

# The Change Management Revolution: Oracle Primavera Cloud's Impact on Construction Efficiency

Leverage Oracle Primavera Cloud with a powerful set of change management tools to achieve ultimate project results.



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# 01. PROLOGUE

Just as in life, change is an unavoidable aspect of managing construction projects. Throughout my years training, coaching and collaborating with delivery team Presidents, Operations Managers, Project Executives, Project Managers, and Superintendents, it wasn't often that I heard complaints about the possibility of project changes. It was understood that "change is a comin" and they had age-old processes to anticipate and address them.

These construction professionals shared a vital trait: they embraced change management rather than avoiding it, acknowledging it as a fundamental part of the industry. Just like me, they discovered that navigating this aspect of project dynamics is what made their careers in construction profoundly rewarding. By managing change and steering it towards mutually beneficial results, we've experienced a significant sense of fulfillment. Furthermore, these instances of change have not only sharpened our professional skills but have also enriched us personally, enhancing our roles within our families and communities.





Given this acknowledgement and embrace of the inevitability of change, why do over 30% of U.S. construction projects miss contractual completion dates, have cost overruns and end up in legal disputes?

This question weighs heavily on the minds of delivery team executives. Across the United States, executives share a common recognition: there is significant room for improvement in identifying, measuring, and resolving contract changes and schedule impacts. This acknowledgement was reflected in a recent discussion with a President of a northeast CMR firm where he stated:

"Scheduling is the single most important task that Project Managers handle on their projects."

This is a common viewpoint among construction executives. For decades, since the advent of Primavera Project Planner (P3)<sup>1</sup> on running on personal computers in 1983, the project schedule has been placed in the hands of capable project managers and schedulers as their primary project and change management tool. Over these past 40 years, the technology available to delivery teams has increased exponentially to include Relational Database Management System (RDBMS), BIM, SaaS / cloud applications, Data Intelligence, Artificial Intelligence, robotics, and drones.

So why do delays persist with such a collection of technologies available to delivery teams? With access to digital and data assets readily available, why is the perfect project still so far out of reach?

1 - Primavera Systems, Inc. 1983

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Professional associations worldwide are pivotal in the progression and dissemination of knowledge outside of academia, particularly in project and construction management. In the U.S., leading bodies include AACE International (AACEI), the Project Management Institute (PMI), the Construction Management Association of America (CMAA), and the Associated General Contractors of America (AGC).

These organizations offer vital services such as education, certification, advocacy, networking, and the establishment of industry standards and best practices. Membership in these groups provides professionals with essential resources, networking opportunities, and avenues for professional growth.

In parallel, technology companies, with Oracle at the forefront, have significantly influenced construction management through innovative software and cloud solutions. The Oracle Smart Construction Platform, highlighted by the success of Primavera, has transformed project management by fostering:

- Enhanced collaboration
- · Data-driven decision-making
- Improved workforce productivity

- Better safety protocols
- Comprehensive change management across project lifecycles

As a seasoned member of AACEI and PMI and a lifelong user of Primavera applications (P3, P6, OPC), I've noticed there's often a significant disconnect between the methodologies promoted by professional associations and their real-world application within specific tech environments. This "applied knowledge disparity" can be attributed to:

1

#### **TECHNOLOGY NEUTRALITY**

Professional associations avoid endorsing specific technologies to maintain impartiality.

2

#### **RAPID TECH EVOLUTION**

Keeping up with technological advancements poses a challenge for updating standards and methodologies.

3

#### SOFTWARE FLEXIBILITY

Technology solutions like those from Oracle are designed to be adaptable, which sometimes means they don't strictly follow any single methodology.

This case study aims to bridge these divides by offering a Tech Primer on applying change management theories and practices to the Oracle Primavera Cloud (OPC) platform, an integral component of the Oracle Smart Construction Platform. By focusing on real-world applications, we will explore:

- How data intelligence can enhance decisionmaking within OPC.
- The integration of symbiotic technologies to improve change management practices.

This approach seeks to align theoretical knowledge with the tools and methodologies used daily by construction management professionals, thereby enhancing practices in the Oracle Primavera Cloud capabilities.





