An Approach to Airline Offer Management:

Dynamic Bundling and Pricing

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Speaker and Agenda

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Agenda

01 Background

02 Generic framework for offer management decision support

03 Required Processes

04 Extensions to other use cases

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BACKGROUND

Objectives

Framework for real-time, personalized air ancillary offer recommendations

Applicable to airline-direct channels (including NDC)

Extensible to more general use cases (e.g. air + ancillaries and dynamic packaging)

Why is it important?

- Ancillary sales are one of the hottest areas of airline revenue growth
- Global ancillary sales in 2020 (COVID impacted) estimated at $83B USD with 13% CAGR
- However, most airlines only support ancillary sales on a standalone (a la carte) basis or those included in static, pre-defined branded fare offerings
- Growing opportunity to use ML to offer the right bundles to the right customer at the right price at the right time.

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Offer Management Recommendations

Provide real-time recommendations for dynamic ancillary offer bundle and pricing for customer (or agent)

- If shopper is anonymous, recommend popular ancillary bundles based on the trip-request type
- If shopper is known, provide 1-to-1 customized bundle offers based on trip-request, prior purchase history and other information
- Dynamic discounting of the bundle prices is provided based on the total ancillary revenue

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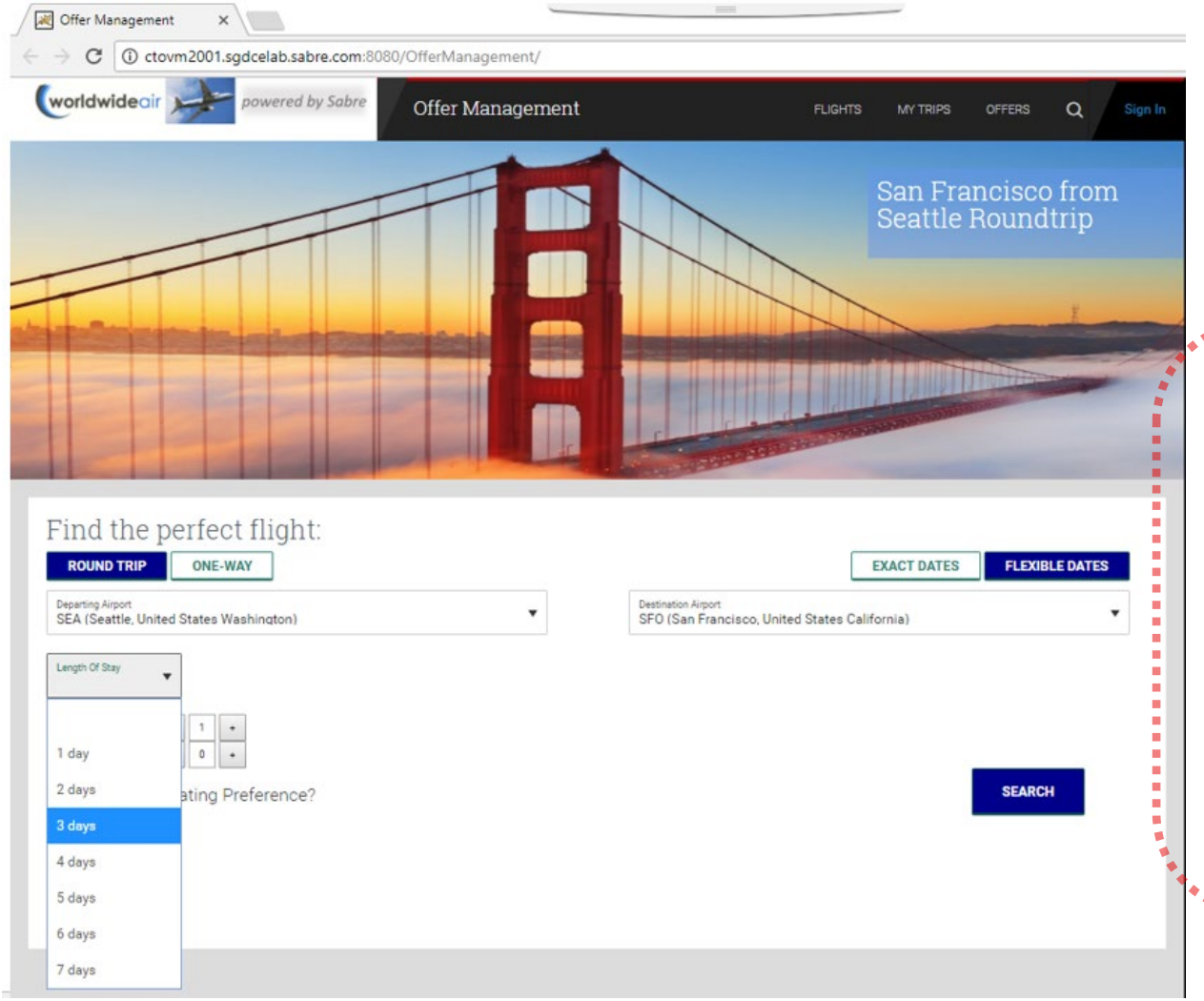
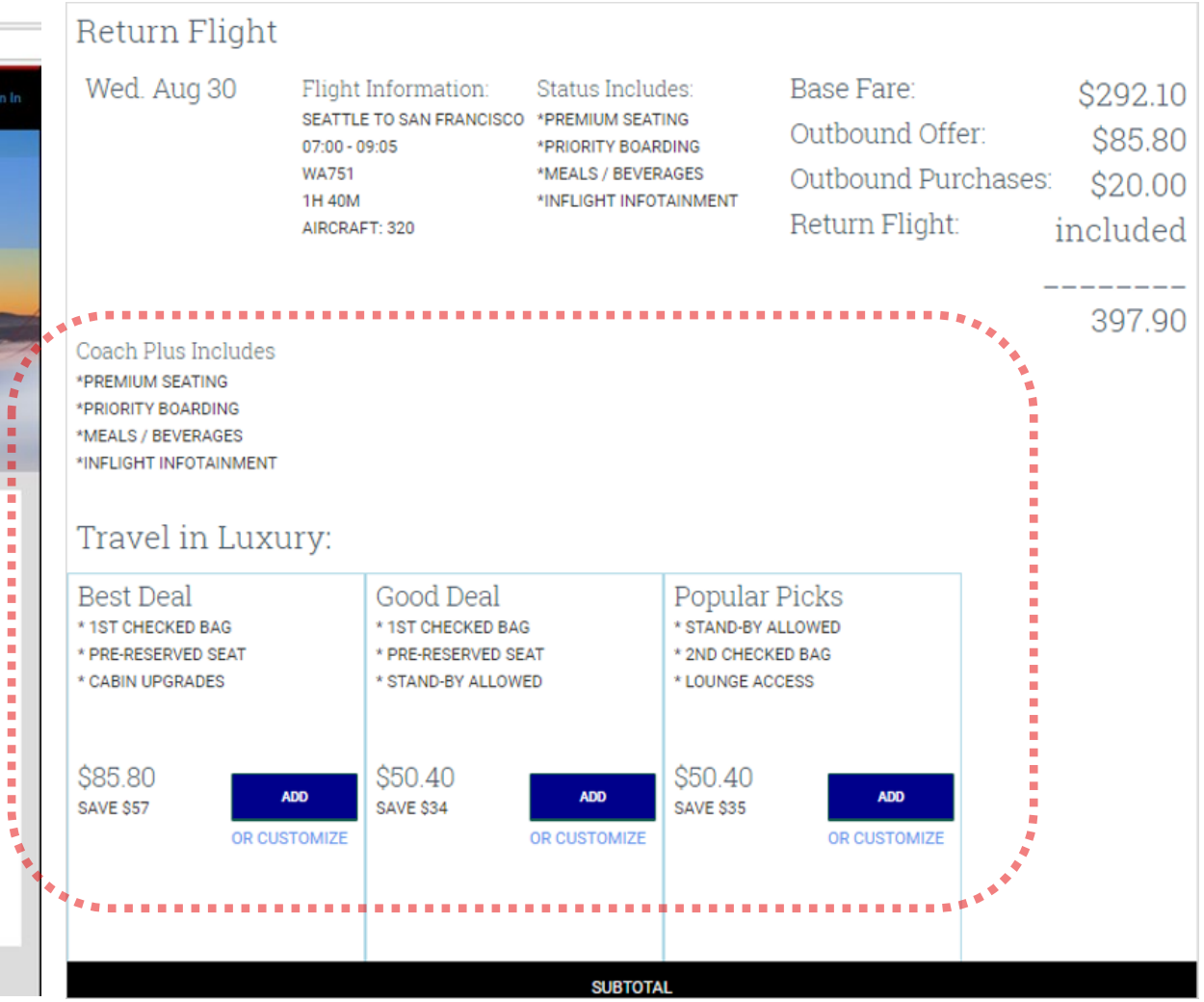
Dynamic Bundled Offer Example





