

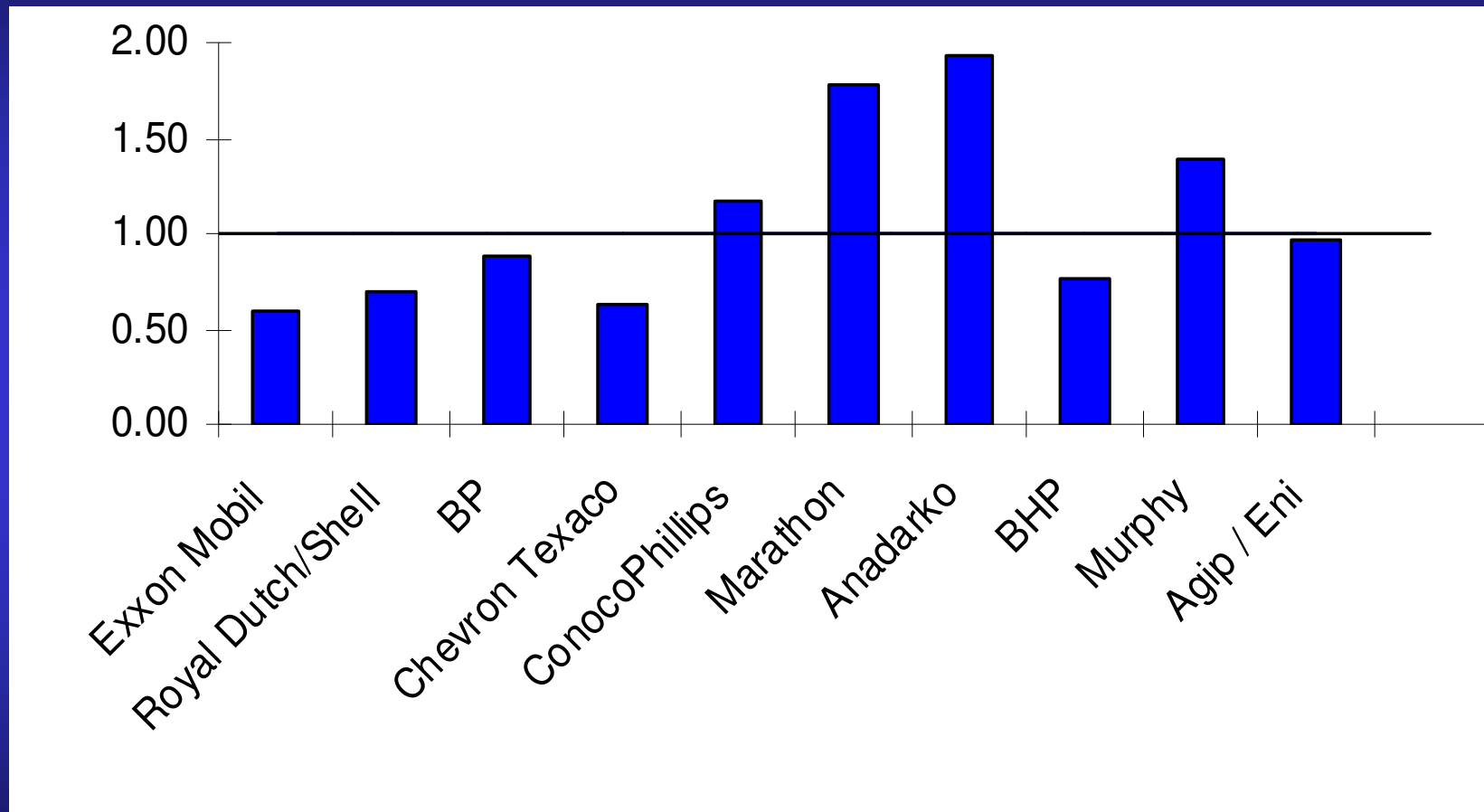
Predictable Projects: *An Impossible Dream?*



***SPE Workshop
June 2005***

**Keith Dodson
Sr. Executive Consultant, Westney Consulting Group**

2004 Net Income to Capex Ratios



Who Said This?

“Humans will not fly for another 50 years”

Wilbur Wright to Orville

1901 (two years before their first flight)

Who Said This?

“There is not the slightest indication that nuclear energy will ever be attainable.”

Albert Einstein

1932

Who Said This?

***“It will be years - not in my time -
before a woman will become Prime
Minister”***

Margaret Thatcher

1974 (four years before her election)

Who Said This?

“640K ought to be enough for anybody”

Bill Gates

Founder - Microsoft

1981

Let's "Ask the Audience"

- **How would you rate industry's current capability to predictably plan and execute major capital projects?**
 - Excellent = 5
 - Very Good = 4
 - Good = 3
 - Fair = 2
 - Poor = 1

Documentation of Project Predictability

- **“Megaprojects and Risk” (Flyvbjerg)
Cambridge Press 2000**
- **“Taking on a Cult of Mediocrity”
Upstream, 23 May 2003 (IPA)**
- **“Risk Assessment for International Projects”
CII Report 2003**
- **“The Strategic Management of Large
Engineering Projects” (Miller and Lessard) MIT
2000**
- **“Megaprojects” (Merrow) Rand Corporation
2000**

***All Sources Collaborate that Large
Project Predictability is Poor***



Infrastructure Projects

- “Cost overruns of 50 % to 100% are common, overruns >100% not uncommon”
- **Key Points:**
 - “Appraisal Optimism” leads to unrealistic estimates
 - Perhaps “delusion” is necessary to start projects
 - The key problem is lack of accountability, not lack of technical skills or data”
 - The world of megaprojects is not Newtonian
 - Risk Management techniques insufficient

“Megaprojects and Risk” (Flyvbjerg)

Upstream

- **1 in 8 of offshore projects is a “disaster”**
 - Cost growth/schedule slip >40% vs. sanction
 - First year operability <50% vs. plan
- **50% of megaprojects (>\$1B) are “megawrecks”**
 - Average overrun \$1.42B
 - Percentage of disasters increases with project size

Upstream, 23 May 2003
“Taking on a Cult of Mediocrity”



Statistics on Offshore Project Performance

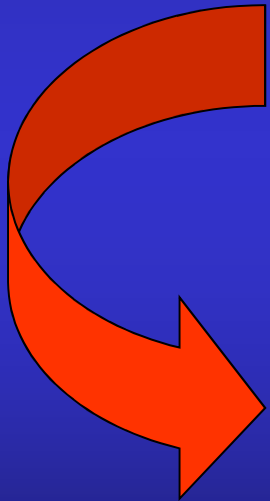
- **Root Causes:**
 - Insufficient Front End Loading
 - Highly schedule – driven
 - Wholly inappropriate contract strategy
 - All caught up in company politics
 - Ignored what the company knew were Best Practices

What do these have in common?

Statistics on Offshore Project Performance

- **Root Causes:**

- Insufficient Front End Loading
- Highly schedule – driven
- Wholly inappropriate contract strategy
- All caught up in company politics
- Ignored what the company knew were Best Practices



Self – inflicted!!!!

Can We Learn From the Legacy of Large Projects?



