
**Information technology for learning,
education and training — Nomadicity and
mobile technologies —**

**Part 1:
Nomadicity reference model**

*Technologies de l'information pour l'apprentissage, l'éducation et la
formation — Nomadisme et technologies mobiles —*

Partie 1: Modèle de référence du nomadisme

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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

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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.

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

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

In other circumstances, particularly when there is an urgent market requirement for such documents, the joint technical committee may decide to publish an ISO/IEC Technical Specification (ISO/IEC TS), which represents an agreement between the members of the joint technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/IEC TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/IEC TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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

ISO/IEC TS 29140-1 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, SC 36, *Information technology for learning, education and training*.

ISO/IEC TS 29140 consists of the following parts, under the general title *Information technology for learning, education and training — Nomadicity and mobile technologies*:

- *Part 1: Nomadicity reference model*
- *Part 2: Learner information model for mobile learning*

Introduction

The number of people working as “global nomads” has been rising in the last few decades. The traditional nomad (tribal, ethnical, cultural) is a vanishing species, but globalization and the ease of travel has given a real boost to the number of professional nomads. These professional nomads are people who work in a variety of occupations (educators, trainers, learning specialists, sales people, service people, sports professionals, junior and senior managers in international companies, tourism industry workers, disaster relief and aid workers, military personnel, etc.). Information and communication technology (ICT) has the potential to provide learners with increased access to information and learning materials, and to support learning and working “on the go” and from anywhere rather than from a specific location at a certain time. There are many possible ways to approach the situation, two of which are provided below.

First, this part of ISO/IEC TS 29140 focuses on an approach to nomadic learning. In situations where nomadicity is involved, the learner, educator, or other participants may be in transit between different locations or require access to services as they travel to different locations. It is essential that learning, education and training (LET) activities are seamless. The environment must accommodate the needs and requirements of learners who are travelling from place to place. The ever-changing environment of the learner is considered with respect to the context in which LET takes place. The question regarding which devices are employed to support learning will change over time as new innovations and emerging technologies become available. The learner may use mobile devices, stationary equipment supplied at different locations where learning is taking place, or use whatever combination of devices is available locally or through distributed networks. This means that information regarding the learning context will be crucial to enable learning processes. It is recommended that this part of ISO/IEC TS 29140 be consulted in conjunction with ISO/IEC TS 29140-2 when designing ITLET systems that will support nomadicity.

Second, when using the mobile learning approach, emphasis is placed on the technical device that the learner is using. When mobile learning is implemented properly, it has the potential to increase efficiency and productivity within the various sectors (public, private, and voluntary). Mobile technologies have the potential to provide learners with new opportunities to connect, create and explore during LET activities. Where learning, education, and training activities involve mobile devices to support nomadic learning, this part of ISO/IEC TS 29140 and ISO/IEC TS 29140-2 would be consulted. It should be noted that not all LET activities where mobile devices are used involve nomadic learning. For example, mobile devices may be used in a classroom to teach school-age children about disease transmission patterns, in medical education to support students learning about bedside clinical practice, in a desktop Personal Digital Assistant (PDA) system to support people with aphasia. In these cases, it is likely that only ISO/IEC TS 29140-2 would be consulted. More information regarding the use of a mobile learning approach is provided in ISO/IEC TS 29140-2.

There are a number of research teams around the world who are working on nomadicity (nomadic learning) and mobile learning. Additionally, work is already in progress in various countries around the world on related topics such as ubiquitous learning, nomadicity, and learning using smartphones. Work is in progress on some of these issues at the W3C and the ITU-T as well.

Information technology for learning, education and training — Nomadicity and mobile technologies —

Part 1: Nomadicity reference model

1 Scope

This part of ISO/IEC TS 29140 provides guidance regarding learning, education and training (LET) situations in which learners are nomadic (travel from place to place, from one location to another or require access to services as they travel to different locations). It can be used as a reference by software developers, implementers, instructional designers, and others to ensure that LET environments reflect the specific needs of these learners. Specifically, this part of ISO/IEC TS 29140 provides

- a definition of nomadicity within LET,
- a nomadicity reference model indicating the elements required to support learners engaged in activities within LET environments that involve nomadicity,
- a description of the elements and relationships between the elements, and
- an introduction to the characteristics of nomadicity that impact on LET activities.

This part of ISO/IEC TS 29140 also identifies ITLET standards and fields of standardization within ITLET impacted by nomadicity and may be used as a basis for further standardization work and harmonization efforts.

This part of ISO/IEC TS 29140 is intended to support interoperability by providing a nomadicity reference model that can be used by developers, implementers, instructional designers, and others. ISO/IEC TS 29140-2 provides a learner information model specific to mobile learning that can be used as a reference by software developers, implementers, instructional designers, teachers, instructors, and others to ensure that LET environments reflect the specific needs of mobile learners.

It is essential to differentiate between nomadicity and mobile learning approaches because the former is considered to be independent of the ICT involved. A concise view and understanding is needed of how nomadic learners' needs and requirements can be met using standardization efforts. The focus of this part of ISO/IEC TS 29140 is to ensure that not only is the concept of "nomadicity" understood, but that the user needs and requirements have been addressed.

1.1 Exclusions

The scope of this part of ISO/IEC TS 29140 does not include the following:

- in-depth technical review of issues related to adaptability to culture, language, and individual needs;
- broad or in-depth technical interoperability issues of nomadic computing domains;
- security;
- authentication.

1.2 Areas not currently addressed

This part of ISO/IEC TS 29140 currently does not include

- privacy,
- accessibility, and
- detailed information regarding complementary work within other organizations that might be relevant (ITU-T, W3C, etc.).

It is anticipated that some or all of these requirements will be addressed in future editions of this part of ISO/IEC TS 29140, or in companion International Standards or Technical Specifications.

2 Normative references

No normative references are cited.

3 Terms and definitions

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

3.1 learning

acquisition of knowledge, skills or attitudes

[ISO/IEC 2382-36:2008 (2.23.01.01)]

3.2 nomadicity

tendency of a person, or a group of people, to move from one location to another with relative frequency

EXAMPLE A learner has to access the learning materials from different locations, varying time zones and within another environment during a single learning episode.

4 Abbreviated terms

LMS	Learning Management System
LCMS	Learning Content Management System
PDA	Personal Digital Assistant
PMP	Portable Multimedia Player
RFID*	Radio-Frequency Identification
Tablet PC*	Tablet Personal Computer
UMPC*	Ultra-Mobile Personal Computer
WiBro*	Wireless Broadband

* For further descriptions of these items, see Annex E (Informative).