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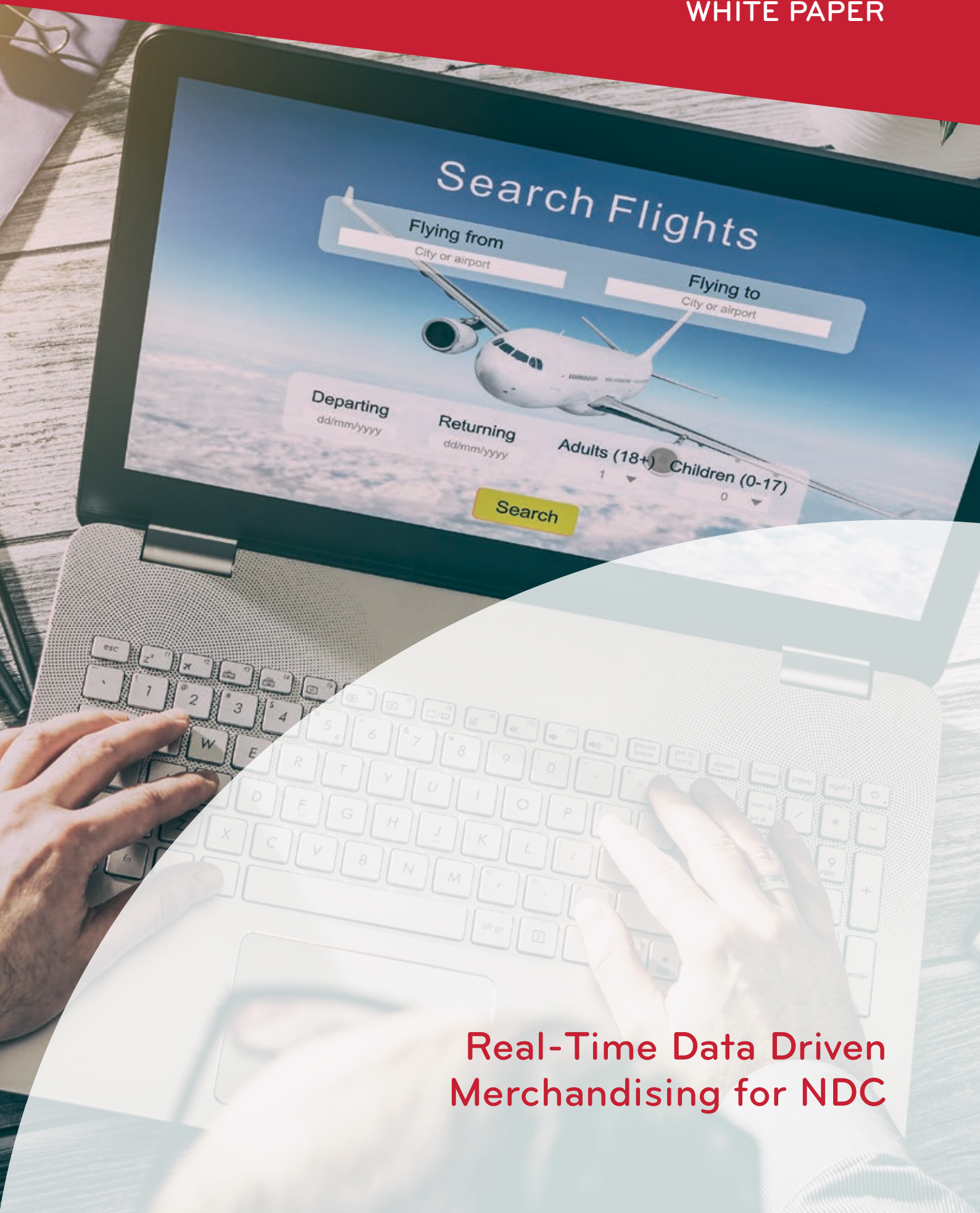

Real-Time Data Driven Merchandising for NDC

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Real-Time Data Driven Merchandising for NDC

The airline industry is at a crossroads. Airlines can embrace the digital retailing age and take ownership of their customer relations from beginning to end, or they can continue to allow the commoditisation of their inventory through intermediary channels. Most airlines want to take the first road. To do this they need to take steps to transform how they sell to their customers. This involves overhauling their current merchandising and ticket-distribution strategies and systems to meet the needs of the various channels available for connecting with their customers.

