



Mitigate Project Risk with an Effective Cloud-Forward Strategy

CH2M Case Study



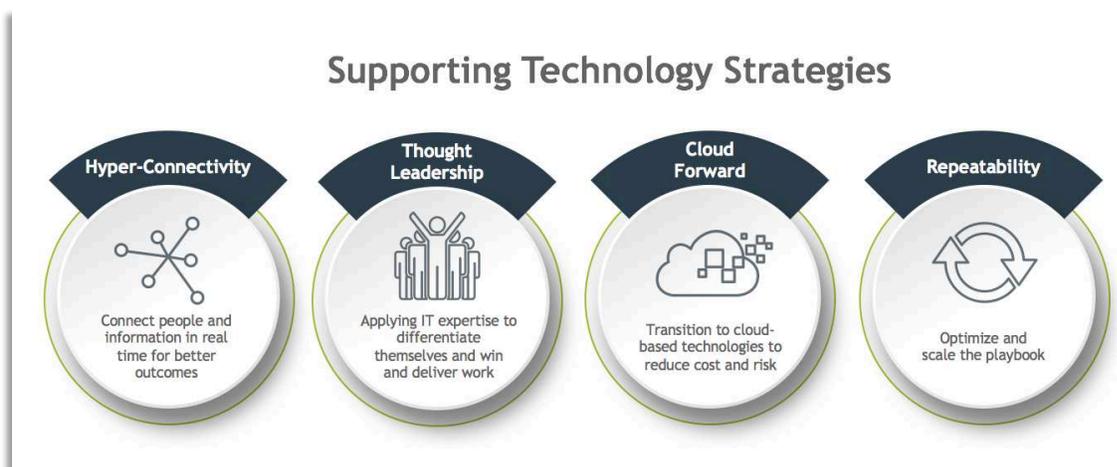
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Michelle Stuart is the Enterprise Director of Project Controls Systems at CH2M with over fifteen years of experience in commercial and government sectors including oil and gas, power, transportation, water, government facilities and environmental markets.

She explains there's a lot going on in CH2M around Mitigating Project Risk using an Effective Cloud-Forward Strategy. Stuart states, "We've been working very closely with LoadSpring to transition our applications to the cloud." She then adds, "Our goal is to work side-by-side with our clients to lay the foundation for human progress. We get into iconic projects like London Olympics, Q22 and have 20,000+ employees around the world. We are very diverse."

Stuart explains more about CH2M, "From a technology perspective, we're very innovative and that shows in the strategic initiatives that we invest in. We always make sure we're leveraging the best toolset to mitigate risks and create value for our customers."



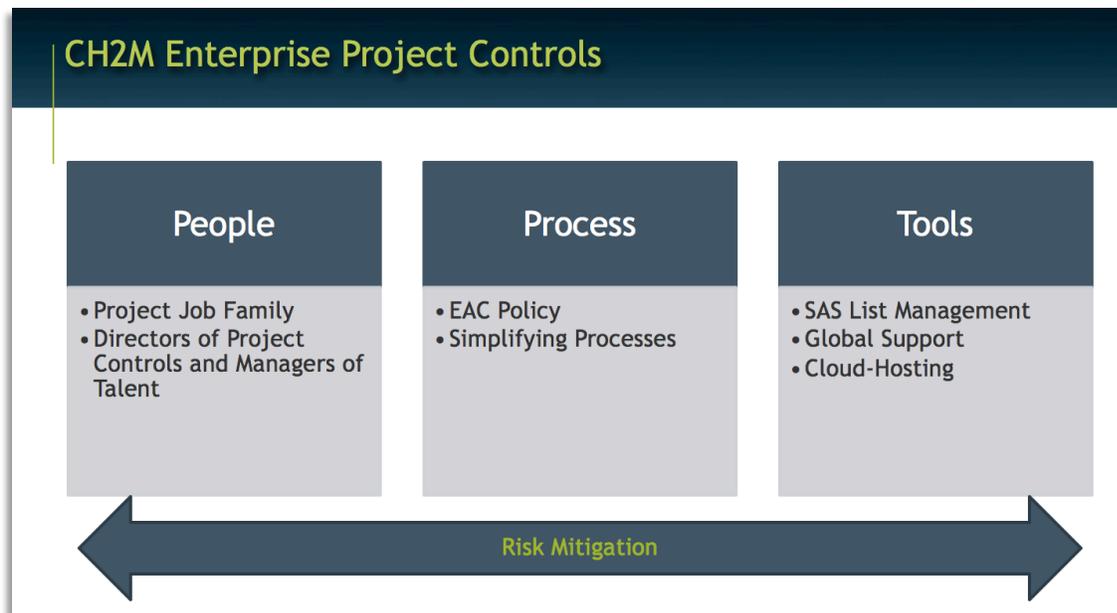
Hyper-connectivity: is a big part of that. Time-to-Value is a value proposition that CH2M customers demand. CH2M needs to be able to go from pursuit to delivery, then transition from planning to delivery, and make sure they can quickly deploy the supporting tools and technologies.

