Achieving Predictable Projects

In a World of Black Swan Risks

SESSION 9

Achieving Predictable Projects

In a World of Black Swan Risks

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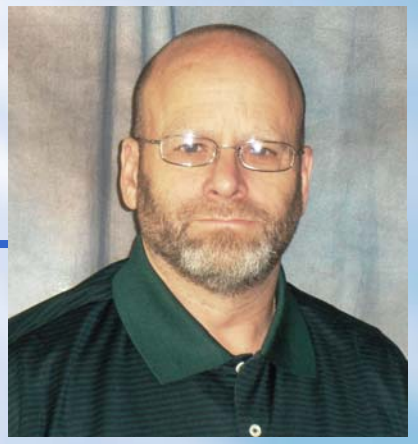
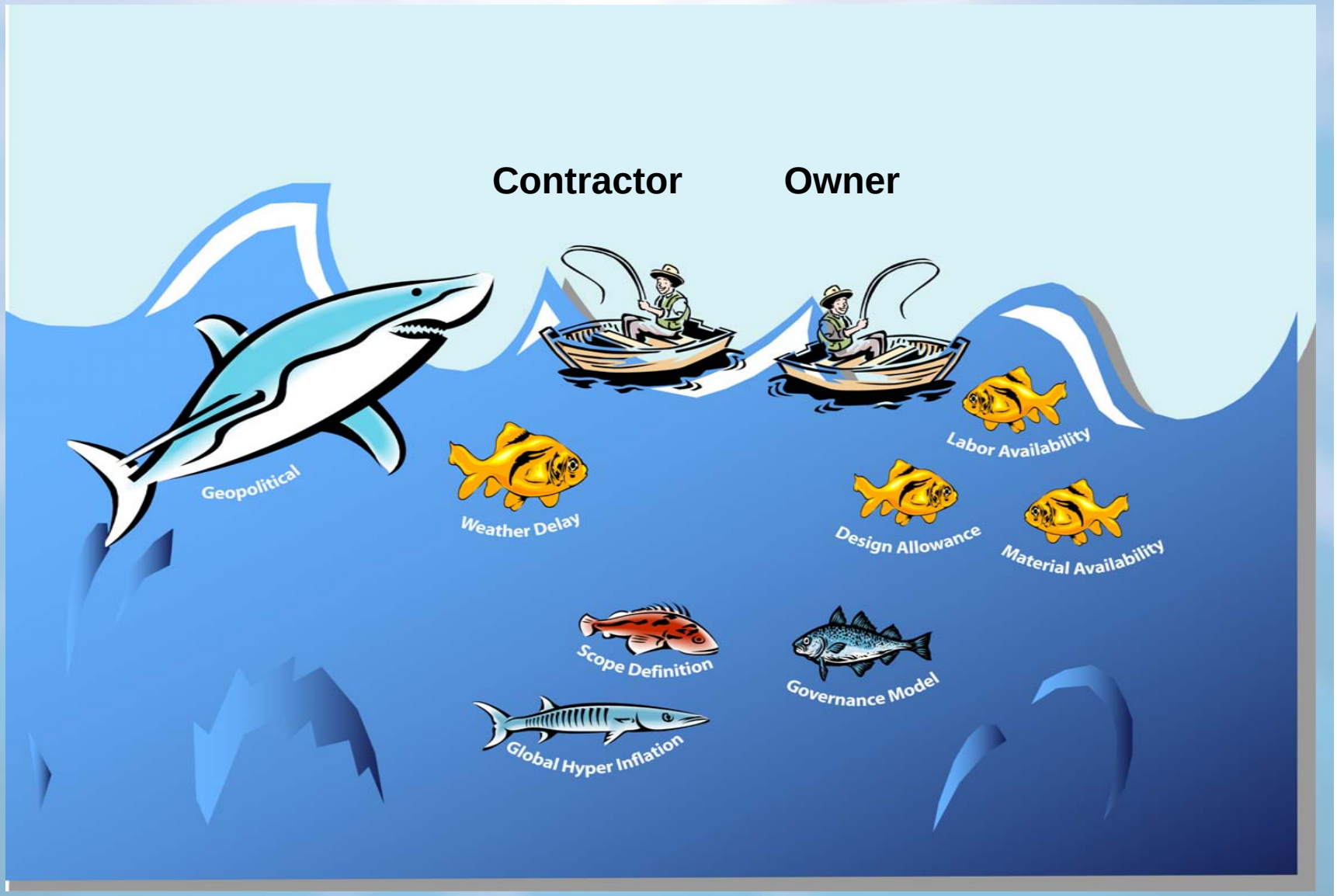


