# Introduction to XML and TEI

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# What is XML?

- XML is a metalanguage (a language about markup languages).
- It is also a formal model that represents texts in an ordered hierarchy. We think and write with hierarchical structures, and XML is a practical attempt to formalise and represent documents in a machine-readable language.
- Computers can operate more quickly and efficiently on trees (ordered hierarchies) than they can on nonhierarchical (flat) documents. Large amounts of data can be managed and transformed efficiently if a document is modelled as a tree.
- An ordered hierarchical content object (OHCO): The hierarchy imposed on documents depends on the state of surviving documents as well as one's research questions. The same document can be encoded in more than one hierarchical (or non-hierarchical, for that matter) structure.

# What is the difference between XML and TEI?

- The XML specification details the rules for the language (e.g. that elements are delineated with angle brackets)
- There are hundreds of other vocabularies of XML in every domain of knowledge you might imagine.
- Journal publishing uses JATS XML, ebooks use BITS XML, e.g.
- There is even a BeerXML standard.
- The TEI Guidelines recommend a specific vocabulary (e.g. the names of elements and attributes) and structure.

# Example: A play encoded in TEI XML

SCENE I. *On a ship at sea ; a tempestuous noise of thunder and lightning heard.*

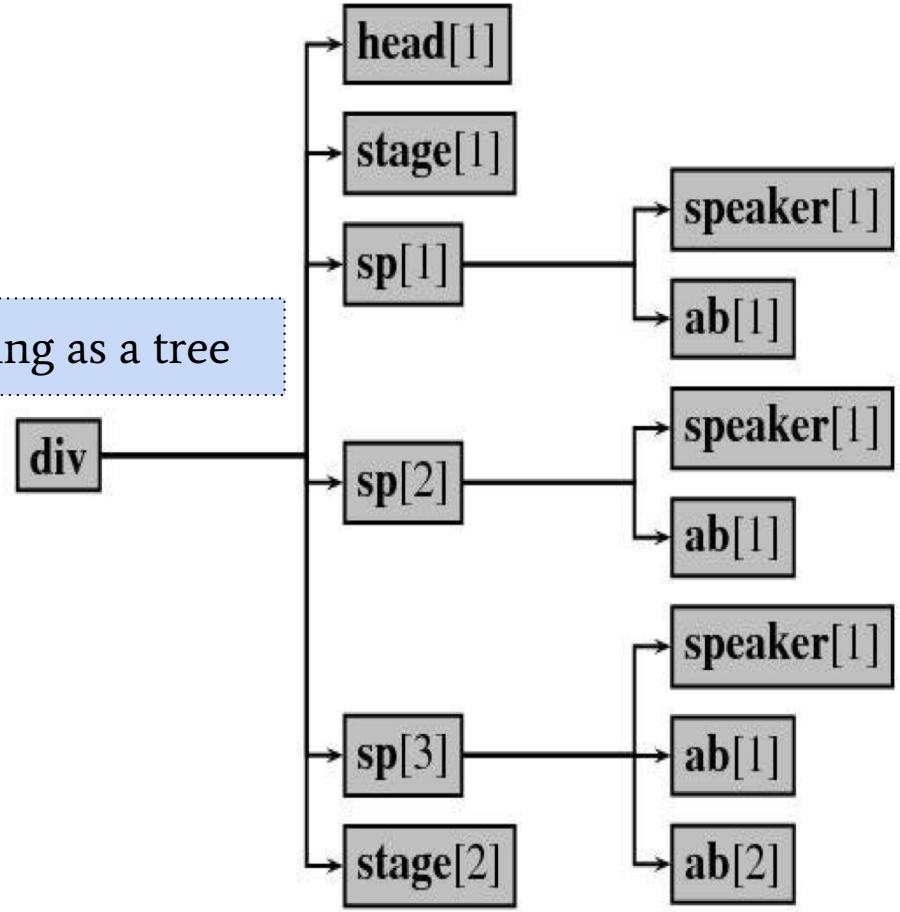
*Enter a* Shipmaster *and a* Boatswain.

