



The Attribute Model

April 2020



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Introduction

Imagine going into a pizza parlor that only offered cheese or supreme pies. If you want anything in between, you had to pay the more expensive price for the supreme and pick off what you didn't want or go basic with the cheese even if you would have spent more if given the option to special order. It's probably safe to say you'd not be happy with this experience. There's also a good chance that pizza parlor would have a tough time filling their restaurant catering to only two types of customers. Yet, this messy concept is how hotels sell their product today.

Enter the Attribute Model (AM). As a concept, AM redefines the traditional hotel product (rate plan + room type) and instead puts the consumer in control of choosing what they want and are willing to pay for by pricing the attributes in a typical rate plan along with those that make up the physical rooms in their hotel.

Behind the scenes in supporting AM, the hotel has flexibility in assigning rooms not based on a predetermined room type with a set (and limited) inventory count but instead assigned based on the attributes consumers choose. As the consumer creates their own product the hotel is not limited to a hard inventory count of a specific room but can assign and re-assign rooms as long as those single attributes are available, creating a much larger inventory bucket. The customer creates their own product and pays for exactly what they want. This concept could be expanded to include non-room attributes and could even be extended to products/services not "owned and operated" by the hotel. This ability to offer customized products to the consumer means not just happier guests, but increased conversion and higher revenue.

Executive Summary

In [our recent survey](#), over 74% of respondents were familiar with AM as a concept, while only 42% said a solution was being implemented for their brand. Although much attention is being drawn to this concept, the hospitality industry is clearly still in the early stages of adoption and practical application.



In a future state, shopping and selling connectivity would focus on an experiential model that addresses the needs of hotel distribution and the complexity required for identifying, recognizing, personalizing, packaging, offering, and selling traveler or persona-specific offers in real time.

This committee hopes to help bring the picture of what AM can do into focus by outlining the shopping and buying models, system requirements, and necessary technology for hotel or any accommodation distribution, enabling the continuing evolution from today's approaches to those that are likely to emerge as the industry evolves to ever-increasing personalization.

This paper will include the likely steps that our industry will take toward that future state, coupled with the technological approach for enabling success. Most importantly, the committee wanted to define the common terminology to be used when discussing the topic with our peers as well as for our technical teams to have a common term to use when defining requirements and building messaging specifications. While there are many different names currently floating around the industry (e.g. Attribute Based Selling, Attribute Based Shopping, Attribute Based Pricing, Attribute Based Search) for the concept, the simplest approach was to reduce it to what it is - an "Attribute Model." Many of the terms previously used were in essence actions (e.g. selling, searching, pricing etc...) that are done with attributes. Furthermore, there are a number of terms used to define attributes depending on the time of booking (e.g. ancillaries, add-ons, upsells, etc...). For simplicity's sake, the decision was made to call everything an attribute and to define the type of attribute and time of sale when needed.

Problems Faced Today

As shown by our survey, the hospitality industry is aware of AM and many are taking steps to lead their brands toward a solution that will tailor offers to the specific needs and expectations of their traveling customers. That being said, current shopping and selling models are not designed to fully support traveler-specific shopping and buying.

This committee will focus on the enablement of personalization, also referred to as "NDC for hotels" or AM, among other things. This paper will draw the technical framework that the industry can collectively utilize to support the objectives of real-time personalization. In order for hoteliers to be effective they have to be able to know who is shopping, know what that specific

traveler or traveler persona wants or are likely to want. They need to be able to receive information about the shopper and transmit customized offers specific to that traveler.

What is the AM?

Just as the fixed pizza types discussed in our introduction, today’s hotel distribution landscape sells inventory to consumers as room types. Each physical room on property is categorized as a specific room type for sale. Room types can vary based on size, location, bed type, view, room contents, etc... A point of frustration among consumers is the lack of consistency among hotels. Each hotel, brand, or chain defines the room types differently, which is why a “Deluxe” Room Type for one property could vary significantly from a “Deluxe” Room Type at another, even if the hotels are next door to each other.

In the world of AM, customers would pick and choose what they want to purchase based on aspects of rooms. This would replace the pre-built packages seen today. The key here is the data flow and definitions of individual elements. As a hotelier, I would load the aspects of my property into the system as opposed to loading pre-set packages (i.e. rooms with queen beds, rooms with a river view). As a consumer, I am able to then choose a junior suite with a river view where previously I may have only been offered a standard queen with that view.



- DISTRIBUTION SYSTEMS PROVIDE NO VISIBILITY INTO ATTRIBUTES AND NRI (NON-ROOM INVENTORY)
- AM WILL ALLOW CONSUMER CHOICE

Package Name Best

| | | | |
|--|--|---|---|
| <input type="checkbox"/> Executive | <input checked="" type="checkbox"/> River View | <input checked="" type="checkbox"/> Parking | <input checked="" type="checkbox"/> Prem WI-Fi |
| <input type="checkbox"/> Suite | <input type="checkbox"/> Park View | <input checked="" type="checkbox"/> Lounge | <input type="checkbox"/> Balcony |
| <input checked="" type="checkbox"/> Standard | <input type="checkbox"/> City View | <input checked="" type="checkbox"/> Breakfast | <input checked="" type="checkbox"/> Flex Check-in/out |
| <input checked="" type="checkbox"/> Shuttle | <input type="checkbox"/> King | <input checked="" type="checkbox"/> Health Club | <input type="checkbox"/> 2 Queen |

