NISO JATS Standing Committee Recommended Changes Between Journal Article Tag Suite (JATS) NISO/JATS 1.2 and Draft JATS 1.3

(in Response to Comments on NISO Z39.96-2019 (JATS 1.2) through December 2020)

February, 2021

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JATS Version 1.2 to 1.3 Changes

The ANSI/NISO Z39.96-2021: JATS 1.3 version is the latest ANSI/NISO standard JATS. This JATS 1.3 version is fully backward compatible with JATS 1.0 (2012), JATS 1.1 (2015), and JATS 1.2 (2019). Any document valid to JATS 1.0, 1.1, or 1.2 will be valid to the JATS 1.3 version of the same JATS Tag Set.

Changes to JATS 1.2 to produce JATS 1.3 were made in response to user comments on the previous versions, through a series of Committee Drafts (JATS 1.3d1 and JATS 1.3d2). These are incremental changes, adding new functionality such as Questions and Answers (borrowed from BITS) or more detailed descriptions of awards. A new category of element was added, to hold processing metadata that might previously have been recorded in processing instructions.

A more significant change is that all JATS modules filenames are now tied to the version of their release: so, for example, a module that used to be named "JATS-list1.ent" is now named "JATS-list1-3.ent".

1   Catalog and Formal Public Identifiers in JATS 1.3

New catalog files (catalog-jats-v1-3-no-base.xml and catalog-jats-v1-3-with-base.xml) were established as version 1.3 catalogs, with a publication date of xxxx 2021. Each of the JATS-named modules was given a new Formal Public Identifier (fpi) in which JATS "v1.2" became "v1.3 2021xxxx".

The most significant catalog change was in the module naming. *Each of the* "JATS-" named files was given a new name, incorporating the full "1.3" version number. For example, the file that was previously named "JATS-list1.ent" (the filename for the JATS 1.0, 1.1, or 1.2 version) is now named "JATS-list1-3.ent" and, similarly, the former "JATS-display1.ent" is now named "JATS-display1-3.ent".

2   Elements Added

All changes apply to all Tag Sets unless specifically noted below.

2.1   Describing Awards and Grants

There are (at least) three independent concepts at work in the description of a grant or an award:

- <award-id> — An award or grant identifier. Preferably a short, machine-actionable string (such as <award-id>U1605212</award-id> or <award-id>P30DK020572<award-id>).

- <award-name> — The natural language name of the award or grant, that is typically a phrase such as <award-name>Marie Curie Career Integration Grant</award-name> or <award-name>Schleswig-Holstein Excellence Chair</award-name>.

- <award-desc> — An award description holds textual material concerning an award or grant that does not fit in one of the two elements above, for example, the word

"Fellowship", "German Egyptian research long-term scholarship", or the name of an institution or program that is not a funding source.

Two new elements (<award-name> and <award-desc>) were added to <award-group>, as optional and not repeatable. They join the <award-id> in naming an award or grant. The award IDs, award names, and award descriptions are all recorded as part of the same award naming by being in the same <award-group>.

2.2   New Question/Answer Models Added from BITS

BITS has contained a model for questions and answers (not for full quizzes, but quizzes might be constructed from them) since BITS 2.0. That model was rolled into JATS

Question/Answer elements added:

- **<answer>** — The answer to a question.

  - In Publishing, an <answer> may be contained in: <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, and <th> as well as in the following Question/Answer elements: <answer>, <answer-set>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Archiving, an <answer> may be contained in: , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th>, <trans-abstract> as well as in the following Question/Answer elements: <answer>, <answer-set>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Authoring, an <answer> may be contained in: <app>, <bio>, <body>, <boxed-text>, <license-p>, <named-content>, <p>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <answer-set>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

- <u><answer-set></u> — A series of answers, typically in response to a question.

  - In Publishing, an <answer-set> may be contained in: <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Archiving, an <answer-set> may be contained in: , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th>, <trans-abstract> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Authoring, an <answer-set> may be contained in: <app>, <bio>, <body>, <boxed-text>, <license-p>, <named-content>, <p>, <sec>, <styled-content>, <td>, <th> as

well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

- <u>**<explanation>**</u> — A description of a Question/Answer or of just an answer or answer set. The explanation may describe, for example, why this particular answer is incorrect, or where in the text the material for this question can be found, et al.

