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The Lifecycle Estimating – Bidding with More Data and Less Gut

April 2, 2025

NFBA NATIONAL FRAME BUILDING ASSOC.

Maxim Consulting Group

Management Consulting

- Strategic Planning
- Operational Excellence
- Technology Integration
- Training & Development

Lean Transformations

- Supply Chain Management
- Design Standards
- Enterprise Scheduling
- Process Standardization

Peer Groups

- Electrical
- Mechanical
- Fire Protection
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- Heavy Civil
- Utility

Corporate Finance Advisory

- Mergers & Acquisitions Advisory
- Equity & Debt Financing
- Ownership Transition
- Management Succession
- Captive Insurance

Agenda

- The Challenges of Current Practices
- The Benefits of Processes Definition and Data
- Risk Mitigation in Estimating
- The Process of Improvement
- The Need for Accurate Reporting

Part I

The Challenges of Current Practices

What Could Possibly Go Wrong?

Bidding the “wrong” jobs

- Wrong time
- Wrong market
- Wrong price
- Wrong staff
- Wrong customer
- Wrong location

Reliance on Software Alone

Data based on averages

Little scientific basis for vertical market differentiation, job size, job duration, etc.

Forces “gut” driven modifications to the bid

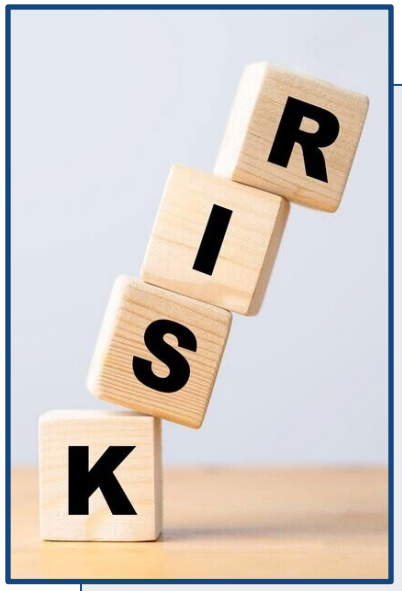
Trimble MEP

STACK

HeavyBid

ProEst®

Estimating Department Challenges



- Workload management
- No time to “do it right”
- Understaffing
- Lack of estimating standards
- Lack of skillset development focus
- Disconnect between estimating and project execution
- High levels of turnover

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Part II

Benefits of Processes and Data in Estimating

The Benefits

- Bidding with confidence (no more buyer's remorse)
- Bidding the right jobs (not all jobs)
- Setting up the operations team to win
- Generating greater predictability in project outcome
- Creating better alignment between bid and build

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Part III

Risk Mitigation in Estimating

First Line of Defense

Almost all financial risk enters a construction firm through estimating

Bid Selection Criteria

- Selection of the “right” jobs based on information
- Minimizing the quantity of “loser” jobs in the portfolio

Item	Description	Points	Score
Strategic Importance	Fits specific mktg plan with an existing project type with high-growth potential	9	
	Fits specific mktg plan with a project type in our core competencies	6-8	
	Generally fits marketing plan in a stable industry	3-5	
	Does not fit marketing plan	0-2	
Location of Project	Close proximity to existing office	9	
	Close proximity to another project	6-8	
	Remainder of continental US	3-5	
	International – requires CEO approval	0-2	
Qualifications	Clearly most qualified team with the strongest experience	9	
	Excellent project experience but client may not know it	6-8	
	Some industry experience with a few related projects	3-5	
	No similar projects	0-2	
Staff Opportunity	Project will result in industry leading, innovative work	9	
	Project will accelerate staff learning	6-8	
	Minimal staff development	3-5	
	No new challenges offered by this project	0-2	
Proposal & Project Schedule	Staff available as needed for proposal development and project delivery	9	
	Staff available for prop, development, but requires shifts for project delivery	6-8	
	Requires major shifts in either or both proposal development/project delivery	3-5	
	No staff available	0-2	

