

***Localising or globalising?  
Multilingualism and lingua franca in the management of  
emergencies from natural disasters<sup>1</sup>***

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*Abstract*

*Communities are ever more multilingual and multicultural thanks to the free movement of people all over the world and to constant migration flows, hence public communications about an evolving disaster need to account for the different languages spoken within the same community and across borders. Events such as Hurricane Katrina, the Haiti earthquake, the Central European floods in 2013, the heavy rain and snowfall of 2014 in northern Italy or the major flood that struck UK and Ireland in 2016 have shown that natural disasters know no national boundaries and often require collaboration between emergency organisations from different countries to help affected populations and bring disaster relief.*

*Our review of emergency management software systems indicates that they are either not localised at all because they mainly address an English-speaking audience – thus excluding a considerable number of potential users – or are localised into a great number of languages using machine translation, with some labels or sentences left in English.*

*In this article we describe the method we developed and the work we carried out for the (g)localisation of the graphic user interface of the disaster management system and documentation developed within our EU-FP7-funded project, Slándáil. Before a product can be localised, it needs to undergo a process of globalisation, which may be followed or substituted by localisability, both entailing linguistic and cultural evaluations such as the comparison of cultural systems and the translation issues brought about by potential differences. The potential costs incurred and resources needed to localise these systems and attendant documents are also assessed.*

*The present article contributes to account for and map the socio-linguistic variation present in the language of emergency management, as used by different stakeholders. (G)localisation is used to facilitate cross-linguistic communications among emergency operators and aid them in intercultural communication during emergencies.*

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## **1. Introduction**

In the era of globalisation, localisation is one of the fastest growing services in the language industry (Common Sense Advisory, 2015). It may seem paradoxical that while the world is going global, individual people ‘prefer local’, but translation – an estimated \$4 billion business in 2016, more than half of which in Europe – is currently growing at an annual rate of 5.5%, while localisation is the 4th fastest growing industry in the US (Henderson, 2016). It is not – or not just – that the tide of globalisation may be turning, but rather that localisation pertains to those products and services people use every day. If over 75% of the world population knows no English (Lyne, 2016), it hardly comes as a surprise that on average people prefer to interact with tools, platforms, or documentation in their own language.

Localisation has to do with language as much as with culture. When information needs to be transferred to places where different languages from the original are spoken, localisation becomes essential. In this way, linguistic specificity and cultural difference are maintained so that identity can be preserved (Cronin 2006: 29). Large multinational companies have soon learned that it is not just language, but culture that is important to connect with people at local level. By contrast, small and medium-sized enterprises (SMEs) often seek to go global first, i.e. they try to market their product(s) or service(s) in a widely-spoken language – typically English – to make their brand known at international level before they consider localising into less widely-spoken languages. Emergency management organisations act in very similar fashion in an international context while they include ‘local’ languages in cross-border operations. It is debatable whether globalising into English is localising too, as English is the mother tongue of 6% of the world population and it would be very difficult not to include English native speakers amongst the prospective recipients. Moreover, in the profiling of recipients that is an essential part of the translator’s work, it is much easier to identify the cultural preferences of real people than imaginary ‘citizens of the world’.

Much research in software localisation focuses on ‘going local’, i.e. translating into languages and cultures different from those of the original system. Successful localisation relies on optimum usability, and on enabling users to interact with the translated text as if this had been directly produced in the target language and culture (Sin-wai, 2013: 359). Further research investigates problems of quality assurance (QA) mostly focussing on aspects pertaining to the acceptability of the translation of strings, and on tools and methods to achieve and assess it (Bowker, 2005; Schmitz, 2007; Colina 2008; Jiménez–Crespo, 2009a and 2009b; Karsch, 2009; and Dunne, 2009). As a result of this discussion, a

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number of good practices have been outlined (cf. Gala's "Standards and Guidelines for the Language Industry").<sup>2</sup>

In this article we analyse the special case of SMEs developing software within our EU project Slándáil (Security System for language and image analysis) for the management of emergencies from natural disasters both in English-speaking countries and in countries where no languages of wider diffusion such as English and Spanish are spoken. In the following sections, we describe the method we developed to first 'globalise' the software into English and then to localise it into German for emergency operators. In the process, we map the socio-linguistic variation we encountered and the strategies we used to achieve high quality in intercultural communications.

