



Motherhood, Apple Pie and I18N (*Internationalization*)

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Powerhouse organizations like Microsoft and Lotus have both the bulk and the resources to design internationalization into their products from the very earliest stages of development. Extensive testing enables simultaneous release of multiple languages and ultimately, ensures first-to-market status. Internationalization at this success rate and level, is achieved through aligning an organization from top to bottom to support global goals.

Then there are the rest of us. Everyone from managers working in start-ups to product developers at medium-sized companies, all competing for limited resources, and buy-in from upper management who believes in reaching globally, but thinks that internationalization will actually slow efforts to be first-to-market.

Educating and evangelizing the entire organization on the benefits of

internationalization are essential parts of building a cost-effective and long-term strategy. Careful evaluation of each localization and internationalization project is also key to understanding when compromises really do need to be made.

This presentation will discuss real-world experiences in internationalization and suggest a few unconventional approaches to motivating internationalization within an organization.

Motherhood, Apple Pie and I18N

Motherhood- Ideal I18N

Big co. vs. Lesser co.
If yours is a lesser co. ...

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The agenda for this session is as follows:

First we review the ideals of I18n- the goals put before all of us as the “right” way to do I18n.

As I am alleging that these ideas are right for large companies, and that the smaller companies perhaps require a different approach to I18n, we compare the large and small companies.

Then we discuss I18n at smaller companies.

Motherhood and Apple Pie

- ✦ **Design I18N in from the beginning**
- ✦ **Always localize**
- ✦ **Complete product localization:**
 - **User interface, help, documentation**
- ✦ **Simultaneous release of multiple languages**
- ✦ **Support for I18N from the CEO on down**

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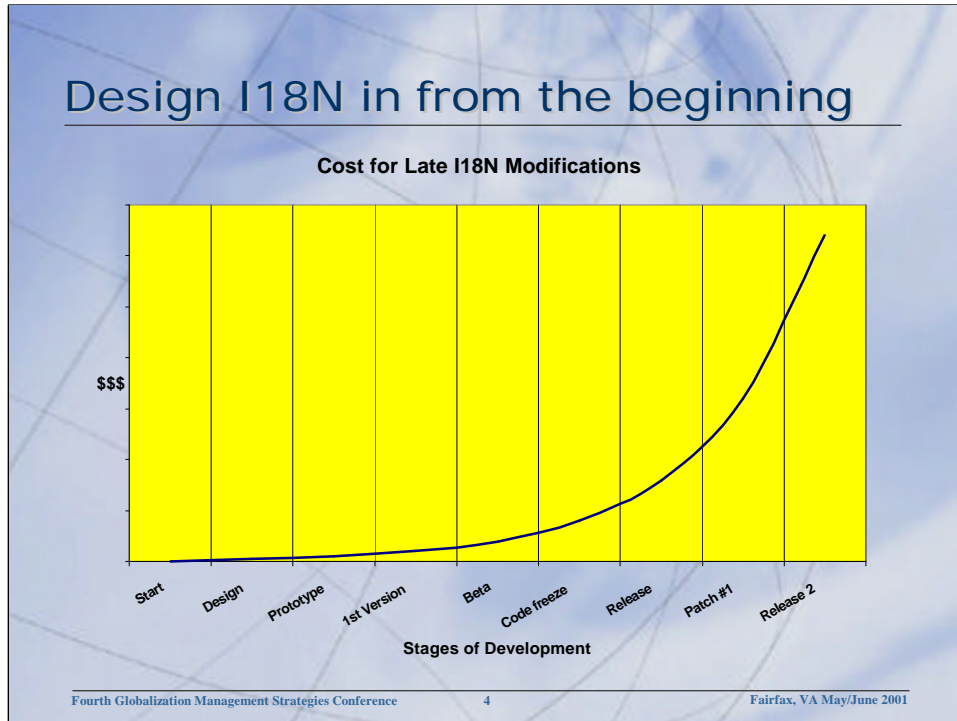
These are the holy grails of I18N:

I18N must be designed into software from the beginning.

