

Welcome to the 17th Annual  
**EMUG BOSTON**

#EMUG2019



# EMUG 2019

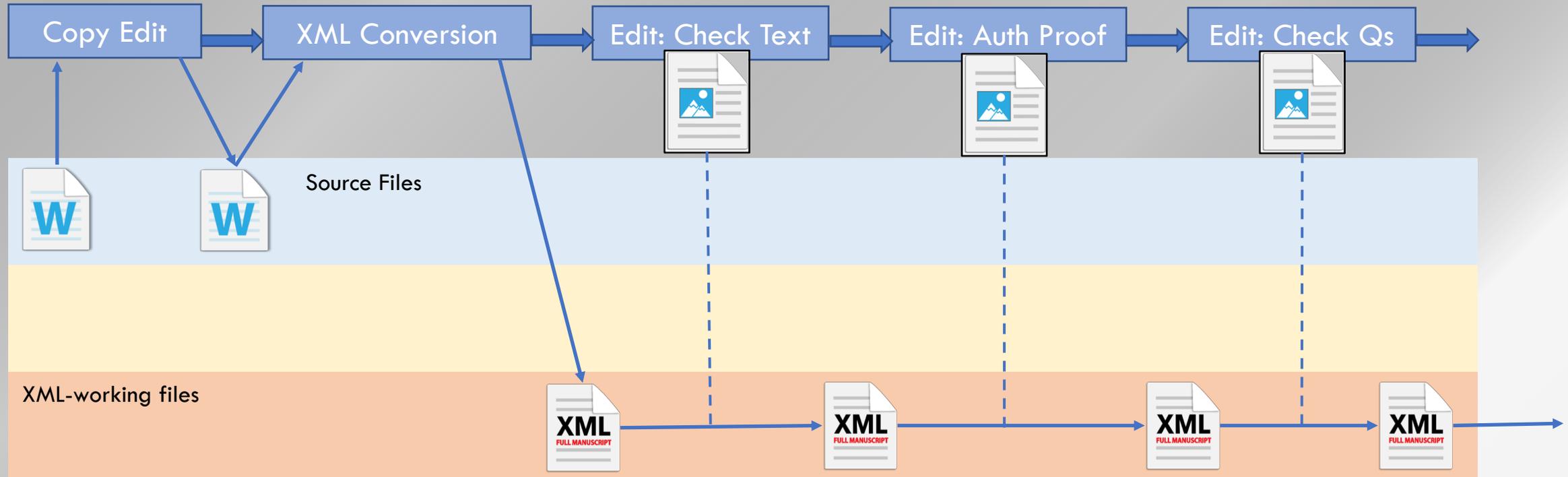
## Update on LiXuid MS

SJ MacRae  
C O'Connor

Business Systems Analysts

# Where are we heading?

## XML Workflows!



# And how does Aries plan to get there?

- Phase 1 – done! Front Matter conversion
- Phase 2 – Production-oriented Tasks (also TaskManager)
- Phase 3 – Bring into Peer-Review

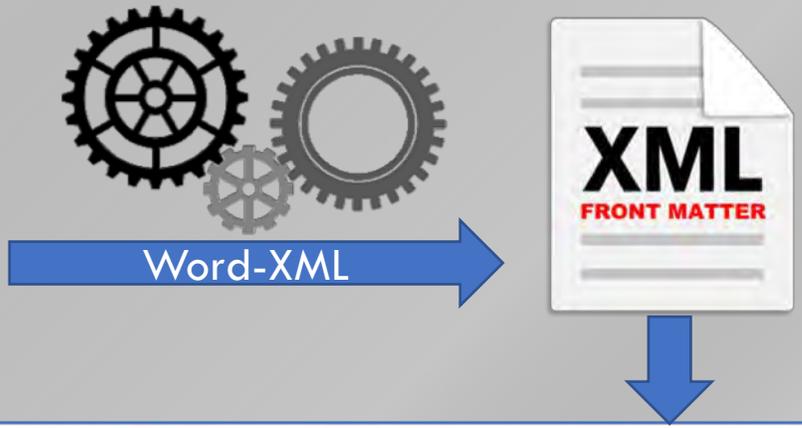
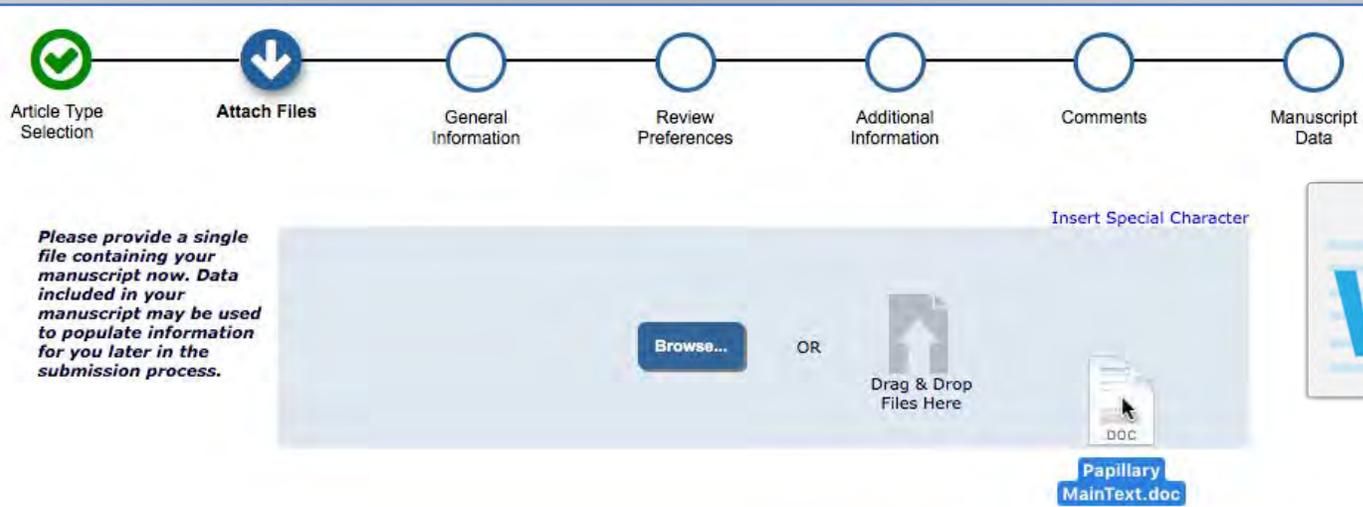
# Phase 1

Front-Matter Conversion to XML on Submission

# Phase 1 – Metadata Extraction on Submission

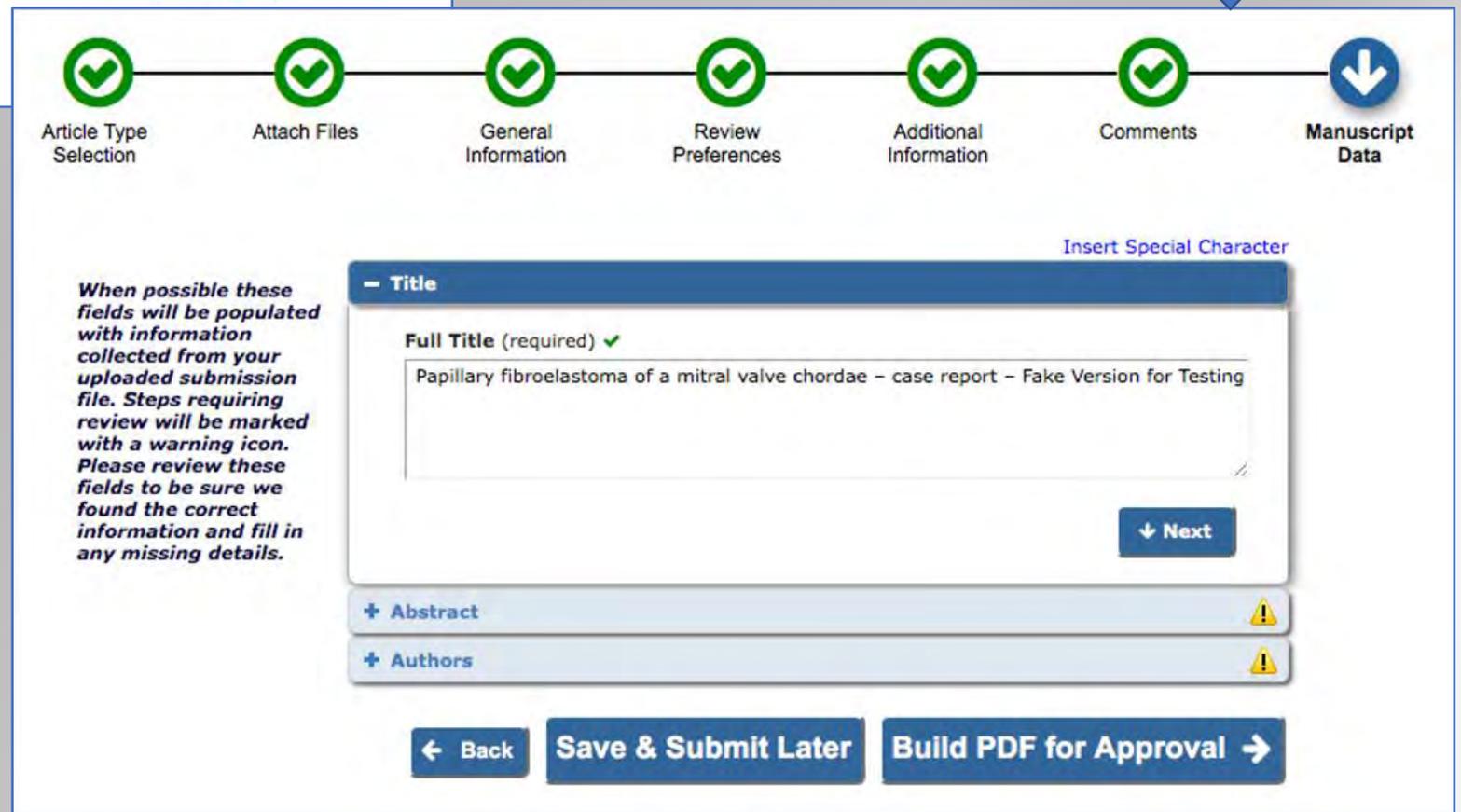
- Already released to all customers
- XML used behind-the scenes
  - Word doc part-converted to XML
  - XML used to populate EM
- Part of new submission UI:





