Customising the TEI

TEI @ Oxford

July 2011

Moving on

- How the TEI is constructed
- Making a TEI schema
- Specifying your profile of the TEI
- How to use the TEI Guidelines documentation

Some terminology

- The TEI encoding scheme consists of a number of *modules*
- Each module contains a number of *element specifications*
- Each element specification contains:
  - a canonical name (<gi>) for the element, and optionally other names in other languages
  - a canonical description (also possibly translated) of its function
  - a declaration of the *classes* to which it belongs
  - a definition for each of its *attributes*
  - a definition of its *content model*
  - usage examples and notes
- a TEI *schema* specification (<schemaSpec>) is made by selecting modules or elements and (optionally) modifying their contents
- a TEI document containing a schema specification is called an *ODD* (One Document Does it all)

What is a module?

- A convenient way of grouping together a number of element declarations
- These are usually on a related topic or specific application
- Most chapters of P5 focus on elements drawn from a single module, which that chapter then defines
- A TEI Schema is created by selecting modules and adding or removing elements from them as needed

Which modules exist?

Module name	Chapter
analysis	Simple Analytic Mechanisms
certainty	Certainty and Responsibility
core	Elements Available in All TEI Documents
corpus	Language Corpora
dictionaries	Dictionaries
drama	Performance Texts
figures	Tables, Formulae, and Graphics
gaiji	Representation of Non-standard Characters and Glyphs
header	The TEI Header
iso-fs	Feature Structures
linking	Linking, Segmentation, and Alignment
msdescription	Manuscript Description
namesdates	Names, Dates, People, and Places
nets	Graphs, Networks, and Trees
spoken	Transcriptions of Speech
tagdocs	Documentation Elements
tei	The TEI Infrastructure
textcrit	Critical Apparatus
textstructure	Default Text Structure
transcr	Representation of Primary Sources
verse	Verse

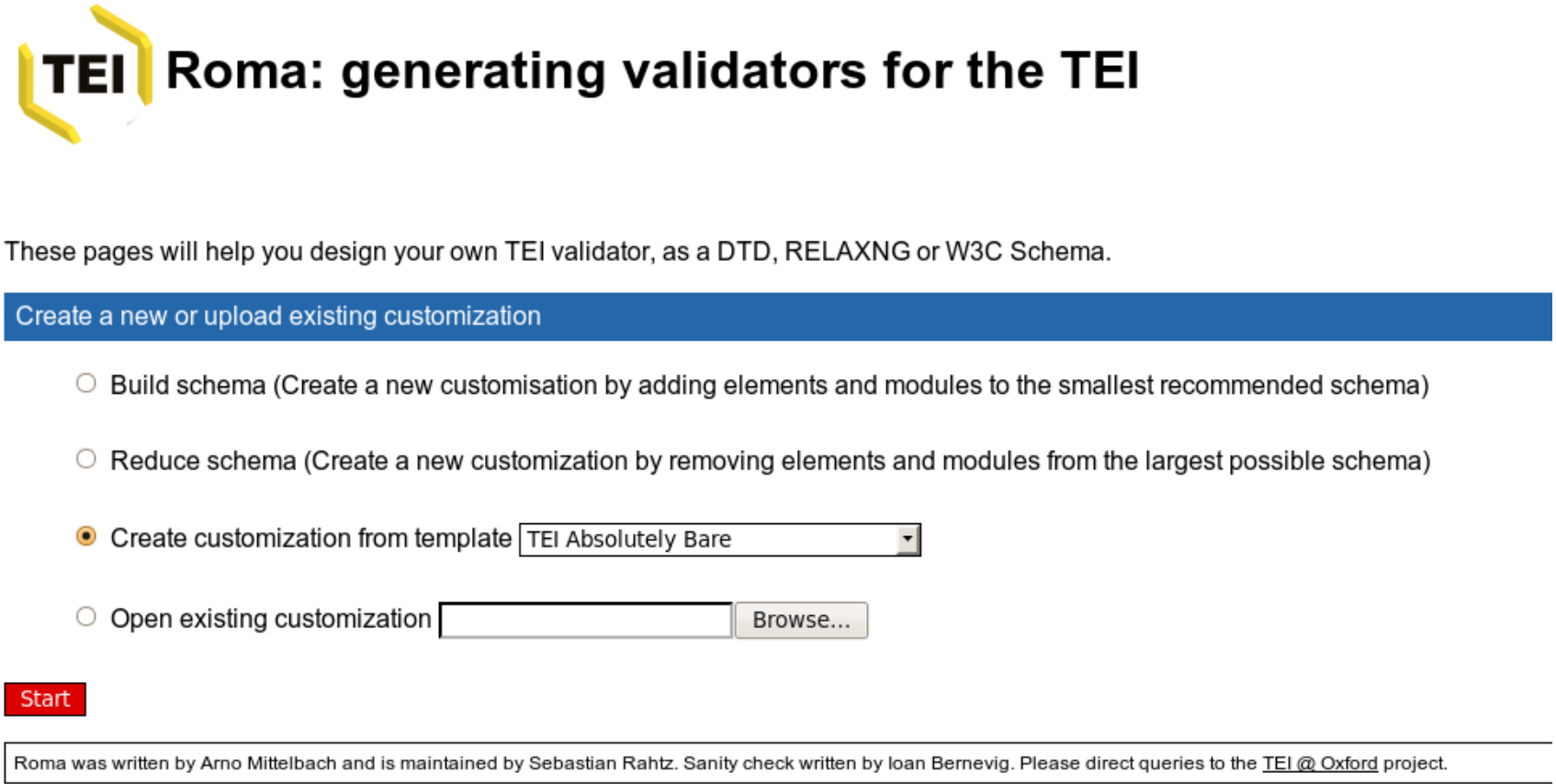
How do you choose?

