

Deltek Acumen Risk

An In-Depth Review...

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Agenda

➤ Introductions

➤ Introduction to Acumen Risk

- Why Acumen Risk is different
- Uncertainty Factors
- Risk Advisor
- Risk Register

➤ Risk reporting

- Risk histogram
- Risk tornado chart
- Risk critical paths

➤ Creating risk-adjusted schedules

PMFocus Introductions

Legacy & Background

- 20 years experience
- Founder of
 - Pertmaster NA (Primavera)
 - Acumen (Deltek)
- Inventor of
 - Acumen Fuse/Risk/360
 - Schedule Index™
- Facilitated
 - 100's of CAPEX risk workshops
 - EPC, Owner, JV

Focus & our DNA

- Confidence management
- Project forecast certainty
- Project intelligence
- Deltek partner



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

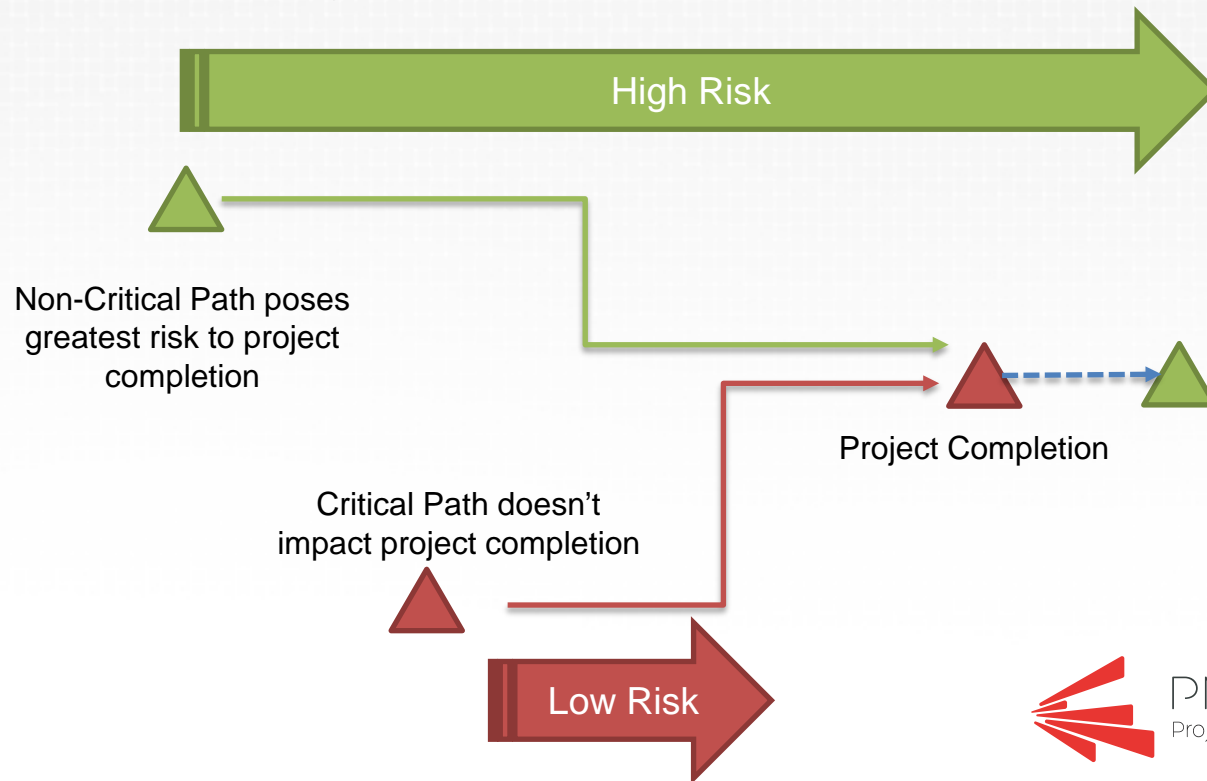
- Gain true insight into schedule achievability
- Pinpoints risk hotspots that will cause delay
- Structured approach to **reducing** risk exposure



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Why Bother with Risk Analysis?

- ⚡ Brings realism & confidence to your forecast
- ⚡ Reveals hidden critical paths
- ⚡ Establishes appropriate contingency
- ⚡ Generates team buy-in to the schedule



How Does Risk Analysis Work?

⚡ Based on CPM (scheduling!)

- Accounts for variability in the forecast
- Schedule uncertainty
- Risk events
- Cost-impact of time...

