to gaining predictability insights from them.

#### External Costs

These are costs over which you have little or no control. The best example is a commodity cost — if there is a sharp global increase in critical commodity costs, your project costs will go up. These types of context-related costs are in your circle of concern. Monitor them, of course, but do not make them your focus, because you cannot control them.

#### Combined Costs

Combined costs are those over which you have peripheral control. For example, an increased demand for custom engineered equipment will invariably increase lead times and, in most cases, increase project-related costs. These factors are largely out of your control, and so they are firmly in your circle of concern.

However, your response to these market conditions remains entirely within your team's circle of influence. In this case, the obvious solution is to order the engineered equipment as early as possible. This seems simple, but in practice it can be an enormous organizational challenge, best addressed through a combination of *Predictability Thinking™*, *Advanced Work Packaging* and a construction-driven Project Execution Plan.

## Project Costs

Project costs are those over which you have relatively full control. Costs associated with scope and design changes are an excellent example of these types of project costs. In many cases, the first step to bringing these types of costs under control is to apply *Predictability Thinking™*, develop a clear Path of Construction (PoC), and then use that PoC as the basis for cost estimates.

Practically speaking, this means that instead of evaluating bulk piping quantities for the entire project, the estimator works with discrete project areas, providing a much more granular — and therefore more accurate — estimate of the amount of pipe required for the project. The devil is in the details, and by using right-sized scope elements, you'll be able to improve your estimating accuracy.

This is entirely within your circle of influence, and it will help that circle grow.

## How Costs Point the Way to Predictability

To solidify our understanding of how costs point the way to predictability, let's take another example, this time from engineering estimates.

Ultimately, we want engineering estimates to reflect a reasonable, predictable engineering execution. To do this, you want your estimate to be derived from how you're going to allocate engineering resources, and you want that allocation to actually reflect how it will support the construction sequence laid out in the PoC.

This means that project leaders who want a predictable estimate should not only be interested in a total estimate of engineering hours, but rather an estimate showing how the project will allocate engineering resources over the next 18 months.

This type of estimate can help answer a critical predictability question: Will this allocation of engineering resources support or delay construction? Also: To what degree is the project engineering construction-driven? As part of Concord's Predictability Package™, we supplement this cost-based assessment with a comprehensive analysis that looks at your engineering packages release plan, staffing and internal planning. We offer a score

that can also be factored into the estimate, to further refine the analysis.

Why go to all this trouble? Because predictability ultimately comes down to behaviour; it is a state of mind for you, your team, and your contractors. If leaders don't set up predictable expectations, they won't see predictable behaviour. By looking at costs through the lens of predictability, and focusing our efforts on the circle of influence to improve cost and project predictability, capital project leaders can differentiate themselves in a competitive market and better ensure that their project can be delivered on-time and on-budget. 🌐

## Olfa Hamdi delivering the closing remarks at the Groundbreaking Women in Construction in San Francisco, CA



Our vision is to empower and support our clients in achieving predictable outcomes on 100 percent of their projects. Concord has developed an innovative framework and powerful new tools to support AWP-based predictable project delivery. Our pioneering Predictability Package™, has been successfully deployed at some of the largest petrochemical organizations in the world.

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