Project: 101079696 — ET-PP — HORIZON-INFRA-2021-DEV-02

EINSTEIN TELESCOPE

# ETO Project Office – Risk Assessment

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# Simplified comparative Risk Assessment

## What is a Risk?

•A risk is a potential **hazard** that, if it occurs, could impact the project negatively.
- •**Severity**: How serious is the impact?
- •**Likelihood**: How likely is it to occur?
- •**Criticality**: Combination of severity and likelihood to prioritize risks.

**Criticality = Likelihood * Severity**

## Why?

•The project involves multiple configurations (2L, Triangle), each with unique **design challenges** and **uncertainties.**

•Comparing risks across these configurations ensures that decisions are informed by a thorough understanding of potential **impacts**.

# Simplified comparative Risk Assessment

## How?

- Evaluate risks tied to different aspects of the project, such as technical feasibility, financial viability, scheduling, and scope.
- Score each configuration to identify which is more prone to risks in specific areas.

# Risk Categories

4 Risk Domains are covered :

•**Technical and Schedule Risks** Challenges related to the development and operation of critical systems:

- **Suspensions**
- **Cryogenics**
- **vacuum systems**
- **optics**

  - Delays or failures in these areas could significantly impact project timelines.

•**Financial Risks**

  - Costs of **civil engineering and infrastructure** are major drivers of the project's budget.

•**Scope Risks ( OSB + Involved systems from ISB )**

  - Ensures that the proposed configurations align with the scientific objectives, such as achieving the required sensitivity curves.

# Methodology

**1- Establish the 1st Baseline Configuration: ( Triangle )**

•Choose Triangle as the **baseline** for risk evaluation.

**List Potential Risks: ( For triangle )**

•Define risks under 4 main categories:

- •**Technical and schedule risks** (delays, component failures .. )
- •**Financial risks** (cost overruns … )
- •**Scope risks** (not meeting scientific goals …)

• Suggest a mitigation ( optional)

• Score : Criticality = Severity * Likelihood

• Score for the Alternative Configuration **( 2L)**

**2 - Establish the 2nd Baseline Configuration: ( 2L )**

•Rely on how 2L differ from the baseline ( triangle) : design variations ….

**List « New » Potential Risks: ( 2L)**

•Score : Criticality = Severity * Likelihood

• Score for the « Now » Alternative Configuration **( Triangle )**

**3 - Release the final comparative Risk Analysis ( 2L and triangle)**

***Example on decision making if we suggest that our reference is the budget :*** *For example, a configuration with fewer technical risks but higher financial risks might be preferred if funding is more flexible*.

# Risk Severity and Likelihood

| Score | Likelihood | Likelihood of occurrence | |
|---|---|---|---|
| **L5 = 5** | Maximum | *Certainly appears or appears at least once in the lifetime of the Project.* | > 50 % |
| **L4 = 4** | High | *Will probably appear.* | 10 % to 50 % |
| **L3 = 3** | Medium | *Event could happen occasionally, but not expected; there is some precedent or moderate probability.* | 2 % to 10 % |
| **L2 = 2** | Low | *Event is unlikely, but possible under exceptional circumstances; rare in similar projects.* | 0,1 % to 2 % |
| **L1 =1** | Minimum | *Event is highly unlikely to occur, with no history of similar issues in comparable projects.* | < 0,1 % |

| Score | Severity | Severity Description |
|---|---|---|
| **S5 = 5** | Catastrophic | *Critical failures that severely compromise project objectives, with potential project abandonment. Severe safety incidents or regulatory issues. Financial impact >20%.* |
| **S4 = 4** | Serious | *Major issues that require significant rework, delays up to 2 years, or financial impacts of 10-20%. May impact critical project objectives or require safety interventions.* |
| **S3 = 3** | Moderate | *Significant issues requiring additional resources or changes but manageable within project constraints. Delays of up to 6 months; financial impact 3-10%.* |
| **S2 = 2** | Minor | *Minor technical or operational issues that slightly affect project outcomes but can be managed within the current budget and schedule. Financial impact of 1-3%.* |
| **S1 =1** | Negligible | *Minor issues easily resolved with minimal impact on cost, schedule, or performance. No safety risks, and no delays beyond minor, routine adjustments. Financial impact <1%.* |