Exercise

It is the middle of the European bombing campaign during WWII. The US Army Air Corps, concerned over the heavy losses of B17 bombers during daylight raids over Europe, is planning to increase the use of armor plating to protect critical areas of the bombers.

Armor plating on an aircraft is heavy and reduces payload. Hence, the decision how much to place, and where, is critical.

A study team is formed to analyze the data and recommend the placement of armor. They carefully study returning bombers to determine the location and frequency of damage. Some members of the team recommend placing armor at those locations where the most damage occurred. Others suggest that armor be placed in areas that were hit least often.

Who is right, and why?

How Can We Improve Predictability?

Could there be some parallels to the view of project team performance and the returning bombers?

How Can We Improve Predictability?

- Is the environment of projects “Newtonian” i.e. “Cause and Effect?”
- Is the Project Team solely accountable for the outcome?

Keep in Mind

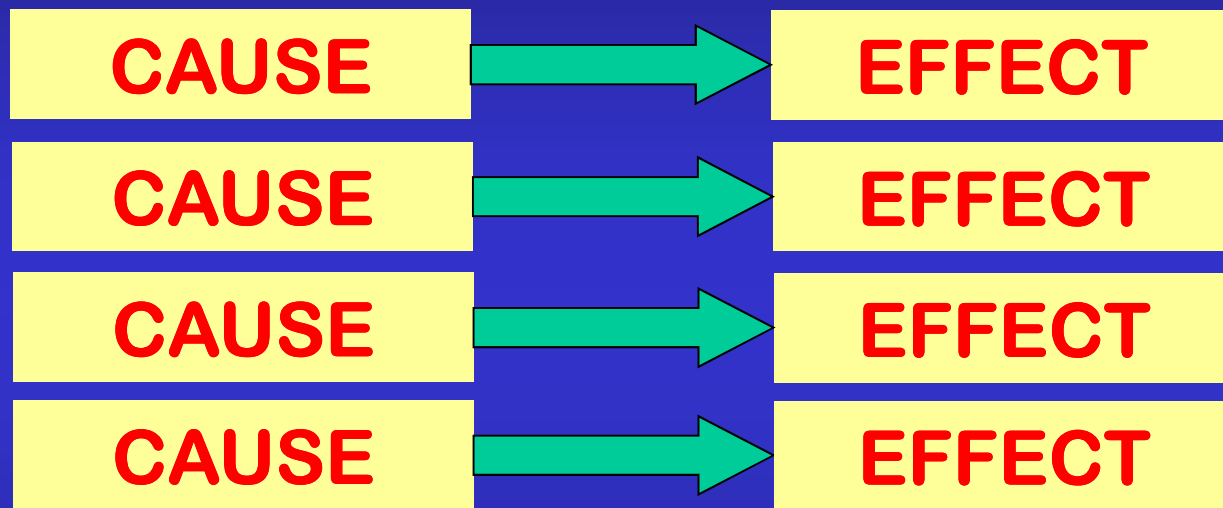
*You must learn from the mistakes of others
you will never live long enough to make them all
yourself! (Sam Levenson)*

Why Are There So Many Problems with Predictability Today?

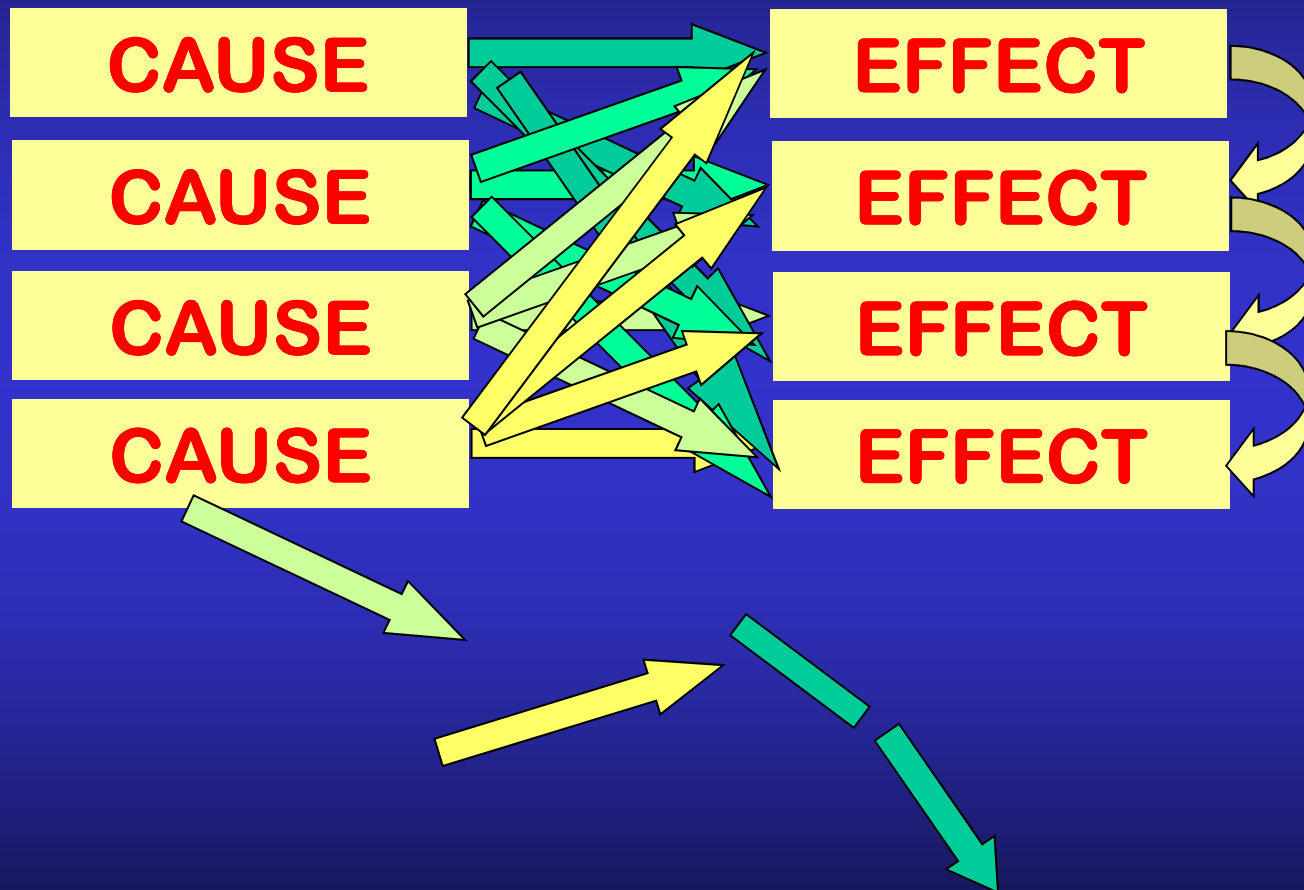
*Are we predicting in a Newtonian world ...
or a world of Chaos?*

*“Predictability: Does the Flap of a Butterfly’s Wings in Brazil,
Set Off a Tornado in Texas?” (Lorenz, 1972)*

