Practical applications of fare search shopping data

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Agenda

01 Background

02 Dynamic availability and pricing

03 Codeshare fare management

04 New sources of demand signals

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BACKGROUND

Why is shopping data important?

Airlines can use streaming shopping data to keep track of current available fares in the marketplace

- Modern travel agency and airline lowfare search tools are good for customers and help inform them of a wide variety of different airfare products and prices in the marketplace
- But the sheer volume and constantly changing nature of available prices makes effective P&RM management processes very challenging for airlines
  - Combinations of Markets x Depdates x Arrdates x Channels can exceed 100M separate items for a large airline

Traditional pricing and revenue management methods

- Use fares management tools to file and monitor airfares at the market level
- Revenue management systems to forecast demand based on their own sales history data
- These processes are important and allows monitoring all the possible price points coupled with consideration of the airline's own sales history to project demand
- However, they ignore the current active competitor prices at the detailed level (i.e. specific flight itineraries, fares, departure and arrival dates) that actually show up in lowfare search (i.e. what the customer sees)

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Why is shopping data important? (cont'd)

Impacts of restriction-free and lightly restricted pricing

- Emergence of restriction-free pricing (RFP) in many markets means airlines had to replace 'strong' market segmentation (previously afforded from fare restrictions) with much 'weaker' market segmentation
- Necessitates a greater reliance by airlines on active management of fare availability
- Means that carriers must pay much closer attention to current competitive situations for each market and future departure date (e.g. Cary, JRPM, July 2004)
  - Cary argued that current generation of RM systems is inherently flawed since it focuses on airline historical trends (in isolation) rather than considering the pricing and availability actions
- 17 years later, most carriers still gauge their competitiveness primarily on filed fare information, and their RM systems primarily use historical booking data and scheduled capacity

An airline can be up-to-date in its own filed fares and RM controls, yet it can still be poorly priced in the market (with respect to the customer's own wants/needs and competitive offerings)

- Use streaming shopping data to identify opportunities to improve pricing decisions at the detailed level
- Also useful for other RM-related processes for codeshare fare management and market demand shifts

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DYNAMIC AVAILABILITY AND PRICING

Shopping example (the “Yin/Yang” principle of shopping)

For this shopping result, is AF well positioned?

- AF option has SVO airport and an attractive morning departure
- However, it is worst price and longest elapsed time of all options, so it is generally considered overpriced
- Most airline P&RM pricing analysts would deem it as an overpriced option and look for sales improvements

For the same example, how well positioned is the A3/S7 reciprocal codeshare in these results?

- It has a lot of desirable features: lowest price, faster travel time, local carrier and non-stop service
- Although a codeshare flight, most customers would probably choose it (by a large margin)
- Even for a price sensitive customer segment, the price advantage is large (opposite situation of AF)
- Most airline P&RM analysts would consider the A3/S7 option underpriced and would look for yield opportunities

Market Position from Shopping Data

(Athens to Moscow for a given departure date)

Best flights Learn more

US$129 one way	23:30 – 04:10+1 Aegean · S7	3h 40m ATH-DME	Non-stop
US$195 one way	16:55 – 02:00+1 KLM	8h 05m ATH-SVO	1 stop 1h 05m in AMS
US$232 one way	15:10 – 01:35+1 Vueling · Iberia	9h 25m ATH-DME	1 stop 2h 00m in BCN
US$284 one way	06:30 – 18:35 Air France	11h 05m ATH-SVO	1 stop 3h 45m in CDG

- For simplicity, above example is a one-way request
- The same principles apply to roundtrip results also

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DA: overpriced example (AF)

AF Fares Management		AF Revenue Management *
Y	$ 355	All remaining seats
K	$ 320	45 seats
M	$ 284	19 seats
E	$ 266	~~Closed for sale **~~
Q	$ 249	~~Closed for sale~~

$155

Market Position from Shopping Data

Best flights Learn more

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* Example airline rules setup for DA

Suppose E was closed automatically due to days to departure rule, and Σ(bid prices) = $250; don't fall below it