### The Evolution

For project teams accustomed to project planning and scheduling with tools like Primavera P6 or Microsoft Project, the leap to Oracle Primavera Cloud (OPC) indeed feels like a rebirth in project management. Here's how this transition marks a significant evolution:

TECHNOLOGICAL ADVANCEMENT		
From Local to Cloud	Moving from desktop applications like P6 or Microsoft Project, which require local installation and updates, to OPC's cloud environment means data is accessible from anywhere, fostering a more flexible work environment. This eliminates the physical constraints of hardware and the need for manual updates.	
User Experience	While P6 and Microsoft Project have evolved, they still can be somewhat clunky or less intuitive for real-time collaboration. OPC provides a modern, user-friendly interface that simplifies complex project management tasks, making them more approachable for all team members.	

COLLABORATION AND ACCESSIBILITY		
Real-Time Collaboration	Unlike the more sequential or siloed updates in traditional software, OPC allows multiple users to work on the same project simultaneously. Changes are reflected in real-time, significantly enhancing team collaboration.	
Mobile Access	The ability to access project data on mobile devices through OPC wasn't as seamlessly integrated in older versions of P6 or Microsoft Project, providing project managers with greater control over projects while on the move.	

DATA MANAGEMENT AND SCALABILITY		
Centralized Data	OPC centralizes project data, reducing the risks associated with data silos or loss due to local storage failures. This was a concern with legacy systems where data management was less unified.	
Scalability	OPC scales projects, programs and portfolios from small to large whereas P6 or Microsoft Project handle single project planning.	

CHANGE MANAGEMENT		
Integrated Change Management	OPC provides a more holistic approach to managing changes, where impacts on schedule, cost, and resources are immediately visible and analyzable. In contrast, change management in P6 or Microsoft Project often required more manual coordination.	
Risk and Impact Analysis	While both P6 and Microsoft Project offer risk analysis, OPC's cloud capabilities allow for more dynamic and immediate risk assessments, leveraging real-time data for better decision-making.	

INTEGRATION AND ECOSYSTEM		
Broader Integration	OPC integrates seamlessly with other Oracle products and has robust APIs for third- party integrations, something that might require more effort in P6 or Microsoft Project. This integration capability can streamline workflows across different systems.	
Ecosystem	Being part of Oracle's larger ecosystem, OPC benefits from ongoing development and support that align with other enterprise solutions, something not as pronounced with Microsoft Project unless you're fully invested in Microsoft's suite.	

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ANALYTICS AND REPORTING		
Advanced Analytics	OPC's cloud infrastructure supports more advanced analytics and reporting tools, offering insights that might be more labor-intensive to achieve with the traditional setups of P6 or Microsoft Project.	
Customization	The ability to customize dashboards and reports in OPC is more dynamic, allowing for personalized views tailored to different project stakeholders' needs.	

SECURITY AND UPDATES	
Security	Cloud platforms like OPC typically offer enhanced security measures compared to local software, reducing the risk of data breaches or loss.
Automatic Updates	Users no longer need to worry about software updates. OPC ensures everyone is using the most current version, automatically incorporating new features and security enhancements.

For those who have navigated the constraints of traditional project management software, OPC represents not just a tool upgrade but a paradigm shift towards more agile, collaborative, and data-driven project management. It's akin to a rebirth, providing new life to the methodologies and practices established in the legacy era of P6 or Microsoft Project.



## A Platform of Integrated Applications

Oracle Primavera Cloud (OPC) is a comprehensive, integrated platform designed to manage multiple aspects of project management and the changes they encumber. OPC supports different project management domains through its suite of 13 integrated applications:



#### **RISK APP**

Identify, assess, and manage risks throughout the project lifecycle. OPC's risk app provides qualitative and quantitative risk analysis capabilities, evaluating probability and impact, and developing mitigation strategies.



#### **SCHEDULE APP**

Plan, monitor, and adjust project schedules with precision. OPC provides tools for critical path method analysis, resource leveling, and what-if scenario planning to ensure projects stay on track to a Master Schedule.



#### **RESOURCES APP**

Manage and allocate resources efficiently. OPC enables detailed resource planning, including human resources, equipment, and materials, ensuring optimal use, availability, and impact analysis.



