Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

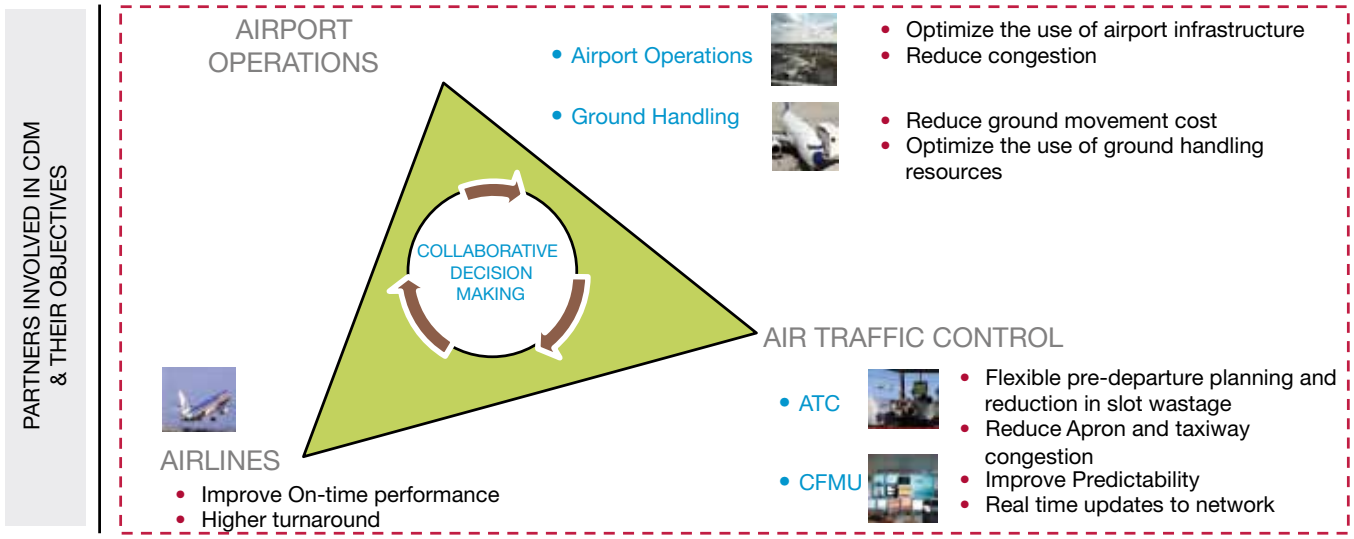
the way we do it

Collaborative Decision Making in Aviation

In an uncertain world there is reasonable certainty in stating that air travel will increase in the future. How airlines and airports will work together to address this increase is less certain but it is a necessity if they intend to deal with the cost implications that are the legacy left behind from decades of fragmentation, inefficiency and uncoordinated operations.

The activities of airlines and airports are complementary in nature but the industry is in need of better coordination between all the aviation partners, i.e., Airport Operations (Airport Operators, Ground Handlers), Airlines and Air Traffic Controllers if operational efficiency is to be expected. Collaborative Decision Making (CDM) enables the partners to share information and work together more efficiently and transparently with the common goal of improved overall performance, bringing a common situational awareness between all partners involved as well as refining the processes and information flows. Figure 1 illus-

Figure 1: CDM Triad



Sources: Distribution Lab Analysis, Eurocontrol

trates the key objectives of each of the partners involved in the CDM Triad.

CDM in Aviation aims to improve operational efficiency at airports by reducing delays, improving the predictability of events during the progress of a flight and optimizing the utilization of resources. To accomplish this the CDM Partners need to share accurate and timely information and adopt coordinated operational procedures, automatic processes and user friendly tools

This coordinated and collaborative approach has proven to work well in other industries, like retail, where Vendor Management Inventory and Business Intelligence tools have improved sales forecasts and inventory turnover through information sharing between retailers and vendors. Similarly, the efficiency of the supply chain in the courier industry is empowered by the quality of hand-offs between different entities, e.g., consolidators, 3PL, on-board carriers and agents/contractors. But can this type of approach work in the aviation industry with its unique set of challenges?

