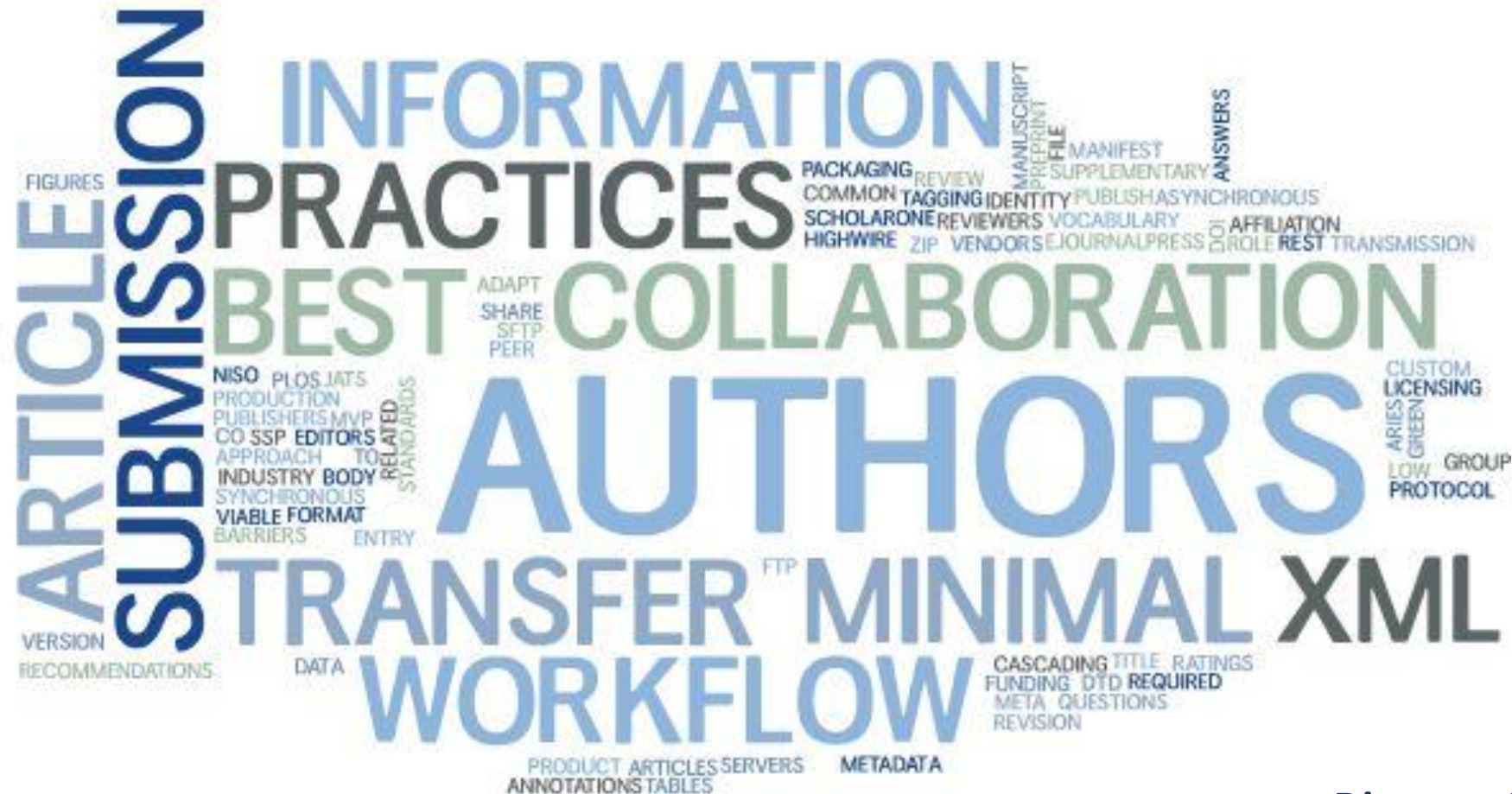


Manuscript Exchange Common Approach



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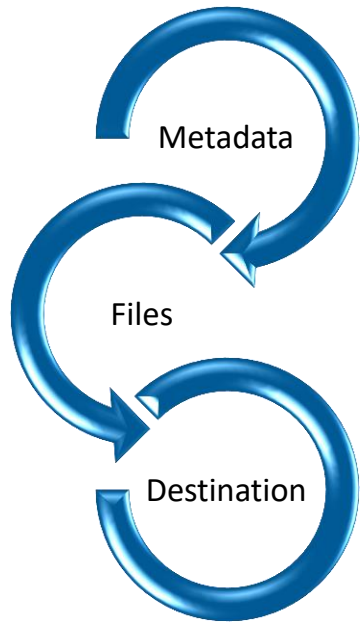
@OccupySTM

