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Exploring Multilingual Requirements of the Community of a Learning Portal: the case of Organic.Edunet

Anastasios Koutoumanos^{*}, Alexios Dimitropoulos, Yannis Psochios

Agro-Know Technologies, 17 Grammou str., 15235 Vrilissia, Greece

Abstract

This paper presents an analytical framework for introducing multilingualism into web portals, aiming to facilitate bringing down the language barriers, bridging the current language divide between potentially interested users and the multimedia resources from around the world that are made available through such portals. The general problem addressed is the design affordances that shall allow multilingual web portals to meet different linguistic profiles, needs and user expectations. The paper describes the methodology used for the analysis of user requirements of the existing user community of Organic.Edunet, by focusing to the registered members (totalling around 2,500 at the time of the study, doubled already by today). Organic.Edunet, being a thematic web portal aiming to promote the discovery and best use of the wealth of educational resources on Organic and Sustainable Agriculture in a European and international scale, forms a typical example for understanding the language barriers between people of diverse linguistic profiles, and the affordances needed in such a “Learning portal” that will help bringing down those barriers. The paper concludes with some initial results and discussion of the findings and suggestions for future work.

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1. Introduction

“In the galaxy of languages, every word is a star.” (UNESCO, 2000) According to the United Nations Educational, Scientific and Cultural Organization (UNESCO), information and knowledge are key determinants of wealth creation, social transformation and human development. Language is the primary vector for communicating knowledge and traditions, thus the opportunity to use one’s language on global

^{*} Corresponding author. Tel.: +30-694-7000-481; E-mail address: tkout@agroknow.gr

information networks such as the Internet will determine the extent to which one can participate in emerging knowledge societies. By developing policies to advance multilingualism, including in cyberspace, we can work towards reducing this “language divide”.

The general problem addressed by the work presented in this paper is, indeed, the definition of the existing linguistic barriers, the different linguistic needs, and the possible ways to address them when designing a multilingual web portal. In fact, the objective of this paper is two-fold: to provide a generic, analytical framework for addressing the requirements related to multilingualism of web portals, as well as to present a case of needs analysis for Organic.Edunet, an existing web portal, currently in operation since 2010. Organic.Edunet (<http://organic-edunet.eu>) is a well-established web portal, targeting mainly the educational community. It has been successfully coupling a network of associated repositories with learning objects on Organic Agriculture and related topics, such as sustainable agriculture, agro-ecology, aquaculture, etc. From its initial conception, design and implementation, Organic.Edunet has adopted a federated, standards-based approach that facilitates the incremental growth of the network along with the integration of more sophisticated services for its end users (Manouselis et al., 2009). The web portal is currently available in sixteen languages, thus already facilitating its use by users from around the globe. Moreover, the knowledge representations recorded in the federated repositories (ontologies and metadata schemas) have been manually translated by human experts to several languages. However, the portal’s features and the facilitated open access to an ever expanding quality controlled catalogue of resources, result in user communities from even more countries becoming increasingly interested in using the portal.

This success has therefore brought together an interesting problem: *What are the current language barriers for the international community of the Organic.Edunet users and which are the best approaches for identifying and validating the needs of those, in order to break down those language barriers and facilitate access of all interested users to the wealth of resources from the federated repositories of the Organic.Edunet network.*

This is almost in direct alignment with the “Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace” that has been unanimously adopted in October 2003 by UNESCO’s member states, which seeks to support equitable and affordable access to information and to promote the development of multicultural knowledge societies. In line with this recommendation, UNESCO advocates for a multilingual cyberspace by focusing its interventions in three areas: (1) including new languages on the Internet; (2) creating and disseminating content in local languages in cyberspace; and (3) providing multilingual access to digital resources.

This paper provides an insight on our work for capturing, analyzing, documenting and organizing the user requirements of all stakeholders related to multilingual support and features of the Organic.Edunet portal. Furthermore, the paper holds an analysis of the results of this process, focusing on the feedback collected from existing users of the portal (“registered members”). In particular: section 2 presents the background for the problem at hand and related work for multilingualisation on the web; section 3 describes our methodology for the overall context of the analysis of user requirements, the identification of stakeholders and the existing users of the portal, as well as new and anticipated users, their current approaches for creating and locating learning resources and the tools they use; section 4 documents the results from the feedback from existing users, with details of the user sample, the audience involved and the most important findings; section 5 concludes with a discussion of the findings and indication for further and future work.

