

**Automation Technology Using  
Geographic Information System (GIS)**

by

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Airport Surface Movement Area is but one of the actions taken to increase the capacity and safety of existing airport facilities. The System Integration Branch (SIB) has designed an integrated system consisting of an electronic moving display in the cockpit, and includes display of taxi routes which will warn controllers and pilots of the position of other traffic and warning information automatically.

Although, this system has in test simulation proven to be accurate and helpful; the initial process of obtaining an airport layout of the taxi-routes and designing each of them is a very tedious and time-consuming process. Other methods of preparing the display maps are being researched. One such method is the use of the Geographical Information System (GIS).

GIS is an integrated system of computer hardware and software linking topographical, demographic and other resource data that is being referenced. The software can support many areas of work with virtually unlimited information compatibility due to the system's open architecture. GIS will allow us to work faster with increased efficiency and accuracy while providing decision making capabilities. GIS is currently being used at the Langley Research Center with other applications and have been validated as an accurate system for that task. GIS usage for our task will involve digitizing aerial photographs of the topology for each taxi-runway and identifying each position according to its specific spatial coordinates . The information currently being used can be integrated with the GIS system, due to its ability to provide a wide variety of user interfaces.

Much more research and data analysis will be needed before this technique will be used, however we are hopeful this will lead to better usage of man-power and technological capabilities for the future.