Project Controls EXPO
Melbourne, Australia

Project Controls Expo – 22nd November 2018 Melbourne Cricket Ground

High-Fidelity Project Controls

About the Speaker

Michael Maslen
Solution Director, InEight

INEIGHT

- Responsible for leading InEight's solution and value engineering engagements with organisations to help them find innovative ways to use best-practice processes and technology.
- 25-year background in tier-1 Project Controls and ERP solution architecture and deployment.

InEight is a global leader in construction project management software, with solutions spanning from design to estimate, from field execution to turnover.

25,000 USERS

550 CLIENTS

33 COUNTRIES

650 EMPLOYEES

AECOM ExxonMobil HATCH Kiewit Turner Xcel Energy REDPATH aps BROADSPECTRUM Freeport McMoRan Copper & Gold Husky Energy TESORO WOOD GROUP PSN ZACHRY

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High-Fidelity Project Controls

Michael Maslen

Solution Director, InEight

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High-Fidelity Project Controls

01.
Concept of High-Fidelity Project Controls
- Definitions

02.
What are the Essential Ingredients?
- The 3 ‘F’s

03.
Putting it all Together
- The Art of the Possible

04.
A Practical Example
- The MetroTrains Experience

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Who Knows what This Is?

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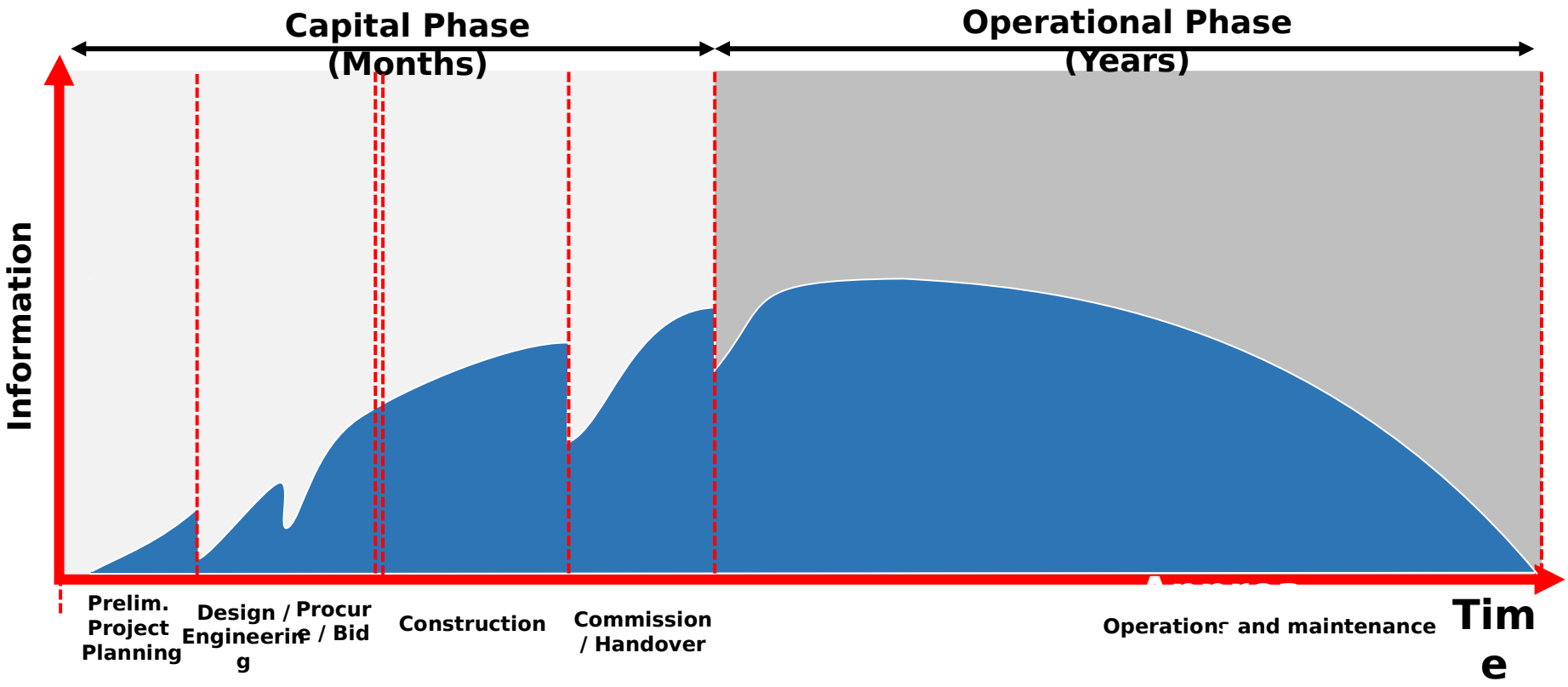
Music Consumption in the 1980s

