

Capacity Crunch – What do we do for 2019?

EUROCONTROL Network Manager Capacity Measures

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The Capacity Equation

- Large areas with capacity deficit
- Investigating any feasible action
- Engaging with all ops stakeholders

$$\begin{aligned}
 \mathcal{L}_{GWS} = & \sum_f (\bar{\Psi}_f (i\gamma^\mu \partial_\mu - m_f) \Psi_f - e Q_f \bar{\Psi}_f \gamma^\mu \Psi_f A_\mu) + \\
 & + \frac{g}{\sqrt{2}} \sum_i (\bar{b}_L^i \gamma^\mu b_L^i W_\mu^+ + \bar{b}_L^i \gamma^\mu a_L^i W_\mu^-) + \frac{g}{2c_w} \sum_f \bar{\Psi}_f \gamma^\mu (I_f^3 - 2s_w^2 Q_f - I_f^3 \gamma_5) \Psi_f Z_\mu + \\
 & - \frac{1}{4} |\partial_\mu A_\nu - \partial_\nu A_\mu - ie(W_\mu^- W_\nu^+ - W_\mu^+ W_\nu^-)|^2 - \frac{1}{2} |\partial_\mu W_\nu^+ - \partial_\nu W_\mu^+ + \\
 & - ie(W_\mu^+ A_\nu - W_\nu^+ A_\mu) + ig' c_w (W_\mu^+ Z_\nu - W_\nu^+ Z_\mu)|^2 + \\
 & - \frac{1}{4} |\partial_\mu Z_\nu - \partial_\nu Z_\mu + ig' c_w (W_\mu^- W_\nu^+ - W_\mu^+ W_\nu^-)|^2 + \\
 & - \frac{1}{2} M_\eta^2 \eta^2 - \frac{g M_\eta^2}{8 M_W} \eta^3 - \frac{g'^2 M_\eta^2}{32 M_W} \eta^4 + |M_W W_\mu^+ + \frac{g}{2} \eta W_\mu^+|^2 + \\
 & + \frac{1}{2} |\partial_\mu \eta + i M_Z Z_\mu + \frac{ig}{2c_w} \eta Z_\mu|^2 - \sum_f \frac{g}{2} \frac{m_f}{M_W} \bar{\Psi}_f \Psi_f \eta
 \end{aligned}$$