Thought leadership: Hyper-connectivity is achieved heavily through thought leadership and having standardization across the company in order to work smarter, not harder. To do so, it's critical to always scan the environment for the best-in-class tools to support the delivery of projects.

Cloud-forward: Most companies struggle with infrastructure challenges related to delivering these tools. The days of people being afraid of the cloud have ended. There

is now a huge push towards cloud-forward strategies, especially with all the infrastructure and deployment challenges the cloud alleviates.

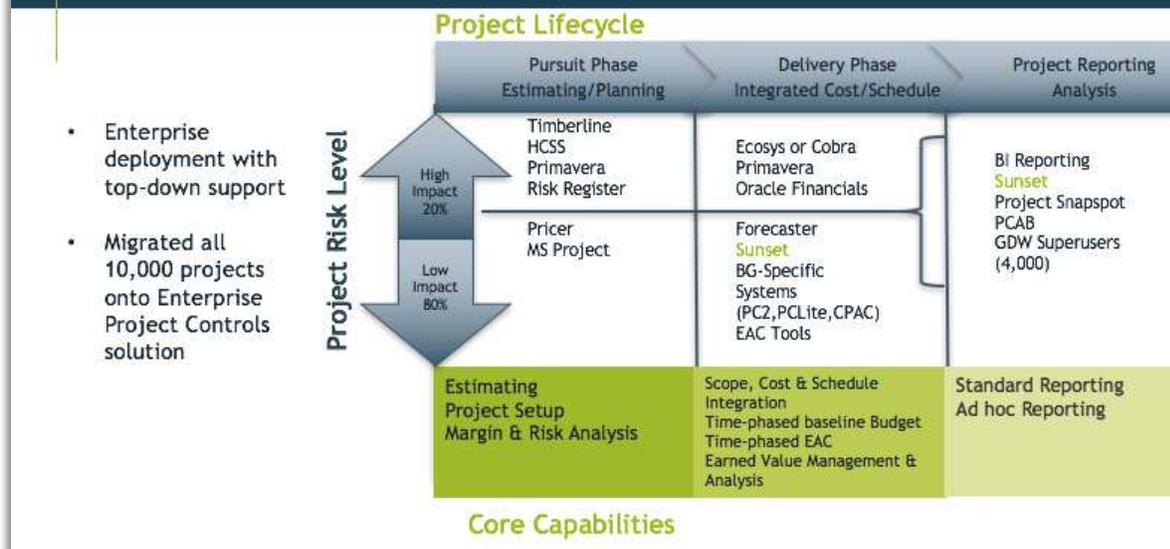
Repeatability: This all leads to repeatability. Companies want predictability in their results, in their margins. At the end of the day this is all underpinned by risk reduction, and creating customer value.



CH2M Enterprise Project Controls has concluded that the best way to change behavior and drive good practice is through tools. CH2M has set up a standard application software list that LoadSpring manages year-over-year. LoadSpring also tracks license utilization and scans the environment for new technologies while ensuring CH2M receives global support.

