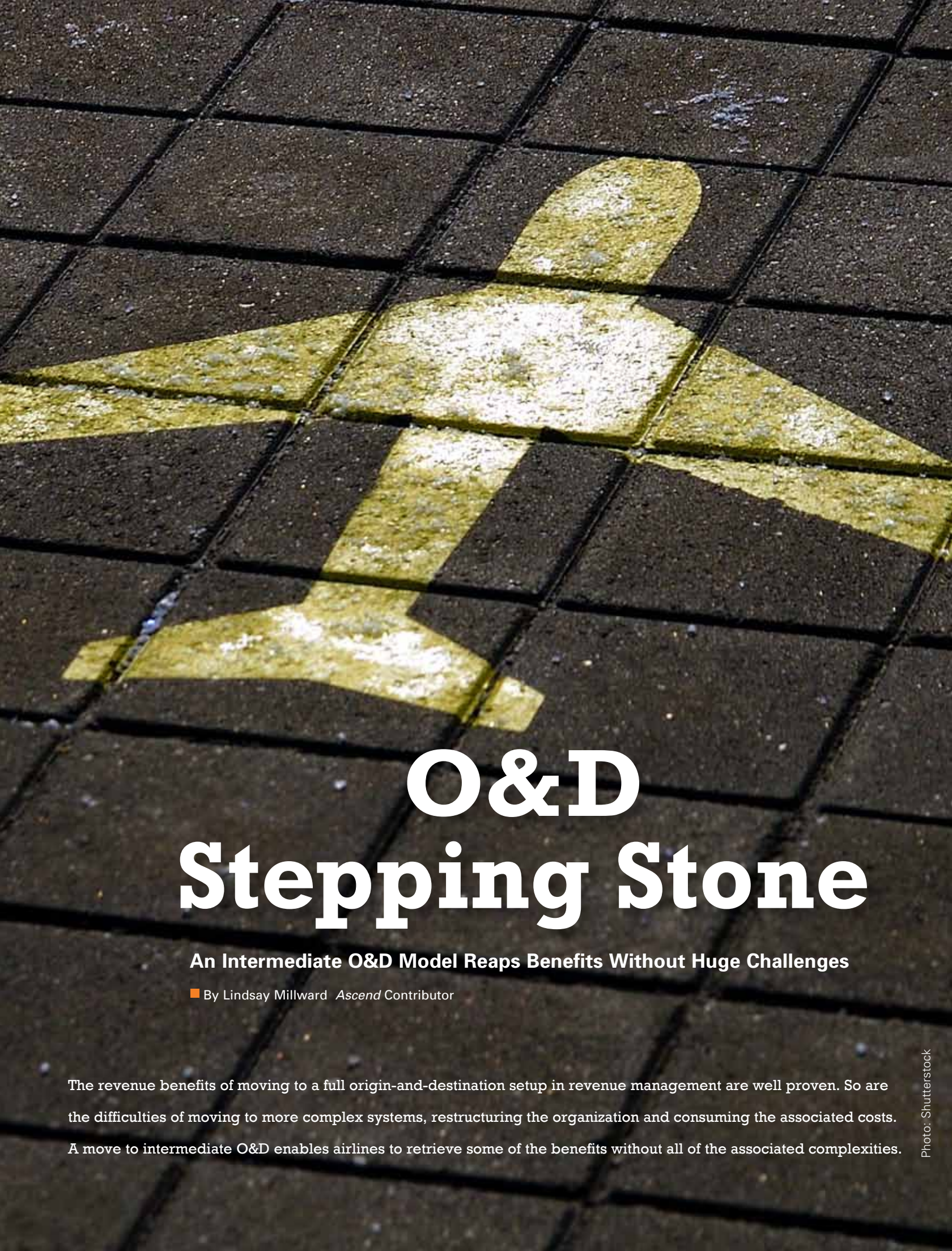

# O&D Stepping Stone

## An Intermediate O&D Model Reaps Benefits Without Huge Challenges

By Lindsay Millward *Ascend* Contributor

The revenue benefits of moving to a full origin-and-destination setup in revenue management are well proven. So are the difficulties of moving to more complex systems, restructuring the organization and consuming the associated costs. A move to intermediate O&D enables airlines to retrieve some of the benefits without all of the associated complexities.

