

Translating Vital Information: Localisation, Internationalisation, and Globalisation

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Summary: This paper deals with Globalisation, Internationalisation, and Localisation; these terms are often used interchangeably, which is incorrect. Internationalisation is the step before localisation, while globalisation covers both internationalisation and localisation and is generally considered more as a strategy than a task. In this paper we will focus on one particular aspect of localisation, i.e. the effect of mainstream localisation efforts on people whose languages are not covered because they do not represent a market and are thus deprived of access to vital information. Very often important information to secure the health, freedom, education, and financial well-being of people does not reach many parts of the world and is only available in English. This paper raises awareness of inequality with reference to the digital divide, and describes the humanitarian goal of localisation. We introduce some not-for-profit organisations and describe the Rosetta Foundation as one example of how to address the digital divide and the problem of information poverty ignored by current mainstream localisation efforts.

1. Introduction

Globalisation, Internationalisation, Localisation, and Translation (GILT) are terms which nowadays are used very often. The borders between them are often blurred, as many people consider localisation as counterpart of globalisation on the grounds that the former is "supposedly" based on a local and the latter on a global audience or market.

In this paper we will examine the differences between localisation, internationalisation, and globalisation (section 2) and then describe in section 3 the main characteristics of the language-culture combination, called *locale*. Section 4 elaborates particularly on the need for localisation, focuses on healthcare, and provides an introduction to some not-for-profit organisations.

Localisation should not be seen only through the eyes of the localisation enterprises as a process to increase international sales revenues, but also as a helping hand for the people who have limited or no access to digital content. This lack of important information and access will be described in section 5 and the Rosetta Foundation which provides solutions addressing the problem of Information Poverty will be introduced in sub-section 5.1. We close this paper with a summary in section 6.

2. Localisation, Internationalisation, Globalisation

In this section we define the terms included in GILT and illustrate their characteristics and their main differences.

Translation is the text transfer from a source to a target language; text is everywhere, in laws, news, academic dissertations, user manuals, advertisements and so on; the list is endless. Besides, that text is often accompanied by pictures, animations, logos, diagrams, and other visual effects. We often see that these visual effects change, when they are transferred to

a target language (TL). That is in principle what localisation means: it goes beyond the translation and adapts the source content to the culture of the place where the translated text is to be used (called locale – see section 3).

Since the digital revolution in 1970-1980s, the text has become part of the digital content. The digital content, apart from text, contains also audio, video, images, and software. Software includes websites, programs, or video games and thus implements graphics, animation, and many other widgets. The text included in the software should be translated into a TL and the visual part of the software should be localised according to the preferences of a locale. Localisation is regarded often as "high-tech translation", as localisation addresses non-textual components of products or services in addition to strict translation. Esselink (2000) refers to other tasks included in localisation, in addition to translation, such as project management, software engineering, testing, and desktop publishing.

The Localisation Industry Standards Association¹ (LISA), which has corporate clients and provides business guidelines and multilingual information management standards, defines localisation as follows:

*"Localisation involves the adaptation of any aspect of a product or service that is needed for a product to be sold or used in another market."*²

We see that this definition focuses on the usage and selling of products in distinct markets. Now we give the definition of localisation by Schäler (2007), who additionally to products, focuses on digital content in general:

"[Localisation is] the linguistic and cultural adaptation of digital content to the requirements and locale of a foreign market, and the provision of services and technologies for the management of multilingualism across the digital global information flow." Schäler (2007: 157)

In the aforementioned definition, we notice, among others, the aspects of multilingualism and digital global information flow. These aspects link local communities and foreign markets with global ones and this linking is achieved through multilingual websites, software, and information in general.

As far as internationalisation is concerned, it takes place at the development stage of a product. According to Schäler (2003: 79), "internationalisation is the isolation of linguistic and cultural data, so that localisation is performed simply and cheaply". LISA defines internationalisation as "the process of enabling a product at a technical level for localisation."³ In other words, internationalisation precedes localisation. LISA states, as a general rule, that the localisation of a product takes twice as long and costs twice as much if it is not properly internationalised⁴. As for the people involved, software developers are the people mainly involved in the internationalisation process.