- Just choose everything (not really a good idea)
- The TEI provides a small set of predefined combinations (TEI Lite, TEI Bare...)
- Or you could roll your own (but then you need to know what you're choosing)

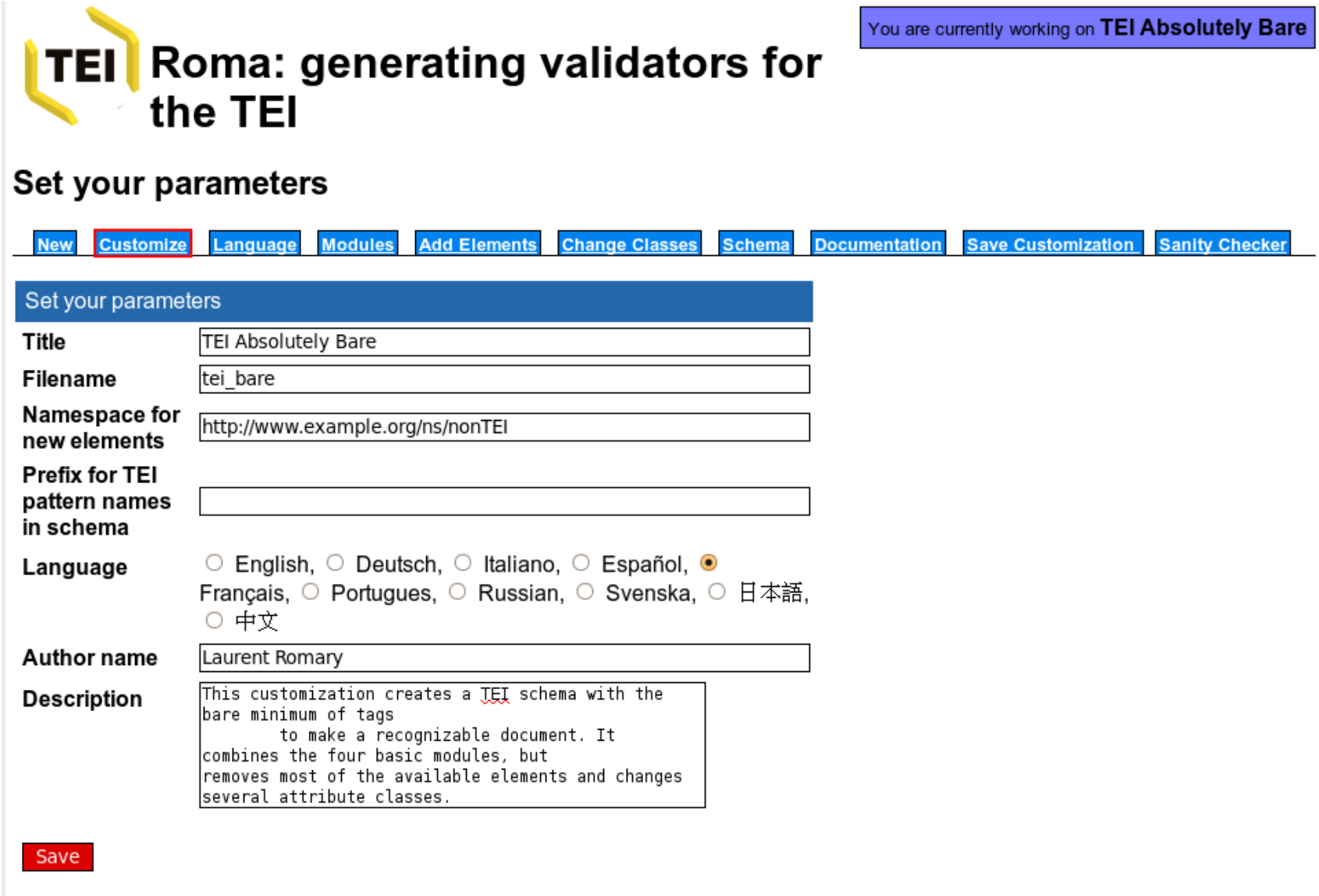
Roma a command line script, with a web front end, designed to make this process much easier