Conversion to XML proceeds while Author completes other information

EM extracts metadata from converted XML 'front matter' to present to author on the last step



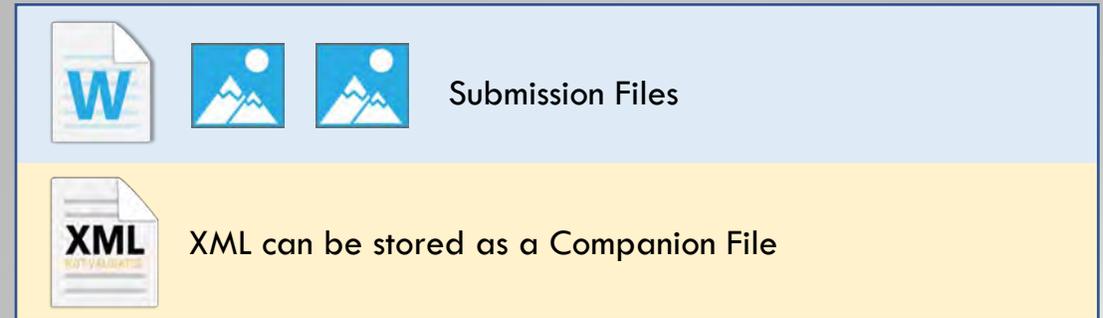
# Phase 2

XML in ProduXionManager/TaskManager Workflows

# Introducing Aries XML

- XML Files can be handled as Companion Files
- But LiXuid MS adds new 'Aries XML' file stream
- Specific XML format
  - Subset of JATS
  - Allows us to develop internal tools that expect this format

## File Inventory



## Aries XML – special XML file stream per submission



# Aries XML?

- Subset of JATS 1.2 (Publishing)
  - 100% valid to JATS 1.2
  - JATS has 16 ways to associate authors and affiliations; Aries XML has 1
  - This allows us to develop tools based on this narrower subset
- Aries Full-Text Tagging Guidelines
  - Not everything can be restricted by the DTD
  - “Empty” cross refs for numbered bibliographies allow automation
- Compliant with JATS4R
  - Optimized for re-use and machine readability

# New 'XML Tool' Tasks to cover key processes

- Sending XML to third parties
  - Any Task can send out Companion File XML or Aries XML
- Transforming and Validating XML
  - Custom transforms for converting XML (e.g. to/from Aries XML)
  - Validating to Aries or non-Aries XML DTDs (structure)
  - Applying Schematron Rules (structure and content)
- Online Editing of the full document text in EM
  - By content experts not XML Editors
  - Hide the XML, while allowing creation of valid elements
  - **Requires Aries XML file**
- Conversion to XML

# Aries XML Export

Available for any task



# Aries XML Assignment File

- Aries XML selectable for any Task Assignment
- Or configurable under Automatic Assignment File Selection
- Or you can use Companion Files

If 'Automatically Select Files for Assignment' is enabled, files in the submission File Inventory that match the configured File Types will appear pre-selected for manual task assignment or will be automatically included when a task is assigned automatically.

Automatically Select Files for Assignment

Restrict selection to XML-Related files 

Configure the Item Types for automatic selection. You may select multiple Item Types or de-select an Item Type by clicking on an item while holding down the CTRL key (Windows) or Apple/Command key (Mac). Important Note: if the task is an FTP task requiring a File on assignment, and the Task is configured to be Assigned Automatically, you must select an item here for the task to ever be assigned.

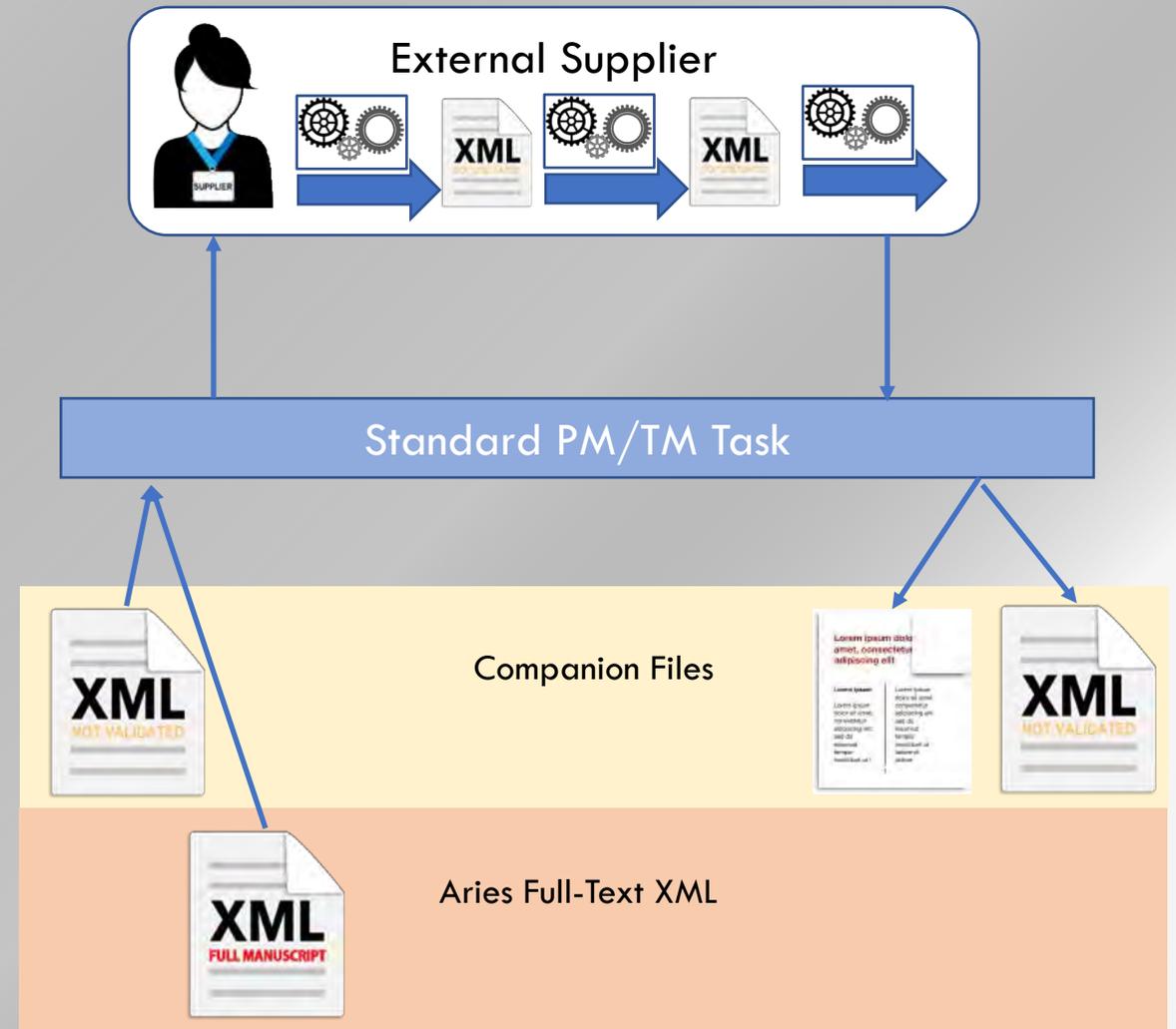
[System-Generated PDF]  
 [Full-Text XML]  
 Biosketch  
 Biosketch Photo  
 Companion File going through Reference Checking  
 CONSORT Agreement (only if required)  
 Contributions of Authors Form

## Submission Files

Item	Description	Item Family	File Name	File Reference	Size	Last Modified	QC Results	Use in XML	Allow Download
	PDF						N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Full-Text XML	XML		AJO_AJO-04-1344.xml		429.5 KB	Nov 01 2004 5:15PM	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Abstract (MUST be submitted as	Abstract (MUST be submitted as a	Default	041002 Safety Abstract		20 KB	Oct 4 2004	N/A	<input type="checkbox"/>	<input type="checkbox"/>

