



plante moran | Audit. Tax. Consulting.  
Wealth Management.

# Manage risk: budgeting and planning in construction

Adapting to a new world



# Presenters



## Bob Tinglestad | Principal Construction Technology

I'm one of the firm's construction leaders with an emphasis on improving organizational performance through technology optimization and analytics. My expertise spans business intelligence needs analysis, data integration/management, and BI tool implementations. My passion is helping our clients through the journey of becoming a data-driven organization; enabling them in making confident decisions that solve problems, optimize productivity, seize opportunities, and manage risk.



## Chris Porter | Manager, Construction

As the leader of the Construction team, Chris is responsible for ensuring that Construction organizations understand how Corporate Performance Management (CPM) software will help to better manage their projects to gain a deeper understanding of their data and make better business decisions. In Chris' 10 years with Prophix he has consistently taken on greater responsibilities in a variety of roles including; Consulting, Sales and Channel Partners. Chris is passionate about helping people improve the pace of their business through the power of automation.



# Learning objectives

- Understand how types of budgets and forecasts that can improve your organization's decision making.
- What is a CPM tool and how can it help?
- Benchmarking and consensus gathering





# Creating a data-driven culture in construction

*Collaboration, Transparency & Alignment.*

*A few practical examples to support your  
visioning...*



# Example #1: Cash gap





# Example #2: Margin Analysis

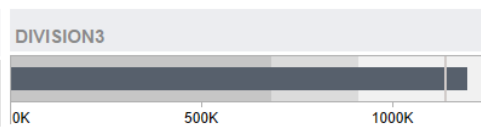
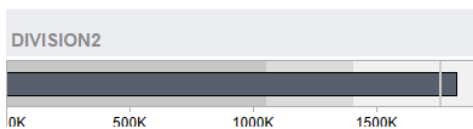
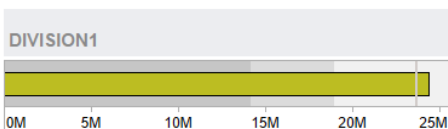


Gross Margin Analysis: 12/2017 to 12/2018  
YoY GM Increase | **YOY GM Decrease**

Click the bars to filter location

Contract Value	Gross Margin	Jobs	Change	<input checked="" type="radio"/> (All) <input type="radio"/> 2017 <input type="radio"/> 2018	Estimator (All) ▼	Project Manager (All) ▼
\$2,671M	\$86M	159	-6.84%			

## SAMPLE CONSTRUCTION Co



Gross Margin			Gross Margin			Gross Margin		
2017	2018	Change	2017	2018	Change	2017	2018	Change
37,871,536	34,150,426	-9.83%	2,853,020	2,907,720	1.92%	\$53,762	\$62,868	16.94%

Job Name	2017				2018			
	Contract Value	Estimated Cost	Gross Margin	GM %	Contract Value	Estimated Cost	Gross Margin	GM %
<b>Grand Total</b>	1,279,531,886	1,235,097,738	44,434,148	5.8%	1,391,744,331	1,350,348,316	41,396,015	6.0%
111 Diego Dr.	45,151,628	44,751,628	400,000	0.9%	46,709,054	48,806,326	-2,097,272	-4.5%
CC River	32,799,138	32,179,256	619,882	1.9%	33,186,530	33,325,356	-138,826	-0.4%
Park Library Parking Lot	237,203	237,203	0	0.0%	0	72,719	-72,719	0.0%
Cotton Wood Visitor Center Roof	143,000	143,000	0	0.0%	161,674	181,999	-20,325	-12.6%
Master Main Lobby	1,178,068	1,139,793	38,275	3.2%	1,173,171	1,184,984	-11,813	-1.0%
TR5 Veranda Reno	262,942	312,942	-50,000	-19.0%	227,256	238,669	-11,414	-5.0%
Succession Art Gallery	504,021	504,021	0	0.0%	532,524	533,622	-1,099	-0.2%
Widedot - Box T*R	1,691	1,495	196	11.6%	0	163	-163	
P90 USCG Carpet Install	2,547	2,316	232	9.1%	1,631	1,763	-132	-8.1%
Widedot - U3, Y65, Duo	4,893	4,355	538	11.0%	4,448	4,467	-20	-0.4%
Widedot Fill Holes	9,200	8,464	736	8.0%	4,980	4,998	-18	-0.4%
Widedot - Flooring	5,300	4,876	424	8.0%	4,941	4,958	-18	-0.4%
Widedot - Flooring part 2	5,300	4,876	424	8.0%	4,972	4,986	-14	-0.3%
Widedot - Basement Blowout	1,100	979	121	11.0%	1,047	1,050	-4	-0.3%
Welton Crop Redesign	1,125	1,077	48	4.3%	0	1	-1	



