



Designing Maintainable XML Transformations

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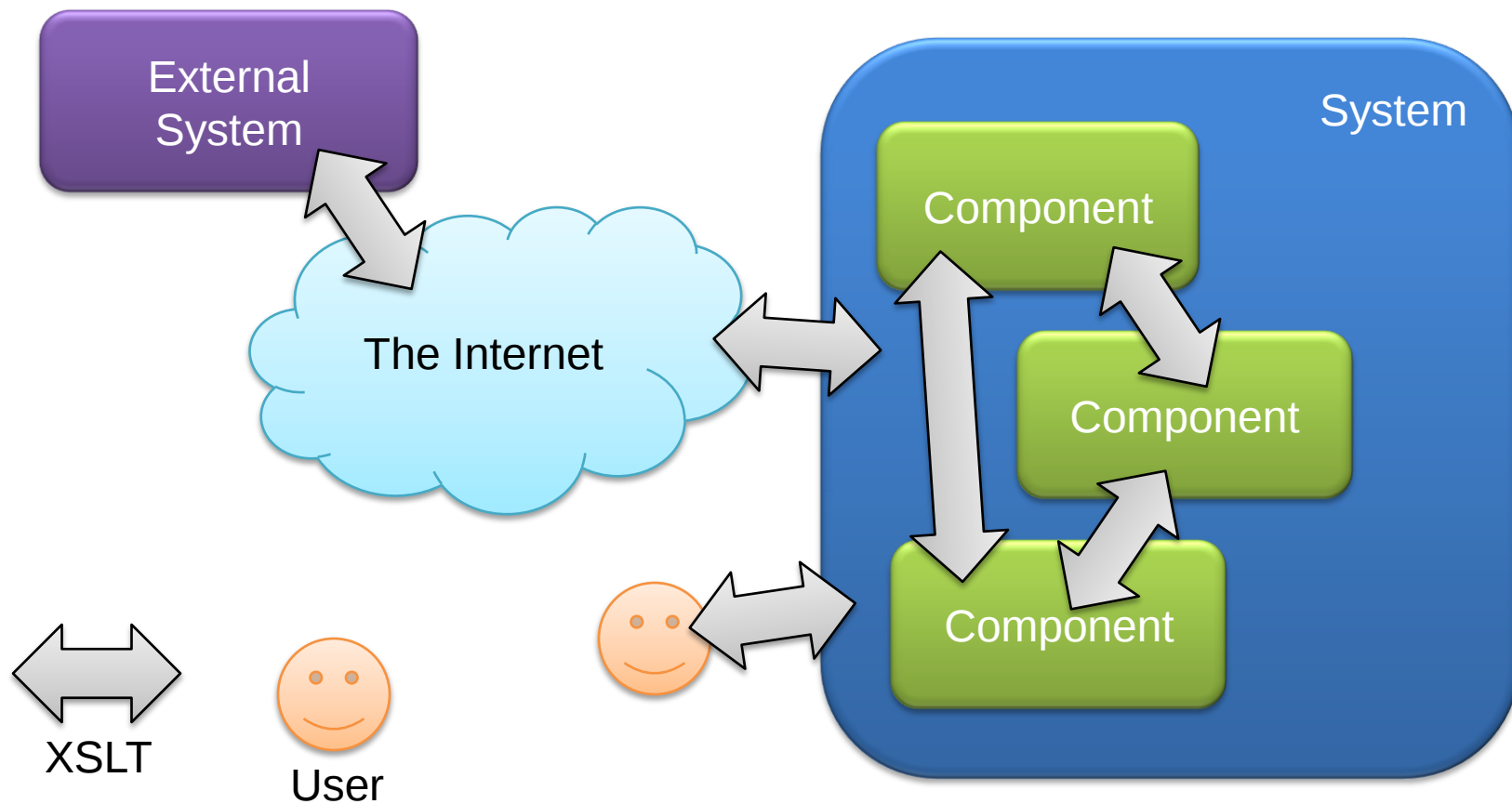


Outline

- Motivation
- XSLT guidelines
- Measuring XSLT conformance
- Improving XSLT conformance



Uses of XSLT





Maintenance

Evolution of XML

- New information
- Obsolete information
- Changes in semantics



Maintenance

- Updates in relevant transformations



Forward Compatibility

Minimises effort needed to update code.

Independence from business components
(generality)

Graceful handling of unexpected content



Guidelines

Use existing or common controls.

