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Technical Report 19764 – Guidelines, methodology, and reference criteria for cultural and linguistic adaptability in information technology products

Rapport technique – Guide méthodologique et critères de référence pour l'adaptabilité culturelle et linguistique dans les produits des technologies de l'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.

The main task of technical committees is to prepare International Standards, but in exceptional circumstances a technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when a technical committee has collected data of different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

Technical Reports are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

ISO/IEC TR 19764, which is a Technical Report of type 3, was prepared by Joint Technical Committee ISO/IEC JTC 1/SC 35, *Users Interfaces*.

This document is not to be regarded as an "International Standard". It is proposed for provisional application so that information and experience of its use in practice may be gathered. Comments on the content of this document should be sent to the ISO Central Secretariat.

Introduction

A successful information technology product or service requires satisfying the needs of users, including needs of a cultural and linguistic nature, which some people consider an essential part of what is now known as "[user]" accessibility [to information technology]".

This technical report will assist the marketplace by providing an objective evaluation method to measure cultural and linguistic adaptability. Although local or national requirements of a legal and regulatory nature may not always be directly relevant in evaluation of products meeting cultural and linguistic adaptability, they sometimes constitute a world-wide challenge for many product or services, now including those which are IT-based. The TR provides indications reminding that such requirements may have to be met in a national or local profile to complete cultural and linguistic requirements in some countries and hence should be considered in evaluation, as a guidance to producers.

The TR is considered as a tool for examining products and thus is intended to help consumers in evaluating the ability of a product to support a given language and culture. At the same time it is also intended to help developers evaluating in advance or enhancing their product's capabilities with regards to cultural and linguistic adaptability.

It is expected that with the use of such a method, typically no product will be assigned a null mark, and typically none will also be able to achieve perfection, so that cultural and linguistic adaptability will be progressively defined in this way by the market and that it will constitute a moving – and evolving – target by nature. It is indeed more a tool to assist in the making bettering of products

The TR is presented in such a way that one individual or organization should be able to make its own benchmark in a sequential way by following the guidelines given, and establish the weightings attributed to each point evaluated in accordance with all parties involved in such an evaluation. As stated before, the goal is not to discard product but to help correct their weaknesses.

The TR is based on actual experience gathered initially at OQLF (*Office québécois de la langue française*) over four years in evaluating software (mainly) and hardware (mainly in the field of user interfaces, such as keyboards from different manufacturers, using profiles of standards and other specifications), with regards to meeting the different requirements of the French language and the cultural aspects relevant in Québec. This model project, nicknamed BETEL (*Banc d'essai technolinguistique*), experienced through a specific natural language and a specific cultural environment is being generalized here to cater for needs of any language in a similar way. The steps given in the TR constitute guidelines and criteria that could be enhanced over years. Hence this TR which currently has modest but pragmatic goals in its evaluation, could also be updated in the future in line with comments received throughout months and years from the communities of users of this TR.

1 Scope

This Technical Report (TR) defines a methodology and a guided checklist for evaluation of cultural adaptability in software, hardware and other IT products, that is, a widely usable check-list and guidelines applicable to all IT products, also expandable for meeting specific cultural environments requirements.

2　References

The following documents contain provisions which, through reference in this text, constitute provisions of this Technical Report. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this Technical Report are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

http://www.olf.gouv.qc.ca/technologies/Betel/ [Banc d'essai technolinguistique]

ISO/IEC SC35 N 461 – Grille d'évaluation technolinguistique

ISO/IEC SC35 N 462 – Guide d'évaluation technolinguistique

3　Terms and definitions

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

3.1
CLA
cultural and linguistic adaptability

3.1
culture
Set of uses, customs, artistic, religious and intellectual expressions which are characteristic features of a group, a human society.

3.2
term (any term that readers of this draft think needs to be defined here should be proposed to the editor)
text of the definition

4　Benchmark (Guidelines and criteria for evaluating CLA)

The following constitutes a sequential path to follow in order to establish a CLA evaluation benchmark. This is to be seen as a general *aide-mémoire* from which one can deviate by suppressing non-applicable elements or by adding relevant ones. In particular software and hardware can use some common elements but in general hardware (such as keyboards), CLA characteristics are generally simpler to evaluate, if only the number of CLA elements to be considered is taken into consideration.

Once all the elements to be taken into consideration have been established, and before testing, relative weighting of each element occurs, against which evaluation will be determined before attributing a general score to a product, which may also permit product ranking.