With an enterprise deployment, it's important to receive 24/7 support across the globe and the best way to do it is through cloud hosting. CH2M likes that LoadSpring provides this technical aspect along with functional support for tools like Primavera and Acumen Fuse. This underpins mitigating risk and increasing bottom line growth for CH2M's clients.

Achieving Enterprise Project Controls



The image above is CH2M's one-page vision chart that addresses their state of affairs. It was implemented enterprise-wide with the main goal being to provide BI reporting.

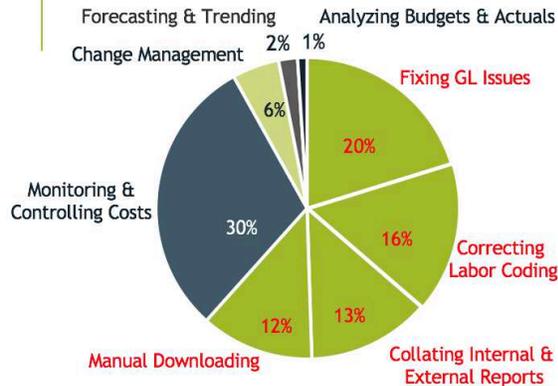
CH2M's project mix typically breaks into an 80/20, where 20% of projects are more complex, design-build EPC projects. These projects typically use more sophisticated estimating tools like Timberline and HCSS. They usually have a resource-loaded schedule and a quantitative risk register, and those clients are perfect candidates for EcoSys, the enterprise project controls tool used at CH2M.

The other 80% are lower impact projects that typically have MS Project schedules and use an internally developed estimating tool called Pricer. They are the candidates for Forecaster, which is a light version, Excel-based tool. Many companies are creating these single-point solutions that are not supported by IT and that can't be replicated, so it is important to deploy an enterprise caliber solution.

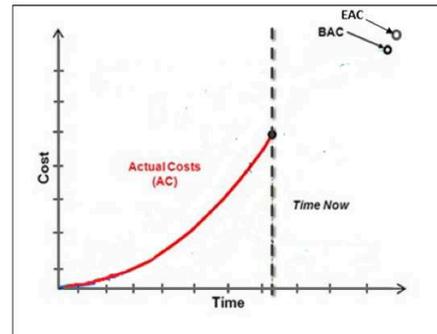
CH2M is taking advantage of The Big Data revolution making all the data from these tools funnel into their BI reporting tool. They have migrated over 10,000 projects into this suite of tools to continue the advancement of their BI reporting.

Identifying Risk

Why the ERP System is not the solution for Enterprise Project Controls Business Data



Costs Analysts spend 60% of time on "Wasteful" activities



ERP System Project-level data

These 2 graphs break down the previous one-page vision chart.

The graphic on the right: CH2M has a global data warehouse where they download most of their ERP system data and it's stored in a time-phased way for Actual Costs (AC). All the transactions are time stamped, but then require a Budget at Completion (BAC) or an Estimate at Completion (EAC) to add as data points. This is important for revenue recognition, since in the Accounting and Finance space there is no point in time associated with BAC and EAC. Project completion date is uncertain, making it unclear how to draw the line from the Actual Cost (AC) up to the EAC. How will you get there? What's your forecast or time phase forecast? The ERP system doesn't provide the daily data you need, which is why it's critical to have an enterprise project controls solution.

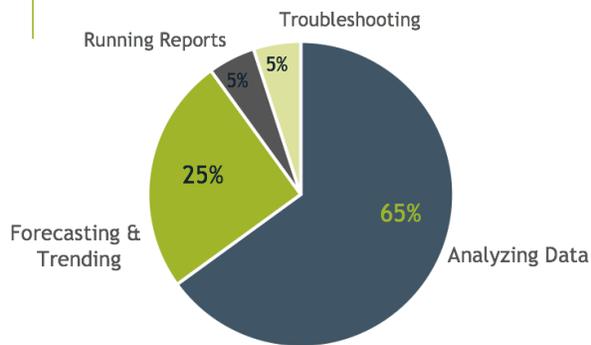
The graphic on the left: Without an enterprise project controls solution, it's difficult to collate data and turn it into information, then into a report, later handing it off to the Project Manager only to identify issues. The analysis doesn't happen early enough or often enough and it comes down to data and how to leverage data in the best way possible.

