Affordable Readiness Model

(formerly Lifecycle Management Cost Optimizer)

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Agenda

- The Cost Modeling Challenge
- ARM model Methodology
- F-22 Supply Chain Comparative Analysis Example
- Summary

The Challenge

- DoD's increasing emphasis on sustainment costs
- DoD lacks key information and cost visibility necessary to produce life-cycle O&S cost estimates and baselines
  - GAO-10-717: O&S Cost Analysis Inadequate
  - CAPE Report to Congress August 2010 re O&S baselines
- Weakness of the static point estimate approach
  - Reliant on bounded ground rules and assumptions; easily biased
  - Generates unrealistic expectations
- Need for dynamic capability reflecting range estimates and impact on operational performance

What will be the Life Cycle Cost of the X-45B Tactical Fighter Aircraft?

Or This?

Which estimate would be a more accurate early planning and decision support foundation?

This?

EXACTLY $15.875B

Sensitivity Factors

- Life span
- Peacetime vs. Contingency use
- Mission profile
- OPTEMPO
- Technology change
- Funding availability

ARM Example Application

F-22 Supply Chain Comparative Assessment

1. FASTeR Partnership (*Follow-on Agile Sustainment for the Raptor)*
   - Lockheed Martin managed supply chain
   - Government hands-on depot MRO
2. Government managed Supply Chain
   - Government-managed supply chain
   - Government hands-on depot MRO

The Analytic Methodology

1. Identify & Define the Relevant Operational Outcomes
2. Identify & Define the Factors that Influence the Outcomes
3. Develop Representative Decision Support Interface
4. Create a Map of Processes That Impact Outcomes
5. Develop Discrete Event Simulation Populated With Distributions
6. Run the Simulation Multiple Times Across the Range of Input Factors to Capture Uncertainty Ranges
7. Validate the Simulation Outputs
8. Populate Decision Support Interface enabling comparison of alternatives against operational outcomes under various user defined ranges of input factors.

