

# Is your global business at risk?

Tex Texin  
Globalization Architect, XenCraft

Michael McKenna  
World-Ready Architect, PayPal, Inc.

IMUG International Multilingual Users Group



## Damaging your brand



IMUG International Multilingual Users Group



3

## Globalization is a process

- It is not turnkey
  - One input has many possible outputs
  - It can be complex, with many points of potential failure
  - Working processes can degrade
  - Once successful results, can be unusable at a later time
- Failure can be catastrophic

IMUG International Multilingual Users Group



4

## A simple catastrophic example



- A large company rolls out a worldwide marketing campaign associating their new product with “heroes”
- A fireman is featured as an example of a hero.

IMUG International Multilingual Users Group



5

## Fireman as a hero

- Campaign failed outside North America
  - In USA & CA, firemen are brave and run into danger to save lives.
  - Elsewhere, firemen just clean up the rubble.
  - Besides materials cost, market momentum was lost, relationships with distributors hurt
- Could have **easily** been prevented by in-market testing.

IMUG International Multilingual Users Group



6

## Translation is not turnkey

- A company's knowledge DB is called an "encyclopedia" to distinguish it in market
  - Competitors use the term "repository"
  - Newest manual was translated and printed
  - "Encyclopedia" translated to the French equivalent of "repository"
- \$1 Million of publication was tossed

IMUG International Multilingual Users Group



7

## Translation is not turnkey

- This failure should have been prevented
  - There was a review before printing
  - Were reviewers thorough?
  - Did reviewers know what to look for?
  - How do you establish a review is successful?
- How can you reduce risk for your translation projects?

IMUG International Multilingual Users Group



8

## Risk reduction

- Glossary of approved brand and key terms
  - Include a list of terms to avoid
  - Scan translation for terms to avoid
  - Hold translators and reviewers accountable to use key terms
- Inject known problems into translations
  - so reviewers can be graded
- Metrics- reasonable? in line with history?
  - Error count, translation wpm, review wpm, et al

IMUG International Multilingual Users Group



9

## Reducing international risk

- Many ways products fail in global markets
- Many points in development where you can evaluate the potential for failure.
- Catching and correcting problems early is significantly less expensive than later.

IMUG International Multilingual Users Group



10

## Don't "go through the motions"

- All points of the process need monitoring
- Executing "reviews" does not assure proper checking
- Quantitative measures allow evaluation of quality of both products and process
  - KPI = Key performance indicators
  - Comparing KPI over time shows problem areas and whether quality and efficiency are improving

IMUG International Multilingual Users Group



11

## Naïve Localization Process

- Source language/locale in, destination out
- Presumes well-defined, error-free process
  - translation is 1 to 1 conversion
  - translators (or Machine Translation) are perfect
- No QA; Market judges quality (and you)



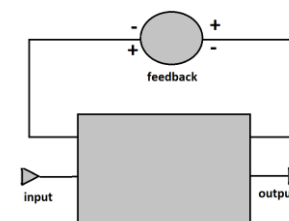
IMUG International Multilingual Users Group



12

## Final stage QA

- Rerun the process if changes needed
  - Translation, and/or internationalization
  - Expensive, unreliable delivery
  - Fixes often pushed to next release



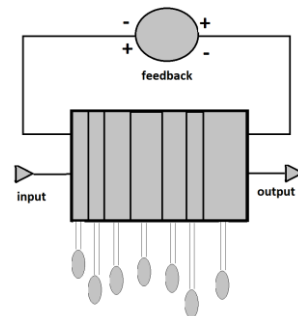
IMUG International Multilingual Users Group



13

## Continuous monitoring

- Early, less-costly correction
- Systemic, not just spot fixes
  - E.g. string externalization, plurality

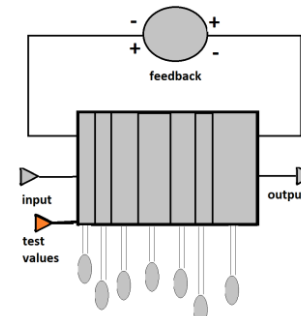


IMUG International Multilingual Users Group

14

## Test the process

- Proof points
  - Pseudolocalization
  - Error injection
    - Illegal utf-8
    - Impossible date-times
- Repeat periodically
  - detects degradation
- Automate testing and data collection
  - For consistency, reliability



IMUG International Multilingual Users Group

15

## Quality Degradation

- Occurs for many reasons
  - **Quality fade** motivated by tight profit margins
  - Differing views of requirements, responsibility and “success” across cultures
  - Geographically distributed teams are especially difficult to supervise and know of changes in staff, technology, process, etc.

