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## From eScriptorium to TEI Publisher

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# From eScriptorium to TEI Publisher

Brace your digital scholarly edition!

11/19/21

Hugo Scheithauer, Alix Chagué, Laurent Romary

*Inria*



# Overview - from source documents to scholarly editions

Context: heterogeneous formats at the various stages of a digitisation workflow

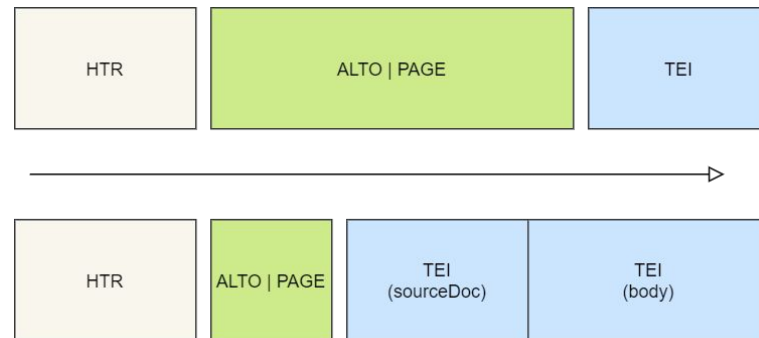
- ALTO/PAGE XML vs. TEI

Objectives:

- Improve reusability of content at various stages
- Hence, easier combination of different software solutions

Results:

- Propagation of metadata elements
- Mapping of layout, transcription information
- Architecture for integrating the content in further editions



## What is eScriptorium?



- An open-source software, developed by the research team Scripta (PSL)
- Provides an interface for:
  - document segmentation,
  - layout annotation,
  - transcribing (manually or automatically),
  - and training OCR/HTR models.



Description

Images

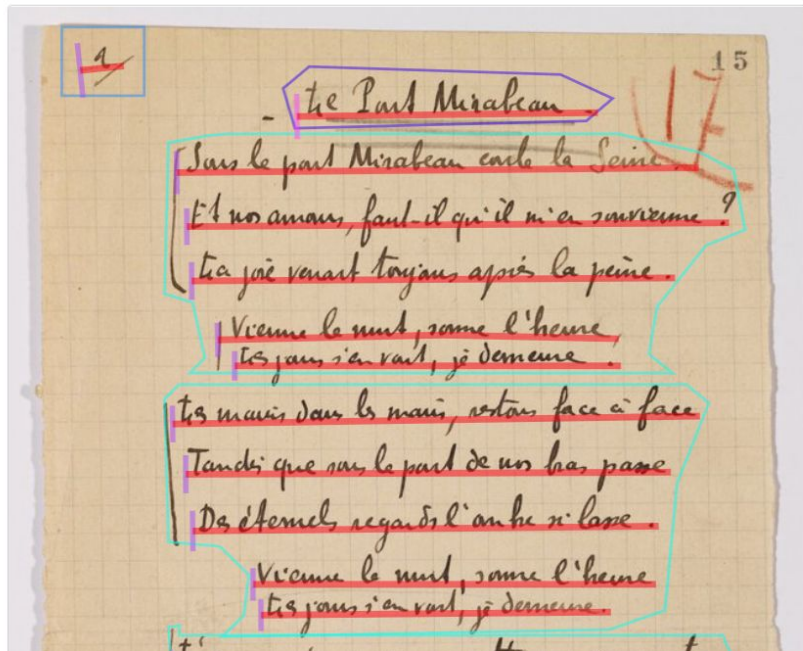
Edit

Models

NAF 28058

Element 1 - 32\_c42c1\_default.jpg - (2312x3469) - 810.3 KB

Zip Import ▾



1

## Le Pont Mirabeau.

Sous le pont Mirabeau coule la Seine.

Et nos amours, faut-il qu'il m'en souvienne ?

La joie venait toujours après la peine.

Vienne la nuit, sonne l'heure,  
Les jours s'en vont, je demeure.

