

# **LISA**

# **Best Practice**

# **Guide**

**Quality Assurance–  
The Client Perspective**



# LOCALIZATION INDUSTRY STANDARDS ASSOCIATION



SINCE 1990, the Localization Industry Standards Association has been helping companies *enable global business*. LISA is the premier not-for-profit organization in the world for individuals, businesses, associations, and standards organizations involved in language and language technology worldwide. LISA brings together IT manufacturers, translation and localization solutions providers, and internationalization professionals, as well as increasing numbers of vertical market corporations with an international business focus in finance, banking, manufacturing, health care, energy and communications.

Together, these entities help LISA establish best practice guidelines and language technology standards for enterprise globalization. LISA offers other services in the form of standards initiatives, Special Interest Groups, conferences and training programs which help companies implement efficient international business models to provide a return on investment for their Globalization, Internationalization, Localization, and Translation (GILT) efforts.

LISA partners and affiliate groups include the International Organization for Standardization (ISO Liaison Category A Members of TC 37 and TC 46), The World Bank, OASIS, IDEAlliance, AIIM, The Advisory Council (TAC), Fort-Ross, €TTEC, the Japan Technical Communicators Association, the Society of Automotive Engineers (SAE), the European Union, the Canadian Translation Bureau, TermNet, the American Translators Association (ATA), IWIPS, Fédération Internationale des Traducteurs (FIT), Termium, JETRO, the Institute of Translating and Interpreting (ITI), The Unicode Consortium, OpenI18N, and other professional and trade organizations.

LISA members and co-founders include some of the largest and best-known companies in the world, including Adobe, Avaya, Cisco Systems, CLS Communication, EMC, Hewlett Packard, IBM, Innodata Isogen, Fuji Xerox, Microsoft, Oracle, Nokia, Logitech, SAP, Siebel Systems, Standard Chartered Bank, FileNet, LionBridge Technologies, Lucent, Sun Microsystems, WH&P, PeopleSoft, Philips Medical Systems, Rockwell Automation, The RWS Group, Xerox Corporation and Canon Research, among others.

## **Why Do the Leading Corporations and Organizations Around the World Support LISA?**

LISA has a proven track record of partnership with governments, non-governmental organizations (NGOs) and multinational corporations. LISA helps these bodies implement best practice and language technology standards, while providing them with access to the best independent information about what it takes to manage their multiple language content efficiently to communicate effectively across cultures. LISA has held more than 45 international forums and global strategies summits in Asia, Europe and North America, as well as workshops, executive roundtables, and other events tailored to meet the needs of specific groups or industry segments. LISA's members and partners know that they can come to LISA as an unbiased information resource to learn about the cost factors, technologies and business trends that affect how they do business in an increasingly globalized and integrated world.

## **Why Do GILT Service Providers Support LISA?**

LISA has provided an open forum for more than twelve years for GILT service providers to discuss the business and legal issues that affect them, and to learn from one another and from their customers. Like their clients, service providers understand that they need to stay current on technical standards and business developments in the GILT industry. They also know that they can rely on the largest archive of GILT-related information in the world, available to LISA members, including all (1) issues of the *Globalization Insider* (LISA's content-packed newsletter, now in its 13th year of publication), (2) presentations and summaries from every major LISA event since 1997, and (3) research and survey reports that indicate where the GILT industry is today and where it is headed in the future.

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# INTRODUCTION

Far too often, buyers of globalization, internationalization, localization and translation (or GILT, for short) are unhappy with the quality of the services they buy. At the same time, providers of GILT services are faced with impossible deadlines, increasing volumes, and the constant demand for lower prices. It might seem that the demands for better, faster and cheaper GILT services, coupled with the clients' need for quality, are fundamentally contradictory; but fortunately, many of the steps that can help make GILT cheaper are the same steps that can help improve localization quality. Achieving quality localization at a reasonable price requires sustained effort and knowledge about GILT processes on the part of buyers of services. Most quality concerns are best addressed long before a translator sees a product. "Throwing it over the wall" is a recipe for poor quality localization and greater expense. In contrast, knowledgeable buyers know what to expect, what not to expect and how to achieve the results they want.

This *Best Practices Guide* addresses the issues GILT clients face when setting up their processes ensure to quality GILT. The guide is structured in four sections:

- **A series of questions about GILT quality in six broad areas:**
  1. assessing needs,
  2. preparing for localization
  3. selecting appropriate partners
  4. linguistic resource
  5. working with partners
  6. checking quality and resolving problems.

Not all of these questions have definite answers since a particular organizations's course of action will depend on its needs and the nature of its projects. Nonetheless, considering the questions and the potential answers will allow readers to clarify their needs and processes early on to prevent problems. Each of these sets of questions also contains open advice from noted GILT experts. Eric Nicod, Software Localization Manager at Logitech, and Alison Toon, Translation and Localization Manager at Hewlett Packard, kindly agreed to provide the benefit of their experience and knowledge in implementing large localization projects for this guide. Reflecting the broad nature of the GILT industry, their advice is sometimes complementary and sometimes contradictory, but always insightful and constructive.

- **The Localization Project Bill of Materials** is a checklist that can be used and adapted to ensure that all issues that can impact localization projects are addressed. Developed by LISA to help companies verify the completeness of their localization projects, the Bill of Materials contains a detailed listing of components found in typical GILT projects that need to be considered to guarantee high-quality localization.
- **Four articles from the *Globalization Insider* (LISA's newsletter)** that address various aspects of GILT quality. These articles represent some of the best insights available on how to achieve quality goals, and each one offers excellent advice on how to build a GILT program that will meet an organization's needs now and in the future.
- **A listing of additional resources** for readers to explore topics in greater depth.

The various sections of this *Best Practice Guide* together will be especially useful for:

1. those who are considering localization and need to know how to get started
2. those who need a refresher course on how to improve their GILT quality
3. GILT solutions providers who need to know how to talk to their clients in order to improve process issues.

By considering the issues raised in this guide, readers will be better equipped to build partnerships and workflows that will help them achieve their quality goals.

# OVERVIEW

*How can clients ensure that their GLT efforts will be of the highest quality? What steps can be taken to realize customer expectations? The responsibility is not solution providers' alone—quality assurance must begin with the client at the earliest phase of product design. Quality is not added by localization—if the original product is not of the highest quality the localized product will certainly reflect the problems of the source. Given limited resources, clients have to decide where to focus their quality efforts and how best to realize them.*

*The following list of questions set forth questions and issues that clients must deal with to assess their quality needs and make them a reality.*

## Assessing needs

1. What business requirements does this project address, and how do I expect it to meet them?
2. How much can I spend on this project? How much can be internal vs. external spending?
3. How much time can I spend on internationalization, localization, testing and explicit quality assurance (QA)?
4. At what stages can I take time for QA? Will my product be ready for internationalization testing prior to localization?
5. Will I be able to provide training on and examples of the product to my GLT solutions partners?
6. What are my expectations for this product? Do my expectations match my needs? Do my expectations and needs match my budget?
7. Am I sure I am providing a quality source product, or am I expecting my solutions partners to fix problems in my product?

## Preparing for localization

1. Are my files properly internationalized? Do I know where internationalization problems may occur?
2. Are my files in appropriate formats? If not, can I convert them?
3. Are my files properly organized, and can I provide needed file information to my partner(s)?
4. Do I have an appropriate plan and sequence for my project?

## Selecting appropriate partners

1. Do I want a multiple-language vendor (MLV), single-language vendor(s)

- (SLV), or do I want to handle my localization in-house?
2. Should I choose a domain specialist or a general solutions provider?
3. Can my potential partners provide relevant references and have I taken then time/will I check them?
4. Should I request test localizations from my potential partners?
5. Do my potential partners have sufficient capacity to handle my projects at the same time as they deal with projects from other clients? Can they scale their operations if I increase volume?
6. What skills will my partner need to deliver the quality I require? Does it have these skills, or can it partner with others to deliver what I need?
7. How important is physical location?

## Linguistic resources

1. What linguistic resources (terminology, translation memory, etc.) do I have available? Can my partners use them?
2. Have my linguistic resources been checked for quality?
3. Do I have a process or method in place to maintain my linguistic resources and so implement changes to them?
4. If I have previously-translated materials, can I verify their quality? Can they be used to improve the quality of this project?

## Working with partners

1. How should I communicate with the translators? With managers? What structure is in place to resolve problems or make changes?

2. Is there a single person within my organization who can serve as a contact person for my partners?
3. Have my quality expectations been made clear to my partners? Have they agreed to meet them? What issues have been identified in advance?
4. Is there a process in place for me to provide incremental feedback as the project progresses? Is there a process to incorporate this feedback into already-localized, as well as future, material?
5. If working with an MLV, what level of contact do actual translators have with me to address questions? Is this contact channeled through a project manager, or is it direct?

## Checking Quality and Resolving Problems

1. What quality assurance methods are appropriate for my project? Which ones should I use?
2. What should my QA testing focus on?
3. Can I conduct functional testing of localized versions?
4. Do my quality checks represent how my product will actually be used?
5. How will I find out about problems in localized versions?
6. Who will pay for correction of problems? What sort of problems should we try to resolve?
7. How will I disseminate corrections/changes to users after product shipment (e.g., if an update is required)?

# ASSESSING NEEDS

*Quality GILT results depend on balancing quality desires and requirements with real-world constraints. Clients often have unrealistic or unstated expectations for quality and are then disappointed with the results. Making expectations explicit and understanding how they will/will not be met (and at what cost) can help clients make appropriate decisions and investments.*

## 1. What business requirements does this project address and how do I expect it to meet them?

A common problem in planning for localization is the failure to consider the business context in which localization occurs. A decision may be made to localize for a given market without a thorough investigation of the potential return on investment (ROI).

Before starting a localization project determine what business requirements the project will address and why you need to localize a particular product for a given market. Ask yourself what the sales targets are for each market and what the legal or other obligations are. If ROI is not the foremost concern, be sure to understand the other business needs requirements. For example, are you localizing to gain a competitive advantage or to meet legal requirements? How do your business needs influence your localization requirements?

Consider how your localization options will meet these needs and how they will fit into your existing business processes. Localization is most effective when it is planned for and implemented as part of the entire business process, not as an “add-on” at the end of the chain.

It is also vital to consider the *ongoing* costs of localization, not just the initial cost. What sort of support will the product require after its completion, and will you be able to provide this support? Is the project a one-time localization, or is it part of an ongoing program of localization for a specific market? Will sales pay for and justify the long-term support needs?

Failure to consider the short- and long-term business requirements driving a project can add expense and result in localizations that do not meet business

needs or which will poorly serve your customers.

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- DO** DETERMINE THE BUSINESS REQUIREMENTS OF YOUR PROJECT
  - DON'T** NEGLECT CONSIDERATION OF LONG-TERM SUPPORT NEEDS
- 

## 2. How much can I spend on this project?

How much you can spend on localization needs to be determined in terms of the business requirements identified in the previous question. Localization cost is the opportunity cost to reach a market, and should not be thought of as an expense to be whittled down as much as possible.

Early on you need to determine what you budget for a given project will be and how much you can spend on QA of GILT issues. All things being equal, obtaining a quality localization will generally cost more than obtaining poor localization from the same solutions provider. If obtaining localization as cheaply as possible is your goal, you need to accept that this will impact the quality of your results. Obtaining and verifying quality takes time and money. The most expensive localization will not, however, necessarily be the best localization. Simply paying more does not automatically result in improved quality.

Early on you need to determine what your budget for a given project will be and how much you can spend on QA of GILT issues.

### **How much of this can be internal vs. external spending?**

Often companies have priorities for whether budget is spent internally or externally (for example, a percentage of a project's budget may need to sup-

port internal headcount). This will affect how much can be spent on QA efforts with external partners and may force assignment of QA tasks to one part of the process or another.

While internal staff generally know your product better than any external partner, they often lack expertise in GILT-specific skills. Choosing where to spend your budget, taking into account the strengths and weaknesses of your internal staff and external partners, will help you achieve the best results within your budget constraints and priorities.

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- DO** MAKE REALISTIC PLANS FOR YOUR BUDGET
  - DON'T** EXPECT \$100 RESULTS ON A \$1 BUDGET
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## 3. How much time can I spend on internationalization?

Internationalization represents the most cost-effective way to help facilitate quality assurance downstream in localization. This step is often not given enough importance in product design because it requires up-front time and budget be engineering and development groups. It tends to be pushed to GILT solutions providers, who are then forced to deal with problems that could have been prevented. Internationalization problems, if not solved one time *before* localization, must be solved in each target locale—each error that must be solved/worked around adds time and expense and lowers the quality of the finished product. This is because most localization fixes to internationalization problems are workarounds of dubious or limited quality.

The more time you can spend on internationalization, the more you will be able to avert problems before they become major. If problems are fixed early



on (and so cost less), greater emphasis can be placed on raising quality, rather than trying to salvage quality.

#### **How much time can I spend on localization?**

Is localization given adequate time? If localization is relegated to the closing weeks of a large project there is no time to fix problems or make needed changes. Localization should be planned for at the earliest stages.

If you must rush localization, quality is likely to suffer even as costs rise. The more time allowed for localization, the more likely that problems will be resolved in an acceptable manner. Discuss time requirements with your partners early on to ensure that your plans are realistic and will allow sufficient time for quality localization.

One of the most common errors in localization projects is to expect the actual translation phase of localization to be completed in an unrealistically short time. Rush jobs are subject to errors and mistakes that easily easily preventable with sufficient time.

#### **How much can I spend on testing and explicit quality assurance (QA) steps?**

QA is often left to GILT solutions providers and considered part of localization. When they are provided with adequate time, support and resources, this may be an acceptable method for dealing with QA issues. However, when quality specifications are not covered in contracts and supported by the client, QA levels may not match your expectations and demands. QA expectations should be specified in advance and given adequate time in project planning.

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- DO** LEAVE ENOUGH TIME AT EACH STAGE OF DEVELOPMENT  
**DON'T** RUSH INTERNATIONALIZATION
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#### **4. At what stages can I take time for QA?**

Identify early at what stages you will be able to perform QA. If there are two weeks for localization, does this allow adequate time for QA? Even if you can spend time on particular aspects of product development, will you be able to perform

adequate QA during the time allotted? Allowing for QA may force changes the to overall project plan.

#### **Will my product be ready for internationalization testing prior to localization?**

This is a critical question in software and other technical localization projects. If projects are being modified up to the last possible minute and cannot be tested, what assurance can you have that critical internationalization errors will not crop up at the last minute? These may harm localization efforts (and bring an about accompanying loss of quality).

Failure to provide a stable internationalized version early on also increases costs by requiring implementation of changes and/or costly fixes to problems at the last minute.

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- DO** MAKE PLANS FOR QA  
**DON'T** PUT INTERNATIONALIZATION TESTING OFF
- 

#### **5. Will I be able to provide training on and examples of the product to my GILT solutions partners?**

Perhaps the worst possible localization process is one in which user interface strings are extracted from a program and sent off to a GILT solutions provider for translation, with little or no context. The highest quality process will involve training GILT partners on the product and providing functional copies. This may or may not be feasible (e.g., a heavy machinery manufacturer would not physically be able to provide a 60-ton turbine to a localization provider), but quality is promoted and improved by providing the solutions provider with as much information and training as possible.

#### **Will it fit into my budget and time requirements to do so?**

If it is physically and logistically possible to provide functional copies of a product to solutions providers, do your budget and/or time constraints allow you to do so? If not, what can be done within the you time and budget limitations? Would it be possible to provide distance training or support for localizers? Would it be possible to provide priority help service

or other methods for localizers to get answers to questions or problems?

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- DO** PROVIDE TRAINING AND/OR PRODUCTS TO PARTNERS  
**DON'T** EXPECT PERFECT LOCALIZATION WITHOUT PRODUCT SUPPORT
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#### **6. What are my expectations for this product?**

Do you expect perfection from localized versions, or do you expect usable (but not perfect) ones? What need will the localization fill? Are you localizing a user interface where perfection will be expected, or are you providing a “quick and dirty” localization intended for a small audience of technical users?

