Chapter 9
Commercial Aircraft: 
A Holistic and Integrated Model of 
the Flux of Information Regarding 
the Operational Support

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ABSTRACT
The Air Transportation is the type of activity that exhibits significant complexity mainly due to the fact that to take place a great number of interlinked services need to be made available, ranging from air traffic control and management to ground services as well as to maintenance. In this respect, the utilization of software is permanent, allowing the operators to perform, among various aspects, the relevant operational support of commercial aircraft essentially oriented to aircraft maintenance or in other words compliance with the applicable Continued Airworthiness Instructions. Despite the fact much commercial software is available, little literature exists describing conceptually the whole process. Starting from situation, this book chapter provides the reader and those involved in the development of software for aircraft support the structure and the type of information related thereto.

INTRODUCTION: OVERVIEW ON THE AIR TRANSPORTATION
Air Transport is commonly used by all categories and types of business. However it became particularly important for those categories engaged in what Button and Taylor (2000) call new economy activities, e.g., business categories requiring for those companies involved easy inter-personal contacts only possible with high-quality transport services¹. In this respect, those authors listed 125 activities that were organized into 11 groups:

The evaluation of the impact in the economy of those 11 groups of activities is not an easy task, (Harmatuck, 1996; Barros, 2008; Halpern and Pagliary, 2008; Tapiador et al, 2008) mainly for two reasons: services themselves may interact in several combinations, and territories themselves may react in several ways too according to its own endogenous characteristics, (Cole, 1998). Button

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and Taylor (2000) consider these spatial and non-spatial impacts in terms of four domains:

- **Primary effects**: direct and immediate benefits to a region for the creation of services and/or the expansion of others existing. The gains to the local economy are of short term and usually limited in their order of magnitude;
- **Secondary effects**: these are long term impacts. They are usually linked to local economic benefits of the air service operations mainly due to the employment involved in aircraft ground operations, such as, passengers, cargo and catering. The size of the secondary effects over the territories depends upon airport operations volume and nature;
- **Tertiary effects**: impacts over the local economy as the result of the air transport services available to individuals and companies;
- **Perpetuity effects**: these are the type of impacts assumed as being related with infra-structures, like concluded by Aschauer (1989, 1990) who underlines that there are empirical evidences that infrastructure investment have an impact itself into the regional economy, by raising the activity level and stimulating the productivity, thus acting as a catalyst for higher economic growth.

In this respect, more recently despite the specific objectives and characteristics under which Low Cost Airlines (LCA) operate, they also became an additional factor of economic and social progress for the Air Transportation mainly impacting regional airports and under utilised infra-structures most of them located in the suburban areas outside of large cities (see figure 1).

Given this multi-impact in the local and global economy, from a more specialised and detailed perspective, the Air Transportation involves a number of activities such as:

- Air Traffic Control/Management;
- Ground operations involving crews and passenger assistance, check in, load and unload aircraft;
- Aircraft servicing including loading, unloading and refuelling;
- Fleet management;
- Aircraft Operations Planning;
- Aircraft dispatch services;
- Flight crew management;
- Security services;
- Fire brigade services;
- Training services;
- Aircraft maintenance.

Parallel to the impact in the society and activities, specific organisations have also contribution to the Air Transportation influencing it direct or indirectly.

Those organisations include the civil National and International Aviation Authorities, such as, FAA and EASA, as well as civil International Aviation Associations/Organisations like ATA, IATA, ICAO and Eurocontrol. All of them share a common aspect, that is, they define rules and standards.

| IT Software; | Energy and Environment; |
| IT Services; | Electronics; |
| Telecom Services; | Transportation; |
| Advanced Materials; | Management and Services; |
| Aerospace; | Technology Industrial Manufacturing. |
| Biotechnology; | |

*Table. 1*
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