IATA's New Distribution Capability (NDC) maps out a clearly defined path for updating these merchandising and retailing practices, especially via indirect channels. There is a real opportunity for airlines to redefine their role in the passenger travel world and to leverage technology to reach new levels of insight, flexibility, effectiveness, and service to travellers.

Data and how it is captured and used is key to the success of this digital transformation. This paper explores what real-time framework is needed to help airlines better understand and service their customers. We call this framework the four pillars of online conversion. These are the fundamentals that underpin success in converting browsers into buyers. We will discuss how airlines can:

1. Optimise their **operational** and **API** environment to meet demand
2. Become more predictive in their **inventory availability** management
3. Monitor search trends to influence **pricing**
4. Be responsive with **relevant offers** based on customer insight and context

NDC is the catalyst for a more joined up approach. Instead of having marketing, sales, distribution, pricing, data analytics, strategy, IT and loyalty programmes operate as functional silos, a capable airline will make these functions collaborate in the interests of serving the customer.

For many NDC adoption will be a phased approach. The first phase focusing on creating a new channel based on NDC but distributing conventional offerings, to be followed by a secondary phase addressing the merchandising side of this new world. This becomes a new way of life so the second phase is actually all about the embracing the change that introduces it.

Taking Back Control

The NDC is a game changer that transforms how airlines can merchandise the full spectrum of their offerings through the indirect channel. When successfully implemented, it will help airlines regain control of their products, their markets and their customers. It also promises to deliver the market transparency that is currently lacking. Currently comparative shopping is limited strictly to comparing fares and schedules, rather than comparing value added features.

In an NDC world, consumers will be able to see and compare all the related ancillaries on offer from each airline. The qualitative differences between low-cost, hybrid, and full-service carriers will become more evident from the product variations (everything from seat sizes to menus to in-flight entertainment systems, etc).

But to make NDC a reality airlines need to make three fundamental changes:

i) Adopt the new IATA XML standard and schemas

ii) Commit to new offer creation and ticketing workflows requiring new systems

iii) Start making rapid and 'agile' decisions

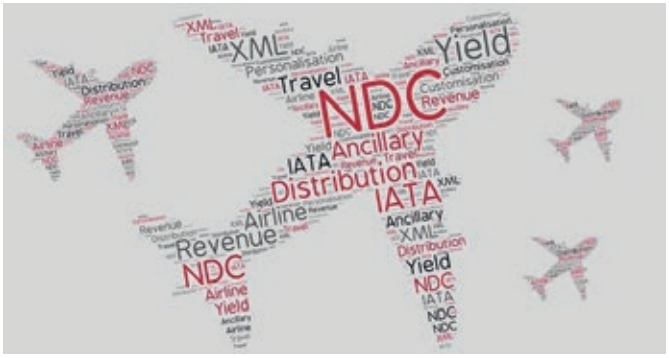
Fundamentally, this requires an overhaul of the current systems and processes in place to accommodate the transition from the creation of the offer remaining with the airline rather than the GDS as is currently the case.

NDC is creating opportunities for a new breed of aggregators, handling the requests and replies between travel agent and airlines, while the airline makes the offer. Since the airline has the fares, schedule, availability, and knows about ancillaries it wishes to sell, it is in the best position to create the best offers, and over time use insights to refine offers and increase conversions. Aggregators consolidate the offer responses from various airlines and present the results back to the agents & travellers. Travellers can see at a glance not only the schedule, availability and price but the associated product features and make direct comparisons with other airlines flying similar routes.

