FLIGHT TEST PERSPECTIVES IN A MODEL DRIVEN DESIGN SCENARIO: A CASE STUDY

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ABSTRACT

"Why Embraer Flight Test Division is not able to sustain a hundred flight hours per month per prototype?" This question has been raised by program managers during EMB 170/190 family certification process.

After that, a diagnostic study demonstrated that Embraer development process was centered in flight test as a main resource to develop and to show compliance with requirements. A change was needed since flight test is the most expensive and time consuming means of development.

With this motivation, in 2005 a set of research and development projects was started with the goal of obtaining a reduction in flight test cycle and in the level of corrections after aircraft release to test and release to field. The core of these integrated projects was the domain of key technologies associated with flight by wire and systems integration based on a modeling and simulation strategy.

The Embraer Flight Test Division started also one project with the main goal of optimizing the flight test campaign by transferring the development effort from flight test to ground test and modeling and simulation. In addition, in 2008 Embraer launched programs with high level of complex and integrated systems that represent a great step in terms of technological evolution and, once again, the risk of flight test phase go out of schedule has been raised. This challenge forced a new strategy for the development process with a Kaizen approach with focus on flight test in the context of the development.

In this paper, all the Embraer Flight Test efforts and results to change the development process in order to allow a better balance between flight test, ground test and modeling and simulation is presented. As a conclusion, aircraft systems evolution - that means continuous increase in complexity necessary to assure product competitive - forces the Embraer Flight Test Division to develop a continual improvement approach to keep commitment with schedule, costs and quality in a new aircraft development.