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For years, airlines have been searching for the perfect revenue management methodology that most accurately fills the finite space on the aircraft based on passengers' willingness to pay and their overall contribution to the bottom line. Airlines with significant connecting traffic know the challenges of trying to reserve space for passengers whose end-to-end journeys contribute the most. Research shows that O&D (or a full origin-and-destination forecasting and optimization system) is the answer.

Yet, the complexity of moving to a full O&D operation can be enough to deter even the most bullish airline executives. The list of challenges and changes required can seem overwhelming, and the time to market can be extensive. It can take 12 to 18 months to collect the necessary data, implement the system and get analysts up to speed before the entire operation works like a well-oiled machine.

## Why So Difficult?

Technically, the requirements are complex and hefty. They require a PNR data warehouse that is updated daily as well as fares data by origin, destination and inventory class (or even point-of-sale inventory class). Generating and storing this volume of data can require significant investment by the airline and requires ongoing maintenance. Yet, it is simple when compared to the substantial human impact.

In a point-to-point (non-O&D) environment, analysts have complete control over their markets. They can analyze and adjust demand forecasts easily because there are typically 20 to 30 inventory classes to work with on any flight departure. They can view the exact availability on their market at any time as well as open or close classes in seconds.

In an O&D environment, there can be hundreds of ODIFs (O&D inventory fare classes) or even ODIF-PoS (with point of sale), with minute-demand values to analyze. To further complicate the analysis, other analysts' actions affect their market's availability. Therefore, they have to coordinate with multiple analysts to achieve their market objectives, making for complex processes and visibility into performance extremely difficult.

The analysts' ability and willingness to work in this new world directly impacts the revenue increase that can be gained from moving to O&D. Investment in training and consulting is required to ensure analysts ramp up quickly. An organizational restructure is often required as the team moves from an inventory analyst role to a market-demand analyst role. This move can result in experienced analysts falling by the wayside as their role becomes more intellectually demanding.

Even when a restructure occurs, responsibility for managing demand on less-popular markets can be unclear, leaving certain markets without management. Reporting is more complex and involves larger volumes of data.

In short, the process of revenue management becomes less tangible and more theoretical — less crystal clear and more of a hazy shade of grey. The risks associated with moving can be significant and the entire process can become a major distraction from the day-to-day running of the business.

## Why Move To O&D?

It's been proven airlines can achieve a 1 percent to 2 percent revenue benefit, direct to the bottom line for airlines whose network warrants it. Estimates vary, but generally, a network with 20 percent to 25 percent connecting traffic is enough to benefit significantly from moving to an O&D operation.

This kind of revenue increase is tempting, but it requires significant investment to achieve. Airlines can generate some of the return with much less business upheaval and a much lower capital outlay through intermediate O&D.

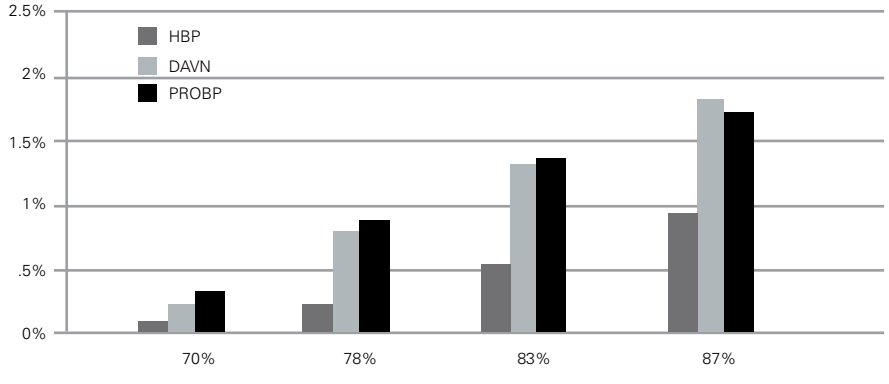
The Passenger Origin Destination Simulator (PODS) MIT Research Consortium, which is funded by eight international airlines to explore forecasting, optimization and competitive impacts of revenue management, conducted an analysis. The Consortium determined that the benefits vary depending on the type of O&D control implemented. The three types are:

- Heuristic bid price — Forecasting is done at the fare-class level, but bid prices are produced and can be used by the inventory system to control O&D availability based on the bid-price curve.
- Displacement adjusted virtual nesting (DAVN) — Forecasting and optimization are done at the O&D level, but the controls are at the leg/bucket level. Sometimes referred to as "virtual nesting," this requires an offline mapping of origin/destination/fare values to buckets.
- Network probabilistic bid-price control (PROBP) — Forecasting, optimization and inventory control are all done at the O&D level.