Of course, software must be localized, and it must be localized completely- product packaging, marketing collateral, documentation, help, etc.

We should release all localized versions at the same time as we release the initial (source language) version.

I18N must be supported from the CEO on down. This insures support throughout the organization for the efforts of the I18n team.



This graph provides the justification for designing I18N in from the beginning. Based on studies of the cost of making software changes at different points in the development cycle, including post-release, it is found that the later in the cycle a change is made the more costly it is.

Clearly, in the very beginning, when the design is just a paper spec, or perhaps a drawing on a napkin, changes are easy. Toss the napkin away and start again.

Once implementation has begun, a change in one module can require changes in many other modules that depend on it. These changes can also trigger changes to other sets of modules.

Post-release changes require consideration for users that have come to depend on the software as-is. So not only do you need to address all of the dependencies in your software on the module that is changing, but you must consider the legacy created among your existing users. Perhaps you modify the software to support both the old and the new way, perhaps you create utilities to help them migrate to the new way.

The increased cost of late-cycle changes apply to changes made for I18N as well. Designing changes in early is lowest cost and most efficient.

Simultaneous release

- ✦ **Maximize market benefit of announcement**
- ✦ **Show of commitment to regional markets**
- ✦ **Have product to sell when interest is keen, not delayed until features are old news**
- ✦ **Single version of source world-wide simplifies support and maintenance costs**

Simultaneous release is important in a world where communication is instantaneously worldwide. If your release fails to include the language of region x, the news of the release still reaches them. The implicit message to that region is you consider them less important or unimportant. They will believe that your support for them will not be as good as a competitor that includes them in initial releases. To the extent news of the release creates interest, sales opportunities are lost. Later, when you do release a version for their market, any bang you would have gotten from the announcement of new features in the release is no longer news.

Of course, during the creation of the localization for language X, you may discover changes to the software are required. Besides the high cost of post-release changes, this may put you in the position of supporting more than one version of your product. This increases the difficulty of future maintenance (patches) and support (since different versions have different behaviors, and the support organization must deal with all of the differences.)

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Do these ideals make sense for both large and small companies?
Let's compare them!

Large company reality

- ✦ **Strong belief in ultimate product success**
- ✦ **Millions of floppies/CDs sold retail**
- ✦ **Recall is significant cost**
- ✦ **Recall can kill product's market**
- ✦ **Large QA staff and thorough QA process**
- ✦ **Large beta test, lots of VAR interest**
- ✦ **Single source is imperative**
- ✦ **I18N (internal) standards for dev. in place**
- ✦ **CEO knows Internat'l impacts bottom line**

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By a large company I have in mind one that is a gorilla in their market. Perhaps they print millions of packages of their product for each release. If there was a significant bug and they had to recall their software, the impact on reputation and the real cost of recalling the software and replacing it would be tremendous. Therefore large companies invest heavily in QA and thorough testing. They also have long beta periods with large numbers of customers. Because they are a gorilla, they have lots of VARs that create add-on products and therefore participate in the beta to get an early start.

In this environment, having a single source is imperative, as the cost for testing, supporting and patching multiple versions is prohibitive.

For the same reasons, having a separate release cycle for different language versions is prohibitive.

To insure that a single source for all versions is achieved there is heavy investment in early I18n. Usually, standards for I18N are in place for developers.

The CEO understands that I18N can impact his bottomline positively and negatively. The CEO endorses I18N strongly and the organization is supportive of I18N efforts.

Lesser company reality

- ✍ **Selling hundreds, not millions**
- ✍ **Limited development, QA, L10N resources**
- ✍ **Hedges on (initial) product success**
- ✍ **Time to market is often (over-) emphasized**
- ✍ **U.S. market key to technology acceptance**
- ✍ **I18N a distraction to U.S. product success or a tradeoff against other potential features**
- ✍ **Selling retail vs. a technical or a solution sale or a significant customer relationship**

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Small companies plan to sell units of hundreds or less.