#### **Do my expectations match my needs?**

How critical is a given quality level for the product? Do you expect perfection but really need something less? Would fixing 90% of the errors be enough for the product? At what point does spending more on fixing a product become counter-productive?

#### **Do my expectations and needs match my budget?**

If you need perfection and expect it, are you allocating time and budget to achieve it? It takes time and money to achieve high-quality localization, and if time and budget are not available for a given quality level, this level will not be attained, through no fault of the solutions provider.

- 
- DO** HAVE REALISTIC EXPECTATIONS  
**DON'T** EXPECT MORE THAN YOU PAY FOR
- 

#### **7. Am I sure I am providing a quality source product, or am I expecting my solutions partners to fix problems in my product?**

It is quite common for clients to complain about problems in a localized version of a product that in fact existed in the source-language version, but which were ignored or never even noticed. Often, localized versions of products are subjected to levels of scrutiny never given to the source. As with internationalization problems,

problems in the source cost more to fix during localization than earlier on during the authoring process.

Yann Meersseman points out that “technically speaking, localization adds nothing” to a product (see “The Customer Makers the Difference” on page 35 for more information). That is to say, while poor localization can lower quality, good localization generally cannot fix problems in the source. Delivering error-ridden or poorly-written documentation yet expecting the localized version to be high-quality, is a recipe for disappointment.

When examined, problems in translation frequently prove to be the result of problems in the source. Poor writing or design are only magnified in translation.

You may not be able to fix all problems yourself (e.g., you may not have in-house expertise to deal with all problems), so it may be appropriate to work with your partners to solve problems. Such services, however, are generally *not* included in localization quotes, and will be separate (and expensive) services on top of general localization costs.

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**DO** FIX PROBLEMS IN THE SOURCE  
**DON'T** EXPECT PARTNERS TO FIX YOUR MISTAKES

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## Expert Advice

According to Eric Nicod, Software Localization Manager at Logitech, it is critical to consider early on the requirements for the markets targeted for localization. This will, in large measure, determine the amount to be spent on localization. Factors to consider include (1) local customer preference, (2) competitive products, (3) legal requirements (e.g., localization is mandated for products sold in most of Europe), (4) adding languages will impact current schedules and plans, and (5) the opportunity cost of *not* localizing.

For new products, consider the market markets you need to reach, and your plans are for product rollout. Potential revenues should be balanced against the cost to reach them..

In the case of existing products that will be localized into new languages, it is important to consider the impact on the current review schedule. Adding localization may not be feasible at just any point in the product cycle. You may need to wait for the optimal time to introduce a new language when it will not disrupt current projects and plans. Consider all costs, and all materials, not just those that are immediately obvious.

Nicod also cautions against making localization decisions based on cost alone: although price is an important factor, alone it reveals little about quality. The cheapest localization is often not the best, but the most expensive one may not be the best either.

Do not put off internationalization or QA testing—the later a problem is detected, the more it will cost to fix it. Testing should be constant from the very start of a project.

It is really vital, wherever possible, to supply examples of your product, even if the product is a beta, to your translators so that they can translate material with reference to the actual product.

Alison Toon, Translation and Localization Manager at Hewlett-Packard, cautions against letting enthusiasm

get ahead of reality. She stresses that (1) an understanding of why you want to localize certain materials and (2) whether it makes sense to do so are key to preventing disappointment. It is easy to localize a product only to find that the cost to localize is more than the projected sales of that localized version. Knowing the needs the localization will help determine whether it match your budget.

Understand your end-to-end business processes and requirements, and view localization as just another component within them. Your business model will influence localization needs and impact how projects are handled. There is a tendency to treat localization as a catchall process rather than as something that will vary depending on business needs. Failure to consider the business reasons can lead to downstream problems as you find that expectations don't match business needs or reality.

In making decisions be sure not to neglect any on-going support issues that may result from a localization project. In other words, is this localization a “one-off” project, or will you need to build support processes to deal with the localization after release? Consideration of support requirements (both internal and external) will help you understand the real cost of localization.

If you are dealing with a GILT solutions provider, you must also understand what work and effort is required on your part. You may find that massaging materials to the point where a partner can deliver a given price will be quite expensive due to the time and staff required to prepare them. Costs such as terminology research or importing translation memory (TM) data may not be part of a quote unless specifically requested. In general, required as detailed a quote as possible so you know exactly what services are included and what are not.



# PREPARING FOR LOCALIZATION

*Authors and developers of content can greatly influence the quality of localized materials through their actions before localization begins. Internationalization—the process of preparing materials to facilitate localization—is critical in assuring quality of localized materials. There are additional steps that clients can take that will also help increase quality and reduce costs at the same time. After clients have identified their needs, they can properly plan their products to meet these needs.*

## 1. Are my files properly internationalized? Do I know where internationalization problems may occur?

Internationalization prepares products for localization, and is a complex subject in its own right. The following information presents a basic overview.

Internationalization, in its broadest sense, refers to the phase during product development when all locale-specific content such as text and images is made accessible and/or generic for the localization process. In our context, it applies to documentation as well as software. Its purpose is to facilitate localization so that high quality can be achieved as cost-effectively as possible. How this works for various kinds of content is described below:

### Images

The most important issues for the internationalization of images are (1) making sure localizers can access text, and (2) removing potentially ambiguous and/or offensive content from images.

It is vital that any images containing text be kept in a format that allows localizers to translate the text. Typically this means that bitmapped file formats such as JPEG and GIF should not be used except as final output forms—localizers generally cannot work directly with these formats because the text is stored as images rather than editable text. In place of bitmapped images original files in formats such as Adobe Illustrator should be saved (even if GIF or JPEG images are used for final output in a web page). Alternatively Adobe Photoshop (or an equivalent program) may be used since it allows text to be stored and edited in separate *layers* within the graphic files.

The second primary concern is to avoid offensive or ambiguous images. Ambiguous images include those like

U.S. trash cans (which resemble mailboxes used in many locales) and check marks (✓) to indicate task completion (in some locales check marks are symbols of failure). Images may even be completely unintelligible in some locales. Potentially offensive content includes depictions of parts of the human body or religious symbols.

In cases where a company wishes to use images in one locale that would be inadvisable in another locale the localizers will need to create appropriate graphics for the locale in question. This can be expensive and, in the case of complex graphics, the localizer may have to charge a premium.

If there is any doubt about the appropriateness of any graphics, consult with locale experts early on and implement changes before product development becomes dependent on specific images.

Graphics used within programs or files should be “externalized” rather than embedded, i.e., graphics should be linked to external files wherever possible rather than copied and pasted in place. In addition, graphics should be loaded at run-time from external resources rather than embedded as binary content within computer code.

### Document Design

For localization of documentation, one of the most critical steps room is to leave room for *text expansion*. In most cases localized text will be longer than the source text. The actual amount will vary by language pair and by text type and length (short texts typically expand more than long texts). Consulting with your partner(s) about anticipated expansion early on will allow appropriate planning.

Leave room on pages for this expansion when pagination of documentation

must remain consistent across languages. This is typically done by leaving white space at the bottom of pages. If this is not done localizers may need to reduce font sizes to keep pagination constant. Alternatively, documentation can be designed without leaving significant room for expansion if total pagination can increase.

### Text

Text internationalization involves simplifying text and removing locale-specific references and content.

Simplifying text is important since long and complex sentences are difficult to localize and may present unforeseen ambiguities and complexities. Especially important is, wherever possible, eliminating long strings of nouns or other complex constructions like “handbrake connector retract cord” as these are often very difficult to translate.

Removing locale-specific references is vital. Sports and religious metaphors in particular do not translate well, and may be difficult to convey in other locales. Do not use idioms or “figures of speech.” References to celebrities, current events, television shows and movies, or other popular culture figures should generally be avoided because they may be misunderstood or meaningless outside of the source locale.

### Program code

Internationalization of program code is a complex topic. A few guidelines for internationalizing code are as follows:

1. Do not embed strings in program code. Include them in resource files instead and have the code point to the resource file.

2. Leave room in dialog boxes for text expansion
3. Do not make language- or locale-specific assumptions in computer code. For example, do not assume that all languages share a common word order.

The concerns and issues listed above are just a few of the many that must be considered in internationalization of files and products. For more information, please refer to the *Additional Resources* section at the end of this Guide.

- 
- DO** MAKE SURE DOCUMENTS AND PRODUCTS ARE INTERNATIONALIZED BEFORE LOCALIZATION
- DON'T** INCLUDE LOCALE- OR LANGUAGE-SPECIFIC INFORMATION IN FILES
- 

## 2. Are my files in appropriate formats? If not, can I convert?

Files must be delivered to localization partners in formats that they can use. In general, it is best to check with your partners well in advance to make sure they can handle your files natively. If they cannot, you will need to establish a reliable process to enable localization.

Use of proprietary or uncommon formats can lead to higher costs, longer turn-around times and higher error rates. In some cases custom filters must be developed, and this can be very expensive. Fortunately most translation tools can deal with common file formats quite well, but there may be limitations or issues with some formats. (For example, most translation tools do not deal directly with Quark XPress files, so extra processing steps are required to extract text.)

Another important limitation to consider is that not all programs handle all languages, or there may be limitations in language support. Make sure that your file formats will work in your required languages/locales. For example, it is not sufficient to ask a localization partner if they can “take Quark files.” Instead it is important to specify what version and what language(s) will be needed to verify that all required languages can be handled.

If you must convert files to other formats, do it yourself so that you can (1) verify quality of conversion in-house, and (2) avoid paying a premium for partners to do it.

- 
- DO** CONFIRM THAT YOUR PARTNER CAN WORK WITH YOUR FILES
- DON'T** USE PROPRIETARY OR UNCOMMON FILE FORMATS
- 

## 3. Are my files properly organized, and can I provide needed file information to my partner(s)?

The logistics of organizing, maintaining, and tracking localization projects can be a major source of expense and errors if steps are not taken to ensure smooth processes.

Partners must be able to locate all files and know what role they play in the project. In general the best procedure is to create a file hierarchy in which related files are stored in the same folders. For example, it is usually a good idea to put all

### Expert Advice

According to Alison Toon (Translation and Localization Manager at HP), your business model and needs will impact preparation for localization as well, since your methods will depend on the destination for particular texts.

If you are using any technology as part of the process, confirm any limitations or issues that will affect the use of that technology, as well as best practices for implementation and use.

A prime example would be sending out a Microsoft Word file that has an embedded PowerPoint slide that has embedded Excel data. Each of these layers could contain text that should not be translated, but which is not obvious in the Word document. Be aware of places text can “hide” and how it can affect your results and costs. Clean up and remove redundant materials: in some cases, files may be 90% redundant, and failure to take care of this can result in a lot of wasted effort and money.

In dealing with XML in particular, be sure you can provide a DTD (document type definition) or schema and that all of the XML provided follows a standard. XML can cause some problems since it is not as easy to preview as other formats, and it may provide content with little context. Pay attention to how your XML files are designed since content that should be translated (such as country names) may be provided inside tags (i.e., as attributes), that most translation environments try to protect. Therefore, for-

formats should leave translatable content outside of tags whenever possible.

It is critical to educate content creators in your organization about localization to help them understand how their actions affect localization and other “downstream” processes. Although this may be difficult to do, it ultimately saves the organization time and money.

Take a step back and look at things from the beginning to make changes that will make everyone’s life easier. Understand the needs and motivations for particular choices (such as file formats) that will impact your work.

Eric Nicod, Software Localization Manager at Logitech, states that localization departments must have a good rapport with the software development department so that they can influence the organization of software to facilitate the localization process. Often the actual organization of many projects is out of the hands of the department in charge of localization, so building a good relationship with the developers is vital.

It also helps to have a convincing case for the developers as to how properly organizing files for localization will save them time and money. Be prepared in dealing with software developers to provide concrete examples and arguments for how their actions impact time and revenue downstream.

graphics used in a file in a single directory with the file. However, where multiple files use the same graphic and are linked to it, only one copy of the file should be provided in a separate folder for common graphics. (If you provide multiple copies, expect to be charged for localization of each copy since your partner will localize each one.)

Files should also be named in a consistent and intelligible manner so that it is easy to tell where they are used and what they do. For example, the file name **img002a.psd** does not indicate anything about the file, while **userGuide\_figo2a\_en.psd** helps localizers (and content creators) know where the file is to be used and even the language used in the file (**en** = English). If partners have to spend time locating files and opening them to verify content, the odds of error or delay increase.

Make sure to send all files to your partner(s): missing or incorrect files are

a common source of time and cost overruns, as well as errors.

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**DO** ORGANIZE YOUR FILES AND NAME THEM CONSISTENTLY  
**DON'T** INCLUDE MULTIPLE COPIES OF IDENTICAL GRAPHICS

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#### **4. Do I have an appropriate plan and sequence for my project?**

In larger projects, individual components will generally be received over a period of time. The sequence in which work is completed and delivered can be vital to ensuring quality. Very often parts of a project will depend on completion of other parts. For example manuals and help file will generally need to be localized after software. Failure to follow a proper sequence can lead to inconsistencies and incorrect localizations (e.g., using two

different terms to refer to the same thing in the software and user manual).

Prior to starting a project, determine what dependencies (if any) exist, as well as how much time will be needed to complete each stage before other stages can begin. Be prepared to adjust schedule expectations to allow for the results of this analysis.

Even if you deliver all components of your project at one time, communicate your plan and requirements clearly to partners so that they carry out work according to your needs. In addition, plan with your partners to allow time for review of any materials that will affect other materials prior to further localization.

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**DO** PLAN A SEQUENCE OF WORK  
**DON'T** LOCALIZE MATERIALS OUT OF SEQUENCE

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## ❖ QUALITY ASSURANCE: THE CLIENT PERSPECTIVE ❖

# SELECTING APPROPRIATE PARTNERS

*Choosing appropriate partners who can meet your needs is a vital step in obtaining quality localization results. Even good localizers can deliver poor-quality results if they are not equipped to deal with specific projects or subject domains. Checking references and making sure that solutions providers have delivered good localizations in the language(s) and subject domains(s) of your projects will help you verify the selection good partners. You also need to confirm that potential partners have sufficient capacity to meet your needs in a timely manner.*

### **1. Do I want a multiple-language vendor, a single-language vendor(s), or do I want to handle my localization in-house?**

It is important to understand the differences between various types of GILT solutions providers or departments so that you can select an appropriate partner.

*Multiple-language vendors (MLVs for short)* provide “one-stop shopping” for localization services and generally support several languages through partnerships with single-language vendors and individual freelance translators.

*Single-language vendors (SLVs for short)*, as the term suggests, typically provide localization services for one primary language, although they may be able to subcontract work for other

languages. Typically smaller than MLVs, SLVs often provide an ideal partner for smaller projects, or projects where single languages are used. SLVs are generally the companies that provide actual localization services to MLVs.

*In-house localization departments* handle some or all localization tasks within the company that produces a product or products. These companies typically produce large volumes of localizable materials and prefer to maintain linguistic expertise within their own organizations.

MLVs generally provide the best option for companies with little or no localization experience because they can provide all necessary services, including project management and desktop pub-

lishing (DTP) that their clients may not be equipped to handle. These services come at a cost, but the additional costs of MLVs may be less than the costs of maintaining qualified in-house staff to deal with them. MLVs can also tap into existing networks of translators that would be difficult for companies to build on their own.

SLVs may provide superior service for specific languages, and if you are localizing into a small number of languages and can handle project management and other tasks in-house may be a good option for high-quality results. SLVs generally charge less than MLVs are an attractive option for organizations that want to maintain an active role in the localization process. However, you must take all costs into account when compar-

ing potential partners and calculating return on investment.

