

Supporting
European
Aviation



Evaluating Economic Benefits of Air Traffic Management Projects

ART Workshop 'Aviation Economics and Business Models'

Kirsteen Purves

Business Case Senior Expert, EUROCONTROL

16 April 2019

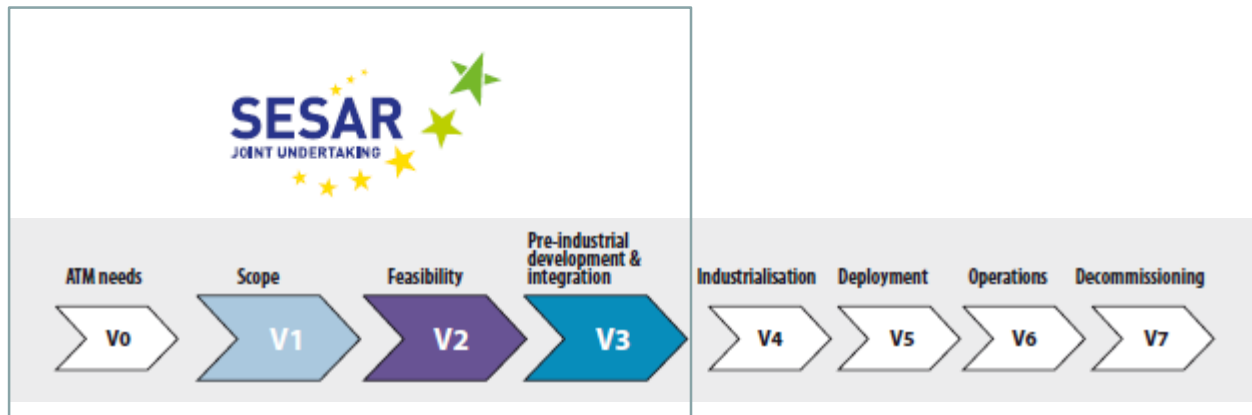


NETWORK
MANAGER



Scope

- Air Traffic Management (ATM) projects – R&D phase
 - Advanced Air Traffic Controllers Support Tools
 - Demand and Capacity Balancing tools
 - Trajectory Based Operations
 - Improved data accuracy and wider data sharing



- SESAR Solutions ([2019 Catalogue](#))
- Benefits → Performance impacts
 - SESAR Performance Framework – Validation

Key Performance Areas to Stakeholder Benefits

Key Performance Area (Focus Area)	Key Performance Indicator	Impact	Stakeholder Benefits
Capacity (Airport)	Runway throughput (flights/hour) At constrained locations during constrained periods	Additional movements	<u>Charges for the additional movements</u> <ul style="list-style-type: none"> - Airport Operator (Airport Charges) - ANSP (Terminal Airspace Charges) <u>Value from the additional movements</u> <ul style="list-style-type: none"> - Airspace Users - Scheduled Airlines

Benefits will come from Solutions addressing runway occupancy time, departure separation minima,