4.1　Product identification and environment data for the evaluation report

In the evaluation report, the product is here identified by a series of data:

4.1.1 Producer name, address and other coordinates.

If evaluation copies of a software product can be downloaded through the Internet, the URL of the site where this can be done is documented here.

4.1.2 Product name, language(s) and version

The identification of the exact version evaluated is documented here (including the specific indication on the language[s] version if the core product was not produced in a neutral way), as accurately as possible. The evaluation can indeed be very different after an evaluation is fed back to the producer, which is likely to correct some, if not all, weaknesses identified in previous versions.

4.1.3 Product category

This data gives a summary of the general scope of the product evaluated, and what its main functions are.

4.1.4 Evaluation date

The evaluation date is data that complements the version number. Some products are provided with fixed in between versions that may affect the validity of the results if this element is not well identified. It is highly recommended that all fixes available from the producer at the date of evaluation be applied to guarantee the accuracy of the report in a standardized way.

4.1.5 Evaluation team

This is essential historical data which could give an idea of the expertise of the evaluation team and of its credibility over a period of time.

4.1.6 Test environment

This documents the environment under which the tests were made, such as the actual keyboard used, the specific fonts used if relevant, the operating system and its version, the character set(s) used and so on.

4.1.7 Method used for acquiring the product

Here it may be relevant to say who sponsored the acquisition of the product, to make transparent the links that may have the evaluators with the producer. It is important that any complimentary providing of the product not be tied with any advantage given to the evaluators.

4.1.8 Remarks on evaluation conditions

This gives some more data on issues or remarks that could make the evaluators on the conditions of the evaluation tests.

4.2 General cultural and linguistic profile of the product

This profile constitutes the first approach that a user may have in front of a new product. This approach also has relevant CLA requirements that are evaluated here under three different themes.

4.2.1 Packaging and product presentation in general

One can get a product fully packaged or in the case of software, optionally through downloading via a web site. In both cases the presentation may or may not respect the user language and culture.. This element evaluates this first contact with a product. It is recommended that the evaluation report shows an image of either the physical packaging or of screen captured on a web site, to illustrate the evaluation.

4.2.2 Install

Even if the final installed product may respect the user language and culture, it is possible that the install process does not or does more or less. This element is intended to evaluate this characteristic. Again, in the report, pictures should document the evaluation as far as possible. Not only documentation should respect the user language but the elements of the installation process should also do it, including for example installation files names or directory names whenever it is intended that they be significant for the installer (example: a file called "README" or "ThisFileShouldBeDeleted" in English might be uninformative to a human installer whose language is not English). When file names can be determined by the user they should ideally allow the user to enter all national characters necessary to write a text.

Conflicts between the product installed and its environment should be identified (for example, installing a French piece of software on an English operating system or the reverse might have adverse effect. When the install process gives such indications, they should e noted. Otherwise, the presence of inconsistencies in the user interface (for example, error messages not corresponding to the user language) should be assessed.

4.2.3 General elements to be evaluated

To quickly see if a product provides a general respect of the user language and culture the following elements should be examined: online help, dialog boxes, help captions, error messages, file names, and elements of after-sale service.

4.3 Local language and culture support

This is the most important aspect of evaluation, as it goes through detailed evaluation, after the first approach to a product. Whenever international standards or national standards exist they should be considered for evaluation. In their absence in certain areas addition private specifications may be of help.

Otherwise natural language support per se should be considered, which in general concerns input, process and output supporting the cultural and linguistic characteristics of the user.

4.3.1 Input method

The product evaluated should allow without interference the user language in all its richness. Normally one evaluates here the ability of the product to cope with international and national keyboard layout (for example ISO/IEC 9995), international or national entry method (for example ISO/IEC 14755) and to properly feed back the characters entered. Points should be given for each standard involved, as in general several may be involved.

4.3.2 Input (Read)

The product evaluated should be able to read and correctly display a file that already contains the characters used in the user language. Either the identification of the language is explicit (tagging system identifying the character set, or in its absence it should be possible to identify it manually) or it is implicit (the product assumes that a given character set is used). Unless the coded character set used is the

Universal character set (ISO/IEC 10646, which is often implicitly coded using the UTF-8 format, in particular in new Internet standards), it is not desirable that the character set in use be assumed as being fixed, as this seriously affect the linguistic adaptability of the product.

Support of various international and national standards for coding is to be evaluated. Pure support of private specifications is not desirable in any product as it ultimately affect not only linguistic adaptability but also interoperability of products.

