PeopleSoft In-Memory Project Discovery on Oracle Engineered Systems:
A New Way to Overcome Project Challenges
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Executive Overview

Typically, organizations use a variety of reporting and analysis technologies to assess, control, and improve the performance of their projects. What has been missing from these various reporting tools, however, is the ability to unlock the value of data stored in project-related documents and other unstructured data stores, such as status reports, written deliverables, and contracts, and correlate that data with large volumes of project transaction data. In short, project managers, practice directors, and resource managers alike have been confined to analysis based on what can be extracted from predefined fields in a database. Constructing a richer picture of project operations by leveraging quantities of data stored in documents and other formats has been all but impossible.

The time has come to change this reality. Imagine if a project manager could not only access a dynamic dashboard displaying key project financial and project health metrics but also instantaneously filter that information by keywords and concepts locked away in associated project artifacts. With the ability to quickly discover the answers to so many previously daunting questions, organizations could make better resource deployment decisions, identify the causes of and patterns related to project success and failure, and adapt behavior to improve project performance.

With its unique ability to construct innovative engineered solutions, Oracle is creating the PeopleSoft In-Memory Project Discovery (PPD) application to address this challenge of uniting structured and unstructured data to produce project insight not previously attainable. At first glance, PPD preconfigured dashboards that display project financial, plan, and resource information are expected to resemble what project and practice managers are accustomed to seeing. What is unique about PPD, however, is its focus on exploiting In-Memory technology and Oracle Engineered Systems to dynamically and instantly recalculate dashboard metrics derived from massive volumes of project and resource data and to filter the metrics by any keywords found in unstructured artifacts.

Combining the analytical processing power and speed of Oracle Exalytics and Exadata Engineered Systems and Oracle’s Endeca in-memory technology for mining unstructured data, Oracle is creating the PPD solution to offer organizations an unprecedented ability to understand their projects and gain a competitive advantage in the continuing quest to make better project decisions faster.
This white paper describes how PeopleSoft Projects applications users will benefit from Oracle Engineered Systems. For more information about these systems, see the section “Overview of Engineered Systems” at the end of this white paper.
The Challenge of Correlating High Volumes of Structured and Unstructured Project Data

While organizations are accustomed to analyzing their projects with traditional reporting tools, a tool or interface enabling project and resource managers to configure dashboards and navigate software based on both structured and unstructured data has not been available. In other words, information stored in file attachments, maps, and text and comment fields has been extremely difficult to consume, exploit, and correlate to volumes of structured project financial and resource data.

To illustrate the obstacle posed by not being able to link structured data with unstructured data, consider these scenarios.

The vice president of facilities at a multi-campus university reads in the morning news that one of the subcontractors performing work for the school has been charged with defrauding customers by installing defective fire suppression systems. The vice president knows there have been a number of these systems installed throughout the university’s buildings, but unless he has his staff manually read through every project-related contract entered during the past three years, he has no way of knowing which projects might have exposure to these defective systems, how much was spent on these systems, and when they were installed. This situation leaves the university exposed to significant legal, financial, and safety risks every day until it is remediated. The inability to relate unstructured data (for example, clauses in a contract, text in a contract attachment, and so on) to volumes of structured data (for example, project locations, project financial figures, purchase orders, and so on) is the barrier to eliminating these risks.

In a global consulting and IT services firm, having the ability to rapidly identify available, capable resources located close to a client site can often mean the difference between winning and losing business. Because employee qualification (for example, competencies, certifications, languages, work experience) and availability data are often stored in either a document such as a resume, a spreadsheet or desktop database on a resource manager’s computer, or emails; identifying the appropriate resource for each assignment can be slow and manual. (While some disciplined organizations enable effective matching of resources to project needs by capturing and maintaining skill information in a structured database, the practical reality in many organizations is that employee capability data are captured when individuals are hired and then become stale immediately thereafter.) Instead of sifting through competency data of dubious accuracy in hopes of finding a qualified resource, what practice directors, resource managers, and project managers long for is the ability to easily query the text of employees’ resumes and their work products so that they can generate a short list of high-potential candidates to consider for assignment.
Figure 1. The Untapped Potential: Unstructured Data in the Enterprise Project Financial and Resource Management System

As these examples illustrate, the cost of not being able to correlate structured and unstructured data is very real and has posed a problem for which no practical solution has existed.
Overcoming Project Data Challenges with PeopleSoft In-Memory Project Discovery

From the scenarios noted in the previous section of this paper, it is clear that there is real business value in unlocking the potential of unstructured data to overcome project challenges. By leveraging Oracle’s Endeca technology for conducting unstructured data analysis and Oracle Exalytics and Exadata Engineered Systems for high-performance computing, the PeopleSoft In-Memory Project Discovery (PPD) application intends to tackle the previously impossible task of linking structured and unstructured data to provide insight into project financial, resource, and operational performance. With PPD, the vice president of facilities, the practice director in the global services firm, and project managers in any enterprise can expect to obtain answers to some of the most perplexing and elusive questions.

