LISA

The Localization Industry Primer

2nd edition

LISA™

Dear Reader,

In order to succeed in today's increasingly global business environment, enterprises have to do more than export their existing products worldwide—companies must become truly *globalized*. Globalization is not simply having a world-wide presence, but rather the incorporation of a global perspective into all aspects of a company. As such globalization is an outlook and philosophy of doing business. Globalized enterprises are just that—global—in every aspect of their operations. However, being truly global is only possible by being local in the markets where companies do business. A company's products, services, documentation, customer support and maintenance procedures, marketing, etc. must all reflect the needs of the local market in terms of culture, language and business requirements. Multiple local market versions have to be produced simultaneously to stay ahead of the competition and ensure a return on investment within today's shrinking product lifecycles. This is where the localization industry comes in.

But what is localization? For far too many people localization is still "just another linguistic process". Far from it! Localization is the process of adapting and manufacturing a product so that it has the look and feel of a nationally-manufactured piece of goods. Thus localization is the piece of the global business puzzle that enables companies to do business in markets outside of their home market.
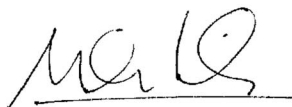
When correctly implemented, localization pervades every aspect of product design, development, testing, marketing and support. In other words, it unites and transcends individual services and disciplines such as engineering, translation and fulfillment. Localization and globalization find a place in almost every vertical business sector and are at the heart of successful international business strategies. By focusing on these issues, the localization industry has grown into a multi-billion dollar business from its humble beginnings as a "cottage industry" well over a decade ago.

Localization must be understood as one critical part of the global business equation, which includes globalization, internationalization (preparation of products to facilitate localization), localization and translation (collectively called GILT). This Primer is designed to show you why the localization industry has developed, how localization relates to the other aspects of GILT, and what localization can do for your business and how you can get started. It also provides reference information for international business and language resources.

The Localization Primer is based on the collected wisdom of the global leaders in this field, most of whom are members of LISA—the Localization Industry Standards Association. This non-profit organization provides a forum in which companies can exchange information and best practices in order to maintain localization business. LISA also is the forum for the development of the open standards that facilitate localization and help organizations effectively capitalize on their language assets.

We hope that you find the Primer useful and will be pleased to help you further in all issues concerning GILT.

Sincerely yours,

Michael Anobile
Managing Director
LISA—The Localization Industry Standards Association

Table of Contents

Tables and Figures

Executive Summary

The irreversible process of globalization and the Internet revolution are fundamentally changing the way enterprises do business. The global spread of the free market economy, the liberalization of key industries, ongoing work on a global political and economic framework, and the implementation of a uniform technical and logistics infrastructure have brought all areas of the world closer than ever before, even as key technologies from various business sectors have converged to provide an unprecedented level of technical infrastructure around the world. At the same time, the Web has leveled the playing field for companies and economies throughout the world, providing a low-cost global platform for advertising, marketing, sales, distribution, and support. Entry barriers for foreign markets have tumbled, but competition on domestic ones is increasing dramatically, and the whole world is watching what you'll do. Companies must think far ahead when reorienting their strategies, plan effectively, and implement fast. The idea of "business as usual" no longer applies.

Globalization and the Internet have forever altered "business as usual"

Globalization and localization

To be successful in this challenging environment, organizations must modify their offerings to give them the look and feel of locally-made products. This involves catering to a wide range of linguistic, cultural, content, and technical issues. Product presentation (size and shape, language, colors, graphics, icons, etc.) and functionality must be adapted to local conventions. English is simply not enough, especially for business-to-consumer products, since the vast majority of the world's population cannot read or understand English-language materials, and of those using the web, about 2/3 do not speak English. In addition differences in working practices, legislation, and in some cases even human anatomy need to be taken into account.

Whole product globalization and localized products are the keys to global success.

Efficient localization depends on product and service globalization—i.e., making all the necessary technical, financial, management, personnel, marketing, and other enterprise decisions facilitating localization. Where globalization concerns are not considered in advance, any localization later will be much more expensive: a good rule of thumb is that it will take twice as long and cost twice as much. Globalization entails a comprehensive and well-structured product development lifecycle that starts with a global and local product analysis and moves through product globalization and localization to end with support for, and feedback on, localized products. Where this lifecycle is implemented correctly, enterprises are able to localize and release up to 60 or more different language versions with little or no delay behind the release of the source-language version.

Globalization and localization are not just product design processes, however—companies must develop and implement a global vision, strategy and eBusiness processes, as well as establishing global branding and release policies. Last but by no means least, they must ensure that their entire organization, from designers to back

office support, think and act globally too. Globalization thus impacts, and needs the active support, of every function in the enterprise from top to bottom, as well as horizontally.

The localization industry

Since the early 1990s, a whole new sector—the localization industry—has grown to offer services, advice and training in the area of globalization, internationalization, localization and translation (GILT), the expertise and services that enable companies to sell and support their products worldwide. Many of the market leaders are organized in LISA, the worldwide Localization Industry Standards Association, which provides the nexus for companies, organizations and individuals involved in all aspects of global business to come together.

Localization is now a multi-million dollar industry poised for further growth.

Although hard data is difficult to come by given the youth, dynamic growth and global reach of the industry, LISA estimates put the minimum size of the GILT industry at USD 3.7 to 5 billion world-wide (with some estimates as high as USD 15 billion). Unfortunately, all too many companies still do not know what they are investing in or gaining from localized products, largely due to a lack of transparency of the localization process within organizations. This makes more precise estimates of industry size difficult.

What is clear, however, is that localization brings a substantial return on investment, often greater than 10 to 1. Reasonable projections show, for example, that the 20 largest companies in the IT sector alone leverage a localization investment of around USD 1.5 billion to generate sales of global products apporximating USD 15 billion. When other vertical markets are included this number is doubtlessly much higher. Companies in other areas are seeing similar return on investment as localization has allowed them to tap lucrative new markets.

The players in the localization industry have grown in the past years from humble beginnings to leading enterprises providing sophisticated services. Substantial growth has been fueled by a trend towards greater outsourcing, and is accompanied by ongoing industry consolidation, as well as small vendors working together. In addition, small specialist shops have emerged that are tightly focused on particular industries or services. These small and medium enterprises (SMEs) represent a major production capacity in the localization industry and have led the industry in many innovations. At the same time, standards and best practices have emerged in key areas such as quality management, linguistic data interchange, bidding procedures, and education and training.

Language technology enables localizers. It does not replace them.

Language technology has shown progress over the past years, and a number of productivity-enhancing linguistic tools have now emerged. Chief among these are terminology management systems, which aid the collection and use of specialist vocabularies; translation memories, which are designed to facilitate the reuse of

previous translations; and machine translation, which provides actual linguistic analysis and conversion of texts from a source language into the desired target language. Recently Content Management Systems (CMSs) and their globalization-specific offspring, Globalization Management Systems (GMSs) have made an impact in helping to automate the task of maintaining a complex document repository or web-site. Because of the complexity of language, these tools cannot be expected to work fully unaided—they enable localization staff rather than replace them. In addition, they must be integrated with organizational workflows for best results. However, linguistic tools have greatly increased the productivity of localization companies and personnel, enabling a degree of efficiency, speed, and quality assurance impossible just a few years ago.

Future trends facing the industry include: the need to drive forward technology and process integration and new tool development; overcoming process fragmentation to make GILT visible within enterprises; educating senior management and development staff about the crucial importance of these processes and of the value they add; and managing growth. In addition, service providers are likely to increase the value they add still further in the future and increase their range of offerings. In this way, they will be able to act as consultants to the many smaller companies that hope to ride the globalization wave. When evaluating technology and service providers, companies should adopt a long-term approach based on cost-effectiveness rather than price alone, and emphasizing time to market and quality.

The future belongs to integration and value-added services

LISA Members are committed to quality services, open standards, language technology and automated production support. Further information on globalization and localization can be obtained from the sources given in the Annexes to this document, or from the Localization Industry Standards Association (www.lisa.org).

Doing Business in a Global World

Globalization—the new world order

Globalization is an irreversible process.

The last fifteen years have seen profound economic, political, technological and social transformation, resulting in an unparalleled degree of international integration. This process of globalization, as it is commonly known, is now one of the defining aspects of our lives. In the words of UN Secretary General Kofi Annan, globalization is "an irreversible process, not an option"*.

Key factors driving the development of globalization include the following:

Liberalization and deregulation have boosted investment and competition.

- **The liberalization and deregulation of key industries such as telecommunications and power generation, coupled with a redefinition of the role of the state.** This process has fuelled private investment and global competition, as well as providing a political and economic framework for technological innovation.
- **Ongoing work at an international and national level on the political and economic framework for global commerce.** Key initiatives here include those of the World Trade Organization, which aims to establish ground rules for free trade in products and services and the protection of intellectual property rights, the World Bank, which aids developing countries, and the United Nations Environmental Program (UNEP), which provides leadership and encourages partnerships in caring for the environment.

The political and economic framework for globalization is emerging.

- **The emergence of a single main economic and political model (free market democracy) following the end of the Cold War.** This process has torn down physical barriers to world communications and trade, as well as developing a common framework for political and business leaders. Countries (and companies) previously unable to compete can now do so with relatively little upfront investment, while those previously off-limits to their competitors are now having to open up. At the same time, regional economic and political communities have emerged in the Americas, Europe and Asia.

The Internet revolution is gaining speed.

- **The creation of a seamless worldwide technical and logistics infrastructure based on ever-cheaper computer hardware and software and telecommunications technology.** Chief among the innovations making up the new global infrastructure are personal computers (PCs), the Internet/Web, and fiber-optic, wireless, and satellite networks. The result has been an unprecedented level of business and personal interconnectivity, as distance and geography become largely irrelevant. At the same time, there has been a quantum leap in the speed at which business is conducted, and therefore in required reaction times. In particular, the Internet revolution offers companies:

  - **A low-cost worldwide advertising and marketing platform.** By setting up a Web site, even small companies can advertise themselves, their products

* *UN Secretary General's Report to the UN General Assembly on Globalization and Interdependence, Oct. 1999*

and their services to a potentially worldwide audience. In addition, they can use their Web sites to gather information on customer needs direct and in real time.

- **A low-cost worldwide sales platform**. The rise of e-commerce solutions enables companies to sell goods direct from their Web sites; payment is typically made by credit card or by debiting an existing offline account. In the future micropayment functionality ("electronic purses" or similar systems that allow users to pay cents or fractions of cents for goods and services) and other types of e-payment solutions will become more common.

- **A low-cost worldwide distribution platform.** Any product that can be made available as electronic data (e.g., software, books and other text-based information, music, films) can also be directly distributed via the Web. This development is already well advanced in many sectors and will gather further momentum in coming years. In the case of non-digitizable products such as hardware, cars, and the like—sometimes referred to as "atoms"—worldwide logistics providers now offer efficient international distribution.

     However, it is important to note that these suppliers have invested heavily in web-based services and are themselves acutely dependent on the Internet for their new tracking and tracing services for clients, and for other forms of customer care such as manuals and service information.

- **A low-cost worldwide support platform**. Companies serving a newly acquired international customer base can minimize support issues by providing registered customers with information and contacts via their Web sites. LISA offers a Global Business Directory called "The MAP" (www.lisa.org/map) where companies can register their products, operating countries, languages, standards and other business parameters for public access and support.