IMUG International Multilingual Users Group

16

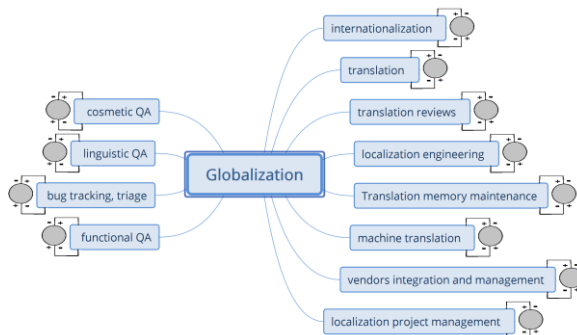
## A single process?



IMUG International Multilingual Users Group

17

## Monitor each process

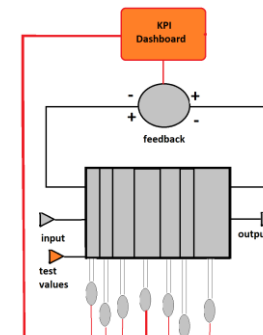


IMUG International Multilingual Users Group

18

## KPI Key Performance Indicators

- Quantitative values
  - Objective comparison of process changes
  - Intentional or not
- Diagnostic
- Analysis
  - by team, code, phase, release, market, et al
- Dashboard
  - Transparency!
  - Urgency: green, yellow, red
  - Automated data collection



IMUG International Multilingual Users Group

19

## Root cause analysis

- **Wow-** we have many translation errors
  - How many is a lot?
    - 100 errors in 1000 or in 100,000 words?
  - Translator mistranslated?
  - Delivery or timing or versioning error?
  - Inadequate context (orange fruit vs color)
  - Poor code (word order, gender, plurals)
  - UI/Text design (pun/ phrase with 2 meanings, metaphor, invented term –heads-up display)

IMUG International Multilingual Users Group

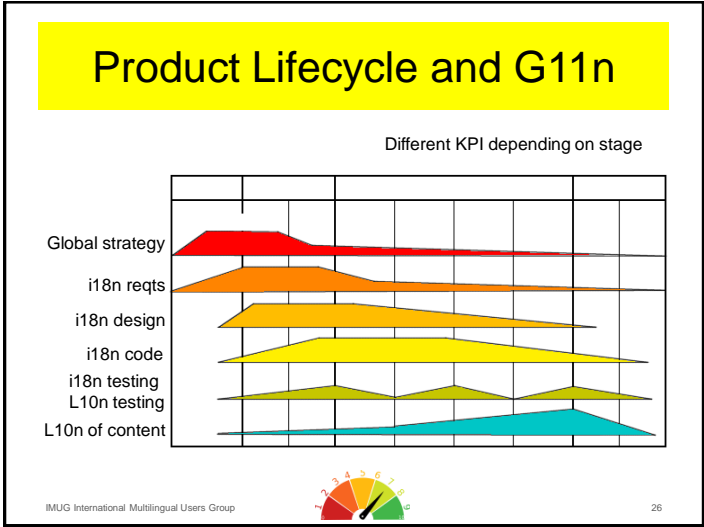
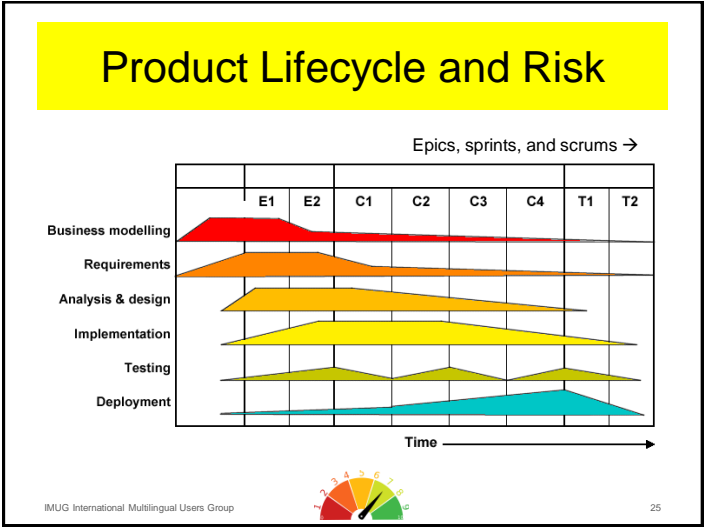
20