## **2. (G)localisation for emergency management: methods and resources**

The localization of the Slándáil graphical user interface (GUI) – i.e. a user interface for interacting with electronic devices through graphical icons and visual indicators instead of through command lines – consisted of a number of steps. First, a survey of existing emergency management systems (EMS) and of their localised versions (if present) was carried out. Second, a corpus of texts relating to emergency management during natural disasters was compiled and used as a reference for translation and for (semi)automatic term extraction. Term candidates were evaluated by linguists and used to create a termbank. The GUI was then translated from Italian into English and German using the resources created. Finally, the project's emergency managers provided feedback on the usability and communicativeness of the GUI as native speakers of the target languages.

A survey conducted on twenty emergency management systems and on their localised versions highlighted that most of them are available only in one language, thus excluding a considerable number of other potential emergency operators who do not speak that language. In particular, 75% of the systems surveyed were not localised at all, 15% were localised into a number of languages using machine translation or crowdsourcing, and only 10% were professionally localised. Platforms considered include

NICS (Next-generation Incident Command System), a web-based command and control platform for the management of incident of all scales developed by MIT in partnership with the operators from the California First Responder Community;

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<sup>2</sup> Available at <http://lsrp.galacrisp.org/#why.html>, Gala's Standard and Guidelines have replaced LISA's after LISA closed in 2011.

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IDSS (Intelligent Disaster Decision Support System), a platform for the smart integration of geospatial information with an advanced optimisation and simulation engine; and

Sahana Eden, an open source platform for disaster management with a highly configurable structure.

These platforms are not only for internal use by police forces such as the Police Service of Northern Ireland (PSNI) and the Garda Síochána in the Republic of Ireland, or emergency management organisations such as Germany's Bundesamt für Bevölkerungsschutz und Katastrophenshilfe (BBK) or Italy's Protezione Civile. They often have a public interface offering information to the general public about ongoing disasters nation-wide – for example US NICS or Australia's IDSS – or world-wide such as Sahana Eden. Sometimes they even request users to report on known emergencies (cf. Safe Trek and InciWeb). Most of these systems and the information they provide would not be accessible to all individuals living in multilingual and multicultural societies. Moreover, agencies now use different emergency management systems that cannot exchange information because they are not localised in all emergency operators' native language and culture. This state of play inevitably prevents the smooth coordination of international or cross-border operations and may lead to an increase in damage and casualties (Aye et al. 2016, Lorenz and Dittmer 2016: 47-8).

To improve the exchange of information, to ensure smoother coordination of national and international operations and to communicate more effectively under the typical time constraints of emergencies, it is essential that messages, documents and management systems are available in the language(s) used in the area where disaster strikes. In particular, command and control platforms need to 'speak' the local language(s) and are examples of both software and web localisation in emergency management. Software localisation has been defined as (Schäler, 2009: 157):

the linguistic and cultural adaptation of digital content to the requirements and the *locale* of a foreign market; it includes the provision of services and technologies for the management of multilingualism across the digital global information flow.

Emergency management platforms are often web-based nowadays. Web localisation is "the translation of the software's user interface or information on a web page into another language" (Sin-wai 2013: 347). Though what we discuss here is the localisation of a graphic user interface, which is usually categorised as software localisation (Sin-wai 2013: 349; Jiménez-Crespo 34, 63), aspects of web localisation also need to be taken into account, especially with reference to culture (Jiménez-Crespo and Singh 2016). Localisation is a type of highly *domesticated* translation and an instance of *culturalisation* (O'Hagan and Ashworth,

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2002: 66)<sup>3</sup> whereby the message as a whole – i.e. including both text and visual elements – is adapted to meet the cultural expectations of target audiences. Thus, consideration about the role and the impact of culture and of cultural filters (Katan, 2009: 75) is an integral part of the discussion on the localisation of software systems.