Challenges of the Aviation Industry

There are many, including:

Increase in Air Traffic - The European airspace has experienced continual growth in traffic over the last half century, with a doubling of traffic over the past 20 years. The aviation industry needs to prepare for a future of high levels of congestion in the air traffic network.

Regulatory Compliance - The Single European Sky initiative was launched in 2004 to provide a unified regulatory framework for implementing solutions to absorb the traffic increase while ensuring a high level of security. The deployment phase of the Single European Sky ATM Regulation will start in 2014 and will require implementation of a new air traffic management infrastructure, composed of fully harmonized and interoperable components across European airports.

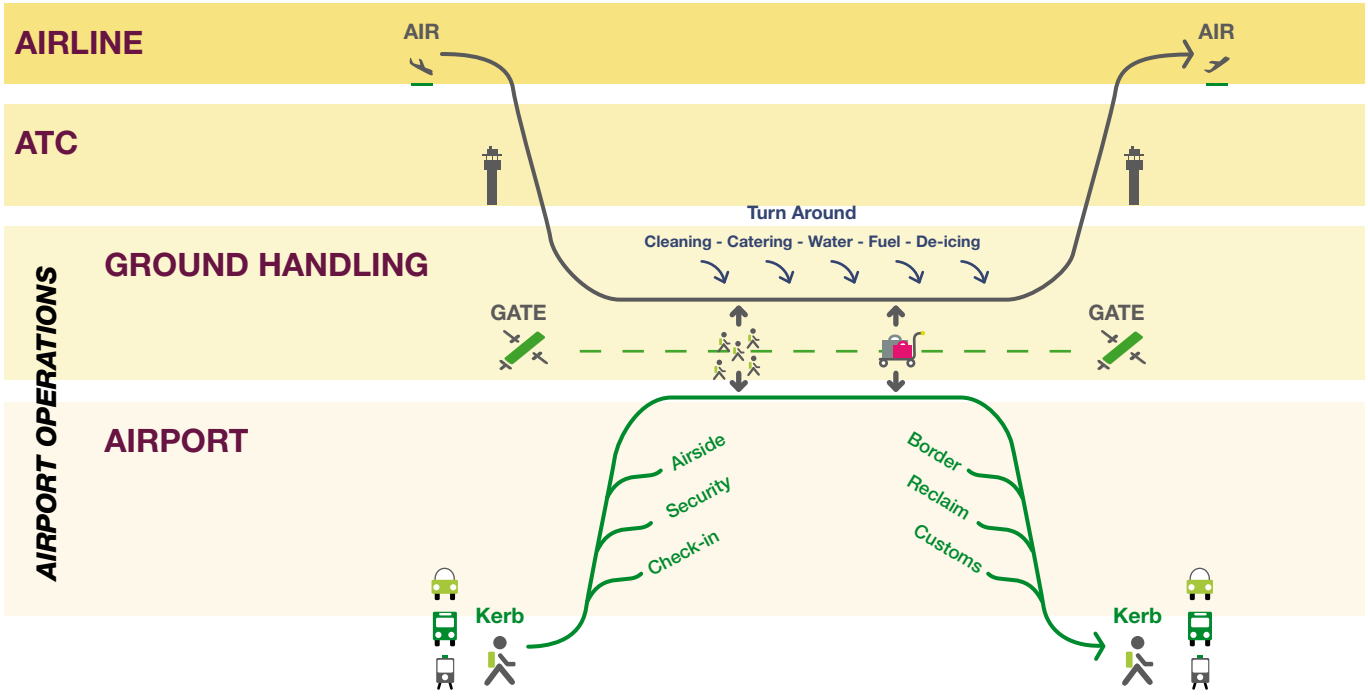
Lack of coordination in the Air Traffic Management (ATM) Network - The aviation industry is highly fragmented and coordination, not just between partners but also between various airports, is lacking. Problems at a single airport can affect the entire network.

As illustrated in Figure 2, decades of function-centric operations in the air-to-air process have achieved reasonable operational efficiency within individual functional areas but hand-offs and information flows between each of the areas are in need of improvement. There is a pressing need for transition to a process-centric approach, with the focus on different functions working together to create a smooth air-to-air transitional flow.

