Integrating on-line MT services into monolingual web-sites for dissemination purposes: an evaluation perspective

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Abstract. On-line machine translation (MT) services are becoming increasingly popular among Internet users. In particular, over the last few years there has been a dramatic increase in the number of monolingual web-sites that rely on Internet-based MT systems to disseminate their contents in a variety of languages, which seems to be one of the most interesting areas in the current use of MT technology. This paper is based on preliminary observations of these recent developments and reports on how on-line MT services are actually integrated into a sample of monolingual web-sites only available in English, attempting to evaluate the success of the strategies used to incorporate web-based MT technology for dissemination purposes. The discussion suggests in conclusion that the overall lack of a user-oriented approach and the limited consideration of issues of user-friendliness make the integration of on-line MT into the sample of monolingual web-sites largely ineffective.

1. Introduction

1.1 Background

This paper provides an overview of how a sample of 36 monolingual web-sites incorporate on-line machine translation (MT) technology to disseminate their contents in multiple languages. The investigation focuses on web-sites that originally present information only in English, and explicitly encourage non-English-speaking visitors to translate their web-pages via links to on-line MT services. These monolingual web-sites rely on web-based MT technology for dissemination purposes, i.e. to make their contents available in other languages to a much wider population of Internet users with different linguistic backgrounds.

The use of on-line MT technology integrated into monolingual web-sites is becoming increasingly popular (see e.g. Yang & Lange 2003: 192-193), even though exposing Internet users to raw MT output in order to disseminate information in multiple languages certainly entails controversial issues: "This is a sensitive area, since the imperfections of MT may distort the message" (Yang & Lange 2003: 201). It seems particularly interesting that MT technology today is heavily used for dissemination purposes on the Internet, contradicting the widely held belief that unedited MT output is only suitable for internal use or gisting purposes, and should not be used for outbound circulation.

1.2 Purposes of the evaluation

This paper reviews some of the most common patterns in the way in which monolingual web-sites embed on-line MT technology, and attempts a brief evaluation of how successful these strategies are from the point of view of Internet users. In this respect, this research looks in particular at some of the perceived weaknesses in the approach towards the use of on-line MT services for dissemination purposes, and contrasts them with examples of good user-centred design emerging from the sample of web-sites.

Due to the preliminary nature of this report and to space constraints, only some of the criteria that are relevant to the successful integration of on-line MT technology into monolingual web-sites are reviewed and evaluated here. The investigation lays particular emphasis on user-friendliness and

interaction design issues, and the paper sketches a picture of some of the broad trends that emerge from looking at the chosen sample of web-sites.

2. Web-sites and factors considered for the evaluation

2.1 Choice of the sample of web-sites

The web-sites that have been included in the sample considered for this investigation have been selected by the author after submitting a few simple queries to the search engine Google[1], by means of textual search strings and relevant key-words[2]. This procedure restricted the scope of the enquiry to web-sites with textual contents originally written in English that explicitly encourage their visitors to use on-line MT, in order to obtain on-the-fly translations into other preferred languages. The multiple queries submitted to Google returned several thousands of hits in total, thus indicating that many monolingual web-sites in English currently incorporate on-line MT to disseminate information.

A few dozens of these web-sites were briefly checked by the author, and subsequently a sample subset of 36 of them was extracted, so as to have an equal number for each designated main category (i.e. 12 for each of the three types considered here – see next section 2.2 below for details). The selection criteria for this further choice were arbitrarily set by the author, being however only aimed at representing different types of web-sites and providing a reasonably comprehensive overview of the different strategies used (more or less successfully) to integrate on-line MT technology into monolingual web-sites.

The resulting sample of 36 web-sites provides a small-scale realistic picture of how on-line MT is used by monolingual web-sites, exemplifying a number of general user-friendliness and interaction design issues that represent the focus of the evaluation proposed here.

2.2 Types of web-sites considered

The 36 web-sites that were included in the sample are grouped into three different categories, i.e. institutional, commercial and informative; the main purpose of this sub-division into three broad categories is exclusively to facilitate the discussion and give it a clear structure[3]. They provide a good basis to discuss and evaluate how successful the integration of web-based MT services actually is according to certain pre-determined factors (these are presented and explained in more detail in section 3. below).

The first category of web-sites is the one called "institutional", and includes the official Internet sites of public authorities, administrations, non-profit organisations, societies and associations. Secondly, under the label "commercial" come the web-sites of corporations, companies, shops or professional service providers involved in e-commerce or business-related activities. Finally, the "informative" category contains web-sites providing leisure or professional information on specific topics, subjects, places, people, products or services.