Combining the two aforementioned processes, localisation and internationalisation, we come to globalisation. Globalisation transforms local or regional phenomena into global ones. According to Wieglerling (2004: 2), "globalisation as a global integration of markets and the consideration of a local identity can exist side by side". Globalisation is often synonymous with economic globalisation, it can be defined though in a number of different ways. LISA

¹ <http://www.lisa.org/>, 20.10.2009

² <http://www.lisa.org/Localization.61.0.html>, 20.10.2009

³ <http://www.lisa.org/Internationalization.58.0.html>, 20.10.2009

⁴ <http://www.lisa.org/Internationalization.58.0.html>, 20.10.2009

describes globalisation as "the global product development cycle, where internationalisation includes the planning and preparation stages for a product and localisation the actual adaptation of the product for a specific market"⁵. Thus globalisation is not a counterpart of either localisation or internationalisation, but the general umbrella which covers them both; that is the "industry standard" globalisation model. However, Microsoft's globalisation model differs in that the terms internationalisation and globalisation are substituted⁶.

At this point we would like to refer to the term called "glocalisation", a portmanteau word of globalisation and localisation. "Glocalisation" is a neologism meaning the combination of intense local and extensive global interaction (Wellmann, 2003: 13). He states that "glocal" shows the human capacity to bridge scales (from local to global) and to help overcome "little-box" thinking. Besides, he describes that glocalisation creates new social needs, as there is need for more funds of desirable resources, along with financial capital, human capital, organizational capital, and cultural capital. Such network capital includes the fund of people who provide information, knowledge, material and financial aid, emotional support and so on. Networked individuals, in their attempt to keep their relationships with friends or family get to know and learn how to do that, i.e. by means of which sites, etc.

Let us now depict the main differences between the terms "localisation", "internationalisation", and "globalisation" in the form of a table (see Table 1). We distinguish them particularly based on their definition, people involvement and performance stage.

	<i>Internationalisation</i>	<i>Localisation</i>	<i>Globalisation</i>
<i>Definition</i>	Functional in any language and content (linguistic and cultural data) separated from functionality	Adaptation of products, services, and digital content to a cultural-linguistic market	The strategy of bringing a product or service to the global market, involving sales and marketing
<i>People</i>	Software developers, producers and authors of digital content	Translators, proofreaders, software engineers, project managers, testers, publishers	Marketing and sales personnel
<i>Stage</i>	Development and design of a digital product (content) or service (pre-requisite for localisation)	Translation and adaptation of text, user interface, and cultural conventions	Bringing to the market the internationalised and localised product or service

Table 1. Differences between internationalisation, localization, and globalisation

The cooperation between those contributing to the localisation process is vital. Take the software developers, for instance. They gain from the software publishers' side, as they do not want to take the risk of huge initial production and want to keep the cost low. The relationship between the clients and the vendors should be open, honest and they should constantly give feedback to each other. If people cooperate properly, then everybody gains advantage and the result is as desired.

⁵ <http://www.lisa.org/What-Is-Globalizatio.48.0.html>, 20.10.09

⁶ http://www.google.de/url?sa=t&source=web&ct=res&cd=3&ved=0CBIQFjAC&url=http%3A%2F%2Flocalizationlocalisation.wordpress.com%2F2009%2F04%2F08%2Fwhich-comes-first-globalization-or-internationalization%2F&ei=aLztSuzfIM37_AbBycCTDw&usq=AFQjCNFSjiV3rLoJYXltBCQvVmmALULriA and <http://msdn.microsoft.com/en-us/goglobal/bb688112.aspx>, 20.10.09

We would like now to make a further distinction between ordinary (otherwise called mainstream) and out-of-the ordinary localisation. The former is driven by short-term sales and return on investment (ROI) considerations and has a mono-dimensional globalisation function focused on the economic aspects of globalisation while ignoring the social, cultural, and political aspects. Localisers work mostly with proprietary files, so the relationship between customers and vendors is one-way, tight, and protected. Ordinary localisation is difficult to maintain long-term, as proprietary content and technologies will lead to expensive and politically and culturally inadmissible monopolies.