2. Background

In computing, internationalisation and localisation are means of adapting computer software to different languages, regional differences and technical requirements of a target market. Two commonly used “numeronyms[†]” are used in short for both terms: i18n and L10n[‡]. i18n is the process of designing a software application so that it can be adapted to various languages and regions without engineering changes. L10n is the process of adapting internationalized software for a specific region or language by adding locale-specific components and translating text. These definitions lead us to “multilingualisation”, or m17n for short; support of multiple languages by computer systems can be considered a continuum between L10n, through m17n, to i18n.

These definitions for i18n, L10n and m17n, although generic and concerning all kinds of software, have a slightly different perspective when referred to web sites, web content, web applications and web portals. It would be interesting however to discuss first the definition of web portals itself. According to the American Heritage Dictionary of the English Language (2009), a portal is a doorway, entrance or gate, especially one that is large and imposing. In fact, the more frequent usage for the term has been in science-fiction, and some "New Age" philosophies, for describing a gateway to another world of the past, present, or future, or to an expanded awareness, a matterless vortex used to travel between different dimensions, a two-way interdimensional door opening into several realities, including the astral world; usually involving the legendary crew of starship USS Enterprise leaping through, making use of the wormhole method[§] and escaping through space and time. To a certain degree, the term has retained the meaning of its original usage when started to being used, in the late '90s, during the internet frenzy, to describe a website that is considered as an entry point to other websites, often by being or providing access to a search engine (Smith, 2004). In fact, according to Dewan et al (1999), to attract traffic, portals provide value added services to the users. They continuously scan the World Wide Web for relevant and timely information, screen and prioritize the links, and provide a consistent interface to the ever changing Web. It is exactly this “added-value” that makes portals valuable and among the most successful web sites: the aggregation, annotation, selection, categorisation, quality control of resources scattered at different locations, all over the world. But it is exactly these characteristics and qualities that make support for multilingualism even more demanding for portals: interesting resources, being aggregated by international collections, addressed to an international audience, call for an extensive consideration, starting from the design phase, in order to safeguard that linguistic needs are taken into account and portals do not become barriered alleys disallowing effective access to information seekers for the wealth of resources that they aggregate.

This is therefore, an interesting problem to face: *how to prepare a web portal for to support multilingualism?* Or, to put it in other words: *what are the affordances that will make a web portal an efficient and effective instrument for information seekers around the globe?* The problem, thus, becomes a problem of definition of the affordances. So, maybe if we reflect on the real-world analogous of web portals, we could easily locate those affordances and try to replicate them into their digital equivalent! But, what is really an affordance? The word “affordance” itself was originally invented by the perceptual

[†] A numeronym is a number-based word (source: Wikipedia). Such words begin with the <first letter>, have <number> of letters in the middle, and end with the <last letter>. i18n was coined at Digital Equipment Corporation in the 1970s or 1980s

[‡] The capital L in L10n helps to distinguish it from the lowercase l in i18n

[§] A postulated method, within the general theory of relativity, of moving from one point in space to another without crossing the space between (http://en.wikipedia.org/wiki/Wormholes_in_fiction)

psychologist J. J. Gibson in his article “The Theory of Affordances” (1977) and explored more fully in his book (1979). Gibson uses the term to refer to the *actionable properties* between the world and an actor (a person or animal). To Gibson, affordances are a relationship. They are a part of nature: they do not have to be visible, known, or desirable. In a sense, some affordances are yet to be discovered! Norman (1988), however, suggests that when it comes to design, the term “perceived affordance” should have been used, since the focus is much more about what the user *perceives* than what is actually true. In any matter however, an affordance is a quality of an object, or an environment, which allows an individual to perform an action.

So, going back to web portals and multilingualism, we try to employ the ever successful divide and conquer paradigm (Knuth, 1998) and break down the problem into three smaller pieces, in order to be able to address each one separately:

- a problem of collecting, aggregating and managing multilingual data (resources);
- a problem of adequately defining data structures for annotating those resources (metadata); and
- a problem of providing an effective, multilingual user interface for our global audience, fostering the location and re-use of those resources.