# Example #3: Backlog & scheduling

Labor Backlog						Material Backlog
Category	As Bid Backlog Days	Backlog Days Used	Days Remaining	Potential Days	Open Days	Choose a Job Number
Traffic Control	1643	661	982	1700	57	(All)
Grading	613	673	-60	750	137	Estimator Name
Mill Cleanup	1000	995	5	1500	500	(All)
Conditioning	105	100	5	110	5	Project Manager Name
Paving	889	449	440	900	11	(All)

Job Number	Job Description	Estimate Number	Estimator	Project Manager	Category	As Bid Backlog Days	Backlog Days Used	Days Remaining
316-56984	Bryant St	13654987	Noah Fant	Shaun Hanson	Conditioning	22	15	6.6
					Paving	94	83	10.6
					Grading	198	180	18
135-4465	16th Street Mall	13224976	Jack Johnson	Shaun Hanson	Conditioning	17	5	11.8
					Paving	73	43	29.8
					Grading	154	99	55





# Example #4: Equipment Cost Modeling

## EQUIPMENT COST MODEL EXAMPLE

**Shop Budget & Equipment Utilization**

Main Menu

	Target Hours	Expected Hours	Utilization	Required Shop Hours	Variable Equip Rate	Fixed Equip Rate	Fuel Cost	Parts & Service Costs	Shop Labor	Variable Shop Overhead	Projected Fixed Recovery	Excess Capacity Cost	Total	
Grand Total	926,219	820,477	90%	26,038				\$11,289,648	\$4,626,807	\$920,769	\$1,001,826	\$10,731,873	\$1,936,058	\$32,107,086

**Excavators**

	Target Hours	Expected Hours	Utilization	Required Shop Hours	Variable Equip Rate	Fixed Equip Rate	Fuel Cost	Parts & Service Costs	Shop Labor	Variable Shop Overhead	Projected Fixed Recovery	Excess Capacity Cost	Total
Cat 325/330	18,000	19,323	107%	461	\$ 9.05	\$ 9.92	\$542,976	\$112,548	\$9,223	\$33,155	\$191,603	(\$13,118)	\$896,383
Cat 345/350	10	10											
Cat 365	4	4											
Cat 375/385	6	6											
Total	38	38											

**Graders**

	Target Hours	Expected Hours	Utilization	Required Shop Hours	Variable Equip Rate	Fixed Equip Rate	Fuel Cost	Parts & Service Costs	Shop Labor	Variable Shop Overhead	Projected Fixed Recovery	Excess Capacity Cost	Total
Cat 140	10	10											
Cat 160	16	16											
Cat 14	12	12											
Total	38	38											

**Dozers**

	Target Hours	Expected Hours	Utilization	Required Shop Hours	Variable Equip Rate	Fixed Equip Rate	Fuel Cost	Parts & Service Costs	Shop Labor	Variable Shop Overhead	Projected Fixed Recovery	Excess Capacity Cost	Total
JD 850	30	30											
Cat D6	12	12											
Cat D8	14	14											
Cat D9	4	4											
Cat D10	2	2											
Total	62	62											

**Tractor-Boxblades**

	Target Hours	Expected Hours	Utilization	Required Shop Hours	Variable Equip Rate	Fixed Equip Rate	Fuel Cost	Parts & Service Costs	Shop Labor	Variable Shop Overhead	Projected Fixed Recovery	Excess Capacity Cost	Total
Cat 416/420	7	7											
Cat 570	7	7											
Cat 580	7	7											
Total	21	21											

**Loader-Wheel**

	Target Hours	Expected Hours	Utilization	Required Shop Hours	Variable Equip Rate	Fixed Equip Rate	Fuel Cost	Parts & Service Costs	Shop Labor	Variable Shop Overhead	Projected Fixed Recovery	Excess Capacity Cost	Total
Cat 140	10	10											
Cat 160	16	16											
Cat 14	12	12											
Total	38	38											

**Hourly Rate Summary**

Main Menu

	Fuel	Parts & Service	Shop Labor	Fixed Equip Rate	Excess Capacity Cost	Include Fuel?
Excavators	\$ 5.82	\$ 0.48	\$ 2.75	\$ 9.92	\$ (0.68)	No

**Operating Costs - Excavators**

Main Menu

	Shop Hrs	Shop \$	Parts/Service	Interval	Cost / Hour	Shop Hrs	Shop \$	Parts/Service	Interval	Cost / Hour
Excavators										
Cat 325/330										
Cat 345/350										
Cat 365										
Cat 375/385										