Each of the web-sites in the sample was given a unique identification code (web-site ID), so that for the purposes of this research each of them can be referred to clearly and concisely. These web-site IDs are listed in the Synoptic Table in the Appendix below for all the web-sites belonging to the three categories. The first part of the ID defines the category that the web-site belongs to, according to the following abbreviations: INST (institutional), COMM (commercial) and INFO (informative). This code is followed by a dash and a number (1-12 for each category), to identify a particular web-site within that category, so that web-site IDs look like this, e.g. INST-1, COMM-6, INFO-12 (the Synoptic Table in the Appendix shows which web-site corresponds to each ID and provides further information such as the URL).

2.3 Methodological approach to evaluation

The evaluation proposed here is not a hierarchical one, i.e. it does not aim to establish which are the

[1] The searches were carried out between 15 November 2003 and 15 March 2004, using the Internet search engine Google at the URL `http://www.google.com` .

[2] For instance, search strings such as "translate this web-site" (with the similar variations "translate this website", "translate this web site", "translate this site", "translate our website", etc.) were used. In addition to this, a separate search was carried out for web-sites that link from their home pages to the web-sites of the most popular on-line MT services (e.g. Babelfish, Freetranslation, Google, Intertran, etc.), using Google's advanced search facility.

[3] The category to which some of the reviewed web-sites belong may be controversial (e.g. in some cases it is difficult to decide which ones have a purely informative nature, rather than a commercial one), but it should be emphasised that establishing the exact limits of the groupings is not crucial to the overall discussion.

best solutions or strategies among those reviewed. This is partially due to the fact that there are no set standards or benchmarks available to evaluate the ways in which monolingual web-sites incorporate the use of on-line MT technology. Furthermore, even though the selected sample of web-sites considered in this study gives a wide overview of different approaches, its coverage is still too restricted to be considered exhaustive or to provide a comprehensive picture. Finally, a detailed and complete contrastive examination of the gathered data would exceed the length and scope of this paper.

As a result, here it is sufficient to identify and briefly discuss some crucial features that have a bearing on how the employment of on-line MT technology is proposed to Internet users by a variety of monolingual web-sites, without attempting a final classification of preferred strategies or better alternatives. However, this paper attempts to draw some general conclusions from the observed sample of web-sites. If further research is conducted in the areas that are looked at in the present discussion, it is reasonable to predict that the incorporation of web-based MT services into monolingual web-sites on the Internet could be significantly developed and enhanced, especially in terms of user-friendliness.

Similarly, although an accurate evaluation of on-line MT technology should certainly take them into account, due to its limited scope and length this paper does not consider more traditional general issues of MT evaluation. Familiar parameters and criteria that are usually applied to evaluate MT systems, such as the translatability of the input text, the fidelity of the output or the quality of the machine-translated text (e.g. in terms of grammaticality, readability and intelligibility) are ignored here, since they lie beyond the scope of the present study. This discussion is only concerned with issues of a different nature, that have nothing to do with the linguistic quality of the raw output provided by the on-line MT services: e.g. how intuitive, simple and straightforward are the actions that need to be performed by Internet users to effectively access the web-based MT systems to translate the contents of monolingual Internet sites.

2.4 Issues considered for the evaluation: user-friendliness and interaction design

The point of view of the Internet users is adopted throughout, e.g. by focusing on what they are requested or expected to do in order to carry out the procedures to use on-line MT when they visit the web-sites and navigate around them.

This discussion revolves around some basic factors such as the following: which web-based MT engine is linked to (which determines what language pairs are available in combination with English as the source language, i.e. the language coverage); how the availability of web-based MT is made known to the visitors of the web-site (e.g. through mono- or multilingual verbal messages v. more intuitive and language-neutral visual and iconic elements, such as flags or maps alluding to the linguistic preferences of the net-surfers); where Internet users of a web-site are encouraged to use on-line MT services (i.e. in what part of the screen on the home page); how web-surfers are supposed to start the on-demand machine translation process; the presence and informative content of (mono- or multilingual) disclaimers and warnings about the use of the incorporated on-line MT services, etc.

The above list of factors does not claim to be exhaustive, nor precisely refined according to objective and rigorous criteria. However, for the purposes of this preliminary study these factors seem to provide a convincing framework within which the considered sample of web-sites can be reviewed, so as to represent a basis for evaluation and, even though to a lesser extent, for implicit comparison.

The Synoptic Table in the Appendix below presents in summary some of this basic information, particularly regarding the following points: web-site ID; URL of the web-site; brief description of its contents; the on-line MT service(s) recommended and incorporated by the web-site; whether there is any disclaimer or warning available on the web-site regarding specifically the use of on-line MT technology; and, finally, a brief judgement on the degree of integration of on-line MT technology into the web-site and on the level of its user-friendliness.