By contrast, out-of-the-ordinary localisation is driven by disruptive innovation and has a multi-dimensional globalisation function. Content developers and tool providers promote open standards, such as Creative Commons for content and OASIS⁷-based standards for technology. Content developers and service providers become tool and tool-provider independent, content, linguistic resources and technologies become widely available and the community can easily become involved in projects through crowdsourcing and community-based platforms, thus leading to greater economic activities and wider access to digital information and knowledge. Crowdsourcing is a neologism for the act of taking a task traditionally performed by an employee or contractor, and outsourcing it to an undefined, generally large group of people or community in the form of an open call (see Howe, 2008). The relationship between the partners is open and there are opportunities given to the community and not only to the professional paid sub-contractor to participate. The "cascading" value chain is cut, and middlemen are replaced by open platforms and sharing of digital content. Collaboration in the out-of-the-ordinary localisation becomes not just possible, but also affordable, since monopolies, as in mainstream localisation, are no longer involved.

3. Locale

"One country, one language, one culture" was a common motto many years ago which we can now find it only seldom and particularly in terms of historic matters. Nowadays we prefer the motto of the Asia Online⁸ company which is the following: "The World speaks one language – Yours", implying that every language should have penetration on every aspect of life, everywhere in the world, and the Web is an effective means to achieve that.

As aforementioned, locale is this combination of language and culture where the localised digital content, products, and services are used and sold. Neither a language nor a culture alone can form a locale. There can be a language spoken in more than one country, that means that there are many different languages in one single country. Moreover, there can be more than one different culture in the same country. Take the Greek language, for example. Greek is spoken not only in Greece, but also in the countries where Greek immigrants are. That means that we do not have a Greece-locale or a Greek language-locale, but an Australian-Greek locale or a German-Greek locale, to name just a few. Both the Greek language and the culture are influenced by the local Australian and German language and culture.

In different locales there are linguistic, cultural, and technical differences. Although English is spoken in both the United Kingdom and the USA, differences in spelling exist on either side of the Atlantic Ocean. Take for example the UK spelling of "localisation", which is "localization" in the USA.

The adaptation of colours, icons, and graphics to the target product or service is essential, in order not to offend the local audience or overstate a situation. An example of a cultural non-adaptation is the "Ben & Jerry" *Black & Tan* ice-cream which introduced and quickly removed this flavour from the Irish market in 2006, apologising to their Irish customers. *Black & Tan* in the US means a mixture of Guinness and cream; in Ireland, however, *Black &*

⁷ <http://www.oasis-open.org/home/index.php>, 20.10.09

⁸ <http://www.asiaonline.net/Default.aspx>, 20.10.09

Tans was the name of a particular vicious invasion army which occupied the country in the early 20th century.

A locale provides cultural conventions which are data formats, dates (full and abbreviated names for weekdays and months), number formats (symbols for the thousands separator and decimal point), times (indicators for 12-hour time), and currency symbols⁹. Just to provide an example of how important the measurement conventions are, "Gimli Glider" was a Boeing 767 jet which in 1983 ran out of fuel in mid-flight because of two mistakes in figuring the fuel supply of the airline's first aircraft to use metric measurements.

Wade (2009) supports the locale of one, which is very inspiring and evolving idea. Based on this idea, every person in a locale is unique with specific needs, preferences, and competences. According to Wade (2009: 27), "presenting tailored content can provide user improvement both in terms of ease of understanding of the content as well as ease of application of the information in performing user tasks." We definitely agree with the locale as a repository of shared user needs and preferences, but we strongly believe in the research towards supporting the existing unique mentalities inside a locale.

4. Need for Localisation

The need for localisation nowadays is immense from every aspect, as it brings benefits to industries, customers, and government, simply to everyone. Even more importantly, many times localisation saves lives in countries where people have limited or not access at all to life saving information in their native language.

From the one hand, the industries have a need for localisation, as their products should be sold everywhere in the world. The profit is much more when the product is adapted to the needs and preferences of a locale. From the other hand, customers will buy a product more easily if the website and the user manual of the product are in their own language, just to give an example. The websites should not only be multilingual, but should be interesting with attractive effect and adapted to the target locale users' preferences; in other words, they have to be personalised.

Apart from the linguistic issues, there are also physical and technological issues behind the need for localisation. As far as the physical issues are concerned, automobiles sold in Australia, the United Kingdom, Ireland, India, Japan, and much of southern Africa need to have their steering wheels on the right side of the vehicle, while in all the other parts of the world the steering wheel is on the left side. Also, various volt power levels are distinct in some countries, e.g. the electrical equipment sold in the United States and Canada requires 120-volt power, most of Japan requires only 100 volts and most of the rest of the world uses 220- or 230-volt power. Another example is the different computer keyboard layouts. As for the technical issues, supporting some local languages may require extra engineering work. The character encoding and the internationalisation in general, is very important, for example, for East Asian languages. Languages which are written from right to left, such as Arabic and Hebrew, must be taken into account and not be ignored.