**Ownership Data**

Main Menu

	Replacement Cost	Salvage Value	Useful Life (Years)	Useful Life (Months)	Expected Hours / Machine	# of Units	Insurance Category	Target Hours / Unit	Base Ownership Rate	Salos Tax @ 10.25%	Property Tax @ 2.5%	Cost of Funds @ 6% over 4 years	Total Ownership Cost per Hour	
Excavators														
Cat 325/330	\$219,000	\$125,000	7	14,000	2,147	9	Off-road	2,000	6.71	6.69	0.31	0.22	1.99	9.93
Cat 345/350	\$358,000	\$20,000	7	14,000	1,667	5	Off-road	2,000	19.86	2.04	0.39	0.27	3.25	25.81

**Cost Factors**

Main Menu

	Off-road Fuel Cost	On-road Fuel Cost	Cost of Funds	Sales Tax Rate	Property Tax Rate	Insurance (annual premium)	Off-road - (% of equipment value)
	\$2.81	\$3.15	6.00%	10.25%	2.50%		0.25%

**Calculation of Remaining Shop Expenses**

	Total Department Budget	Less:	Excess Capacity Cost (per model)	Actual Equipment Depreciation	Maintenance Parts & Service (per model)	Fuel (per model)	Property Tax (per model)	Insurance (per model)	Mechanics Wages	Remaining Shop Overhead	Maintenance & Repair Labor Hours	Shop Base Wage Rate	Shop Overhead Rate	Total Shop Rate
	\$28,000,000		\$ 1,936,058	\$ 6,000,000	\$ 4,626,807	\$ 11,289,643	\$ 201,413	\$ 423,374	\$ 520,769	\$ 3,001,936	26,038	\$20	\$115	\$135

**Reconciliation to Shop Department Cost**

	Total Extended Cost (Cost Model)	Less costs in model but not charged to client	Subtract Capital Cost (Cost Model)	Subtract Cost of Funds (Cost Model)	Subtract Sales Tax (Cost Model)	Add costs charged to dept but not in model	Addback Actual Equipment Depreciation	Adjusted Equip Related Cost (Cost Model)	Total Department Budget	Variance
	\$32,107,086		\$ (7,789,774)	\$ (11,573,951)	\$ (798,247)		\$ 6,000,000	\$ 24,000,000	\$ 28,000,000	\$ 6,000,000

**Equipment Cost Model**

Main Menu

- Set-up / Reporting
- Cost Factors
- Ownership Data
- Shop Budget
- Rate Summaries

**Off-Road Operating Costs**

- Excavator
- Grader
- Dozer
- Tractor-Boxblade
- Loader-Wheel
- Scraper
- Compactors
- Other Off-road

**Trucking & Other Operating Costs**

- Trucks
- Other Trucks
- Haul Trailers
- Other Trailers
- Paving
- Batch Plant
- Bridge
- Misc

**webinars.plantemoran.com**





- [illegible]