#### **TASKS APP**

The Tasks app provides lightweight lean construction planning and scheduling capability to manage the tasks required to complete a project integrated with the Master Schedule. Conduct pull planning, make-ready planning including constraints, weekly work planning all through a fast, efficient and easy to use mobile and web interfaces.



#### **COST AND FUND APP**

The Cost and Fund app is used to capture project budgets and to track, manage and report on project costs and funds.



#### **SCOPE APP**

Provides install-based deliverables management, enabling delivery teams to define the deliverables and materials that are required to complete a project. It enables the tracking of the installation and cost of scope items without requiring a detailed schedule.



#### **PROJECT TEAM APP**

Facilitate team collaboration and communication. OPC includes features for team management, roles, and permissions, promoting a collaborative environment where everyone can contribute effectively.



#### **FILES APP**

Centralize document storage and management. OPC provides a secure place to store all project documents, accessible to authorized users, streamlining document control.

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#### **CUSTOM LOGS APP**

The Custom Logs app in OPC allows for tracking unique project events or data points not covered by other OPC Apps.



#### **WORKFLOWS AND FORMS APP**

Automate business processes such as submitting and reviewing project proposals with customizable forms.



#### **INTEGRATION APP**

Synchronize and transfer data between OPC and external applications.



#### **DASHBOARDS APP**

Provide at-a-glance project insights. Customizable dashboards in OPC offer real-time visibility into project health, allowing stakeholders to monitor key metrics without deep dives into data.



#### **REPORTS APP**

OPC's reporting tools allow for the creation of custom reports or the use of predefined templates to analyze project performance, costs, schedules, and more.

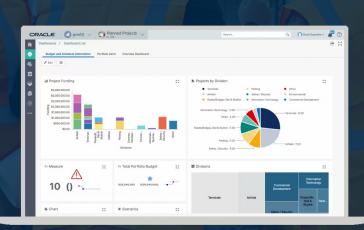
This collection of integrated applications in OPC ensures that all aspects of project management are covered, from inception to completion, fostering an environment where change management, risk mitigation, and project control are seamlessly woven into daily operations. By centralizing these functions, OPC not only enhances efficiency but also supports strategic decision-making across the project lifecycle.



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OPC represents not just a tool upgrade but a paradigm shift towards more agile, collaborative, and data-driven project management.





To symbiotically achieve change management practices with the full spectrum capabilities of the Oracle Primavera Cloud (OPC) platform, a specific mindset must be established.

This mindset needs to go beyond mere positive thinking and embrace a philosophy that drives continuous improvement, resilience, and proactive problem-solving. Here's how a Change Management Mindset should be framed:

Adopting a Full Spectrum Approach to Change Management and Associated Schedule Delays.

This means considering all aspects of change, from inception to impact analysis, employing OPC's capabilities to visualize and manage these changes across the project lifecycle.

Understanding That Bad News Does Not Improve Over Time.

Fighting Relativism on Projects.

Recognizing that delays or issues, if not addressed promptly, will only compound. OPC can be used to track these issues from the moment they arise, enabling timely interventions.

There should be one clear, documented truth regarding project status, changes, and outcomes. OPC serves as the single source of truth, reducing discrepancies and ensuring all parties operate from the same data set resulting in common conclusions.

#### Focusing on Influenceable Issues.

Use OPC to identify which changes or delays you can directly influence. Concentrate efforts where they can make the most impact, using the platform's analytical tools to guide decision-making.

#### Promoting an All-Hands Approach.

Engage every member of the construction delivery team through OPC's collaborative features, ensuring everyone is aware of changes and involved in managing them.

#### Going Beyond Contemporaneous Documentation of Change.

While documenting changes as they happen is vital, it's not sufficient. Use OPC to systematically log, analyze, and forecast the implications of changes over time.

#### Immediate Notification of Potential Impacts.

Even when the full impact on schedule and cost isn't immediately clear, use OPC to flag potential issues as soon as they are discovered. This allows for early risk mitigation strategies.

#### Establishing an Open and Continuous Communication Environment.

Leverage OPC to create a transparent communication channel between the owner, construction manager, and contractors ensuring all parties are informed about project changes, impacts, and responses in real-time.