The timescale for introducing products, bundles and other is going to change dramatically. The old six month filing issue will be history and the most competitive airlines will be looking to introduce new offers in as many weeks if not days and be able to fine tune decisions around these offers in hours if not minutes. This requires an order of magnitude change in decision velocity and even an agile approach might make sense.

The good news is that data to help drive decisions will become available via the adoption of NDC and the process changes will be fundamental in helping an airline to identify who is the end consumer, which opens up further opportunities for personalisation and ultimately dynamic pricing. It will also fundamentally change how airlines work with distribution partners and the need to monitor their performance.

The Merchandising Revolution



To succeed in brand differentiation and opening up new revenue streams, airlines need to become more like retailers. Most retailers start by making sure they have the right strategies, platforms and processes. Specifically this means:

- Ensuring responsive and scalable systems can handle traffic and spikes **(operations)**
- Optimising inventory and pricing leverage when making offers **(availability/pricing)**
- Better understanding of their customers to service their needs. **(relevance)**

As part of the new environment, getting the right architecture and PSS is certainly the foundation stone of any long term technology strategy, but this is no longer enough. Airlines need to invest in developing more flexible and intelligent merchandising platforms. This should include tools and capabilities that allow them to do something with the data they capture in real-time. This involves capturing data, developing customer segments and profiles, and using analytics to then deliver a more relevant and targeted offer as appropriate.

An ecosystem of technology suppliers is developing to address the emerging need for e-retailing platforms. Travel technology companies like Datalex, Farelogix and Openjaw Technologies spring to mind.

But to get effectively merchandising, airlines also need to get analysing. The famous online retailers got to where they are by not only analysing customer and transaction data, but then using it to promote and refine their wares. Airlines have invested heavily in their direct channel online capabilities. This will include deep analytics about visitor traffic and online purchases. The same rich insights are available when using XML or JSON APIs. Triometric, for example, offers a customer and distribution intelligence layer on top of the merchandising platform. This gives airlines deep visibility into their search traffic, and how they are meeting demand via the indirect channel. So there is no excuse for airlines not to make sure they are seeing the full distribution picture.

The Four Pillars of Online Conversion

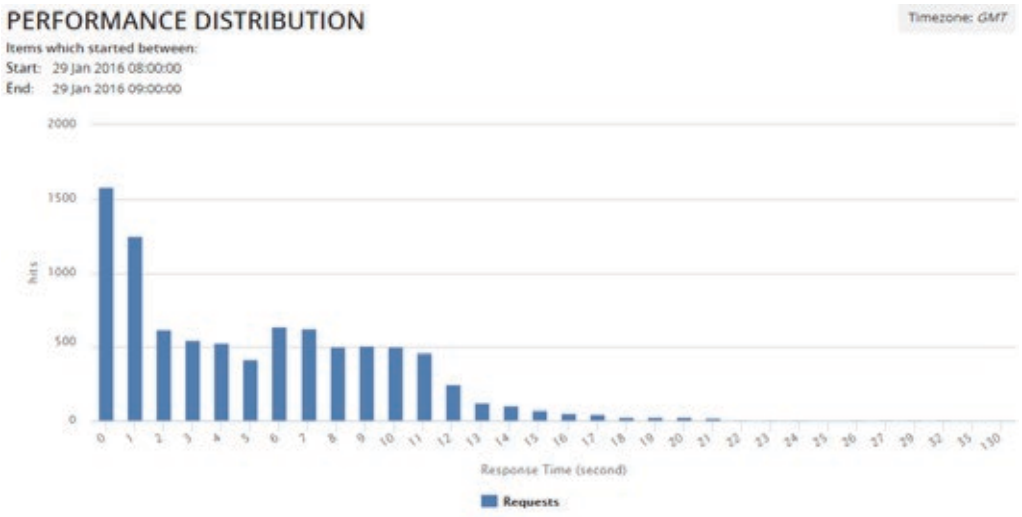
At Triometric we have identified four fundamental performance areas that provide the critical insights needed to successfully and profitably distribute
travel products:

1. Operations
2. Availability
3. Pricing
4. Relevance

We first identified them when working with our clients in the hospitality sector, but they are generic and apply equally to airline merchandising and distribution. We call them pillars because each column represents a cornerstone to support the objective of 'using real-time data to deliver relevant offers to the right customer, at the right time and for the right price' in the knowledge that the technology infrastructure is performing optimally and conversion opportunities are not lost.

1. Operational Performance

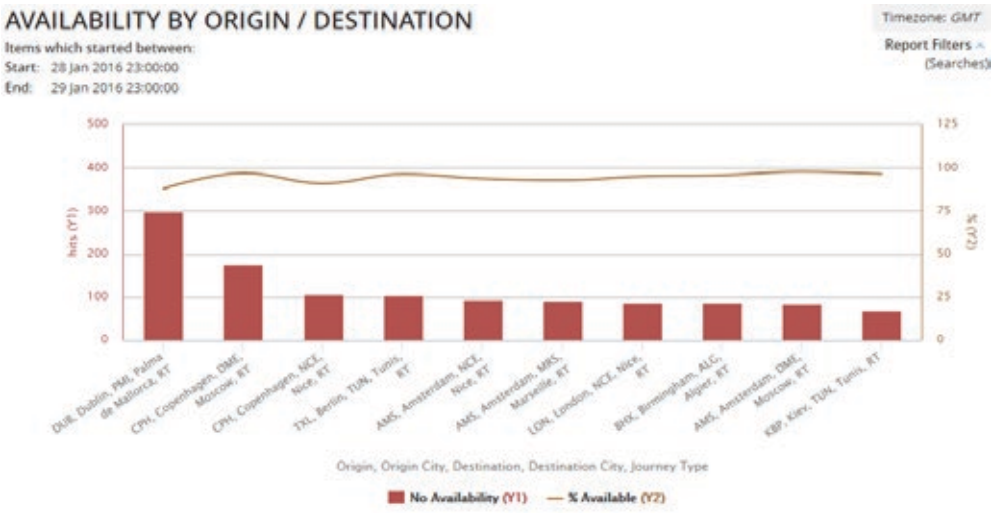
The performance of servers, applications, networks is crucial to doing business. If servers or networks are too slow or even worse the connection timeouts then the searches may not be received and the offers will never be presented to the end traveller. If the search requests contain undetected errors, again the opportunity to respond correctly fails or is compromised. With the right monitoring tool in place these things can be easily spotted, automatically alerted on, and rectified before too much damage is done. If not so straightforward, drill down capability can isolate root causes. For example, poor system performance or capacity issues can be caused by too many requests coming from one or two sources stressing the system, with detailed analysis showing high request volumes but poor conversion rates. Detecting and understanding the causes goes a long way towards being able to resolve the issues.