Filter Options



Standard Room

323 sq. ft.
City View

Will include Sleep Advantage® Power Enjoyment™

\$150



Premium Room + Time Square View

650 sq. ft.
Fully Stocked Mini-Bar
Club Lounge Access

Will include Sleep Advantage® Power Enjoyment™

+\$79



Executive Room + Crowne Plaza Club Lounge Access

969 sq. ft.
Separate Living Space
High Floor
City View

Will include Sleep Advantage® Power Enjoyment™

+\$99

Normally \$149

View More Rooms & Rates

Glossary

| Term | Definition |
|----------------------|--|
| Add-on | Items and or services that can be dynamically added with the purchase as part of the reservation. (e.g. \$25 for a bottle of wine and roses to be added to the booking) (related to NRI, attribute, ancillary) |
| Ancillary | Non-room revenue sources such as services and add-on components to the room booked |
| Attribute | Characteristic or feature of a hotel room such as view, amenities such as coffee maker, balcony etc. Characteristics of a hotel rate plan such as cancellation policy, maximum occupancy, meal plans, etc... |
| Attribute Model (AM) | Approach by which pricing configurations include a base rate, room attributes, and non-room inventory components compiled into pricing bundles allowing the consumer to search by selecting desired features (attributes). |
| Base Rate | The lowest rate available based upon common room type |
| Condition of Sale | Variable pricing strategies based upon sell conditions. Conditions could include: advanced booking, extended stay, cancellation policy, volume discounts, pre-pay, etc. |
| Content | The information about a hotel that is displayed to the client in the distribution channel. |
| Dynamic Packaging | A consolidated offer of two or more products that may be priced relative to the other items in the package OR priced individually. The items are sold |

| | |
|--------------------|--|
| | together, bundled based upon the customer's choice. |
| Hotel Amenity | Non-Room services or offerings that are available at a hotel including: Parking, Food and Beverage, Golf, Spa, Pool, Late Check-Out, etc. |
| NDC | <p>New Distribution Capability (https://www.iata.org/en/programs/airline-distribution/ndc)</p> <p>A travel industry-supported program (NDC Program) launched by IATA for the development and market adoption of a new, XML-based data transmission standard (NDC Standard). The NDC Standard enhances the capability of communications between airlines and travel agents and is open to any third party, intermediary, IT provider or non-IATA member, to implement and use.</p> |
| Non-Room Inventory | <i>(See also: Ancillary)</i> Items that are sold by the hotel that are not room or room attribute based. Non-Room inventory includes: food and beverage, parking, golf, spa, meeting space, etc. |
| NRI | Non-Room Inventory (e.g. Breakfast, Ski) |
| Offer | Room Type (or NRI) + Rate Plan + Conditions |
| Package | <p>A consolidated offer of two or more products that are priced relative to the other items in the package and sold together as a single offer that cannot be unbundled by the customer.</p> <p>A room combined with additional components such as tickets, meals, etc. Also defined as a room reservation combined with additional travel components such as air and/or car.</p> |

| | |
|------------------------------|--|
| Parity (aka Rate Parity) | Consistency of rates between sales channels. |
| Pricing Bundle/Configuration | A combination of base sleeping room with multiple room attributes, room amenities and conditions of sale as defined by brand, hotel or sales channel. A combination of seasons, rates, room attributes, hotel amenities and condition of sales |
| Product | <u>Today</u> = Rate Plan + room type <u>Future</u> = Rate Plan + Room Type (or Non-Room Type) + Collection of attributes selected by the consumer |
| Rate Amount / Pricing | Cost of a room, attribute, or amenity |
| Rate Plan | A marketing program the hotel offers to a guest and represents the details of what is being sold(name, dates, rules, description). It holds the fences and policies as 'rules' or 'terms and conditions' that a guest must meet or exceed in order to be eligible to book. |
| Room Attribute | Descriptions that identify the items that make up a physical room and not for sell individually with a cost associated. For example: # of beds, bed size, room view, room location, room size, etc. |
| Room Feature | Related to attribute |
| Room Type | A combination of base sleeping room with multiple room attributes as defined by brand, hotel or sales channel |

| | |
|---------------------------|--|
| Room View | What the guest will be able to see from their guest room, such as the ocean, mountains, city, etc. |
| Shopping Cart | A piece of e-commerce software on a web server that allows visitors to an internet site to select items for eventual purchase. |
| Upgrade | A complimentary move from one product attribute grouping to another with perceived higher value than the inventory originally purchased. |
| Zero Based Inventory Item | The manner of inventory for an unlimited item, beginning at zero. |

Current Landscape and Airline Success

There are many reasons to review the adoption of an attribute pricing model, from offering customers more flexibility to simply driving incremental revenue. But the primary reason to consider a change in the shopping model is that consumers have become accustomed to a highly personalized retailing experience. Interactions with retailers like Amazon, Netflix, Starbucks and StitchFix lead to expectations of being able to customize the experience being purchased. Across the travel industry there are many examples of the implementation of similar models, yet hotels have lagged behind, arguably to the detriment of their properties, agency revenues and guest experience.

While there has been some research on the impact of pricing models and unbundling on customer experience and preference, we believe that there is a need for further research to understand the impacts of this model in the hotel industry, particularly across different accommodation segments (luxury, mid-scale, budget) where there is the potential for an attribute pricing model to detract from the overall product offering, or in specific markets that are not commonly used to transacting in an unbundled fashion.

Evolution of pricing models in the hospitality industry



The hotel industry to date has largely been focused on optimizing the base price point and availability, some of the strategies that have developed over time include:

- FPLOS - Full Pattern Length of Stay
- Daily Pricing with LOS - Daily rates with Length of Stay restrictions - AKA Daily BAR
- Check-in and Check-out restrictions
- BAR by LOS - Best Available Rate by Length of Stay
- Hurdle Points - Restricting reservations based on rate in periods of unconstrained demand
- Closed to Arrival - Restricting reservations based on the date a stay begins
- Occupancy Based Pricing - Pricing based on the number of people staying in a room

These pricing models have proven effective in maximizing pricing and availability across distribution channels, however, none of them have broken down the industry norms of room types and rate plans.

