Wake up, standOff!

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Wake up, standOff!

Piotr Banski, Bertrand Gaiffe, Patrice Lopez, Simon Meoni, Laurent Romary, Thomas Schmidt, Peter Stadler, Andreas Witt
And special thanks to Luca Foppiano and Charles Riondet
Overview

• The way towards a <standOff> element in the TEI architecture
  – Relation to ISO 24624 Transcription of Spoken Language
• Implementation issues
  – Reflecting the open annotation model
  – Open cans of worms (header, annotation body)
• Whither <standOff>?
The simple picture

**Inline annotation:**
Intertwined with the source text

**Stand off annotation:**
Source text is referenced from outside

**Embedded stand off annotation:**
Stand off annotations attached to the same document as the source
Why embedded stand-off annotation?

• Each time the source document is seen as the reference organisational unit
  – Corpus management
  – Transmission workflow
  – Multiple annotation layers
  – Competing annotations
    • E.g. Manual vs. automatic annotation
Standoff: A long-standing issue

- The idea of standoff annotation is not new in general
  - Thompson & McKelvie, 1997
- Standoff annotation has been a core concept in the TEI guidelines since the beginning
  - Cf. Chapter: Linking, Segmentation, and Alignment
  - Availability of <anchor>, <span>, <interp>, <link>, @ana
- But: not integrated in the TEI architecture
  - Stand-off elements can appear anywhere in a TEI document
  - Usual trade-off between on-site vs. grouping (<back>)
- The NLP community has also developed its own means
  - GraF (Ide & Suderman 2007), Paula (Zeldes et al. 2009), etc.

- Need for a proper, and inclusive, treatment of standoff annotations in the TEI
  - Better integration, more guidance
Embedded standoff: Basic concept

• Building up an autonomous document containing primary source and additional annotations
  – Annotations are conveyed with their specific meta-data
  – Annotations have their specific place in the TEI document architecture
  – Standoff annotations may be recursively organized
  – Standoff annotations may point to textual as well as facsimile content
  – Well-defined elementary annotation units
  – Coherence with existing models (Open Annotation, ISO TC 37) should be ensured

• Typical use-cases
  – Annotated corpora
    • Treebanks
  – Text mining
    • Named entity recognition, keyword/terms extraction
  – Human annotations on a document
    • critical editions, patent examination, peer review...

• Strong relation with interlinear annotation
Timeline

- August 2012: new tickets by Javier Pose (EPO)
- January 2014: Workshop in Berlin
  - Draft of a first proposal
  - Setting-up a github environment
- 2012-2016: ISO 24624 project (Editor: Thomas Schmidt)
  - Need for an annotation grouping component (<annotationBlock>)
- May 2015: Council meeting in Ann Arbor
  - Several updates to the proposal
  - Stabilisation of element names
- March 2016: TEI release 6.0.0
  - New element <annotationBlock> for interlinear annotation
- August 2016: publication of ISO 24624 Transcription of Spoken Language
Annotations in TEI: `<standOff>`

Recursive construct: allows the organisation of annotations per method, annotator, campaign

Meta-data related to the annotation, such as annotator, revisions of the annotations, availability

<div>-like component for structuring complex series of annotations

Elementary annotation unit
Application: interlinear annotation

• Encoding interlinear annotation as inline content (in <text>)

```xml
<annotationBlock who="#SPK0" start="#T9" end="#T12" xml:id="au1">
  <u xml:id="u1">
    <seg xml:id="seg45" type="utterance" subtype="declarative">
      <w xml:id="w43">Nee</w> <pc xml:id="pc3">, </pc> <w xml:id="w44">hab</w> <w xml:id="w45">kein</w> <w xml:id="w46">Führerschein</w>
    </seg>
  </u>
  <spanGrp type="en">
    <span from="#T9" to="#T12">No, I don't have a driver's license.</span>
  </spanGrp>
  <spanGrp type="pos">*
    <span from="#w43" to="#w43">NE</span>
    <span from="#pc3" to="#pc3">$</span>
    <span from="#w44" to="#w44">VAIMP</span>
    <span from="#w45" to="#w45">PIAT</span>
    <span from="#w46" to="#w46">NN</span>
  </spanGrp>
</annotationBlock>
```

ISO 24624 - Transcription of Spoken Language, implementation in EXMARAlda
Standoff interlinear annotation