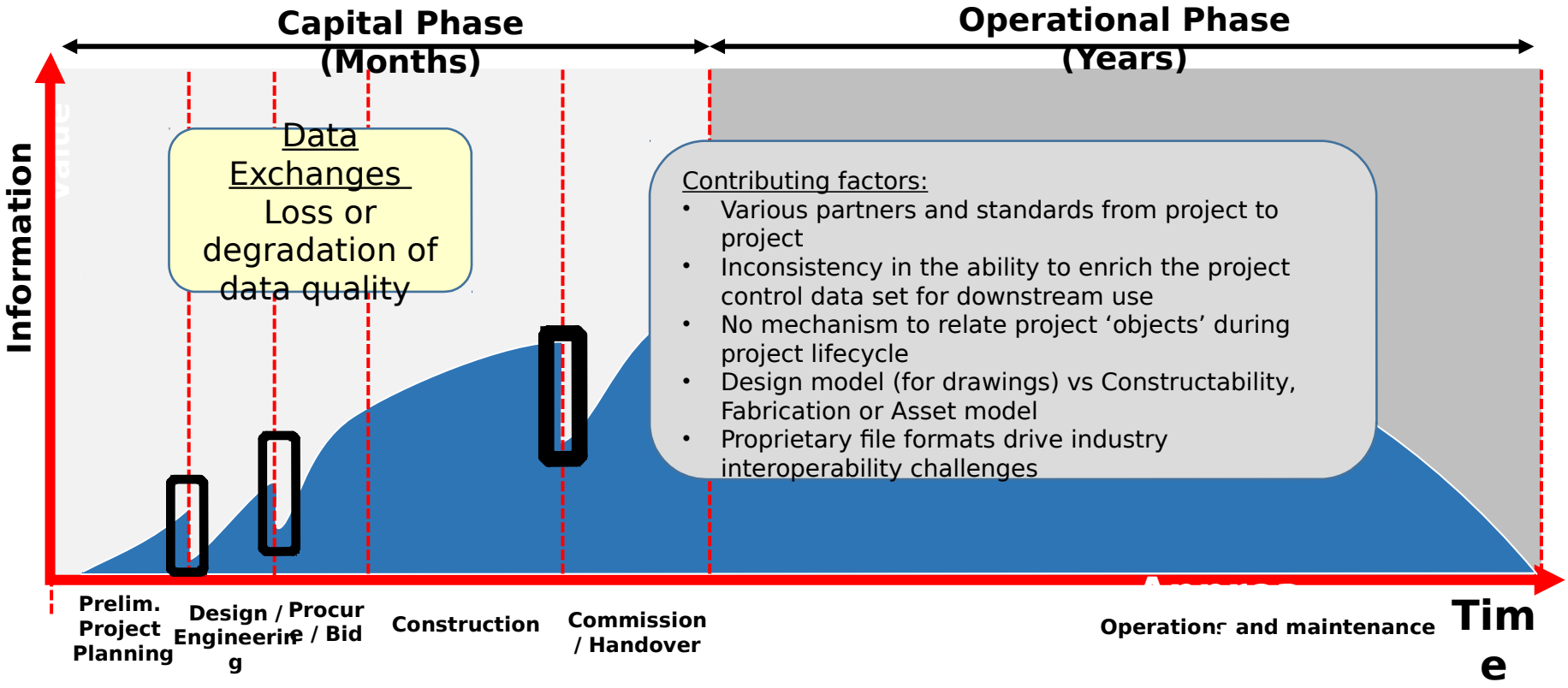
Data-Conversion
ie, Bit-loss

Data-Conversion
ie, Bit-loss

Project Lifecycle



Project Lifecycle – Traditional Approach



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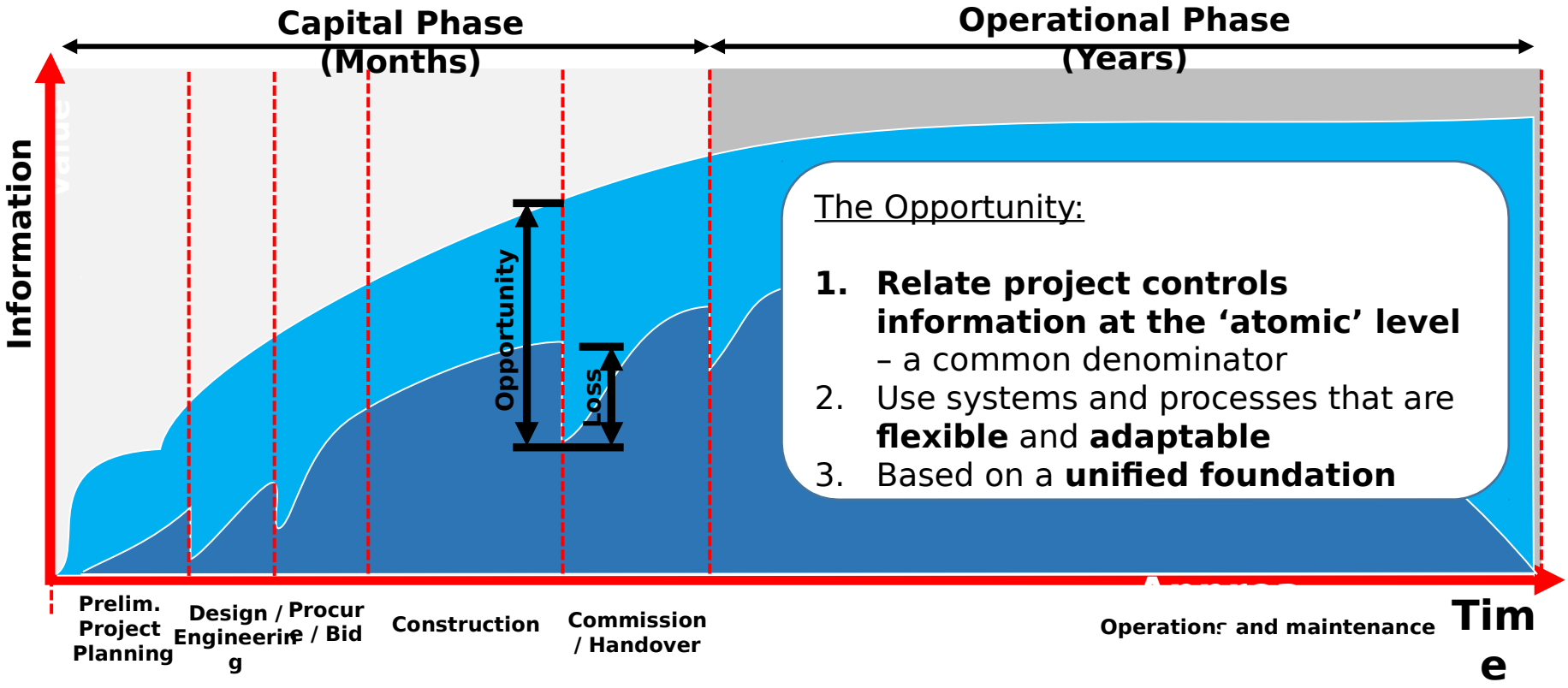
Introducing ‘High-Fidelity’ Project Controls



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The Essential Elements of High-Fidelity Project Controls – The 3 F's:

1. Foundation
2. Flexible
3. Flow

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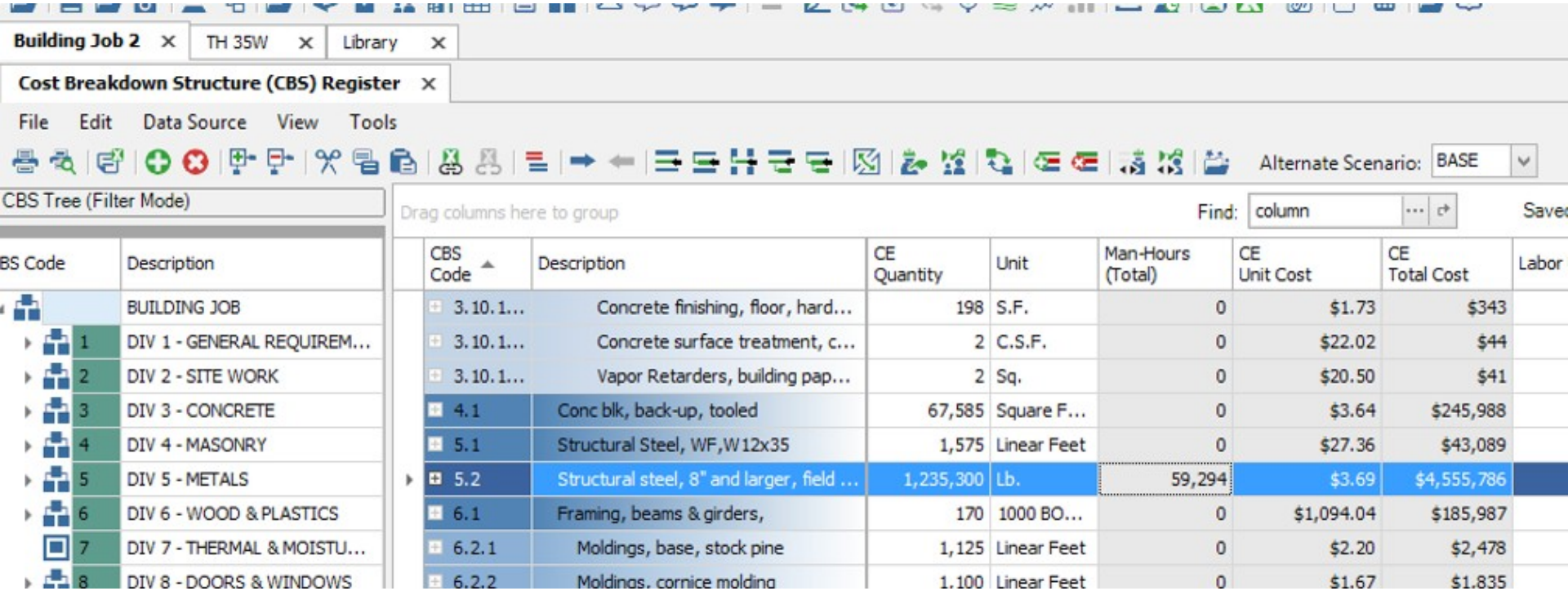
Element #1: Foundation

- Fine-grained / atomic structure of all your project information needs to be designed-in
- The ability of project data to be architected to be stored at the lowest common denominator
- Supports any audience and any business process