Packages vs Attributes

Hotels regularly create bundled packages to group non-room attributes into themes to help increase their appeal to specific consumer groups, for example, Honeymoon/Romance packages or Corporate packages - these do not allow for the same flexibility as the attribute model. The key is personalization, current package offers are based on the perceived needs and wants of customers rather than empowering customers to select items that are relevant to them, the individual. Additionally, these packages are typically constructed with either a link to the room rate with a fixed cost to cover the extra services or priced independently from other public pricing. This limits the ability to test on the price sensitivity of individual attributes and therefore limits the potential audience, and therefore the hotel's revenue.

The airline industry has led the way in the implementation of the attribute model, commonly referred to as "NDC" (New Distribution Capability), and Cruise Lines are moving more in this direction with add-on packages for drinks, food upgrades and now room servicing. These companies have effectively trained consumers to pay for non-core products and services,



while offering choice and flexibility to consumers. Given the affinity of airlines, cruise lines and hotels, the time is right for the industry to focus on end to end adoption of the attribute model.

Unbundling in the Airline Industry - New Distribution Capability (NDC)

The history of NDC (New Distribution Capability) goes back many years. The airline industry had long struggled to generate reasonable returns on invested capital. In the mid-2000's, the industry began to alter the core business model. "Merchandising" became the operative term of the day, and airlines started charging for items that had long been incorporated in the seat price - seat selection, baggage fees, food and beverages, among many other things. At times, these services would be charged separately. Others might elect to bundle offerings into packages of product and service. The airline industry, in an effort to respond to these changes and modernize both the business model and the technical framework, initiated a series of actions to push this agenda forward.

At this time, new solution providers emerged which were promoting new forms of connectivity, particularly a move to XML-based transactions, suggesting that it would foster these structural changes. It was going to require massive changes at the core of the business, with sweeping changes to the technology and how the services were shopped, sold, and operationalized. But it was also showing signs that it was very much worth the effort. The early efforts were allowing airlines to charge incrementally for virtually anything other than passing through the door of the plane. And, that exactly is what the broader airline community started to do. Seat fees, checked bag fees, check-in fees, priority boarding fees, fees to talk to a call center agent or someone at the ticket counter... the list when on and on. Food had largely disappeared, which created an opportunity - charging for food. Beverages, specifically alcohol, were also fair game. There were jokes about giving away beverages but charging to use the onboard toilet.

What happened? Well, the industry has enjoyed a period and level of prosperity virtually unseen in its nearly 100 year history. And, in an unlikely coincidence, the broad profitability of the industry is at least a direct 1-to-1 correlation with the revenues that are not part of the base fare. Put more



succinctly, the industry is making essentially 100%+ of its profits in the form of the myriad extra fees that have been implemented¹.

NDC was an evolution from those earliest attempts to sell differently. The companies that were helping to drive it, spurred by leading airlines around the world, but particularly in the United States, joined IATA, the global governing body of the airline industry, to help foster the change. IATA took ownership of the earliest forms of the new XML message standards, instituting a broad program to drive its adoption. That early XML standard took on the moniker of New Distribution Capability – NDC.

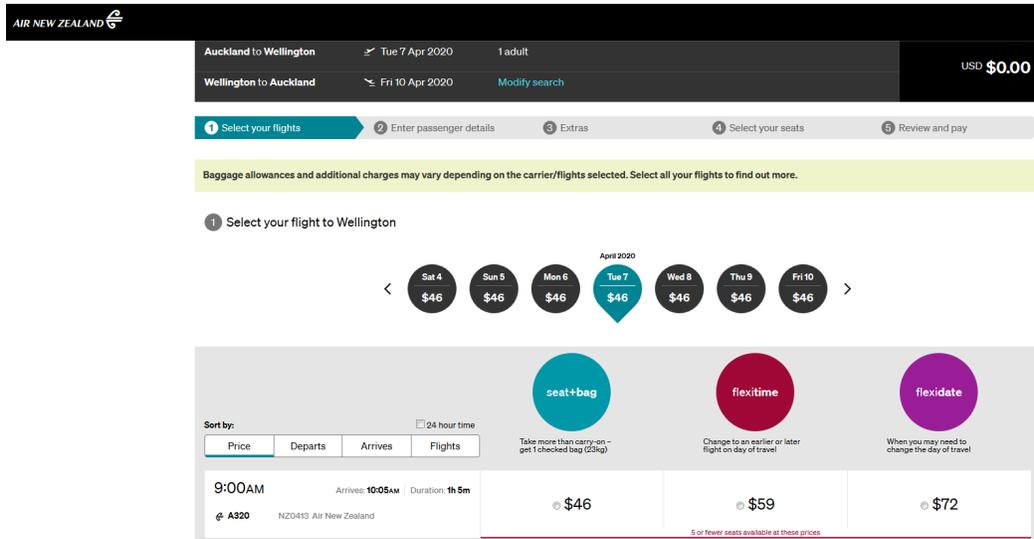
Initial Results

All of this has not come without challenges. There have been commercial issues, technical constraints, regulatory pitfalls galore. Getting all the industry participants lined up to accept the change was (and, in many cases, remains) difficult. Trust between the airlines and their customers (corporations and travelers) and partners (travel agencies and GDS companies) was a challenge – a two steps forward, one step back process for years. When the players could get aligned or the airlines simply took a “damn the torpedoes” approach and implemented their desired changes, there were often technology issues, often requiring a brute force approach or a stop-gap measure to enable the changes, albeit with inefficient manual processes.

Still, while progress was slow, there was progress none-the-less. Some of the notable early successes included:

- **Branded Fares.** Paving the way for a trend that would be adopted worldwide, Air New Zealand, followed by Qantas and finally (to broad acclaim) Air Canada introduced “Branded Fares” – a series of product and service bundles with differentiated prices for different bundles of services. These new offerings enabled the airlines to meet both the price and – most importantly – the product and service offerings of the low cost carriers (e.g., Ryanair, easyJet, Tiger, AirAsia, Spirit, and Frontier). Furthermore, the prices for each fare bundle increased as additional services were added to the bundles. While the bottom-line benefits are difficult to quantify and validate, the trend became widely adopted.