Business Intelligence Benefits

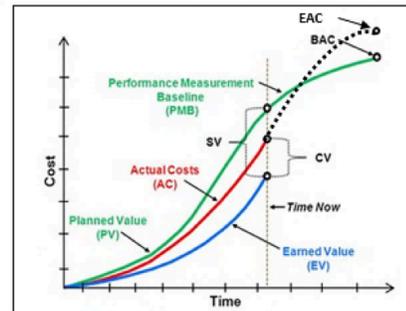
- 1. Standardization.** To create a data solution in the project management and project delivery space, companies must standardize on KPIs. Standardization is key and allows companies to create reports with a single source of truth. As you're building your BI roadmap it's important to decide which tools are going to be the company standard to become the source of truth for a BI output.
- 2. Actionable intelligence.** The goal is to obtain actionable intelligence at the portfolio and project-level. Translate Big Data into information presented in a report to enable fast and accurate decision-making. Actionable intelligence allows companies to determine corrective actions ahead of time through early warning indicators and mitigate any problem projects along the way.
- 3. Automation.** Get out of the paperwork business and into the automation business where simple workflows are automated and date/time stamped to enhance efficiency, creating data that can be migrated to a BI platform. CH2M leverages that through an EAC policy which requires that a Project Controls Manager, a Project Manager and a Project Accountant all sign off at the EAC of a project. From a Sarbanes-Oxley standpoint, they previously did that on paper and then loaded the information into centralized document control systems. With automation, CH2M raised the importance of engaging project roles and now have date/time stamps for every single workflow approved along the way permanently recorded within the tool.
- 4. Integration.** Most of the benefits from these platforms come after being integrated with source systems for enterprise capabilities. When they are sending information from one system to the other duplicate entries are removed and double-keying is minimized creating efficiency and maximizing ROI.
- 5. Centralized.** Information protection and security is critical and a BI platform allows you to centralize and control the information, who gets it, and how they get it. Through this centralized intelligence, teams can see the information that is important to the company.

Risk Mitigated

Achieving Enterprise Project Controls Systems and a Business Intelligence Platform



Moving to more High-value activities



Future State

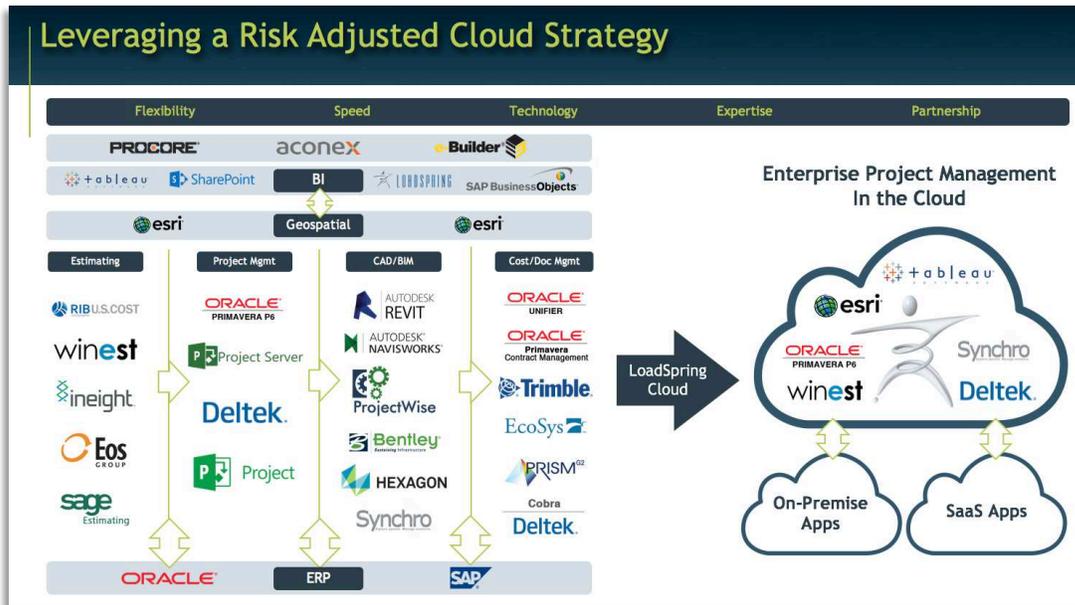
The graphs above show how CH2M achieves their project controls vision.