# XML Transfer, any Task

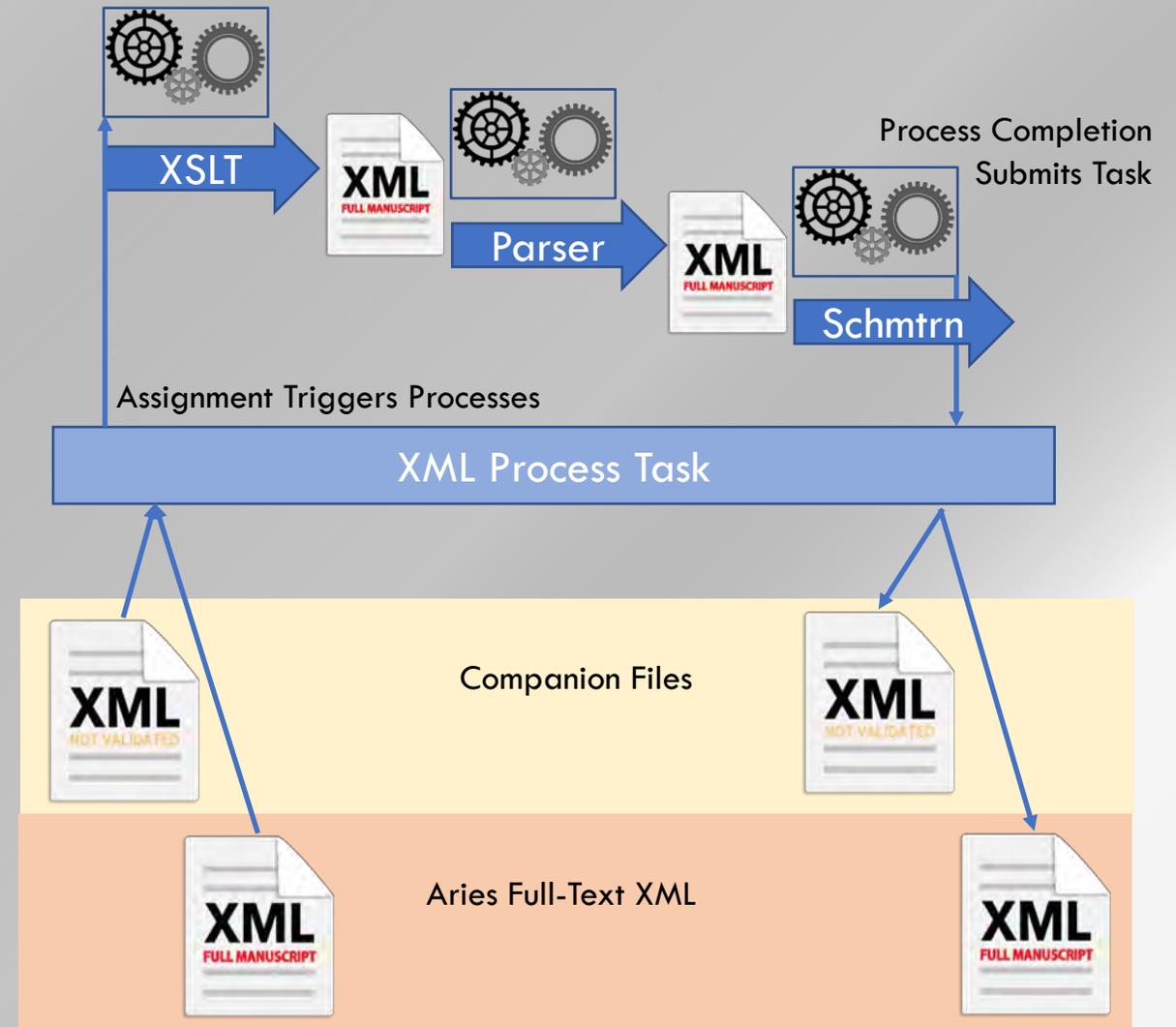
- Export Aries JATS XML to 3<sup>rd</sup> parties
  - If your supplier can use it directly
- Or a Non-Aries XML Companion File
- For whatever purpose
  - To get more XML back
  - Or to e.g. Typeset proofs from it
- To 'round-trip' Aries XML requires another Task Type...



# Custom XML Processing Task

# XML Process Task

- Supports up to three Custom processes in sequence:
  - Transform (using XSLT)
  - Validation (e.g. to DTD)
  - Schematron validation – ‘content rules’
- Can process:
  - Non-Aries XML Companion File
  - Aries XML File
- Result can be:
  - Left as Companion File
  - Validated to replace Aries XML File



## Edit Submission Production Task

Cancel

Submit

[Insert Special Character](#)

New Production Task Name:

Atypen Delivery

Maximum Production Task Name is 100 characters

**Hide** When you **hide** a Production Task Name, the Production Task Name will be deactivated (not available for assignment).

New Configuration options to turn the task into an XML Tool Task

### XML Tool Options

Production Task can be configure to interact with any of the XML Tools (e.g. XML conversion, XML editing) available in the drop-down menu below. When assigned a task with an XML Tool selected will trigger an interaction with the specific to the tool. Only one tool can be selected per task.

#### Select XML Tool:

Choose XSLT:

Choose DTD/Schema Validation:

Choose Schematron:

Full-Text XML Process

None

None

None

Resulting XML File Replaces the Current Full-Text XML ?

Resulting File is Uploaded as a Companion File  
Add Suffix to Resulting Companion File Name

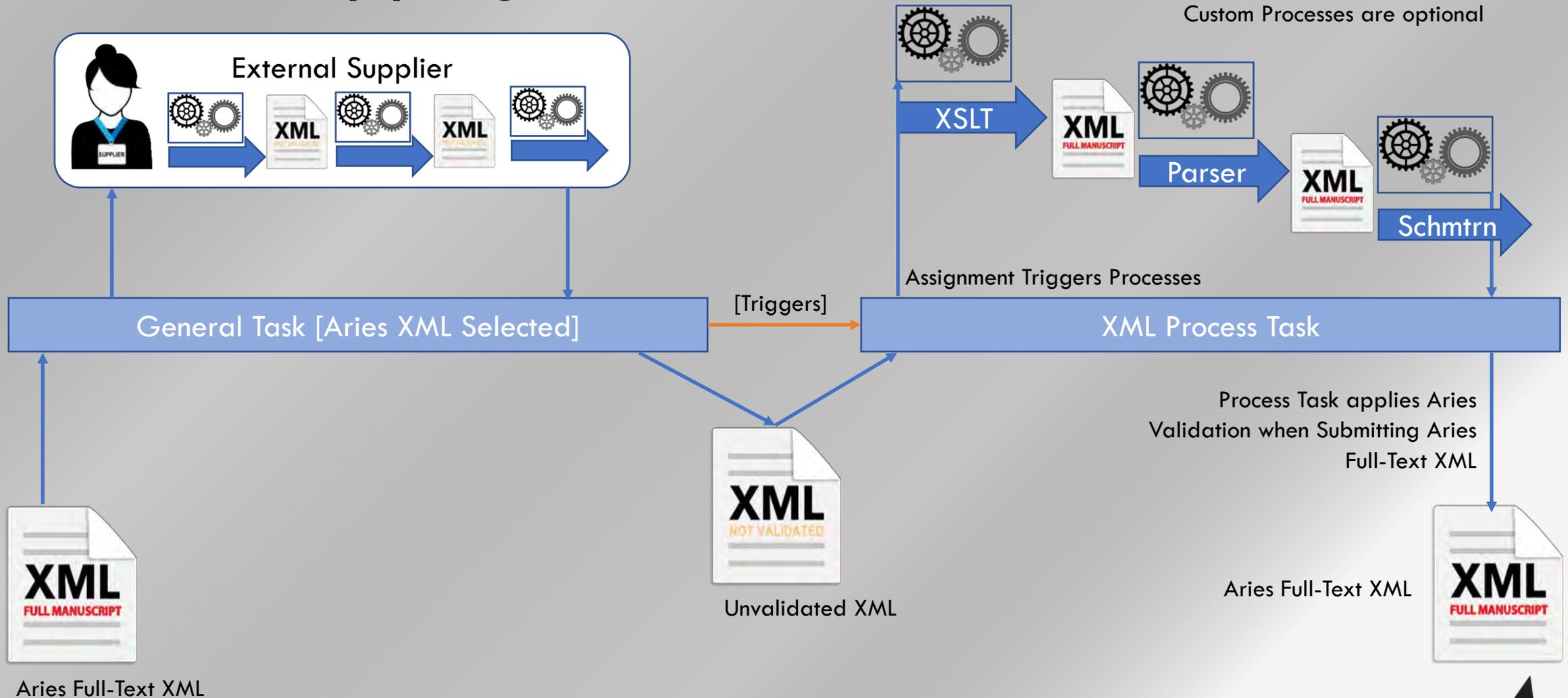
File Extension for Resulting Companion File

Configuring Process Task – custom transforms/schemas/Schematron rules will be pre-loaded by Aries.