¹ Forbes.com January 2019



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1 Select your flight to Wellington

April 2020

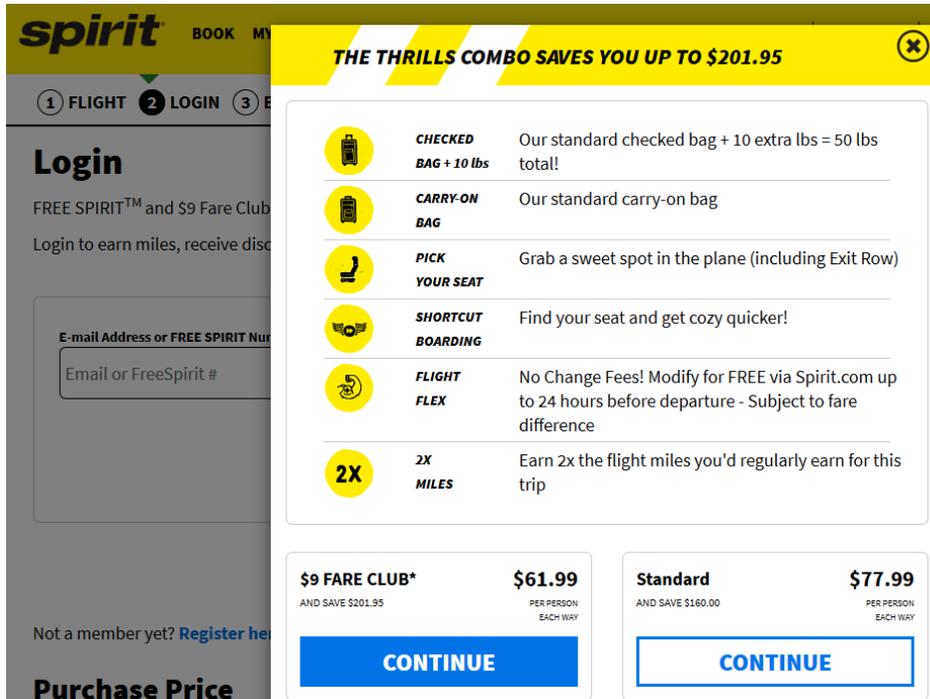
| Day | Price |
|--------------|-------------|
| Sat 4 | \$46 |
| Sun 5 | \$46 |
| Mon 6 | \$46 |
| Tue 7 | \$46 |
| Wed 8 | \$46 |
| Thu 9 | \$46 |
| Fri 10 | \$46 |

Sort by: 24 hour time

| Price | Departs | Arrives | Flights |
|--------|------------------|-----------------|---|
| 9:00AM | Arrives: 10:05AM | Duration: 1h 5m | <div> <p>seat+bag</p> <p>Take more than carry-on – get 1 checked bag (23kg)</p> <p>\$46</p> </div> <div> <p>flexitime</p> <p>Change to an earlier or later flight on day of travel</p> <p>\$59</p> </div> <div> <p>flexidate</p> <p>When you may need to change the day of travel</p> <p>\$72</p> </div> |

5 or fewer seats available at these prices

- Ancillary Services:** At the other end of the spectrum, numerous airlines moved to a model of additional charges for any product or service. Early notable successes were the aforementioned low cost carriers across geographies around the world: Ryanair and easyJet in Europe, Tiger and AirAsia in Asia, and Spirit, and Frontier in North America. Each was famous, or infamous, for their charging schemes, often involving travelers being surprised by the extra fees after they had arrived at the airport. Other examples of success in this space involved many legacy carriers – for example, seat and bag fees for the large flag carriers laid out by American, Delta, and United in the United States, British Airways, Air France, and Lufthansa in Europe, and – albeit slower to market – airlines in Asia / Pacific as well.



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Purchase Price

| | |
|--|---|
|  <p>CHECKED BAG + 10 lbs</p> <p>Our standard checked bag + 10 extra lbs = 50 lbs total!</p> |  <p>CARRY-ON BAG</p> <p>Our standard carry-on bag</p> |
|  <p>PICK YOUR SEAT</p> <p>Grab a sweet spot in the plane (including Exit Row)</p> |  <p>SHORTCUT BOARDING</p> <p>Find your seat and get cozy quicker!</p> |
|  <p>FLIGHT FLEX</p> <p>No Change Fees! Modify for FREE via Spirit.com up to 24 hours before departure - Subject to fare difference</p> |  <p>2X MILES</p> <p>Earn 2x the flight miles you'd regularly earn for this trip</p> |

| | |
|---|---|
| <p>\$9 FARE CLUB*</p> <p>AND SAVE \$201.95</p> <p>\$61.99</p> <p>PER PERSON EACH WAY</p> <p>CONTINUE</p> | <p>Standard</p> <p>AND SAVE \$160.00</p> <p>\$77.99</p> <p>PER PERSON EACH WAY</p> <p>CONTINUE</p> |
|---|---|

- **Hybrid:** A mixture of both Branded Fares and Ancillary Services, airlines employing model this would often utilize elements of both strategies, sometimes offering fare bundles with the ability to purchase some limited ancillary services separately.