Gary Berman
President / CEO
GREYHAWK

Agenda

- **Black swan risks**
- **What risks are you including?**
- **Risk assessment**
  - An owners and contractors perspective
- **How do you assess and manage those risks?**
  - Levels of analysis
  - Risk management techniques
- **How will you manage risk in the future?**

How Deep is Your Risk Pond?



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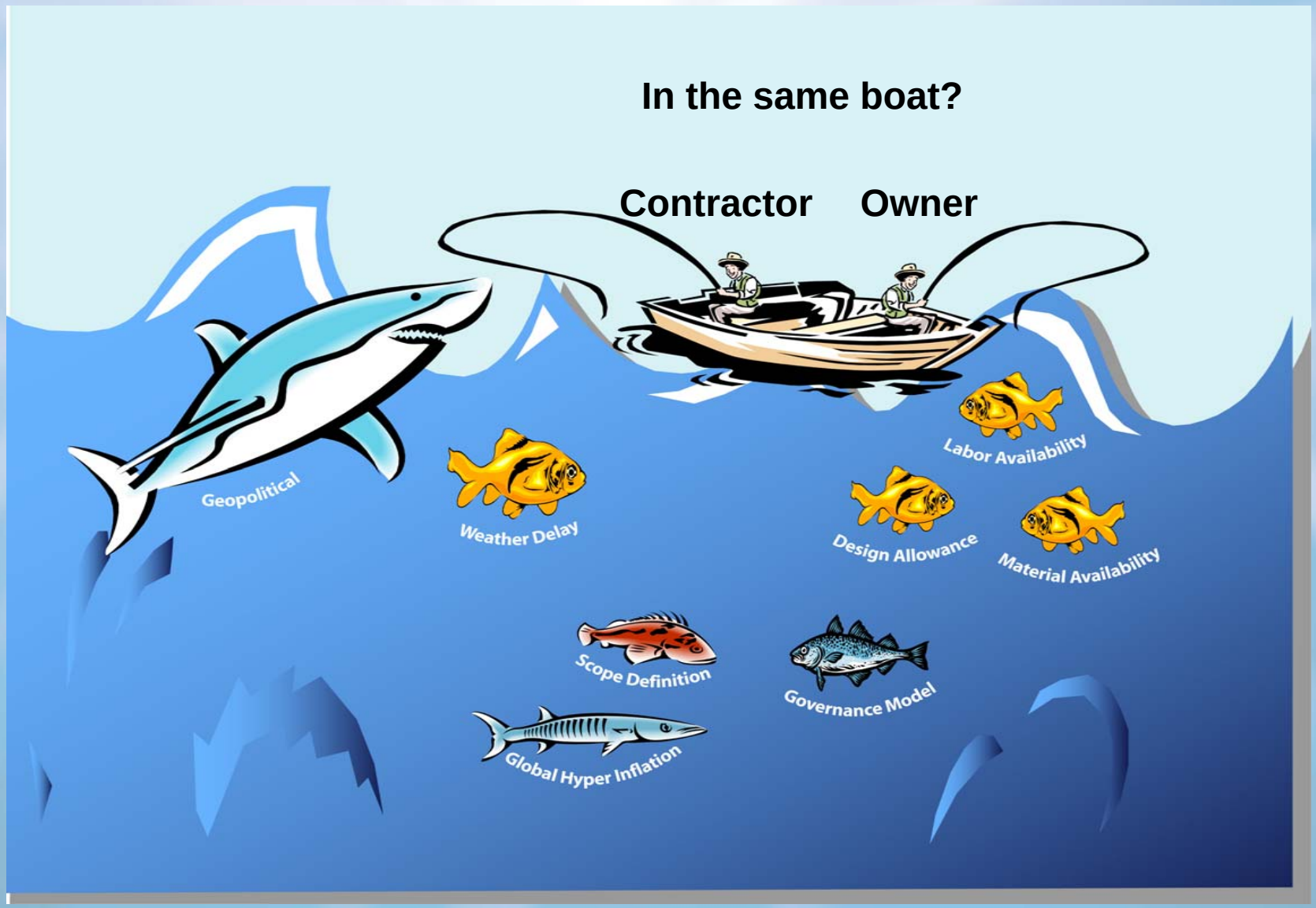