None of these three problems, however, is easy to address. On-going research for almost the last fifteen years has provided some answers and technical solutions, but it has also raised a number of questions, making apparent many issues, along with their complexity and interdependency. Consider for example the task of writing for an international audience: it is important when targeting an international audience to bear this in mind, for ease of translation into other languages, and for ease of understanding by non-English audiences. What happens when we try to support this process with a software system? Should the workflow remain the same, or maybe alternative paths should be explored, so that, for example, the author of the original language version is responsive to translators’ questions, in effect participating in the translation process? Or consider the following example: when reading English text, many people, for whom English is not their mother tongue, use dictionaries to look up unfamiliar terms. This is exactly a typical real-world analogous that need to be supported in a digital equivalent: provide a readily available, intuitive dictionary mechanism, which, on user’s request, can help in the easier understanding of the resource. Also, cultural elements such as date & time representations, first day of week, measurement system, name formats, regulations, need careful consideration. So questions still remain to be explored and issues to be resolved. On the other hand, findings up to now are promising: when properly designed on the basis of proven methods and supported by appropriate software, multilingual content management can save time (=labour) and increase efficiency as well as quality of information (Wright, 2005).

The objective of m17n is naturally to enable users to work in a culturally and linguistically familiar computer environment, which is thus easy to master. The users’ language thus becomes a working language of computer use. Software localization in a poorly endowed language thus helps to enhance the prestige of that language in the eyes of users and, in particular, of its own speakers (Diki-Kidiri, 2007), providing motivation and trust towards exploring the features of the software and the resources that are made available.

In particular, with regards to the Organic.Edunet portal, new features related to m17n are expected to further facilitate users who search for educational content, making it easier for them to access all resources relevant to their topic of interest. Fragmentation of knowledge as a result of language barriers is expected to be significantly reduced. To this end cross-lingual search will act as the key language

technology developed. Also, the cost-effectiveness of the translation work will be increased by providing support in the process of labels, metadata and resource descriptions. Furthermore the generation of suggested descriptive details from text and translations is going to increase the completeness of metadata.

Since its official launch in January 2010, the Organic.Edunet portal has attracted more than 76,500 unique visitors from 184 different countries. This traffic towards the portal was translated into more than 94,700 visits and 327,700 page-views, with an average time on portal of more than 2 ½ minutes per visitor. More than half of this traffic (55%) was performed through the use of search engines, while 28% was direct traffic (Palavitsinis et al., 2011). Moreover 24% of the unique visitors per day came from countries not having content in their own language (for example France, Italy and China).

3. Methodology

Given the identified needs, expectations and linguistic background of the Organic.Edunet's users, our main aim related to m17n of the portal is in providing a wider and more efficient multilingual access and effective exploitation of the learning materials available through the federated repositories. Our approach to this end is to analyse and re-engineer the related facilities and associated workflows in order to support m17n, multilingual access, effective localisation and integration of automatic machine translation (MT) services for the aggregated metadata descriptions and learning objects. In particular the re-engineering of the system architecture will integrate MT modules to enable on the fly translation of user interface elements and support for human translators (in the form of suggestions for manual translation), as well as cross-language search and retrieval services, contemplating the existing text-based search, multilingual keyword browsing, semantic search and tag-based (cloud) search.

The main targeted audiences of Organic.Edunet fall in the following categories:

- School teachers involved in teaching of Organic Agriculture and related topics, either directly (e.g. through environmental education activities) or indirectly (e.g. through educational activities on cross-disciplinary topics like biology, chemistry, economics or history);
- Academics and researchers involved into teaching, tutoring or researching Organic Agriculture and related topics;
- Learners, with diverse goals and ages ranging from pupils at schools to university students and life-long learners (practitioners, farmers, etc.) who wish to find resources on OA and related topics,
- Content providers and other stakeholders involved in the creation, production, organization and/or publication of content around Organic Agriculture and related topics. This group includes a wide variety of institutions and initiatives, such as: academic and research institutions, EU-funded initiatives, public organizations, private not-for-profit organizations, agricultural libraries or publishers, existing portals and repositories, as well as end-users themselves (communities of practice).
- Last but not least, a main audience for the Organic.Lingua project is that of Technology providers, including: i) linguistic technology providers and integrators, working on similar projects and looking for practices and / or tools that can be used in their own projects, ii) machine translation engines that need to train their software with parallel corpora of specific, under-resourced fields, like OA and related domains that are targeted by Organic.Edunet.