On a higher level, the governments also gain advantage from localisation. Particularly, the Social Enterprise Coalition in the UK has been very strong on their vision of a localised policy environment supporting prosperous and cohesive communities¹⁰. The government localisation agenda includes among others, greater community participation, flexibility, and organisational focus on users.

⁹http://publib.boulder.ibm.com/infocenter/wbihelp/v6rxmx/index.jsp?topic=/com.ibm.wics_developer.doc/doc/access_dev/access_dev141.htm, 20.10.2009

¹⁰<http://www.dta.org.uk/activities/campaigns/communityenterprise/localisation.htm>, 20.10.09

4.1 Healthcare

We will now focus on the urgent need for localisation in areas, both geographical and domain specific, which are currently ignored by mainstream localisation. For example, signs warning children in Afghanistan of land mines are written only in English, a language foreign to the children playing in these areas. In healthcare, important information, from the description of medicines to medical equipment user manuals, is just not available in a sufficient number of languages. In many countries, foreign healthcare workers must orally translate surgery manuals, so that they can be understood by local medical teams. Moreover, information about preventing mother-to-child transmission of HIV is unavailable in many local languages. Very often, young rural mothers lack access to health and nutritional guidelines in their language, so they cannot combat malnutrition in their children. According to the former director of UNICEF¹¹, James Grant, two billion people today lack access to healthcare. As a result, 17 million people die each year and 80% of these preventable deaths occur because of a lack of access to healthcare information.

Furthermore, in 2008 it was announced that some 5,500 patients had received overdoses at a French hospital between 1999 and 2006; 715 had received 'dangerous doses' and 5 had died.¹² A report by the French Nuclear Safety Authority¹³ blamed the overdoses in part on the French technicians who had incorrectly calibrated radiotherapy equipment when working from untranslated English operator guides.¹⁴

These figures illustrate how immense the need for localisation is, independent of short-term return on investment considerations. For example, some of the world's best known and most successful not-for-profit organisations which provide access to healthcare to those who need it most, have only limited funds to pay for commercial mainstream localisation services and are in dire need of a service that is based on social entrepreneurship instead, putting people before profits:

- Doctors Without Borders/Médecins Sans Frontières (MSF)¹⁵: an international medical humanitarian organisation working in more than 60 countries. It received the 1999 Nobel Peace Prize;
- Pharmacists Without Borders (PSF)¹⁶: wishes to help populations in need to organise their medical distribution networks and to assure the proper management of essential medications;
- the well project¹⁷: a not-for-profit corporation, conceived, developed, and administered by HIV+ women and those who are affected by this disease;
- Handicap International¹⁸: works in around 60 countries worldwide to make a positive difference to the lives of disabled people; it has been a co-winner of the 1997 Nobel Peace Prize;
- World Information Transfer¹⁹ Inc.: a not-for-profit, non-governmental organisation in General Consultative Status with the United Nations, promoting environmental health and literacy.

¹¹ <http://www.unicef.org/>, 20.10.09

¹² Statement by French Health Minister Roselyne Bachelot, reported by AFP, 22 April 2008.

¹³ <http://www.french-nuclear-safety.fr/>, 20.10.09

¹⁴ Final report of the French Nuclear Safety Authority (ASN)

http://rpop.iaea.org/RPOP/RPoP/Content/Documents/Whitepapers/rapport_IGAS-ASN.pdf

¹⁵ <http://www.doctorswithoutborders.org/>, 20.10.2009

¹⁶ <http://www.psfcanda.org/en/index.html>, 20.10.2009

¹⁷ <http://www.thewellproject.org>, 20.10.2009

¹⁸ <http://www.handicap-international.org.uk/>, 20.10.2009

¹⁹ <http://www.worldinfo.org/>, 20.10.2009

With the activities of these organisations, people can survive and live better. To give just an example, the number of people in Mozambique on anti-retroviral treatment, the life-saving medication for people living with HIV and AIDS, was 86,000 by the end of 2007, up from 8,000 in 2004²⁰.

