

Internationalization:

Your Company, Code and Building it for the World

Adam Asnes
adam@lingoport.com
+1.303.444.8020

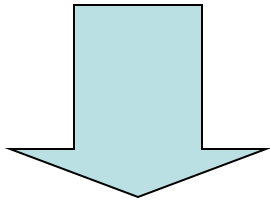
Internationalization Challenge

- Adapt software to display and manage worldwide character set requirements and cultural formats
 - Compare data processing
 - US English, German, Chinese, Japanese, Hebrew

Internationalization and Localization Fit

- Internationalization

- Development oriented consulting and products
- Adapt products so they can be localizable for any market



- Localization

- Tailored translation specific to market needs
- Coordinated management of strings for translation
- Linguistic Testing and more

Globalization Implications

- Global initiatives
 - Expanding opportunities, New customers
- Competitive pressure
- Lost time to market
- Iterative code fixing, problems keep slipping through
- Development costs in the hundreds of thousands to millions of dollars

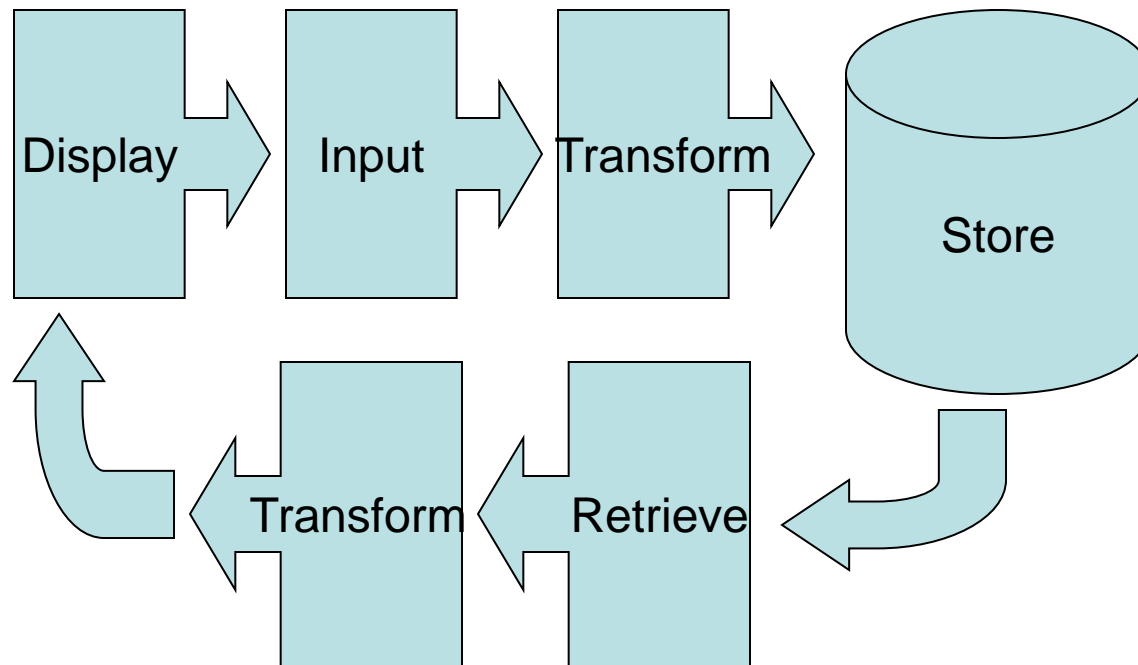
Is It Internationalized?