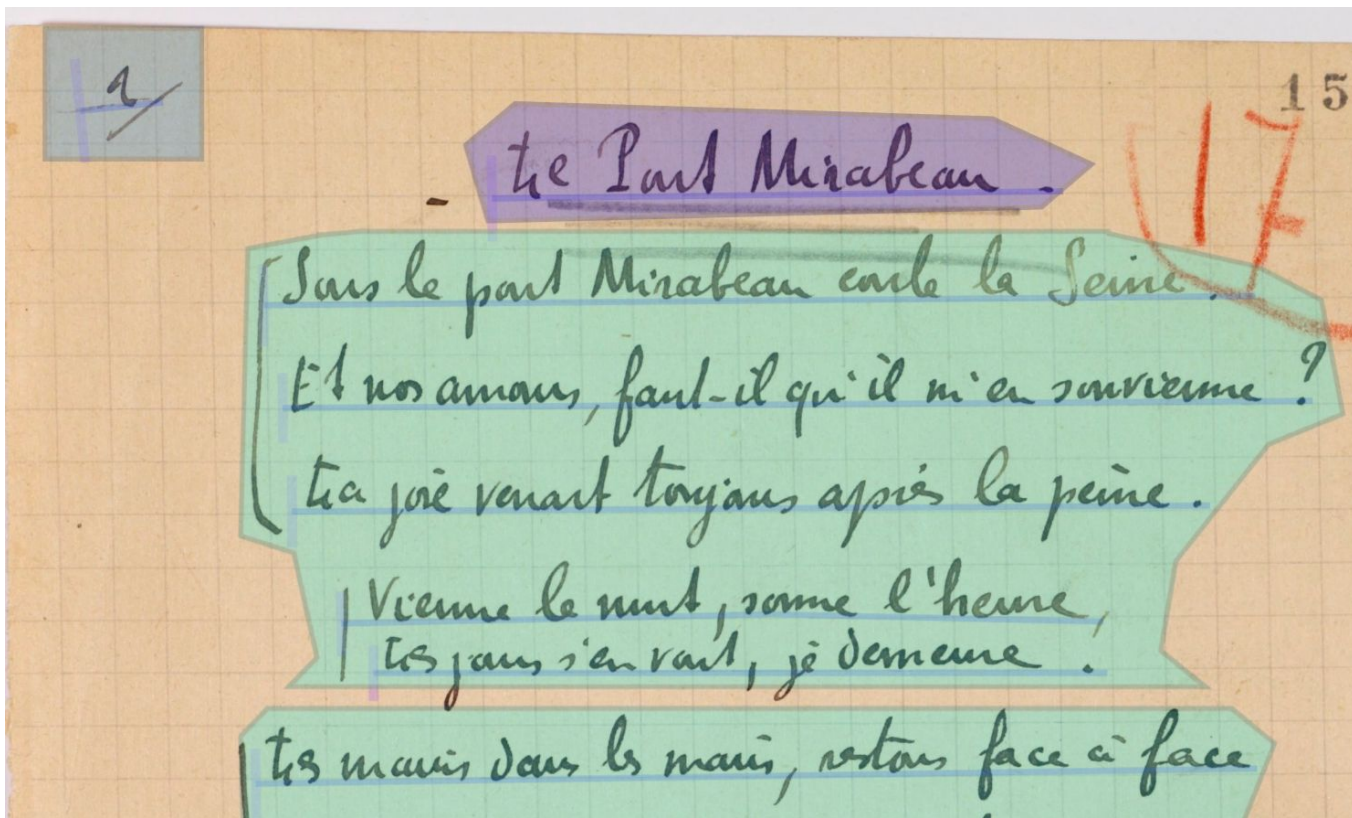
Les mains dans les mains, restons face à face

Tandis que sous le pont de nos bras passe

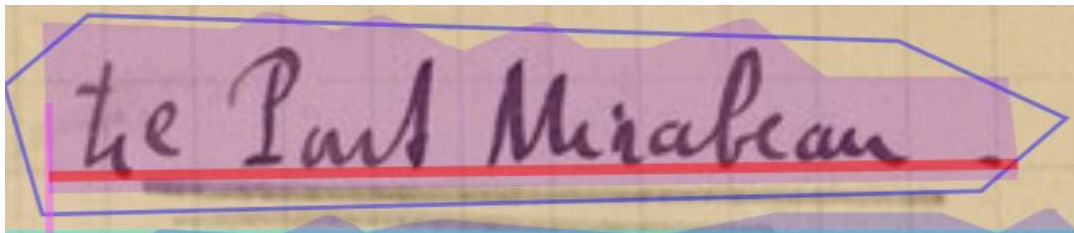
Des éternels regards l'ombre si lasse.