http://www.tei-c.org/Roma/

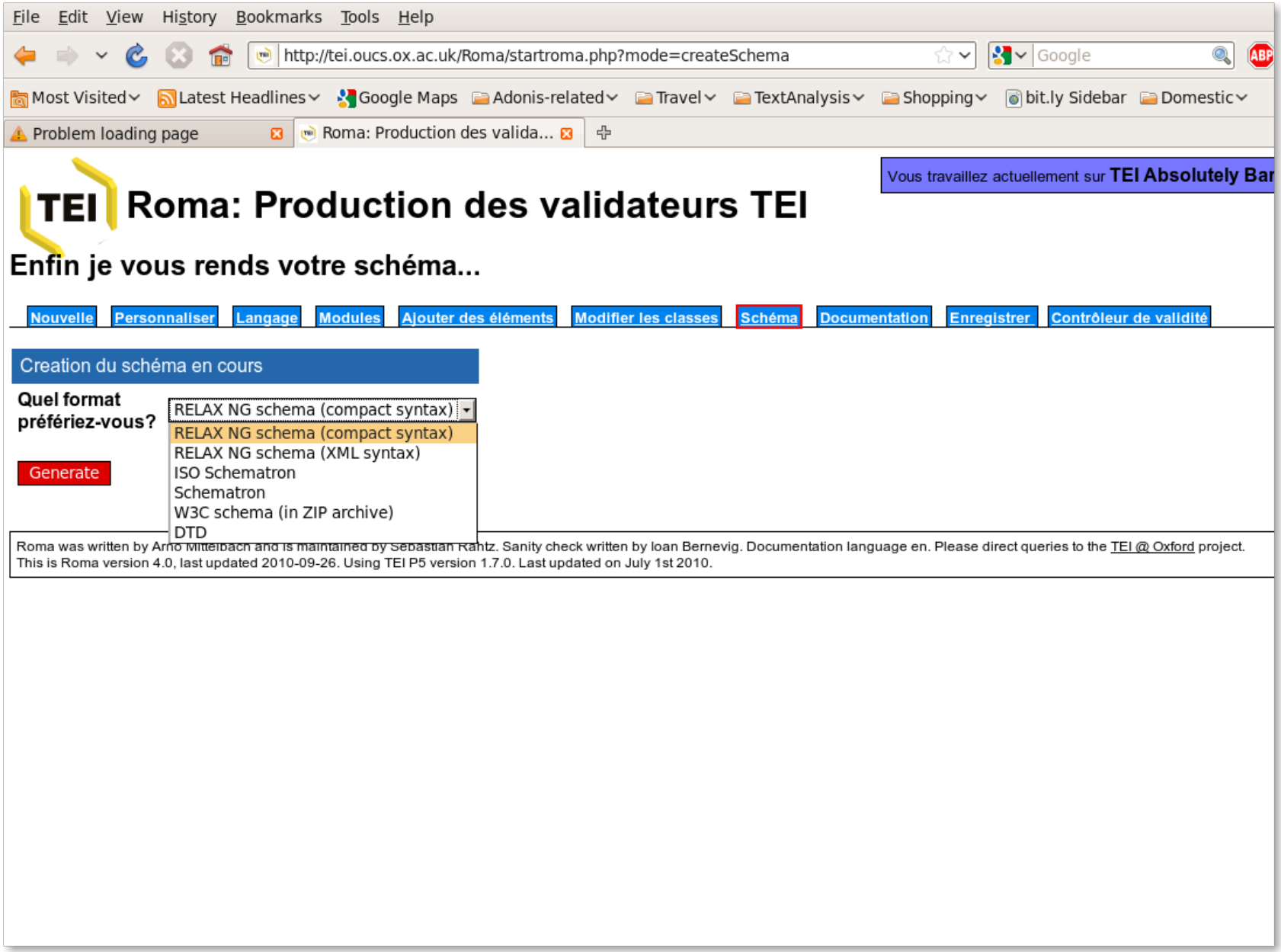
Roma: New


TEI Roma: generating validators for the TEI
These pages will help you design your own TEI validator, as a DTD, RELAXNG or W3C Schema.
Create a new or upload existing customization
Build schema (Create a new customisation by adding elements and modules to the smallest recommended schema)
Reduce schema (Create a new customization by removing elements and modules from the largest possible schema)
Create customization from template
TEI Absolutely Bare
Open existing customization
Browse...
Start
Roma was written by Arno Mittelbach and is maintained by Sebastian Rahtz. Sanity check written by Ioan Bernevig. Please direct queries to the TEI @ Oxford project.