Bid Selection Criteria

Level of Focus Appropriate to be Dedicated to Win	One of our top ten previously identified opportunities	9	
	Tracked for at least three months, but is not a top ten project	6-8	
	Not previously tracked, but we clearly have competitive advantage	3-5	
	We were not aware that this project was being advertised	0-2	
Risk Factors (D/B, Contractual, Project Type)	No risk	9	
	Low risk in relation to profit potential	6-8	
	Client wants risk to be shared 50/50	3-5	
	Client wants us to assume majority of risk	0-2	
Competition	We are the architect of choice for this long term client	9	
	Completed other successful project(s) for this client, but so have other firms	6-8	
	Other firms have more successful experience with this client	3-5	
	A competitor is the architect of choice for this client	0-2	
Chances for Success	Our firm has a solid lead, with a win probability of at least 50%	9	
	Slightly favored over competitors…listed as a win probability of at least 35%	6-8	
	Listed with a win probability of less than 30%	3-5	
	Not tracked prior to RFP	0-2	
Profit Potential	Excellent opportunity for high profits proven by previous work with this client	9	
	High profit potential with good opportunity for additional services work	6-8	
	Bread & butter type of work with high volume at acceptable profitability	3-5	
	Unable to ascertain, but we could lose money on this project	0-2	
Repeat Potential	Clearly identified opportunities for future projects with this client	9	
	Good opportunity for more projects from this client	6-8	
	Possible opportunity for more projects from this client	3-5	
	Slim opportunity for more projects	0-2	
Ratings: *Go: 70-100 Maybe: 50-69 No-Go: less than 50* **Conclusion:** _____		***Total***	

Estimating with Data

Quantifying the Difference

- Vertical market
- Job size
- Customer/contractor
- Geographic region
- Superintendent/foreman
- Project manager
- Project schedule

Estimating with Data – Vertical Market Example

Wall rough in branch conduit in a new hospital (use your own example):

- What bid labor units would you use?
- Are they proven units?
- How were they proven?
- How was the data collected?
- Was the data correct?

This example chosen for a reason. It is always high risk.

Estimating With Data – Vertical Market Example

Wall Rough In Branch Conduit:

Market	Hours	Unit
Commercial new	5.3	Per 100’ LF of conduit
Hospital new	7.5	Per 100’ LF of conduit
Hospital remodel	13.7	Per 100’ LF of conduit
K-12 new	5.6	Per 100’ LF of conduit
K-12 remodel	10.1	Per 100’ LF of conduit
Industrial new	8.4	Per 100’ LF of conduit
Industrial remodel	12.6	Per 100’ LF of conduit

Estimating With Data – Vertical Market Example

If you did not have this data, what would you do?

Market	Hours	Unit
Commercial new	5.3	Per 100’ LF of conduit
Hospital new	7.5	Per 100’ LF of conduit
Hospital remodel	13.7	Per 100’ LF of conduit
K-12 new	5.6	Per 100’ LF of conduit
K-12 remodel	10.1	Per 100’ LF of conduit
Industrial new	8.4	Per 100’ LF of conduit
Industrial remodel	12.6	Per 100’ LF of conduit

Estimating With Data – Vertical Market Example

Wall Rough In Branch Conduit:

Market	Hours	Unit	Cost for 100' of conduit at $150/hour
Commercial new	5.3	Per 100' LF of conduit	$ 795
Hospital new	7.5	Per 100' LF of conduit	$1,125
Hospital remodel	13.7	Per 100' LF of conduit	$2,055
K-12 new	5.6	Per 100' LF of conduit	$ 840
K-12 remodel	10.1	Per 100' LF of conduit	$1,515
Industrial new	8.4	Per 100' LF of conduit	$1,260
Industrial remodel	12.6	Per 100' LF of conduit	$1,890

Estimating With Data – Vertical Market Example

Wall Rough In Branch Conduit:

Market	Hours	Unit	Cost at $150/hour	Cost for 10,000' of conduit
Commercial new	5.3	Per 100' LF of conduit	$ 795	$ 79,500
Hospital new	7.5	Per 100' LF of conduit	$1,125	$112,500
Hospital remodel	13.7	Per 100' LF of conduit	$2,055	$205,500
K-12 new	5.6	Per 100' LF of conduit	$ 840	$ 84,000
K-12 remodel	10.1	Per 100' LF of conduit	$1,515	$151,500
Industrial new	8.4	Per 100' LF of conduit	$1,260	$126,000
Industrial remodel	12.6	Per 100' LF of conduit	$1,890	$189,000

Estimating With Data – Vertical Market Example

Wall Rough In Branch Conduit:

Market	Hours	Unit	Cost at $150/hour	Cost for 100,000' of conduit
Commercial new	5.3	Per 100' LF of conduit	$ 795	$ 795,000
Hospital new	7.5	Per 100' LF of conduit	$1,125	$1,125,000
Hospital remodel	13.7	Per 100' LF of conduit	$2,055	$2,055,000
K-12 new	5.6	Per 100' LF of conduit	$ 840	$ 840,000
K-12 remodel	10.1	Per 100' LF of conduit	$1,515	$1,515,000
Industrial new	8.4	Per 100' LF of conduit	$1,260	$1,260,000
Industrial remodel	12.6	Per 100' LF of conduit	$1,890	$1,890,000

Estimating With Data – Vertical Market Example

Wall Rough In Branch Conduit:

Market	Hours	Unit
Hospital new	7.5	Per 100’ LF of conduit

How might this production rate be affected by:

- Job size
- Customer
- Geographic region
- Etc.?

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Part IV

The Process of Improvement

Estimating Process Examples

- Labor/material database
- Assembly library
- Bid selection criteria
- Takeoff methodology
- Defined takeoff breakdown (= work breakdown structure)
- Quotation reviews/qualification
- Subcontract reviews/qualification
- Bid summary usage
- Bid review process

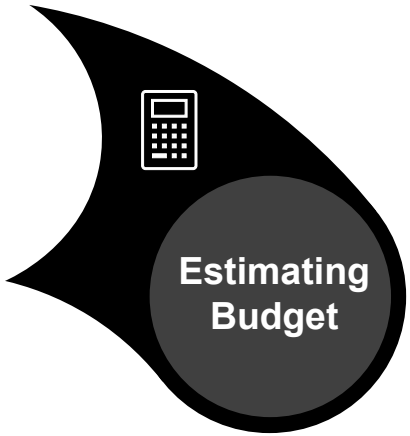
Project Life Cycle

Estimating Turnover

- Specification review summary
- Scope review
- Estimating budget review
- Risk identification
- Value engineering or improvement ideas
- Clarification of assumptions

Estimating Budget

- Is always the documented starting point
- Original estimating budget should not be changed once loaded into the ERP system
- Should be completely in alignment with how the job will be built
- Should be broken down into phases, areas, and tasks as needed



Prejob Planning

Determines how the job will be built

- Schedules (internal and external)
- Levels of design and design standards
- Procurement
- Submittals
- Manufacturing
- Kitting
- Subcontractors
- Field installation method confirmation
- Etc.

Change Order Zero

Change order zero is an internal change order(s) that modify the original estimating budget to align it with how the job will actually be built. Common revisions to the budget include:

- Work breakdown structure revisions
- Means and methods changes
- Value engineering changes

An internal change order is used so that any deltas that exist between the estimator's budget and the construction budget can be identified and prevented in the future

Construction Budget

The construction budget has the correct:

- Cost types
- Cost codes
- Hours and quantities
- Phases and areas
- Breakout and definition of engineering, fabrication, and field installation budgets

All is in alignment with how the job will be built

Time and Quantity Reporting

The field must ACCURATELY report:

- Labor hours by cost code
- % complete or quantities installed by cost code

This will provide actual production units that may be mined by different reference points (i.e. vertical market, job size, customer, etc.)

