Crew Management & Flight Operations:
How Technology Is Supporting a Changing Landscape
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Introduction: The need for Improved Technology in Industry with no Margin for Error

Few industries have seen the rapid growth and change of the aviation market over the past few decades. Subject to high levels of regulation and scrutiny—as well as unpredictable fluctuations in the market—airlines have had to constantly shift and adapt their technology strategies in order to maintain their (frequently thin) profit margins. Technology has improved the planes themselves, allowing fewer pilots on longer trips. But challenges remain, and nowhere is the need for improving the systems that support these airlines more apparent than in two key areas: Crew Management and Flight Operations.

The first challenge: ever-changing costs. The airline industry is not static; instead it lives in real-time, subject to fluctuating fuel costs and increasing maintenance expenses. And because airlines have to maintain a 100% standard for safety, there is little “wiggle room” when it comes to decreasing costs. When combined with vigorous regulations by national organizations like the FAA, EASA, etc., airlines are faced with no choice but total compliance. Strategies like fuel hedging and fuel tankering—which have saved some airlines billions of dollars since the 1990s—have become as big a part of the landscape as basic flight operations.

With little margin for error in expenses (2012 industry data at IATA.org puts the profit margin at 1.8% industry-wide), and no margin for error in safety, this leaves airlines with precious few areas in which to save money. But technology offers support and even solutions to other challenges, including crew management costs, simply by making the systems with which crews interact with technology simpler and easier to manage. Today’s Operating crews are smaller than the standard four person crews of yesteryear, which makes effective management of crew assignments absolutely essential.

As with the flights themselves, airlines are faced with an ever-changing landscape. But this landscape—of new regulations, crew management, and fluctuating fuel costs—is increasingly complicated. How can airlines respond? What technology is capable of reducing the workload of flight operators, increasing the efficiency of crew management, and stabilizing the fluctuating nature of running an airline? To illustrate, we’ll have to track the changes that have led us to the present—while keeping an eye on future obstacles as well.

A Brief History of Flight Operations Challenges

Hop on board a flight of eight to ten hours and there’s a chance you’ll see only two flight operators: the pilot and the co-pilot. It wasn’t always this way. Although the physics of flight itself has not changed since the early 20th century, much about aircraft has changed. Jet technology has put airplanes above the weather, extending the range of a two-person flight crew to several hours, and more. As a result, airlines have no flexibility on scaling back on labor costs, especially with flight crews having become as small as they possibly can be.

The addition of long-range flights thanks to jet technology was a major boon for customers, and has expanded the operational radius of flights ever since. But with less money to save in areas like manpower and flight accommodations, airlines have been forced to deal with expenses over which they have less control.

And airlines have no control over the rise of the regulatory environment, which has become a major driving force in airline IT in recent generations. Airlines are beholden to regulatory agencies such as the FAA, the EASA (which covers some 40+ nations), and more. The omnipresent ACARS (Aircraft Communication Addressing and Reporting System) technology is not put in the hands of IT but rather large companies with major aviation contracts, giving little and less control to the airlines when it comes to crafting IT solutions.
What’s more, any airline that changes its safety or flight operations technology will often require regulatory approval before the aircraft can fly. This is the case in changing aircraft components-changes in ACARS and electronic flight bags.

Where can IT step in and help airlines grow more efficient while dealing with the ever-changing landscape of fuel costs and regulatory requirements?

Changes in Crew Management and New Solutions

In the history of aviation, crew management has been a largely “offline” piece of the puzzle. Managing which pilots & flight attendants would go where-and-when could be accomplished with an intelligent manager armed with a pen & a pad. Essentially, crews were managed manually, which left room for inefficiency at every turn.

These days, the new challenges of long-distance flights thin margins of aviation require a more calculated approach. Consider the following challenges:

- Dealing with time zone changes
- Managing & preventing crew fatigue: Expanded flight capabilities have meant longer hours. This means a greater need to fight fatigue. With new regulations poised for 2016, this is a challenge airlines need to meet now.
- Day-of-flight changes.

For maximum efficiency, a pen and a pad will simply not do. Human crew managers still control some changes in crew schedules and requirements, but computers are developing an ever-increasing role in meeting these challenges. And without the right monitoring programs in place, crew costs can increase because airlines aren’t making the most efficient use of their employees’ time.