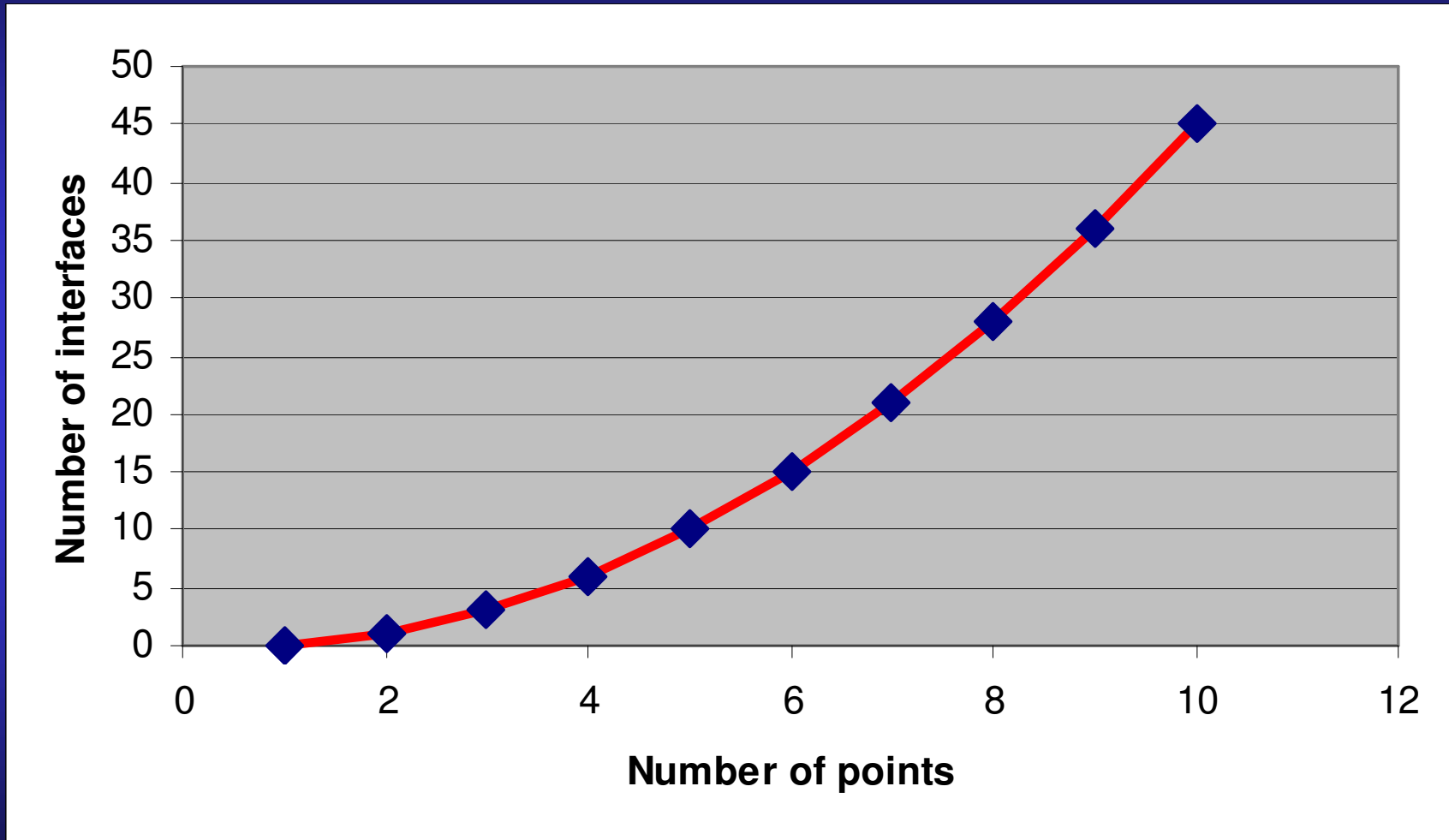
The “Newtonian” View of a Project Or “The Expectation”



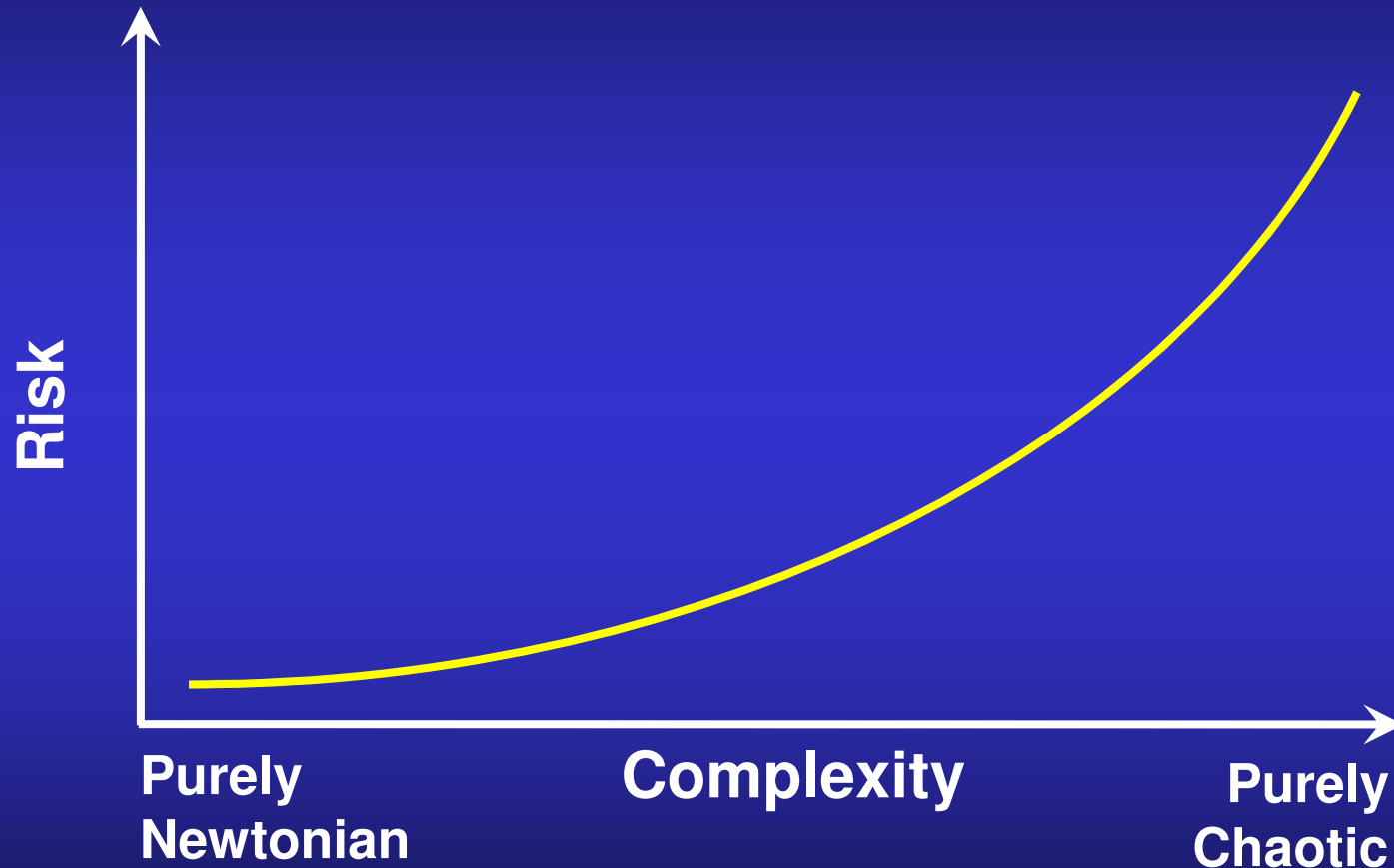
The “Chaos” View of a Project or “The Reality of the Major Project”



