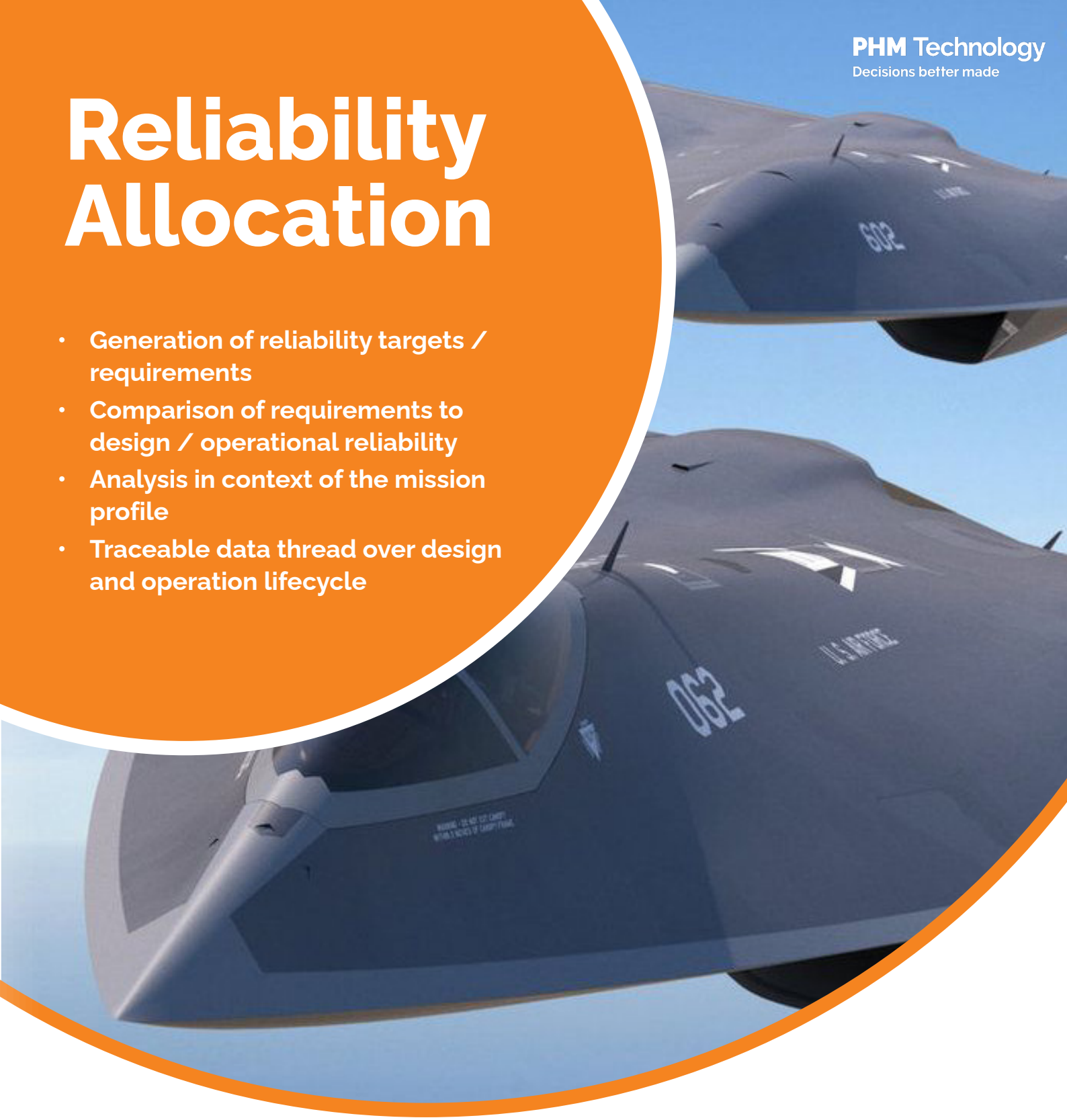
PHM Technology
Decisions better made

Reliability Allocation

- Generation of reliability targets / requirements
- Comparison of requirements to design / operational reliability
- Analysis in context of the mission profile
- Traceable data thread over design and operation lifecycle



MADe Reliability Allocation apportions top-level reliability down to the system's constituent components and parts based upon the system's use case (or mission profile). This provides granular and actionable reliability requirements for each item. Utilised with the model-based environment of MADe reliability can be tracked and as the design progresses, can be assessed against the as-designed and as-maintained performance of the system.

MADe
MAINTENANCE AWARE DESIGN

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How does Reliability Allocation fit into system design?

Reliability Allocation allows high level reliability targets to be broken down and applied to the subsystem, component or part level. Using specific targets as requirements during the system engineering process allows engineers to confidently design or acquire items to meet reliability targets. When items are later integrated into the wider system, less deviations from reliability targets are encountered leading to a reduction in redesign risk and costs.

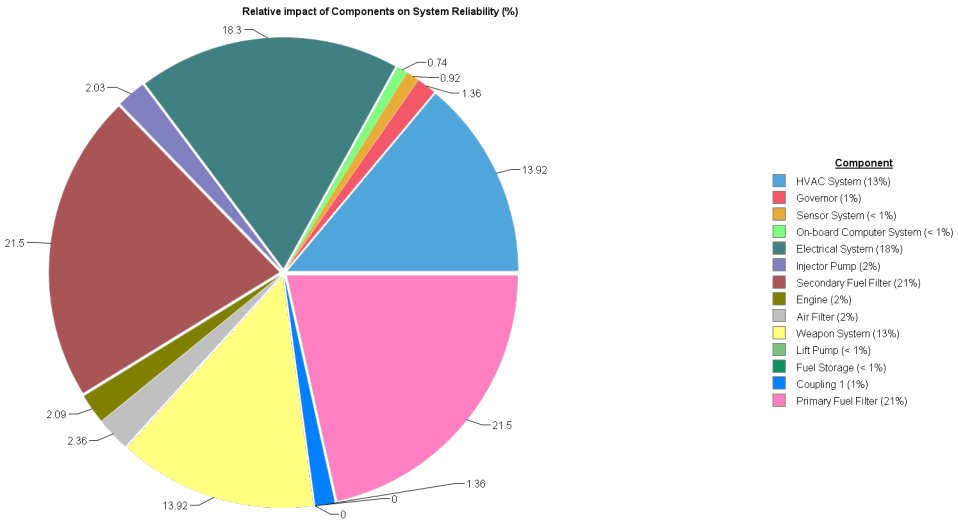


Figure 1: System reliability allocated using hardware complexity as a weighting criteria