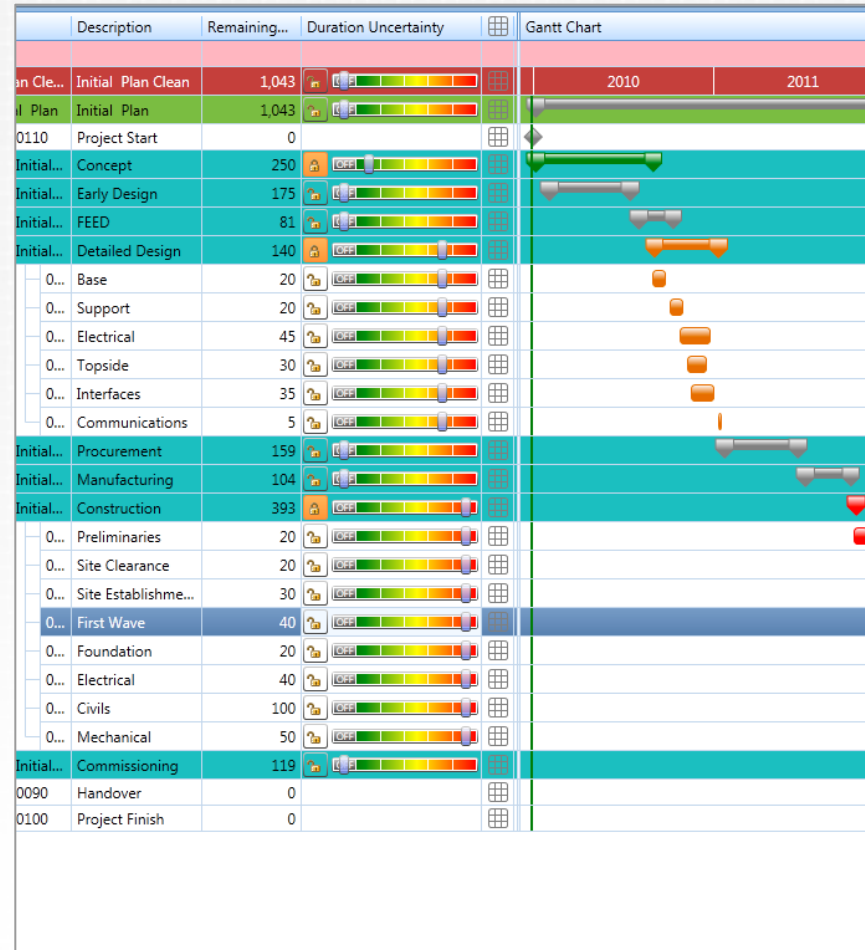
⚡ Monte Carlo simulation

- Brute force approach
- Highly prone to logic



Acumen Risk™

- Cost/schedule analysis
- Aimed at team members
- Integrated risk register
- Uncertainty Factor™
- Uses native schedule
- Intuitive reporting
- Risk-adjusted schedules



Building a Risk Model

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

A More Effective Approach

Uncertainty Factor

- Top down approach
- Retains integrity of schedule
- Ensures total categorization
- Very fast approach
- Removes complexity
- Eliminates crazy rankings

Graphical Sliders

ID	Description	Remaining...	Duration Uncertainty
Current Sched...	Current Schedule	706	
Current Sc...	Current Schedule	706	
0110	Project Start	0	
+ Curre...	Early Design	0	
+ Curre...	Concept	0	
- Curre...	Detailed Design	68	
0...	Base	0	
0...	Communications	5	
0...	Support	6	
0...	Topside	30	
0...	Electrical	20	
0...	Interfaces	25	
+ Curre...	FEED	69	
+ Curre...	Procurement	217	
+ Curre...	Manufacturing	106	
+ Curre...	Construction	315	
+ Curre...	Commissioning	105	
0090	Handover	0	



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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™

The screenshot shows the 'Uncertainty Factor™' software interface. At the top, there is a 'Template' tab and a toolbar with icons for 'Open', 'Save', 'Apply', and 'Manually Add a Risk Distribution'. A slider control is set to '5' with a range from 1 to 7. Below the toolbar is a table with columns for 'Name', 'Type', 'Min', 'Most Likely', and 'Max'. The table contains several rows of data representing different risk scenarios.

