Module 9: STAB Tools and applications in risk management Session 2 of 2

Rev. 1.3.5

Topics

- Definitions
- Risks based on technological uncertainty
- Risk rectangles and why not to use them
- Risk profiles and framework
- Risks in using poor people (lecture and 0902)
- **Risk and opportunity identification and mitigation**
- **Survivorship bias**
- The flaw in the 'B' paradigm (0903)
- The doomed classroom project (0904)
- Mitigating communications risks (0905)
- Exercise

Risk identification, mitigation and prevention – in planning

- Solving or fault-finding an imaginary problem (*Generic* HTP)
- Understanding the situation (system) using the HTPs
  - Design, process, organization, mission, etc.
  - *Structural*
    - What will happen if this … fails (breaks or does not happen)?
  - *Operational*, and *Functional*
    - What could have happened to prevent this function/operation from happening?
  - *Generic*
    - What has happened in similar systems?
  - *Scientific*
    - How do we prevent it from happening?
    - What is the best way to prevent it from happening?
    - If we can't prevent it, how can we mitigate it to reduce the negative impact?

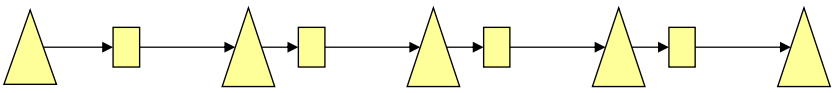
Abstraction

- Our brains can juggle 8-10 items at any one time (Millers' and Military Laws)
- How we choose to abstract depends on what we consider to be "significant"
- The same system may be represented by different abstractions (perspectives)
  - e.g. Operational, Systems, Technical
- **Risks are inherent in abstraction**

Opportunity identification

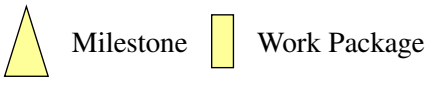
- *Continuum*
  - What is the effect of exceeding the specification?
    - Making this part stronger
    - Taking less time to perform a function?
  - What could we do if this part was stronger or more flexible?
  - What could we do if this process takes less time?
  - What could we do if a prerequisite is ready sooner than expected?
- *Quantitative*
  - Is there value in using this opportunity?

Project network (timeline, PAM)

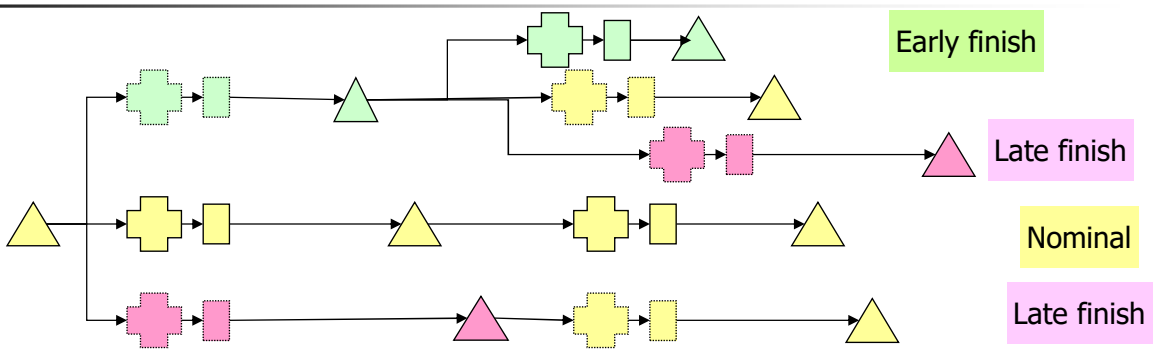


- Traditional view
- Work done between milestones
- Project management
- Risk management
- Systems engineering
- Other streams of activities

- Critical path
  - Schedule estimates
- Cost estimates
- Measure actual costs as time goes by
- Earned Value Analysis
  - Compares estimates with actual



Contingency planning (*Continuum* HTP)



Milestone

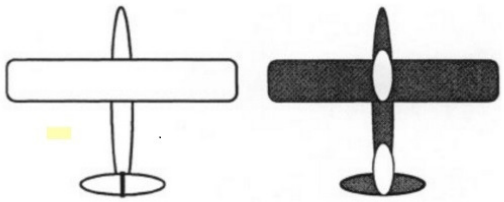
Contingency

Work Package

- Similar to decision tree
- Probabilities and impact severities
- Focus on the 6-8 that have maximum impact (*Quantitative* HTP)
- Revise before each milestone
- Way of estimating early and late times in PERT charts

HTPs overcome "survivorship bias"

- World War II US *Operational* bomber losses deemed too high
- *Structural* HTP
  - Look for what is there
  - Examined aircraft post mission (survivors)
  - Identified damaged areas (wings and tail)
  - Strengthened damaged areas
  - No significant change in losses
- *Continuum* HTP
  - Look for what isn't there (did not survive)
  - Strengthened undamaged areas (engine)
  - Significant decrease in losses
- Change in assumption



Bullet holes & Bias: The story of Abraham Wald
https://mcdreeamiemusings.com/blog/2019/4/1/survivorship-bias-how-lessons-from-world-war-two-affect-clinical-research-today

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- **Exercises**

Knowledge reading exercise 9-21

1. Prepare a brief on two main points in reading 0903 (< 5min)
2. Presentation to contain
    1. A summary of the content of the reading (<1 minute)
    2. The compliance matrix
    3. The problem formulated per the problem formulation template
    4. This slide and lesson version number
    5. A list of the main points
    6. The two briefings
    7. Reflections and comments on reading (<2 minute)
    8. Comparisons of content with other readings and external knowledge
    9. Why you think the reading was assigned to the module
    10. Lessons learned from module and source of learning e.g. readings, exercise, experience, etc. (<2 minutes)
3. Save as a PowerPoint file as Exercise9-21-abcd.pptx
4. Post/email presentation as, when and where instructed
5. Brief on one main point

Knowledge reading exercise 9-22

1. Prepare a brief on two main points in reading 0904 (< 5min)
2. Presentation to contain
    1. A summary of the content of the reading (<1 minute)
    2. The compliance matrix
    3. The problem formulated per the problem formulation template
    4. This slide and lesson version number
    5. A list of the main points
    6. The two briefings
    7. Reflections and comments on reading (<2 minute)
    8. Comparisons of content with other readings and external knowledge
    9. Why you think the reading was assigned to the module
    10. Lessons learned from module and source of learning e.g. readings, exercise, experience, etc. (<2 minutes)
3. Save as a PowerPoint file as Exercise9-22-abcd.pptx
4. Post/email presentation as, when and where instructed
5. Brief on one main point

Knowledge reading exercise 9-23

1. Prepare a brief on two main points in reading 0905 (< 5min)
2. Presentation to contain
    1. A summary of the content of the reading (<1 minute)
    2. The compliance matrix
    3. The problem formulated per the problem formulation template
    4. This slide and lesson version number
    5. A list of the main points
    6. The two briefings
    7. Reflections and comments on reading (<2 minute)
    8. Comparisons of content with other readings and external knowledge
    9. Why you think the reading was assigned to the module
    10. Lessons learned from module and source of learning e.g. readings, exercise, experience, etc. (<2 minutes)
3. Save as a PowerPoint file as Exercise9-23-abcd.pptx
4. Post/email presentation as, when and where instructed
5. Brief on one main point

Summary

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Meeting the objectives

1. Showed how systems thinking and beyond (STAB) tools can improve risk management
2. Explained a few STAB tools for risk management

Any questions ?

1. Best
2. Worst
3. Missing

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