How Deep is Your Risk Pond?

So What is a Black Swan Risk?

1) **It lies outside the realm of "regular" expectations**
   - Nothing in the past can "convincing" point to its possibility
   - So how do you plan for it or model it?
2) **Its impact is extreme**
3) **After the fact, we concoct explanations for its occurrence**
   - Making it explainable and predictable

4) **Theoretically its about accepting the randomness of large deviations**

Question #1

What risks do you commonly think about today that would have been considered “Black Swan” risks more than 25 years ago?

Why Talk About Risks?

" **....No construction project is risk free.** Risk can be managed, minimized, shared, transferred *[insured]* or accepted. *It cannot be ignored."*

Sir Michael Latham

Risk Analysis '101'

- What is the difference between cause, risk and effect?
  - Cause – The project is in Afghanistan
  - Risk – Skilled labor will be limited
  - Effect – The project will be late

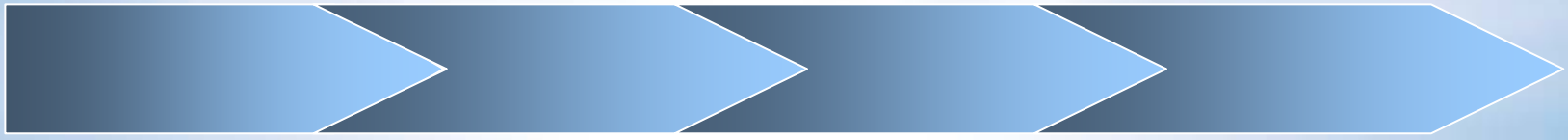
‘Hard’ Benefits of Early Risk Analysis

- Better informed and more believable plans, schedules and budgets
- Increases the likelihood of a project delivering its objectives
- Allows a more meaningful assessment of contingency
- Contributes to the build up of historical information to assist in better management of future projects
- Enables a more objective comparison of alternatives
- Identifies and allocates responsibility to the best risk owner