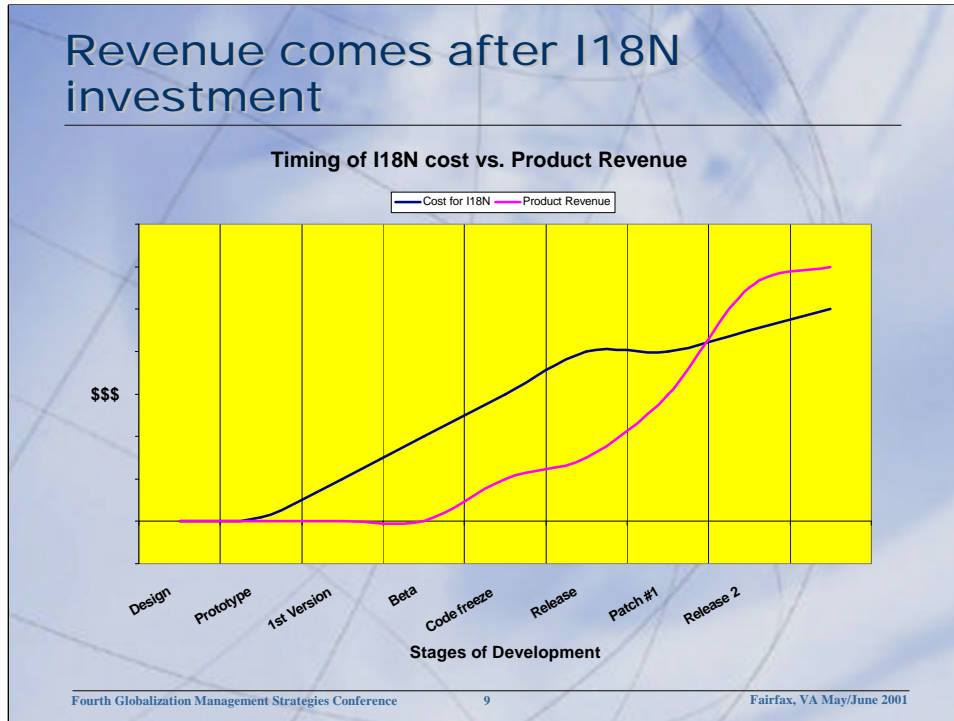
They are financially constrained and often have fewer QA and localization resources.

They are less confident of the success of their product (as they are not a gorilla) and often hedge on how and how much they invest in the product.

Time to market is deemed critical. (Gorillas can afford to be late and perhaps even benefit from the mistakes of early market entries.)

Because of the size of the market, small companies often consider the US market as the key to establishing themselves. So being first in the US market becomes an overriding goal, and I18N can be deemed an obstacle to achieving early U.S. leadership. Scarce resources applied to I18N might be better applied to other features or accelerating the schedule.

Whereas large companies are primarily selling retail, many small companies work closely with potential customers, especially if they have a highly technical product (with difficult installation or configuration issues) or they are selling a solution (with some customization requirements).



This graph contrasts the timing of development costs against the timing of revenue from sales.

The steepness of the cost curve can be increased with increased investment in I18N. It is a point not lost on most managers with budget responsibility. And yet the payback for this investment comes much later and is also a function of how successful the company is with creating the infrastructure to sell in foreign markets. An infrastructure that also takes time and money to create. Therefore, investing in I18N early in the design of a product, even though it represents a savings over late internationalization, is still an investment with unclear returns on investment.

Lesser company reality- continued

- ✍ **Risky business-**
 - **I18N and L10N costs are significant**
 - **There is no product revenue yet!**
 - **Over-invest upfront: product runs a loss**
 - **Under-invest: biggest customer will be a multinational conglomerate**
- ✍ **I18N standards & processes not entrenched**
- ✍ **“Old ways” don’t apply to new technologies**
- ✍ **Announcements are not usually front page**

To recap: Internationalization and Localization investment is not insignificant and return on investment is unclear. Especially for small companies. Overinvestment can result in significant corporate losses.

Underinvest and Murphy’s law will insure your biggest customer will be a multinational conglomerate with strong requirements for I18n...

Small companies generally do not have the standards and processes defined so that their developers know how to create internationalized code for their environment. Technologies have changed so quickly there aren’t always publically available resources to define an I18n strategy. (For example XML.)