British Airways  Non-stop 1h 35m

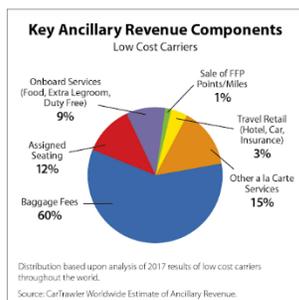
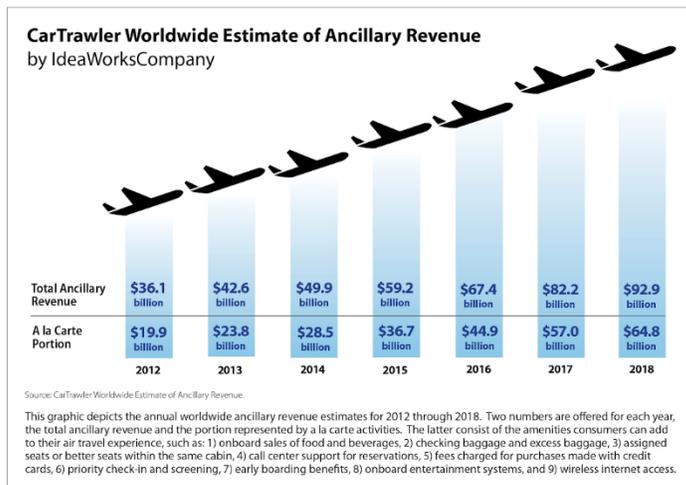
[Flight details](#)

| Economy Basic | Economy Plus | Business |
|--|--|---|
| <p>3 left at £48</p> <ul style="list-style-type: none"> Allocated seats or pay to choose anytime Hand baggage only Last to board <p>View more</p> | <p>3 left at £62</p> <ul style="list-style-type: none"> Free seat choice from 48 hours before departure 1 x 23kg checked baggage allowance Airport, online or mobile check-in <p>View more</p> | <p>3 left at £140</p> <ul style="list-style-type: none"> Guaranteed window or aisle seat 2 x 32kg checked baggage allowance Fast Track security to help you speed through the airport Access to British Airways lounges where available <p>View more</p> |

Revenue Impact

Airline revenue management practices evolved in their sophistication, where they have been generally limited to applying Revenue Management (RM) strategies to the base fares only. As previously mentioned, the results were highly impactful, with industry profitability being almost wholly driven by the revenues from the newly-implemented, for-charge services. Additionally, in recent years, the intent has been to increasingly utilize more sophisticated revenue management to both the base fares as well as the ancillary services. Hence, the incremental value initially bolstered by the services with relatively brute force pricing has the potential to further increase the benefits from these initiatives.

Graphic page for the November 28, 2018 press release
by IdeaWorksCompany and CarTrawler





Other Channels and Philosophies

Some other interesting case studies have also emerged over the years. While the initial forays in this space were often driven by attempts to further control distribution and the associated costs, it quickly became evident that costs were the lesser objective, given the incremental revenue that was achieved. So, airlines became increasingly thoughtful about how and where the initiatives were pursued. While efforts to charge for basic (inflight beverages) and essential (lavatory access) were generally discontinued, as consumers pushed back, airlines began to recognize that they could drive additional revenue by introducing these new products outside their direct channels.

As an example, Sabre worked with both United Airlines and Westjet to support their paid seat selection products in the GDS channel, allowing travel agencies and corporate booking tools to provide access to the higher margin products to their customers - in both the leisure and corporate channels. Furthermore, US Airways worked with all three GDS companies to enable the sale of their “preferred” seats in the GDS channel.

With that said, making these products available outside the airlines’ direct channel has never been an easy decision. Airlines have wrestled with the allure of incremental revenue and measured that against keeping them available only in direct channels as a mechanism to lure consumers to those channels. Hence, progress to multi-channel has been slow. OTAs, for example, continue to support pricing by class of service (sometimes only when specifically searched), but do not offer the ability to choose premium seating for a fee and only message baggage fees to be collected at the airport. And while GDSs support paid seating, not all corporate booking tools do.

Not all airlines operate the same way, however. Southwest Airlines has been a holdout in charging for checked baggage, believing that it sees enough of an increase in bookings, relative to those that don’t charge for checked baggage, to warrant continuing their “bags fly free” practice. This isn’t to say that Southwest has avoided the trap of merchandising. Southwest has a fairly distinct branded fare approach and also charges fees for many services such as queue placement for boarding.



Some airlines have been late to the game, given the rather incongruity with their brand image. Airlines that maintain a high-end brand image specifically have taken a more reserved approach. For example, British Airways was slow to decide that they were right to implement changes. Airlines in the Middle East - Etihad, Qatar, and Emirates - have tread very carefully as they introduced for-charge services. Other premium-brand Asian airlines, such as Singapore and Cathay Pacific have struggled to find a comfortable balance in maintaining their brand image while still driving additional revenue. This likely reflects the concerns airlines may have on negatively impacting their high end product as can further be seen by their minimal experimentation with unbundling on their premium cabins.

Applying AM to Hospitality

Given the success for airlines discussed above, it's only natural to wonder what this would look like for hospitality. But first, it's important to note what is driving the need for change. After all, unlike the airline industry, hospitality is not looking to an attribute-based pricing model as its last hope to remain profitable; rather, the call for change is being driven by changing consumer expectations. Given the existing research, it just so happens that not only is there opportunity to only generate revenue but also keep consumers happy.

With a constant growth in supply and opportunities to purchase, consumers are looking for value in the products they buy more than they ever have before. This was a strong basis for the airline industry to incorporate attribute base pricing into their model².

Of course, one of the challenges is estimating the "size of the prize." To do so we may be able to extrapolate an estimate by targeting the revenue growth generated for the airline industry through NDC and apply that growth rate to the hotel industry. It could also be argued hospitality has much more to work with in the way of ancillaries than airlines and therefore to simply apply the airlines' growth rate would be to grossly underestimate the potential that could be realized - an estimate which may be directionally correct but not be deemed highly accurate. A better approach might be to analyze the areas within hospitality to which attribute-based pricing could be employed and

² [Marketing's Holy Grail: Digital personalization at scale](#)



then apply the growth rate to each of those areas rather than just to the hotel's overall output.