XML Tool 'Success' notification:

Notify Task Assignee

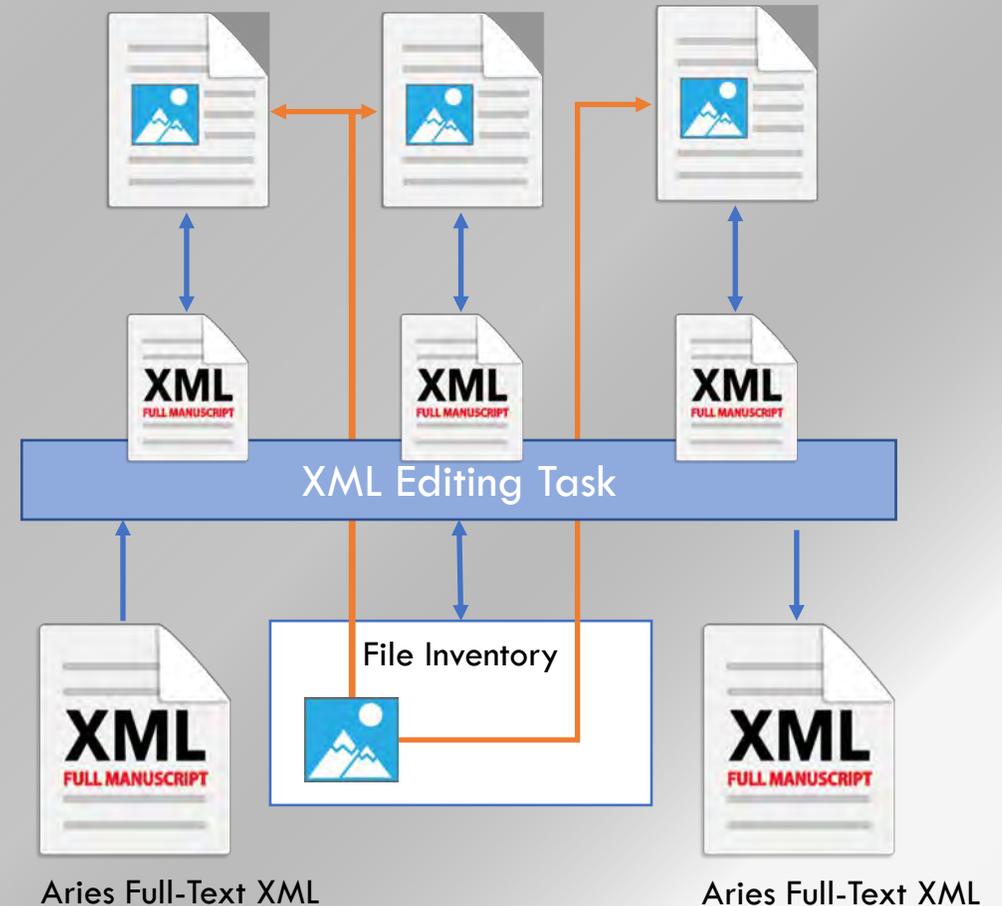
# Round-tripping Aries XML



# Full-Text Editing Task

# XML Editing Task

- Assign Task to allow recipient to edit the XML text while task is open
- Editing via EM XML Editor
  - Based on Fonto-XML
- User sees Word-Processor like UI
  - Hides the XML
  - In-line maths, tables, figures
- The EM XML Editor understands XML rules
  - User cannot create 'bad' XML (we use JATS)
  - But can add new elements, not just edit text
- The EM XML Editor constantly 'validates' the text
  - We can warn the user of inconsistencies
- We're adding special tools to help you
  - E.g. Queries to the Author



# XML Editor – Accessed via Task Assignment

**Submission Tasks Assigned to Editor Mike Di Natale, MD**

Page: 1 of 1 (2 total tasks) Display  results per page.

[Switch to Status Grid View](#)

Action ▲	Manuscript Number ▲▼	DOI ▲▼	Article Title ▲▼	Production Status ▲▼	Production Task ▲▼	Date Task Assigned ▲▼	Date Task Due ▲▼	Days Until Due ▲▼	Assigned By ▲▼	Schedule Group ▲▼	Section/Category ▲▼	Article Type ▲▼
<a href="#">Assignment Files</a> <a href="#">Edit Manuscript Text</a> <a href="#">Submit Task</a> <a href="#">Reassign Task</a> <a href="#">Assign Production Task</a> <a href="#">Assign to Schedule Group</a> <a href="#">Production Details ▾</a> <a href="#">History</a> <a href="#">Transmittal</a> <a href="#">Edit Submission</a> <a href="#">Send E-mail</a>	MIKETEST-17-0001	10.11260150011	Automated workflow test	In Production;	Corrections Review	Apr 11 2017 2:52PM	Apr 11 2017 11:59PM	21 days overdue	Mike Di Natale, MD			Automated production flow test

**Current Task Assignments for Author McAuthor**

Page: 1 of 1 (1 total tasks) Display  results per page.

Action ▲	Task ▲▼	Date Task Assigned ▲▼	Date Task Due ▲▼	Days Until Due ▲▼	Manuscript Number ▲▼	Article Title ▲▼	Assigned By ▲▼
<a href="#">View Assignment Letter</a> <a href="#">Assignment Files</a> <a href="#">Edit Manuscript Text</a> <a href="#">Submit Task</a> <a href="#">Correspondence</a>	Author Proofing	Aug 12, 2017	Aug 12, 2017	Due Today	CHARLESDEV141-D-17-00002	Submission Companion Figure Test	mary mary

Page: 1 of 1 (1 total tasks) Display  results per page.



The screenshot shows a web-based word processor interface. At the top, there is a navigation bar with tabs for 'HOME', 'SECTIONS', 'INSERT', and 'TITLE PAGE'. Below this is a rich text editor toolbar with icons for undo, redo, bold, italic, underline, text color, background color, bulleted list, numbered list, link, unlink, and a search icon. The main editing area contains the following text:

SECTION

## 2.3 Mutant preparation

Mutants of *Pl-scylo-IDH* containing single amino acid substitutions with alanine (K106A, D191A, H195A, R178A, and H318A) were prepared using a PrimeSTAR mutagenesis kit (Takara Bio, Shiga, Japan) according to the manufacturer's protocol, with pET21a(+)-*lgdA* as the template. The primers used for construction of each mutant genes are shown in [Table 2](#). Mutant enzymes were expressed and purified as described for the wild-type enzyme.

TABLE WRAPPER

Table 2

**Primers used for mutation**

K106A-f	CTGGAAGCGCCCATGGCGCTGAGCGTC
K106A-r	CATGGGCGCTTCCAGCCAGACATGCTT
D191A-f	CTGGGGGCTCTGGGCTGCCATCTGCTC

On the right side of the editor, there is a vertical sidebar with tabs for 'OUTLINE', 'REVIEW', 'QUERIES', and 'IMPROVE'.

Word Processor-like  
Editing environment

Tabs for helper tools

# Images, tables, maths in-line

The image displays two overlapping LaTeX Beamer slides. The left slide features a figure caption and a map of the North Pacific region. The right slide shows the '2.2 Methods' section with a mathematical equation for the EAP index.

flow upstream, leading the cold/dry air to arrive in SC, and converge with the warm/wet air from the edge of the WPSH. Consequently, a persistent precipitation process occurs in SC.

FIGURE  
FIG. 4

Composited 500-hPa geopotential height (contours; every 5 dagpm) and normalized height anomalies (shaded; every 0.5 $\sigma$ ). The vectors indicate wave activity flux (units: m<sup>2</sup>s<sup>-2</sup>). The number above each panel has the same meaning as in [Figure 2](#).

The figure is a map of the North Pacific region, showing contours of 500-hPa geopotential height and shaded areas representing normalized height anomalies. The map covers latitudes from 20N to 60N and longitudes from 120E to 120W. A color scale on the right indicates the magnitude of the anomalies, ranging from 477 (dark blue) to 594 (dark red). Two arrows point to specific areas on the map, labeled 'Low geopotential heights' and 'High geopotential heights'. The map also shows wave activity flux vectors.

SECTION  
2.2 Methods

The precipitation process that persisted for at least three consecutive days are referred to as persistent precipitation process.

