User Education Guidelines for Mobile Terminals and E-services

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Abstract

User education for mobile information and communications terminals and services is becoming ever more important as those devices and services grow more complex and perform increasingly complex tasks. Nevertheless, manufacturers and service providers do not always give user guides and other means of user education the respect they deserve. In order to define minimum standards for user education for telecommunications terminals and services, ETSI, the European Telecommunications Standards Institute, on behalf of the EC, the Commission of the European Union, put the members of Specialist Task Force (STF) 285 in charge to develop ETSI Guide EG 202 417 [1] to fill this gap. This paper gives the background to the development of [1] and an outline of its structure.

Key words: education, user manuals, mobile devices, e-services, mobile computing.

1 The role of user education in ICT products and services

1.1 The increasing importance of user education

A common-sense statement often heard is that the user guide for a product would be superfluous if the quality of the product's user interface was sufficiently good. While this is undoubtedly true, it is unlikely that there ever will be fully self-explanatory ICT products, explaining the available functionality and the set of supported services. Some of the reasons for this are:

- Many mobile ICT products are highly complex, frequently exceeding 200 functions;
- Mobile ICT products have become increasingly miniaturised with the display often presenting only six or less lines of a complex menu;
- Mobile ICT devices "evolve" fast. Users replace their mobile product with a new one, which often has a different interface and new functionality, sometimes as often as every two years;
- Some user-interface concepts of these devices are inadequately borrowed from those of personal computers (e.g. icons that cannot be moved / copied and pasted);
- Many mobile ICT products interact with personal computers or other devices. The user, therefore, also needs to understand how his/her device interacts with others;
- Services are often presented in a seamless way where some functions are local and others provided by the network. This distinctions is not always clear to the user;
- There are increasingly more possibilities for errors caused by the device, the service, the network or the user, i.e. the user needs to cope with fairly complex situations.

In addition to the above, many users report that they manage to set up and use a new product or service without the need for a user guide, so why is there problem? Firstly, if a user doesn't know about or understand a particular function or service, s/he is unlikely to use it, thus missing out on the opportunity of benefiting from what the device or service has to offer. This also means that the service provider misses out on the chance of earning revenue. User education can play an important role not only in explaining how to use a feature or service, but also in explaining that the feature or service exists at all and how it can benefit the user. Hence, user education plays a crucial role in service discovery.

As stated above, modern ICT devices are consumer products to be used by the broadest range of consumers. The users of ICT devices and their associated services are, however, not homogeneous in terms of their knowledge about services, features and types of user interfaces. For some, their new mobile phone will be just the latest in a long sequence of devices previously used; and many are familiar with user-interface components such as soft keys and touch screens. For others, their new phone may be their first mobile ICT device requiring them to learn entirely new features and user-interface concepts (this is particularly the case in countries where the users' first mobile phone is also their first telephone). User education has to reflect the vast range in previous knowledge and has to accommodate both the novice and the expert user. For example, some users make use of different subsets of the device or service functionality; others just appreciate the assurance of being reachable in cases of emergency, whilst other users may require the device for specific applications such as telecare. On the other hand, some users need to explore every aspect of a device or service and to adopt new features at the earliest point in time. Therefore, the focus of user education cannot be restricted to one group but has to enable all users to fully benefit from what the device or service has to offer to them.

User education also plays a particularly important role for the very young, elderly and/or disabled users who run a serious risk of being left out of the modern information society. ICT has enormous potential for (re-)activating and (re-)integrating people with special needs into society, but only if this new technology can be handled by them. The design of ICT devices and services often excludes certain user groups (e.g. blind and visually-impaired users are excluded if information is being presented only visually). There is, fortunately, a growing body of expertise on how to design ICT devices and services to be used by the largest possible range of users (see e.g. [2]). To implement features in such a way as to allow elderly and/or disabled people to use a device or service in one step, the users have also to be aware that these features exist and how to use them. User education is, therefore, particularly important for these groups requiring a design-for-all approach to be taken when designing user guides and other types of user education with the aim of presenting the right information to the right user in a suitable way. A further motivation for considering the needs of elderly and/or disabled users is the fact that in many cases, all users benefit from user education produced for people with special needs e.g. those with limited literacy skills.