Underutilization of capacity – The more delays there are at an airport the more it appears that all resources are being utilized but in fact delays mean inefficient use of airport infrastructure, limited airport throughput, poor slot compliance, and frequent late stand and gate changes, all of which stretch the airport's capacity to its limits.

Simply optimizing the use of current available capacity through technical solutions will not be sufficient to accommodate market developments in the years to come. The solution is not just to create new capacity but also to ensure that the available capacity is utilized to its maximum.

Figure 2: Air to Air Processes



Sources: Distribution Lab Analysis

How Aviation partners benefit from CDM

The Airport-CDM (A-CDM) program was designed and developed by Eurocontrol* to improve overall efficiency of operations through better coordination and information sharing within as well as between airports. It serves as a means of optimizing and improving collaboration and operational efficiency throughout the air travel value chain globally. Applied initially in the en-route environment, the CDM approach has evolved into a comprehensive solution for improving global air traffic management.

But how do you assess the benefits that A-CDM can bring to each of the aviation industry players? And how do the benefits stack up against the challenges inherent in the industry? We apply three commonly recognized business objectives - Margins Improvement, Performance Improvement, and Quality Optimization - to see how each player within the air travel value chain stands to be impacted by aviation industry challenges and to see where growth is possible.

Airports

Airport revenues come primarily from servicing incoming and outgoing flights. Lack of air traffic coordination can lead to fewer flights being processed and that in turn means loss of income. It can also result in penalties and delay costs, affecting the airport organization's bottom line, not to mention the loss of reputation and image from disgruntled passengers and unhappy customer airlines.

Also, on the performance dimension, irregular and inconsistent coordination leads to reduced operational efficiency and asymmetrical capacity utilization and allocation of flights.

How CDM Helps

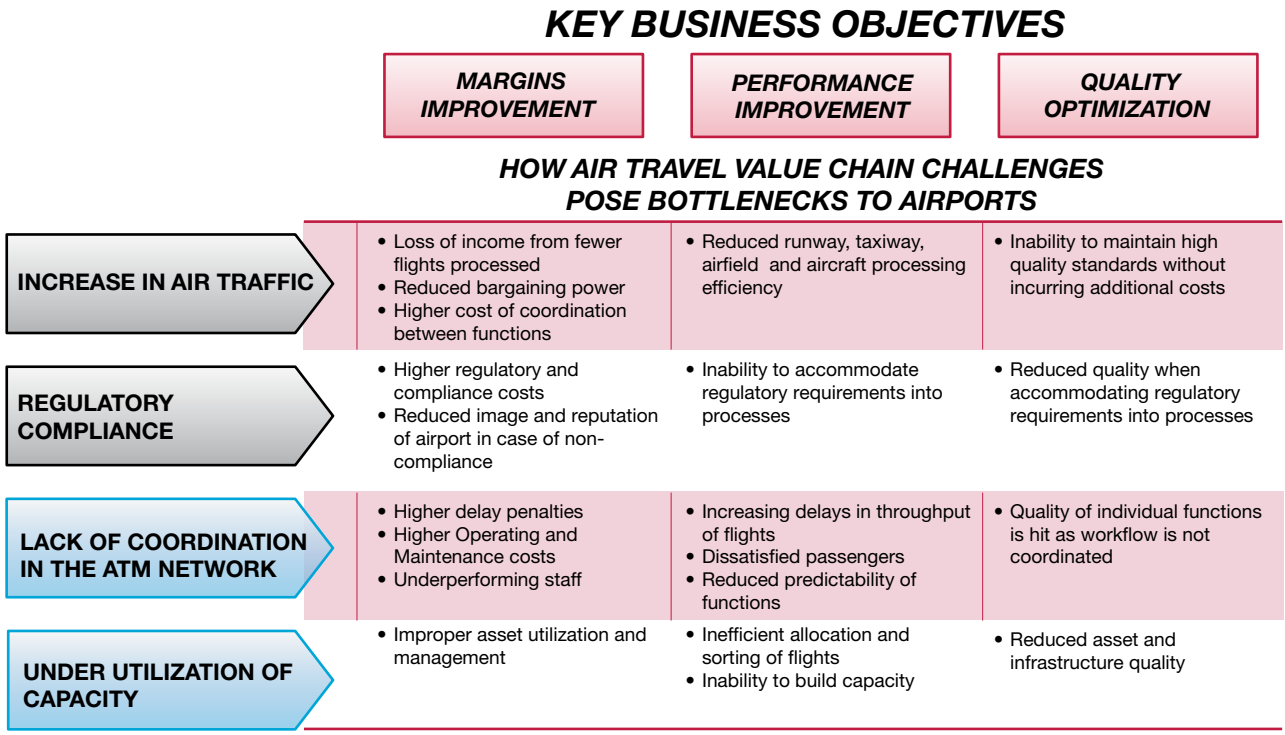
By implementing the CDM principles, airports stand to benefit most in the Performance Improvement area (Figure 3). They are able to improve the performance of their processes as well as their reaction times, leading to increased ability to deal with air traffic without compromising on quality. Also, airports will be able to reduce delays and the drop in service levels of their functions, without the need for extended investment in quality assurance.