Problem

- Authors are irritated at time, effort, **delays when re-submitting articles**
- Reviewers' time is wasted when **reviews are re-done or replicated**
- New publication flows demand **transfers to/from preprint servers**
- Each workflow system has to **implement separate interfaces** to each other system – inefficient to work 'pairwise'

Opportunity

- A common approach to moving manuscripts solves the above use cases and can also solve some additional workflow problems!
- ***All we need is for a group of competitors to collaborate!***



- A group of vendors and publishers
 - Aries: Editorial Manager
 - Clarivate Analytics: Scholar One
 - eJournalPress: eJPress
 - HighWire: BenchPress
 - PLOS



- Develop a common approach
 - Not software, not a central service, not a database
 - Recommended best practices
 - Non-proprietary, CC-BY

- Hope for wide adoption

- National Information Standards Organization (NISO) – Project approved March of 2018 and Working group established



Principles

- **Journals & authors set the rules on what transfers... not MECA**
- **Seamless transfer between publications and platforms... but not necessarily a complete submission**
- Define minimal required data for transfer
 - **The data needed to *start* a submission**
- Define MVP (Minimal Viable Product)
 - **Get going now**, but build for future use cases
- Protocol based on best practices and industry standards
 - Low barriers to entry to use MECA
- **Recommendations, not code**
 - **No hub, no software, no service**
 - **Not like Crossref or ORCID; no tracing of manuscripts**

Use Cases – Manuscript Transfer Across Boundaries

- **Journal**
 - Submission System to Submission System (primary)
- **Preprint**
 - Preprint System to/from Submission System (primary)
- **Syndication: Import from ...**
 - Authoring Systems to Submission System (primary)
- **Syndication: Export to ...**
 - Submission System to Various Services (secondary)

Project Area – Vocabulary

- **Goal:** To provide a **standard nomenclature**
- Provides a baseline for understanding
- Includes 4 Use Cases
- Includes Term, Definition, Synonym, ‘Often-confused-with’ alternatives, and Examples
- Includes 70+ Terms
 - Publishing terms like ‘Author’, ‘Review’, ‘Downstream Processing’
 - Terms like ‘BITS’, ‘Interoperability’, ‘Mime Type’
- Is being updated over time

Project Area - Packaging

- **Goal:** simple, flexible, standard way to **assemble files**
- Zip File
- One manuscript per zip file
- Package contains:
 - **Manifest.xml** * (new DTD for file manifest)
 - **Transfer.xml** * (new DTD for source/destination, contact, and security information)
 - **Article.xml** (JATS-compliant)
 - **PeerReview.xml** (optional - JATS-like)
 - Source files

* Required Item

Project Area – Manifest Information

- **Goal: To be able** to pass **file information** from system to system
- Each file in the zip file must have an entry in the XML file
- May include entries for items not in the zip file, e.g. URL/URI submission items
- Includes optional 'type' attribute – supports an optional defined list of submission item types
- Includes optional 'submission-item-id' to match files across systems
- Includes optional 'mime type' attribute
- Receiving system determines how file is imported
- **Manifest.xml** (new DTD)

Manifest DTD

```
<!ELEMENT manifest (item+)>
<!ATTLIST manifest xmlns CDATA #REQUIRED>
<!ATTLIST manifest version CDATA #REQUIRED>
<!ELEMENT item (title?, description?, file-order?, item-metadata?, instance+)>
<!ATTLIST item id ID #IMPLIED>
<!ATTLIST item type CDATA #IMPLIED>
<!ATTLIST item submission-item-id CDATA #IMPLIED>
<!ATTLIST item version CDATA #IMPLIED>

<!ELEMENT title (#PCDATA)>
<!ELEMENT description (#PCDATA)>

<!ELEMENT file-order (#PCDATA)>

<!ELEMENT item-metadata (metadata+)>
<!ELEMENT metadata (name, value)>
<!ELEMENT name (#PCDATA)>
<!ELEMENT value (#PCDATA)>

<!ELEMENT instance EMPTY>
<!ATTLIST instance media-type CDATA #IMPLIED>
<!ATTLIST instance href CDATA #REQUIRED>
<!ATTLIST instance origin CDATA #IMPLIED>
<!ATTLIST instance conversion CDATA #IMPLIED>
<!ATTLIST instance composition CDATA #IMPLIED>
```