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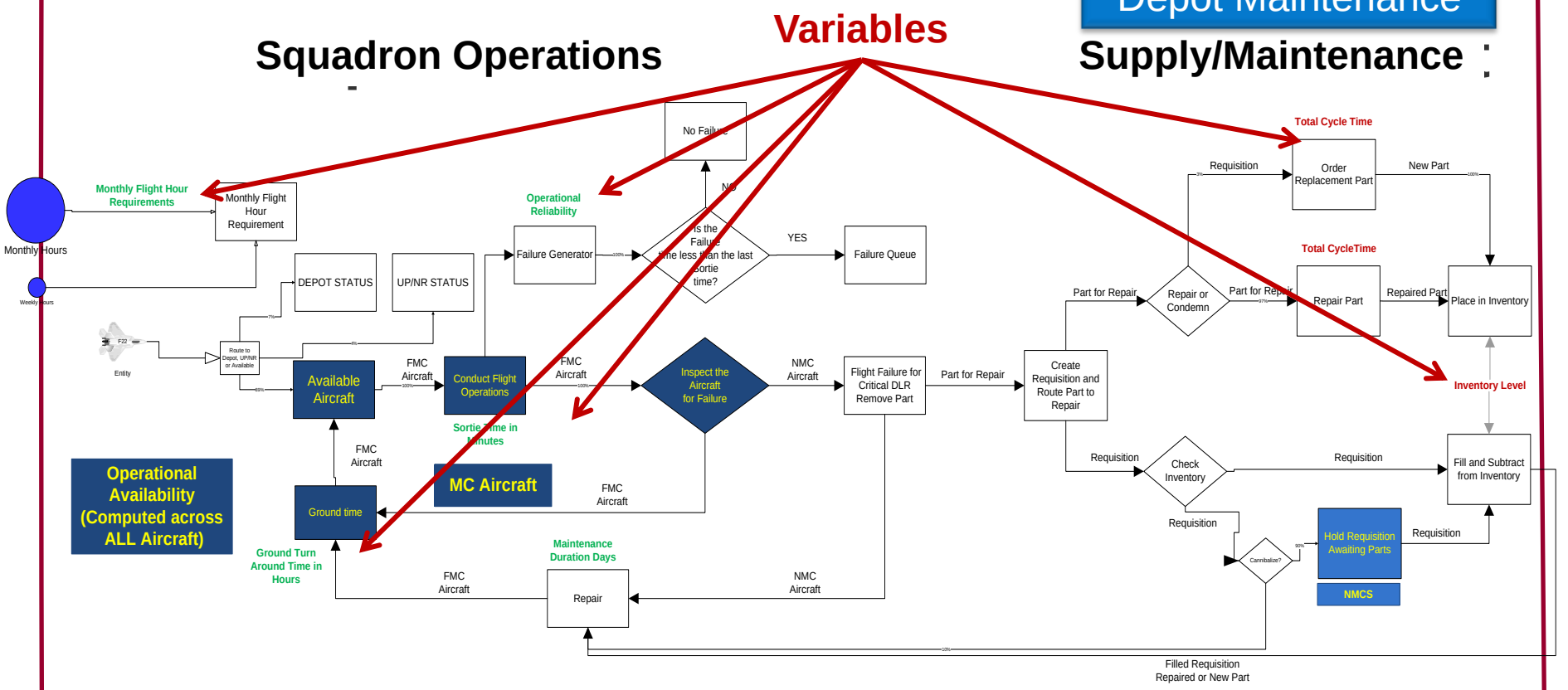
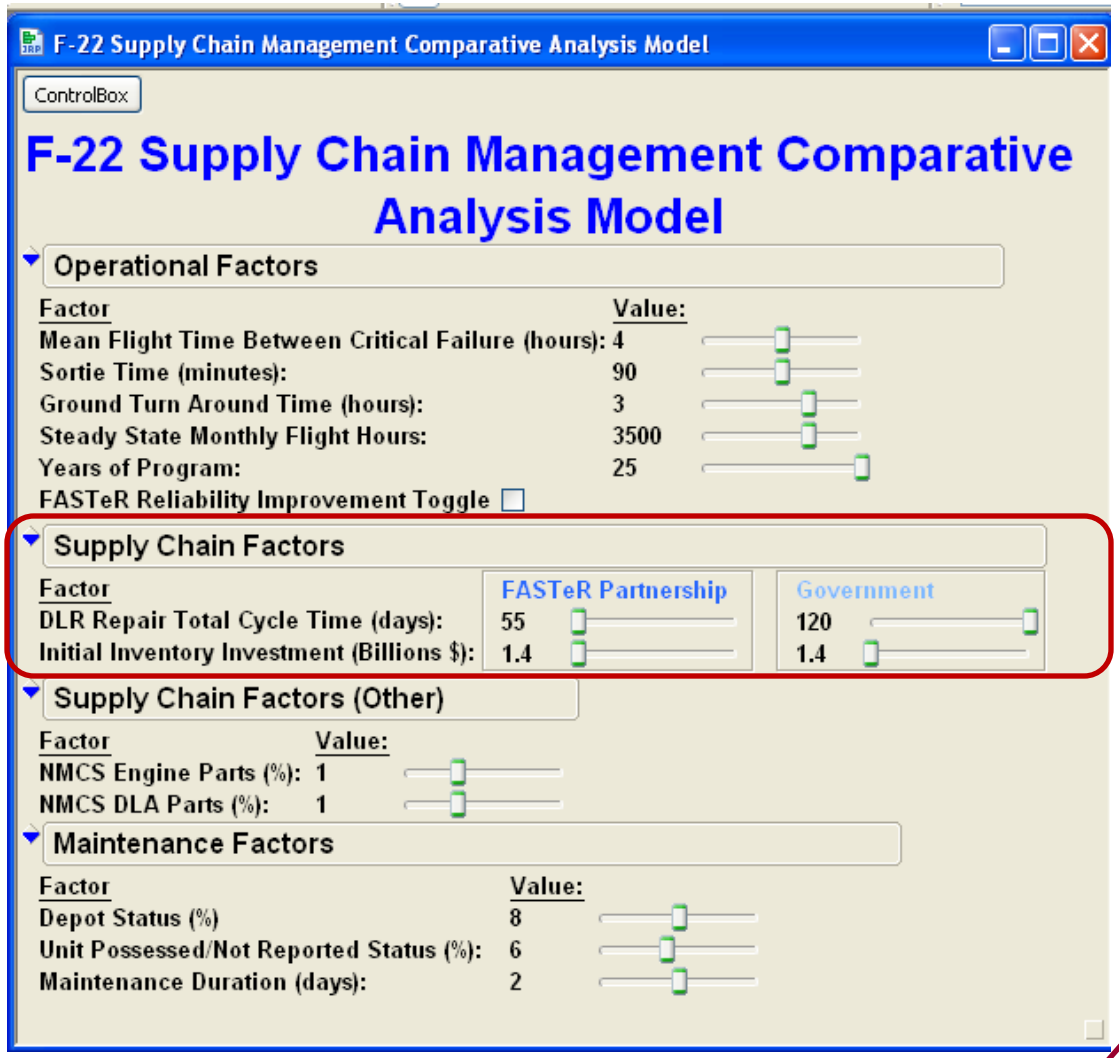
The F-22 Operations & Sustainment Process Map

