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THINK FORWARD

TOP CHALLENGES OF COST ESTIMATING TEAMS – EMPOWERING SMEs WITH BEST PRACTICES AND DATA

ProjStream

ProjStream – Who We Are

- 50+ years of combined industry experience
- Experts who love to help our users achieve greater growth and efficiency
- We can't wait to help yours do the same!

KBR

SwRI
Southwest Research Institute

NASA

SAIC

CACI
EVER VIGILANT

L3HARRIS™

OCEANEERING®

amentum™
Experience | Passion | Purpose

DRS TECHNOLOGIES

Nammo

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Project Life Cycle (PLC) Solution

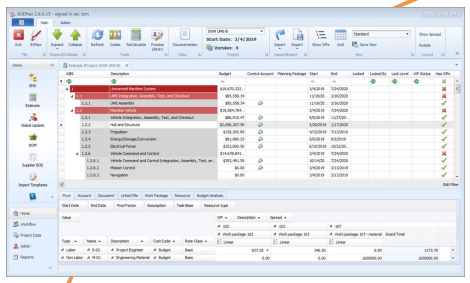
Shared Database
Built-in Workflow
Robust Ad-Hoc Reporting

BOE Time Phased Data

Merge Approved Changes

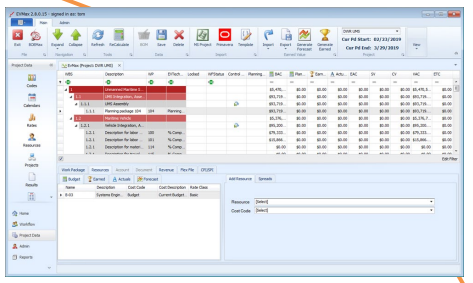
Historical Actual Costs

BOEMax



- Integrated Estimating and Pricing
- Historical Estimate, Actual Cost Data Library
- Process Library
- Hierarchical BOMs
- Rich Text Documentation
- Schedule Integration
- What-If Analysis, Model Changes, Audit Trail
- Top Down, Bottoms Up Traceability

MaxTeam



- Create and Maintain Budget Plan
- Track Key Performance Indicators
- Schedule Integration
- Measure Work Progress
- Import Actual Costs
- Maintain ETCs
- EVM

Work Bench

- Web application
- Short learning curve for SME
- Budget and ETC data entry
- Workflow approvals

MaxBoard

- Interactive Data Analysis Dashboard
- Single or CrossProject Data Views
- Proactively Manage Cash Flow, Revenue, Resource Capacity and Demand

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Agenda

Welcome

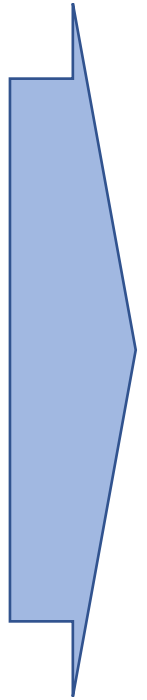
- *45-minute talk and an interactive Q&A session to complete the hour*
- *Put any questions you have in chat and join in on the poll*
- *Stay for the Q&A session at the end*

Your Speakers Today

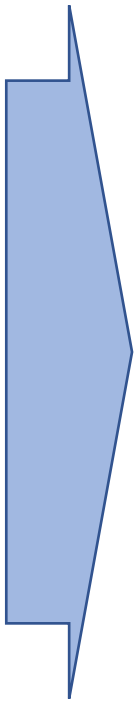
- Chuck Kurtz—Director of Pricing, BAE Systems
- Tom Shanahan—President and CEO, ProjStream

Top Challenges to Address

- Scattered Historical Records – We Don’t Have Access to our Data
- Lack Of Standardization in Work Products
- Variations in SME Risk Assumptions Cause Uncertainty
- Tracking Change is Difficult and Takes Too Long
- Mystifying Estimate Rationale



Best Practices



- Make Data Accessible and Reusable
- Provide a Reusable, Repeatable Task Level BOE
- Standardize on BOE Attributes, Establish Feedback Loops
- Automate Change Tracking
- Standardize and Train on Rationale Process

1. Scattered Historical Records – We Don't Have Access to our Data

•Our data storage is scattered, and important records are difficult to find, if not lost completely.