Vienne la nuit, sonne l'heure  
Les jours s'en vont, je demeure.

A page layout can be segmented into one or several **text regions**, each with their own coordinates:



Text lines can be nested in a text region.



A line of text combines:

- A baseline (red) or a topline: a line defined by at least 2 points
- A mask (purple): a polygon defined by at least 3 points
- A text node

eScriptorium currently uses three formats for transcription export:

- PAGE XML
- ALTO
- Raw text





# From page to content

Which TEI representation for HTR output?

# Documenting a transcription: metadata representation with TEI

TEI

(METS XML)

PAGE XML

```
<Metadata>
<Creator>escriptorium</Creator>
<Created>2021-11-17T09:55:48.382300+00:00</Created>
  <LastChange>2021-11-17T09:55:48.382342+00:00</LastChange>
</Metadata>
```

```
<teiHeader>
  <fileDesc>
    <titleStmt>
      <title>32_c42c1_default</title>
    </titleStmt>
    <respStmt>
      <resp>Transcribed with</resp>
      <name>escriptorium</name>
    </respStmt>
  </fileDesc>
  <publicationStmt>
    <p>
      <sourceDesc>
        </sourceDesc>
      </p>
    </publicationStmt>
  </publicationStmt>
  <revisionDesc>
    <change when="2021-11-17T09:55:48.382300+00:00">Creation</change>
    <change when="2021-11-17T09:55:48.382342+00:00">Last change</change>
  </revisionDesc>
</teiHeader>
```

Any metadata missing for documenting an automatic transcription?

→ The transcription model

→ Documenting automatic and manual post-processing, such as correction

→ Information regarding how the transcription was produced

Which TEI representation for the transcription  
itself?

# What does the TEI have to offer for the representation of data resulting from HTR/OCR?

Beyond facsimiles, the **<sourceDoc>** element:

**<sourceDoc>**

**<sourceDoc>** contains a transcription or other representation of a single source document potentially forming part of a *dossier génétique* or collection of sources.

Screenshot from the TEI guidelines for the <sourceDoc> element (<https://www.tei-c.org/release/doc/tei-p5-doc/fr/html/ref-sourceDoc.html>)

## How are we using the <sourceDoc>?

Two key principles:

→ The <sourceDoc> must be the strict transposition of all automatic transcription output elements.

→ All elements in <body> are the user's responsibility and contain their interpretation/editing of the transcription.

Representation of a page with TEI using the  
**<sourceDoc>** element



The PAGE XML <Page> element, with basic metadata, for instance:

```
<Page imageFilename="32_c42c1_default.jpg" imageWidth="2312" imageHeight="3469">
```

becomes a <sourceDoc> element in TEI:

```
<sourceDoc>  
  <graphic url="32_c42c1_default.jpg" width="2312px" height="3469px"/>
```

# PAGE XML and TEI structure of an image content: text regions and baselines

## PAGE XML

```
<TextRegion id="eSc_textblock_dde8b8e9" custom="structure {type:numbering;}">  
  <Coords points="154,59 154,257 392,257 392,59" />  
  <TextLine id="eSc_line_106ba71b" >  
    <Coords points="205,182 199,118 237,118 240,109 251,95 254,95 254,92 254,92" />  
    <Baseline points="207,184 333,171" />  
    <TextEquiv>  
      <Unicode>1</Unicode>  
    </TextEquiv>  
  </TextLine>  
</TextRegion>
```

...

## TEI

```
<surfaceGrp>  
  <surface xml:id="eSc_textblock_dde8b8e9"  
    type="structure_{type:numbering;}"  
    points="154,59 154,257 392,257 392,59">  
    <zone xml:id="eSc_line_106ba71b"  
      type="mask"  
      points="205,182 199,118 237,118 240,109 251,95 254,95"  
      <path type="baseline" points="207,184 333,171" />  
      <line>1</line>  
    </zone>  
  </surface>
```

...