By aligning this mindset with the capabilities of the Oracle Primavera Cloud platform, project teams will manage change more effectively, ensuring that the construction project's integrity, schedule, and costs are maintained or adjusted with foresight and collaboration.



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Oracle Primavera Cloud (OPC) has ushered in a new era for change management, revolutionizing how we deal with risk and schedule delays.

By focusing change management on the critical areas of scope, schedule, and resource, OPC directly influences cost impacts, ensuring that changes are not just managed but are leveraged for project success.

The stages of Change Management can be identified by the 6 A's:

- Anticipate: Be vigilant and informed about potential changes or risks.
- Avoid: Implement strategies to bypass or mitigate negative (and positive) impacts before they occur.
- Alert: Proactively notify all relevant stakeholders about changes or emerging risks.
- Analyze: Deeply assess the impact of changes on the project's scope, schedule, resources, and budget.
- **Apportion:** Identify the party responsible and quantify the impact of the change to the project schedule, resources and costs. Work together for amicable solution.
- **Assert:** Proactively advocate for the necessary changes or decisions, ensuring that the project benefits from the adjustments made. Make the case for why a change should be accepted, how it should be implemented, and make a convincing claim towards successful resolution.

By systematically addressing changes through these stages, OPC transforms potential obstacles into avenues for improvement, making it an indispensable tool for modern schedule impact avoidance and analysis.

## Closing the Knowledge Disparity

The aim of this case study is to bridge the gap between change management and schedule analysis methodologies and their practical application within the Oracle Primavera Cloud (OPC) platform. This endeavor seeks to create a symbiotic relationship between established processes and advanced technology, enhancing both change management and schedule analysis practices.

We will achieve this by providing a primer that outlines a catalog of tools and deliverables throughout the three key phases of a construction project:

- Pre-Construction
- Construction
- Post-Construction

In each phase, we'll apply the 6 A's of Change Management: Anticipate, Avoid, Alert, Analyze, Apportion, Assert.

This structured approach will not only clarify how to use OPC effectively but also demonstrate how it can transform methodological knowledge into actionable, real-world practices, thereby closing the knowledge disparity in change management and schedule analysis.

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# **Pre-Construction**

The Pre-Construction Phase is about laying the groundwork for a smooth, efficient, and successful construction project by anticipating and planning for all aspects of the project lifecycle. Its importance cannot be overstated.

- **Prevents Cost Overruns:** By setting a realistic budget and identifying cost-saving opportunities early.
- Avoids Delays: A well-planned schedule minimizes the risk of delays during the construction phase.
- **Reduces Rework:** Early design and constructability reviews help in avoiding costly changes once construction has begun.
- **Enhances Quality:** Proper planning ensures that quality standards are set and can be achieved.
- Manages Expectations: Clear communication and planning align all stakeholders on project goals and processes.
- **Mitigates Risks:** Early risk identification and management can prevent small issues from becoming project-threatening problems.

During the Pre-Construction Phase, Anticipate and Avoid stages of Change Management are implemented, utilizing the Oracle Primavera Cloud (OPC) to develop specific tools and deliverables.

#	TOOLS / DELIVERABLES	OPC APPLICATIONS : FUNCTION
1.1	Project Risk Register	OPC Risk: Manage all identified risks, track mitigation plans, and monitor risk status. Provides a centralized place to log, assess, and manage risks throughout the project lifecycle, allowing for proactive risk management.
1.2	Contract Time Determination Schedule	OPC Schedule: Use to set realistic project timelines considering contractual obligations, aiding in planning the project schedule accurately. Utilize scheduling tools to align project timelines with contractual agreements, ensuring legal and stakeholder expectations are met.
1.3	Constructability Review	OPC Schedule: Facilitate reviews to ensure the project design can be built efficiently, adjusting the schedule to account for any design modifications. Conduct virtual or collaborative reviews where schedule adjustments can be made based on constructability issues.
1.4	Resource Demand Projections	OPC Schedule, Resources: Forecast resource needs over the project timeline, helping in resource allocation and scheduling. Leverage features to predict and plan resource allocation, ensuring availability and optimal use.