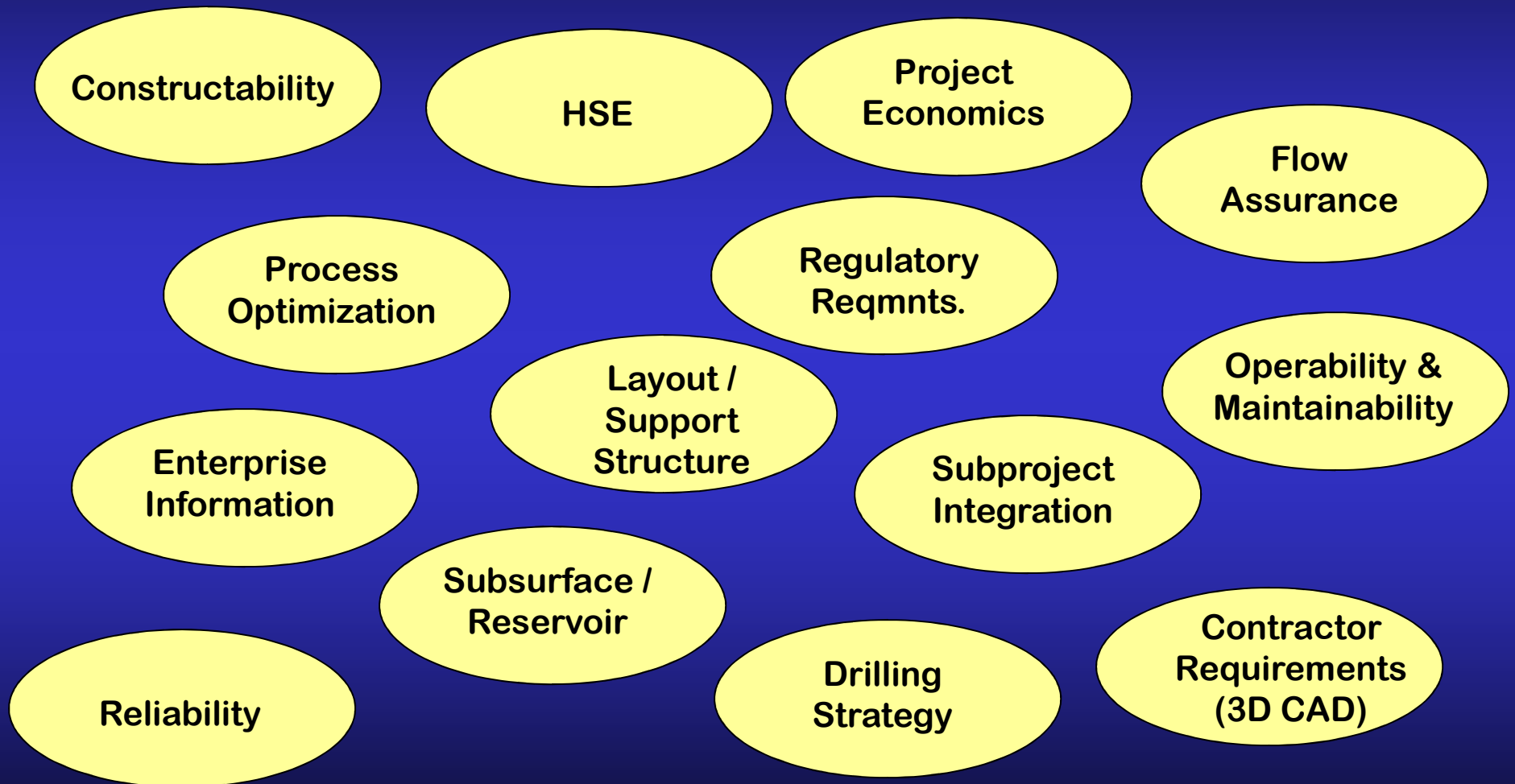
Interfaces Increase Geometrically



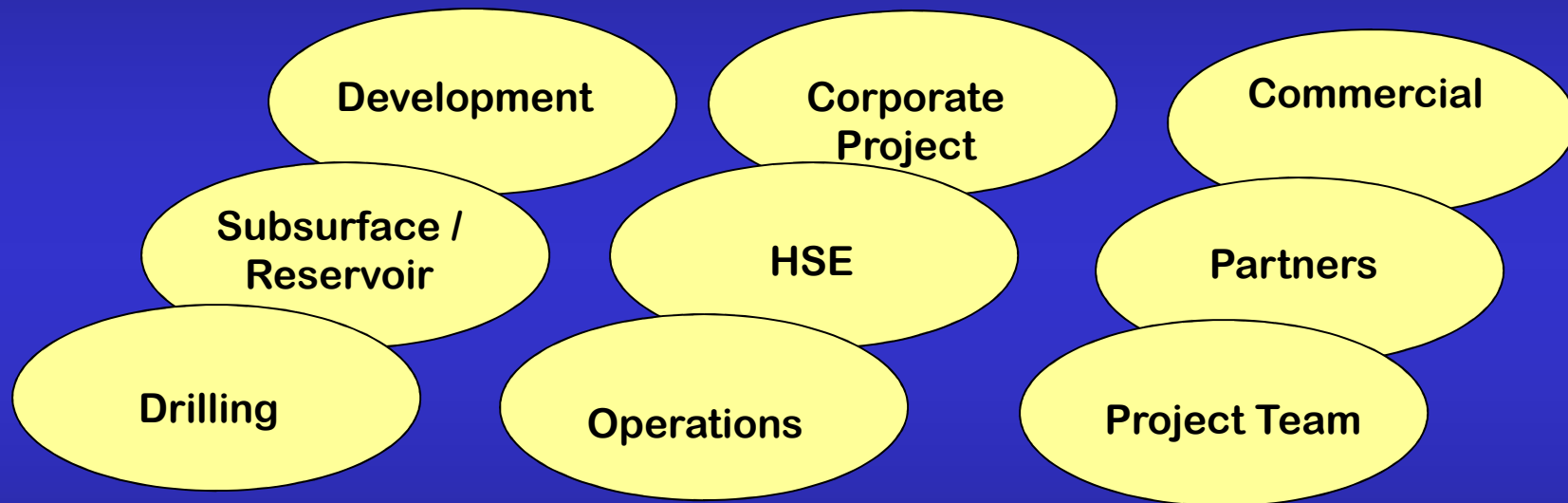
Complexity Means Risk



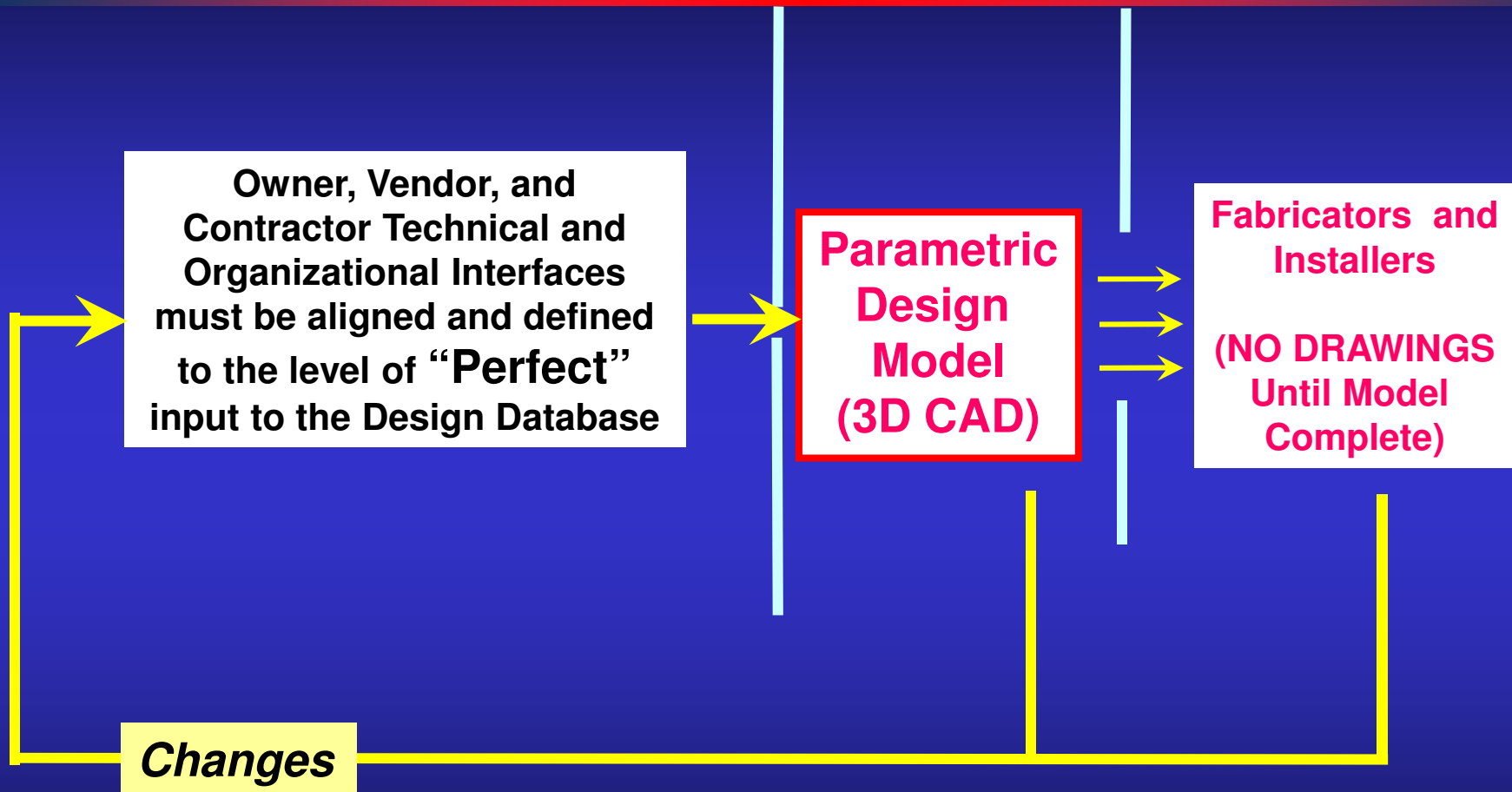
Complexity - Technical Interfaces



Complexity-Internal Alignment & Project Accountability