Use generic services instead of internal components to expose similar aspects.

Compose complex services of individually addressable and “subscribable” services.

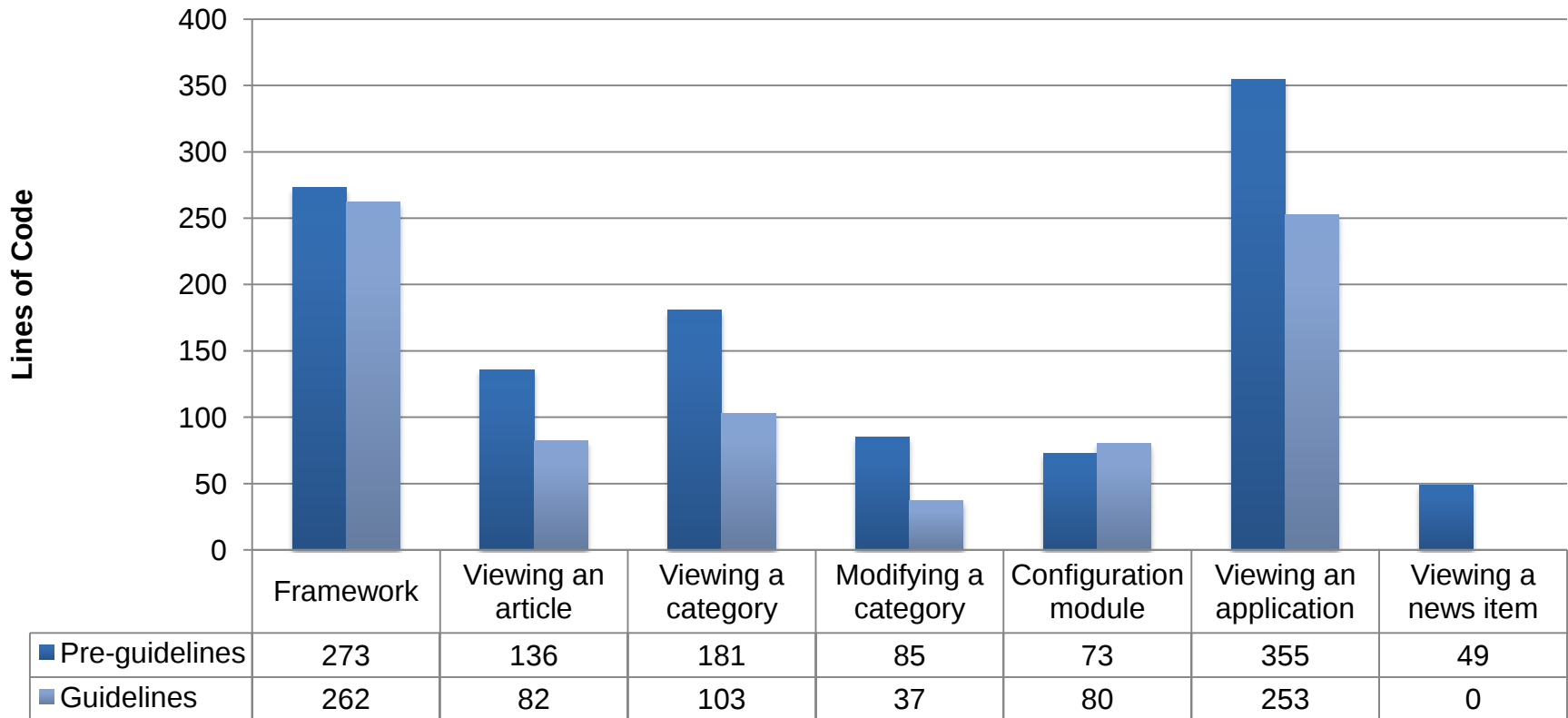
Avoid the need for additional metadata to render a document.