Dynamic Availability:

Open E class @ $266 (-$18)

K	$ 320
M	$ 284
E	$ 266
~~Q~~	~~$ 249~~

Old Lowest Selling Class

New Lowest Selling Class

Optimal Price

* Example airline rules setup for DP

DP: airline wants to maintain a minimum $10 margin above the bid prices, so optimal price is bounded at $260

Dynamic pricing control:

Reduce price to $260 (-$24)

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DA: underpriced example (A3/S7)

A3/S7 Fares Management		A3/S7 Revenue Management *
Y	$ 204	All remaining seats
B	$ 178	15 seats
H	$ 143	7 seats
K	$ 129	2 seats
M	$ 89	~~Closed for sale~~

$66

Market Position from Shopping Data

Best flights Learn more

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* Example airline rules setup for DA

DA: don't upsell by more than two fare classes, so the result is bounded at B class for $178

Dynamic Availability:

Upsell by + $49

Y	$ 195	Optimal Price
B	$ 178	New Lowest Selling Class
~~H~~	~~$ 143~~	
~~K~~	~~$ 129~~	Old Lowest Selling Class

* Example airline rules setup for DP

DP: don't increase above next highest competitor option, so optimal price is bounded at $195

Dynamic Pricing:

Price increase +$66

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System processing: Dynamic availability and pricing with market and customer context

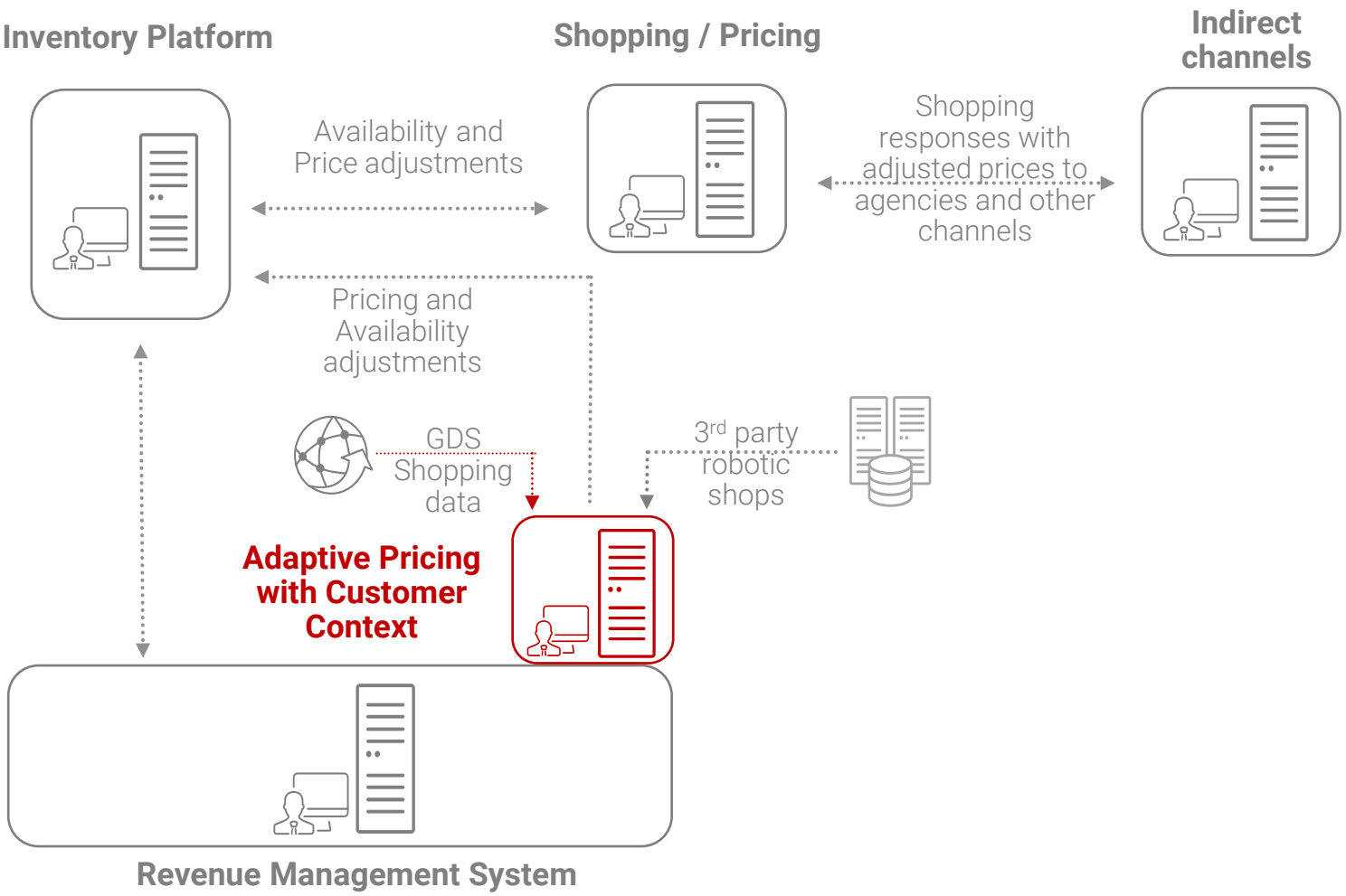
Use shopping data and ML tools to identify revenue opportunities in the market (despite idealized RM and strategic pricing positions)