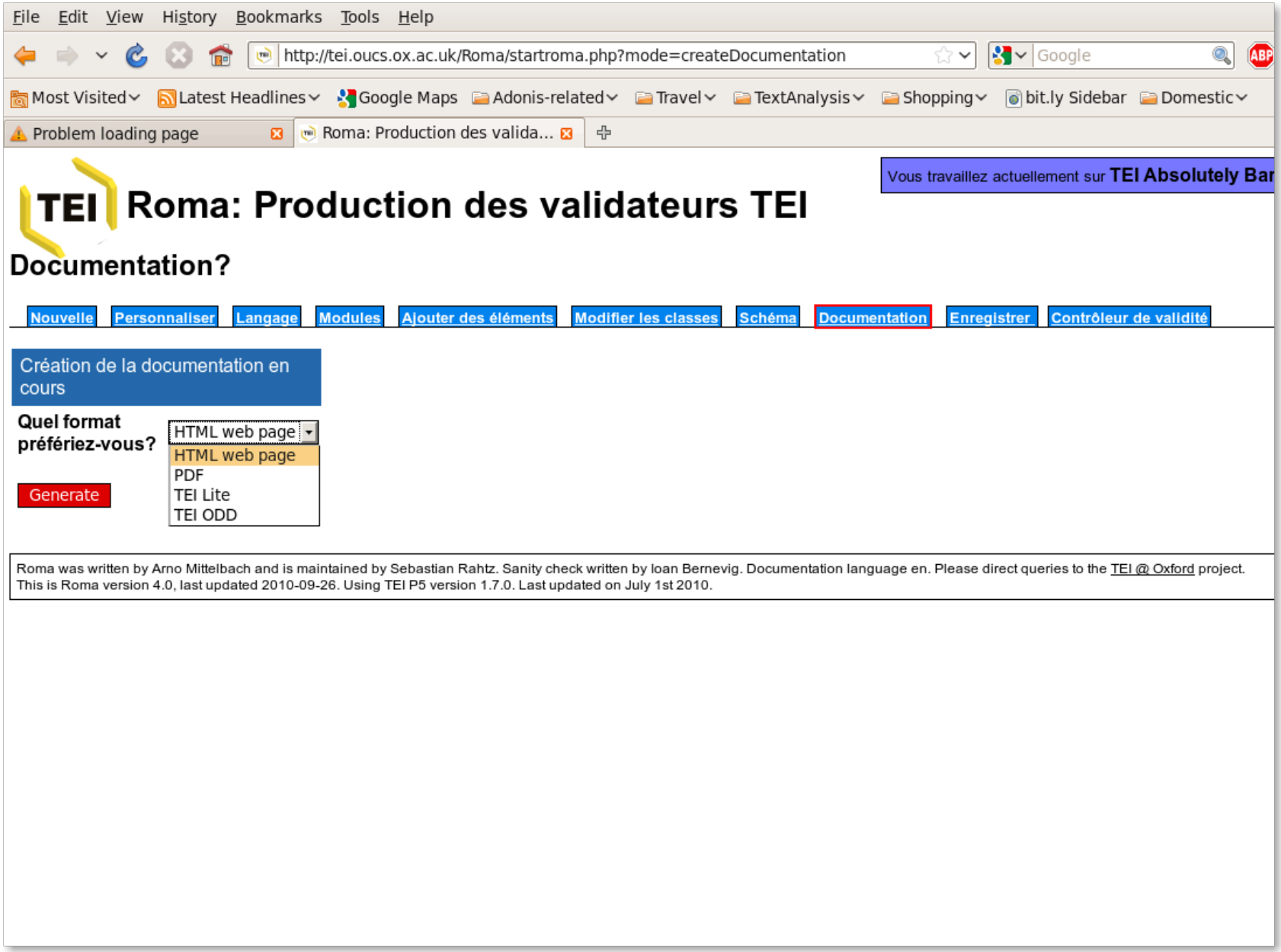
Roma: Customize



Roma: Schema


File Edit View History Bookmarks Tools Help
http://tei.oucs.ox.ac.uk/Roma/startroma.php?mode=createSchema
Google
Most Visited
Latest Headlines
Google Maps
Adonis-related
Travel
TextAnalysis
Shopping
bit.ly Sidebar
Domestic
Problem loading page
Roma: Production des valida...
Vous travaillez actuellement sur TEI Absolutely Bar
TEI Roma: Production des validateurs TEI
Enfin je vous rends votre schéma...
Nouvelle
Personnaliser
Langage
Modules
Ajouter des éléments
Modifier les classes
Schéma
Documentation
Enregistrer
Contrôleur de validité
Creation du schéma en cours
Quel format préfériez-vous?
RELAX NG schema (compact syntax)
RELAX NG schema (compact syntax)
RELAX NG schema (XML syntax)
ISO Schematron
Schematron
W3C schema (in ZIP archive)
DTD
Generate
Roma was written by Arno Mittelbach and is maintained by Sebastian Rahtz. Sanity check written by Ioan Bernevig. Documentation language en. Please direct queries to the TEI @ Oxford project.
This is Roma version 4.0, last updated 2010-09-26. Using TEI P5 version 1.7.0. Last updated on July 1st 2010.

Roma: Documentation



What did we just do?

We processed a pre-existing ODD file which contained (as well as some discursive prose) the following schema specification:

```
<schemaSpec ident="tei_bare" start="TEI">
 <moduleRef key="core"/>
 <moduleRef key="tei"/>
 <moduleRef key="header"/>
 <moduleRef key="textstructure"/>
 <elementSpec ident="abbr" mode="delete" module="core"/>
 <elementSpec ident="add" mode="delete" module="core"/>
<!-- ... -->
 <elementSpec ident="trailer" mode="delete" mod-
ule="textstructure"/>
 <elementSpec ident="title" mode="change" module="core">
  <attList>
   <attDef ident="level" mode="delete"/>