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Distribution Channels

Airline Direct Channels

- The airline website and airline-managed POS tools are the most obvious initial use case
- Dynamically generated ancillary bundles are usually offered after itinerary selection
- Dynamic bundles can be included in the primary search page results, but screen real estate limitations are typically a factor

Indirect Channels

- Most airlines want omni-channel offer solutions, but dynamic offers in indirect channels based on traditional distribution are more challenging
- A combined technical and commercial approach is needed by airlines for successful growth of ancillary sales and product upselling in agency channels
- Possible to extend these technical capabilities into agency POS via API's (e.g. NDC)
- But commercial incentives are also needed to motivate agencies to invest in these capabilities and expend the additional time and effort

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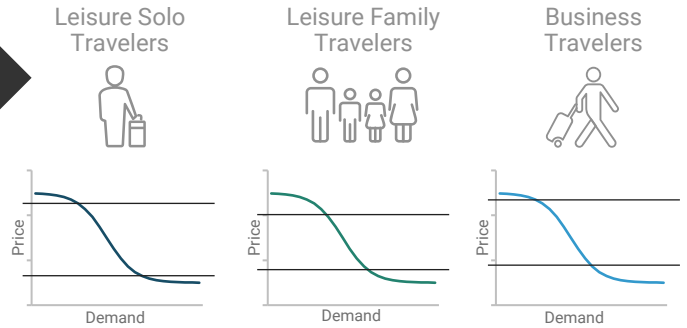
GENERIC FRAMEWORK

For Offer management decision support

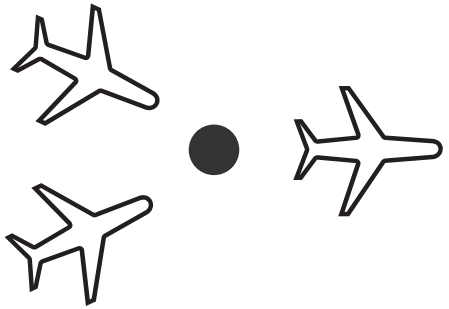
In-path, ML decision support is essential to unlock value

Population shopping and booking patterns

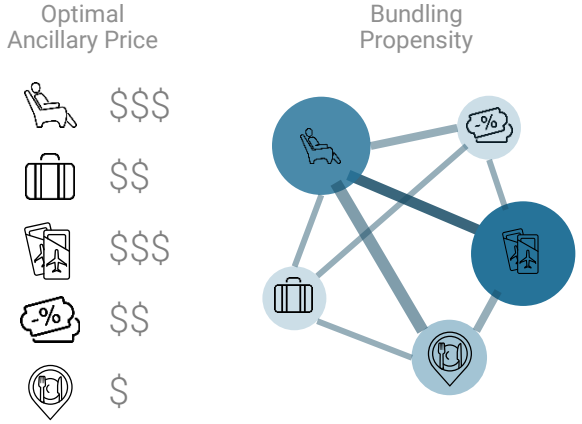
Customer segmentation and pricing



Forecasting for customer choice and optimization based on capacity



Ancillaries and bundling



Optimized ancillary bundles with price

+ $50	+ $20	$230 — 3 seats — Leisure Solo Travelers
+ $60	+ $40	$300 — 5 seats — Leisure Family Travelers
+ $90	+ $60	$400 — 2 seats — Business Travelers