The challenges of globalization

The rise of the Internet and the Web has vastly increased potential market sizes and the speed of business, as well as slashing customer acquisition, sales and support costs. This radical change in economics has leveled the playing field, allowing even small companies to compete outside their traditional markets. At the same time, however, competitors at home and abroad—including new entrants attracted by technological convergence, new business opportunities, or the need to reposition their existing activities—can also take advantage of this technology. In other words: while the pond has grown in size, so have the number, type and size of the fish swimming in it. Companies therefore cannot assume that years of investment in a market or previous customer loyalty will protect them unless they are meeting their clients' needs and making it easy for them to buy (e.g., via the Internet). What is more, in the Internet economy, as the saying goes, "you snooze, you lose." Enterprises that are slow to market with new products, or that fail to reinvent existing ones, may well find their place already taken. Global exposure means global competition, while speed of innovation leads to speed of imitation. As a result, competitors can research and often copy new features or products within days.

The pond has grown in size, but so have the number, type and size of the fish.

On the Internet you snooze, you lose. Companies must think far, plan well, and implement rapidly.

At the same time, the liabilities of *economic* globalization are becoming increasingly apparent as individuals and organizations have pointed out the environmental, cultural, and personal impacts of globalization. Localization is what allows the benefits of globalization to accrue not only to large companies and powerful nations—localization lets speakers of less common languages enjoy access to the same products and resources that those in major markets use. In addition localization allows the flow of products and information to be two-way, as dominant countries receive goods and services from smaller countries that have traditionally had no access to their markets. When companies localize their products and services they help to "level the playing field" and redress economic inequalities, helping to create a better world in which no one is left out.

Guidelines for going global

**The Internet gives
global exposure, but
doesn't make you
global**

In other words, while the Internet and the Web provide global reach, this is not enough on its own to ensure success. Going global in today's economy thus means rethinking—and re-engineering—almost every aspect of your business. Only careful preparation for and implementation of the globalization process will create, rather than destroy, value. To this extent, speed must be balanced against planning, and blind activity avoided. Companies must think as far as they can into the future, plan well, and then implement rapidly.

Among the key issues that companies need to address when starting out are:

**Forget "business
as usual".**

- **The need to develop and implement a global vision, strategy and (e-) business processes.** Selling to the world—especially via the Internet—means selling to a new, complex market. Relying on past business plans and assumptions simply will not work. Enterprises must therefore develop new goals and strategies, and ensure that these are implemented. For example, they need to establish an appropriate local presence (e.g., subsidiaries, affiliates, partners, distributors or shipping agents). As the list suggests, this will vary not only with the maturity and potential size of the target market, but also with the product or service and the degree to which effective support can be provided online.
- **The need to establish and maintain global branding and release policies.** Companies must strike a careful balance (which may well differ between individual markets and over time) between global consistency and local responsiveness. For example, local and global pricing models must be harmonized, since today's global customers are adept at exploiting international price differences. At the same time the Euro as a single currency for many countries in Europe has made price comparisons even easier.

**The whole world is
watching.**

  In addition, customers generally stop buying local versions of an existing product when a new release of the original is announced. With today's rapidly shrinking product lifecycles, sales in the weeks following a new release may well account for up to 10% of total revenues, making such behavior painful.

Rapid or even simultaneous shipment ("simship") of new releases to key local markets is therefore critical.

- **The need to design products and services for global distribution.** Rapid rollouts require upstream planning. Although the Web may be flattening geographical barriers, other market requirements have not been homogenized. Differences in working practices, legislation, culture and languages—in some cases even in human anatomy—need to be taken into account. This is best achieved by designing products to enable subsequent modification, since failure to do so results in downstream re-engineering, and therefore spiraling costs. Indeed, such retrofitting may well make international product rollouts economically unfeasible. In contrast, products that have been "globalized" in this way can be adapted to different markets with a minimum of effort.

- **The need to provide localized products and services.** Where products and services are to be sold in other markets, they must be "localized", i.e., adapted to meet specific local needs. First and foremost, this means making them available in the local language(s), since English on its own is simply insufficient. Even though it is now the international language of business, science and technology, currently only one in four of the world's population speaks English to some level of competence. In addition, customer orientation and user friendliness, national or regional legislation, and tender specifications may well dictate local language provision. However, this is generally not enough by itself: instead, localization needs to go beyond language questions to address issues of content and "look and feel", with the ultimate aim of releasing a product that looks like it has been developed in country.

- **The need to globalize back-office functions.** Globalization does not stop at the company's front door or Web site. Rather, back office workflows must be reorganized to cope with global sourcing, distribution and support. For example, reporting and accounting structures, legal and payroll functions and employee relations must all be looked at in a global context. Support for foreign language e-mails and telephone inquiries, foreign address formats and multi-currency payment facilities should not be forgotten, either. Last but not least, e-commerce/e-business and Web solutions must be integrated with existing ("legacy") applications and databases and tailored for international audiences.

Design globally right from the start.

Provide a "local look and feel."

The back office must go global, too.

The Role of the localization industry

It is impossible for companies to design and implement such complex and fundamental changes without calling on expert advice. In practice, enterprises going global will need to seek the help of a number of specialist professional services providers such as lawyers, accountants and e-commerce specialists. Above all, however, they will need the services of the localization industry—the dynamic young sector devoted to product globalization and localization. Localization service providers offer not only operational support for globalizing and localizing products and services, but also consulting, strategic advice and training. Many of the best-of-breed companies are organized in LISA, the global Localization Industry Standards Association. And

Services, advice and training.

while almost everyone today is trying to jump on the globalization and localization bandwagons, LISA's service providers have a proven track record of success in their field. Equally, client enterprises going global can benefit from the experience of the major enterprises within LISA who have implemented before them. LISA acts as a forum for exchanging ideas and establishing and disseminating standards and best practices throughout the world, as well as promoting the industry to potential clients and other stakeholders. The remaining chapters of this Primer draw on the collected wisdom of these global experts to present a more detailed overview of localization and the localization industry, its development, activities and future challenges.

Service	Total	In-house	In-country	Outsourced
Authoring	68%	50%	17%	33%
DTP	83%	18%	18%	64%
Product internationalization	83%	84%	7%	9%
Product localization	83%	55%	18%	27%
Translation	96%	10%	12%	78%
Proprietary tools development	68%	75%	3%	22%
QA	98%	62%	25%	13%
Technical support	79%	76%	12%	12%
Terminology	96%	53%	27%	20%
Training	70%	73%	22%	5%
Technical consulting	72%	42%	39%	18%

Table 1. Client Outsourcing Policy for Various Services (source, LISA 2001)

Going Global—Some Basic Facts

- Global trade accounts for 20% of global output and is set to expand by 7–8% per annum. Global trade figures in 1997 were up 14-fold on 1950 levels.
- Since 1992, IBM's international market revenue generated sales of over USD 460 billion—more than half of its total revenues during this period.
- Microsoft's international market revenue has generated sales of over USD 49 billion since 1992.
- Recent research has shown that globalization tends to increase the prosperity of all nations that engage in it, while leaving behind nations that erect barriers against globalization.
- A sizeable majority of all Web documents are in English (62%–87%, depending on the survey). However, only one in four of the world's population speaks English to some level of competence and over 90% of the world's population needs or prefers a language other than English for business purposes.
- The top ten languages of the world account for approximately 50% of the world's population, and over 2,000 languages account for the remaining 50%.
- There are 700 million Internet users today. This number is forecast to rise to approximately 1 billion by 2005. Of these, 300 million are likely to be in China alone. In addition, the number of online users in Europe now exceeds those in the United States (as of 2003).

Introducing Localization

What is localization?

To many people, localization sounds like "just a linguistic process" identical or similar to translation. However, while translation plays an important role in the localization of all text-based products, the process of localization is actually much broader than this. The Localization Industry Standards Association (LISA) defines localization as "the process of modifying products or services to account for differences in distinct markets". In practice, this means that localization needs to address three main categories of issues:

Localization is not just a linguistic process. Cultural, content and technical issues must also be taken into account.

Linguistic issues

These relate to the translation of a product's user interface and documentation and may also extend to the translation and re-engineering of any underlying linguistic functionality such as applications programming interfaces (APIs), search engines or wizards.

Content and cultural issues

In many cases, the information and functionality contained in products need to be adapted for local audiences. Cars sold in Britain cannot have the steering wheel on the left, while accounting software will have to comply with local generally accepted accounting principles, to give just two examples. Cultural issues concerning the presentation of information (icons, graphics, colors, forms of address, etc.) may also need to be taken into account.

Technical issues

Supporting local languages and content may require redesign and re-engineering. For example, Arabic scripts are bi-directional (i.e., they generally run from right to left, except for numbers and foreign-language words, which run from left to right). Equally, Far Eastern languages require twice the disk space of English for each character (which is why their alphabets are known as "double byte character sets", or DBCSs). Adapting products to these scripts therefore requires changes to the code (in the case of software) and/or product design, packaging, etc. Ideally, the localization process follows on from product globalization (see below) and should not be confused with it.

Localizing a product is not a trivial task, and in practice not all products are localized to the same extent. On average, technical products and proprietary business-to-business applications will be less likely to be (fully) localized. However, it would be a mistake to conclude automatically from this that English is good enough. In the real world of business today, factors influencing the extent of localization include the nature and scope of the product concerned, the size of the target market and audience, the length of the product lifecycle and anticipated update frequencies, competitor behavior, market acceptance, and national or international legislation. Only after a thorough analysis of these issues and of potential consequences should a decision not to localize, or to localize only in part, be made.

The degree of localization required may vary, but this does not automatically mean that English is good enough.

What is internationalization?

Internationalization comes before and facilitates localization.

However, even such a careful analysis will not succeed if localization is taken in isolation. Instead, it needs to be an integral part of the entire product design, development and distribution chain (see Figure 1 on the next page). In particular, products have to be internationalized before they are localized. While globalization can be defined as "making all the necessary technical, financial, managerial, personnel, marketing, and other enterprise decisions necessary to facilitate localization", internationalization is specifically enabling a product at a technical level for localization. In other words, an internationalized product does not require remedial engineering or redesign, as opposed to adaptation to a specific local language or platform.

It takes twice as long and costs twice as much to localize a product after its first release if it isn't first internationalized

Internationalization primarily consists of abstracting the functionality of a product away from any particular language so that language support can be added back in simply, without worry that language-specific features will pose a problem when the product is localized. Where a product has not been internationalized in advance, additional expenditure will be incurred during localization; in some cases, this may be substantial enough to make the entire project uneconomic. A good rule of thumb to follow is that it takes twice as long and costs twice as much to localize a product if it was not properly internationalized to start with.

Successful internationalization requires the active support and participation of design and development staff, and of management.

Internationalization at this level is thus a fundamental product development process requiring the active support and participation of design and development staff, and of corporate management. Procedures for ensuring internationalized product design must be written, approved, and implemented consistently. Getting to this point often requires education and negotiation, since traditionally other priorities may have applied. For example, developers have a tendency to focus on adding maximum functionality to the original product version at the last possible minute (often known as the "development freeze"). After this date they concentrate on ensuring that the results get out the door as quickly as possible so that the product can ship. At the end of this process they are frequently exhausted and disappear for a well-earned break. In contrast, localization staff are generally still working during these later phases and need ongoing access to key developers. Changing such working habits (and in some cases the accompanying remuneration and bonus systems) requires tact and time. In addition, it requires an awareness of the importance of the globalization process in its wider economic sense—and of foreign language versions. At a more technical level, designers and developers may not have the knowledge or skills to globalize products and design out localization pitfalls if they have never been exposed to international issues.