Lessons Learned

A lessons learned meeting will review

- Direct job cost outcome
- Change orders incurred
- Estimating gaps
- Estimating overages
- Deltas between estimating methods and field methods

This will provide a continuous improvement process, moving estimating closer to what is designed, fabricated, and installed.

The End Game

- Product standards
- Assembly standards
- Design standards
- Fabrication standards
- Kitting standards
- Field installation standards

Estimates should be compiled utilizing the standards above. Alignment is key!

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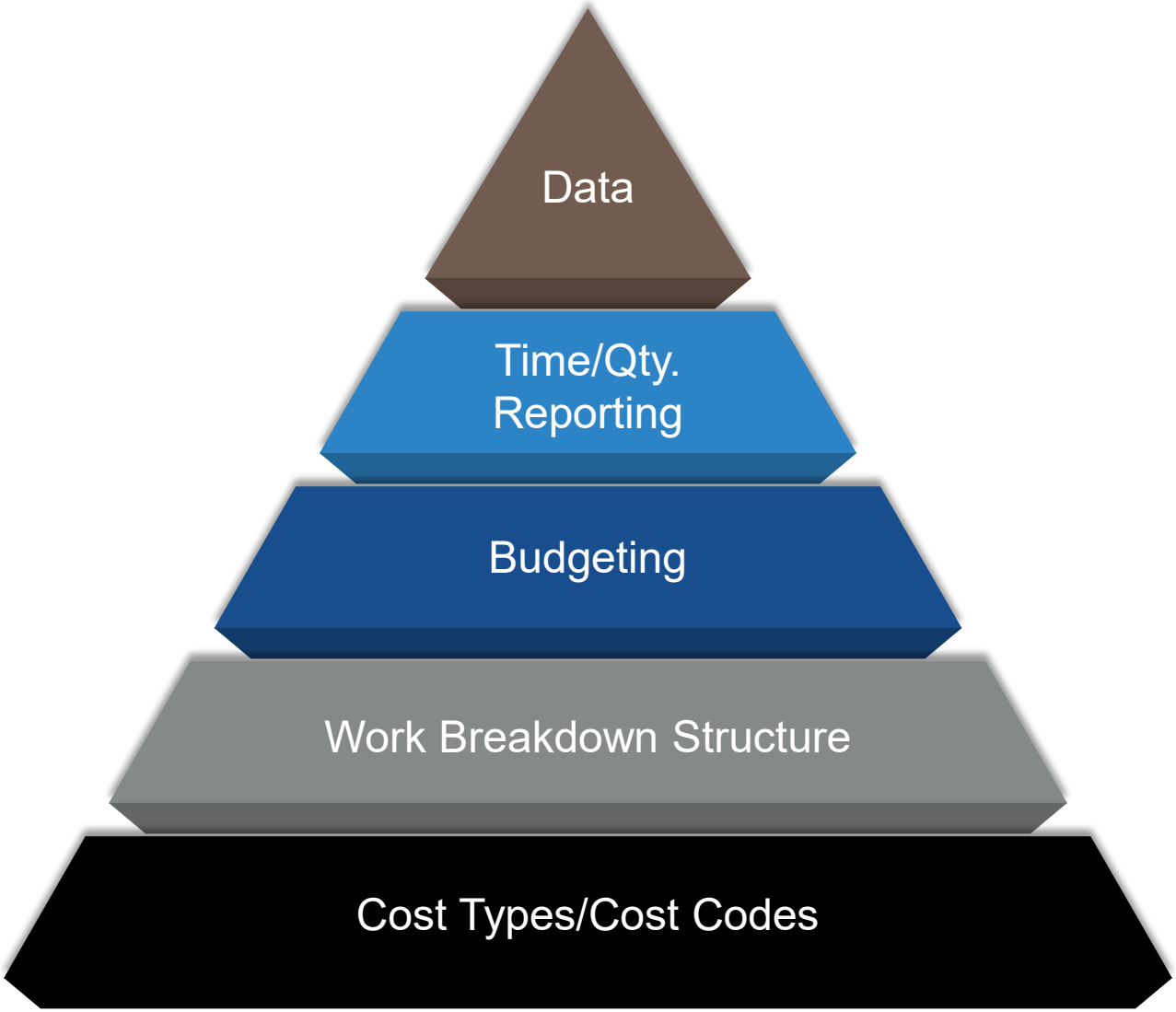
Part V