In-house localization is generally not an option for serious localization work for newcomers to localization. Often companies are tempted to use multilingual staff as localizers for small projects, but these staff members are usually not trained as translators and are not qualified to provide high-quality localization.

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- DO** SELECT AN APPROPRIATE TYPE OF PARTNER FOR YOUR NEEDS
  - DON'T** FAIL TO CONSIDER HIDDEN COSTS SUCH AS PROJECT MANAGEMENT
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## 2. Should I choose a domain specialist or a general solutions provider?

Whether to work with domain specialist or general localization providers depends in large measure on the nature of materials your company produces.

If you produce one type of material (e.g., automotive manuals) or if your materials deal with a field that has special terminology or requires considerable specific knowledge, domain specialists will usually provide superior results since they have the in-house expertise to do so. Otherwise, most GILT service providers are qualified to deal with general computer/information technology (IT) texts, and can often provide high-quality results in a variety of domains.

In many cases there will be no domain specialist localization firms for specific product areas or languages, so general solutions providers may be the only option. Under these circumstance, the more information and training you can provide to your partner, the better, since it will help the partner develop domain expertise relevant to your products.

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- DO** CONSIDER THE NATURE OF YOUR MATERIALS AND THE CAPABILITIES OF POTENTIAL PARTNERS
  - DON'T** FAIL TO PROVIDE PRODUCT INFORMATION TO YOUR PARTNERS
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## 3. Can my potential partners provide relevant references and have I taken then time/will I check them?

Checking references can provide a good idea of the capabilities of your potential

partners. Check references thoroughly, and be prepared to find out how the solutions partner has done with regards to quality and fixing problems. Ask for examples of how it has dealt with projects similar to yours and how it has performed under pressure.

You should also ask for references that are relevant to your projects. Localization of an advertising campaign will not indicate how well a company will do in localizing a software project. If working in a particular domain, try to obtain reference relevant to that domain. If possible, try to get a neutral third party evaluation of samples of the vendor's work (note: do not use other vendors for this).

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- DO** INTERVIEW REFERENCES THOROUGHLY
  - DON'T** FAIL TO ASK HOW THE SOLUTIONS PROVIDER HAS HANDLED DIFFICULTIES
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## 4. Should I request test localizations from my potential partners?

A common practice in evaluating potential GILT partners is to require them to submit test localizations, which are then evaluated to select the best partner. The advantage of this is that it allows you to see what to expect from your own materials rather than trying to evaluate potential partners based on projects that may be substantially different from your own.

If you have enough time and skills to evaluate test projects, they can be a very valuable tool in selecting the best partners for your projects. However, they take time, and evaluation of the results requires linguistic skill. It is pointless to request a test localization if you have no way of evaluating its quality.

Tests or pilot projects also serve a role after your partners have been selected, by allowing you to define processes and methods prior to running a large-scale project. Tests of this sort can be "real" projects, but on a smaller scale than what is anticipated for the future. Careful analysis of the results can help isolate problems and highlight areas for improvement for both you and your partner, prior to significant investment of time and resources in a large project.

## 5. Do my potential partners have sufficient capacity to handle my projects at the same time as they deal with projects from other clients? Can they scale their operations if I increase volume?

Capacity is an important consideration, especially for large or time-critical localization projects. Smaller solutions providers may not have the capability to handle multiple projects due at the same time, so make sure that they can handle your projects. If you leave sufficient time for projects and plan ahead with your partners, you can help assure resource availability.

If you anticipate your localization requirements growing over time, make sure that your partners will be able to scale their operations to meet your needs. In some cases solutions providers are able to work with their own partners to meet heavy demand. If it is important that projects be handled in-house by a partner, verify that the partner has the capacity to do so.

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- DO** MAKE SURE THAT YOUR PARTNERS CAN HANDLE HIGH DEMAND PERIODS
  - DON'T** FAIL TO PLAN AHEAD TO ENSURE RESOURCE AVAILABILITY
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## 6. What skills will my partner need to deliver the quality I require? Does it have these skills, or can it partner with others to deliver what I need?

The skills needed to perform localization tasks vary, and you need to confirm that potential partners can provide these skills. For example, can the solutions provider handle software localization skills on all required platforms; is it skilled in graphics adaptation, etc.? Most vendors will not have expertise in all possible tasks in-house, but often can partner with others to provide what's missing.

It is important *not* to assume that potential partners can provide all required skills without checking. It is also important to work with partners in advance to make sure that your requirements are understood and anticipated.



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- DO** MAKE SURE YOUR PARTNERS KNOW WHAT SKILLS YOU NEED
- DON'T** ASSUME THAT YOUR VENDOR CAN DO EVERYTHING
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## 7. How important is physical location?

Physical location of partners may or may not be an important factor. If you need to provide localizers with physical access to your products, but you cannot send them to the localizers (due to size or other factors) select a partner within a reasonable physical distance from a location where the localizers can obtain access to them.

Typically, localization is carried out in the country where the product will be sold because localizers in the target country will be more aware of locale needs and requirements than expatriate localizers. If it is important that localization be in-country, you may still be able to work with partners in your own country since most solutions providers work with in-country translators for actual translation work and handle additional localization tasks in a central location. You will, however, need to verify where actual translation takes place.

Some clients prefer to be physically close to their partners so that they can work with them face to face and can physically review their processes.

Another factor that may influence your choice is time zone. If you choose a partner on the other side of the world for some reason (reputation, skills, etc.), confirm that its office hours will overlap with yours. If not, you will need to work out a way to adequately communicate concerning urgent matters.

At the same time, there are some advantages to working with partners in different time zones. Partners can take advantage of time zone differentials to complete tasks during times that might otherwise be unused and effectively decrease turnaround times.

There are advantages and disadvantages to both sides of partner location. A careful consideration of your processes and needs will help you determine where they should be located.

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- DO** DETERMINE WHERE YOUR PARTNERS CAN BE LOCATED
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- DON'T** OVERLOOK POSSIBILITIES CREATED BY TIME ZONE DIFFERENCES
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## Expert Advice

Logitech has chosen a “regional MLV” model rather than a single MLV. In this model, a number of smaller MLVs handle different regions (e.g., Eastern Europe, the Middle East, the Nordic countries). Logitech feels that smaller companies provide a level of service and commitment that they would not find in working with one larger company.

For Logitech, physical location is vital. According to Eric Nicod, Software Localization Manager at Logitech, meeting with partners at least once, including those at all levels of the production cycle, is critical, as this allows him to gauge the partner’s “corporate culture” and structure. This includes actually meeting all the translators as well, and physical proximity facilitates such face-to-face meetings.

Partners also need to have proven expertise in the services Logitech needs, and these services need to be in-house. Management and business models must be very clear, and partners must disclose their accounting methods openly.

One of the most important qualities that a partner have is a real dedication to service. Beware, however, of an overzealous level of personal commitment, which can lead to an attitude of refusal to make changes, in which case making changes can evolve from a localization issue to a personal management issue.

Nicod cautions against relying on references to make a decision. Rather, references should serve as a confirmation of a conclusion already reached through meeting with and internally evaluating a potential partner.

In contrast, Alison Toon, Translation and Localization Manager at

HP, does not find location of potential partners particularly important. Translators should be up-to-date on the language usage in the particular country for which they are translating. For example, someone who has lived in the U.S. for thirty years would not be a good choice for translating something for use in another country besides the U.S.

The type of solutions provider you choose depends on your processes and needs. If you want to simply hand over files and receive translations back (the “black box” approach to localization) an MLV is probably the best bet. However, if you have the time and resources to manage SLVs and individuals, the price may be better and the quality higher than with MLVs.

According to Toon, you also need to consider what sorts of materials you are localizing. While most solutions providers are excellent at translating technical materials and specifications, marketing materials are much more difficult and require a “natural” in marketing with good copy-writing skills.

When considering the capacity of potential partners, be aware that their capacity needs to be sufficient not only for you, but for all of their other clients. When you require a lot of capacity, others may as well (including others from within your own company, if your company is large), so you need a partner who can successfully handle multiple projects on your scale at one time. Make sure your partner(s) will provide advance warning about any projects that may impact their ability to respond to your needs in a timely manner. Communication needs to be two-way, with no attempt to conceal lack of capacity that could result in delays or shoddy work.

# LINGUISTIC RESOURCES

Linguistic resources such as terminology information and translation memory data play a vital role in modern GILT projects by facilitating consistency and reuse of previously translated material. However, care must be taken to ensure that these resources are of high quality and do not end up reproducing previous errors and problems. This section describes various linguistic resources, their roles in modern GILT processes, and ways to ensure that your linguistic resources don't end up creating problems rather than solving them.

## 1. What linguistic resources (terminology, translation memory, etc.) do I have available? Can my partners use them?

The most common linguistic resources in use today are terminology information and translation memory, both of which play vital roles in facilitating consistent translations.

### Terminology Resources

Terminology resources range from simple lists of terms in an application such as Excel to complex relational databases that define terms and the relationships between them. Good terminology resources are vital in the creation of both the source and translated versions of products.

Good terminology resources will address terms in both the source and the target languages that must be consistently used and translated. The terminology also needs to correspond to the physical product. For example, calling a specific key on a keyboard the “Enter” key in one place in a document and the “Return” key in another will create confusion for users, especially if the keyboard is labeled only with “Return.”

If terminology is not defined in advance and carefully applied, such confusion will be the norm rather than the exception, especially if documentation and other text are produced in a collaborative environment. Such difficulties are only magnified by translation. It is the responsibility of the content creator to make sure that the source is correct.

Multilingual terminology is the responsibility of both you and your partner—often you will not have the in-house expertise to define localized terminology yourself. However, you will need to provide your partner with quality source

terminology lists (preferably with definitions) to help it determine how best to translate your terminology.

If you have multinational offices that are already familiar with your product(s), it is best to consult with staff from these offices on how key terms are to be translated since they will be up-to-date with current usage. In general these staff will be able to provide better translations than your GILT solutions providers because they deal with the terminology on a daily basis and are familiar with common usage.

If you are entering a new market, you will generally need to rely on your GILT partners to suggest translations. Be sure to allow adequate time for terminology research *prior* to actual localization. If you rush this step, you will decrease the quality of the localized product and, in the long run, increase costs as you are forced to deal with problems and inconsistent translations.

Assist your solutions partners by (1) providing terminology lists in the source language, and (2) helping them identify standard references in your subject matter early on (for example, subject-specific dictionaries or Internet resources).

### Translation Memory

Translation Memory (TM) is the most vital labor-saving tool available today. TM saves *segments* of source text (typically sentences) and their translations and stores them in a database format so that they can be automatically retrieved when a new text or a new version of a previously translated text is processed with the tool.

TM really comes into its own when used on revisions of texts that remain substantially unchanged between versions. For example, if only 20% of a text has changed during a revision cycle, a

TM tool will be able to provide the previous translations for the 80% that has not changed. This results in substantial productivity gains, as well as improved consistency between versions of the text. TM is also useful when localizing collections of documents that may have substantial repeated text (e.g., “boilerplate” copyright notices or product descriptions).

TM databases are generally built during the translation process when a text is translated for the first time, and then used in subsequent translation work. However, with some projects, it is possible to build TM databases from previously translated documents that were not created with a TM system (see question 4 below).

You can also help increase the effectiveness of TM data by making sure that the source text is finalized before it is sent for localization. It is difficult to make changes to TM databases after they have been created, so last-minute changes are often made in output files, but not entered into the TM database. This means that these changes are not recorded and are thus lost for subsequent revisions.

### Other Linguistic Resources

Other linguistic resources exist, such as machine translation (MT) lexicons, language-specific hyphenators, and so forth, but most purchasers of GILT services are unlikely to create these resources, so they are not covered here. If you do require special resources, consult with your GILT solutions partners early on to make sure they can provide them at a price you are willing to pay.

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|--------------|--|
| <b>DO</b>    | PROVIDE ANY RESOURCES THAT WILL HELP YOUR PARTNERS |
| <b>DON'T</b> | ALLOW POOR TERMINOLOGY TO CREATE PROBLEMS          |
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## 2. Have my linguistic resources been checked for quality?

If you already have translation memory or terminology data, have you verified the quality? If your materials were previously translated, but you weren't happy with the results, be careful in using linguistic resources created in their production since you are likely to propagate the same problems if you reuse these materials.

Checking quality involves not only making sure that previous translations were adequate, but also confirming that the linguistic resources accurately reflect the final translations. It is quite common for linguistic resources to be out-of-synch with finalized translations since changes and corrections may have been introduced to localized versions without the corresponding linguistic resources being updated.

Linguistic resources may also be incomplete or corrupt, thus requiring some work prior to use.

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**DO** CHECK THE QUALITY OF YOUR LINGUISTIC RESOURCES

**DON'T** USE RESOURCES WITH PROBLEMS YOU DON'T WANT TO REPEAT

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## 3. Do I have a process or method in place to maintain my linguistic resources and so implement changes to them?

Before you begin a project you should have a process already in place for maintaining and updating linguistic resources. This is needed to prevent your linguistic resources from getting out of synch with your localized materials and potentially spreading inappropriate terms or outdated translations in future localizations.

You need to have this process in advance since it will affect how files are processed and may have implications for costs since your GILT partners may need to modify their processes to support your maintenance needs.

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**DO** PLAN TO MAINTAIN YOUR LINGUISTIC ASSETS

**DON'T** LEAVE PLANNING UNTIL AFTER THE PROJECT

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## 4. If I have previously-translated materials, can I verify their quality? Can they be used to improve the quality of this project?

If you have had materials translated in the past without development of terminology resources or translation memory, you can still use these materials for improving future translations, provided you know their quality.

Previous translations can be used in terminology research by allowing terminologists to locate terms and their translations without having to investigate external sources. Very often this will result in better terminology since terms defined in this manner represent your actual terminology usage.

Translation memory databases can be built up from previous materials through a process called *alignment* in which the source text and its translation are matched, segment by segment, to create a translation memory database after the fact. If you already have a quality localization that has not been processed in a TM system this will provide a good way to reuse the previous translation.

Creating linguistic resources may be expensive, but can provide both short- and long-term savings.

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**DO** USE PREVIOUS LOCALIZATIONS TO BUILD TERMINOLOGY AND TM

**DON'T** ASSUME YOU CAN'T REUSE PREVIOUS LOCALIZATIONS

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### Expert Advice

**A**lison Toon, Translation and Localization Manager at HP, advises you to consider the formats and tools you use in order to identify any problems. Sometimes, specific formats will cause problems with specific tools. Understand the reasons why you need to use specific tools and how to work with them to achieve the required results.

Because it is easy for linguistic resources to become out-of-synch with what is actually published or distributed, HP often defines workflows that involve linguistic QA of the TM *before* the TM tool is used to output the translated file. If changes are subsequently made, they are collected and implemented directly in the TM so that it always matches the final version of a file.

**A**ccording to Eric Nicod, Software Localization Manager at Logitech, you need to contractually specify in advance that you own all linguistic materials produced during a localiza-

tion project, including terminology and translation memory data. If this is done in advance you will be able to reuse all linguistic resources with any future partners.

Consider also how to verify the quality of resources. For languages that are known by someone in your company, you may have a good deal of security. For other languages you may need to rely on the judgment of external parties. Finding resources to independently verify quality may be difficult, however.

In new technology fields or domains, terminology may not yet be standardized or may be in flux. The stability of terminology may vary not only by technology, but also by language. Terminology might be very stable in one language, while in another, several major players may each be promoting different terminology. In such a situation, ensure that your linguistic resources reflect current and widespread usage by consistently updating them to include the latest changes.