A report from Monetate finds that the average order value of a recommendation that catches a customer's attention increases by nearly 33%³. Furthermore, according to research from PWC, 86% of buyers are willing to pay more for a great customer experience. The more expensive the item, the more they are willing to pay⁴. A May 2019 Google/Bain/Dynata study has similar interesting statistics. It revealed that online, un-met needs deter travelers from booking twice as much as price. However, when their needs are met, travelers spend up to 35% more.

The attribute model, however, doesn't function independently. Current consumerism is clearly focused on increased personalization throughout the purchasing experience. The benefits of personalization are clearly documented across a wide range of industries and research indicates the benefits of marketing personalization can lead to a 10-20% increase of sales while reducing acquisition costs by as much as 50%⁵.

In the end, attribute based shopping is one option in the customer purchase path. Just as today we buy a "packaged pizza" (ie Siciliana or Margarita), the majority of pizza restaurants also offer a "build your own" pizza - same for most quick service restaurants. In the end customers want choice, relevance and convenience and it is the right balance between both that is critical. Most importantly for hoteliers it creates a consistent guest experience across direct and indirect channels and an opportunity in the industry for new inventory distribution technology at potentially lower costs.

Change Management and Enabling AM Success

As with any transformation to the fundamental components of a business, a thorough plan of action that considers all connected components is required. The distribution landscape of hospitality is anything but simple, so there are many aspects to examine through the lens of AM. As is well known, "nothing happens in a vacuum" and revenue managers need to evaluate all opportunities and challenges in tandem including the following:

³ [Quarterly Report - EQ2 2018: The Right Recommendations](#)

⁴ [Customer experience \(PWC\)](#)

⁵ [Personalizing at scale](#)



Content: Deeper integration of amenities into each search requires updated content. Room descriptions may be the culmination of attributes that define the respective inventory; however, they may be descriptive for marketing purposes even if they are mapped to reflect a room's given attributes across internal systems and external distribution channels. There is also the increased need for content. As the number of items and services up for sale increases, content must be created for each. This takes resources, which is something many hoteliers already struggle keeping up with today.

Rate parity: The introduction of attributes and the attribute based selling model may disrupt the usual standard of rate parity. Without the common distribution of attributes and respective price points, there may be a real [challenge for maintaining parity](#)⁶ in the eyes of the consumer. As [some in the industry suggest](#)⁷, if the new content doesn't get distributed to OTAs, it will impart rate parity disassociation. Inherently, can AM only be successful if guests see a consistent rate across all channels, and then pay for additional attributes either during the booking flow or prior to check-in? Or is the goal around enhanced search, personalization, and the common return of an all-inclusive attribute rate. This may not be resolved at this current state of evolution but is critical in the broad adoption of AM. Regardless, AM would require a seamless connectivity across all distribution platforms. Its existence increases the importance of capturing each attribute-based transaction across all distribution platforms.

Competitive set: As hotels re-define how to sell rooms, they must also re-define how to create an accurate comp set. For example, implementing AM challenges [revenue managers](#)⁸ and sales managers to be more nimble when rate shopping and makes it more difficult to achieve a true apples-to-apples comparison when building a [competitive set](#)⁹.

Rate insight: In pursuit of a comprehensive [understanding of where your hotel's rates stand in comparison to another's](#)¹⁰, managers will need a firm grasp on rate trends across markets and their comp set. Dynamic pricing also challenges rate insight, as pricing fluctuates according to not only market and

⁶ [Hotel rate parity: understanding and meeting the challenges](#)

⁷ [Attribute-based selling comes to hotel reservation systems](#)

⁸ [Ultimate Guide to Revenue Management For Single Properties](#)

⁹ [How to select your perfect competitive set](#)

¹⁰ [Hotel Competitor Rate Shopping](#)

property demand but also attribute demand. This is because prices will be generated dynamically "at point of booking" rate and comparisons will only reflect a point-in-time view. Measuring conversion/price elasticity for past offers and applying that to future offers will become more critical than comparing with the competition.

Loyalty: Although an increase in revenue is a compelling reason to consider applying the AM model to hospitality, the impact of satisfying consumer expectations could rewrite the terms of guest loyalty. As stated by OTA Insights¹¹ this model should result in even more loyal guests and encourage more to sign up for loyalty programs. The article cites a study by [Google/Phocuswright](#)¹²: "If a travel brand tailored its information and overall trip experience based on personal preferences or past behaviour, 76% of US travelers would be likely or extremely likely to sign up for the brand's loyalty program."

Personalized Pricing: With personalized pricing, peer ratings will be evaluated differently for brands as compared to independent hotels, and the availability of customizable offers in familiar brands, and their consistency across locations is more likely to contribute to a more homogenous, loyal customer base for large brands. Customers are 24% more likely to trust guest ratings over brands today, but attribute pricing might challenge the concept of rating itself, with brands being evaluated by the versatility of their offers¹³
¹⁴.

User experience: The number of attributes and depth of options may, at least at first, be overwhelming to consumers. Ease of use must be considered in contrast with the amount of options and personalization. Hoteliers should be cautioned against selling everything they can and instead think of what best fits their brand/property. Ease of use must take first priority and be balanced accordingly with the amount of options and type of personalization.

Operational Issues: Hotels today have challenges with the fragmentation of their inventory as they allocate rooms to arriving guests. The advent of attributes certainly extends the potential for fragmentation. By including

¹¹ [How to orientate hotel operations in an attribute-based world](#)

¹² [2018 travel trends to help shape your marketing](#)

¹³ [Price and guest ratings carry more weight than brand value as key attributes to hotel property selection](#)

¹⁴ [Choice Profits: Airlines and Passengers Benefit from Personalization | APEX Media](#)



attributes into the selling model, the potential for fragmentation expands - where once a generic room type needed to be allocated across a stay, now a room type with specific attributes needs to be made available especially if the specific attributes are no longer “requested” and “based on availability” but “paid for.”