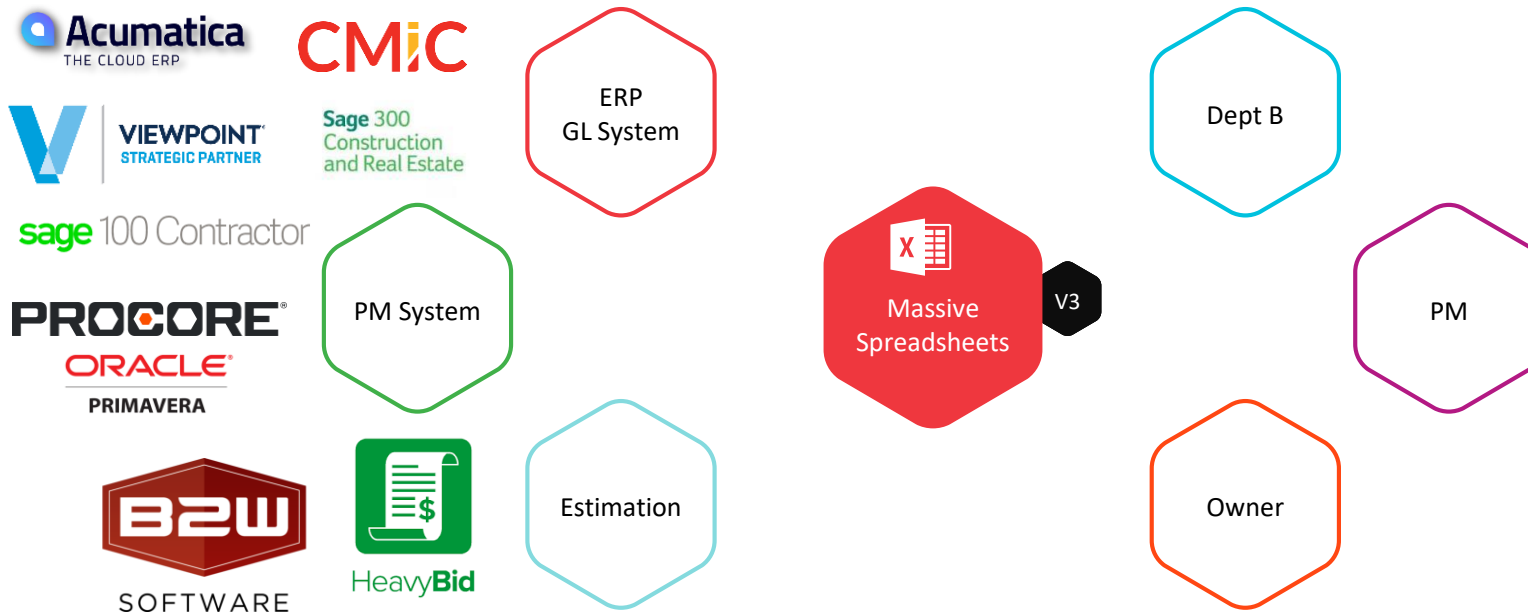
*-General Dwight D. Eisenhower*



# Learning objectives

- Understand how types of budgets and forecasts that can improve your organization's decision making.
- **What is a CPM tool and how can it help?**
- Benchmarking and consensus gathering

Today, many environments look like this...



And you have all of this for **budgets, actuals and forecasts!!!**  
Resulting in overwrites, deletions, lost versions, late nights and **confusion!**

**DEMO**





# Learning objectives

- Understand how types of budgets and forecasts that can improve your organization's decision making.
- What is a CPM tool and how can it help?
- **Benchmarking and consensus gathering**



# End user adoption

Solve a business need

Understandability

Performance

Accuracy

Executive sponsorship



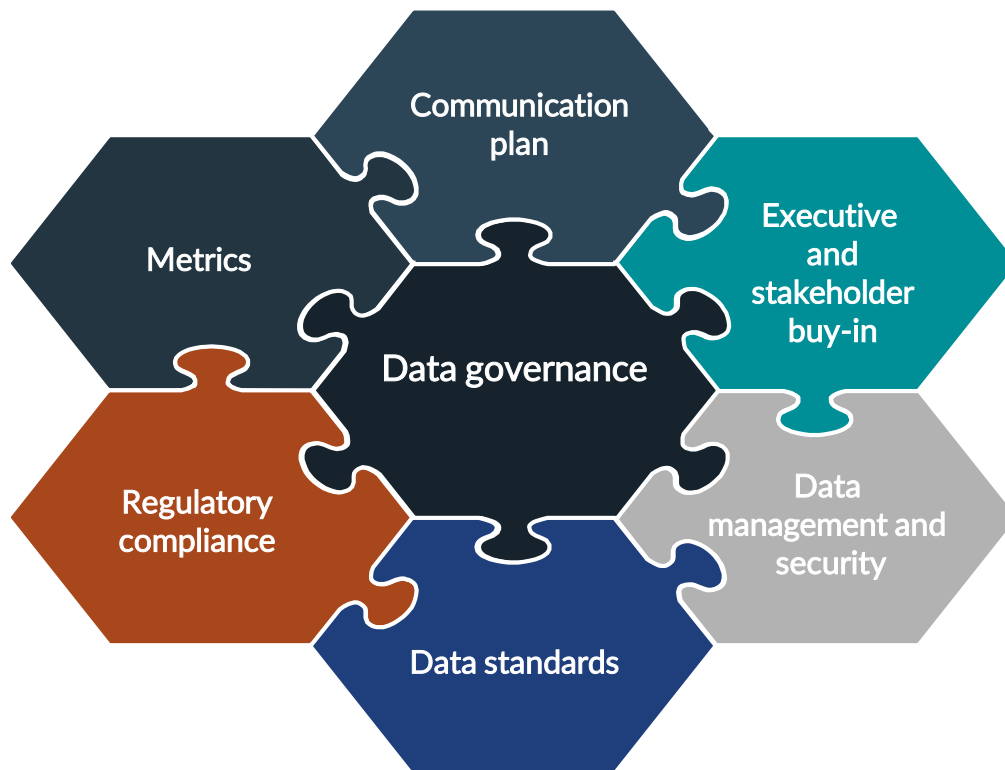


# The jigsaw of data governance

Best practice components are **variable** for each **organization**; some translate into higher success rates than others.

Start with a manageable set of data. **Look at the size of the organization, the number of data sets to be governed, and required data security compliance**

**Establish which best practices will generate the highest results** for your organization's data governance initiative and implement them first.





# Data Governance guided by Drivers

## Data Governance

Efficiency

Practice

Culture

Knowledge

Control

Operations

Information  
Architecture

Process

Policy

People

Behavior

Definitions

Data  
Assets

Applications

Risk/  
Security

Quality

Data  
Flows





# Q&A



# Thank you for attending!

Business Analytics for Data Driven Decisions (CFMA)

Supercharge your industry peer group to drive innovation

Growing into business analytics

How construction companies can use business analytics to boost margins

Case study: Large construction company upgrades critical ERP software