Deltek Acumen

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Planning, Risk, Acceleration

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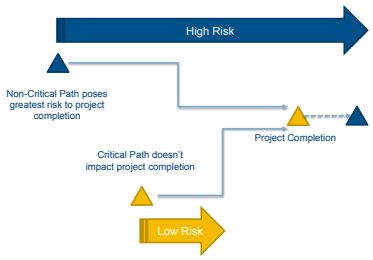
Learning Objectives

- The 5 steps
  1. Capturing uncertainty: *calibrating the schedule*
  2. Identifying risk events: *accounting for unknowns...*
  3. Alternate scenarios: *risk adjusted schedules*
  4. Interpreting results*: exposure & drivers*
  5. Risk Reduction*: reducing risk exposure*
- Worked examples
- Q&A

Introduction to Project Risk Analysis

- Scheduling
  - Science behind forecasting project completion
  - Doesn't account for scope uncertainty, unknowns
- Project Risk Registers
  - Becoming more prevalent
  - Still isolated from true risk analysis
- Risk Analysis
  - Gain true insight into schedule achievability
  - Pinpoints risk hotspots that will cause delay
  - Structured approach to **reducing** risk exposure

Why Bother with Risk Analysis?



- Reveals hidden critical paths
- Brings realism to your forecast
- Managed contingency
- Generates team buy-in to the schedule
- Helps with the likes of IPA certification

How Does Risk Analysis Work?

- Based on CPM (scheduling!)
  - Accounts for variability in the forecast
  - Schedule uncertainty
  - Risk events
  - Cost-impact of time…
- Monte Carlo simulation
  - Essentially a brute force approach
  - Highly prone to schedule logic & inputs

Importance of a Sound Schedule

A schedule is a forecast used as a benchmark against which to measure performance.

- Means of defining & capturing scope
- Means of communicating the plan to stakeholders

S1 — **Schedule Basis**
- Reflects latest scope/contractor updates

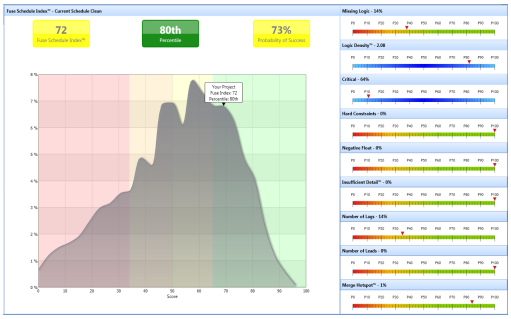
S2 — **Critiqued Schedule**
- Structurally sound, no contingency, sound logic

S3 — **Risk-Adjusted Schedule**
- Estimate uncertainty, risk events

S4 — **Optimized Target Scenarios**
- Reduced hot spots, higher confidence

S5 — **Team Validated Scenario**
- Buy-in on mitigation plans

Sound Schedule



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Building a Risk Model – Alternate Approaches

Risk Load Critical Path

- Pros
  - Focuses the team in a workshop
  - Based on actual schedule
- Cons
  - Assumes known critical path
  - Risk events make this approach flawed
  - Dangerous approach to risk modeling
  - Doesn't give true picture of risk

Create a Summary Schedule

- Pros
  - Excellent means by which to facilitate a workshop
  - Easy to risk load/build risk model
- Cons
  - Lose the logic integrity/calendars/ detail of a schedule
  - Separate model to maintain to that of schedule

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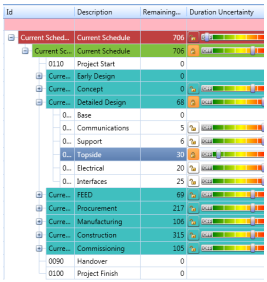
A More Effective Approach

Top-Down Categorization

  - Retains true integrity of the project schedule
  - Ensures whole schedule is categorized
- Very fast approach
- Removes complexity
- Eliminates crazy rankings

Graphical Approach



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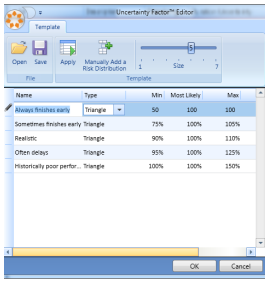
Step 1: Capturing Uncertainty

Background

- Uncertainty
  - variability regarding durations/costs
- Is the duration realistic?
  - Scope definition
  - Complexity of work
  - Past performance
  - Just plain wrong!
- Not dates!
  - Dates are the results of durations & logic
- Old school approach
  - Min, most likely, max & distribution type