Structural Beams

Estimator sees: *Single Line, Total Quantity*



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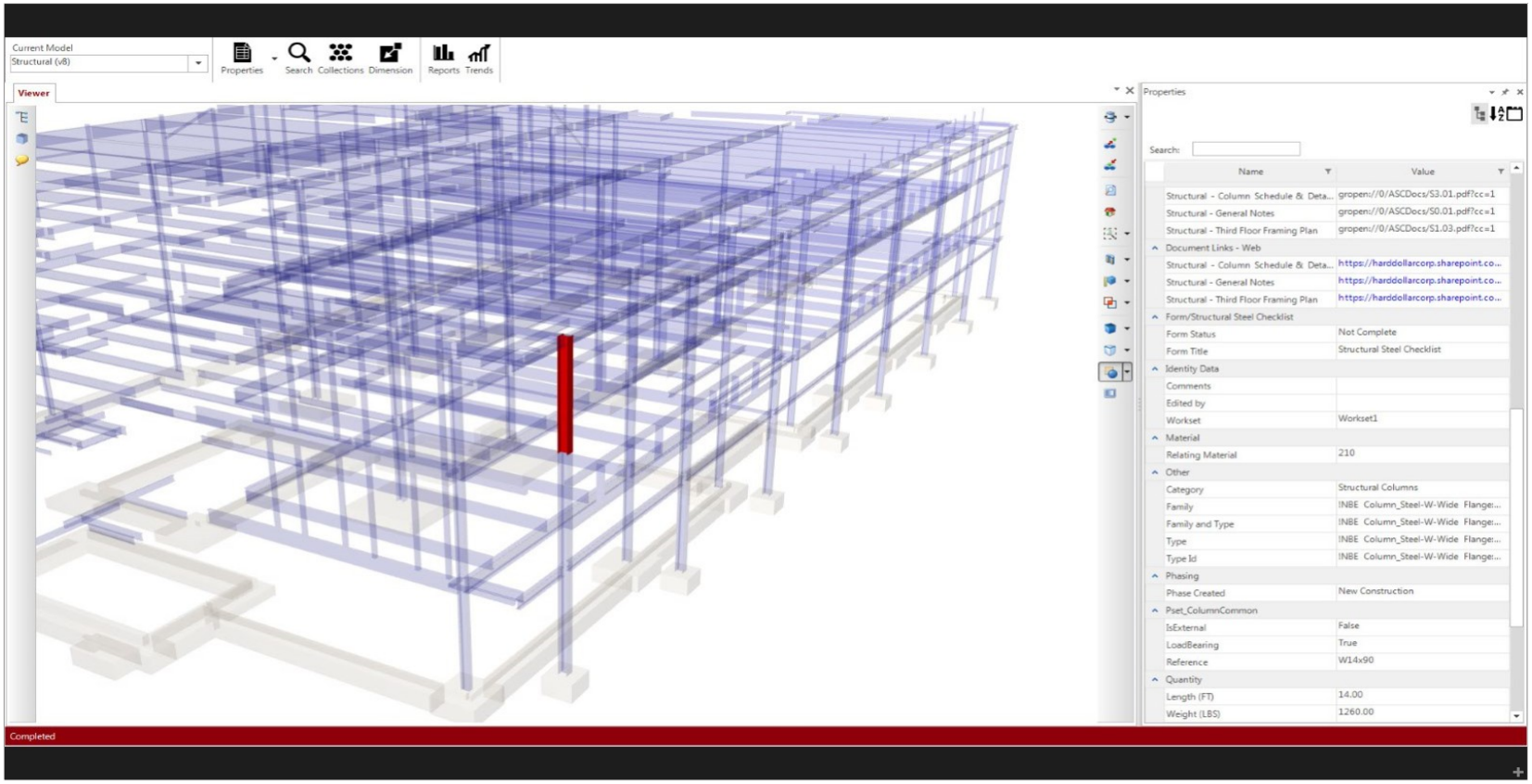
Procurement – *Multiple components*



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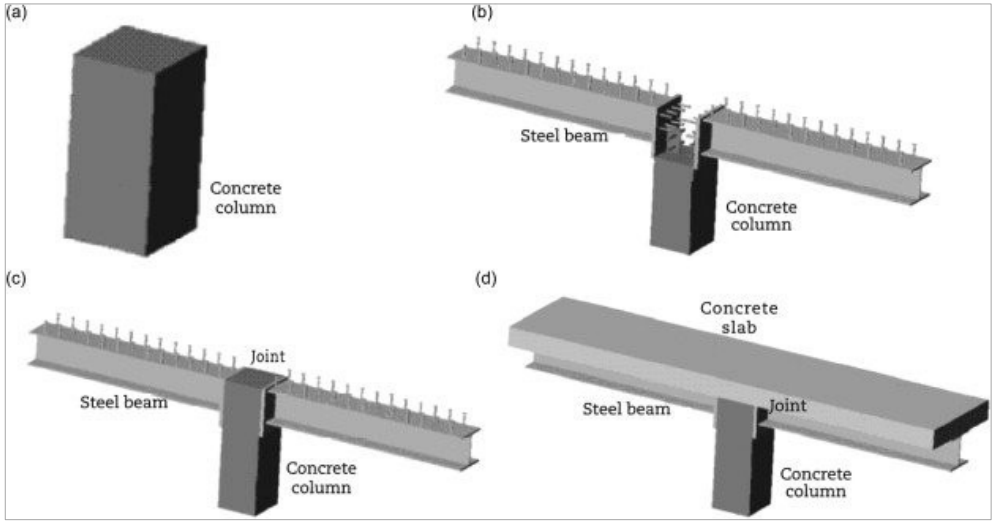
Job site – *Piece marks, Work (Sub)Components*



Element #1: Foundation – *Solved: Designed-in Atomic-level Structures*

- **We call this the 'Quantity Breakdown Item'**
- Having the right foundation enables project data to be represented correctly
- Accordion-style expansion or contraction of project data

The Essential Elements of High-Fidelity Project Controls – The 3 F's:

1. Foundation
2. Flexible
3. Flow

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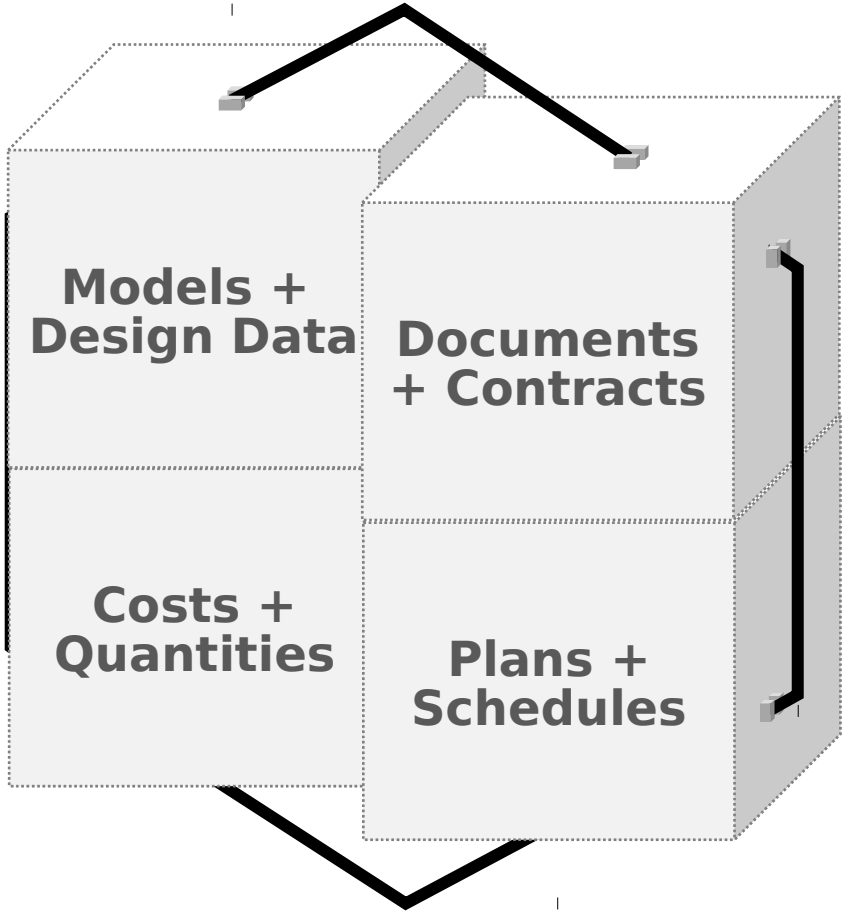
Element #2: Flexibility