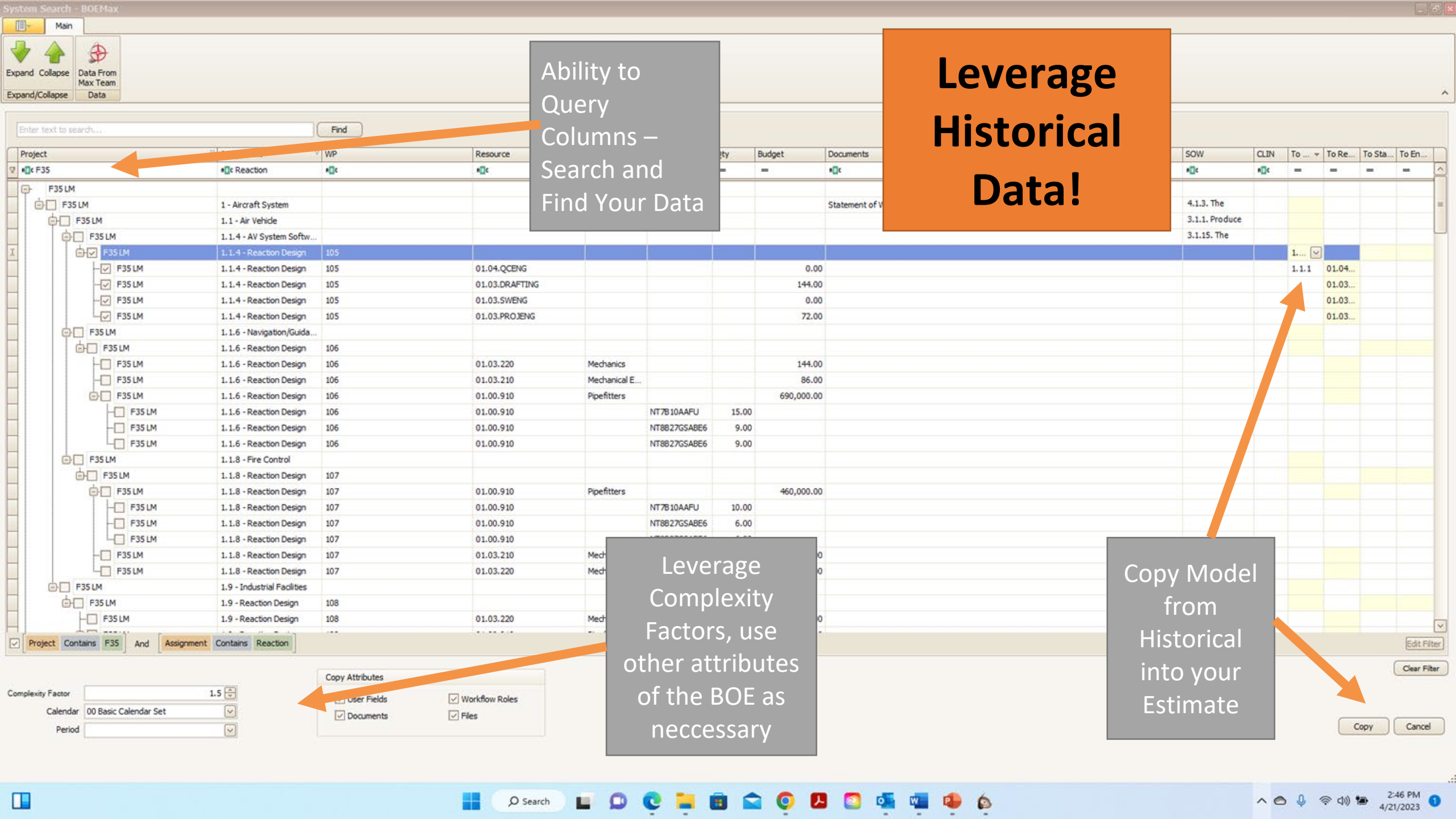
- Cost (Hours, Material Cost, Quantities)
- Technical – Requirements, Physical System Characteristics
- Programmatic – program parameters that can drive cost
- Schedule – Time-Phased Data (when is first material support gate, etc., when is first lot purchase and lead time, etc.)