Space constraints do not allow to present and discuss more detailed or comprehensive information here. The next section 3. summarises and discusses the most salient points observed from the gathered data, whereas section 4. below finally draws some general conclusions.

3. Observations and discussion

3.1 Main features of the sample of web-sites

It seems safe to assume that monolingual web-sites that incorporate on-line MT technology for

dissemination purposes are very interested in increasing visitor traffic to their pages, and in reaching out to potential visitors who are not familiar with English. This study looks at how the presence of embedded MT services correlates with other factors that show a keen interest on the part of the web-sites concerned to maintain a dynamic Internet presence, attracting visitors to view their pages often.

When this information was available on the home page of the sample of web-sites, details regarding the last up-date have been checked. This showed that a large number of the web-sites are in fact highly dynamic ones, i.e. they change frequently. Even though not all them show the time of their last up-date, on a day chosen at random for checking purposes (i.e. 12 March 2004) 12 out of the 36 Internet sites included in the sample (i.e. 33%) informed their visitors that their contents had been revised and up-dated in the previous month[4]. This seems to indicate that on-line MT is particularly effective for dissemination purposes when it would be too time-consuming and laborious (if not impossible) to maintain multilingual versions of a web-site by relying exclusively on human translators and localisers, especially for sites that change and are up-dated on a regular basis. In this scenario on-line MT seems to represent an excellent time-effective tool to manage and disseminate on-line content in multiple languages, in spite of its imperfections and shortcomings.

3.2 How the use of on-line MT is proposed to the web-surfer

Different approaches are adopted regarding how the visitors are encouraged to use on-line MT to translate the textual contents into languages other than English. In some cases there is an explicit message (available only in English), usually associated with a hyperlink, saying e.g. simply "Translate" (e.g. web-sites INST-3, COMM-2/9/10, INFO-10), "Translate this/our (web-) site…" (e.g. INST-4/5/8/10/12, COMM-3/4/5/6/7/8/11/12, INFO-1/2/5/6/8/11/12) or "Click here to translate this Website into…" (e.g. INST-11), etc. – clicking on these hyperlinks directs the user to the default page of the chosen on-line MT service or to a section of the web-site itself with further information on how the web-pages can be translated; in other cases, however, there are multilingual (presumably machine-translated) messages and sentences that invite visitors to use on-line MT (a good example of this strategy is found in web-site COMM-1), or single isolated key-words shown in various languages suggesting that some hyperlinks lead to on-line MT services (e.g. INST-9); a popular approach, finally, seems to be the combination of verbal and visual messages, e.g. a few words indicating the possibility to use an embedded on-line MT service, combined with iconic messages such as flags which allude to the user's preferred language(s) other than English (e.g. web-sites INST-1/2/6/7, INFO-3/4/7/9 in the considered sample rely on this strategy).

In summary, there is no standardised way or largely preferred method to encourage users to take advantage of on-line MT services to access the contents of monolingual web-sites. However, a common problem seems to be that many web-sites have messages to this effect only in English (26 out of 36 in the considered sample, i.e. approximately 72%), which is quite ironic since it is not justified to assume that users may be able to understand them. As a result, an approach which seems to be preferable and is used by 8 web-sites in the sample (i.e. approximately 22%) consists in presenting also language-neutral visual cues (e.g. flags, maps representing countries, etc.) alongside verbal messages, which are certainly more user-friendly and easier to understand for users with no knowledge of English.

3.3 How much relevance is given to on-line MT

This section briefly summarises the information regarding how and where on the screen Internet users are encouraged to use on-line MT services to translate the monolingual web-pages they are visiting. Even though different strategies are used by the web-sites examined, in general on-line MT seems to be considered a valuable asset of the web-site, since it is normally proposed on the home page, most of the time in positions of the screen that give it high priority when visitors look at the home page (cf. Nielsen & Tahir 2002).

One reason for this is that suggesting to resort to on-line MT ultimately aims at increasing traffic of multilingual visitors, who need to be made aware of the possibility to use it as quickly as

[4] These are the 12 web-sites of the sample that have been up-dated in the last month on 12 March 2004: INST-1/4/5/6/7/8/9/10/11, COMM-2/12 and INFO-10. Interestingly, the institutional web-sites are the ones that seem to update their contents most frequently, compared to the two other categories considered in the sample, i.e. commercial and informative web-sites. Further details regarding all the web-sites included in the sample are available in the Synoptic Table in the Appendix below.

possible when they find the monolingual web-pages, otherwise they may simply leave the site, if they get the impression that it is only available in an unfamiliar language. Most web-sites in the sample show hyperlinks to web-based MT services towards the top of their home pages and in the middle of the screen, so that users do not even need to scroll down from the top of the page to see them: this strategy suggests that in designing the layout of these monolingual web-sites, the integration of on-line MT is deliberately given privileged visibility as a valuable asset of the site to communicate with the visitors.