When a small company releases its products, they are not always front page news. Although there may be some impact to their international customers, perhaps the consequences are not as great as previously listed for larger companies.

Lesser company reality- continued

- ✦ **As a result, CEO and You are not aligned...**
- ✦ **Relationships to channels and customer may be more collaborative than retail**
 - **Willing to manage limited I18N, L10N**
 - **Willing to share L10N burden**
 - **Scheduling release becomes more difficult**
 - **Although acquiring international channels might bring pressure for more I18N, L10N**

Costs are high, Revenue impact is potentially negative rather than positive, and internationalization and localization may delay release to market. Your CEO therefore may not be in such a hurry to lend full support to I18N.

Many small companies and startups have collaborative relationships with their customers and distributors. This in fact may buy time for I18n. They may even want to participate in localization efforts.

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So achieving the holy grails is not only difficult for small companies, perhaps it is not the right thing to do. Other strategies need to be considered.

What are your options?

- ✦ **Stand your ground / Be an idealist**
 - Lose credibility...
- ✦ **Defer I18N / Be an Ostrich**
 - A multi-national conglomerate will bite you
- ✦ **Find some legitimate compromises**
 - Use input from channels and market research to guide selective I18N, L10N
 - Advance I18N with minimal detrimental impact on the rest of the organization
 - Contain the risk
 - Continue evangelizing

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You can consider several alternatives:

Stick to the holy grail and your CEO and others will consider you an idealist that is not being practical. You are not a “team player”.

Plan B could be to defer all I18N. This may be good in the short run, but will make it very expensive and perhaps introduce significant delays to a later release when I18N is needed.

Or there is a more thoughtful approach which sets out to define legitimate compromises. However, getting reliable information to evaluate markets and validate product decisions and tradeoffs is very difficult.

I will outline some candidate approaches for your consideration.

Input from Channels and Market Research

- **Recommendations from channels**
 - e.g. **Limiting localization vs. I18N**
 - **Hard to defend “biased 3rd party sales”**
 - **Beware national and other pride**
 - **Often answers are counter-intuitive**
 - **Cultural misunderstandings abound**
 - **Validate by talking to potential customers**
 - **Dev. Managers should go into the field**

One source of information is your international marketing channels. You might look to them for advice on whether localization is in fact an absolute requirement or which parts of the product require localization and which parts it might be acceptable to defer. Note that requirements coming from 3rd party distributors is often “tainted”. It is easy for HQ to dismiss their input as that of a biased view with no incentive to restrict expenses.

I also have run into national pride coloring answers from distributors. For example, I have been told “Of course English is acceptable, our national education system is excellent and everyone understands English even though it is a second language.”. Of course, it took me 3 faxes to understand this was his point...

Often the answers you get will go against your intuition and take some digging to understand how another culture thinks about product strategy. And there is plenty of room for the question and answer to be misunderstood due to language and cultural differences.

The best way to validate the information is to also talk to customers directly. Not only product managers, but development managers should go into the field. Often having the development manager hear the problem expressed directly allows for solutions that a description passed thru a few layers of sales and product management would not bring up for consideration.

Input from Channels and Market Research

- **Where is market research for L10N?**
- **My experience is L10N before I18N**
- **Don't take too long to complete product**

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Although there is research that says localization is important to regional markets, there is no research that helps a company understand if they have been selling English products to regional markets how much impact localizing will have. This makes it difficult to have data to promote I18N in an organization.

Sometimes tough decisions need to be made. For example, whether to internationalize a product or to localize it (or its packaging and marketing collateral). As an engineer I used to believe internationalization is most important. Make the product work well with international data and users will accept the product. Experience has shown that localization makes sales easier (shows commitment and understanding of their market needs) and people are willing to work with you until the product is internationalized.

But don't take too long to complete the product I18N and L10N.

