Title: Draft New Work Item Proposal: Geographic information - Calibration, validation and certification of remote sensing sensors and data

Source: NB of Germany

Expected action: This document is sent out for 30 days review. Particular consideration should be given to title and scope, and to harmonization with other ISO/TC 211 standards. Members are invited to submit comments to the secretariat.

Due date: 2009-01-19

Type of document: Draft NWI for review

Note: This is NOT a voting document. This proposal and any comments received within the 30 days will be reviewed by the Programme Maintenance Group (PMG) according to Resolutions 155 and 360, and their recommendation will be forwarded to the proposer.

Hyperlink: http://www.isotc211.org/protdoc/211n2607/
A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, or organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

See overleaf for guidance on when to use this form.

**IMPORTANT NOTE:** Proposals without adequate justification risk rejection or referral to originator.

Guidelines for proposing and justifying a new work item are given overleaf.

### Proposal (to be completed by the proposer)

<table>
<thead>
<tr>
<th>Title of proposal</th>
<th>English title</th>
<th>Geographic information - Calibration, validation and certification of remote sensing sensors and data</th>
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</thead>
</table>

**French title**

(if available)

<table>
<thead>
<tr>
<th>Scope of proposed project</th>
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<tbody>
<tr>
<td>This International Technical Specification will specify the procedure for calibration of photogrammetric and remote sensors and the mechanism to report the calibration result. The Technical Specification will specify a minimum set of metadata for the calibration and the validation of the geometry and of the radiometry of photogrammetric and remotely sensed data, and will define content and procedure of a related certification. The validation will be applicable to different levels of data aggregation. This Technical Specification will consist of the three parts calibration, validation, and certification.</td>
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**Concerns known patented items**

(see ISO/IEC Directives Part 1 for important guidance)

- [ ] Yes
- [x] No

If "Yes", provide full information as annex

<table>
<thead>
<tr>
<th>Envisaged publication type</th>
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<tbody>
<tr>
<td>(indicate one of the following, if possible)</td>
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<tr>
<td>[ ] International Standard</td>
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<tr>
<td>[x] Technical Specification</td>
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<tr>
<td>[ ] Publicly Available Specification</td>
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<tr>
<td>[ ] Technical Report</td>
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</table>
New work item proposal

**Purpose and justification** (attach a separate page as annex, if necessary)
The Technical Specification will cover the calibration of photogrammetric and remote sensing sensors as well as the validation of those sensors, the related data and processes. This Technical Specification will also define the certification of those sensors, data products and processes, as well as standardize those metadata that have not been covered by other standards.

After nearly a decade of operational digital aerial cameras these new systems have matured. Compared to the earlier analogue cameras the new digital systems have other geometric and radiometric characteristics. In addition their various types differ considerably in the system design and hence in their components critical for the overall geometric and radiometric accuracy. This fostered a strong demand for internationally agreed calibration procedures. Those are presently under development in the ISPRS, the EuroSDR and some national organisations.

A similar demand for common calibration procedures for imaging remote sensors exists in communities working on Earth observations.

This Technical Specification will specify the minimum content required to geometrically and radiometrically calibrate remotely sensed data unless done elsewhere already. It will also specify the information, such as the response of the system to input signals, needed to evaluate the radiometric quality of the measurements. For uncalibrated data, it will define, for each type of remote sensor, all parameters required to quantitatively derive physical values from raw sensor measurements. For calibrated, non-thermal data, it will define the mechanisms for reporting the methods used for the radiometric calibration/correction, the accuracy and precision of the calibration, and the methods for determining accuracy and precision.

This Technical Specification will define a detailed guideline that lists the practical requirements of the geometric and radiometric calibration of photogrammetric and remote sensing sensors.

Validation is the process of assessing by independent means the quality of the data products derived from the system outputs. Data may be validated on different levels of aggregation. Those levels range from unprocessed data through intermediate product levels to the fully processed data product. In particular those agencies which receive their remotely sensed data products from a large number of different sources and suppliers demand a standardized validation procedure.

This Technical Specification will define a framework for the procedure to validate remote sensing data and derived data products. Calibration and validation lead to a report that contains the results, in particular the technical parameters found during the calibration process, and/or proves the fitness for use of a certain data set. This Technical Specification will specify the minimum content required to validate remotely sensed data. It will also define a standardized certification for calibration and validation, which covers procedure, content, and the responsible authority of such a certificate.

Preliminary work has been done by EuroDAC², the European Digital Aerial Camera Certification project in cooperation with ISPRS and ASPRS (USA), and the CEOS Cal/Val and WGISS working groups.

In addition to the above listed topics this Technical Specification will add all metadata that are necessary to cover those topics and that have not been defined in other standards for geographic information, e.g. ISO 19115, ISO 19115-2, and ISO 19130. Consequently the new specification will particularly add the metadata of the radiometric properties of remote sensing data.

The existence of a common specification will allow users to package their calibration and validation information in a way that will make it accessible to the widest possible number of users, promoting interoperability of data between application systems and facilitating data as well as sensor exchanges.