3.4 What on-line MT services are recommended

Concerning what on-line MT services are actually employed in the sample of web-sites, a few of them are more often found than others (detailed information is given in the Synoptic Table in the Appendix, which also includes Table 2, i.e. a list with the URLs of the seven on-line MT services recommended by the monolingual web-sites in the sample).

Most of the time one single MT engine is preferred over others, i.e. Babelfish (powered by Systran) (as is the case for 19 web-sites of the sample, i.e. approximately 53%), but other popular choices are Google's on-line MT engine (chosen by a handful of web-sites in the sample) as well as Intertran (recommended by 4 web-sites, presumably because of the large variety of language pairs that it claims to cover) and Ajeeb (which translates from English into Arabic free of charge, and has been chosen by 2 web-sites, i.e. INST-4 and INFO-7, in combination with other MT systems that guarantee coverage for other languages).

In a few cases users are left with the alternative of what on-line MT system to use, among a choice of e.g. two (this is the case in web-sites INST-1/4 and COMM-9), three (INST-5, COMM-7 and INFO-7/9) or even four different options (as is the case for web-site COMM-1, even though the link to one of the four on-line MT services is broken as of 15 March, 2004). The Synoptic Table in the Appendix below shows which web-sites of the sample rely on one or more on-line MT services to disseminate the contents of their pages in a variety of languages.

It is worth emphasising here the implications that the number of on-line MT services recommended by the web-site has for users. As a matter of fact, giving preference to one single web-based MT system over the others or, conversely, suggesting a choice among a few of them has a direct impact on how useful MT technology is for visitors, since this affects the coverage of target languages that are supported and may be combined with the source language (in these cases English all the time). As a result, this study suggests that in the interest of maximised language coverage combining a number of on-line MT services can be a successful strategy to guarantee that a large audience of Internet users can actually access the contents of the web-site.

3.5 Disclaimers and warnings about the use of on-line MT

One very thorny issue concerns the possible risks and legal implications of exposing Internet users to raw MT output produced on-demand to view the contents of monolingual web-sites (see Westfall 1996; Yang & Lange 2003: 205-6). Resorting to on-line MT services to disseminate information presents of course serious threats to the integrity of the messages and information contained in the original version of web-sites. In spite of this, only a minority of the sites in the considered sample (i.e. 11 out of 36, which corresponds to roughly 30%) include some sort of disclaimer or warning about the use of on-line MT services, whose potential may be overestimated by some naïve Internet users, or indeed by web-designers who integrate MT technology into their monolingual web-site[5].

Interestingly, these disclaimers and warnings that are found in the sample are of varying length and the information they contain is quite different: some of them are very succinct and relatively vague (i.e. web-sites INST-9, COMM-2, INFO-9), whereas others explore the dangers and limits of using on-line MT in more detail (e.g. INST-5, COMM-5/9), making visitors aware of what can be reasonably expected and pointing out areas where technical or linguistic problems may arise, due to weaknesses that are very difficult to overcome for MT in general (cf. Yang & Lange 2003: 206).

One strategy that seems particularly helpful for non-English-speaking users in this respect consists in showing disclaimers and warnings in a variety of languages, and not only in English. Even though these messages in other languages seem to be machine-translated, they may serve the purpose of alerting non-English-speaking Internet users to the potential problems that may be encountered when relying on MT technology.

[5] Table 2 in the Appendix below provides details about all the disclaimers used by the web-sites in the sample.

Among the web-sites included in the sample, multilingual disclaimers and warning messages are provided by the following 3 web-sites: INST-1, COMM-1/7.

The web-sites mentioned so far present the disclaimers and warnings on their own web-pages, and the explanations are usually in plain language and quite straightforward to understand for Internet users. However, one web-site in the sample (INFO-5) goes beyond this strategy, in that it briefly warns visitors against the possible dangers and imperfections of on-line MT, and also refers them to the detailed disclaimers and frequently asked questions (FAQs) on the official web-site of Babelfish, the web-based MT system that it recommends.

This wide range of different attitudes towards disclaimers that are included in some web-sites seems to mirror the degree of awareness that web-designers and web-masters have about the potential pitfalls entailed by MT technology. In summary, including disclaimers and warnings about the limitations and likely shortcomings of on-line MT services seems a desirable option for monolingual web-sites, so that Internet users are made aware of the possible consequences and do not expect a fully reliable translation.

