

**The project has been already closed.  
It is not guaranteed that all the information is still actual.**

## Airport Airside Capacity Enhancement

Funding: European (Other)

Duration: 02/2002 - 11/2006

## Background & policy context

The need to enhance capacity at an airport is clear at many airports within Europe. Increased demand for airport slots cannot be met, delays are increasing and growth is restricted. In many cases, investment in new infrastructure takes time in order to resolve environmental, political and cost issues and the potential for significant increases in capacity appears limited.

## Objectives

However, existing infrastructure is often under-utilised using inefficient practices and procedures. The Airport airside Capacity Enhancement (ACE) projects the means to release this "latent" capacity through:

- accurate measurement of the performance of the airport operation,
- assessment of the capacity of the airport and,
- enhancement of ATC, pilot and airport operator performance via the implementation of Best Practice techniques.



## Methodology

Capacity at an airport is limited by a variety of constraints with the most restrictive of these governing the overall capacity. In order to sustain growth, the airport must engage in Airside capacity planning to meet future demands. Therefore, the primary objective of this process is to provide a structure for identifying and targeting the constraints that are limiting current or future capacity. It starts by quantifying the capacity requirements for the short and medium term and then determines what constraints will impact on the ability of the airport to achieve those requirements. The prerequisites are to have an in depth knowledge and profile of the current and forecast capacity requirements, understanding of all constraints that can affect the process and accurate and reliable information on all areas associated with the development of the airport.



**The Airside Capacity Planning Method Document describes a step by step process leading to the development of a Capacity Plan:**

- **STEP 1** – Establish the baseline capacity
- **STEP 2** – Determine future demand
- **STEP 3** – Determine if a shortfall will exist
- **STEP 4** – Identify the constraints
- **STEP 5** – Score the constraint impact
- **STEP 6** – Identify remedial actions
- **STEP 7** – Score the remedial action impact and cost
- **STEP 8** – Establish priorities
- **STEP 9** – Establish Capacity Enhancement Plan

One of the project's outcome is the creation of the ACE Implementation Manual that is briefly described below:

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## ACE Implementation Manual

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### Volume 1

**Volume 1** provides a Quick Start Guide to the complete Airside Capacity Enhancement Package and contains Interactive and multimedia materials.

Capacity Planning and Capacity Enhancement methods, based on best practices, and developed by EUROCONTROL, are central to this package together with the involvement of all the key players on the airport stage.

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### Volume 2

**Volume 2** provides a high-level overview of EUROCONTROL methods for airport airside capacity enhancement and capacity planning.

The material is targeted at managers and other staff wishing to implement airside capacity enhancement measures. The method described for releasing latent capacity, providing airport stakeholders with short to medium term benefits, typically requires little investment and is relatively easy to implement.

The importance of involving pilots and air traffic controllers at an early stage is highlighted and methods are proposed to achieve this effectively. For the longer term, capacity management methods based on accurate planning are described. The constraints to growth are evaluated and scored as are the various methods suitable to mitigate the constraints.

The results are used to establish priorities for planning and budgeting. The importance and benefits of cooperative action between all airport partners is shown conclusively. It is important to note that activities to release latent capacity and capacity planning for the longer term must happen in parallel. One should not wait for the other.

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### Volume 3

**Volume 3** contains detailed material on all aspects of airside capacity enhancement relevant to airport operators.

It also touches briefly on the land-side factors that may influence capacity through their complex interactions with the air-side issues.

The leading role and corresponding responsibilities of the airport operator are described and explained.

The concept of 'measure to manage' is introduced followed by detailed descriptions of how to conduct performance studies and how to measure performance.



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A whole section deals with the analysis of the results, highlighting the need for trust, anonymity and a no-blame culture.

Guidance is given on how to improve the airport infrastructure, both in terms of pavements and facilities such as lighting, signs and markings.

The need to improve existing facilities before necessarily constructing new ones is especially highlighted. The subject of Rapid Exit Taxiways (RETs), their design, location and use, is treated in detail as is the importance of traffic mix and scheduling.

Land-side issues and environmental aspects are also addressed at the end of the Volume.

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## Volume 4-1

**Volume 4-1** concentrates on the airside capacity enhancement activities specific to air traffic control operations.

The importance of having a continuous and frank dialogue between aircraft operators, the airport operator and air traffic control is highlighted.

ATC operating procedures are reviewed with a fresh look at their potential to enhance airside capacity. A separate section is devoted to the complicated interaction between airports and the airspace around them. The need to consider the interaction of nearby airports is elaborated, as this scenario is increasingly common in Europe.

A new concept, tower resource management is introduced and explained in the light of the well-known concept of cockpit resource management. ATC performance management, enabling efficiency improvements, to unlock latent capacity is also included in this section. In all cases, the need to focus on the performance of the whole operation rather than that of individuals is highlighted. Awareness raising and capacity study recommendations conclude this Volume.

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## Volume 4-2

**Volume 4-2** contain case studies illustrating how the practices outlined within Volume 4 have been successfully applied across Europe. Each case study has been chosen to show clearly how ACE practices have enhanced airside capacity at key airports around Europe.

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## Volume 5

**Volume 5** concentrates on the airside capacity enhancement activities specific to Airline Operations.

The time an aircraft spends on the runway during take-off and after landing is a significant factor in influencing the maximum capacity of the runway. The shorter the Runway Occupancy Time (ROT) of each aircraft, the greater the available runway capacity. Aircraft operator and pilot procedures have a significant influence on runway occupancy times. Safety, passenger comfort and



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operational economy considerations may limit the possibilities for the application of best practices that can potentially reduce runway occupancy times.

Nevertheless, actions to raise the awareness of pilots and aircraft operators of issues related to runway occupancy times have the effect of releasing latent capacity. Like any measuring of human performance, monitoring runway occupancy times raises many professionally sensitive issues. However, involvement of the pilot community and avoidance of measurements that focus on individuals usually result in wide-spread buy-in and support from pilots.

While the primary concern is always the safe operation of aircraft, especially in the critical landing and take-off phases, pilots are also willing partners in the common effort to increase runway throughput via the reduction of runway occupancy times. A set of expert insights complements the list of best practices, providing useful explanations that help in understanding the issues and limitations faced by pilots and aircraft operators in trying to meet the runway occupancy time objectives. Finally, a set of best practices for pilots and a key action checklist for airlines, which have proven effective in enhancing capacity, complete this volume.

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## Volume 6

**Volume 6** provides technical instructions and guidance for the use of the EUROCONTROL analysis and modelling tools; PIATA+ and CAMACA.

A software installation CD accompanies the printed material. Included is guidance on configuring of PIATA+ for a specific airport, preparing and loading of flight data, creating reports of measured indicators and performing "what if" Analysis, Goal Seeking and Sensitivity Analysis. The CAMACA user guide is provided in electronic format together with the software on the installation CD.



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