In order to address all identified stakeholders and engage them in activities towards capturing the most relevant and important feedback, a methodological framework has been designed for the preparation, organisation and reporting of a number of events involving stakeholders, with the objective to elicitate

and validate the user needs of all participating user communities. The main requirements analysis techniques that were used included the following:

- Requirements documentation: all identified requirements, suggestions and issues identified by members of the Organic.Edunet community were documented and served as the basis for an internal live document, in the form of wiki pages, used as a communication and collaboration tool by all members in order to reach a common consensus of the goals, objectives and procedures for the requirements validation.
- Stakeholder engagement: it was clear that strong engagement should be sought for the validation of identified requirements, with representatives from all main user-groups. In that sense, a series of events were organized for getting input and feedback from students, teachers, academics, researchers, practitioners and people working on translation from all participating countries. The wiki pages provided guidelines for alternative scenarios for these events, being mainly in three forms of activities, as described in the following paragraphs.

Apparently, the team that has been involved in the design and development of the Organic.Edunet portal and is currently active with its sustainable management, being mostly aware of the existing shortcomings and weaknesses with regards to the handling of multilingual content and linguistic services overall, were obviously the first source for identifying and describing existing requirements. This was achieved through a systematic analysis of the content and metadata lifecycle within the Organic.Edunet platform. Additionally, existing users of the Organic.Edunet portal were an apparent source of valuable feedback and suggestions of new and improved functionality. In order to gather this feedback we have exploited two approaches. The first one was to investigate and study the users' interactions with the portal's components through an analysis of the log files. The second one was to directly ask registered users to participate in an online survey, with suitable questions to elucidate and validate identified requirements.

The survey was designed so as to contribute in the identification of requirements and suggestions of existing users of the Organic.Edunet portal. It focuses on the recognition of user needs and opinion concerning multilinguality regarding (a) the portal's interface, (b) searching and using of the learning objects from the federated repositories that are available through the portal and (c) the need for new features and services. The survey was developed using the Lime Survey tool (www.limesurvey.org) and was made available online at <http://ieru.org/organicsurvey>. The questionnaire was designed during July 2011 and was then circulated among the project partners for comments and feedback. During the last week of August 2011 a pilot phase was carried out during which two individuals per project partner were asked to complete the survey in order to make sure that the data collection mechanism was working as expected and also that no functionality or other problems occurred. The questionnaire has been translated by project partners and was made available in 9 different (English, Estonian, French, German, Greek, Polish, Romanian, Russian and Turkish). In this way we were able to get feedback from a more representative sample of users and identify differences between users with an advanced level of proficiency in English and those who have a low level or do not speak English at all. The above languages were selected for translation taking into account the number of users from each country so as to make sure that we cover all countries where large groups of users exist.

The survey included 49 questions, arranged in 5 parts, making every effort for a balance between elaborate feedback from respondents and realistic effort necessary to complete the questionnaire. The following table (Table 1) provides an indication of the questions asked, adopted for the limited space of this paper.

Table 1: Questions of the online survey.