Emergency management software systems are culture-bound as different types of bodies are charged with them across countries. It can be a civilian body with limited decision-making power (as is the case with the Italian *Protezione Civile*), it can be police forces (as in the UK and Ireland), or it can be the military (as in Germany). The greater or lesser propensity for disaster preparedness during peace times and the perception of risk influences the organisation of rescue operations and the relationship to the population. From a communicative standpoint, emergencies can be regarded as social constructs whose meaning and extent are decided according to values, beliefs, expectations and norms that vary across cultures (Hofstede et al. 2010; Schwarz et al. 2016: 3). In localisation, then, these cultural differences are not only reflected in the textual components of software systems but also found in their visual structure and the way they display information. Information is then interpreted by users following a ‘cultural grammar’ (Katan, 2009: 86). Localisation is associated with a process of internationalisation of program design and document development (Pym 2014: 121). In order to be efficient and effective, it needs a focus on local relevance and cultural behaviour and for that reason it is now often associated with transcreation. This practice is frequently employed in marketing and advertising (but also websites and the like) and is said to go beyond translation in that it recasts the source text in a new language while preserving the intended content (Pedersen 2014; see also *Cultus* 2014).

Platforms such as the Eden developed by the Sahana Foundation are essentially databases which collect information about staff, facilities, physical assets, logistics, inventories and supplies to be deployed during emergencies. The Slándáil system is an emergency management software that can receive information from a number of sources – including the web and social media – i.e. not just data that is input by the staff in the organisation. On the basis of the information received, Slándáil manages disaster scenarios in real or simulated emergencies and thus assists operators in making better-informed, timely decisions in disaster preparedness, response, mitigation and recovery. Slándáil-like systems operate first at the level of the graphical user interface, the communicativeness of the system with its end user, i.e. a disaster manager; and second, the comunicativeness of the actionable information generated by the system and released to the general public using social computing systems.

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<sup>3</sup> Translation Studies are still debating the role of translation within the localisation process. For a summary, see Maumevičienė (2012).

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The Slándáil software system was first developed by one of the Italian project partners and hence was initially available only in Italian. The subsequent localisation into the other project languages had a twofold goal: to make the EMS accessible to English- and German-speaking project partners, and to provide all future emergency operators with knowledge of English with a globalised EMS (internationalisation). The localisation work was carried out by translation specialists who were native speakers of Italian, and was thus an instance of inverse translation. While this is a commonly accepted practice in the professional world, it has been acknowledged and investigated by translation scholars only in recent times as evidence accrued that the quality, accuracy, acceptability and fluency of translations by non-native speakers is not necessarily linguistically or indeed culturally deficient (Pokorn 2005; Rodríguez and Schnell, 2012: 69). The necessary extralinguistic knowledge, i.e. domain-specific and bicultural knowledge, was acquired through the compilation and study of comparable corpora on emergency management and subsequent terminology development (see section 2.1), along with specific investigation of the communicative practices of partner emergency management agencies. Feedback from project partners who are experts in emergency management contributed to the validation of the localisation work. Advertising-like transcreation was involved whenever components needed to be maximally effective but their culture-bound features required adaptation to reflect local specificities (Pedersen 2014: 67) in the practice of emergency management. In German and Italian, for example, natural disasters are conceptualised from the point of view of the risk they pose, while in English they are described as events. The Italian Protezione Civile often refers to the *rischio sismico* (seismic risk) where FEMA, PSNI and Garda Síochána simply talk of earthquakes. Further, transediting strategies (Ulrych 2009) were employed as recipient-oriented rewriting techniques that took into account cultural differences. The need for adjustment may arise for example from the different nature of emergency organisations. PSNI and Garda Síochána operate differently in some respects because they are part of police forces, while Italian Protezione Civile is an independent body. Accordingly, we attempted to meet the emergency operators' expectations by restructuring messages through the addition, deletion, substitution or rearrangement of information.