- Project outcomes by their nature are individual
- What we see is that process and technology being applied to unique and individual outcomes ‘brittle’
- Not designed to flexibly handle day-to-day or project-to-project business demands

Project Control Building Blocks

- Geo-spatial data / dimensional data
- Design data (metadata)
- Geo-location data
  - Budgets
  - Forecasts
  - As-builts



- Document repository
- Project correspondence / e-mails
- RFIs, submittals
- Subcontracts
- Issues and changes
- Prime contracts
- Billings / payments
- Project schedules
- Short interval schedules
- Commissioning plans
- Procurement plans
- People plans

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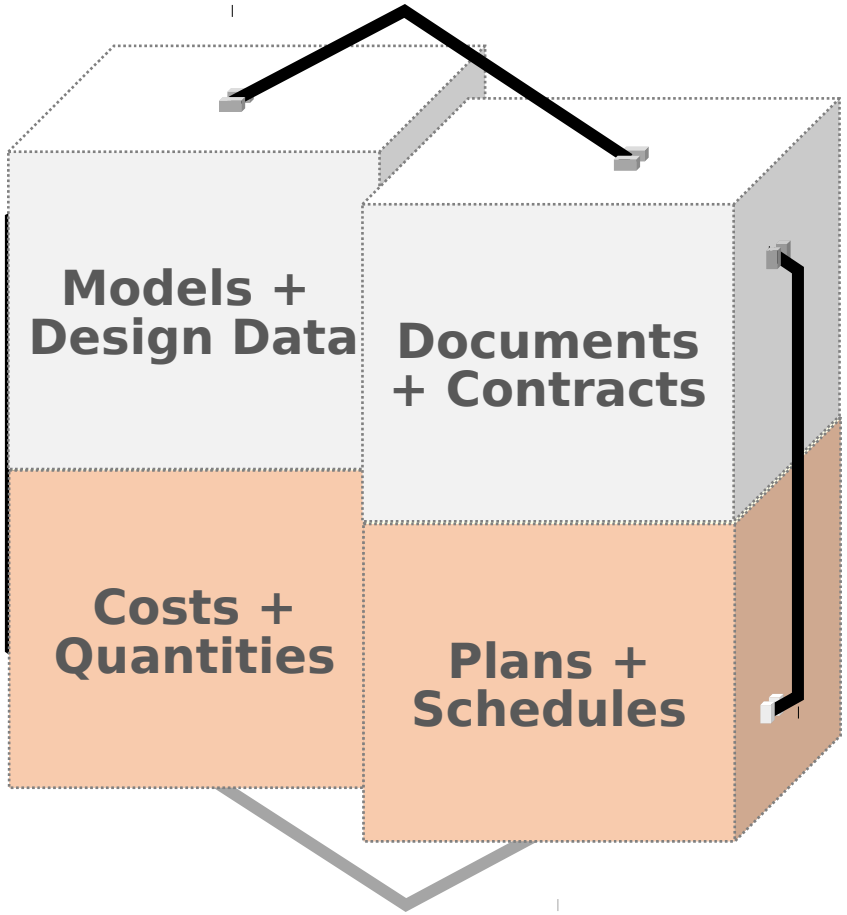
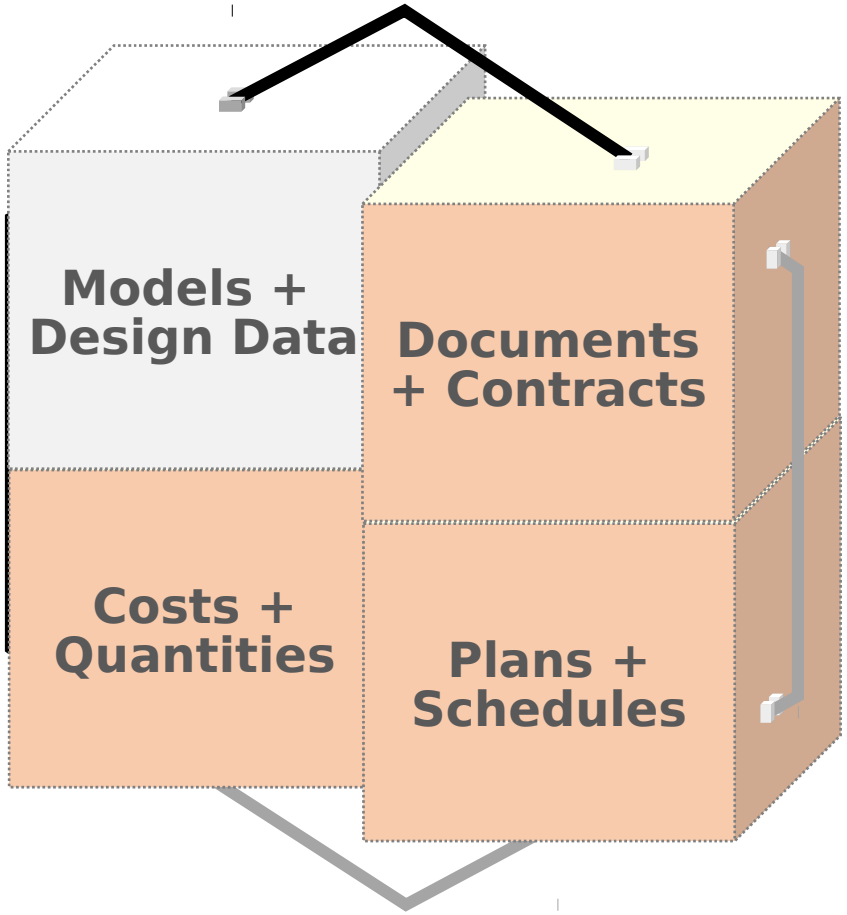
“Earned Value Management”



“Construction Project Management”



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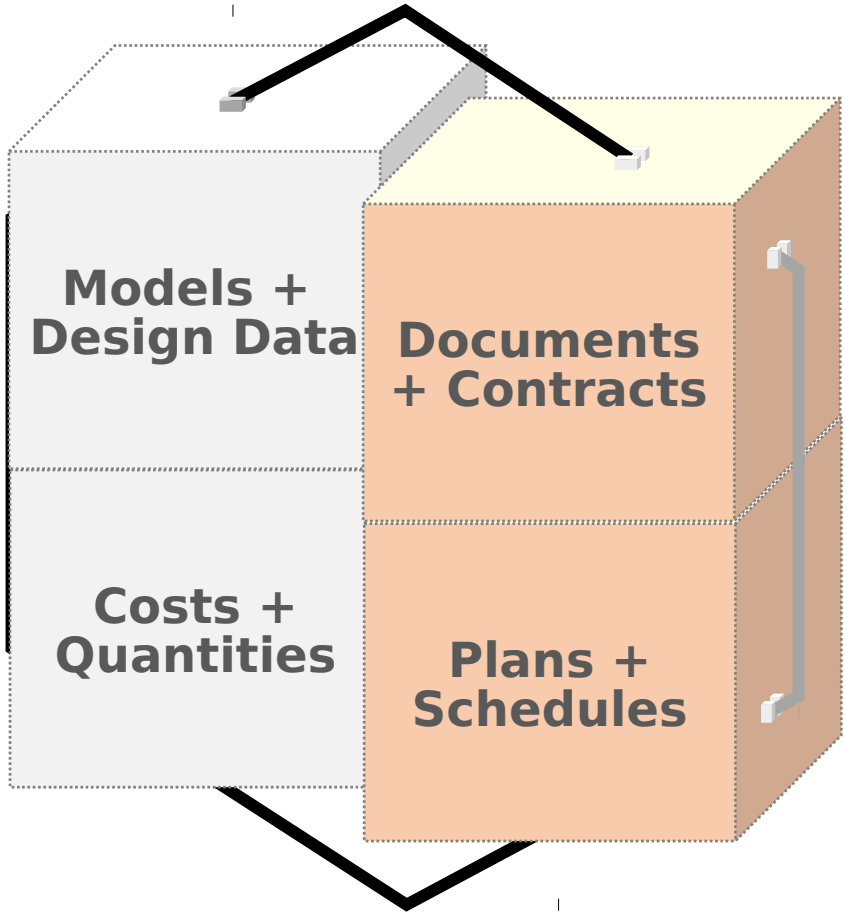
“Work Planning”