Reuse

**Loose
coupling**



Evaluation of Guidelines





Metrics of XSLT

- Number of elements
- Number of attributes
- Number of templates
- Number of apply-templates
- Number of match expressions
- Number of select expressions
- Number of test expressions

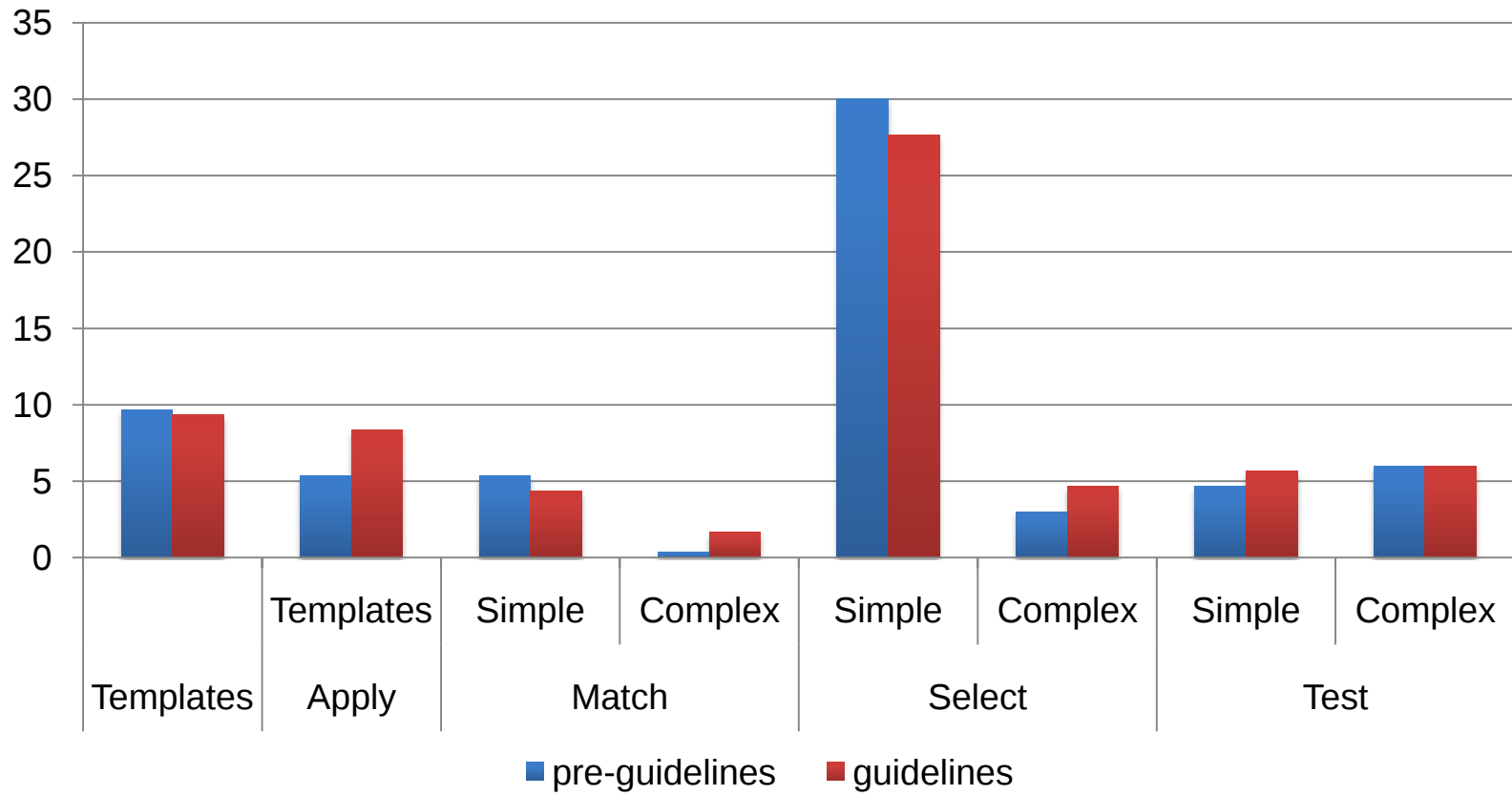


Types of Expressions

- Simple
 - Can be written without wildcards and function calls
 - E.g. **Resources**
- Complex
 - Wildchars
 - Function calls
 - E.g. *** [string-length (name ()) =4]**

