

Integrated Enterprise Reporting

July 2013 Don McNatty

PROJECT MANAGEMENT SOLUTIONS THAT SIMPLY WORK.



Abstract

"Integrated Reporting" can be accomplished by using reporting and dashboard tools that support accessing multiple data sources directly or through a data warehouse. The data warehouse is the "central" database containing data with differing structures used in producing reports that incorporate the data directly from their auditable source databases. The report/dashbard is supported by programming to align the data based in common elements to provide Enterprise level information, supported by individual system audit reports and without the need for Excel.





Thank you for joining today's technical webinar

- Mute all call in phones are automatically muted in order to preserve the quality of the audio for all attendees.
- Questions during the session, questions can be submitted through the Questions Box on the right side of the screen. We will try to address your questions at the end of the presentation, time permitting.
- Follow up all registrants will receive an Excel file listing all questions and responses along with a link to the recorded webinar.



Twenty-five + years experience with Primavera





- Oracle Primavera Software
- Oracle Certified Training
- Oracle Certified Implementation Support
- Project Support Services administrators, schedulers, estimators
- Managed Hosting Services through MLM Project Services
 - Primavera Portfolios, P6 (web), P6 Pro, Contract Management, BI Publisher, Documents, Risk
 - Hard Dollar, Acumen Fuse, Ecosys, Prism G2...
- Subscription based Oracle | Primavera solutions

Business Process Outsourcing



Don McNatty dmcnatty@drmcnatty.com



Outline

- What is "Integrated Enterprise Reporting"?
- How does it compare to data integration?
- Technologies
- The Reporting Database
- Benefits
- Examples
- Demonstration
- Summary





Integrated Enterprise Reporting

- Data, from multiple sources within the organization...
 - (Often data is silo'd and unconnected)
- Is captured from it's native structure and formatted, simplified or renamed for easy use in reports...
- Aligned within a reporting database for proper context (time, cost, scope)...
- To provide an integrated dataset for reporting.
- Using a variety of third party report writers, dashboard or graphic tools.

PROJECT MANAGEMENT SOLUTIONS THAT SIMPLY WORK.

Easily accessed through a simple web interface.



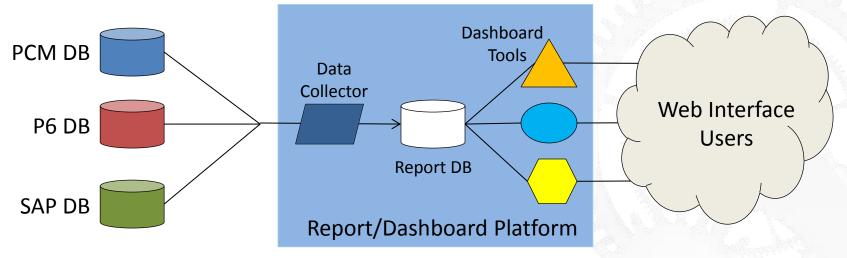


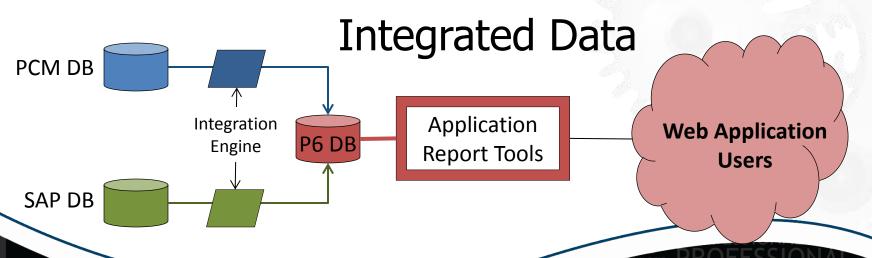
Data Integration

- Data, from multiple sources within the organization...
 - (Often data is silo'd and unconnected)
- Is passed through "data connectors" and "integration engine" that process and align the data...
- Usually collected into one "primary application" ...
- To provide information both onscreen and in reports.
- Using application specific reporting tools.
- Through application specific interfaces.
- May still need Integrated Enterprise Reporting



Integrated Reporting









Technologies

- Some of the examples shown in this presentation used various technologies applied to an Integrated Reporting Platform in our hosted data center.
 - Language: Ruby
 - Framework: Ruby on Rails
 - Database: Postgres/MongoDB/MSSQL/Oracle
 - Standards: HTML5, CSS3, JavaScript and Web Services
 - Web interaction Libraries: HighCharts Charting, ExtJS UI/Grid
 - Operating System: Ubuntu Linux 12.04





The Reporting Database

- Gathers information from other database sources as part of an ETL (Extract, Transform and Load) process.
- During this process data can be "flattened" for ease of use and combined from the different sources by linking related pieces of information (for example project information from P6 and Contract Manager).
- Reporting Databases are not "live" databases but are refreshed on a regular basis (for example, daily).
- A reporting database can easily retrieve data from multiple P6 or Contract Management databases.
- Primavera's P6 Analytics Reporting Database is an example of a Reporting Style of Database that includes P6 data. Non-P6 data can be added to the environment.



Benefits

- Integrated reporting is less costly than full application integration.
- Data in the reporting database is easier to work with for ad-hoc reports.
- Reporting database can support data access security.
- A variety of third party tools are available to access the reporting database directly for specialized output.
- Reports, Dashboards, Analytic data easily accessed through simple web interfaces or devices.
- Output is interactive with "drill-down" capability.
- Audit reports can align with source data.

