

Laser-Scan Ltd.

Software Product Specification

DFAD

Issue 1.1 05-May-1992

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| Document "DFAD SPS" | | Category "SALES - Spec" |
| Document Issue 1.0 | Dave Catlow | 10-June-1988 |
| Document Issue 1.1 | J M Cadogan | 05-May-1992 |

DFAD Software Product Specification

1 DESCRIPTION

The Laser-Scan DFAD package contains a number of modules that have been designed to specifically handle Digital LandMass Simulation (DLMS) Digital Feature Analysis Data. Utilities are provided to create, examine and validate DFAD data held within a Laser-Scan Internal Feature Format (IFF) file, along with utilities to read and write a DLMS DFAD format magnetic tape. In addition modules are provided to create and modify a Feature Analysis Data Table (FADT); to merge a FADT with DFAD coordinate information, and to access an on-line DLMS Rules File.

2 HARDWARE PREREQUISITES

- o DEC VAX, DEC MicroVAX or DEC VAXstation computer.
- o Any DEC-compatible alphanumeric terminal.
- o A magnetic tape device (for modules DFAD2I, I2DFAD)

3 SOFTWARE PREREQUISITES

DFAD runs under VAX-VMS Version 5.4-3 or later version, assuming upwards compatibility by DEC. DFAD coexists concurrently with other interactive and batch processes.

Laser-Scan's **IFF Map Processing** package (IMP) is a prerequisite. Laser-Scan's LITES2 interactive digitising and editing software is recommended for digitising and editing vector input data. VTRAK automated digitising is recommended for large numbers of input documents.

4 SUPPORT LEVEL

DFAD is a fully supported Laser-Scan standard software product.

5 COMPONENT MODULES

The DFAD package contains the following modules:

- o DFAD2I

DFAD Software Product Specification

- DFADVAL
- FADTINPUT
- FADTMERGE
- I2DFAD
- MCEHED

DFAD Software Product Specification

MODULE DFAD2I

The module DFAD2I transfers a manuscript from a Digital LandMass System (DLMS) Digital Feature Analysis Data (DFAD) format magnetic tape to a Laser-Scan Internal Feature Format (IFF) disk file.

The user may specify which manuscript to transfers by means of qualifiers on the program command line. Selection may be performed on the basis of manuscript number, or manuscript latitude and longitude origin. The tape device from which the data is read is similarly specified by the user on the command line.

Options are provided in the program to produce a dump of the tape, and to enable the output of diagnostic messages describing the progress of the DFAD tape to IFF file conversion.

DFAD Software Product Specification

MODULE DFADVAL

The module DFADVAL is used to validate an IFF file containing DFAD data. It performs validation on feature geometry, DFAD accuracy region attributes, and DFAD point, line and area attribute records. The module also validates header fields in the MCE Map Header of the IFF file.

Attribute validation is performed against the DLMS DFAD specification, and optionally againsts rules contained in a DLMS Rule file.

The module is generally run before DFAD data is written to a DFAD format magnetic tape.

DFADVAL produces a validation report, which may be output at the terminal or sent to a user specified list file for subsequent printing and examination. Optionally a LITES2 guidance file may be produced to aid the correction of any features that fail validation.

Geometry validation operations, include checks on the coordinates of DFAD features to ensure that they are within the manuscript bounds; checks on the number of coordinates defining a point, line or area feature, and checks for crossing or touching line segments. Areas are validated to ensure that the coordinates are defined in the correct direction, and that area features close correctly.

Attribute validation operations ensure that all analysis fields are present for each point, line and area feature; that each analysis code complies with the DLMS specification, and that analysis codes in combination are valid when compared against a set of DLMS rules.

Map Header checks involve ensuring that values for all fields required for the DFAD DSI and ACC records are present and conform to the DLMS Specification. Accuracy regions checks involve examining both the coordinates and the attributes of the features.

Which checks are performed on the data, may be selected by the user using program command line qualifiers.

DFAD Software Product Specification

MODULE FADTINPUT

The module FADTINPUT enables a user to create, edit and list a DLMS Feature Analysis Data Table (FADT) file. The module validates the FADT records on entry against the DLMS Specification, and optionally against a set of validation rules in a DLMS Rule file.

The operation of the module is controlled by a series of forms (DEC FMS) or by a series of logical names set up prior to invoking the module.

Forms are provided to allow the input and validation of DFAD DSI and ACC record data, and DFAD feature analysis data. The use of forms offers considerable flexibility, while enabling stringent checks to be made on the format of the data that are entered.

In the Laser-Scan DLMS DFAD production system, the information entered into the FADT via the forms, will be merged with coordinate data held in an IFF file. This merging is performed using the module FADTMERGE.

DFAD Software Product Specification

MODULE FADTMERGE

The module FADTMERGE merges records in a Feature Analysis Data File (FADT) created by the module FADTINPUT, with DFAD feature coordinate data contained in an IFF file.

DFAD feature data is merged on the basis of feature analysis code (FAC) for the FADT file, and feature serial number (FSN) for the IFF file. DSI and ACC header data contained in the FADT file is transferred to a Map Header in the IFF file.

The user may specify which type of records are merged (for example just data relating to the header records) by means of qualifiers on the program command line.

DFAD Software Product Specification

MODULE I2DFAD

The module I2DFAD transfers data from a Laser-Scan Internal Feature Format (IFF) disk file to a Digital LandMass System (DLMS) Digital Feature Analysis Data (DFAD) format magnetic tape.

The user may select whether to append data to any existing manuscripts on the tape, or to write the data as the first manuscript on the tape, by means of qualifiers on the program command line. The tape device to which the data is to be written is similarly specified by the user on the command line.

An option is provided in the program to output diagnostic messages describing the progress of the IFF to DFAD tape conversion.

DFAD Software Product Specification

MODULE MCEHED

The module MCEHED allows fields in a Map Header (MH) entry in a Laser-Scan Internal Feature Format (IFF) file to be examined or edited. The Map Header must be a MCE (customer type 1) header.

The main use for the module in DLMS work is to enter and modify header information that is held in the DSI and ACC records of a DFAD format magnetic tape.

The module is command driven. Commands are provided to examine all fields in the header, or a group of fields (eg. fields relating to manuscript coverage). All fields in the header may be edited using the module.