

On The Network Planning Horizon

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The Role Of Fleeting And Optimization Around Every Stage Of Network Planning

For today's airline to realize optimal profitability, it must stretch its fleeting and optimization models across all the stages of network route planning. Airlines can thereby realize substantial value through improved network profitability. Advanced software solutions are key to achieving this level of success.





Fleeting and schedule optimization is integral to the longevity of any airline.

Successful airlines have a firm idea of what their primary network strategy is, years in advance. They know which primary markets and regions they intend to introduce their service and the frequency with which they intend to serve the route, as part of their long-term strategy. This is the network strategy, or network plan.

Fleeting comprises a fleet plan that documents aircraft counts by aircraft type and day across the airline. Effective fleet management ensures that the airline's primary product, its schedule, efficiently caters to the needs of the passenger, the market and the overall profitability of the airline. The fleet plan defines how the strategy and vision of the airline will unfold. The network plan is then used in conjunction with the fleet plan to produce an effective schedule that maximizes profitability with the aid of an optimization model.

The fleet plan should ideally be generated after the network plan has been developed. A modeling tool can then combine the two plans, to not only cultivate an effective long-term strategy (schedule), but also to ensure whether the airline can actually execute on that plan, by taking operational feasibilities, fuel efficiency and costs, among others, into account.

After all, the optimized schedule impacts all the down-line processes and departments, such as crew scheduling, airport operations, revenue management and maintenance planning. Hence, fleeting is not only about determining the ideal mix and count of aircraft, but also includes the optimization of the proposed network to improve bottom-line profitability.

There are instances when the network plan is generated after a fleet plan has been put in place. This may not necessarily allow for effective profitability when the schedule is executed.

For example, the airline has a network plan centered on 50 aircraft, but an additional 30 have now been scheduled to arrive in the coming year. Are there enough market and frequency opportunities available? The airline could end up serving routes with less revenue potential or over serving existing routes, thereby diluting revenue and reducing profits. Thus, the network plan should ideally precede the fleet plan.

Once the fleet plan is developed, how can it be evaluated? An airline must first start with revenue and market-size forecasts for the time periods being evaluated. A multitude of factors need to be considered such as historic operational statistics, performance, current demand and competitive outlook to model passenger revenue on a flight level, as well as market share by individual passenger itineraries.

The assumptions can be a bit more relaxed when evaluating 5-year plans, for example, but

need to be more stringent when closer in, and almost real time when looking at a few weeks before departure.

Next, the airline must determine costs to be assigned to each aircraft by various cost drivers. Financial performance metrics can be used to simulate expenses such as fuel, operational, maintenance and ownership. The use of a state-of-the-art forecasting system, such as Sabre AirVision Profit Manager, should be used to evaluate the initial profitability of the schedule and help identify changes that can further increase the profitability of the schedule.

As the day of departure approaches, more constraints and fluctuating market conditions allow for fewer opportunities to make drastic changes to the schedule. Nonetheless, fleeting can still be used to positively optimize the schedule and generate incremental profit. Therefore, the fleet plan must be visited and the schedule optimized at every stage of the network planning lifecycle.

Long-Term Planning (>5 years to 18 months)

The main goal of long-term planning is to determine the optimal mix of fleet types based on the network plan. In essence, an airline's long-term planning department needs to come up with the fleet plan. The long-term fleeting process can take the

form of 5-year plans to 18-month plans. In between these time frames, myriad scenarios can be addressed through fleeting and optimization.

With the consolidation of airlines in the industry today, long-term planners are tasked with evaluating various potential mergers. This also serves as a check point for airlines to evaluate their existing aircraft and determine the optimal count and type of aircraft needed from both airlines to generate an efficient and profitable schedule.

Factors such as aircraft range, fuel efficiency, maintenance costs, seat configurations, aircraft utilization and crew synergies not only need to be modeled, but an optimization tool should model the many iterative scenarios necessary to produce an accurate forecast on a network level to management.

Airlines, whether in growth or consolidation mode, struggle with the time-old question of whether to lease or buy aircraft. The aircraft ownership cost of new leased aircraft can be low, but the cost can be comparable if an older aircraft is purchased outright. Imagine a scenario where the expanding airline is offered a mix of new and old aircraft from two manufacturers.

