

**CO**  **GENCE Alliance**  
**Owners + Architects + Engineers + Contractors**

*Inspire. Educate. Unite.*

# Can Teamwork Reduce Financial Risk?

11 January 2017



# Mission + Purpose

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## Cogence *(Latin)*

**“To drive together” or “Thinking that is well organized”**

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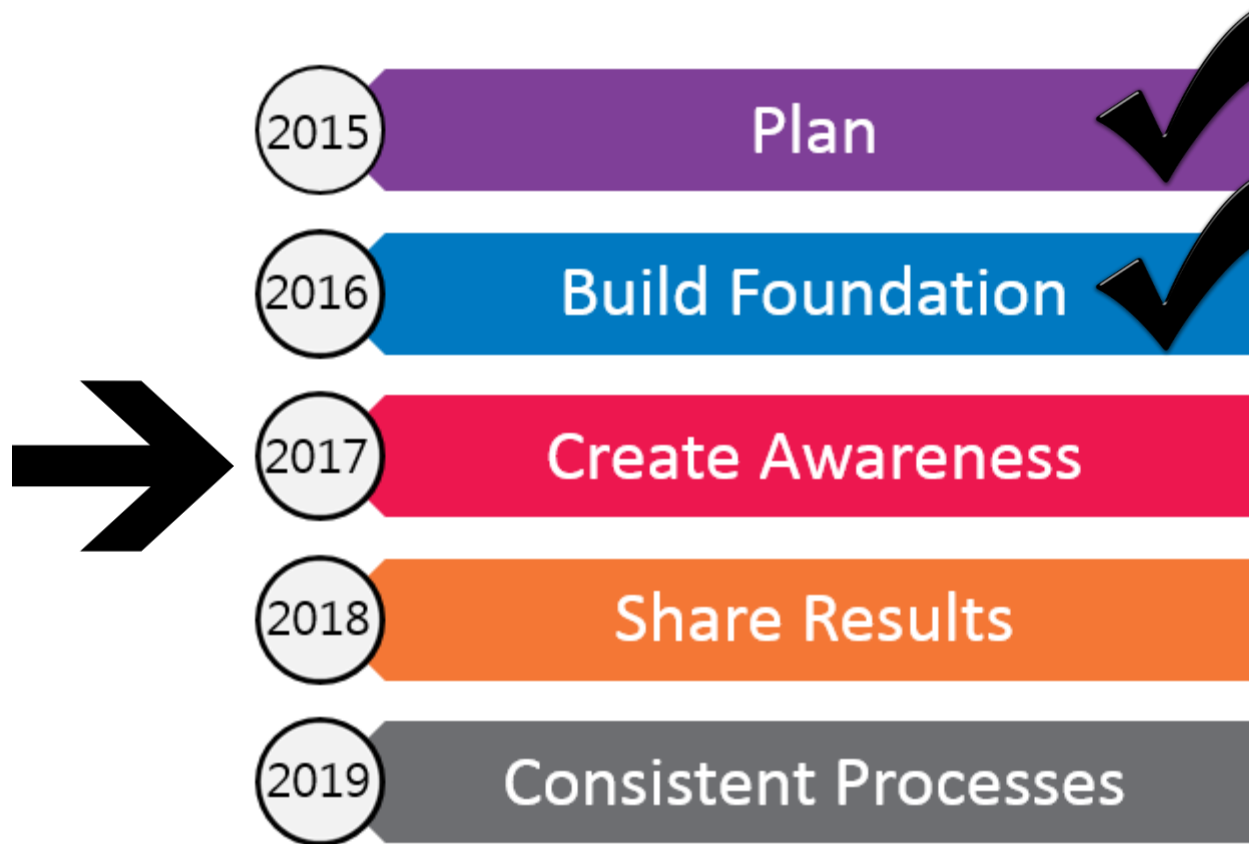
The purpose of the Alliance is to bring Owners and Developers, Architects and Engineers, Construction Managers and Contractors, and Allied Industry Professionals together to **advocate** and be a **resource** for improved project delivery.

*For more information please visit us at  
[www.cogence.org](http://www.cogence.org)*

*Inspire. Educate. Unite.*

# Strategic Timeline

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**How have you been an advocate for Cogence's Mission?**

*Inspire. Educate. Unite.*



# Collective Risks We Face

<b>Leadership</b>		<b>Communication</b>	
 <ul style="list-style-type: none"><li>Change within Project Timeframe</li><li>Lack of Engagement</li><li>Misalignment of Personalities</li><li>Not Involved Early Enough to Affect Outcome</li></ul>		 <ul style="list-style-type: none"><li>Lack of Transparency</li><li>Not Open, Honest, Timely</li><li>Fails to Clarify Intent</li><li>Does Not Happen</li></ul>	
<b>Failed Expectations</b>		<b>Contract Issues</b>	
<ul style="list-style-type: none"><li>Schedule / Budget Not Realistic</li><li>Overcommitting</li><li>Forced to Accept Deficiencies</li><li>Assumptions Made on Incomplete Information</li></ul>		 <ul style="list-style-type: none"><li>Scope Not Detailed</li><li>Shift Risk to Inappropriate Party</li><li>Not Negotiable</li><li>Not Properly Coordinated with Team</li></ul>	
<b>Financial</b>	<b>Project Management</b>		<b>Quality</b>
 <ul style="list-style-type: none"><li>Schedule Delays Business Operations</li><li>Effort Exceeds Budget</li><li>Pricing Assumptions</li><li>Cash Flow</li><li>Estimates Based on Incomplete Info.</li><li>Aligning pricing structure to compete with market</li></ul>	<ul style="list-style-type: none"><li>Inexperience</li><li>Not Being Clear with Performance Expectations</li><li>Scope Creep / Scope Change</li><li>Reliance on Consultant / Sub Performance</li><li>Overextended Workload</li><li>Not Involved Early Enough to Affect Outcome</li></ul>	<ul style="list-style-type: none"><li>Poor Craftsmanship</li><li>Incomplete / Conflicting Docs.</li><li>Constructability Issues</li><li>Poor Performance</li><li>Drawings Never Perfect / E&amp;O</li><li>Changes in Scope Without Change to Schedule; Quality Suffers</li></ul>	

# Agenda

- Introduction (10 Min)
- Basics of Business Practices (35 Min)
- Activity: Develop a Cogent Solution to Financial Problem (50 Min)
- Conclusion (10 Min)
- Plus/Delta (10 Min)

# Owner

**“The worst estimate is the first estimate  
and that’s the one approved by the  
Board of Directors”**

**-unknown**



# Owner - Recent Examples

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- 360,000 SF Kay Jeweler's Pavilion opened in May of 2015, first project using LEAN IPD.
- 24,000 SF Behavioral Health Renovation, opened Jan. 2, 2017 using CMAR.