# WORKING WITH PARTNERS

*Establishing good working relationships with partners involves effort by both parties, as well as an understanding of where problems are likely to occur and how to fix them before they become crises. Knowing how to work with partners will help ensure satisfaction on both sides and produce a quality result. Regardless of how you choose to work with your partners, make sure that your expectations of the relationship match those of your partners. Do not assume that your partners will do anything not specified in advance.*

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## **1. How should I communicate with the translators? With managers?**

The procedure you use to communicate with the actual translators and project managers on a particular project will depend in large part on the sort of partner you choose. Interacting with multiple-language vendors (MLVs) is very different from working with single-language vendors (SLVs). An awareness of the ways in which these different entities work will help you effectively communicate with them.

In the case of MLVs you generally will work with a single project manager, and thus have little direct contact with the translators or other specialists working on your projects. (Part of the reason for selecting an MLV is to reduce the amount of managerial contact you need to have with individuals.) However, in some cases you may want to obtain direct access to translators and other individuals involved in your project (e.g., to facilitate faster answering of questions, or to corroborate on terminology development).

If you work with SLVs or freelance translators you may have considerably more direct contact with the translators involved in your projects than you generally would with MLVs.

Before starting a project, know who to contact for different problems and how to reach them. You also need to know who to reach as a backup if your project manager is unavailable for any reason. Many projects have been delayed or harmed simply because one individual could not be reached.

Similarly, provide contact information to your partners for your main point(s) of contact, as well as a backup.

Within your own organization, it is vital to establish clear lines of respon-

sibility and control for projects so that you don't send competing messages or requests to partners. It is not uncommon for multiple people involved in a project to have different ideas about what should be done. With no clear authority or responsibility your partners will likely implement any and all requests in an attempt to "keep the customer happy." The result will be a negative impact on quality.

### **What structure is in place to resolve problems or make changes?**

Before you start a project, establish an 'escalation' path with your partners (and within your own organization as well). In other words, make sure that you can always reach someone with questions or requests in the event that you cannot reach your main contact, or if you do not obtain satisfactory results from that person.

At the same time, provide the right contact information to your partners so that they know who to go to if they do not receive needed answers, or if they are not satisfied with the response they receive.

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- DO** MAKE SURE YOU KNOW WHO TO CONTACT TO RESOLVE PROBLEMS
- DON'T** RELY ON A SINGLE CONTACT WITH NO BACKUP
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## **2. Is there a single person within my organization who can serve as a contact person for my partners?**

There is a trade-off between different methods of communication between you and your partners. You can centralize communications through one primary individual within both. This will result in more consistency and control on your end, but will, at the same time, increase

the managerial burden on the primary contacts.

If, on the other hand, you choose various people to serve as contacts for different aspects of the project, you may decrease the managerial burden on any one individual (although probably not the overall amount of management needed). Having multiple contact points can, however, lead to inconsistency if partners receive conflicting instructions from different individuals, since not all stakeholders in your projects may be aware of what others have done.

A sure recipe for disaster and quality problems is to let too many people have access to control of a project. Allowing individuals to have direct access to partners grants them control of the project to some extent. Your partners cannot be expected to distinguish between the authority of various individuals coming to them with instructions or requests.

As a general rule, designate one responsible party (the overall project manager) within your organization who will serve as the primary contact person for your partners. Make it clear to everyone that this person is to be kept current on any actions that may affect the project. While this individual may delegate tasks and not direct all aspects of the project, or may delegate tasks, he or she should be copied on all communications. All parties involved in the project should also be aware of what does and does not need to be cleared through the project manager.

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- DO** BE CLEAR ON ASSIGNMENT OF RESPONSIBILITY
- DON'T** LET TOO MANY PEOPLE HAVE CONTROL OF A PROJECT
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### **3. Have my quality expectations been made clear to my partners? Have they agreed to meet them? What issues have been identified in advance?**

It is imperative to make your expectations clear to partners early on. Key expectations should be contractually specified to prevent any misunderstanding. Discuss all expectations with your partners prior to commencement of work to make sure they are clear and realistic. Open discussion prior to the beginning of a project will prevent many problems.

Clearly communicating needs and expectations for quality with your partners will allow them to more accurately allocate resources, and they may even be able to suggest ways to enhance quality. Often, very small changes in processes can have tremendous impact on quality and costs. Ask your partners how you can facilitate their work to help them meet your requirements.

It is your responsibility to be educated about the localization process so that you can know what is realistic within your constraints. The better you are prepared and understand your quality needs, the more likely you are to come to agreement with your partners.

Often, potential issues can be identified in advance and resolved to avoid negatively affecting quality. For example, if you know that previously translated versions of your product were of poor quality, inform your partner so that they can eliminate errors early on before they create additional problems. While costs may be impacted by issues identified in this way, you will almost always save money by dealing with problems up front, rather than waiting for them to be discovered.

If you fail to disclose known problems, then you will be responsible for the extra costs associated with fixing them. Work that was not foreseen may be subject to higher charges than work covered under the contract.

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**DO** IDENTIFY ISSUES IN ADVANCE AND PLAN TO RESOLVE THEM

**DON'T** LEAVE EXPECTATIONS UNSTATED

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### **4. Is there a process in place to provide incremental feedback as the project progresses?**

If you properly determine a sequence of work prior to starting a project, chances are that major portions of the project will be completed before other portions start. Quality and costs will improve if you are able to review completed portions prior to the commencement of work on other portions. This is especially critical in cases where components (like screen captures or manuals) depend on completion of other portions.

It is vital to review completed portions promptly so that your partners can implement any required changes. Establish a process with your partners to implement incremental feedback in a timely manner. Leave time for this work, especially if your product has not been localized previously.

Changes must also be made in any linguistic resources created in the project. Set up a defined and verifiable process for the maintenance of all materials with your partners.

### ***Is there a process to incorporate this feedback into already-localized, as well as future, material?***

It is not uncommon that minor errors will be discovered after a project is released. In most cases a new version is not required to correct minor localization errors. Occasionally, you will need to revise an already-completed project to correct a vital problem. You need to consider how to deal with these problems before they happen.

In the case of minor corrections, arrange with your partners to implement changes in linguistic resources so that future releases will not replicate these same problems. In the case of more important corrections, work together with your partners to make the required changes. Depending on the nature of the problem and who is responsible for it, you may need to pay to have the problem fixed or your service provider may agree to fix the problem at no cost.

Develop a plan for how to disseminate essential changes, should they arise. The plan will depend greatly on the type of project. A website, for example, can usually be updated in place with no addi-

tional work. In the case of physical equipment, however, introducing changes may involve shipment of new equipment or visits by service technicians to update firmware or other components.

Obviously, it is better to allow time up front for quality assurance to prevent the need for critical corrections after shipment. Therefore QA *must* be planned and carried out with sufficient time to allow for corrections before any required deadlines for media or equipment production.

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**DO** DETERMINE THE SEQUENCE OF WORK IN ADVANCE TO REDUCE THE NEED FOR CHANGES

**DON'T** FORGET TO IMPLEMENT CORRECTIONS IN LINGUISTIC RESOURCES

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### **5. If working with an MLV, what level of contact do actual translators have with me to address questions?**

When you work with MLVs, you will generally route most work through the MLV, and thus have limited contact with the individuals actually working on the translation for any given project. The level of contact you actually need will depend greatly on your project type and the experience of your MLV partner with projects such as yours.

If you are working on a highly specialized project in an area in which your partner is not particularly experienced, you may need to have considerable contact with translators, particularly at the start of the project, as you bring them up to speed on your requirements.

The actual nature of contact will depend on your particular situation and the willingness of your MLV partner to provide direct access to the translators working on the project (see below for more information on this topic).

You must also determine when contact with translators is needed. Part of what you pay an MLV to do is to handle routine queries and issues with translators. A high level of contact with translators effectively eliminates much of the rationale for choosing an MLV. Too much contact can even have negative effects if you and your MLV provide contradictory directions, or the translators don't know who to turn to for direction. Remember

that you also have chosen an MLV for its expertise in managing the localization process. In most cases the MLV will have a better idea than you do concerning what is actually needed to move a project forward and guarantee its success.

It makes sense to let MLVs manage the process as much as possible, and prioritize your time in dealing with translators to handle only those issues that require your attention. When you have a clear picture of when and where contact is needed, you can provide prompt and adequate feedback without unduly straining internal resources.

***Is this contact channeled through a project manager, or is it direct?***

Many MLVs do not like to provide direct contact to the individuals and SLVs with whom they do business. Often, they want to maintain control of projects and have found, through experience, that allowing too much access between clients and translators can have a negative effect on quality and lead to other problems.

Other MLVs are quite willing to provide direct access to translators if they understand that it is needed. If having direct access to translators is important, discuss this with your partner early on to ascertain how best to accommodate this requirement.

Your contact will usually be routed through a project manager, who can often answer translators' questions before they require your attention, and who can monitor the project's progress to determine when direct contact with you may be required.

However you may decide to handle contacts with translators, make sure that both you and your partner agree to apply the same method to prevent confusion and misunderstanding.

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- DO** MAKE USE OF YOUR MLV'S SKILLS IN PROJECT MANAGEMENT
  - DON'T** LET CONTACT WITH TRANSLATORS HARM YOUR PROJECT
- 

**Expert Advice**

**E**ric Nicod, Localization Project Manager at Logitech, finds that meeting with everyone who will be involved in your projects at least once is very important. Knowing who you are working with helps facilitate project success and ensures that you know whom to go to with specific issues. Your point of contact will usually be a project manager, and if the project manager does his or her job, you should generally not need to contact others. However, when problems do arise, having an "escalation" plan in place is crucial, so that you know whom to go to if problems are not resolved. In addition, both you and your partners should have a backup contact person so that projects are not dependent on the availability of any one person.

Openness and honesty are vital in communication. Your partners need to disclose who will work on your projects, and they need to be open in communicating problems. When problems or methods are hidden, or even disguised, a breach of confidence arises. You don't want to find yourself in a situation in which your partners have outsourced work to companies that fall below your quality standards or with which you do not want to do business.

Some partners will provide you with substantial feedback and will ask questions, while others will generally provide little, if any, feedback. Be aware of how these differences may impact your management requirements and practices.

Finally, confirm that your partner's language skills are such that you can communicate regarding problems and needs. Competent translators may not always have the best personal communication skills or be entirely comfortable in spoken English (or whatever language you use to communicate). You need to consider this and realize that language barriers may double or triple management time on some projects.

**I**n contrast Alison Toon, Translation and Localization Manager at HP, does not find it particularly important that partners disclose their work methods, as long as they can deliver on time and use the required tools and linguistic resources. Ultimately, the chosen partner is responsible for delivery, and as long as they can meet their obligations, their methods do not particularly matter.

Toon prefers that her team not spend much time working with partners on management details. She delegates many projects to an HP internal team that deals specifically with GILT project management. She also hands project management off to an MLV, so that her team is not burdened with day-to-day management issues. However, she finds that having contact with translators beneficial since it provides direct access to those who can help answer questions that may arise during the localization process. In addition, it is often more reliable and cheaper to send materials directly to translators, rather than have them go through layers of MLV management, if your partners are willing to do this.

In order to facilitate communication with GILT partners, it is wise to have staff with good skills in various languages in-house. In this way, there is always someone available in your company who is familiar with your projects and can deal with partners in their preferred languages. Having linguistic skills in-house not only helps facilitate project management, but also can help international offices deal with one other more effectively.

Toon does not find it especially critical that her team meet everyone involved with a project. It is more important to her that certain key members know each other. In particular, it is important for the translator and the linguistic reviewer to know how to reach each other to resolve problems. Often, a reviewer can provide important guidance to a translator, while the latter can explain why specific texts are translated in certain ways.



# CHECKING QUALITY AND RESOLVING PROBLEMS

Checking quality can be formal or informal, comprehensive or targeted, systematic or ad hoc. Choosing appropriate methods for quality assurance will help provide a better picture of the quality of the localized material and identify problems. In addition, quality testing will help isolate problems that can “break” a localized product before it is shipped to end users. When you do find problems, knowing how to resolve them and prevent them from recurring is vital to long-term quality and cost goals

## 1. What quality assurance methods are appropriate for my project?

There are a number of ways to check the quality of a product, ranging from the informal read-through of a document to formalized metrics of evaluating accuracy. Not all QA methods are appropriate for all projects.

In general, quality methods can deal with linguistic quality, functionality and cosmetic issues. Of these three, functionality issues are usually the most critical, while linguistic quality can range from minor annoyances to vital problems. Cosmetic issues are not as serious, but should still be fixed if time permits.

Functionality testing for localized product versions is most critical for software or products that rely on localization directly for their functionality. In the case of a large piece of farm equipment, for example, functionality testing of localized versions would likely be less critical.

Quality assurance for linguistic testing can refer to everything from review, up to and including formalized tracking of translation errors and problems in a database.

### Which ones should I use?

At a minimum, you should always perform a linguistic review and spell check on your localized products. In most cases, this will be included in the process your GILT partners have established, but you should always confirm the type of review provided. Linguistic review should consist of a read-through by a native speaker of the language you are localizing into, as well as a detailed examination of any “problem areas” that may have been identified during the localization process.

Linguistic review is often carried out at various stages, so confirm your partner’s method for integrating changes back into linguistic resources so that problems are not repeated in future releases.

If you need formalized information on localization accuracy, or a basis to compare the work of various GILT solutions providers, the *LISA QA Model 3.0* (see the section on additional resources) is an ideal tool since it provides you with a formalized method for evaluating quality that was developed specifically for the localization industry by LISA.

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<b>DO</b>	SELECT APPROPRIATE QA EVALUATION METHODS
<b>DON'T</b>	LEAVE QA METHODS UNSPECIFIED

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## 2. What should my QA testing focus on?

Making the most of your QA effort requires understanding where to focus time and resources. Certain areas will require more attention than others, but too much attention can actually be counter-productive when it wastes resources in pursuing changes that add minimal value to the product.

As a matter of highest priority, develop testing methods that will capture the most serious errors, such as missing negatives (e.g., *press the red button* instead of *don't press the red button*) or translations that inadvertently present inaccurate or dangerous material (e.g., *keep all metal objects at least .24 meters from the scanner* versus *at least 2.4 meters from the scanner*). Testing should focus on cases in which safety is at stake, or in which damage to property or data can result

from translation errors. If there are such cases, identify them in advance and plan to pay special attention to these areas.

Testing should put a high priority on finding missing text (i.e., text that was in the source but which is missing in the localized version) or untranslated text. By the same token, be aware of cases in which text should not be translated to make sure that “fixes” don’t end up creating problems.

Stylistic problems may be major or minor. You may assign a high priority to stylistic fixes for marketing material, but a very low priority for little-used help text. In addition, stylistic fixes can be time-consuming to fix with little tangible result. In some cases, companies set the amount of time that can be spent on stylistic review in advance in order to force their reviewers to prioritize their quality improvement efforts.

In the end, what you choose to emphasize in your QA testing will depend on your priorities and needs.

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<b>DO</b>	FOCUS YOUR EFFORTS ON AREAS THAT MATTER
<b>DON'T</b>	WASTE TIME ON FIXING STYLE WHERE IT DOESN'T MATTER

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## 3. Can I conduct functional testing of localized versions?

Functional testing of localized software and hardware is vital. Any time you make a change to a product, you introduce the possibility of “breaking” the product. Proper internationalization will help minimize this possibility, but it cannot eliminate the problem. Understanding what changes are likely to cause problems will help focus your testing efforts.

Functional testing is thus an essential step in GILT quality assurance. While it may not be as comprehensive as functional testing of the source version, functional testing should verify that all aspects of the localized product work as intended and do not cause problems. It should be carried out as soon as practical since it may reveal problems that will take time to resolve.

You need to pay special attention to areas where language or locale plays a major role. For example, if you are localizing a graphics package, tools for drawing are less likely to be impacted by localization than are those dealing with type or language.

Together with your partner, devise a test regimen to verify functionality of the localized versions. Identify those areas that are likely to be impacted by localization and pay special attention to them. In some cases your partner partner may need to conduct functional testing (e.g., if it involves special linguistic knowledge that you do not have in-house), or outsource testing to a third party.