Advance with minimal detrimental impact on the organization

- ✦ **Work on a parallel, future, or older version**
 - Later merging I18N can be easier than working on product under development
- ✦ **Identify and modularize current code that will need I18N changes, where it is low impact**
 - Prepares for future changes
 - Allows possibility of outsourcing and acceleration of I18N version schedule
- ✦ **Do R&D on tomorrow's technologies**
 - (outside of the mainstream development)

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When you are ready to internationalize a released product consideration should be given to whether it should be done to the current release in development, an older release, or a separate version.

I have had good success with internationalizing an older release. The I18N effort does not impede the current release in development, and generally once the older release is completely internationalized, merging the changes into the current release is straightforward.

One step that can be taken in current development is to identify where I18N changes are needed and move them to a small set of modules. Then when the changes are made, the impact is smaller.

Also, moving the changes to a separate set of modules, which do not have a lot of proprietary algorithms in them, primes them to be candidates for outsourcing, should a localization agency be brought in to help with the I18N.

Another tactic is to begin researching tomorrow's technologies from the perspective of internationalization. Prepare yourself for the incorporation of these technologies into the next release and have an internationalization strategy ready to roll out.

Contain the risk

- ✦ **In the current version, use only internally established I18N techniques**
 - **Defer establishing new techniques**
- ✦ **Encapsulation of known risks**
 - **e.g. API wrappers, thin layer around those areas that will need changing for I18N**
 - **externalize (e.g. DLL): easy experimentation**
- ✦ **Raise the bar on quality for I18N-driven changes**
 - **reduces objections to further changes.**
 - **I18N changes often not in code you own.**

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There may be some internationalization tactics your company has adopted and worked well on previous products. Even though it may not be clear how to internationalize the current project, having the development team continue to follow the techniques they have used before can reduce the cost of later internationalization without introducing significant overhead to the project. The team is already trained and so the suggestion is easy to accept.

Code that is known to need I18N should also be encapsulated at the object or linkage level for easy experimentation. An API wrapper layer or moving the functionality into dynamically loaded libraries will allow the I18N team to make changes and test them without impacting the rest of development or having a separate source tree.

An important and successful strategy for me, is to insure that the I18N developers produce very high quality changes. Often the I18N team works in code that other groups “own”. Making high quality changes reduces their objections to your modifying “their” code.

Continue evangelizing

- ✦ **Build on successes and compromises**
 - You are a team player AND made I18N go!
- ✦ **Job satisfaction**
 - Why developers don't like I18N & QA pull-thru
- ✦ **Managing diverse teams**
 - Proactive discovery of the individual's view
 - Expectations of management
 - Rewards, Complaints
 - English as a second language
- ✦ **Leverage experts when they visit**

By taking steps to incorporate internationalization into the product without impeding time to market and other considerations, you will be recognized as a practical team player. From time to time you can use this to gain some room to make changes and improve internationalization in the product despite time to market and other concerns.

An important aspect of evangelizing I18N is to understand how people get satisfaction from their work. One hint, QA engineers rarely get attention. Promote I18N to them and explain how they can find problems and they will love you for the attention and get satisfaction from a whole new set of problems they can find. Meanwhile, developers like to solve problems. They do not like I18N, because when they are done, it doesn't look "right" to them and therefore provides no satisfaction. For example, fixing dates to be day-month-year instead of month-day-year won't look right to an American engineer. However, reducing their bug count is a form of problem solving. Get the QA group reporting I18N bugs and the developers become interested in I18N and how to avoid bugs and to reduce their bug counts!

It is often useful to bring in guest speakers on I18N. They may be saying the same things as you, but fresh faces or established experts can bring attention to a subject which someone who is "supposed to say that" cannot command.

In Summary: What are your options?

- ✦ **Use input from channels and market research to guide selective I18N, L10N**
- ✦ **Advance with minimal detrimental impact on the rest of the organization**
- ✦ **Contain the risks**
- ✦ **Continue evangelizing**

I have suggested a few different ways to think about internationalization in small organizations or organizations that are not fully committed to internationalizing their products.

The requirements of these organizations are different from large companies that are gorillas in the market. The I18N community needs to have a variety of strategies for working within organizations and we would do well to recognize this and begin to enumerate these strategies instead of just seeking the holy grail...