  </attList>
 </elementSpec>
<!-- ... -->
</schemaSpec>
```

We selected four modules, deleted loads of elements, and also deleted an attribute

Roma provides an interface to the detail

- The [Modules] tab shows the modules available
- Selecting a module from it shows the elements within that module, and gives you the choice to
  - include all of them (and then remove some)
  - exclude all of them (and then put back the ones you want)
- You can also change an element's attribute list, and the values they permit

Roma: Modules

Nouvelle | Personnaliser | Langage | Modules | Ajouter des éléments | Modifier les classes | Schéma | Documentation | Enregistrer | Contrôleur de validité

Liste des modules TEI

	Titre du module		Description brève	Modification
ajouter	analysis	?	Mécanismes analytiques simples	
ajouter	certainty	?	Degré de certitude et responsabilité	
ajouter	core	?	Éléments disponibles pour tous les documents TEI	modifié
ajouter	corpus	?	Corpus linguistiques	
ajouter	dictionaries	?	Dictionnaires	
ajouter	drama	?	Théâtre	
ajouter	figures	?	Tableaux, formules et graphiques	
ajouter	gaiji	?	Représentation des caractères et des glyphes non standard	
ajouter	header	?	En-tête TEI	modifié
ajouter	iso-fs	?	Structures de traits	
ajouter	linking	?	Liens, segmentation et alignement	
ajouter	msdescription	?	Description de manuscrits	
ajouter	namesdates	?	Noms, dates, personnes et lieux	
ajouter	nets	?	Graphes, réseaux et arbres	
ajouter	spoken	?	Transcriptions de la parole	
ajouter	tagdocs	?	Éléments de déclaration d'un modèle	
ajouter	textcrit	?	Apparat critique	
ajouter	textstructure	?	Structure textuelle par défaut	modifié
ajouter	transcr	?	Représentation de sources primaires	
ajouter	verse	?	Poésie	

