

En Route Airspace Modeling

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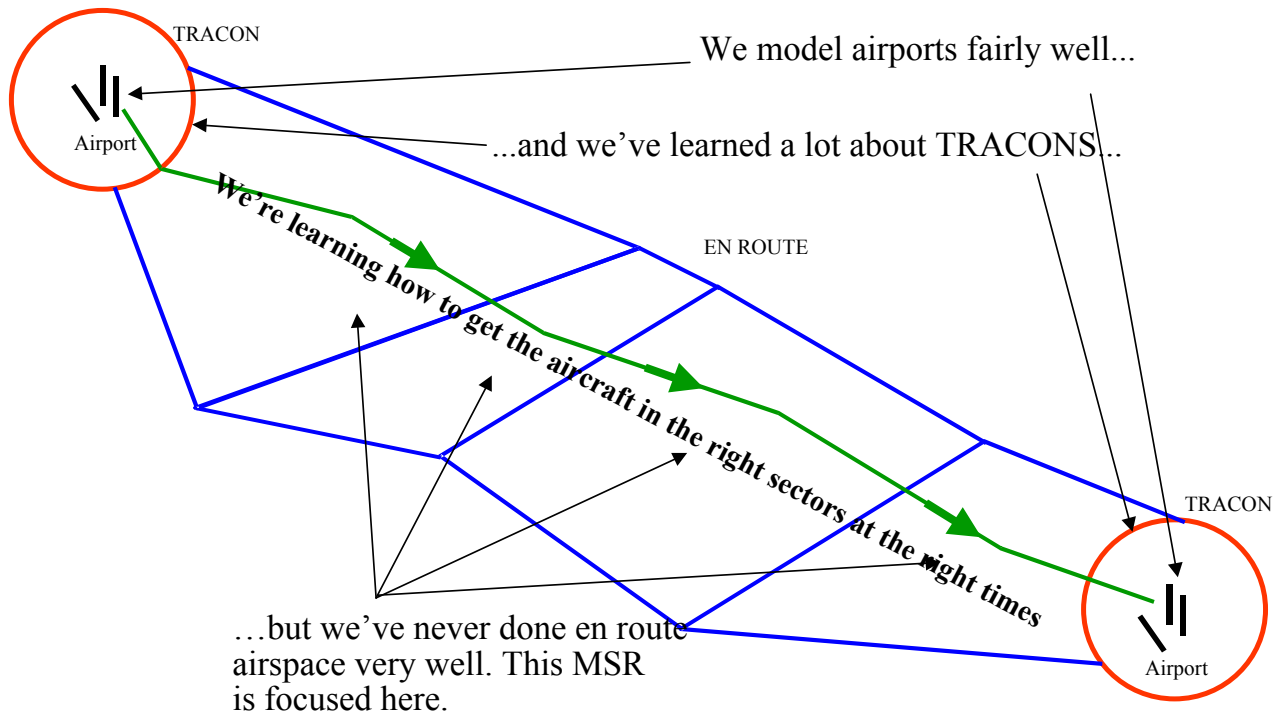
The MITRE Technology Program logo, featuring a stylized graphic of stacked blocks in yellow, orange, and blue to the left of the text "MITRE Technology Program" in white.

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Problem

- Present en route airspace models do not accurately reflect airspace operation.
- They are not sensitive to many of the changes brought about by new technologies and procedures.
- This severely limits the utility of existing models and the accuracy, precision and completeness of simulation studies.