Name	Type	Min	Most Likely	Max
Always finishes early	Triangle	50	100	100
Sometimes finishes early	Triangle	75%	100%	105%
Realistic	Triangle	90%	100%	110%
Often delays	Triangle	95%	100%	125%
Historically poor perfor...	Triangle	100%	100%	150%

Introduction

- Assigning uncertainties is inherently difficult
- Solved complexity with uncertainty sliders
- Still lacks guidance
- Advice based on
 - Schedule quality
 - Historical performance
 - User field

Example

Id	Description	Remaining...	Duration Uncertainty	Type	%
0370	Vendor B	15d			100 %
0680	Vendor C	20d			100 %
0350	Bid reviews	30d			100 %
Current Schedule.0060 Manufacturing		236d			
Current Schedule.0060... Offshore		209d			
Current Schedule.0060... Domestic		236d			
0430	Phase 1	4d			100 %
0420	Phase 2	10d			100 %
0480	Phase 3	5d			100 %
0470	Phase 4	15d			100 %
0460	Phase 5	20d			100 %
Current Schedule.0070 Construction		460d			
0600	Preliminaries	40d			100 %
0590	Site Clearance	20d			100 %
0580	Site Establishment	30d			100 %

General	Status	Relationships	Duration Uncertainty	Costs	Risk Events
Remaining Duration	30d	Probability of Existence	100 %		
Enable Duration Uncertainty	<input checked="" type="checkbox"/>	Distribution Type	Triangle		
Minimum Remaining Duration	30d		100 %		
Most Likely Remaining Duration	30d		100 %		
Maximum Remaining Duration	45d		150 %		
Risk Notes	Uncertainty set to very aggressive due to poor schedule quality				

Capturing Risk Events – Risk Register

Risk Events

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

Project Risk Register

Risk			Current				Mitigation	
Mapped	ID	Name	Probability	Schedule	Cost	Score	Enabled	Description
<input type="checkbox"/>	R7	Risk of airport not being complete...	Very High	Very High	High	25	<input type="checkbox"/>	
<input type="checkbox"/>	R42	Risk of inability to hire craft to mai...	Very High	High	Very High	25	<input type="checkbox"/>	
<input type="checkbox"/>	R14	Risk of limited in country infrastru...	Very High	Very High	High	25	<input type="checkbox"/>	
<input type="checkbox"/>	R9	Risk of delay due to fab yard cons...	Very High	Very High	High	25	<input type="checkbox"/>	
<input type="checkbox"/>	R3	Risk of insufficient in country skille...	Very High	Low	Very High	25	<input type="checkbox"/>	
<input type="checkbox"/>	R1	Risk of delay post transportation...	Very High	Very High	Very High	25	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	R37	Risks of major dredging equipment...	Very High	Very High	High	25	<input type="checkbox"/>	
<input type="checkbox"/>	R39	Risk of work stoppage due to cora...	Very High	Medium	High	20	<input type="checkbox"/>	
<input type="checkbox"/>	R36	Risks of theft of materials (especial...	High	Very High	High	20	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	R38	Risk of change in law impacting c...	High	Very High	Very High	20	<input type="checkbox"/>	
<input type="checkbox"/>	R41	Risk of delay in approvals of visas	High	Low	Very High	20	<input type="checkbox"/>	
<input type="checkbox"/>	R46	Risk of plane crash with project cr...	High	Very High	Negligible	20	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	R34	Risk of actual required resources e...	Very High	High	Medium	20	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	R43	Risk of delays in establishing pion...	High	High	Medium	16	<input type="checkbox"/>	
<input type="checkbox"/>	R2	Risk of customs delays	High	High	High	16	<input type="checkbox"/>	
<input type="checkbox"/>	R5	Risk of pirates during FPSO sail fro...	High	High	Medium	16	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	R44	Risk of Governmental agency dire...	Very High	Medium	Low	15	<input type="checkbox"/>	
<input type="checkbox"/>	R23	Risk of weather event	High	Medium	Low	12	<input checked="" type="checkbox"/>	
<input type="checkbox"/>	R21	Risk of insufficient Commissioning...	High	Low	Medium	12	<input type="checkbox"/>	
<input type="checkbox"/>	R45	Risk of delays in releasing equipm...	Low	Very High	High	10	<input type="checkbox"/>	
<input type="checkbox"/>	R20	Risk of rejection and/or late appro...	Low	Very High	High	10	<input type="checkbox"/>	

Drag a column header here to group by that column

Link		Current		Mitigation		Mitiga	
R...	Activity	Event	Duration	Cost	Duration	Cost	Duratic
<input checked="" type="checkbox"/>	0140: Requirements Defi...	New Event	0d	\$0	0d	\$0	
<input checked="" type="checkbox"/>	0190: Commerical review	New Event	0d	\$0	0d	\$0	