#	TOOLS / DELIVERABLES	OPC APPLICATIONS : FUNCTION
1.5	Revenue vs Cost Projections	OPC Schedule, Resources: Assess financial aspects by projecting costs against expected revenue, aiding in resource and budget management. Integrate financial planning to keep an eye on the project's economic viability from the start.
1.6	Sub-Trade / Contractor Bid Workbook	OPC Risk, Schedule, Resources: Coordinate subcontractor / contractor bids, evaluate their commitment to schedule, resource and cost. Manage the bidding process and ensure that the schedule and resources reflect the capabilities and commitments of subcontractors or contractors.
1.7	Construction Manual	OPC Risk, Schedule, Resources: Store and distribute, for all team members to access, standardized templates for project processes while ensuring consistency and efficiency in scheduling.
1.8	Project Schedule Special Provision	OPC Risk, Schedule, Resources: Document special provisions or conditions that might affect the schedule, resources, or introduce new risks, ensuring these are accounted for in project planning. Incorporate any special scheduling or resource considerations in the development of the contract schedule for planning and execution purposes.

By utilizing these tools and deliverables within OPC, the pre-construction phase can be managed with a high degree of foresight, preparation, and strategic alignment, setting the stage for a successful project execution.



# **Construction**

During the Construction Phase, every team member is engaged, employing the Change Management stages—Anticipate, Avoid, Alert, Analyze, Apportion, and Assert. This is the phase where Oracle Primavera Cloud (OPC) is leveraged to its maximum potential, utilizing tools and deliverables that ensure effective applications of change management and ultimately achieving the project's contractual obligations.

#	TOOLS / DELIVERABLES	OPC APPLICATIONS : FUNCTION
2.1	Baseline Development Conferences with Owner and Sub-Trades	OPC Risk, Schedule, Resource: Setout collaboratively to establish a project baseline, align expectations, and integrate risk management into the schedule and resource planning.
2.2	Collaborative Baseline Schedule Development	OPC Schedule, Tasks: Collaborate on creating an initial schedule that all parties agree upon, setting the stage for project execution.
2.3	Schedule Quality and Audits	OPC Schedule: Utilize dynamic schedule health checks to ensure the schedule is prepared to the highest of industry standards before committing to the plan.
2.4	3 Step Schedule Update Process	OPC Schedule, Tasks: Systematically update the project schedule to reflect actual progress, elective revisions and change management.



#	TOOLS / DELIVERABLES	OPC APPLICATIONS: FUNCTION
2.5	Collaborative Schedule Reviews	OPC Schedule: Direct reviews by stakeholders in the single source schedule to ensure the schedule aligns with project realities and stakeholder expectations.
2.6	Contemporaneous As-Built Critical Path	OPC Schedule: Document the actual critical path taken through the project, showing which activities truly determined the project duration.
2.7	Contemporaneous As-Built Concurrent Impacts	OPC Schedule: Identify and track near-critical, concurrent activities, their influence on the controlling critical path activities, and their effect on delay analysis.
2.8	Contemporaneous Time Impact Analysis	OPC Schedule: Analyze how changes or adverse events impact the project timeline in real-time, providing a basis for adjustments and reconciliation.
2.9	Schedule & Cost Impact Resolution Sessions	OPC Schedule, Resources: Conduct review and resolution sessions with sub-trades / contractors of impacts on both schedule and resources. Hold review and resolution sessions with the owner to vet out differences and reach an amicable resolution.
2.10	Pull Planning	OPC Tasks, Schedule: Implement lean construction techniques where work is planned backward, ensuring all tasks are aligned with activities and miles in the master schedule.
2.11	Weekly Work Planning	OPC Tasks, Schedule: Plan the week's activities in detail, ensuring resources and tasks are made-ready for execution. Align and adjust the master schedule based on the weekly work plan.
2.12	Daily Reporting	OPC Schedule, Tasks: Record daily progress, issues, and discussions to keep stakeholders informed and facilitate immediate response to changes.