Personalized offers by segment

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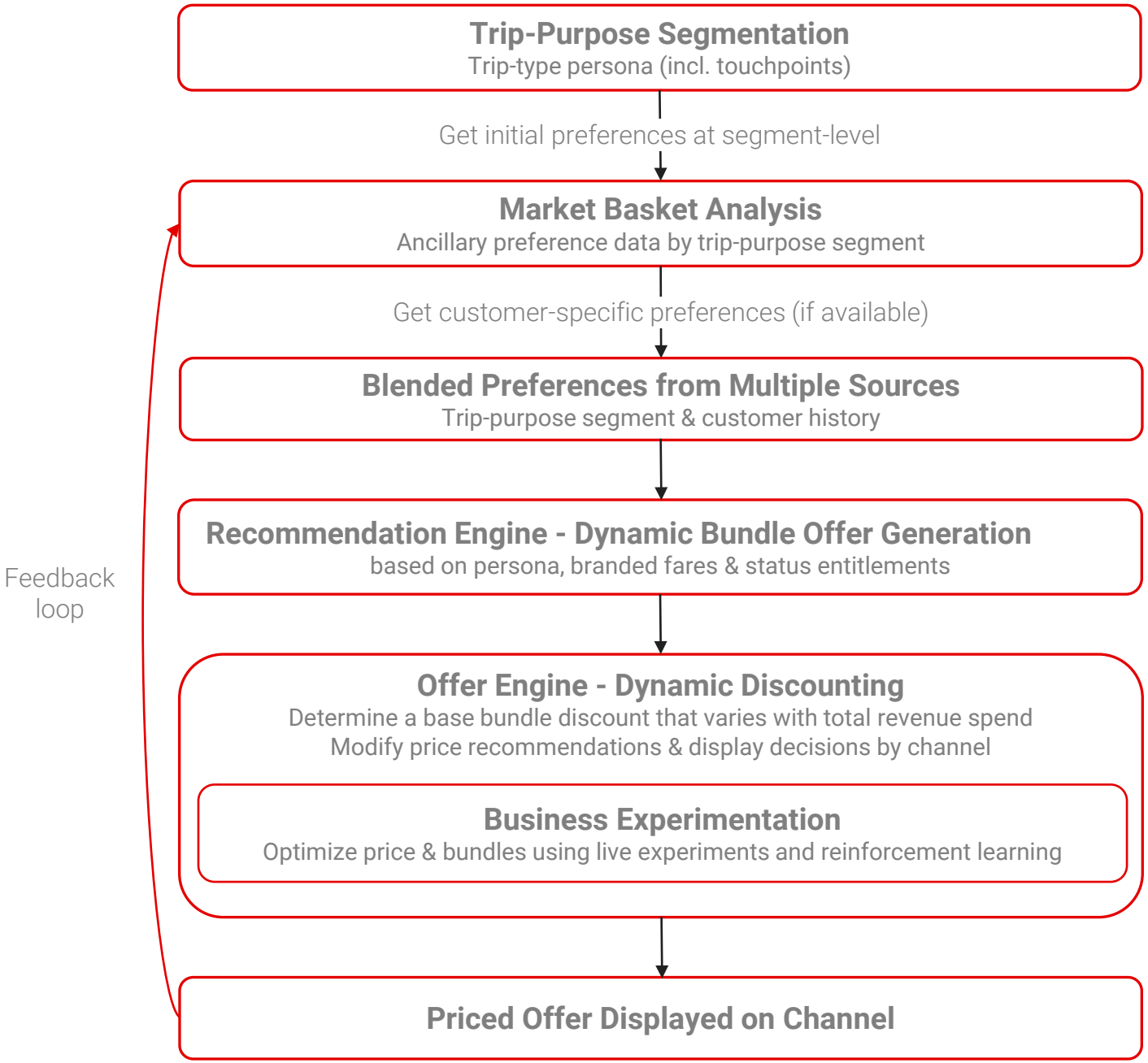
Dynamic Bundling of Ancillaries



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REQUIRED PROCESSES

Trip-purpose Segmentation

Every customer has multiple profiles based on the context for travel

- Overnight business trips
- Extended business trips
- Family vacation
- Weekend getaway without children
- Visiting friends and relatives
- …

Segment Id	Type	Business / Leisure	Advance Purchase	Length of Stay
A1	Individual	A typical business traveler	0 – 6 days	0 – 1 days
A2	Individual	Business/Leisure	0 – 6 days	2 + days
A3	Individual	Business/Leisure	7 – 13 days	0 – 3 days
A4	Individual	Leisure	7 – 13 days	4+ days
A5	Individual	Business/Leisure	14 – 20 days	Any
A6	Individual	Business	21+ days	0 – 3 days
A7	Individual	Leisure	21+ days	4+ days
A8	Couple (2)	Leisure	0 – 20 days	Any
A9	Couple (2)	Leisure	21+ days	Any
A10	Family (>2)	Leisure	Any	Any
A11	Individual	One way business travel	0 – 6 days	One Way
A12	Individual	One way, business or leisure traveler	7 – 13 days	One Way
A13	Individual	One way, business/leisure traveler that plans ahead	14 – 20 days	One Way
A14	Individual	One way, leisure traveler that plans ahead	21+ days	One Way
A15	Couple(2)	One way, couple on leisure trip	Any	One Way
A16	Family(>2)	One way, family vacation	Any	One Way

Customers when they shop may be anonymous or registered. Responses returned during shopping and offers should be relevant based on trip context

Trip purpose segmentation is the common link between shopping and offer management