*Inspire. Educate. Unite.*

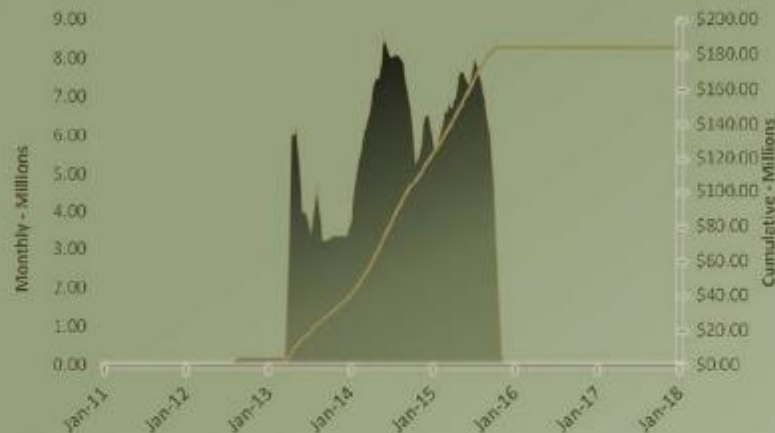
## Critical Care Tower - Baseline

3/22/2012

Total Project Cost: **\$273,003,000**



Monthly and Cumulative Cash Flow



Construction Phasing Plan



### Overall Project Parameters

- 09) Project Area - New Construction: 520,000  
Excludes: Bridge
- 10) Project Area - Interior Fit-out: 371,157
- 11) Project Area - Renovation: -
- 13) Construction Cost / SQFT: \$318.22
- 14) Escalated Cost / SQFT: \$525.01

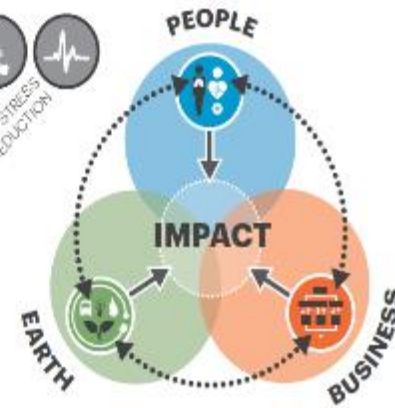
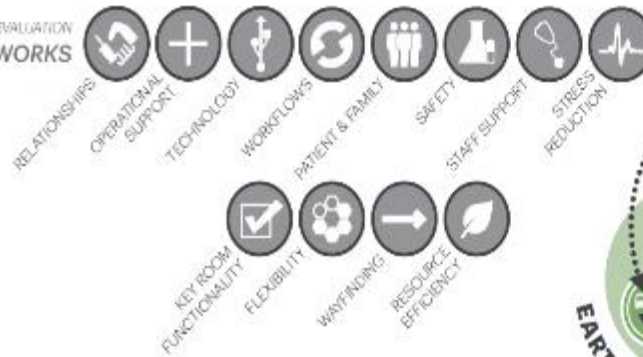


# AKRON CHILDREN'S HOSPITAL

## KAY JEWELERS PAVILION

Location: **Akron, OH**  
 Type: **Critical Care Tower Addition**  
 Size: **368,000 SF**  
 Scope: **75-bed NICU, 39-room ED, Outpatient Surgery, Support Services**  
 LEED Certification: **LEED Gold**  
 Opened: **May 2015**

### FUNCTIONAL PERFORMANCE EVALUATION FRAMEWORKS



## DESIGN INTENT

what IMPACT did **AKRON CHILDREN'S HOSPITAL** have on...  
 KAY JEWELER'S PAVILION

**INCREASED SATISFACTION**

**REDUCED CARBON FOOTPRINT**

**SIGNIFICANT COST SAVINGS**

### ENERGY EFFICIENCY exterior design feature...

- reduced fuel and energy consumption
- reduced fuel and energy costs



#### PATIENT / FAMILY SATISFACTION

Press Ganey Score

AVERAGE IMPROVEMENT:  
**67 points**

Department	Score	Improvement	Target
OUTPATIENT SURGERY CENTER	71	△ 77	88
Outpatient Surgery	25	△ 71	80
Outpatient Surgery	50	△ 59	88
Outpatient Surgery	18	△ 70	88
Outpatient Surgery	101	△ 87	100
Outpatient Surgery	13	△ 80	100
NICU	50	△ 66	86
NICU	22	△ 77	88
NICU	101	△ 80	100
NICU	70	△ 78	100
NICU	50	△ 82	88

#### CARBON FOOTPRINT

Green House Gas (GHG) Emissions



#### CONSTRUCTION COSTS

Budget

**\$44 million**  
 UNDER BUDGET OF \$29 MILLION

CONSTRUCTION COMPLETED  
**54 days**  
 BEFORE 24 MONTH SCHEDULE

\*savings percentages represent the comparisons of Akron Children's Hospital actual operations to the National Averages for Health Care Facilities