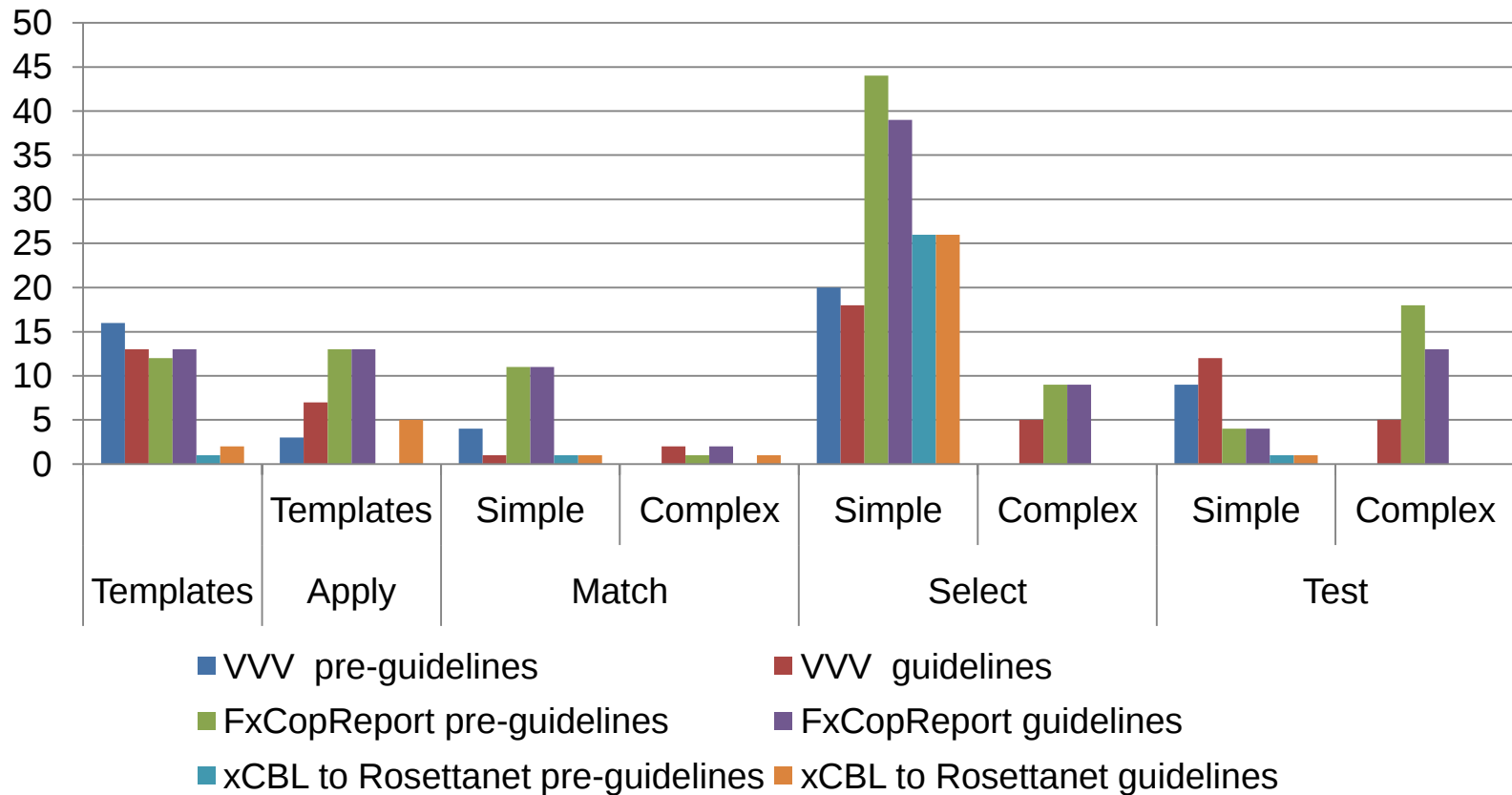


Results





Results





Impact of the Guidelines

Metric	Guideline 1	Guideline 2	Guideline 3	Guideline 4
Number of Similar code sections	↑	↓		→
Length of similar code sections	→	→	→	→
Number of elements in stylesheet	→	↓	↑	↓
Number of local variables and parameters in stylesheet	→	→	→	→
Number of global variables and parameters in stylesheet	↑		↑	
Number of template calls and copy-of elements	↑		↑	↓
Number of match, select and test expressions, which make use of implicit information		↑		↑
Number of templates in stylesheet	→	↓	↑	→
Number of apply-templates elements in stylesheet		↑		↑
Length of templates in stylesheets	→	→	↑	→



Improving XSLT Conformance

- Iteratively
- One guideline at a time:
 - Common controls
 - Generic transformation services
 - Addressable and subscribable services
 - Use of metadata
- Verify each steps result



Future Perspectives

- Study the correlation between stylesheet orientation and effectiveness of guidelines.
- Investigate maintainability using other metrics.
- Study enforceability of the guidelines.



Discussion