## All TEI elements together:

```
<sourceDoc>
  <graphic url="32_c42c1_default.jpg" width="2312px" height="3469px"/>
  <surfaceGrp>
    <surface xml:id="eSc_textblock_dde8b8e9"
      type="structure_{type:numbering;}"
      points="154,59 154,257 392,257 392,59">
      <zone xml:id="eSc_line_106ba71b"
        type="mask"
        points="205,182 199,118 237,118 240,109 251,95 254,95 254,92 254,92 257,92 257,92 257,92 260,92 260,92 260,92 263,92 324,98 332,170 338,251 211,268">
        <path type="baseline" points="207,184 333,171"/>
        <line>1</line>
      </zone>
    </surface>
    <surface xml:id="eSc_textblock_e94aafae"
      type="structure_{type:line_group;}"
      points="1770,370 1995,420 2093,471 2126,644 2013,690 1872,867 1849,1003 1917,1058 524,1058 567,1014 532,855 451,829 462,393 576,372 633,367 1769,367">
      <zone xml:id="eSc_line_c4880d79"
        type="mask"
        points="486,479 480,358 549,364 549,364 552,364 552,364 552,364 555,364 555,364 555,367 590,401 659,401 700,361 700,358 700,358 700,358 703,358 703,358 703,358 706,358 706,358 708,358 708,358 711,358 711,358 714,358 798,398 891,398 931,364 931,364 934,364 934,364 934,364 937,364 937,364 937,364 940,364 1038,370 1059,361 1079,352 1079,352 1082,352 1082,352 1082,352 1085,352 1085,352 1085,352 1088,352 1088,352 1088,352 1108,361 1116,367 1142,361 1183,355 1183,355 1183,355 1186,355 1296,364 1380,370 1409,364 1484,349 1484,349 1487,349 1629,349 1629,349 1629,349 1632,349 1632,349 1681,367 1681,367 1684,367 1724,346 1724,346 1724,346 1727,346 1727,346 1730,346 1730,346 1730,346 1733,346 1733,346 1733,346 1736,346 1736,346 1736,346 1736,349 1756,367 1776,390 1961,390 1976,370 1993,465 1987,500 1788,482 1655,503 1655,503 1652,503 1652,503 1522,485 972,505 969,505 969,505 969,505 897,491 784,511 784,511 784,511 781,511 781,511 781,511 590,494 486,514">
        <path type="baseline" points="486,479 1993,465"/>
        <line>Sous le pont Mirabeau coule la Seine.</line>
      </zone>
    </surface>
  </surfaceGrp>
  ...

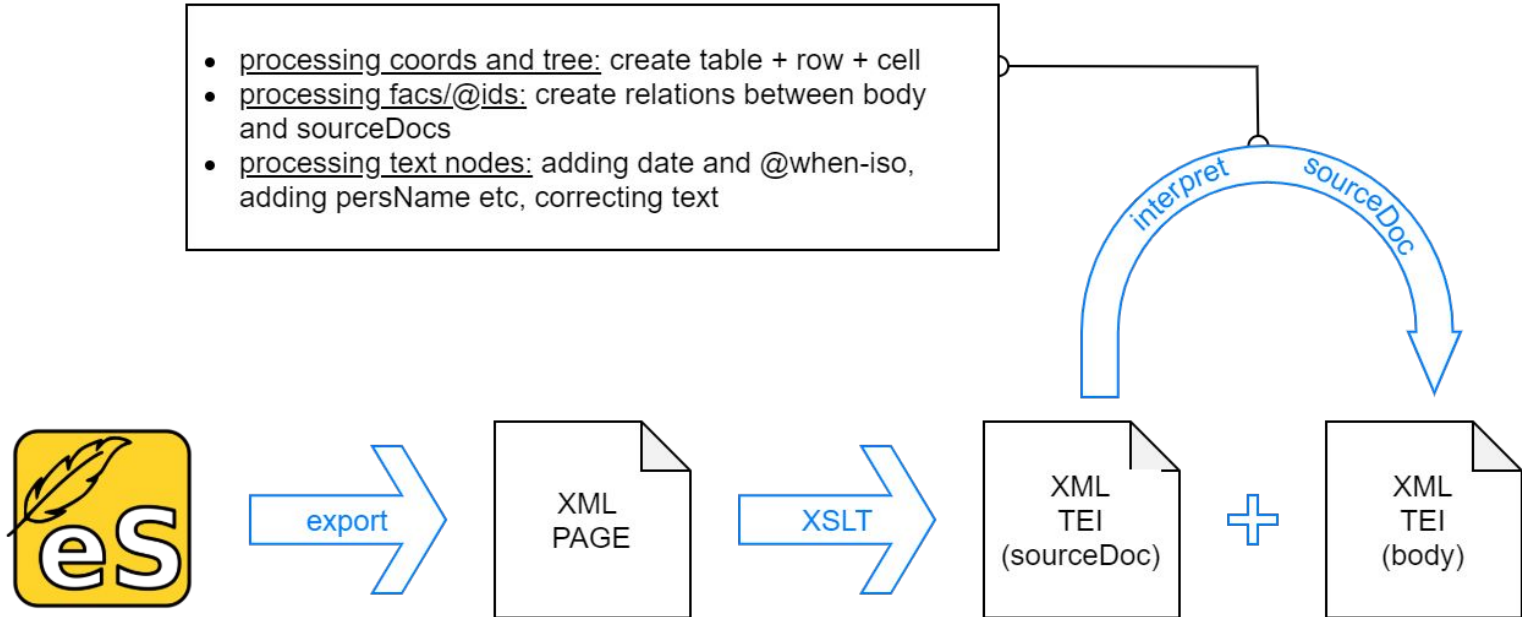
```