In developing your testing regimen work with a knowledgeable testing expert to ensure that the tests provide adequate coverage of needed test cases.

When designing tests for localized versions, carefully consider what tasks end users will consider important, as well as typical hardware, software, systems extensions, etc. with which the product will be used with. For example, does the software work with input methods and encodings that customers may use? What about non-standard extensions or system additions that might be common in their markets? (Custom input methods or type-handling extensions are quite common in Asia, for instance.) Research how your product will be used to determine what tests are appropriate. Keep in mind that the tests may vary by market. In many cases the best option will be to work directly with testing partners in the target locale who are familiar with locale-specific concerns.

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- DO** CARRY OUT ADEQUATE FUNCTIONAL TESTING
  - DON'T** ASSUME THAT WHAT WORKS IN THE SOURCE WILL WORK FOR LOCALIZED VERSIONS
- 

#### **4. Do my quality checks represent how my product will actually be used?**

When developing quality checks for a product, verify that the tests will adequately represent how the product will be used. Tests that abstract features of the product and present them in isolation may not catch problems that usage-based testing will find, or may incorrectly flag problems that aren't really there. Good testing regimens will focus on realistic scenarios, not abstract notions of quality.

Testing needs to represent real world uses of the product, and to emphasize those aspects of the product that are most likely to impact the user experience. One major error in a highly visible and important part of the product will create a negative impression concerning the product quality that perfect localization in other areas will not eliminate. Testing should focus on ways in which people will use your product for typical tasks.

As with functional testing, make sure that the quality checks take into account locale-specific concerns and needs. For example, graphics originating in an English source document may well need to be examined much more closely in an Arabic localization than in a German one; right-to-left patterns will force reversal of some graphics in Arabic, where no changes will be required in German.

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- DO** USE REALISTIC TESTS TO DETERMINE QUALITY
  - DON'T** FORGET ABOUT LOCALE-SPECIFIC CONCERNS
- 

#### **5. How will I find out about problems in localized versions?**

If a user discovers a problem in a localized version of the product, how will you capture the user's feedback? If local distributors are responsible for supporting localized versions, establish a process for them to send feedback directly to you. If customers are going to provide feedback directly to you, establish a method of dealing with feedback in their language(s). Whatever methods are used, make sure they are in place before the product ships.

- 
- DO** ESTABLISH A WAY TO RECEIVE NATIVE LANGUAGE FEEDBACK
  - DON'T** WAIT TO IMPLEMENT FEEDBACK PROCEDURES UNTIL A PRODUCT HAS SHIPPED
- 

#### **6. Who will pay for correction of problems? What sort of problems should we try to resolve?**

Payment for correction of problems has the potential to be one of the most contentious issues in a localization project. Before asking your partners to pay for changes, confirm that the problems are indeed their fault. Often, problems in localized versions can be attributed to problems in the source that are not apparent until the localization process is carried out. Because problems are almost always more expensive to resolve after the fact, advise your GILT partners of any problems as soon as possible, and make it a matter of policy to address problems reported by your partners immediately. While you can and should expect your partners to pay for their mistakes, you cannot expect them to pay for your mistakes.

In addition decide in advance what sorts of problems should be fixed. Although perfection may be the goal, limited resources dictate that you will probably not be able to resolve all problems. In addition some problems may require changes to many different product components, so it may make more sense to wait for a subsequent release to implement these changes. You should keep a list of all changes and required steps them so that you can easily track their status and avoid losing them over time.

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- DO** PLAN WHAT SORTS OF CHANGES YOU WILL MAKE
  - DON'T** EXPECT YOUR PARTNERS TO FIX PROBLEMS YOU CREATED
- 

#### **7. How will I disseminate corrections/changes to users after product shipment (e.g., if an update is required)?**

If you discover a problem after a product has shipped that requires a fix, have a plan for disseminating the correc-



tions/changes to end users. The methods used will depend on the nature of the localized product. For example, a localized website will probably just need to be changed with no further notification to users. Software may require patches and/or new versions, which can often be distributed via a company website or on CD-ROM to registered users. Embedded systems may be more difficult to update, and the need for updating (via firmware, for instance) should be considered from the earliest design stages.

When you do release a fix, notify individuals who reported the problem directly so that they can implement the fix.

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**DO** HAVE A PLAN FOR CHANGE DISSEMINATION

**DON'T** NEGLECT CHANGE NEEDS IN THE PRODUCT DESIGN PHASE

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## Expert Advice

**E**ric Nicod, Localization Project Manager at Logitech, advises that quality must be systematically checked at all levels in all activities by following documented processes. In the case of an ISO-certified company like Logitech, quality assurance steps must be in place for all activities. Even companies that do not have a formal certification, should carry out QA on a systematic basis.

At Logitech, the vast majority of software QA localization activities are carried out in-house, including functional testing. Functional testing is a must prior to release of multilingual versions of software or other products.

The first question in dealing with changes or problems is whether or not they should be fixed immediately. It is not worth delaying the delivery of more than sixteen languages just because there are problems in one (at long as the problems are not serious). The financial aspects can be handled after the fact.

It is vital to specify deliverables in writing so that there can be no misunderstanding as to what is required. If, despite planning and your best efforts, something should go wrong, document the problem and provide proof that delivery was not according to plan. Do this before going to your partners to talk about financial adjustments. Obviously, you don't want to pay for deliverables that were never received, or which arrived with serious problems, but you need to document exactly what went wrong if you expect compensation.

If changes are needed after a product has been released, prioritize them and decide to disseminate them. Some changes are critical and may be sent to users directly as patches, or distributed via the Internet. Other modifications may be low priority and can wait until the next major release of the product. Also plan for the fact that changes or fixes to a product usually

require updates to all related materials: marketing, support, help, etc. Even if a change is a good one, you may need to delay making it until it can be systematically implemented. Don't rush to make a change that will create more problems than it solves, or which results in confusion for users.

**A**lison Toon, Translation and Localization Manager at HP, points out that localizers "are the garbage collectors at the end of the line. Not only do we have folks pulling out bugs from the development phase, we also find bugs in the quality of the English source language." Therefore, good communication with content creators is very important. Providing guidelines to prevent problems, and discussing them can have significant impact. For example, helping content creators understand that they cannot keep changing text after it has been delivered for localization will (1) help maintain text consistency with linguistic resources, and (2) lower costs to implement changes (including the cost of re-translation).

Understand the priorities for bug fixes. Critical translation errors absolutely must be fixed immediately, e.g. "do not" translated for "do." More subjective problems (such as preferences for different wording) can be put off, and may not even be worth fixing. The process for fixing translation errors should be the same as for other bugs.

Make a distinction between what is a localization problem and what is a source problem. Feedback will often indicate a problem in a translated version, when the translation itself is fine, and the objection is really to the underlying message of the source language. No matter how well a message is translated, if it is inappropriate for a specific market, the translation will be perceived as problematic. Figure out what the real problem is and then fix it.

# LOCALIZATION PROJECT BILL OF MATERIALS

The Localization Project Bill of Materials provides a comprehensive listing of common localization-related services and items required for localization projects. While individual projects may require other items, this list will include project components that must be covered to ensure a quality result. Note that not all columns or items apply to each line item.

GENERAL PROJECT INFORMATION	Yes/No/NA	Rate	Quantity	Rate
<b>1. PROJECT OUTLINE:</b>				
Description				
Start date				
Deadlines				
<b>1.1 GENERAL INFORMATION:</b>				
Software / On-line help (OLH) / Documentation translation				
Revision or new translation				
Source and target languages				
Mixture of European / Asian / E. European languages				
Difficulty of source text				
Electronic or hardcopy source text				
Source word counts provided (s/w, OLH, doc)				
Formatted or text source files				
Localization kit provided				
Number of software test cycles required				
Previous reference material				
Computer-assisted translation (CAT) / machine translation (MT) tools to be used				
File management				
Localized product ported to different hardware platforms				
Numbers of copies (documents / software) required				
Support client is willing to provide to partner (resource, personnel)...				
<b>Training on partner site:</b>				
Hardware / Software set-up				
Training time				
Training materials				
Travel				
Living expenses				
<b>Training on customer site:</b>				
Hardware / Software set-up				
Training time				
Training materials				
Travel				
Living expenses				

GENERAL PROJECT INFORMATION	Yes/No/NA	Rate	Quantity	Rate
<b>Glossary provided or to be created:</b>				
Tool to be used				
Source terms supplied, including definition				
Abbreviations				
Context supplied				
Hotkeys identified				
<b>Glossary maintenance:</b>				
Source terms supplied				
Electronic master supplied				
Context supplied				

SOFTWARE	Yes/No/NA	Rate	Quantity	Rate
<b>2.1. SOFTWARE:</b>				
<b>Translation of software Wordsw</b>				
Editor to be used				
Platform to be used				
Length restrictions				
Are hotkeys identified				
<b>Editing and Proofing of Software Words:</b>				
Editor to be used				
Platform to be used				
Provide size and time of file creation				
Is it possible to produce a printout and limitations?				
<b>Testing of Software:</b>				
Hardware / Software to be used				
Third party localized software to be used				
Test plan available (if for English, can it be used in another language?)				
Test script available				
Test script preparation and execution				
<b>Localized version functional testing:</b>				
Hardware / software to be used				
Third-party localized software to be used				
Acceptance criteria of test suite				
<b>Identification of RC Files:</b>				
Bitmaps - SHG files...				
Hotspots				
Resizing				
Engineering support during localization provided.				

SOFTWARE	Yes/No/NA	Rate	Quantity	Rate
<b>Tools to use:</b>				
Developed in-house				
Proprietary				
Licensing issues				
Reusability				
<b>2.2. SOFTWARE ENGINEERING:</b>				
<b>Special requirements</b>				
<b>Hardware to lease</b>				
<b>Software to buy</b>				
<b>Software install</b>				
<b>Tools install</b>				
<b>Technical support</b>				
<b>Test build / Compile</b>				
<b>Merge with previous version (one or several)</b>				
<b>Extraction / alignments</b>				
<b>Localized version build / compile</b>				
<b>Build environments - validation</b>				
<b>Localized version bug fixing - resizing</b>				
<b>Localized version help - integration</b>				
<b>Bug tracking follow-up</b>				
<b>Final media generation</b>				
Define design alternatives/re-engineering				
Development of tools required for project. (Who will own them?)				
Field testing				
<b>Change as requested by customer</b>				

HELP and DOCUMENTATION	Yes/No/NA	Rate	Quantity	Rate
<b>3.1. ON-LINE HELP:</b>				
<b>Translation of on-line words:</b>				
Editor to be used				
Platform to be used				
Glossary supplied				
Length restrictions				
Jumps and links identified				
<b>Editing and proofing of on-line words:</b>				
Editor to be used				
Platform to be used				
Is it possible to produce a printout?				

<b>HELP and DOCUMENTATION</b>	<b>Yes/No/NA</b>	<b>Rate</b>	<b>Quantity</b>	<b>Rate</b>
<b>Linguistic testing of on-line help:</b>				
Hardware / software to be used				
Third party localized software to be used				
Test plan available				
Text script available				
<b>Screen captures provided?</b>				
Software to be used				
Location identifiers - list of screens				
Source screens provided				
Proofing				
Screen creation required				
<b>Compilation:</b>				
Compiler to be used				
List of compile errors (in source) provided				
Document compare for updates				
Formatting/clean-up				
Graphics insertion				
<b>Engineering support during localization provided</b>				
<b>Leveraging OLH vs document translation</b>				
<b>3.2. DOCUMENTATION:</b>				
<b>Translation of documentation words:</b>				
Hardcopy supplied				
Editor to be used				
Platform to be used				
Glossary supplied				
Length restrictions				
Index entries				
Manual entries or markers				
Cross-references				
Manual entries or markers				
Author alterations				
<b>Editing and proofing of documentation words:</b>				
Hardcopy supplied				
Editor to be used				
Platform to be used				
Glossary supplied				
<b>Page make-up:</b>				
Hardcopy supplied				
Style sheets				
Supplied				
To be created				
Fonts				
Table of figures provided?				

<b>HELP and DOCUMENTATION</b>	<b>Yes/No/NA</b>	<b>Rate</b>	<b>Quantity</b>	<b>Rate</b>
<b>PDF file generation:</b>				
Hardcopy of source files supplied				
Generate PDF files				
Test PDF Files				
Printout and QA PDF files				
<b>Documentation screen capture:</b>				
Provided				
Hardware / software set-up				
Process				
Any art creation				
<b>Consistency checking of documentation vs. software:</b>				
Hardcopy supplied				
Hardware / Software to be used				
Third party localized software to be used				
Number of words				
Number of leveraged words				
Previous doc versions available				
Updates planned during translation				
Software source available				
<b>Index creation:</b>				
Index markers to be translated				
Index markers to be created				
Index to be mocked up				
Manual generation				
<b>Table of Contents (TOC) creation:</b>				
Macro supplied				
Tools for TOC QA supplied				
Manual checking				
<b>Print specification sheet preparation:</b>				
<b>Changes as requested by customer:</b>				

<b>OTHER</b>	<b>Yes/No/NA</b>	<b>Rate</b>	<b>Quantity</b>	<b>Rate</b>
<b>4. OTHER:</b>				
<b>License agreements:</b>				
Legal translation				
In-country legal proofing				
<b>Legal agreements:</b>				
<b>Warranty notices:</b>				
Legal translation				
In-country legal proofing				



OTHER	Yes/No/NA	Rate	Quantity	Rate
<b>Packaging material:</b>				
Editor to be used				
Platform to be used				
<b>Media material:</b>				
Editor to be used				
Platform to be used				
<b>Voice over:</b>				
Editor to be used				
Platform to be used				
Special voices required				
<b>Estimated project management days:</b>				
Job specification				
Change management				
Change management as requested by customer				
<b>Travel:</b>				
Transport				
Accommodation				
Expenses				
<b>Project hardware costs</b>				
<b>Project software costs</b>				
<b>Project font costs</b>				
<b>Media costs</b>				
<b>File (labour and phone costs)</b>				
ASDN				
E-mail				
Modem				
Leased lines				
Communication costs				
<b>Courier costs</b>				
<b>Extra volume costs</b>				
<b>Currency loss</b>				

# HIGH-QUALITY TRANSLATION— THE NEW LOCALIZATION PARADIGM

ROBIN BONTHRONE & DEBORAH FRY

*Underpaid, undervalued, the translator can find a way to survive—by competing on quality. And that means defining and measuring the elusive quality of translation. Robin Bonthronne and Deborah Fry spotlight the evolution of the translation sector.*

## A Necessary Evil

In the couple of short years in which localization has gone from a handful of cottages in Ireland to a global and in a number of cases a publicly listed industry, its translation aspects have not been the center of attention. “Strategic” aspects such as making money, mergers and acquisitions, employee recruitment, project management and the Internet revolution all commanded much greater airspace at industry gatherings. This omission, though perhaps understandable in an industry metaphorically trying on its first adult suit of clothes, is nevertheless surprising given the fact that translation is the largest single budget item in localization projects.

What is more, where translation was actually addressed, it was regarded as definitely problematic—a source of rationalization efforts by large client corporations and a bugbear for service providers. As Claudio Pinkus, the former CEO of global service provider Bowne Global Solutions, put it at the LISA Budapest Forum in December 1999, “translation means adding one person for every 2,000 words per day, and this is not the way to add value.”

The logical business model for such a low-value, non-core activity was generally felt by both clients and service providers alike to be a mixture of automation and outsourcing. In practice “daisy-chain” structures involving multiple intermediaries evolved to handle the supply side of the market. Thus a client would contract with a large international localization agency to localize an application into numerous languages. In turn, the agency

would contract with a lead subcontractor for each language pair, who in turn subcontracted further down the chain. It was (and still is) not infrequent for the ultimate translator to be seven or more links removed from the software manufacturer, and it is not uncommon in the lower echelons for price to be the only driving factor behind supplier selection.

effort—and hence, the value added is much more immediately apparent.

