Abstract

Development of a Spatial-Information-System for the Crop Wild Relatives Project using Open Source Technology

Till Kirchner

Crop Wild Relatives (CWR) are wild plant species having a relatedness to a crop. The conservation of CWR as a gene-pool for commercial crops will be of great importance in the future.

In this context the thesis develops a prototype of the first CWRInformation-System for the federal state of Brandenburg (Germany).

The data used for the CWR-Information-System comes from several heterogeneous data-pools that have been migrated into a spatial-temporal database, which was developed during the work for this thesis. The thesis will consider modern geodata-management-concepts and show that large complex object-structured geodata-pools are almost impossible to organize without the use of high-end Spatial-Database-Systems.

Problems of data-modeling and data-analysis, resulting from the complexity and heterogeneity of used data, will be described and solved. It will be demonstrated that modern Spatial-Database-Systems cannot be considered as data-storage modules only, but also provide the possibility to run very complex spatial-temporal analysis without the need of external tools. Furthermore, high-end Geographic-Information-Systems, traditionally used for spatial-data-analysis, are unable to use the full information-content of complex object-structured geodata-pools, modeled in a realistic way. Therefore, complex spatial-temporal analysis for the CWR-Information-System has to be shifted to the Spatial-Database-Management-System directly.

Keywords: CWR, Geodatabase, GIS, Information System, Spatial Database, Spatial Database Management System, Spatial Database System, Temporal Database, Geodatainfrastructure