## KPI Candidates

- # Errors, %total, errors/1000 lines, coverage, severity
  - Translation by topic, language, translator, reviewer, file type
  - Code: by type, developer, technology, file, module
  - QA: # tests, %total by language, type,
  - Design: flaws, #reviews, by language, etc.
  - Process: #code scans, results, scan misses
- Timing, duration (rushed, planned, conflicted)
- Training: %attendance, coverage
- Compliance: #exceptions to defined process
- Correction: time to investigate, design, fix, test, age, cost
- Support: #calls, #returns, field reports, sales,

IMUG International Multilingual Users Group

21



### Risk KPI measuring g11n

- Market
  - Are international targets set?
  - Actual vs Expected revenue
  - A:B testing and international results
- Regional support
  - Supported languages
  - Regional usability

| KPI               |
|-------------------|
| Yes/no            |
| Target<br>Actual  |
| Yes/no            |
| # Current/planned |
| Regional tickets  |

IMUG International Multilingual Users Group

### Global Requirements


- Locale Identification
- Text externalization
- Grammar rules
- Data format
- Layout/Form factor
- Graphics, Media
- Search, Sort, et al
- WAN Performance
- Financial
- Regulatory
- Privacy, GDPR
- Security
- Accessibility
- Cross-locale usage
- Domain requirements
  - Eg health, e-commerce

| KPI       |
|-----------|
| Yes/no/na |

Numerous G11n checklists on the Web


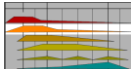
IMUG International Multilingual Users Group

## Assessing Risk ready for global distribution




- Regulatory and Legal
  - Financial flows are legal
  - Regional servers where needed for data privacy and regulatory
  - GDPR
  - Advertising and Content are legal

**KPI**  
Yes/no  
schedule


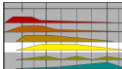
IMUG International Multilingual Users Group

## Assessing Risk ready for global distribution




- Code – I18n Scans
  - Code scans for good, bad i18n patterns
  - Message scans for bad L10n patterns
    - Embedded dynamic content
    - Fragments and incomplete sentences

**KPI**  
Yes/no  
tickets


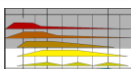
IMUG International Multilingual Users Group

## Risk KPI measuring g11n




- I18n Code Scan Analysis
  - I18n Areas
    - Use scans to determine code areas where i18n is/should be used
  - Bug Density
    - Issues/lines code
    - Issues/number i18n areas
  - Trends
    - Code change cause less/more issues?
    - Repeat problems?

**KPI**  
Issue density  
tickets


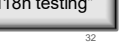
IMUG International Multilingual Users Group

## Critical Test Values




- Values that are more likely to find errors
  - Boundary conditions
    - Supplementary characters
    - Date-time eg Dec 30-Jan 2, Leap yr Feb 28-Mar 1
  - Data transformation
    - Upper case changes length: Upper(eßen)=ESSEN
    - Replace changes byte length: resume->résumé
    - Turkish “ı İ I I” breaks ASCII case-insensitivity
    - ISO 8859-1 control characters 0x80-0x9F e.g. ™ €

See I18nguy.com for previous conference talk: "Critical values for I18n testing"


