GLOBALIZATION BY DESIGN

A WHITE PAPER OF THE SIIA EXECUTIVE COUNCIL ON GLOBALIZATION

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SIIA Executive Council on Globalization

New software models and the Internet are changing the way software companies do business. The ability to leverage global talent and markets provides new opportunities for increasing revenue while controlling costs. At the same time the regulatory, financial, and logistics demands of supporting multi-national development teams and customers, is putting a strain on companies not prepared to participate in global markets.

The SIIA Executive Council on Globalization was created to define and work on best practices that will assist software companies as they reach out across borders and cultures. The Executive Council is organized into four committees to focus on the following issues:

1. **Global Distribution Strategies**: how do we market and sell products or services abroad? What are the best strategies for my company and what are the pitfalls we should avoid?

2. **Offshore Development**: when is the right time to offshore? Which processes should be outsourced and which should remain captive?

3. **Localization of Products and Services**: how do we best adapt products/services to regional language and cultural differences?

4. **Global Legal and Accounting Issues**: Addressing policy issues, licensing and IP protection, as well as regional regulatory requirements.

All SIIA members are encouraged to join the discussion. For further information contact David Thomas at +1.202.558.6538.

GLOBALIZATION BY DESIGN.

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What does Globalization by Design mean? In today's economy, any company with a website is a global player. More and more corporations have identified the need to localize their products in order to capture foreign markets for revenue gains and in response to competition.

Globalization is not a process that can be bolted on to the end of the software build, website launch or final document review. It has to be designed into the development process in order to get the greatest efficiencies in terms of time, quality and cost. A truly global company plans for globalization as products or services are being conceived, not as an afterthought.

True globalization is not a just a process, it is a mindset that permeates an organization from the CEO all the way down. Globalization by Design gives organizations the best possible advantage to capture foreign markets when it is planned for and managed in a strategic manner.

WHY DESIGN FOR GLOBAL MARKETS

Engineers *must* design products to be used internationally. Doing so serves developers by reducing their future workload. It also serves the company by accelerating products' introduction into foreign markets. Most importantly, it serves customers who both want and need a product that can be readily used in every country in which they have offices.

Incorporating internationalized design early and throughout the product design cycle:

- Eliminates expensive reworking of software later when overseas markets become a management priority.
- Creates a more manageable product from an engineering perspective.
- Anticipates the necessity of serving multinational customers.

Greater revenue pool

We now live in a global economy where every nation buys software. Your marketing organization is ready to sell to customers around the world -- if they have the product. Thus, having a product ready to be localized facilitates rapid and reasoned revenue growth.

As noted above, proactively incorporating globalization into product design engineering helps you meet those goals. Given that retrofitting software to work in foreign markets can be extremely slow and expensive -- and can delay market entry -- designing software with globalization in mind is essential.

Essential to large, multi-national customers

Multinational companies want and need software packages to work in all countries where they have employees. Regardless of the nature of the software (infrastructure, IT management, applications, middleware, etc.), large customers select solutions that serve all of their employees and not just one or a few.

If your revenue stream is at all dependant on large buyers (and most software companies have at least a few enterprise customers), designing globalization into the product is essential. This allows the product to be adapted to new regions with little additional effort when the demand and sales opportunities arise, and thus satisfy multination corporations.

Effective block to competition

Competitors who do not proactively design their products for global markets will not be able to win business. Thus, properly designed and global-ready software will dominate markets by blocking competitors from entering those markets. Engineering can thus create competitive barriers by designing software for globalization.

Critical to user adoption

Having a global ready software package can help you win the deal, but a well designed global infrastructure and support system is critical in successful user adoption. All users expect the same high quality software experience regardless of their location and language. In today's market of subscription software services, maintaining customer satisfaction globally can be as important winning the deal.

HIGH-LEVEL ISSUES TO CONSIDER WHEN GOING GLOBAL

Regardless of how your product is architected or deployed, shipment in foreign languages is difficult and requires careful planning. If your ambition is SimShip (shipment of your localized product at the same time as your non-localized product), the task is correspondingly more complex. All of your product stakeholders, including product management, engineering, quality assurance, technical publications, and support, have a hand in fulfilling a simultaneous multilingual product launch.

Product Management

The life of a product begins with the marketing requirements document (MRD) or product requirements document (PRD). A well crafted MRD not only provides engineering a blueprint for product concept, but is also used by all other downstream product groups for crafting training, documentation, quality assurance and other support material. A thorough MRD and working closely with your cross-functional teams will allow them to get a head start on their material. You will not be able to achieve SimShip if your technical writers begin writing after the product has been built.