By actively engaging these 12 tools and deliverables in OPC during the Construction Phase, project managers will have a greater anticipation of potential changes; avoid impacts with early detection of changes; provide alerts to the delivery team and owner when change impacts do occur; immediately model and analyze the impacts to schedule, resources and cost; identify the responsible contract parties, quantify and apportion out the impacts to each party; and then proactively assert resolution of the change impacts contemporaneously with amicable results.

Utilizing the construction phase effectively is key for making prompt decisions that can either mitigate adverse effects or seize new opportunities. This strategy ensures that the Post Construction phase is free from arbitration or litigation.

# **Post-Construction**

The Post-Construction phase represents a critical juncture, determining whether a project has succeeded or failed. In success, a basic After Action Analysis suffices. In failure, a more in-depth post-mortem forensic analysis is necessary to pinpoint responsibility and assess the extent of impacts. At this stage, with all construction activities concluded, the focus shifts solely to Analyze, Apportion, and Assert. The following tools and deliverables, applied in OPC, are essential in a successful close-out of a project.

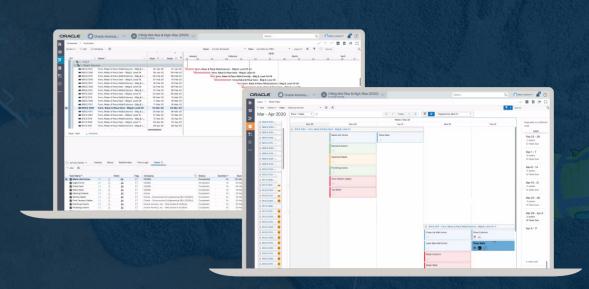
#	TOOLS / DELIVERABLES	OPC APPLICATIONS : FUNCTION
3.1	Source Documentation Validation	OPC Schedule: Validate the accuracy of project records against executed work.
3.2	As-Built Schedule	OPC Schedule: Document the actual timeline and progress of the project including all revisions and changes. Discover all of the known, unknowns to capture a single source of the truth.
3.3	Methods to Qualify and Quantify Discrete Impacts	OPC Schedule: Apply practices in OPC to identify and quantity as-built activity-level impacts that were the cause of project delays.
3.4	Forensic Schedule Analysis	OPC Schedule, Resource: Analyze, Apportion and Assert how changes or adverse events impacted the project timeline through the determination of the as-built critical path and as-built controlling activities.
3.5	Forensic Concurrency Analysis	OPC Schedule, Tasks: Analyze, Apportion and Assert near-critical, concurrent activities, through the determination of as-built concurrent activities against the as-built controlling critical path activities. Calculate compensable and non-compensable days.
3.6	After Action Analysis	OPC Schedule, Tasks, Resource: Reviews the entire project lifecycle to learn from successes and failures. Document and memorize by updating or creating Project Templates.

The delivery team has the full capability to use these tools and prepare these deliverables independently, without relying on external experts. This self-sufficiency not only saves time and costs but also ensures a direct, thorough understanding of the project's performance and lessons learned.

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This endeavor seeks to create a symbiotic relationship between established processes and advanced technology,

enhancing both change management and schedule analysis practices.



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Over 25 individual tools and deliverables have been catalogued in this case study to address the knowledge disparity that exists between construction change management methodologies and the practical application of Oracle Primavera Cloud (OPC).

This case study serves as a primer for individual use cases for each of the tools or deliverables described, providing a comprehensive guide for project teams to enhance their change management practices using OPC. Be sure to visit and bookmark our website (projecttechgroup.com) to get access to the latest use cases and webcasts as you join PTG in the Change Management Revolution.





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# Project Technologies Group is a U.S. premier Oracle sell – enable – train partner dedicated exclusively to the Oracle Primavera Cloud (OPC) platform.

Founded in 1998, PTG has successfully delivered the Oracle Primavera P6 EPPM and Professional solutions to owners, construction managers, and contractors. With the first release of OPC (original Oracle Prime) in 2017, PTG immediately saw the vision and endless capabilities of an integrated, cloud-based project planning and management platform and have never looked back since. We have built our expertise on the entire OPC platform with the development of over 30 enablement / training tracks spanning the 15+ applications contained within OPC, all delivered utilizing our proven lean, highly effective processes.



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