The EAP index ( $I_{EAP}$ ) was normally defined based on three key anomaly-center points; namely, the Sea of Okhotsk (OK), the mid-latitudes of East Asia (EA), and the western Pacific (WP), during the EAP regimes ([1](#); [4](#); [9](#); Chen and Zhai, 2014):

EQUATION

$$I_{EAP} = \frac{1}{3}H_{OK} - \frac{1}{3}H_{EA} + \frac{1}{3}H_{WP}$$

(1)

where  $H_{OK}$ ,  $H_{EA}$ , and  $H_{WP}$  represent the normalized 500 hPa geopotential height anomaly of OK, EA, and WP, respectively. This study is based on the typical EAP teleconnection pattern responsible for no persistent heavy precipitation cases in the YRV in June and July, as identified by [7](#) for the period 1961–2010. The cases are selected by requiring that the normalized domain-averaged daily precipitation in the YRV should be smaller than  $-1$  standard deviation (denoted by  $\sigma$  hereafter), and are referred to as dry YRV EAP cases. At the

Article > Body > Methods > Section > Paragraph > Equation

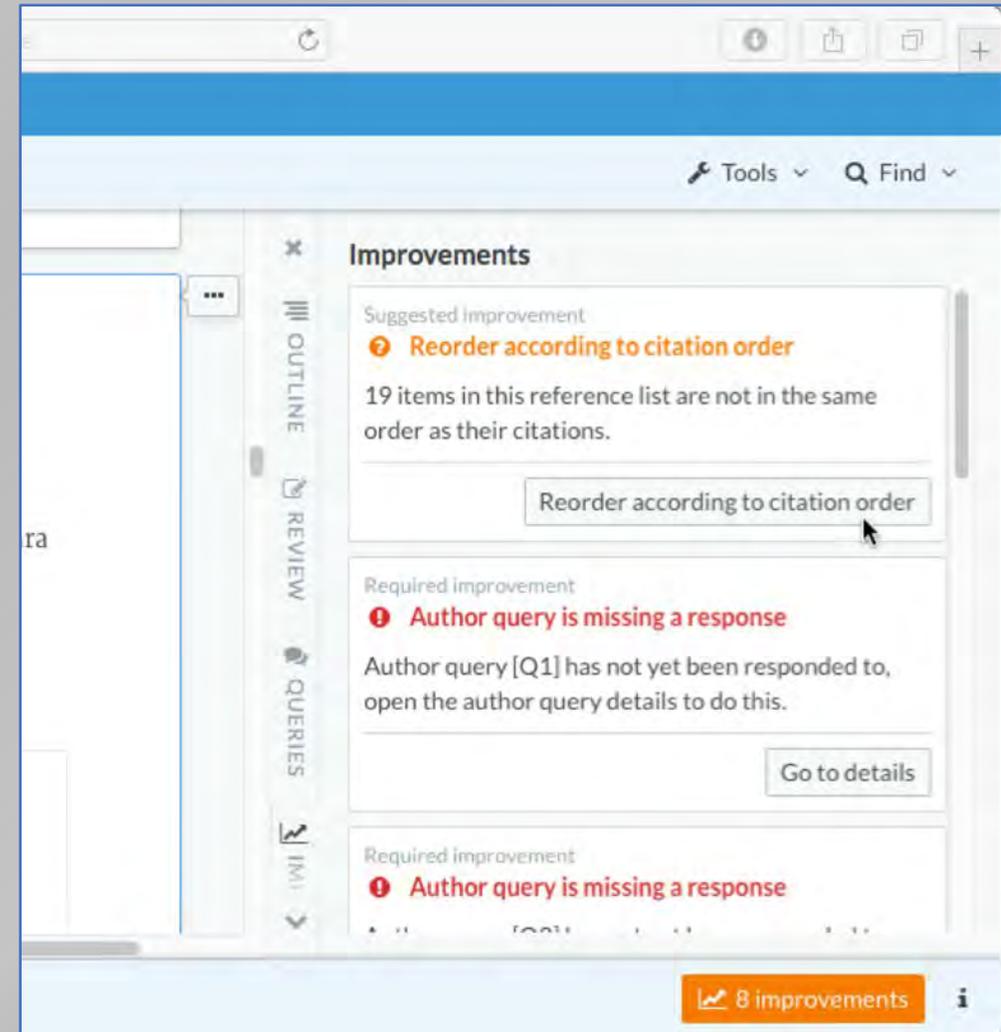
Methods > Section > Paragraph > Equation

# Editing Tool UX Configurable by Task

- Sections can be hidden or made read-only
  - E.g. stop authors from changing their Article Title at this late stage
  - Prevent the Author from changing the order of contributors
- Enforce editing ‘policies’
  - Such as forcing authors to answer all queries from Editors when submitting edits
  - Ensure all figures, tables etc. are cited in text
- Editing UI tools can be hidden
  - By role, e.g. hide the UI used to edit submission-related metadata
  - By journal style, e.g. hide the ability to use the box text element

# Verification by the Aries XML Editing tool

- The Aries XML Editing tool constantly parses the XML
  - Knows what elements are valid, where
- Can warn of inconsistencies and issues, e.g.
  - Missing citations
  - Missing images, tables
  - Uncited images
- Configurable, so warnings can prevent submitting edits, or just warn



# EM XML Editor Custom Components – e.g. Author Queries

- Author Query component – Questions to Author
- Question – Response – Review cycle
- E.g.:
  - Question to Author raised by Copy Editor
  - Response entered by Author; we can enforce this
  - Response marked as Viewed/reviewed by Desk Editor

Search or enter website name

Submit HOME SECTIONS INSERT TITLE PAGE

B I U x<sub>2</sub> x<sup>2</sup> More

Tools Find

1. Rudney H (1940) The Utilization of L-Glucose by Mammalian Tissues and Bacteria. Science 92: 112 - 113. 10.1126/science.92.2379.112 17755265

2. REFERENCE  
Sasajima KI, Sinskey AJ (1979) Oxidation of L-glucose by a Pseudomonad. Biochim Biophys Acta 571: 120 - 126. 10.1016/0005-2744(79)90232-8 40609

3. REFERENCE  
Q1 Nakamura A (2015) Paracoccus laeviglucoasivorans sp. nov., an L-glucose-utilizing bacterium isolated from soil. International Journal Systematic and Evolutionary Microbiology 65: 3878 - 3884. 10.1099/ijsem.0.000508 26243274

4. REFERENCE  
Shimizu T, Takaya N, Nakamura A (2012) An L-glucose catabolic pathway in Paracoccus species 43P. J Biol Chem 287: 40448 - 40456. 10.1074/jbc.M112.403055 23038265

Author queries [Add query](#)

All queries [Details of Q1](#) 0 of 7 answered 0 of 0 reviewed

Anonymous Invalid Date

Medline reports the journal title should be "Int. J. Syst. Evol. Microbiol.", not "International Journal Systematic and Evolutionary Microbiology". (Ref. 3 "Nakamura, 2015")

This query has not yet been responded to.

Response

Click to add a response.

8 Improvements

# XML Editing tool: Review changes

The screenshot displays a software interface for reviewing document changes. On the left, a document titled "INTRODUCTION SECTION" is open, showing the "1 Introduction" section. The text discusses homochirality and the metabolism of L-glucose, mentioning various enzymes and genes like *lqdA*, *lgnE*, *lgnF*, *lgnG*, *lgnH*, and *lgnI*. On the right, a "Detailed changes" panel shows a list of seven changes made by the "Author - Current session". The changes are: 1) Deleted text "K", 2) Inserted text "L" (highlighted in yellow), 3) Deleted text "Z", 4) Inserted text "D", 5) Inserted text "The reported structures show homo-dimeric or homo-tetrameric ...", and 6) an unlabeled inserted text entry. The interface includes a "Document history" header, a date/time stamp "January 11, 2019, 12:16 PM", and a "Timeline" dropdown menu.

Document history

January 11, 2019, 12:16 PM Now Timeline

INTRODUCTION SECTION

## 1 Introduction

Homochirality, in the form of **L**-amino acids and **D**-sugars, exists in all living organisms. In the case of sugars, it had been a long held belief, first reported in 1940 by Rudney, that L-glucose cannot be metabolized by either mammalian or bacterial cells [1]. Subsequently, Sasajima et al. purified D-threo-aldose dehydrogenase from *Pseudomonas caryophylli*, which was capable of oxidizing L-glucose [2]. Recently, a catabolic pathway that can utilize L-glucose has been discovered in *Paracoccus laeviglucosivorans* [3], and the component genes have been cloned and characterized [4]. This pathway is made up by the combination of genes originating from two independent operons. *lqdA*, which codes for a protein that works at the first step, is located in a putative inositol catabolic gene cluster. The genes that code for proteins that work at the later steps in the pathway, *lgnE*, *lgnF*, *lgnG*, *lgnH*, and *lgnI* are located in an operon, which is analogous to *E. coli* L-galactonate catabolic pathway [5]. Using the combined pathway, L-glucose is metabolized to pyruvate and glyceraldehyde-3-phosphate.