The localisation of the Slándáil GUI was based on two key resources: corpora and terminology. Comparable corpora relating to emergency management from formal and social media in the three project languages were automatically and semi-automatically collected.<sup>4</sup> All types of communication

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<sup>4</sup> The Slándáil corpus includes documents retrieved using LexisNexis, Facebook posts and Twitter messages, the FEMA Major Disaster Declaration Corpus, the Slándáil Newsletter corpus, UNIPD corpus (manuals, protocols, reports, bulletins, glossaries), and International Red Cross, UNISDR, EIONET documents.

(technical reports, alerts and notices for the population at large, social media messages, etc.) were included in the corpus in order to account for the differences found in the use of language within differentiated groups, namely the police (traffic police, beat officers, civic co-ordination, law and order maintenance, intelligence), medical services (primary and tertiary services) and the population (levels of education, health and epidemiological profiles). Comparable corpora are key resources for localisation in that they support translators in finding reliable evidence of authentic lexically, syntactically and stylistically equivalents in the target language (Jiménez-Crespo, 2009a, and 2009b; Wilkinson, 2005). By relying on corpus evidence, translators can produce a text better suited to the expectations of users in terms of pragmatic, register, phraseology, and genre adequacy. In this sense, corpora also assist in achieving satisfying functional equivalence and better intercultural understanding. Since usability is one of the key requirements of localisation, the use of corpora increases the quality of the final product, and reduces costs by increasing translator's productivity. Translation based on corpora was used to create a translation memory to use for localisation of future EMSs and for updates to the Slándáil system documentation. Throughout the project, they were also used to develop the Slándáil lexicon, a terminology wiki.

The guiding criteria for corpus collection are (Ahmad, 2008: 64):

- representativeness (different types of communication produced by a variety of users were accounted for e.g. fact sheets, official documents, social media posts);
- balance (both formal and social media were included);
- reliability (the sources selected are taken from authoritative formal and social media<sup>5</sup>);
- timeliness (only recent texts were selected).

For the localisation of the GUI only informative texts were used, that is texts produced by experts of various disciplines concerned with providing objective information, as opposed to imaginative texts, which include works of fictions and which have to do with personal opinions and feelings. Informative texts such as bulletins and reports – e.g. Germany's magazine *Bevölkerungsschutz*, US FEMA's *Bulletin* or Italy's *La Protezione Civile italiana* – were used to retrieve and investigate instances of the language used by emergency managers to ensure better consistency and cultural-pragmatic accuracy.

Corpora also included expert-to-expert communication such as guidelines and protocols on public communication practices published by emergency

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<sup>5</sup> The social media were essentially Facebook posts and Twitter messages that were either accounts of national emergency management organisations or accounts the organisations redirected users to.

management agencies such as the UK's Cabinet Office *Communicating with the Public*, the German Ministry of the Interior's *Leitfaden Krisenkommunikation* or *Disaster Communications in a Changing Media World* (Haddow and Haddow 2014). The analysis of these documents provided examples of communication whether successful – e.g. during hurricane Sandy – or unsuccessful – e.g. during hurricane Katrina. Successful crisis communication relies heavily on terminologically clear, coherent, concise, syntactically simple messages able to inform, reassure, and appeal to the public. These guidelines were used for structuring and evaluating messages during the localisation process.

After lexical, syntactic and semantic analysis of the texts was carried out, automatic terminology extraction and subsequent evaluation from terminologists and field experts allowed us to create a termbank. The terms were used to translate approximately 20% of the messages present in the interface. Terminology is the primary means of communication and knowledge transfer between software developers and emergency operators. Effective terminology management is critical to the development and use of software products. Well-designed and consistent terminology and a clear language also have an impact on software usability and comprehensibility help emergency operators to organise and spread vital information swiftly (Schmitz, 2007: 49-52).