- Developers often underestimate i18n requirements
- Most don't know the answer
- Agile or other feature and release requirements often overrun less formally measured i18n requirements
- There is a Management Value in being able to confirm global readiness

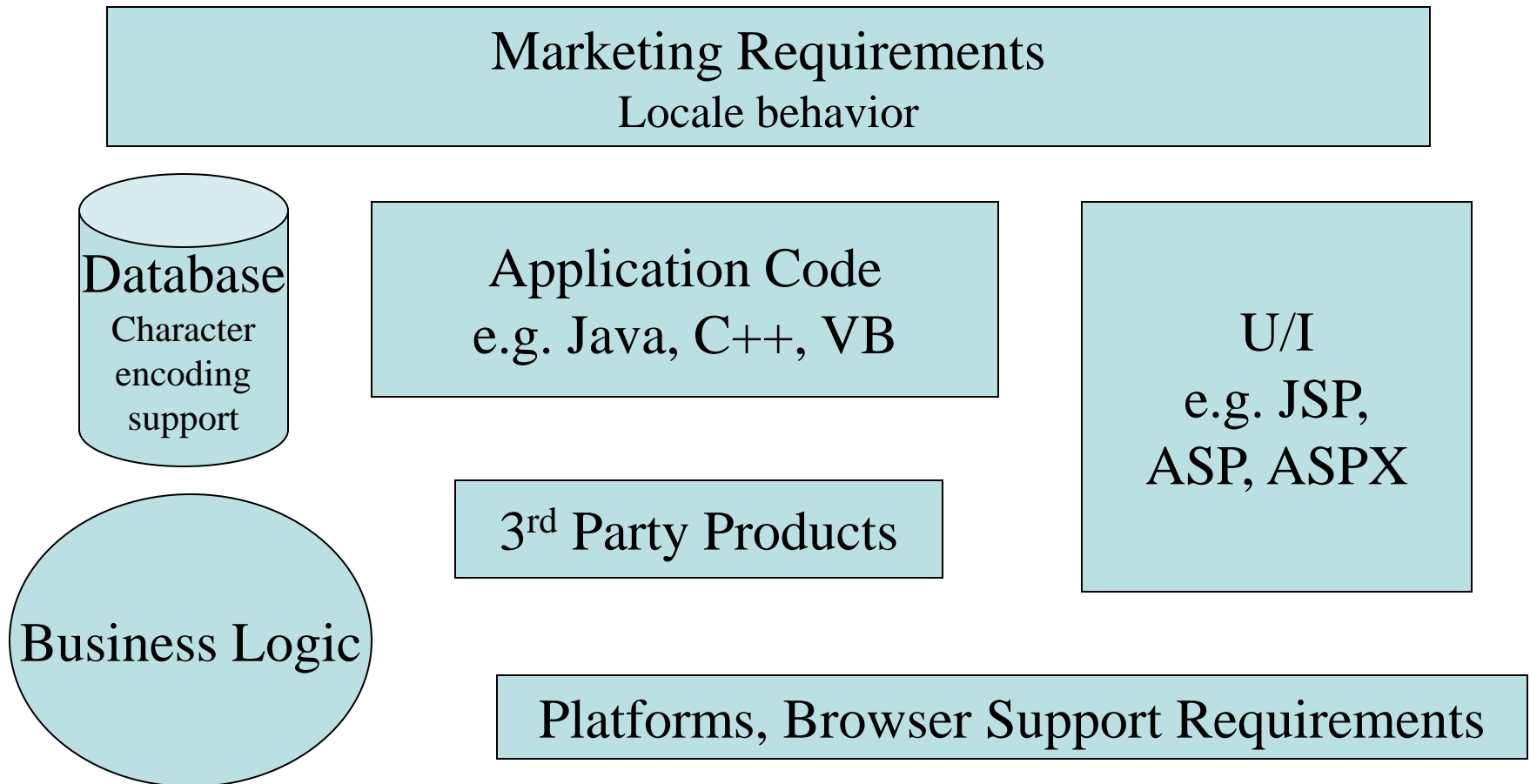


Internationalization Challenge

- Software Data Path - it's not just the display



I18n Architectural Challenge



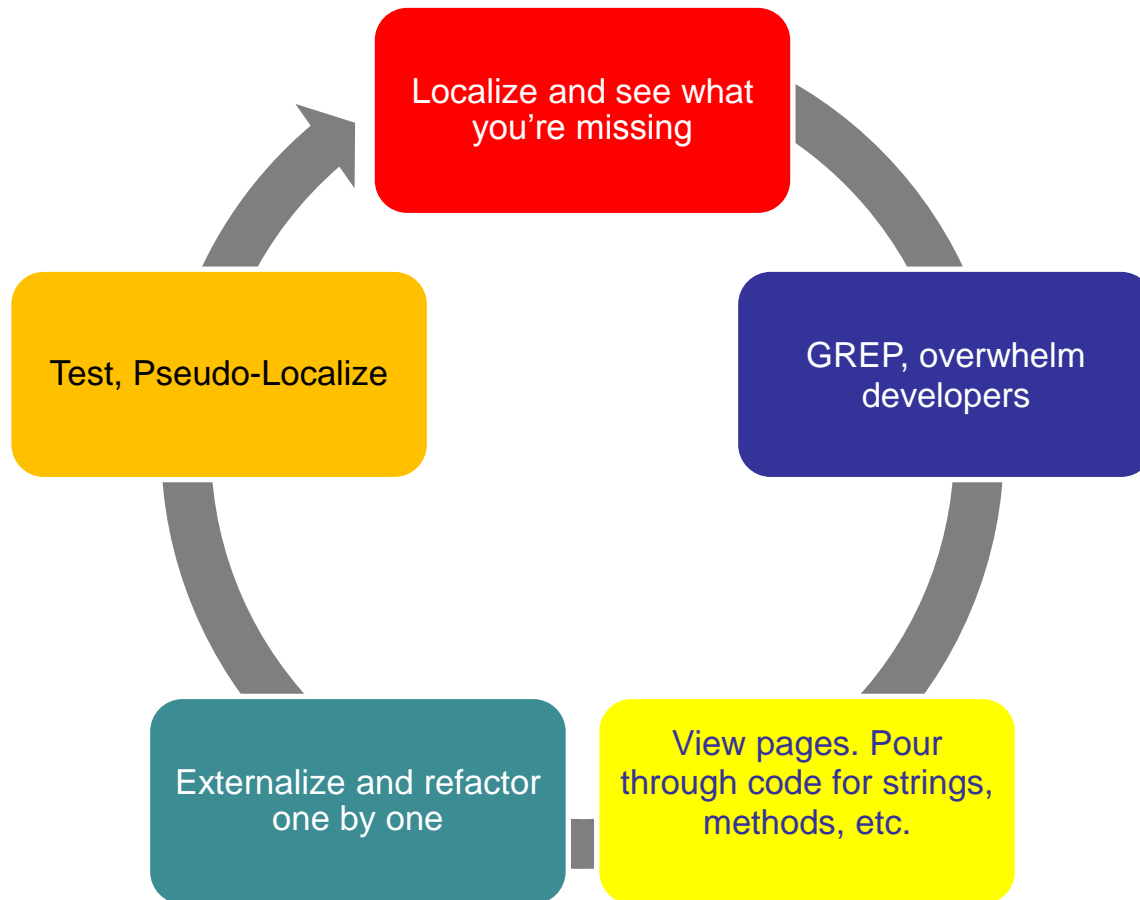
I18n trouble spots – developer's challenge

- Embedded Text & images
- Character set support
- String Concatenation
- Date/time formatting
- Sorting & searching
- Currency
- Transaction process
- User Locale Handling
- Telephone formats
- Postal formats
- Region-specific functions
- Shipping conditions
- Numerical formats
- Page layout
- Reporting, workflow
- Database enabling
- Multi-byte enabling

Practical Challenges

- Sift through hundreds of thousands or millions of lines of code
- Managing fixing complex problems among teams of developers and outsourced resources
- Creating a product that looks, feels and behaves natively to its worldwide users
- Source code must be adapted to seamlessly adapt to any language, streamlining support and updates