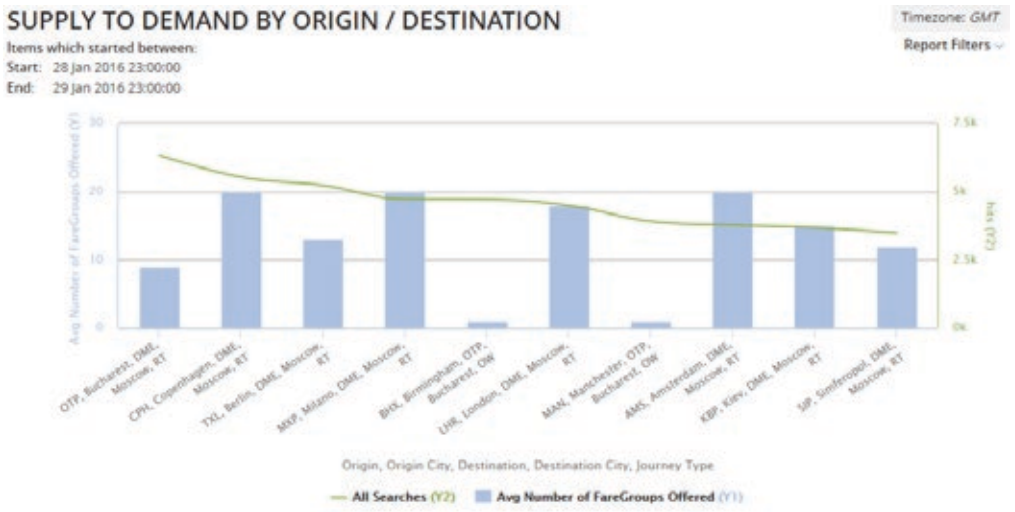
This chart is a histogram of the number of requests by response time in one second buckets. It provides us with a very clear view of the spread of response times that our system is providing to clients (OTAs). Whilst there are two major peaks in the first two buckets, there is also a very long tail of much slower responses with even a small number as slow as 130 seconds. The reality is that the modern world is impatient and anything longer than approximately 2 seconds (never mind 2 minutes) is too long for search processing.
In practical terms, this chart indicates that there is a lot of work to be done in improving the response times of all the requests (the majority) which are in the third bucket and above. The next stage in any investigation would be to examine the slower responses and build a picture of why they take longer. That clearly requires good quality "drill-down" data.

2. Product Availability

Airlines have a finite number of seats to sell, but these are perishable in nature. The business objective remains to maximise the revenue per seat mile, but airlines are constantly challenged by downward pressure on fare structures, fluctuating demand patterns, and the risk of inventory not being used. Unsold seats represents lost revenue so monitoring inventory availability and how this is communicated in search requests and responses makes sense. Analysing searches against availability data helps airlines to match their product inventory to demand. It is also possible to identify when system glitches result in a search request being presented as a 'no availability' response, when in reality there is availability. When errors creep in resulting in wrong availability responses, the chance to sell the seat and associated ancillaries is lost.



This chart provides with a very simple view of our 'no availability'. By examining each response for the inclusion of at least one product offer we can build up a picture of the percentage of requests which show availability and by implication the reverse - no availability. Understanding which routes are showing the worst availability for all searches and focusing efforts on resolving them is one the simplest ways to eliminate a long list of potential causes for not offering product. Not having product is clearly one of them but very often it is far from the most prevalent. Errors in mappings, enabling of buckets and other factors tend to be more common. The next stage of any analysis would be drill into each bar in chart to establish the route cause and eliminate it.