Engineering

Treating the source language as "just another language" is a huge step in the right direction. To validate that this is the case, it is a good idea to pseudo-translate your application as you develop it. Pseudo-translation introduces language-specific characters (like î â é ô) into all strings across the application. Non-modified strings found during a thorough visual check of your pseudo-translated application are known as hard coded strings. These will normally have to be externalized before you can successfully localize your materials. Doing this will not eliminate all localization issues, but it will eliminate the most basic localization problems you may encounter.

Scope creep is an evil term in the product development lexicon, but can be a final dagger for product globalization. New features, tweaks, and terminology changes have a downstream effect equal to the number of languages of your support. It is very important that Engineering keeps the product team honest and maintains code and language freeze dates in order to maintain ship dates.

Quality Assurance

You cannot bolt on quality at the end. Quality must be incorporated into every stage of taking the product international.

Linguistic reviewers should do just that – "review". Their job is not to retranslate the entire product. If you find this is the case, there is a significant problem either with your localization partner or your reviewer.

Technical Publications

It is imperative to document ground rules early in the documentation process. Late changes have a disproportionate effect on both costs and deadlines. Changing the look of the publications two weeks before shipment *is* possible, but it will drive your localization team crazy, as well as rapidly deplete your localization budget. Consider documentation "feature" cut-offs as seriously as product feature cut-offs.

Support

Your support plan is critical for multilingual software. Not only will native language support staff be required to field incoming customer inquiries, but all inbound avenues such as phone menus and online support tools (including solutions, FAQs and trouble-ticketing systems) will need to be available for all offered languages.

You can arguably support an English product in Japan, for example, without having any Japanese support staff. However, if you localize the product into Japanese, your users will expect that support is there in Japanese, and meeting these expectations is essential to keeping existing customers and recruiting new ones.

HIGH-LEVEL ISSUES THAT LOCALIZATION ADDRESSES

Language

Being an English speaker does not automatically qualify you as a tech publication author or a creator of marketing collateral. It is no different in foreign languages. Knowledge of a foreign language does not in itself qualify a person to be a translator -- literacy and domain expertise are also required.

Professionally translated materials will satisfy three criteria:

Must be technically accurate: Translation is no use if the original instruction says: "paint, wait 30 minutes and then polish"; where the translation says "polish, wait 30 minutes and then paint".

Linguistically correct: Spelling mistakes and ungrammatical phrases are not acceptable.

Local feel: What really separates the professional translator from the amateur is the way the text flows. A piece of professionally translated text will read as if it was *created* in the foreign language rather than being a translation.

It is unlikely that you have the talent in-house to meet these minimal criteria. It requires having native speakers of the target language, those still living "in-country" so they are aware of common cultural languages and symbolic idioms, and that they have the technical knowledge required to assure instructions are properly communicated. Ensuring maximum foreign market acceptance of your product is best left to localization (aka translation) professionals.

Iconography

The old saying: "a picture is worth a thousand words", helps explain why icons are such a powerful way to communicate. Despite their universal appeal it is perhaps surprising that icons are not always universal.

Simple icons such as mail boxes and traffic lights (horizontal as opposed to vertical) might not be immediately understandable to foreign users. This is where in-country translators play a significant role because they are aware of current iconographic symbols for common – and occasionally uncommon – activities. They can contribute early in the localization process by reviewing the software product graphical elements and suggesting alternatives.

Cultural biases (color, images, etc.)

Different colors produce different emotional responses in people depending on their culture. For example, the color white denotes purity in North America and death in Japan.

The use of color may not be offensive; but could add confusion. For example, British mail boxes are red, French ones are yellow, and US Postal Service boxes are blue.

Images, icons and color selection for localized products should be guided by in-country specialists. Illustrations of women at work may not be appropriate in certain cultures, whereas a manual which only uses illustrations of men may be considered unbalanced in other cultures.

MECHANICAL NECESSITIES AND TACTICS

Keep in mind one vital concept when you begin the process of globalizing your software: all users expect the product to work and appear as if it was originally created in their region and language. The following will provide some general concepts to consider when globalizing your product.

Support layers

Operating systems

The operating system provides many in-built functions which you should exploit if at all possible. This will save you a lot of headaches later on as you take your product into international markets. Make a through review of these support features before starting, and leverage them to reduce your total workload.

Third party software

In many instances your product may rely on 3rd party software or components. It is important that you understand the capabilities of these components when you decide if your own product should be localized into a given language. Let us assume that you use a 3rd party report writer. If this report writer only supports Western European languages – and, heaven forbid, just ASCII characters – your localization efforts may stop dead in their tracks when localizing your product into Chinese. If these 3rd party products exploit the OS locale tools, odds are you will have few problems. An end-to-end analysis of all software components is essential early in the localization design process.

