Interaction Between Strategic and Local Traffic Flow Controls

Operational Need

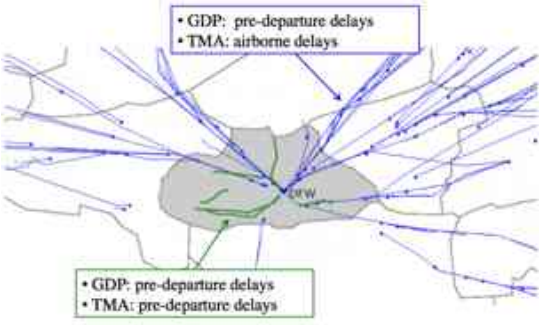
The loosely coordinated set of traffic flow management initiatives that are operationally implemented at the national- and local-levels have the potential to under, over, and inconsistently control flights.

Approach

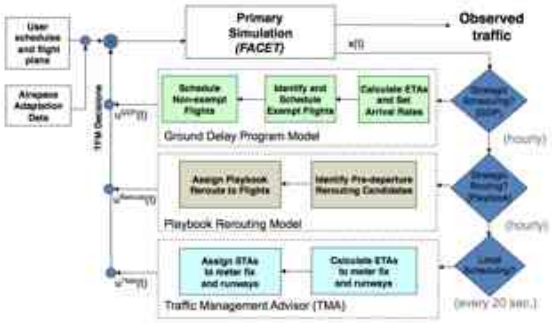
- Integrated NASA's Future ATM Concepts Evaluation Tool (FACET) with NASA's Traffic Management Advisor (TMA)
- Integrated system used to investigate the interactions between Ground Delay Programs and arrival scheduling, playbook rerouting and arrival scheduling and TMA Flow Programs and arrival scheduling

Benefits

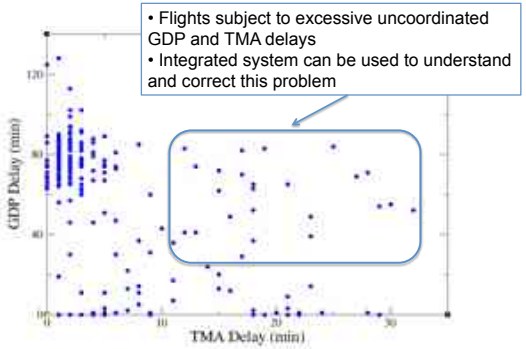
- Better coordinated strategic and local traffic flow controls
- More equitable distribution of delays
- Reduced unnecessary delay and fewer delayed flights



Dallas/Fort Worth International arrivals controlled by an uncoordinated Ground Delay Program and arrival scheduling



Integrated system developed to explore interactions between strategic and local traffic flow controls



Dallas/Fort Worth scenario showing 52% of all arrivals receiving uncoordinated GDP and arrival scheduling delays