Connectivity: Until connectivity standards are established, (both seamless and cached) connectivity across all distribution platforms will be limited. More importantly, suppliers will need to identify which data points to share. Should the focus be on a seamless connection where the supplier calculates the final price based on the specific consumer request? Or should distributors using a cached model have access to the individual attribute pricing and availability requiring them to implement the specific business logic of the supplier.

Regulation: Of course, no industry changes can occur without identifying the impact of ongoing regulation. Both GDPR (EU General Data Protection Regulation) and CCPA (California Consumer Protection) might prevent true customization and offer management and attribute search, book and abandonment will need to be captured in order to provide likely-to-book offers.

Challenges/Considerations

The largest challenge to implementing a fully integrated Attribute Model is that all systems present in the booking path must implement the overarching solution. Most importantly, implementing AM across the hospitality industry requires agreement across suppliers, distributors and the variety of industry organizations in place.



Concept for Hospitality

Enabling a similar model from NDC in the airlines to the hospitality industry would require several key roles working in close partnership to launch this effort. Below is a list of roles, potential players, & their associated responsibilities.

| Role | Organization | Responsibility |
|------------------------|--|---|
| Current Players | | |
| Industry Advocate | HEDNA (Hotel Electronic Distribution Network) | <ul style="list-style-type: none"> Industry trade group driving collaboration & incubation activities Provides industry level business requirement |
| Spec Provider | HTNG (Hospitality Technology Next Generation) | <ul style="list-style-type: none"> Partner that creates technical schema in support business requirements defined by Industry Advocate |
| Industry Governance | OTA (Open Travel Alliance) | <ul style="list-style-type: none"> Travel Industry governing body that approves new schemas into the ecosystem |
| Future Players | | |
| Technology Partner | TBD | <ul style="list-style-type: none"> Enables the new channel for connecting inventory providers with third party sellers Could engage with industry players using a community model |
| Inventory Provider | IHG, etc. | <ul style="list-style-type: none"> Hotel entities that provide inventory of rooms and other products |
| Travel Retailers | Expedia, etc. | <ul style="list-style-type: none"> Retails travel products & services to consumer or businesses travelers |

If there is any one system in the booking path that does not implement Attribute Model, there is no solution. There will likely be a number of systems that are unable or unwilling to make the initial investment to integrate, and will provide a “hacked” solution which may or may not be seamless. In order to truly implement the attribute model, we need an approach that will support attribute selling and traditional selling. The evolution will take time and will vary by hotel, by distribution channel and by region. There is opportunity for “backwards compatibility” in the short term, but to move forward, suppliers and distributors need to make an effort to move forward in implementing the attribute selling model.

Additionally, there are a number of additional points to consider some of which have been noted previously.

Contractual/Commercial: AM has the ability to disrupt how commission or margin agreements are structured. Currently, contracts do not take into consideration a separate accounting for attributes, however, if they do, contracts may become a lot more complex, potentially down to the attribute level. Furthermore, It may be difficult to find widespread adoption of System Providers using a consistent implementation across the industry, short of introducing a certification process, which has its own set of concerns.



Technical: The current data model is room type oriented. In order to facilitate AM it needs to be broken down into base room and attributes where attributes will have their own allotment and rate. This new data model needs to be incorporated in all the systems that participate in the value-chain. It is critical to ensure a correct message size along with the necessary speed to process the messages. The wrong data model will have a direct impact on the ability to distribute inventory and rates correctly.

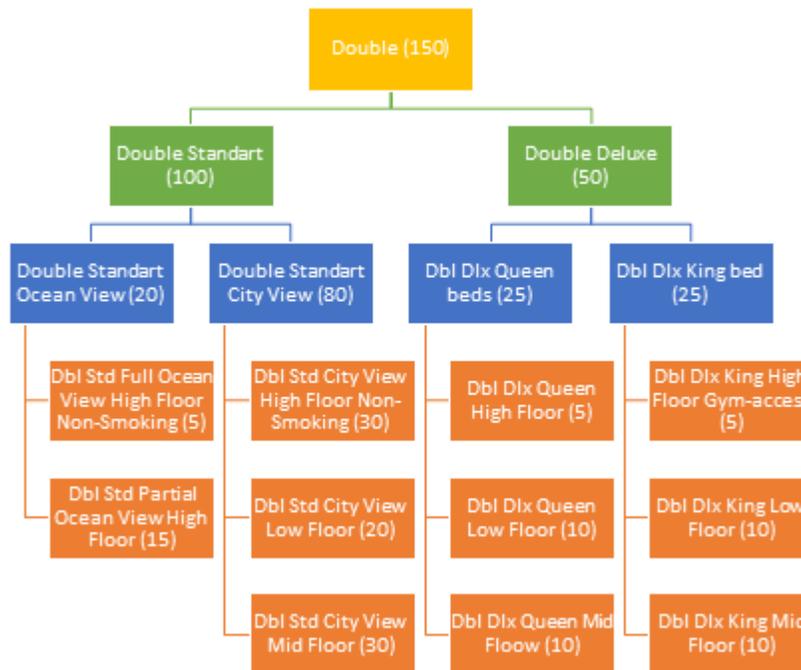
In order to proceed forward, a number of technical steps need to be finalized by all touchpoints (PMS, platforms, bed banks, OTAs, meta search engines), the most important of which is the adoption of a standardized set of connectivity messaging and attributes. The main benefit of standardization is to reduce complexity with mapping the attributes - a necessary step in order to ensure correct distribution. One possible option to ensure adoption would be to agree on the minimum set of attributes and messaging required to be implemented in order to be considered 'attribute pricing ready'. One widely accepted industry standard is the OpenTravel Alliance XML message format. OpenTravel has the following predefined categories that could be used as an initial proposal for code standardization: Bed Type (BED), Room View Type (RVT), Main Cuisine Code (CUI), Pets Policy Code (PET), Room Amenity Code (RMA), Room Location Type (RLT). On a first high level analysis it seems required to differentiate between two types of attributes: room-based attributes; room view, non-smoking, close to elevator, high floor, kitchenette, and stay-based attributes; like access to pool, garage, gym, architectural style. This classification should simplify the configuration of the attributes on the PMS/CRS side as it clearly separates attributes common to the building (potentially shared by all the guests and somehow static pricing) and those attributes specific to rooms (potentially with a more dynamic revenue and allotment restrictions).