# Criticality and Mitigation Strategies/ Actions

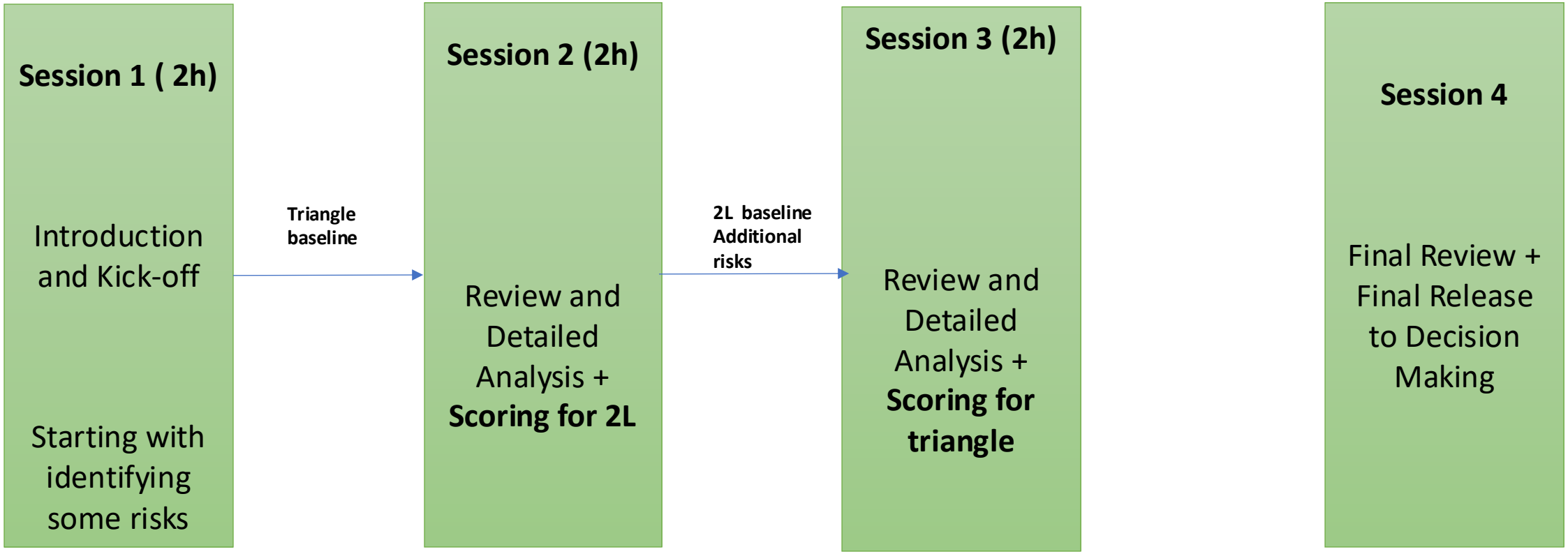
| Likelihood | CRITICALITY ( C = P x S ) | | | | |
|---|---|---|---|---|---|
| L5 | 5 | 10 | 15 | 20 | 25 |
| L4 | 4 | 8 | 12 | 16 | 20 |
| L3 | 3 | 6 | 9 | 12 | 15 |
| L2 | 2 | 4 | 6 | 8 | 10 |
| L1 | 1 | 2 | 3 | 4 | 5 |
| Severity | S1 | S2 | S3 | S4 | S5 |

| Criticality (C = L x S) | Type of Risk | Review Frequency |
|---|---|---|
| 10 to 25 | **UNACCEPTABLE RISK** Develop and implement a detailed risk mitigation plan. Escalate to senior management and prioritize resource allocation. Communicate regularly with stakeholders and prepare contingency measures as needed. If unresolved, this risk may necessitate major project adjustments. | **Bi-Monthly** |
| 5 to 9 | **TOLERABLE RISK under control** Monitor and plan: Develop a response plan to manage this risk, but active mitigation can be minimal. Regularly review and reassess to catch any changes in risk conditions. Keep stakeholders informed. | **Every 6 Months** |
| 1 to 4 | **ACCEPTABLE RISK** Routine Monitoring: No significant action required other than periodic monitoring. Include in regular risk assessments, and be prepared to adjust if project conditions shift or if the risk level increases. By convention, the risk is said to be CLOSED when the various project actions are closed. | **Annually or Phase Review** |

# Examples

| Risk | Likelihood (Triangle) | Severity ( Triangle ) | criticality ( triangle) | Mitigation | Likelihood ( 2L ) | Severity ( 2L ) | criticality (2L) | Mitigation |
|---|---|---|---|---|---|---|---|---|
| Suspension failure | 3 | 4 | 12 | Improve materials | 1 | 2 | 2 | |
| Cryogenics system delays | 3 | 3 | 6 | Parallel development | 4 | 5 | 20 | |
| Civil engineering cost overrun | 4 | 5 | 20 | Budget contingency | 2 | 2 | 4 | |

# ETO Taskforce Risk Assessment Sessions



# Thank you!

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