‘Soft’ Benefits of Early Risk Analysis

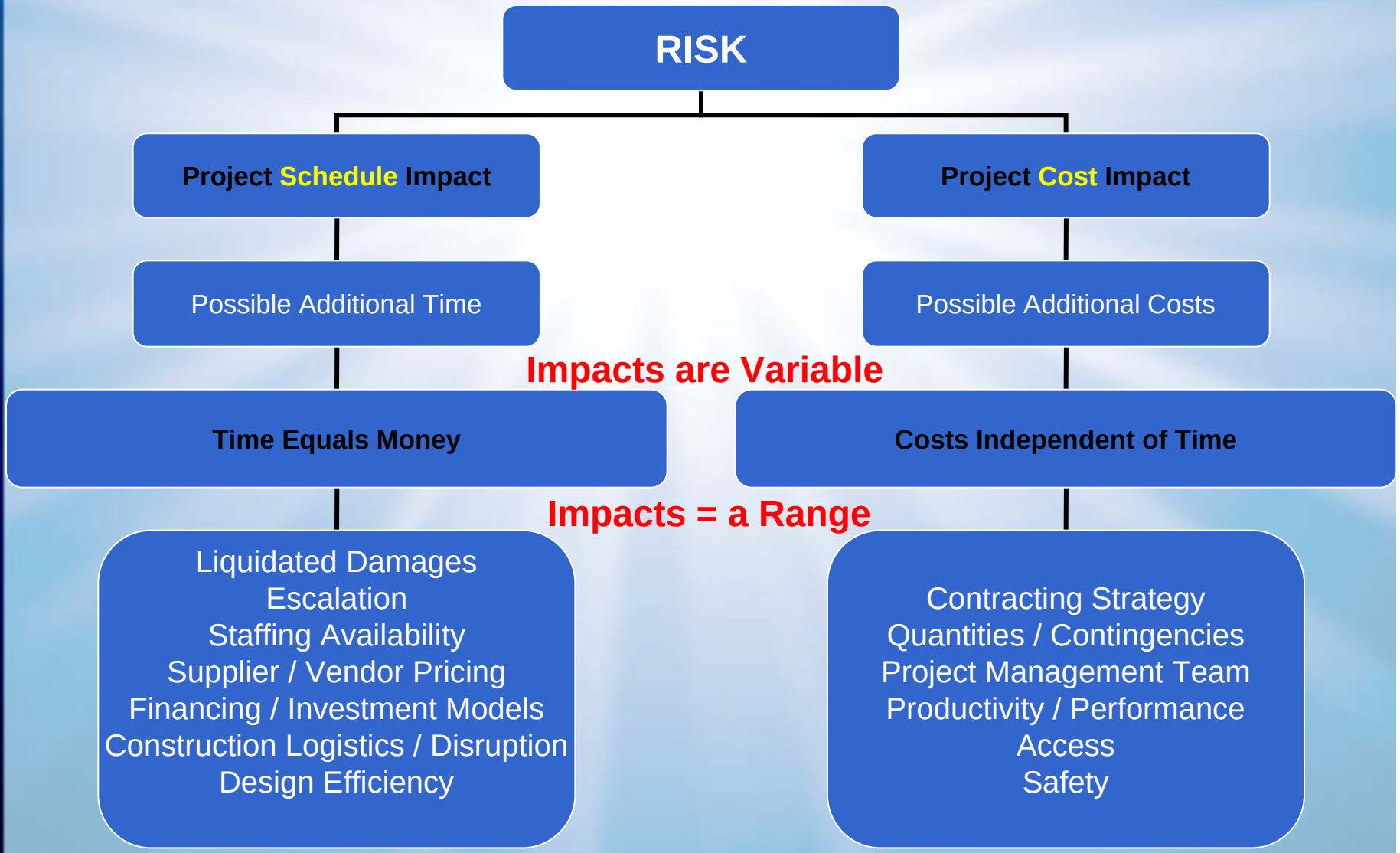
- Improves corporate/project experience and communication
- Leads to a common understanding and improved team spirit
- Assists in the distinction between good luck/management and bad luck/management
- Helps develop the ability of the staff to assess risks
- Focuses management attention on the real and most important issues
- Facilitates greater risk taking

A Spectrum of Risk



Tactical	*Strategic*	*Future*	*"Black Swan"*
Quantity accuracy	Basis of design uncertainty	Foreign exchange	Market crash
Labor rates	Partner alignment	Hyper-inflation	War
Productivity	Permitting	Changing regulation	Extreme weather
Weather			Major scope change
Margin of error			
Design allowance			