Examples

- Los Angeles Metro
 - Orange Line Project Summary
 - Measure R Public Dashboards
- Large Utility
 - Dashboards

A single page summary report has been created for each of the Major Rail projects and dynamically displays data from P6 and Contract Management related to convey high level project information in a single view.



Metro Orange Line Extension

Status Date: 07/01/2011

The Metro Orange Line (MOX.) Expension Project is a four-mile extension of the Wetro Orange Line extending from the Carcoga park-and-ride for to the Chasboard Metrolink Station. The Project indulests beavay, new station partforms at the Carcoga park-and-ride lot, new stations at Sherman Way (with park-and-ride), Roscoe Boulevard, Nordhoff Street, and the Orange park-and-ride lot, new stations at Sherman Way (with park-and-ride), Roscoe Boulevard, Nordhoff Street, and the Orange of Sherman Way (with park-and-ride), grade-opparation structure over active rational facility and Lastens Direct (Lassen/Mix) Overcrassing) providing direct access into the Chatbevorth Metolink Station; Los Angeles River and Santa Susana West bridge consuling; and switchs bus preking tacility. The project also includes street improvements, beyde-biddestian path, systems equipment and Inadecepting similar to the MOX.

PROJECT DESCRIPTION

With the MTA Board adoption of the MOL Extension Project in January 2009, the Board directed staff to accelerate the completion of the Project to summer 2012.

	Funding (in Millions)	Funding %	
Prop 18 Funds - SLTPP	\$73.8	34.2%	
Prop C 25%	\$71.8	33.3%	
Prop 18 Funds - PTMSEA	\$70.0	32.5%	
PROJECT TOTAL	\$215.6	100%	



The design builder, Brutoco Engineering & Construction, Inc., started on March 1, 2010 and is suspensible for the construction of the Lasson bridge and Lasson Short improvements as well as for the design and construction of the remaining Project score of work. The design builder has started:

Construction of the underground utility work on Lassen Street. Relocation of utilities conflicting with Lassen bridge foundations. Construction of Abutment No. 1 and No. 4 foundations of Lessen bridge. Removal of potentially contaminated soils. Final design of the business, sheet crossings, bitkeway, stations and remaining bridges. Other Project Specific term negated for missaue operations included:

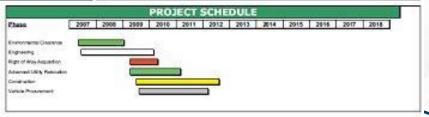
 Purchase and install fare collection equipment – a contract modification was executed in October with Cubic Transportation Systems, Inc., for required equipment.

Station Artwork - selected artists for station artwork

Vehicles – complete a middle overhauf of existing Change Line busins and add busins to the feet in time for a summer of 2012 opening.

Milestone	Baseline Plan	Forecast / Actua
Begin Preliminary Engineering	June 2008	June 2008
Board selects Locally Preferred Alternative	June 2008	June 2008
Board certifies FEIS/FEIR	January 2009	January 2009
Begin Construction Contract Solicitation	June 2009	June 2009
Issue Dosign/Build Contract NTP	March 2010	March 2010
Commence Revenue Operations	July 2013	August 2012

(in Millions)					
	Current Budget	Conwittments	Expenditures to Date	Correct to	
CONSTRUCTION	\$137.3	\$92.2	\$39.1	\$119.5	
RIGHT-OF-WAY	\$8.0	7.00	\$2.1	\$5.0	
VEHICLES	59.9	9.00	53.3	\$0.9	
PROFESSIONAL SERVICES	\$38.7	\$13.5	519.4	\$33.8	
PROJECT CONTINGENCY	\$21.7	262	5.5	\$47.3	
PROJECT RESERVE	-	-	574	¥ii	
PROJECT REVENUE		- 1		XII.	
PROJECT TOTAL	\$216.6	\$105.7	\$63.9	\$215.6	





Project Status Reports

Crenshaw / LAX Transit Corridor

Eastside Transit Corrido Phase II

Exposition Light Rail Transit to Santa Monica

Gold Line Foothill Light Rail Extension

Green Line Extension to LAX

Green Line South Bay Extension

Metro Orange Line Extension

Regional Connector

San Fernando Valley East North-South

San Fernando Valley I-405 Corridor

West Santa Ana Branch Corridor

Reports are easily accessed via a custom portlet in the P6 Web Dashboard and users can select the specific project link and launch the report directly from within P6 Web.

Metro Orange Line Extension

Status Date: 07/01/2011

PROJECT DESCRIPTION

(a)MCI, Scoreich Project is a four-mile extension of the Matrofrom the Carego part-and-risk to the Challegorth Metolinik dudes believing new station platforms of the Canago park-and-Shermann Wey (with part-and-sher). Roscoe Bouslewerd, Nondrieff and Matrofinik Station (with part-and-sher), gradio-separation for the Challegorth Canado Princip (Lasand/ME) Overcrossing), into the Challegorth Station (but Angeles Roser and risks consisting and sizes. In a graving facility. The project provious risk, bicycle-parket and princip solids.

poption of the MOL Extension Project in January 2009, the Bo rate the completion of the Project to summer 2012.