National Aeronautics and Space Administration

Interaction Between Strategic and Local Traffic Flow Controls

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Airspace Systems Program
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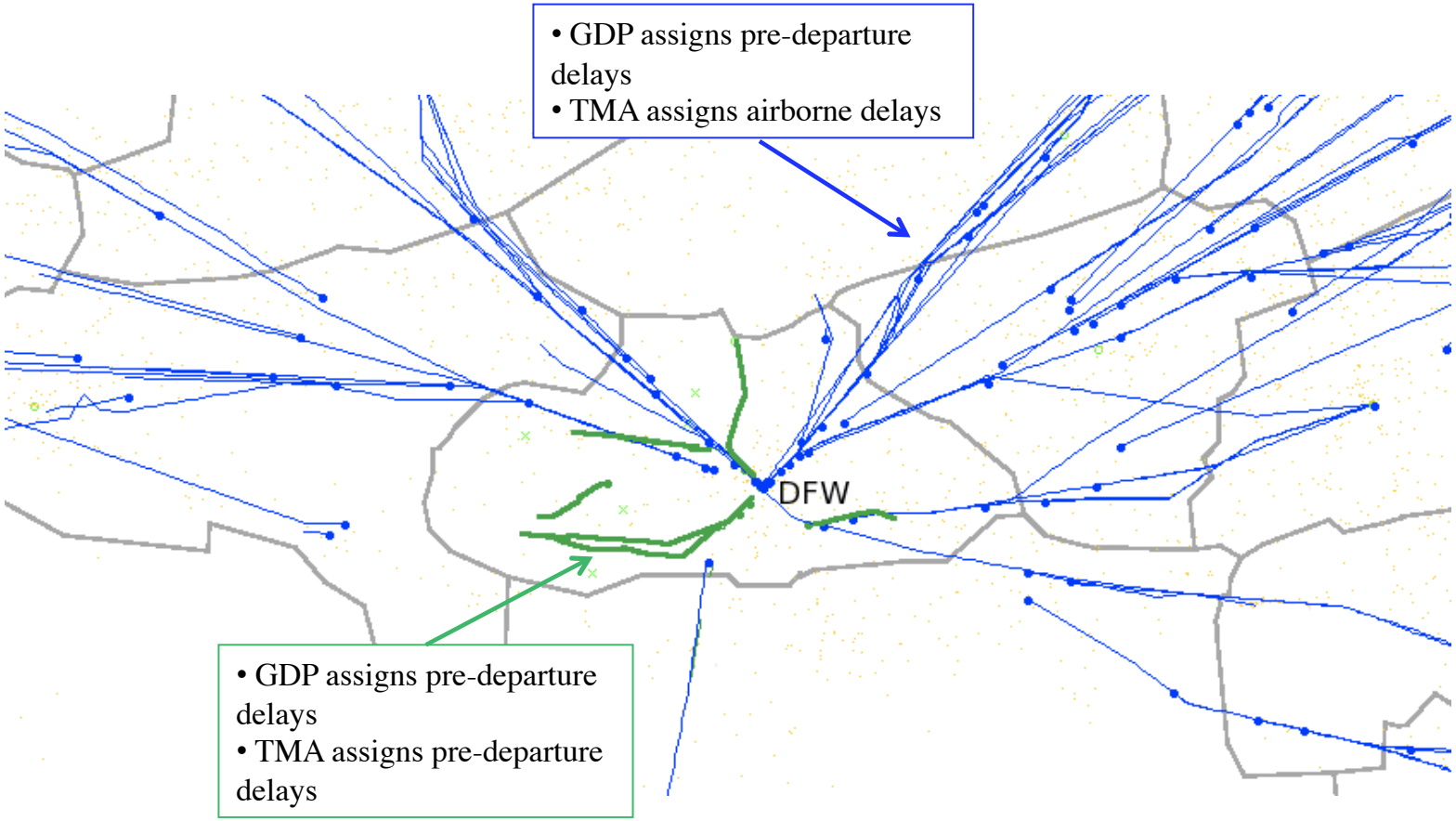
Motivation


• GDP assigns pre-departure delays
• TMA assigns airborne delays
DFW
• GDP assigns pre-departure delays
• TMA assigns pre-departure delays