Right: That was CH2M's future state. They wanted to look at their data and see a performance measurement baseline - what is the measuring stick? They also wanted to see earned value metrics in order to learn early on across portfolios Cost Performance Index (CPI), Schedule Performance Index (SPI), Cost Variance (CV), Schedule Variance (SV), how to get to Estimate to Complete (ETC), and is that attainable or is it too steep, and can the company support it. CH2M has this simple S-Curve for all 10,000+ projects now.

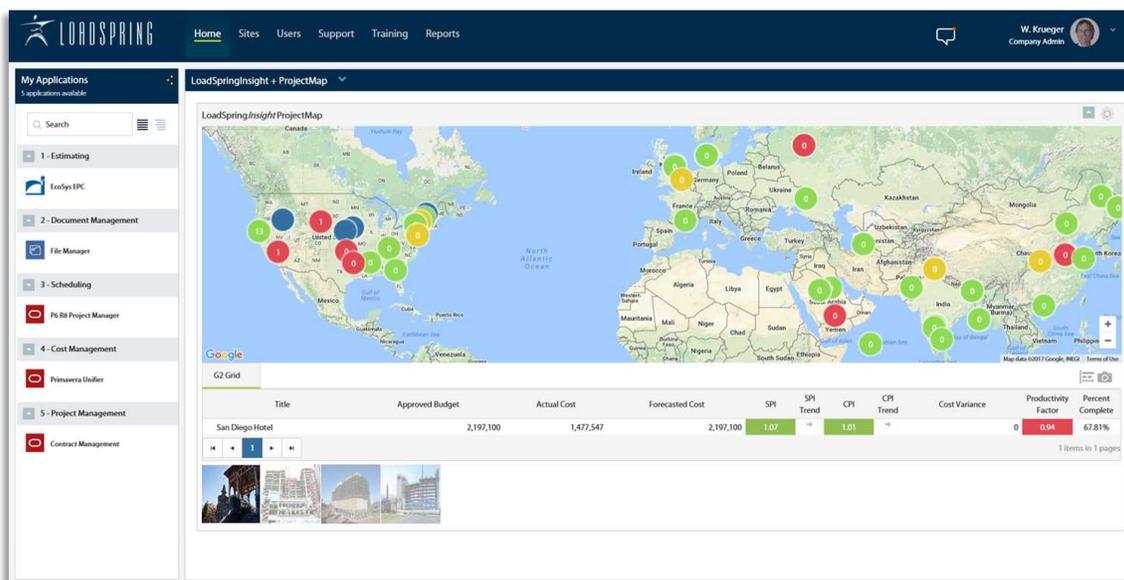
The S-Curve doesn't live in their ERP system, which does a great job tracking cost over time like the end point, Budget at Completion (BAC). The planned cost curve, the baseline seen over time, the plan to get to that BAC, is all housed in CH2M's enterprise project controls system. Those are the minimum data requirements set early on measured equally across. This time phased data comes out into their business intelligence platform any time a project submits their Estimate at Completion (EAC). It's important to avoid in-progress data provided by your BI tools since it lives in the source system, the enterprise project control system. EAC and all final numbers are provided at the end of the month along with other data baselined, which is all then posted into the BI tool.