On the surface, the PPD preconfigured dashboards that display project and resource information are expected to resemble what project and practice managers are accustomed to seeing in enterprise reporting dashboards.

![Figure 2. A Project Dashboard displaying financial and risk information within PPD](image)

What makes PPD unique, however, is its planned ability to exploit Oracle’s Endeca, Exalytics, and Exadata technologies to dynamically and instantly recalculate dashboard metrics derived from massive volumes of project and resource data and to filter the metrics by whatever keywords (that is, unstructured data) a user types. To perform its analytical calculations in real time, PPD intends to
leverage Oracle’s Exalytics Engineered System, which is built for fast in-memory analysis and calculations, resulting in speed-of-thought, responsive performance and visual analysis with no limits. And, since PPD is intended to perform computations against vast quantities of structured and unstructured data sourced from the PeopleSoft Projects and Financials business applications, Oracle Exadata’s Smart Scan and InfiniBand technologies can be applied to accelerate the data-intensive querying and transmitting of timely content necessary for PPD to consume. (For more information about Oracle Engineered Systems, see the section “Overview of Engineered Systems” at the end of this white paper.)

With the power of Oracle Engineered Systems, the PPD solution’s purpose is to mine project artifacts and deliver answers to complex questions in seconds. The vice president of facilities, described in the previous section of this paper, could use PPD to learn where the defective systems were implemented and eliminate the costs that the university would otherwise incur for staff or temporary workers to pore over project contracts and could immediately mitigate the legal, financial, and safety risks associated with the subcontractor’s work. He could identify for the university all of the exposure to the defective fire suppression systems, draw up and institute remediation plans within hours, and immediately begin implementation of the plans to eliminate the risks.

Figure 3. In addition to tapping the value of unstructured data in the Enterprise Project System, organizations possess numerous other unstructured data stores outside the Enterprise Project System that their staff would like to be able to associate with structured data in the Enterprise Project System.

For the practice director, leveraging PPD to fill resource requests means that she could staff client projects faster and drive higher employee utilization. With a keyword search, she could generate a short list of candidates based on not only employees’ competencies but also their resumes and the text of the
work experience in their resource profiles. The speed and quality of this search could help demonstrate responsiveness to client requests, drive higher revenues through faster filling of orders, increase resource utilization by tapping new hires and employees with incomplete profiles, and reduce the administrative burden on employees by not even requiring them to update competency evaluations.

Beyond the problems that the project executives were able to solve in the two previous scenarios, a variety of others could be addressed by integrating unstructured content into traditional project analysis. Consider the value to an organization of being able to answer the following questions by typing a few keywords:

1. For projects with certain keywords (for example, “audit finding,” “SOX finding,” “DCAA Audit,” and so on) appearing in their issues, risks, deliverables, status reports, are they generally finishing on time?

2. Are the projects associated with particular project managers on schedule and on budget, and where are they in relation to one another on a map?

3. For projects and activities with delays, do recurring issues, deliverables, change requests, and risks exist that should be investigated?

4. For budget change requests specifying certain keywords (for example, “storm damage”), what is the cost in aggregate?

5. What is the financial status of all the contracts that have certain keywords (for example, “classified,” “national security”) in the contract description?

6. For contracts with an amendment attachment specifying a particular cause (for example, “quality problems in design specification”), what is the value of those contracts?

As these examples illustrate, PPD built on Oracle Engineered Systems can unlock the potential in unstructured enterprise data and directly and immediately affect an organization’s bottom line.
What the New World Can Look Like

In the 21st Century, it is generally acknowledged that major elements of what differentiates a leading business from an average one is how well and how fast an organization exploits data to make better decisions faster. For a practice director in a global professional services firm, making better resource deployment decisions faster is arguably one of the highest priorities. Let’s look at how the PeopleSoft In-Memory Project Discovery (PPD) application is expected to contribute to driving better quality and speed in the resource deployment process.