Manifest XML

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE manifest SYSTEM "manifest.dtd">
<manifest version="1" xmlns="">
  <item id="a-222" type="manuscript" submission-item-id="custom-metadata-id1" version="0">
    <description>This is the manuscript submitted by the author</description>
    <file-order>5</file-order>
    <instance media-type="application/vnd.openxmlformats-officedocument.wordprocessingml.document"
href="samplemanuscriptwithreference.doc" />
  </item>
  <item id="a-123" type="author agreement" version="0">
    <description>Author Agreement</description>
    <file-order>1</file-order>
    <instance media-type="text/plain" href="Assignment-or-Rights.txt"/>
  </item>
  <item id="a-456" type="Reviewer Response">
    <description>This is the file the Author uploaded in response to comments by reviewers</description>
    <instance media-type="application/msword" href="Responses.doc"/>
  </item>
  <item id="b-456" type="figure" submission-item-id="custom-metadata-id-2" version="0">
    <description>Figure</description>
    <file-order>3</file-order>
    <item-metadata>
      <metadata>
        <name>Figure Number</name>
        <value>1</value>
      </metadata>
      <metadata>
        <name>Caption</name>
        <value>This is the caption for Figure 1</value>
      </metadata>
    </item-metadata>
    <instance media-type="image/jpeg" href="figure1.jpg" />
  </item>
```

```
<item id="c-567" type="figure" submission-item-id="custom-metadata-id-2" version="1">
  <description>Figure</description>
  <file-order>4</file-order>
  <instance media-type="image/jpeg" href="figure2.jpg" />
</item>
<item id="d-891" type="supplemental">
  <description>Supplementary Data File</description>
  <instance media-type="text/plain" href="https://landsat-pds.s3.amazonaws.com/c1/L8/139/045/LC08_L1TP_139045">
</item>
<item type="Author/Editor PDF" version="0">
  <description>Working PDF</description>
  <instance media-type="application/pdf" href="SALLYDEV140-D-17-00013R2R0.pdf"/>
</item>
<item id="e-123" type="Manuscript" version="1">
  <description>This is an arXiv file uploaded by the Author</description>
  <file-order>2</file-order>
  <item-metadata>
    <metadata>
      <name>Includes References</name>
      <value>Yes</value>
    </metadata>
  </item-metadata>
  <instance media-type="application/x-tex" href="ehll_180124.tex" />
</item>
<item id="f-345" type="Reviewer Attachment">
  <description>This is an annotated file uploaded by the Reviewer</description>
  <instance media-type="application/msword" href="annotated-review.docx" />
</item>
<item id="custom-metadata-id-7" type="Author Proof">
  <description>This is a production file</description>
  <instance media-type="application/xml" href="marked-up-manuscript.xml"/>
</item>
</manifest>
```

Project Area – Transfer Information

- **Goal: To be able** to pass **transfer information** from system to system
 - Source Information
 - Service Provider
 - Contact Information
 - Publication Type, Title, Acronym
 - Destination Information
 - Service Provider
 - Contact Information
 - Publication Type, Title, Acronym
 - Security Information
 - Authentication Code
 - Processing Instructions
- **Transfer.xml** (new DTD)

Transfer Information - DTD

```
<!ELEMENT transfer (source?, destination?, security?, processing-instructions?)>
<!ATTLIST transfer xmlns CDATA #REQUIRED>
<!ATTLIST transfer version CDATA #REQUIRED>
<!ELEMENT source (service-provider?, name?)>

<!ELEMENT service-provider (name?, contact?)