Design Models Limit Flexibility



Project Predictability



Framing The Issue

Why Are There So Many Problems with Predictability Today?

Can we manage risk without identifying and understanding it?

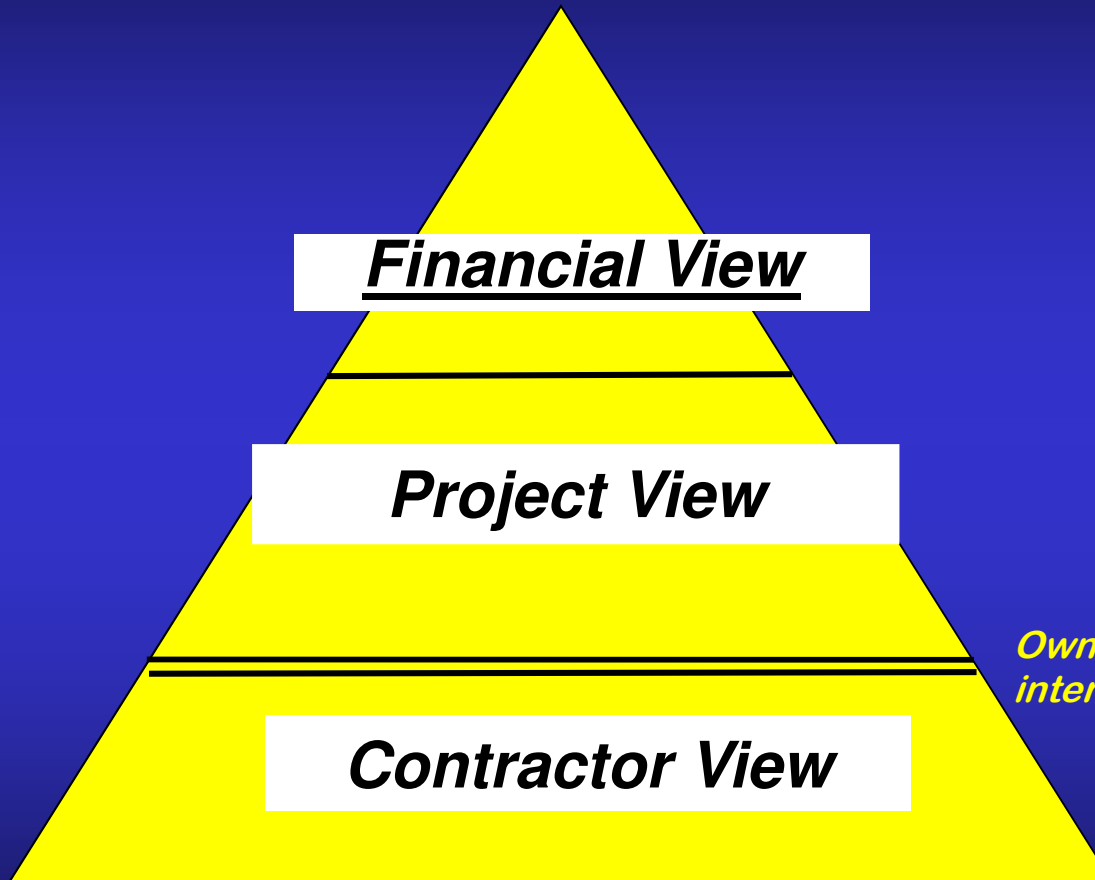


What is Project Predictability?