Left: By delivering a BI solution companies can get more into the business of analyzing and mitigating data, which is all about mitigating risk and leveraging the BI platform

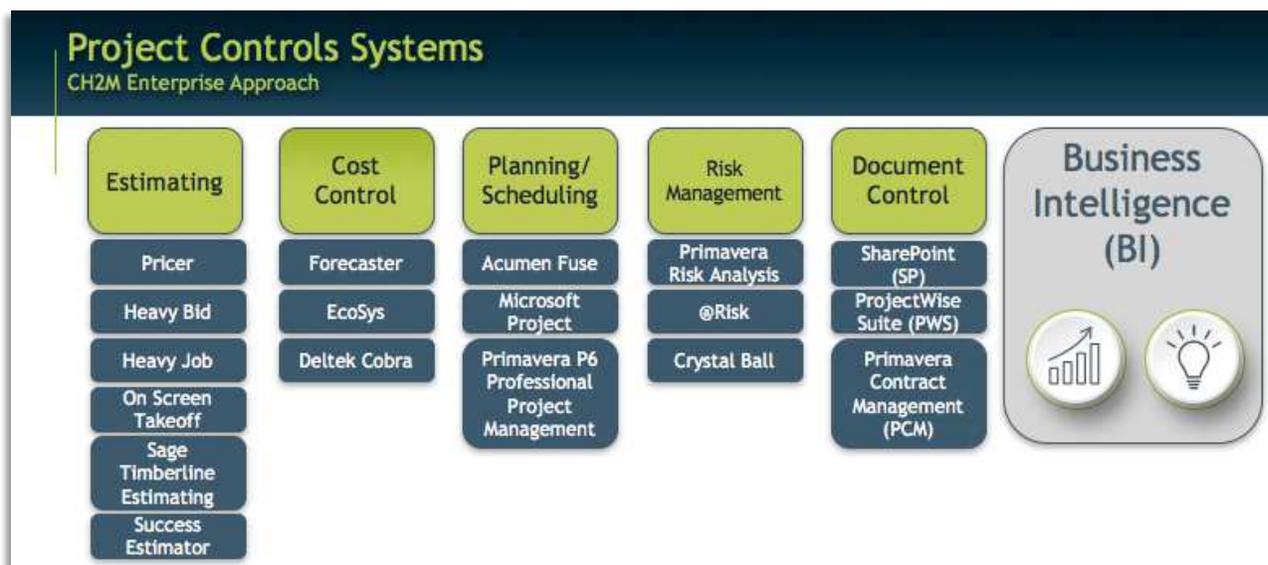
that was delivered. CH2M is currently leveraging Oracle Business Intelligence Enterprise Edition (OBIEE) as their BI tool with few instances of Microsoft Power BI and Tableau.



It's critical to CH2M's clients that they provide flexibility and speed with the technology they need to deliver their solutions. LoadSpring hosts and has deep knowledge of over 200 Project Management and Engineering tools and their integrations, which is why CH2M has chosen them as their Cloud solutions provider.



- One of the advantages of hosting on the LoadSpring Cloud Platform is the ability to track licenses in a more streamlined and standardized way. CH2M has a suite of enterprise tools and prior to LoadSpring they managed them using spreadsheets. Fortunately, LoadSpring provides a geospatial view of who is using the licenses, how, and when, which streamlines CH2M's ability to deliver technology to their customers much more quickly.
- Through the LoadSpring Cloud Platform customers get centralized application access and management, enabling users to get better insight into who is using the tool and how often. This helps identify how to reallocate, cancel or purchase new licenses for any specific tools.
- This was a huge reason why CH2M transitioned to the LoadSpring Cloud Platform, not to mention the global 24/7/365 support for their applications, integrations, and infrastructure.
- This allows companies to mitigate risk as it enables them to maximize uptime and cost savings. Although CH2M has a technical support team, they struggled with providing 24/7 support for all their global teams.
- All the systems deploy multiple versions and not all of them yield the benefits that CH2M's teams required - that's where LoadSpring helps by advising which versions best fit CH2M's needs based on prior testing. Running upgrades takes a considerable amount of time and resources to manage, especially when talking about a suite of tools. Fortunately, LoadSpring provides upgrade recommendations and runs the upgrades and integrations themselves, while also providing technical support.



This is CH2M's standard application software list available to the enterprise on SharePoint for team members to reference. Often times their clients will ask for specific sets of tools, but CH2M recommends the ones listed above based on their different functional areas.

CH2M categorizes Business Intelligence separately because, not only does it provide the project delivery and project controls lifecycle, but also the operations dashboards that include Profit & Loss (P&L) pivots and data of that nature. This makes BI sit a bit higher within CH2M's Project Controls System suite.