## Keeping the link with IIIF image servers?

```
<graphic url="https://gallica.bnf.fr/iiif/ark:/12148/btv1b525056707/f33/full/full/0/native.jpg"  
source="https://gallica.bnf.fr/iiif/ark:/12148/btv1b525056707/manifest.json" width="2312px"  
height="3469px"/>
```

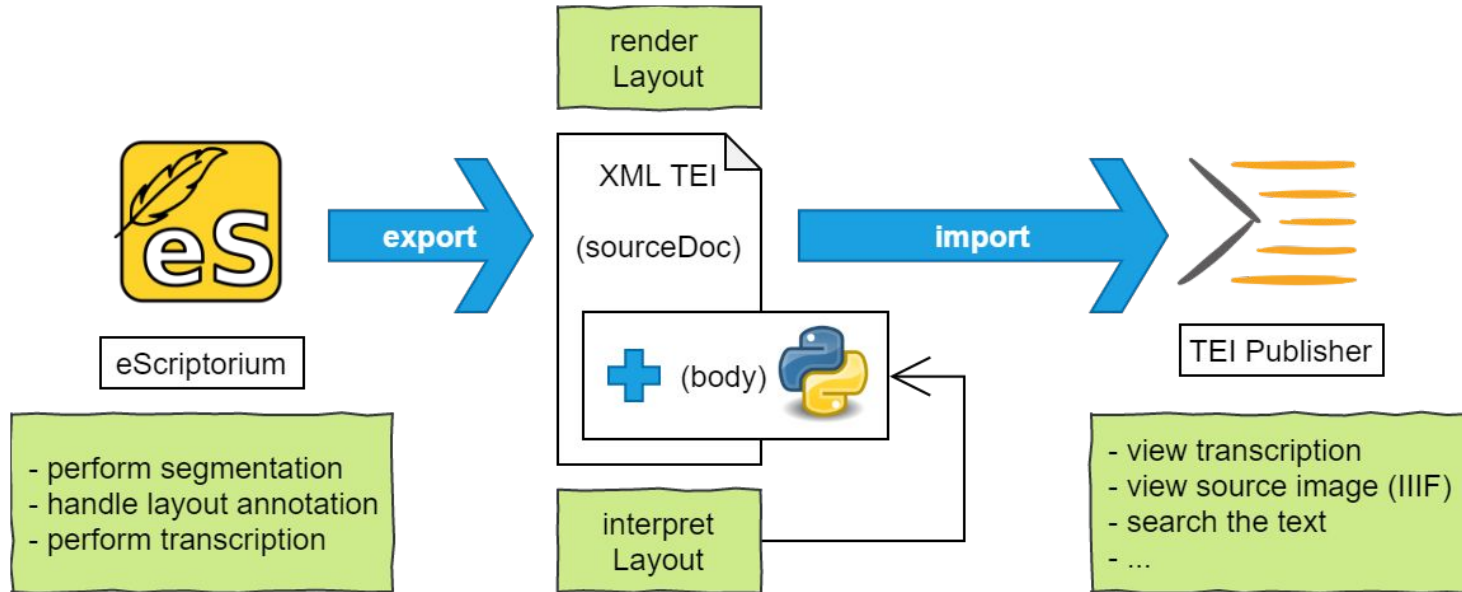
Processing the <sourceDoc>

# Linking interpreted content in the <text> elements with the various components available in <sourceDoc>



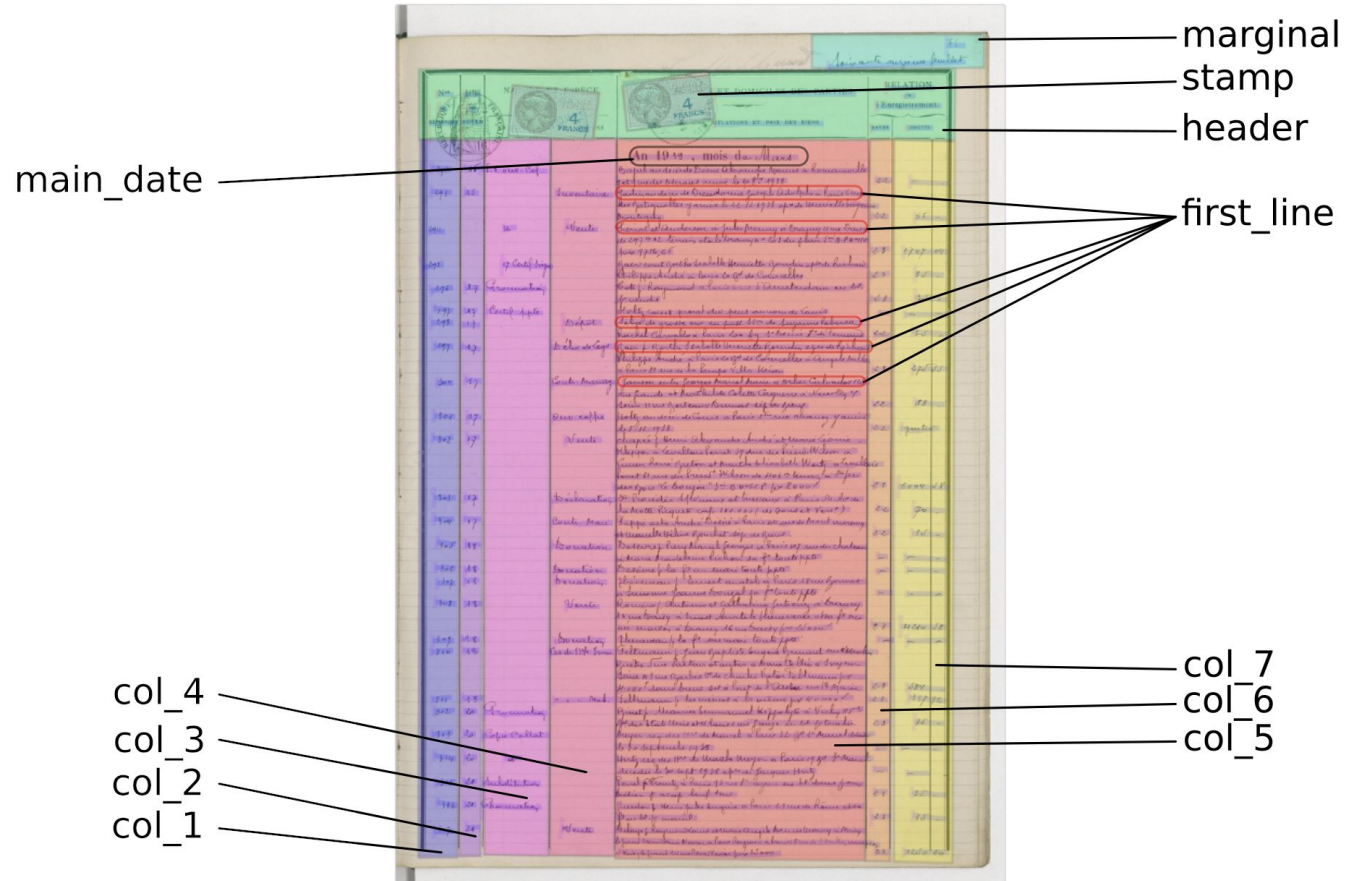
Simplification of the LEPIDEMO workflow

# Linking interpreted content in the <text> elements with the various components available in <sourceDoc>



Simplification of the LEPIDEMO workflow

# A complex layout finely annotated in eScriptorium





# Visualizing the <sourceDoc> and the processed <body> with TEI Publisher

The screenshot displays the TEI Publisher web interface. At the top, there is a dark navigation bar with the following elements: 'Start', 'Télécharger', 'Fonctions avancées', a search bar with the placeholder 'rechercher...' and a magnifying glass icon, 'Langue Français', and a user profile icon with the text 'Connecté en tant que escriptorium\_user'. Below this is a light gray toolbar containing icons for a list, a folder, a refresh button, a magnifying glass, another magnifying glass, and a hamburger menu.