#### STAFF SATISFACTION

Post-move Staff Survey



**Children's Hospital Medical Center of Akron  
KJP Final Costs  
Through November 15, 2016**

<b>DESCRIPTION</b>	<b>ACCOUNT</b>	<b>AMOUNT</b>
Construction-WetyBoldt	ASST 1645	123,752,781
Other Construction	ASST 1645	647,548
<b>Soft Costs:</b>		
Site Acquisition	ASST 1645	184,855
Architect	ASST 1645	14,603,658
Pre-Construction	ASST 1645	3,977,810
Landscaping	ASST 1645	192,642
Fees/Administration	ASST 1645	3,519,951
Utility	ASST 1645	1,666,734
Other	ASST 1645	945,940
Lighting/Signage	ASST 1645	282,945
Artwork	ASST 1645	647,188
Security	ASST 1645	<u>9,007</u>
	<b>TOTAL ASST 1645</b>	<b>150,431,059</b>
Project Manager	<b>ASST 1640</b>	<b>1,705,920</b>
WeltyBoldt ICL #1	ASST 1648	4,154,421
HKS ICL #1	ASST 1648	1,087,638
WeltyBoldt ICL #2	ASST 1648	138,481
HKS ICL #2	ASST 1648	<u>36,254</u>
	<b>TOTAL ICL</b>	<b>5,416,794</b>
Demolition	ASST1646	405,203
Utility Work	ASST1647	577,563
Capitalized Interest	ASST1649	<u>9,212,287</u>
	<b>TOTAL</b>	<b>10,195,053</b>
<b>TOTAL BUILDING</b>		<b>167,748,826</b>
<b>TOTAL FURNISHINGS and EQUIPMENT</b>		<b>16,893,619</b>
<b>TOTAL KJP CAPITAL</b>		<b>184,642,445</b>

## ALL IN COST ANALYSIS

**360,000 SF**

**\$175,430,158**

**\$487/SF**

**Original Estimate: \$525/SF**







# Owner - Behavioral Health

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- 24,000 SF Renovation
- Original Budget / Estimate \$2,650,000
- Final Cost \$4,507,000
- Transferred \$1,841,000 from other projects

## **Major Issues**

- Added complete new HVAC System
- Added Private Bathrooms w/ Showers
- Upgrade Security
- Upgrade IT Closet
- Upgrade Fire Alarm



# Owner - Behavioral Health

- The current budget is approximately \$4.5M. Additional funds of \$315k were substituted to cover overages.
- I listed a few items that caused the overrun at the bottom of the attached budget totaling 345k.
- The project was completed on schedule with the final move into 8100 scheduled for the week of 1/2/17.

Budget Available	capital 16-3161	\$4,518,581.00
	From MV	\$1,459,000.00
	Phase II	\$1,250,000.00
	Nurse Call	\$96,000.00
	Phase I	\$1,400,000.00
Substitutions for 8100/8200, capital 16-3161	additional funding	\$175,000.00
	additional funding	\$7,581.00
	additional funding	\$15,000.00
	additional funding	\$116,000.00
Estimated completion		\$4,507,000.00

Changes:	Duct Detectors & AV's	\$35,000.00
	Security Rough & Doors	\$40,000.00
	Swisslog	\$20,000.00
	Relocation phase II allowance	\$200,000.00
	Diebold Move	\$10,000.00
	Firestopping Existing	\$40,000.00
		\$345,000.00





# Owner - Conclusion

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- Kay Jeweler's Pavilion – Final Outcome was \$13.7M lower than beginning project estimate due to letting the process work
- Behavioral Health Renovation - Final Outcome was \$1.84M approved project cost increase due to unplanned infrastructure / physical plant / system upgrades

## Lessons Learned

- Improve the project estimating process
- Avoid Scope Creep as much as possible

# Architecture & Engineering





# A/E - Proposal Process

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## Project Fee

- Compensation for Tasks 1 -4 will be through our standard rates and will not exceed Thirty Three Thousand Dollars (\$33,000)
- Reimbursable expenses (estimated at \$ 3,000) such as travel and printing shall be in addition to our fee and shall be invoiced as they occur.



# A/E - Article 11 – Typical Fee Percentages

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## 11.2 Compensation for Basic Services

**11.2.1** For basic services, as described in Article 2, and any other services included in Article 12 as part of Basic Services, Basic Compensation shall be computed as follows:

- PD 0%
- SD 15%
- DD 20%
- CD 35%
- BN 5%
- CA 20%
- PC 5%



# A/E - Sample Workplan

Heinen's - Chagrin Falls - Engineering Services Retrieve Mode: All Data \* ETC/JTD Date: 8/2/2016

General Rates Labor Consultant Expense Summary Analysis Unit Top-down Plan

Labor									
New Row X Delete Insert Employee Gen									
Description	Project	Comp.	Reim. Allow	Cons. Fee	Planned Hrs	JTD Hrs	JTD Cost	Planned Revenue	
▶ Heinen's - Chagrin Falls - Engineering Services	J20150014.000	83,900.00			759.0	733.50	25,168.22	84,115.41	
▢ Construction Documents	J20150014.000	63,900.00			570.0	715.50	24,640.34	64,034.16	
▢ HVAC	J20150014.000	15,000.00			130.0	203.50	6,903.17	15,000.00	
▢ Plumbing	J20150014.000	15,300.00			158.0	242.00	7,909.09	15,285.57	
▢ Fire Protection	J20150014.000	3,400.00			4.0	10.00	336.54	351.90	
▢ Electrical	J20150014.000	24,200.00			208.0	225.50	7,977.22	24,086.55	
▢ Project Management	J20150014.000	4,000.00			16.0	8.00	526.93	2,884.62	
▢ Support	J20150014.000	2,000.00			14.0			1,954.35	
▢ Technology - CLE	J20150014.000				40.0	26.50	987.39	4,471.17	
▢ Construction Administration	J20150014.000	20,000.00			189.0	18.00	527.88	20,081.25	
▢ HVAC	J20150014.000	4,300.00			35.0	18.00	527.88	4,290.87	
▢ Plumbing	J20150014.000	4,300.00			49.0			4,311.06	
▢ Fire Protection	J20150014.000	700.00			4.0			351.90	
▢ Electrical	J20150014.000	6,000.00			53.0			5,978.37	
▢ Project Management	J20150014.000	2,900.00			16.0			2,884.62	
▢ Support	J20150014.000	1,800.00			28.0			1,817.31	
▢ Technology - CLE	J20150014.000				4.0			447.12	