- Primary vs. Secondary Data

1. BP – Make Data Accessible and Reusable

Adopt a method to store data that SMEs can query and access at their fingertips. Make it as easy as possible to translate historical data into data that can be used on the estimate along with complexity factors and rationale.

- Confidence in the cost-realism of your project estimates because you leverage accurate historical data.
- Primary Data is most defensible, provide this first and foremost.
- *Reference Blog - https://www.projstream.com/blog/bridging-gap-between-project-cost-estimating-cost-management*


Leverage Historical Data!
Ability to Query Columns – Search and Find Your Data
Leverage Complexity Factors, use other attributes of the BOE as neccessary
Copy Model from Historical into your Estimate

2. Lack Of Standardization in Work Products

We do repeatable work but don’t capture the methodologies or templates and so have to relearn and repeat attributes of an estimate and we have no idea of time to task.

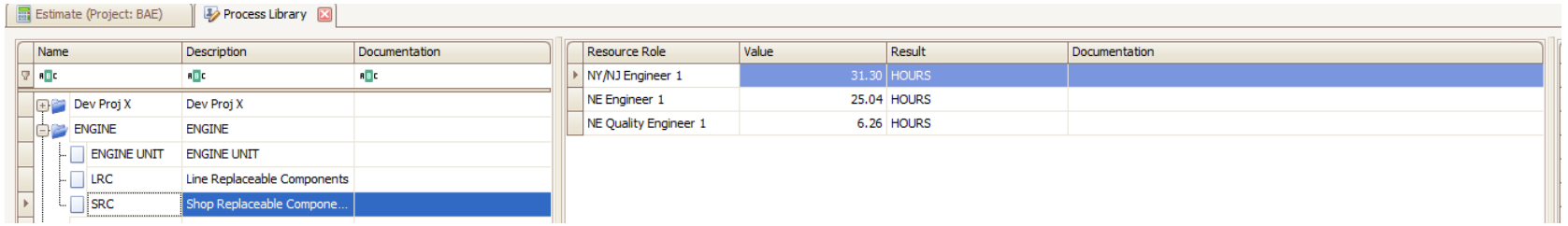
2. BP – Provide a Reusable, Repeatable Task Level BOE

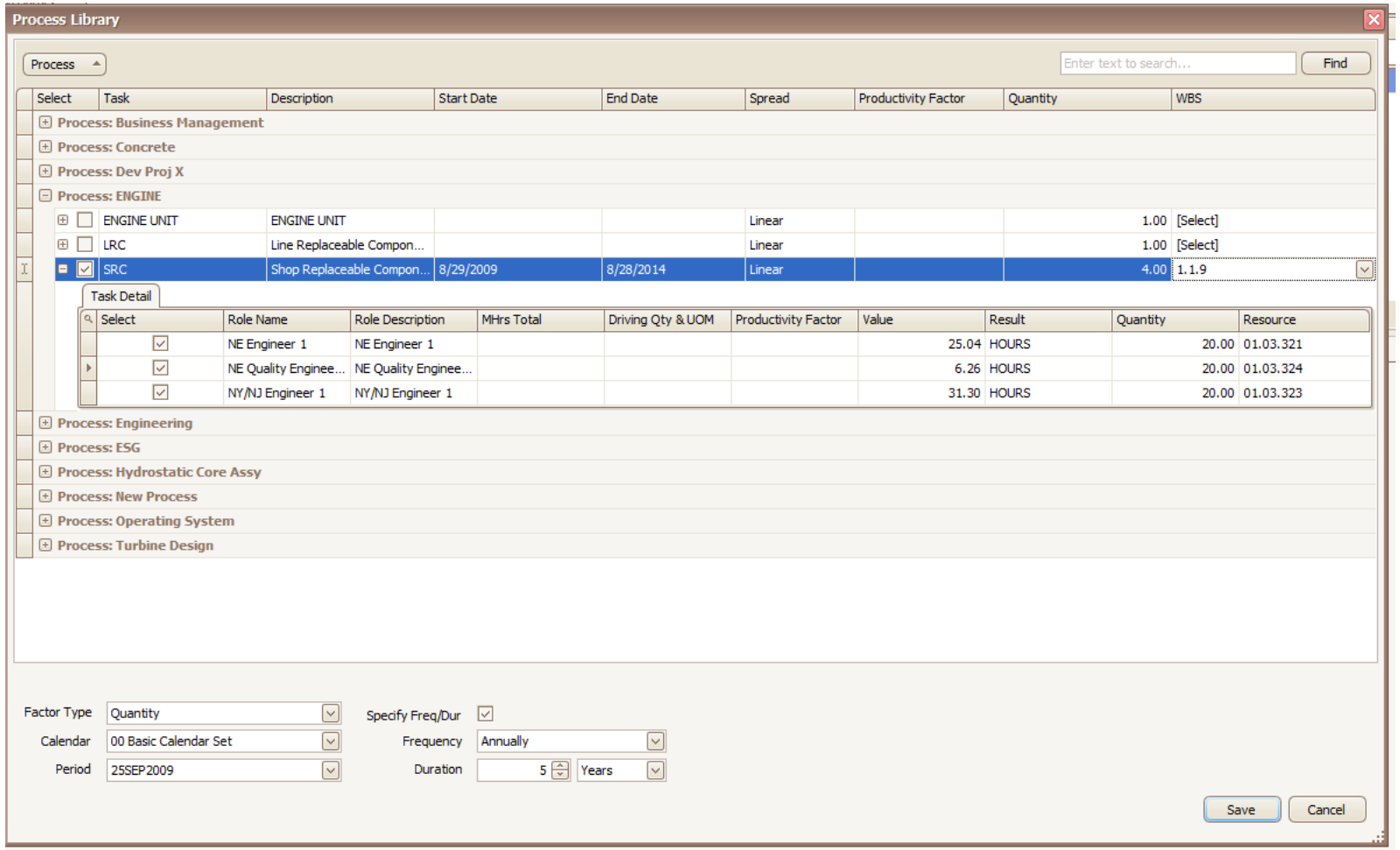
Establish a shareable Estimate Component Library and methodology to provide a consistent, repeatable process for fast and accurate estimate building.

