

Lesson Objectives

This lesson provides an overview of risk elements. Below are the objectives covered in this lesson:

- Define Performance Related Risks and it's separate categories
- Define Schedule Related Risks
- Define Cost Estimating Risks



Elements

Elements of Risk require identification before they can be assessed or managed. Previous experience with similar programs, analogy comparisons and expert interviews are examples of identifying methods. Cost analysts are able to quantify the risks in dollar terms by taking identified risk elements into account in the cost estimate.

The elements are:

Performance Related Risks



Schedule Related Risks



Cost Estimating Risks



Performance Related Risks

The first risk element is **Performance Risk**. Performance related risks refer to requirements and performance uncertainties found in acquisition programs. These risks come from the uncertainties associated from all requirements (from the user to congress) such as program and technical issues.

Examples of four sub-elements of Performance Related Risks are:



Technical Risk



Supportability Risk



Configuration Uncertainty



Programmatic Risk

Technical Risk

Technical Risk (or technical uncertainty) addresses the following questions:



How capable is the technology?



Can the system be adapted to meet changing performance expectations?



Will the maturity of existing technology meet current design and performance requirements?

Configuration Uncertainty

Configuration Uncertainty is the risk associated with changes in physical or performance characteristics during the life cycle of the system.

There are four outstanding reasons that configuration may change:



The original design does not meet performance requirements



Change in hardware specification change the system's performance characteristics



Error or omission of the initial system specifications



Strategy changes that affect employment and deployment of the system

Supportability Risk

Supportability refers to the ability to support a system in the field or during maintenance routines. There are 10 Integrated Logistic Support (ILS) elements that could be risk sources:



Maintenance Planning



Facilities



Technical Data



Support Equipment



Computer Resources



Training Support



Manpower and Personnel



Packaging, Handling, Storing, and Transportaion



Training



Design Interface

Programmatic Risk

Programmatic Risk refers to risk that has an impact across the program and can be outside of program control.

Example sources for program risk are:



Authoritative decisions



Indirect events or actions



Unknown production problems



Other unforeseen problems with the system's capabilities

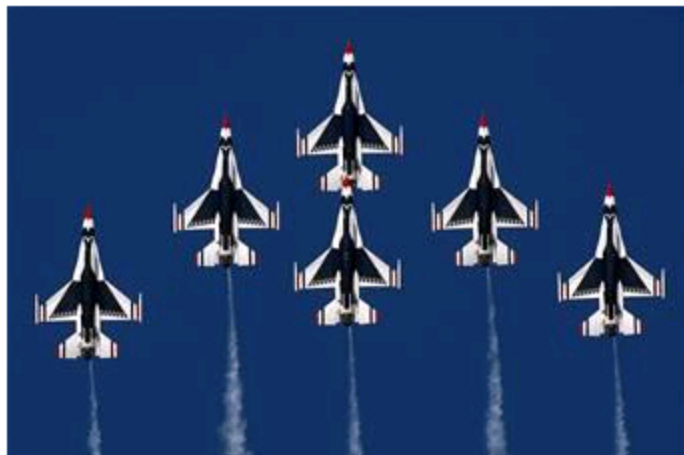
Schedule Related Risk

The second element of risk is **Schedule**.

This refers to anything that changes the program schedule and affects the length of the program, from initiation to end.

The following are examples of how or when the schedule may be affected:

- Change in system requirements
- Change in design requirements
- Change in strategy
- Change in funding sources
- Change in personnel performing the work



[Click here for an example of an acquisition schedule.](#)

Popup Text

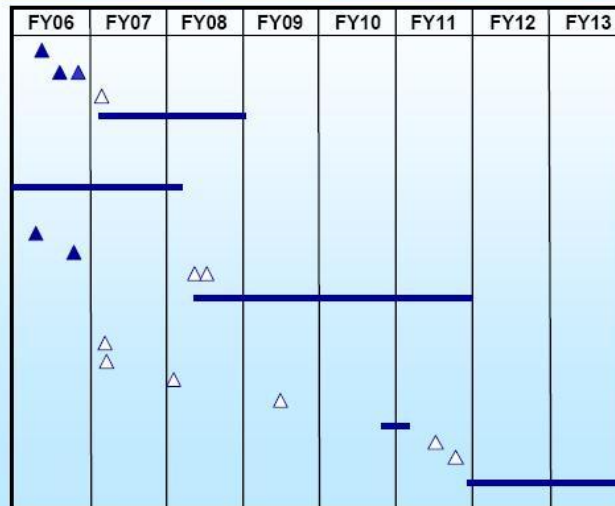
Acquisition Schedule



Surface Launched UUV Program Schedule



BPAUV
PDR
CDR
System Delivery (1)
Fleet Demos
SMCM UUV
Increment 1
Fleet Experimentation
Increment 2
RFP
Contract Award
System Delivery (3)
Fleet Experimentation
Increment 3
AoA
CDD
Milestone B
CDR
TECH/OPEVAL
Milestone C FRP Decision
IOC
Production



Acronym Legend:

AoA - Amphibious Objective Area
BPAUV - Battlespace Prep Autonomous Undersea Vehicle
CDD - Course Design Document
CDR - Critical Design Review
FRP - Function Review Process
IOC - Initial Operational Capability
PDR - Preliminary Design Review
SMCM UUV - Surface Mine Countermeasure Unmanned Undersea Vehicle
TECH/OPEVAL - Technical Operation Evaluation
UUV - Unmanned Undersea Vehicle

Cost Estimating Risk

The third risk element is **Cost Estimating Risk**. This deals with the fact that there may be uncertainty associated with the cost estimating method used by the analyst and that these methods, data and tools may not be totally accurate.