# A/E - Timecard

## Detailed Timesheet for the Period Ending 1/6/2017

Tuesday, January 10, 2017  
11:27 AM

Osborn Engineering Company

Employee	00464	Kiwala, Shelley M	Total Hr	Sun 1/1	Mon 1/2	Tue 1/3	Wed 1/4	Thu 1/5	Fri 1/6
J20150412.000	002	Stark County Engineer - Roadway Bridge							
	500	Glage Hill Design Development							
		Transportation - AKRON							
J20150456.000	004	Ohio Turnpike - 71-15-04 and 71-15-06							
	500	Bidding							
		Transportation - Akron							
		Reg	5.0					5.0	
J20150726.000	001	ODOT - ODR 254-2-22							
	500	Part 1 - PL and CC							
		Transportation - AKRON							
		Reg	6.0			2.0	2.0	2.0	
J20160205.000	001	ODOT - ODR 10 - GFA-606-7-10							
	500	Part 1 - Preliminary Engineering							
		Transportation - AKRON							
		Reg	2.0			1.0	1.0		
J20160370.000	002	Lake County Eng - 2015 Bridge Inspector							
	500	Part 5 - Load Rating & Report							
		Transportation - AKRON							
		Reg	1.0				1.0		
EP0170007.000		Cleveland Heights - Forest Hill Parking							
		Reg	1.0			1.0			
ZDCPTMGR3.000	102	Department Manager Admin							
		Akron							
		Reg	4.0			3.0	1.0		
		Total Hr							
		Reg	32.0			6.0	9.0	9.0	9.0

Employee 00464  
DAILY TOTALS

Kiwala, Shelley M  
Reg 32.0 6.0 9.0 9.0 9.0





# A/E – Utilization Tracking

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- Importance of Keeping Staff on Production

Group Utilization			
	Actual	Projected	Employee %
Infrastructure	70.47%	75.34%	32.35%
Energy/Facility	71.37%	72.19%	38.24%
SET	55.98%	64.20%	12.75%



# A/E - Estimate to Complete

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Jobs are tracked against contract value; work completed to date  
And work to be completed



# A/E - Project Earnings Report

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Earnings are tracked and compared to contract value  
Work in Progress or WIP adjustments are made accordingly



# A/E - Income Statement

Sample Rock Castle Construction - QuickBooks: Premier Accountant Edition 2011(multi-user)(Admin) - [Profit & Loss]

File Edit View Lists Favorites Accountant Company Customers Vendors Employees Banking Reports Online Services Window Help

Home Search Company Snapshot Customer Center Vendor Center Employee Center Doc Center Report Center Statement Writer App Center Upgrade Live Community Invoice Item Check Bill Reg Acct Rmnd

Modify Report... Memorize... Print... E-mail Export... Hide Header Expand Refresh

Dates This Fiscal Year-to-date From 01/01/2014 To 12/15/2014 Columns Month Sort By Default

11:36 AM  
12/15/14  
Accrual Basis

**Rock Castle Construction**  
**Profit & Loss**  
January 1 through December 15, 2014

	% of Income	Oct 14	% of Income	Nov 14	% of Income	Dec 1 - 15, 14	% of Income	TOTAL Jan 1 - Dec 15, 14	% of Income
<b>Ordinary Income/Expense</b>									
<b>Income</b>									
40100 · Construction Income	100.0%	61,651.25	99.1%	67,550.50	99.7%	51,241.16	100.0%	447,537.34	99.5%
40500 · Reimbursement Income	0.0%	584.00	0.9%	225.00	0.3%	0.00	0.0%	2,119.80	0.5%
<b>Total Income</b>	100.0%	62,235.25	100.0%	67,775.50	100.0%	51,241.16	100.0%	449,657.14	100.0%
<b>Cost of Goods Sold</b>									
50100 · Cost of Goods Sold	3%	669.46	1.1%	2,127.16	3.1%	3,048.45	5.9%	14,766.19	3.3%
54000 · Job Expenses	35.7%	39,338.64	63.2%	36,987.39	54.6%	16,677.46	32.5%	165,299.14	36.8%
<b>Total COGS</b>	38.7%	40,008.10	64.3%	39,114.55	57.7%	19,725.91	38.5%	180,065.33	40%
<b>Gross Profit</b>	61.3%	22,227.15	35.7%	28,660.95	42.3%	31,515.25	61.5%	269,591.81	60%
<b>Expense</b>									
60100 · Automobile	1%	972.84	1.6%	329.80	0.5%	81.62	0.2%	6,844.94	1.5%
60600 · Bank Service Charges	0%	0.00	0.0%	12.50	0%	0.00	0.0%	125.00	0%
62100 · Insurance	4.5%	1,627.99	2.6%	2,086.72	3.1%	1,214.31	2.4%	20,125.09	4.5%
62400 · Interest Expense	0.3%	122.90	0.2%	101.14	0.1%	32.58	0.1%	1,995.65	0.4%
62700 · Payroll Expenses	22.9%	9,051.57	14.5%	9,103.22	13.4%	15,117.86	29.5%	120,347.21	26.8%
63100 · Postage	0.0%	35.00	0.1%	0.00	0.0%	69.20	0.1%	104.20	0%
63600 · Professional Fees	0.0%	0.00	0.0%	0.00	0.0%	250.00	0.5%	250.00	0.1%
64200 · Repairs	1.2%	0.00	0.0%	0.00	0.0%	175.00	0.3%	1,525.00	0.3%
64800 · Tools and Machinery	0.0%	0.00	0.0%	350.00	0.5%	810.00	1.6%	2,620.68	0.6%
65100 · Utilities	0.2%	173.81	0.3%	213.47	0.3%	122.68	0.2%	2,269.31	0.5%
<b>Total Expense</b>	30.2%	11,984.11	19.3%	12,196.85	18%	17,873.25	34.9%	156,407.08	34.8%
<b>Net Ordinary Income</b>	31.1%	10,243.04	16.5%	16,464.10	24.3%	13,642.00	26.6%	113,184.73	25.2%
<b>Other Income/Expense</b>									
<b>Other Income</b>									
70100 · Other Income	0%	54.38	0.1%	43.89	0.1%	43.53	0.1%	146.80	0%
70200 · Interest Income	0.2%	0.00	0.0%	0.00	0.0%	0.00	0.0%	229.16	0.1%
<b>Total Other Income</b>	0.2%	54.38	0.1%	43.89	0.1%	43.53	0.1%	375.96	0.1%
<b>Net Other Income</b>	0.2%	54.38	0.1%	43.89	0.1%	43.53	0.1%	375.96	0.1%
<b>Net Income</b>	<b>31.3%</b>	<b>10,297.42</b>	<b>16.5%</b>	<b>16,507.99</b>	<b>24.4%</b>	<b>13,685.53</b>	<b>26.7%</b>	<b>113,560.69</b>	<b>25.3%</b>



