AFIS
ALKIS
ATKIS

Working Committee of the Surveying Authorities

of the States of the Federal Republic of Germany (AdV)

Documentation
on the
Modelling of Geoinformation
for Official Surveying and Mapping
(GeoInfoDok)

Chapter 5
Technical Applications of the Basic Scheme

Section 5.2
Comments on AFIS

Version 5.1
Status: 31. July 2006

Edited by the
AdV Work Group for Spatial Reference

5.2.1 The History of AFIS

Once the modelling of ALKIS had reached an advanced stage, a discussion was held on integrating geodetic fixed points of territorial surveyance (trigonometric points, levelling points and gravity control points). The different responsibilities (local surveying offices for cadastre data, state surveying offices for the fixed points of territorial surveyance) induced the GeoInfoDok editorial group to propose in November 1999 an independent "Official Geodetic Control Station Information System AFIS" in addition to ALKIS and ATKIS. The AdV work group for groundwork surveying accepted this proposal in its 5th conference on 25/26 Jan. 2000. AFIS was to be simply structured on the one hand and primarily contain data causing external effects, on the other hand to represent a substitute for the previous ALK station file to take into account the unique features of the federal states. These conflicting demands were successfully combined by considering all state requirements but also defining a brief basic database (see item 5.2.4).,

The AFIS experts comissioned by the work group, including representatives of the states of Baden-Württemberg (at times), Bavaria (leader), Brandenburg (at times), Lower Saxony, North-Rhine-Westphalia (at times) and Rhineland-Palatinate presented several modelling proposals, on which the states were able to comment. Following the consent of the work group for Basic Surveying at its 8th conference, the AdV Plenum approved the proposed AFIS feature catalogue and the AFIS standard edition on its 110th conference on 25/26 April 2002. Further additions and minor changes were subsequently implemented as part of the AFIS-ALKIS-ATKIS revision management process.

5.2.2 Coordination between ALKIS and AFIS

From the outset, AFIS was extensively aligned in content and form with ALKIS, whose modelling was more advanced at every stage. This agreement was made possible by interviews and primarily by the harmonisation meeting on 17 Dec. 2001. The contents of the common point location feature and the common geodetic catalogue were specified in this meeting.

5.2.3 Technical modelling of the AFIS features

The AFIS group of experts worked on the technical modelling for the following seven features: Horizontal control point (LFP), vertical control point (HFP), gravity control point (SFP), reference station point (RSP), diagram, point location and gravity. As part of UML modelling (conducted in July 2002 by ii-instruments, Mr. Portele), these primary AFIS features were modified without changing the technical content. For instance, an abstract feature "AX_ControlPoint" was created containing several attributes and relations occurring identically in LFP, HFP, SFP and RSP and from which the UML features AX_HorizontalControlPoint, AX_VerticalControlPoint, AX_GravitationControlPoint and AX_ReferenceStationPoint are derived. The remaining features, for example in the feature groups of user profile, presentation objects and area units, which are required to complete the digital control station model for state surveying (DFGM, which corresponds to AFIS), were taken from ALKIS and used unchanged as part of UML modelling.

The following explanations are given for AFIS features LFP, HFP, SFP and RSP:

- Point code attribute: Point numbering may differ between states, although must be explained in the meta data. A clear designation for a control point therefore also includes the specification of "state".

- Monument type attribute: The key coefficient (value) of a monument type indicates not only the type of monument in the locality, but also the location of the monument to which the position coordinates and, where appliable, the heights and gravity values relate. Therefore, several monument types were listed twice, e.g. the TP specification with "sheet" as well as "column" as reference (=marker).

- Column height attribute: TP definitions (sheet with column) allows te storage of several column heights with the associated measuring dates.

- Structure height attribute: SFP allows the indication of the height difference between marker reference point and true location of gravimeter.

- Relations between control points: Due to the various markers of monuments used with some monuments (e.g. TP definition), a distinction had to be drawn for many relations between "is identical to" and "has different marker reference point".

5.2.4 Geographic core data of AFIS-OK

In its resolution for AFIS (AdV 110/8) based on the resolution for ALKIS core data (AdV 107/5), the AdV Plenum also specified AFIS geographic core data, which was still adapted in the course of the AAA-Revision management. The core data defines the AFIS elements and must be implemented. On implementation of an element not considered core data, the modelling carried out in AFIS must be used.

5.2.5 Historization and entering historical data

At its 9th conference (18/19 March 2002, Agenda Item 6.1), the AdV work group for Spatial Reference emphasised that for technical reasons, the territoral survey control points had to permanently store both current as well as historical data. The work group did not define a specific procedure for a complete historization, although it cited versioning as an example. The work group also demanded the capability to retrospectively enter historical AFIS features (e.g. coordinates in historical reference systems) and enter earlier versions of current features (e.g. historical features in a current reference system).

5.2.6 Word and image trademarks of AFIS

AFIS is registered with the German Patent and Trademark Office as a word and image trademark. The trademark is owned by the Bavarian State Survey Office, which allows the trademark to be used under the terms of AdV regulations.