It is noteworthy that a lot of translation and interpreting is done on the ground and is not captured by central administration by some of the non-governmental organisations.

5. Localisation against Digital Divide and Information Poverty

Nowadays many of us get often really frustrated if we cannot chat, download our favourite video, or share our pictures – and that in few minutes, as the Internet connection is slow or the webpage that we need information from is currently out of service. This frustration as a result of "bad" connection exists only in the western countries and some other parts of the world, as most parts of the world do not have internet connectivity at all.

Some languages are called minority languages although they are spoken by million people, but have no penetration on the Web in contrary to some other languages which without many speakers have achieved a great presence in the Internet, e.g. Norwegian. The percentage of Internet users per language can be found at the "Internet World Stats" website²¹. English is the top language in the Internet with 464 millions of users, followed by 321 Japanese and 131 Spanish. In the first quarter of 2009 there are estimated 1,596,270,108 Internet users. As for Spanish, there are 132,963,613 Spanish speaking people using the Internet. Out of the estimated 411,631,985 world population that speaks Spanish, only 32.3 % use the Internet. It is noteworthy that the number of Spanish speaking Internet users has grown 631.3 % in the last eight years (2000-2009). In the same years, the growth in Internet for English is 237.2 %, while for Chinese is almost 4.5 times higher with 1,018.7%. Another fact, reported by the China Internet Network Information Center²², is that the Internet users in China (338 million) are more by 30 million than the total population of US.

However, Internet is only one part of the digital world and although the Internet grows, still many countries lack the technology. In order to have Internet, PCs are necessary and these are unavailable in many "developing" and impoverished countries; then, to a higher level, access to the internet is restricted to those who have money to pay for it. Many people do not even have a telephone connection: half of the population has never made a phone call – only 3% out of 80% of total population has a telephone connection.

That leads to the digital divide, i.e. the gap between people with effective access to digital and information technology and those with very limited or no access at all; the global digital divide refers to differences in technology access between countries or the whole world. The lack of technology generally causes lack of useful information and knowledge. Gender, income, race groups, and locations are some of the classification categories of the digital divide.

There are enough associations, foundations, and charity organisations which help people survive by translating life saving information, live a better life after having treated diseases, and also bridge the digital divide giving the opportunity to excluded communities to become familiar with technology and the digital world.

After we referred to some important health helping organisations, we would now like to introduce another not-for-profit organisation, The Institute of Localisation Professionals²³ (TILP) which is the representative body for localisation professionals. It has the primary aim of developing professional practices in localisation globally. TILP is owned by its members

²⁰ www.irishaid.gov.ie, 20.10.2009

²¹ <http://www.internetworldstats.com/stats7.htm>, 20.10.2009

²² <http://www.cnnic.org.cn/en/index/index.htm>, 20.10.2009

²³ www.tilponline.org, 20.10.2009

and is registered in Ireland. It offers the Certified Localisation Professional Programme (CLP) and is the reference point at global level for the localisation industry and those requiring information about it. TILP cooperates closely with localisation companies, government departments and agencies, researchers and students, as well as the media and international consultancy firms.

The Rosetta Foundation²⁴ is another not-for-profit organisation registered in Ireland which is designed to combat another type of global poverty, a lack of access to basic information on health, education, and other essential services. The Rosetta Foundation aims to make information available to people worldwide regardless of their income levels, cultural background, and language.

The Rosetta Foundation was launched during at AGIS 2009²⁵ at the University of Limerick over three days in September, 21st to 23rd. At AGIS 2009, there were many presentations and discussions about information poverty and how this problem could be solved by out-of-the-ordinary localisation efforts. The president of the Rosetta Foundation is Reinhard Schäler and the vice presidents are Smith Yewell and John Papaioannou. The Rosetta Foundation is a spin-off and supported by the University of Limerick and the Centre for Next Generation Localisation²⁶ (CNGL) project. It receives significant support from localisation service provider Welocalize²⁷.

We aforementioned that access to information can save lives, preserve people's liberty and support their education and financial well-being. Localisation (or the lack of it) can make the difference between prosperity and poverty, freedom and captivity, and, ultimately, life and death. The Rosetta Foundation combats information poverty by enabling access to information in any language. It wants to make this possible by developing and deploying an open source intelligent translation and localisation platform and will use "Globalsight²⁸", the translation management system of the company Welocalize, as a backbone. This platform will be available to the translation and localisation community.

