

## **ESD.33 Systems Engineering**

# **Assignment 4 Innovation**

**Due Date:** 6 July, 8:30AM EST

**Deliverable:** Team written report (about five pages)

**Time allotment:** You should expect to spend 5 hours all together on this homework.

**Grading:** 5% of your final course grade. Every team member earns the same grade.

**Objectives:**

This assignment is primarily aligned with the objectives– “apply the most essential systems engineering tools” and “gathering and using data...”

**Assignment:**

Self select into teams of 3 to 5 people. In this case, I think it is best to create a team from a single company or industry.

1) Summary of this week’s major concepts:

- a. List and summarize the most essential new concepts (roughly five concepts) introduced in session #7 – Pugh Concept Selection.
- b. List and summarize the most essential new concepts (roughly five concepts) introduced in session #8 – Effective Innovation.

2) Select a system of interest to you (or a subsystem thereof) and evaluate aspects of its technical evolution over a period of about ten to fifty years. Preferably, the evolution should be documented with text and graphics from publicly available documents such as patents. Please include the following elements if possible:

- a. Provide an example of a launch innovation
- b. Provide an example of a sequence of about three growth innovations
- c. Attempt to forecast a growth innovation that has yet to come

3) Write a short essay (about 500 words) evaluating TRIZ as a systems engineering tool. You may wish to address the following questions. What is TRIZ good for? What is TRIZ not so good for? What challenges exist in introducing TRIZ to an organization? What are the most important alternative tools that address the same or similar needs? What do you recommend doing in your company or industry to promote effective innovation?