<!ELEMENT contact (contact-name?, email?, phone?)>
<!ATTLIST contact role CDATA #IMPLIED>

<!ELEMENT contact-name (surname?, given-name?)>
<!ELEMENT surname (#CDATA)>
<!ELEMENT give-name (#CDATA)>
<!ELEMENT email (#CDATA)>
<!ELEMENT phone (#CDATA)>
<!ELEMENT name (#CDATA)>

<!ELEMENT destination (service-provider?, contact?, publication?, security?)>

<!ELEMENT publication (title?, acronym?, contact?)>
<!ATTLIST publication type CDATA #REQUIRED>
<!ELEMENT title (#CDATA)>
<!ELEMENT acronym (#CDATA)>

<!ELEMENT security (authentication-code?)>
<!ELEMENT authentication-code (#CDATA)>

<!ELEMENT processing-instructions (instruction?, comments?)>
<!ELEMENT instruction (#CDATA)>
<!ATTLIST instruction sequence CDATA #REQUIRED>
<!ELEMENT comments (#CDATA)>
```

Transfer Information - XML

```
<!DOCTYPE transfer SYSTEM "transfer.dtd">
<transfer xmlns="http://meca.org/transfer" version="1.0">
  <source>
    <service-provider>
      <provider-name>eJournalPress</provider-name>
      <contact role="Project Manager">
        <contact-name>
          <surname>Smith</surname>
          <given-names>John</given-names>
        </contact-name>
        <email>jsmith@ejournalpress.com</email>
        <phone>301-555-1212</phone>
      </contact>
    </service-provider>
    <publication type="journal">
      <title>The Journal of the American Medical Association</title>
      <acronym>JAMA</acronym>
      <contact role="Managing Editor">
        <contact-name>
          <surname>Smith</surname>
          <given-names>Sally</given-names>
        </contact-name>
        <email>ssmith@jama.com</email>
        <phone>301-555-1212</phone>
      </contact>
    </publication>
  </source>
```

```
    <destination>
      <service-provider>
        <provider-name>Highwire</provider-name>
        <contact role="Project Manager">
          <contact-name>
            <surname>Rogers</surname>
            <given-names>John</given-names>
          </contact-name>
          <email>jrogers@highwire.com</email>
          <phone>444-555-1212</phone>
        </contact>
      </service-provider>
      <publication type="preprint-server">
        <title>BioArxiv</title>
        <acronym>BioArxiv</acronym>
        <contact role="Managing Editor">
          <contact-name>
            <surname>Rogers</surname>
            <given-names>Sally</given-names>
          </contact-name>
          <email>vrogers@bioarxiv.com</email>
          <phone>301-555-1212</phone>
        </contact>
      </publication>
    </destination>
    <security>
      <authentication-code>abdasa-13123-abae</authentication-code>
    </security>
    <processing-instructions>
      <instruction sequence="1">Verify XML First</instruction>
      <instruction sequence="2">Load XML</instruction>
      <comments>Free form comments</comments>
    </processing-instructions>
  </transfer>
```

Project Area – Submission Metadata

- **Goal:** To be able to pass **submission information** from system to system
- **Article.xml** (file in JATS format – Green DTD compliant)
- Defines minimal required data*
- Only the highest revision of the submission is written to the XML
 - Article Identifiers (Manuscript Number, UUID, DOI)
 - Article Title *
 - Article Type, Category, Classifications, Keywords
 - Corresponding Author* and Co-Authors (with affiliations)
 - Related articles, Preprints
 - Funding Information, Custom Metadata
 - Figures, tables, supplementary material

Submission Metadata - DTD

```
<!DOCTYPE article PUBLIC "-//NLM//DTD JATS (Z39.96) Journal Archiving and Interchange DTD v1.2d1 20170631//EN"
"https://jats.nlm.nih.gov/archiving/1.2d1/JATS-archivearticle1-mathml3.dtd">
<article dtd-version="1.2d1" article-type="Original Study">
  <front>
    <article-meta>
      <article-id pub-id-type="manuscript">DEMO1234</article-id>
      <article-id pub-id-type="doi">10.1234/91.1191023</article-id>
      <article-categories>
        <subj-group subj-group-type="Article Type">
          <subject id="custom_id_value">Rapid Communication</subject>
        </subj-group>
        <subj-group subj-group-type="Category">
          <subject>Medical Sciences</subject>
        </subj-group>
        <subj-group subj-group-type="Classification">
          <subject vocab-term-identifier="100.1">Medical Sciences</subject>
          <subject vocab-term-identifier="100.1.3">Anatomy and Pathology</subject>
        </subj-group>
      </article-categories>
      <title-group>
        <article-title>This is the article full title</article-title>
        <alt-title alt-title-type="running-head">This is where the short title or running title goes</alt-title>
      </title-group>
      <contrib-group> ... </contrib-group>
      <ext-link specific-use="Custom_Metadata_ID" xlink:href="my manuscript.docx" xlink:title="description of the file"/>
      <history />
      <abstract><p>This is the manuscript abstract as a separate field outside of the word doc</p></abstract>
      <kwd-group> ... </kwd-group>
      <funding-group> ... </funding-group>
      <funding-group> ... </funding-group>
      <counts> ... </counts>
      <custom-meta-group> ... </custom-meta-group>
    </article-meta>
  </front>
  <body />
</article>
```

Submission Metadata - XML