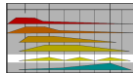



IMUG International Multilingual Users Group


 **Assessing Risk**  
ready for global distribution

- i18n/L10n Testing
  - Functional testing – product doesn't break
  - Pseudo-Localization – pre translation testing
  - Linguistic – are they the right words?
  - Esthetic – does it look right in context
  - Prioritize found issues
    - Functional show stopper
      - product won't work
    - Linguistic show stopper
      - customer confused/offended

**KPI**  
Schedule  
Tickets  
Category  
Priority/severity  
Age


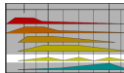



IMUG International Multilingual Users Group


 **Risk KPI**  
measuring g11n

- Test results
  - How many language/regions tested
    - Matrix of tests should cover all major functional differences
    - Don't need to cover every possible combination
  - Time to test
    - Should not adversely affect time-to-market
  - Automation
    - Build time – e.g. through Jenkins
    - Check in tests – e.g. through esLint

**KPI**  
Coverage  
Test time  
Automation %


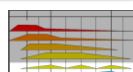



IMUG International Multilingual Users Group


 **Assessing Risk**  
ready for global distribution

- Deployment testing
  - Last mile tests
    - Regional latency testing
    - CDN testing – content delivery
    - Mobile carriers testing
  - “Friends and Family” testing
  - Regional presence

**KPI**  
Latency  
Tickets


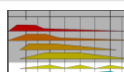



IMUG International Multilingual Users Group

 **Assessing Risk**  
ready for global distribution

- Customer Support
  - Help in local language
  - Local contact/phone for region

**KPI**  
Yes/no  
tickets


IMUG International Multilingual Users Group



## Risk KPI measuring g11n

- Released Product tracking by Region and Language
  - Customer support issues
  - Rejection rate
  - Engagement
  - NPS – “Net Promoter Score” by Region
  - Sentiment analysis by Region

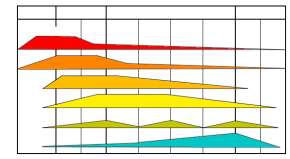
**KPI**  
NPS  
Tickets  
Sentiment scores



IMUG International Multilingual Users Group


## Reporting Risk

- Convert to scores
  - Easy to compare
  - Reflect ROI or cost/benefit



Organize

- Overall
- By team, by org
- By KPI
- By age of code
- By Market
- By age of issue



IMUG International Multilingual Users Group

# Putting it all together


KPI and dashboards



IMUG International Multilingual Users Group


## Dashboards

| Use [18n Assessment Tools menu to] |                        | Enablement  |            | Role    |          |          |         |
|------------------------------------|------------------------|-------------|------------|---------|----------|----------|---------|
|                                    |                        | World-Ready | Localizati | Planner | Designer | Engineer | Overall |
| Scores on a scale of 0 to 10       |                        |             |            |         |          |          |         |
| Product ABC                        | average                | 6.3         | 5.7        | 6.1     | 4.8      | 6.3      | 5.6     |
| Details by category                |                        |             |            |         |          |          |         |
| -Planning                          | Market Requirement     | 2.0         | na         | 6.0     | 1.0      | na       | 6.3     |
|                                    | Dependency             | 6.0         | 1.0        | 8.0     | 10.0     | 8.0      | 5.1     |
|                                    | Process                | 8.0         | 6.0        | 6.0     | 3.0      | na       | 6.6     |
|                                    | Content                | 9.0         | 4.0        | na      | 1.0      | na       | 6.1     |
| -Design                            | Interaction Design     | 2.0         | 3.0        | 8.0     | 7.0      | 4.0      | 5.7     |
|                                    | Text Processing        | 8.0         | na         | 10.0    | 5.0      | 7.0      | 4.6     |
|                                    | Locale formatting      | 9.0         | na         | 1.0     | na       | 2.0      | 6.1     |
|                                    | Search                 | 2.0         | na         | 3.0     | 7.0      | 7.0      | 1.0     |
|                                    | Language switching     | 9.0         | na         | 8.0     | 10.0     | 10.0     | 7.6     |
| -Engineering                       | Editorial guidelines   | 10.0        | 7.0        | 9.0     | 3.0      | 10.0     | 5.2     |
|                                    | Unicode                | 8.0         | 8.0        | 2.0     | na       | 3.0      | 4.8     |
|                                    | API/SDK                | 7.0         | 10.0       | 2.0     | na       | 7.0      | 6.4     |
|                                    | Interoperability       | 2.0         | 4.0        | 9.0     | na       | 2.0      | 6.6     |
|                                    | Standards compliance   | 7.0         | 1.0        | 8.0     | na       | 9.0      | 6.4     |
|                                    | Deployment             | 6.0         | 2.0        | 4.0     | 8.0      | 4.0      | 4.8     |
|                                    | Test automation        | 5.0         | 9.0        | 9.0     | 1.0      | 7.0      | 6.3     |
|                                    | UI Extraction          | 9.0         | 9.0        | 10.0    | 3.0      | 10.0     | 4.0     |
|                                    | UI Layout              | 8.0         | 6.0        | 7.0     | 8.0      | 7.0      | 7.1     |
|                                    | UI Implementation      | 2.0         | 7.0        | 4.0     | 2.0      | 3.0      | 5.4     |
|                                    | Build and Deliverables | 8.0         | 5.0        | 4.0     | 7.0      | 7.0      | 6.9     |
| UI Modularity                      | 6.0                    | 9.0         | 4.0        | 1.0     | 6.0      | 4.4      |         |



