Generating Presentation Quality Custom Reports
From Oracle Project Management

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Case Study

This paper and its accompanying presentation are based upon a real world implementation at a leading multinational energy transportation and distribution corporation. The content has been sanitized to protect the customer's trade secrets.

About the Customer

The customer has been using Oracle Project Costing for over nine years, and subsequently decided to add Oracle Project Management Release 11.5.10.M to their suite of solutions. There are approximately 75 active users of the Oracle Project Management (PJT) module. These users required presentation quality reports that combined the project work and financial data with graphical project images, maps and charts.

The customer's reporting requirements were very detailed, and included:
- A project title page image
- A project header section with the names of:
    - Project Manager/Supervisor
    - Department/Entity
    - Executive Sponsor
    - Customers
- A progress to date section with:
    - Baseline ITD cost
    - Actual Cost to date
    - Earned Value indices – Earned Value, CPI and SPI
- A cost section that included:
    - Original Budget Cost
    - Current Budget Cost
    - Forecast Cost
    - Forecast to Current Budget Variance
    - Total Commitments
    - Total Expenditure to Date (Actual Cost to Date)
    - Cost to complete (Forecast – Actual Cost)
- An expenditure profile graph that showed:
    - Monthly Current Baseline Budget Cost bars
    - Cumulative Current Baseline Budget Cost line
    - Monthly Actual/Forecast Cost bars
        - Actual Cost before the current month
        - Forecast Cost bars for the remaining months
    - Cumulative Actual/Forecast line
- A Gantt chart with baseline, actual and forecast Bars
- Key Milestones Information that included a list of key project milestones with:
    - Baseline Date
    - Actual Date (for completed milestones)
    - Forecast Date (for future milestones)
- A cost variance section with:
    - Current month forecast to current budget variance

- o Current month forecast variance, including the difference between the predicted forecast cost for this month and last month
- A detailed cost breakdown
- An Issues/ Risk/ Mitigation actions section that was to detail the following:
  - o List of top 10 project risks
  - o Probability/ Impact/ Scores for these risks
    - ▪ Probability – this was user assigned, ranging between 1 and 10
    - ▪ Impact -- this was user assigned, ranging between 1 and 10
    - ▪ Score – this was simply the probability multiplied by the impact
  - o Mitigation Actions
- A Budget/ Approval/ Forecast History section
  - o Month-wise history of Original, Current and other Budget Cost changes
  - o Month-wise history of predicted Forecast Cost
  - o Month-wise Forecast to Current Budget Variance
- Text sections for:
  - o Project Scope
  - o Project Highlights
  - o Health and Safety Information
  - o Schedule and Cost Variance Explanation
- Imbedded images for:
  - o Project Scope
  - o Project Pictures (maps, photos..)
- Attachments were to include detailed Gantt charts generated from third party project management applications.

The reporting program required following parameters for report generation:
- Project Number
- Month for the report
- WBS level
- Draft/Final

Comparison of Customer Needs to Native Functionality

When the customer's reporting requirements were clearly documented, we analyzed these needs against the native status report functionality of the PJT module.   We discovered that the native status report offered limited features and did not meet many of the customer's requirements. Specifically, we identified these shortcomings:
- Standard report sections did not provide the necessary information
- Custom report sections did not provide way to get the necessary information in the required format and order
- Graphical sections –Gantt Chart and other graph did not meet the requirements of formats and presentation quality
- No easy way to include images and other attachments
- Overall presentation quality and formatting of the report was not satisfactory
- There was no printing capability

Custom Built Reports

We therefore determined that custom reports would need to be built, and we selected Oracle BI Publisher as the tool of choice.   Some capabilities and functions of BI Publisher are that BI Publisher is an Enterprise reporting solution used to author, manage and deliver reports. It allows highly formatted report layouts to be designed in MS-Word or Adobe Acrobat. It is integrated with the Oracle E-Business Suite, and it maintains data logic separate from layout logic.

To build a custom report in BI Publisher, follow these steps.
1. Design the XML data template. This is referred to as Data Definition
2. Design the layout template using Microsoft Word. This is referred to as Format Definition

3. Define the E-Business Suite integration needed to access the data.

Key Features

The key features that were used in the creation of the custom reports are showcased in the following section of this whitepaper.

Header and Footer

We used tags to call a named template to be inserted into current template, as shown.