The *lqdA* gene encodes inositol dehydrogenase, and on the basis of its amino acid sequence,

### Detailed changes

7 changes

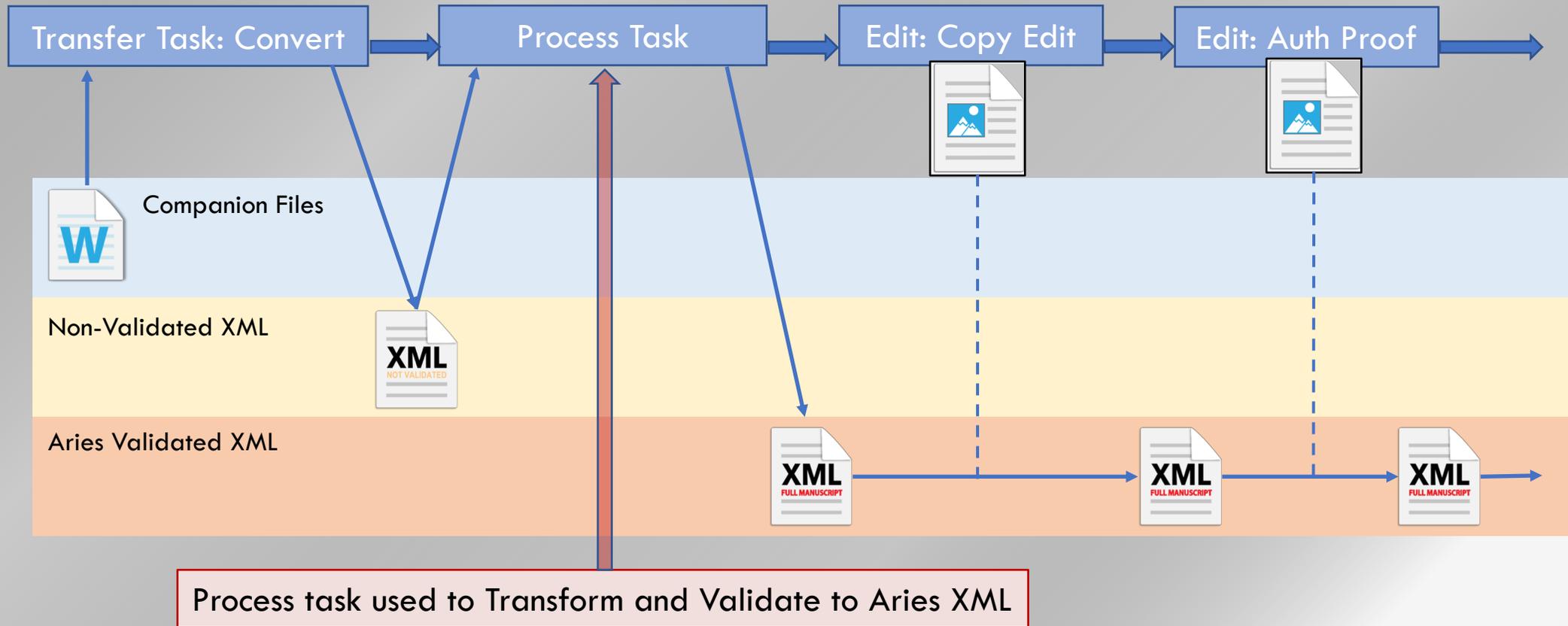
- Author - Current session ✓  
Deleted text  
K
- Author - Current session ✓  
Inserted text  
L
- Author - Current session ✓  
Deleted text  
Z
- Author - Current session ✓  
Inserted text  
D
- Author - Current session ✓  
Inserted text  
The reported structures show homo-dimeric or homo-tetrameric ...
- Author - Current session ✓

# Creating Aries XML

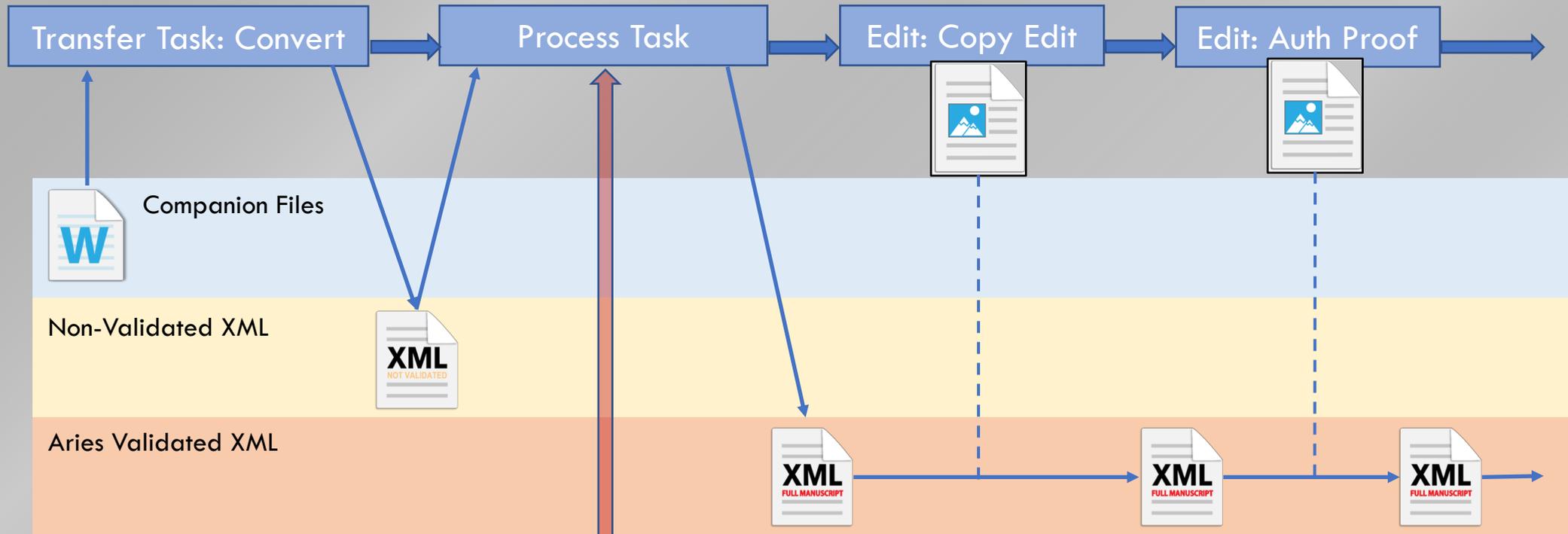
# XML Workflows: Possible Approaches

- Work with third party XML
  - Third parties convert text as now
  - Import/Export XML as Companion Files
  - EM tasks can apply XSLT and Schematron transforms if needed
- Work with 'Aries XML'
  - Subset of JATS XML
  - **Allows use of EM XML Editing Task, other processes in future**
- Hybrid workflows?
  - Use EM Tasks to convert to/from Aries JATS
  - i.e. EM as online XML Proofing system

# 3<sup>rd</sup> Party supplies Non-Aries XML



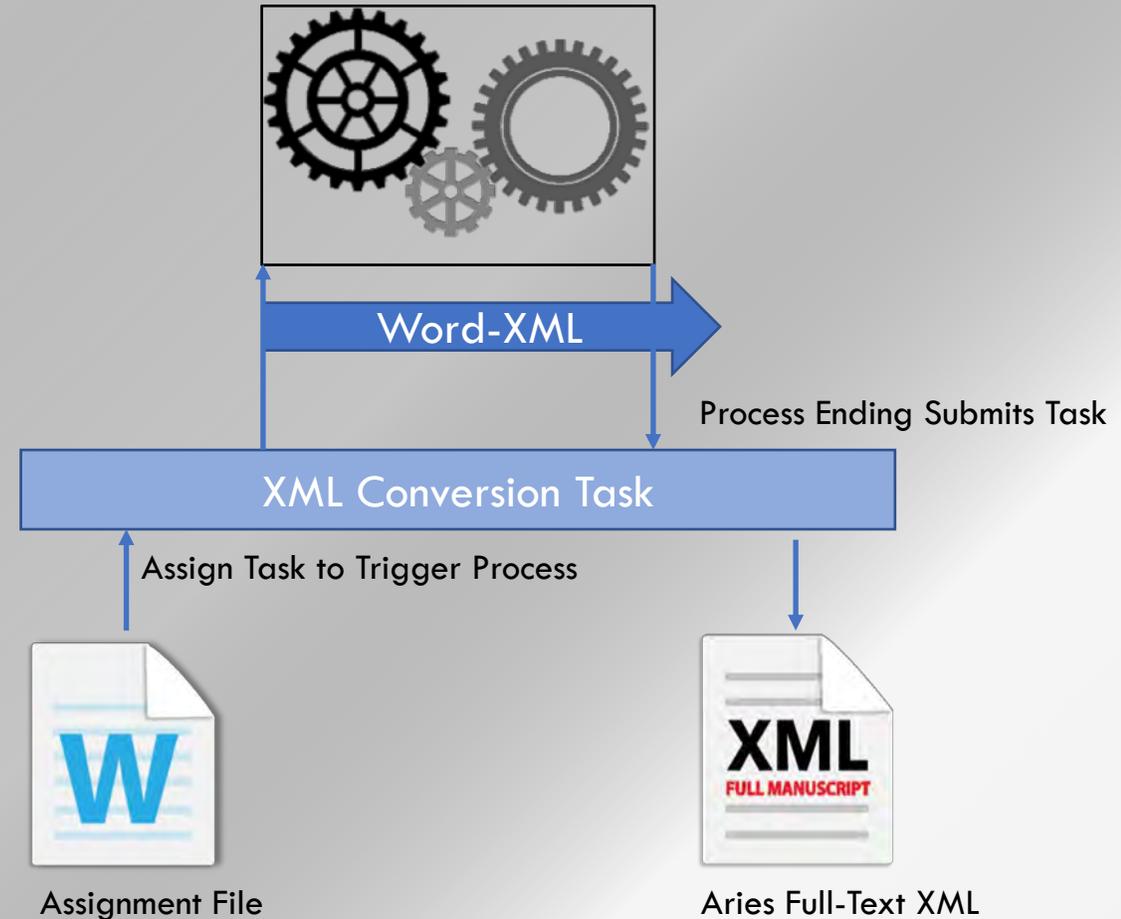
# 3<sup>rd</sup> Party supplies Aries XML



Process task used without Transform; only validates that file conforms to Aries DTD