IMUG International Multilingual Users Group

## Dashboards

3.2  Globalization contact person  
3.3 Globalization checking tools  
3.4 Globalization checking tools  
3.5 Standard defect tracking

4.0 **Content** Product or user generated content is designed for international requirements

4.1 Worldwide content availability Any user anywhere can access any globally licensed and jurisdictionally appropriate content. Easy and effective method to select and obtain content (by language/region/topic).

4.2 User generated data and moderation Consult with legal requirements for jurisdiction based abuse, decency, privacy and data security requirements. Design and implement features to enable this content moderation and if needed blocking.

4.3 Multi-lingual content Numerous countries officially support multiple official languages. Consider requirements for multi-lingual content library creation capability and delivery.


4.4 Content library localization process Localizable content library data resides in localization standard file formats or efficient extraction or automation tools exist

5.0 **Interaction Design** User interface must support regional specific input and output formats and market needs

5.1 Regional identity requirements Support local ID requirements (drivers license, passport, residence number (Korea), etc.) for creating accounts or internet service.

5.2 Regional payment systems Support necessary regional payment systems, some countries favor giro payment system rather than credit cards.

5.3 Culturally correct name and title use Some regions place special emphasis on awareness and use of title and salutations. Others reverse order of typical first and last name, and never refer to someone by first



IMUG International Multilingual Users Group 41

## Dashboards

Issues Measures Code Dashboards

Lingoport Overview

Globalizer Summary

|                          |    |
|--------------------------|----|
| Concatenations           | 12 |
| Embedded Strings         | 13 |
| Locale-Sensitive Methods | 26 |
| General Patterns         | 4  |
| Static File References   | 0  |

Resource Manager Summary Repo

Default Locale:

Base Resource Files:

Base Resource Words:

Target Locales

% Complete

Last Prepped Kit Version

Last Prepped Kit Date


Licensing

LRM License End Date-valid:

LRM Version:

LRM License Company Name:

LRM-Number of Projects Allowed: 42



IMUG International Multilingual Users Group 42

## Dashboards

■ PHP ■ PHP-xml package  
■ PHP-JSON Resource Bundles for PHP  
■ PHP-xml Multitype support for PHP  
■ PHP-JSON Character Encoding Conversion  
■ PHP-unicode-Unicode functions for PHP