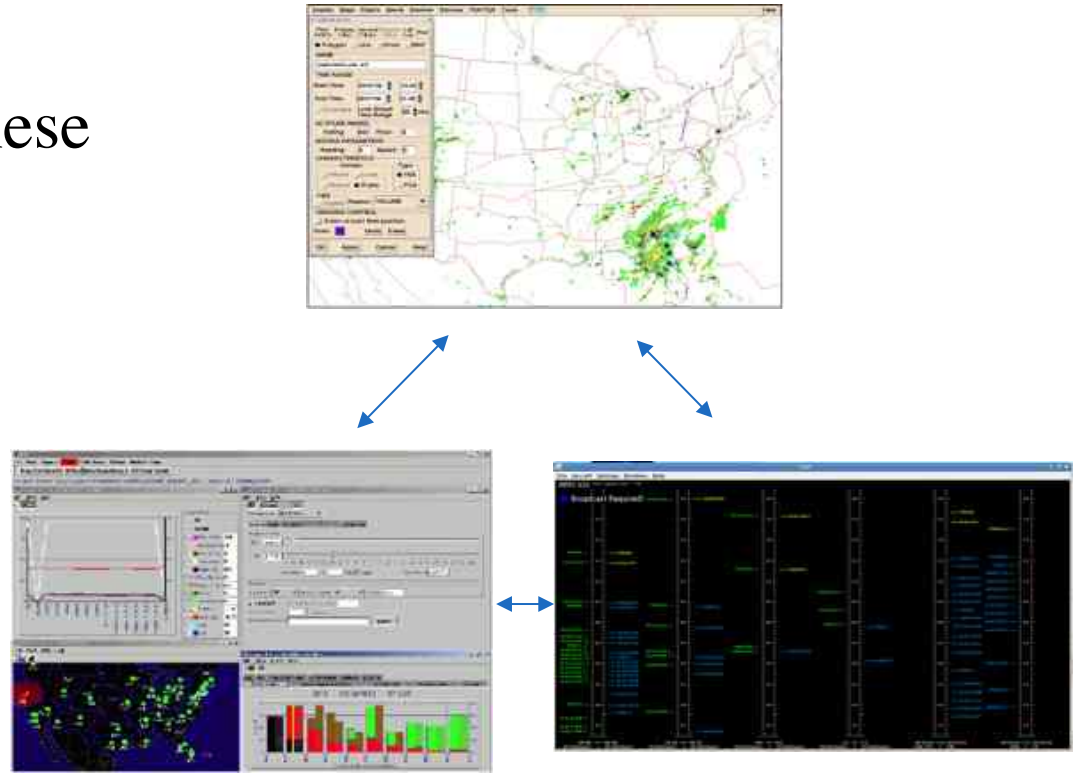
Key Messages

- Integrated environment under development to explore and improve the interaction of national, regional and local level Traffic Flow Management controls

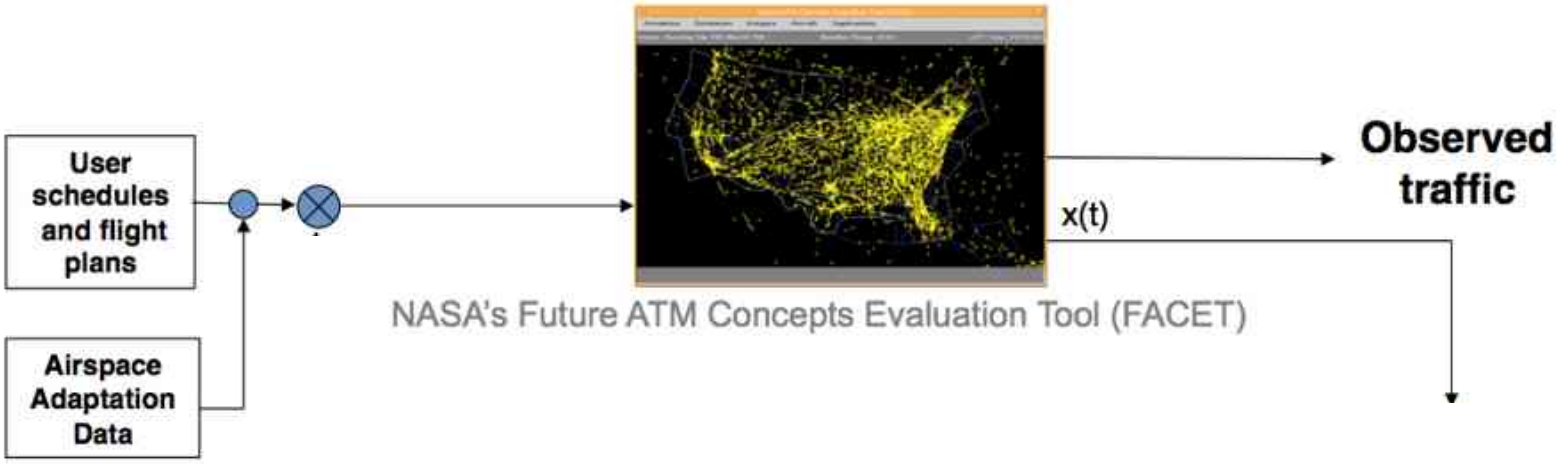
- Systems used to identify potential sources of inequity ("double penalization") in the National Airspace System