The Need for Accurate Reporting

Consistency in Data Collection



THE NEED FOR ACCURATE FIELD REPORTING – Correct Reporting Example

A	B	C	D	E	F	G	H	I	J	K	L
							F/B	(F/B) X D		I/J	(J/F)*B
	BUDGETED				ACTUAL					PRODUCTIVITY	PROJECTED
Activity	Units	UOM	Hours		Units	UOM	Units Inst. or % Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours
A	100000	SF	8000		40000	SF	40.00%	3200	4000	0.8	10000
B	50000	LF	6000		25000	LF	50.00%	3000	2500	1.2	5000
TOTAL			14000					6200	6500	0.95	15000

All data is complete in this example. Shows us over in labor by 1,000 hours.

THE NEED FOR ACCURATE FIELD REPORTING – Optimistic Reporting Example

A	B	C	D	E	F	G	H	I	J	K	L
							F/B	(F/B) X D		I/J	(J/F)*B
	BUDGETED				ACTUAL					PRODUCTIVITY	PROJECTED
Activity	Units	UOM	Hours		Units	UOM	Units Inst. or % Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours
A	100000	SF	8000		50000	SF	50.00%	4000	4000	1.00	8000
B	50000	LF	6000		30000	LF	60.00%	3600	2500	1.44	4167
TOTAL			14000					7600	6500	1.17	12167

% Complete data is reporting incorrectly. Should be 40% and 50%, respectively. This now shows us saving 1,833 hours.

THE NEED FOR ACCURATE FIELD REPORTING – Pessimistic Reporting Example

A00	B	C	D	E	F	G	H	I	J	K	L
							F/B	(F/B) X D		I/J	(J/F)*B
	BUDGETED				ACTUAL					PRODUCTIVITY	PROJECTED
Activity	Units	UOM	Hours		Units	UOM	Units Inst. or % Comp.	Earned Hrs.	Act. Hours	Earned/Actual	Hours
A	100000	SF	8000		35000	SF	35.00%	2800	4000	0.70	11429
B	50000	LF	6000		20000	LF	40.00%	2400	2500	0.96	6250
TOTAL			14000					5200	6500	0.80	17679

% Complete data is reporting incorrectly. Should be 40% and 50%, respectively. This now shows us running over in labor by 3,679 hours.

Culture Sets the Stage

- Poor culture encourages staff to hide or misreport information
- Positive culture encourages trust and early intervention to solve as a team

Accuracy

Accuracy in project financial controls will give:

- Correct labor productivity
  - Use in estimating
  - Use in change order management
- Proper material usage/savings/overage
  - When done in conjunction with labor, may indicate WHY a variance is occurring
- Subcontractor performance
  - Time spent coordinating, managing, scheduling, problem solving
- Accurate equipment costing
  - Ownership and operating costs
  - Rentals
- “Other” direct job costs
  - Project management and administration
  - Jobsite facilities