International Components for Unicode (ICU) Global Readiness

Global readiness grade: Based on overall score: **B7**

Market Entry


Global UED

Data Representation & Exchange

Locale sensitive behavior

Content management

Deployment



IMUG International Multilingual Users Group 43

## Dashboards

Grade: 81.78%  
Status: Graded


| Categories                        | Grade | Wt%  | Status         | Comments |
|-----------------------------------|-------|------|----------------|----------|
| Western European language support | 10.00 | 5.00 | Graded         |          |
| CJK language support              | 10.00 | 5.00 | Graded         |          |
| Eastern European language support | 9.50  | 5.00 | Graded         |          |
| Unicode Support                   | 9.52  | 5.00 | Graded         |          |
| ISO8039 certification             | -     | 5.00 | Not Applicable |          |
| Full locale awareness             | 4.69  | 5.00 | Graded         |          |
| Linguistic support                | -     | 5.00 | Not Applicable |          |
| Single code base                  | 10.00 | 5.00 | Graded         |          |
| Complex Script Support            | 4.50  | 5.00 | Graded         |          |
| UI resources externalized         | 9.00  | 5.00 | Graded         |          |
| Efficient build process           | 10.00 | 5.00 | Graded         |          |
| Streamlined kit creation          | 9.00  | 5.00 | Graded         |          |
| Language expandability            | 10.00 | 5.00 | Graded         |          |

Western European language support

Grade: 100%  
Status: Graded

Filter Questions: Do you want to mark, display, import/export, copy/paste, or manipulate the navigation and editing of textual elements?

| Requirements                 | Grade                    | Wt%   | Status     | Comments |
|------------------------------|--------------------------|-------|------------|----------|
| Typing characters            | 10.00-Full support       | 5.00  | Graded     |          |
| Keyboard switch input        | Not Graded               | 0.00  | Not Graded |          |
| Non-ascii chars in filenames | Not applicable           | 0.00  | Not Graded |          |
| 0-9-Non support              | 0.0-Non support          | 0.00  | Graded     |          |
| Keyboard shortcuts           | 2.5-Minor support        | 0.00  | Graded     |          |
| Backspace and delete usage   | 3.0-Intermediate support | 0.00  | Graded     |          |
| Cursor positioning           | 7.5-Major support        | 0.00  | Graded     |          |
| Text selection               | 10.0-Full support        | 5.00  | Graded     |          |
| Multiple click selection     | 10.0-Full support        | 5.00  | Graded     |          |
| Character display in UI      | 10.0-Full support        | 20.00 | Graded     |          |
| Bracing                      | 10.0-Full support        | 5.00  | Graded     |          |
| Interspersibility            | 10.0-Full support        | 5.00  | Graded     |          |
| Cross-language compatibility | 10.0-Full support        | 10.00 | Graded     |          |
| Text format                  | 10.0-Full support        | 5.00  | Graded     |          |



IMUG International Multilingual Users Group 44

## Dashboards

IMUG International Multilingual Users Group 45

## Process data collection benefits

- Confident of outcome based on data
  - Meets specs (product, G11n)
  - Forecast customer acceptance, known pitfalls
- Early detection allows mid-course correction
- Reliability: Final QA confirms not corrects
- Historic data allow process improvements
  - Efficiency (Cost, Time to market, ROI)
  - Quality (Accuracy, Functional, Rejection rate)
  - Insight (robustness, automation, reuse, training)

IMUG International Multilingual Users Group 46

## Questions

IMUG International Multilingual Users Group 47

## References

- W3.org
  - <https://www.w3.org/standards/webdesign/i18n>
  - <https://validator.w3.org/i18n-checker/> - checks web pages for i18n correctness
- G11n checklist
  - I18nguy - list of assessment tools <http://www.i18nguy.com/guidelines.html>
  - Multidimensional Quality Metrics (MQM) Definition, German Research Center for Artificial Intelligence (DFKI) and QTLaunchPad. "translation-oriented quality assessment systems" <http://www.qt21.eu/mqm-definition/>
  - Lingoport WorldWare Conference [https://lingoport.com/wp-content/uploads/2012/03/I18nConference2012\\_I18nAssessments.pdf](https://lingoport.com/wp-content/uploads/2012/03/I18nConference2012_I18nAssessments.pdf)
- Search terms:
  - "i18n assessment tool"
  - "Localization acceptance tests"

IMUG International Multilingual Users Group 48