	MAP
- 8	Comments - Contract
- 6	Total - Total
- 6	- marin
- 8	D sans
- 1	(C) Personne
- 1	Married Land
- 1	300000000000000000000000000000000000000
- 1	
- 8	
- 10	
- 8	
- 8	
- 1	(C) WHINEIN
- 8	
- 6	THE RESERVE TO SERVE THE RESERVE THE RE
- 6	
- 8	E man
- 8	The second second
- 12	BANKA .
- 1	PARK 2
- 1	MESSELAND STLAG
- 6	

CURRENT STATUS

The design builder, Bristoco Engineering & Construction, Inc., started on March 1, 2010 and is aspensible for the construction of the Lissoon bridge and Lisson Street improvements as well as for the design and construction of the remaining Project scope of work. The design builder has satired:

Construction of the underground utility work on Lasson Street, Relocation of settins conflicting with Lasson bridge boundations. Combination of Abutiment No. 1 and No. 4 Sourcetains of Lasson bridge, Removal of potentially conferminated soils. Final design of the burnery, attent crossings, bitisessy, stations and metaphop bridges. Other Project Struction and measured for research confermination and confermination of the confermination of the second confermination confermination of the conferminatio

Purchase and install fare collection equipment – a contract modification was executed in October with Jubic Transportation Systems, Inc., for required equipment.

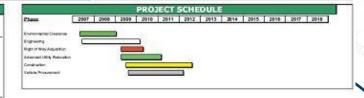
Station Artwork – selected artists for station artwork

 Vehicles – complete a middle overhaul of existing Orange Line buses and add buses to the feet in time for a summer of 2012 opening.

Milestone	Baseline Plan	Forecast / Actual
Begin Preliminary Engineering	June 2008	June 2008
Sound selects Locally Preferred Atternative	June 2008	June 2008
Board cortifies FEIS/FEIR	January 2009	January 2009
Begin Construction Contract Solicitation	June 2009	June 2009
Issue Dosign/Build Contract NTP	March 2010	March 2018
Commence Revenue Operations	July 2013	August 2012

	Funding (in Millions)	Funding %	
Prop 18 Funds - SLTPP	\$73.8	34.2%	
Prop C 25%	\$71.8	33.3%	
Prop 18 Funds - PTMSEA	\$70.0	32.5%	
PROJECT TOTAL	\$215.6	100%	

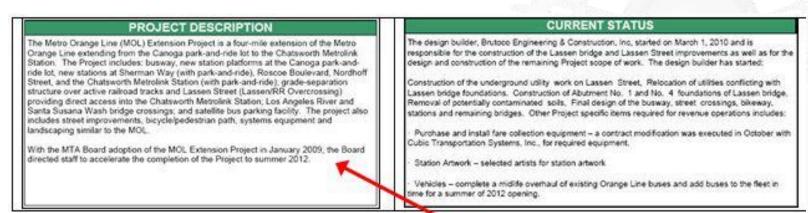
PROJECT BUDGET					
(in Millions)					
	Gurrent Budget	Conwittments	Expenditures to Date	Corrent Forecast to	
CONSTRUCTION	\$137.3	\$60.2	\$39.1	\$119.5	
RIGHT-OF-WAY	\$8.0		52.1	\$5.0	
VEHICLES	\$9.9	9.00	\$3.3	\$0.9	
PROFESSIONAL SERVICES	\$38.7	513.5	519.4	\$33.8	
PROJECT CONTINGENCY	\$21.7	3.40	7.5	\$47.3	
PROJECT RESERVE	-	64	5%	¥iii	
PROJECT REVENUE				XII	
PROJECT TOTAL	\$215.6	\$105.7	\$63.9	\$215.6	

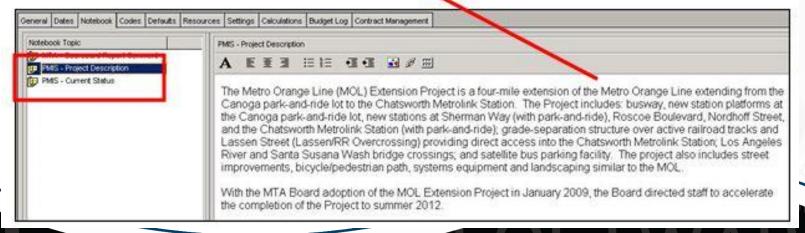






Summary Report fields for Project Description and Current Status are receiving information from Notebook Topics within P6. This information has the capability to be updated within the P6 Client Application or P6 Web.







Report information for Gantt Chart and Project Milestones are updated from schedule information contained within the P6 Summary Schedule. Activity codes are used to identify the proper information and the report consolidates the information for

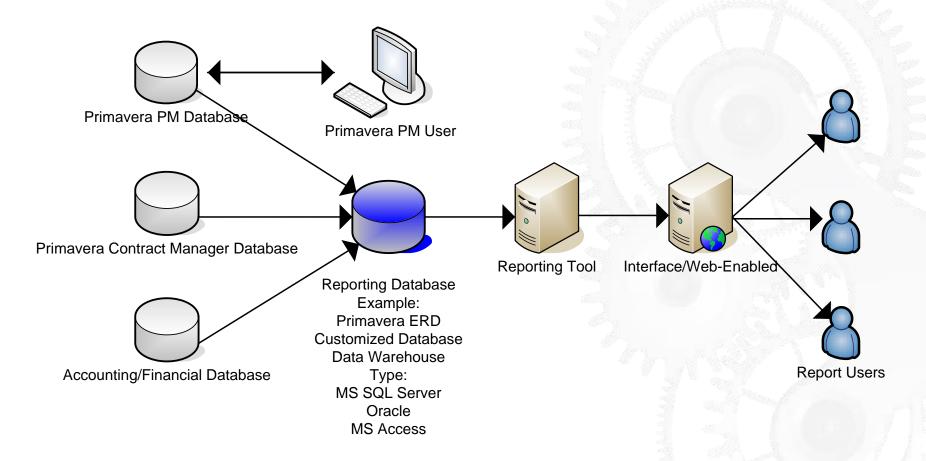
display.