The global product development cycle

Successful product globalization is thus a combination of internationalization and localization. In practice, these two processes can be broken down into a number of steps (see Figure 1):
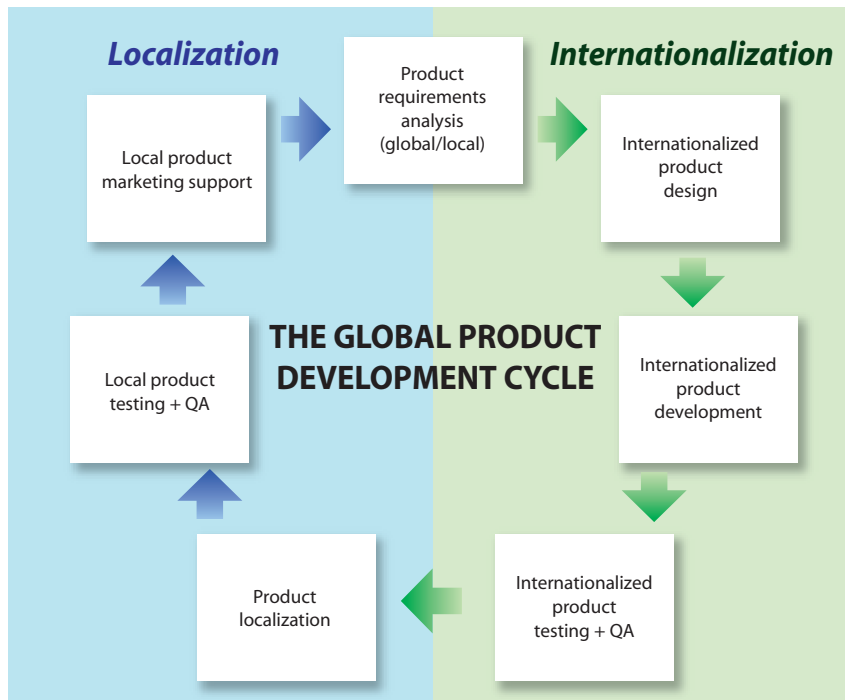
Figure 1. The global product development cycle.

Product requirements analysis (global/local)

Any product design process starts with a basic requirements analysis. What is the core functionality and content that users—wherever they are—need? What are they prepared to pay money for? What feedback has been received on previous versions, and how do competitors' products compare? What return on investment must be generated within what time frame? In a global environment, the important point is to make sure that this analysis is conducted not just for the domestic market, but for all potential markets. The fact-finding process should therefore draw on the expertise of in-country staff, distributors and users as well as addressing ROI and strategic considerations.

The result of this process is a set of global product specifications that also incorporates input from all local markets identified as desirable, rather than specifications that are tailored to a lead national market and that subsequently need modification. In other words, the process requires companies to start "thinking global" from the outset, since only this will ensure efficient product internationalization and localization and minimize update and maintenance costs. In particular, the specifications will contain information on the following issues:

Content and functionality

What content and functionality will the global product supply, and what local content requirements (an increasingly important issue) exist? To what extent must functionality be adapted to conform to local legislation or practices? What technical support and features must be provided?

Begin at the beginning: with fact-finding exercises for the global and local markets.

Linguistic and cultural issues

What parts of the product (interface(s), documentation, help, navigation, packaging, etc.) need to be translated? What, if any, changes are required to adhere to local cultural conventions? Does the product presentation have to be adapted? Graphics, colors, icons, abbreviations, product markings, shortcut keys and other elements are candidates for modification. At best these may be meaningless—and hence user unfriendly—in their target markets, while at worst (as in the case of icons representing hands and eyes in certain cultures), they may be positively offensive.

Internationalized product design

Designing for globalization means designing for flexibility and translatability.

Once the product requirements analysis has been completed, the next step is product design, which creates the technical specifications needed for product development. Two principles are of key importance in creating an internationalized product: designing for flexibility and designing for translatability. Designing for flexibility ensures that the basic product can be easily adapted to local variations. For example, software code may need to provide basic support for double-byte character sets or bi-directional languages, while car designs may need to accommodate the resizing of individual components, or right-to-left transposition to facilitate driving on the other side of the street. Designing for translatability entails ensuring that any language components of the product are clearly written, clearly identified, and easily accessible, and that they are kept physically separate from other aspects of the product. For example, software texts should not be hard-coded into a program (where they have to be laboriously identified and translated, and may cause programming errors), nor should labels or markings be etched into hardware components. What is more, the space left for texts in both software and physical products should be large enough to accommodate the fact that words are of different lengths in different languages.

Internationalized product development

The next stage in the process is to develop the basic internationalized product according to the global design specifications. Provided that the latter have been carefully thought out, the coding or manufacturing process itself should be relatively simple. In fact, today it may be outsourced or performed by overseas units.

Internationalized product testing and quality assurance

Test localized products thoroughly!

Following the development of the internationalized product, it needs to be thoroughly tested against the specifications, since errors at this stage may reproduce themselves across localized versions or otherwise impede the localization process. In some enterprises, products are also localized into an artificial language in order to identify localization errors early on. The testing and quality assurance (QA) process requires discipline and adherence to deadlines on the part of developers, who are sometimes prone to packing more and more functionality into a product

down to the last possible moment. In such cases, QA may suffer, while the lack of a "frozen" (i.e., stable) version means more work for localizers.

Product localization

Following QA and testing of the internationalized product, the actual product localization process can then begin. This leverages and implements the criteria for particular target markets established during the requirements analysis phase. In practice, enterprises may be localizing products regularly into 60 or more languages (and sometimes in excess of 170). In some cases, these are divided into three or four different tiers, according to market importance. The aim is to keep the time gap between the appearance of the product in its lead market and localized versions as small as possible, especially for the key first tier markets. As a result, many companies aim for "simship"—simultaneous shipment of multiple language versions. The allocation of localized versions to specific tiers may also influence the depth to which products are localized (translation of user interface and documentation alone, content localization, adaptation of underlying functionality, etc.). It is at this point that efficient internationalization will pay off, since localizers will not only have a list of required features for their target versions, but also an enabled, stable product version from which to start.

Some enterprises are localizing into 60 or more languages and shipping key localized releases simultaneously.

Local product testing and QA

Following the actual localization process, the localized product version must also be subjected to rigorous testing. In addition to technical and linguistic quality assurance, which may be performed in-house and/or by the localization service providers concerned, such tests often involve some sort of in-country validation or acceptance testing by local subsidiaries, distributors or end users. In many cases, the results obtained from one language version are made available to localizers of other versions and developers via a central "bug database" or similar mechanism, in order to cut overall troubleshooting times.

Test again and share test results.

Local product marketing, support, and feedback

Following the release of the localized product, it enters the in-country marketing and support stage. In this context it is important to ensure that enterprises are made aware of, and collect, feedback and change and enhancement requests. These should then be evaluated as part of the next product requirements analysis. In addition to using in-country organizations, enterprises today can gain valuable feedback on their products via their Web sites and other electronic media such as bulletin boards.

Gather, evaluate and act on local feedback.

The Localization Industry

Origins

In its broadest sense, the localization industry has existed ever since products started to be exported on a major scale. To give just one example, automotive manufacturers have long been confronted with the design, manufacturing and marketing problems raised by cars driving on different sides of the road, national safety and lighting legislation, and variations in human body size. However, the term "localization" only came into common usage in the early 1990s, when the industry as we know it today started to grow significantly. This development was closely connected with the spread of computing, and in particular with the rise of the PC. As computers have become ubiquitous in enterprises worldwide, software and hardware manufacturers have faced increasing problems of adaptation and translation.

As these reached a certain size, these companies made a strategic decision to outsource work in order to remain focused on their core business, designing the products themselves. This led to the development of the supply side of the industry, in the form of localization and internationalization service providers and consultants of various kinds. In the mean time, the industry has grown to the point where the 20 largest IT companies alone are leveraging around USD 1.5 billion a year to generate sales of some USD 15 billion, an incredible ROI of over 1000%

Market size

Market data on the localization industry as a whole is notoriously difficult to come by. Key reasons for this include the relative youth and dynamic growth of the sector, its global reach and the heterogeneous nature and small size of many players, which make surveying a laborious and costly process. In addition, the reliance on outsourcing and subcontracting within the industry means that care must be taken not to count revenue streams twice. Another obstacle is that the localization process within many organizations is often invisible and costs may well not be wholly transparent; as a result, data may simply not be available, or may be unreliable (see the chapter entitled "Localization Costing and Pricing" for more details). Additionally, past market estimates and surveys have generally failed to agree on a standard definition of the localization industry and process, making correlations difficult. Last but not least, many surveys by the industry itself are designed to provide snapshots and/or basic information rather than full statistical significance. That having been said, the increasing maturity of the industry and the recent influx of external investment have fuelled an increase in both the quality and quantity of the information available (see the section *Further Information* for more details).

LISA estimates of the total size of the localization industry worldwide at a minimum of USD 3.7 billion per annum, with a likely figure around USD 5 billion (some estimates put it as high as USD 15 billion). The IT sector of the localization industry alone is somewhere in the region of USD 10 billion—with the inclusion

of all vertical markets this number is substantially higher. To give a comparison: recent figures for the size of the translation industry range from "between USD 11 billion and USD 18 billion" (American Translators' Association) to USD 30 billion (European Commission).

Market players

The localization industry today consists of the following main players:

- **Clients** with or without in-house localization (management) facilities;
- **Localization service providers** ("vendors") providing any or all of engineering, linguistic and auxiliary services;
- **Consultants** of various expertise providing services to both the above-mentioned groups;
- **Academics and training organizations** responsible for providing tertiary and vocational education to localization industry staff and for research into localization-related issues;
- **Tools providers,** who supply both clients and service providers with language technology and process management and productivity tools (*see the section entitled "Localization Tools and Technologies" for more details*).

In practice, individual organizations may fulfill multiple roles within this spectrum; thus, clients, service providers and academics all frequently develop their own tools, while third-party tools providers and service providers also provide consulting services.

Client organizations

Until a few years ago, the localization industry was dominated by large client organizations, most of them from the IT sector. For example, the founder members of LISA on the client side were all suppliers of hardware and/or software. In the early days of the industry, these organizations performed much of their localization work in-house, either at their headquarters or, more commonly, in regional centers or local facilities. However, as globalization took hold, clients were faced with the need to localize more products into more languages within ever decreasing time frames. High internal staffing levels mean high overheads, especially given the peaks and valleys in demand caused by traditional product releases. As a result, clients started delegating more operations to service providers and concentrating on their core business. For in-house localization services, this generally means internal consulting, education and liaison (especially with product development staff), service and tool provision, vendor selection and support, and testing and QA. Client staffing levels in this area have dropped accordingly, with many organizations—even ones generating more than USD 100 million per year—having localization headcounts of less than five. While nearly half of localization units report to development, they

Client outsourcing drove development of the localization industry.

may also be assigned to other departments, e.g., documentation and marketing. Localization heads are commonly managers, directors or vice-presidents.

