



***The Best of Both Worlds: Mobile Technology
Provides for Decentralized Airline Operations
with Centralized Data Management***

An Aircraft Data Fusion White Paper

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Introduction

In the business world, one often hears the rallying cry that decision-making needs to move as close as possible to the customer. To do otherwise is to risk losing responsiveness to the markets businesses are dedicated to serving. In the airline industry, the customer is everywhere: at the ticket counter, in line at the gate, and of course on the aircraft itself. Numerous decisions can affect the cost of a ticket, whether a passenger is unacceptably delayed, or whether a given flight makes money for the airline. Ideally, these decisions should be made as close to the customer as possible, and in real time. This speaks to the need for decentralized operations, which are able to react nimbly to changes on the ground.

However, this ideal doesn't account for the reality that airlines also require accurate data to make those decisions. It has long been the reality that decentralized operations were forced to make do with inadequate data for decision-making, and the data resulting from flight and ground operations often did not find its way back into the organization to allow for optimal decision-making. Hence, the counterbalancing need to centralize operations to ensure that decisions are based on the best data available.

This tension is inherent in any business, and in the past decades we have witnessed the swing from centralized to decentralized operations and back. The airline industry has its own set of circumstances which set it apart from other industries, and its own unique history. However, it is not immune to this dynamic tension between centralized and decentralized operations.

A paradigm shift or trend is beginning in the airline industry to once again move away from centralized processing of mission critical tasks in favor of completing these tasks as close to the execution level as possible. This is now possible because of improvements in hand held computer processing, storage and communications.

The problem with decentralized operations

Prior to the Information Age, airline operations were decentralized and it was difficult to keep the business planning and operations synchronized. For years the organizational structures used by airlines reflected some similarity to that used by the military: break tasks down and group them into categories where specialized tools or personnel would be applied for the most efficient execution of the tasks. Standard operating procedures and policies were used as the glue to bind them together to ensure coherent operations. Information flows were limited to meetings and memos.

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Consolidation at this point was restricted by information processing and communications capabilities. As technology improved in these two areas, information became more centralized and better communications could disseminate the information to the user. As an airline grew in size, coordination and management of information flows became more and more difficult. Delays, operating costs and quality of service suffered because of the limitations of the system.

The advent of mainframe computers offered the initial solution to the problems of decentralized information flow. As mainframes became more available, affordable and powerful, information was integrated into processes and the results of the process communicated to the end user within operations. With improved intelligence, the user could execute given tasks far more efficiently. In addition, corporate executives were provided with far richer operational information that was fed back into business planning.

As a result, capability and capacity, command and control became more centralized. This provided corporate consistency to many mission critical functions; e.g., dispatch, maintenance, master flight schedule. The best

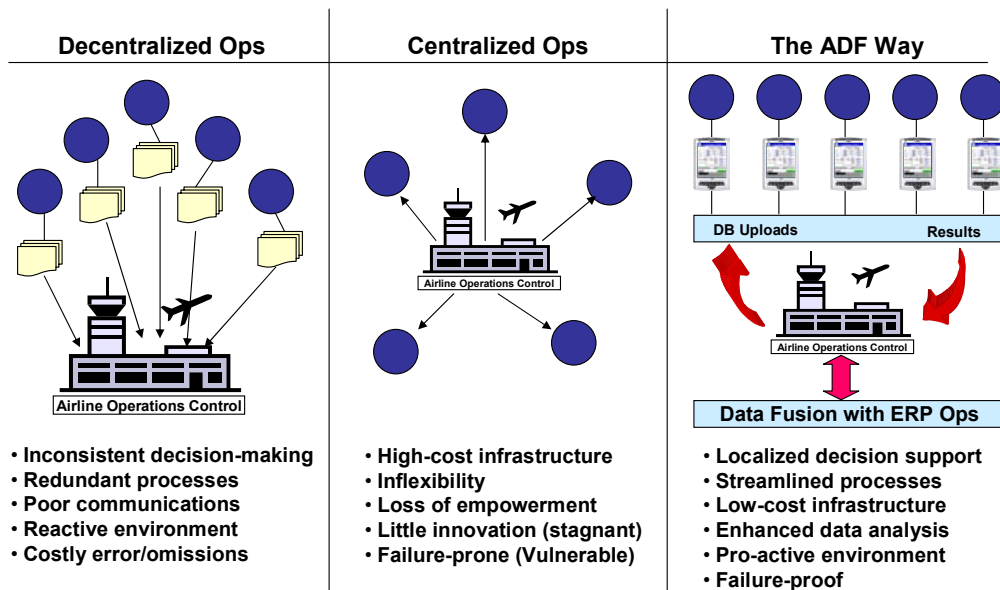
example of this movement was the creation of the Operations Control Center (OCC) with its integrated operating system, which became the central nervous system of the airline. The OCC facilitated the co-location of all of the mission critical functions of an airline and connected them together via a common operating system. Some airlines built onto their operating system, adding functionality such as irregular operations, and aircraft logistics. These systems were integrated into the operating system driving consolidation and automation.

The problem with centralized operations

Over the years airline management teams have used technologies in their business systems where appropriate to improve productivity and efficiency. But that wasn't the end of the story; solving one set of problems often gives rise to another. While the new model of centralized computing came with many obvious benefits, its greatest shortcoming was inflexibility, scalability and the cost of maintenance and

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Decentralized Resources + Centralized Information = Best of Both Worlds



support. The inability to make changes in real-time and the fragile condition of many legacy systems today require that a systematic and evolutionary process be developed for each airline to transition into a more services oriented architecture and services platform. Add-on systems are providing some additional functionality but require additional and costly interoperability tools to achieve the desired results.

Mobile computing and the new paradigm

A paradigm shift or trend is beginning in the airline industry to once again move away from centralized processing of mission critical tasks in favor of completing these tasks as close to the execution level as possible. This is now possible because of improvements in hand held computer processing, storage and communications.

The decentralization of these tasks has significantly reduced the complexity and logistics creating increased productivity and higher quality performance. In the airline industry this is best by pushing aircraft load planning out to the station level where the aircraft is loaded. This facilitates the use of optimized loading and ensures that no aircraft limitations are exceeded.

Providing integrated mobile solutions at the user level will reduce delays, improve customer satisfaction and enhance the efficiency of the operations. With the processing, storage and display capability of current and future hand held computing devices many processes can be loaded on these devices where tasks can be executed at the user level.

Configuration management including corporate policies, guidelines and regulatory compliance are managed from a central administration module. This provides the same command and control functions previously provided for by mainframe computing. The mobile solutions are

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connected to the airlines central information system (network centric) coordinating and managing critical information flows.

The use of handheld computing devices decentralizes the execution of a function or process and places it at the user level. This minimizes the number of steps and coordination required with other users who either need to make input or need only the computed results. This results in significantly reducing the number of steps in multiple processes, along with potential for error and departure delays.

What the future holds

As airline operators continue to reduce their IT costs, they are becoming more dependent on vendors to research and stay abreast of technology and offer business solutions that meet their near and long term requirements. The airline IT team role is changing from developer and implementer to oversight and contracting. This forces vendors to compete in providing the most affordable business solutions to meet the operator's needs.

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