3.6 Degree of integration and level of user-friendliness

In order to investigate the degree of integration and the level of user-friendliness with which on-line MT is incorporated into monolingual web-sites, this section refers to how the translation process is to be started by the users. Several different approaches are adopted in this respect as well by the web-sites that have been investigated for this research. From the point of view of the Internet user, the procedure to start the on-demand MT request should be as straightforward and simple as possible, whereas there are cases in which the design of the web-sites is complicated, obscure and not intuitive as it should be in the interest of a user-centred interaction design.

One crucial factor in this respect regards how much information should be supplied (i.e. typed in or specified e.g. by choosing options by means of pull-down menus) by the user and how much is automatically already available in the correct form. It seems for instance that a much more effective strategy is the one adopted by web-sites that pre-determine in the relevant field the URL of their home page when the user is taken to the screen prompt of the on-line MT service to start the translation process (this happens only in 2 of the 36 monolingual web-sites, i.e. COMM-4-8). In other words, when users click on the link to obtain the on-line machine translation (assuming they have been able to find it, since most of the time the message is available only in English), they are redirected to the external web-site of the web-based MT service, and the on-line submission form of the translation request already has the URL of the monolingual web-site in the correct field; at this stage, then, the users only need to supply the correct language combination for the translation request and click on a button to actually start the process.

In a few other cases, i.e. INST-3/8 and COMM-3, the on-line MT system is embedded into the monolingual web-site with a good seamless integration (i.e. most of the steps needed to start the translation process take place behind the scenes and are hidden from the user), but the fundamental flaw here is that users have to select a choice from a drop-down menu or from a list of links in which the options are written only in English, which again some users may not be able to understand.

In most cases, however, the situation is even less favourable than this for non-English-speaking users, since very often they are simply redirected from the monolingual web-sites to the default home page of the on-line MT service (e.g. Babelfish), which has a graphic user interface in English. When this happens, the users need to select the target language and language pair for the desired on-the-fly translation job navigating through menus in English, and also have to manually type in (or copy and paste) the URL of the web-page that they want to translate into the appropriate field (this is the case in web-sites INST-7/10/12, COMM-1/7/12, INFO-1/2/9). This laborious and time-consuming operation may be particularly challenging for novice Internet users or for people who have never had the chance to use an on-line MT service before, and as a result it doesn't seem to be particularly user-friendly.

As a point of comparison, one example of good practice in terms of interaction design and user-friendliness is worth mentioning here, i.e. web-site INST-1 of the sample. This originally monolingual web-site offers a very intuitive navigation pattern to multilingual visitors, who can constantly rely on visual cues (i.e. flags) and multilingual messages in a variety of languages other than English (i.e. French, German, Italian, Portuguese and Spanish) when they are guided step-by-step through the procedure needed to view the pages of the web-site in languages other than

English. As a result, this approach offers excellent support to visitors and a very user-friendly integration of on-line MT technology for dissemination purposes.

One final remark should be added regarding the layout and design of the web-pages (in particular the home pages) of the monolingual web-sites in the sample. The home pages of some of the sites have large quantities of text presented as parts of icons, banners and images, as well as links that are essential for navigation included in graphic format as opposed to plain text (e.g. web-sites COMM-3/8, INFO-12). As a result, the application of on-line MT technology is not effective in such cases, since text presented in graphics remains untranslated even after the page has been processed with an on-line MT service.

The design and layout of pages that are likely to be translated by means of web-based MT technology should take into account that digital content can only be translated if it is entered as typed text, and this seems to be another level at which the awareness of web-designers and web-masters needs to further develop, for them to fully appraise the limitations and technical requirements of on-line MT.

The Synoptic Table in the Appendix presents a column containing very short comments on the degree of integration and the level of user-friendliness with which each web-site embeds on-line MT technology into its own navigation and interaction design. This information is only intended to give a very rough and informal indication of how successful or otherwise each web-site is in integrating web-based MT services for the benefit of its multilingual visitors, and is based on a combined assessment of the factors reviewed and discussed so far.

4. Conclusion

4.1 Lack of general consensus and established practices

On the basis of the observations summarised so far, there seems to be a wide variety of approaches to the incorporation of on-line MT services into monolingual web-sites. This final section tries to draw some general conclusions based on the observation of the sample of 36 web-sites, considered with reference to the selected key factors of user-friendliness and interaction design presented above.

First of all, no specific preferences seem to emerge that may be related to each type and category of web-sites, i.e. institutional, commercial and informative. Rather, the overall picture is very varied and fragmented, with different approaches and strategies adopted across the three types of web-sites. The details provided for each parameter in the Synoptic Table below and the discussion in the previous section 3. briefly illustrate what are the main advantages and disadvantages of the various alternatives from the point of view of Internet users.

