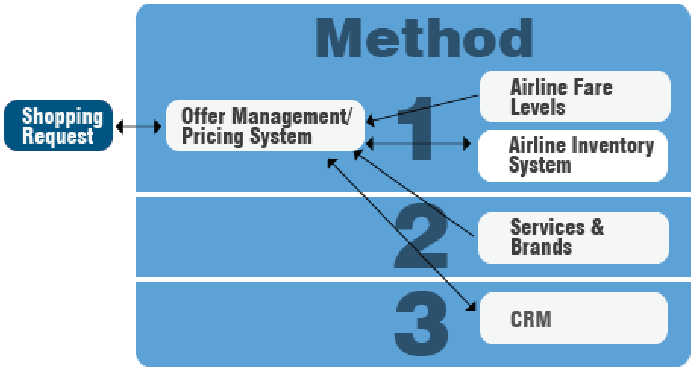
DYNAMIC PRICING

Definition, Impact, and Current Capabilities

There is a perception today that NDC will replace filed fares and will introduce dynamic and personalized pricing capabilities that traditional distribution methods are not currently able to support. However, there does not seem to be a clear or a common understanding on what is meant by *filed fares*, or even *dynamic* and *personalized pricing.* The purpose of this paper is to define four dynamic pricing methods, their impact, and the capabilities that currently exist. These are the four methods:

1. Dynamic Availability Using Fare Levels
2. Bundling/Unbundling
3. Personalization
4. Dynamic Fare Generation

The first three methods can be employed with filed fares and enable airlines to achieve their goals with minimal impact to current systems and life cycle. The fourth method, Dynamic Fare Generation, requires extensive development for internal airline systems, substantial process changes, and new industry standards development in order to maintain interoperability and current commercial capabilities and is not viable in the short term. The ability for this solution to produce incremental revenue could also be affected by customer expectations of rational price behavior and other practical considerations.



1. Dynamic Availability Using Fare Levels

When referring to *dynamic pricing,* the technique used today to dynamically offer differing price points is based on predetermined fares that are then assigned to booking classes or inventory buckets. The dynamic nature is then achieved by managing the number of seats available for each booking class or inventory bucket based on real-time demand data.

This approach has been successful for the airlines, and its key to success is its ability to reflect market value by segmenting buyers into groups with differing levels of willingness to pay based on the characteristics or rules of the fare.

Airlines have typically driven their pricing strategy and competitive responses by managing availability at this base fare level, and past operational research has concluded that utilizing fare levels and controlling available units is a nearly optimal approach.[1] In addition, recent research asserts that "practical considerations exist that constrain the strategic pricing solution," and that these practical considerations reflect consumer expectations of price boundaries and an understanding and rationalization of price differences between products,[2] reinforcing the need to maintain pre-determined fare levels.

By utilizing predetermined fare levels, airlines are able to accomplish several key objectives:

- Facilitate the complete life cycle of the fare, from fare management and collection through distribution and revenue accounting
- Provide interoperability for interlining and codeshare relationships
- Enable efficient transitions from legacy systems and new ways of doing business
- Enable commerce through promotions, discounting, and corporate agreements

2. Bundling/ Unbundling

In the past, flights were sold as a bundled service including meals, baggage, and seat selection. Recently, bundling has been reinvented as airlines have unbundled flights from services and redefined bundles to appeal to different segments of customers. This presents further opportunity for airlines to optimize revenue by customizing the components in a bundle and the total price of the bundle, which requires personalization. This is an area of revenue opportunity for airlines that would be further enhanced by techniques similar to those used in fare management, collection, and distribution.

3. Personalization

Customer Relationship Management (CRM) focuses on tracking customer behavior in order to understand and market to customer long-term value. Rather than managing only very broad segmentations, the application of CRM to Revenue Management results in the ability to price at a more granular level: the level of "who is asking."

Personalization was historically achieved by point-of-sale control and some customized benefits for frequent flyers as a group; however, airlines are contemplating and implementing even further personalization of pricing and product based on customer value and other characteristics. This can be achieved today by leveraging data from CRM systems to drive dynamic pricing by customizing the components of a bundle, as well as the price of a bundle, in a manner similar to how dynamic availability using fare levels operates today. Research has also suggested that a revenue management methodology that determines availability based on the additional criteria of customer long-term value can result in better customer loyalty and increased revenue.[3]

Presenting an offer that more closely reflects customer value gives an opportunity for airlines to not only maximize revenue, but also to improve the customer experience.

4. Dynamic Fare Generation

In contrast to the management of fare levels and availability, the term *dynamic pricing* is being used to describe the process where a fare is dynamically created in real time. In this scenario there are no predefined fare levels and no booking classes.

There is currently no known airline using this model of pricing. Real-time Dynamic Fare Generation would have a substantial impact on individual carrier systems, such as revenue management, yield management, revenue accounting, and commerce systems. Dynamic Fare Generation would require constant adjustment and would be difficult to maintain across applications. There would also be cross-industry impact, particularly if airlines do not maintain a method of distributing these fare levels for regulatory, interoperability, or competitive purposes.

Finally, if Dynamic Fare Generation is used by airlines, it needs to coexist with current methodologies, making both revenue management and revenue accounting even more complex within the airline and across the industry. Considering the potential investment required, the implementation of Dynamic Fare Generation would not provide sufficient positive impact to overcome costs, time-to-market, and customer dissatisfaction.