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Market Basket Analysis

Recommendation Engine

Recommends bundles based on travel context

Ancillary preferences vary by Context for Travel

Trip-purpose Segmentation

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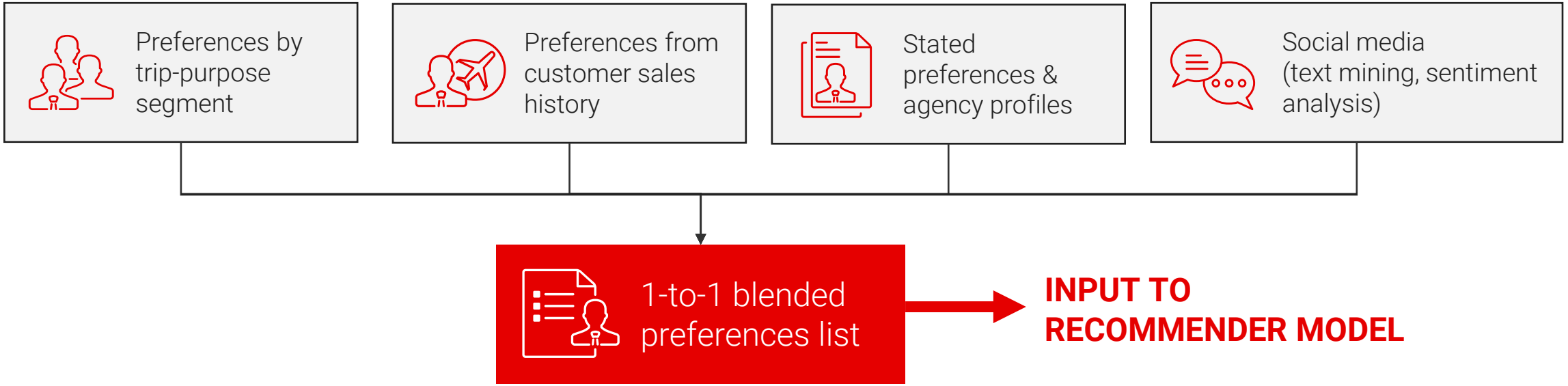
Blended Preferences

Market basket analysis is used to determine ordered preference list of items in bundled offers (including ancillaries)

- The goal is 1-to-1 personalization
- In practice it means combining historical information from multiple data sources



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Dynamic Bundle Offer Generation

Obtain ancillary preference revenue rankings by trip-purpose segment

- Determine if there are extras already included in the branded fare or that customer qualifies for
  - E.g. customer may have purchased a branded fare which includes free bags and lounge access. He/she is also entitled to priority boarding due to his/her company credit card provider
- Dynamically eliminate those ancillary items from consideration
- Choose from remaining ones to create dynamic bundles based on segment preferences

Multiple offers and product framing:

- A Sabre Labs prototype included capability to dynamically generate and price discount multiple offers, e.g.:
- *Best Deal*: based on the most preferred ancillary items for the trip-purpose segment considered
- *Good Deal*: a slightly inferior version of the first one by substituting a less preferred item for one of the original ones and also applying less of a discount (to make the best deal look relatively more attractive)
- *Popular Picks*: in case the true trip-purpose of the customer is different, add an offer based on overall, generic average preferences (i.e. not trip-purpose specific). It provides a safety net

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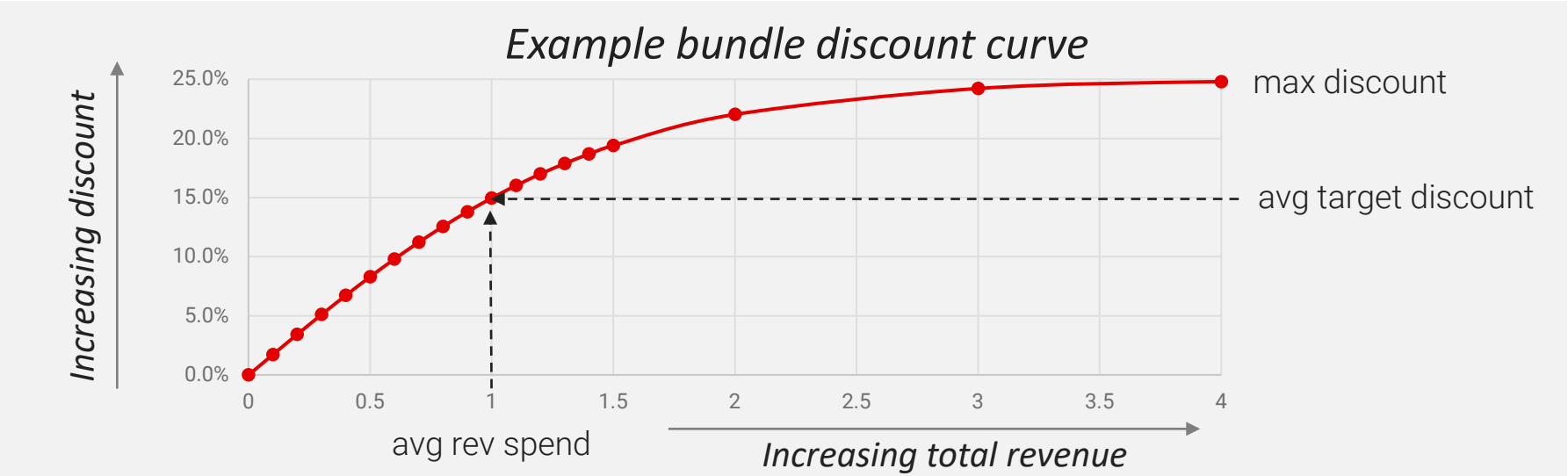
Dynamic discounting

Principle

- The greater the total revenue spend, the larger the discount applied (and vice-versa)

Compute discounts dynamically using a function (along with airline-specified parameters)

- Use a function for the dynamic discount, where average target discount is based on average historical revenue spend
- As bundle spend increases, the applied discount asymptotically approaches the maximum discount level
- Applicable discount is automatically recalculated as items are added to (or removed from) the cart