The 2013 Professional Services Maturity™ Benchmark published by the analyst firm Service Performance Insight, LLC (SPI Research) in February 2013 looked at the performance of 234 professional services firms compared to the level of maturity they demonstrated in relationship to SPI’s PS Maturity Model (Professional Services Maturity Model). Among the various statistics produced by the study, three are particularly interesting when trying to assign a value to the harnessing of unstructured data. In particular, the report found that:

1. Talent management was ranked the number one challenge identified by the 234 professional services organizations.

2. The average billable utilization of the top 13 firms compared to that of the other 221 firms in the study was 7 percent higher.

3. The EBITDA of the top performing firms was 78 percent higher.1

The firms identified as most advanced along the PS Maturity Model continuum are those that produced the leading business performance. They are able to focus on their talent pool to deploy their resources more effectively to achieve a dramatically higher EBITDA, and they are generally the firms that had the most advanced deployment of professional services automation technologies.

With the PPD application, organization’s can expect to gain access to a unique ability to analyze client project needs against resource qualifications and location data (in whatever unstructured forms they may exist). In short, the goal of PPD is to become a tool for professional services organizations to rapidly acquire and institutionalize in their quest to tackle the challenge they ranked number one in the SPI Research survey: managing talent.

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1 2013 Professional Services Maturity™ Benchmark published by Service Performance Insight, LLC (SPI), www.spiresearch.com February 2013
Figure 4. One of the PPD Resource Dashboards highlighting where the qualified, available resources are globally.

Figure 4 provides a visual depiction of the resources best suited to address a project’s requirements and does so with nothing more than the typing and selecting of a few keywords. In contrast to the current state of the art in most enterprises, the PPD user experience is expected to offer professional services organizations a tremendous boost in their ability to analyze and render useful information upon which practice directors and resource managers can act in order to win business and raise resource utilization.
Conclusion

If a project-driven enterprise can rapidly correlate its structured project and resource data with relevant unstructured content, it stands to achieve significant business performance gains by answering questions that were previously unanswerable in a practical timeframe. The PeopleSoft In-Memory Project Discovery application aims to combine the power of Oracle Exalytics and Exadata with the In-Memory processing and unstructured data analysis of Oracle’s Endeca technology to give organizations an intuitive, easily deployed tool that can filter vast quantities of project financial, plan, and resource data by unstructured dimensions. With this capability, enterprises should be able to drive business processes, such as staffing resources to projects and finding project-related hazards, significantly faster than ever before. As the SPI Research study highlights, successful adoption of business practices and technologies that enable dramatic decreases in cycle time for core business processes is an essential step that every organization needs to achieve if it intends to be one of the leaders in its industry.
Overview of Engineered Systems

Oracle’s engineered systems combine best-of-breed hardware and software components with game changing technical innovations. Designed, engineered, and tested to work best together, Oracle’s engineered systems can power the cloud or streamline data center operations to make traditional deployments even more efficient. The components of Oracle’s engineered systems are preassembled for targeted functionality and then—as a complete system—optimized for extreme performance. By taking the guesswork out of these highly available, purpose-built solutions, Oracle delivers a solution that is integrated across every layer of the technology stack—a simplicity that translates into less risk and lower costs for your business. Only Oracle can innovate and optimize at every layer of the stack to simplify data center operations, drive down costs, and accelerate business innovation.

Oracle Exalytics

Oracle Exalytics is an Engineered System built for in-memory analytics. Exalytics In-Memory technology allows for terabytes of data to be stored directly in-memory for fast analysis and calculations, resulting in speed-of-thought, responsive analytic performance and visual analysis with no limits. It consists of a combination of a powerful hardware platform and Oracle Analytics products spanning Relational, Multidimensional, Unstructured and Predictive Analytics. These products including Oracle Business Intelligence Foundation Suite, TimesTen In-Memory Database for Exalytics, In-Memory Essbase, and In-Memory Endeca have been enhanced to run faster, more effectively and more efficiently upon the Exalytics platform.

Exalytics is custom designed for In-Memory Analytics. It packs at least a terabyte of high speed memory and matches the memory backed by several terabytes of high-speed PCI-Flash that can support hundreds of thousands of IOPS per second as well as gigabytes of bandwidth per second. This flash layer is further backed by several terabytes of persistent hard disk storage. Exalytics also includes FibreChannel interfaces to further expand storage capacity and to provide unparalleled throughput. In addition to memory and storage, Exalytics includes the best server processors in the market with at least 40 compute cores with several execution threads per core. These functions enable Exalytics to store more data, process queries faster, load and export data faster, and handle more users and concurrent workloads than identically configured commodity servers running commodity operating systems.