User education also plays a role in the context of some well-known problems that potentially hamper service adoption. Some of these problems are:

- Users fail to set up their device or service and subsequently cannot use it: many services require certain parameters to be before the services can be used;
- Certain features can facilitate the usage of certain services, but only if the user knows the details of his/her personal subscription which is often not the case;

- User guides are needed in first-use and in error situations. In case of errors, the user needs support in solving a problem that may be related to the device, the operator service, the service provider, security, PC software, compatibility and other factors. Today's user guides typically only give help with the mobile device;
- Features like Call Forwarding are complex and may have many consequences such as additional costs;
- Little or no information on tariffing is available for services, the information may be presented on the service providers' web pages but is not available to the users in the actual situation they need it.

These and other issues currently limiting the uptake of services can be addressed with adequate user education explaining to users what the service does for them, how it is being used and what the possible consequences are (e.g. the associated rates). A large number of problems with current user guidance are also known, some of which are:

- The user guide is not complete (i.e. the information is not there);
- The information cannot be found (i.e. the information is there but not where the user is looking for it);
- The language of the user guide is inadequate (i.e. the language is too abstract, uses unknown abbreviations, uses technical and/or foreign language terms);
- The structure of the guide is inadequate (i.e. alphabetical feature list as opposed to the likely order in which users encounter or use features);
- The explanation of how to use a feature is too abstract;
- The information cannot be perceived adequately (i.e. in particular elderly users find it unacceptable to read print in 8 points);
- The functionality / software implementation is not frozen at the time the user guide has to be completed – the user guide is therefore wrong and has to be corrected in later editions.

[1] Addresses possible solutions for how to deal with these and other problems related to user education, providing design guidelines directly applicable to a variety of ICT areas.

1.2 Cost-benefit trade-offs and current industry practices

There are a number of benefits associated with the provision of high-quality user education and risks associated with failing to do so. A careful analysis of the trade-offs of possible costs and benefits is required to identify the appropriate level of quality in user education to be provided to the end user.

Some of the relevant costs and benefits related to providing high-quality user education are:

- Frustration with a failure to fully being able to use the product can lead to low brand loyalty on the side of the end user.
- Insufficient user education can lead to increased costs in customer care centres.
- In cases where the written user guide is not up to date at the time of print, the end user has to be informed
    - that the update is available,
    - how the update can be obtained, and
    - whether a new user guide is available documenting new or improved functionalities.

- In many cases, users return their product reporting it as faulty while the customer-care staff cannot identify any problems with the product. Good user education can help reduce the "No trouble found" rates.

In spite of the obvious benefits of investing in good user education and in spite of the costs associated with failing to do so, most companies' current practice is to either give the topic less attention than it deserves, or to review it as a candidate for cost-cutting attempts. The current practice includes:

- Try the cheapest, minimum-effort solution without considering subsequent additional costs;
- Cost-saving efforts include the choice of very small fonts;
- Symbols being used in order to save space and translation costs where text would be more appropriate;
- Reduce volume (to save in paper and technical writer / translator costs but also to reduce box sizes);
- Making (often wrong) assumptions about what the user already knows;
- Outsource all user-guide related activities, thus removing them from the product-development activities;
- User-education being provided exclusively by means of a paper-based manual, using the product-related web; sites primarily for advertisement purposes;
- No effort is being made to address the user-education needs of users with special or additional needs;
- Too little time is made available for adjusting the user guides to changes made in the product at a very late stage;
- Not all procedures are described in detail, some are only mentioned;
- Functions are being described without reference to possible preconditions, i.e. a function is only available if certain conditions are met;
- Usability tests of user guides are the exception.

1.2 Legal and safety considerations

A further motivation for investing in excellent user education can be derived from the various national, regional and international legal and regulatory requirements on user documentation [3]. Some regulations require that a written documentation on how to use the product in the language(s) of the country in which the product is being sold be included with the product. Others specify details on issues such as hazards associated with the use of the product, environments and environmental conditions suitable for product use, and possible age restrictions. In addition, first regulations requiring access to user education also for people with disabilities are being prepared.