- A deterministic value (that has little risk of being exceeded)?
- A probabilistic range of values?
- A value with an assigned probability?
- An impossible dream???

Three Perspectives of Risk

*Tactical
view?*



*Owner/contractor
interface*

Three Perspectives of Risk

*Strategic
View?*

Financial View

Project View

Contractor View

*Owner/contractor
interface*

Consider

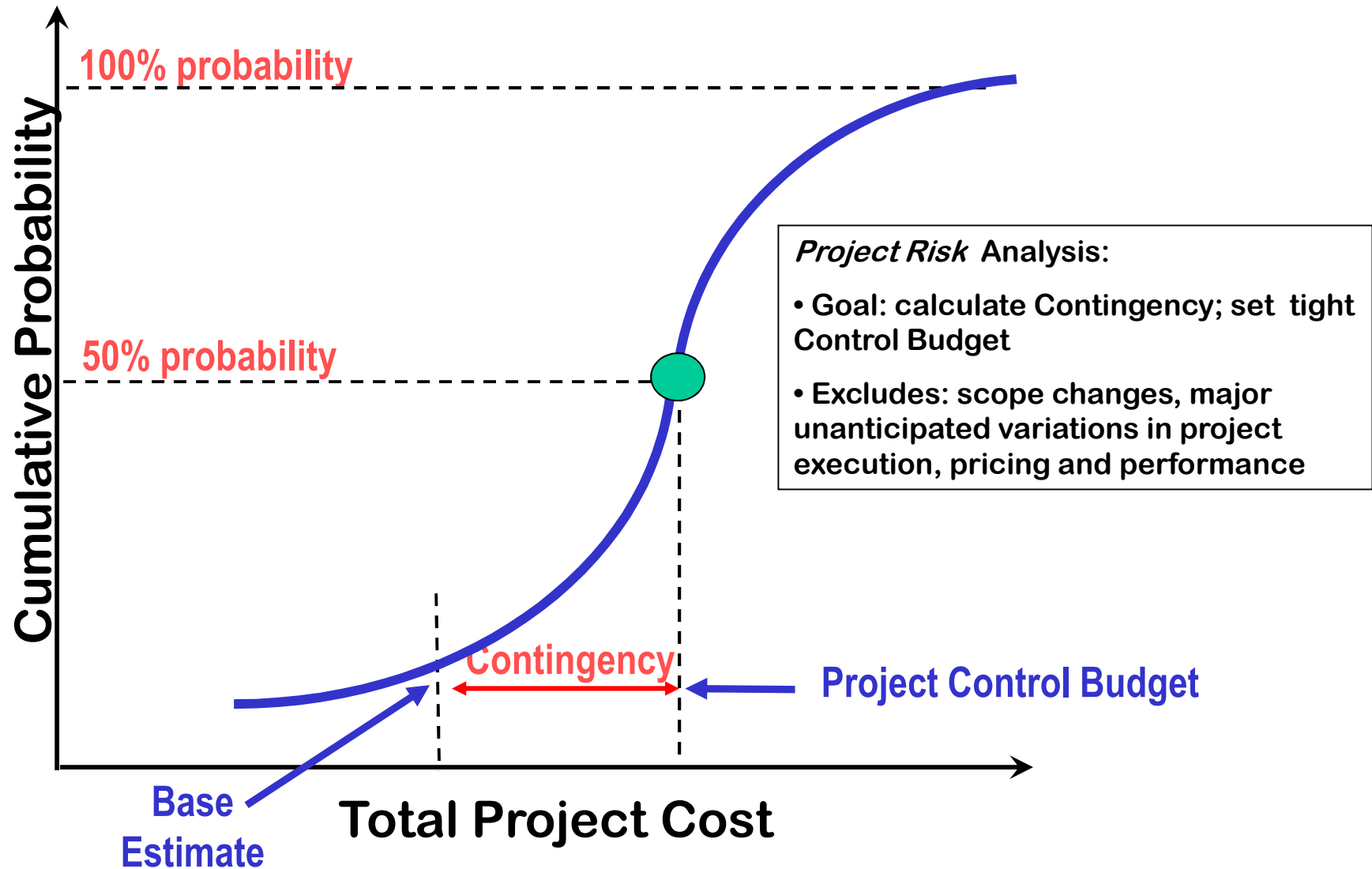
- **Strategic Risks**- The project risks that are “global” or “enterprise” related. The related decisions are normally with management and are not within the authority of the project team. Many are not controllable, but awareness can reduce risks. Unless a strategic view is take on these risks, they are many time ignored
- **Tactical Risks**-The project risks that are manageable within the authority and control of the project team and solely accountable to the project team.

Consider

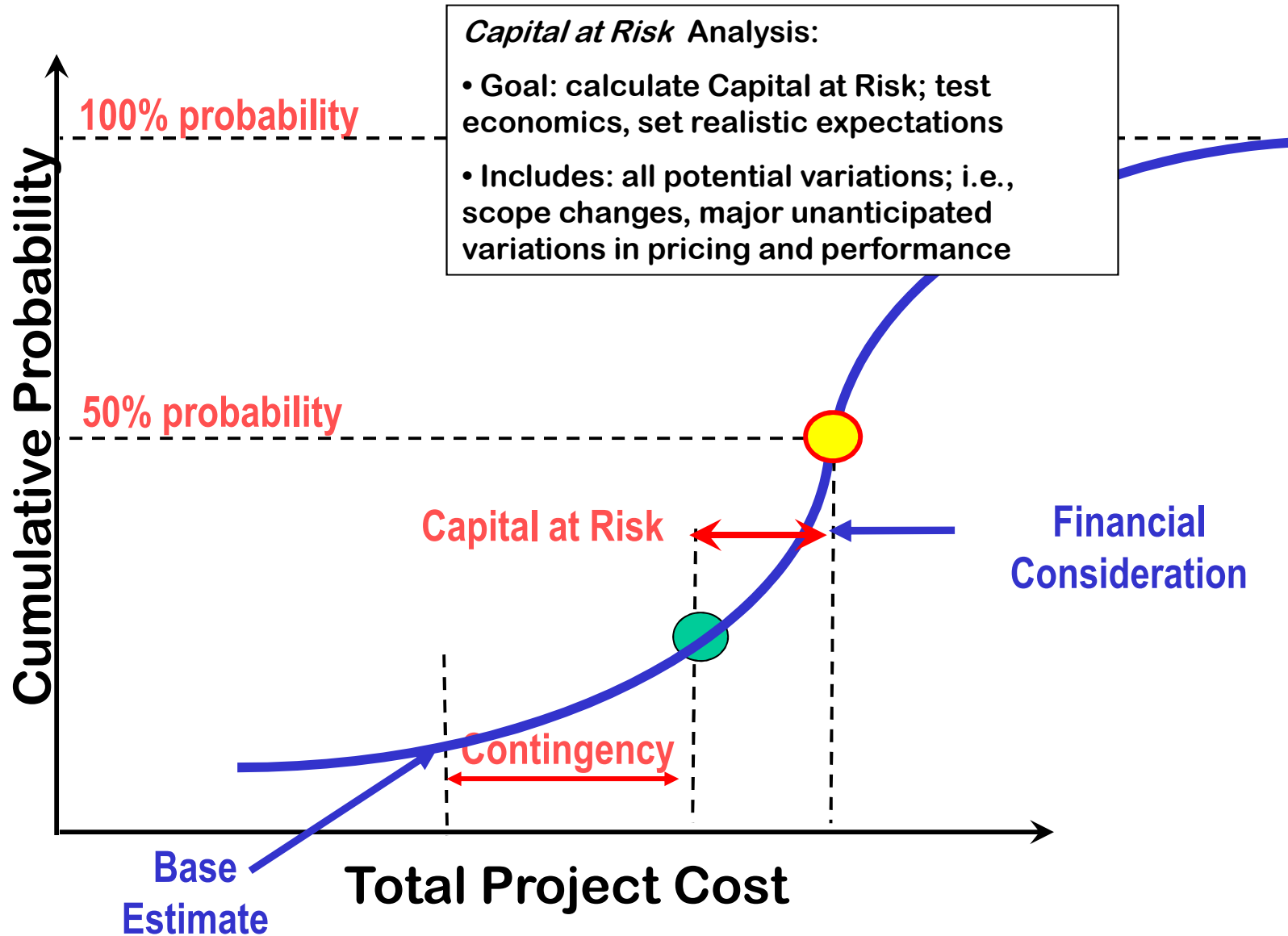
- **“Capital at Risk”** A probabilistic provision for the amount that the project might financially exceed the sanction due to “strategic” risks.
- **Contingency** is the amount included in the sanction to provide coverage for “Tactical” risks and will likely be spent.

