A on-line system supporting the provision of assistive technology products to individual users through the National Health Service

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Abstract. A on-line tool was developed to assist rehabilitation teams in choosing the appropriate assistive devices meeting the clients' individual needs and compiling the prescription package for provision through the National Health Service. Such tool is implemented on the Italian national Assistive Technology Information Portal; it provides the following facilities 1) browsing the National List of categories of assistive equipment eligible for prescription, with guidance in compiling all the components of the prescription package 2) comparative analysis of products available on the market that meet the selected categories 3) detailed analysis of possible configurations of each product, in order to find out prices and prescription codes of the specific configuration meeting each client's individual needs. The tool was finalised through various validation rounds that involved assistive technology prescribers (medical doctors from the national Society of Physical Medicine and Rehabilitation) and manufacturers/suppliers (who checked how effectively information can be constantly kept updated). The tool is now publicly available on www.portale.siva.it .

Keywords: AT provision, AT information Systems, AT prescription

Background

The importance to disseminate information on assistive technologies products to all people needing it – especially people with disabilities and their families; health care professionals; AT suppliers and manufacturers; policy makers and officers involved in public service delivery systems; people working in AT research and development – is out of discussion today. In recent years sector studies [1], scientific literature, policy recommendations, user organisations statements repeatedly stressed how AT information is important; art. 4/h of the UN Convention on the Rights of People with Disabilities acknowledges AT information as a specific commitment of each Country; the International Classification of Functioning, Disability and Health includes information services among the contextual factors that help user empowerment, in this

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way recognising their contribution to reducing the user's disability according to the ICF disability model [2].

In today's society, Internet has provided AT manufacturer and supplier unprecedented avenues to spread out information and advertise their products. Contrary to the past, today it is possible – at least for skilled Internauts – to find almost any existing AT product on the Internet, by means of mainstream tools such as Google, or other similar engines, or new "smart" search systems emerging on the Net. One might argue that specialised AT databases – on which significant investments have been made in many Countries and by the EU over time – are going to be no longer needed in the near future.

The truth is exactly the opposite. Identifying the AT product providing appropriate solution to each individual need is a complex task requiring higher level information and guidance, than pure product info retrievable by mainstream search engines. The user – whether a person with disabilities or a professional – needs help in discriminating what is relevant and what is not, within the *mare magnum* of product information available on the Net; when performing a choice, (s)he seeks information organised in such a way that allows for comparisons, provided by or validated by independent bodies having no commercial interest in relation to AT products ("*super partes* info"); (s)he also seeks complementary information and assessment instruments that provide an understanding of what choices are to be considered most appropriate.

Overall, the user need trusted information systems assisting all the steps of the whole decision process, which include [3]: defining precisely one's own need, devising possible strategies for solution, identifying the set of products composing the "assistive solution" [4], comparing such products until reaching a final decision, preparing the documentation needed to apply for funding with the appropriate Agency, accessing evaluative information or sharing retrospective judgements with other peers.

Many on-line information systems exist today in several Countries that provide trusted *super partes* product information, and offer to various extents guidance or assessment tools. An association has been established across the world – the International Alliance of Assistive Technology Information Providers www.ati-alliance.net – that helps all system stay in touch, exchange expertise and possibly develop joint development projects.

The European systems participating in the Alliance (SIVA, Italy; DLF-Data, UK; REHADAT, Germany; HMI-BASEN, Denmark; VLIBANK, Belgium; HANDICAT, France; CEAPAT, Spain) have successfully harmonised and joined in a common network – the European Assistive Technology Information Network – whose multilingual website www.eastin.info [5] includes a specialised search engine able to perform product searches across all partners' databases and provide comparable results in any partners' language.

Several such systems are currently engaged in further developments to increase their ability to respond to the users request for guidance and assessment. A great example can be seen in the latest version of the UK DLF-Data (www.dlf.org.uk), now including the new guided section "living made easy" and a self assessment tool named "ASKSara".

This paper reports a new development of the SIVA Portal – the national Italian Assistive Technology Portal (www.portale.siva.it) – created and maintained by Fondazione Don Carlo Gnocchi with the support of the Ministry of Welfare.

Since many years the SIVA system includes a number of facilities guiding the user towards appropriate choices, backed by the possibility to refer to several specialised

AT assessment centres (the SIVA network) when simple information is not enough, but professional consultation is needed in a centre equipped with an AT exhibition where practical trials can be also carried out.

However, until recently the system offered no tool able to assist in the preparation of prescriptions for AT provision through the National Health Service. In Italy, prescription is responsibility of specialised medical doctors. The pressure of containment of public expenditure is more and more forcing Local Health Authorities to require the prescriber to provide evidence of appropriateness, to demonstrate that all possible alternative solutions have been explored, and the prescribed solution is a cost-effective one. Therefore a tool was purposely developed to help the prescriber to meet such requirements.