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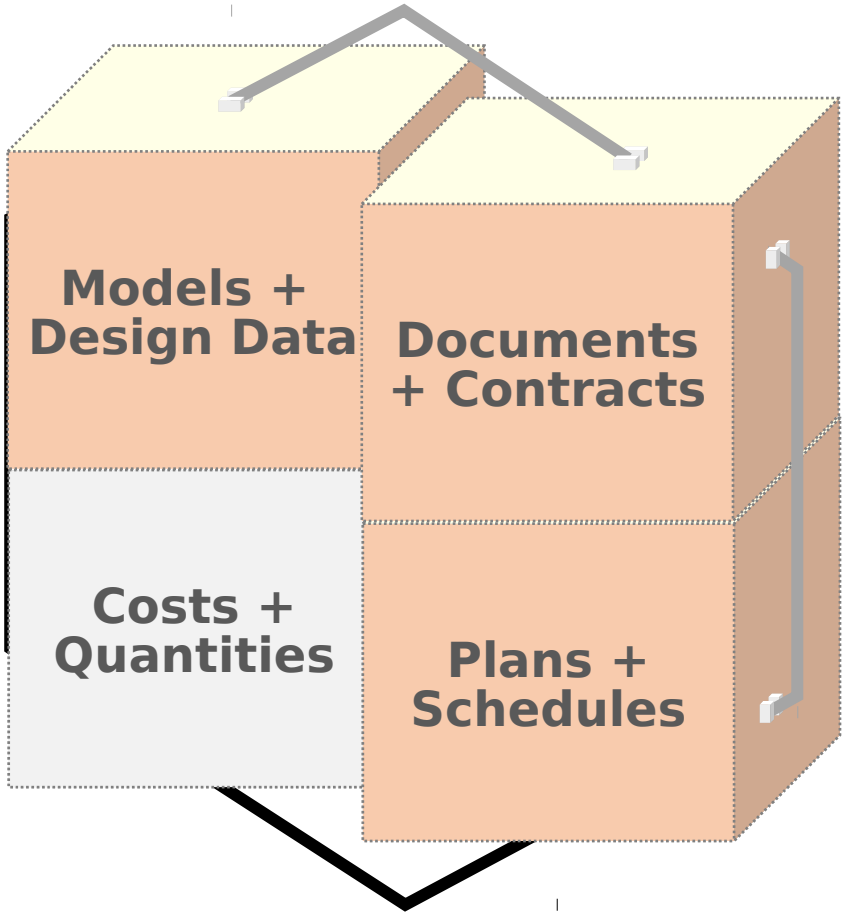
“Advanced Work Packaging”



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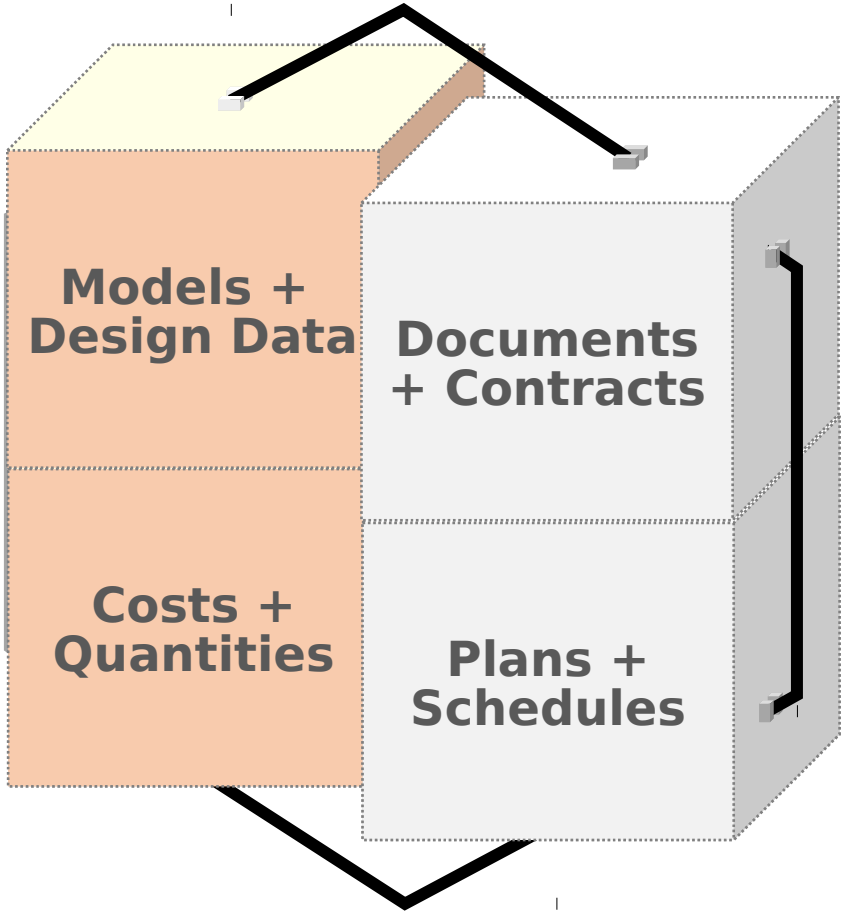
“Model-driven Estimating”



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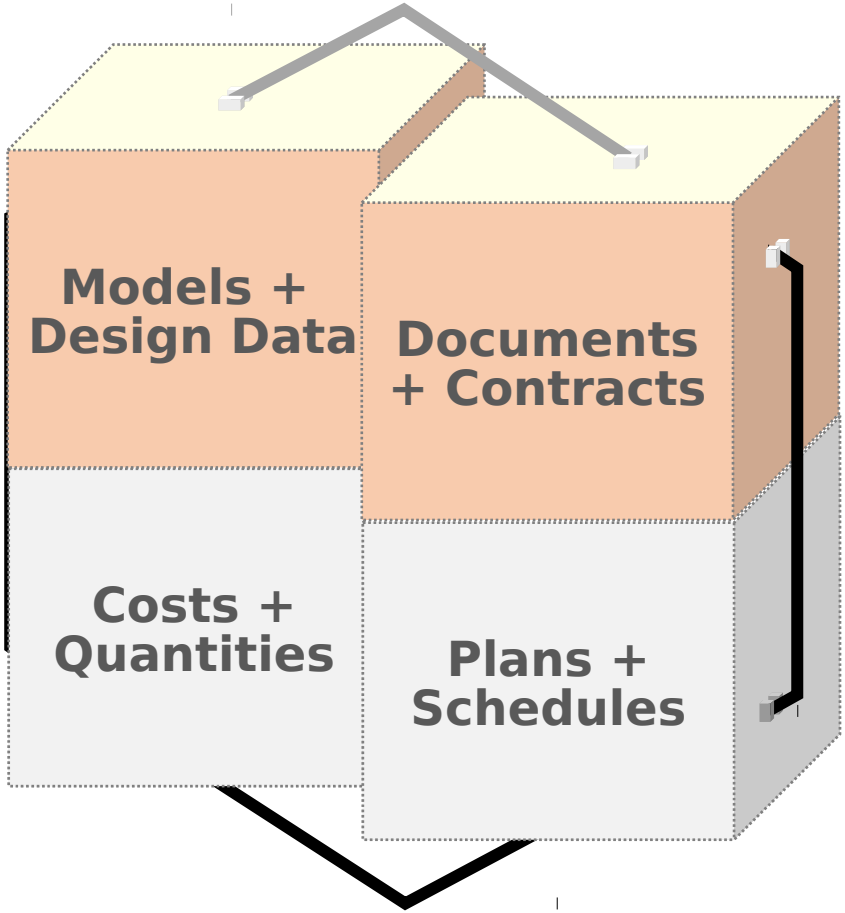
“Digital Engineering”



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Element #2: Flexibility – *Solved: Modular Interoperability*

- Project delivery styles of today demand:
  - Flexible technology ‘baseplate’
  - Flexible processes
- Low-cost and low-risk approach
  - Use what you have
  - Plug-in and modernize when required

The Essential Elements of High-Fidelity Project Controls – The 3 F's:

1. Foundation
2. Flexible
3. Flow

Element #3: Flow

- Too often, process and technologies connectedness is absent or broken
- Connected project information is often a pipe-dream
- Simply put, actionable information is power

Connected Processes leads to Project Certainty!

