

# An accessible and transparent pipeline for publishing historical egodocuments

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# An accessible and transparent pipeline for publishing historical egodocuments

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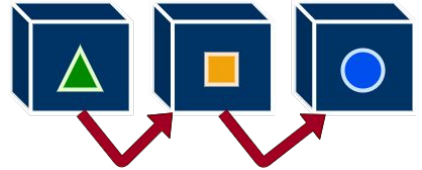
What's Past is Prologue : The NewsEye International Conference  
17 March 2021

DAHN Project  
Alix Chagué - Floriane Chiffoleau  
Research and Development Engineers at Inria



# WHY A PIPELINE ?

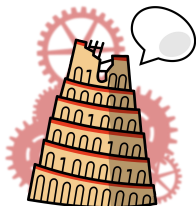
- ❖ Black box:
  - does everything we want; but no interception of the data, no customization;
- ❖ Scattered toolbox:
  - risk of obsolescence and discontinuity; portability of data not guaranteed;
- ❖ Pipeline:
  - clear steps, compatible softwares, extensive documentation
  - data integrity, user in control



# THE DAHN PROJECT

*“Dispositif de soutien à l'Archivistique et aux Humanités Numériques”*

- ❖ Members: Inria + EHESS + University of Le Mans | MESRI;
- ❖ Scientific digital edition program for archival corpus;
- ❖ Goal: facilitate the digitization of data extracted from archival collections and their dissemination to the public in the form of digital documents and/or as online editions
- ❖ ALMANACH in charge of developing and/or enhancing the tools that are part of the pipeline.

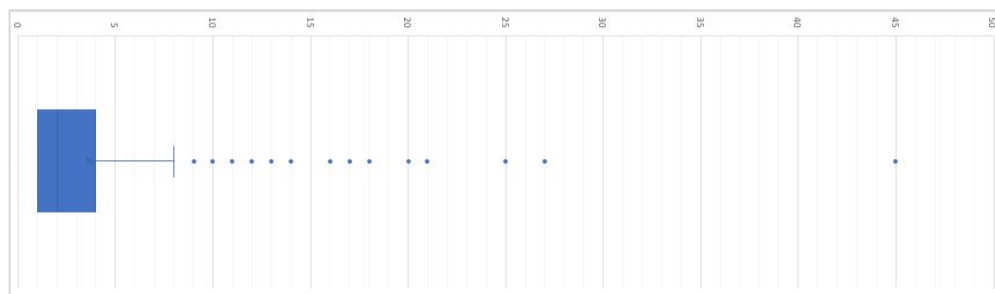


# THE CORPUS: PAUL D'ESTOURNELLES DE CONSTANT CORRESPONDENCE

- ❖ The context:
  - War reports
  - Exchange of opinions between two pacifists
- ❖ The corpus, a perfect test subject:
  - Typewritten documents: easier OCR, no HTR, faster work
  - Voluminous corpus: 1500 letters, 430 from the war period alone (from April 15, 1914 to November 19, 1918), one-to-several tens pages



The sender:  
Paul d'Estournelles  
de Constant



Distribution of pages per letter

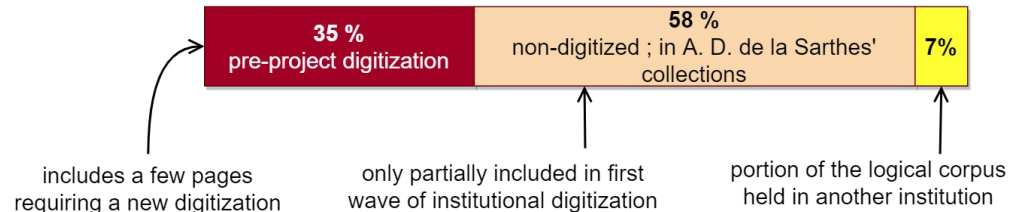
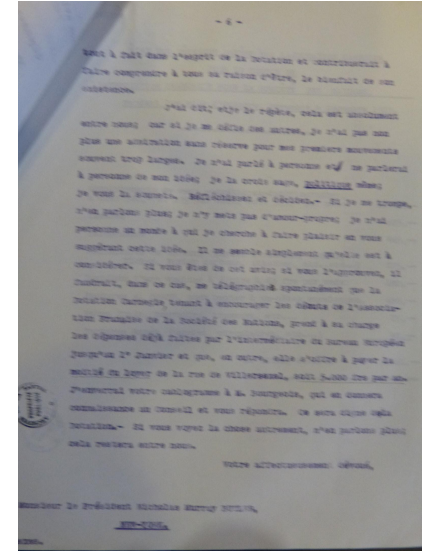
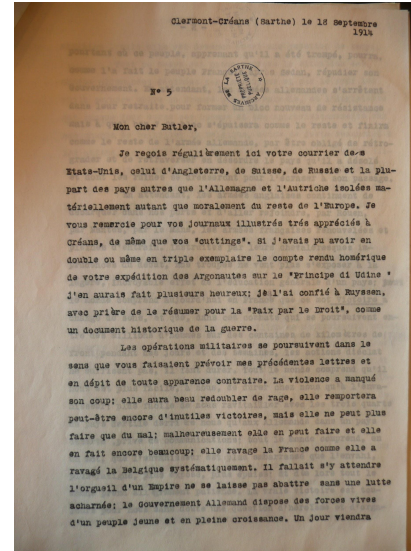