Make price adjustments (considering market context, airline pricing strategy and schedule quality)

Different data sources as input (shopping data)

Dynamic availability is more appropriate when omni-channel distribution is desired

Dynamic pricing is limited to airline direct channels (e.g. airline.com website and NDC)



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CODESHARE FARE MANAGEMENT

Codeshare partner fare inconsistencies are an ongoing challenge

Operating Flight

Outbound flight

worldair
8:40 AM – 1:25 PM
ABC - EFG
WW77 Economy Class · Airbus A330
Average legroom (31")
6h 45m
Wi-Fi
In-seat & USB power
On-demand video

Return flight

worldair
10:10 PM – 6:25 AM+1
EFG - ABC
WW78 Economy Class · Airbus A330
Average legroom (31")
Overnight flight
6h 15m
Wi-Fi
In-seat & USB power
On-demand video

Fare Disparity

Book with Partner Air Marketed as PA* 2850, 2851	Marketing airline	$ 817
Book with World Air WA77, WA78	Operating airline (host)	$1,231

Fare mismatch
$414

Root causes of inconsistencies

- Volume and frequency of pricing adjustments
- Misaligned fare class mapping
- Insufficient inventory controls
- Fare filing errors

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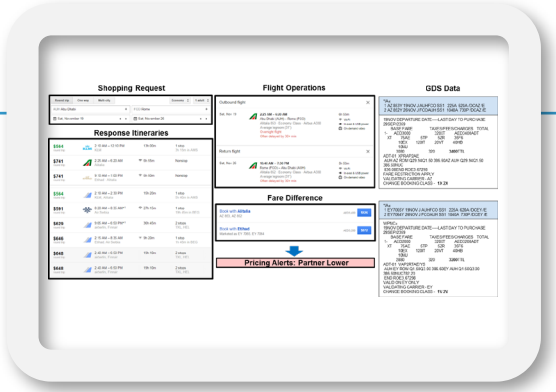
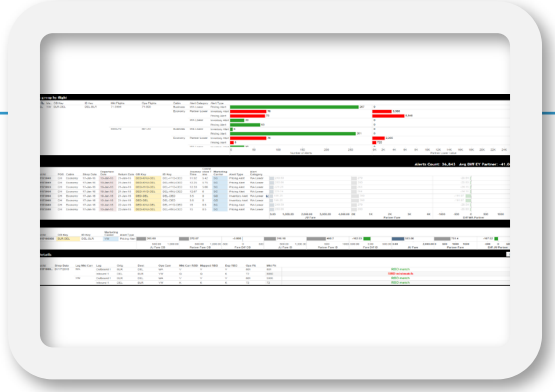
A Codeshare Management process identifies fare imbalances and providing real-time insights and analysis