Images

We wanted to show images that are stored as attachments in the E-Business Suite Applications.

- Use a Java concurrent program that copies attached image to the middle tier OA_MEDIA directory. This converts an image stored as BLOB on database to a .jpg file on the middle tier.
- Use XML TAG: url:{'${OA_MEDIA}/image name'}

We wanted to show the image side by side with text. And we displayed a dynamic number of images using the multi-column page support feature.

Combo Graph

BI Publisher supports 30 different graph types, but only six are possible without additional code. We used a combination of line and bar graphs. Take advantage of graphType="BAR_VERT_CLUST2Y" and be sure to refer to http://blogs.oracle.com/xmlpublisher for details on additional graph types.

Expenditure Profile
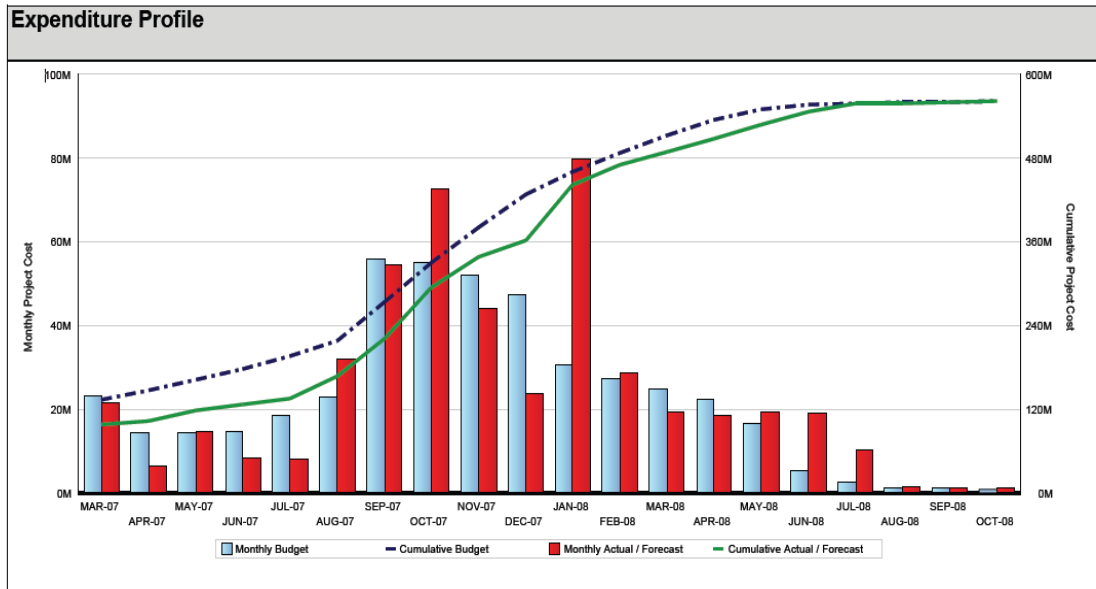
Conditional Formatting

Take advantage of conditional formatting to display items on a conditional basis. Use these XML tags:

- <?ORIGINAL_AFE[not(.=preceding::ORIGINAL_AFE)]?>
- <?if:condition?><?end if?>
- <?choose:?> <?when:expression?> <?otherwise?>

Project: SOUTH TERMINAL CONSTRUCTION (CON2008AL001)

Financial Reporting As At: **31 December 2007**, Commentary Updated to: **14 January 2008**

Budget / Approvals / Forecasts History, CAD $'000's

	Original AFE Budget	Current AFE Budget (a)	AFE Appropriations	Forecasts (b)	Variance (b-a)	
					Period with Variance $	%
APRIL 2007	$435,000			$448,727		
MAY 2007				$515,432		
JUNE 2007			$435,000	$515,432		
JULY 2007				$515,432		
AUGUST 2007				$522,797		
SEPTEMBER 2007				$559,691		
OCTOBER 2007				$563,400		
NOVEMBER 2007				$563,400		
DECEMBER 2007		$563,400		$563,400	0	0%
Current State	**$435,000**	**$563,400**	**$435,000**	**$563,400**	**0**	**0%**