Risk Translated into Real Impact

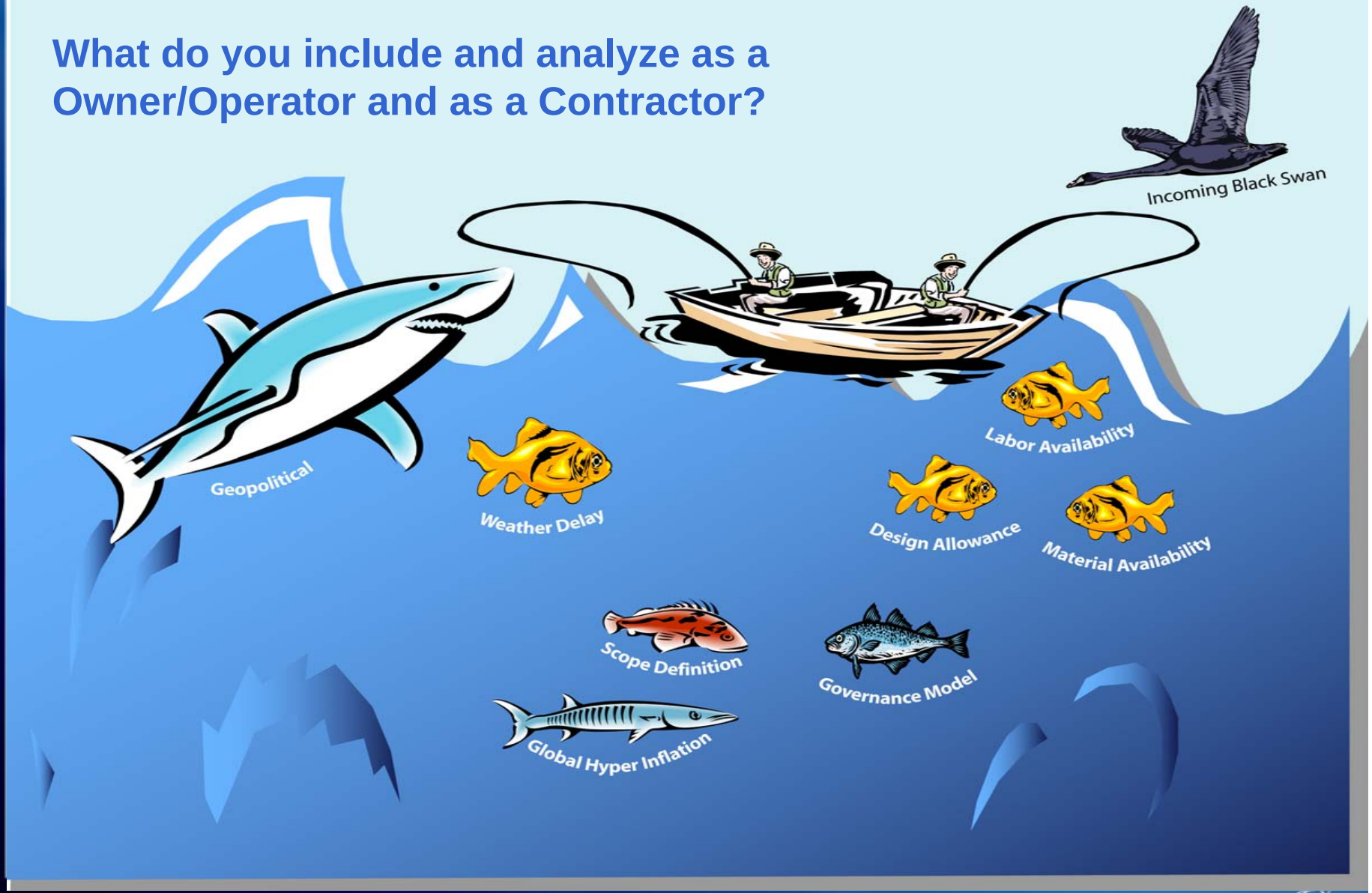


Risk Spectrum

	Mild →			Extreme
Weather	annual events	1 in 10 yr events	1 in 100 yr events	1 in 1000+ yr events
Organization	assume "A-team" and move on	staffing analyzed	staffing and structure analyzed	PM and team composition are analyzed
Partners	one client, no "partners"	aligned partnership	mis-aligned partnership	new partner with mis-aligned priority
Political	permit delays	mild protest	NGO shuts down project	regulation shift

How Deep is Your Risk Pond?

What do you include and analyze as a Owner/Operator and as a Contractor?



Labor Availability

- **Owner perspective**
  - Ultimate cost of labor
- **Contractor perspective**
  - Organizational structure
  - Productivity and size of peak labor force
  - Strategy – local and journeyman content
  - Execution – minimize site labor
    - *Modularization*

Design Allowance

- **Owner perspective**
  - Included in base estimate, or
  - Not included in base estimate
- **Contractor perspective**
  - Address issues in estimate
  - Revisit at each gate of execution
  - Risk register evaluation - scope

Material Availability

- **Owner perspective**
  - Cost impact
  - Schedule impact
- **Contractor perspective**
  - Schedule impact
  - Cost impact
  - Escalation criteria