The services that clients outsource most frequently are those that least match in-house competencies. For example, a large majority of clients use service providers for translation, while development issues such as product globalization and technical support are generally kept in-house (see Table 1). In terms of localization expenditures, translation, which is outsourced by almost 80% of clients, is by far the largest budget item (see Figure 2). In addition, corporate organizational policy and the relative sophistication of clients' and service providers' offerings may also influence outsourcing strategies. Today, many clients with mature vendor relationships have reached the stage where they wish to maintain their current outsourcing policies, although a sizeable number are looking to outsource more services, and the volume of work outsourced within individual services is still increasing.
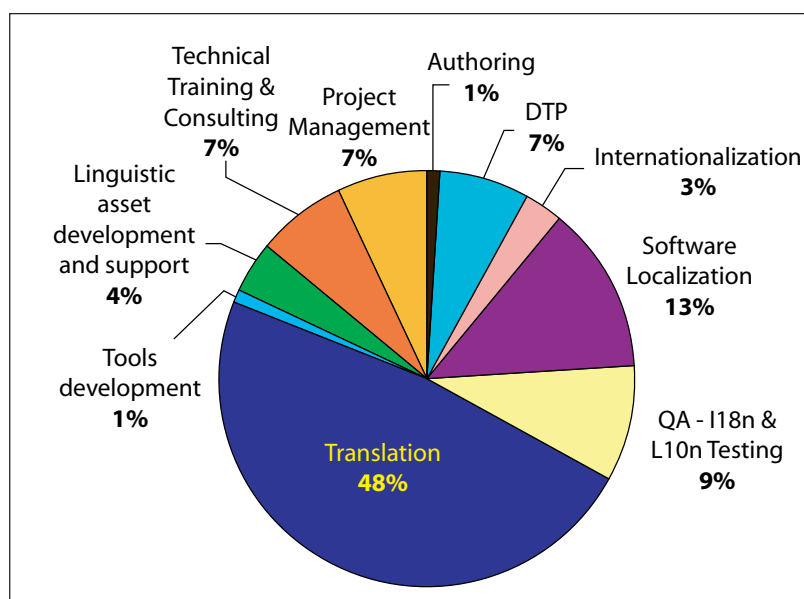
Figure 2. Client Localization Services as a Percentage of Budgets (source, LISA 2003)

In addition, a wave of new players has recently joined these relatively mature, organizationally sophisticated IT clients. One such group consists of major companies outside the traditional IT sector that are nevertheless heavy users of IT (e.g., the telecommunications, medical devices and media sectors). Another group comprises smaller to medium-sized IT and Internet companies that are starting to go global and hence facing the same problems as their larger competitors.

As the Internet revolution has matured, the number of new and smaller companies has increased, and with it the need for additional services.

Service providers and consultants

Many of today's leading service providers originally started life either as in-house localization units or as translation-only companies. Traditionally, many of the latter were relatively small and offered a restricted number of languages, which is why they were often known as "single language vendors" or "SLVs." While their linguistic competence was often high, the engineering and project management services they offered were traditionally limited, due to a lack of internal skills and/or to the fact that many customers retained much of this work in-house. However, a number of small, specialized engineering shops did exist, particularly for—at the time—niche applications such as multimedia, and for internationalization and remedial engineering services for the Far East markets (so-called "double byte enabling"). Over time, growing client and general market pressure led to the emergence of a number of so-called "multi-language vendors" ("MLVs") offering a wider range of languages plus more sophisticated project management and engineering services. To do so, they relied—and indeed still rely—relatively heavily on freelancers and subcontractors, especially in the area of translation.

Service providers: from humble beginnings to global leaders.

Starting in 1997, the move to larger operators took on a new quality with the first round of global consolidation. A number of MLVs and regional and local players, many of them LISA members, merged to produce a handful of "global" players. Today, these companies offer a combination of sophisticated linguistic services, language and process technology and project management services. The rationale behind this was to provide major global clients with a global supplier base that mirrored their development and distribution structures—a trend paralleled in a number of other industries.
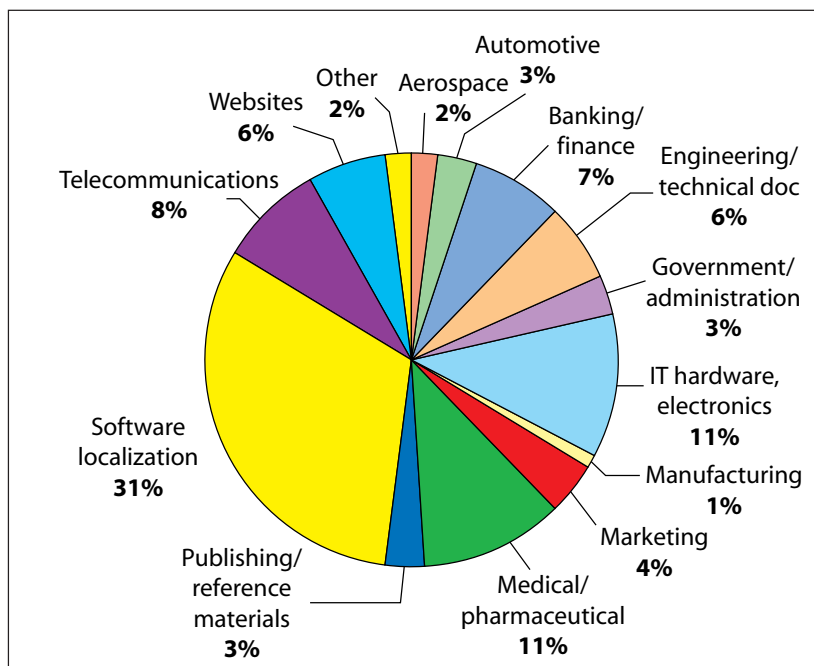

Figure 3. Service Provider Localization Sectors (source, LISA 2003)

The establishment of these new companies was accompanied for the first time by substantial external investment (on the part of venture capital firms, private equity investors and more traditional lenders), and the first initial public offerings (IPOs) in the industry. All in all, LISA estimates that LISA members alone have invested a total of USD 1.8 billion in localization since 1997. A logical side effect of this inflow of funding has been a focus on more sophisticated management structures and a move towards recruiting key management players from other industries.

After a comparatively quiet period in which the new global players focused on assimilating their acquisitions, the consolidation process gathering speed again. Among the factors fuelling this second wave were the need of service providers to further increase their range and depth of services and geographical coverage, to react to the opportunities and threats inherent in the Internet/Web, and to eliminate or reduce competition. In addition various technologies have converged. At the same time, a new wave of small to medium-sized service providers sprang up. Thus, about half of localization companies generate less than USD 2 million in revenue, and develop in less than five languages. However, in contrast to their predecessors, many of these newer companies are tightly focused on localization (as opposed to offering it as an extension of translation) and/or offer relatively sophisticated process and quality management. In addition, service providers are increasingly focusing on and building up expertise in specific vertical market segments. Thus the boundary between service providers and globalization and localization consultants, whose number and range and depth of offerings have also increased considerably, is becoming somewhat blurred. The benefit for potential clients is that they can now tap into a sophisticated knowledge and service pool wherever they are in the world.

Tools providers

The technological basis of much localization work, coupled with its large volumes, tight deadlines and sophisticated process management requirements, means that the industry has always been highly dependent on technology. In practice, the tools used can be divided into two main categories: language technologies (such as machine translation, translation memory and terminology management systems) and non-linguistic, operational tools such as workflow, file and document management systems and project management tools. Traditionally, both types of tools, which often require rapid updates and substantial customization to reflect the needs of individual organizations and their clients, were developed in-house. According to LISA data, nearly 70% of clients and approximately 50% of service providers still perform at least some systems development work internally, and developers of internal tools tend to have larger and more complex localization programs than other companies that do not develop tools. Nevertheless, the increasing maturity, size and focus of the localization industry have led to the rise of an independent and growing language engineering sector. At the same time, generic workflow and file and document management solutions are gaining ground here, as elsewhere. In

addition to established tools vendors, increasing numbers of developers have arisen to offer novel solutions to localization problems that have risen as the result of new technologies, particularly those relating to the Internet. Industry experts predict further growth and consolidation in this market, in order to increase critical mass and facilitate the integration of stand-alone technologies.

Global reach

The localization industry today is globally based: for example, LISA members have come from 43 countries and LISA holds Forums each year in the United States, Europe and Asia. A majority of LISA's client members generate a substantial proportion of their revenues (more than 20%) outside of their home country, and this number is also increasing. In keeping with this, the average number of target languages required by clients is increasing—over half of LISA client members have definite near-term plans to increase the number of languages into which they translate. In addition many large international firms and organizations already translate into 60 or more languages (with some dealing with over 170 languages at present.) While many classic IT clients still have their headquarters in North America (which means that English is currently the source language for a large majority of work), client enterprises already have operations on the ground in many different countries (with an average in excess of 32 countries), and the Internet means that these companies often have a presence in far more countries than those where their offices are located. Thus localization is clearly the glue that holds these global businesses together.

Localization is the glue holding global businesses together.

Equally, service providers, consultants and tools providers, though generally much smaller, are located all around the world and are also going international by creating formal and informal service networks, and, in some cases have reversed historical business trends by aggressively localizing their products into English from another language.

Localized products gain better local market acceptance.

Localization Tools and Technologies

Localization tools improve their users' time to market and ROI.

There are two main categories of localization tools: linguistic tools (language technology) and what may be termed administration and management tools—i.e., tools designed to facilitate and automate workflows, processes, project management, personal productivity, etc. Both categories are in considerable demand in the localization industry, since the speed and volume of work involved in localization make the use of tools imperative. In addition, many users have been able to reap substantial economic and other benefits from their tools. Since administration and management systems are mainstream tools and relatively well understood, this document focuses on language technology.

Language technology

Language is one of the most complex problems on earth.

Language engineering—the discipline that produces language technology—is a relatively new sector. Dependent for its progress on the rise of computing, and dealing with one of the most complex inventions on this planet—language—it has not fulfilled the naïve expectations of some of its founders, who mentally consigned human translators to the scrap heap many years ago. Nevertheless, a number of proven language technology systems have now emerged that enable rather than replace humans, and constructive human-computer interaction looks set to continue for a long time.

The following sections give a very brief overview of the main technologies involved:

Terminology management systems

Good terminology is the foundation for good translation of all kinds.

Terminology—i.e., the specialist vocabularies associated with specific sectors and applications—is the foundation on which good translation of all kinds is built. Thus the use of correct and appropriate terminology in translation memories and machine translation systems (see below) improves quality and cuts subsequent editing time. At the same time, human translators also require superior, easily managed terminology resources. These are generally provided by terminology management systems—term databases that contain entries in different languages. Good systems will be concept-based rather than word-based, allow effective synonym management, and be integrated with word processors to enhance translator productivity. The exchange of terminology between terminology management systems and between these and other tools such as machine translation systems is the subject of ongoing standardization work.

Translation memory (TM)

Translation memory is suited to repetitive texts or new versions of existing documents.