Cost Breakdown, USD $'000's

Task Name	Budget	Expended to Date		Forecast At Completion	Variance	
	a	b	b/c	c	c-a	(c-a)/a
SITE GRADING						
DEVELOPMENT	6,656	5,594	84.00%	6,656	0	0.00%
EXECUTION	61,195	30,614	50.00%	61,284	89	0.00%
WRAP-UP	616	7	1.00%	616	0	0.00%
SUPPORT	6,785	9,554	141.00%	6,785	0	0.00%
OTHER COSTS	5,616	5,611	101.00%	5,546	<70>	-1.00%
FINANCIAL MANAGEMENT	26,360	10,154	39.00%	26,360	0	0.00%
Subtotal	**107,228**	**61,534**	**57.38%**	**107,246**	**19**	**0.02%**

Gantt Chart

A Gantt chart is not supported as BI Beans, and also not available as a chart type. So we used Drawing Shapes.

- XML Tags:
  - o <?shape-size-x:PLAN?>
  - o <?shape-size-y:0.5?>
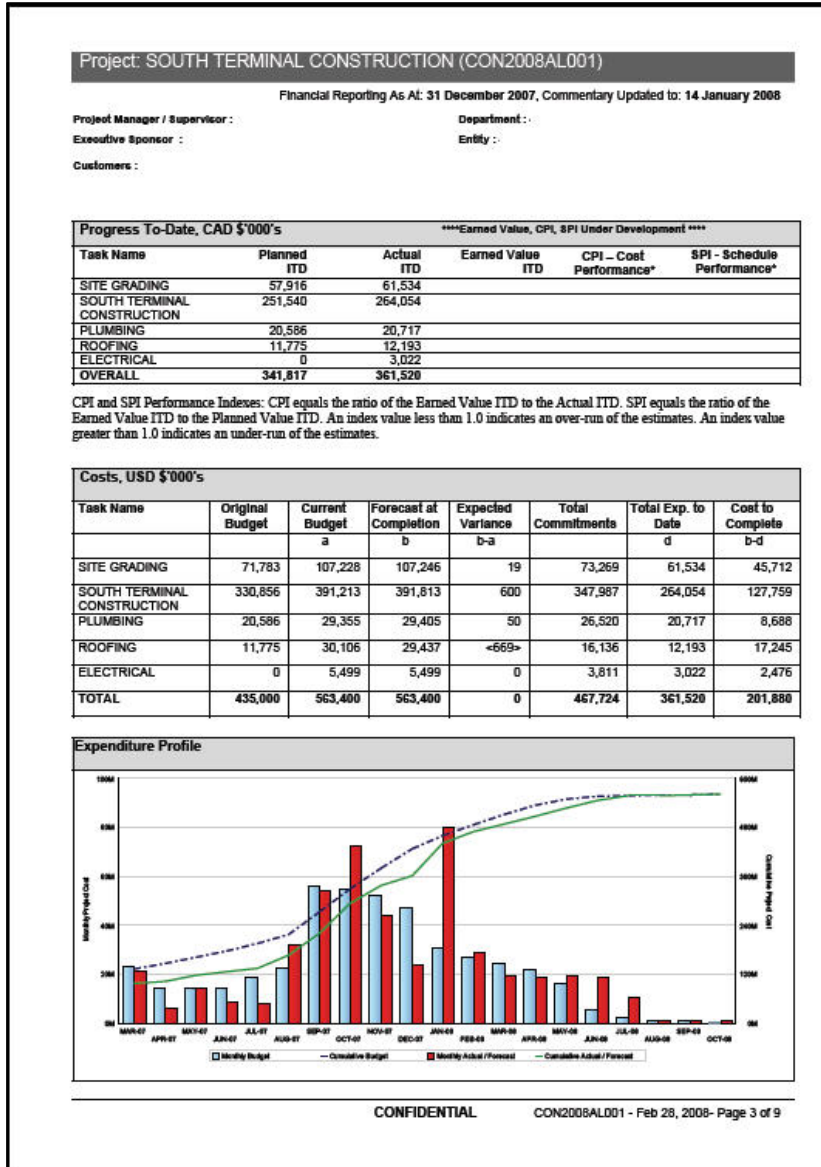 - o <?shape-offset-x:PLAN_OFFSET?>

PDF Document Merge

We used XML API's to merge the XML report output with a Microsoft Project plan Gantt stored as a pdf attachment in the application. We used PDFDocMerger JAVA API to merge two pdf documents.

Sample Reports
Following are some sample reports that we produced using the above methods.

