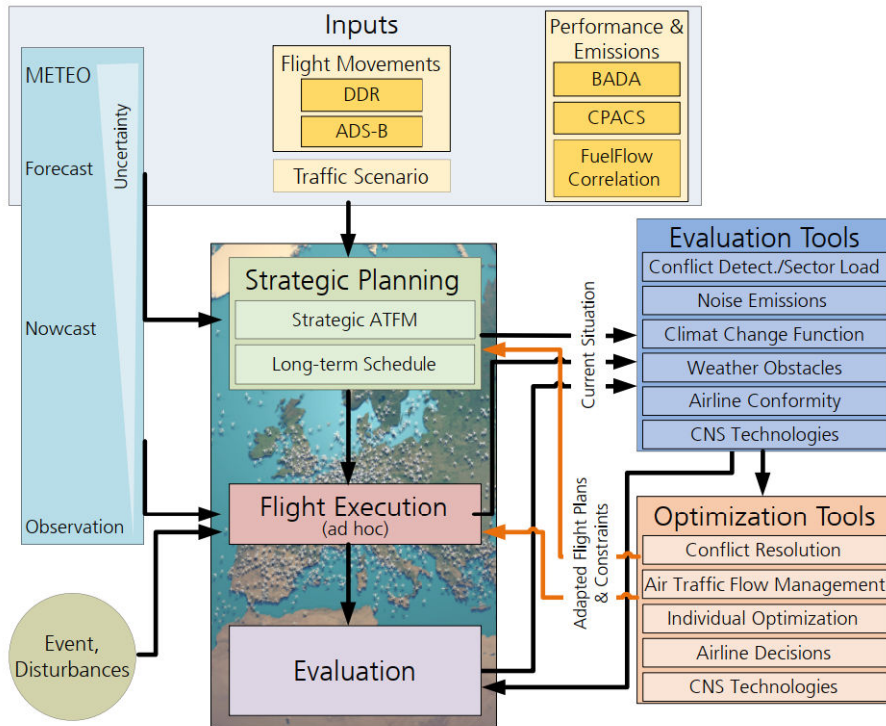


ATM Performance Simulation and Validation with the Future Air Traffic Simulator

The Future Air Traffic Simulator provides a “proof of concept simulation” for new ATM concepts and operations to assess changes in the air transport system and their effects at an early development stage.



The Future Air Traffic Simulator embedded in the validation platform for optimization and validation of air traffic concepts.

FATS provides a variety of traffic management options influencing trajectory generation, including:

- Sector-based
- Flight-centric ATC
- Trajectory-based operations

These parameters are applied to the simulated execution of flights, including uncertainties and the simulation of failure events. Both, the planning and execution phase are supported by several optimization tools reacting on the analyzed data.

For post-processing and evaluation, FATS provides a variety of metrics. The executed trajectories are evaluated with respect to flight duration, fuel burn, emissions, horizontal flight efficiency, flight costs, or distance flown.

Future Air Traffic Simulator

The Future Air Traffic Simulator (FATS) performs optimization and validation of new concepts considering feasibility, throughput, cost- and ecological efficiency, as well as robustness. Based on different evaluation and optimization tools, complete traffic scenarios can be analyzed and improved both strategically and tactically up to a global level.

ATM Performance Assessment

The Future Air Traffic Simulator (FATS) evaluates the influence of changes in the air traffic system from an ATM perspective. The upper figure gives an overview of the capabilities. FATS is integrated in the Aviation Life Cycle and Impact Assessment (ALICIA) platform. A strategic planning is performed based on flight demand data, weather forecast, as well as flight performance and emission models.

It provides the capability to consider different parameters influencing flight efficiency, as

- Route length
- High altitudes
- Tailwind
- Respect no-fly-zones
- Contrails, non-CO₂ effects
- Separation adherence

New concepts and technologies are evaluated with respect to ATM:

- New configurations
- Alternative fuels
- New setups and procedures