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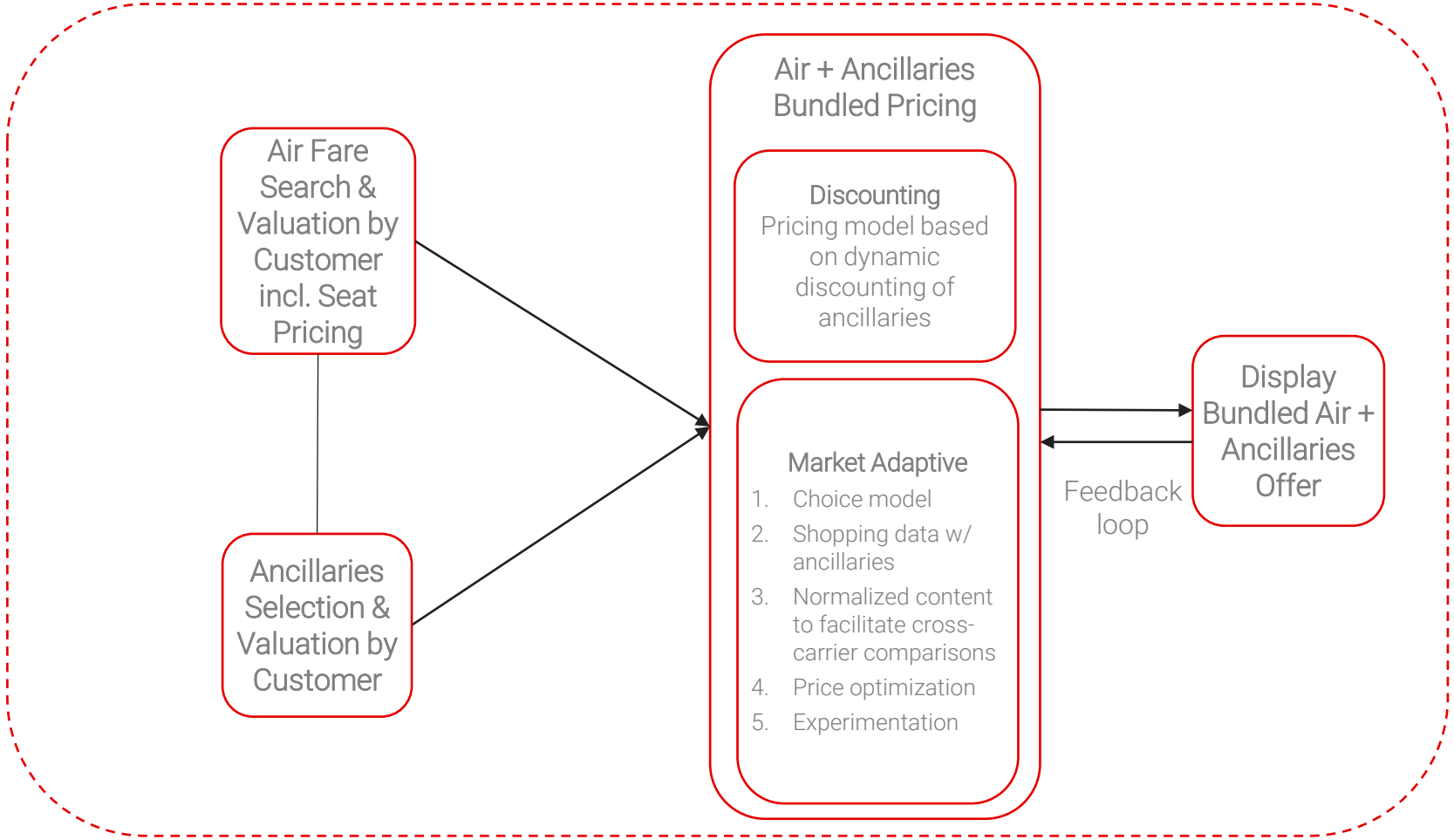
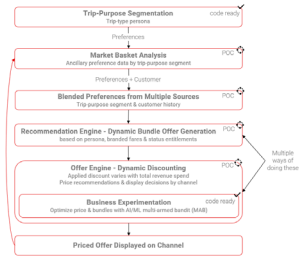
EXTENSIONS TO OTHER USE CASES