Background



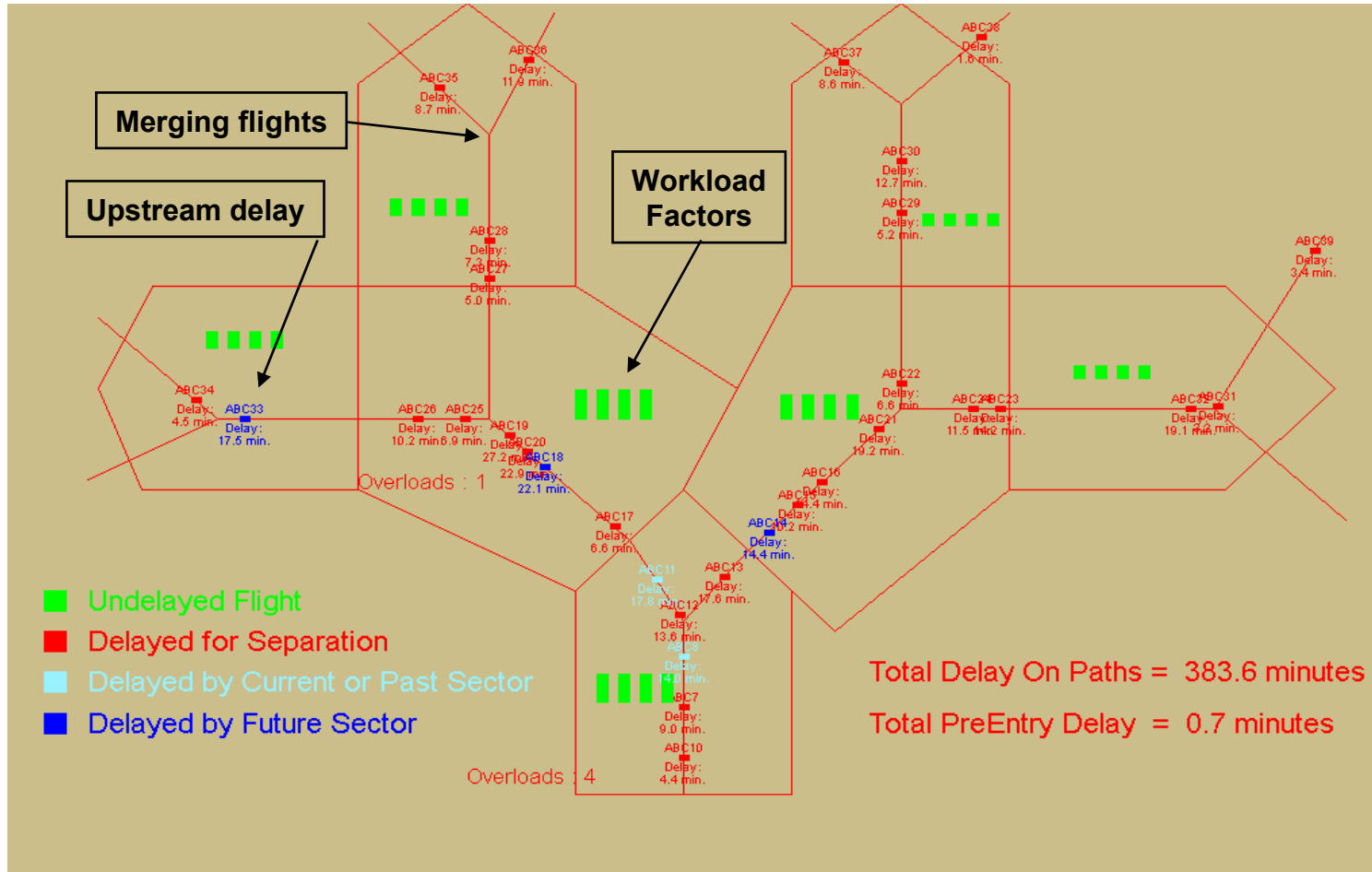
Objective

- **Develop a more complete, accurate and comprehensive method of representing en route airspace in simulation models**
- **More accurately represent the functions of real airspace and responses to changes in factors influenced by new technologies and procedures**

Activities

- **Research existing en route models in MITRE and elsewhere**
- **Develop new en route models with the desired properties, and experiment with and demonstrate these models in prototypes created in a fast prototyping environment**
- **Represent individual sectors; areas of up to six sectors will be prototyped**
- **Select and demonstrate the preferred modeling technique(s) to the MITRE modeling community**