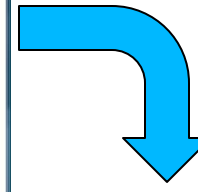
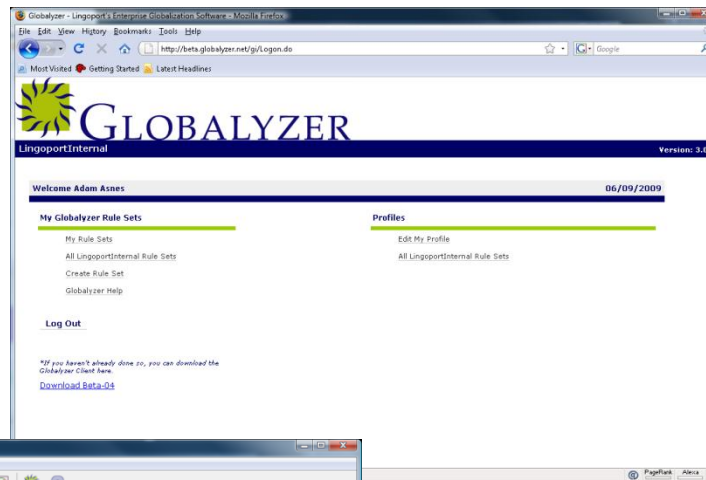
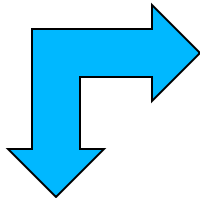
Traditional Approach - repeat, and repeat, and repeat, and repeat



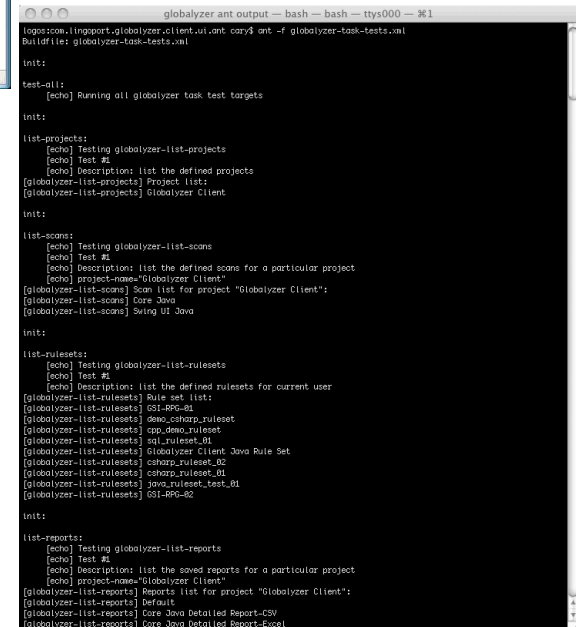
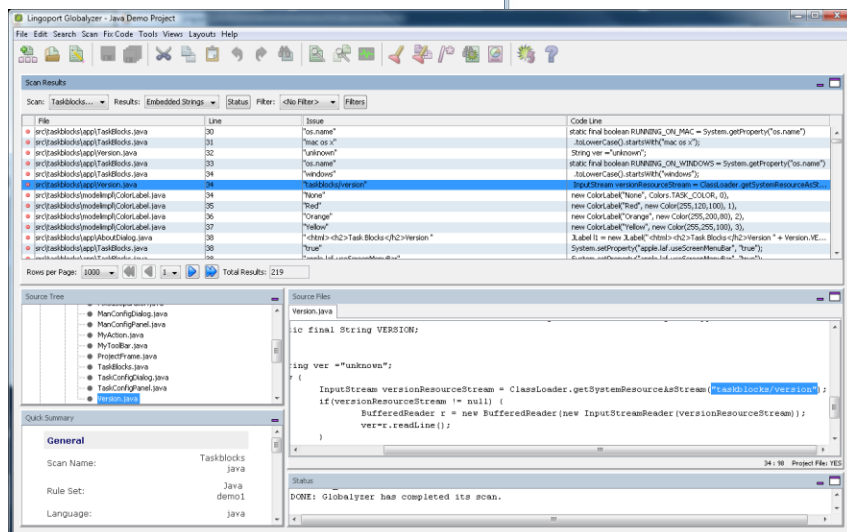
Globalyzer Server and Clients