- We call this the “process library”

Process Library

Process Library Base Definition of One SRC Unit





Estimators Apply Process Library

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3. Variations in SME Risk Assumptions Cause Uncertainty

We have no learning mechanism or insight into knowledge sharing so uncertainty leads to excessive padding. SMEs do not trust our estimating tools and assume too much risk or too much opportunity.

3. BP I – Standardize on BOE Attributes

Define all the appropriate attributes of a quality BOE, for example, what specific labor and non-labor resources go into the estimate, standardize the rationalization and make it part of the process library to create time to task and rationale information. If there are no data or cost drivers to an estimate, consider a 3-point estimate approach.

3. BP II – Establish Feedback Loop

Reference and leverage relatively current performance data against the tasks homogeneously to normalize that data and update the process library templates.

- Eliminate subjectivity by taking personalities out of the equation vis-à-vis risk-aversion
- Include peer review capability and a process to identify correlations
- Documentation and previous work look-up for insight and history to capture the learnings

4. Tracking Change is Difficult and Takes Too Long

We cannot create high-quality estimate scenarios or capture changes. No capacity to see alternatives due to the lack of an automated process to generate scenarios.

4. BP – Automate Change Tracking

- Implement a platform with the ability to perform what-if modeling.
- Create a procedure to capture and report changes to the estimate.

		01.03.210 PROJECT ENGINEERING	54,448.39	58,762.40
		01.03.220 DRAFTING	11,847.65	12,786.36
		01.03.230 AERONAUTICAL ENGINEER	849,665.21	868,439.30
		01.03.240 MECHANICAL ENGINEER		1,410,297.72
	COST Total		944,480.94	2,381,084.93
102 Test T...	COST	01.03.107 PROJECT MANAGEMENT	2,639,919.71	2,661,307.83
		01.03.210 PROJECT ENGINEERING	2,175,881.94	4,607,954.53
		01.03.220 DRAFTING	473,459.22	492,638.60
		01.03.240 MECHANICAL ENGINEER	13,599.26	52,885.73
		01.03.250 SOFTWARE ENGINEER		454,267.81
	COST Total		5,302,860.13	8,269,054.50
103 Turbin...	COST	01.00.910 DIRECT MATERIAL	57,023,662.07	62,726,028.28
171 Energy...	COST	01.00.910 DIRECT MATERIAL	9,610,496.54	10,571,546.19
		01.03.107 PROJECT MANAGEMENT	2,592,496.00	2,851,745.60
		01.03.210 PROJECT ENGINEERING	4,273,588.47	4,700,947.32
		01.03.220 DRAFTING	929,907.93	1,022,898.72
		01.03.240 MECHANICAL ENGINEER		1,645,331.56
		01.03.250 SOFTWARE ENGINEER		235,047.37
	COST Total		17,406,488.93	21,027,516.75

