A simple layout in which passengers can reach their destination in the shortest time possible is one of the key factors of terminal design.

Designing a brighter future

Perhaps the most common question that airport designers face today is how to plan for the future in an uncertain environment. During the past five years the industry has been hit with an unpredictable string of events including 9/11, airline bankruptcies, SARS and the Iraq war, as well as the ongoing threat of terrorism. However, industry experts have pulled through and are busy planning for a brighter future.

Design features

"There are a number of fundamentals that need to be right for a successful project," says Elliot Wishlade, airport planning business leader for ARUP. "Within the terminal, the key considerations are passenger flows, provision of appropriate queuing and processing facilities together with producing a building that aids passenger way-finding."

Ali Ozveren, senior partner at GMW Architects agrees. His team was recently awarded highly commended at the British Construction and Consultants Bureau International Expertise Awards for the fast-track construction and design of the new International Terminal at Istanbul Atatürk. Ozveren believes that the emphasis on promoting efficient passenger flow constituted a major part of the terminal's success.

"We believe we have provided a simple clear layout which provides passengers with distinctive and clear objectives as opposed to the complex plans of other airports where passengers have to follow numerous signs," he says. "In Istanbul the routes are very clear, passengers always walk forwards and there are no level changes. It makes the whole experience enjoyable."

But while this is a design feat for the terminal building, creating a successful retail environment means adopting a completely different mindset.

"Retailing now represents a major proportion of revenue generated at airports," says Ozveren. "In an airport terminal the primary goal is to get from A to B in the shortest time and distance possible, but in a shopping environment you must create a dwell time. Sometimes the retail areas are almost like a labyrinth so that passengers get lost and are likely to spend more."

The look of the terminal is also an important indicator of high-quality architectural design. According to Walter Müller-Werkmeister, diplom ingenieur architect for W&P Architects Engineers: "So-called 'international style' with glass, steel and natural stone is still successful, but individuality and efficiency and returning to the roots of design, could become a winning trend."

He also believes that the location of shops has an influence on shopper attitudes at airports: "They should be bypassed, not an obstacle race." Although, says Müller-Werkmeister, what is more important is "a long-term vision, even just for small, just-in-time projects".

GMW's modular and linear design for the first stage of the new International Terminal at Istanbul Atatürk proved to be a successful strategy that easily facilitated the extension of the terminal to accommodate the increased capacity, with minimal disruptions to existing operations.

The political turmoil in the 1990s resulted in the master plan for Belgrade International requiring a re-plan in the light of new traffic levels, changed travel patterns and tendencies.

Forecasting and master planning

A coherent master plan enables the airport to efficiently plan its growth within the framework of asset, operational, financial and environment management. It is essential that the master plan understands that an airport is a complex interaction of these functions and that to be useful, it must consider their inter-relationships.

ARUP's Wishlade is not afraid to admit that it is impossible to anticipate what will happen in 30 years. "The visionary part is to develop a framework that can accommodate many different future solutions. Primarily this is about land use planning and getting the correct balance between land reserved for future airside, terminal building and landside expansions, while accommodating all of the other facilities such as hotels, car parks and business parks that make the airport commercially successful."

Since 9/11, masterplanners Scott Wilson, which has worked on plans for airports all over the world from Brussels to Chiang Kai-Shek, has noted a significant downsizing of airport expansion plans as traffic levels fell below forecasts. However, it reports that figures are now hinting at a recovery, meaning that long-term plans remain valid.

Alan Campbell, head of airport infrastructure at Scott Wilson, says: "Land use plan is one of the most important tools in the master plan. It should be followed through the whole development of the airport to ensure coordination, balance and flexibility at all stages."

If it is recognised again, that a defining part of an airport's success is to generate money, then it is essential that the planning stages account for the unpredictable.

"The ultimate test only comes with time," says Wishlade. "However, often if you asked yourself some 'what if' questions, such as 'what if a large low-cost operator were to start operating at the airport', and test how the airport could respond, we get an understanding of how robust the master plan is."

Much like looking into a crystal ball, if there were unlimited amounts of space, it would be a simple matter. In the real world, the revenue generating potential of an airport is often inhibited not only by operational factors. As Campbell says: "Environmental issues have an increasingly political dimension and mitigation measures are now a very important aspect of masterplanning. Airports must be planned to be financially successful, to be able to accommodate substantial growth throughout their lives but also to present a minimal threat to the surroundings."

Environmental factors

"Minimising the environmental impact of airport surface access is likely to be one of the key challenges facing airports as demand and environmental pressures increase," says ARUP's Wishlade. "This will require careful consideration of connections to public transport modes to make them an attractive option."

Internally, architects are using natural materials. GMW's Istanbul project for example integrated the use of natural light, particularly in the departures level to create a light and airy space. As Istanbul is also one of the critical earthquake zones in the world an interesting part of its design was the implementation of 'seismic isolators', which help to sustain the structure by diverting pressure away from the supporting columns.

"An airport has an impact on the environment well beyond its boundaries and full consideration should be given to identifying and containing undesirable effects," says Scott Wilson's Campbell.

The last word

"As a result of unpredictable changes or complications in the aviation industry you have to be extremely cautious and design the terminal as a very flexible, adaptable framework in order to respond to the changing demands and unpredictable events," says Ozveren.

There is an increased demand for security measures, which runs the danger of perpetuating a 'cold' environment, while also presenting a need for more staff. "Providing an integrated retail offering with these security constraints can be very challenging," says ARUP's Wishlade.

Being able to balance needs and non-aviation revenues therefore is a key issue facing airport designers at this moment in time. The most obvious, but perhaps the most valuable piece of advice from W&P's Müller-Werkmeister is to 'start planning early', because you never know what's round the corner.

The design approach to the retail environment is fundamentally different to that of terminal design.