A database of previous translations in which the source and the target language texts have been broken down into segments that are aligned with each other. When a subsequent version of the same source text is compared with the original, the memory identifies the equivalent translated segments and inserts them into the

new target text. In addition, so-called "fuzzy matching" allows segments that are similar, but not identical, to the original to be inserted and then edited. Efficient use of translation memory depends, among other things, on the quality of the original translation (since any errors it contains will also be replicated consistently), the alignment (since reusability may depend on how big the segments identified are), and on how updates to the original source text are handled. In addition, even 100% matches will require subsequent editing to rule out subtle changes of context, or to adapt target texts to local markets (e.g., in an automotive text: "look under the hood" (US) versus "look under the bonnet" (UK)).

Globalization Management Systems (GMSs)

Traditional localization processes typically relied on a workflow in which entire projects (often consisting of hundred or thousands of files) were completed and then localized into target languages. This model of localization is not suitable for web sites that are constantly changing, often with little or no central control over the process. Manually tracking site changes is an almost impossibly task, so tools developers began developing GMSs starting in the late 1990s specifically to facilitate localization of web site content. GMSs typically consist of an engine that monitors site content for change and a component that, using business rules specific to each client, passes content to translators or other linguistic tools for further processing, and manages the workflow and synchronization of translated content with the source-language website. Although GMSs are complex tools, they are the only way at present to successfully localize the large and dynamic websites customers increasingly rely upon for everything from sales to tech support.

Globalization Management Systems allow for the translation of large, constantly-changing websites.

Machine translation (MT)

This much-misunderstood technology differs from translation memory in that it actually performs linguistic analysis on the texts submitted to it. Whereas translation memories are in theory language-independent, machine translation systems break down the source text into its constituent parts before translating them and reassemble them in the relevant target language. The results will not compare to (high-quality) human translation, but may still offer substantial productivity gains even after any post-editing effort has been factored in. Alternatively, MT can be used without post-editing to aid basic comprehension, in which case it is known as "for your information" translation, or "gisting". (The term "gisting" is also used in some cases to describe monolingual text summarization, which is not addressed here.)

Machine translation is suited to high volumes of well-written texts in restricted subject areas, or "for your information" translation.

One of the reasons why MT cannot offer the same quality as the best human translators is that machines cannot deal with ambiguity in the way that humans can, and also (like humans) have problems understanding long, convoluted sentences. As a result, machine translation works best on unambiguous, "technical" texts, or in restricted subject areas ("domains"). It is also particularly well suited to high-volume texts, and produces optimum results when integrated with other document generation and translation processes. Among other things, this is because the quality of the writing and editing applied to the source texts is vital to its success. Last but not

Since machines cannot resolve ambiguities, clear source texts are vital.

least, machine translation is crucially dependent on the quality, size and structure of the dictionaries (known as lexicons) that the system concerned uses. For example, translating an IT text with only a general lexicon will not produce high-quality results. This means that substantial set-up times for machine translation systems may be required, but that results can be very good where all relevant terms have been identified and added.

Guidelines for success

Language technology can produce real benefits, but care should be taken to ensure a realistic assessment of what it can and cannot offer. In addition to developing an understanding of the basic technologies involved, potential users should bear the following basic rules in mind:

Avoid false expectations

Language technology enables people. It does not replace them.

The extremely complicated nature of language means that no tools can produce perfect results all the time, and human intervention (post-editing) will still be required. The goal of replacing humans completely is therefore doomed to failure. More useful benchmarks to apply are time and efficiency gains and cost reductions. In some cases quality improvements may also be experienced, e.g., due to the use of a consistent vocabulary or text modules.

Horses for courses

Match your technology to your readers' needs.

Different types of text are suitable for treatment with different types of technology. The use of inappropriate tools will inevitably lead to substandard—or even unusable—results. For example, machine translation is generally unsuitable for advertising and marketing work, since these texts (and their readers!) demand a high degree of originality. Potential users should therefore be aware of the function of their texts and their readers' expectations, and should select their technologies accordingly. Localization professionals and tools manufacturers can advise further on this.

Garbage in, garbage out

High-quality source texts are vital.

The quality of results produced by linguistic tools is crucially dependent on the quality of the original text ("garbage in, garbage out"). Quality control of the original documents (which may go as far as to include the use of plain writing rules by the authors, or pre-editing of the texts before translation) is therefore vital.

Invest for the long term

Language tools are repositories of knowledge. They need building up over time.

Most localization tools require careful planning and implementation to produce best results. For example, terminology management systems and translation memories have to be filled with enterprise-specific content, while workflow systems require the documentation and optimization of the business processes they are designed to support. As with any knowledge-intensive system, potential users should accept that they are investing for the long haul.

Develop an integrated process

The full benefit of many tools, and hence an optimum return on investment, can only be achieved within an integrated process stretching from document creation to update management and text recycling. "Island solutions", while they may bring returns in their own right, will not unlock the full potential of the technology involved. In practice, creating such integrated solutions may well require overcoming the fragmented nature of multilingual document production in many enterprises (see the next chapter, "Localization Costing and Pricing", for further discussion of this topic).

Integrated solutions bring the best results.

Localization Costing and Pricing

Clear costing, pricing and cost/benefit figures are often difficult to obtain in the localization industry. On the one hand, it is clear that localized products are a major source of income for international companies. For example, in fiscal 1998 more than 60% of Microsoft's revenues came from markets outside of the United States, and its revenues from localized product exceeded $5 billion. On the other, 23% of client respondents in a LISA survey stated that they did not know how much revenue they were generating from localized products. Equally, many companies are currently not equipped to produce accurate cost calculations for localized products, and hence cannot effectively manage their localization spend.

In practice, there are a number of common issues that need to be addressed.

Calculating the ROI of localization

Localization can provide a "first mover" advantage.

Companies going global for the first time may only have a hazy idea of the size of their target markets and the relative benefits and costs of localization. In practice, providing a localized product version may well increase the potential ROI of a project substantially, especially if the enterprise concerned can exploit a "first mover" advantage. Conversely the cost of localization and of product maintenance and update costs for the localized version have to be factored in (although these can be minimized through careful global design). Companies should therefore analyze their target markets in depth and take the advice of their local representatives and specialist service providers on how localization (and/or the lack of it) will affect their chances of success in both the short and the long term.

Making the localization process transparent

All too often, localization is an "invisible," non-core process.

Unless localization work has been fully outsourced, the invoices submitted by external suppliers will only be a proportion of total costs. However, internal costs—especially for coordination and project management—may not be recorded at all, or not in sufficient detail. Furthermore, where some or all localization work is performed in-house, the process generally cuts across different functions and departments (e.g., design, development, product management, documentation, translation and marketing). Last but not least, some aspects of localization may be done "on the side" by staff normally performing other tasks. For example, local sales and marketing employees, technical writers and even secretaries may be responsible for translation or translation management, while development engineers may handle globalization and localization work. Only if these departments consistently and accurately document their effort and expenditure by project, and if the resulting data is subsequently aggregated, will accurate statistics be available.

Establishing actual revenue streams

Precise data is required.

In the software industry in particular, different language versions (including the English source) are often shipped on a single CD-ROM or DVD. This means that while it may be possible to identify the number of units sold in a particular market,

it is not necessarily clear which language version is being used. This further complicates ROI calculations.

Managing localization for cost-effectiveness

Once the actual costs and potential and actual revenues for localization have been established, enterprises are in a position to manage their localization costs effectively. This involves a basic decision as to the amount and types of work to be performed in-house, as well as how (and how many) interfaces to suppliers are to be handled. Generally speaking, companies outsource those types of work which are least related to their core businesses, and/or in which they have the least skills in-house. At a more abstract level, time-to-market, product quality (which can help cut subsequent support costs) and cost are the key client drivers for outsourcing. Enterprises should therefore look for localization service providers who can deliver on all three counts.

Service providers should deliver on time-to-market, product quality and cost.

In addition, given the "bet the farm" nature of product localization, companies are well advised to rank cost-effectiveness above the lowest absolute price. For example, slogans and advertising claims—the public face of a company or its products—require recreation in the target language rather than a literal rendition.

Cost-effectiveness is the key benchmark.

Companies that treat localization as a pure commodity, rather than recognizing that it is a creative process, will get substandard results. Also, service providers offering simultaneous shipment have to invest heavily in project management, telecommunications and information technology, and this will naturally be reflected in pricing. That having been said, the localization industry currently combines sophisticated services with extremely competitive prices, giving clients a strong vendor base worldwide from which to choose.

Best Practices and Standards

Localization is a young and dynamic industry in which change is the only constant. Companies that did not exist ten years ago are now providing mission-critical services to some of the largest enterprises in the world. In growing, they have integrated hundreds of people from different cultures and a large variety of technologies, many of them still under development. As with other young industries such as IT, this rapid growth has only been possible due to a consistent focus on best practices and standards. In particular, the areas examined below have played and are playing a crucial role in the development of the localization industry.

Quality management

Quality standards ensure smooth operations and satisfactory results.

Given the high volumes, fast turnaround times and vital importance of localized products, sophisticated and consistent quality management procedures are a must. Quality standards in use for different aspects of the localization process include the LISA QA Model (which covers localization-specific issues), the ISO 9000 series and Total Quality Management (generic, process-based standards that can be tailored to any industry and any processes within it), DIN 2345 (a German translation standard), and CMM (for software development). In practice, many LISA clients and service providers use internal QA systems based on one or more of these standards. This has the advantage of producing highly customized quality assurance procedures that can be rapidly revised when procedures change.

Translation data interchange

Translation data interchange standards protect investments and facilitate the use of state-of-the-art technology.

As localization tools have developed and been implemented on a broad scale, so the need to interchange translation data, which often represents a sizeable economic investment, has grown. Ideally, such interchange needs to be both between different systems (e.g., from Manufacturer A's translation memory to Manufacturer B's translation memory) and between different system types (e.g., to reuse terminology from a terminology management system in a machine translation lexicon). This task is not easy given the wide range of highly proprietary formats in use, but the development of open standards has simplified the exchange of translation data and information.

One such open standard is TMX (Translation Memory eXchange), produced by LISA's OSCAR (Open Standards for Container/Content Allowing Re-use) Special Interest Group. TMX designates how segments of text are defined and aligned within translation memories, thus allowing these segments to be ported to any other system supporting the standard. OSCAR is also working on how terminology can be exchanged between systems—a major productivity issue—in its Term Base eXchange (TBX) project.

Open standards play a crucial role in building customer confidence and industry support for organizations investigating cross-lingual applications. Stating his opinion in a recent interview, Mr. Glenn H. Nordin, Assistant Director (Language),

Department of Defense, said that "language technology tools purchased by the U.S. government are expected to implement TMX and TBX among other open standards like Unicode".

Consistent with the growth and importance of global knowledge management throughout many worldwide organizations, developers are increasingly aware that it is in their interests to build applications that will avoid the establishment of systems that stand alone and are kept alone. Mr. Nordin added: "Developers as a group need to help their customers understand and use the standards in writing specifications. Standards from Unicode through to LISA's TMX and TBX, will provide the glue to build the virtual translation, translation management, and knowledge warehouse of the future."

In addition to TMX and TBX, OSCAR is currently working on standards that address standard methods for counting words in files and defining how text is segmented by translation tools. Both of these issues are of vital economic and technical importance in the localization industry, and development of these standards will increase the further increase the effectiveness of translation tools and workflows.