To sum up, therefore, traditional localization companies generally adopted a highly paradoxical attitude to translation. On the one hand, they regarded it as a commodity product, with reproducibility and repeatability as key criteria. In other words, translation was a substitution-

***“Translation means adding one person for every 2,000 words per day, and this is not the way to add value.”***

At a macro level, the effect of this on a profession as heavily fragmented and individualistic as translation itself started to look like a self-fulfilling prophecy, with much of the traditional low end being sucked into the downward price spiral.

The introduction of translation re-use technologies, though driven as much by the need to ensure the repeatability and reproducibility of original content as by cost-related considerations, also had a similar effect. By—naturally enough—emphasizing the primacy of existing text and inserting a further layer of technology as an intermediary, translation memory tended to remove translators and the creative process of translation from the center of events. This further reinforced the perceived drop in value added. Other language technologies, such as machine translation, have not presented the same problem in such an acute form, since the human input needed has been great—except in highly controlled environments that have generally themselves been the recipients of man years of consulting

driven activity in which individual translators or corporate translation providers were—in theory at least—effortlessly interchangeable. On the other, it was also regarded as a high-maintenance, non-scalable and irksome activity, to be outsourced if possible. In both cases, translation was a necessary evil rather than a differentiating factor, and having the word “translator” on your business card—if indeed you had one—was not exactly regarded as the stepping stone to a brilliant corporate career. (This despite the further paradox that many localization companies actually made a large proportion of their money from translation).

## Things Fall Apart

Much of the blame for this development can, however, be laid firmly at the door of the translation community itself. Accustomed over decades to almost mediaeval working practices and a self-image that sought to set translators apart from such “unworthy” matters as business and customer orientation, the translation pro-

fession in the late 1980s and early 1990s was a classic case of an industry largely blind, or reacting wrongly to, the changes happening around it. The paradigm of the translator as artist (i.e. only minimally a scientist and definitely not a business person) was extremely well rooted—and in fact actively encouraged by some academic institutions and professional associations, which spent more time in internecine warfare than in equipping their (admittedly often extremely recalcitrant) members for the new world order.

Against this backdrop, the impact of localization (and of automation in general) was to split the industry into a low end and a high end, as well as causing a big shake-out among traditional proponents of the latter. Unwilling to adopt fast-moving information and communication technologies and facing growing time pressures, among other things, many specialist translators simply first burned out and then dropped out of the business altogether, or turned to areas of work that were less affected, at least temporarily, by the pace of the new developments.

Those translators who avoided the localization trap in the 1990s but who nevertheless enthusiastically embraced computing, the Internet and language technologies started redefining the role and the image of the translator. The new high-end specialists are multilingual content providers, offering business solutions rather than “mere” translations. In fact, many of them also started adding consulting services to their offering, leveraging their know-how and adding value to both their own and their clients’ processes.

All this will sound remarkably familiar to observers of the current round of repositioning on the localization scene. One version of the “high end” is represented by the technically sophisticated global service providers, which offer global reach and economies of scale and are increasingly taking on the role of facilitators. To be able to compete with these often cash-rich companies on something approximating equal ground, and to escape the trap of working for “pennies for words,” many small and medium-sized localization vendors are repositioning themselves as specialty providers. There are many different versions of such specialties, including geo-

graphical, technological, and/or domain expertise, as well as unique combinations of services and target environment (e.g. Web site) know-how.

Other factors influencing this redefinition are the fact that as we now automatically get “chips with everything,” the boundaries between the localization and straight translation models are inevitably becoming blurred, and the traditional product release model is breaking down in the wake of the Internet. While overall translation volumes (and hence senior management attention) are continuing to increase, the multiple target audiences and the move towards mass customization are leading to a greater emphasis on content adaptation and personaliza-

istic. To quote Claudio Pinkus in Budapest again: “the problem is that translations are so often wrong, and there is always a risk no matter how much effort you put into getting them right.”

Of course, it is clear that in a localization context “quality” will refer not just to translation but to the quality of the finished product as a whole (and the renewed focus of the past few years on software testing is no accident in this respect). It is also clear that, in the real world, cost and time to market, resource availability, and expertise and experience can all combine to relativize quality. Nevertheless, the more the industry moves to a specialist model, the more issues of both process quality and content (or

***Having “translator” on your business card—if indeed you had one—was not exactly regarded as the stepping stone to a brilliant corporate career.***

tion rather than “commoditized” translation. Equally, product and content liability (and hence translation liability) is becoming more of an issue for clients, and hence for service providers. And, last but not least, as the Internet tears down entry thresholds and markets become more competitive, quality is emerging as a differentiating factor for both clients and service providers.

#### **Process and Content**

What, though, is this quality that everyone is now talking about? It has long been the case in the translation industry that, while there is a general consensus that quality is something we all need, defining quality—and translation quality in particular—is a far more difficult task.

The deleterious effects on translation quality of the commodity model have certainly been identified as an issue. Thus Claude Pesquet, the former Digital Equipment senior executive and LISA Board member demonstrated in Budapest that the French version of Visual Basic 6.0 contained a large number of “anomalies” and called for a change of heart: according to him, “being ashamed of specializing in translation is wrong.” Nevertheless, the dominant mood among clients and service providers alike still seems to be fatal-

output) quality will continue to rise on the radar screen.

The first area is the one in which the most progress has been made. Standards such as ISO 9000 ff., the LISA QA Model and various proprietary enterprise quality systems are designed to ensure that the workflows and processes involved in localization are optimized at the level of organizational units and individual procedures. Adoption of such quality standards in recent years has done much to professionalize and streamline the localization industry, and hence indirectly to facilitate the global expansion of the IT industry. The implemented process quality requirements behind the simship of a major software product, for example, are something of which localizers can rightly be proud. What is more, on the vendor side, such levels of process sophistication have helped ensure corporate survival in a heavily competitive environment and a market dominated by growing volumes and ever-shorter deadlines.

However, much less progress has been made in the area of output quality, even if the incidence of downright howlers has now declined with the spread of basic PC literacy and the increasing use of style guides and standard terminologies. The latter are, incidentally, common ways

of trying to build in a certain degree of quality from the start, and other standards such as the LISA QA Model have also addressed this issue in passing. Nevertheless, the more dominant focus of work up to the present has been on various ex post methodologies of analyzing and evaluating output quality. This is perhaps understandable given the pressing need to establish and agree on “objective” criteria for translation quality before doing anything else, and the difficulty of the issues involved. However, such approaches assume—or at least can facilitate the assumption—that the (translation) content received for QA is likely to be flawed in some way, and that the QA process is the primary stage for identifying and rectifying errors.

### **The Quality Challenge**

Nevertheless, designing in quality from source is precisely the challenge now facing the high-end sector of the translation/localization industry. In today’s fast-moving business world, the old triangular model of “quality/price/deadline—pick any two” that service providers used to show to clients has now been replaced by “consistent quality, value-added and time-to-market,” with all three factors an absolute must. This means that the only chance to achieve translation quality is to get it right first time, not to build it in at a later point.

However, this has significant implications for both translation/localization companies and individual translators. In particular, a number of not insubstantial challenges need to be addressed.

### **Productivity**

Claudio Pinkus is quite right that translation is not a way to add value. Despite the move to a value added (and hence not exclusively price driven) model, in today’s fast-moving environment, translators will need to accomplish often much more, and on a regular basis. This requires a change in the “quota-based” mentality sometimes visible in the translation profession (itself often a by-product of or reinforced by a commodity-based model). Obviously, language and other technologies that give translators the tools they need to do their job have a key role to play here, as do the

greater speed and assurance that come with sector specialization. However, translator training and translator profiles also need to be rethought, in some areas substantially (see below).

### **Translator training**

To use a somewhat old-fashioned military metaphor, new translators, like any other recruits, need to acquire all the skills they need for survival during their basic training. While many universities have made substantial progress over the past few years to modernize their

pal/senior consultant/junior consultant” syndrome), and the motivational and human resources development issues connected with this, particularly in small enterprises, can become real challenges. How do you create a culture in which you consistently expect the best from people without demotivating young employees who are still in the learning curve? And how do you retain the specialists you have spent three years training, especially when your clients can outgun you almost every time on salary, titles and other traditional HR benefits?

***Quality is something we all need, but defining quality (particularly in translations) is a very difficult task.***

courses, the gap between the curricula and real life is still too large for everyone’s comfort in too many cases. In addition, many universities in turn deplore the basic native language skills (starting with but not confined to grammar) exhibited by school leavers, and in at least one case a remedial program has been set up (the title of which was carefully disguised to avoid falling foul of university regulations on the purpose of tertiary education institutions).

In addition, much greater sectoral and technological expertise will be required in the future. Developing corporate knowledge bases and other forms of IT support is one way of shortening the learning curve here and leveraging existing human and written resources, if still a labor-intensive one. In a knowledge-driven economy, it’s not a matter of having all the knowledge yourself: it’s about knowing where to find it and how to integrate the people who have it. The new breed of translation/content adaptation providers, who have invested heavily in recent years in domain expertise, training and technology, are well positioned to fill this gap. Nevertheless, ongoing training and knowledge collation and dissemination will continue to represent a not inconsiderable effort for smaller specialist shops in particular.

What is more, the need to transfer knowledge within organizations, its often highly uneven distribution (often solved in the consultant firms by the “princi-

### **Scalability**

Even if translator productivity can be improved, however, the fact remains that capacity is and will always be limited. Scalability is the name of the game, and the lack of it is why many investors are currently steering clear of consultants and other professional services organizations. The reason is simple: since their activities are based on highly skilled people, growth is limited by the availability of the latter. This applies both in absolute terms (as everyone keeps saying, in today’s rapidly expanding global economy there simply aren’t enough really top flight people with all the requisite skills around) and in relative ones. To put it in a nutshell: there are only 24 hours in a day and once you have billed your clients for all of them you have to change your model to continue adding value. Of course, there are a number of ways of doing this, such as adding new people with different skill sets (e.g. consultants, to the extent that you can find them), and/or developing new services or products.

### **Falling in love again**

What, then, will the effect of these developments be on the localization industry?

Firstly, we are likely to see even more mergers and acquisitions, but also more formal, semi-formal and informal alliances, many of them project based, as companies seek to tap the knowledge and resources they need for specific work or entry into specific markets. Since

under the new model the content change risk (having to keep abreast of the latest domain-related developments in two or more languages/cultures) passes to the translation/content adaptation providers, a tight focus becomes necessary. Specialist translation and localization companies are repositories of deep and wide multilingual, multicultural knowledge that is tightly focused on specific industries, domains, technologies and/or markets. By allying themselves with other like-minded specialists, they can effectively manage both one-off projects and continuous delivery models, as required.

Secondly, within service (sorry, solutions!) providers, we shall see a change in the status of “wordsmiths” of all kinds, be they translators and/or content creators. With some of the newer e-transformation companies already giving traditional ad agencies a run for their money in the area of multilingual Web sites, we are likely to see more aspects of “creative” behavior, working environments and remuneration policies. (Of course, this also presupposes similar levels of target language skill, as well as the ability to successfully marry such an ad hoc style with the process-dominated localization environment).

The upshot of all this is that specialist service providers, whether they originally came from “straight” translation or localization, will adopt the “high-touch” model described by Claudio Pinkus in Budapest, which is “founded on knowledge, customization and service. They put together solutions for clients founded on the belief that they (know) more than the client and (can) offer them this knowledge at a premium.” In this case, it will be interesting to see whether the localization industry as we know it will more or less disappear, subsumed into the global content delivery segment on the one hand, and the global content creation segment on the other. ❖

## ❖ QUALITY ASSURANCE: THE CLIENT PERSPECTIVE ❖

# PUTTING THE QA STAMP ON TRANSLATION

MINAKO O'HAGAN

*Can the human intellectual process of translation ever be formalized so that it can be measured and subject to objective quality control? Minako O'Hagan from the School of Communications and Information Management at New Zealand's Victoria University of Wellington examines just how far technology can bring translation into the ambit of QC.*

### QA Before IT

One of the unique aspects of translation products is that there is no one “correct” version; many variations are possible and consequently, almost by definition, clients are usually unable to immediately judge their quality. Perhaps this is why the concept of quality control (QC) has until relatively recently been rather ill-defined, and only loosely applied to the translation business in general.

Consequently, in the early 1980s New Zealand's professional body for translators and interpreters found that indemnity against loss caused by mistranslations was unheard of by insurance companies in New Zealand. Judging translation quality was considered something subjective and controlling the translation process was seen (by translators) as akin to asking novelists to apply a formula to their writing.

a specialized nature. Observance of these rules, however, had been left to the practitioners' discretion rather than to formal enforcement.

In the era before information technology (IT) played a major part in language services, QC was defined as the manual processes carried out by human translators and checkers. These included checking spelling, grammar and figures, as well as translation itself for accuracy and style, etc. In those days, QC was also largely limited to the resources available in-house.

One of the hallmarks of the quality issue of this era was that it was largely dependent on subjective judgments made by translators and checkers, often leaving the client's needs out of the equation. In this sense the language service was removed from the real needs of the customers, and translators often treated

***Controlling the translation process was seen by translators as akin to asking novelists to apply a formula to their writing.***

There had been a few quality-related rules generally understood by practitioners. One was that translators should translate only into their native language or, if that was not possible, then the resulting translation had to be checked by a native speaker editor. Another was that one should have an appropriate level of subject knowledge in order to undertake technical translation work of

their work more like academic exercises; they were in pursuit of “perfect” translations regardless of context and the end use of the product. Such an intuitive and entirely human-based QC procedure was feasible because of the volume of work, the production time, the variety of language pairs, output media and also the final purpose of the translation.



The lack of formal QC measures also had to do with the fact that the translation profession used to be founded almost entirely on “on the job training” rather than on formal institution-based qualifications. In fact, the debate over experience versus formal qualifications is still rampant today, after many special-

ized translation training schools and academic institutions have been established the world over. scooped at by many practitioners. This thinking may be reflected in the long-held attitude of many translators towards MT: computers cannot undertake the translation process, because it is only possible by means of human intelligence. In other words, this human mental process cannot be formalized.

With the advancement of IT and the increasing globalization of world markets together with enhanced translation capacity, translation work started to increase both in volume and in the variety of work content, often with a reduced production time. Under these circumstances the need for project management and formalized QC procedures became essential.

Over this period translation services also became much more sensitive to customers’ real needs, and the idea of “quality” was no longer always taken in a purist sense but in the context of customer requirements. For example, draft translations with a quicker turnaround at a reduced price were wanted by some customers for certain jobs. This supplier awareness in turn probably stimulated more demand for translation (which would otherwise have gone unrealized). In fact, this “information-only” translation need is one of the markets specifically targeted by some MT developments.

Into the early 1990s low-price desktop MT software (sometimes called PCMT) emerged in the market, while online MT

services were also in operation. Some translation operators used MT systems in an attempt to increase productivity. By this time it had become clear to both translation suppliers and their end users that while MT could not be expected to produce perfect translation, perhaps it would have its place. End users might take advantage of speed and cost factors for information-only purposes or for first-pass translations before deciding on the need for more precise work by human translators. For the translation suppliers, some repetitive text and large-volume jobs in certain technical domains with a short production deadline became possible candidates for MT process-

ized translation training schools and academic institutions have been established the world over.

Because of the lack of official “measurements” of their skill levels and their outputs, and despite the specialized nature and the expertise required, the work of translators had been cast somewhat outside the norm of so-called “professionals” such as medical doctors, lawyers, engineers, etc. This situation has not been helpful for either translators or customers; the former were often undercut by amateurs or had to face clients who expected unrealistically low rates while the latter had to persevere with jobs of less than satisfactory quality or suffer the consequence of poor translations. Under these circumstances, quality assurance (QA) in any formal sense in the translation industry was almost non-existent.