And what about the new crew management systems that are being put in place by airlines? The innovation is less daring than you’d expect. “Flight operation involving crew operation solutions needs to be proven…and most airlines don’t want to be the first to be tried upon,” said aviation consultant Mannmohan Narula.

One solution has been the evolution of the “Preferential bidding system,” or crew bidding system. In this system, crew members are allowed to make their own requests, giving different weights to the importance of each request. The schedules are then sorted by the airlines’ needs & the weights given by each crew member’s bid. This has served to give crew members some deal of control while reducing the overall costs of managing crews. But there are additional ways to handle crew management to make the process simpler and more intuitive while better serving both airlines & their crews.

Trends and Solutions in the Future of Flight Operations and Crew Management

There are mobile applications available in the industry which are capable of increasing efficiency in crew management as well as dealing with the additional need of increasing customer understanding (even this year, the FAA reports that airline customer complaints are up in 2014).

Such applications have made it possible for flight crew members to accomplish a number of things, including:

- Performing their flight duties
- Serving customers and addressing their complaints
- Avoiding total use of paper
- Saving crew time with less emphasis on paperwork and more emphasis on mobile application usage
- Increasing time directly interacting with passengers on board the flight

Mobile Apps have made these solutions possible with the following strategies:

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<th>Passenger Management</th>
<th>Decreased Paperwork</th>
<th>Operational Assistance</th>
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<td>The cabin crew can consult Mobile Apps to view passenger status, ID, loyalty, and special services requests</td>
<td>Crew members can refer to crew briefings, training manuals, and procedures without excessive paperwork</td>
<td>Crew members can create, edit, and maintain a number of reports while flying</td>
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<td>One-touch viewing to allow crew members to sort passengers by needs and special requests</td>
<td>A procedures module gives crew members “refresher” courses</td>
<td>Easy-to-use reports modules can be uploaded to the main system when arriving on the ground</td>
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<td>Seat and list views are available, allowing crew members to sort visually by seating.</td>
<td>Meal details and announcements can be found as well, reducing the need for additional paperwork</td>
<td>The reports module includes safety assessment forms, meal reports, incident reports, cabin defects, etc.</td>
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This type of interface has several advantages in crew management as well, allowing cabin crews to check-in in advance using their iPad from home, giving the supervisors at the airport more advance warning when day-of-flight changes need to be made. Through decreased paperwork and increased efficiency, IT solutions are helping airlines navigate a world of thin margins while increasing the capacity of crew members to offer quality customer service to their passengers.

**Conclusion: Building Stronger Service with IT**

How are airlines utilizing these solutions to meet their challenges? With the EASA introducing the new Flight Time Limitation (FTL) regulation-to be effective from early 2016-NIIT Tech is utilizing its deep knowledge in this domain to assist a leading airline in Europe in implementing 100% compliance with the EASA-proposed rules. This is accomplished by providing end-to-end Testing facility of the enhancements in the Crew Management Systems used by the airline.

There are a lot of IT challenges in this age of aviation. Some of those challenges are out of airlines’ control, including changes in ACARS by major airline providers and changes in regulations by the chief national agencies of the day. But enhanced and mobile IT still offers a chance for airlines to optimize their crew management and customer service by decreasing paperwork, enhancing mobility, and simplifying the reports processes.

Better technology should increase not only efficiency, but offer a noticeable increase in the quality of everything from flight operations down to the passenger experience. Enabling flight attendants and flight crews to perform their duty with maximum efficiency helps enhance the passenger experience and gives airlines real, tangible ways to save on costs without compromising service. Navigating the future of flight operations and crew management will require a similar focus on effective IT solutions as they continue to evolve.

**References**

*Strategies like fuel hedging—which have saved some airlines billions of dollars since the 1990s*

http://www.columbia.edu/cu/consultingclub/Resources/Airlines_Eric_Henckels.pdf  - fuel hedging saved one airline some $3.5 billion or more since 1999


Airline consumer complaints are up in 2014

*With little margin for error in expenses (a 2012 industry analysis at IATA.org puts the profit margin at 1.8% industry-wide),*


Over $650 billion total revenues in the industry in 2012—operating profit of 1.8%

With the EASA looking to add Flight Time Limitation in 2016

http://www.caa.co.uk/default.aspx?catid=620&pagetype=90&pageid=15889
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