Open standards like TMX and TBX provide the backbone for the future of localization.

Business practices

As an emerging and fast-moving industry, localization needs to develop and disseminate best business practices rapidly. As the premier global industry association, LISA has played a central role here. Its initiatives include a code of practice for LISA members and a Common Bidding Platform designed to help standardize client-partner expectations before implementing a localization project. By defining a project's deliverables in terms of its languages, engineering, technology and documentation requirements, customers and their service partners are in a good position to establish reasonable time, cost and quality parameters for any type of localization project.

Best business practices increase professionalism and avoid potential conflicts.

Education and further training

The localization sector is currently facing an acute shortage of qualified staff, with many companies forced to invest considerable sums in private training. LEIT (the LISA Education Initiative Taskforce) has been working since 1998 to address this problem. The initial mandate of this group of leading academics and institutions from the US, Europe and Asia was to evaluate the state of localization-related education (international business, computer science, technical writing, and translator training) and make recommendations for action. The ultimate aim is to produce a commonly agreed core curriculum for localization and to facilitate its implementation at universities and other training institutions. Along the way, LEIT it is also providing support to academics and publicizing career opportunities in the field in order to attract additional high-caliber recruits.

Education and training lay the foundations for success.

Future Trends and Challenges

The localization industry has come a long way in a very few years, and still bears many of the hallmarks of an emerging industry. As economic globalization gathers momentum, so will the demands facing clients, service providers, tools manufactures and consultants. In particular the following issues have been and continue to be critical challenges for companies engaged in globalization.

Technology and organizational processes

Enterprises must drive forward technology and process integration, and new tool development.

While a number of useful language technologies have emerged over the relatively recent past, tools in this area are by no means as sophisticated, universally applicable, or robust as users require. This problem is especially acute given the extremely tight project turnaround times, a factor that is likely to get worse rather than better in the future. At least two main issues need addressing here: integration and further technological development. In the case of integration, tool manufacturers need to provide or facilitate end-to-end document creation and localization processes spanning individual technologies such as translation memory and machine translation. At present, these are generally deployed as "island solutions" and are not obtaining maximum benefit. For example, source texts that have not been written or optimized for translation will not produce quality results with machine translation alone.

Process fragmentation and cultural clashes must be overcome.

In many cases, however, integration involves surmounting substantial organizational and cultural boundaries within client companies. For example, in many cases different links in the localization chain report to different units, and cultural differences e.g., between engineers and technical writers are often found. In addition, many tools providers find it difficult to provide the bandwidth needed to support projects that can easily run into several person years. Above and beyond this, additional blue-skies and applied research and development is required to increase the range and reliability of existing technologies. Here, too, the substantial sums of money involved and the small size of many tools providers act as a brake to progress. Client enterprises therefore must play at least a flanking role in driving progress.

Staffing and training issues

As has already been mentioned, the localization industry—like all IT-related sectors—is currently suffering from a severe shortage of new employees. In addition, graduates in relevant disciplines are by no means always trained in all the skills they need. Remedying this by incorporating relevant modules into curricula for related courses, e.g., for translator and software engineering training, must be a high priority. This requires ongoing liaison with and support for university staff, who must develop such changes and have them approved by their relevant faculties. Ongoing vocational education must also be provided, and clients in particular need to support training programs (up to now, service providers have been carrying a disproportionately heavy part of the burden). Last but not least, governmental funding

will have to play a role, especially in the area of basic skills provision and support for blue-skies research.

Above and beyond this, enterprises must recruit and retain high-quality localization staff by offering them attractive compensation packages and career development paths. Localization must be seen as a profession with a future both by potential entrants and by the companies employing them. This perception has sometimes been a problem in the past, with localization engineering being seen as inferior to mainstream development work, and translation being performed by a wide range of people, some of whom have been insufficiently skilled. LISA's work to raise the standing of the profession, and its LISA Education Initiative Taskforce (LEIT) are two of the many activities that need to be continued and, subject to appropriate funding, could result in globally valid certification programs.

Strategic importance and transparency

As has already been seen, one problem facing localization today is that the process is often invisible to senior executives, who are not aware of the sums they are spending in this area, or of its strategic importance. Alternatively, they may have recognized the issue but regard localization as "just another linguistic process", i.e., a non-core, non-value added activity to be outsourced. This view breaks down in the face of the revenues generated from localization and the overriding importance of timely product delivery. These can only be achieved where the interface between development and localization is well designed, and where communications flow freely. That this is not the case becomes clear from the 65% of clients who find that insufficient information is the main cause of delivery problems. Thus, thinking globally and acting locally means integrating localization activities fully into operational processes.

> **Senior executives and development managers must realize the strategic importance of localization.**

Industry growth

As a young industry, the localization sector has only recently seen the emergence of large enterprises, and a large proportion of service and tool providers are still relatively small. The growing pains that such companies experiences are considerable, as they need to cope not just with a highly dynamic sector but also with a massive increase in demand on the part of their clients, some of whom are already large, sophisticated organizations. At the same time, they need to implement professional structures and workflows and grow (and retain) their management and specialist staff. Last but not least, they have to ensure profitability, raise the funds required for expansion, and subsequently keep any investors happy. LISA and other professional organizations have a key role to play here as a forum for the development and dissemination of best practices, industry standards and information, as a facilitator of contacts, and as a provider and promoter of training courses.

> **The localization industry must continue to grow and mature at all levels.**

Standardization

An ever-growing number of file formats and technologies, as well as GILT tools, has pushed standardization to the front as a vital issue in localization. Companies

involved in localization are increasingly finding that no single tool can meet all their needs, and are turning to open standards as a way to integrate various tools into their workflows. LISA's open-standards committee, OSCAR, is the Special Interest Group that created one of the first XML-based standards, Translation Memory eXchange (TMX), to allow users of various Translation Memory systems to share data, and OSCAR has been working on other areas in need of standardization. Other relevant standards, such as Unicode, are not specific to localization, but provide the backbone for localization tools and standards. Standards allow users to be flexible and to choose the best tool for each job, rather than being tied to one tool because information in that tool cannot be shared. Standards also allow tools developers to focus on their core competencies, rather than trying to replicate ever feature of every other tool in their own product. Although a lot remains to be accomplished in the area of standardization, bringing the benefits of standards to all areas of localization is an area of considerable effort and importance to companies involved in localization.

Managing content

Content management eliminates redundancy and allows for repurposing of content

In the early days, the localization industry focused on localization of products or services, but increasingly companies want to manage multilingual content, and see content, regardless of language, as a vital corporate asset. Companies also see management of content as a significant source of savings, as previously independent (and redundant) authoring functions can be combined and streamlined. Various tools have arisen to help keep multiple language versions of content in sync and linked to their sources, as well as allowing for dynamic repurposing of content, and localization is increasingly being folded into these systems, allowing the benefits of the content management revolution to be extended to globalization.

Increased focus on value creation

Clients and service providers must recognize the value added to products by localization.

Up to now, localization has traditionally been regarded as a pure service. In particular, service providers have regularly signed away their intellectual rights in their work, and have traditionally performed relatively simple, low value added tasks. This has led to characteristically low valuations for service provider companies on the stock market, for example. At the heart of this practice is a fundamental underestimation of the value added to products by localization. The rise of economic globalization is changing this, as the proportion of revenues from localized product increases.

In addition, the range and complexity of service provider offerings is growing, and with it the relative equality of the two sides of industry. For example, as many smaller companies go global, the role of service providers will be to provide full globalization consulting, and not just operational services.

As a result, we are likely to see the development of new business partnerships in future, in which clients and service providers share risks and rewards more evenly. For example, vendors could provide localization services in return for a share in lo-

cal market revenues, rather than a fee, or retain intellectual property rights or rights of reuse in parts or all of their work. While they may prove initially uncomfortable for clients, such arrangements will also increase the incentive for service providers and offer them and the industry as a whole a growth path.

Living on the Web

As we have already seen, the Internet revolution and the rise of e-commerce will drastically change the way in which enterprises do business, and localization professionals are no exception here. Internet content needs translating at Internet speed and must often be released simultaneously in all languages, thus slashing turnaround times. Web pages age quickly, increasing update frequencies and leading to "micro-releases". One key benchmark of Web success is *stickiness*-the ability to attract new and repeat visitors and keep them on a site. Popular methods of keeping visitors "glued" to Web sites include in-depth company and product information, loyalty programs, tips and tricks, help desks and support functionality, as well as chat rooms and message boards. All of these have to be designed, implemented and maintained, and the bigger the site, the bigger the potential headaches.

Thousands of small files may well require near-instant delivery, management and—hopefully—reuse. Tight integration with the authoring process is necessary here: something that is further reinforced by the need to achieve a balance between global branding and local market attractiveness.

In addition, the speed and flexibility demanded by clients cannot be purchased at the expense of quality. On the contrary, by exposing products, services and information to large native-speaker audiences worldwide, the Web is increasing the pressure on enterprises to provide high-quality material. Service providers who cannot support their clients in this will feel the heat in future, especially since language technology is starting to offer an alternative at the low end of the market. In many cases, this need for quality will reinforce the current trend towards greater specialization, since it is impossible for a service provider to offer the required level of product in all subject areas and languages.

This trend towards subject area and functional specialization, coupled with the need to respond flexibly to changing situations, will lead to an increase in partner relationships among specialist organizations. Networks of alliances of varying degrees of formality will emerge, glued together by technology and advanced project and workflow management. The cost implications of such a model are, of course, considerable, and will lead to further changes in industry structures and service provider profiles.

LISA in the new millennium

LISA serves as the nexus in which all aspects of business globalization can come together and develop standards, best-practices, and new techniques for dealing with the challenges faced by all in the GILT (Globalization, Internationalization,

Service providers will increasingly turn into consultants, and new business models will emerge.

Localized Web sites need careful management.

Tomorrow's industry must deliver quality, flexibility and speed.

Localization and Translation) field. As the globalization and localization sector grows, LISA's role will be to continue voicing key issues and to expand the opportunities for all concerned to learn more about the requirements for success. To this end, LISA will continue providing local events and information tailored to specific geographic regions as well as serving as a virtual and physical global community in which all sides of the industry to get together and focus on the issues. As in the past, it aims to break down barriers, facilitate education both within and outside the localization sector, and expanding and defining the market. In discharging this task, it welcomes and seeks input from all relevant stakeholders and players.

Further Information

This list provides a number of key resources for those interested in finding out more about globalization and localization. It makes no claims to completeness, nor does it assume any responsibility for the sources listed.

LISA information

The Localization Industry Standards Association's Web site provides information on LISA events, members and activities, along with a selection of basic industry data, partner offerings and member job postings. LISA Members also have access to LISA's extensive archives of industry data, Forum summaries, the LISA Newsletter, etc. LISA General Assembly and Sponsorship members can register up to 100 employees to access the password-protected areas of the site.

The LISA Web site

The Web site can be referenced at www.lisa.org

LISA publications

For a current listing of all LISA publications, including free publications, please visit http://www.lisa.org/products/survey.html.

LISA Publications

LISA Newsletter - Globalization Insider

The *Globalization Insider* is LISA's twice-monthly publication that includes articles written by recognized experts in globalization. The Globalization Insider is free, but premium content is available to LISA members and newsletter subscribers only.