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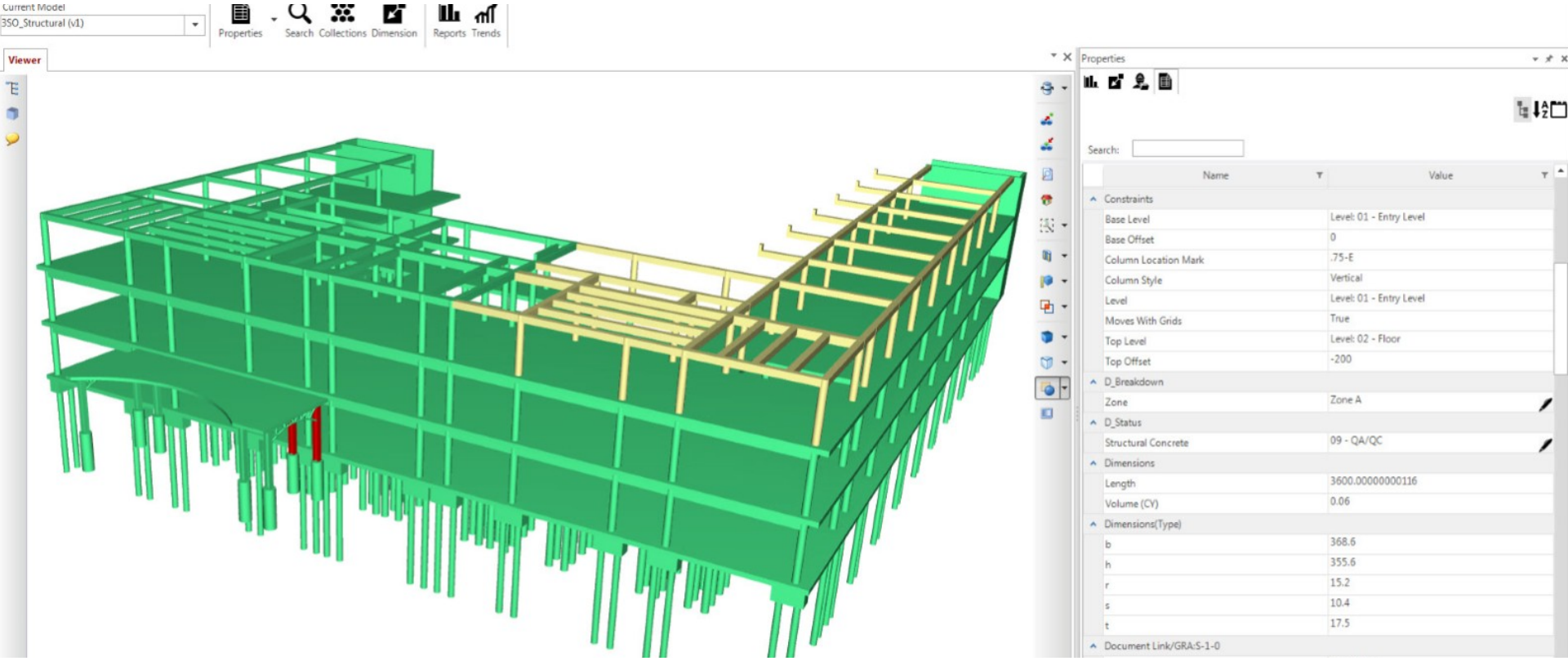
Interactive – Visualisation Example



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Interactive – Visualisation Example

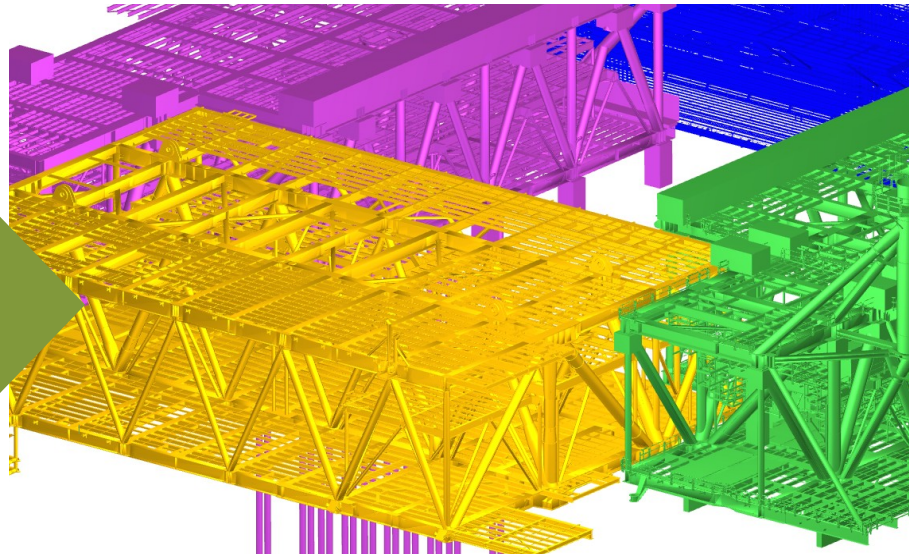
Daily cost performance

Project name:	105002 - Cove Point	Executor(s):	ALL	Expand task	Expand
From date:	1/6/2017	Approver 1:	ALL	Executor	Collapse
To date:	3/6/2017	Approver 2:	ALL	Prod. notes	Collapse
Task(s):	ALL	Production type	MHrs / Qty	Show approvers	Show
		CB MHrs / CE MHrs	Current Budget MHrs	Planned values	Hide
		Group by	Task	Financial GL	Show

Run on: 3/7/2017 7:55:54.6 PM

		Budget				Period 1/6/2017 to 3/6/2017							FC remaining		Overall project to date							
Task		Forecast T/O Qty	UoM	CB total MHrs	Budget unit	Install Qty	Actual MHrs	Earned MHrs	Actual MHrs GL	Financial GL	Unit	PF	Unit	PF	Install Qty	Actual MHrs	Earned MHrs	Actual MHrs GL	Unit	PF	% Cmp	Approver1	Approver2
105002 - 1136	Craft (Leads, Advisors) (MD)	100.00	-	-	0.000	-	11.25	-	-11.25	-	-	-	-.3925	-	-	39.25	-	-39.25	-	-	-	Justine Acosta	Rickie France
105002-1136	Craft (Leads, Advisors) (MD)		-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Justine Acosta	Patricia Savage
105002 - 1200	SS In-House Party Chief, Surveyors and Rodmen	1,341.54	-	-	0.000	3.26	12.75	-	-12.75	-	3.913	-	-.0095	-	3.26	12.75	-	-12.75	3.913	-	0.24%	Justine Acosta	Patricia Savage
105002-1200	SS In-House Party Chief, Surveyors and Rodmen		-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Justine Acosta	Patricia Savage
105002 - 1229	MM Warehousemen	4,825,005.00	-	8,844.51	0.001	-	7.00	-	-7.00	-285.53	-	-	0.002	1.001	-	17.00	-	-17.00	-	-	-	Arthur Dent	Patricia Savage
105002-1229	MM Warehousemen		-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Justine Acosta	Patricia Savage
105002 - 1263	SS Maint Equipment Moves	126.00	-	2,760.33	1.826	1.00	38.00	21.91	-16.09	-822.49	37.998	0.577	21.603	1.002	1.00	60.00	21.91	-38.09	59.996	0.365	0.79%	Daniel Coates	No Approver2
105002-1263	SS Maint Equipment Moves		-	-	0.000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Arthur Dent	Patricia Savage
105002 - 1267	Purchase Embeds	8.00	-	-	0.000	0.50	6.00	-	-6.00	-	12.000	-	-.8000	-	0.50	6.00	-	-6.00	12.000	-	6.25%	Arthur Dent	Burt Flart
105002 - 1328	Agg Base - Place Mainline Roadways (construction use)	58,993.00	-	10,643.99	0.180	-	2.00	-	-2.00	-102.70	-	-	0.180	1.000	-	2.00	-	-2.00	-	-	-	Bubb Rubb, Sr	Burt Flart
105002 - 1330	Agg Base - Finish-Mainline (Blade) Roadways (construction roads)	110,959.00	-	1,764.47	0.003	350.00	11.00	5.57	-5.43	-279.08	0.031	0.506	0.016	0.999	350.00	11.00	5.57	-5.43	0.031	0.506	0.32%	Bubb Rubb, Sr	Burt Flart