PROJECT MILESTONES				
Milestone	Baseline Plan	Forecast / Actua		
Begin Preliminary Engineering	June 2008	June 2008		
Board selects Locally Preferred Alternative	June 2008	June 2008		
Board certifies FEIS/FEIR	January 2009	January 2009		
Begin Construction Contract Solicitation	June 2009	June 2009		
Issue Design/Build Contract NTP	March 2010	March 2010		
Commence Revenue Operations	July 2013	July 2012		

Activity ID	Activity Name	Start 🔻	Finish	PMIS Milestone Task Code
Orange Lir	ne Canoga Extension	25-Jun-08 A	31-Jul-12	
□ Planning I	Environmental	26-Jun-08 A	22-Jan-09 A	
0E-PL-1020	Board selects Locally Preferred Alternative		26-Jun-08 A	LPA
0E-PL-1040	Board certifies FEIS/FEIR	22-Jan-09 A		EIR
Design Engineering 25-Jun-08 A		27-Jun-09 A		
OE-DE-1070	Begin Preliminary Engineering	25-Jun-08 A		PE
OE-DE-1090	Advertise for Construction Bidders	27-Jun-09 A		AFB
□ Constructi	on	01-Mar-10 A	31-Jul-12	
OE-CO-1000	Issue Design/Build Contract NTP	01-Mar-10 A		NTP
OE-CO-1100	Commence Revenue Operations		31 Jul-12	REV



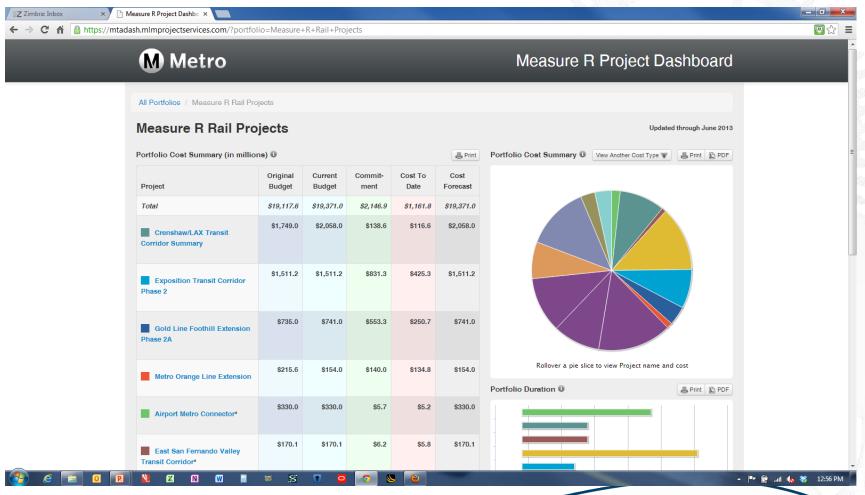
Reporting Structure Architecture





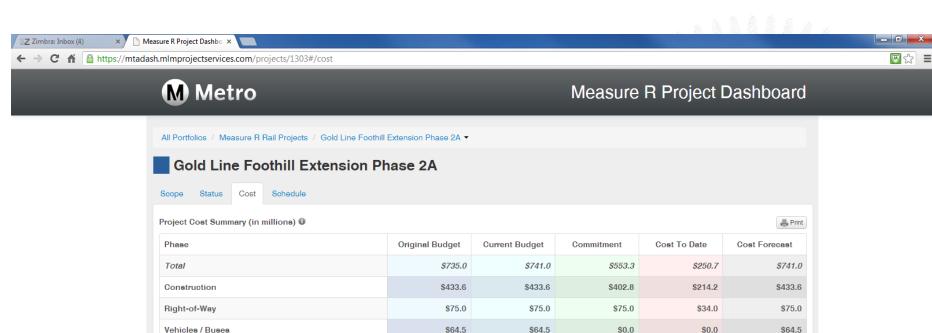
17

LA Metro - Dashboards



https://mtadash.mlmprojectservices.com/





\$64.5

\$84.7

\$47.3

\$30.0

Professional Services

Project Contingency

Project Finance

\$64.5

\$84.7

\$53.3

\$30.0

\$0.0

\$75.5

\$0.0

\$0.0

\$0.0

\$2.4

\$0.0

\$0.0

\$64.5

\$84.7

\$53.3

\$30.0



Executive Summary

- Designed to provide public-facing website that reports:
 - Status and Performance of Measure R projects
 - Include Cost and Schedule information
- Data published is extracted from existing PMIS systems (P6, Ecosys, FIS)
- Administration system in place to validate and audit information PRIOR to publication, including audit of all review and publication steps.
- Designed for Measure R project portfolio but ready to support additional portfolios of projects.



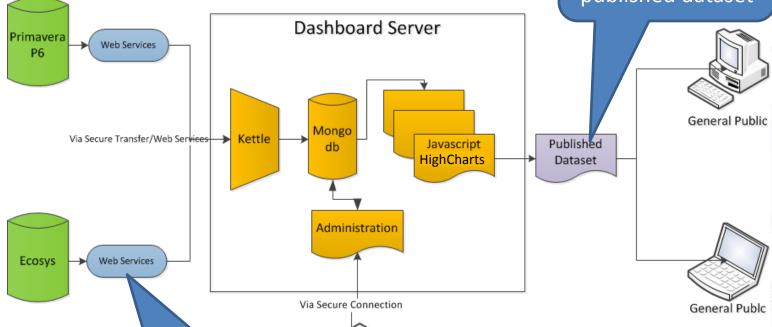
System Overview

- Web-based system.
 - Javascript utilized, but no Java applets to install
 - Browser-independent for most recent browsers
- Data extractions from PMIS systems are done weekly in automated processes.
- Administration of public-facing data is maintained within the Dashboard system.