Technical Challenges

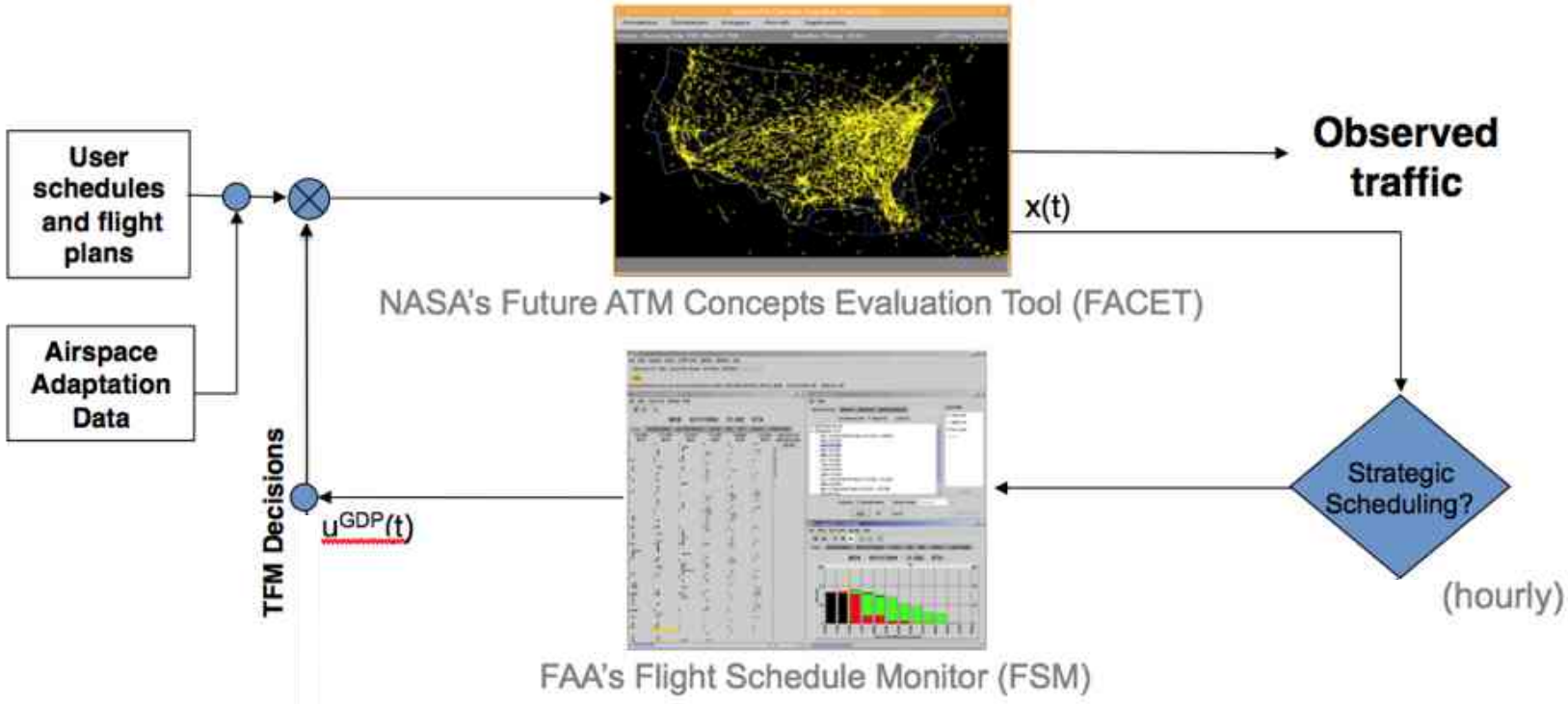
- Traffic Flow Management consists of a loosely coordinated set of ground holding, airborne holding and rerouting controls
- Integrated impact of these controls are not well understood
- Controls tend to under, over and inconsistently control traffic flows