# A/E - Worst Case Outcomes

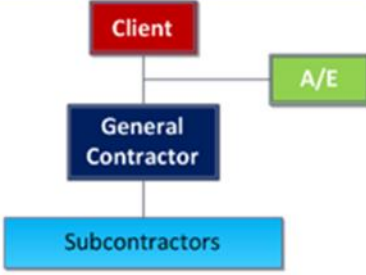
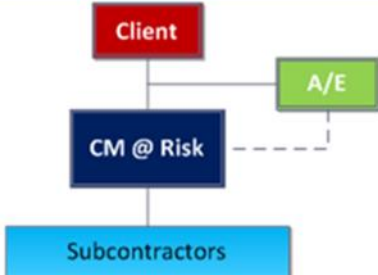
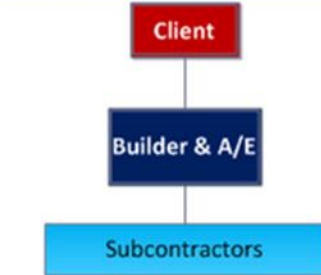

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- Not enough fee to do the work
- Not enough budget to match the scope
- Client doesn't like design / re-draw
- Changes or delays on the Job
- Issues in the field
- E and O Issue at the end of a job
- Informal settlement
- Claim

# Construction Manager



# CM - Delivery Methods

LUMP SUM BID	CONSTRUCTION MANAGER AT RISK	DESIGN / BUILD	IPD (Integrated Project Delivery)
<p>This is the traditional method and the one with which most Clients are familiar. It is a linear process where one task follows completion of another with no overlap. Plans / Specifications are completed, and then advertised for bid. Contractors bid the project exactly as it is designed. The award is to the lowest responsible bidder.</p>	<p>Construction Manager at Risk allows the Client to hire a CM at any time during the project pre-design phase. The CM and the A / E work together to develop and estimate the design. A guaranteed maximum price is provided by the CM @ Risk based on subcontractor and vendor input. The construction price is the sum of the CM @ Risk fee and the subcontractors' bids. The Client will not pay more than the guarantee maximum price (GMP), and typically retains any savings.</p>	<p>In the Design / Build method the builder and A / E are one entity hired by the Client to deliver the project. A guarantee maximum price (GMP) is usually furnished in the beginning based upon design criteria prepared by the Client. The A / E / builder then develop drawings based on criteria and the GMP.</p>	<p>In this integrated method, the builder and A / E are typically hired as a team. A target budget is established early with clear conditions of satisfaction so the project team is aligned with client objectives. Jointly all parties are incentivized to work together through transparent collaboration and also share in the risk if the project does not achieve the project objectives. The support of early subcontractors to assist with the development of drawings is also key to the IPD process.</p>
STRUCTURE	STRUCTURE	STRUCTURE	STRUCTURE
 <pre> graph TD     Client[Client] --- GC[General Contractor]     Client --- A/E[A/E]     GC --- Subcontractors[Subcontractors]         </pre>	 <pre> graph TD     Client[Client] --- CM[CM @ Risk]     Client --- A/E[A/E]     CM -.- A/E     CM --- Subcontractors[Subcontractors]         </pre>	 <pre> graph TD     Client[Client] --- Builder[Builder &amp; A/E]     Builder --- Subcontractors[Subcontractors]         </pre>	 <pre> graph TD     Client((Client)) --- CM((CM))     Client --- A/E((A/E))     CM --- A/E     CM --- Subcontractors[Subcontractors]     A/E --- Consultants[Consultants]         </pre>
BENEFITS	BENEFITS	BENEFITS	BENEFITS



# CM - Procurement/ Cost of Service Calculation

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One Step or Two Step Process:

1. Overhead and Profit (Fee)

- Return on Staff Investment
- Project Risk Profile

2. General Conditions

- Reimbursable Expenses
- Insurance and Bonds
- Staffing



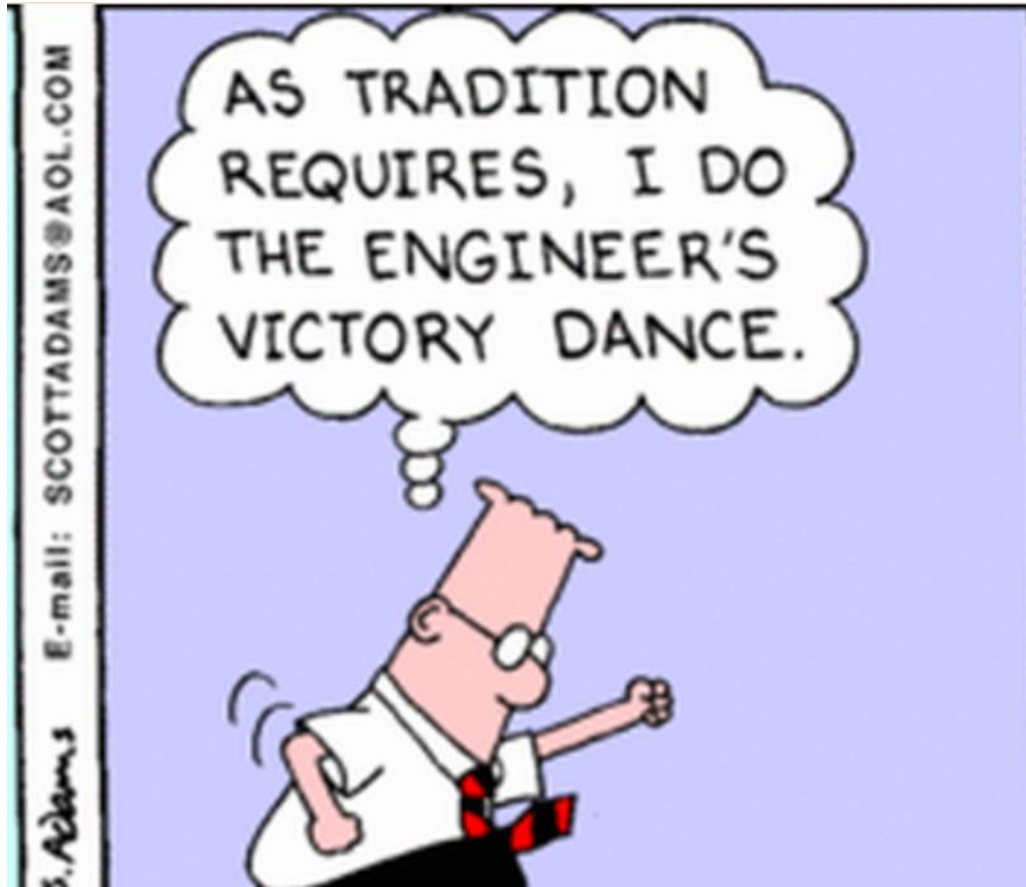
# CM - Staffing Matrix

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- A Staffing Matrix is developed with availability and projected hours

# CM - Victory Celebration

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# CM - Preconstruction Services

- Cost Reimbursable with a fixed cap
- Risk Management period
  - Constructability reviews
  - Peer reviews on design
  - Subcontractor input
  - Competitive Bidding
  - Scope Reviews
  - GMP Finalization

GMP SCHEDULE OF VALUES		
December 1, 2015		
Bid Package	Trade	Target Budget Total
BP15	MASONRY	\$285,759
BP16	ROUGH CARP.	\$771,102
BP17	MILLWORK, LAB CASEWORK	\$3,940,367
BP19	DOORS, FRAMES AND HARDWARE	\$1,839,460
BP19a	HARDWARE MATERIAL	\$1,767,000
BP20	LOW VOLTAGE / TECHNOLOGIES	\$4,480,333
BP21	MISC METALS / ARCHITECTURAL METALS	\$2,198,267
BP22	PAINTING AND WALL COVERINGS	\$726,129
BP23	FLOORING - CT / EPOXY / VCT / SHEET / CARPET	\$2,593,750
BP24	TERRAZZO	\$439,196
BP25	FIRESTOPPING	\$1,018,826
BP29	WINDOW TREATMENTS	\$416,061
BP31	ASPHALT PAVING	\$500,750
BP32	SITE CONCRETE	\$1,011,650
BP33	SITE PAVERS	\$38,338
BP34	LANDSCAPE / IRRIGATION	\$697,481
BP35a	MATERIAL HOIST	\$650,780
BP35b	GR BID PACKAGE	\$2,941,140
BP36	EQUIPMENT PROCUREMENT	\$9,900,224
BP37	CAISSONS	In BP4
BP38	VENDOR ALLOWANCE	\$0
<b>Subtotal - Direct Cost</b>		<b>\$122,564,200</b>
CONSTRUCTION CONTINGENCY		\$3,064,105
PRECONSTRUCTION SERVICES		\$1,100,000
GENERAL CONDITIONS		\$183,846
INSURANCE AND BONDS		\$2,538,243
FEE		\$3,210,370
<b>Total Guaranteed Maximum Price</b>		<b>\$147,056,028</b>





# CM - Forecasting

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- Work is then forecasted according to the work plans



# CM - Financial Results

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- Financial Results are summarized Monthly and the Month is closed based on the performance of the projects



# CM - When the wheels come off

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- Just a small sampling:
  - Preconstruction Cost Overruns – Scope and Budget don't align
  - Overspend on direct cost or general conditions
  - Unfunded change orders, scope gaps in buyout
  - Poor book keeping by field staff, don't know you have a problem until too late
  - Onerous contract terms weren't negotiated out (damages, force majeure)
  - Schedule isn't met and additional staff and direct cost required
  - Overtime or other non-reimbursable costs incurred to complete (reputation)
  - Subcontractor, vendor, or manufacturer failures and defaults
  - Non insurable losses (insurance carve out)
  - Post construction issues/defects.

# Trade Contractors



# TC - How Our Business Operates

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- Given the opportunity to be a part of the TEAM
- Understand what owner is trying to accomplish. What is the purpose of the project?
- Requirements
- Wish list
- Boundaries and parameters



# TC - Estimate

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Estimates are prepared based on labor projections; salary and manhours  
Required to execute the workplan



# TC - Risk Mitigation

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- Material impact and risk, generally low
- Labor risk, generally high
  - Field management issues
  - Crew issues
  - Project Manager vs. Foreman conflicts
  - Putting the round peg in the square hole
- Understanding schedule



# TC - Monitor

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	Hours
Service	500
Feeders/Distribution	2,000
Mechanical	750
Branch	10,000
Lighting	1,000
Systems	500
Finish	1,000

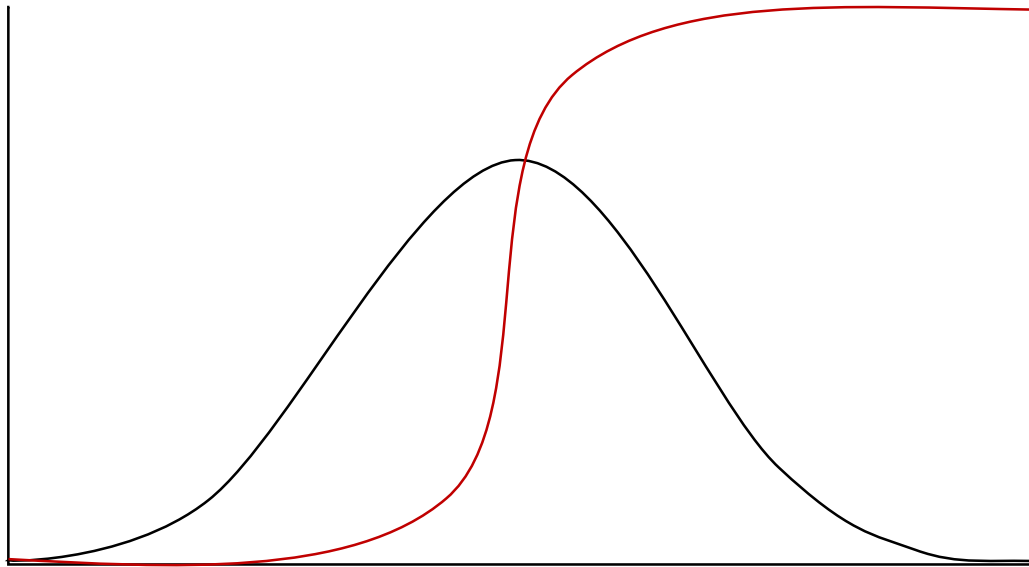




# TC - Schedule Schedule Schedule

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- No schedule/plan
- Incomplete schedule
  - Schedule is all about detail and plan
- Schedule not maintained, or worse, ignored
- The vision is near-sighted, long term outlook





## TC - Many Times the Attempted Resolution is Costly

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- Overtime
- "An hour's an hour, it's your problem."
- "You didn't buy hours from us, you bought a plan."
- "What do you mean there's cost for efficiencies?"
- "That's your problem, figure it out!"