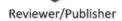


Dashboard Design Overview

Public only has access to current published dataset



Data Sources queried as scheduled services via secure and automated processes



Review and Publication performed securely on Dashboard Server

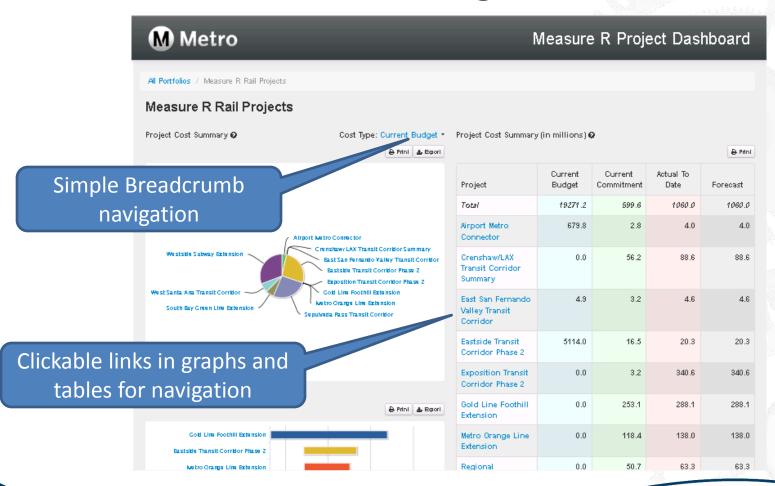


Data Sources

- Cost data—retrieved from Ecosys which includes cost data pulled in from FIS and Primavera Contract Management.
- Schedule data—retrieved from P6.
- Project Status—retrieved from P6.
- Maps—uploaded to Dashboard system.
- Images—uploaded to Dashboard system.