  - In Publishing, an <explanation> may be contained in: <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, and <th> as well as in the following Question/Answer elements: <answer>, <answer-set>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Archiving, an <explanation> may be contained in: , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th>, <trans-abstract> as well as in the following Question/Answer elements: <answer>, <answer-set>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Authoring, an <explanation> may be contained in: <app>, <bio>, <body>, <boxed-text>, <license-p>, <named-content>, <p>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <answer-set>, <option>, <question>, <question-preamble>, and <question-wrap>.

- **<option>** — One of the possible answer-choices for a multiple-choice question. An attribute can be used to identify options which are correct. An <option> may be used only inside a <question>.

- **<question>** — A question (request for an answer) used in the text or as part of a quiz, exam, etc.

  - In Publishing, a <question> may be contained in: <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Archiving, a <question> may be contained in: , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th>, <trans-abstract> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Authoring, a <question> may be contained in: <app>, <bio>, <body>, <boxed-text>, license-p>, <named-content>, <p>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

- **<question-preamble>** — A container element to hold setup/preamble information when the setup is shared by several questions, for example, a diagram is shown and the

questions are similar to "What is angle a?". A <question-preamble> may be used only inside <question-wrap-group>.

- **<question-wrap>** — Used to model a Question/Answer scheme. These questions may be used, for example, for the Continuing Medical Education articles. The model allows for simple questions followed by their corresponding answers or for a multiple choice setup, where questions are followed by multiple alternative answers (<option> elements), along with the correct answer and an explanation.

  - In Publishing, the element <question-wrap> may be used inside <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Archiving, the element <question-wrap> may be used inside , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th>, <trans-abstract> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

  - In Authoring, the element <question-wrap> may be used inside <app>, <bio>, <body>, <boxed-text>, <license-p>, <named-content>, <p>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap>.

- **<question-wrap-group>** — A container element used to hold a group of <question-wrap> elements, for example, when all the questions share a common preamble (setup).

  - In Publishing, the element <question-wrap-group> may be used inside <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, and <question-preamble>.

  - In Archiving, the element <question-wrap-group> may be used inside , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, <td>, <th>, <trans-abstract> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, and <question-preamble>.

  - In Authoring, the element <question-wrap-group> may be used inside <app>, <bio>, <body>, <boxed-text>, <license-p>, <named-content>, <p>, <sec>, <styled-content>, <td>, <th> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, and <question-preamble>.

2.2.1 Differences in Authoring Because of Questions

When Questions and Answers were added to Authoring, they used some elements and attributes that had long been in Archiving and Publishing, but which Authoring did not contain. In order to keep the Question/Answer models the same in each of the three tag sets, these elements and attributes were added to Authoring, for use inside question elements only.

New Elements in Authoring: Authoring added the following elements because they were used in questions and answers. These elements had never been used in Authoring before:
- <alt-title> (used in <answer>, <answer-set>, <explanation>, <option>, <question>, <question-preamble>, and <question-wrap-group>)
- <compound-subject> (Used in <subj-group>)
- <compound-subject-part> (Used in <compound-subject>)
- <sec-meta> (Used in <question>)
- <subject> (Used in <subj-group>)
- <subj-group> (Used in <sec-meta> and <subj-group>)

New Attributes for Authoring: Authoring added the following attributes because they were used in questions and answers. These attributes had never been used in Authoring before:
- @alt-title-type (Used on <alt-title>)
- @subj-group-type (Used on <subj-group>)
- @vocab (Used on <compound-subject>, <subject>, <subj-group>)
- @vocab-identifier (Used on <compound-subject>, <subject>, <subj-group>)
- @vocab-term (Used on <compound-subject>, <subject>)
- @vocab-term-identifier (Used on <compound-subject>, <subject>)

Changes in Attributes for Authoring: In addition to the Question/Answer element attributes, Authoring added the following attributes to the new question-only additional elements:

- @assigning-authority
  - <compound-kwd>
  - <compound-subject>
  - <subject>
  - <subj-group>
- @content-type
  - <compound-subject>
  - <compound-subject-part>
  - <subject>
- @id and @xml:base
  - <alt-title>
  - <compound-subject>
  - <compound-subject-part>
  - <subject>
  - <sec-meta>
  - <subject>

- <subj-group>
- @specific-use
  - <alt-title>
  - <subj-group>
- @subj-group-type
  - <subj-group>
- @xml:lang
  - <alt-title>
  - <subj-group>

New Parameter Entities for Authoring: Authoring added the following Parameter Entities to be able to tag questions:
- %alt-title-atts;
- %alt-title-elements;
- %compound-subject-atts;
- %compound-subject-model;
- %compound-subject-part-atts;
- %compound-subject-part-elements;
- %sec-back-matter-mix;
- %sec-meta-atts;
- %sec-meta-model;
- %subject-atts;
- %subject-elements;
- %subj-group-atts;
- %subj-group.class;
- %subj-group-model;

2.3   New Processing Metadata

To provide a more complete in-the-XML description of the tag set associated with a document, JATS 1.3 added an optional Processing Metadata element (<processing-meta>) to the models of <article>, <sub-article>, and <response> as a child element, the peer of <front> and <front-stub>.

2.3.1 What is <processing-meta>

The <processing-meta> names (through attributes) the tag set, table model, and MathML options a document follows and (through elements) some of the modeling restrictions or extensions the document claims to follow.

Processing metadata is not considered to be part of the content of the article, nor metadata for citing the article; it is metadata about how the XML is constructed — not about how the article is structured. This metadata is information at the "file level" and thus not part of <article-meta>, but inside the article as a peer to <front>, which is the article and journal metadata

container in JATS. Similarly, <processing-meta> is allowed inside <sub-article> and <response>, as a peer to <front-stub>.

- The elements inside <processing-meta> name tag set extensions (superset) and restrictions (subset, secondary schema, etc.) that the XML document claims to follow. More than one restriction or extension is allowed. The restrictions on a <sub-article> or <response> need not be the same as on the parent <article>.

- The attributes on <processing-meta> describe the modeling choices made by this document in terms of tagset family, tagset, table model, and MathML model.

2.3.2 Contents of <processing-meta>

Holds elements that describe processing information descriptive of the XML-tagged document (document instance):

- **<restricted-by>** — Identification of one of the guidelines or other restrictions (such as a tighter subset schema) the document claims to be following. The content of <restricted-by> may be a name such as "jats4r" or "pmc", or a URI, for example, the URL of a particular JATS4R recommendation. The element is repeatable so that multiple restrictions can be claimed.

- **<extended-by>** — Identification of a JATS extension or superset that the document claims to be following. The content of <extended-by> may be a name, such as "taxpub", or a URI. The element is repeatable so that more than one extension can be claimed.

- **<custom-meta-group>** — To hold other processing metadata a JATS user might want to express in the XML file.

2.3.3 Tagset Identification Attributes

Since the @dtd-version attribute has never provided a complete description of which version of the tag set controls a document, several attributes were added to the <processing-meta> element to describe the version choices more fully:

@tagset-family	Which of the JATS tagset families is the basis for this document's tagset? (e.g., "jats" or "bits")
@base-tagset	Which of the JATS standard tag sets is the basis for this document? (e.g., "publishing" or "archiving")
@table-model	Which table model is used by the tagset for this document? (e.g., "xhtml" or "oasis")
@mathml-version	Which version of MathML is used by the tagset for this document? (e.g., "3.0" or "2.0")

@tagset-family

Which of the JATS tagset families is the basis for this document's tagset? @tagset-family is an optional attribute; there is no default. The attribute has a set value list:

bits	BITS (Book Interchange Tag Suite)
jats	JATS (Journal Article Tag Suite)
sts	STS (Standards Tag Suite)

@base-tagset

Which of the JATS standard tag sets is the basis for this document? @base-tagset is an optional attribute; there is no default. The attribute has a set value list:

archiving	Journal Archiving and Interchange Tag Set
authoring	Article Authoring Tag Set
publishing	Journal Publishing Tag Set

@table-model

Which table model is used by the tagset for this document? @table-model is an optional attribute; there is no default.

both	Both XHTML-inspired and OASIS CALS models are used
none	No table models are used
oasis	The OASIS XML Exchange (CALS) table model
xhtml	The XHTML-inspired table model

@mathml-version

Which version of MathML is used by the tagset for this document? @mathml-version is an optional attribute; there is no default.

