

QUANTITATIVE RISK ANALYSIS



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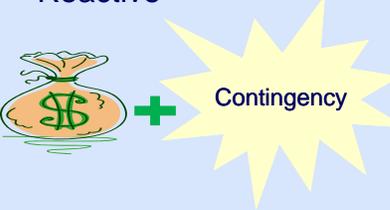
Presentation Outline

- Approach
- Concept
- Objectives
- Process
- "SWAT" Team
- Pilot Workshops



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Cost Estimating Approaches

<p style="text-align: center;"><u>Traditional</u></p> <ul style="list-style-type: none"> • Contingency is intended to include all risk (known & unknown) • Little control of cost and schedule • Reactive <div style="text-align: center; margin-top: 20px;">  </div>	<p style="text-align: center;"><u>Risk-Based</u></p> <ul style="list-style-type: none"> • Risk are clearly identified and quantified • Reasonable control of cost and schedule • Proactive <div style="text-align: center; margin-top: 20px;">  </div>
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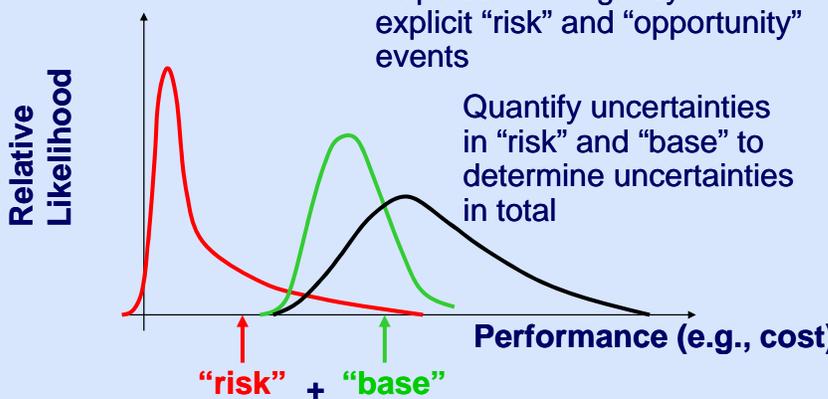
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Risk Analysis Concept

Total ≈ "Base" + "Risk"

Replace "contingency" with explicit "risk" and "opportunity" events

Quantify uncertainties in "risk" and "base" to determine uncertainties in total



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Objectives

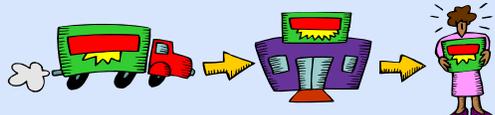
- Identify & Quantify Uncertainty in Project Cost and Schedule:
 - sequence of all project activities
 - base cost and schedule
 - threats and opportunities
- Prioritize Risks and Opportunities
- Determine Action to Manage Impact of Risk



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Risk Analysis Process

- Conduct Project Overview
- Develop Flowchart & Schedule
- Determine Base Cost Estimate
- Identify/Quantify Risks & Opportunities
- Determine Uncertainty in Cost & Schedule

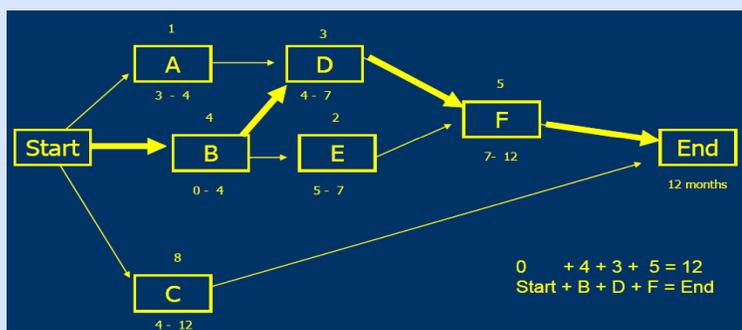


Conduct Project Overview

- Review baseline project scope, strategy, timeframe and assumptions
- Review project history and alternatives
- Review stakeholder's issues
- Review any other issues

Develop Flowchart & Schedule

- Develop flowchart of project activities
- Determine base activities duration



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Determine Base Cost Estimate

- Eliminate contingencies
- Assume no problems or opportunities
- Uncertainty in base cost

A photograph of a broom lying on a baseball diamond. The broom is positioned diagonally across the diamond, which is a pentagonal shape on a dirt field. This image is a metaphor for the uncertainty in base cost mentioned in the text.