Example sources of this type risk are:

- [Cost Analysis](#)
- [Cost Estimating Relationships \(CERs\)](#)
- [Data Error](#)
- [Extrapolation Errors](#)
- [Price Level Changes](#)
- [Aggregation](#)



Popup Text**Cost Analysis**

Cost analysts use a variety of techniques and thus may produce different cost estimates for the same item.

Cost Estimating Relationships (CERs)

CERs recognize variability in the data through the error term and the standard error.

Data Error

Data error is the use of incorrect archived CER data (Cost Estimate Relationship).

Extrapolation Errors

Cost Estimating Relationships that held in the past may not hold in the future; and analysts may use them to predict outside the relevant range of the equation.

Price Level Changes

Future prices are estimated using assumed inflation rates. These rates are only estimated, with changes in the artes driving prices higher or lower.

Aggregation

Aggregation is the combination of separate estimates into one estimate.

Knowledge Review

Select the correct matching pairs of risk types and risk characteristics.

- | | | |
|-------------------------------------|---|--------------------------------------|
| <input type="checkbox"/> | Risk Characteristic: Technical Data, | Risk Type: Programmatic Risk |
| | Risk Characteristic: System Adaptability, | Risk Type: Configuration Uncertainty |
| | Risk Characteristic: Unknown Production Problems, | Risk Type: Supportability Risk |
| | Risk Characteristic: Strategy Changes, | Risk Type: Technical Risk |
| | | |
| <input checked="" type="checkbox"/> | Risk Characteristic: Technical Data, | Risk Type: Supportability Risk |
| | Risk Characteristic: System Adaptability, | Risk Type: Technical Risk |
| | Risk Characteristic: Unknown Production Problems, | Risk Type: Programmatic Risk |
| | Risk Characteristic: Strategy Changes, | Risk Type: Configuration Uncertainty |

Check Answer

The correct matching pairs of risk types and risk characteristics are:

Risk Characteristic: Technical Data, Risk Type: Supportability Risk

Risk Characteristic: System Adaptability, Risk Type: Technical Risk

Risk Characteristic: Unknown Production Problems, Risk Type: Programmatic Risk

Risk Characteristic: Strategy Changes, Risk Type: Configuration Uncertainty

Knowledge Review

A change in hardware specifications is a characteristic of _____.

- ☐ Technical Risk
- ☐ Supportability Risk
- ☒ Configuration Uncertainty
- ☐ Programmatic Risk

Check Answer



A change in hardware specifications is a characteristic of **configuration uncertainty**.

Summary

Elements of Risk:

- Performance Related Risks
- Schedule Related Risks
- Cost Estimating Risks

Examples of Performance Related Risks sub-elements are:

- Technical Risk
- Configuration Uncertainty
- Supportability Risk
- Programmatic Risk

How capable is the technology?

- Can the system be adapted to meet changing performance expectations?
- Will the maturity of existing technology meet current design and performance requirements?

Summary, Cont.

Configuration Uncertainty

There are four outstanding reasons that configuration may change:

- The original design does not meet performance requirements
- A change in the system's desired performance changes the hardware specifications
- Error or omission of system specifications
- Strategy changes that affect employment and deployment of the system

Supportability Risk

There are 10 Integrated Logistic Support (ILS) elements that should be evaluated for potential risk.

- Maintenance Planning
- Manpower and Personnel
- Support Equipment
- Technical Data
- Training
- Training Support
- Computer Resources
- Facilities
- Packaging, Handling, Storing, and Transportation
- Design Interface

Summary, Cont.

Programmatic Risk refers to risk that makes an impact across the program and can be outside of program control. It includes:

- Authoritative decisions
- Indirect events or actions
- Unknown production problems
- Other foreseen problems with the system's capabilities

Scheduled Related Risk refers to what affects the length of a program's development, from it's acquisition to its end use. It includes:

- Change in system requirements
- Change in design requirements
- Change in strategy
- Change in funding sources

Cost Estimating Risk's additional sources are:

- Cost Analysts
- Cost Estimating Relationship
- Data Error
- Extrapolation Errors

Lesson Completion

You have completed the content for this lesson.

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If you have closed or hidden the Table of Contents, click the Show TOC button at the top in the Atlas navigation bar.