Project: SOUTH TERMINAL CONSTRUCTION (CON2008AL001)

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Project Manager / Supervisor :   Department : ·

Executive Sponsor :   Entity : ·

Customers :

Progress To-Date, CAD $'000's   ****Earned Value, CPI, SPI Under Development ****

Task Name	Planned ITD	Actual ITD	Earned Value ITD	CPI – Cost Performance*	SPI - Schedule Performance*
SITE GRADING	57,916	61,534			
SOUTH TERMINAL CONSTRUCTION	251,540	264,054			
PLUMBING	20,586	20,717			
ROOFING	11,775	12,193			
ELECTRICAL	0	3,022			
OVERALL	341,817	361,520			

CPI and SPI Performance Indexes: CPI equals the ratio of the Earned Value ITD to the Actual ITD. SPI equals the ratio of the Earned Value ITD to the Planned Value ITD. An index value less than 1.0 indicates an over-run of the estimates. An index value greater than 1.0 indicates an under-run of the estimates.

Costs, USD $'000's

Task Name	Original Budget	Current Budget a	Forecast at Completion b	Expected Variance b-a	Total Commitments	Total Exp. to Date d	Cost to Complete b-d
SITE GRADING	71,783	107,228	107,246	19	73,269	61,534	45,712
SOUTH TERMINAL CONSTRUCTION	330,856	391,213	391,813	600	347,987	264,054	127,759
PLUMBING	20,586	29,355	29,405	50	26,520	20,717	8,688
ROOFING	11,775	30,106	29,437	<669>	16,136	12,193	17,245
ELECTRICAL	0	5,499	5,499	0	3,811	3,022	2,476
TOTAL	435,000	563,400	563,400	0	467,724	361,520	201,880

Expenditure Profile

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Progress-to-date section

Cost Summary Section

Expenditure Profile

Project: SOUTH TERMINAL CONSTRUCTION (CON2008AL001)

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Summary Schedule Dates

Planned   Actual   Forecast

Task Name	2005	2006	2007	2008
	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A
SITE GRADING				
SOUTH TERMINAL CONSTRUCTION				
PLUMBING				
ROOFING				
ELECTRICAL				

Gantt Chart

Key Milestones

Description	Planned	Actual	Forecast	Variance in Weeks
Project Approved	Nov 15, 2005	Nov 15, 2005		0
Site Gradation Complete	Nov 30, 2005	Dec 22, 2005		3
	Dec 29, 2006	Mar 05, 2007		9
	Nov 30, 2005	Dec 22, 2005		3
	Dec 29, 2006	Feb 20, 2007		8
	Jul 01, 2007	Jun 15, 2007		-2
	Mar 14, 2008		Apr 09, 2008	4
	May 29, 2008		Jun 30, 2008	5
	May 01, 2008		Apr 01, 2008	-4
	May 01, 2007	May 01, 2007		0
	Apr 10, 2008		Nov 28, 2007	-19

Key Milestones Section

Schedule Variance Explanation

some delay due to unpredictable weather

Schedule Variance Text

Cost Variance, CAD $'000's

Task Name	New This Month	Total from Current Budget
SITE GRADING	892	19
SOUTH TERMINAL CONSTRUCTION	611	600
PLUMBING	<2,803>	50
ROOFING	<1,284>	<669>
ELECTRICAL	2,584	0
TOTAL VARIANCE	0	0

Cost Variance Section

Cost Variance Explanation

unexpected rise in material cost

Project: SOUTH TERMINAL CONSTRUCTION (CON2008AL001)

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Issues / Risks / Mitigation Actions

	P	I	S	Comments
Delay in Permit Grant	10	8	80	Comments here. Reasons here
Land Acquisition issue	8	5	40	Comments here. Reasons here More comments Some more comments Additional resoans Explanation
Site grading issue	9	8	72	Comments here. Reasons here

P = Probability, I = Impact, S = Score

Project E H & S

Health and Safety comments here

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Issue/Risks/ Mitigation Section

Environment & Safety Text

Budget/Forecast Approval History

Project Scope with scope image

Inside the report image:

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DECEMBER 2007		$563,400		$563,400	0	0%
Current State	$435,000	$683,400	$435,000	$683,400	0	0%

Project Scope

This project is about construction of a major bus terminal 2 mile south of existing residential community popularly known as Six Springs in Bolero City, California. This terminal will cater to the bus services from Bolero City to 40 nearby cities and will operate about 100 buses every day on 20 different routes. More than 100,000 passengers will utilize the services of this bus terminal annually.