*Master.* Boatswain !
*Boats.* Here, master ; what cheer ?
*Master.* Good ! Speak to th' mariners ; fall to 't yarely, or we run ourselves aground ; bestir, bestir. [*Exit.*

```
<div n="1.1">
    <head>
        SCENE I. On a ship at sea: a tempestuous
        noise of thunder and lightning heard.
    </head>
    <stage>Enter a Master and a Boatswain</stage>
    <sp who="#master">
        <speaker>Master</speaker>
        <ab>Boatswain!</ab>
    </sp>
    <sp who="#boatswain">
        <speaker>Boatswain</speaker>
        <ab>Here, master: what cheer?</ab>
    </sp>
    <sp who="#master">
        <speaker>Master</speaker>
        <ab>Good, speak to the mariners: fall to't,
            yarely,</ab>
        <ab>or we run ourselves aground: bestir,
            bestir.</ab>
    </sp>
    <stage>Exit</stage>
</div>
```

```xml
<div n="1.1">
    <head>
        SCENE I. On a ship at sea: a tempestuous
        noise of thunder and lightning heard.
    </head>
    <stage>Enter a Master and a Boatswain</stage>
    <sp who="#master">
        <speaker>Master</speaker>
        <ab>Boatswain!</ab>
    </sp>
    <sp who="#boatswain">
        <speaker>Boatswain</speaker>
        <ab>Here, master: what cheer?</ab>
    </sp>
    <sp who="#master">
        <speaker>Master</speaker>
        <ab>Good, speak to the mariners: fall to't,
            yarely,</ab>
        <ab>or we run ourselves aground: bestir,
            bestir.</ab>
    </sp>
    <stage>Exit</stage>
</div>
```