An optimization tool such as Sabre AirVision Fleet Manager can evaluate

The Future Of Fleet Planning



Tighter Integration An airline's fleet-planning and optimization models must be tightly integrated with a number of systems across an airline including operations, crew and maintenance, revenue management, ancillary, cargo, capacity planning and route profitability.

both scenarios and provide results that complement the network structure of the airline given the routes being flown, their distances, aircraft utilization, fuel-burn capabilities and ownership rates, among other variables.

Therefore, whether an airline is evaluating a schedule with new routes, the budget schedule or ensuring that the new maintenance rules are in compliance, the business process is the same. Fleet planning can also be used to perform a quick and accurate appraisal of the schedule.

Medium-Term Planning (18 months to 3 months)

In medium-term planning, operational constraints tend to increase, and airlines determine how to accurately execute on the planned long-term strategy. The main objective is to execute on the fleet plan by delivering a flyable and sellable schedule. The lead time of 12 to 18 months is sufficient to determine conclusively the optimal month for a new aircraft or aircraft configurations to be phased into the network, while old aircraft are phased out. Optimizing the fleet schedule allows an airline to determine the transition (the phase in/out of aircraft) effectively by ensuring robust aircraft routings, as well as the flow of operations, remains unaffected.

At this point in the planning horizon, network planning departments determine the value of their upcoming seasonal schedule by generating an overbuilt schedule. The financial value of the future schedule is then determined, and the most unprofitable segments of a schedule are mathematically removed through the use

of an optimization tool to ensure that the profitability of the schedule is always maximized. The exact same exercise can be performed to transition a monthly schedule, for example, from the fifth of a month to the sixth, or to reduce a schedule by specified available seat miles or available seat kilometers.

Aircraft scheduling departments often analyze a new hub design, changes in flight timing, additional frequencies in existing markets and pattern of service levels. A robust forecasting model can aid in determining the financial value of the network, and then a fleet assignment tool is utilized to ensure effective aircraft rotations and fleet assignments to unlock the incremental value.

Fleeting can also be used to test changes in operational constraints such as increasing or decreasing block times and minimum ground times, evaluating competitive changes to the schedule or testing new maintenance rules by efficiently allocating maintenance and automatically solving routing issues before passing the schedule to operations.

Short-Term Planning (3 Months to 3 days)

At this point on the planning horizon, the schedule and fleet plan have been solidified, and the revenue management department is actively managing the seat inventory to maximize yields and revenue per available seat kilometer or available seat mile. However, shifts in passenger demand and operational factors such as maintenance delays create opportunities to execute targeted, tactical aircraft swaps.

The main benefit of fleet optimization in short-term planning is derived through close-in re-fleeting, or CIRF. This is the process of re-assigning scheduled fleet based on actual passenger bookings, and booked revenue by flight leg from the revenue-management system. The time frame at which CIRF is carried out is typically one week to two months prior to departure, depending on an airline’s crew assignment close date.

Fleet Manager factors in all the operational constraints of the airline and typically identifies many more aircraft swaps for an entire network to maximize profits. The number of equipment swaps can also be limited to ensure that the airline can facilitate the last-minute changes.

Optimization exercises in the short term can also aid in tackling capacity reductions during special events, holidays and weekends, along with addressing aircraft delivery delays.

Fleeting And Optimization Is Key

The future of fleeting includes tighter integration with operations, crew planning, route profitability systems and decision-making with cabin-level passenger-demand data. The level of optimization with such integrated systems will translate to profitable synergies across the airline.

Fleeting and optimization is integral to the overall strategic planning process. It has relevant applications in all stages of network route planning and assists in addressing several commercial and operational scenarios that typical airlines may encounter. Airlines that effectively optimize through all the stages of the planning horizon realize substantial value through improved network profitability, passenger load factors, RASK, yields and aircraft utilization. **F**

Constraint Increase Over The Lifecycle Of The Network-Planning Process



Various Planning Scenarios The fleeting process guides airlines through the various long-term, medium-term and short-term planning scenarios.

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