Secondly, no general consensus or established rules exist at present as to what are the best strategies to successfully incorporate on-line MT technology into monolingual Internet sites. Rather, different choices are made to propose the use of web-based MT technology to Internet users, which obviously have far-reaching consequences on the degree of usability and user-friendliness that the public of web-surfers tends to associate with it. Thirdly, the data gathered from the monolingual web-sites in terms of interaction design and user-friendliness seems to suggest that on-line MT is incorporated simply because it provides a costless and ready-made alternative to expensive and time-consuming localisation processes or on-line content management strategies. In summary, there does not seem to be much attention devoted to carefully assess what international non-English-speaking Internet users would find easy and straightforward (i.e. user-friendly) approaches to the incorporation of on-line MT technology.

One somewhat ironic usability paradox stands out in particular as a striking example of this: the vast majority of the considered monolingual web-sites present instructions and information concerning how to use MT technology with messages exclusively written in English. However, knowledge of this language should not be assumed on the part of the Internet users, since the on-line MT service would presumably be used by web-surfers who do not feel comfortable with it or who have no knowledge of English at all.

4.2 Implementing user-friendly and user-centred design to incorporate on-line MT

The key factors considered in the present investigation show that simple principles of user-friendliness are not widely established and very little attention is given to good user-centred interaction design. More worryingly, perhaps, some choices regarding how the possibility of using on-line MT in monolingual web-sites is recommended to visitors sometimes reveal even a lack of common sense. This study has shown that a very large number of the monolingual web-sites in

the sample fail to meet even minimum requirements of user-friendliness and user-centred interaction design.

As a result, this investigation suggests in conclusion that adopting a more user-centred design in monolingual Internet sites that wish to incorporate web-based MT services would represent a significant step towards making the general public more satisfied with the use of MT technology. The successful performance of machine translation in the on-line environment raises specific issues that need to be carefully considered, but at present these concerns seem to be scarcely taken into account.

The thorny issue of disclaimers and warnings about the use of on-line MT is a clear example of an area that needs further investigation and possibly some improvements, so as to set and introduce accepted standard policies aimed at raising the awareness of what on-line MT services can and cannot reasonably do.

This is an exciting scenario that poses several challenges concerning the short- and medium-term development of MT in the on-line environment. In spite of being risky and ambitious, the exploitation of web-based MT services is gaining popularity among web-designers and net surfers alike as a reasonable application to translate on-line textual content for various types of web-sites. However, much serious work is still needed to enhance the level of usability and user-friendliness according to standards that should hopefully be promptly established and accordingly implemented.

References

Nielsen, J. & M. Tahir (2002). *Homepage Usability: 50 Websites Deconstructed*. New Riders Publishing.

Somers, H. (ed.) (2003). *Computers and Translation: A translator's guide*. John Benjamins

Westfall, E. (1996). "Legal Implications of MT On-line". In *Expanding MT Horizons*: *proceedings of the Second Conference of the Association for Machine Translation in the Americas*, *2-5 October 1996, Montreal, Quebec, Canada*. 231-232.

Yang, J. & E. Lange (2003). "Going Live on the internet". In H. Somers (ed.). 191-210.

Disclaimer

All the web-sites and URLs mentioned and referred to in the paper as well as in the Appendix (i.e. in Table 1, Table 2 and the Synoptic Table) have been accessed and are available on-line with the described features as of 15 March, 2004.

All the information supplied in the paper and in the Appendix below has been directly taken from the web-sites concerned or derived from their on-line contents, and is correct as of 15 March, 2004.

Appendix

Table 1. URLs of the seven on-line machine translation services recommended to visitors by the 36 monolingual web-sites included in the sample and listed in the Synoptic Table

Name of the on-line MT service	URL of the on-line MT service
Ajeeb	http://english.ajeeb.com
Babelfish	http://www.world.altavista.com
Freetranslation	http://www.freetranslation.com
Google	http://www.google.com/language_tools
Intertran	http://www.tranexp.com/InterTran/FreeTranslation.html
Systransoft	http://www.systransoft.com
Translate RU	http://www.translate.ru/eng

Synoptic Table. Summary of the information on the sample of web-sites considered in this study

INSTITUTIONAL WEB-SITES (*INST*): public authorities, administrations, non-profit organisations, societies and associations

COMMERCIAL WEB-SITES (*COMM*): corporations, companies, shops or professional service providers involved in e-commerce or business-related activities

INFORMATIVE WEB-SITES (*INFO*): leisure or professional information on specific topics, subjects, places, people, products or services

INSTITUTIONAL WEB-SITES (*INST*): public authorities, administrations, non-profit organisations, societies and associations