Simplified rendering as a tree

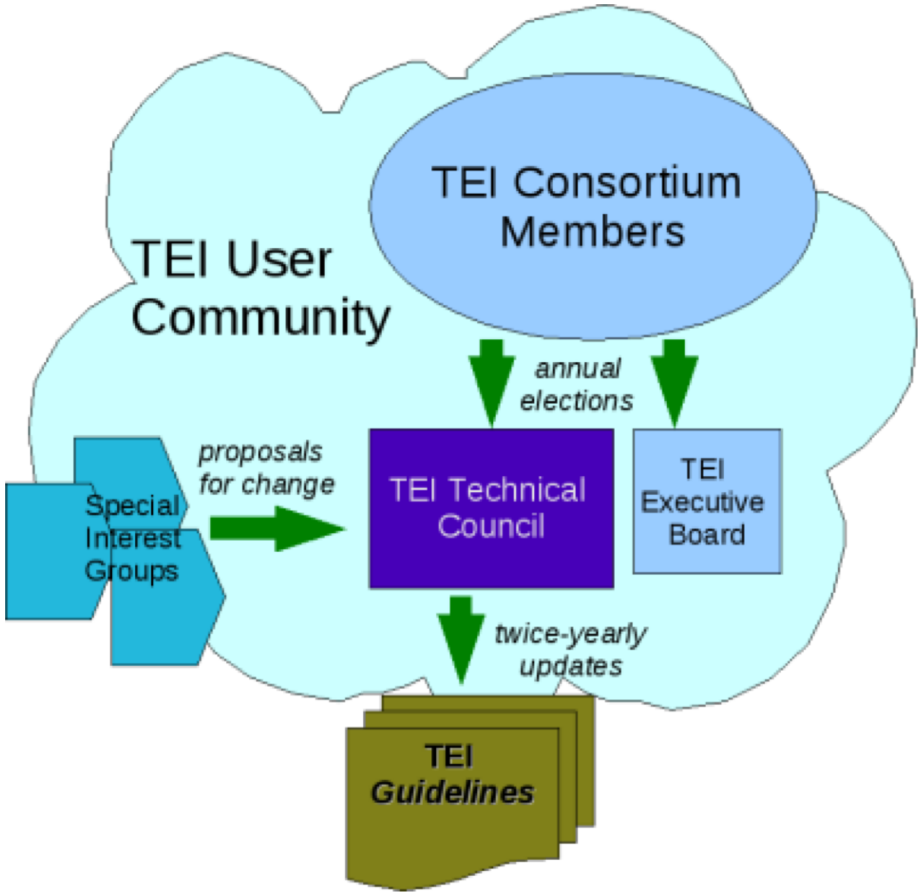


# What is the TEI?

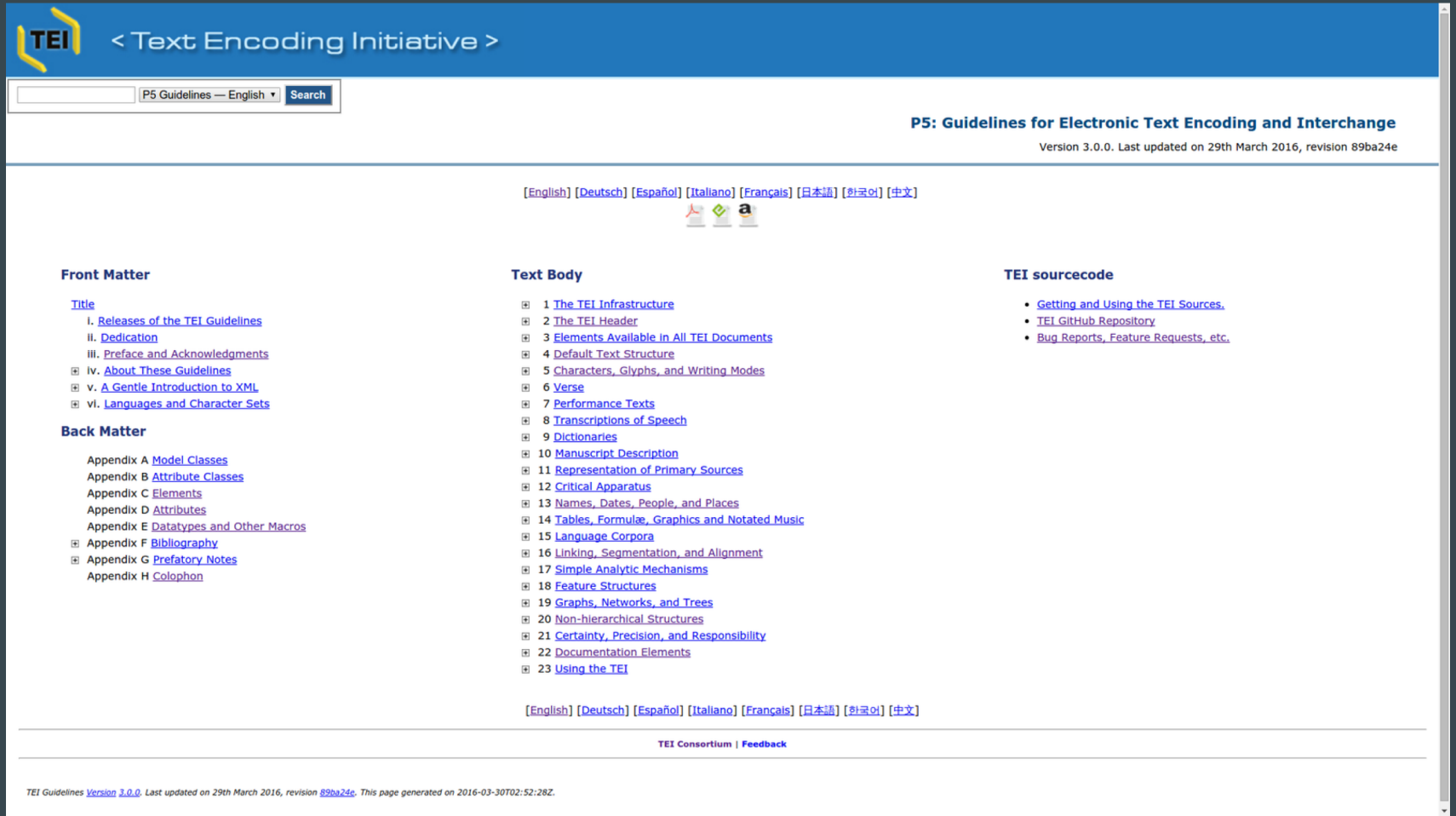
- An international consortium of institutions, projects and individual members (established in 1987)
- A community of users and volunteers creating hardware- and software-independent methods for encoding and archiving humanities data
- A flexible set of guidelines with recommendations and examples of over 570 markup distinctions
- A tool for producing customized schemas for validating your project's digital texts
- A set of free and openly-licensed stylesheets for transformations to many formats (e.g. HTML, Word, PDF, Databases, RDF/LinkedData, Slides, ePub, etc.)
- A consensus-based way of organizing and structuring textual resources, images, and other media
- An archival format for long-term preservation of digital data