2019 Network Outlook

2018

En-route delays

**Initial Forecast =
2.00 mins/flight**

**Result = 1.72
mins/flight**

2019

En-route delays

**Initial Forecast
Without NM measures
4.00 mins/flight**

**Final Forecast
With NM measures,
including tactical
1.9-2.28 mins/flight**

Performance Target = 0.5 en-route delay mins/flight

EUROCONTROL NM Action Plan

**Enhanced
Network
Measures**

**Network
Operations
Plan**

**Network
Weather**

**Network ATFM
Regulations**

EUROCONTROL NM Network Measures for 2019 x7

**Civil/Military -
FUA**

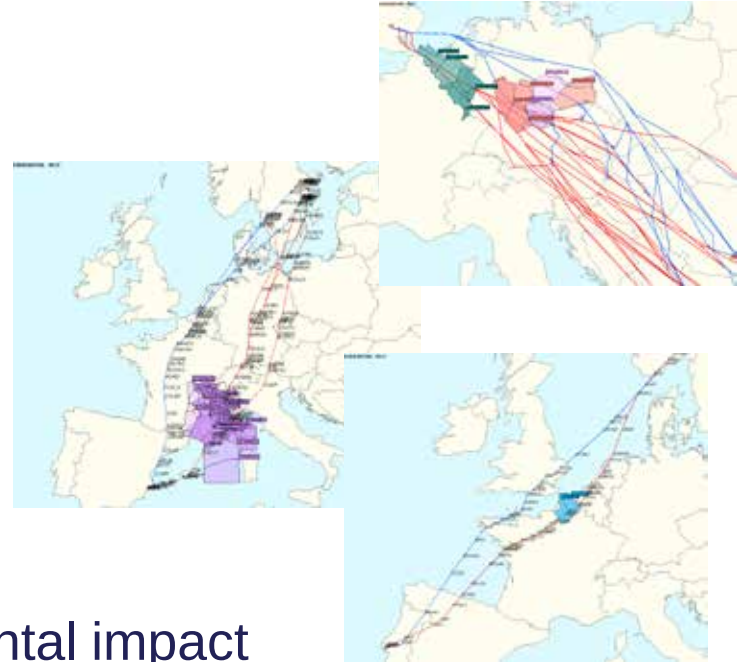
**Airspace
Bottlenecks**

Strikes

eNM/S2019

Enhanced NM/ANSPs Network Measures for summer 2019

- 2200 sectors assessed
- Any capacity available exploited
- 19 million minutes of delay mitigated
- Limiting as much as possible environmental impact



Network Operations Plan 2019-2024

- 30 bi-lateral meetings
- Transparent information available
 - Sector opening schemes
- Full commitment necessary
- Strategic decisions required for the longer term



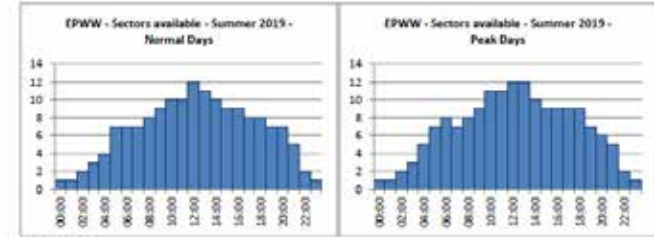
European Union
European Commission



European Network Operations Plan
2019-2024



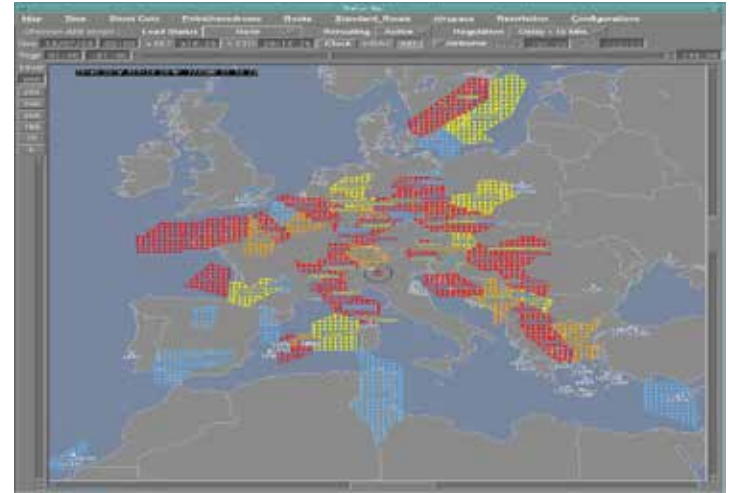
Edition March 2019



All times UTC

Network Weather and ATFM

- Network procedures proposals developed
- Roles and responsibilities defined
- Limit unnecessary delay and traffic volatility
- NM CDM process February – April 2019



Civil/Military and A-FUA

- Procedures at Network Level
 - Alignment of military bookings for peak times
 - Improve data accuracy
 - ASM/ATFCM scenarios
- Enhanced cooperation in FABEC Area

European Route Network Improvement Plan

PART 3 Airspace Management Handbook Guidelines for Airspace Management

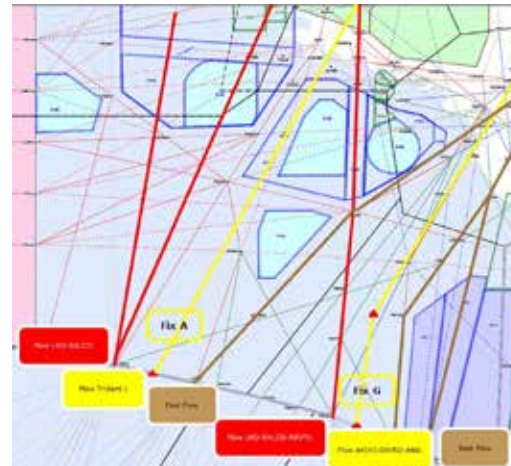
European Network Operations Plan 2018-2019/22