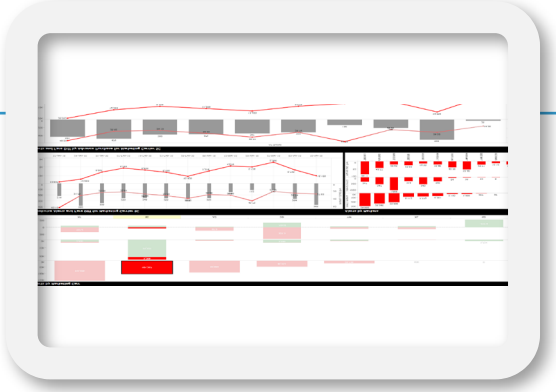
SHOP → DISCOVER → ACTION



Retrieve codeshare partner shopping data



Fare alerts generated based on rules engine



Advanced visualizations for quick analysis and decision making

- Codeshare partner fare misalignment causes revenue leakage
- Shopping data are collected daily from GDS/3rd party with robot based on adaptive smart-shopping algorithm

- Detects occasional and systematic fare differences and availability misalignments
- Alerts host airline indicating if resolution requires an inventory action or pricing action

- Incorrect fare class mapping is corrected by analyst
- Incorrect fare filing is resolved with partner
- Incorrect inventory availability is addressed by adjusting partner availability

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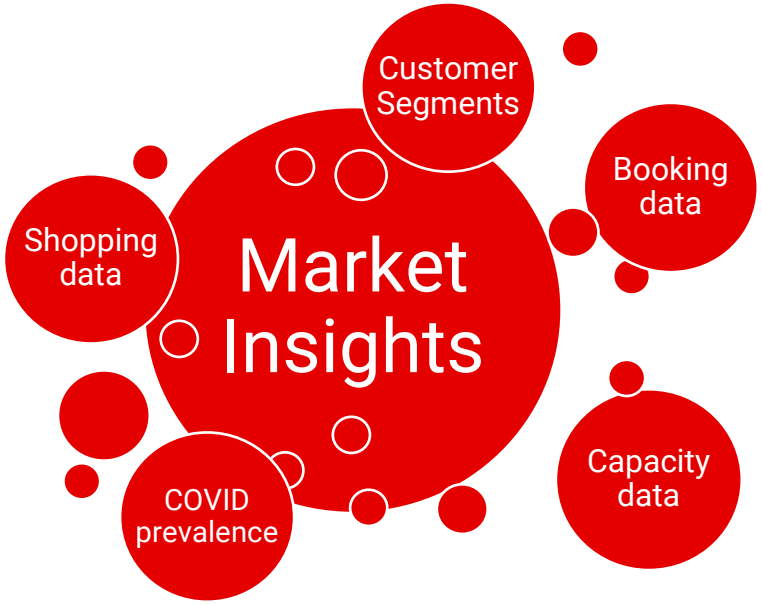
NEW SOURCES OF DEMAND SIGNALS

Market Insights - Trends & Actions

Realize new opportunities using rich insights from shopping, booking, capacity and COVID prevalence data

Visualize evolving impact of COVID
- Get the latest country-wise cases
- Understand the internal and international restrictions applicable for each country

Discover Current Network Trends
- Discover top searched markets and country to country shopping pairs
- Analyze the capacity, shopping and booking evolutions and split across airlines
- Visualize shopping and booking splits across trip types and AP and LoS buckets



Analyze Recovery Insights
- Analyze recovery by looking at percentage recovery in Capacity, Booking and Shopping

Visualize Market Condition
- Analyze capacity, shopping and booking evolutions for selected months
- Analyze market share in capacity and bookings
- Visualize network level capacity adjustments
- Visualize customer split across trip purpose segments

Perform Deep Dive for each Market
- Dive deep to understand shopping and booking trends, capacity adjustments and trip summary