ATPCO has been building capabilities across fares, rules, and optional services to enable dynamic pricing that minimize the impact to current systems and processes.

Dynamic Pricing	Dynamic Pricing Goal	ATPCO Product Functionality	
1. Dynamic Availability Using Fare Levels	Ability to offer different fare levels across a broad spectrum of demand	• Fares (Specified, Constructed, Discounted, Fare By Rule)	• Negotiated Fares • Fare Type • RBD • Rules
2. Bundling/Unbundling	Ability to include and price optional services either independently or as a bundle with the fare	• Optional Services • Carrier-Imposed Fees	• Ticketing Fees • Branded Fares
3. Personalization	Ability to offer fares and/or optional services in conjunction to a specific passenger or subset of passengers	Specific Market Segment • Account Code • Ticket Designator • Point of Sale	Specific Passenger • Frequent Flyer Status (Tier) Level • Customer Index Score • Passenger Nationality or Residency

Airlines' ability to dynamically price their products using these methods can still be improved. In order to enable airlines to dynamically price services via NDC, as well as outside NDC, and provide them with a consistent and accurate calculation of their pricing in all points of sale, we need to do the following things as an industry:

METHOD 1: CREATE MORE INVENTORY CONTROLS

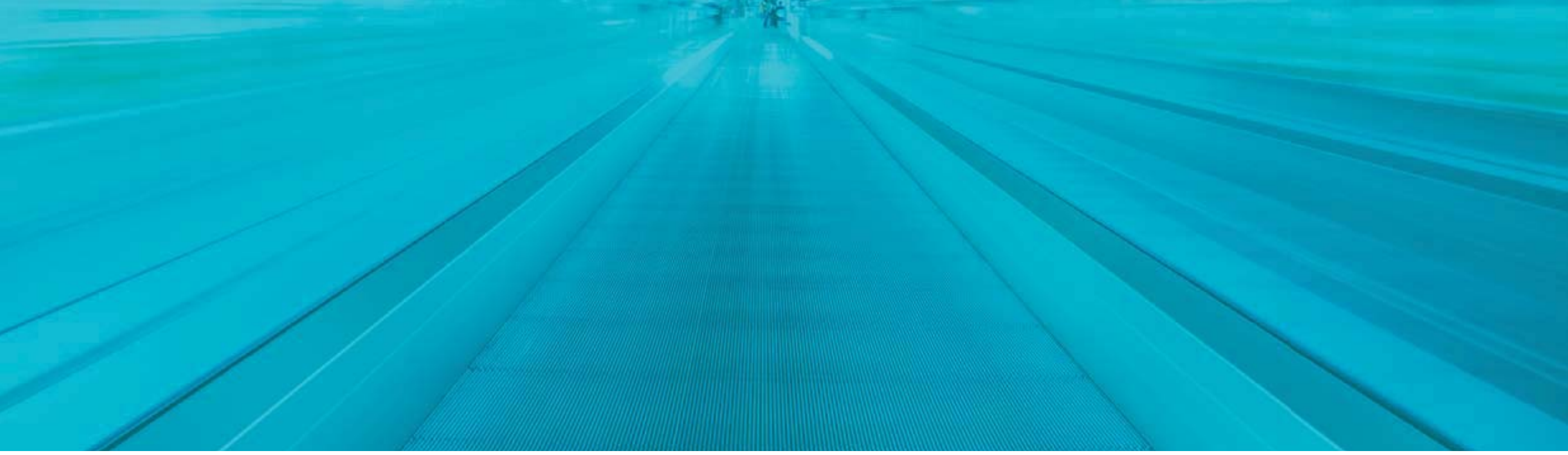
- Establish more inventory buckets that can be communicated and used (dual-designated RBD)
- Enhance the availability messages (PAOREQ/PAORES) to include the fare information on what amount was priced

METHOD 2: IMPLEMENT SERVICES AND BRANDS

- Implement a standard data supply of airline services and brands
- Establish an industry governance and infrastructure to enable interline through prices to be generated

METHOD 3: IMPLEMENT REAL-TIME INTERACTION WITH CRM

- Create request-and-response messages to query the CRM to determine which fares, services, and brands apply to the person requesting the airline products



Summary

- Pure dynamic pricing (Dynamic Fare Generation) appears to be more theatrical than a practical or efficient way to achieve personalized pricing.
- Bundling/Unbundling and Personalization are processes that require internal airline revenue management and CRM system investment, and once complete, can be utilized within and outside NDC.
- Filed fares can be used with NDC and outside NDC and can be used to achieved Bundling/Unbundling and Personalization.
- ATPCO has been building capabilities across fares, rules, and optional services to enable dynamic pricing that minimize impact to current systems and processes and can be used in Dynamic Availability Using Fare Levels, Bundling/Unbundling, and Personalization.
- To improve the capabilities of dynamic pricing we need to do three things:
    - Create more inventory controls
    - Implement services and brands
    - Implement real-time interaction with CRM

[1] G. Gallego and G. van Ryzin, "Optimal Dynamic Pricing of Inventories with Stochastic Demand over Finite Horizons," Management Science, vol. 40, no. 8, pp. 999-1020, 1994.

[2] Joakim Kalvenes, Yingying Kang, Richard Ratliff, "Getting Your Prices Right," Ascend, Issue No. 4, 2014.

[3] Tobias von Martens, Andreas Hilbert, "Customer-value-based revenue management," Journal of Revenue and Pricing Management (2011) 10, 87–98. Published online 10 April 2009.