User interface

Interface design

When text is translated, the resulting words and phrases can be longer than the native text. It is critical that your designers create an interface that is not only usable, but that can also adapt to longer words and phrases.

TIP: Most QA departments in a multi-language environment will utilize a pseudo-language which will mimic translations in the most character-dense languages. Use of a pseudo-language will provide you with an idea of where your user interface will break. It is useful to eliminate these problems before beginning the text translation.

Language selection

Users require a means for selecting the language of their choice, typically via a drop down menu of supported languages.

TIP: Some web sites and applications use flags as a colorful means of selecting language. ***Avoid*** using flags as they usually define a geography rather than language. For example, an Australian or a British person is more likely to associate the Stars & Stripes (the US flag) with the US than with the English language. Conversely, people within a region, such as US Latinos, will almost certainly not be adequately addressed by a national flag.

Many modern software applications support run-time or dynamic updates to the interface and this should be a consideration when users select their language of choice. In this type of environment, users will expect the ability to change their language on-the-fly.

Error messages

Error messages need to be translated for each supported language. This will improve usability and will also streamline end user support. Since providing technical support is a potentially large cost center, and since poor technical support destroys customer evangelism and mass adoption, error message should receive extra care during localization.

Online help & tutorials

If you provide online or inline help, or provide online product use tutorials, this information will need to be translated and available for all supported languages. This needs to be scheduled and budgeted.

TIP: Be careful of including screen shots in tutorials when supporting a multi-lingual software package as all data within the screen shots will need to be translated. If you include screen shots be sure to use translated screens in the localized tutorials.

Administrator's translation interface

If your software supports administrative changes to the interface – custom fields or field renaming – you will need to provide a translation interface for translating custom and renamed fields into each supported language. Note that certain field types, such as translating Lists of Values fields can present a tricky translation interface.

TIP: The translation process is a workflow. A word is added to the interface, it's translated, reviewed, tested, and approved. You should consider how you support this workflow when designing your translation interface.

Working with translators

Most software packages have terms and phrases specific to their product. Unless your translator is intimately familiar with your software package, there is a chance that some text may be mistranslated. A native-speaking reviewer – for each language – is important to ensure a correctly localized product.

TIP: Your translator may request a glossary of terms specific to your software package. If you plan to eventually translate your software it is a good idea to maintain an ongoing translation glossary as you build your product.

LOCAL PREFERENCES

A translated user interface is only one half of a properly translated multi-lingual software product. The other half is providing support for your user's local preferences or locales.

Local preferences define how numbers are displayed, how date & time is displayed, how currencies are displayed and many other aspects. Each country has its own set of standards for working with locales and it is important that you conform to the standards of each country you target.

It is probably *more* important to be able to select local preferences than have a translated user interface. For example a user in Germany might just accept an application with an English user interface, but will reject an application in which the currency symbol is hard coded as $.

We mentioned earlier that you should make use of the underlying operating system whenever possible. This is particularly helpful when it comes to local preferences since many operating systems have functionality to handle this.

This section will provide general guidelines you should consider when localizing your product.

Local preference selection

Users will require a means for selecting their own local preferences based on their location. If you use the underlying operating system's functionality, there might already be a mechanism for selecting local preferences.

Just as with language selection, many modern software applications support run-time or dynamic changes to the interface and this should be a consideration when users select their local preference. In this type of environment, users will expect the ability to change their local preference on-the-fly.

Date, time, time zones and calendars

What does 10.12.06 mean to you? In the US this reads as October, 12th 2006. In Europe and other parts of the world this reads as December 10th 2006. Local preferences include local date and time formatting.

It is common for date and time formats to be supported by the operating system, but you may still need to write additional code to fully support local preferences. For example date ranges. A US date range of October, 12th 2006 - October, 16th 2006 is rather cumbersome, whereas a date range of October, 12th - 16th 2006 is more readable. The equivalent date range in the UK would read 12th – 16th October 2006, and 2006 10 12 -16 in Japan. It is unlikely that date ranges will be supported by the OS.

We mentioned earlier that providing technical support is part of going global. If you plan to provide telephone support, you may find that time zones become an issue when providing technical support. There is no overlap in normal working hours between India and Boston. Supporting the Japanese market Monday - Friday from California, means Sunday – Thursday California time.

Likewise you should be aware that the US working week is generally Monday – Friday, whereas in the Middle East it is Sunday – Thursday.

Currencies and numbers

Many of the world currencies can be denoted by a single symbol, e.g. $ (Dollar), £ (Pound), € (Euro) and ¥ (Yen). There are some important exceptions where this is not the case, for example SFr (Swiss Francs) and NT$ (New Taiwan Dollar).

