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Mega Event Worldwide, Long Beach, 2018
Merchandising Seats: How to leverage AI to maximize revenue and delight customers
The Data Revolution

Larger and Wider Datasets = Better Decisions
Seeded Data = Stimuli > Response
Leveraging A.I.

Integrate and Unify the Airlines’ **Data** into a single Petabyte scale repository.

Use **Machine Learning** to Forecast Demand, Elasticity, Inventory and Product Relevancy.

**Assemble and Price** the Offer based on the generated forecasts and network-wide optimization.

Provide **Compatibility** with existing airline systems to transact with customers.
A.I. Benefits

Automation
Simulations and Live A/B testing
Individualization of Pricing and Offers at Scale
Instant and Continuous Outputs
A.I. Powered Airfares

1. Data Sources
2. Data Pipeline
3. Data Warehouse
4. AI Forecasting
5. Forecast Cache
6. Pricing ‘Solver’

Continuous, Automatic Triggers

7. Base Price
8. Cart Adjustment
9. User Adjustment
10. Final Price

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Continuous Dynamic Pricing

Availability is Binary. Elasticity is Everything.

Pricing Computation occurs in Real-time for every Shopping Request

Channel, Customer and ‘Shopping Cart’ are considered with each query

Leading Indicators are derived from new data sources

Seat availability is Managed as fractional Inventory holds against individual PNRs
The **Arrival Rate of Shopping Requests** is forecasted on the OD level using various new data sources such as search requests and EDIFACT message logging.

The **Customer Elasticity** (willingness to pay) is forecasted at the itinerary level as a search conversion rate for 200+ price points.

**Inventory/Availability** is forecasted at segment level based on the change, cancellation and no-show likelihood of each PNR/booking.

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Many asynchronous decisions

A single, real-time decision

Pricing

Inventory / Availability

Offer Management

Pricing

Inventory / Availability

Offer Management
Distribution
Dynamic Fare Families

Maintain a copy of the airline’s flight and ancillary catalog in the ‘Synthetic Inventory’.

Assemble any set of products into a **Dynamic Fare Family**.

Once a customer proceeds to checkout, perform a **handoff to the airline’s PSS**.

Existing Order Management System & PSS
## Evolution of Artificial Intelligence

<table>
<thead>
<tr>
<th>Yesterday</th>
<th>Today</th>
<th>Tomorrow</th>
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<tbody>
<tr>
<td>Assess the current state and rank the next moves to best apply computational power</td>
<td>Limited (non transient) Memory to guide the next decisions</td>
<td>Build a vast and changing representation of the world and of the self to predict behaviors and further optimize actions and responses</td>
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<tr>
<td>1996: Deep Blue - $10^{123}$ moves</td>
<td>Driverless Cars</td>
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<tr>
<td>2016: AlphaGo - $10^{360}$ moves</td>
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