Edition December 2018



Airspace Bottlenecks

- Cross-border approach
- FRA based
- France/Spain Interface
- FABEC Area
- Central/SE Europe



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Adressing network capacity in 2019

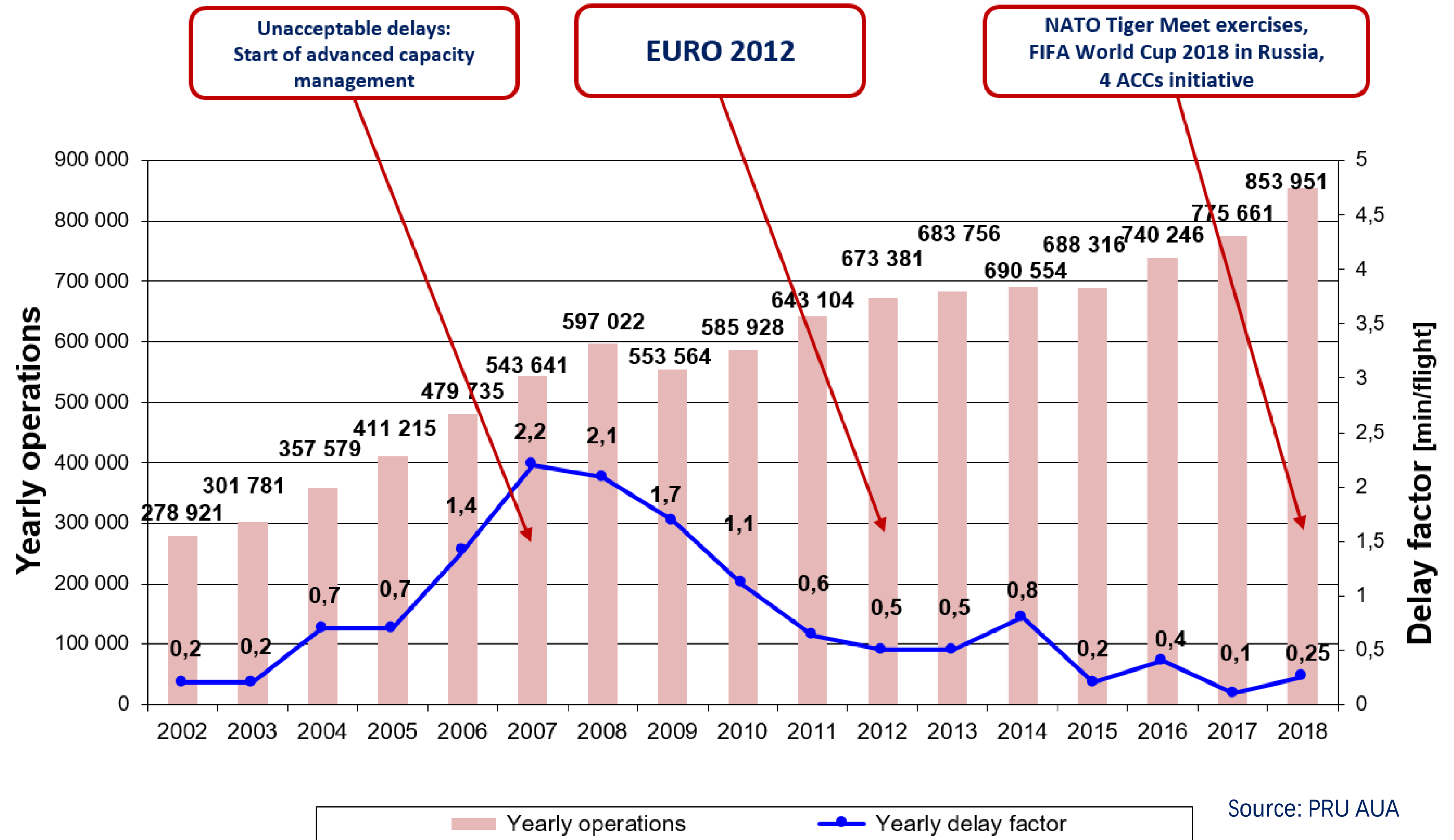