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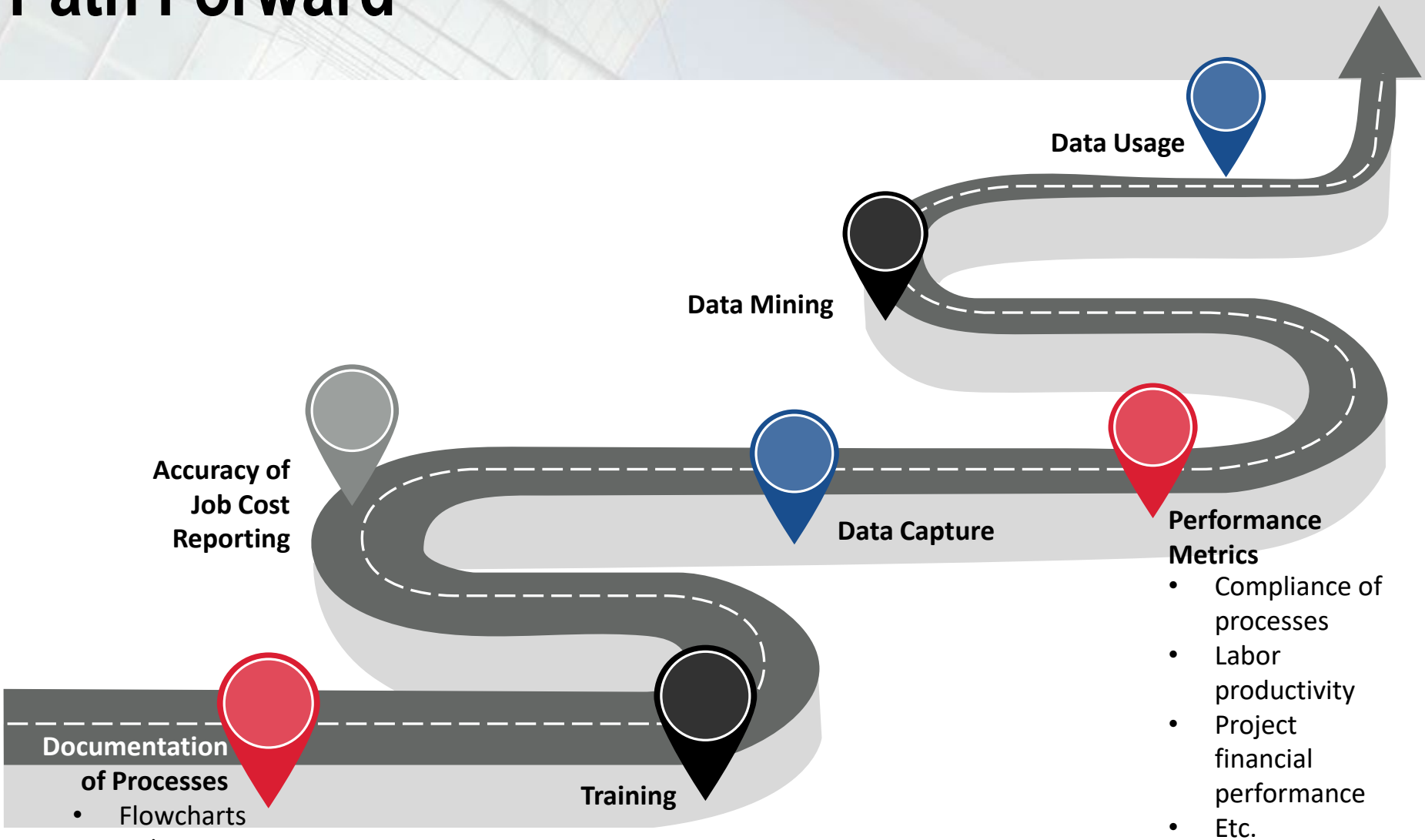
Summary

Summary

- Data and processes allow for greater predictability of success
- Bidding the right projects, at the right time, with the right data reduces risk
- The estimating team is critical in setting the operation up for success
- Gut feel in estimating is not easily transferrable. Process, examples, and data usage is.

Path Forward



- Compliance of processes
- Labor productivity
- Project financial performance
- Etc.

- Flowcharts
- Videos
- Examples
- Roles/responsibilities matrix

Success for All

Setting your team up for success has a much more predictable outcome than hoping they are

Questions

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