2.0	MathML 2.0 is used
3.0	MathML 3.0 is used

2.3.4 Changes to dtd-version

Through Version 1.3d1 of JATS, @dtd-version was a #FIXED attribute on <article>, with its value set in the schema/DTD, that could not be changed by a JATS user. The attribute was intended to name the high-level version of JATS to which the document was valid. Being #FIXED meant that the attribute was always applicable, even if it was not present in the document. For example, the @dtd-version for JATS 1.3d1 was a #FIXED "1.3d1".

Having a set version number was convenient for some applications, but inconvenient for others, particularly for repositories that house many versions at the same time, most of which may be valid to many versions of JATS. It was also not a complete description of the version, since it did not include information such as which tag set (Archiving, Publishing), table model(s) used, what version of MathML (MathML 2.0 or MathML 3.0), etc.

To solve these problems, the @dtd-version attribute was made optional and given a new set of values, one for each published version of JATS, with the intention that new values will be added over time.

The revised @dtd-version attribute has a named set of numerical values from "0.4" to "1.3", including "3.0" for NLM DTD 3.0:

```
(3.0 | 0.4 |
 1.0 | 1.1d1 | 1.1d2 | 1.1d3 | 1.1 |
 1.2d1 | 1.2d2 | 1.2 |
 1.3d1 | 1.3d2 | 1.3)
```

2.3.5 Potential Math Representations

JATS will add the attribute @math-representation to <processing-meta>. This attribute names the style(s) of mathematics representation that may occur in the document collection.

The attribute @math-representation is an NMTOKENS attribute (meaning a space-separated list of values) so that an organization could declare their document to be using both TeX and images, for example, or both MathML and LaTeX.

While the XML schema does not constrain this list, expected values are one or more of the following words:

```
mathml   tex   latex   images   plain-text
```

2.4   Issue Title Group and Issue Subtitle

[Archiving and Publishing only]

An <issue-title-group> element was added as a repeatable peer of <issue-title> within <article-meta>, as a container to hold related issue title metadata (such as issue titles and subtitles).

The new element was modeled on <title-group> and has the following content:

- An <issue-title> element, as the first child (required).

- A new element <issue-subtitle>, as the second child (optional, repeatable) which has the same model and attributes as <issue-title>.

- A <trans-title-group> element as the third child (optional, repeatable), with one <trans-title-group> for each language. The <trans-title-group> element already existed in JATS, where it was used in the article metadata <title-group>. The two uses of <trans-title-group> can be differentiated by context. [Note: The current <trans-title-group> contains: <trans-title> (required) and <trans-subtitle> (optional, repeatable).]

For reasons of backward compatibility, this modeling allows <issue-title> in two places, both as a child of <article-meta> and as a child of <issue-title-group> inside <article-meta>.

2.5   <block-alternatives>

[Archiving and Publishing only]

A container element used to hold a group of block-level processing alternatives, for example, the same figure, once in Spanish, once in English, and once in Portuguese. This element is a physical grouping to contain multiple logically equivalent (substitutable) versions of the same structural object, such as a figure, boxed-text, or table.

- In Publishing, <block-alternatives> is allowed everywhere <fig> is allowed: inside: <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <fig-group>, <floats-group>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, and <styled-content> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, and <question-preamble>.

- In Archiving, <block-alternatives> is allowed in: , <ack>, <app>, <app-group>, <bio>, <body>, <boxed-text>, <disp-quote>, <fig-group>, <floats-group>, <glossary>, <license-p>, <named-content>, <notes>, <p>, <ref-list>, <sec>, <styled-content>, and <trans-abstract> as well as in the following Question/Answer elements: <answer>, <explanation>, <option>, <question>, and <question-preamble>.