The development and study of terminology was key to our localisation work because term use too is culturally determined, and semantic and conceptual equivalence may not be the only viable parameters when selecting target language terms. Contextual equivalence was hence preferred as it allowed us to take into account users' preferences in the selection of terms in specific contexts, thus reflecting their stance towards reality and towards what they deem appropriate in a given context. Localisers generally resort to translation memories (TMs) in order to increase productivity and accuracy. In the case of our project, there was no TM available as emergency management practices vary considerably from country to country and emergency management systems are mainly developed in the manufacturing company's national language. Thus, contents require a degree of adaptation, transcreation and/or transediting. As outlined above, however, now that the Slándáil system has been 'globalised' into English and localised into German, a TM and guidelines exist for future reference.

### 3. Analysis

Emergency management systems such as NICS, IDSS and Slándáil are designed to be used by emergency operators, who are tasked with receiving emergency communications and enter relevant data to manage crises in the ongoing scenario – or in a simulated one for training purposes. The system then triggers alerts to authorities and keeps a permanent record of operations, resources, locations, etc.

Thus, the messages displayed by the system need to be immediately interpretable by users by adapting language to their cultural and pragmatic expectations and by removing any foreign element.

In localisation, culturally-laden elements are identified by the notion of ‘locale’, which are not just language-specific conventions such as date and time format, keyboard type, numbers, currencies, orthography, or units of measurement as these can be easily handled by CAT tools to avoid human mistakes, but more importantly a specific ‘gaze’ on reality and on every-day life situations. The latter necessarily requires careful adaptation or transcreation, as it cannot be assumed that meaning at this level is shared between cultures, and users are likely to respond to messages in different ways, or not to respond at all. Our localisation work focused on the attempt to analyse the specific gaze adopted within the system and on performing linguistic and cultural adaptation, transcreation and/or transediting. Here we shall focus on three main issues: interaction between text and visuals in the GUI, lack of contextual information in the translation of strings, and differences in conceptualisation.

Messages are not only conveyed through text but also through icons. These represent a schematised symbol or picture that induces or suppresses a particular action (Risku and Pircher, 2008: 161). The use of icons proves particularly important in software localisation as it minimises the text necessary to select a given object and the amount of dialogue between users and the system, thus reducing localisation time and costs. However, icons are not necessarily recognisable or unambiguous in absolute terms. If they represent *realia*, they will prove clear only if the target audience recognises them as such and associate them with the intended concept; if internationally known icons are used, they will prove clear only as long as they trigger the intended reaction. In other words, icons do not always travel well across cultures.

An example is provided in Figure 1 where two ‘tiles’, i.e. buttons that lead to a new tab, are shown. The tile *Anagrafiche* (lit. records) (left) leads to a registry of all people or institutions that can be contacted in case of emergency including authorities, schools, and companies. The tile *Tabellari* (data in table form) (right) leads to an ontology of the system, where lists of all items used to classify objects/events are presented (e.g. all types of incidents such as floods or earthquakes, of resources for emergency management, or of geographical information).



Figure 1.: Examples of tiles of the Slándáil GUI.

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The localisation of tiles aimed to combine the iconic information with the textual information and to convey the function of the tile at the same time. Thus, tiles were adapted as *rubric* and *lookup data* in English, and as *Personaldaten* and *Menüs* in German. While the Italian captions resulted somewhat opaque (especially *Tabellari*, despite the associated gear symbol), the localised versions have been translated based on actual use in each partner country.

Localisation files display each string of text as a separate unit of meaning deprived of any contextual information. Also, the order in which strings appear does not follow the sequence in which they are displayed in the GUI. They thus lack a narrative thread and “cannot be ‘read’ in the same way as traditional documents” (Dunne, 2015: 561). Below is an example showing a sequence of strings from the GUI in Italian and English respectively:

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msg.save.success=Dati salvati con successo.  
msg.delete.success=Dati cancellati con successo.  
msg.confirm.modal.form.exit=Confermi l'uscita senza salvare?  
msg.select.items=Scegli oggetto(i)  
msg.create.tile=Crea l'aspetto della tile  
msg.create.filter=Crea filtro  
msg.term.service=Ho letto ed accettato le condizioni d'uso  
  
msg.save.success=The data have been successfully saved.  
msg.delete.success=The data have been successfully deleted.  
msg.confirm.modal.form.exit=Do you confirm exit without saving?  
msg.select.items=Choose item(s)  
msg.create.tile=Create tile  
msg.create.filter=Create filter  
msg.term.service=I have read and agreed to the terms and conditions
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The interpretation issues deriving from lack of context were addressed by identifying the location of the text within the interface in order to retrieve its textual and iconic co-text and by analysing how the content of the string interacted with it. It should be noted that the localisation of the GUI did not entail a large number of words, as may be the case of more complex systems. Ambiguity was sometimes found at term level – especially when the information could not be found in the corpus –, in which case field experts were consulted to ensure maximum user-friendliness.