Air Traffic Controllers (ATCs)

ATCs could face loss in revenues from their inability to pass additional traffic through an already congested airport. Lack of coordination could lead to a decrease in air traffic predictability, impacting the operational efficiency of an ATC as well as a slower response rate for any adverse situation.

Note: *Eurocontrol is the European Organization for the Safety of Air Navigation and working for seamless, pan-European air traffic management.

Figure 3: Challenges Facing Airports



Sources: Distribution Lab Analysis

How CDM Helps

Using CDM, Air Traffic Controllers would be able to manage not only more but also more varied flight types within a complex airport infrastructure, improving the overall capacity of the air travel value chain.

Airlines

Airlines are faced with reduced flexibility and increasing congestion at airports, leading to lost business and higher costs.

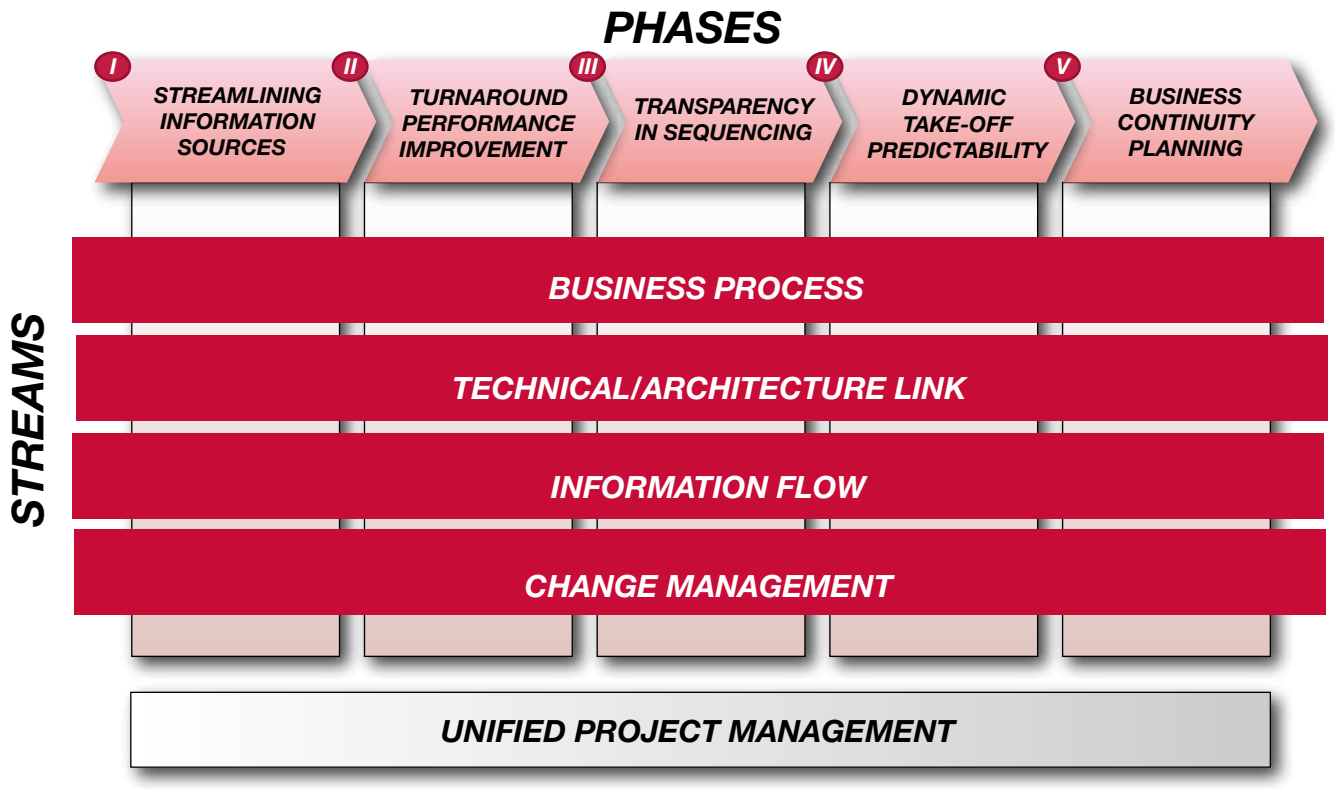
Airlines are impacted on margins by cost factors such as increase in fuel consumption as air time is increased, penalties from cancellation and delays and additional allocation of manpower due to nonalignment of services. All of these lead to an increase in operating costs.

