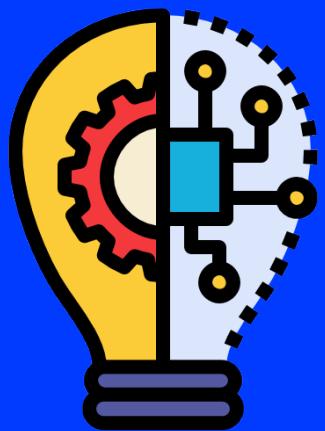


INNOVATION TRACK

< WORKSHOP - IMPACTS, RISKS &
MITIGATION />



INNOVATION TRACK

Workshop: Impacts, Risks & Mitigation

The objective of this workshop is to project your solution into the "real world" and anticipate the consequences of its existence.

An engineering project is not just about coding features; it's about ensuring the **sustainability, resilience**, and **responsibility** of what you build.

By the end of this workshop, you must demonstrate that you have anticipated "Day 2" (Production), potential failures, and the environmental footprint of your project.

You will work on three critical dimensions:

1. **Risk Management:** What could go wrong and how to fix it?
2. **Environmental Impact (GreenIT):** What is the carbon footprint of your code?
3. **Deployment & Resilience:** How does it survive in production?

Part 1: Risk Management

Unlike the **SWOT** analysis (Workshop 4) which focuses on strategic business risks, here we focus on **Project & Operational Risks**. You must prove that you can keep the ship afloat even during a storm.

The Risk Matrix

You must identify risks and classify them based on **Probability** (Likelihood) and **Impact** (Severity).

| Risk | Probability (1-5) | Impact (1-5) | Criticality (P*I) | Mitigation Strategy |
|--|-------------------|--------------|-------------------|---|
| Technical | | | | |
| e.g., <i>The external API we depend on doubles its price</i> | 2 | 5 | 10 | <i>Plan a proxy service to switch providers easily.</i> |
| Operational | | | | |
| e.g., <i>The Lead Developer leaves the team</i> | 3 | 5 | 15 | <i>Enforce documentation and code reviews to share knowledge.</i> |
| Security | | | | |
| e.g., <i>User database leak</i> | 1 | 5 | 5 | <i>Encrypt sensitive data at rest; Regular pentests.</i> |

Mitigation Strategies

For each critical risk, you need a plan:

- ✓ **Avoid:** Change the plan to bypass the risk.
- ✓ **Reduce:** Take action to lower the probability or impact.
- ✓ **Transfer:** Insure against the risk or outsource it.
- ✓ **Accept:** Acknowledge the risk (if low criticality) and monitor it.

Part 2: Environmental Impact (GreenIT)

Digital technology is responsible for 4% of global greenhouse gas emissions. As future engineers, you must code responsibly.

Eco-Conception Principles

Analyze your architecture (Workshop 3) through the lens of GreenIT:

- ✓ **Hosting:** Did you choose a Green-powered data center? (e.g., Regions with low carbon intensity).
- ✓ **Data Transfer:** Are you sending heavy images/videos unnecessarily? Can you compress data?
- ✓ **Compute:** Is your algorithm optimized? Are you using "Serverless" to scale down to zero when idle?

Measuring Impact

You cannot improve what you don't measure.

- ✓ **EcoIndex:** Estimate the performance and footprint of your web pages.
- ✓ **Carbon Footprint:** Estimate the CO₂eq emissions of your infrastructure using calculators (e.g., Cloud Carbon Footprint).

Target: Provide an **Eco-score estimation** or a list of specific optimization choices made to reduce energy consumption.

Part 3: Deployment & Resilience

Developing on `localhost` is easy. Running in production is hard. You need to explain how your solution will live, evolve, and resist failures.

Deployment & Migration Strategy

- ✓ **CI/CD:** How do you automate testing and deployment?
- ✓ **Migration:** How will you handle updates? If you change the database schema in V1.2, how do you migrate data from V1.0 without losing everything?

Resilience & Continuity

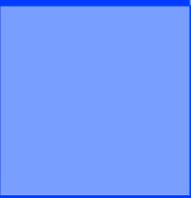
- ✓ **SPOF (Single Point of Failure):** Identify components that, if broken, stop the entire system. (e.g., A single database server without replication).
- ✓ **Backups:** What is your backup policy? (Daily? Hourly? Retention period?).
- ✓ **Degraded Mode:** If the chat feature fails, does the rest of the app still work?



Deliverable Checklist for this Workshop:

At the end of this workshop, your slide deck should include:

1. **Risk Matrix:** A table listing at least 3 critical risks (Tech/Project) with their mitigation plans.
2. **GreenIT Strategy:** An analysis of your environmental impact and actions taken to reduce it (Eco-design choices).
3. **Resilience Plan:** A brief explanation of your backup strategy and how you avoid Single Points of Failure (SPOF).



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