Oracle Exalogic

Oracle Exalogic is an Engineered System on which enterprises deploy Oracle business applications, Oracle Fusion Middleware, or third-party software products. Exalogic comes prebuilt with compute nodes, memory, flash storage, and centralized software; all connected using InfiniBand in a high redundancy architecture delivering five-nines availability, with fault tolerance and zero-downtime maintenance.

Exalogic dramatically improves performance of Oracle Applications, Fusion Middleware, and third-party applications without requiring code changes and reduces costs across the application life cycle, from initial setup to ongoing maintenance, as compared to conventional hardware platforms. Oracle
has made unique optimizations and enhancements in Exalogic firmware, Exalogic software, and in Oracle’s middleware and applications. These include on-chip network virtualization based on near zero latency InfiniBand fabric, high-performance Remote Direct Memory Access, workload management in Oracle WebLogic Server, and optimizations in Oracle Coherence and Oracle Traffic Director. Exalogic includes support for a highly optimized version of the Oracle VM, which significantly outperforms comparable virtualization solutions and is an ideal consolidation platform for Oracle Applications. Templates to simplify install, deployment, and configuration of applications on Exalogic are available.

Oracle Exadata Database Machine

Oracle’s Exadata Database Machine is Oracle’s database platform delivering extreme performance for database applications, including Online Transaction Processing, Data Warehousing, Reporting, Batch Processing, or Consolidation of mixed database workloads. Exadata is a preconfigured, pretuned, and pretested integrated system of servers, networking, and storage all optimized around the Oracle database. Because Exadata is an integrated system, it offers superior price performance, availability, and supportability. Exadata frees users from the need to build, test, and maintain systems and allows them to focus on higher value business problems.

Exadata uses a scale out architecture for database servers and storage. This architecture maintains an optimal storage hierarchy from memory to flash to disk. Smart Scan query offload has been added to the storage cells to offload database processing. Exadata implements Smart Flash Cache as part of the storage hierarchy. Exadata software determines how and when to use the Flash storage for reads and write as well as how best to incorporate Flash into the database as part of a coordinated data caching strategy. A high-bandwidth, low-latency InfiniBand network running specialized database networking protocols connects all the components inside an Exadata Database Machine. In addition to a high performance architecture and design, Exadata offers the industry’s best data compression to provide a dramatic reduction in storage needs.

Oracle SPARC SuperCluster

Oracle’s SPARC SuperCluster is the world’s most efficient multi-purpose engineered system, delivering extreme efficiency, cost savings, and performance for consolidating mission critical applications and rapidly deploying cloud services. Oracle’s SPARC SuperCluster represents a complete, pre-engineered, and pre-tested high-performance enterprise infrastructure solution that is faster and easier to deploy than a collection of individual database and application servers. The system combines innovative Oracle technology—the computing power of Oracle’s SPARC servers, the performance and scalability of Oracle Solaris, the Sun ZFS Storage Appliance, the optimized database performance of Oracle Database accelerated by Oracle Exadata Storage Servers, and a high-bandwidth, low-latency InfiniBand network fabric—into a scalable, engineered system that is optimized and tuned for consolidating mission-critical enterprise applications.

Oracle’s SPARC SuperCluster provides both the capacity for growth, as well as the fine-grained server virtualization needed to isolate individual application components. With multiple layers of enterprise application infrastructure consolidated onto a high-performance, highly available SPARC SuperCluster system, deployment speed, application performance, and availability can all be optimized. Designed as
a pre-configured, pre-tested, and ready-to-deploy SPARC SuperCluster engineered system, the solution provides a complete and optimized infrastructure solution for applications, built around robust compute, networking, storage, virtualization, and management resources. The result is a system that is orders of magnitude easier to manage, and up to five times faster to deploy than alternatives, all while occupying considerably less real estate requiring less power. Furthermore, the SPARC SuperCluster system provides full built-in redundancy resulting in a highly reliable infrastructure without single point of failure. An issue with one component will not impact other components of the system offering true isolation. Customers can consolidate multiple environments with minimum disruption, without fear of performance degradation, and the ability to achieve required service levels.