Diple, modular methodology and tools for heterogeneous TEI corpora

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The École nationale des chartes publishes a variety of electronic corpora, focused on historical sources (medieval, but also, modern and contemporary). A dictionary, a collection of acts, or a manuscript are very different types of documents, each requiring different structures and interfaces. A narrative manuscript needs a table of contents, a dictionary, fast access to headwords, and acts, the ability to sort by dates. Each editorial project should allow customization, but efficient development requires that the tools and corpora are as normalized as possible. New needs emerge, such as natural language processing research, requiring large corpora with normalized metadata sets and word tagging. For several months we have been working on a platform to address these needs: Diple is a collection of tools to organize modular production, publication, and searching of electronic corpora.

1. Modular schemas

The TEI guidelines (500 XML elements, 1500 pages of documentation) allow endless variations in encoding, even for identical objects. For example, italic in our corpora has been encoded with different combinations of \(<\text{(hi|emph)} \text{rend}="(italique|italic|ital.|i|\ldots)"\>\). After several years of development, with different encoders, each electronic edition becomes an independent software, with its own encoding, mistakes, workarounds, with also different technologies for publication or fulltext searching.

Diple starts with housekeeping. First, for all our tagged texts, we wrote a precise document type definition (in Relax-NG syntax) in order to define three main and shared schemas:

- file metadatas (<teiHeader>)
- general text (blocks and inlines)
- structure for a specific type of text (ex: acts and charters, dictionaries)

The normalization of the corpora is a more sustainable investment than new software. These shared schemas are extremely helpful for normalizing and validating XML instances, and therefore allow us to take advantage of earlier TEI editions. Of course, the Diple TEI schema is modular, allowing customization for each editorial project. An editor can then focus on the specificities of each edition. Are named entities sufficiently tagged to generate automatic indexes? Are the sentences chunked, the words lemmatized?

Moreover, this work of normalization of our XML corpora is a small price to pay to factorize our code, for instance to create a standard XSLT engine: the screen transformation of a new corpus conforming to those schemas is done by this engine, increasing our publication productivity. In the end, the XSLT of a specific edition is short, focusing on the very specific aspects of the corpus (its custom schema) related to a research project, the main part of the publication job being done by the Diple XSLT engine. The same logic applied for presentation CSS.

2. Shared interface components, documents driven

A publication system usually allows templating and plugins. A good software architecture should be conceived in this way, but scholarly editions don’t function like a CMS. Templating systems are usually designed to effect easy change of colours, to deliver the same feature under different designs. In a scholarly collection, books could share a cover, but follow very different structures. Rather than constrain all corpora to a single template, the Diple system provides different components, allowing
an electronic corpus editor to compose the interface best suited to his text. Headers or footers are easy to share, but beyond that, one project might require a fulltext search box, another a database query, another a sidebar table of contents. Design snippets or plugins are conceived of as portal bricks, easy to compose in a server page (PHP), and are kept as simple and light as possible. If a local variable, function or object could have a general interest, it should be shared.

3. Text engines for research, retrieving and concordances

Navigation, tables and indexes, should answer most of the user's needs; but a search box is also an important navigation tool. Diple ensures a canonical electronic publication, with persistent addresses, so that different text engines can be plugged around the edition. Corpora may require different approaches. A collection of items, like a dictionary or cartularies, needs at first a retrieving engine to get an item conveniently, by a keyword in full-text, but also dates, headwords and other metadatas. There are also texts for which no divisions are relevant; a concordance report is much more informative, displaying all occurrences in context. Different tools offer different views, documented XML allows us to generate what an engine likes. We have successfully used MySQL full-text indexes for navigation interfaces, PhiloLogic for concordances, Lucene is very efficient to retrieve items, and we learned to use IMS Corpus Workbench (CWB) for future lemmatized corpora. But sometimes we also simply use mixed scripts (shell, XSLT, SAX…) to run a specific experiment on a word or a semantic field.

4. Conclusion

Diple grows and adapts with each new corpus, rapidly incorporating other corpora, an idea worth generalizing. All our code will soon be released under a free software license. Anyone can download, read, and try Diple. We don’t claim it will work for all your TEI documents, but if they conform to the schemas, you will quickly get nice results on the screen.

References


Notes

1. http://elec.enc.sorbonne.fr/
2. http://ducange.enc.sorbonne.fr/
5. For example, http://elec.enc.sorbonne.fr/cartulairesIdF/src/schema.htm
7. http://philologic.uchicago.edu/