The recipient:  
Nicholas Murray  
Butler

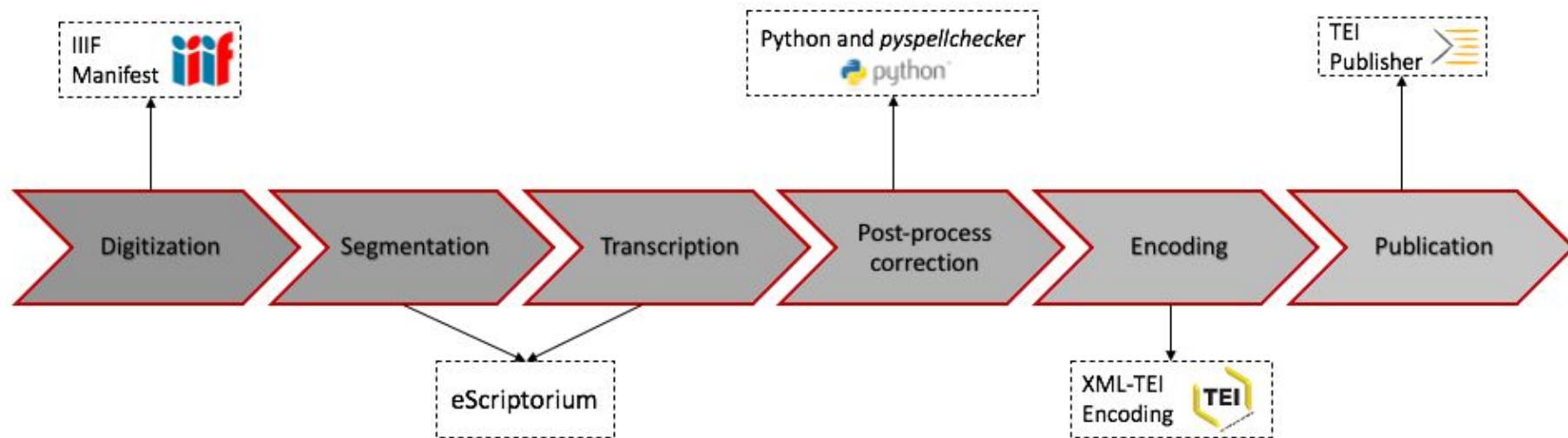
# THE CORPUS: DIGITIZATION OF THE CORRESPONDENCE

An heterogeneous corpus of digitizations:

- ❖ Manual photo shooting of the corpus, by a researcher of the project, prior to its creation: medium quality images, case of blurred lines, cropped images and/or incomplete pages
- ❖ Institutional and exhaustive digitization campaign with proper material by the institution where the corpus is kept: high quality images

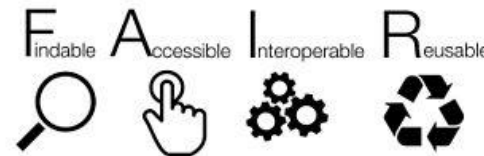
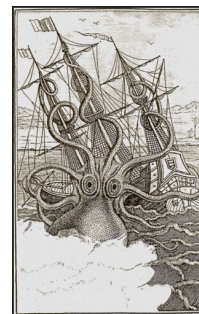


