

## GIS for Simulating Air Traffic by Applying Different Multi-radar Positioning Techniques

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**Abstract :** Radar data is one of the many data sources used by ATM Air Traffic Management systems. These data come from air navigation radar antennas. These radars intercept signals emitted by the various aircraft crossing the controlled airspace and calculate the position of these aircraft and retransmit their positions to the Air Traffic Management System. For greater reliability, these radars are positioned in such a way as to allow their coverage areas to overlap. An aircraft will therefore be detected by at least one of these radars. However, the position coordinates of the same aircraft and sent by these different radars are not necessarily identical. Therefore, the ATM system must calculate a single position (radar track) which will ultimately be sent to the control position and displayed on the air traffic controller's monitor. There are several techniques for calculating the radar track. Furthermore, the geographical nature of the problem requires the use of a Geographic Information System (GIS), i.e. a geographical database on the one hand and geographical processing. The objective of this work is to propose a GIS for traffic simulation which reconstructs the evolution over time of aircraft positions from a multi-source radar data set and by applying these different techniques.

**Keywords :** ATM, GIS, radar data, air traffic simulation

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