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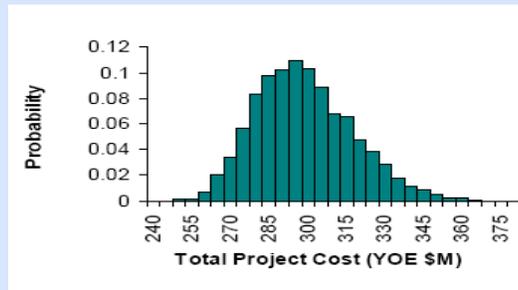
Identify/Quantify Risk and Opportunities

- Brainstorm list of risks & opportunities
- Refine brainstorm list
- Determine likelihood & impact of risks and opportunities
- Prioritize risks & opportunities

A photograph of a red wooden sign on a wooden post. The sign has the words "DANGER" and "THIN ICE" written on it in white capital letters. The sign is set against a background of a snowy or icy landscape.A 3D rendered illustration of a man in a suit peeking from behind a door. The door is open, and the man is looking out from the gap. This image is a metaphor for identifying and quantifying risks and opportunities.

Determine Uncertainty in Total Cost & Schedule

- Input data into probabilistic computer software
- Generate cost & schedule graphs



Cost Risk Analysis “SWAT” Team

- Team Members
- Mission/Vision/Goals/Objectives
- Team Activities



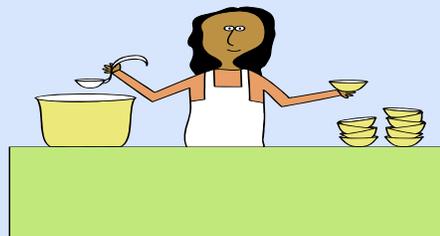
Team Members

- Greg Davis – State Estimates Engineer
- Kurt Lieblong – State Value Engineer
- Dave Sadler – State Construction Eng
- Tim Brock – D4 Value & Utilities Eng
- Jose Theiler – D4 Program Service Admin
- Jason Spilak – D7 PS&E Manager



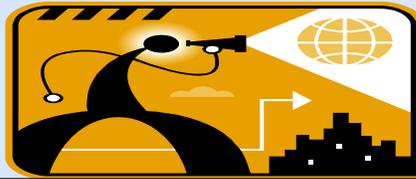
Mission Statement

“Manage/control the quality of construction cost & schedule estimates to ensure they are reasonable, defensible and reliable.”



Vision Statement

“Risk Management...the way FDOT controls project unknowns and manages their impacts to cost and schedule by identifying those risks into the decision process.”



Goals

- (1) *Develop and Implement Cost Risk Analysis Program*
- (2) *Conduct Cost Risk Analysis Workshops on major projects*
- (3) *Develop a mentoring / succession / training plan*



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Objectives

- To conduct cost risk analysis workshops for projects between \$100M and \$500M
- To manage a consultant contract for cost risk analysis workshops on projects greater than \$500M
- To develop training program for cost risk analysis



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Team Activities

- Strategic Plan
- Draft Procedures
- Project List
- Software Recommendations
- Subject Matter Experts
- Consultant Contract Scope of Services



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Pilot Workshops

- I-4 Lee Roy Selman Expressway & Tampa Port Connector
- CSX Commuter Rail in District 5
- **I-595 Corridor Improvements in District 4**
- **First Coast Outer Beltway in District 2**
- I-75 Corridor Improvements in District 4

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Thank You - Any Questions!