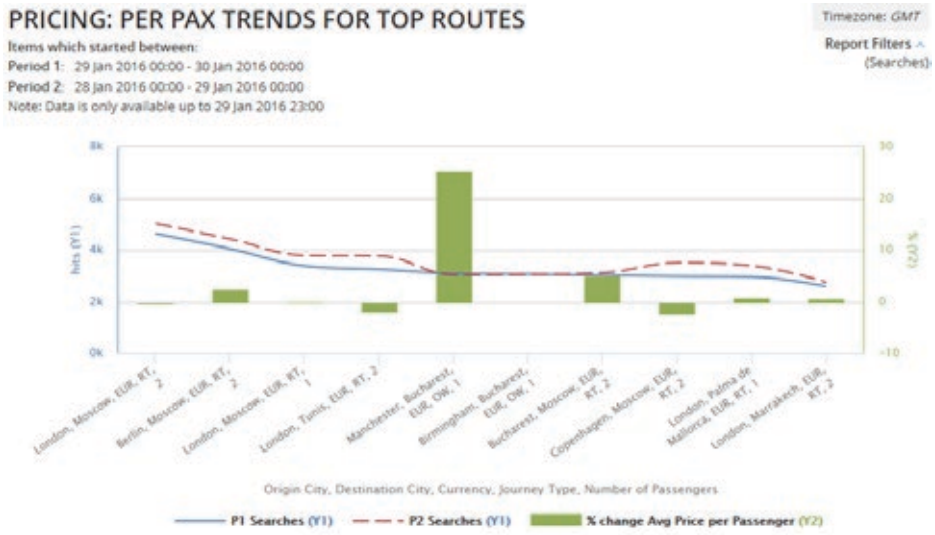


Supply to Demand is based on examining the quality of the responses that are being sent back. The <FareGroup> element in a NDC XML response document represents all the information for one priced up offer including all the hops and all the taxes. In NDC a response will contain a list of these entries, so for product supply tracking we can track the number of <FareGroup> 's we have in each response and build up a picture of how many offers we are making to customer across our main routes – the supply level. This chart depicts how drops in supply can be detected very rapidly and in this particular dataset we can see two routes which clearly have an issue. Whilst this could be a capacity issue, it is more likely there is some error in the system.

3. Pricing

Getting the best price for the seat is obviously key, and NDC is creating the need for flexibility to vary the product offering, for example, with respect to price, not just within the 26 booking classes but also to include the ancillary products and services available as part of a response to a search request. Ultimately, ancillary revenue should not just be about baggage fees or other unbundled items but should aim to create genuine value propositions based on increasingly real-time information about customer preferences and needs and using that information for targeted services. This calls for customer-centric retailing with the ability to push relevant content at the right price. In the long run there will be a need for revenue management systems to be able to leverage real-time pricing capabilities.

Analysing price data as part of search requests and subsequent bookings can deliver a number of key insights such as which routes, classes or ancillary offers are more popular or deliver the best returns. This can be useful in support of an airline's yield management or margin management strategies. Crucially it can also deliver information on what the look to book ratio is in terms of delivering bookings and therefore what the revenue is per search from any one channel being monitored. Not all channels or aggregators are made equal and some will make heavy system demands with many requests, but deliver few bookings. Searches can be considered a resource overhead. Fewer bookings would be less of an issue if analysis showed that the bookings were higher in value and therefore of good quality.



Capturing the actually price offers being sent back in every response, part of the detailed information within the <FareGroup> element of the NDC response XML ensures that an organisation is actually offering what it thinks it is offering and avoids any expensive potential gaps.

This chart is based on comparing the average cost of flights per passenger across two consecutive days for a set of major routes. In addition the two lines show the volume of search for each route which are broadly similar across the two days. The green bars however show the %change in price by route. The large green bar in middle of the chart captures a dramatic 25% increase in the cost of flights for that route. Unless there has been some dramatic surge in bookings then this would likely be down to human error which will most certainly dissuade prospective travellers.

4. Relevance

With NDC, airlines have the opportunity to know their customers, which is key to understanding what drives their purchasing decisions. Understanding this is the basis for creating those relevant offers in terms of bundles and ancillaries that are more like to convert.

Although the ideal 'personalisation' intent is to be able to track search history combined with transaction history to build up an accurate picture of the individual passenger to make recommendations, it is unlikely that travellers will be inclined to provide the detailed travel history needed for such true 'customisation' of the travel experience. Whilst there will be a proportion of frequent flyer IDs, this generally leaves airlines becoming more creative with segmentation of searches and the offers that they make at a 'predicted' segment level.