Contingency: The PROJECT VIEW of Risk

Project View



Capital at Risk: The FINANCIAL VIEW of Risk



Capital at Risk Improves Predictability

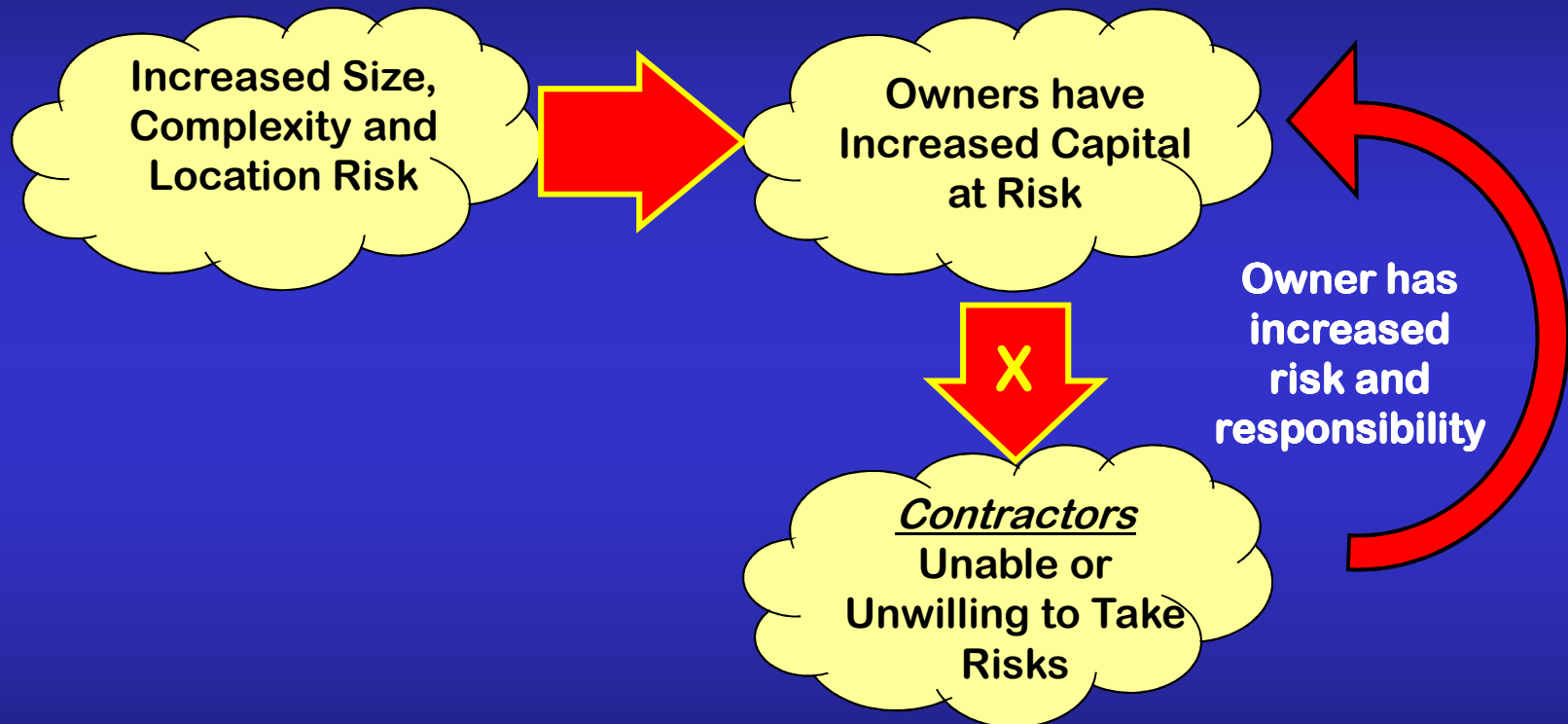
Capital at Risk:

- **Allows management to ensure that all risks that can reasonably be expected to occur, are considered in the financial process.**
- **Considers those risks that are outside the view of the PM Team**
- **Compensates for “optimistic expectations”**

Why Are There So Many Problems with Predictability Today?

The contractors are no longer willing or able to assume risks?

Owners Can No Longer Lay Off Project Risk



Needed: A New Approach

- **Traditional method of “laying the risk off” on others, will not work today**
- **New approach must:**
 - Enable all parties to understand each other’s risks
 - Provide a means by which an equitable allocation of risks and costs can be made
- **Cost and Risk to all parties are reduced**
- **Disputes are avoided**
- **This new approach is “Risk Resolution”**

Key Elements of Risk Resolution

- **Address Risks away from the negotiation table, with all parties equal**
- **Facilitate the Risk Resolution process**
 - Mutually agree risks, probabilities and impacts
 - Allocate each risk to the party best suited to assume it
 - Eliminate and/or mitigate risks by agreement on issues
 - Fund appropriate risks by agreement, using pricing or a risk pool

The Risk Resolution Process

Risk Resolutionsm is achieved when all parties are in agreement as to how project risks are to be allocated and mitigated; and how each party will fund the risks it bears.