The main content area shows a 'View' dropdown menu set to 'sourceDoc'. The visualization consists of several XML structure blocks, each with a corresponding text box:

- structure\_{type:numbering;}**: A text box containing the number '1'.
- structure\_{type:line\_group;}**: A text box containing the following text:

Sous le pont Mirabeau coule la Seine.  
Et nos amours, faut-il qu'il m'en souviennne ?  
La joie venait toujours après la peine.  
Viennne la nuit, sonne l'heure,  
Les jours s'en vont, je demeure.
- structure\_{type:title;}**: A text box containing the text 'Le Pont Mirabeau.'
- structure\_{type:line\_group;}**: A text box containing the following text:

Les mains dans les mains, restons face à face  
Tandis que sous le pont de nos bras passe  
Des éternels regards l'ombre si lasse.  
Viennne la nuit, sonne l'heure  
Les jours s'en vont, je demeure.
- structure\_{type:line\_group;}**: A text box containing the following text:

L'amour s'en va comme cette eau courante  
L'amour s'en va. comme la vie est lente



## FRAN\_0025\_3056\_L-0.tei

View

sourceDoc

Unable to open [object Object]: HTTP 404 attempting to load TileSource

**structure\_{type:col\_1;}**

198  
199  
200  
201  
202  
203  
204  
205  
206  
207  
208  
209  
210  
211  
212  
213  
214  
215  
216

**structure\_{type:col\_3;}**

Procuration  
Autorisation  
Certificat de ppté



## FRAN\_0025\_3056\_L-0.tei

View

sourceDoc

**structure\_{type:col\_3;}**

Procuration  
Autorisation  
Certificat de ppté  
Procuration  
Mainlevée  
de signification

**structure\_{type:col\_5;}**

An 1914, mois d Fevrier  
à Paris 34 rueSedaine  
Lamour (par Jn Bte) employé à laCaserne de laGde Républicaine  
à Paris rue St- Etienne du Mont en blanc pour recueillir Sson  
Boettcher (par Henry Emile) Ingr Conseil à Paris 39 Bd St. Martin  
à Léontine Jeanne Blanchot safe dt avec lui pour gérer Comce-  
Boileau-Descombres (parlaSté) à Paris 73 rue Lafayette d'inscn. cf  
Sophie Marie Louise Dessoliers épse de Edouard Lavelaine de Maubeuge  
Gront (par Jean Eugène André) Directr d'usine à Bobigny route des  
Petits Ponts à André Valern Fortin indel à Paris 34 rueSedaine  
Valter (par Léon) imprimr à Paris rue Grange aux Belles d'ins.  
c/ Jean Louis Perréal à Montigny leBretenneux (S. & O.)  
Billema (par Lucien) négt dt à Paris rue d'Aumale 13bis// d'insc.  
c/ Edouard Eugène Lebourcq & Eugène Pauline Potel 104 r. St Maur  
Kopenhague (par Andrée Esther Eugénie) à Neuilly s/ S. 14 rue  
St- Pierre à Augustine Marie Bonchot rentière à Paris 41 rue  
de Maubeuge de 26000 f. - remboursable le 9 février 1920. hvp. s/

