Executive Summary

Team 5-- Safran

Project Objective:

- To assess how Agile can be implemented in the new product development process of a physical product – Safran Landing Gear

Problems faced:

- Agile methodology is mainly utilized in the software industry. Therefore,
  - Unsure if it is possible to transition the methodology from a software industry to pure hardware industry
  - Doubt exists about the possibility of success when applied to aerospace design which has vastly different requirements than software.
  - Changes would need to be made to the existing Agile methodology when applied to a hardware industry

Approach:

- Case studies from companies who had successfully implemented Agile processes into hardware development were sourced to investigate benefits, limitations, challenges and best practices.
- Preference was given to Aerospace companies who had implemented Agile in hardware development.

Findings:

- **Northrop Grumman**
  - It is necessary to train individuals on the Agile processes while an environment needs to be created which emphasizes collaboration, team empowerment, trust and organizational learning.
  - The continuous coaching is the main driver that sustains the Agile culture at Northrop Grumman.
  - Model Based Systems Engineering (MBSE) approach used.
- **Saab Aerospace**
  - It is difficult to define what a 'done' sprint looks like.
  - The focus of the Agile in hardware at Saab is to provide clear priorities for teams.
- **Thermo Fisher Scientific**
  - Pre-planning to avoid changes to requirements mid-development are more important for hardware.
  - The hardware release cycles were longer and the increments of functionality were larger between each than in a software development project.
- **Ericsson**

- One major modification that has been made to the traditional scrum framework in Ericsson was the use of a team lead instead of a scrum master.
- Another unique feature of Ericsson Agile hardware implementation was the re-planning of certain sprints.

Proposed Solutions：

- Option 1: Agile practices can be implemented within the existing Integrated Product Development (IPD) structure while the objectives of the different gates are achieved using Sprints.
- Option 2: An extension of Option 1, but also involves the elimination of the Preliminary Design Review in favor of smaller reviews conducted during Sprint Review.