PART A	SHORT USER PROFILE
Q1.1	How would you best describe yourself? (<i>i.e. Academic, undergraduate student, school teacher, student, etc.</i>)
Q1.2	For what purposes do you mostly search in the Organic.Edunet repositories? (<i>i.e. Research, Study, Lesson plans, Homework, Field practice, General interest, etc.</i>)
Q1.3	What is your native language?
Q1.4	In what other languages do you speak / write?
Q1.5	Have you used automatic translation services?
PART B	ISSUES & PERSPECTIVE ON PORTAL'S USER INTERFACE
Q2.1	Is the OE portal available in your language?
Q2.2	How would you rate the quality of the OE translation to your language? (<i>very poor, poor, acceptable, good, excellent</i>)
Q2.3	What is your preferable choice when using the portal? (<i>my native language, the original English version</i>)
Q2.4	For what reasons you prefer the English version? (<i>answered if Q1.3 was not English and Q2.1 was English</i>)
Q2.5	Are there terms in the portal that you believe would need a better translation?
Q2.6	Have you tried automatically translating the Organic.Edunet portal to your language?
Q2.7	Do you prefer the automatically translated version or the translation provided by Organic.Edunet?
PART C	ISSUES & PERSPECTIVE PORTAL'S CONTENT AND METADATA
Q3.1	Is it easy to search for content with terminology in your mother language? (<i>1-5 scale from "very hard" to "very easy"</i>)
Q3.2	How often do you use educational content in a language other to your native one?
Q3.3	Is it easy to locate available content in other preferred languages?
Q3.4	Do you use the advanced search mechanism to 'filter by language'?
Q3.5	Would you prefer using terms in your native language or in English when you are searching for resources?
Q3.6	Do you try to guess the English terms for text-based searching in order to locate more material?
Q3.7	Do you find it easy to use the 'semantic search' mechanism to locate content in your preferred language(s)?
Q3.8	Do you find it easy to use the 'tag-cloud' mechanism to locate content in your preferred language(s)?
Q3.9	Do you find the existing translated metadata descriptions accurate?
Q3.10	Do you believe the translated metadata descriptions provide you access to enough content (in other languages)?
Q3.11	Have you tried automatically translating available metadata descriptions?
PART D	REQUIREMENTS FOR NEW FUNCTIONALITY
Q4.1-15	How important are the following features for you? (<i>rating with a scale from 1: not important to 5: very important of a list of 15 features that had been anticipated as initial user requirements</i>)
PART E	FULL USER PROFILE
Q5.1-11	<i>Set of non-mandatory questions asking for personal details and information on affiliation, level of education, sector of expertise, professional discipline, country of residence, etc.</i>

The survey was launched on September 1st 2011 and was active for two months. Organic.Edunet users were notified through an email and were asked to participate and provide their opinion and feedback. Reminder emails were sent two weeks after the survey's launching. Furthermore a news announcement linking to the survey was placed on the homepage of the Organic.Edunet web portal and on the project's web site. Other communication mechanisms such as twitter and the web sites of other relevant projects where used to increase visibility. The population targeted for the survey were the registered users of the Organic.Edunet Web portal. These users are the ones more involved with the portal and as a result the ones who are more experienced in using it and can give us better feedback on their needs and expectations. The large number of registered users (at the time the survey was launched there were 2909 registered users) meant that we had a large sample that could give us a solid picture of the users' requirements. Due to invalidated email accounts or other network problems, a total of around 2500 emails is estimated to have been delivered to members' mailboxes.

4. Results

In total 136 valid responses were gathered which constitutes a number slightly more than 5% of the users that actually received our emails), constituting a sample suitable for statistical analysis of the results. The diverse profile of the respondents fits the wide range of different categories of Organic.Edunet's users. This fact also allow as space for comparisons between different users categories and thus making it possible for us to understand the different needs of each group. Table 2 presents the details about the linguistic profile of the respondents. It is obvious that a vast majority of our respondents has a competency in English, totalling to a 82.35% (5.88% mother tongue + 76.47% second or third language competency). On the other hand, only a very small minority of 10.29% has no other competency other than their mother tongue. If we subtract the English respondents among those, this relative frequency becomes even lower, adding up to a 6.62%. This fact can be an indication that our portal's members are people who feel competent in using English and, in general, have a linguistic profile of an above average competency level of that expected from the portal's intended audience. This indication could be supportive of the hypothesis that people who face language barriers are not actually using the portal and cannot benefit from its services and the associated learning resources.

It is also interesting to note the main difference between the users that use the English version of the portal and the ones that use the one on their own language (Fig. 1). The former also search in English while the latest do not (Fig. 2). This also supports the claim made regarding teachers and researchers. We can also observe another major difference by taking a look at the replies in Q3.3 "Is it easy to locate available content in other preferred languages?" As researchers are more used to using English this process seems significantly easier to them whistle it is much more difficult than the average for teachers. The graph in Fig. 3 illustrates the difficulty in locating content in other preferred languages reported by each group, in a scale of 1 (very easy) to 5 (very difficult).