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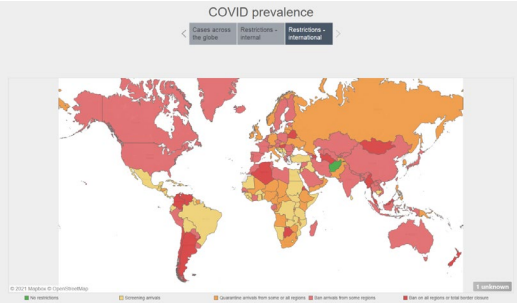
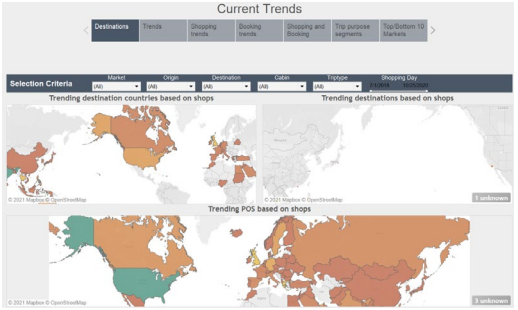
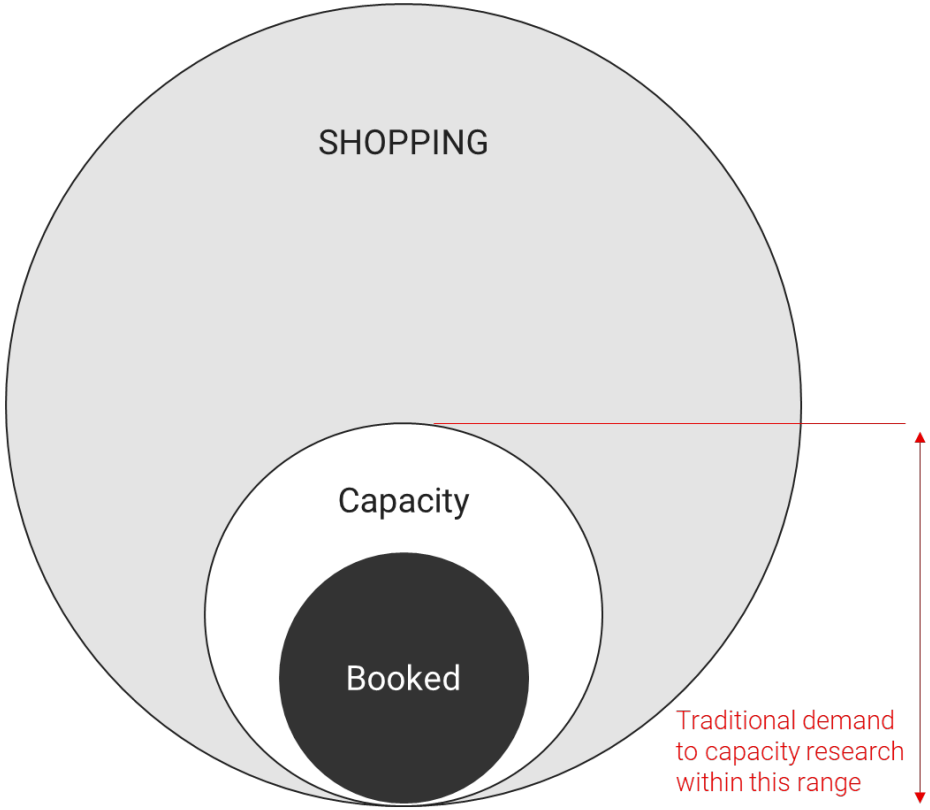
Identify Demand