# Aries Full-Text Conversion Task

- XML Tool Task, assigned like any other
- Takes a Word document to convert as the Assignment File
- Triggers a new system process
- New software to automatically convert Word document to structured XML
- No template needed
- Heuristics to deconstruct files with a variety of structures
- On completion of the process, EM automatically submits the Task



# Full-Text Conversion: Embedded Images

Word file contains embedded image



Conversion creates XML reference, extracts image, creates filename

Journal Code from EM

ID from EM Submission

```
<inline-graphic xlink:href="JXYZ_JXYZ-D-18-00017.fx1" />
```

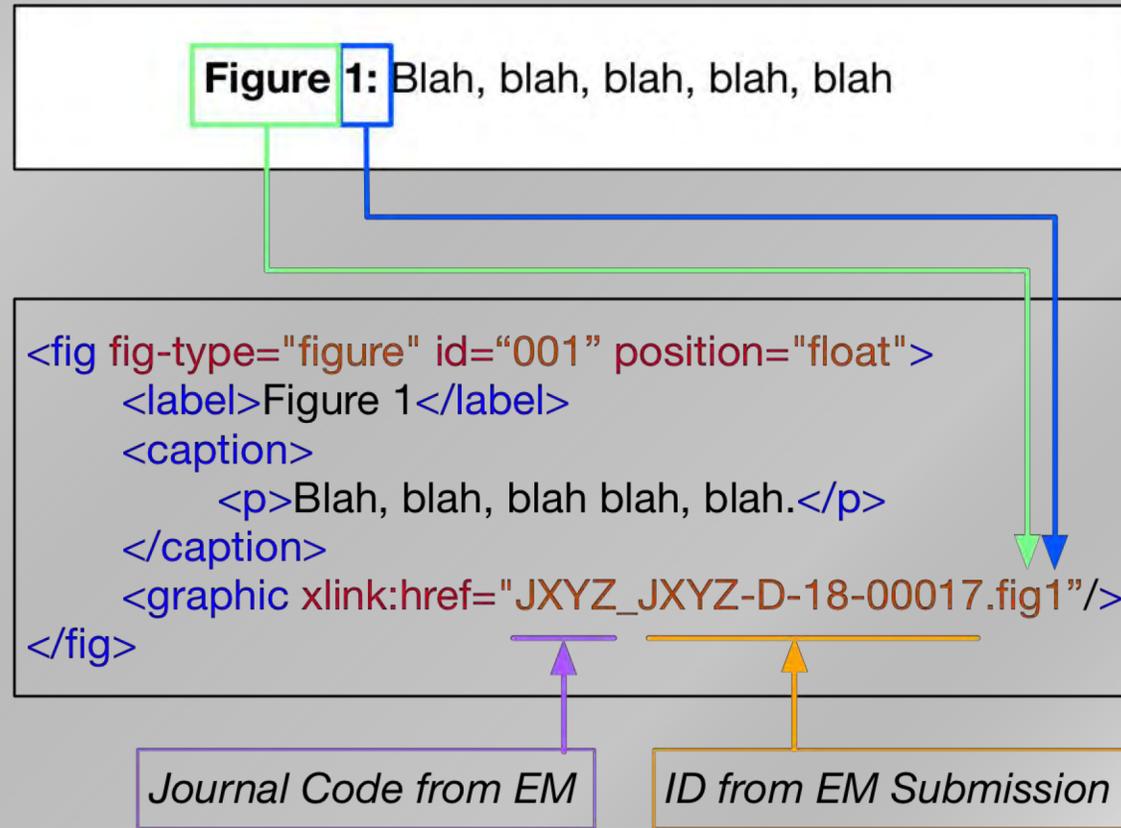
'fx' prefix + count

Matching filename created

JXYZ\_JXYZ-D-18-00017.fx1.jpeg

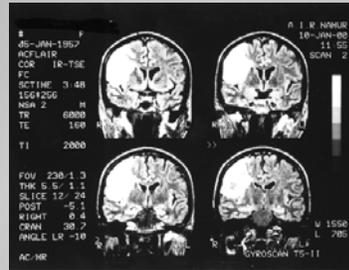
# Full-Text Conversion: External Images

Conversion identifies a caption; builds XML version with an *assumed* filename



# Full-Text Conversion: External Images

When Author uploads image files, caption-related information is collected



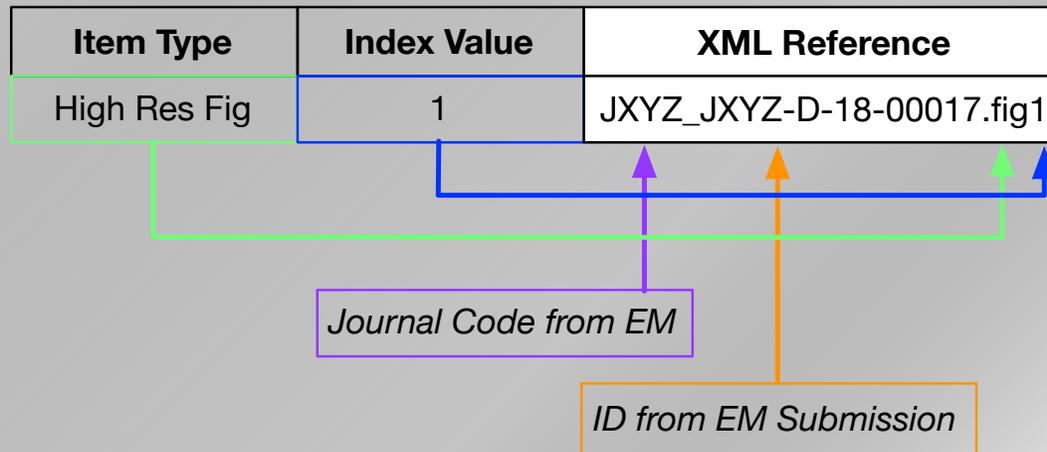
**EM Metadata:**

Item Type: Standard Figure

Fig No: 1

Smith 1998 Fig1.tiff

This can be used to link the figure to the XML, same rules as conversion

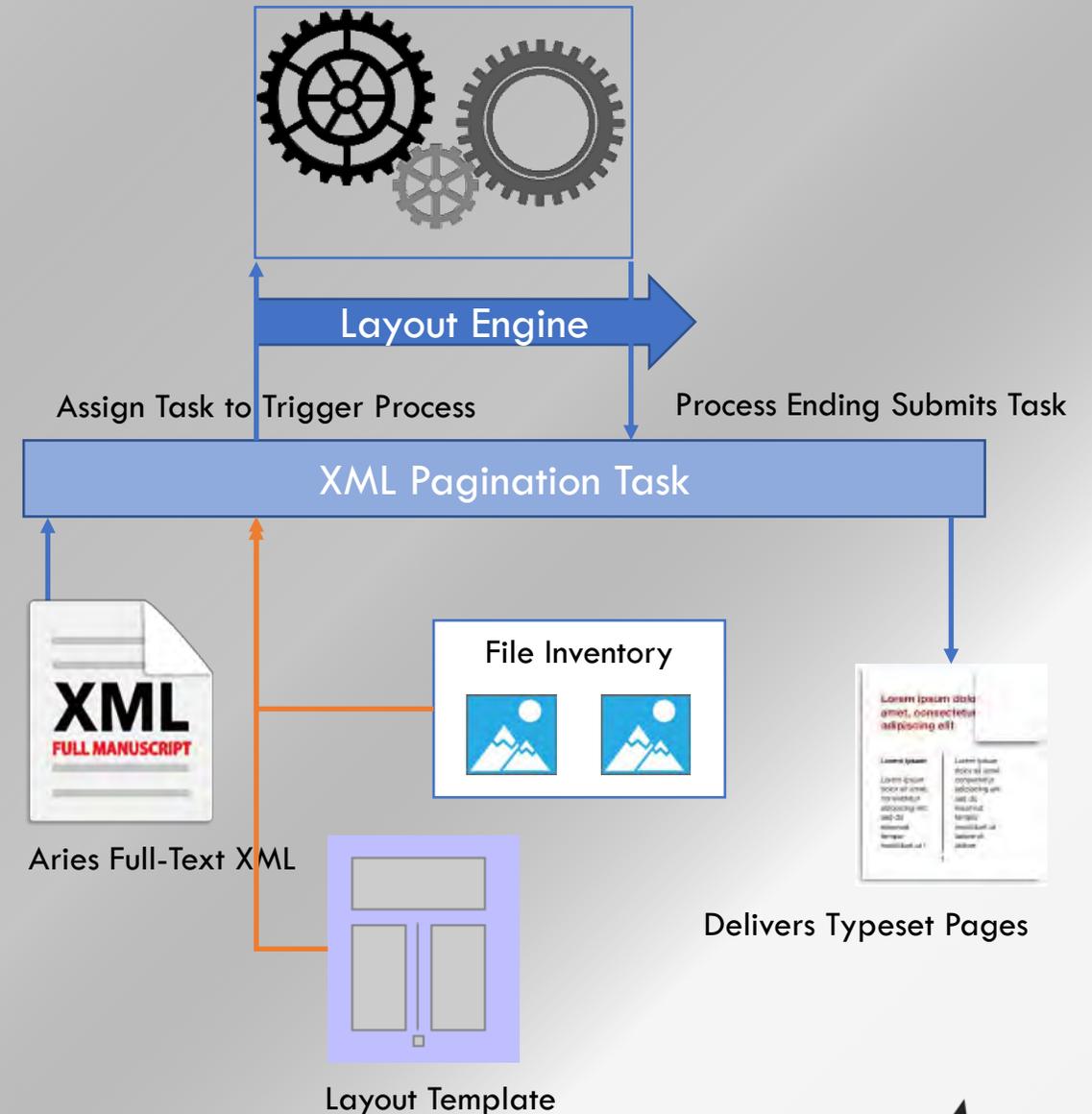


# And more for Phase 2

- Continue to develop ideas
- More Editing Tools
  - E.g. more suggested Improvements
- More XML Task Types, e.g.:
  - Auto-pagination
  - PDF Rendering