Project Controls Information Needs to be Intelligent, Interactive, Responsive



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A Better Way – Visual Index

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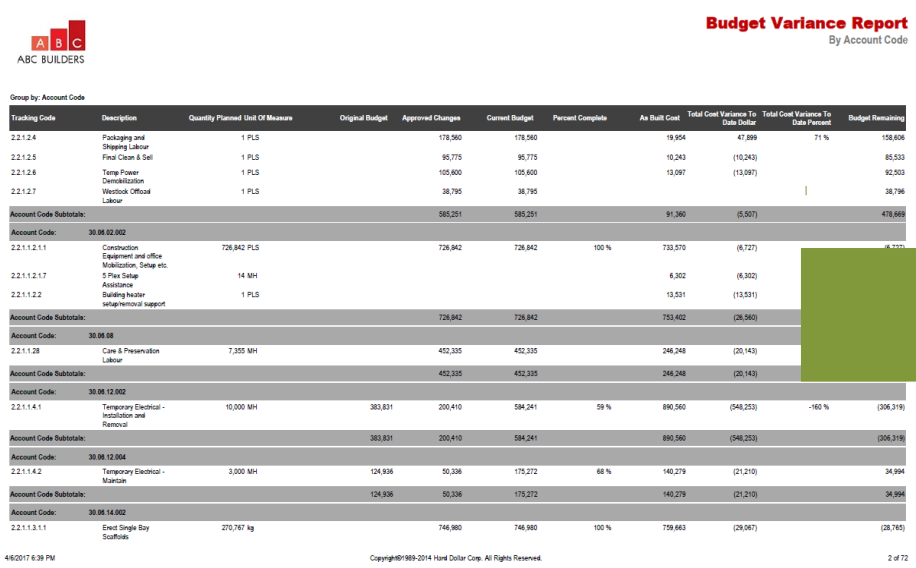
Project Controls Information Needs to be Intelligent, Interactive, Responsive



ABC BUILDERS

Budget Variance Report
By Account Code

Group by: Account Code

Tracking Code	Description	Quantity Planned	Unit Of Measure	Original Budget	Approved Changes	Current Budget	Percent Complete	As Built Cost	Total Cost Variance To Date Dollar	Total Cost Variance To Date Percent	Budget Remaining
2.2.1.2.4	Packaging and Shipping Labour	1	PLS		178,560	178,560		19,954	47,899	71 %	158,606
2.2.1.2.5	Final Clean & Sell	1	PLS		95,775	95,775		10,243	(10,243)		85,533
2.2.1.2.6	Temp Power Demobilization	1	PLS		105,600	105,600		13,097	(13,097)		92,503
2.2.1.2.7	Westlock Offload Labour	1	PLS		38,795	38,795					38,796
Account Code Subtotals:					585,251	585,251		91,360	(5,507)		478,669
Account Code:	30.06.02.002										
2.2.1.1.2.1.1	Construction Equipment and office Mobilization, Setup etc.	726,842	PLS		726,842	726,842	100 %	733,570	(6,727)		(6,727)
2.2.1.1.2.1.7	5 Plex Setup Assistance	14	MH					6,302	(6,302)		
2.2.1.1.2.2	Building heater setup/removal support	1	PLS					13,531	(13,531)		
Account Code Subtotals:					726,842	726,842		753,402	(26,560)		
Account Code:	30.06.08										
2.2.1.1.28	Care & Preservation Labour	7,355	MH		452,335	452,335		246,248	(20,143)		
Account Code Subtotals:					452,335	452,335		246,248	(20,143)		
Account Code:	30.06.12.002										
2.2.1.1.4.1	Temporary Electrical - Installation and Removal	10,000	MH	383,831	200,410	584,241	59 %	890,560	(548,253)	-160 %	(306,319)
Account Code Subtotals:				383,831	200,410	584,241		890,560	(548,253)		(306,319)
Account Code:	30.06.12.004										
2.2.1.1.4.2	Temporary Electrical - Maintain	3,000	MH	124,936	50,336	175,272	68 %	140,279	(21,210)		34,994
Account Code Subtotals:				124,936	50,336	175,272		140,279	(21,210)		34,994
Account Code:	30.06.14.002										
2.2.1.1.3.1.1	Erect Single Bay Scaffolds	270,767	kg		746,980	746,980	100 %	759,663	(29,067)		(28,765)

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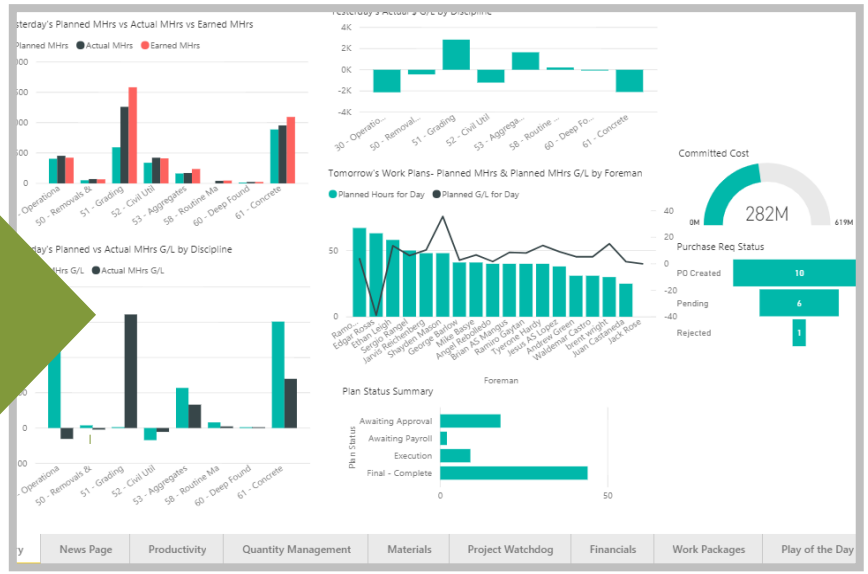

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A Better Way – Actionable Insights