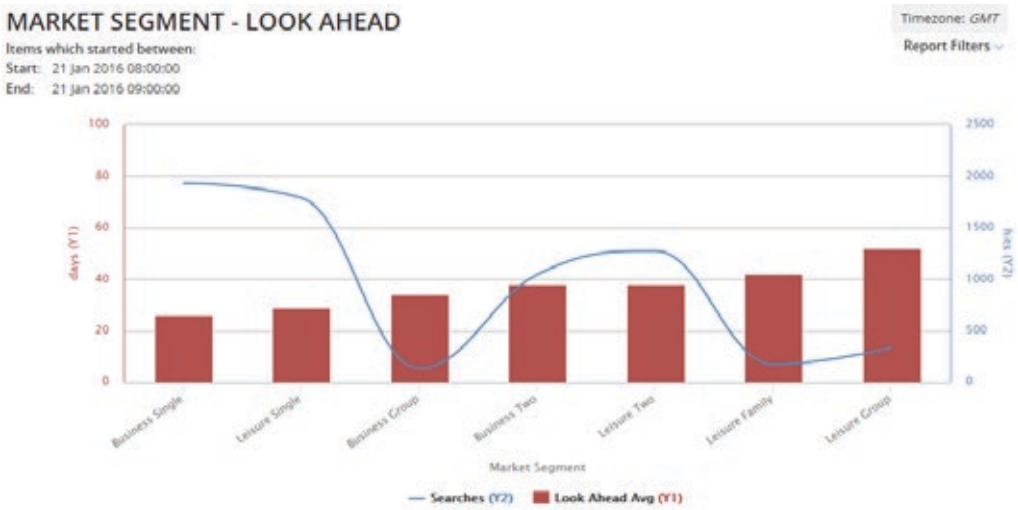
The predicted segment needs to be identified based on details with in the search request itself. This is a more natural starting point and can be instrumental to successful conversions. Classic marketing techniques in traveller profiling and segmentations can help an airline understand which customers are likely to buy specific ancillaries so the airline can offer them the right products at the right time. But to make more relevant offers that convert segmentation needs to be combined with studying buying behaviour.

Taking the context of the search into account helps airlines segment their passengers into a number of different traveller types such as family, business, leisure, singles, couples, groups, etc. Buying behaviour analysis, especially of ancillaries should then be added to the mix, in particular what ancillaries get searched for and which ones actually get bought. Understanding how far into the future certain segments tend to search and how far ahead they book tells the airline when the buying sweet spot has been reached.

Insights here can help airlines develop fare bundles and devise timing of new ancillary options taking account of particular customer segments such as "vacationing families with small children" or "businesswoman on long-haul flight". When thinking about a family traveling versus a business-class traveller, different products will appeal to each. Even within those segments, there may be sub segments and different timings of offers needed to optimise conversion. By looking at whether passengers are travelling for business or pleasure, whether they are alone or part of a family and if they are on a connecting flight to join a long haul leg is all key information that allows airlines to differentiate the services and products they offer.

Bottom line is that an airline's merchandising strategy is going to have to address the needs of various segments using real-time data.

Offer Management is an excellent term that captures how revenue management and marketing will need to co-operate on what to put in front of a prospective traveller and at what price across various points in the travel planning and buying cycle.



Customer buying behaviour is the subject of many a conference presentation but much of the discussion will be based around belief rather than fact. This chart is data driven and extremely interesting. Firstly it presents the concept of a segmentation. By analysing the traveling party members, the day of week of departure, the duration, the Saturday night stay and other factors across a large set of searches it is possible to build an educated guess as to the intent of travel for each search. In this case this has been used to separate searches into business and leisure and has then been combined with the party member data to provide some classic segments. By analysing the difference between the date of search and date of departure for each segment, it becomes straight forward to estimate the average "look ahead" value. We could repeat this approach for bookings to get a "book ahead" for each segment. The time period between the look ahead and the book ahead is the planning period. It could be that this planning period is the magical time to make that winning package/price offer.

Closing the Loop

In online retailing, an airline's chosen distribution channels and partners (connected via APIs) are continuously sending search requests to the merchandising platform. In turn these searches are responded to according to a set of merchandising rules set by the airline in line with its distribution objectives and real-time parameters.