Dynamic Bundling of Ancillaries & Air





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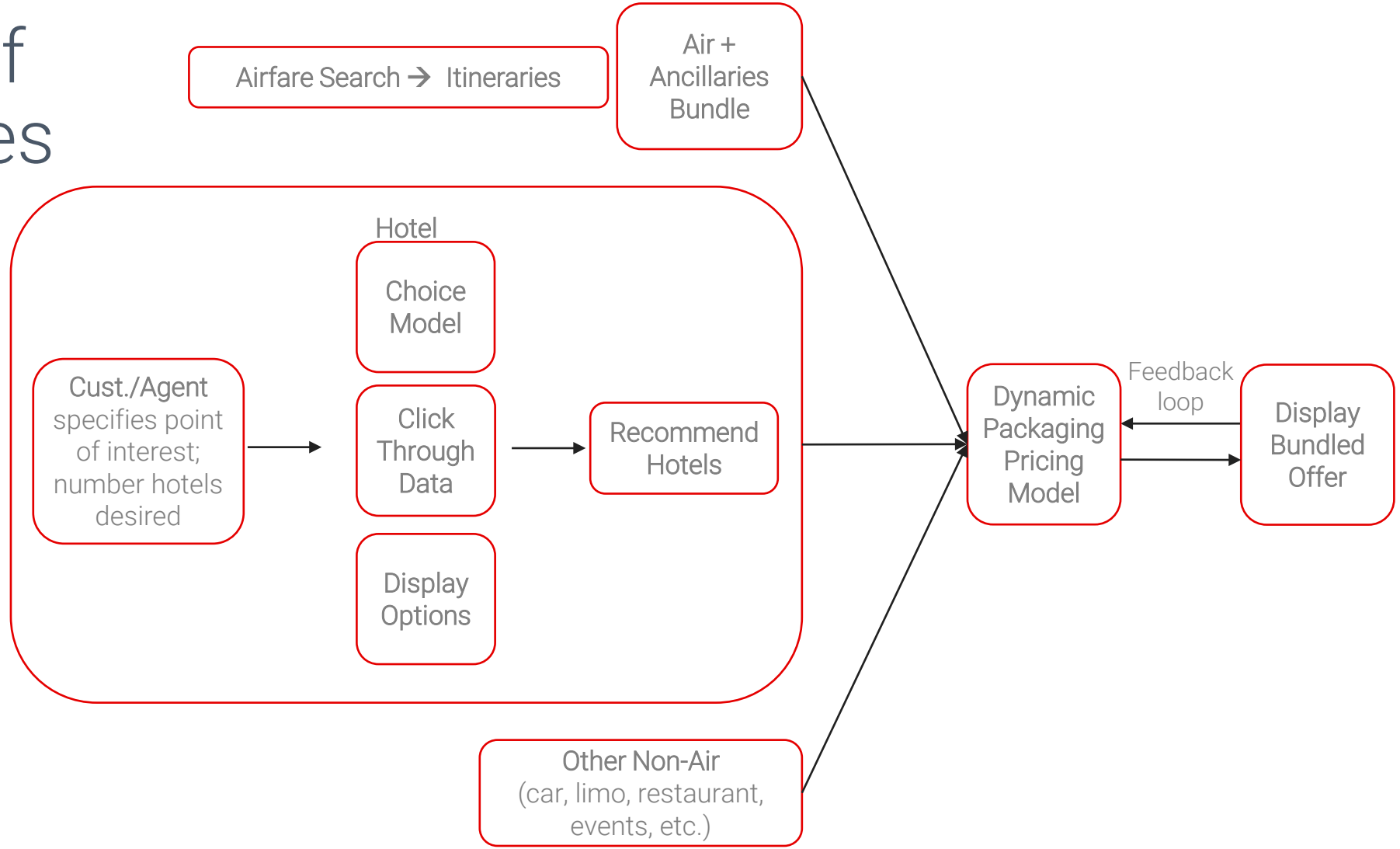
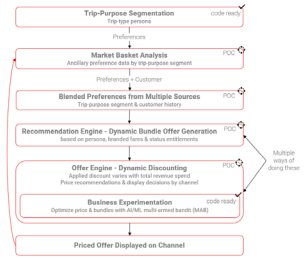
Dynamic Packaging of Air, Ancillaries & Non-Air





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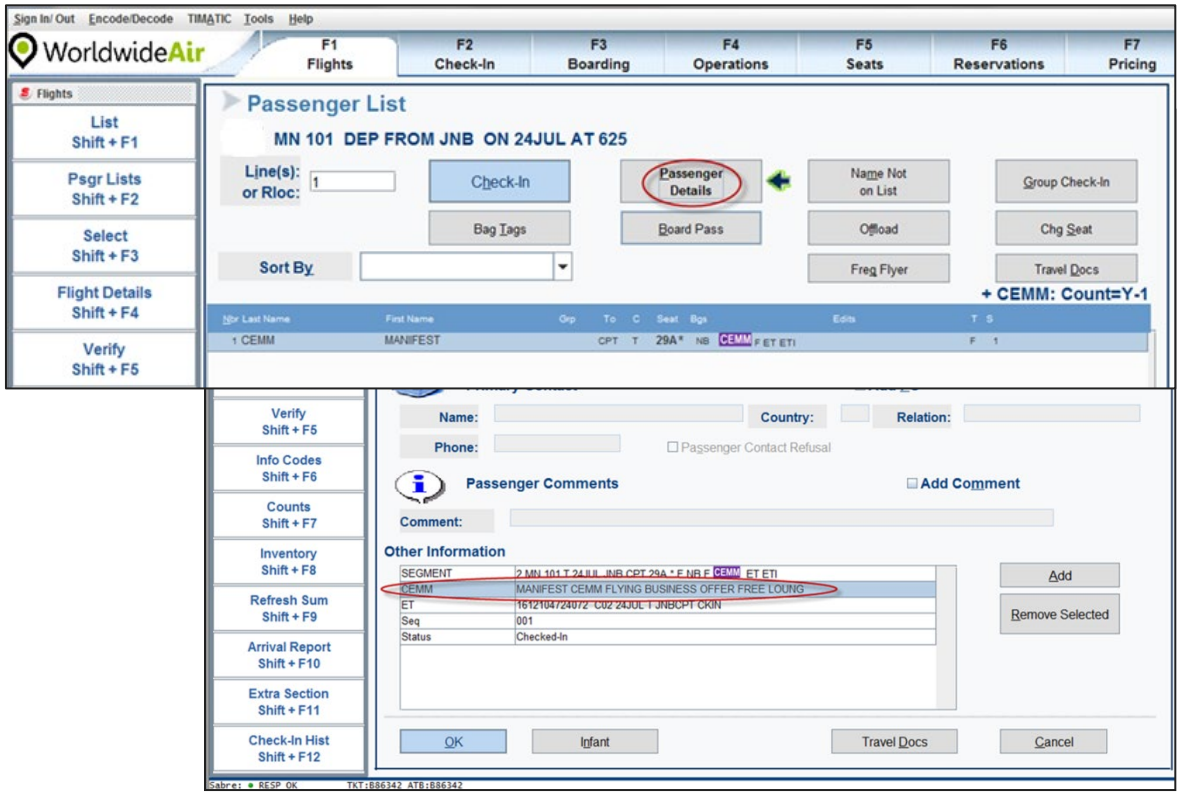
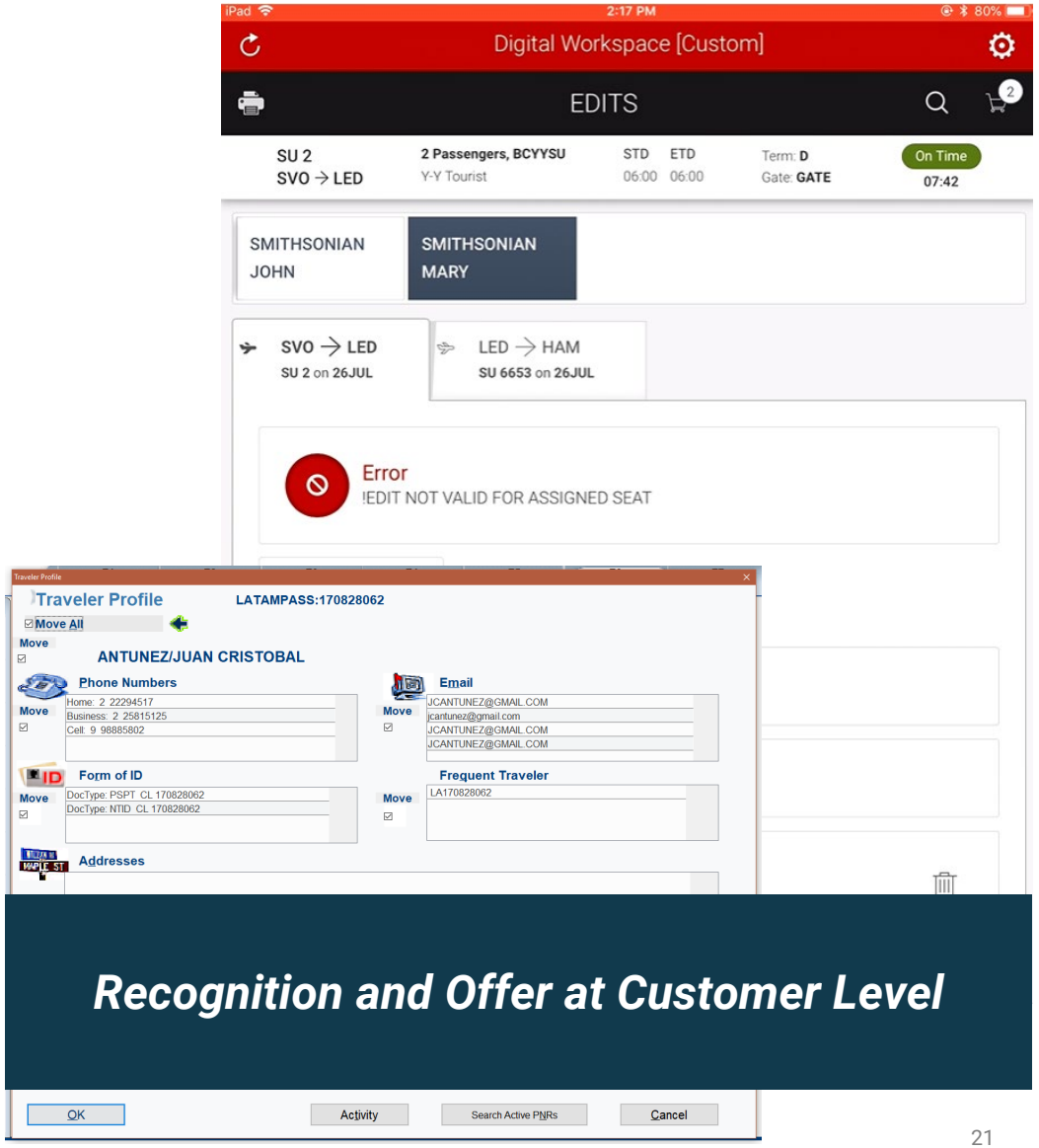
Extensions to onboard channels, airport channels