Unable to open [object Object]: HTTP 404 attempting to  
load TileSource

## Processing <sourceDoc> to create an interpreted content in <body>

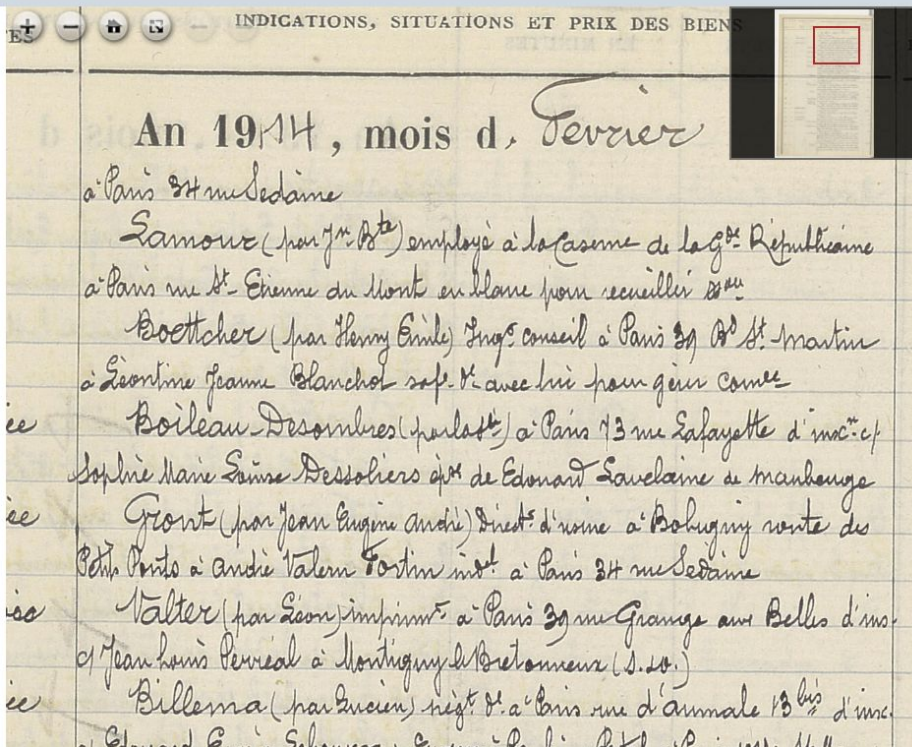
- processing coordinates and sourceDoc
  - create table, row and cell in body
- processing facs and ids:
  - create relations between sourceDoc and body//cell
- processing text nodes:
  - add annotation layer (when-iso to dates, persName, etc)
  - correct the text

```
<row>
  <cell n="1" role="col1">
    <lb facs="#eSc_line_e24d89c4"/> 440 </cell>
  <cell n="2" role="col2">
    <lb facs="#eSc_line_eb98aedd"/>
    <date cert="high" when-iso="1875-05-28,1875-06-28"> 28 </date>
  </cell>
  <cell n="3" role="col3">
    <lb facs="#eSc_line_a42fbb0d"/> Suite du 8 juillet 1869 </cell>
  <cell n="4" role="col4">
    <lb facs="#eSc_line_58d48f3d"/> Dépôt </cell>
  <cell n="5" role="col5">
    <lb facs="#eSc_line_f60606c2" n="1"/> An 1875 mois de Mai
    <lb facs="#eSc_line_3fc0d6ed" n="2"/> Chemins de fer Normands
    (de pièces de publications de délibérations </cell>
  <cell n="6" role="col6">
    <lb facs="#eSc_line_f6960fc1"/>
    <date cert="high" when-iso="1875-05-29,1875-06-29"> 29 </date>
  </cell>
  <cell n="7" role="col7"/>
  <cell n="8" role="misc"/>
</row>
```



FRAN\_0025\_3056\_L-0-tei

Numéros du répertoire	Dates des actes	Actes en brevets	Actes en minutes	Noms, prénoms et domiciles des parties ; indication, situations et prix des biens	Date de l'enregistrement	Droits de l'enregistrement	Autres
198	9	Procuration		Lamour (par Jn Bte) employé à la Caserne de la Gde Républicaine à Paris rue St-Etienne du Mont en blanc pour recueillir Sson  Boettcher (par Henry Emile) Ingr Conseil à	10	3.75	



# Conclusion

- All elements from PAGE XML and ALTO files can be mapped to a <sourceDoc> element
- Switching to TEI earlier in the pipeline simplifies the workflow. It ensures that data resulting from OCR/HTR are documented and easily accessible with an edition software such as TEI Publisher.
- We present a proof of concept and a series of rather stable specifications and call for feedback from the community

Thank you for your attention, feedback is welcome and appreciated!

### **Contacts:**

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- laurent.romary[at]inria.fr

### **Resources:**

- <https://github.com/lectaurep/page2tei> (XSLT PAGEXML to TEI and transformation exemples)
- <https://github.com/lectaurep/lepidemo> (LECTAUREP project pipeline for transforming PAGE XML files to TEI, and publishing them with TEI Publisher)