Visualize evolving impact of COVID

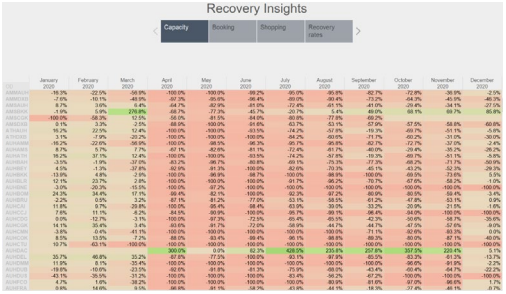


Discover Current Network Trends



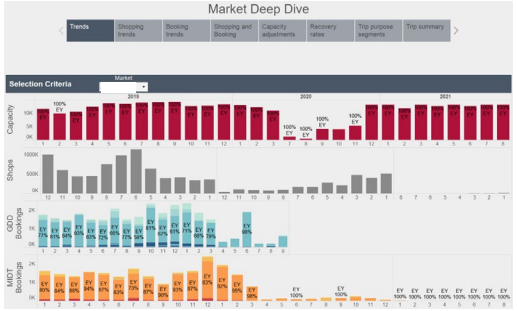


Analyze Recovery Insights



Visualize Market Condition

Perform Deep Dive for each Market



- Booking data is limited to the capacity in the market
- Shopping data reflects quantity of interest
- Post COVID world this will be beneficial as travel schedules and patterns change

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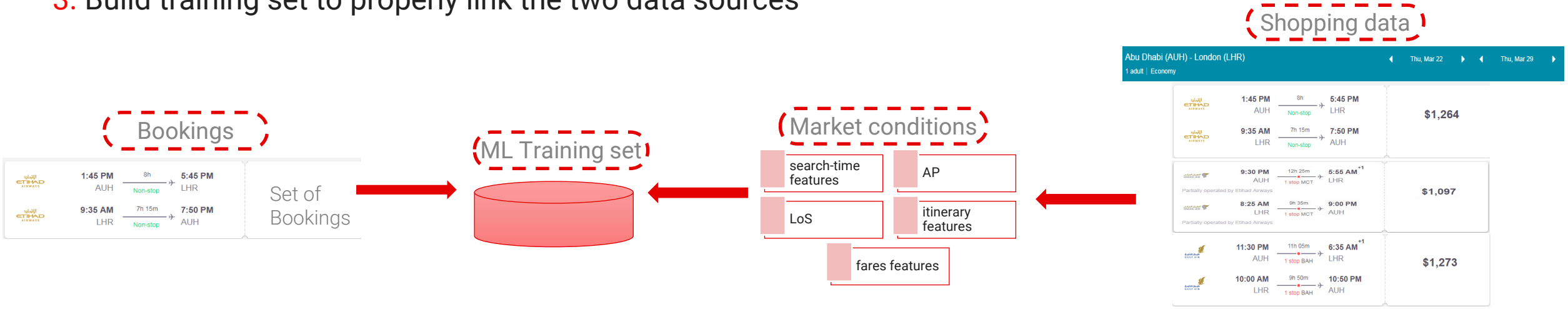
Booking and Fare Intelligence Using Shopping Data

1. Collect shopping data (robotic and organic) to model market conditions
2. Collect reservations
3. Build training set to properly link the two data sources



- Prediction of booking profiles depending on market conditions
- Prediction of fares over different dimensions
- Predictions should also consider different customer segments (price vs schedule needs sensitivity)
- These ML tools can be deployed in Dynamic Availability and Dynamic Pricing tools

