

Flexible design in airports essential for courting low-cost airlines

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The leading low-cost airlines with a preference for small, inexpensive airports are now the largest airlines in the United States and Europe, according to an MIT expert on airport design and operations, who said that airport planners in major metropolitan areas need to accept this paradigm shift and build flexibility into airport design.

Professor Richard de Neufville of MIT's Department of Civil and Environmental Engineering said that airport planners have been slow to grasp the reality that the business model of their largest customers has changed dramatically. Low-cost airlines require terminals half the size of legacy airlines, because they use space more intensively -- for instance, several gates share a single waiting area -- and the terminals contain few or no retail shops and restaurants. The reduced commercial activity results in fewer airport employees going through security checks, which provides the additional benefit of cutting passenger turnaround time in half.

Despite this, airport planners continue to design airports as grand public spaces.

"Airport planners are still building airports with fancy architecture and lots of retail space, but the low-cost airlines often won't use them. And the low-cost airlines are not necessarily small anymore; they are a growing sector that represents the future. They want smaller, cheaper airports that increase efficiency," said de Neufville, who added that, in general, smaller airports also have the advantage of fewer ground and air

traffic control delays.

In a recent issue of the journal *Transportation Planning and Technology*, de Neufville states that the largest carriers in the U.S. domestic and European markets are now low-cost airlines (Southwest Airlines in the U.S. and Ryan Air in Europe) that have outpaced the traditional large legacy airlines, such as American and Delta, in terms of market capitalization, airplanes owned (as opposed to leased), and newness of aircraft. To meet the needs of these new industry leaders, airport planners should rely on flexible design, so that a terminal's shape can be altered, say by building and tearing down walls, or expanding up or out.

De Neufville recommends flexible design that encourages airport planners to recognize that major airlines may go out of business, air traffic patterns and distribution may change or move to another airport, and incoming airlines may well reject the facility vacated by a previous customer. The solution is to think through the likely possible scenarios, anticipate responses to those, and incorporate maneuverability into design and operations. This may prevent business failures, such as expensive new terminals designed specifically for legacy airlines that later declare bankruptcy, leaving empty space that low-cost airlines won't use.

"The traditional airport design process is based on a 'most-likely forecast' that ignores uncertainties. These forecasts are always wrong, in that the actual level of traffic in five, 10 or 20 years and the types of traffic occurring are routinely very far off from original predictions," he said. "This can lead to some very embarrassing situations and expensive failures for airport owners."

According to de Neufville, the new JetBlue terminal at New York's JFK Airport will serve twice the number of passengers (20 million) as the recently built international terminal, using just half the space. The new

building will cost about the same as Delta's new terminal at Logan Airport (roughly half a billion dollars), but it will serve four times as many passengers. At Logan, JetBlue processes about 0.5 million passengers per gate annually, about twice the number of its neighbor, Delta.

Source: MIT

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