By comparison, from its birth in the 1950s, machine translation (MT) has worked on a totally formalized basis with language analysis and generation rules. Even inputs need to be regulated (by way of pre-editing of input text) for better results. In this sense MT can be relied upon to invariably apply whatever rules are programmed into its software and to output consistent terminology, etc. This environment would seem to imply that it would be easier to apply QC procedures to MT productions than to those done by humans alone.

And yet the very inflexibility in changing “rules” is often responsible for poor quality outputs. Human translation production processes have been more or less reliant on the individual style of each translator and the mere thought of applying any standardization would have been

At the same time, the end users of translations had almost the opposite and unrealistically optimistic expectations that MT would resolve the world’s language problems once and for all. To the delight of many human translators, however, the early results of MT only supported the view that the task was beyond the computer’s capabilities.

#### **QA After IT**

In the mid 1980s when IT started to impact on the translation business with multilingual word processing, DTP and faxes, for example, the QC process began to evolve from an entirely manual and intuitive style to one following systematic procedures and the use of technology. While the computer began to be used

for general job management purposes, specific IT tools were integrated into QC procedures. Electronic spelling checkers were used as part of standard document preparation (although not replacing a human proofreader entirely) and the fax made possible the concept of remote “in-country” translation and checking. This also meant that some clients were able to assess the quality of translation with the help of their in-country contacts.

For the suppliers, the new IT applications meant a new capacity to be able to add value to a straight translation job by the use of DTP, for example. This, on the other hand, created a new area to be covered by QC. In addition to checking

services were also in operation. Some translation operators used MT systems in an attempt to increase productivity. By this time it had become clear to both translation suppliers and their end users that while MT could not be expected to produce perfect translation, perhaps it would have its place. End users might take advantage of speed and cost factors for information-only purposes or for first-pass translations before deciding on the need for more precise work by human translators. For the translation suppliers, some repetitive text and large-volume jobs in certain technical domains with a short production deadline became possible candidates for MT process-

***To the delight of many human translators, the early results of MT only supported the view that the task was beyond the computer’s capabilities.***

***The more computers start behaving like humans the more their translation quality may improve. At the same time, they will make more human-like mistakes.***



ing. Translator's workstations and CAT (computer-assisted translation) were also being used in some translation offices.

This was also the time when the localization business established itself in a major way in the translation sector. This new field of translation represented the

back channel between the customer and the supplier or the supplier and his/her subcontractors?

Translators often need to ask questions regarding the text after accepting a job, in order to resolve the meaning of ambiguous sentences, check the spelling

QC in the translation business used to be driven mainly by the subjective judgment of translators and their checkers. In this sense it was closest to the "perception-based" approach, and depended mainly on one's linguistic skills. This remains true today as far as translators' self-checking is concerned. However, with IT applications and with the translation sector taking on the characteristics of a service industry, the overall QC strategy by practitioners has now moved to a less intuitive and more systematic approach. Of all translation businesses, the localization sector may be considered the forerunner that first attempted a formalized process in QA, based on all three factors of "product," "user" and "operations." This head start may be partly due to the nature of localization work, but is also perhaps due to the "culture" of a systematic approach inherited from the computing industry background combined

***We were told that the translator should always aspire to get the right translation the first time around rather than leaving the effort to find a correct translation till later.***

coordinated skills of computing and translating and in many ways started to bring in a more IT-oriented approach.

In the mid 1990s the impact of the Internet was felt strongly by the translation industry, bringing a new generation of "teletranslation," whereby customers and service suppliers are linked electronically on a global scale. Today there are a large number of Web-based teletranslation services in operation, including both MT-based and human-based services. With the former the user knows the trade-off between the cost/time and the quality factors, and this understanding makes the transaction mostly straightforward in terms of QC for translations; the service comes with a "disclaimer" on the quality of the translation.

While the first introduction to teleworking for translators began with fax, they needed to wait for today's more mature telecommunications environment to provide sophisticated worldwide "virtual" services. The virtual service formula seems to be largely operable with translation work; text arrives and departs between the client's and the supplier's screens. The advantage of teletranslation is that the customer can tap into a translator who may be best qualified to take on the given translation assignment without being confined by locality.

Physical distance in human-based teletranslation services (which cater to wider translation needs than their MT counterparts) does, however, have implications for the quality issue. For example, electronic links inadvertently break down from time to time, sometimes without either party realizing. Also, even when it is working, the question remains: does the electronic link allow a sufficient feed-

of proper names, clarify jargon, etc. Clients may not be able to get on the phone to demand a delayed job to be dispatched immediately. Suppliers will require a new QC system when a large volume of translation work is organized in a distributed manner. QA for teletranslation needs to take into consideration these extra factors due to the very fact of "facelessness"

***The long-held attitude of many translators is that computers cannot undertake the translation process because it is only possible by means of human intelligence.***

in their style of providing services.

#### **The Future of QA**

Having looked at some aspects of how quality issues evolved in the translation industry, perhaps it's time to try to define what we mean by quality in the context of translation service, and then to explore future strategies regarding the quality issue in general.

The five categories of quality by Garvin provide a basis for discussion:

1. **Perceived:** this is the 'you know it when you see it' view.
2. **Product-based:** this is based on quality being design-oriented, precise and measurable.
3. **User-based:** this is based on the 'fitness for purpose' from the client's perspective.
4. **Operations-based:** this is based on the principle of 'conformance to specification' i.e., error-free.
5. **Value-based:** i.e., 'best value for money for a given purpose.'

with relatively obvious and fast feedback from the user market.

In the past, many attempts to quantify "translation quality" have been made by the world's translation associations as well as by individual translators, mainly with the objective of improving the professional status of translators—this had little clear, tangible success. Today, however, commercial pressure more than anything else seems to be pushing this. For example, the applicability of ISO 9000 standards has been a subject of debate among practitioners in recent years.

In the future, the translation business will increasingly need to apply this kind of formalized process, treating translation as a "product" or "commodity." Customers will be increasingly looking for QA, and this will be even more true with teletranslation services in order to compensate for their "virtual" nature. How will QA evolve and what factors will improve the current model? The answer will most likely lie in overcoming the bottleneck of the human process (the translation process in particular) in a QA model.

One of the beliefs held by QC guru Dr. Deming was simply to get it right the first time. This motto was hammered into those of us working in a New Zealand government translation bureau in the early 1980s. We were told that the translator should always aspire to get the right translation first time around rather than leaving the effort to find a correct translation till later. This advice is sometimes difficult to follow, particularly with the flexibility afforded by word processing which can encourage translators to put “something” down even if they do not understand the word or phrase correctly in their first attempt at a draft translation.

Recently I was interested to hear that a local translation firm decided to use more experienced translators to do the first draft and the less experienced to edit/check their work. This sounds paradoxical to some practitioners, but it in fact follows the Deming logic. A senior translator is less likely to make errors than a junior translator; thus, by getting it right first time the margin of error will be minimal. Doing it the other way around takes more time for editing and checking and possibly produces lesser quality work.

Looking into the future, it is inevitable that MT will progressively encroach upon the human translation process. How effectively can MT be implemented in relation to QC and QA issues? Applying the Deming formula, perhaps an MT system can be developed and specifically designed to edit or check a good-quality base translation. For example, a senior translator does a first draft translation. The text is then put through MT which back-translates the text into the source language. The result is then compared with the original text for numbers, proper names, number of sentences (paragraphs), terminology, grammatical structures, etc. Further research is necessary to investigate how commercially feasible this scenario may be.

One of the world’s MT authorities, Professor Nagao of Kyoto University, once said that both birds and planes can fly and yet they fly based on totally different principles. MT does not necessarily follow the way humans translate. In fact, MT’s advantage lies in its very mechanical and systematic methods (think of its processing speed, capacity and con-

sistency in the use of terminology). The human translation process will remain extremely difficult to subject to a total QC procedure and yet MT will readily lend itself to such a formalization.

While considering how to improve QA for translation services, we have to assume that human factors will always remain opaque. The challenge is then to find a way to minimize the opaque factor and counter it with the machine’s transparency. For example, the use of CAT or translation memory clearly assists “systematizing” the human translation process, making it easier for benchmarking and achieving consistent quality. The extreme example would be fully automated on-line MT services, which can be subjected to a QC system. Then the question is to what extent one can afford to remove the “human components.”

During my participation in PACLING ‘97 (Pacific Association for Computational Linguistics, held in Tokyo) listening to computer and AI (artificial

intelligence) scientists present their research into natural language processing technology, I realized that the more computers start behaving like humans the more their translation quality may improve. At the same time, they will make more human-like mistakes. In this sense we will never have “perfect translation” either by machines or humans.

There will be no such thing as “perfect QA” on the human side either, but by the very effort of scrutinizing the translation production process for QA purposes we will come closer to finding a workable model. Comments given by translation practitioners in relation to adopting ISO 9000 are that its applications may sound too demanding to be realistic, but the process of preparing for the certification does help clarify inefficiency and areas for improvement. In the long run this may be a worthwhile exercise. Last but not least, a successful formula for QA requires input from clients. Striving for higher quality needs to be a joint effort. ❖

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## ❖ QUALITY ASSURANCE: THE CLIENT PERSPECTIVE ❖

# QUALITY ISSUES

EMMANUEL UREN, ROBERT HOWARD &  
TIZIANA PERINOTTI

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*Emmanuel Uren, Robert Howard and Tiziana Perinotti provide essential advice for American programmers involved in internationalization (I18N) and localization (L10N) quality issues.*

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### Introduction & definitions

In our experience, there is a large discrepancy between the ways that translators and engineers view the question of quality; translators appear to be concerned with the accuracy of translation while engineers are more concerned with functionality. An American dictionary gives the following definitions (among others):

**QUALITY:** Degree of Excellence, Degree of Conformance to a Standard, Inherent or Intrinsic Excellence

**ASSURANCE:** Certainty, Freedom from Doubt, Quality or State of Being Certain, Something that inspires Confidence

The purpose of a Software Quality Assurance function in a software developer’s organization is to help answer the question “Is this product sufficiently error or anomaly free that it may be released for use?”

For the purposes of this article, we will focus on I18N issues, those features

that must be added to American code so that it may be adapted easily for use in other locales. We will assume that the reader has some familiarity with Testing or Quality Assurance procedures as used in American software companies. Time and money spent up front in planning and technical reviews usually pays off in the form of fewer mistakes and changes later on in development. Some companies involve their best domestic customers at the design stage and this may be desirable with overseas customers too. Keeping things short and simple is a good strategy too. Part of the Quality Engineers' role is to play Devil's Advo-

### **"First-time" fundamental errors**

In our experience, U.S. programmers involved with i18N features for the first time can make some fundamental mistakes. Therefore particular care should be taken to verify the basics. Are strings hard-coded rather than placed in resource files, are hot-keys in resource files as they should be, and are dialog/message boxes dynamically sized? Are extended characters used as word delimiters, are all characters imported and exported correctly, do decimal tabs work, is case conversion correct, and does sorting conform to a locale's rules? What about basic numeric, date, time and currency formats? Do

is available for comparison. Therefore a suspected anomaly can be verified on the other product. Second, resource files from different localizations can be swapped. It should be possible to swap French and German and U.S. versions of resource files, for example, and that can assist greatly in focussing on a problem area in the code.

One of the most difficult tests in retrofitted code is to ensure that all necessary strings have been identified for translation. We know of no structured procedure for detecting all strings although some companies do have proprietary tools.

Of course, there should be consistency of translation, that is in the terms used, between the major components of a software product, namely — documentation, Help and software.

### **Software Testing "Localizability" Testing on International English version**

It is possible to test whether the software contains many of the internationalization or "localizability" features in the U.S. version before any actual localization has taken place. And it is an article of Quality Assurance faith that the earlier an anomaly is found, the easier and cheaper it is to fix. Basically, what the testers can do with the internationalized, but not localized, code is test whether all the additional features

***A Japanese reader would expect more graphics and less text than an American is accustomed to... Perhaps the Japanese version of documentation should be re-written rather than translated.***

cate to developers and like everyone else in Marketing, International, Documentation and Technical Support the earlier they are involved in a project, the better. But Quality Assurance engineers who have only worked on U.S. code need to verify features that their U.S. experience does not prepare them for, and it is those features that we discuss below. We do advise you to keep track of what problems you find during development and localization. Then it may be possible to figure out either ways to prevent these anomalies occurring again or ways to automate finding them in your next project. Always conduct a project post-mortem with all parties involved for each project.

Quality Engineers sometimes use automated regression suites; there is an opportunity here to localize them too for testing localized software. Some translation tools extract and replace text strings, handle increased space considerations, merge new engineering releases with previous translations and pseudo-translate. Some have versions for software, documentation and Help that can interact, thereby making it easier to have consistent terminology in all three.

they conform to the orthographical rules of the target language? Spell checkers, hyphenators and other third party software need to be verified as do kerning and leading. Concatenated strings and strings with two or more variables might ignore gender variations and plurals or result in a sentence order that is incorrect. Printing and displaying characters for all fonts, displays and printers is basic. Can you input characters, parse input strings,

***The translator should be able to pass for a native of the target locale. Such a person can recognize if the language is from another locale (e.g., France, Quebec, Switzerland, Belgium).***

and are character and word boundaries correctly defined? Are measurement scales and page sizes appropriate and is clip art acceptable?

Testers need to verify that there are no errors in these basics.

### **Additional testing procedures**

In testing a localized product's functionality, a tester has two additional procedures when compared with testing the U.S. product. First, there is a "sibling" product available which itself has undergone testing and whose functionality

work correctly. The scope of this testing can be greatly enhanced if there is a tool available that can:

- extract text strings,
- perform a pseudo-translation incorporating both the anticipated extra characters and insertion of additional space,
- and then insert the pseudo-translated strings back into the code.

Use of such a tool assists quality engineers to test the display and printing of

characters, the anticipated sizes of menus and dialog boxes, string resourcing and basic functionality at a very early stage in the development process, even before any real translation has taken place. More significantly, these tests can be performed before a version of the code has been given out to translators. This reduces both the amount of time and the

### **Subtleties**

There is an increasing tendency these days to use the operating system's i18N support. One subtle issue as a result is whether it is "alright" for i18N features to change with the OS or not. For example, a Parisian French localization might take on some German characteristics (currency or numeric formats to name two)

***It is an article of Quality Assurance faith that the earlier an anomaly is found, the easier and cheaper it is to fix.***

number of times that there are two different versions of the code, the one that engineers are developing and the one that translators are translating. And there will probably be fewer engineering corrections to make later in development, after real translations are re-inserted into the code.

In the realm of text processing, test the input, display and output of characters (including their order and direction if dealing with non-European languages), the import and export of characters to other applications, the processing of multi-byte, double-byte and single-byte character strings, the use of concatenated strings and strings with embedded parameters (in particular verify that word order is grammatically correct in the target language). In testing multi-byte strings, areas of interest include verification that characters are correctly deleted, that they copy and paste correctly, that the cursor moves correctly, that searches perform correctly and finally that lines break correctly on the screen and in printing.

### **Localized versions**

Localized resource files, being of a different size than the original U.S. versions, are arranged differently on disks and so it is necessary to test installation procedures. Depending on the strength of your overseas organization, arrange for some beta testing.

An advantage to localizing in the target country is that it provides the opportunity to verify the localized product's functionality on more of the typical computer environments than may be available in the U.S. home office and with more localized versions of third-party software.

under a German OS even though menus may still be in French. So it may behoove testers to test the application under a localization of the operating system different from the one planned to see if the application's i18N support overrides the OS's support.

The increased pressure to produce localized versions within at most a month after the completion of the basic U.S. version intensifies the following predicament for localizers. They will have started to localize incomplete engineering releases of the product; as bugs are discovered in the basic code and corrections are made to the code, documentation and Help, new engineering releases become out of synchronization with the releases being translated. Merging the two can be difficult and therefore can easily introduce errors unless a rigorous oversight of resource ID numbers and a rigorous build transfer process is maintained.

