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ATC SIMULATORS ON THE BASIS OF ARTIFICIAL INTELLIGENCE

The primary responsibility of air traffic control (ATC) is the prevention of aircraft collisions. An important secondary responsibility is to expedite traffic. These and other duties are all currently performed by human air traffic controllers. Increasing numbers of flights, however, are straining the system and this trend is expected to continue.

In order to maintain and expedite the flow of air traffic in an orderly manner an ATC must possess a set of qualities and experience in the sphere of air traffic control. The provision of such training in real time and on the basis of real airfield endangers the safety of the current aerodrome traffic. So as a result a number of ATC simulators were created. In general usage the word simulator means mechanical, electrical, or combined education and training device that artificially simulates different loads or the circumstances (situation).

If talk about air traffic control simulators, they are training systems for interacting with a user, generating a representation of at least one moving aircraft having an initial position and heading for producing a dynamic simulation of an air traffic scenario.

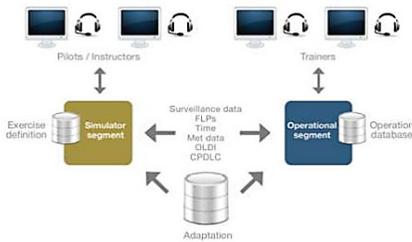


Figure 1 Conventional scheme of ATC

Nowadays, the most common type of simulator used in ATC is the one that includes simulator segment and the operational segment (Figure 1). In other words it means that the presence of a supervisor or a pseudo-pilot is obligatory during the whole process of ATCO’s training. Such simulators as: Si ATCSim, ATCoach, TSim, The 3-D Gate-to-Gate Simulator, etc.

But as it always is there are two side of the coin in this situation. It’s great to have an opportunity to practice and improve skill of future and current ATCOs without putting in danger human lives. But still this kind of simulators has some disadvantages. Some of them are: high prices for the required equipment, necessity in a personal supervisor for each trainee (as a result there is a great demand in human resources with a high level of professionalism) and in addition it takes time for a situation to be modeled.

As a result a new generation of ATC simulators appeared, the ones based on the artificial intelligence. To have a better understanding of such simulators it’s important to understand what A. I. is actually is. To put it simple words the computer that possesses A.I. is expected to act in a way that is inherent to humans’ mind. While applying it in ATC simulators it creates the simulator that is capable of not only reacting on student responses but also to observe the students’ performance and offer advices and criticism. Examples of such ATC simulators are: Total Control, MaxSim ATC Simulators, ICE ATC, etc.

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