Congestion at runways, taxiways and airfields affect flight timeliness. Airlines also face schedule disruptions, increase in waiting time for planes and passengers due to apron congestion, rise in baggage handling errors/ passenger complaints and difficulty maintaining same service quality across all flights. The result is reduced brand appeal and image problems for the airlines.

How CDM helps

CDM smoothes out the flow of air traffic and flight management tasks between various travel chain players. It enables airlines to focus more on business improvement and service levels, which helps improve their margins and efficiency.

Figure 4: CDM Roadmap



Sources: Distribution Lab Analysis

How to become CDM compliant: Capgemini's CDM Implementation Roadmap

Capgemini proposes implementing CDM across the air-to-air process in a phased manner. For this, Capgemini has designed a roadmap based on Capgemini's DELIVER set of methods and methodologies, which form the real core of Capgemini's consulting work. Set across five phases and impacting four key streams, Capgemini's CDM Roadmap (Figure 4) follows a bottom-up approach in organizational and process transformation. Each phase is divided into a large number of tasks but Capgemini proposes managing the Roadmap implementation through a Unified Project Management approach.

The key phases are as follows:

Phase I: Streamlining Information Sources

This phase looks at integrating and centralizing Information Flows within the air travel value chain.

Key tasks revolve around defining a Data Integration Strategy and conducting an AS-IS analysis of existing IT systems in order to create a streamlined, integrated IT foundation.

Phase II: Turnaround Performance Improvement

Here the focus is on improving the efficiency of the Turnaround Process.

Key tasks for this phase include mapping the AS-IS turnaround process, identifying key milestones and assigning timing and priority of updates along key milestones.

Phase III: Transparency in Sequencing

This phase promotes a more efficient and egalitarian sequencing process for flight management.

Key activities areas are mapping AS-IS taxi time calculation and sequencing process and at the same time identifying various parties and factors that influence taxi time and sequencing. There may also be a need to evaluate software solutions that can analyze all influencing factors to calculate more accurate taxi times.

Phase IV: Dynamic Take-off Predictability

Next we look to improve take-off predictability both at the current airport and in the broader air travel network.

Priority activities during this phase include building data flows from turnaround and sequencing processes to calculate more accurate take-off times. This information is shared with the Central Flow Management Unit (CFMU).

