

STUDY: Airport Capacity Imbalance

PRC Webinar

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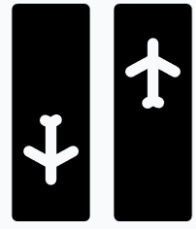
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STUDY: AIRPORT CAPACITY IMBALANCE

Purpose:

- Analysis of potential capacity loss at airports when using different configurations.
- Identify how “resilient” an airport is to the changes in runway configurations, by studying the impact on capacity and performance.

Elements of the analysis



- Runway configurations



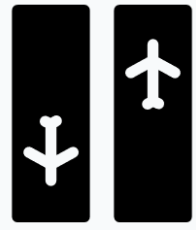
- Runway system capacity



- Performance



Elements of the analysis



- Runway configurations

- Common methodology for the identification of configuration based on APDF data.



- Runway system capacity

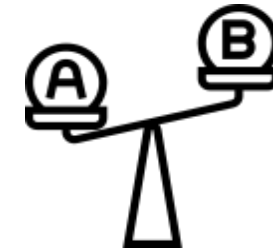
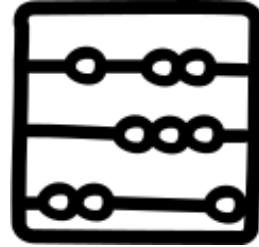
- Peak Service Rate used as proxy.
- Maximum throughput also analysed to complete the picture.



- Performance

- Additional taxi-out and ASMA times.

Approach



1. APDF in 15 min time intervals

2. Count ARR&DEP per runway

3. Runway configuration for each interval. Probability

4. Calculate peak service rate and performance for each runway configuration

5. Calculate imbalance and resilience

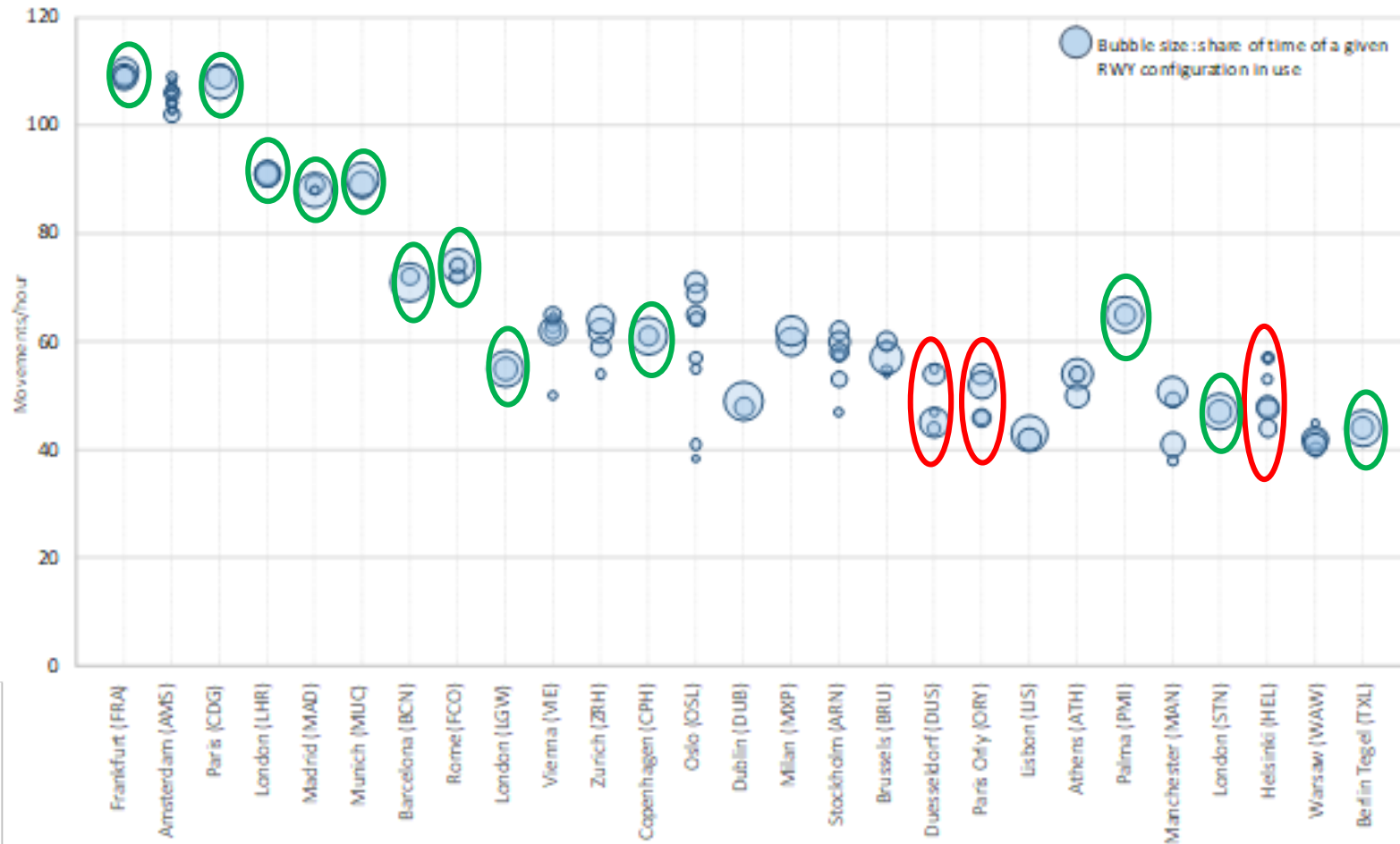
- Post operational data driven approach
- Airport Operator Data Flow (APDF)
- 90 airports analysed on 2019 data