```
<contrib-group>
  <contrib contrib-type="author" corresp="yes">
    <role content-type="1" />
    <role vocab="CRediT" vocab-identifier="http://dictionary.casrai.org/Contributor_Roles"
vocab-term="Writing – original draft" vocab-term-identifier=" http://dictionary.casrai.org/Contributor_Roles/Writing – original
draft" specific-use="Lead"/>
    <role vocab="CRediT" vocab-term="Writing – review & editing" vocab-identifier="
http://dictionary.casrai.org/Contributor_Roles"
vocab-term-identifier="http://dictionary.casrai.org/Contributor_Roles/Writing - review & editing" />
    <role vocab="Other" vocab-term="Additional Research" specific-use="Lead" />
    <name>
      <surname>Smith</surname>
      <given-names>Mary Margaret</given-names>
      <prefix>Ms</prefix>
    </name>
    <contrib-id contrib-id-type="internal">999999</contrib-id>
    <contrib-id contrib-id-type="orcid" specific-use="authenticated">0000-0003-2141-4459</contrib-id>
    <contrib-id contrib-id-type="isni">1234</contrib-id>
    <contrib-id contrib-id-type="pubmed">56781</contrib-id>
    <contrib-id contrib-id-type="researcherid">9999</contrib-id>
    <contrib-id contrib-id-type="scopusid">8888</contrib-id>
    <degrees>PhD, MD</degrees>
    <email>test@ariessc.com</email>
    <xref ref-type="aff" rid="aff1" />
  </contrib>
```


Project Area – Peer Review Data

- **Goal:** To be able to pass **review information** from system to system
 - Questions/Answers
 - Ratings
 - Comments
 - Annotations
 - Red lines / Marked up files
- **Privacy**
 - Reviewer names/contact information can be redacted
 - Based on sending journal's privacy policy
- **Reviews.xml** (file is similar to JATS)
 - Group decided information does not belong in article.xml
 - Multiple reviews & revisions in one file

Peer Review – Sample XML

```
<?xml version="1.0" encoding="utf-8"?>
<!--!DOCTYPE review-group SYSTEM "reviews.xsd"-->
<review-group>
  <version revision="0">
    <reviews>
      <review type="review">
        <history>
          <date date-type="completed" iso-8601-date="2018-02-28">
            <year>2018</year>
            <month>2</month>
            <day>28</day>
          </date>
          <date date-type="due" iso-8601-date="2018-02-14">
            <year>2018</year>
            <month>2</month>
            <day>14</day>
          </date>
          <date date-type="assigned" iso-8601-date="2018-01-29">
            <year>2018</year>
            <month>1</month>
            <day>29</day>
          </date>
        </history>
        <contrib-group>
          <contrib contrib-type="reviewer">
            <role content-type="1" />
            <name>
              <surname>Reviewer</surname>
              <given-names>Bob</given-names>
              <prefix>Dr.</prefix>
            </name>
            <contrib-id contrib-id-type="orcid" authenticated="true">1234-0052-2141-3325</contrib-id>
            <degrees>PhD</degrees>
            <email>BReviewer@mit.edu</email>
            <xref ref-type="aff" rid="aff1" />
          </contrib>
```

```
</review-item-group>
  <review-item review-item-type="recommendation">
    <review-item-question sequence-number="">
      <title>Recommendation Term</title>
      <alt-title/>
      <text/>
    </review-item-question>
    <review-item-response is-confidential="Yes">
      <text>Reject and Transfer</text>
    </review-item-response>
  </review-item>
  <review-item review-item-type="comments">
    <review-item-question sequence-number="">
      <title>Comments to Editor</title>
      <alt-title/>
      <text/>
    </review-item-question>
    <review-item-response is-confidential="Yes">
      <text>This is a great paper but not for this journal.</text>
    </review-item-response>
  </review-item>
  <review-item review-item-type="comments">
    <review-item-question sequence-number="">
      <title>Comments to Author</title>
      <alt-title/>
      <text/>
    </review-item-question>
    <review-item-response is-confidential="No">
      <text>Nice job but needs some work.</text>
    </review-item-response>
  </review-item>
```