Conceptual differences between languages were also found. This is exemplified in the differences found in the types of disasters considered relevant in the four project countries. The UK and Ireland mainly focus on floods and storms; Germany on floods and power outages. In Italy the major natural hazards are floods and earthquakes. Differences can also be found in the

categorisations and labelling of emergency management phases (Temmerman 2000: 43 and 52) that can be traced back to different culture-specific practices in emergency management. In English speaking countries, emergency management is a process comprising four stages – *preparedness, mitigation, response, recovery* – while in German and in Italian they are *Vorsorge* (prevention), *Vorbereitung* (preparation), *Bewältigung* (response), *Nachbereitung* (recovery) and *previsione* (forecast), *prevenzione* (prevention), *soccorso* (response), and *superamento dell'emergenza* (recovery) respectively. Though the phases are four in all three cases, the English term *preparedness* – unlike its German and Italian counterparts (*Vorsorge* or *previsione*) – does not foreground the forecasting of natural hazards while *mitigation*<sup>6</sup> has no direct equivalent as it partly overlaps with German *Vorbereitung*, *Bewältigung* and *Nachbereitung* and the Italian *prevenzione*, *soccorso* and *superamento dell'emergenza*. Further conceptualisation differences were found at a typological level, specifically between Romance languages on the one hand and Germanic languages on the other. Comparative grammar suggests that Italian conceptualises and hence describes reality through abstract concepts. By contrast, English often refers to phenomena by appealing to their concrete features. An example is the Italian version of our EMS, which uses *idraulico* as a short form of *rischio idraulico* to indicate all water-related disasters, while English-speaking emergency operators consistently refer to these events as *flooding* and German-speaking operators are in-between as they use *Hochwasserrisiken*, combining flooding (*Hochwasser*) with risks (*Risiken*). In this case our transcreation had to proceed accordingly by referring to risk in German and Italian and to the actual event in English.

The strings to be translated have been classified into four main types: (1) error messages, (2) operational messages (save, delete, close), (3) ontological messages (i.e. relating to types of incidents, incident statuses, or types of disasters), and (4) descriptive messages (e.g. ‘the following people were notified of the operation’). The constraints mentioned above (lack of contextual information and conceptual issues) were particularly evident in message types (1), (2) and (4). The translation of such strings was approached by prioritising terminological accuracy and pragmatics by means of transediting. For example the Italian pop-up message:

*Assicurarsi di aver avvertito le seguenti persone, ed aggiungere altre persone avvertite.*

(Make sure the following people have been notified, and add other people who have been notified.)

was localised into English as:

*Please notify the following people. Add any people you notify.*

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<sup>6</sup> Mitigation is defined as “the effort to reduce loss of life and property by lessening the impact of disasters. In order for mitigation to be effective we need to take action now—before the next disaster—to reduce human and financial consequences later (analysing risk, reducing risk, and insuring against risk)” (FEMA, “What is mitigation?”, <https://www.fema.gov/what-mitigation>).

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This is a case of instruction with option, or a non-binding instruction. It is transedited using the different politeness strategies required for the message to work in English. Pragmatic adequacy is thus achieved by means of an indirect request through ‘please’ followed by an imperative. The distribution of information has been preserved; however, the syntax of the original sentence was rearranged by creating two separate sentences, each containing one piece of information (‘notify a list of people’, and ‘add other people you notify’). By opting for a paratactic construction in English, the message increased its clarity and readability.