Phase V: Business Continuity Planning

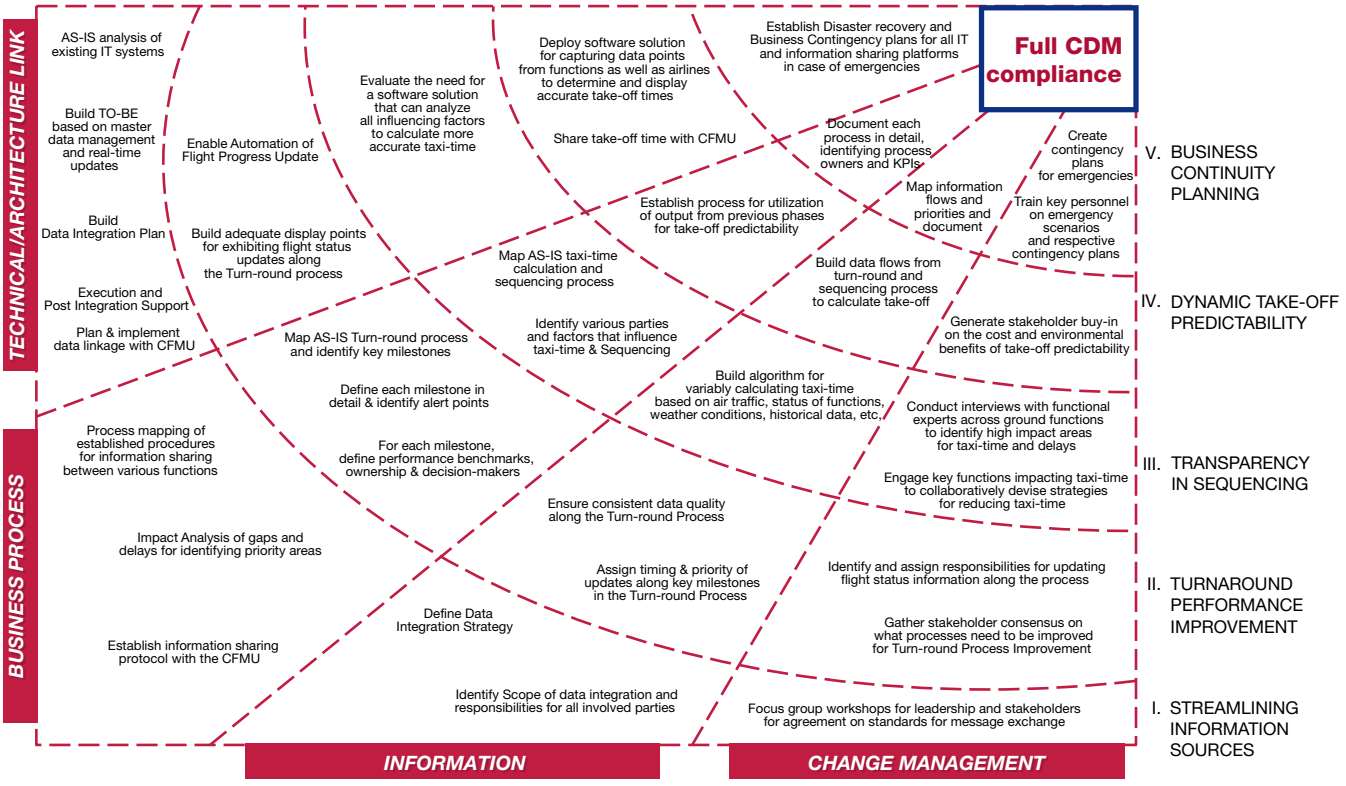
The final phase focuses on preparing for contingencies and/or emergencies by building a business continuity plan.

The key task for this phase is to establish disaster recovery and business contingency plans for all IT and information sharing platforms at an airport.

The benefit to clients of our overall bottom-up strategy is that it offers broader operational coverage in the early phases and gives higher visibility to organizational changes.

Capgemini has created a Transformation Map (Figure 5) that depicts the key tasks/activities required for following the Roadmap to complete CDM compliance

Figure 5: Transformation Map



Sources: Distribution Lab Analysis

Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

the way we do it

If you would like to learn more about Capgemini's CDM Implementation Roadmap and how it can help your organization, please contact:

Hikmat Mahawat Khan
Center of Excellence Aviation
Tel: +31 30 689 5300
Mob: +31 6 15 030 946
hikmat.mahawatkhan@capgemini.com

About Capgemini and the Collaborative Business Experience™

Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies. Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™.

The Group relies on its global delivery model called Rightshore®, which aims to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients. Present in more than 30 countries, Capgemini reported 2009 global revenues of EUR 8.4 billion and employs 90,000 people worldwide.

More information is available at **www.capgemini.com**