# Parts of the TEI Community

- TEI Consortium Members
- TEI Executive Board
- TEI Technical Council (which produces the Guidelines and Software)
- TEI User Community
- TEI Special Interest Groups



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



< Text Encoding Initiative >

P5 Guidelines — English Search

# P5: Guidelines for Electronic Text Encoding and Interchange

Version 3.0.0. Last updated on 29th March 2016, revision 89ba24e

[English] [Deutsch] [Español] [Italiano] [Français] [日本語] [한국어] [中文]

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[English] [Deutsch] [Español] [Italiano] [Français] [日本語] [한국어] [中文]

TEI Consortium | Feedback

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## Front Matter



## Back Matter



## Text Body

# Appendix C Elements

## Appendix C.1 About the Elements Appendix

This appendix gives you links to reference pages for all elements in the TEI Guidelines. There are 573 TEI elements in revision 3c0c64ec4 of TEI P5 Version 3.5.0 of the TEI Guidelines.

The elements listed here are in the TEI Namespace: http://www.tei-c.org/ns/1.0 unless otherwise noted on that element's reference page.

Sorted alphabetically

a b c d e f g h i j k l m n o p q r s t u v w x z **Show all** **Show by module**

### a

ab abbr abstract accMat acquisition activity actor add additional additions addName address addrLine addSpan adminInfo affiliation age alt alternate altGrp altIdent altIdentifier am analytic anchor annotationBlock anyElement app appInfo application arc argument att attDef attList attRef author authority availability

### b

back bibl biblFull biblScope biblStruct bicond binary binaryObject binding bindingDesc birth bloc body broadcast byline

### c

c caesura calendar calendarDesc camera caption case castGroup castItem castList catchwords catDesc category catRef cb cell certainty change channel char charDecl charName charProp choice cit citedRange cl classCode classDecl classes classRef classSpec climate closer code collation collection colloc colophon cond condition constitution constraint constraintSpec content corr correction correspAction correspContext correspDesc country creation cRefPattern custEvent custodialHist

### d

damage damageSpan dataFacet dataRef dataSpec datatype date dateline death decoDesc decoNote def default defaultVal del delSpan depth derivation desc dictScrap dim dimensions distinct distributor district div div1 div2 div3 div4 div5 div6 div7 divGen docAuthor docDate docEdition docImprint docTitle domain

### e

edition editionStmt editor editorialDecl education eg egXML eLeaf elementRef elementSpec email emph empty encodingDesc entry entryFree epigraph epilogue equipment equiv eTree etym event ex exemplum expan explicit extent

### f

f facsimile factuality faith fDecl fDescr figDesc figure fileDesc filiation finalRubric fLib floatingText floruit foliation foreign forename forest form formula front fs fsConstraints fsdDecl fsDecl fsDescr fsdLink funder fvLib fw