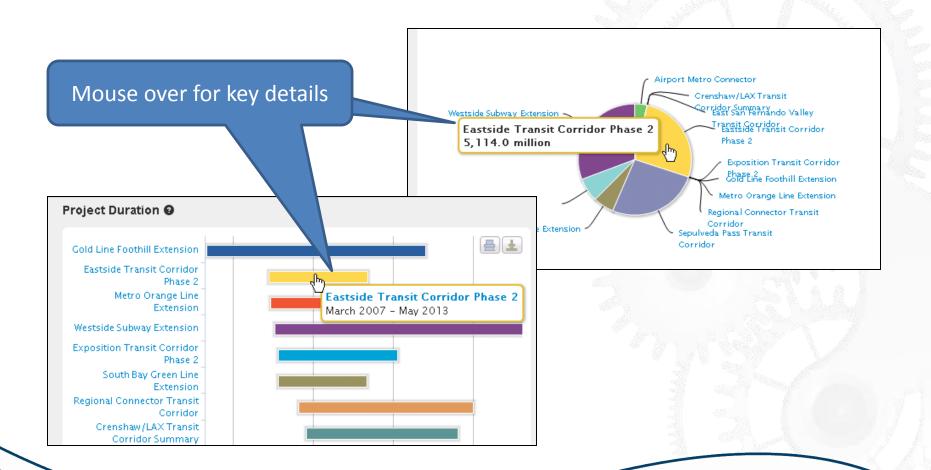


Site Navigation





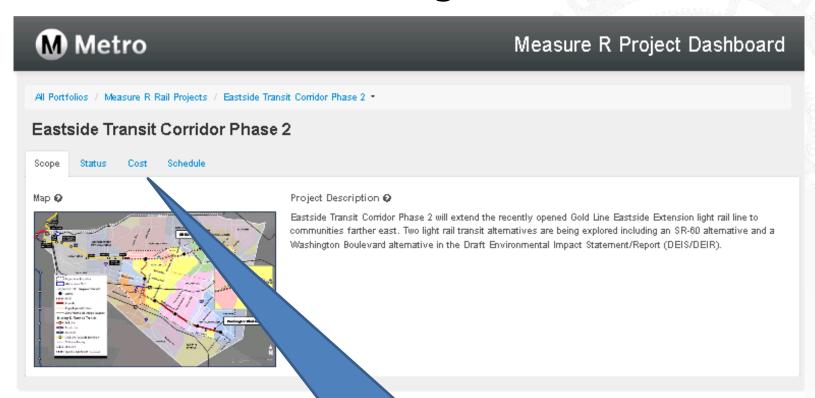
Site Navigation--Graphs





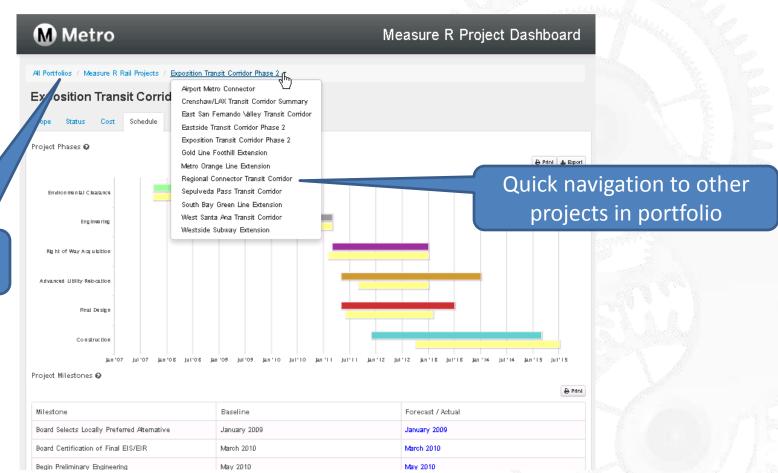


Site Navigation



Details organized into simple tabs

Site Navigation



Breadcrumb navigation





Special Features







Special Features

				⊕ Print	
Project	Current Budget	Current Commitment	Actual To Date	Forecast	
Total	19271.2	599.6	Prin	t option on	all tabula
Airport Metro Connector	679.8	2.8	4.0	data.	
Crenshaw/LAX Transit Corridor Summary	0.0	56.2	88.6	88.6	
East San Fernando Valley Transit Corridor	4.9	3.2	4.6	4.6	
Eastside Transit Corridor Phase 2	5114.0	16.5	20.3	20.3	





Special Features



Scope

Status

Cost

Schedule

Current Status



Current status narrative from the Project Manager

The Phase 2 Design-Build contractor, Skanska/Rados continues to adva alternatives for the maintenance facility. URS began mobilization of the E Beatty Infrastructure who provided the lowest responsive bid for the desi Department of Transportation for a shared use parking garage on City o Caltrans. Continued coordination with LADWP and SCE on overhead por project stakeholders. Skanska/Rados continues potholing and pre-const Canyon Storm Drain.Skanska/Rados continued Preliminary Engineering

Images 🛭

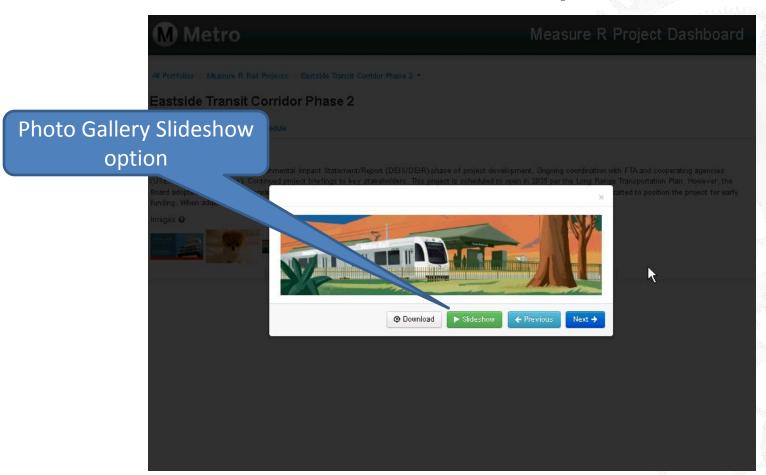


www.drmcnatty.com

Simple Help pop ups to

explain what's on screen

Photo Gallery



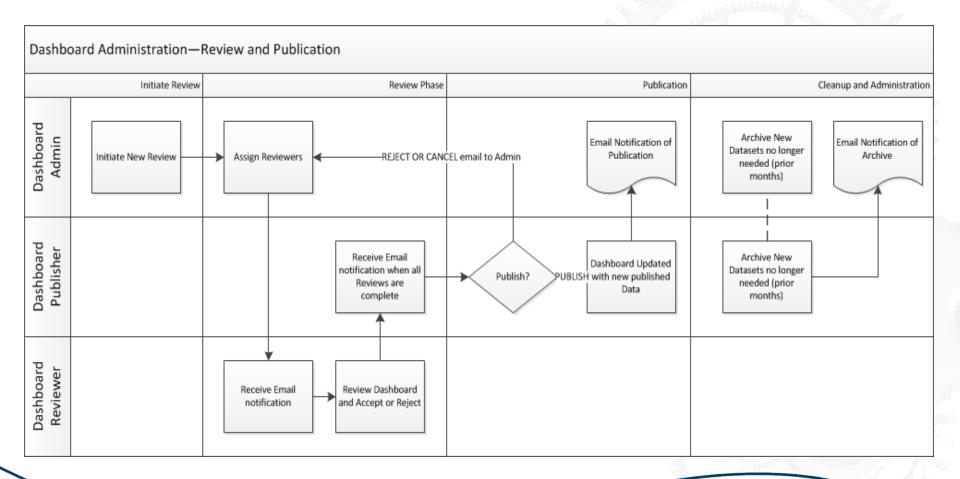


Administration

- Complete Administration utility to administer, review and publish dashboard data.
- Maintains historical record of published, reviewed, rejected data.
- Users for administration have role-based access assigned.
- Review/Publication process utilizes automated emails to users involved.