Method

First, a conceptual model was defined of the prescription process able to embody the various ways the prescription procedure is regulated by the Regional legislation of the 20 Italian regions. This stage involved comparative analysis of regional procedures and consultations with experts from Assistive Technology assessment centres all over Italy.

The second step consisted of defining what are the key points of a "good practice" prescription, compared with "bad practices" that still may be encountered in the field due to local lack of competencies, resources or organisation. This stage involved literature analysis, expert consultation in AT assessment centres (especially those participating in the nation-wide GLIC network), and consensus panels with medical doctors of the AT Working Group of the National Society of Physical Medicine and Rehabilitation (SIMFER). The results of this stage were embodied in a proof of concept – a slide-show simulating step-by-step how the system should respond and guide the prescriber's reasoning in the decisional process involved by a "good practice" prescription.

Armed with the above, a fully-working prototype of the prescription tool was gradually developed through various iteration, each refining the concept, solving conceptual inconsistencies and fixing bugs. The tool was then plugged into the SIVA Portal. This involved also the complex task of transforming the National List of types of devices eligible for prescription (issued by the Ministry – a text file without any consistent classification structure) into a database instrumental to the prescription tool. A new facility was also introduced in the SIVA Portal: the possibility to launch – from the record of a retrieved product – an internal call to the EASTIN engine returning the list of all similar products existing in all other European databases.

The fourth step – the validation stage – was based on field tests of the working prototype with three samples of users: prescribers (selected by SIMFER), professionals of AT assessment centres, and end-users who are familiar with the prescription process.

Results

A "prescription" is a XML document generated by the system including the following components:

- List of prescription codes – with their full verbal description – that embody the assistive solution to be provided, along with any relevant information about the level of funding expected by the funding agency and the possible users' contribution (according to current legislation)
- Clinical evidence of the appropriateness of the solution provided
- List of products available on the market that meet the prescription's specification, according to the prescriber's judgement
- Possible further specification, depending on the category of products (e.g. wheelchair seat width)
- Instructions and alerts for correct use of the prescribed equipment
- Name of the prescriber and the professionals who took part in the assessment.

Once completed, the prescription can be imported into the prescriber's local computer, or copied & pasted into the local prescription software provided by the Local Health Authority (no common standard exists across Italy). The online tool does not store or keep track of any information about the prescription, it being a clinical document subject to privacy / confidentiality rules.

One of the key points of good practice was found to be "*the prescription should follow a detailed individual assessment, often involving multidisciplinary competences and specific protocols depending on the problem (seating, communication, ADL, orthotics etc...)*". Therefore, before the prescriber starts to think about the prescription, the system alerts about the assessment needs and suggests how the various databases of the Portal (products; assessment centres; companies; ideas; experiences; documents available in the Portal's library; forum etc.) may help find out the appropriate assessment path.

When compiling a prescription, the prescriber may decide on two different conceptual paths:

- From specification to prescription: a) from the national list of types of products eligible for prescription, select the appropriate prescription codes b) check whether any products exist in the Portal that meet such codes c) perform a comparative analysis of such products, if any, and decide on "the most appropriate" d) review prescription codes, and e) compile the prescription
- From product to prescription: a) identify an appropriate product b) find out the prescription specifications for such product c) check whether other products exist that meet the same specifications d) perform a comparative analysis of such products and decide on "the most appropriate" e review prescription codes and f) compile the prescription

The choice of either path depends on many factors: on whether the solution has to do with custom-made Vs off-the-shelf products (in the former case, the second path makes no sense, as there the product database only includes off-the-shelf products); on how complex or simple the individual problem is; on how much critical is the choice of the product brand/model Vs leaving the user to freely select from a range proposed by the suppliers he or she likes best.

Discussion

This new prescription tool revealed soon – even from the first working prototype – its potential positive impact on the quality of AT provision through the National Health Service. First, the fact that such tool is a "plug-in" to the national AT Portal – today considered the "golden standard" for AT information in Italy – motivates the prescriber to use the same tool used by his/her assessment team, thus allowing to save a lot of time.

Second, it leads the prescriber to adopt a common standard of good practice at national level, communicate with other members of the team with the same language, and avoid mistakes due to the complexity of the National List; it also helps collect all the data needed for an evidence-based prescription and a detailed and transparent information to the client.

Third, it helps increase the efficiency of the prescription procedure: indeed, it reduces the percentage of wrong-coded or incomplete or poorly documented prescription received by the authorisation officers of the Local Health Authorities, which is often today a major reason for delays that impact on the user.

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