#### 4. Results and discussion

Analysis indicates that communication (the ‘newsroom’) is an integral part of emergency management; it is central to successfully handling an emergency. It has changed considerably with the advent of social media and communication strategies need to be adapted accordingly. When the population at large is addressed it is meant to create bonding in ‘peace times’, i.e. to establish people’s confidence in emergency operators and their work which during emergencies will turn into trust – for example trusting emergency operators that an area must be evacuated leaving property behind. As a consequence, careless drafting of messages or oral communications can adversely affect the outcome of emergency management and negatively impact the image of the emergency agency for a very long time. Review of the corpus confirms that the underlying principle of all communications and the yardstick by which their quality is measured is to what extent they can contribute to build a trust relationship between the emergency operators and the population.

The localisation process enabled all project partners and emergency operators to fully access and test the platform in their language. The new versions of the system also grant accessibility beyond the limits of the project. Thus, the ‘local’ German version is accessible to all German-speaking countries – i.e. to around 90 million people –, thus reaching almost one fifth of the EU population. The localisation into English makes the GUI available not only to English-speaking countries but also to all those users with a knowledge of English. This can be regarded as an act of glocalisation: English here does not simply qualify as a ‘locale’ but rather as a *lingua franca*, which grants access to a global audience through an international language. The GUI can thus be accessed by a much broader community within and without the EU. The wider circulation of the system, then, makes it possible for agencies to trial it and then further adapt it to more specific locales, e.g. Australian English.

In any communication, addressees need to perform ‘contexting’, i.e. to negotiate how much meaning can be retrieved from the context and how much

of it is shared (or not). Hence, meaning can only be preserved when a context familiar to the target culture is given (Katan, 2009). In the specific case of software/web localisation, we are faced with an extreme example of target-oriented translation involving adaptation, transcreation and transediting, where out-of-context strings provide users with either informational or procedural content. It was thus of paramount importance for messages to be immediately understandable and culturally and pragmatically adequate.

The compilation of term entries led to a number of advantages in the localisation of the GUI. Equivalent domain terms had to be extracted and studied in context using corpus-based methods. Terminological investigations helped to shed light on categorical and conceptual differences and similarities between terms, thus expediting the translation stage and improving the usability and communicativeness of the GUI. Having a pre-established terminology ensured consistency in the translation of strings and contributed to better quality.

Section 2 highlighted that most EMSs currently available are either not localised at all or provide users with versions that are not produced by professional translators. These choices are mainly justified by economic reasons, considering that localisation may be relatively expensive. The methodology applied to localise the Slándáil GUI proved satisfactory in terms of cost effectiveness. The monetary value of the localisation work was estimated by consulting industry-standard platforms and was then compared with estimates from four language service providers. By managing the entire localisation process internally, the project achieved high standards in usability and communicativeness – as confirmed by emergency operators and external evaluators – at market competitive costs.

The acceptability of our adaptations, transcreations and transediting also originated from the pragmatic revision carried out by emergency operators native speakers of English and German. Their involvement improved the final version as we could tap their linguistic experience in using the technical language of emergency management and their competence in operational concerns that hinder communication during emergency management. While in the professional practice functional testing is generally carried out internally solely by linguists and engineers, the direct contribution of emergency operators during system development and localisation granted the full usability, communicativeness, and market-readiness of the system. The final localised system was tested for usability by end-user partners in the Slándáil project and further demonstrated to members of the Business Continuity Institute and the Emergency Planning Society. Overall the GUI has been rated as high-quality.

## **5. Conclusion**

Software localisation is an example of an ever more globalised translation market,

where users demand products to be displayed in their native language. In order to achieve this, a number of linguistic and cultural adaptations are required. The present paper discussed methods, tools, and issues in the localisation of the GUI of an emergency management system (EMS) for the EU project Slándáil by means of inverse translation from Italian into German and English. The resulting localised versions not only allowed all project emergency operators to access the GUI in their native language but also to create a glocalised system by using English as a *lingua franca*, thus granting access to a potentially global audience. The methodology applied also proved cost-effective since the localisation was performed internally.

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