2 The approach chosen for EG 202 417 [1]

2.1 User education during the product life cycle

User education plays a role throughout the whole product and e-service life cycle. From an end user's perspective, the product life cycle can be described as containing the four stages 'Pre-purchase/Pre-subscribe', 'Purchase/subscribe', 'Ownership', and 'Repurchase/Upgrade'. In each of the four stages, the users' needs for information about the product/service differ, requiring from the manufacturer/service provider a different approach to the provision of user

education. In the 'Pre-purchase/ Pre-subscribe' phase, the users typically try to assess whether the product/service meets their requirements. E.g., the user wishes to know whether a particular mobile phone supports certain features. Users intending to upgrade to the next generation of product or service are usually interested in knowing whether the user interface of the new device or service will seem familiar to them allowing them to use it straight away without much learning. Finally, some customers acquire the product not for themselves but for others (e.g. their parents or grand parents) who have special requirements such as suitability of the product for elderly users. In the 'Purchase/subscribe' phase, users need information on the steps required for being able to use the product (i.e. on how to set it up and prepare it for first use). In the 'Ownership' phase, users need to how to solve problems arising in terminal or service usage or both at the same time. In addition to problem solving, user education plays an important role in this phase for service and feature discovery. In the 'Repurchase/Upgrade' phase, users need to know how to properly discard/dispose of the terminals or its components and on how to replace it with another one. An important issue at the end of the life cycle is how stored data or settings can be transferred to the replacement device or service. At this stage, many users may already have displaced or discarded the printed user guide.

2.2 Choice of media for user education

Different user-education media differ in the degree to which they are suitable at a given product life cycle phase and in terms of the options they offer to the manufacturer and to the end users with or without impairments. [1] Provides guidelines on the appropriateness of available media options for different target groups and usage scenarios.

3 Structure of EG 202 417 [1]

3.1 General

[1] defines a minimum standard of user education for users of information and communications devices and services provided in different media (from paper-based user guides to electronic versions provided on the web or on CD-ROMs). It considers to the largest possible degree the particular requirements of elderly users and users with impairments. At the time of writing, the document is available in draft form from www.etsi.org and is expected to be published in its final form in September 2006.

3.2 The role of user education in ICT products and services

This introductory section of [1] provides some background to the motivation of attempting to define minimum standards for the provision of user education for ICT products, referring to the problems associated with this issue and the current industry practice.

3.3 Generic guidelines

The clause "Generic Guidelines" gives recommendations on the provision of user education independent from the different media options available. Issues addressed include:

- Processes for the development of user guides;
- Content and structure;
- Language and terminology;
- Use of illustrations;
- Localisation and translation management;
- General customer requirements.

Each issue is introduced in detail and, wherever possible, best-practice examples are provided.

3.4 Specific guidelines for paper-based user guides

Specific guidelines that mainly apply to paper-based user guides that for the time being can be considered the most important means of providing user education include the following issues:

- The printing process;
- Format and layout;
- Formal structure;
- Consistency and logical structure;
- Main and secondary guides;
- Legal and regulatory requirements.

3.5 Other media

Guidelines for the provision of user education using other media than the paper-based user guides address in detail:

- Terminal-based user guides (i.e. user education provided via the ICT device itself);
- Screen-based user guides (i.e. user education via PC-size screens);
- User guides on (CD-ROM, DVD and other) portable media;
- Audio-based user guides;
- Other ways of providing user education, including user groups and forums.

3.6 User education and design for all

Solutions for the provision of user education are addressed covering the following groups of users with special requirements:

- Older users;
- Visually-impaired users;
- Hearing-impaired users;
- Users with cognitive impairments;
- Users with communications impairments;
- Children.

3.7 Usability evaluation of user guides

This clause of [1] argues that user guides should be usability tested just like the user interfaces of devices and services, and it gives detailed recommendations on how to do so, including guidelines for the testing method (test tasks, materials, test sample, analysis and reporting).

4 Summary

The ETSI Guide [1] under development provides guidelines that have been written by practitioners in the field of user education and that have been reviewed by members of the relevant ICT industries. It has the potential to form the basis of a minimum industry standard for the provision of user education for ICT products and services, benefiting both end users and, eventually, the industry itself.

References

NOTE: All ETSI references are available free of charge at www.etsi.org.

[1] ETSI DEG 202 417: “Human Factors; User education guidelines for mobile terminals and e-services”.

[2] ETSI EG 202 116: “Human Factors (HF); Guidelines for ICT products and services; ‘Design for All’”.
[3] TCeurope SecureDoc (2004). “Usable and safe operating manuals for consumer goods – A Guideline.