• Encoding interlinear annotation as stand-off markup
  – In <standOff>
    <annotationBlock inst="#u1">
      <spanGrp xmlns="http://www.tei-c.org/ns/1.0" type="en">
        <span from="#T9" to="#T12">No, I don't have a driver's license.</span>
      </spanGrp>
      <spanGrp xmlns="http://www.tei-c.org/ns/1.0" type="pos">
        <span from="#w43" to="#w43">NE</span>
        <span from="#pc3" to="#pc3">$</span>
        <span from="#w44" to="#w44">VAIMP</span>
        <span from="#w45" to="#w45">PIAT</span>
        <span from="#w46" to="#w46">NN</span>
      </spanGrp>
    </annotationBlock>
  – In <body>
    <u xml:id="u1" who="#SPK0" start="#T9" end="#T12">
      <seg xml:id="seg45" type="utterance" subtype="declarative">
        <w xml:id="w43">Nee</w> <pc xml:id="pc3">,</pc>
        <w xml:id="w44">hab</w> <w xml:id="w45">kein</w> <w xml:id="w46">Führerschein</w>
      </seg></u>
Going further: mapping the Open Annotation model

Any TEI object (with @xml:id) or <surface>

<bibl>, <person>, <place>, <fs>, <note>, <body>, MAF, SynAF

<interp type="" inst="" ana="">

<span type="" from="" to="">
<zone type="" corresp="#_theSurface" ulx="1253" uly="802" lrx="22" lry="29"/>

0..n

1..n
Going deeper into `<standOff>`
Systematizing the use of `<span>` and `<interp>` in `<annotationBlock>`

- `<span>`
  - Close semantic to the notion of `target` in the OA model
  - Identifies a markable within the full-text of the document
  - Requires a precise guidance concerning pointing options
  - Kind-of business as usual

- `<interp>`
  - Extended usage
  - `@type`: provides the type of the annotation
    - Cf. `@type` on the parent standOff element
  - `@resp`: the entity who is responsible for this annotation
  - `@inst`: lists the components (span or surface) to be annotated
  - `@ana`: points to annotation content (body in OA speak)
Prototypical example

Dates in a named entity recognition context

<annotationBlock>
  <date xml:id="E4N1" from="1944-08-17" to="1944-08-25">
    17 - 25 août 1944</date>
  <interp ana="#E4N1" inst="#d1e173"/>
  <span xml:id="d1e173" from="#E4T6" to="#E4T10"/>
</annotationBlock>

Great advantage on readiness and programmatic treatment
Example from the ANR Termith project

<annotationBlock>
  <fs>
    <f name="lemma"><string>corpus</string></f>
    <f name="pos"><symbol value="NOM"/></f>
  </fs>
  <interp/>
  <span target="#t1"/>
</annotationBlock>
Can we make the model more implicit?

<annotationBlock inst="#t1">
  <fs>
    <f name="lemma"><string>corpus</string></f>
    <f name="pos"><symbol value="NOM"/></f>
  </fs>
</annotationBlock>

- Closer to the speech transcription version
- Risks:
  - Loosing the link with the OA model (hindrance to automation)
  - Allowing all types of possible (creative) encodings
Issues (many)

• Which header do we need?
  – Standoff annotation usually requires very restricted meta-data
  – If we adopt the TEI header, we need to make it more flexible...
    • Should we have a convergence with biblFull (where profileDesc is missed, BTW, SF:533, deeply ambered)
  – Stand-off annotations may be generated by humans and machines
    • how to put <author> (editionStmt) and <appInfo> (encodingDesc) at the same place?

• How do we provide guidance concerning annotations?
  – Mapping the OA model to precise TEI constructs?
  – Allowing a wide variety of possible vocabularies depending on the use case?
    • TBX entries, MathML, full-text annotation (<body>?)
  – Aligning with the various ISO standards: MAF, SynAF and SemAF series
Leaving dust under the carpet for today: pointing mechanisms

1. Offset based mechanism: *string-range(…)*
   
   – not stable in case the original text is modified. The annotation needs to be rebuilt

2. word tokenisation `<p><w>.</w><w>,</w></p>`
   
   – may generate an insane amount of data

3. `<span xml:id="s1" to="#a1"/> + <anchor xml:id="a1"/>`

   Example:

   `<p>....
   <span to="#a2"/><span to="#a1"/>le petit chat<anchor xml:id="a1"/> est mort <anchor xml:id="a2"/>...
   </p>`

   – what about the purity of the source text?
Next steps

• Finalising the content model of `<annotationBlock>`
  – Completely open model?
  – Constrained with specific model classes? (OA)
  – Alternation between the two (or more) options

• Gathering reference example from existing implementations
  – Istex, Termith, EPO, IDS

• Finalising the graft in the guidelines
  – Section in chapter 16 Linking, Segmentation, and Alignment?

• Don’t give up the fight...
MERCI !