Smith Yewell, chief executive of Welocalize and board member of The Rosetta Foundation referred to The Rosetta Foundation as "a commendable, wide-reaching initiative that is helping extend the benefits of the translation industry to the people that most need it".

The Rosetta Foundation works with those who want to provide equal access to information across languages, independent of economic or market considerations, including localisation and translation companies, technology developers, not-for-profit and non governmental organisations. One of the partners is Translators without Borders²⁹ which was created in 1993 by the translation company "Eurotexte" to provide free translations to humanitarian organisations. Lori Thicke is the co-founder of "Eurotexte" and Translators without Borders. Andrä AG³⁰, PROMT³¹ and Alchemy³² are also important partners of The Rosetta Foundation. They deploy a part-time administrator and have donated significant pieces of technology to the foundation. Another supporter of The Rosetta Foundation is Asia Online. Asia Online provides its innovating automated translation software technology based on Statistical Machine Translation (SMT) technology to The Rosetta Foundation. By 2012, half of all internet users will be from Asia, yet information in their own language represents less than 14% of the internet; thus Asia Online is working towards a goal of eliminating information poverty in many developing markets.

²⁴ <http://www.therosettafoundation.org/>, 20.10.2009

²⁵ <http://www.agis09.org/>, 20.10.2009

²⁶ www.cngl.ie, 20.10.2009

²⁷ <http://www.welocalize.com/english/index.aspx>, 20.10.2009

²⁸ <http://www.globalsight.com/>, 20.10.2009

²⁹ <http://tsf.eurotexte.fr/index-en.shtml>, 20.10.2009

³⁰ <http://www.andrae-ag.de/EN/index.htm>, 20.10.2009

³¹ <http://www.promt.com/>, 20.10.2009

³² <http://www.alchemysoftware.ie/index.html>, 20.10.2009

6. Summary

We started this paper with the distinction between globalisation, internationalisation, localisation, and translation. Localisation could be regarded as "high-tech" translation, as it transfers not just textual elements, but any type of digital content to the target language or *locale*. Internationalisation precedes localisation, by making the product easily localisable. Globalisation focuses on the strategy to bring a product or a service to target markets and is related to business processes and models.

We described the meaning of *locale* and explained its linguistic, cultural, and technical characteristics. The spelling, the colours, and the measurement conventions are some of these characteristics. Localisation helps enterprises to increase their revenues by selling their products in more countries and to more customers by adapting these products linguistically and culturally.

However, today, mainstream localisation efforts focus on profitable markets and ignore those who are most in need of access to knowledge and information. Many people die because important medical information is not translated into their language. Doctors without Borders is one of the not-for-profit organisations which help people in need; Translators without Borders is a not-for-profit organisation translating many documents for Doctors without Borders. In order for these organisations to scale up their services and make vital information available in more languages, they need access to better technology and linguistic resources.

The Rosetta Foundation, a spin-off of the Localisation Research Centre at the University of Limerick, Ireland, and the CNGL, a major research initiative supported by the Irish Government, aims to provide the framework supporting non-governmental organisations (NGOs) to make vital information on healthcare available to individuals all over the world irrespective of their social status, linguistic, cultural or religious background, and geographical location. Reinhard Schäler (2009: 11), founder of The Rosetta Foundation, explains: "our initiative to develop an open source translation and localisation platform with GlobalSight as a backbone will widen the narrow focus of current mainstream localisation and bring the digital world closer to the three quarters of the world's population who currently do not have access to it."

Combating poverty is not an easy task, it is time-consuming and has to be cost-effective. However, there can be no better reward for any work accomplished than that of helping people to survive. Localisers can help people realise their entitlement to health, education, water and health service, provide security from violence, and end extremes of discrimination and inequality. Information about and knowledge of these areas is already widely available, but not in the languages spoken by those who most need to have access to it. Charitable organisations and social entrepreneurship in localisation and translation, open-source platforms, and volunteers willing to do humanitarian translation³³ can bring an end to global information poverty.

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³³ "The term humanitarian translation covers a broad spectrum of activities. It can describe the aid, and the reasons for it, in language the international community — the media or donor organizations — can understand. Or it can be part of the aid itself, as in a medical worker's need to communicate with the patient he or she is treating." (Thicke, 2002)

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