Web-site ID	URL of the web-site	Description and contents	On-line MT service(s) recommended	Disclaimers and warnings about MT (see Table 2 for details)	Degree of integration and level of user-friendliness
INST-1	http://www.adurdc.gov.uk	Adur District Council's web-site	Babelfish, Google	Yes, in various languages	Excellent seamless integration
INST-2	http://www.ashford.gov.uk	Ashford Borough Council's web-site	Google	None	Medium: flags and message only in English
INST-3	http://www.generousgiving.org	Christian ministry to encourage givers of all income levels	Babelfish	Yes	Good seamless integration for interaction design but only in English
INST-4	http://www.house.gov/conyers	Congressman John Conyers, Jr.	Babelfish, Ajeeb	None	Very low, minimum guidance given in English
INST-5	http://www.minox.org	Minox Historical Society (photography)	Babelfish, Intertran, Google	Yes with detailed explanation for users	Variable, depends on which on-line service is linked to
INST-6	http://www.nv.gov	Official State of Nevada (USA) web-site	Babelfish	None	Medium
INST-7	http://www.rochford.gov.uk	Rochford District Council's web-site	Babelfish	None	Very low
INST-8	http://www.secstate.wa.gov	Washington Secretary of State Sam Reed	Systransoft	None	Good for interaction design but only in English
INST-9	http://www.sidney.ars.usda.gov	Northern Plains Agricultural Research Laboratory, Sidney, MT (USA)	Google	Yes	Very low
INST-10	http://www.sla-europe.org	European Chapter of SLA (Special Libraries Association)	Babelfish	None	Very low
INST-11	http://www.trinitysb.org/Home.htm	Trinity Episcopal Church, Santa Barbara, CA (USA)	Babelfish	None	Very low
INST-12	http://www.workersrights.org	Worker Rights Consortium	Babelfish	None	Very low

COMMERCIAL WEB-SITES (*COMM*): corporations, companies, shops or professional service providers involved in e-commerce or business-related activities

Web-site ID	URL of the web-site	Description and contents	On-line MT service(s) recommended	Disclaimers and warnings about MT (see Table 2 for details)	Degree of integration and level of user-friendliness
COMM-1	http://www.batterybank.com	Camcorder batteries from the Battery Bank	Babelfish, Freetranslation, Intertran, e-lingo (link is broken)	Yes, in various languages	Very low
COMM-2	http://www.budgetaccommodation.no	Hostelling International Norway (HIN), Western Region, Fjord Norway	Babelfish	Yes	Low
COMM-3	http://www.eastsilver.com	Wholesale experts of silver findings and components from India	Google	None	Good for interaction design but only in English
COMM-4	http://www.home.earthlink.net/~semic	The taximan of San Jose	Babelfish	None	Good for interaction design but only in English
COMM-5	http://www.johnsjewelry.com	Manufacturers and wholesalers of fine jewellery	Babelfish	Yes, fairly detailed	Good
COMM-6	http://www.magazinesofamerica.com	Magazines and magazine subscriptions	Babelfish	None	Guidance in various languages
COMM-7	http://www.mustangsplus.com/index.htm	Mustang parts	Babelfish, Freetranslation, Intertran,	Yes, in various languages	Very low
COMM-8	http://www.nocs.com	New Orleans Cold Storage and Warehousing, Ltd.	Babelfish	None	Good for interaction design but only in English
COMM-9	http://www.sandiegoreal.com	San Diego Real Estate	Babelfish, Intertran	Yes, fairly detailed	Medium
COMM-10	http://www.teflgames.com	Board games for learners of English from TEFL Games Co.	Systransoft	None	Clear step-by-step guidance is given but only in English
COMM-11	http://www.trademarksolutions.com	Fast, affordable and professional trademark registration	Babelfish	None	Medium for interaction design but only in English
COMM-12	http://www.yakuk.co.uk	Russian Yak aircraft sales	Babelfish	None	Very low

INFORMATIVE WEB-SITES (*INFO*): leisure or professional information on specific topics, subjects, places, people, products or services