Note: Includes Only Depot Maintenance



Operational and Process Factors

Input Factors



Critical Driving Factors

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Outcomes

Critical Outcomes

NOTE: Outcomes are portrayed as range vice point values; the tighter the range, the higher the confidence level around the values

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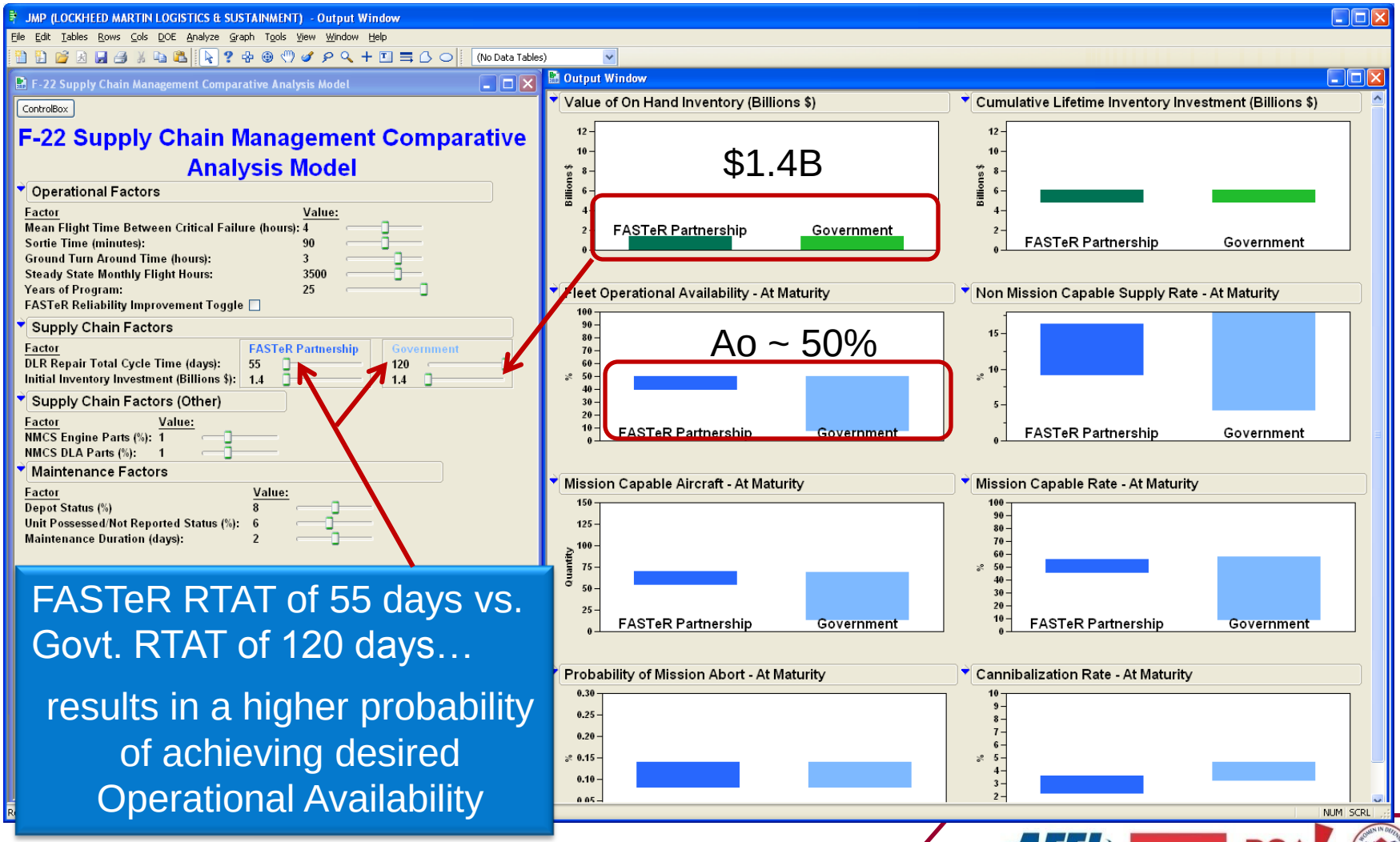
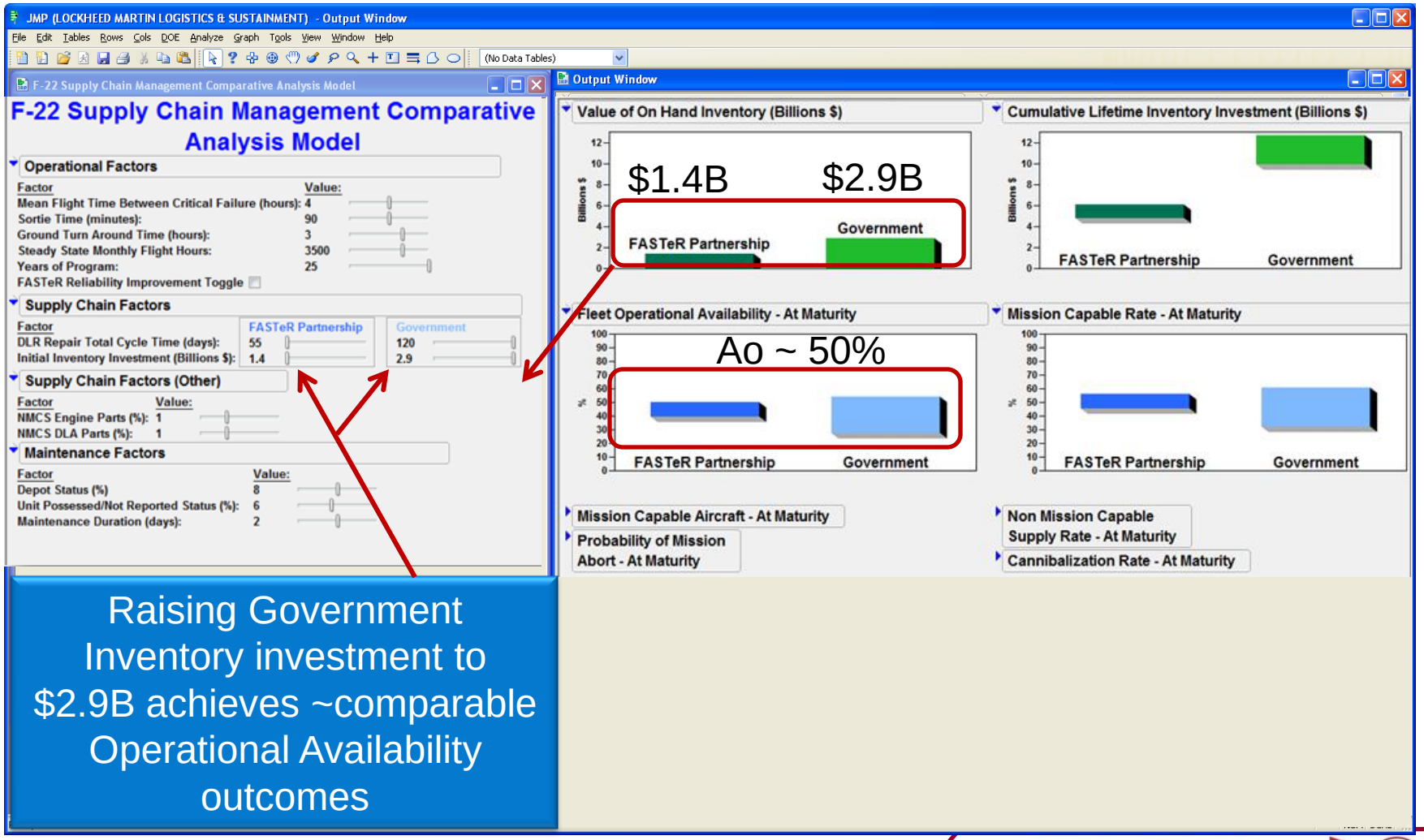
Scenario 1: Equal Inventory Investment