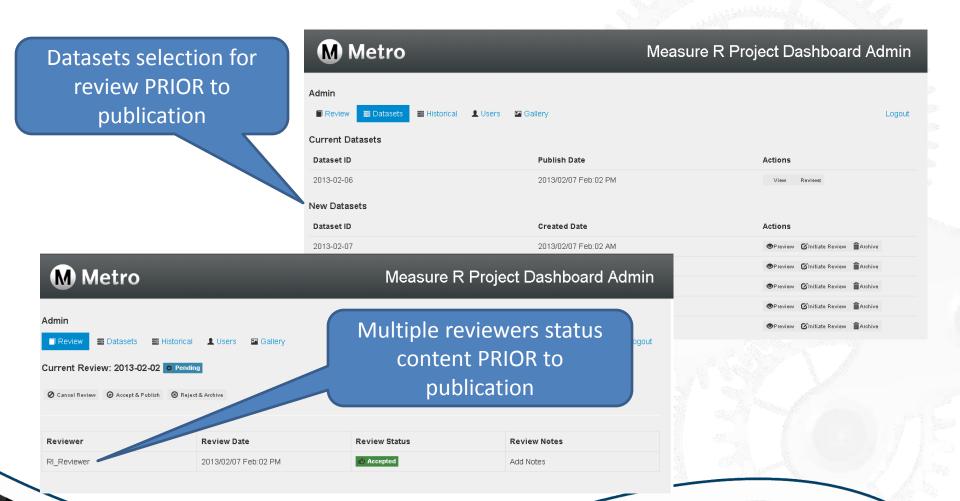


Review and Publication Workflow

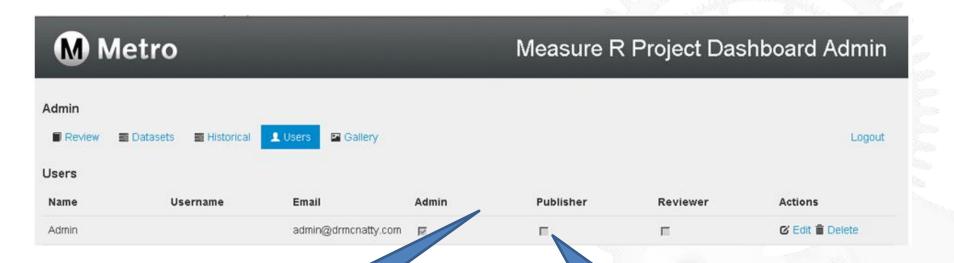




Review and Publish



Role Based Access



User access include Admin,
Publisher and Reviewer
Roles.

Only Publisher Role has rights to publish data to public dashboard



Future Options

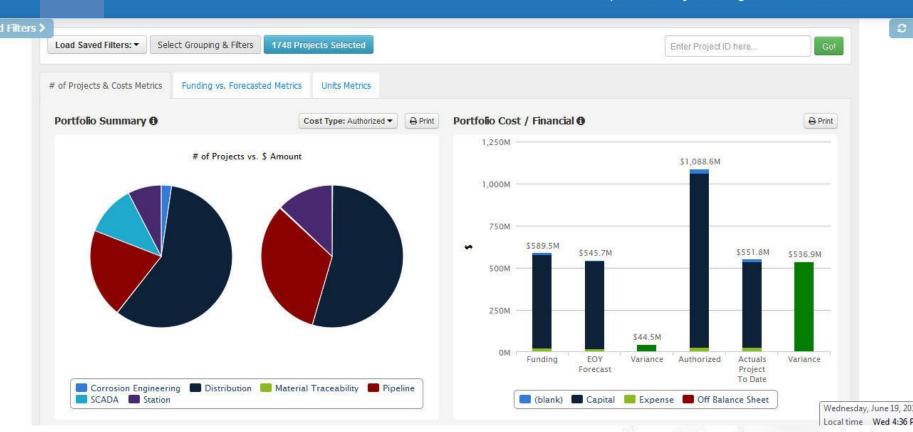
- Implementation of interactive mapping feature for project maps.
- Dashboard currently ready to implement additional portfolios of projects beyond Measure R.

Utility – Performance Reports

- Portfolio Dashboard
- Schedule Dashboard
- Interactive Control of Display
- Project Listing with Drill Down
- Project Summary Dashboard
- Program Status Dashboard
- Program Funding Dashboard