Integrated Simulation Environment



Integrated Simulation Environment



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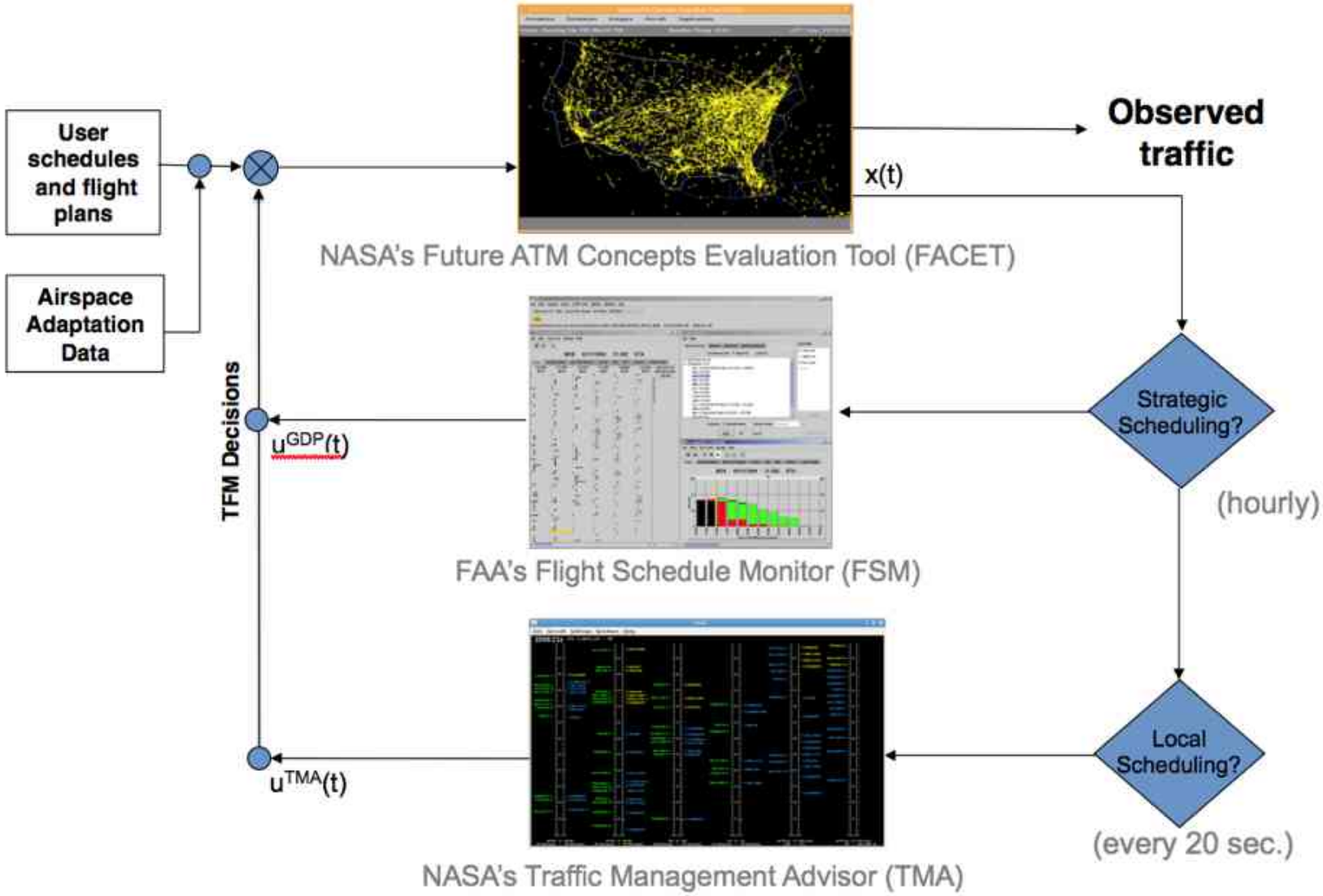
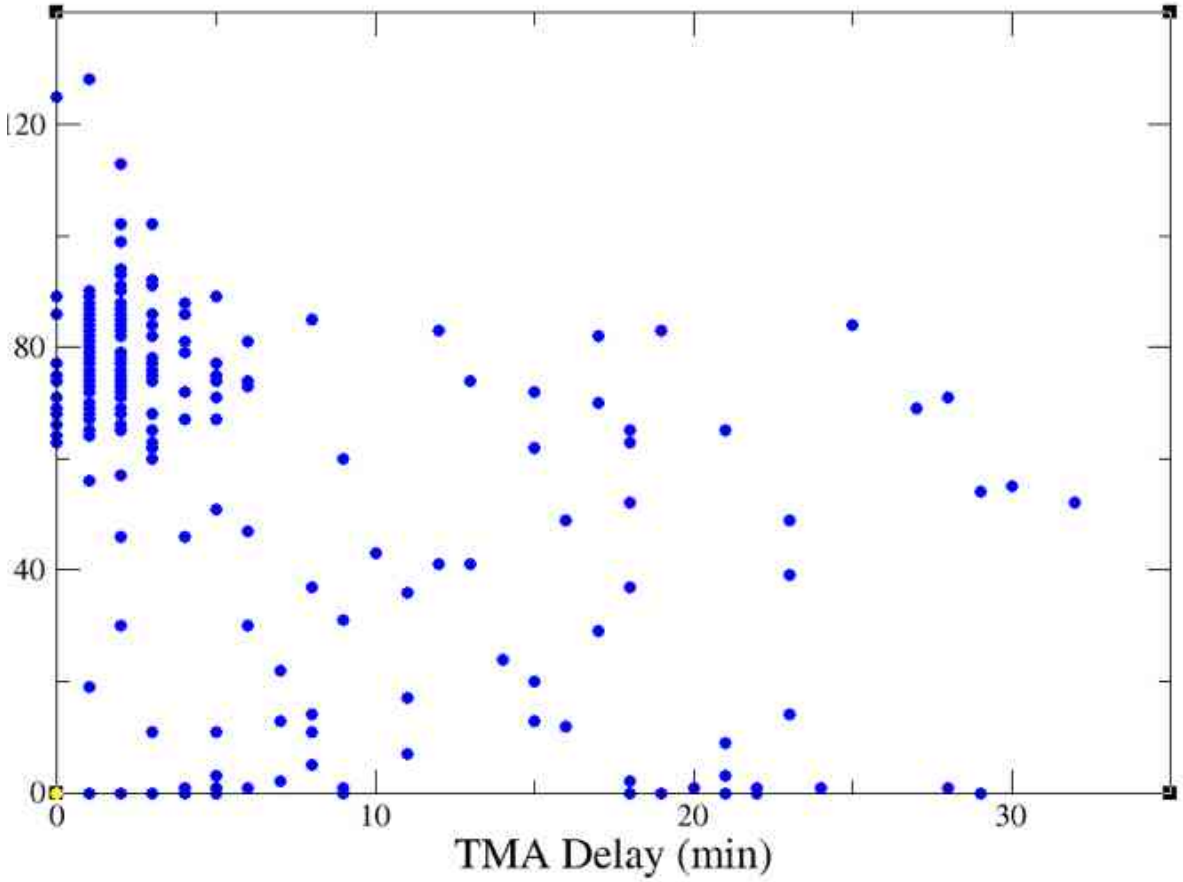