A marshy land of 100 acres is acquired from the county. In the first phase of the project the entire site will be graded and the ports to operate 20 buses will be built. The facilities will include a waiting room for 50 people, ticket booking office, a snack bar, baggage drop-off and pick up area. An open space will provide parking for 100 buses. For passengers, a parking garage with the facility to park 200 passenger cars will be built.

Design and construction documents will be submitted to the City's Building and Safety and Fire Departments, Cultural Affairs, the Planning Commission and other appropriate departments for review/ approval. The project will also be reviewed by the city Administration for road safety considerations

The initial budget outlay is 3.0 million; however, early development plans indicate the project will probably exceed that amount depending upon the selection of a final design. Project funding comes from country's transportation department.

The construction will begin in March of 2008 and the project is expected to finish by July 2009.
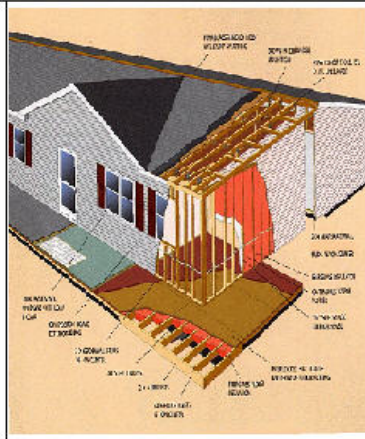
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For More Information
If you have questions and would like more information, visit our website at www. ProjectP.com, or contact Project Partners LLC at 650-712-6200.

About the Authors
Sam Uttarwar, PMP is a Principal Consultant for Oracle Project Management at Project Partners LLC. Over the past 16 years, Sam has been very actively involved in functional design and development of several project planning, cost and schedule management and reporting systems, and their integration with popular third-party scheduling tools like MS Project and Primavera Project Planner. Previously Sam was Senior Principal Manager at Oracle Corporation on the Oracle Project Management product definition team. Prior to that Sam worked at Digital Tools, directing the teams that designed the project scheduling and resource management software systems.

Vijay Ranganathan serves as Director, Projects Technical Services for Project Partners LLC. Vijay has over eleven years of experience in project planning, cost and schedule management, resource management, requirements analysis, project management infrastructure development, IT life-cycle development process, and project

management training. Previously Vijay was a Development Manager at Oracle Corporation for the Oracle Projects reporting team, and was the lead architect for Family Pack M (R11.5.10 M) project performance reporting.

About the Company

Project Partners, LLC is a privately held firm headquartered in Half Moon Bay, California, offering consulting services and software products to project-driven firms. Founded in 1997 by Randy Egger, the former chief architect of Oracle's Projects Applications, Project Partners has grown to include many talented people, including some of the original Oracle Projects® developers, support specialists and implementation consultants. Over 275 firms around the world have selected Project Partners for expert services and products that extend the Oracle E-Business Suite Projects Applications, to increase productivity and reduce operating costs. A Primavera Technology Partner, Oracle Certified Partner and an Oracle Projects user, Project Partners has executed global implementations for clients managing tens of thousands of projects, thousands of users, multiple languages and currencies.

Project Partners' OP3™ product combines Primavera activity and resource scheduling tools with Oracle Projects Applications' financial functionality to provide a complete, seamless, bi-directional solution that addresses both the financial and operational aspects of successful project management.

Project Information Center (PIC)™ is an easy-to-use, web-based composite application for project-centric businesses.

PIC Reporting™ provides complex reporting that spans multiple projects and operating units, and detailed project and task reporting. More significantly, PIC's Financial Statement Generator easily creates complex financial reports, like Profit and Loss Statements, at various levels of flexible hierarchies, across heterogeneous systems.

PIC Invoicing™ delivers custom invoice formats integrated with Oracle Project Billing, Oracle Receivables and Oracle XML Publisher, to enable you to bill your customers in their preferred form, independent of WBS.

PIC User Interface™ provides easy-to-use, easily tailored Oracle application User Interfaces for Microsoft® Excel or a Web browser. PIC User Interface enables customers to quickly build user-friendly and flexible front-end applications that meet their business needs while seamlessly integrating with Oracle security and business logic. It also provides business users an intuitive way to accomplish complex tasks using a familiar yet powerful tool: Microsoft Excel.