Risk: Concept and Operation

Risk as a Concept

- *Risk is potential loss or potential gain.* Thus, *risk is the uncertain deviation (delta) in the execution of a management plan.*
 - This definition aligns with ISO 31000 that describes *risk as the "effect of uncertainty on objectives."*
 - When an organization views risk as both potential gain and potential loss, potential gain is sometimes referred to as opportunity. For example, when mission or business plans use a "SWOT" analysis, <u>opportunity</u> is one of the four elements analyzed and related to the other three elements (<u>s</u>trengths, <u>w</u>eaknesses, and <u>t</u>hreats).
 - The publication <u>Organizational Risk and Opportunity Management</u>, NASA/SP-2014-615, November 2016 "provides ideas for possible consideration in" NASA's implementation to expand the risk concept to include "potential gain."
- When organizations such as NASA view risk only as "potential loss," risk can be defined as:
 - Risk is a qualitative or quantitative estimate of the potential loss occurring due to natural or human activities.

Risk as an Operation

- When an organization views risk both as potential loss and potential gain, the outcome of any mission or venture at a high level can be described as:
 - Actual results = Planned results +/- Risk
- When risk is limited to potential loss, risk written as a **statement** or described in a table has three elements, namely:
 - o <u>Scenario</u>: What can go wrong?
 - o Likelihood: What is the probability it will happen?
 - <u>Consequence</u>: What is the impact if it did happen?
- Furthermore, when risk is limited to potential loss, risk described as a **measure** is commonly:
 - *Risk* = (*Probability of failure*) * (*Consequence*)
 - This measure is either a number (i.e., product) or a point in a risk matrix.
 - When a **risk matrix** is used, the point or cell represents a particular scenario and corresponds to the upper-right corner or vertex of a rectangle. The area of the rectangle corresponds to the magnitude of the risk for the scenario.