# THE PIPELINE



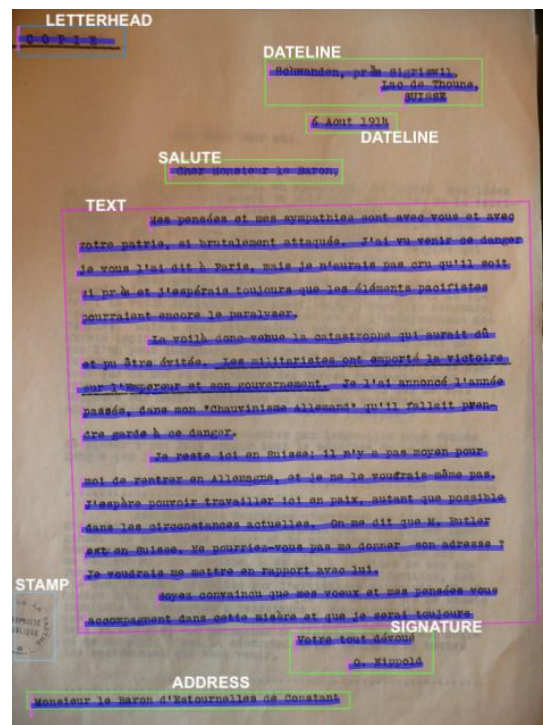
# THE OCR ENGINE: A CAPSTONE

- ❖ Powered by eScriptorium and Kraken
  - eScriptorium: web interface for collaborative and automatic transcription projects;
  - Historical ties between ALMAAnaCH and SCRIPTA PSL (project team behind eScriptorium);
  - Intuitive platform and user-friendly on multiple features;
  - Entirely open-source and up-to-date formats;
- ❖ Guiding principles:
  - Every step of the pipeline relies on open-source software or services;
  - Compliance with the FAIR principles.



# THE PIPELINE STEP BY STEP: SEGMENTATION

- ❖ Segmentation and layout annotation with a system of lines and zones tagging coupled with an ontology;
- ❖ Possible to build your own modelization and pass it on to a model;
- ❖ Integration of the TEI framework early-on;
- ❖ Participation of few members of the DAHN project in [SegmOnto](https://github.com/SegmOnto), a working group aiming at creating a general TEI-based ontology for HTR projects.



Example of an image annotated for Segmonto

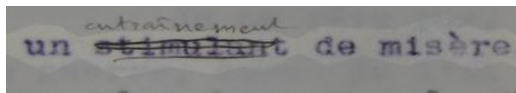
# THE PIPELINE STEP BY STEP: TRANSCRIPTION

## ❖ Training of a transcription model

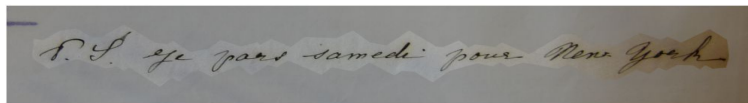
- Ground truth for the first model: 84 pages (10 letters) → not efficient enough
- Construction of a dataset more representative: focus on specific parts of text (capital letters, numbers, narrow text) - about 100 of additional pages → 92,74% accuracy
- Fine-tuning a pre-existing model (“tapuscorpus”, trained on varied typewritten docs): resulting model potentially more capable of generalization → 93,90% accuracy

## ❖ A model capable to render meaningful formatting of the text:

- Handwritten annotation → no recognition required, a double ‘££’ for every handwritten word
- Deletions → a ‘€’ at the start of the deletion and at the end, even if when spanning over several words