The survey revealed several interested findings, some of which had been anticipated, while others were not expected. A first important finding of our research was the existence of two distinct groups of users - one using the English version of the portal, searching in English and being constitute mostly by researchers and the other using the version of the portal in their own language and preferring to search using terms in their mother tongue. It is interesting to notice here that a reason why researchers seem to be more accustomed to searching in English might be the fact that most of the content available through Organic.Edunet is actually in English. As a result only researchers with a substantial knowledge of this language can benefit from using it, and thus, are regular users, some of who participated in the survey.

Another major finding is that a lot of users prefer navigating using the English version of the portal mostly, even though there's a version in their mother tongue, for the following three reasons: (a) availability of resources; (b) personal preferences / habits; and (c) quality of translation. Reasons (a) and (c) along with the fact that most users reported that sometimes they have to guess an English term to find the content they need are clear marks that a better approach towards multilinguality is needed, especially in allocating content in different languages. It is worth noting here that despite the existence of mistakes the quality of the translations available was marked as being very high.

Table 2: Linguistic profile of survey's sample.

Mother Tongue	Rel. Freq.	Other Language Competencies						
		None	English	French	German	Italian	Spanish	Russian
		Relative frequencies across Grand Total of (valid) responses						
		10.29%	76.47%	13.97%	10.29%	4.41%	4.41%	8.09%
		Relative frequencies across Row Total						
Arabic	1.47%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%
Bulgarian	1.47%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%
Czech	0.74%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
English	5.88%	62.5%	0.0%	25.0%	0.0%	0.0%	25.0%	0.0%
Estonian	16.18%	0.0%	95.5%	0.0%	27.3%	0.0%	4.5%	50.0%
Finnish	0.74%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%
French	2.21%	0.0%	100.0%	0.0%	33.3%	0.0%	0.0%	0.0%
German	7.35%	0.0%	100.0%	40.0%	0.0%	20.0%	0.0%	0.0%
Greek	16.18%	0.0%	100.0%	18.2%	0.0%	9.1%	0.0%	0.0%
Hindi	2.21%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Italian	0.74%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Korean	0.74%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Portuguese	1.47%	0.0%	100.0%	50.0%	0.0%	50.0%	100.0%	0.0%
Romanian	5.88%	25.0%	75.0%	12.5%	0.0%	0.0%	12.5%	0.0%
Russian	15.44%	23.8%	28.6%	4.8%	9.5%	0.0%	0.0%	0.0%
Serbian	1.47%	0.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%
Spanish	13.24%	0.0%	100.0%	16.7%	11.1%	5.6%	0.0%	0.0%
Turkish	6.62%	11.1%	88.9%	0.0%	11.1%	0.0%	0.0%	0.0%

For example 76.47% of our sample has some competency in English

For example 100% of the person whose mother tongue is Arabic, have a competency in English) and 62.5% of those whose mother tongue is English respondent no other language competency

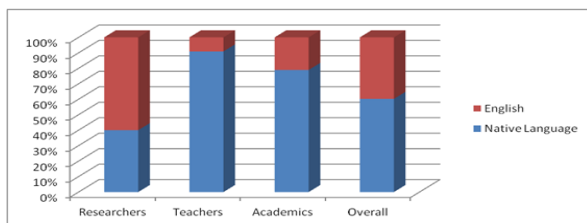


Figure 1: Use of English vs. native language among users' categories

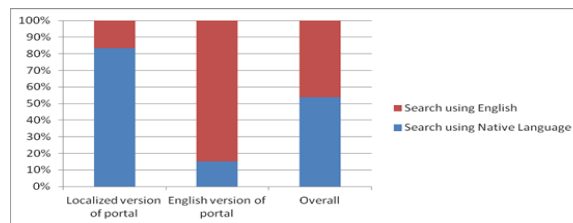


Figure 2: Search using English vs. native Language

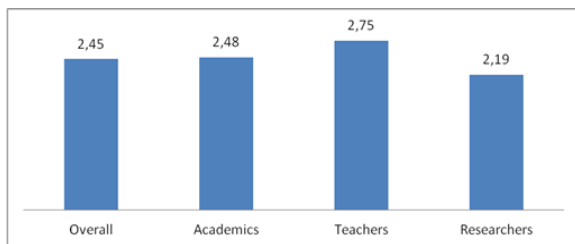


Figure 3: Is it easy to locate available content in other preferred languages?'