Sample Results

Operational Ground Delay Program Scenario at DFW

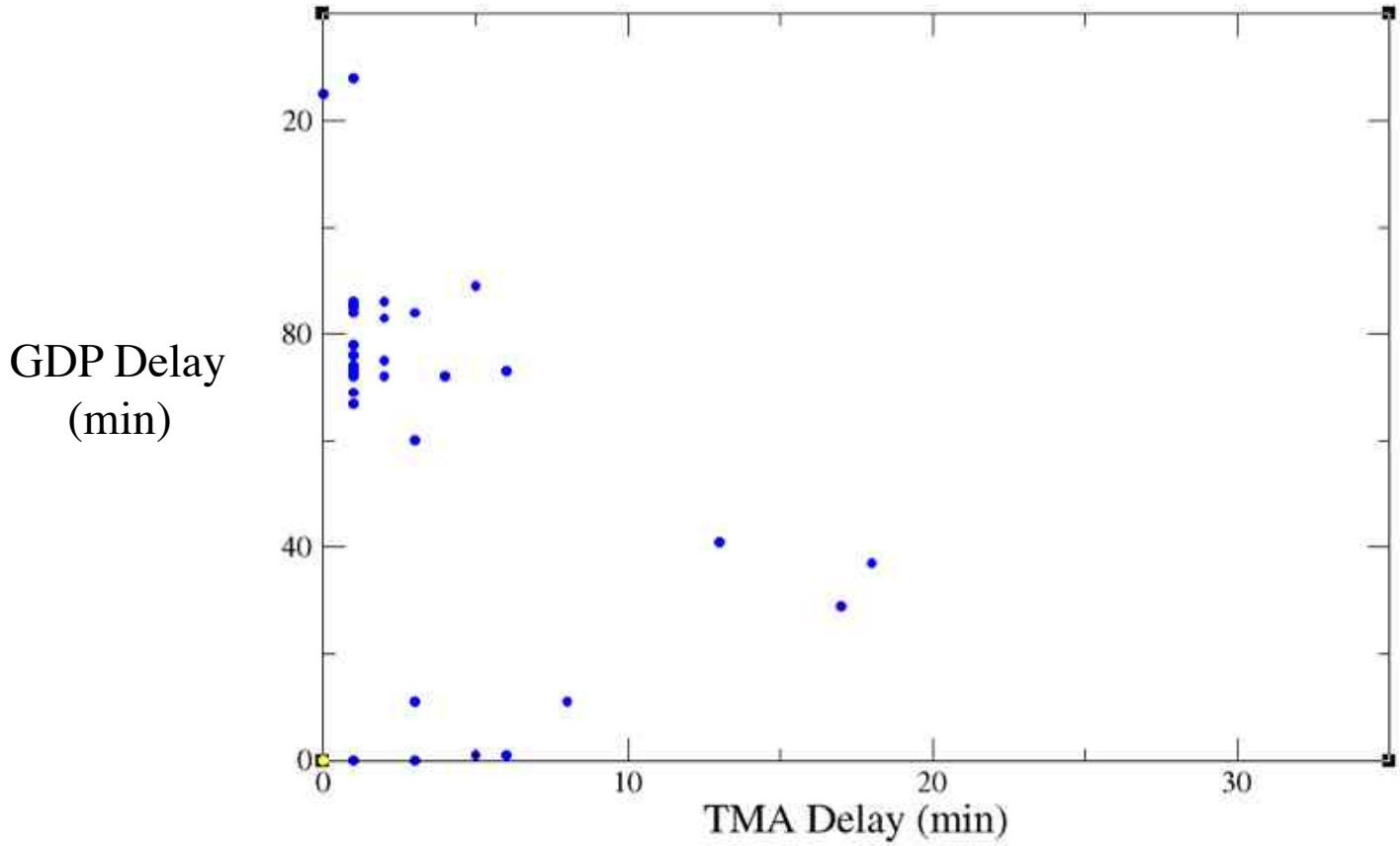
GDP Delay (min)



52% of all flights receive both TMA and GDP delays

Sample Results

Operational Ground Delay Program Scenario at DFW



64% of internal departures received ground delays from the Ground Delay Program and the Traffic Management Advisor

Potential Benefits

- Reduction in avoidable delays and better use of NAS resources
- Improved coordination at the national-, regional and local-levels
- Better distribution of delays amongst all airline operators
- More consistently controlled and predictable traffic flows

Next Steps

- Integration with operational decision support tools (e.g., FSM, RRIA, TMA, CTOP, etc.)
- Enhance weather integrated decision making at the national-, regional- and local-levels
- Identify areas of collaboration with the service provider, industry and airline operators

Concluding Remarks

- Integrated environment under development to explore and improve the interaction of national, regional and local level Traffic Flow Management controls

- Systems used to identify potential sources of inequity ("double penalization") in the National Airspace System