The position of the currency symbol might change depending on the locale. For example in Germany you would write 1.234,00 €, whereas in Austria it would be € 1.234,00, even though the Euro is interchangeable and both are German speaking countries.

NOTE: Most financial institutions have adopted ISO Currency Codes to display currency such as “USD 1,000.00” or “GBP 1,000.00” for the US dollar and Britain Pound respectively. You can use this to denote currency, however it may not be well accepted, depending on your user base (consumer products are notorious for requiring single character currency denotation). One option is to support configurable symbols by currency so that the administrator can support their company’s standard.

TIP: You should also consider the amount of physical space needed for displaying currencies. A report listing annual salaries up to 999,999 might accommodate most U.S. salaries, but would be completely unusable in Japan, where entry level salaries run into the millions as ¥ 999,999 is roughly equal to US$ 9,999! If in doubt, leave as much space as possible.

Phone numbers

Capturing phone numbers is easy, but determining how to display and understand them can present a problem because phone number formats take vastly different shapes in different regions. You should determine how your users will be using phone numbers when designing their input and output fields. Although there are several ways to address the issue the three most common solutions include:

Breaking the number into separate fields including, country code, area/city code, subscriber number and optionally extension. This format is useful if your users plan to analyze phone numbers, such as create a marketing segment by area code. However, some users will object to this type of entry as it prevents cutting and pasting from email for example and can limit dialing prefixes.

Creating input masks for a single field. An input mask is useful if the phone number format can be controlled. You will need to know in which country the phone number is used, so an accompanying country picklist is helpful. This type of field can be more visually appealing than separated entry fields, but will require more coding up front.

A simple text field with formatting logic. In this case, users enter phone a phone number into a single field which formats the number based on the digits entered. Microsoft Office is a great example of this type of field which will format the number based on the local preference setting by the user.

The use of 800 numbers is very popular in the U.S. These numbers are unfortunately useless to anybody outside of the U.S. and Canada since they cannot be dialed internationally. Even if you do not provide international free phone numbers, you should always provide toll numbers as well as free phone numbers.

Postal addresses

The concept of a house number and a street name does not make sense to a Japanese user. With the exception of major roads, Japanese streets are not named. Instead, cities and towns are subdivided into areas, subareas and blocks, similar to the insulae system of the Roman empire. To complicate the matter, houses within each subarea were formerly not numbered in geographical sequence, but in the temporal order in which they were constructed. Even Japanese have difficulty locating addresses. It is for this reason that Japanese businesses always draw a little map of how to get to their location, when sending address details.

Translating the words "ZIP code" to "postal code" does not make your software any more useful to Irish and Hong Kong based users, as neither place uses ZIP/postal codes as of the beginning of 2007. You are, therefore, preventing some users from making purchases on your site if this field is required.

As with phone numbers, global addresses require you to determine how the data will ultimately be used in order to properly design for capturing postal addresses. More specific data will require additional leg work to ensure that the correct set of fields and state, region, or city values are available to the

end user. If your requirements are less specific, ensure that you have enough fields available to properly capture the address for most countries. A common set of fields includes Address 1, Address 2, Address 3, State/Region, Country, and Postal/Zip Code (optional of course).

TIP: Internet sites that cater to global audiences typically do a great job of accommodating global user. PayPal's Account Registration form is an excellent example of an address form that dynamically changes based on the user's country.

Paper and envelope sizes

Outside of the U.S., most countries use A4 sized paper rather than Letter sized paper. Being able to switch between U.S. and ISO standards is important as this is the intersection of the electronic (software) and the physical worlds and the physical world is unbendable. Since U.S. and ISO standards are predominant, incorporating ISO early in your software design has significant benefits with rapid payoffs.

Company default preferences

Staff turnover is common in most companies. For example, Juan de Pueblo has a laptop which he has customized in Spanish for his own needs. Now that he has left, the machine is being used by Frank Peters. He does not want Juan's Spanish customizations, but simply a default setup. Consider the use of a default company language and local preference, as this may help speed up user creation for administrators.

IF YOU BUILD IT, WILL THEY COME?

Your sales force, partners, product managers, marketing and others may cry for a translated product, and guarantee new deals if a certain language is supported. It is important to keep in mind that once you've translated your product into a language, you have to translate it for every new feature and each release from there forward.

The time to localize your products is at the beginning. Designing localization into your products from the start reduces the overall effort required to enter multiple markets. This requires assembling the right tools, staff, and design criteria soon after the MRD is received.

This becomes even more important with the SaaS model, where new features become visible to global audiences instantly. Design of the entire system -- and each enhancement thereafter -- must include all current and most potential target markets. Make international design part of your standard design process and you will create a more successful product and a more profitable company.