### g

g gap gb gen genName geo geoDecl geogFeat geogName gi gloss glyph glyphName gram gramGrp graph graphic group

### h

handDesc handNote handNotes handShift head headItem headLabel height heraldry hi history hom hyph hyphenation

### i

ident idno if iff imprimatur imprint incident incipit index iNode institution interaction interp interpGrp interpretation item iType

# What can you encode with the TEI?

- The TEI takes a general and agnostic approach to **textual** structure and **verbal** phenomena
    - **textual** is based on a prevalent codex format, but it works for non-codex material, too
    - **verbal** is mostly based on linguistics, but there are general-purpose interpretive tags, too
- In theory, TEI can cope with any texts of any size, language, date, complexity, writing system, or media (in practice--that is another matter)
    - e.g. books, journals, letters, manuscripts, postcards, rolls of papyrus, clay tablets, web pages, gravestones, posters, billboards, etc. and contain any type of text

# What distinguishes TEI?

Every TEI document has at least two parts: a <teiHeader> (containing metadata——i.e., data describing the document), and the text (typically represented by a <text> element), in which its structure is represented by elements such as <front>, <body>, and <back>. Within these three structural divisions are further sub-divisions often encoded with  tags.

The <teiHeader> must include a description of the electronic file inside a (<fileDesc>). Within the <fileDesc> you must include:

- the title statement (<titleStmt>), with (<title>), author (<author>) and others responsible for the electronic text;
- the publication statement (<publicationStmt>), providing publication details about the electronic text in a structured way or as prose inside a <p>;
- a description of the source (<sourceDesc>), which lists bibliographic details about the electronic text's material source in a structured way or in a prose paragraph (<p>).

# What distinguishes TEI? Basic structure

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-model href="http://www.tei-c.org/release/xml/tei/custom/schema/relaxng/tei_lite.rng" type="application/xml" schematypens="http://relaxng.org/ns/structure/1.0"?>
<?xml-model href="http://www.tei-c.org/release/xml/tei/custom/schema/relaxng/tei_lite.rng" type="application/xml"
   schematypens="http://purl.oclc.org/dsdl/schematron"?>
<TEI xmlns="http://www.tei-c.org/ns/1.0">
  <teiHeader>
      <fileDesc>
         <titleStmt>
            <title>Title</title>
         </titleStmt>
         <publicationStmt>
            <p>Publication information</p>
         </publicationStmt>
         <sourceDesc>
            <p>Information about the source</p>
         </sourceDesc>
      </fileDesc>
  </teiHeader>
  <text>
      <body>
         <p>Some text here.</p>
         <figure>
            <graphic url="http://www.tei-c.org/logos/TEI-glow.png"/>
         </figure>
      </body>
  </text>
</TEI>
```

# TEI and Constraint

The TEI offers around 570 elements and more than 200 attributes.

You cannot read all the books in the library, in other words.

TEI is not a schema. Editors should select TEI elements and attributes from the TEI modules that apply to their projects. TEI offers an unambiguous foundation for representing text as well as standardized mechanisms for customisation.

Good news: few projects require a complete knowledge of the TEI, and most projects only require about 25 or so elements in total.

# What kind of outputs might you make from TEI?

- What TEI enables you to do is to encode your interpretation of the materials
- What you generate from your TEI encoding is a separate step but ...
- It is important to remember that there is not a one-to-one representation between your TEI and any particular output (like a single view of a digital edition)
- You might generate any number of views of an edition, supplementary indexes, or research aids, introductory editorial material, critical apparatus, metadata lists of people/places/objects/or anything you marked - or you might not generate an edition at all
- Additionally you might do this in any number of formats, HTML for web display, MSWord DocX, PDF, etc.
- Or in the necessary format for further analysis in other software (e.g. CSV/Spreadsheets of extracted information)