Risk Register Calibration

One Size Doesn't Fit All

- Number 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

The screenshot shows the Risk Register Calibration interface with the following components:

- Probability Ranges:** A slider set to 5, with a scale from 3 to 9.
- Impact Ranges:** A slider set to 5, with a scale from 3 to 9.
- Color Thresholds:** A slider set to 9, with a scale from 0 to 25.
- Event Impact Template:**

Type	% Based	Very Low	Low	Medium	High	Very High
Schedule	<input type="checkbox"/>	<10d	<20d	<30d	<40d	<50d
Cost	<input type="checkbox"/>	<\$5,000,000	<\$10,000,000	<\$15,000,000	<\$20,000,000	<\$25,000,000
- Probability / Scoring Template:**

Name	Min Value	Very Low	Low	Medium	High	Very High
Very High	>75%	5	10	15	20	25
High	>50%	4	8	12	16	20
Medium	>25%	3	6	9	12	15
Low	>10%	2	4	6	8	10
Very Low	<=10%	1	2	3	4	5
- Risk Register Custom Fields:**

Name	Is Enabled
Owner	<input checked="" type="checkbox"/>
Custom Field 1	<input type="checkbox"/>
Custom Field 2	<input type="checkbox"/>
Custom Field 3	<input type="checkbox"/>

Reporting - Risk Exposure

Histogram

⚡ P-Dates

- “I’m 50% confident I will finish on...”

⚡ Contingency

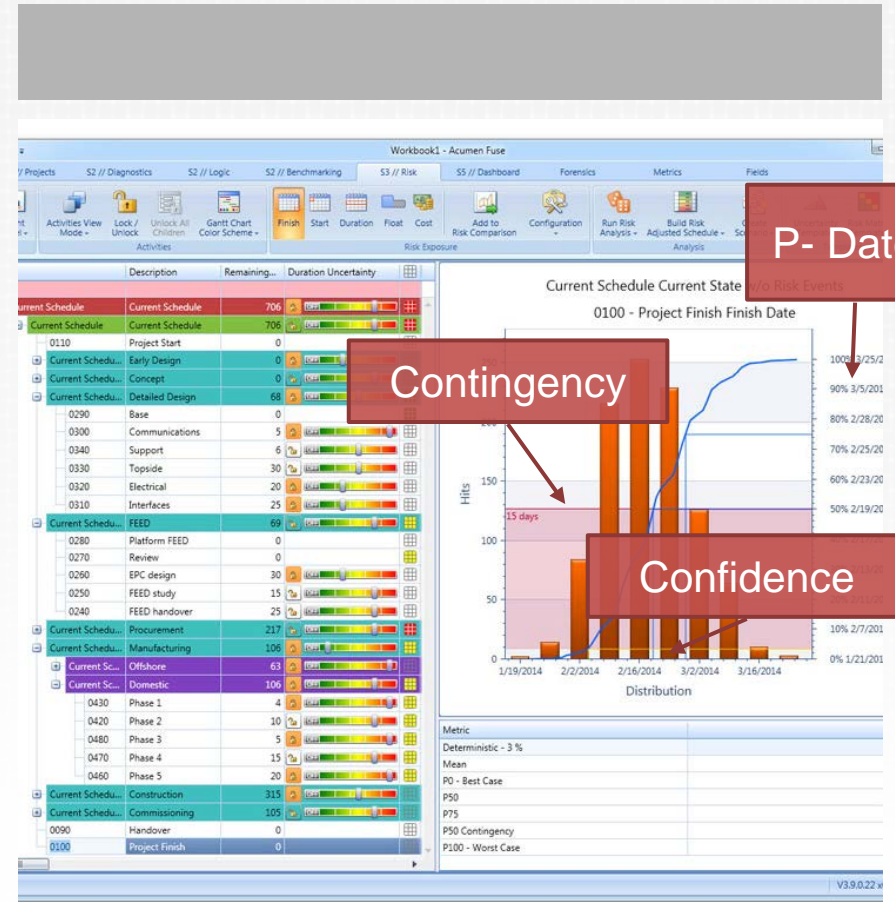
- “How much more/less time do I need to finish by...?”

⚡ 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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Reporting - Risk Drivers

Tornados

Risk Drivers

- High-risk activities
- Most impactful events

Traditional Reporting

% based

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

Risk Contribution Factor™

- True measure of impact
- Differentiates uncertainty/risk



Reporting – Critical Paths

Critical Path Identification

- True insight into risk exposure
- How many times does a path become critical?
- Indication of fluidity of schedule

Critical Paths

➤ Demo

Q & A



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