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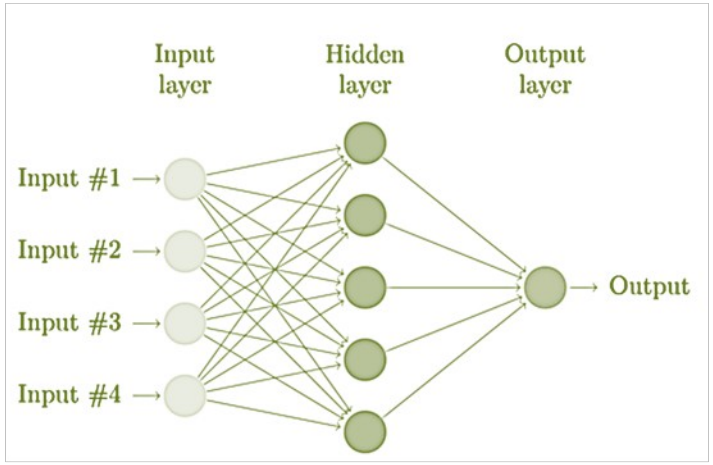
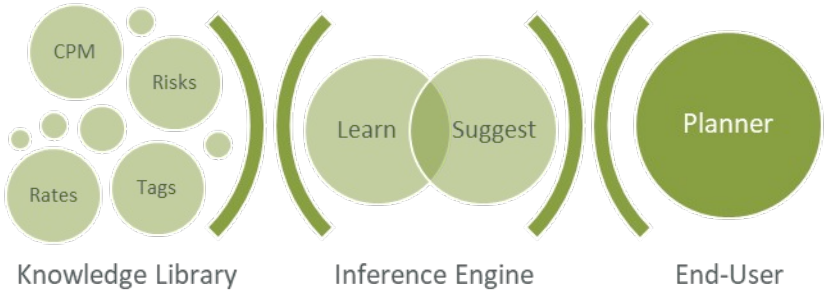
Project Controls Information Needs to be Intelligent, Interactive, Responsive

Neural Network



Knowledge-Base



Artificial Intelligence

- Guided plan development
- Real time suggestions

Human Intelligence

- Consensus analysis
- Survey scorecard approach
- Eliminates challenge of building risk models

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Element #3: Flow – *Solved: Connected Processes*

- Connected processes and systems is no longer a nice-to-have
- End-to-end flow – elimination of disparity - creates connected workflows and unified reporting
- Only possible with ‘Quantity Breakdown Item’
- Only possible with modular approach with common ‘baseplate’

Ask yourself – Do You Have the Essential Elements of High-Fidelity Project Controls?

1. Foundation – do you have atomic structures designed-in?
2. Flexible – do you have the building-block approach?
3. Flow – do you have connected project information?

High-Fidelity Project Controls – In Practice

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High-Fidelity Project Controls – In Practice

The Challenge

- Cost control function – Excel - detailed and complex Excel spreadsheets
- Actuals captured via financial system is exported and uploaded to Excel templates for forecasting and reporting
- The process was taking take up to 10 man days per month

High-Fidelity Project Controls – In Practice

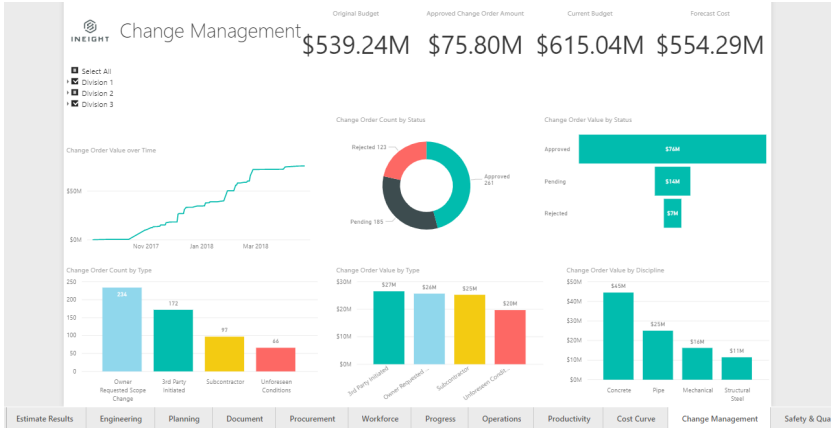
The Journey

- Implemented systems and processes that embraced the high-fidelity approach
- Information being modelled and captured at the atomic-level
- Centrally-managed
- Stable, Secure, Transparent

High-Fidelity Project Controls – In Practice

The Outcome

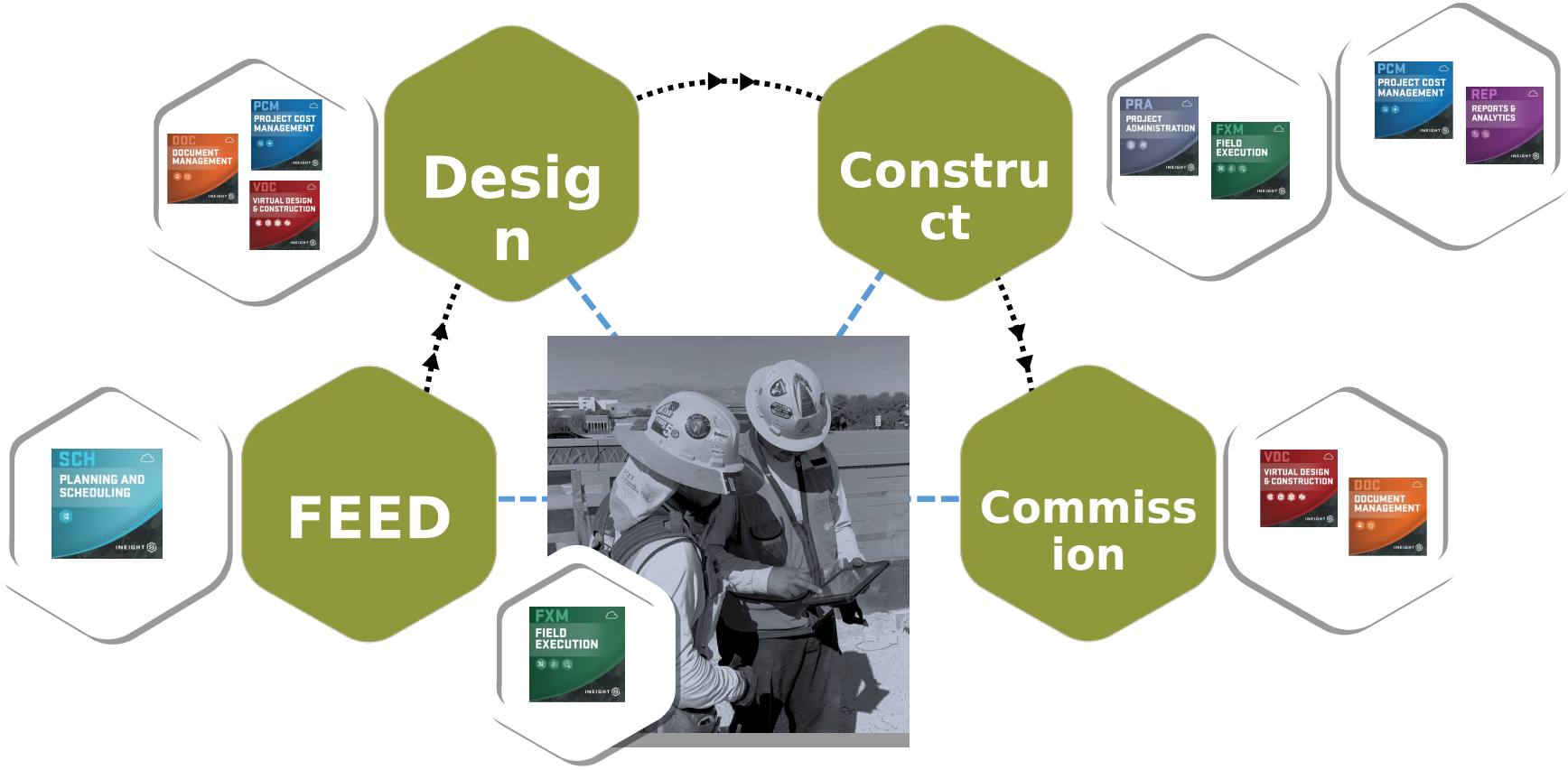
- Visualized, more accurate, far more efficient reporting
  - Multi-level: project, portfolio, division
- Cost performance dashboards produced almost at the click of a button
- Other portfolios across the division are now looking to adopt this modular approach



The MTM Experience – the Art of the Possible

1. Established foundation / key structures
2. Embraced the building-block approach – bite-site as the organisation is able to consume
3. Project controls systems and processes are now joined-up

High-Fidelity Project Controls:
Only InEight



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Thank You

Michael Maslen
Solution Director, InEight

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