

Total Operations Planner

Vision

Within the research framework of “Total Airport Management” (TAM) the German Aerospace Center, Institute of Flight Guidance, developed a new type of planning system. This tool regards stakeholder’s needs in connection with flight operations at an airport and its vicinity.

Integrated Planning Tool

The new Total Operations Planner (TOP) supports the stakeholders Air Traffic Control, Airport Operator, ATFCM (Air Traffic Flow and Capacity Management) and Airlines at their common goal of optimized airport resource usage.

Additionally, TOP helps to find quick and optimal solutions in bottleneck situations in a cooperative way.

In consideration of partners’ wishes and possibilities the pursuit of economical goals is supported.

A transparent decision process ensures fairness between the involved parties



Procedure

TOP creates advisories of capacity usage and event target times for every planned flight in the pre-tactical time horizon.

To guarantee an optimal runway usage for arrivals and departures, TOP’s planning process is adaptable to particular airport constraints.

Calculations are based on actual flight information, weather and capacity forecasts.

The planning solution is presented to the stakeholders' agent on a graphical human machine interface (HMI) which conforms on his specific needs.

By presenting additional information, stakeholders are able to synchronize the planning result with their available capacities and medium-term goals.

If problems are detected at this moment, TOP supports what-if computation and simulation to obtain alternative proposals more satisfactory to the stakeholders.

TOP's integrated mechanism allows each party to present new advices to the other stakeholders immediately.

Resulting possibilities could be discussed and a coordinated airport operations plan could be established and implemented.

Interfaces

TOP has a central database for storage and internal communication, which can be used as well as an interface to external systems. Thus tactical planning systems like arrival and departure managers (AMAN / DMAN), and tools for data analysis are connectable to TOP.

TOP is able to use tactical planners' information, i.e. tactical target times, and other specific and precisely known constraints. TOP regards them at its next planning cycle as concrete guidelines.

Modularity

TOP is designed as a modular system. Thereby both extensibility and flexible adjustment to different airport configurations is easy possible.

First Prototype

Within the LUFO-3 Project K-ATM (Kooperatives Air Traffic Management) a first prototype CLOU (Cooperative Local resOURce planner) was developed in association with Deutsche Flugsicherung (DFS). CLOU prototypically implements first functions of a TOP.

AT-One combines the strength of NLR and DLR in ATM Research

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