Uncertainty Factor™



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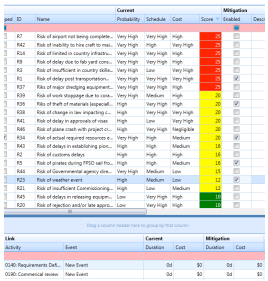
Step 2: Capturing Risk Events

Risk Events

- Discrete event
- 2 key attributes
  - Probability
  - Impact(s)
- Threats & opportunities
- Multiple states
  - Current
  - Mitigated

Project Risk Register



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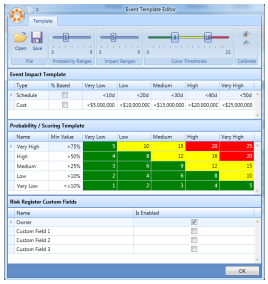
Risk Register Calibration

One Size Doesn't't Fit All

- # of categories
  - 5X5 is standard
- Define probability scale
  - Don't adopt HSE scale
- Calibrate impacts
  - Relative or absolute?
- Determine thresholds
  - Risk score is irrelevant…

Risk Register Calibration



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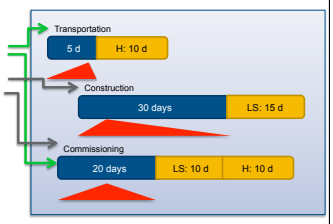
Mapping Risk Events

Risk Register

Risk ID	Description	Probability	Impact
0001	Hurricane	25%	10 days
0002	Labor Strike	50%	50%

Schedule



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Step 3: Risk Adjusted Schedules

- Running the Simulation:
  - Accounts for all reasonable combinations of risk & uncertainty
  - Is true to the logic of the CPM schedule
  - Critical path may jump
  - Run enough iterations until results don't significantly vary

Step 4: Risk Exposure

- **P-Dates**
  - "I'm 50% confident I will finish on…"
- **Contingency**
  - "How much more/less time do I need to finish by…?"
- **Confidence Level**
  - "What chance do I have of hitting my finish date?"
- **Risk Range Factor™**
- Much better means of determining risk exposure

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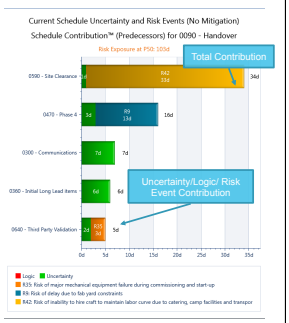
Step 4: Risk Drivers

- **Risk Drivers**
  - High-risk activities
  - Most impactful events
- **Traditional Reporting**
- % based
- .

$$R = 1 - \frac{6 \cdot \sum d^2}{n(n^2 - 1)}$$

- **Risk (** **)r™**
  - True measure of impact in duration & cost!
  - Differentiates between uncertainty & risks



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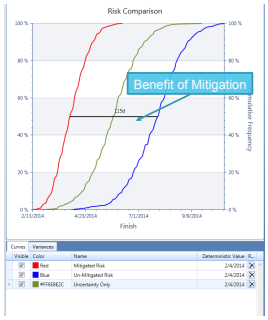
Step 5: Risk Reduction

- Compare scenarios in a single workbook:
  - Turn on or off risks
  - Benefit of mitigation
  - Uncertainty vs. Risk Events
  - Schedule A vs. Schedule B
  - Impact of schedule delay on cost risk



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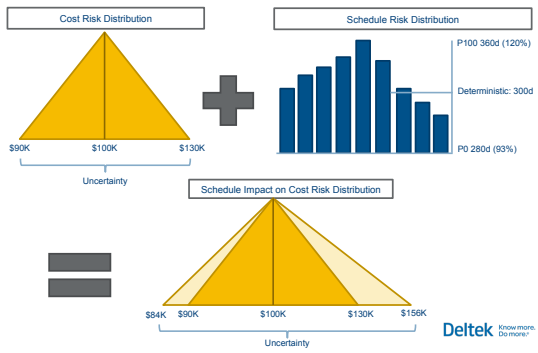
Schedule Impact on Cost Risk



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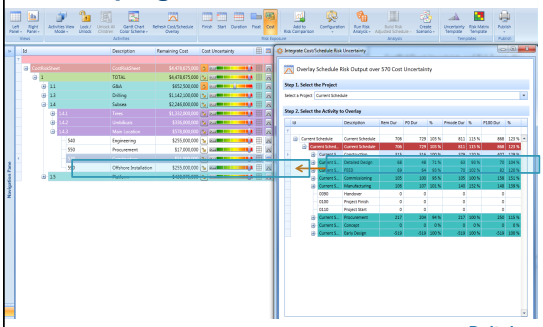
Developing Cost Risk Models



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More Information

Product Information: deltek.com/products/ppm

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