Highlight



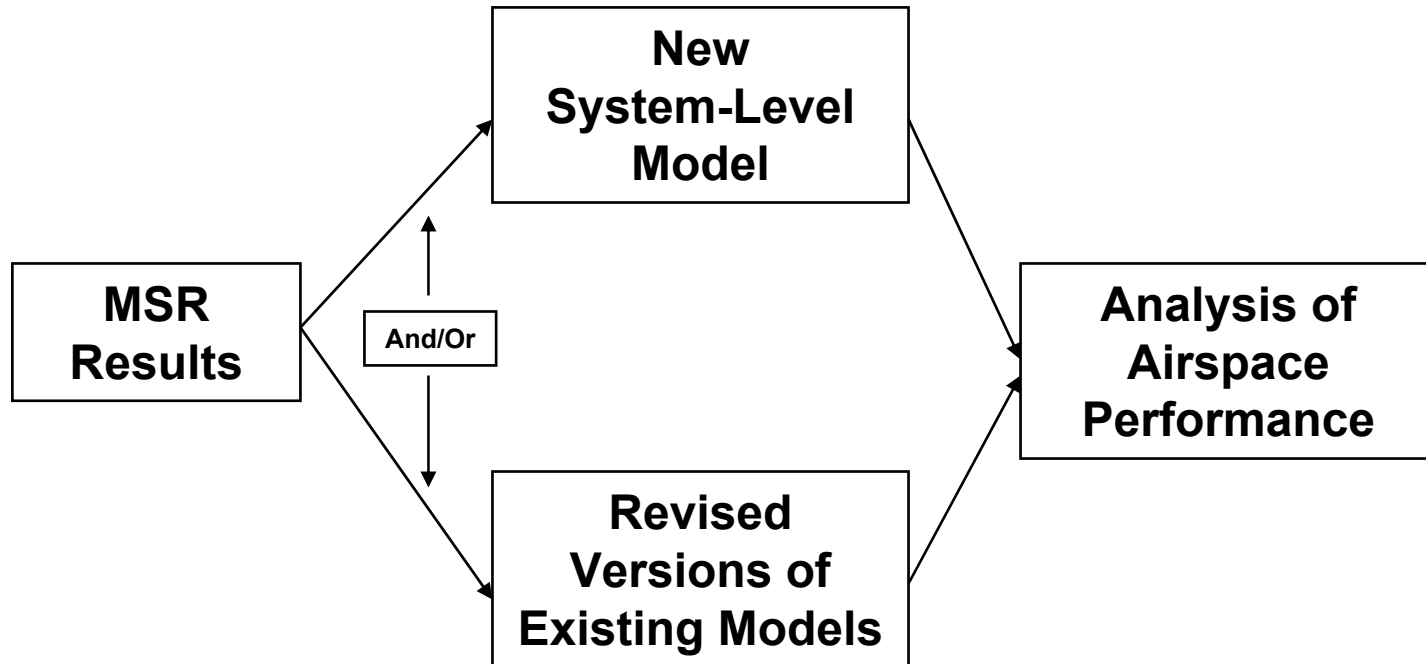
Demonstration

- Hypothetical airspace area
- Multiple streams merge into a single stream
- Aircraft are slowed to
 - Maintain along-track separation.
 - Maintain separation at merges.
 - Absorb delay predicted in down-stream sectors.

Impacts

- **The new en route airspace model will enable simulation of the impacts of new technologies and procedures much more comprehensively than existing models permit.**
- **It may permit enhancement of existing models, or support the creation of new models. The prototype models created this year may themselves be useful for certain types of analysis.**
- **It will enable more accurate and precise evaluation of proposed technologies and procedures in en route airspace.**

Future Plans



MSR results will support both new model development and enhancement of existing models.