Results

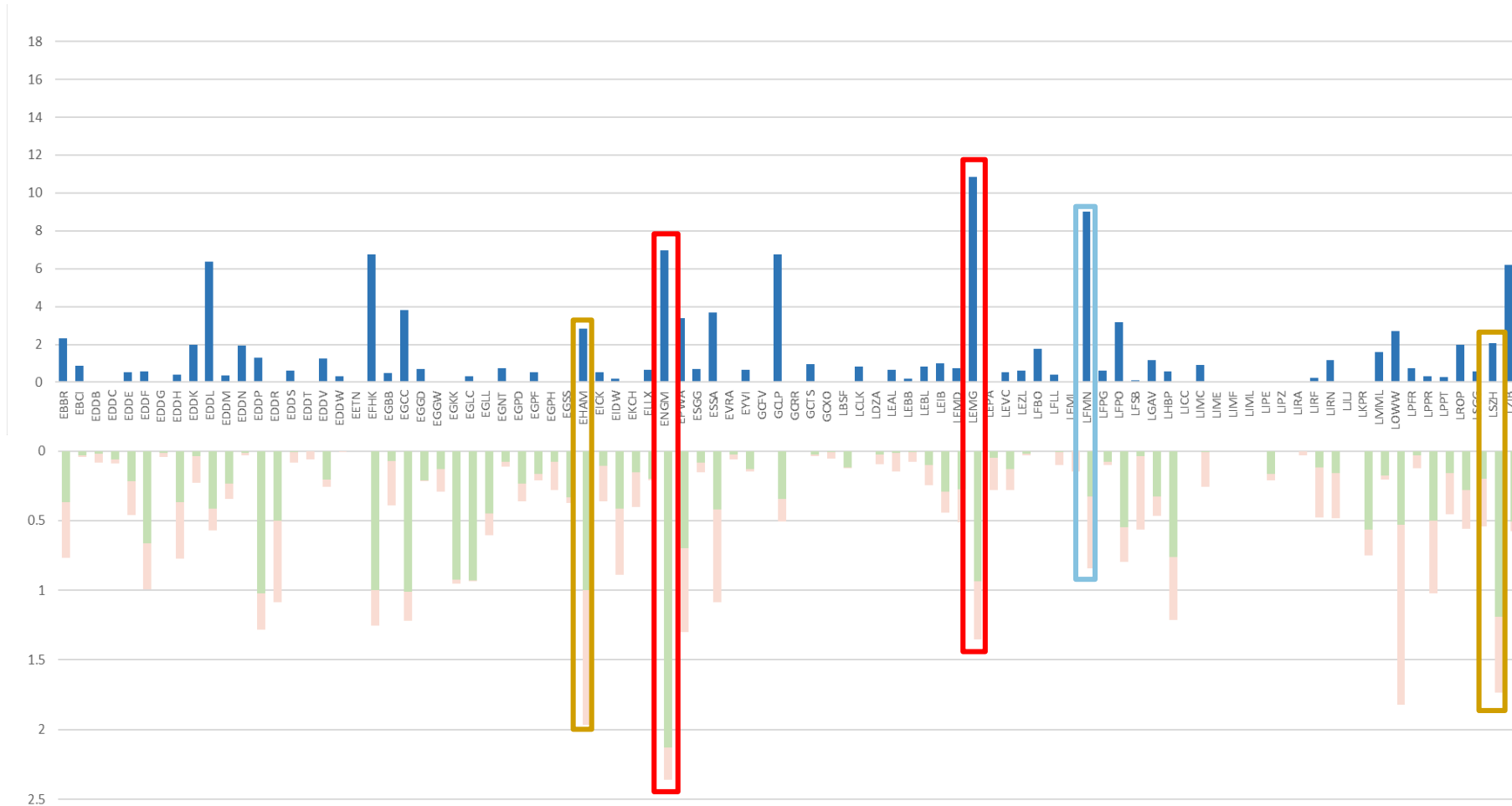
- Identified representative configurations (probability > 3%) cover most of the operation (more than 95% in most cases) and good correlation with declared configurations in airport corner (when available)
- Peak Service Rate as proxy for capacity provides the level of imbalance in throughput.
- The impact on the level of performance, on both Peak Service Rate and additional taxi-out and ASMA times gives a comprehensive understanding of the imbalances detected between configurations and their impact.