Weather Delay

- **Owner perspective**
  - Predictable bad weather included in base cost and schedule
  - Same for 1 in 10 events, near brush with hurricane
  - Extreme events excluded from base cost and schedule
- **Contractor perspective**
  - Typical events in schedule and cost
  - Extreme events excluded

Scope Definition

- **Owner perspective**
  - Minor modifications risked by contractor in base cost
- **Contractor perspective**
  - Minor design allowance/development in base cost
  - Estimating contingencies addressed at each gate of execution
  - Change management plan established with baseline

Governance Model

- **Owner perspective**
  - High level risked based on scenario planning sometimes used for non-OECD countries
- **Contractor perspective**
  - Changes not implemented without approval
  - Approval cycle built into schedule
  - Inspection authorities built into schedule and cost

Global Hyper-inflation

- **Owner perspective**
  - Have a set corporate escalation rate and a process to grant project specific exceptions based on market analysis
- **Contractor perspective**
  - Do not take unquantifiable risk
    - *If it cannot be defined, exclude it*
  - Escalation curves
    - *Collaborative review of various industry norms*
      - Best scenario for business planning predictability

Geopolitcal

- **Owner perspective**
  - Similar to weather....include the ongoing "background noise" (Niger Delta unrest) in base, risk foreseeable events (election outcomes), exclude extreme events (nationalization)
- **Contractor perspective**
  - Build quantifiable risks in schedule and cost
  - Exclude unquantifiable risks

Other Risks

- **Environmental**
  - Contaminated land
  - Pollution liability
  - Nuisances
  - Permissions
  - Public opinion
  - Internal policies
  - Regulation
  - Regulation change
- **Planning**
  - Permission req'ts
  - Policy and practice
  - Land use
  - Socio-economic impacts
  - Public opinion

Other Risks (cont'd)

- **Market**
  - Demand forecasts
  - Competition
  - Obsolescence
  - Customer satisfaction
  - Fashion
- **Financial**
  - Bankruptcy
  - Margins
  - Insurance
  - Risk sharing
- **Economic**
  - Government policy
  - Taxation
  - Cost inflation
  - Interest rates
  - Exchange rates

Question #2

Give us examples of risks that other organizations/companies/industries have handled poorly?

Turning Knowledge of Risks into Action

Considerations When Modeling Risk

- **Definition of risk in dollars and/or days**
- **Frequency**
- **Probability Rating Scale**
  - Optimistic / Likely / Pessimistic
- **Combinations**
  - Lone wolf or hunting in packs
  - Iterative analysis to determine ranges
- **Determine cost effectiveness of risk mitigation**

The Four Levels of Risk Assessment

- **Level 1: Sensitivity Analysis**
  - Use of plus/minus percents to "test" a projects weaknesses
  - Generally uses symmetric ranges (e.g., +10% and -10%)
- **Level 2: Three Point Ranging**
  - Use of continuous distributions on cost estimate line items
  - Generally ignores dependency between similar items

Ranges generated from Levels 1-3 are typically narrow and unskewed
Ranges generated from Level 4 are wider and skewed reflecting observed data

The Four Levels of Risk Assessment

- **Level 3: Three Point Ranging with Dependencies**
  - Use of continuous distributions with correlation
  - Generally ignores risk events and schedule slips
- **Level 4: Full Cause and Effect Modeling**
  - Use of three point ranges on cost estimate variables coupled with dependencies and risk events including a linked schedule risk

Ranges generated from Levels 1-3 are typically narrow and unskewed
Ranges generated from Level 4 are wider and skewed reflecting observed data

The Future of Risk

- **Identification**
  - How can we cast the risk net even wider?
- **Analysis**
  - More or less?
- **Tolerance**
  - If more analysis, is this an area for investigation
- **Risk Shifting**
  - How will future contracts look?
- **Black Swans…are their more to come?**

Question #3

How do you think risk assessment / analysis will be different in the future?

How do you think risk assessment / analysis will be different in the future?

The focus of the future for risk assessment, analysis and strategy is predictability and transparency.

A Last Thought

- We are hoping you better understand the importance of risk analysis and took away a few tools to think about or use in your real life situations

- Remember, if the project planning and risk analysis gets too detailed, it can lead to “paralysis by analysis”.

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Any comments or questions?

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