LISA QA Model Version 2.0

The only non-proprietary global quality standards for the localization profession, the LISA QA Model has been widely implemented in the localization industry. The LISA QA Model offers a standardized quality assurance model for product localization that covers everything from documentation, help and software through to packaging and CBT tutorials). Discussions of and checklists for language, formatting and functional criteria are provided, as are procedures and templates for sampling and follow-up activities. Copies of the LISA QA Model, which was extensively revised and updated, can be ordered from the LISA Web site.

Global Content Creation Survey (2002)

Published in late 2002, the LISA Global Content Creation Survey examines trends and statistics in authoring of global content based on the detailed survey of 154 companies. With 41 pages and 45 figures, the Global Content Creation Survey is the first and only survey to look comprehensively at content creation in a multilingual environment.

2002–2003 Asian Globalization Resources Survey

The first in a planned series of surveys to focus on the globalization business in Asia, the 2002–2003 Asian Globalization Resources Survey focuses on the localization market in the People's Republic of China. The survey was conducted by an experience team of interviewers in China, and was based on in-depth telephone interviews with representatives of over 210 companies doing business in China, both foreign and domestic. The primary research objective was to provide a comprehensive picture of the current and future globalization and localization initiatives undertaken by China-based private and public companies (including a number of the reformed state-owned enterprises). The report was also designed to review their product and web-based localization efforts and spending patterns.

The US Technology Globalization Survey (2001)

The US Technology Globalization Survey (2001) survey explains trends in the US market for globalization and localization technology and services. By interviewing over 200 key executives at High Technology companies regarding their globalization plans, budgets, preferences, and forecasts, the Globalization Technology Survey USA is a comprehensive, in depth, end-user survey that covers major aspects of the globalization market in the U.S.

Free publications

LISA also offers the following publications without charge:

- The **2002 LISA Translation Memory Survey** examines trends and statistics in translation memory usage, as well as the impact of standards on TM usage.
- The **2003 LISA • OASIS Global eBusiness Survey**, conducted in partnership with OASIS, explores trends in global eBusiness, and how these relate to the use and uptake of standards in a multilingual global business context.
- **LISA White Papers**. LISA White papers address topics of importance to the GILT community and are written by experts recognized as the top of their fields.

Other information

Web
- The Unicode consortium, which develops, extends and promotes the use of the Unicode Standard for the representation of text in modern software products and standards, provides information on its work at **www.unicode.org**
- The World Wide Web Consortium's Internationalization page is available at **www.w3c.org/International**
- A listing of localization industry links is maintained at **www.lisa.org/standards/**
- The LISA Educational Initiative Taskforce (LEIT) website provides a listing of internationalization and localization training programs available world wide at **leit.lisa.org**

- OASIS is a not-for-profit global consortium that drives the development, convergence and adoption of e-business standards (**www.oasis-open.org**)
- IDEAlliance (International Digital Enterprise Alliance) is a not-for-profit membership organization. Its mission is to advance user-driven, cross-industry solutions for all publishing and content-related processes by developing standards, fostering business alliances, and identifying best practices. IDEAlliance has been a leader in information technology since 1966 (founded as Graphic Communications Association) having fostered the development and adoption of standards such as GRACoL, ICE, JIFFI, Mail.dat, papiNet, PRISM, PROSE XML, SPACE XML, SGML, and XML. (**www.idealliance.org**)

Globalization

- Bean, James: *Engineering Global e-Commerce Sites*. Elsevier Science. 2003.
- De Palma, Donald A: *Business Without Borders*. John Wiley & Sons. 2002.
- Friedman, Thomas L.: *The Lexus and The Olive Tree*. Farrar, Strauss & Giroux. 2000.
- Greider, William: *One World, Ready or Not: The Manic Logic of Global Capitalism*. Simon & Schuster. 1997.
- Rosen, Robert: *Global Literacies: Lessons on Business Leadership and National Cultures*. Simon & Schuster. 2000. (ISBN: 0684859025)
- Waters, Malcolm: *Globalization* (2nd edition). Routeledge. 2001.

Books, documents and electronic files

Localization and Internationalization

- Dyer, Alyssa: *Software Product Management Essentials*. Anclote Press. 2003.
- Esselink, Bert: *A Practical Guide to Localization*. John Benjamins Publishing. 2000.
- Rätzmann, Manfred & Clifton De Young. *Galileo Computing Software Testing and Internationalization*. (Available as a PDF exclusively through LISA at **www.lisa.org/interact/2003/swtestregister.html**)
- Savourel, Yves. *XML Internationalization and Localization*. Sams. 2001.
- Sprung, Robert (ed.). *Translating into Success: Cutting Edge Strategies for Going Multilingual in a Global Age*. John Benjamins Publishing. 2000.
- O'Connell, Fergus: *How to Run Successful Projects II*. Prentice Hall. 1996.
- Lunde, Ken: *CJKV Information Processing*, O'Reilly & Associates. 1998.

A large list of links to GILT-related publications and sites is maintained on the LEIT site at **leit.lisa.org/bibliography.html**.

LISA and its Members

What is LISA?

Founded in 1990 in Switzerland as a private, non-profit association, LISA is the premier organization for the GILT (Globalization, Internationalization, Localization, and Translation) business communities. Over 400 members from leading IT manufacturers and solutions providers, along with industry professionals and an increasing number of vertical market corporations with an international business focus, have helped establish LISA best practice guidelines and language-technology standards for enterprise globalization. The Association is managed by a full-time Director and support staff and advised by an Executive Committee elected from amongst its corporate members.

What are its goals?

LISA defines its mission as "promoting the localization and internationalization industry and providing a mechanism and services to enable companies to exchange and share information on the development of processes, tools, technologies and business models connected with localization, internationalization and related topics". One of the main vehicles for this are the LISA Forums, at which members can listen to acknowledged industry experts and exchange news and views, thus ensuring that multilingual software, documentation and other products are manufactured worldwide to the highest possible standards. In addition, LISA gathers, processes and distributes a wide range of information on the industry and relevant issues.

What are LISA's values and principles?

LISA seeks to promote the following values in the localization industry and among its members:

- **Global Responsibility**. Companies doing business around the world have a responsibility to respect the nations and cultures with which they do business. Localization provides the means by which companies can enter multiple markets with sensitivity and respect.
- **Global Entrepreneurship**. Globalization allows for the spreading of prosperity across national boundaries and the extension of benefits around the world. By taking a leading role in global entrepreneurship, LISA's members are in a position to promote the benefits of globalization
- **Global Leadership**. LISA's members represent companies taking a lead in global business. LISA members understand the value of global business and localization and are in a position to lead their partners and others into responsible global business practices.
- **Global Cooperation**. LISA promotes cooperation on a global scale, with companies and individuals coming together to work on areas of common interest.

What services does LISA offer?

Services provided by LISA to its members include the following:

- Regular LISA Forums in different venues throughout the world
- Regular LISA Workshops offering hands-on skills training and in-depth discussion for translation tools, Machine Translation, multiple language workflow, and similar topics
- Strategic seminars geared to education decisions makers in the private and public sectors, business consultants and the media about the importance of globalization and localization
- Special Interest Groups (SIGs) for consultation and work on specific topics like Tools Benchmarking, Web support for multiple languages, and localization Quality Assurance
- Industry and member surveys, plus information from standards bodies and other sources
- A constantly updated Web site of online resources and industry updates with archive service for previous Forums, Presentations, Surveys, and special reports
- The LISA Directory listing members and industry support groups with www links

Who can join?

Any legal or natural person working directly or indirectly on the creation of multilingual software, documentation and/or multimedia products. Above and beyond this, information services are available to non-members on a fee basis.

How do I get more information?

Further information on LISA services and membership application forms are available on LISA's Web site (**www.lisa.org**), or from the LISA Secretariat:

7 Route du Monastère - 1173 Féchy, Switzerland.
Tel.: +41 21 821 3210
Fax: +41 21 821 3219
Email: **lisa@lisa.org**

Glossary

bi-di

Abbreviation for "bi-directional", a term used to describe scripts such as Arabic and Hebrew that generally run from right to left, except for numbers, which run from left to right.

bricks and mortar

An adjective used to describe a traditional, non-Internet-based company, as opposed to a "dot com".

clicks and mortar

An adjective used to describe a company with a hybrid business design that incorporates aspects of both traditional and "dot com" companies.

DBCS

Abbreviation for "double byte character sets", a term used to describe Far Eastern scripts such as Japanese and Chinese that require twice the space of English for each letter.

delta

(1) The time gap between the appearance of a product in its lead market and of localized versions. This should be kept as small as possible to avoid revenue loss. (2) The portion of a file that changes between two versions.

dot com

An adjective used to describe a company that has been designed from scratch to take advantage of the Internet, as opposed to a "bricks and mortar" one.

e-business

The sale and purchase of goods and services via the Internet. In contrast to e-commerce, e-business is used to describe business-to-business (b2b) transactions.

e-commerce

The sale and purchase of goods and services via the Internet. In contrast to e-business, e-commerce is used to describe business-to-consumer (b2c) transactions.

enabling

A synonym for internationalization.

gisting

A term used to denote a) instant "for your information" machine translation and b) monolingual text summarization.

globalization

(1) The general process of worldwide economic, political, technological and social integration; (2) The process of making all the necessary technical, financial, managerial, personnel, marketing, and other enterprise decisions necessary to facilitate localization.

globalization management system (GMS)

A translation tool designed to facilitate localization of websites with constantly-changing content.

internationalization

The process of ensuring at a technical/design level that a product can be easily localized.

legacy application

An application that is already in existence and that needs to be incorporated into or ported to a new environment.

LEIT

The LISA Education Initiative Taskforce, which is working to produce a commonly agreed core curriculum for localization issues and to facilitate its implementation in whole or part at universities and other training institutions.

localization

The process of modifying products or services to account for differences in distinct markets.

machine translation (MT)

A translation productivity tool that works by breaking down sentences or other text segments, analyzing them in context and then recreating their meaning in the target language. Machine translation works best on large volumes of well-written texts from narrow subject areas.

MLV

An abbreviation for "multi-language vendor", a term used to describe a relatively large localization service provider offering a wide range of languages and other services.

OSCAR

A LISA Special Interest Group. OSCAR, which stands for "Open Standards for Container/Content Allowing Re-use", comprises a group of localization clients, service providers and academics. The Group was responsible for LISA's TMX (Translation Memory Exchange) standard released in 1998. OSCAR is currently working on a second standard, TBX, for term base exchange.

simship

An abbreviation for "simultaneous shipment". This refers to the common practice in the localization industry of releasing multiple language versions of a product together, on or around the date on which the original is released. Simship is necessary because a substantial proportion of product revenue is generated in the weeks following release, and customers stop buying localized version of previous releases when the new original appears.

SLV

An abbreviation for "single language vendor", a term used to describe a relatively small localization service provider offering only one or a restricted number of languages.

stickiness

A term used to describe the ability of Web sites to attract new and repeat visitors, used as a benchmark of Internet success.

terminology

A database of specialist words for a subject area or areas used to facilitate management system high quality human or computer-aided translation.

