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Information technology for learning, education and training — Information model for competency —

Part 1: Competency general framework and information model

Technologies de l'information pour l'apprentissage, l'éducation et la formation — Modèle d'information pour les compétences —

Partie 1: Cadre général des compétences et modèle d'information

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 36, *Information technology for learning, education and training*.

ISO/IEC 20006 consists of the following parts, under the general title *Information technology for learning, education and training — Information model for competency*:

— *Part 1: Competency general framework and information model*

— *Part 2: Proficiency level information model*

— *Part 3: Guidelines for aggregation of competency information and data*

Introduction

From the late 1990s, some industrial and academic organizations have developed information technology standards in the skills and competency domain, such as human resources, on a global level to address the interoperability requirements and environmental complexities of management and sharing of competency information amongst different organizations. Some examples include work spearheaded by the following organizations: the IMS Global Learning Consortium Inc., HR-XML Consortium, IEEE-LTSC, OMG, CEN TC353 and also ISO/IEC JTC 1/SC 36 itself. Some typical problems encountered by stakeholders as well as ITLET systems dedicated to the management and exchange of competency information and where these issues may be encountered are provided in examples below:[2]

Example 1: Technical - Competency and associated information cannot always be selected and shared between different ITLET systems (e.g. learning management, HR, and other related platforms);

Example 2: Organizational - Competency and associated information is not easily used in human development activities, because skills and competency information may be detailed or expressed differently in various ITLET systems (e.g. learning management, HR, national occupational classification, and other related systems);

Example 3: Information exchange - Skills and competency proficiency information, such as individual status or degrees acquired, cannot be shared easily amongst different ITLET systems (e.g. HR, learning management, national occupational classification, and other related systems);

Example 4: Individual learner - Individual developmental learning, education, and training paths cannot easily migrate or be exchanged amongst ITLET systems;

Example 5: Systems perspective (where systems include individuals, organizations, and the technologies that support them) - Individuals and organizations cannot easily design and integrate informal and formal learning, education, and training opportunities to support life goals, career strategies, and career paths using existing common dimensions within ITLET systems;

Example 6: Practical analytics - The ability to access, extract, and analyse competency and associated information can provide evidence as to whether learning, education and training information needs are being met in order to analyse lifelong learning, thus where competency information must be drawn from different systems and where non-interoperable format and definitions are used;

Example 7: Assessment and evaluation - ITLET systems (e.g. acknowledgement and consideration are needed regarding evaluation biases in human assessment, the use of varying methods and metrics to evaluate human performance, and the need to conduct accurate skill gap analysis), where ITLET systems that use different competency digital schema are involved; and,

Example 8: Overarching goals and outcomes - Human assessment and support for the development of human potential requires ITLET systems that provide a more flexible, holistic integration and exchange of competency and associated information beyond individual learning opportunities, everyday operation, and work performance. Competency data must be generated.

Some of these identified problems have been addressed on a limited basis by the standards and specifications produced by the organizations mentioned above. Not only is it difficult to use these standards and specifications, however, but also the unsolved problems are still critical. It is still confusing for stakeholders to implement and use these standards and specifications. Also, various problems associated with ITLET related systems, which should be solved by or supported with information technology, still remain.

Currently, organizations, such as schools, universities, institutes, and companies, use different ITLET systems to support the use of learning content, to enable and enhance various learning activities, and to provide other services. To meet their mission and goals, such organizations may rely on in-house developers, others such as ITLET vendors or suppliers, or a combination of both to provide and operate IT systems to support LET. This means ITLET operations and other organizational systems that deal with skills and competency information, such as interrelated human resources (HR) information

systems, need to be interoperable to allow for communication between organizations, their employees, and outsourcing ITLET providers or suppliers.

The purpose of this multi-part International Standard is to provide a framework, models, system architecture used for competency and proficiency information, and a way to aggregate competency information. This standard will provide a general framework and information model to manage and exchange information about knowledge, skills, ability, attitude, and educational objectives. Especially this International Standard will focus on extending the concepts contained within ISO/IEC TR 24763 by providing more detailed information regarding competency information and its information aggregation. This multi-part standard may be used by software developers and implementers, instructional designers and test designers, and others to ensure that learning, education and training environments satisfy learners' and organizations' competency needs. In addition, this International Standard will provide definitions of several types of competency information aggregation, which will provide guidance for all stakeholders to better understand and support the development of interoperable systems that will enable competency information exchange.