## Options Abound

Typically, an airline views the potential move to an O&D operation as an "all-or-nothing" migration. Yet, it is clear from the PODS analysis that significant revenue benefits can still be achieved from implementing an intermediate O&D solution. For example, using the heuristic bid-price method where demand forecasts are produced at the segment fare-class level, but inventory controls are at the O&D level.

**Revenue Gains Based On Different O&D Models**




**Different O&D Models** Using different O&D tactics, revenue benefits vary depending on an airline's average load factor (passengers flown divided by the number of seats expressed as a percentage.) If an airline operates at 83 percent load factor and uses the heuristic bid price O&D method, it can expect a 0.6 percent revenue gain. Displacement adjusted virtual nesting and network probabilistic bid-price control methods produce much higher revenue gains.

Based on a network load factor of 83 percent, the revenue benefits are more than 0.5 percent and the difficulties and costs associated with moving to O&D are greatly reduced. There is no requirement for a restructure of the organization because analysts still have route responsibility and work with demand forecasts at the segment-class level.

These are much easier to interpret and control, being more significant than the minute values of O&D demand forecasts. The interactions that the analyst has within the system remain as before — the key piece to change is inventory control.

In Intermediate O&D, the optimization process utilizes the demand forecast and O&D fares data to determine a heuristic bid price for each flight leg. It then produces both a bid-price curve and class-level authorizations to send to the inventory system. This enables availability decisions to be based on the sum of the bid prices of the composite legs of any passenger journey. As a result, the true fare value of the passenger is the determining factor of the availability offered, rather than the inventory-class availability.

There is also no need for a huge PNR database that is supported by expensive hardware and IT staff because the nightly inventory, schedule and post-departure data are sufficient.

### Stepping Stones

Of course, implementing this kind of solution doesn't mean that full O&D forecasting and optimization isn't on the horizon. With intermediate O&D, an airline can break up the mammoth move to O&D into two distinct steps.

With this method, analysts have time to become familiar with the implications of O&D inventory and availability before having to tackle the changes to demand forecasting and the consumer choice models therein.

Alternatively, intermediate O&D can provide an ideal final solution to medium-sized carriers that have healthy O&D traffic but do not have the appetite or scale to move to full O&D.

Airlines can also start achieving some of the revenue benefits of moving to O&D much more quickly, and it significantly reduces the risks associated with such a major change. As such, the bullish airline executive doesn't have to be so bullish after all.

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## **+count** it up

### 90+

The percentage by which high-efficiency particulate air (HEPA) filters are effective at capturing airborne microbes in the filtered air. According to IATA, modern aircraft contain HEPA filters that have a similar performance to those used to keep air clean in hospitals, operating rooms and industrial clean rooms.

### 2020

The year by which the Single European Sky, including the technical component of SESAR, must cut user costs by 50 percent, reduce the environmental impact per flight by 10 percent and improve safety levels as traffic increases by 70 percent, according to IATA.

### 80

The percentage by which biofuels derived from biomass, such as algae, jatropha and camelina, have been shown to reduce the carbon footprint of aviation fuel over their full lifecycle, according to enviro.aero. If commercial aviation were to get 6 percent of its fuel supply from biofuels by 2020, this would reduce its overall carbon footprint by 5 percent.

### 2050

The year by which some 16 billion passengers and 400 million tons of freight will need to be flown yearly, according to IATA.

### 240 million

The number of passengers flown by Chinese carriers in 2010, according to IATA, making it the second-largest domestic market. The number is expected to reach 425 million in 2015.

### 2010

The year in which about a third of all passengers traveled on routes to, from or within Asia/Pacific. North America and Europe accounted for 31 percent each. According to IATA, by 2015, Asia/Pacific is expected to increase its share to 37 percent.