

"Any great company is going to do over half their sales outside North America."

– Eric Schmidt, CEO Google

"Yes, but everyone is late on international products, particularly for Japan and China."

– Michael Moritz, Sequoia Capital, Google Board Director

Globalized Software Development

From a technical consideration, two related processes lead software development tasks: internationalization and localization.

Internationalization involves enabling software to support worldwide language and cultural formatting requirements. It allows the software to become locale-flexible, supporting multiple language user interfaces, character requirements, measurement requirements, date/time formats, data input and output, and the addition of locale operators. Proper internationalization simplifies maintenance of source code for customers across the world, as the software publisher only need maintain a single code base. With internationalization, software vendors are able to leverage translation efforts from software version to version far more efficiently. Quality internationalization allows a product to behave as a customer in a target market locale expects it to behave.

Internationalization Challenges

Internationalization should be expected to involve significant initial costs, as software is refactored for internationalization requirements. Depending upon the technologies used in the original product development and software functions, this process should not be underestimated. You are essentially adding the concept of new operations in your software behavior depending upon locale selection, altering how the user interface works, and how many types of data get stored, processed and retrieved. And this is for hundreds of thousands to millions of lines of source code, often including multiple programming languages and database configurations. There are also myriad issues for the average developer to keep in mind when internationalizing. In C++ there are literally hundreds of functions that will not support some aspect of internationalization (e.g. character encoding requirements that may even be specific to a computer platform, or how numerical units or dates and times are formatted). Some technologies are more straightforward than others such as Java and C#, but none internationalize themselves. It's no wonder that companies are typically late on internationalized products, and usually have to go through several iterations to bring up product quality for the intended markets.

Globalyzer

Globalyzer helps entire teams of developers coordinate and perform internationalization development tasks faster and with high degrees of accuracy. Globalyzer finds internationalization errors, provides tools to help developer make corrections and provides centralized rules based configuration (on the server) so that development team members, no matter their location, can be adhering to the same internationalization coding standards.

How do you accurately comb through large volumes of source code, to find difficult to identify internationalization issues?

Globalyzer supports internationalization efforts in Java, .Net technologies, JSP, ASP, VB, C/C++, HTML and more. Globalyzer's Client scans software for internationalization issues, and steps the developer through them one by one. The developer can quickly query for more information on locale-unsafe methods & functions, including suggested replacement. Additionally, Globalyzer will step the developer through all embedded strings, and automate their externalization after visual inspection - greatly reducing this highly time consuming task.

Globalyzer

- Internationalize faster with higher quality *and* lower costs
 - Search algorithms and customizable rule sets help find complex internationalization issues
 - Coordinate efforts across your development teams
 - Get to new markets
 - Lower worldwide development, maintenance and support costs
 - Keep ongoing development internationalized
-

Using Globalyzer's Server, developers can customize Globalyzer's behavior creating custom rule sets, tailoring to specific internationalization requirements and strategies. Teams can share these rule sets, leveraging internationalization knowledge across the enterprise.

Using Globalyzer's Command Line, development teams can automatically check code under continued development, making sure no new internationalization issues are introduced into their software for the lifecycle of their product.

Globalyzer provides a clear and deployable solution for assessing, working through and maintaining your products' internationalization needs.

Getting Internationalization Done

Let's consider that the Acme Software Company has an enterprise asset management solution which includes 1 million lines of C/C++ and 1 million lines of Java (including JSP's). They are eager to engage in opportunities in Japan and China, but find they are at a severe competitive disadvantage because their software will not support market requirements for that part of the world. Not only will their interface not support these markets, but they can't even manage data throughput in their applications, as Japanese and Chinese require "double-byte" or Unicode support. Like many companies they hadn't spent much attention on planning for this, as it wasn't an understood requirement, or the process seemed so daunting, it was put off until absolutely necessary. Simply scoping and planning for a project of this size can take many months, with the actual effort taking a year or more for a large development team. In the meantime, they will have obligations to their current markets that will need new features.

But using Globalyzer, it is quite realistic to create a detailed internationalization task list over this much code in as little as a week. Planning can be realistically developed in just two weeks and Globalyzer can speed up the code refactoring by two to four times. Globalyzer steps the team through the internationalization issues, automates string externalization and code commenting, and provides help on unsafe methods. And because Globalyzer does such a good job of assisting and monitoring development and enforcing internationalization standard among development teams, it is far easier to coordinate new software development with internationalization efforts - even over continents and using outsourced engineers.

Example of Globalyzer Return on Investment

On the following page is a hypothetical example of an application with 1 million lines of Visual Basic code, where strings must be identified and externalized and locale-limiting (unsafe) methods must be refactored. With regard to methods refactoring C/C++ projects tend to be more difficult and Java or .NET are more straightforward - though they each present unique challenges.

Estimated ROI Using Globalyzer for Internationalization

Internationalization of Software Manually	FTE Hours	Costs	Internationalization of Software using Globalyzer	FTE Hours	Costs
10 weeks to identify and manually externalize 12,000 strings (2 minutes per string)	400	\$17,307	3 days (24 hours) to create rules and filters for Globalyzer	24	\$1,038
3 weeks to research unsafe methods	120	\$5,190	4 days (32 hours) to externalize all strings	32	\$1,384
Write a grep program to find the unsafe methods	2	\$86	62.5 days (500 hours) to refactor the methods (3 minutes per method)	500	\$21,625
104.1 days to refactor the methods (5 minutes per method)	833	\$36,027	Purchase of Globalyzer 3-user client license including support and maintenance for the first year.		\$10,000
Total Cost	1355	\$58,610	Total Cost	556	\$34,047

Total Time Savings of 799 hours (100 FTE days) or 59%

Total Cost Savings of \$24,653 or 42%

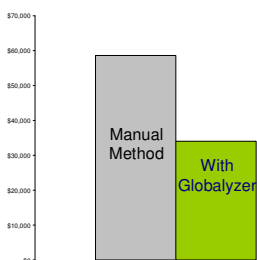
Assumptions:

- Approximately 1 million lines of code, developed with a programming language such as Visual Basic (internationalization difficulty level = medium)
- Approximately 12,000 text strings
- Approximately 10,000 locale-limiting unsafe methods
- Cost for developer is \$90,000 annually (\$1,730 weekly)

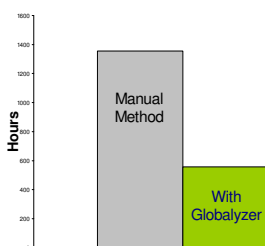
Other Benefits:

- By utilizing Globalyzer, developers can be deployed on new creative tasks rather than manual repetitive efforts
- Faster time to market
- Globalyzer facilitates internationalization knowledge and teamwork for distributed development and outsourcing
- Globalyzer can automatically check code for internationalization compliance, making sure new problems aren't introduced with ongoing development

Cost Savings



Time Savings



About Lingoport

Lingoport provides Globalyzer internationalization software and consulting services. We help global technology companies meet their world market objectives quickly, while saving engineering, translation and software maintenance costs.

Learn more about Lingoport at <http://www.lingoport.com>

Get a free demo Globalyzer account at <http://www.globalyzer.com>

For more information, please send email to info@lingoport.com or sales@lingoport.com or call us at +1.303.444.8020.