At this point insights about which group of passengers are likely to buy which fare group,
bundle or ancillaries may not be well developed.
Whilst the expectation is that collection of search and booking data, followed by deep analytics will deliver the steer needed to develop offers and rules, there are other factors that come in to play when dealing with purchasing behaviour that may transgress the norms.

For example, a higher airfare revenue from a late booking may be offset by an inclination not to indulge in ancillaries, while an early booking passenger who benefited from one of the cheapest airfares may be more willing to splash out on extras, either at the time of the booking or in the weeks ahead of the trip – the second wallet. So our merchandising rules need to be quite sophisticated and are very likely to evolve over time not just because they perhaps lacked initial sophistication but for even more basic reasons such as the market and buying behaviour is forever changing.

The question is how to fine tune and keep tuned all of this expanding rule base? This is where the airline needs to close the loop on rules deployment, testing and evaluation. The data collection process that we use to build our initial understanding of buyer behaviour and formulate the rules is best placed to subsequently track the uptake of the rule-driven offers that are being made to search requests and hopefully turning into bookings. This closing of the loop allows the analytical process to generate the feedback necessary to optimise and maintain the rules. If done correctly, this becomes a never ending cycle of continuous improvement.

How quickly can changes be made and how dynamic can this type of process become?

It is likely that the initial system will be very manually driven and managed. Decisions and changes will be data driven but perhaps on a weekly timescale. This is a facet of current airline practice rather than the market. If the collection of data is in real time then it becomes feasible to use a real time analytical feedback loop to control which rules are in operation at any given time. It's rather akin to developing a set of Offer Management rules to manage the Offer rules – sometimes it may be fine just tuning existing rules whist on other occasions it will be about turning offers off or on.

This vision is not without some precedent. Automated approaches to Revenue Management, which is one part of the Offer Management process, already exist. These semi-automatic Revenue Management systems track bookings and make pricing change recommendations which a human then elects to act on. Whilst the basic principal is there, these systems only use a fraction of the data they could be using (recent booking statistics vs. search/demand and book by segment) to make the recommendations they currently do. One can expect these technologies to grow in sophistication as the NDC market takes shape and in the data available expands to include shopping traffic analysis which represents true demand.

Conclusion

Everything that has been discussed up to this point naturally assumes that the airline in question has access to the necessary data to start this process running. The current reality is that the existing GDS based distribution systems are based around delivering bookings whilst the real distribution, namely handing of search traffic, is outsourced and very little is known about the search process.

In the brave new NDC world, the opportunity is to take control of this distribution. The value of information derived from the search traffic should not be underestimated. Its ability to effect conversion rates by even modest percentages will likely result in the addition of hundreds of millions of dollars to the bottom line. This doesn't necessarily mean that every airline should suddenly take on the burden of building and running a merchandising system either from scratch or off-the-shelf, but it does mean that whatever technology and partners they chose, one consistent objective is to make sure that the system offers the appropriate analytics of the shopping (search and booking) traffic along with access to the merchandising rules engine so that they can be integrated to provide the loop back described above.

After all if airlines want to mimic the customer centric approach epitomised by Amazon, then they really need to build systems and processes that are data driven from the ground up.

Triometric

At Triometric, we specialise in delivering intelligence not only to the commercial teams (distribution, marketing or revenue generation) but also the IT Teams. Our real-time analytics systems help keep IT systems optimised and fine-tuned to meet the demand of high volume search traffic is essential. For business and IT, this isn't just a few search request counts or averages broken down by agent or flight, our reporting covers detailed information on:

- Infrastructure performance: IT and business level errors, full response times, timeouts
- Product availability: mapping and other errors, inventory gaps, supply to demand
- Price sensitivity, Revenue and margins: offers being made, look-to-book, booking revenues, dollars per search
- Relevance and customer behaviour
- Metasearch APIs and third party supplier monitoring

All of this and more can be delivered at scale and in near real-time without impacting your booking engine.

Contact us for more information or a demo: **info@triometric.net**