Liste des Modules selectionnés

supprimer	core
	tei
supprimer	header
supprimer	textstructure

Roma: Change Module

Vous travaillez actuellement sur **TEI Absolutely Bare**

Roma: Production des validateurs TEI

Modification d'un module

Nouvelle | Personnaliser | Langage | Modules | Ajouter des éléments | Modifier les classes | Schéma | Documentation | Enregistrer | Contrôleur de validité

back

Liste des éléments compris dans ce modulecore

	Inclure	Exclure	Nom		Description	Attributs
abbr	○	●	abbr	?	(abréviation) contient une abréviation quelconque.	Changer les attributs
add	○	●	add	?	(ajout) contient des lettres, des mots ou des phrases insérées dans le texte par un auteur, un copiste, un annotateur ou un correcteur.	Changer les attributs
addrLine	○	●	addrLine	?	(ligne d'adresse) contient une ligne d'adresse postale.	Changer les attributs
address	○	●	address	?	contient une adresse postale ou d'un autre type, par exemple l'adresse d'un éditeur, d'un organisme ou d'une personne.	Changer les attributs
analytic	○	●	analytic	?	(niveau analytique) contient des éléments descriptifs qui décrivent la bibliographie d'une ressource (par exemple un poème ou un article de revue) publiée à l'intérieur d'une monographie ou d'une ressource et non publiée de façon indépendante.	Changer les attributs
author	●	○	author	?	(auteur) dans une référence bibliographique contient le nom de la (des) personne(s) physique(s) ou du collectif, auteur(s) d'une oeuvre ; la première mention de responsabilité comme seul élément bibliographique.	Changer les attributs
bibl	○	●	bibl	?	(référence bibliographique.) contient une référence bibliographique faiblement structurée dans laquelle les sous-composants peuvent ou non être explicitement balisés.	Changer les attributs
biblScope	○	●	biblScope	?	(extension d'une référence bibliographique.) définit l'extension d'une référence bibliographique, comme par exemple une liste de numéros de pages, ou le nom d'une subdivision d'une oeuvre plus étendue.	Changer les attributs
biblStruct	○	●	biblStruct	?	(référence bibliographique structurée) contient une référence bibliographique dans laquelle seuls des sous-éléments bibliographiques apparaissent et cela,	Changer les attributs

What does the Punch Project need?

A simple selection of elements, but also

- we want to allow only certain values for *@type* on
- we want a new element to wrap the combination of a <cit> and a comment on it: we will call it a <citCom> (you might like to think of a better name)

Other constraints are possible — we might want to insist that a contains a graphic, for example.

The ODD advantage

We can express these constraints in our ODD, and then generate a formal schema to enforce them using whichever schema language we like

- TEI schemas can be generated in
  - ISO RELAX NG language
  - W3C Schema Language
  - XML DTD language
- ODD itself defines an element's content models using a subset of RELAX NG syntax
- Datatypes are defined in terms of W3C datatypes
- Some facilities (e.g. alternation, namespaces) cannot be expressed in DTDs — RELAX NG schema is recommended
- Additional constraints can be expressed in Schematron

Roma: selecting attributes

Liste des attributs: div

Ajouter des attributs

Changer un attribut	Inclure	Exclure	Nom	Description	Supprimer
org	○	●	org	précise l'organisation du contenu de la division	
sample	○	●	sample	indique si cette division est un échantillon de la source originale et dans cas, de quelle partie.	
part	○	●	part	précise si la division est vraiment fragmentée ou non par quelques autres éléments structurels, par exemple une prise de parole qui est partagée en au moins deux strophes de vers.	
type	●	○	type	caractérise l'élément en utilisant n'importe quel système ou typologie de classification approprié.	
subtype	○	●	subtype	donne une sous-catégorisation de l'élément, si c'est nécessaire.	
decls	○	●	decls	identifie un ou plusieurséléments déclarablesdans l'en-tête TEI, qui sont destinés à s'appliquer à l'élément portant cet attribut et à son contenu.	
xml:id	●	○	xml:id	fournit un identifiant unique pour l'élément qui porte l'attribut	
n	●	○	n	donne un nombre (ou une autre étiquette) pour un élément, qui n'est pas nécessairement unique dans le document TEI.	
xml:lang	●	○	xml:lang	indique la langue du contenu de l'élément en utilisant les codes du RFC 3066	
rend	●	○	rend	indique comment l'élément en question a été rendu ou présenté dans le texte source	
rendition	○	●	rendition	pointe vers une description du rendu ou de la présentation utilisés pour cet élément dans le texte source	
xml:base	○	●	xml:base	donne une référence URI de base au moyen de laquelle les applications peuvent résoudre des références d'URI relatives en références d'URI absolues	
xml:space	○	●	xml:space	signale que les applications doivent préserver l'espace blanc	