# TC - Resolution

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## **Stop, think, and work as a team**

- What is creating the issues with schedule?
- How can we change the schedule to accommodate and mitigate cost impact to team?
- Develop a new, mutually agreed upon, plan that works for the team.

# How can teamwork reduce Financial Risk?



# The Situation:

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The Owner is implementing a key strategic business initiative which requires a new facility. The Board of Directors has approved a \$45M construction cost budget (with 20% soft budget added for overall project budget) for this project. The budget and schedule were established based on historical references to a similar project with generic price per square foot information gathered from friends of the Board, based on a "similar" project completed 7 years ago. A preliminary program has been developed, but all aspects of the program have not been defined.

The organization is relying on the revenue from this initiative in 2019, two years from today. The organization has secured a loan to finance this project, and no additional funds are available.

To achieve competitive pricing from the start, the Owner solicits design proposals from a prequalified list of Architects. The Architect must submit a fixed fee for traditional basic services, committing to standard contractual terms and conditions of the Owner including "a design to budget clause." The Owner received four proposals and selected the Architect with the lowest total fee. The selected Architect agrees to the contractual terms, and the project begins.

The Owner allows the Architect to select the Engineering team. The Architect selects the Engineer who has the most history with the Owner. Their fee is based on an assumption of approach and scope given past experiences with the Owner and a conversation with the Architect. The Architect and Engineer agree to the standard terms and conditions of an AIA contract, tying the Engineer to the terms and conditions to which the Owner and Architect agreed.



# The Situation:

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The project delivery method selected is Construction Manager at Risk. Prior to the completion of Schematic Design, two Construction Managers were interviewed. The selected Firm indicated that the project could be built within the Owners parameters. Their scope included pre-construction estimating services, in addition to Construction Manager at Risk. A guaranteed maximum price (GMP) would be established at 75% Construction Documents. Upon completion of Schematic Design, the construction estimate was 15% high. At that time a redesign was not requested because the Team felt that once they had more detailed drawing they could work with the Trade Contractors and issue a GMP within the project parameters.

Upon completion of Design Development, the Construction Manager issues an estimate with Trade Contractor input that is still significantly over the project budget. The Owner forces the Architect and Engineer to redesign, at their expense, and the Construction Manager to quickly redo their estimate.

The design and engineering team completes the redesign while the Construction Manager and the Trades use hand sketches and notes to develop GMP while the redesign is being completed. The Construction Manager issues a GMP.

Trade Contractors are asked to provide a number and schedule based on the revised drawings. Initially, Trade numbers were high across the board. Given pressure from the Construction Manager and the historic volume of work key Trades performed for the Construction Manager and the Owner, they all agreed to a reduced margin and the timeline to help get the GMP within budget.



## How does the **Owner** Mitigate this Financial Risk?

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- Recognize fault
- Don't know what don't know
  - Fix 2 parts of the triangle not just 1 (cost, quality, schedule)
- Consider alternate delivery methods
- Schedule based on optimal conditions
- Define requirements (needs) – build to code
- Build less
- Incentivize innovation
- Make it easy for others
- Accelerate payment terms to improve cash flow to ease
- Stop when realize out of line
- Identify & fund a feasibility with expertise
- Select your best TEAM of reliable designers and contractors to move forward



# How does the **Architect** Mitigate this Financial Risk?

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What could we have done different:

- CM on early – on own dime if needed – validate number early
- Select engineer differently
- Why did we keep going after SD is 15%
  - Pull the cord
- Early review of program – clarify need v wants
- Have the difficult conversation!
  - If needed do as a team
- Invite Owner to Cogence meeting!
- Renegotiate the T&C's – design in budget





## How does the **Engineer** Mitigate this Financial Risk?

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- Owner Intervention
- Realistic budget assessment
- No posturing
- Leadership
- Define & link engineering program
- Create design/engineering contingency
- Direct communication with trades – work contingencies down – do not displace scope
- Do not redesign in a vacuum
- Clarify use of building – specific engineering system



## How does the **Construction Manager** Mitigate this Financial Risk?

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We are here, now what:

- Collectively reconcile problems immediately – if we search for solutions in silo we won't solve – regardless of contract
- Identify opportunity for cost savings – alternates
- Engage trades
- Realize where the other team members are at a different point financially
- Give better terms to sub trades to get better price and cooperation
- Collaboration is never too late



## How does the **Trade Contractor** Mitigate this Financial Risk?

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In this situation, now what:

- Create a team
- Communicate with CM/A/E to reengineer building – for all trades
- Identify Prefabrication elements – reduce field labor
- Reduce the amount of labor
- Work with A/E to develop details – tight estimate
- Understand scope per trade – in appropriate hands
- Adjust sequence – batch planning



# Conclusion

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- Don't go forward knowing its broken!
- Leadership!
- Early Involvement of Entire TEAM
- Reconcile at Every Step
- Collaboration Never too Late
- Don't Live the Lie
- Candor/Openness with Owner
- Further Define the Project
- Funding Feasibility Phase/Process