Recognition and Offer at Trip Level



Recognition and Offer at Customer Level

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For Further Reference

- Online Airline Offer Management demo on Sabre Innovation Hub
- Sabre Labs blogs on airline offer management

J Revenue Pricing Manag
https://doi.org/10.1057/s41272-017-0121-1

PRACTICE ARTICLE

An approach to offer management: maximizing sales with fare products and ancillaries

Ben Vinod[1] · Richard Ratliff[1] · Vikram Jayaram[1]

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Abstract With the growth in ancillary sales, an area of increasing importance for airlines is the concept of *offer management*, which entails the creation of dynamic, custom, personalized offers consisting of a flight itinerary and ancillary products offered by an airline. This practice-oriented, overview paper provides an end-to-end, future-oriented framework for determining the composition of optimal base fare and ancillary bundles by customer trip-purpose segment followed by 1:1 personalization to maximize total sales. Our focus in this paper is primarily on the proposed offer management framework and its sub-components.

Keywords Revenue management · Ancillary products · Willingness-to-pay · Bundles · Customer segmentation · Personalization · Controlled experiments

Overview

Airline offer management is the practice of creating dynamic, custom, personalized offers consisting of a flight itinerary and ancillary products sold by an airline. An important precept of offer management which enables maximizing ancillary revenue is to maintain the identity of each discrete ancillary in the bundle. The objective of offer management is to offer the right bundles to the right customer at the right price at the right time.

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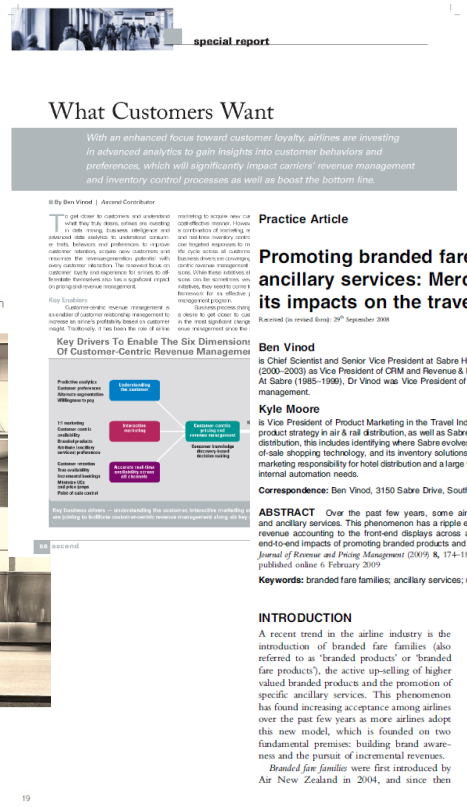
CUSTOMER-CENTRIC SALES

Maximizing Sales Through Better Approaches To Product Distribution

Forward-looking distribution methods are associated with greater personalization characteristics, resulting in improved opportunities for an airline to offer the right product at the right price to the right customer at the right time.