```

<review-item review-item-type="rating">
  <review-item-question sequence-number="1">
    <title>On a scale of 1 to 10, how "novel" is the idea presented in this manuscript?</title>
    <alt-title/>
    <text/>
  </review-item-question>
  <review-item-response>
    <rating>5</rating>
  </review-item-response>
</review-item>
<review-item review-item-type="rating">
  <review-item-question sequence-number="2">
    <title>How would you best describe this manuscript?</title>
    <alt-title/>
    <text/>
  </review-item-question>
  <review-item-response>
    <rating>5</rating>
    <text>Average</text>
  </review-item-response>
</review-item>
<review-item review-item-type="multiple-choice">
  <review-item-question sequence-number="3">
    <title>What is your favorite color?</title>
    <alt-title/>
    <text/>
  </review-item-question>
  <review-item-response>
    <rating>1</rating>
    <text>Red</text>
  </review-item-response>
  <review-item-response>
    <rating>3</rating>
    <text>Blue</text>
  </review-item-response>
  <review-item-response>
    <rating>5</rating>
    <text>Yellow</text>
  </review-item-response>
</review-item>

```

```

<review-item review-item-type="file">
  <review-item-question sequence-number="">
    <title>Reviewer Attachment</title>
    <alt-title/>
    <text/>
  </review-item-question>
  <review-item-response is-confidential="Yes">
    <text/>
    <ext-link specific-use="attachment" xlink:href="my manuscript.docx" xlink:title="description of the file"/>
  </review-item-response>
</review-item>

```

```

<version revision="1">
  <reviews>
    <review review-type="decision">
      <history>
        <date date-type="completed" iso-8601-date="2018-03-02">
          <year>2018</year>
          <month>2</month>
          <day>28</day>
        </date>
      </history>
      <contrib-group>
        <contrib contrib-type="Editor-in-Chief">
          <role content-type="" />
          <name>
            <surname>Editor</surname>
            <given-names>Sally</given-names>
            <prefix>Dr.</prefix>
          </name>
          <contrib-id contrib-id-type="orcid" authenticated="true">0000-0003-2141-4459</contrib-id>
          <degrees>PhD</degrees>
          <email>SEditor@mit.edu</email>
        </contrib>
      </contrib-group>
    </review>
  </reviews>
</version>

```

Project Area - Identity

- **Goal:** Unique, **consistent identity** across systems
- Unique identifier
 - When manuscripts are passed from system to system
 - Article number, but not journal specific
- DOI was considered
 - Need for something without a DOI 'prefix' or implied source
- Universally unique identifier - UUID
 - Type 1
 - Date, time, MAC Address, random number
 - d6bf8782-30f7-4cd7-82a8-94ff62352ac4
 - Guarantees no collisions across vendors
 - Support found in many standard coding libraries

Project Area - Transmission

- **Goal:** Simple, consistent way to **send the information** across systems
- SFTP (FTP over SSH) in 2018
 - Phase 1
 - Asynchronous
- Potential future development – move to API (REST, SWORD)
 - Provide status message to sender
 - Synchronous
 - Influenced by specific use cases

Action Items & Timeline

- 2019**
- Publish NISO Recommended Best Practice
 - Establish ongoing NISO group to evolve MECA to accommodate new uses and technology
-

- 2018**
- Expanded the Working Group under NISO
 - Original team – Aries Systems, Clarivate, eJournal Press, Highwire, PLOS
 - Expanded team – American Chemical Society, American Physical Society, Cold Spring Harbor, eLife, IEEE, Green Fifteen, Jisc, Journal of Clinical Investigation, National Library of Medicine, Springer Nature, Taylor and Francis
-



- 2017**
- Present to organizations and communities of interest
 - JATS-Con, CASRAI, SSP, OASPA, Force11, STM, ISMTE, CSE, ALPSP...
 - Authoring platforms, composition vendors, repositories, preprint servers...
 - Gather input from these interested parties
 - Input via manuscriptexchange.org
 - Host Informational Webinars
 - General and Technical sessions planned for July/August
 - Build trial/pilot/reference implementation
 - Refine approach and documentation

Interested in Participating?

- Additional Information

MECA's web page: www.manuscriptexchange.org

NISO's web page: www.niso.org/standards-committees/meca

- Contact us

info@manuscriptexchange.org





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