



THE 2050+ AIRPORT PROJECT

The FP7 project Airport 2050+ explores radical and novel solutions to prepare airports for the year 2050 and beyond.

Key to the project is the assumption that the airport of the future must address a wide variety of different, sometimes contradictory objectives. To this end, the project develops three different concepts to support development of the airport of 2050 and beyond:

- **The time-efficient airport** concept to maximize the value of time through efficient and effective air transport operations.
- **The cost-effective airport** concept to create an airport with extremely low operating costs and optimal revenues.
- **The ultra-green airport** concept to make the airport self-sufficient regarding its energy needs and to support climate neutral operations with limited noise exposure to municipalities surrounding the airport.

The concepts provide insight into the time-efficient, cost-effective and ultra-green airport of the future including the level of performance that can be expected in these three core areas.

The method for describing and developing airport concepts uses the Value Operations Methodology (VOM). This model is based on the idea that the value of a system can be expressed by its difference in performance compared to a reference. In terms of the 2050+ Airport methodology, the value model utilizes variations in operational characteristics to infer changes in perceived customer value.

Validation of the three concepts takes place addressing 'Identification of needs' (V0) and 'Scope definition' (V1) maturity

levels by using different techniques such as Paper Gaming, Expert Groups (CE & UG) and Analytical methods (TE).

The three airport concepts aim to support the development of existing and new airports in Europe by providing a 3-dimensional vision on future requirements for optimal and seamless service provision, for cost- and revenue competition within a competitive world and for answers to the environmental and sustainability challenges of 2050 and beyond.

For more information please visit:
www.2050airport.ineco.eu

Project details:

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TIME-EFFICIENT CONCEPT

The goal of the Time-Efficient airport is to transform airport operations and infrastructure in such a way that the throughput times, both for passengers and aircraft, are minimized and seamless intermodality between transport modes is enabled. To achieve this, Time-Efficient airport solutions have focused on:

- Dealing with current and expected bottlenecks in air transport operations.
- Minimizing the duration and the waiting times of airside and landside processes.
- Changing the infrastructure to enhance time-efficiency in operations.

A look at the concept solutions unveils intelligent, collaborative and automated systems capable of reducing the time required to perform several processes while reacting to the daily needs of the airport stakeholders. Also infrastructural changes that remove hindrances for time-efficient operations are introduced, altogether with mobile information systems which assist and guide the passenger to reduce misinformation-related delays and improve the time performance of processes such as passenger boarding and transferring between modes.

ULTRA-GREEN CONCEPT

The "Ultra-Green airport" is the airport that has been designed and is operated and managed in such a way that environmental impacts are minimized or made sustainable. Based on new forthcoming technology it aims to make sure all the resources are used and managed in the most efficient way possible in order to give the least environmental footprint and the best service to all stakeholders. To do this the airport applies intelligent, collaborative, dynamic and automated systems capable of reacting to the daily needs of its stakeholders. Five major principles underlie the specific Ultra-Green solutions that form part of the airport concept:

- Aircraft engine use is reduced or nil;
- Airport resources used as effectively as possible to reduce vehicle and infrastructure emissions and waste production.
- Offers a seamless connection to the encompassing, multi-

modal transport system to support an efficient and sustainable trip door-to-door.

- Automation of Airport processes and leap from fossil to electric energy
- Reduction of airport infrastructure a more compact airport which diminishes overall land use and the environmental footprint.

The concept solutions proposed aim to replace fossil fuels by electric energy for many processes at the airport. In addition, the solutions support radical automation of processes to improve efficiency and thereby reduce their resource consumption. Finally, the purpose of the concept ideas is to make the airport infrastructure more compact resulting in a reduced overall land use and environmental footprint.

COST-EFFECTIVE CONCEPT

The cost-effective airport is the airport that has been designed, operated and managed in such a way that:

- The direct and indirect operating costs are minimized and
- The revenues are kept as high as possible.
- The new infrastructure investments (either for expansion or for newly developed airports) are optimized for maximum return on investment and minimum payback period.

In terms of layout/structure it is foreseen that by 2050 surface transport to and from the airport will be much quicker, more efficient and more predictable. In addition, security processes will probably consume less time than nowadays. As a result, the future airport terminal might change significantly. Given the fact that airport terminals are one of the biggest cost centres for airports today, an important reduction of overall costs can be achieved by moving the landside part of the terminal towards city centres/railway stations. The required infrastructure and service centres can be shared with other transport modes, increasing the revenue/cost ratio. In addition, automation of processes at airports will also have a strong impact on the costs and revenues of airports.



CONCEPT VALIDATION

Validation of the three concepts takes place addressing identification of needs and scope definition of the concepts by using different techniques such as Paper Gaming, Expert Groups and Analytical methods.



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