# 2017 Calendar of Events

# 2017

**January**

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

**February**

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28					

**March**

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

**April**

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

**May**

M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

**June**

M	T	W	T	F	S	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

**July**

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

**August**

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

**September**

M	T	W	T	F	S	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

**October**

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

**November**

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

**December**

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

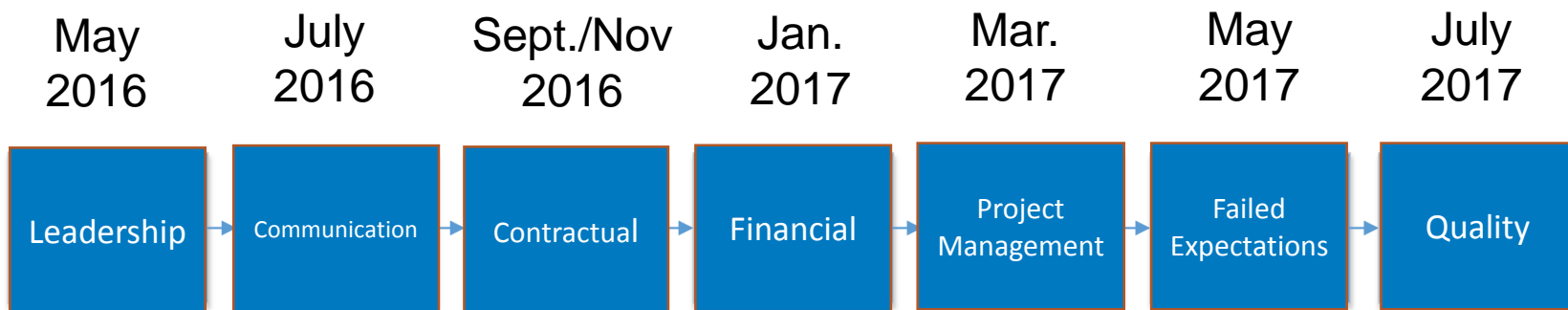
 Program

 Joint Committee Meeting



# 2016 - 2017 Program Timeline

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# Joint Committee Meeting

17 February 2017 | 2:30  
@ Karpinski Engineering

# Next Roundtable

8 March 2017 | 4:30





# Plus/Delta

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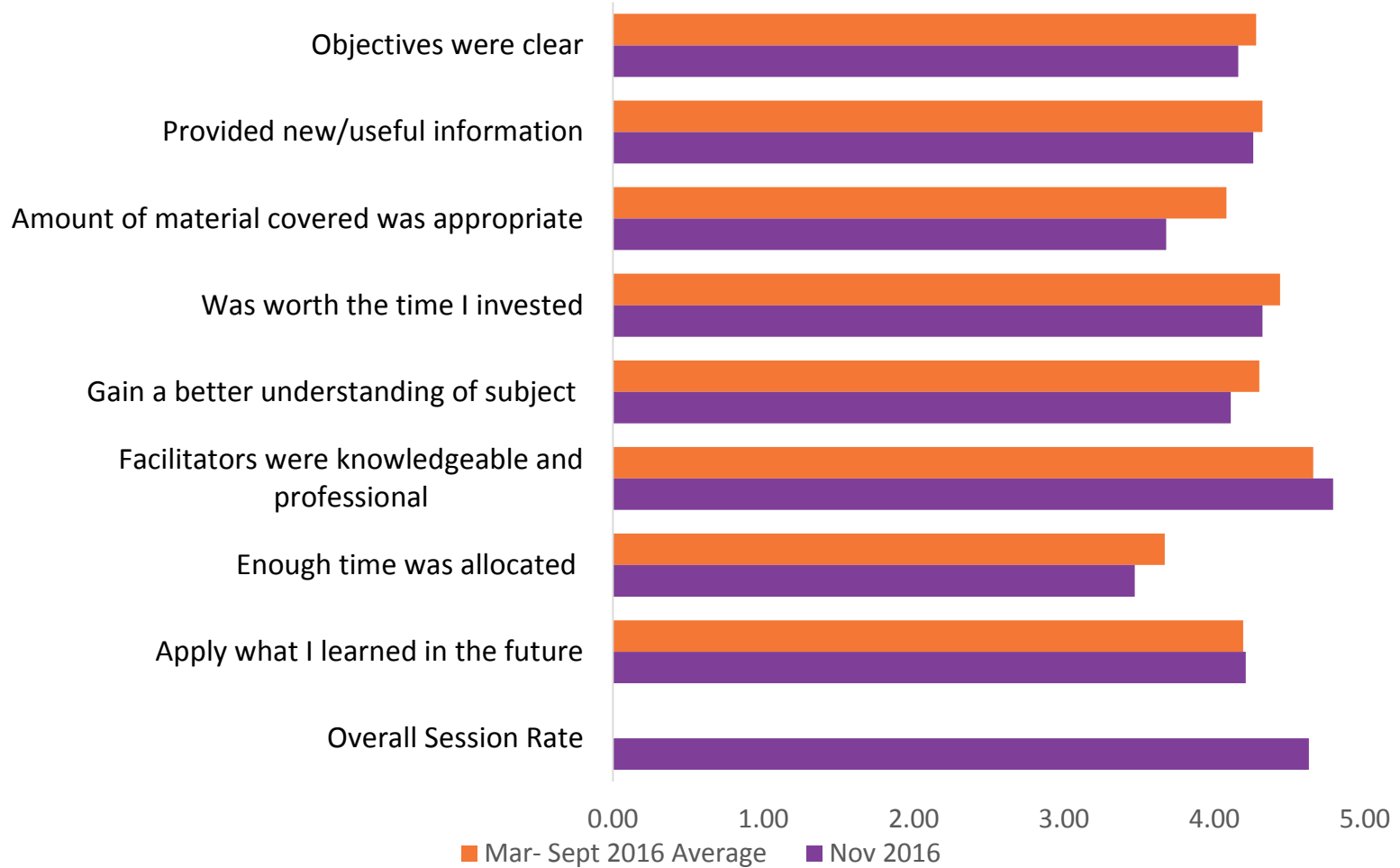
## Plus:

- Mixing Up Work Groups
- Participation
- Fun
- Openness of Business Model Presentation
- Attendance
- In real life we need to Solve the Issue Differently

## Delta:

- Insufficient Time
- Consider
  - How do we start a project as future roundtable agenda
  - Summary Session
    - Relate all Cogence Meetings to Date
  - Role Play Ideas

# November 2016 Program Recap



**CO****GENCE Alliance**  
**Owners+Architects+Engineers+Contractors**

*Inspire. Educate. Unite.*