
**Geographic information/Geomatics —
Qualification and certification of
personnel**

Information géographique — Qualification et accréditation du personnel



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	v
Introduction	vi
1 Scope.....	1
2 Terms and definitions.....	1
3 Abbreviated terms.....	3
4 Review of existing qualifications and certification systems.....	3
4.1 Introduction	3
4.2 Questionnaire results	4
4.3 General comments.....	5
5 National case studies.....	5
5.1 Introduction	5
5.2 Australia	5
5.3 Austria	5
5.4 Canada	5
5.5 China	5
5.6 Finland.....	6
5.7 Germany.....	6
5.8 Japan	6
5.9 Korea	6
5.10 Portugal.....	6
5.11 Saudi Arabia	6
5.12 South Africa	6
5.13 United Kingdom	6
5.14 United States	7
5.15 International case studies.....	7
6 Discussion	7
6.1 Introduction	7
6.2 Definitions.....	8
6.3 National professional organizations.....	8
6.4 Current qualifications and certification initiatives	8
6.5 Future directions.....	9
7 Recommendations	10
Annex A (informative) National case studies — Australia	11
Annex B (informative) National case studies — Austria	20
Annex C (informative) National case studies — Canada	26
Annex D (informative) National case studies — Finland	33
Annex E (informative) National case studies — Germany	34
Annex F (informative) National case studies — Japan	44
Annex G (informative) National case studies — Korea	47
Annex H (informative) National case studies — Portugal	48
Annex I (informative) National case studies — Saudi Arabia	51
Annex J (informative) National case studies — South Africa	60
Annex K (informative) National case studies — United Kingdom	66

Annex L (informative) **National case studies — USA** 78

Annex M (informative) **International Case Study** 86

Bibliography..... 98

This document is a preview generated by EVS

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 19122 was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics* in collaboration with the following ISO/TC 211 Class A liaison organizations:

- International Federation of Surveyors (FIG)
- International Cartographic Association (ICA)
- International Hydrographic Organization (IHO)
- International Society for Photogrammetry and Remote Sensing (ISPRS)
- Open GIS Consortium, Incorporated (OGC)
- World Meteorological Organization (WMO)

Introduction

In 1998, the Canadian delegation made a proposal that the domain of interest for ISO/TC 211 should extend beyond data standards and encompass issues of certification and qualification of personnel. This proved to be a radical shift. From the beginning, the work encountered some difficulty. The voting on the original work item reflected ambiguity on the perceived value of the work. The initial reaction centred on whether there was a need for a single system of certification and whether it should be implemented through a central body.

After several years of discussion, a questionnaire was developed to obtain some of the background on different initiatives across the ISO/TC 211 membership. In August 2001, a small working group met to review the first eight case studies, analyse their content and develop recommendations to ISO/TC 211 through this Technical Report. Subsequently, five more case studies were added to this Technical Report.

To make further progress on the original Project Team 19122 agenda, there existed a continued need to expand the membership to represent better the different domains and approaches to certification and qualification of personnel. Nationally, this means the involvement of experts beyond the data standards arena; internationally, it means representation of the full range of professions and disciplines embraced by the broad geographic information/geomatics domain.

Certification in a technical subject domain raises issues for individual practitioners, education and training institutions, government agencies, professional organizations and the private sector. There remains the need for a mechanism that permits fair comparisons across jurisdictional boundaries; however the measures of skill and competency must be flexible and be cognizant of the social and cultural context.

The universal nature of geographic information/geomatics, and the recent and ongoing publication of ISO/TC 211 data standards dictate a common international requirement for a deeper understanding of different education and training systems, and the available processes for the recognition of professional qualifications across a broad subject domain. In addition, this domain is changing rapidly as the result of the changes in the Information and Communication Technologies (ICT) industry and the integration of GI Technologies into an ever-expanding range of applications. This rapid rate of change has significant implications for educational institutions, professional associations as well as standard setting organizations. All of these must take care to build change management into any standards established. The Project Team hopes this report will initiate a broad dialog towards greater understanding of national and disciplinary differences.

Geographic information/Geomatics — Qualification and certification of personnel

1 Scope

This Technical Report describes and defines the following objectives of the field of Geographic Information/Geomatics.

- To develop a Type 3 report, which describes a system for the qualification and certification, by a central independent body, of personnel in the field of Geographic Information/Geomatics.
- To define the boundaries between Geographic Information/ Geomatics and other related disciplines and professions.
- To specify technologies and tasks pertaining to Geographic Information/Geomatics.
- To establish skill sets and competency levels for technologists, professional staff and management in the field.
- To research the relationship between this initiative and other similar certification processes performed by existing professional associations.
- To develop a plan for the accreditation of candidate institutions and programs, for the certification of individuals in the workforce, and for collaboration with other professional bodies.

While the background research leading to this Technical Report has remained true to the framework provided by these objectives, the focus has shifted to a more comprehensive, descriptive study of the current situation in some member countries and the ongoing activities of some of those international professional associations which cover the subject domain. This is in contrast to a prescriptive study, where the solution would be dictated by ISO/TC 211.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

qualification

knowledge, skills, training and experience required to perform properly GIS/Geomatics tasks, normally achieved through formal education

2.2

certification

procedure leading to a written testimony of the qualification of an individual's professional competence provided by a range of public, private and professional institutions