Portfolio Dashboard

Gas Operations Project Management Dashboard





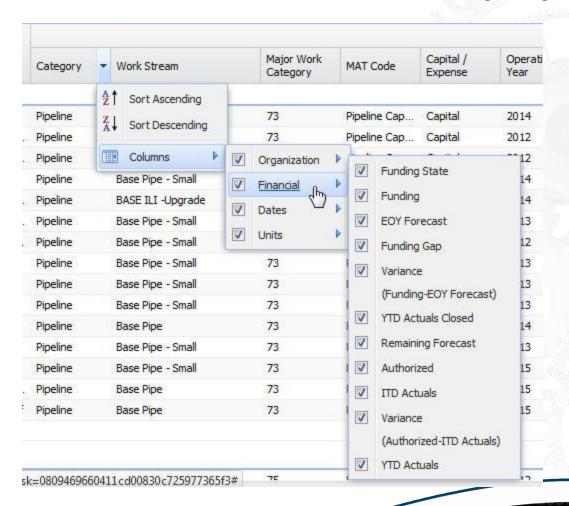
Schedule Dashboard







Interactive Control of Display





www.drmcnatty.com



Project List Dashboard

Portfolio Projects List **★** Excel **Projects** Organization Project Name Project ID Major Work Capital / Operative Active Work Stream MAT Code **BCA** Project Manager Category Category Expense Year Year ∃ 73 2 30713000 Pipeline Base Pipe 73 Pipeline Cap... Capital 2014 A2013 BIGGERSON LEED-DEAN LOSS SEASON & Michael Silver Name Colors 30941511 Pipeline Base Pipe 73 Pipeline Cap... Capital 2012 A2012 \$40041-1116-NP-8-40 TO-8-62/Happ Wildfrand (\$184a) Brica-Dudley Pipeline Base Pipe 73 Pipeline Cap... Capital 2012 A2012 Michael Biller (Dress Deallers E 73 30631419 Pipeline Base Pipe - Small Pipeline Cap... Capital 2014 A2013 Pfchael filter (Brica-Dudlin 73 A2013 30957586 Pipeline BASE ILI -Upgrade Pipeline Cap... Capital 2014 Brisa-Dudley 73 A2013 30841074 Pipeline Base Pipe - Small Pipeline Cap... Capital 2013 HILD and Hillian (30713007 Pipeline 73 2012 A2012 Base Pipe - Small Pipeline Cap... Capital History (MATHE MILITIAN 30841076 Pipeline Base Pipe - Small 73 Pipeline Cap... Capital 2013 A2013 Whithout Stiffer C. James Williams 853 Pipeline 73 2013 A2013 30990731 Base Pipe - Small Pipeline Cap.. Capital PROTeast Stiller (30972542 6-36 Pipeline Base Pipe - Small 73 Pipeline Cap... Capital 2013 A2013 Pipeline 73 30911591 B-304 Base Pipe Pipeline Cap... Capital 2014 A2013 Whitesad Stillian C. Name - Outre 30841077 B-3020# Pipeline Base Pipe - Small 73 Pipeline Cap... Capital 2013 A2013 PM/Food Tillian (Jame Hillion 30936276 \$-362 DPK Pipeline 73 A2013 Base Pipe - Small Pipeline Cap.. Capital 2015 PREPage 1678ac (Britis-Dudley 30603844 Pipeline 73 Pipeline Cap... 2015 A2014 Base Pipe PROFessor Hillian Server Quarre 16 30603687 Pipeline Cap... に回り 双連 Pipeline Base Pipe 73 Capital 2015 A2014 PS:(Fund : ELH) AWYER-QUIN 15 Projects

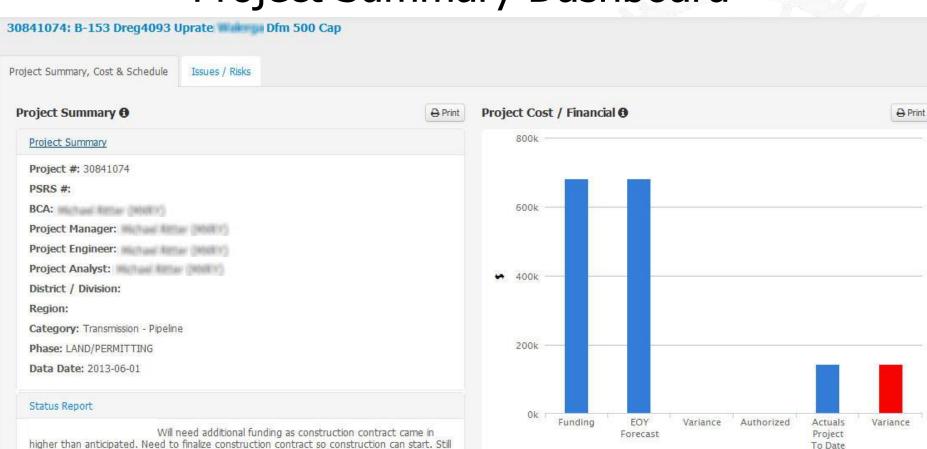
> Drill Down



877.367.7990 www.drmcnatty.com



Project Summary Dashboard





Status Report Archive



anticipating an early July start; however dependent on when NTP is issued.

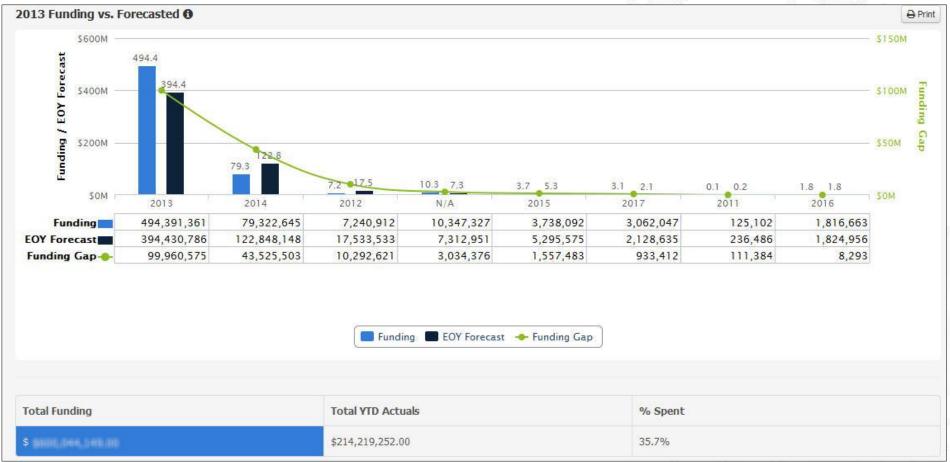
Program Status Dashboard







Program Funding Dashboard







Demonstration

LA Metro Public Dashboard

https://mtadash.mlmprojectservices.com/



Summary

- Integrated reporting has proven to be much lower cost than full blown "integration".
- Integrated reporting can be implemented in much less time than full "integration".
- A wide variety of third party tools easily brings the latest in interactive, drill-down technologies to web based program, portfolio and project reporting.
- This approach also allowed us to provide project reports to a public audience with full audit/approval workflow.
- This approach has allowed our clients that need the flexibility of multiple databases to accomplish the "Enterprise Reporting" of a single database.





UPCOMING EVENTS







The DRM team is participating in and will have a booth at these upcoming events.

QUESTIONS?





Get updates on the latest news, events and upcoming webinars. Sign up for our newsletter on our website www.drmcnatty.com