Beyond the attribute codes, we need to consider the impact of the messaging. Keeping message sizes reasonably small and performant may be a challenge as we are no longer dealing with a known set of room types and instead, dealing with an exponential number of attributes combinations. Hotels will be pushing a base rate and a set of attributes - that can be combined with the base rate - as a % of the base rate, or a \$ amount. Some of these base rate + attribute combinations would also have an allotment, that must be enforced to avoid overbooking. Frequency on rate changes will have a clear impact on the number of messages being pushed for

distribution and speed in processing those changes will be crucial to ensure accuracy across all the value-chain. It will also be necessary to distribute the business rules that govern the combination of base rates and attributes, and attributes amongst themselves as some may be auto-exclusive. Finally, depending on the system and its ability to handle ABP at a native level, a unique id for the base rate and selected attributes may need to be used in order to unequivocally identify the room across the value-chain down to the PMS.

Example of increased complexity of ARI:

With this simple example (a generic hotel with 150 double rooms) we see that the current situation (blue) requires 4 different room types ARI messages to be pushed, but after adding some attributes the required messages increase up to 11 as each option will have a different price and a finite number of rooms.



Implementers need to choose whether they are handling room types or attributes when communicating with other systems. Blue represents the 4 room types of today, whereas Orange represents reality, and where we want to be able to get to with ABP, without the need to create/distribute 11 room types. In the diagram above, there are 5 attributes. It is these attributes that need to be inventoriable, chargeable, and distributable.

DBL DX KG allotment:25 rate:\$100



- High Floor allotment:5 rate: \$50
- Low Floor allotment:10 rate: n/a
- Mid Floor allotment: 10 rate: n/a
- Gym-access allotment: n/a rate:\$15

Establishing a set of Core Tenants across multiple involved companies will likely be difficult. These need to provide the foundation of agreement on a series of principles that cannot change.

Backward Compatibility: It may be in each System Provider’s best interest to implement simultaneous/backward-compatible solutions to ensure “legacy” room types continue to be supported and can be translated to/from attributes.

We cannot assume that all independent hotels, chains and even their brands may have different road-maps in the adoption of AM. How will these two worlds live together?

Finally, in comparing amongst rooms using AM and rooms not using it, it will be required to define a fallback category (or generic attribute). There must be a generic room to be compared with or a mapping between room types and attributes where each could be translated to the other .

Operational: If attributes are handled by upstream System Providers on a pre-arrival basis only, then hoteliers are left to fulfill a potentially unfulfillable attribute request. In other words, if attributes are to be priced, then they must be inventoried as well. Some points to consider:

- Overselling of “physical attributes”
- Complexity of commission reconciliation for various commission models

Regulatory / Tax What is the impact of taxation on the attributes? Let’s take the case of non-room inventory (e.g. breakfast or jet skis) applied to the room sale. It is possible that local taxation may implement a different taxing model to the reservation (e.g. hotel room tax vs. food or entertainment tax). As such these elements and taxation levels need to be not only applied to the room sale, but also need to be transmitted and understood through the distribution chain.

PMS integration: As a final point, even if distribution systems, CRSs, and third party channels are able to support the complexities of attribute based selling through integration, at a final point, these concepts need to integrate back



into the PMSs. With the fragmentation in the PMS market, hoteliers need to be aware.

Conclusion

There is major potential for revenue growth with the adoption and implementation of the Attribute Model (AM) within the hotel industry. As such it must be done in a manner that allows the industry to establish a standard that can be used by multiple hospitality solution providers along with hotels and chains. The hospitality industry is always in a state of change and AM will be a change to how we distribute and sell our rooms and rates to meet the consumers demand for personalization.

While challenges do exist including system integration, distribution, industry standardization and adoption. The path to success has to start somewhere. As we know from experience working in this industry if we do not define our own product someone else will come along and do it without our contribution. HEDNA has an opportunity to help drive the standardization of Attribute Model message sets. This white paper represents an initial document with the expectation that there will be iterations, data and essential learnings to incorporate going forward.

Remember the consumer is driving the change we have become accustomed to a highly personalized retailing experience. Interactions with retailers have led to expectations of being able to customize the experience being purchased. The hotel plays a major role in a guest's experience and if the guest experience is good they will be a potential repeat guest.

Finally, hotels should no longer lag behind in fulfilling experiences causing further detriment of property, agency revenues and guest experience. Hotels should have the ability to sell rooms and attributes that actually match the available inventory at the hotel. Changes to the Attribute Model will take time but will improve the guest experience and increase revenue thus furthering additional opportunities within the hospitality industry.

Addendum:

Additional research:

- Airline industry referential research

- Airline industry white paper
 - <https://www.iata.org/whatwedo/airline-distribution/Documents/air-white-paper-dynamic-offer-creation.pdf>
- Framework used by airline research
 - <https://www.phocuswire.com/Amadeus-ancillary-services-2017>
 - <https://www.phocuswire.com/Airline-ancillary-champions-2017>
 - https://skift.com/2019/02/05/tripactions-adopts-u-s-airlines-next-generation-storefront-effort/?utm_content=84726931&utm_medium=social&utm_source=linkedin&hss_channel=lcp-11821
- Hotel Industry research and posts
 - <https://www.hudsoncrossing.com/attribute-based-shopping/>
- Thoughts on Backwards Compatibility
 - <https://drive.google.com/file/d/1ikvZ4okTgCoU0jqTZ02CmSrULC-cEezD/view?usp=sharing>