

论文

基于GML的航空地理数据建模

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摘要:

航空情报资料是空中交通地理活动所必需或所产生的航空地理数据,在信息化管理过程中面临着多源异构数据的集中管理、统一维护和分布使用等需求。GML作为开放的空间数据模型标准,为航空地理数据的交换和共享提供了要素编码方法和数据交换规范。针对航空信息化系统建设中对规范的航空地理数据的应用需求,在研究航空地理数据特点的基础上,通过分析航空地理数据与GML模型之间的映射关系,以航线管理系统中基础航空情报数据库的建设为例,基于GML规范设计了航空地理数据模型,阐明了数据处理流程,为建立标准化的航空信息数据仓库进行了有益的尝试。

关键词: 航空情报 GML 映射 航空地理数据模型

Aeronautical geographic data modeling based on GML

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Abstract:

Aeronautical information is an important type of geospatial data to ensure the safety and efficiency for air traffic. Currently, aeronautical information service(AIS) provide these data to users by the medium of aeronautical chart, aeronautical information public(AIP), notice to airman(NOTAM), and so on. We are in the age of the Internet, satellite navigation and computer networks, yet our approach to aeronautical geospatial data distribution is still based on paper charts, paper documentation and telex-based text messages. Systems exist in isolation. Many of the data is entered more than twice in different computers using a keyboard rather than via file transfer or database transactions. To satisfy new requirements for the Global Air Traffic Management Operational Concept, aeronautical information services should be transferred to support a digital, real-time, accredited and secure aeronautical information environment. As an open geospatial data standard, GML gives aeronautical information feature coding method and interchanging format. Much has been done in air traffic community, and the technology has become more mature and is widely used. EUROCONTROL and FAA have developed AIXM(Aeronautical Information Exchange Model) based on GML. In Europe, the European AIS Database(EAD) provide unique reference database of aeronautical information on behalf of AIXM. In Chinese air traffic community, unique aeronautical geospatial data model has been considered as the key to ensure quality, integrity and interoperation of the aeronautical information. But there is little material progress on the data modeling. Based on studies on the characteristic of aeronautical information, the paper analyzed the mapping aeronautical data between and GML. Taking the basic aeronautical information database in Airline Management System as an example, an aeronautical geographic data model has been brought forward in this paper. Studies have shown that obstacle data, as special geographic points, can be described by GML model. Terrain data and basic geographic data can be converted in Open GML format. Based on GML, the aeronautical geospatial data model can not only be applied to aeronautic information, but also to obstacle data and terrain data. Based on the data model, aeronautic geospatial data can be progressed regularly, maintained centrally, and used in network. This work explores the approach of information technology on developing the future central aeronautical information database.

Keywords: aeronautical information GML mapping aeronautical geographic data model

收稿日期 2011-07-15 修回日期 2011-10-03 网络版发布日期

DOI:

基金项目:

国家空管科研项目(GKG20070217)

通讯作者:

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