PANSA situation and approach



PANSA operations and enroute delays 2002 - 2017

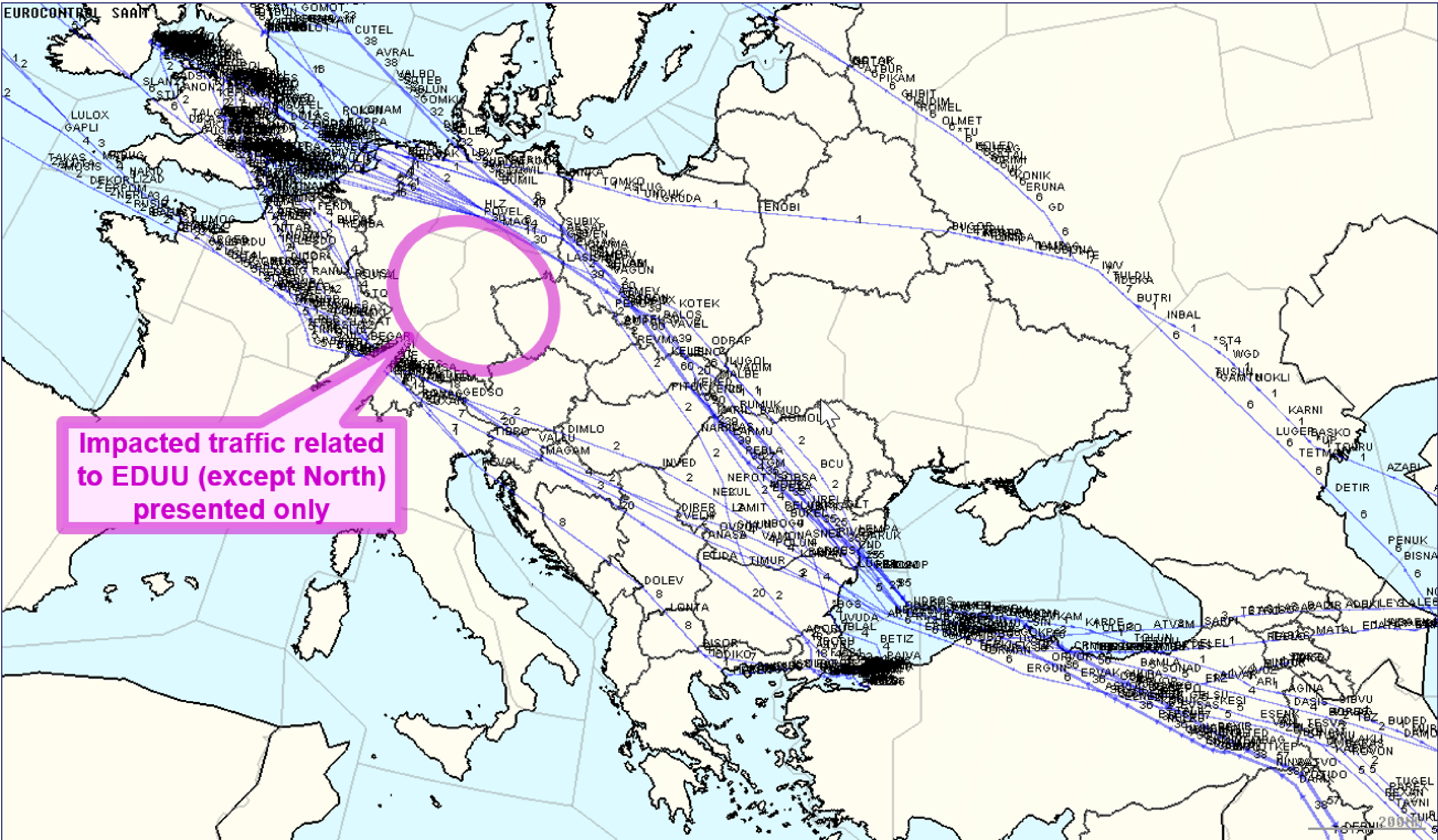
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Since 2015
constant
traffic growth
above
STATFOR High
scenario