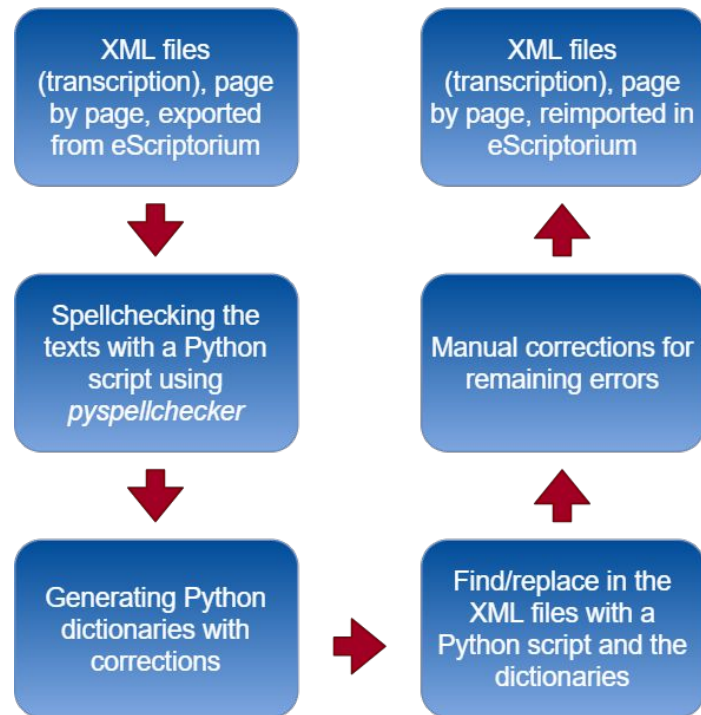
un €stimulant€ de misè



££ ££ ££ ££ ££ ££ ££

# THE PIPELINE STEP BY STEP: POST-PROCESS CORRECTIONS

- ❖ Export/import with eScriptorium
- ❖ Spell-checking:
  - Python script and *pyspellchecker* module
  - Generation of Python dictionaries for correction
- ❖ Correction of texts
  - Python script and find/replace
  - Manual correction of remaining errors
- ❖ Goal → implementation of this method in the eScriptorium API



# THE PIPELINE STEP BY STEP: ENCODING

## ❖ Header

- General encoding of the header, with manuscript description for the corpus
- Correspondence data in the <profileDesc>

## ❖ Body

- Default text structure (titles, paragraphs), changes in text (addition and deletion), difficulties of the corpus (unclear, gaps) and named entities (person, place, organization)
- Correspondence part:
  - Easy tags (opener, closer, address, signatures, etc.)
  - Assistance available for difficult tags: TEI mailing-list, [Correspondence Special Interest Group](#)

## ❖ Helping tools for the encoding

- Script for the encoding of metadata in the header, using an inventory with essential information
- Script for the encoding of the body, using regular expressions

# THE PIPELINE STEP BY STEP: PUBLICATION



## TEI Publisher

- From exist-db, an open source software project for databases built on XML technology
- Transformation files (ODD) and templates (HTML)
- Presentation by collections

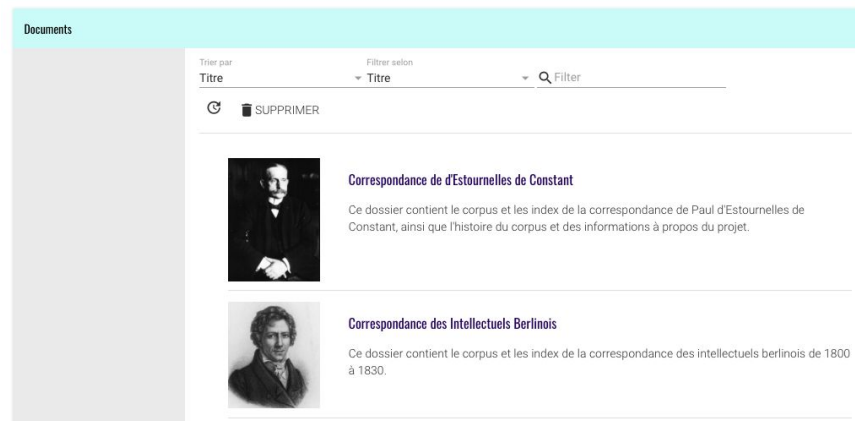


## Application for ego documents

- Text and image opposed
- Metadata available with a specific button
- ODD containing all the tags related to ego documents
- One corpus = one collection



### Collection de corpus d'égodocuments



# FAVORING THE USE OF THE PIPELINE: DOCUMENTATION

- ❖ Initial documentation provided with the software, standards and framework
- ❖ Self-produced documentation
  - Comprehensive series of guidelines for the encoding of ego documents (ODD)
  - Jupyter notebooks and markdown files commenting the use of Python scripts (encoding and correction)
  - Provision of the data from the steps of the pipeline on the dedicated repository

# GENERALIZATION AND MODULARITY

- ❖ Corpus of the Berlin intellectuals, correspondence of the start of the 19th century
  - Modularity: Plug data in without following the pipeline from the beginning
  - Generalization: No limit of space and time for the encoding and publication
- ❖ Sustainability
  - Dissemination of the data in useful formats
  - Ground truth available in HTR-United



# TO CONCLUDE: KEY TAKEAWAYS

- ❖ Scenario fully documented and based on open-source and standards to avoid blackbox and/or scattered toolbox
- ❖ Adaptability of the input and output formats of softwares
- ❖ Prerequisites to use the pipeline:
  - Digitized images
  - A transcription system such as eScriptorium/Kraken
  - A TEI modelisation of the structure of your documents
  - A server to deploy a TEI Publisher application

# THANK YOU FOR YOUR ATTENTION

## CONTACTS

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## LINKS

Repository of the project: <https://github.com/FloChiff/DAHNPProject>

eScriptorium: <http://traces6.paris.inria.fr/>