FASTeR RTAT of 55 days vs. Govt. RTAT of 120 days…

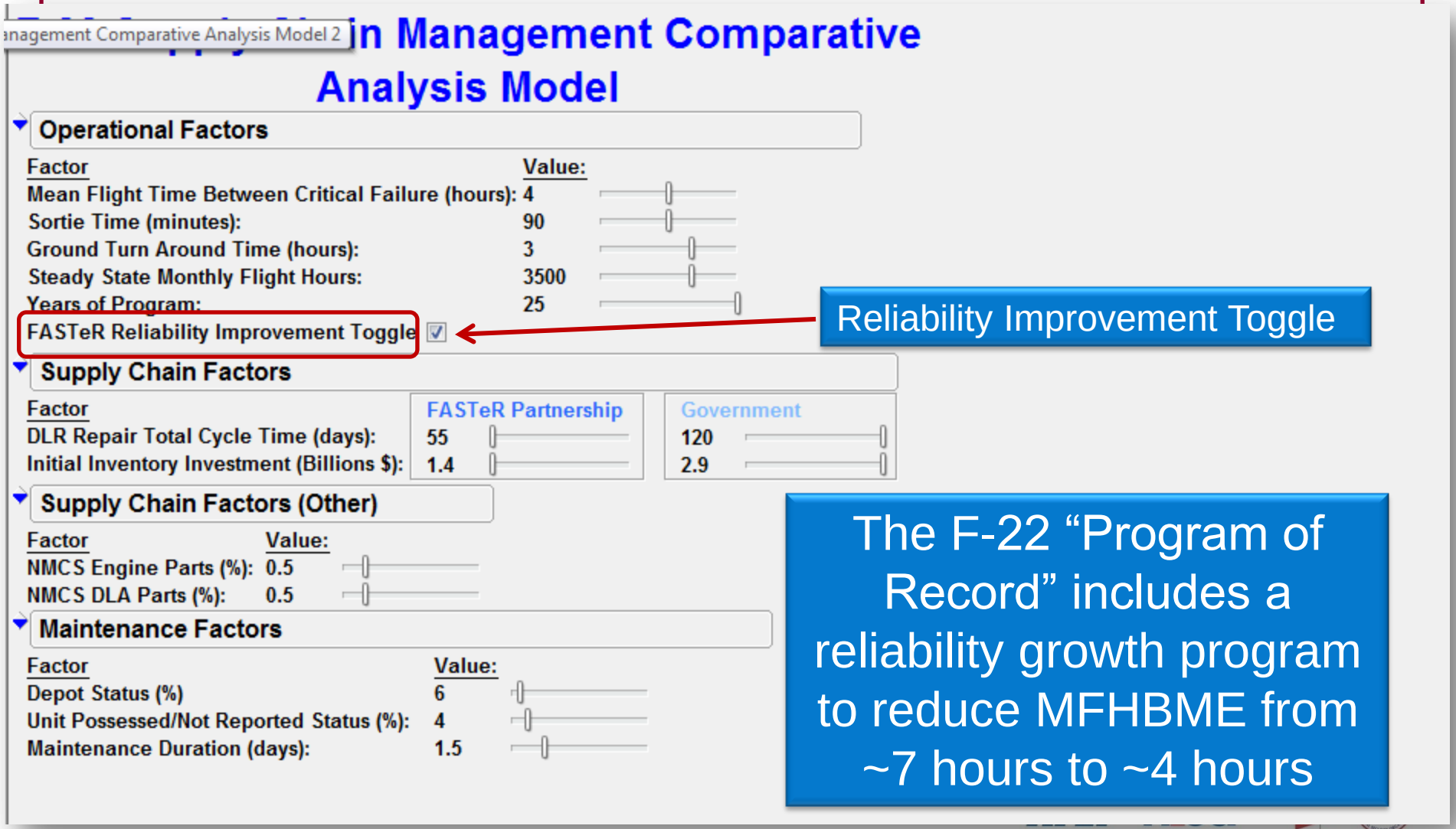
results in a higher probability of achieving desired Operational Availability