pansa

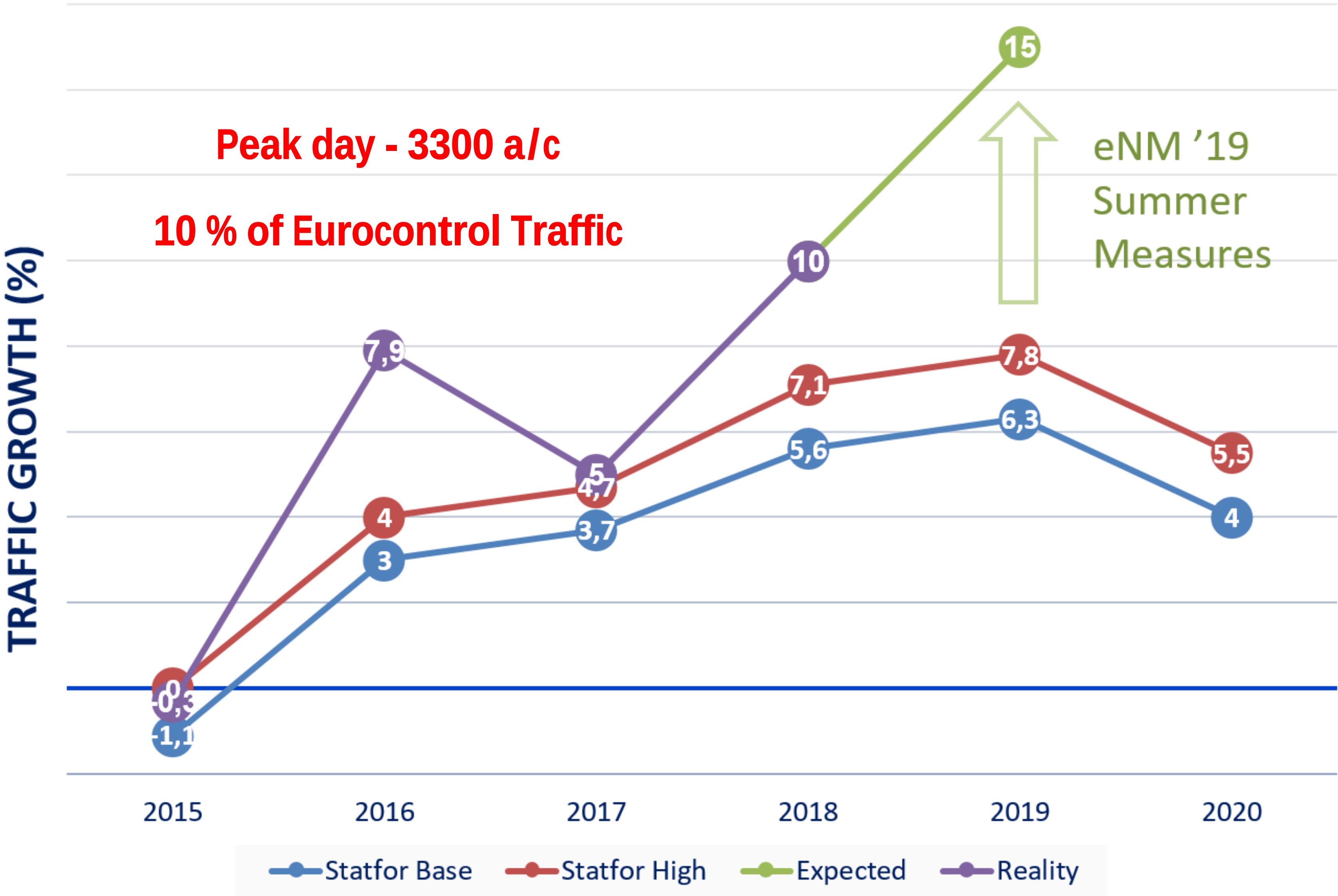
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Source: EUROCONTROL



Potential 15% growth in August 2019 – with eNM'19 Summer Measures



Dynamic capacity
management

Dynamic sector
management (more
than 1 800 possible
sector configurations)

Flexible and dynamic
rostering

High traffic loads



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