Client

Server



Command Line



Sample Internationalization Issues

Example: Hard-Coded English Text

1 million lines of source code

Typically Found:

At least 40,000 Embedded Strings which cannot be efficiently translated

```
String orderStatus = "Your order has been  
processed. A confirmation e-mail will be  
sent to you shortly.";
```

Example: US-Centric Date Formatting

Typically Found:

Over 10,000 Locale-Sensitive Formatting Calls

```
sStartTime =  
  Format(rsData("StartTime"),  
    "mm/dd/yyyy")
```

“Double-Byte” Character Encoding: The Binary Capital Letter **A**

“UTF-16 Unicode

Double-byte encoding for all Languages

00000000 01000001

ISO-Latin1 (and even UTF-8)

Single-byte encoding for Western European Languages

01000001

Example: Encoding Corruption

Attempted to add a Chinese Unit Name via an example ASP page

The screenshot shows a course management interface. On the left is a teal sidebar with navigation links: 'Course Home', 'Syllabus', 'Calendar', a selected unit with a corrupted title, and 'new content'. The main content area shows 'Unit 1: °ç¼È´Å¶ÈÕ¼Ç'. Below this are two buttons: 'Edit Unit Info' and 'Add Content Item'. A section titled 'Edit Unit' contains a 'Schedule' message, an 'Edit Schedule' link, a 'Save Changes' button, and a 'Title' input field containing the same corrupted text. A checkbox at the bottom is checked, with the label 'Use Title as navigation bar text instead of Unit Heading (rec. li'.

Example: Correct Encoding

Successfully added Chinese Subject, Location & Notes text

Event Scheduler - Microsoft Internet Explorer

Edit Event [Save Changes] [Delete] [Cancel]

General Event Info

Subject: **Notes:**

Location:

Display on: **Category:** **Priority:**

Event Time

Start date: **Start Time:**

End date: **End Time:**

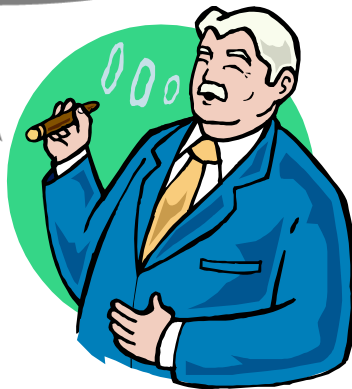
All Day Event **Show Reminder**

Not Just for Older Applications

- Issues for every programming language
- Most newer programming languages are simpler to internationalize
 - That's good for business actually
 - More predictable processes, costs and results

I18n Needs: Stakeholders

*Our Software must be in
Japanese, French,
German, Chinese, and
Spanish by November*



*Multi-tiered application?
String extraction?
Database components?
Unicode?
Testing Plan?*



Localization a downstream concern

- “Somebody else’s problem” in the world of many developers
- Creates an opportunity to educate and shepherd the through globalization

Release Path

- Internationalization, 1st Time
 - Most of U/I
 - Breaks the DB
 - Data I/O
 - Test entire product
- Feature Release
 - 3 week sprint?
 - Focus on code subset
 - Concentrated testing
 - Static analysis with Globalyzer

Code branch, merge,
testing strategy

Release Planning

- Agile
- Sequencing with testing
- You never stop internationalizing
- Maintain your business drivers - REVENUE

Questions and Answers

Adam Asnes

adam@lingoport.com

Resources

www.lingoport.com

Whitepapers, newsletter & articles

<http://i18nblog.com>