BY BEN VINOD

Ascend 2017 • Issue 1


special report

What Customers Want

With an enhanced focus toward customer loyalty, airlines are investing in advanced analytics to gain insights into customer behaviors and preferences, which will significantly impact carriers' revenue management and inventory control processes as well as boost the bottom line.

By Ben Vinod | Ascend Contributor

Key Drivers To Enable The Six Dimensions Of Customer-Centric Revenue Management

Practice Article

Promoting branded fare families and ancillary services: Merchandising and its impacts on the travel value chain

Received (in revised form): 29th September 2008

Ben Vinod
is Chief Scientist and Senior Vice President at Sabre Holdings. Before rejoining Sabre, he serv (2000–2003) as Vice President of CRM and Revenue & Price Optimization business units at I2 Te At Sabre (1985–1999), Dr Vinod was Vice President of Airline Solutions, responsible for pricing management.

Kyle Moore
is Vice President of Product Marketing in the Travel Industry Group. He is responsible for settin product strategy in air & rail distribution, as well as Sabre's Enterprise Data Management strateg distribution, this includes identifying where Sabre evolves its core participation, its connectivity to of-sale shopping technology, and its inventory solutions. Before to his current role, Kyle has als marketing responsibility for hotel distribution and a large variety of Sabre's solutions offered to airl internal automation needs.

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ABSTRACT Over the past few years, some airlines have been promoting branded f and ancillary services. This phenomenon has a ripple effect on the airline value chain – from th revenue accounting to the front-end displays across all channels of distribution. This paper end-to-end impacts of promoting branded products and ancillary services across all channels of *Journal of Revenue and Pricing Management* (2009) 8, 174–186. doi:10.1057/rpm.2008.63; published online 6 February 2009

Keywords: branded fare families; ancillary services; unbundling; merchandising; revenue m

INTRODUCTION

A recent trend in the airline industry is the introduction of branded fare families (also referred to as 'branded products' or 'branded fare products'), the active up-selling of higher valued branded products and the promotion of specific ancillary services. This phenomenon has found increasing acceptance among airlines over the past few years as more airlines adopt this new model, which is founded on two fundamental premises: building brand awareness and the pursuit of incremental revenues.

Branded fare families were first introduced by Air New Zealand in 2004, and since then numerous airlines have adopted similar schemes, most notably Air Canada and Qantas. In an effort to overcome the perception of an airline seat as a commodity (Moore, 2007; Arnoult, 2008), a key initiative in the airline community is the introduction of branded products with its associated *privileges*. This is based on the fundamental premise that the airline seat is not a pure commodity, as it is currently perceived. Hence, the airline does want to offer transparency to customers on the value of the service rendered (Vinod, 2008). In conjunction with branded products, airlines have a desire to become retailers, by promoting

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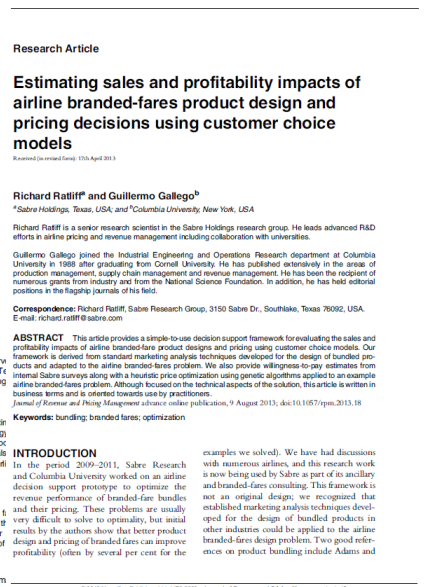
Research Article

Estimating sales and profitability impacts of airline branded-fares product design and pricing decisions using customer choice models

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Guillermo Gallego joined the Industrial Engineering and Operations Research department at Columbia University in 1988 after graduating from Cornell University. He has published extensively in the areas of production management, supply chain management and revenue management. He has been the recipient of numerous grants from industry and from the National Science Foundation. In addition, he has held editorial positions in the flagship journals of his field.

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ABSTRACT This article provides a simple-to-use decision support framework for evaluating the sales and profitability impacts of airline branded-fare product designs and pricing using customer choice models. Our framework is derived from standard marketing analysis techniques developed for the design of bundled products and adapted to the airline branded-fares problem. We also provide willingness-to-pay estimates from internal Sabre surveys along with a heuristic price optimization using genetic algorithms applied to an example airline branded-fares problem. Although focused on the technical aspects of the solution, this article is written in business terms and is oriented towards use by practitioners.

Journal of Revenue and Pricing Management advance online publication, 9 August 2013; doi:10.1057/rpm.2013.18

Keywords: bundling; branded fares; optimization

INTRODUCTION

In the period 2009–2011, Sabre Research and Columbia University worked on an airline decision support prototype to optimize the revenue performance of branded-fare bundles and their pricing. These problems are usually very difficult to solve to optimality, but initial results by the authors show that better product design and pricing of branded fares can improve profitability (often by several per cent for the examples we solved). We have had discussions with numerous airlines, and this research work is now being used by Sabre as part of its ancillary and branded-fares consulting. This framework is not an original design; we recognized that established marketing analysis techniques developed for the design of bundled products in other industries could be applied to the airline branded-fares design problem. Two good references on product bundling include Adams and

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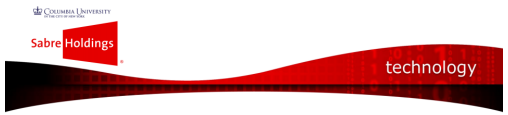

Branded Fares Product Design and Pricing

Richard Ratliff, Sabre Holdings
Guillermo Gallego, Columbia University

AGIFORS Symposium
Phoenix, Arizona USA, October 2012

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