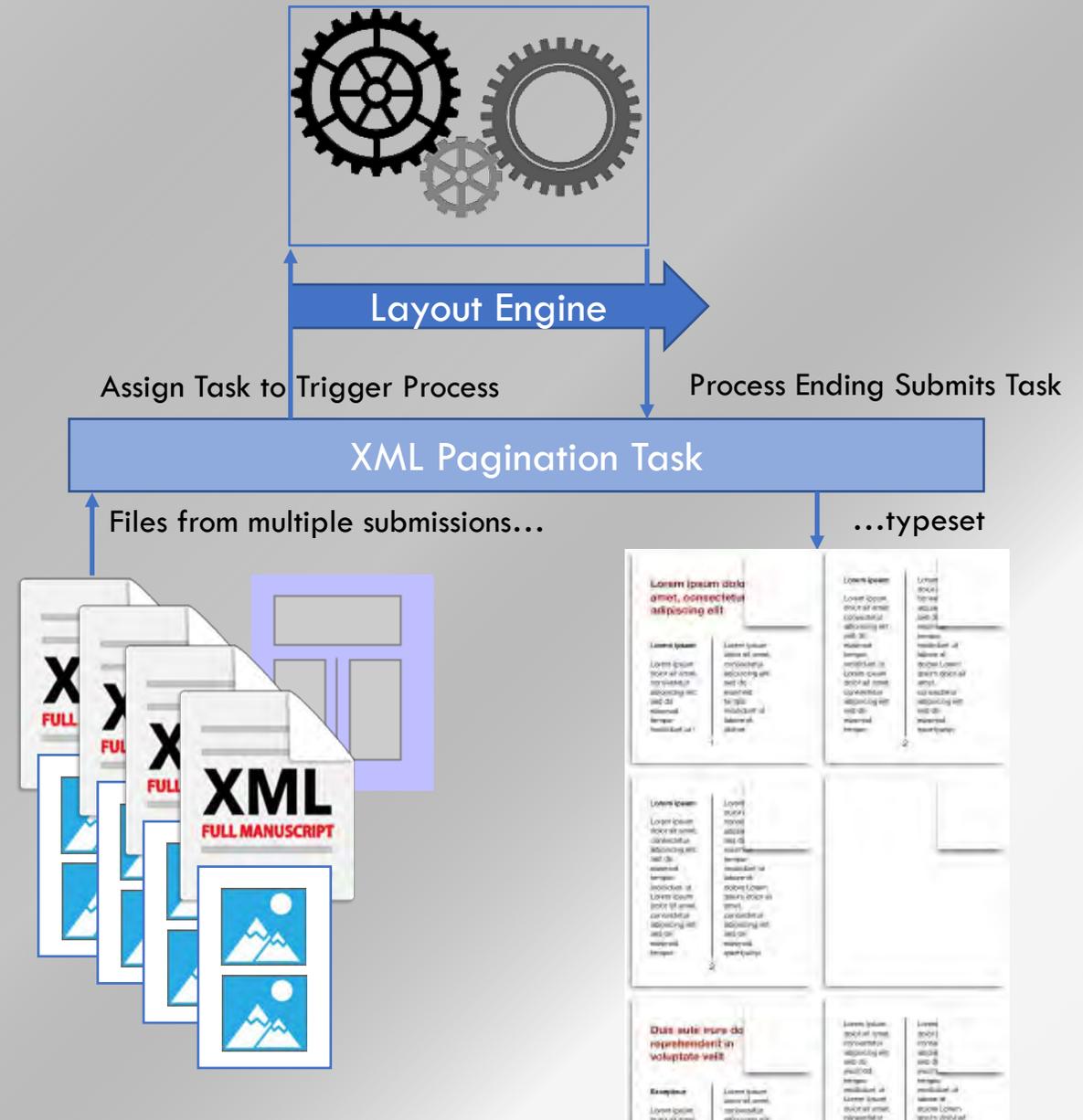
# 'Pagination' Tasks

- We will integrate a layout/pagination engine
- Will reformat and layout XML for delivery
  - E.g. Print, PDF
- Based on customer layout templates
- Solo task for a single submission...



# 'Pagination' Task

- SG/Batch Task for multiple submissions
- Issue makeup and pagination

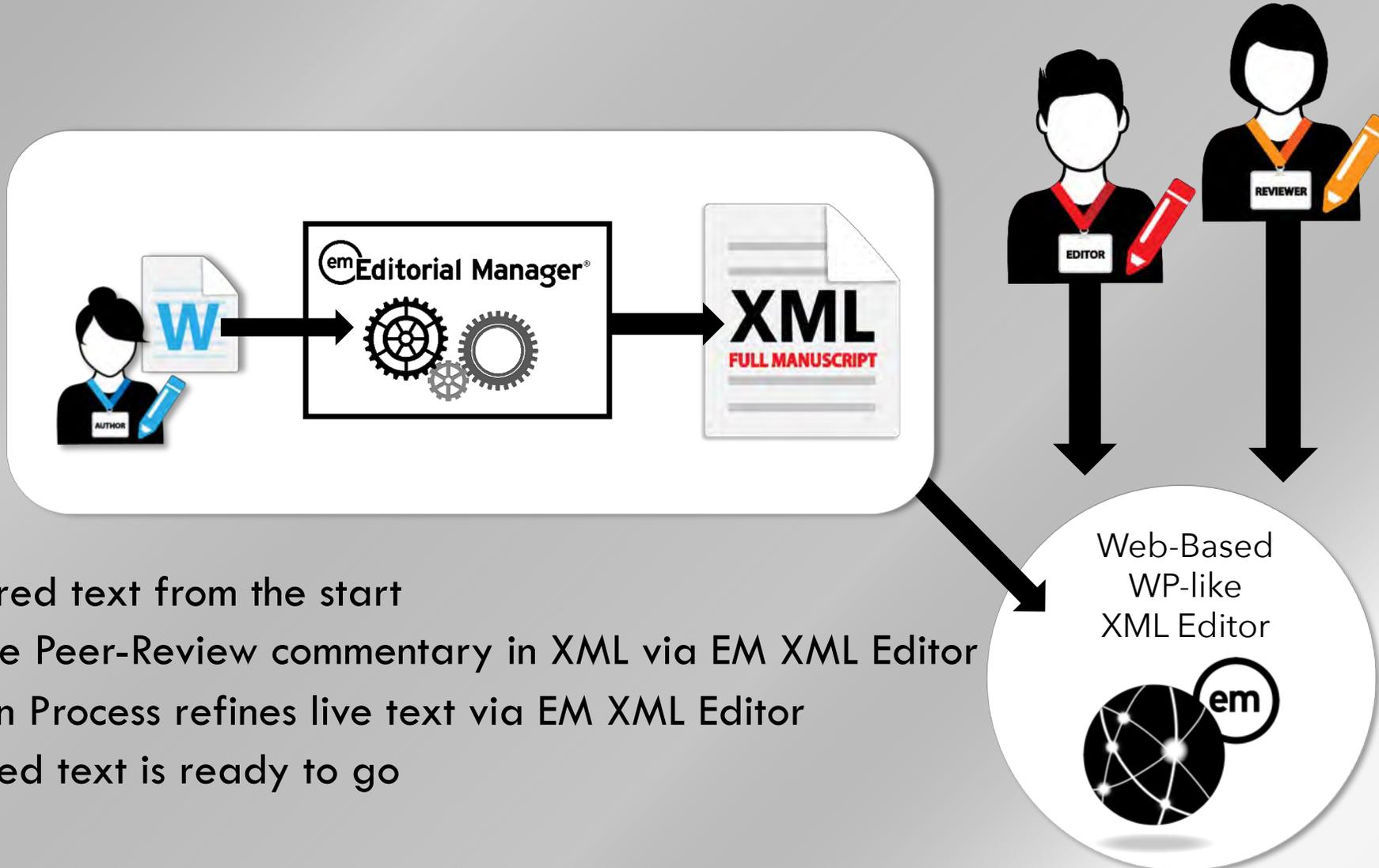


# Phase 3

Bringing it forward



# Phase 3: Full-Text Conversion on Submission



- Structured text from the start
- Capture Peer-Review commentary in XML via EM XML Editor
- Revision Process refines live text via EM XML Editor
- Accepted text is ready to go

# The end

Any Questions?