**Target date for availability** (date by which publication is considered to be necessary) 2012-10

**Proposed development track**

<table>
<thead>
<tr>
<th>Track</th>
<th>Duration</th>
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<tbody>
<tr>
<td>1</td>
<td>24 months</td>
</tr>
<tr>
<td>2</td>
<td>36 months (default)</td>
</tr>
<tr>
<td>3</td>
<td>48 months</td>
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</table>

**Relevant documents to be considered**

- ISO 19113 Geographic information - Quality principles
- ISO 19114 Geographic information - Quality evaluation procedures
- ISO 19115 Geographic information - Metadata
- ISO 19115-2 Geographic Information - Metadata - Part 2: Extensions for imagery and gridded data
- ISO 19121 Geographic information - Imagery and gridded data
- ISO 19124 Geographic information - Imagery and gridded data components (Stage 0 report)
- ISO/TS 19129 Geographic information - Imagery, gridded and coverage data framework
- ISO/TS 19130 Geographic information - Imagery sensor models for geopositioning
- ISO 19138 Geographic information - Data quality measures
- ISO 19139 Geographic information - Metadata - Implementation specification

**Relationship of project to activities of other international bodies**

**Liaison organizations**
- European Spatial Data Research (EuroSDR)
- Committee on Earth Observations Satellites (CEOS)
- International Society for Photogrammetry and Remote Sensing (ISPRS)
- Open Geospatial Consortium (OGC)

**Need for coordination with:**

- IEC
- CEN
- Other (please specify)
Preparatory work (at a minimum an outline should be included with the proposal)

☐ A draft is attached  ☒ It is possible to supply a draft by 2009-05

The proposer or the proposer's organization is prepared to undertake the preparatory work required  ☒ Yes  ☐ No

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Comments of the TC or SC Secretariat

Supplementary information relating to the proposal

☐ This proposal relates to a new ISO document;
☐ This proposal relates to the amendment/revision of an existing ISO document;
☐ This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;
☐ This proposal relates to the re-establishment of a cancelled project as an active project.

Other:

Voting information

The ballot associated with this proposal comprises a vote on:

☒ Adoption of the proposal as a new project
☐ Adoption of the associated draft as a committee draft (CD)
☐ Adoption of the associated draft for submission for the enquiry vote (DIS or equivalent)

Other:

Annex(es) are included with this proposal (give details)

☐

Date of circulation  Closing date for voting  Signature of the TC or SC Secretary

Use this form to propose:

a) a new ISO document (including a new part to an existing document), or the amendment/revision of an existing ISO document;
b) the establishment as an active project of a preliminary work item, or the re-establishment of a cancelled project;
c) the change in the type of an existing document, e.g. conversion of a Technical Specification into an International Standard.

This form is not intended for use to propose an action following a systematic review - use ISO Form 21 for that purpose.

Proposals for correction (i.e. proposals for a Technical Corrigendum) should be submitted in writing directly to the secretariat concerned.

Guidelines on the completion of a proposal for a new work item

(see also the ISO/IEC Directives Part 1)

a) Title: Indicate the subject of the proposed new work item.
b) Scope: Give a clear indication of the coverage of the proposed new work item. Indicate, for example, if this is a proposal for a new document, or a proposed change (amendment/revision). It is often helpful to indicate what is not covered (exclusions).
c) Envisaged publication type: Details of the types of ISO deliverable available are given in the ISO/IEC Directives, Part 1 and/or the associated ISO Supplement.
d) Purpose and justification: Give details based on a critical study of the following elements wherever practicable. Wherever possible reference should be made to information contained in the related TC Business Plan.

1) The specific aims and reason for the standardization activity, with particular emphasis on the aspects of standardization to be covered, the problems it is expected to solve or the difficulties it is intended to overcome.
2) The main interests that might benefit from or be affected by the activity, such as industry, consumers, trade, governments, distributors.
3) Feasibility of the activity: Are there factors that could hinder the successful establishment or global application of the standard?
4) Timeliness of the standard to be produced: Is the technology reasonably stabilized? If not, how much time is likely to be available before advances in technology may render the proposed standard outdated? Is the proposed standard required as a basis for the future development of the technology in question?
5) Urgency of the activity, considering the needs of other fields or organizations. Indicate target date and, when a series of standards is proposed, suggest priorities.
6) The benefits to be gained by the implementation of the proposed standard; alternatively, the loss or disadvantage(s) if no standard is established within a reasonable time. Data such as product volume or value of trade should be included and quantified.

7) If the standardization activity is, or is likely to be, the subject of regulations or to require the harmonization of existing regulations, this should be indicated.

If a series of new work items is proposed having a common purpose and justification, a common proposal may be drafted including all elements to be clarified and enumerating the titles and scopes of each individual item.

e) Relevant documents and their effects on global relevancy: List any known relevant documents (such as standards and regulations), regardless of their source. When the proposer considers that an existing well-established document may be acceptable as a standard (with or without amendment), indicate this with appropriate justification and attach a copy to the proposal.

f) Cooperation and liaison: List relevant organizations or bodies with which cooperation and liaison should exist.