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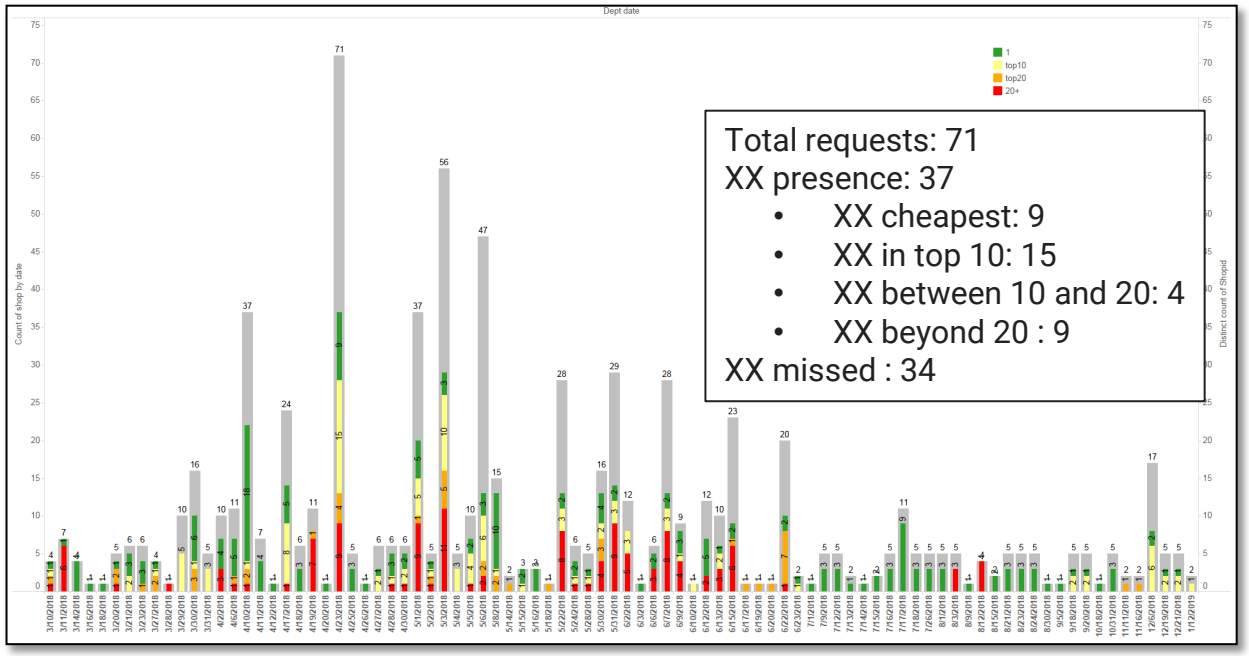
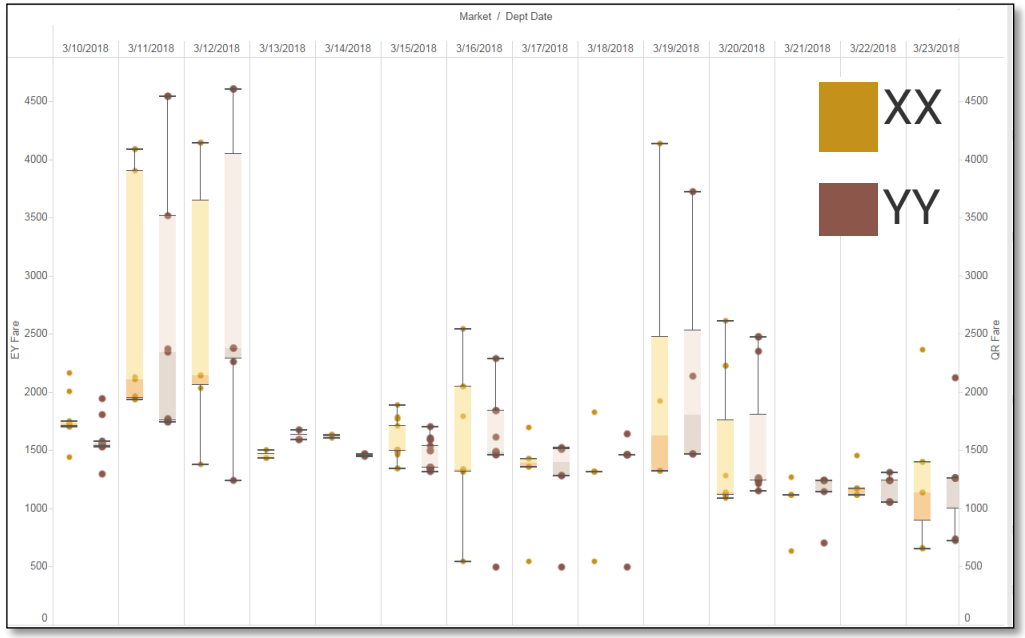
Shopping Analytics: Business Intelligence