4.3.3   Output (Write)

The product should be able to correctly display and transmit the characters of the user language and culture consistently so that the information transported be preserved its meaning (example: a EURO sign input using a specific character set should be printed as a EURO sign and nothing else).

4.3.4   Printing

The product used should also be able to consistently print the characters input by the keyboard and input method or the characters read from an already existing file, produced either by the product itself or by another product (interoperability).

4.3.5   Searching

The reproduction of characters from input to output is something that is of a less complex nature than their adequate processing. Searching must respect the characteristics of the user language expectation: hence in French one may search using accented or unaccented keywords and the comparison should be made according to the behaviour expected from state-of-the-art-aware international and adaptable comparison methods (such as the one prescribed by ISO/IEC 14651).

4.3.6   Character properties: how well taken into account in processing

Character properties such as equivalence or non-equivalence between upper and lower case characters in alphabetic scripts is to be evaluated here according to user expectations or accepted or conventional constraints. Any discrepancy with normal linguistic and cultural practices should be noted in the report and weighed accordingly if this discrepancy is dependent on the product itself.

4.3.7   Sorting

Sorting is a process that is linked to character comparison, like the searching process, with the difference that it is more global in its scope and presentation. Whenever sorting is involved in a product, if such a sorting is under control of the product itself, results produced should respect the cultural and linguistic user expectation. The process should respect either a national sort standard practice (such as the order expected in dictionaries for a given language and country or region) or be aligned on International Standard ISO/IEC 14651, which itself requires adaptation to the user language and culture.

A sorting benchmark should be established (such as the one that exists in Canadian standard CAN/CSA Z243.4.1) and the product tested against this benchmark.

Any non-respect of the sort expectation should be documented by a screen capture or the image of a computer printout.

4.3.8 Special word processing

Rules used in word-wrapping between lines, or of special word or character processing required by the culture or language of the user, whenever existent, are evaluated here.

4.3.9 Openness

The openness of a software or hardware is its capability to be able to able to deal with external elements, such as software plugins, hardware connections of different natures, interchange of characters with other applications (while keeping their "meaning"), exchange of multilingual text, exchange of metadata, and that, without affecting functionality and performance of the product.

Data and metadata compatible in a cross-language way, character interchange in cross-platform, cross-language exchanges, etc.)

When metadata is involved, for example, the exchange should be possible with culturally neutral elements (i.e. not impose metadata to a user in a given natural language that would not be the user's language – numeric metadata is then preferable for inter-machine or inter-application exchanges; for example, whenever a universal character set metadata is exchanged, neutral, numeric identification of the character is preferable to character names; and presentation of this metadata should otherwise be presented to the user with names of characters in the user language).

4.4 Linguistic quality in general

For the evaluated product, a sampling of a given percentage (10% is a reasonable sampling if the total text fits in less than 500 pages – beyond, a sampling of 5% may be reasonably sufficient) of all text involved in user documentation, messages, and display. Among this sampling, linguistic quality should be evaluated by terminology, spelling and grammar mistakes.

4.5 Artistic qualities (if applicable)

4.5.1 Cultural colour bias

Here any cultural bias of a product relative to the culture of the user is to be identified. For example, a colour may be considered a symbol of pain or death in a given culture, and on the contrary a symbol of life, purity and joy in another. Products may have been developed in total ignorance of these biases. It is in the producer interest that such issues be thoroughly identified.

4.5.2 Symbolism

Beyond colours, all elements of a symbolic nature that adversely affects user acceptability should be documented in the report.

4.5.3 Layout

Some cultures pay more attention to elements presented in a specific way than in others (example text with bold titles, with special indents or put in a box, or simply using particular fonts, may be more significant in a culture as in another). Respect of word or character wrapping rules maybe evaluated here if they are considered as an artistic element.

4.5.4 Miscellaneous artistic cultural requirements

In many cultures artistic presentation in a given way is significant. Support of such requirements is to be applied here whenever applicable.

4.6 Legal considerations

Although the goal of this TR is not to solve legal problems, any issue, perceived or obvious, relative to laws, local rules and by-laws, should be identified in the evaluation report. Any score in this area being of a particularly sensible nature, it should be avoided unless it is very obvious and undebatable in nature.

Annex A

Example of an actual CLA evaluation benchmark

To get an idea of an actual example of CLA benchmark grid see document SC35 N0461. Its explanation is given in document SC35 N 0462. Both documents are in French. This benchmark has inspired this TR initial efforts and thus could be considered a profile of it. Even if one does not understand French, the elements presented in these documents in general follows the same sequence as in this international TR.