The DTP package used for documentation must handle all contemplated target languages. Even when it appears that a package does fulfill this requirement, it is possible that different releases exist for different languages, thus creating a compatibility problem. For example, the French version of a DTP package may be two engineering releases later than the Japanese version and therefore may contain features that are just not present in the Japanese one. One obvious strategy is to keep everything as simple as possible, including the requirements for the DTP package itself.

### **Translation errors**

There is no alternative to using native speakers in the translation process. In other words, the translator should be able

to pass for a native of the target locale. Such a person can recognize if the language is from another locale (e.g., France, Quebec, Switzerland, Belgium). And of course, the translator should be up-to-date in the application's terminology. The conventional method for verifying translations is for an editor or proofreader (in other words, another person) to review the translations; another method that is rarely used is to have another translator reverse-translate a small sample back into English so that the original author can compare that with the original. A reasonable similarity may induce a "warm fuzzy" in any monolingual developers.

In certain cases, the question of translate versus re-write arises. Purely American examples need to be replaced by examples that are more appropriate to the target locale. It is entirely possible that a Japanese reader would expect more graphics and less text than an American is accustomed to, so perhaps the Japanese version of documentation should be re-written rather than translated.

The use of hypertext adds a dimension that needs to be checked after translation, namely, are the hypertext jumps preserved? Less obviously, spurious leading and trailing blanks may be introduced during the translation process, hot-keys and quotation marks may be mismatched or hot-keys may not be unique.

### **References**

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# THE CUSTOMER MAKES THE DIFFERENCE

YANN MEERSSEMAN

*Clients have a key, but often neglected, role to play in translation quality. Vendors, no matter how good, do their clients a disservice by taking on jobs in which they are expected to “do everything.” Poor input, working procedures and communications, and an inadequate understanding of the nature of quality can all take their toll. In this article, Yann Meersseman gives a client-oriented view of how to get the most from translation suppliers.*

**H**ave you ever wondered why localization managers can have such different opinions about particular vendors and the quality of their work? How can it be that a localizer boasting university-grade translators, ISO certification and extensive tool usage seems to do a great job for one client or product, but a lousy job for another?

I have worked with many localization companies over the years. Most are staffed by seasoned professionals who have developed well-structured organizations and acquired extensive expertise. Certainly, they have their ups and downs, but that does not explain the broad range of ratings from their customers.

Looking back at the more than 200 localization projects I have been involved

- Do you ensure the language quality of your original product?
- Do you give the vendor the possibility to understand the product?
- Do your product and your procedures allow quality translations?
- Have you sold translation quality inside your company?

The following paragraphs address these questions in more detail.

## **Do Not Confuse Translation Quality and Product Quality**

When you hand over your software, online help, printed documentation, or Web site to a localizer, the implicit message is: “I want exactly this, but in another language.”

***Localization is never a goal in itself. It is one step among many in pursuit of a final objective.***

in, I can only find one satisfying answer: the client makes the difference.

Imagine you found the world’s best localization service. Does this perfect tool guarantee a perfect job? No. The power to make it a success or failure is still in your hands. By selecting the ideal partner, you made one important step in the right direction, but other aspects need to be considered:

- Do you confuse translation quality and product quality?

Strictly speaking, translation adds nothing to your product. Its objective is to accurately transpose the nature and quality of the original material into a target language. Although one impacts the other, translation quality and product quality are very different concepts. The highest translation quality is achieved when original and translated products match in every respect, whether it is functionality, usability, or readability. Good translations preserve product quality, bad ones deteriorate it. Exceptionally, the translated

product can be of higher quality than the original, but don’t count on it.

Whether the product quality is adequate for the targeted market should be part of your company’s preliminary market analysis. Quality perception can vary significantly between cultures, and companies should definitely investigate this before starting any localization.

A good localizer can provide valuable feedback on your product’s quality, but that is where their responsibility ends. Their role is to ensure translation quality. If you have product quality issues, they should be resolved in the original version, prior to translation.

## **Ensure the Language Quality of the Original Product**

The quality of a translation is measured by its ability to render the quality of the original product. This includes its quality of function, quality of form (layouts, fonts, alignments, abbreviations and other cosmetic aspects) and quality of language (content and style). Since translation at its best will merely preserve quality, it is vital to ensure the highest possible standards for the original.

At this point, most developers will reply: “Our QA department thoroughly tests all original products and guarantees the quality of anything we ship.” That is probably true for form and function, but what about language?

Developers and QA departments focus most of their attention on functionality. Technical writers and documentation departments pay more attention to language, but they usually intervene late in the development cycle and control only part of the product. The typical organization does not possess a function that can globally review and correct the language output of all departments involved in the development process. This activity only emerges with translation, and solely on the target language side.

Look at how translated versions are tested. Beside functionality and cosmetic aspects, translations are mainly controlled for:

- accuracy,
- consistency of terminology (in and between the user interface, help texts, manuals, etc.), and

- writing style and readability.

Not surprisingly, translation validation puts a major focus on language. In fact,

***Translation adds nothing to your product.***

the target language is scrutinized in a way the source language rarely is.

I have experienced that a true language QA of the original product yields dramatic improvements in the majority of cases. Not only do you gain in the overall product quality of both the original and the translated versions, but you can actually make substantial savings on translation when you use the same QA effort to analyze and reduce word volume.

When you have measured the original language quality, you also have the tools to rate translation quality and minimize the subjective (and endless) discussions related to language. You don't measure translation quality by asking if the translated version is using consistent terminology—you measure by asking if translation has preserved the consistency of the original version.

Note that localization companies are experts at language QA. They have the people, the tools and the procedures, but their focus is on target languages. They would have no problem helping you determine the language quality of your original product.

**The Vendor's Understanding of the Product is Key**

People buy software because it allows them to perform tasks faster, cheaper, better, or in previously impossible ways.

***Working with external vendors does not exempt you from integrating them into the company's language and culture, providing product training and demos, or having them spend time reading your materials.***

The text in the user interface, on-line help or manuals allows them to understand and fully exploit the possibilities of the tool. The text's role is purely to transmit information. Content has precedence over form.

The people who write these texts understand the product particularly well. The user interface is in most cases directly created by the program developers, while

online help and manuals are written by people who spend considerable time talking to developers and studying the product's functionality. Understanding the product is very important for producing texts that will efficiently guide end users through the software's intricacies.

The role of the translator is to extract this information from the original text and render it unaltered into the target language. The key to successfully achiev-

***It is vital to ensure the highest possible standards for the original—translation at its best will merely preserve quality.***

ing this task is understanding the product. The better a translator understands, the more accurately his translations will convey the original information. This means that translation quality is far more dependent on the translator's technical knowledge than on his language capabilities. Software localization is more closely related to engineering than it is to linguistics.

Unless you develop very popular applications (spreadsheets, word processors, etc.) or you have already translated previous versions, you can be sure that the vendor you selected knows close to nothing about your product. If at this

stage you immediately start the project and impose the typical deadline squeeze, you can forget about quality, no matter how top-of-the-line your vendor is.

Keep in mind that you are outsourcing the localization because it is cheaper, not because it buys you better quality.

If money was not an issue we would all have inhouse translators who, like technical writers, would work closely with the development and sales teams, have an in-depth understanding of the products and deliver a translation quality no external vendor could get close to.

Note that if you hired an in-house team of translation professionals, you would certainly not expect them to be operational on day one. No doubt they would get some product demos and training, have a chance to talk to other departments, and spend time reading the materials and understanding the company's language and culture. Integrating these individuals in their new environment would be considered essential to achieving good results.

Working with external vendors does not exempt you from this integration effort. You just hired the same team of professionals on a temporary basis and they won't be very effective if you treat them like outcasts. Train your vendor's team, show them the end-user view, give them time to learn the concepts and ask questions. This initial investment largely pays back on the quality side.

**Product Architectures and Translation Procedures Can Cause Roadblocks**

Localization vendors work within the boundaries imposed by your product and procedures. Sometimes, this creates limitations that make it impossible to reach the highest level of quality. No matter how good they are and how hard they try, translators can be blocked from reproducing the quality of the original version.

On the product side, these problems occur when no sufficient enablement (or internationalization) has been performed. If, for example, text strings are severely limited in length, the translated version will have far more abbreviations than the original, and readability will suffer. Other classic mistakes made

by developers are shortcuts and system values that cannot be changed. Don't expect users to be overjoyed when they are required to type a "Q" to trigger a command that starts with an "L" in their language.

A lot has been said and written about product enablement and it is encouraging to see how this subject has picked up momentum in the past few years. However, the choice of putting in the effort remains strongly dependent on each particular business case and the decision not to enable can be perfectly justifiable. However, the impact on translation and the resulting loss of quality between original and translated versions has to be understood very clearly.

On the procedure side, it is important to realize that the closer the translators get to the end-user view of the product,

with other activities to achieve the final objective.

Localized products are usually passed on to sales and distribution. Regional offices, distributors, affiliates, VARs, and other direct/indirect channels are the primary customers. They are also often the first to express judgments on translation quality, and sales will suffer badly if their impression of the localized product is negative.

Regardless of how well you organize your projects, subjectivity towards language and translation is something you cannot get rid of. Pass and repass translations among reviewers and you'll never stop making corrections. If you want to avoid nasty arguments at sign-off, you better start selling the quality of your project on day one.

Selling translation quality to your pri-

- Make sure your primary customer feels comfortable with the vendor you have selected.
- Give your primary customer sign-off authority on the target language terminology.
- Produce an initial pilot translation and have your primary customer comment on it.
- Always implement the changes suggested by your primary customer or make sure he understands and accepts why it cannot be done.
- Keep your primary customer informed regularly of the project's status.

Too many times, I have experienced arguments about translation quality that had little to do with translation. The inherent subjectivity of language is used as an opportunity to mask problems of a totally different nature. Unless you have been selling quality all the way, you and your vendor can get caught in the middle of something you will not be able to control.

***Translators should have everything ever published about a product, a hotline to a product specialist and a running version of the original.***

the better the quality will be. The following recipe for serious trouble is still amazingly popular: extract all the strings from your software, put everything in a single file (preferably in alphabetical order) and send it without any other information to your favorite vendor for immediate translation.

There is no way you can do a decent job under these circumstances. As said before, understanding is the key to translation quality and nobody can make much sense out of a pile of words and strings without a minimum of context.

Translators should have a maximum of cross-reference possibilities, all the manuals and information ever published about the product, a hotline to a product specialist, a running version of the original, and—whenever possible—the ability to build and run the translated version.

### **Translation Quality Needs to be Sold Internally**

Localization is never a goal in itself. It is typically part of a company's objective to maintain or increase revenue in a particular market. It is one step among many, and has to be carefully synchronized

mary customers can be achieved by:

- Setting the right expectations.
- Getting your primary customer involved from the very start of the project.

As discussed earlier, translation quality and product quality are different concepts. Your primary customers must understand that localization is not an exercise in fixing anything they might not like in the original version. If they have serious concerns about some aspects of the product, these should be resolved before further work gets done. In parallel, if for architectural, procedural, or any other reason you anticipate a noticeable loss of quality in the translated version, you should communicate this and either obtain acceptance or the means to look for alternatives.

Involving your primary customer in the process is equally vital. It is much easier to reject a product you have never seen before than one you have actively helped produce. Consider the following actions:

### **Conclusion**

It is clear that not all vendors produce superb quality and that not all customers get the translated products they deserve. However, vendors are far from having full control, and customers have a major role to play.

As a customer, you will positively influence translation quality by

- Clearly understanding what translation quality is.
- Ensuring the quality of the original product.
- Training your vendors.
- Enabling your product and developing efficient procedures.
- Selling quality internally to your primary customers.

Performing these actions will allow you to clarify the often confused discussions around translation quality. You will also gain the ability to rate your vendors with a lot more confidence and accuracy. ❖



## ADDITIONAL RESOURCES

*The following references provide additional information on topics discussed in this Best Practice Guide, as well as general language, internationalization and localization information.*

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- **LISA Website** (<http://www.lisa.org>) contains a wealth of information, much of it free to the public. LISA members enjoy access to presentations from LISA Forums and Conferences, as well as access to the archives of the *Globalization Insider*.
- **The *Globalization Insider*** (<http://www.localization.org>) is LISA's monthly newsletter on globalization, internationalization, localization and translation (GILT). Containing articles by industry thought leaders, the *Globalization Insider* provides timely and relevant information on all aspects of GILT.
- **LISA Workshops** cover a variety of topics, including QA and Internationalization. For a current listing of LISA workshops, visit <http://www.lisa.org/events>.
- **The LISA QA Model 3.0** (<http://www.lisa.org/products/qamodel.html>) is designed to help you manage the quality assurance process for all the components in a localized product, including functionality, documentation and language issues. The quality metrics and procedures incorporated in the QA Model 3.0 are the result of a collaboration between LISA members, localization services providers, software and hardware developers, and end-users. Their "best practices and recommendations," along with a basic statistics model, have been compiled to help you streamline your company's product localization quality assurance process.
- The **LISA Education Initiative Taskforce (LEIT) Bibliography** (<http://leit.lisa.org/bibliography.html>) contains an extensive list of localization-related books and other resources, and is a good starting place for investigation of specific topics.
- ***Software Testing and Internationalization*** (<http://www.lisa.org/interact/2003/swtestregister.html>) by Manfred Rätzmann and Clifton De Young. (Available as a free download from LISA.) This book will transform how you view testing methodologies and procedures. It introduces the reader to essential concepts and approaches used by practitioners in the software testing arena, while also taking into account the realities of low budgets and real schedule deadlines. It is in this context that the specific needs of small, agile project teams are covered in detail. After walking through the methods most commonly used for testing software, you will know why these very practices are no longer practical for many projects. This book also outlines the steps involved in planning, implementing and evaluating tests of modern, object-oriented software and provides an assessment of currently available methods so that you can choose the right testing procedures for your development project.
- **The ASTM Consumer-Oriented Guide to Quality Assurance in Translation and Localization** (<http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/WORKITEMS/WK2953.htm?L+mystore+owiz3733>) identifies factors relevant to the quality of language translation and localization services for each phase of a translation project and is designed to provide a framework within which the participants in a services agreement can define the specifications necessary to arrive at a product of desired quality to serve the goals of the consumer.
- **IBM E-Business Globalization Website** ([www-306.ibm.com/software/globalization/index.jsp](http://www-306.ibm.com/software/globalization/index.jsp)) presents information on globalization of e-business, with links to non-IBM information and language-related topics of general interest.
- **International Organization for Standardization (ISO)** (<http://www.iso.org>) provides standards in a variety of areas, including ISO-9000 (for Quality Assurance). ISO Technical Committee 37 develops and maintains language-related standards.
- **Free Standards Group Open Internationalization Initiative** (<http://www.openi18n.org>) is dedicated to providing free and open standards related to internationalization.
- **The Unicode Consortium** (<http://www.unicode.org>) is a non-profit organization founded to develop, extend and promote use of the Unicode Standard, which specifies the representation of text in modern software products and standards. The Unicode

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Consortium website contains information relating to the display and use of many different languages, and is a good starting point for learning more about concerns relating to specific languages.

- **w3C Internationalization Activity** (<http://www.w3.org/International>) contains information on web-specific internationalization and localization issues from the World Wide Web Consortium (w3C). While much of the material is quite technical, adherence to w3C guidelines and suggestions helps ensure that web sites can be easily localized with quality results.
- **i18ngurus.com** (<http://www.i18ngurus.com>) contains links to numerous articles and pages dealing with internationalization.
- **Termnet** (<http://linux.termnet.org>). Founded in 1980, the International Network for Terminology serves as a business forum for international cooperation between companies and organizations and institutions dealing with the practical and commercial aspects of terminological data, methods and tools.

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