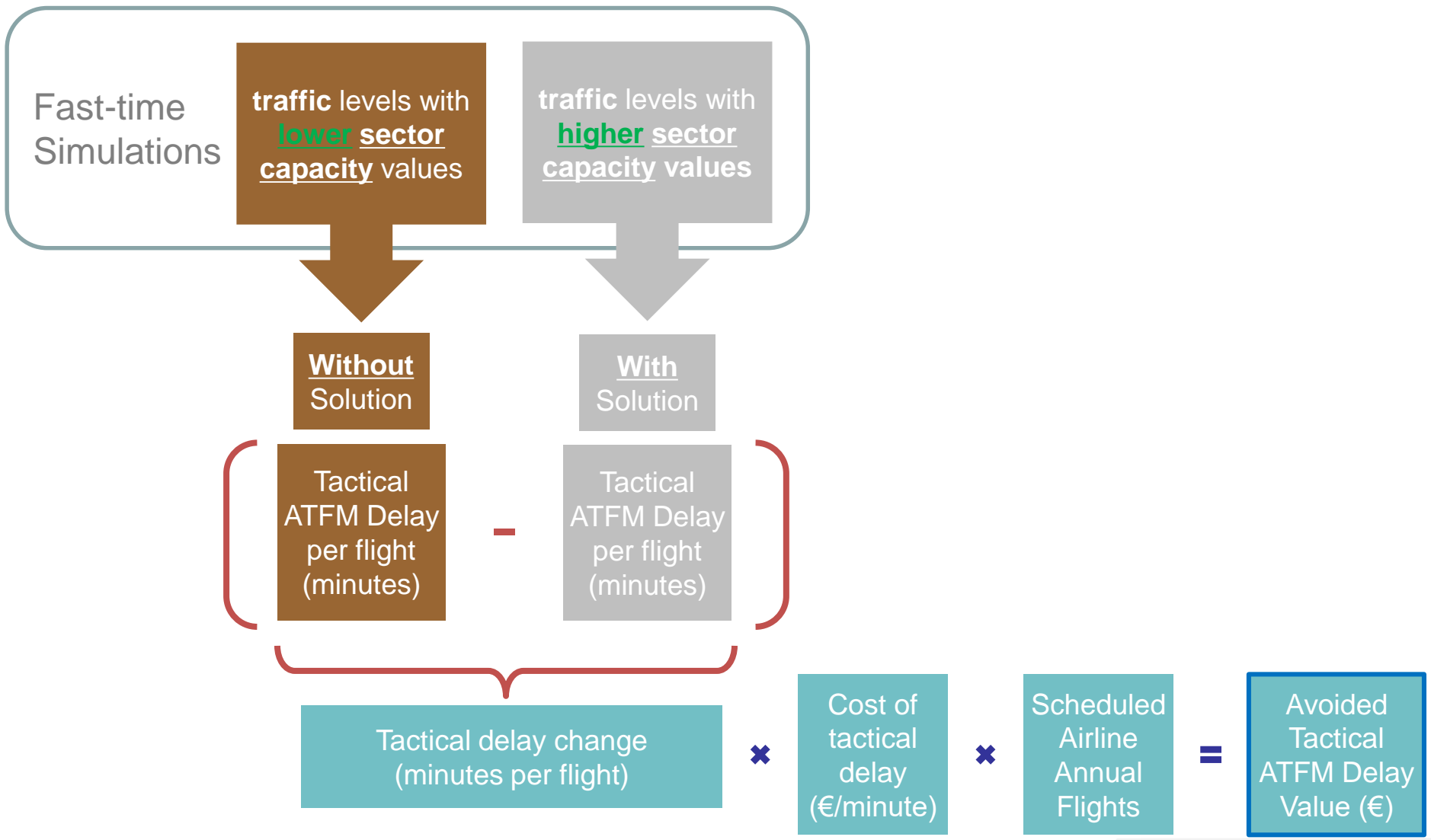
Key Performance Area (Focus Area)	Key Performance Indicator	Impact	Stakeholder Benefits
Capacity (Airspace)	En-Route Throughput (% and number) At constrained locations during constrained periods	Reduced Tactical ATFM delays	<u>Avoided costs of delay</u> <ul style="list-style-type: none"> - Airspace Users - Scheduled Airlines - Airport Operators (accommodating delayed aircraft) - Passengers

Benefits will come from Solutions addressing improvements in separation management, complexity management, Air Traffic Flow and Capacity Management (ATFCM), Airspace Management (ASM), ...