Web-site ID	URL of the web-site	Description and contents	On-line MT service(s) recommended	Disclaimers and warnings about MT (see Table 2 for details)	Degree of integration and level of user-friendliness
INFO-1	http://www.amazingchange.org	A religious web-site on the power and love of Jesus	Babelfish	None	Very low
INFO-2	http://www.artofwildlife.com	Miniature paintings by Wes and Rachelle Siegrist	Babelfish	None	Very low
INFO-3	http://www.centralvirginia.net	Lynchburg Central Virginia Business Directory	Google	None	Medium
INFO-4	http://www.chewing-gum-removal.com	Tips for removing chewing gum from clothes, carpet cleaning tips and stain removal	Babelfish	None	Medium
INFO-5	http://www.expat.or.id	Site for expatriates in Indonesia	Babelfish	Partial (user referred to Babelfish FAQs)	Low, messages and information only in English
INFO-6	http://www.fodsupport.org	On-line support for fatty oxidation disorders	Google	None	Medium, only in English
INFO-7	http://www.immigrationvisa.org	Canada Immigration Research Institute: Canadian/New Zealand Law	Ajeeb, Babelfish, Translate RU	None	Variable, depends on which on-line service is linked to
INFO-8	http://www.jerseyboardwalk.com	New Jersey Shore, The Boardwalk Catalog	Babelfish	None	Medium
INFO-9	http://www.ladinfo.org	Leukocyte Adhesion Deficiency web-site	Babelfish, Google, Freetranslation	Yes	Low
INFO-10	http://www.nephron.com	Nephron Information Center	Systransoft	None	Low
INFO-11	http://www.relax-in-spain.com	Self catering holiday apartments and villas to rent on the Costa Blanca, Spain	Google	None	Medium, only in English
INFO-12	http://www.unomas21.com	Uno Mas Down Syndrom on-line	Babelfish	None	Medium

Table 2. Disclaimers and warnings about using on-line MT presented by the web-sites in the sample

Web-site ID	Disclaimer and warning about MT and URL as of 15 March, 2004
INST-1	'This page provides links to on-line automatically translated versions of our website. The translated versions open in a new browser window, which uses framesets. The translations are not perfect, but may help you to understand our website. Unfortunately text included in graphics does not translate, but the Google one translates the "Alt-text".' (NOTE: This message is also available in 5 other languages: French, German, Italian, Portuguese and Spanish; these multilingual disclaimers seem to have been machine-translated from English - http://www.adurdc.gov.uk/adc/translate.htm)
INST-3	'These these translations are not perfect. Idioms, irregular punctuation and complex sentences may not be translated correctly. These translations will allow you to understand the general intent of the English original, but they will not produce a perfect translation.' (http://www.generousgiving.org/page.asp?sec=0&page=202)
INST-5	'The internet has provided for many ways to bring complex content to users from all over the world. One of the greatest advances in this has been the advent of online translation services. Below are several choices that, depending on your language, will hopefully give you a good translation of this site. These translations are often not as accurate as one would like, but hopefully one of the translations they provide will be sufficient.' (NOTE: This is only part of the disclaimer – http://www.minox.org/translate.html)
INST-9	'NPARL is not responsible for any errors that you may encounter as a result of this translation tool. The translations are automatically generated by state-of-the-art technology without human intervention.' (http://www.sidney.ars.usda.gov/#translate)
COMM-1	**'**Please note that some of these translators work better than others, please feel free to experiment with them all and find the one that works best for you.' (NOTE: This message is also available in a dozen other languages; these multilingual disclaimers seem to have been machine-translated from English – http://www.batterybank.com/translate.html)
COMM-2	'Please note that the resulting translation is far from "perfect" and that HIN cannot accept any responsibility for misunderstandings, based on this computer assisted translation.' (http://www.budgetaccommodation.no/translation/translation.htm)
COMM-5	'Proper nouns and common English abbreviations are translated. This makes for some funny translations. Translating languages is a very complex task. Expect BabelFish to allow you to grasp the general intent of the original, not to produce polished translations. You must use human translators for highly accurate translations.' (NOTE: This is only part of the disclaimer - http://www.johnsjewelry.com/translate.html)
COMM-7	**'**Please note that some of these translators work better than others, please feel free to experiment with them all and find the one that works best for you.' (NOTE: This message is also available in a dozen other languages; these multilingual disclaimers seem to have been machine-translated from English - http://www.mustangsplus.com/trnslate.htm)
COMM-9	'Computerized translations are approximations of the original text. They should not be considered to be an exact translation. The hope is that it will assist world-wide web visitors in viewing this site and that it will assist us in communicating with our clients world wide! I do not speak these languages other than English, and would very much appreciate your comments if anything on these pages has not translated properly to your own language. Thanks!' (NOTE: This is only part of the disclaimer - http://sandiegoca.crosswinds.net/translat.htm)
INFO-5	'For more information on how to use Babel Fish and what its limitations are see [link to Babelfish FAQs]' (http://www.expat.or.id/info/translatethissite.html)
INFO-9	'Language translation web links are provided as a courtesy for your convenience - use them at your own risk. We are not responsible for errors, omissions and/or inaccurate and/or incomplete translations related to the use of this web site and/or any language translation facilities.' (http://www.ladinfo.org/#Translate)