Results: Peak service rate as capacity indicator

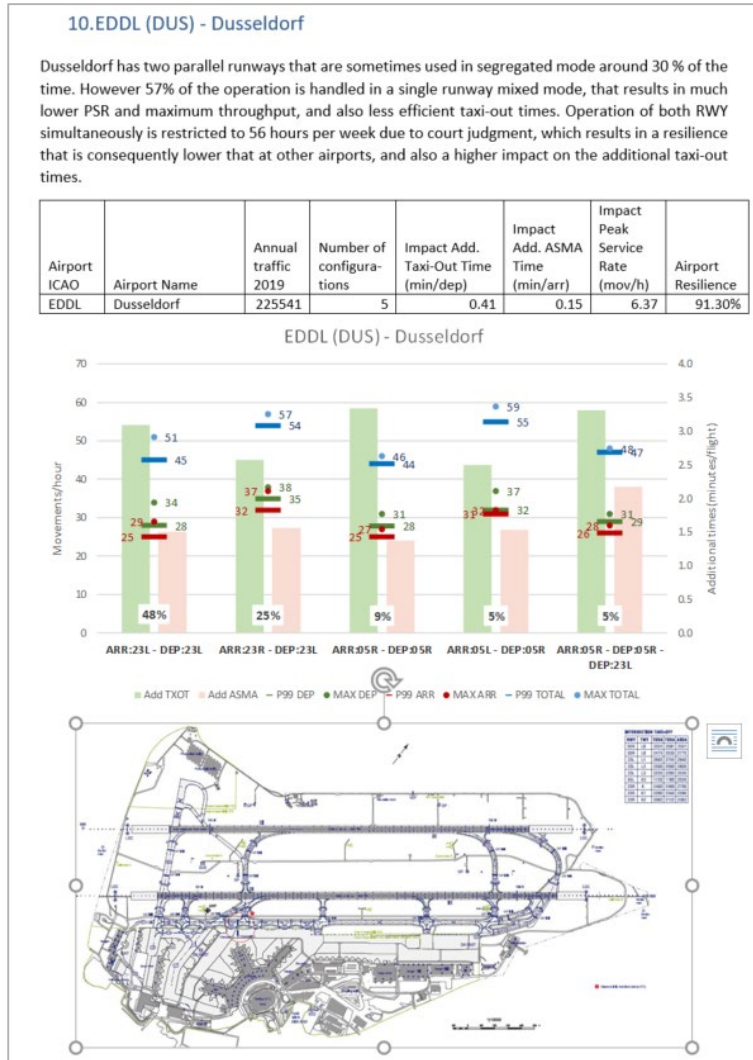
Peak Service Rate Total throughput (arr + dep) at the top 30 airports in 2019 per runway configuration



Results: Impact on PSR and additional times



Detailed results per airport



Detailed view per airport including the results per configuration and a brief analysis on the observed imbalances.

Conclusions

- Data-driven methodology for the identification of the runway system configuration (actual airport operation)
- Peak service rate lower than capacity at non-congested airports.
- Dynamic indicator; evolution can be monitored.
- Most airports do not show a drastic impact on the capacity, but some of these where capacity does not drop significantly, show a clear deterioration in performance.
- A few airports show clear impact on both capacity and performance.

Thank you

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