Scenario 2: Add'l Inventory Investment

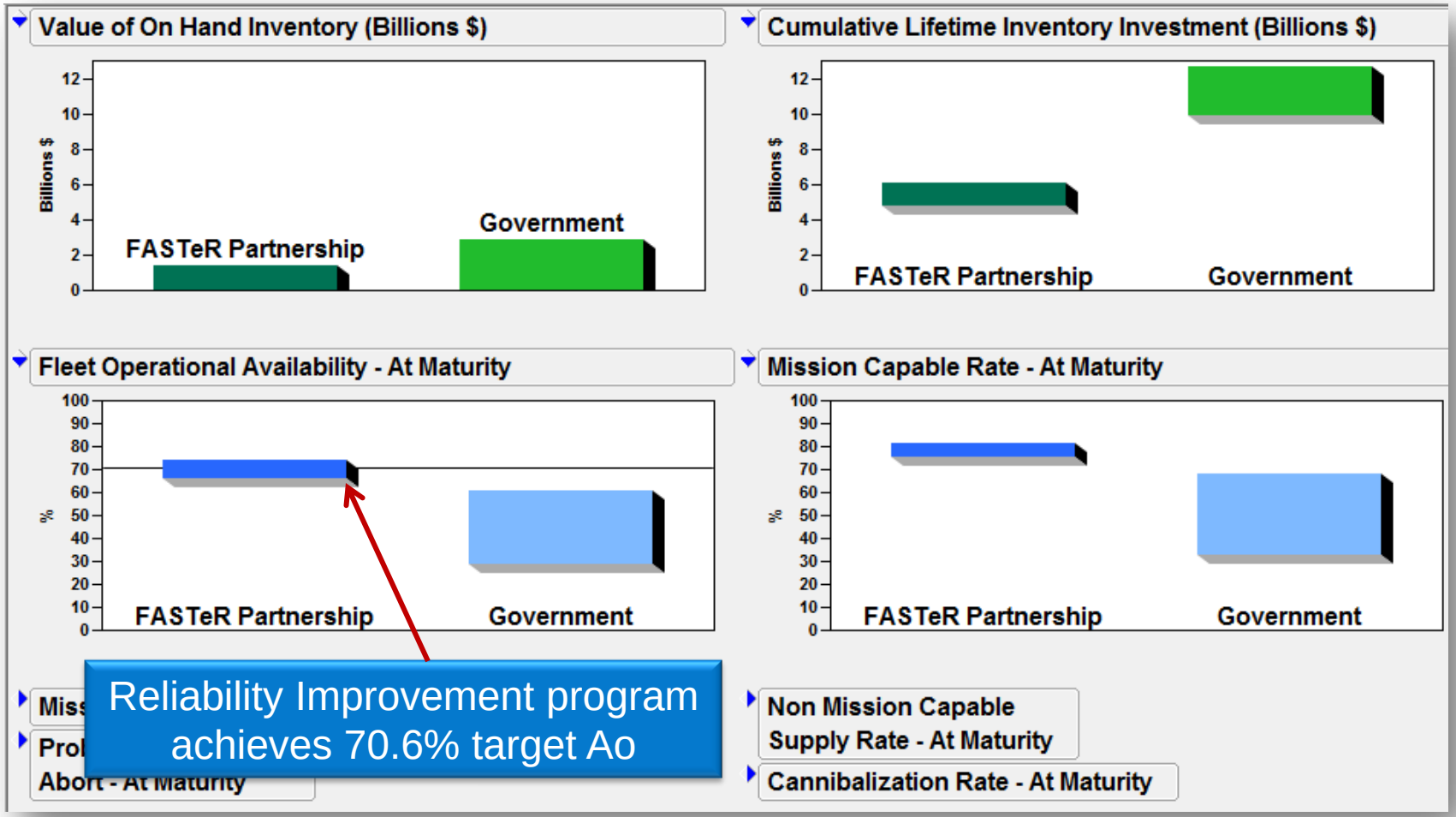


Raising Government Inventory investment to $2.9B achieves ~comparable Operational Availability outcomes

Scenario 3: Reliability Growth



Scenario 2: Reliability Improvement Toggle



Summary

- Dynamic decision support capability
- Shows impact on operational and cost outcomes
- Enables interactive sensitivity analysis for “what if” scenarios
- Accommodates “real world” potential scenarios
- A critical tool in the analysis toolbox

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