Risk Discoverysm

- Identify & Understand All the Risks of All Parties

Risk Assessment

- Determine the Probability and Severity of Project Risks

Risk Allocation

- Determine Which Parties Should Take Which Risks

Risk Mitigation

- Reduce Probability and Severity of Risks

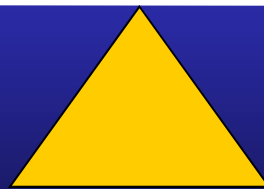
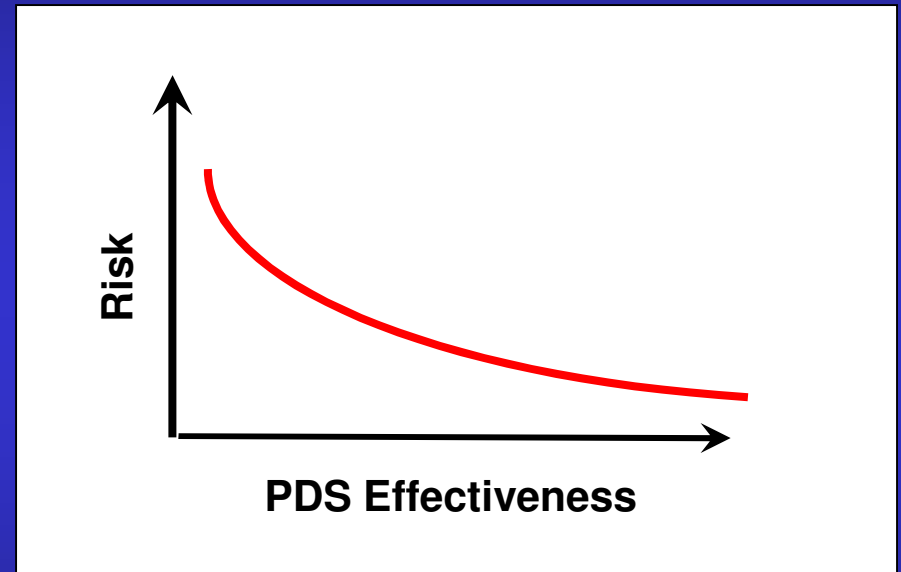
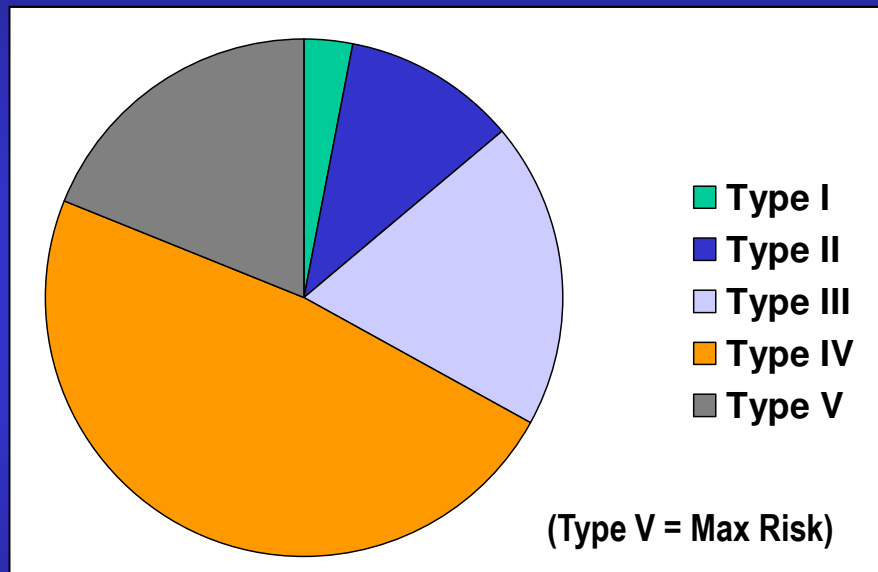
Why Are There So Many Problems with Predictability Today?

Doing the right things – Doing things right

Strategic Project Risks

- **Consider:**
 - A strong Project Delivery System will address issues of accountability and mitigate most internally – driven (enterprise) risks.

Balancing the Project Portfolio with the Project Delivery System



An Effective Project Delivery System Provides These Critical Owner Competencies

- **Strategic Management**

- Partner Relationship Mgmt.
- Country Issues Mgmt.
- Program & Project Execution Planning
- Field Development Planning
- Scope Management
- Value Improving Practices
- Risk Management
- Market Intelligence
- Organization, Contracting & Procurement Strategy
- Internal & Team Alignment
- Issues & Interface Mgmt.

- **Tactical Management**

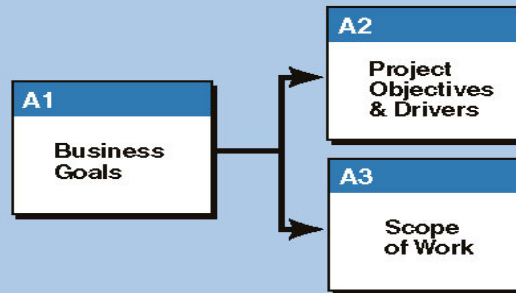
- Design Mgmt.
- Procurement Mgmt.
- Fabrication / Construction Mgt.
- Transport, Install., Hookup Mgt.
- Commissioning & Startup Mgmt.

- **Performance Management**

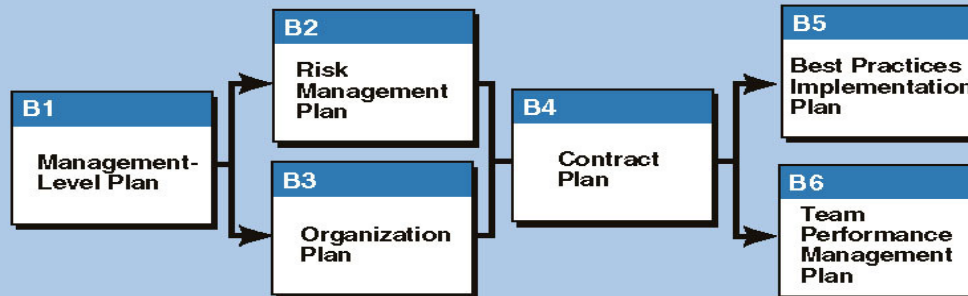
- Safety/Health/Enviro. Mgmt.
- Cost Mgmt.
- Schedule Mgmt.
- Quality Mgmt.
- Operations Mgmt.

Project Execution Planning

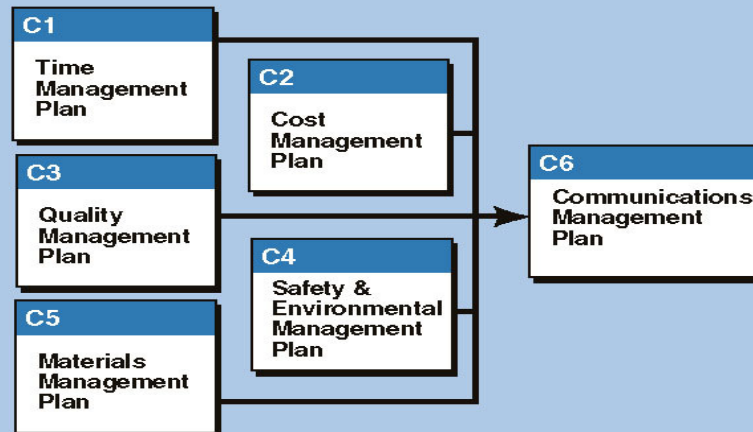
A. Defining the Vision of Success



B. Defining the Strategy for Success



C. Defining the Tools for Success



Keep in Mind

The most important lesson children learn from playing video games is that standing still will get you killed quicker than anything else! (Jinx Milea)