Capacity (Airspace) - En-Route Throughput

- Reduce controller workload
 - Provide additional functionalities (alerts, visualisations, ...)
 - Make traffic flows less complex
 - Increase trajectory prediction accuracy
 - Remove routine tasks
- Test if the Solutions enable controllers to handle increased traffic levels (simulated with prototypes)
 - Local level
- Delay propagates through the network
 - Fast-time simulations

Capacity (Airspace) → Avoided costs of delay



Other Benefits

- Environment

- Enable Free Route Airspace - shorter distance flown/flight time
 - Reduced fuel burn – Airspace User benefit
 - Less CO2 emissions – Airspace User benefit

$$\begin{array}{|c|} \hline \text{Fuel} \\ \text{Efficiency} \\ \text{(kg per flight)} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{Scheduled Airline} \\ \text{Annual Traffic} \\ \text{(flights)} \\ \hline \end{array} \times \begin{array}{|c|} \hline \text{Fuel Price} \\ \text{(€ per kg)} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Value of fuel} \\ \text{saved} \\ \text{(€)} \\ \hline \end{array}$$

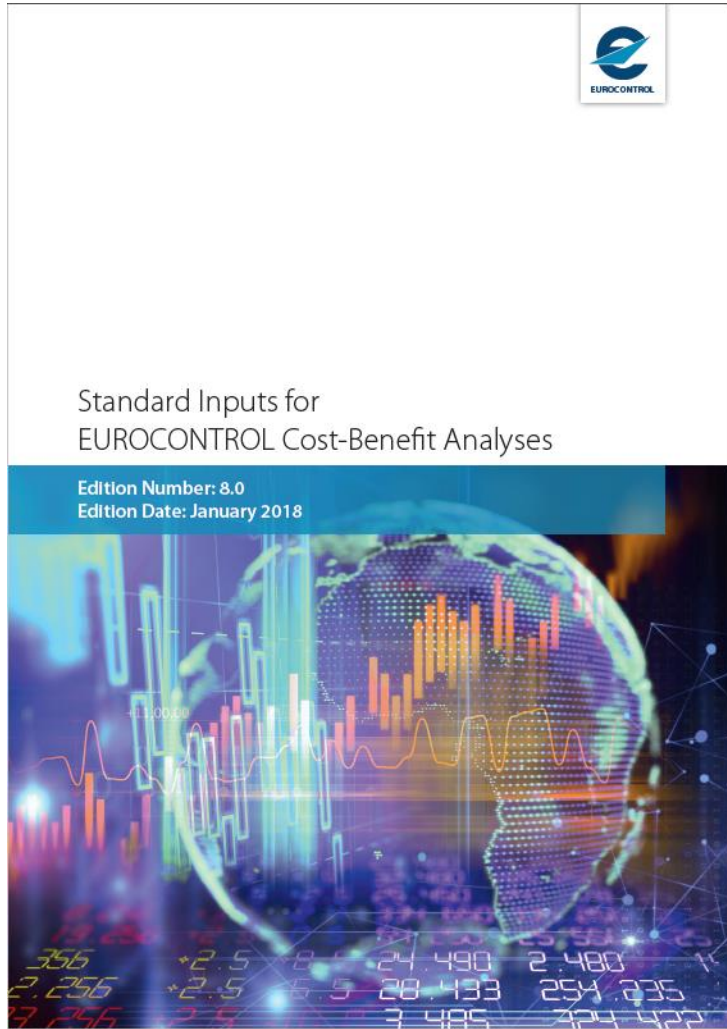
- Reducing Uncertainty

- Increased certainty on where an aircraft will be and when
 - Improved data accuracy and wider data sharing among stakeholders
 - Potential to reduce buffers by improving predictions
 - Scheduled Airlines – reduce buffers in scheduled flight durations (Predictability)
 - ANSP – reduce buffers on declared sector capacity values

Challenges of evaluating benefits

- Finding relevant data
 - Monetising noise reduction benefits (hedonic pricing, ...)
 - Safety benefits (reduced risk, need data on frequency and severity)
- Defining mechanisms
 - Cost of delay for airports
 - Technological projects

Questions?



- Standard inputs for EUROCONTROL Cost-Benefit Analyses