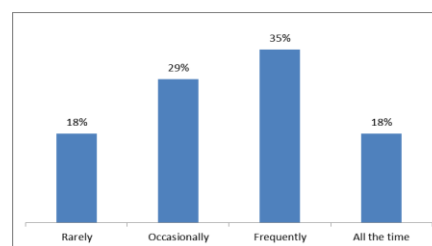


Figure 4: How often do you use educational content in a language other to your native one?'

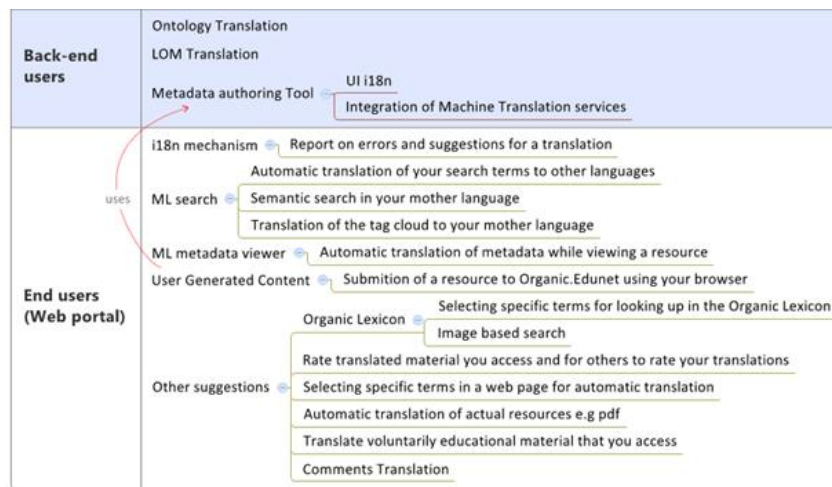


Figure 5: Main user requirements related to multilinguality for the Organic.Edunet portal

Finally users have reported that they would mostly appreciate services that would allow automatic translation of their search terms to other languages (e.g. English), the existence of a multilingual Organic Lexicon (with terminology translated to all languages and images) and being able to use the Semantic search mechanism in their mother language. On the other hand, most users would not be very interested in a feature to rate translated material you access and for others to rate your translations, image based search mechanisms and a feature for the translation of comments made by users. These results are in alignment with the findings of the learning analytics research that is trying to investigate issues related to the use of multiple languages, reported in (Stoitsis et al., 2012).

5. Discussion and future work

Quite a large number of active members of the portal, as well as respondents to the survey would chose to use the original language version of a web site, even when this is not in their native language. This result was well-expected and anticipated, given the analysis of the interaction of existing users with the current version of the Organic.Edunet portal. In many cases, users who are not apparently native English speakers, originating for example from India or Germany, would prefer to use the English version of the portal. It is certainly an issue that needs further investigation, certainly related to common errors that are introduced by the localisation of the portal and the inefficiency of the i18n mechanisms. A feature that would allow for easy reporting on such errors and issues, capturing users' feedback without asking for extensive effort or time from their behalf could certainly help address this challenge.

Another challenging issue is that services that ask for increased user interaction, especially the ones with no-immediate benefit for the users, are among the ones with the lower score in terms of anticipated importance. This is evident with the responses for "A feature to rate translations made by other users and for others to rate your translations", and "A feature to participate in the translation of metadata of existing resources". This finding could provide us a serious motivation for trying to introduce new-comers to the benefits of full engagement and active participation in the Organic.Edunet portal, as registered members. Only then would services "that allow automatic translation of comments made by other users" or "translation of descriptive tags from other users to your native language" would become more apparent and important. Related to multilingualism, a strong incentive for user registration would be an intuitive

mechanism for storing linguistic preferences that would combine information and feedback collected from the interactions of the user with the portal. This collected feedback could be temporarily stored at the user-side, as a cookie, but could be also form the basis for a permanent user profile, that would persuade users to take the extra step and register with the portal. Another apparent motivation for user registration, other than storage and re-use of their linguistic profile, could be closely related to the search mechanism, allowing registered users to store and recall saved searches, either in terms of search terms and queries or, in a later stage, in terms of full support for management of the results-set (i.e. marking of results as relevant or irrelevant, for further investigation, etc.) Last, but not least, access to features such as MT services for translation of documents or suggestions for user-generated content should be only available for registered users.

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