TMX

The international Translation Memory Exchange standard produced under the auspices of LISA.

translation memory (TM)

A translation productivity tool comprising a database containing segments of source and target language texts that have been aligned to match each other. Translation memories are used to retrieve previously translated material, e.g., when handling new versions of existing documents.

LISA Forum and Summit Locations, 1990–2003

1990
- Amsterdam (The Netherlands)

1991
- Luxembourg
- Copenhagen (Denmark)
- Windsor (England)

1992
- Amsterdam (The Netherlands)
- London (England)
- Brussels (Belgium)
- Valbonne (France)

1993
- The Hague (The Netherlands)
- Dublin (Ireland)
- Estoril (Portugal)

1994
- Mountain View, California (USA)
- Boston (USA)
- Heidelberg (Germany)
- Runnymede (England)

1995
- Boston (USA)
- Singapore
- Vienna (Austria)
- Amsterdam (The Netherlands)

1996
- Singapore
- Newport Beach, California (USA)
- Dromoland (Ireland)
- Prague (Czech Republic)

1997
- Geneva (Switzerland)
- Beijing (PR China)
- Washington DC (USA)
- Mainz (Germany)

1998
- Madrid (Spain)
- Tokyo (Japan)
- Salt Lake City, Utah (USA)

1999
- Budapest (Hungary)
- Monterey, California (USA)
- Shanghai (PR China)
- Boston (USA)

2000
- Amsterdam (The Netherlands)
- San Jose, California (USA)
- Yokohama (Japan)
- Arlington, Virginia (USA)
- Washington D.C (USA)

2001
- Vienna (Austria)
- Chicago (USA)
- Singapore

2002
- Heidelberg (Germany)
- Washington DC (USA)

2003
- London (UK)
- San Francisco (USA)

LISA members, past and present

LISA would like to thank the following companies that have contributed to the development of the localization industry as LISA members since 1990:

Australia
Meta Language Engineering (Aust)
Queensland University of Technology (QUT)
Software Engineering Australia (SEA)

Belgium
Dekryptos SA
Eurologos
Global Communication NV
Hitext S.A.
Jonckers Translation & Engineering
Lernout & Hauspie
Mendez Inc.
Sony Information Technology Europe
Stoquart SA
Telelingua International
Unisys Corporation
write! SA
Ycomm Europe NV

Brazil
Norsul Participacoes e Empreendimentos Ltda.

Canada
ACD Systems Ltd
Alis Technologies Inc.
Cognos Inc.
College universitaize de Saint-Boniface
Corel Corporation
Creo Inc.
Crystal Decisions Corp.
DNA Media Services Inc.
i18N Inc
Lexi-Tech International Inc.
LionBridge Technologies Inc.
Nortel Networks
Ordiplan Inc.
Seagate Software Inc.
Sobrio International
Walter Ego, Division of Alis Technologies

China
ArtM Technology Co. Ltd
Beijing Beyondsoft Co., Ltd
Beijing InfoTech Media Co.
Boffin China Inc.
Inforlion Language Services
Linguitronics
Shanghai Kingstar Media Co., Ltd.
SJTU Sunway Software Co., Ltd
Transco Technology Co. Ltd
Worksoft Creative Software Technology Inc.

Czech Republic
Hieronymus s.r.o.
Moravia Translations a.s.
Skrivanek Translation Services
Virtus s.r.o.

Denmark
Mapics Inc.
Navision a/s
The Danish Association of Business Languages
  Graduates (EsF)

Egypt
Arabize
Future Soft

Finland
AAC Global Oy
Alpha Communications
Nokia Corporation
Nokia Networks
PasaNet Oy
Sonera Corporation
Translation Services Noodi Oy

France
ANTHEA Language
Bootstrap

GlobalWare International
Hewlett Packard France
LinguaNet PassWord
Systran
Techword
WH&P
Wonderware Solutions

Germany

Capella & McGrath GmbH
Compaq Computer EMEA B.V.
Fry & Bonthrone Partnerschaft
gwSaar
IASPK / FASK Germerscheim
Locatech GmbH
Logos Corporation
Oskar New Media Consulting GmbH
Philips Medical Systems
Primus
SAP AG
Software AG
Text & Form Software-Lokalisierung GmbH
Think'Z - Global Language Solutions
Translate.IT
Transline International GmbH
Transline Localization GmbH
XTRA Translation Services
Archetypon S.A.
Intertranslations Ltd.
ORCO S.A.

Hong Kong

Standard Chartered Bank

Hungary

Ablaksoft KFT
Gamax

India

GyanSoft Technologies

Ireland

Alchemy Software Development Ltd.
Clockworks International
Connect Global Solutions

Corel Corporation Ltd.
ETP Ireland Ltd.
FileNET Ireland
IT Alliance Ltd
ITP - International Translation & Publishing
LocalEyes Ltd.
Netscape Communications Corporation/AOL
Oracle Corporation
SLIG of Dublin
Sun Microsystems Ireland Ltd.
Symantec Ltd.
Transware plc
VistaTEC Ltd.

Israel

Eyron Software Localization
EYRON.NET
Quality Translations
SagirOnline

Italy

CrossGap S.r.l.
Logos Group
SEPCOM2
Wordwide

Japan

Camui Corporation
Fujitsu Learning Media Ltd.
Human Science Co. Ltd
Language Documentation Services Inc.
NEC Documentex Ltd.
Oneworld K.K.
SAS Institute Japan Ltd.
Sirius Inc.
SunFlare
TOIN Corporation

Netherlands

Alpnet
Amtec Translations
Concorde Tec. B.V.
International Software Products B.V.
L&L Gebruikersinformatie B.V.
Language Networks B.V.

MTM - Multilingual Translations Management
Scriptware B.V.
Sykes Enterprises Inc. B.V.

Norway
INK Norge AS

Poland
Argos Company Ltd.
Lomac Group
Magit

Russian Federation
Delos o.o.o.

Singapore
AsiaRain Automated Translations Pte Ltd.
e-Localization Network
EWGate Pte. Ltd.
HS Cross-Lingual
KRDL - Kent Ridge Digital Labs
Star+Globe Technologies Pte Ltd
The 8th Network Corporation

South Korea
YBM/Si-sa
GlobalWay Co. Ltd.
ISIS Korea Inc.
JTS Korea Inc.

Spain
Bowne Global Solutions
Celer Pawlowsky
Comunicacion Multilingue, S.L.
EQUUS Traducciones S.L.
Hermes Traducciones y Servicios Linguisticos
Logoscript - Translations & Software
    Localization
Management System Solutions
Nova Traductors i Interprets, s.l.
RM-Soft Translation&Publishing
Ros Multimedia SL
Syntax Traducciones Tecnicas Y De Software
Viso Translations

Sweden
Interverbum Localization AB

Switzerland
Andiamo - A Crucible Group Company
Autodesk Development Sarl
CLS Corporate Language Services
Logitech Europe SA
SMP Marketing Sarl
STAR Group
The Fantastic Corporation R and D SA
Transpose SA
World Online Switzerland SA

Taiwan
digiAsia, Inc.
International Integrated Systems Inc.
Mirrors International, Inc
PTSGI/ATS.com
TargeTek Co., Ltd.

Thailand
QTranslation Limited

Turkey
ASK Translation & Training A.S.
ES Bilgisayar Ltd.
Locasis
Pan Localization Services Ltd. Co.

United Arab Emirates
Lingua Franca

United Kingdom
Aspect Communications UK Limited
Babel Media Ltd.
Canon Systems Management Europe Ltd.
Communicare UK Limited
Hasbro Interactive
ITR - International Translation Resources Ltd
Language Technology Centre Ltd.
Lloyd International Translations
McQueen Ltd
PC DOCS Inc.
QIN Limited

Santa Cruz Operations Ltd.
SDL International Ltd.
SEED Foundation
Systems Union Group
Tetra Plc.
Wordbank Ltd
Xerox Ltd.

USA
3Com Corporation
A2Z Global Language Network
Able International Inc.
Acclaro
Adams Globalization
Adobe Systems Inc.
Allaire Corporation
Alltel
Amerolink, Inc.
Apropos Technology
ArchiText Inc.
Asialize2000, Inc.
ATA (American Translators Assoc.)
Attachmate Corporation
Avaya Inc.
Avid Technology Inc.
Bentley Systems Inc.
Berlitz GlobalNET
BMC Software Inc.
BrassRing Systems
BYU - Brigham Young University
California State University, Fresno
CIJ America Inc.
Cisco Systems Inc.
Common Sense Advisory
Convey Software
Dell Computer Corporation
Detroit Translation Bureau
DeVries Data Systems Inc.
Disney Interactive
Documentum Inc.
eBay Inc.
eBusiness Technologies of Inso
Echo International
EDS PLM Solutions
EMC Corporation

empolis NA, Inc.
EnCompass Globalization
FileMaker International Ltd.
General Electric Information Services Inc.
Global Languages and Cultures, Inc.
Globalization Partners International
GlobalSight Corporation
GoTo.com
Hewlett Packard
Hewlett Packard Company
Hyperion Solutions
i2 Technologies
IBM Corporation
Idiom Technologies
iLanguage, Inc.
International Communications
International Language Engineering
International Technoprint, Inc.
InterPro Global Partners
ISOGEN International (division of Innodata Corporation)
iSynergi
Iverson Language Associates Inc.
J. D. Edwards World Source Company
James Madison University - Center of Translation and Interpretation
JLS Language Corporation
Johnston & Associates Inc.
Jubilee Tech International Inc.
Kent State University Institute for Applied Linguistics
Kronos Inc.
Language Partners International Inc.
Language Technology Research Center
Language Works, Inc.
Lawson Software
Lemoine International
LexFusion
Lighthouse Solutions Inc.
Lingo Systems
Logisoft
Logrus International Corporation
LucasArts Entertainment Co. LLC
Lucent Technologies - CTIP
Macromedia, Inc.

MapInfo Corporation
Maxwell Thomas
Medtronic Inc.
Micron Technology Inc.
Microsoft Corporation
Motorola Inc.
Multilingual Translations Inc.
Neilsoft
Nissho Electronics Corporation
Nitorum Corporation
Novell Inc.
OASIS
OneRealm Inc.
Openwave Systems Inc.
Palm, Inc.
pcOrder.com
PeopleSoft Inc.
Peregrine Systems, Inc.
Pervasive Software Inc.
Praetorius Language Services
ProZ.com
Real Idea
Rockwell Automation
Roxio Inc.
Rubric Inc.
RWS Group
Sagent Technology Inc.
Sandhills Software
Sapient Corporation
Satellite Station Inc.
SDRC Corporation

Semantix
Siebel Systems, Inc
Silicon Graphics Inc.
SimulTrans L.L.C.
SinoMetrics International Inc.
State Farm Insurance Companies
Sun Microsystems Inc.
Sybase Inc.
Syntes Language Group Inc.
The World Bank
The Write Stuff
TheOne.com
Trados Corporation
Translations.com
Uniscape Inc.
UniSite Software
Vastera
Venturi Technology Partners
Vignette Corporation
Wayne State University
Welocalize
Wholetree.com
Word Magic
WordStream Inc.
WordWalla Inc.
Worldlingo.com
WorldLink Technologies
WorldPoint Interactive Inc.
Xplanation International NV
YAR Communications Inc.

The Localization Industry Primer, second edition was revised by

Arle Lommel
Publications Manager
LISA