Which methods of allocation does MADe support?

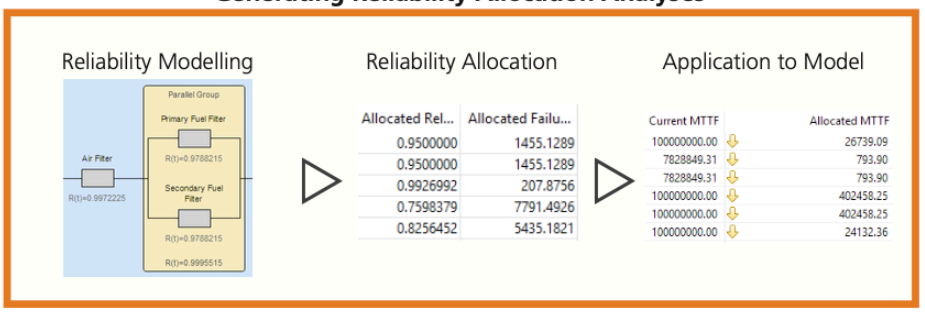
MADe provides the following industry standard allocation methodologies:

- Weighted Allocation methods:
  - State of the Art – Items are ranked based upon level of technological development with undeveloped items being set lower targets
  - Hardware Complexity – Items are ranked based on complexity of the physical hard ware with complex items being set lower targets
  - Functional Complexity – Items are ranked based on the complexity of functions with more complex items being assigned lower targets
  - Historical Reliability Data – Items are ranked on historical reliability data providing lower targets to historically less reliable items

- Equal Allocation: Item reliability is allocated equally at each level of indenture in order to meet the parent item's target reliability with no weighting or bias

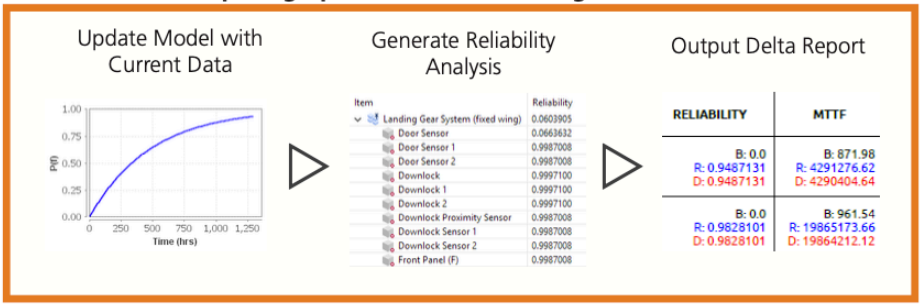
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Generating Reliability Allocation Analyses



1) A Reliability Block Diagram (RBD) is created in MADe
2) An Allocation analysis is conducted
3) Allocated values are to the system model as applied targets or baseline reliability state

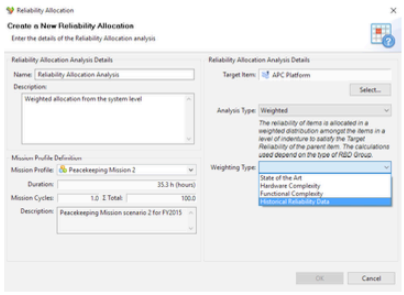
Comparing operational data to target reliabilities



1) As design of system develops input new data into model
2) Assess expected reliability of the system
3) Run comparison between target and current reliability performance

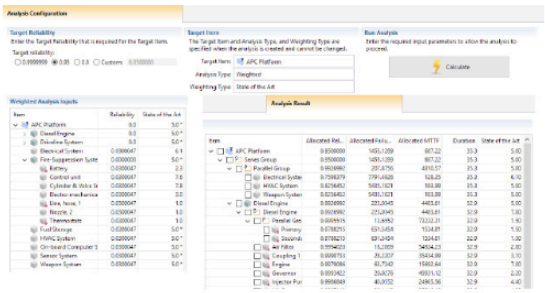
Reliability Allocation

Allocation Settings



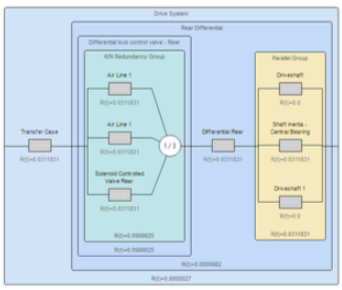
Equal Allocation within MADe

Weighted Allocation



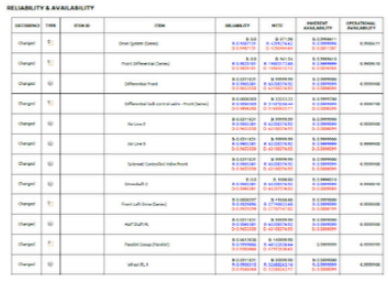
State of the Art, Weighted Allocation within MADe

RBD



Reliability captured within the RBD system structure

Reliability Comparison Report



Comparison between target and operational reliabilities

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