Year-over-year CH2M goes through an annual business planning process and review licensing structures and initiatives to identify where to spend time to further enhance the company. During day-to-day activities, the use of tools like Acumen Fuse rise to the forefront. As they start working on schedule analysis in the pursuit phase, they always run Acumen Fuse through schedule and risk analysis.

CH2M is working on consolidating 42 databases down to 12, split between customized program instances, different sectors carrying different calendars, and enterprise P6 databases. With this consolidation, they will be able to create more standardized structures and Enterprise Project Structures (EPS) nodes, including coding. All this in order to clean house as part of an unloading project to migrate first into the environment of SQL and then to Oracle databases. This will allow CH2M to deliver Primavera P6 much more quickly with LoadSpring.

Schedule & Risk Analytics

Sound Scheduling and Risk reduction



Improved schedule quality and increase project confidence

BENEFITS

- Project Success:** Consistent project success starts with a solid schedule foundation.
- Schedule Diagnostics:** Diagnose and resolve schedule shortcomings for the soundest schedule possible.
- Project Reliability:** Track and manage project risk for the most reliable look at project finish dates.

Project / Snapshot	Timeline						Ribbon Analyzer									
	Q1 2015	Q2 2015	Q3 2015	Q4 2015	Q1 2016	Q2 2016	Missing Logic	Logic Density™	Critical	Hard Constraints	Negative Float	Insufficient Detail™	Number of Lags	Number of Leads	Merge Hotspot	Score
Movie In Progress							21 (23%)	2.24	23 (29%)	2 (2%)	11 (14%)	16 (18%)	5 (6%)	0 (0%)	5 (6%)	54%
Missing Logic	15 (65%)	0 (0%)	1 (7%)	0 (0%)	0 (0%)	5 (36%)	Missing Logic in Project Movie in Progress (21)									
Logic Density™	1.57	2.61	2.86	2.12	2.00	2.21	#	Excluded	Annotate	Id	Description	Project	Original Duration	Remaining Duration		
Critical	5 (38%)	8 (24%)	6 (43%)	3 (18%)	3 (20%)	11 (79%)	1			1.1...	Prepare contracts	Movie In Progress	14			
							2			1.1...	Develop soundtrack	Movie In Progress	300	27		
							3			1.1...	Distribution	Movie In Progress	0			
							4			1.1...	Select Script	Movie In Progress	14			

Deltek Acumen Fuse is a tool CH2M uses extensively in their pursuit phase with large database projects. It allows users to create quality level-2, level-3 schedules to run through the US Defense Contract Management Agency (DCMA) 14-point assessment. Although the assessment is not required, it's important in order to identify missing logic, logic density, number of constraints, negative float, and number of leads, among other variables. This tool is housed in a package that users can run across a schedule and identify risky areas with the push of a button. At the end, it provides a score showing the likelihood percentage that the project will be finished as scheduled, which helps mitigate risk early.

This tool also helps improve schedule quality and increase confidence. It's important to start at the foundation making sure the schedule meets scoping deliverables and enables CH2M to meet their milestones. It allows users to quickly identify any necessary crashing and acceleration via a heat map.

Acumen Fuse tracks and manages project risks and leads to more project reliability. This is critical in Engineering, Procurement, and Construction (EPC) projects with razor thin margins and aggressive schedules where getting this level of analytics is critical from a schedule and risk standpoint.

While strategic technology, people, processes, tools, and initiatives are required, risk mitigation of the aforementioned is a necessity during all phases in CH2M's business and customer projects. We emphasized on CH2M's strategic project controls initiative with the LoadSpring Cloud Platform and the importance for them to deliver a BI solution that mitigates risk, creates standardization, and allows users to share resources across sectors where they can pick up where others left off.

The LoadSpring Cloud Platform helps companies mitigate infrastructure risk, increase Time-to-Value, and have faster deployment times, while tools like Acumen Fuse are best-in-class analytics and risk analysis tools. Those are the tools that CH2M invests in, which helps them differentiate from their competitors - being on the forefront and working smarter, not harder.