XX presence in organic shopping response



Fare distribution and booking of XX and YY



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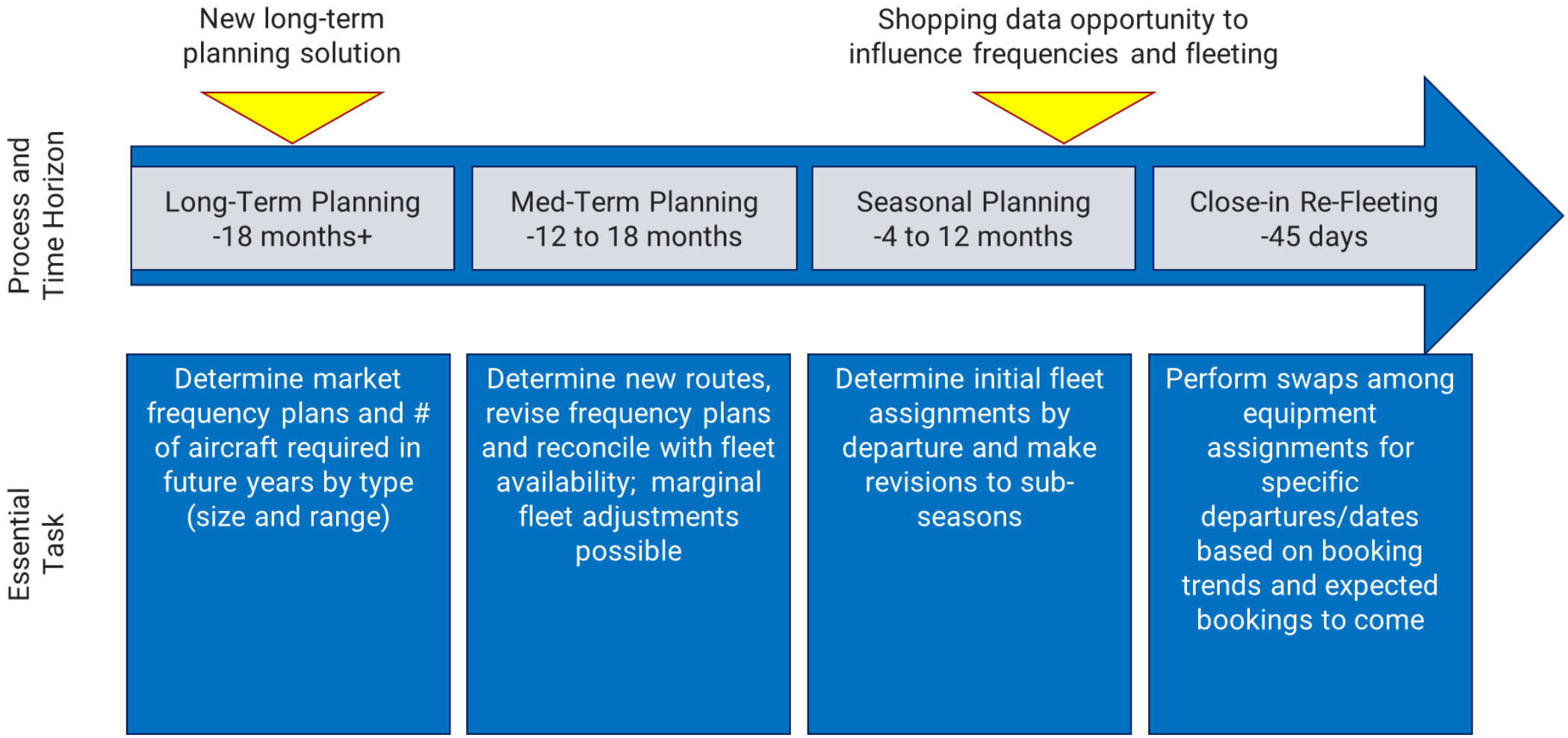
Update published schedules based on shopping data market insights



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Thank you!