Roma: constraining attribute values

Création d'attribut en cours

Nom d'attribut type

Nome de class

Facultatif? ○ yes ◉ no

Contenu Text >= 1 <= 1

Valeur par défaut

Liste fermée ◉ yes ○ no

Liste de valeurs sonnet chapitre livre autre

Description caractérise l'élément en utilisant n'importe quel système ou typologie de classification approprié.

Save

What did we just do?

Our ODD now includes something like this:

```
<elementSpec ident="div" mod-
ule="textstructure" mode="change">
 <attList>
  <attDef ident="type" mode="change" usage="req">
   <valList type="closed" mode="replace">
    <valItem ident="cartoon"/>
    <valItem ident="snippet"/>
    <valItem ident="verse"/>
<!-- ... -->
   </valList>
  </attDef>
 </attList>
</elementSpec>
```

Note that we can also add documentation to the ODD:

```
<valItem ident="cartoon">
 <gloss>contains a humorous picture, usually with
   dialogue underneath</gloss>
</valItem>
```

Defining a new element

When defining a new element, we need to consider

- its name and description
- what attributes it can carry
- what it can contain
- where it can appear in a document

The TEI class system helps us answer all these questions (except the first).

The TEI Class System

- The TEI distinguishes over 500 elements,
- Having these organised into classes aids comprehension, modularity, and modification.
- *Attribute class*: the members share common attributes
- *Model class*: they can appear in the same locations (and are often semantically related)
- Classes may contain other classes
- An element can be a member of any number of classes, irrespective of the module it belongs to.

Attribute Classes

- Attribute classes are given (usually adjectival) names beginning with att.; e.g. *att.naming*, *att.typed*
- all members of `att.naming` inherit from it attributes *@key* and *@ref*; all members of `att.typed` inherit from it *@type* and *@subtype*
- If we want an element to carry the *@type* attribute, therefore, we add the element to the `att.typed` class, rather than define those attributes explicitly.

A very important attribute class: att.global

All elements are a member of att.global; this class provides, among others:

@xml:id	a unique identifier
@xml:lang	the language of the element content
@n	a number or name for an element
@rend	how the element in question was rendered or presented in the source text.

Model Classes

- Model classes contain groups of elements which are allowed in the same place. e.g. if you are adding an element which is wanted wherever the <bibl> is allowed, add it to the model.biblLike class
- Model classes are usually named with a Like or Part suffix:
  - members of model.pLike are all things that 'behave like' paragraphs, and are permitted in the same places as paragraphs
  - members of model.pPart are all things which can appear *within* paragraphs. This class is subdivided into
    - model.pPart.edit elements for simple editorial intervention such as <corr>, <del> etc.
    - model.pPart.data'data-like' elements such as <name>, <num>, <date> etc.
    - model.pPart.msdesc extra elements for manuscript description such as <seal> or <origPlace>

Basic Model Class Structure

Simplifying wildly, one may say that the TEI recognises three kinds of element:

- **divisions** high level major divisions of texts
- **chunks** elements such as paragraphs appearing within texts or divisions, but not other chunks
- **phrase-level elements** elements such as highlighted phrases which can occur only within chunks

There are 'base model classes' corresponding with each of these, and also with the following groupings:

- **inter-level elements** elements such as lists which can appear either in or between chunks
- **components** elements which can appear directly within texts or text divisions

And yes, there is a class model.global for elements that can appear *anywhere* inside a text — at any hierarchic level.

Defining our new element <citCom>

What other elements is it like? It's like a paragraph or quotation. It's not a phrase level element, because it must contain more than just unstructured text.

What other elements can contain it? It can only appear within a division, like a paragraph.

What can it contain? It must contain a citation (i.e. a quote optionally associated with a bibliographic reference) or something like that, followed by at least one paragraph of commentary.