Version Tracking

5. Mystifying Estimate Rationale

Our SMEs have no supporting rationale or charred methodology on which to base our cost estimates, leading to uncertainty, opacity, and cost margin padding to account for risk at the expense of competitive advantage.

5. BP – Standardize and Train on Rationale Process

- Identify, capture, and store the source of the estimated data and the underlying rationale for consistent and repeatable methods to express and format rationale shared by all.
- Establish single source of truth reliability. For example, update the estimate, ensure rationale gets updated accordingly.

Standardize the BOE

Propulsion			
WBS Number	1.1.2	Status	In Progress - Functional Mgr
WBS Title	Propulsion	SOW Ref	3.1.1, 3.1.2
POP Start	12/3/2014	CLIN	DELIVERY I
POP End	8/30/2015	IPT	NEWGEN
Preparer	barterbury	Assumptions	1
Functional Manager	cparkhilll	TPM	1
Proposal Manager	jspeer	Contact Phase	DESIGN

	26DEC2014	27MAR2015	26JUN2015	Total
AERONAUTICAL ENGINEER	200.00	480.00	200.00	880.00
MECHANICAL ENGINEER	265.45	737.71	208.18	1,211.35
TEST ENG			440.00	440.00
Total	465.45	1,217.71	848.18	2,531.35

Assumptions

All thrust vector tests are automated

SOW

3.1.1. Produce System Drawings of Turbine Design

3.1.2. Design a fluidic thrust vectoring system that diverts thrust via secondary fluidic injections. Minimum thrust deflection should be 13 degrees.

TPM

Minimum thrust angle of 13 degrees

Work Package or Estimate Level Data			
WBS Ref	1.1.2	Start Date	12/3/2014
WP Number	101	End Date	3/31/2015
WP Description	Design Thrust Vectoring System	Estimating Methodology	Bottoms Up

		26DEC2014	27MAR2015	26JUN2015	Total
01.03.230	AERONAUTICAL ENGINEER	200.00	480.00	200.00	880.00
01.03.240	MECHANICAL ENGINEER	200.00	480.00	200.00	880.00
Total		400.00	960.00	400.00	1,760.00

BOE
ELEMENT DESCRIPTION
Design Thrust Vector

METHODOLOGY

Subject matter expert judgement is being used here. We are estimating 2 FTE's over a period of 5 months for this design. This is based on level of effort needed against similar design efforts described as.....

Work Package or Estimate Level Data			
WBS Ref	1.1.2	Start Date	4/1/2015
WP Number	103	End Date	8/30/2015
WP Description	Turbine Procurement	Estimating Methodology	Material

Resource: 01.00.910

Part Number	Description	Manufacturer	Type	Qty	Unit	Unit Price	Total
N0102077	COMBUSTION CHAMBER	PRATT & WHITNEY	Item	2.00	EACH	650,000.00	1,300,000.00
NT5B04AAADE5	EXHAUST	PRATT & WHITNEY	Item	2.00	EACH	555,555.00	1,111,110.00

ProjStream Facilitates Best Practices

- ProjStream is an end-to-end software solution for all your project management needs, from bidding and cost estimating to project control and reporting.
- ProjStream handles searches within seconds with accountability
- The ProjStream Estimate Component Library facilitates a consistent, repeatable, and shareable methodology
- ProjStream builds estimates faster with higher profitability
- ProjStream stores a query-able set of data for rapid answers, performance, and profitability

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Q&A Session

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Next Steps

ICEAA Workshop May 16-18 in San Antonio, TX

Stop by the ProjStream booth and receive Top 10 challenges and best practices of cost estimation teams

How to engage in a meaningful way:

Process assessment or
60 day QuickStart Program

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