Conclusions:

- we make it a member of model.divPart
- we will have to define a special content model for it

Roma: Defining a new element

New | Customize | Language | Modules | Add Elements | Change Classes | Schema | Documentation | Save Customization

go back to list

Defining a new element:

Name citCom

Namespace http://www.example.org/ns/nonTEI

Description contains a citation followed by some commentary on it

Model classes

- [ ] model.addrPart
- [ ] model.addressLike
- [ ] model.applicationLike
- [ ] model.biblLike
- [ ] model.biblPart
- [ ] model.castItemPart
- [ ] model.catDescPart
- [ ] model.choicePart
- [ ] model.common
- [ ] model.dateLike
- [ ] model.dimLike
- [ ] model.div1Like
- [ ] model.div2Like
- [ ] model.div3Like
- [ ] model.div4Like
- [ ] model.div5Like
- [ ] model.div6Like
- [ ] model.div7Like
- [ ] model.divBottom
- [ ] model.divBottomPart
- [ ] model.divGenLike
- [ ] model.divLike
- [x] model.divPart
- [ ] model.divPart.spoken
- [ ] model.divTop
- [ ] model.divTopPart
- [ ] model.divWrapper
- [ ] model.editorialDeclPart
- [ ] model.egLike
- [ ] model.emphLike

Defining a content model

- A typical TEI element defines its content by referencing *classes* of element which it can contain, rather than using specific elements.
- Content models are defined using the RELAXNG vocabulary
- Here are some very common predefined content models:

  macro.paraContent content of paragraphs and similar elements

  macro.limitedContent content of prose elements that are not used for transcription of extant materials

  macro.phraseSeq a sequence of character data and phrase-level elements

  macro.phraseSeq.limited a sequence of character data and those phrase-level elements that are not typically used for transcribing extant documents

  macro.specialPara the content model of elements which either contain a series of component-level elements or else contain a series of phrase-level and

Roma: Defining a new element 2

- [ ] att.pointing
- [ ] att.pointing.group
- [ ] att.ptrLike.form
- [ ] att.ranging
- [ ] att.rdgPart
- [ ] att.segLike
- [ ] att.sourced
- [ ] att.spanning
- [ ] att.tableDecoration
- [ ] att.textCritical
- [ ] att.timed
- [ ] att.transcriptional
- [ ] att.translatable
- [x] att.typed
- [ ] att.xmlspace

Contents User content

```
<content xmlns:rng="http://relaxng.org/ns/structure/1.0">
<rng:ref name="cit">
<rng:oneOrMore>
  <rng:ref name="model.pLike"/>
</rng:oneOrMore>
</content>
```

Save

What did we just do?

We added a new element specification to our ODD, like this:

```
<elementSpec
   ident="citCom"
   ns="http://www.example.org/ns/nonTEI"
   mode="add">
  <desc> contains a citation followed by some commentary on
it.</desc>
  <classes>
   <memberOf key="model.divPart"/>
   <memberOf key="att.typed"/>
  </classes>
  <content>
   <rng:ref name="cit"/>
   <rng:oneOrMore>
    <rng:ref name="model.pLike"/>
   </rng:oneOrMore>
  </content>
</elementSpec>
```

Note that this new element is *not* in the TEI namespace. It belongs to the IPP project only!

Other kinds of constraints

- You can also constrain the content of an element or the value of an attribute to be of a particular *datatype* (for example, to insist that the *@when* attribute of the element <date> contains only a date)
- This can be done by using one of a set of predefined *macros* to define the content. Examples include

  data.word a single word or token
  data.name an XML Name
  data.enumerated a single XML name taken from a documented list
  data.temporal.w3c a W3C date
  data.truthValue a truth value (true/false)
  data.language a human language
  data.sex human or animal sex

- Or you can define a more complex constraint, e.g. using Schematron

Schematron constraints

- An element specification can also contain a <constraintSpec> element which contains rules about its content expressed as ISO Schematron *constraints*

```
<elementSpec ident="div" mod-
ule="teistructure" mode="change"
   xmlns:s="http://purl.oclc.org/dsdl/schematron">
 <constraintSpec ident="cartoon" scheme="isoschematron">
  <constraint>
   <s:assert test="@type='cartoon' and .//tei:graphic">a
cartoon must include a graphic
   </s:assert>
  </constraint>
 </constraintSpec>
</elementSpec>
```

However...

- You can only add such rules by editing your ODD file: Roma doesn't know about them.
- Not all schema languages can implement these constraints.

How to read the Guidelines

http://www.tei-c.org/release/doc/tei-p5-doc/en/html/index-toc.html