3 Changes to Elements

The following element models were changed (in all tag sets unless specifically noted):

- **<disp-formula>** — A <caption> element was added to the OR-group model of <disp-formula>. The location of the <caption> within a formula cannot be controlled.

- **<label> and <caption>** — [Not in Authoring] Label and Caption were allowed to repeat inside the following elements, to take care of the case when the label and caption are presented in more than one language, one label or caption for each language.
  - <fig>
  - <fig-group>
  - <table-wrap>
  - <table-wrap-group>

- **<size>** — [In Archiving only] All face markup was added to the <size> element.

- **<string-date>** — had a fairly restricted number of contexts in previous versions of JATS. It was originally designed for true strings such as "in apple blossom time", but over time has come to be used anywhere a JATS user needs to control the punctuation and spacing of a date.

  The element <string-date> may now be found:
  - [Archiving] <string-date> is now allowed inside: <date>, <element-citation>, <event>, <event-desc>, <history>, <mixed-citation>, <product>, <pub-date>, <related-article>, <related-object>

  - [Publishing] <string-date> is now allowed inside: <element-citation>, <event-desc>, <mixed-citation>, <product>, <related-article>, <related-object>

  - [Authoring] <string-date> is now allowed inside: <element-citation>, <mixed-citation>, <product>, <related-article>, <related-object>

- **<subj-group>** — In Archiving and Publishing, subject groups (<subj-group>) were added to wherever keyword groups (<kwd-group>) were already allowed. Thus <subj-group> can now be used inside the following elements:
  - <ack> (through <sec-meta> in Archiving)

- <app-group>
- <article-categories>
- <chem-struct-wrap>
- <disp-formula>
- <disp-formula-group>
- <fig>
- <fig-group>
- <graphic>
- <media>
- <sec-meta> And through <sec-meta> to elements:
  - [Archiving only]
  - <app>
  - <bio>
  - <boxed-text>
  - <notes>
  - <question>
  - <sec>
  - <trans-abstract> [Archiving only]
- <statement>
- <subj-group>
- <supplementary-material>
- <table-wrap>
- <table-wrap-group>

In Authoring, subject groups (<subj-group>) are allowed inside the following elements:

- <question> (through <sec-meta>
- <subj-group>

- **Table Cell Additions** — Added the following elements to XHTML table cells (<td>) and OASIS CALS table cells (<oasis:entry>). This added these elements to both table models and to <array>:
- <disp-quote>
- <speech>
- <statement>
- <verse-group>

- **<xref>** — Added to the models of the following elements, to allow linking the element to a <supplementary-material> element. Thus the <xref> can be used to point to the data *behind* the figure, table, etc., when that data has been described in a <supplementary-material> element. Multiple cross references allow a structure to point to more than one supplemental object. In all tag sets except Authoring, a <ext-link> can be used to point to an external data source directly rather than to its description through a <supplementary-material> element.
- <fig>

- <fig-group> [Not in Authoring]
- <graphic>
- <media>
- <table-wrap>
- <table-wrap-group> [Not in Authoring]

4   Attributes Added

The following new attributes were added (in all tag sets unless specifically noted):

- **@award-id-type** — was added to <award-id>. This attribute records the type of the award identifier for the element <award-id>; it does not record the type of award. In addition to funder-specific award IDs, publishers may need to include Grant IDs in their JATS funding information. Thus, for example, an @award-id-type attribute can identify the award ID as a DOI from the Crossref's DOI-based Grant Identifier system. The @award-id-type attribute is available only on the <award-id> element.

- **@hreflang** — Language of the target to which a link is pointing. A processor following the link would expect to find a document in the language named. Note: The @hreflang is not the language of the link itself or of the article or structural object in which the link is embedded. @hreflang is available on the following elements:
  - <related-article>
  - <related-object>

- **Tagset Identification Attributes** — described in the section *New Elements Added* under *New Processing Metadata*.

4.1   Custom Type Attribute

Added the attribute Custom Attribute Value Escape Hatch (@custom-type). to the elements
```
<article-id>, <fn>, <person-group>, <pub-id>, <xref>
```

This attribute is used only in the same attribute list as attributes whose values come from set lists in one of the JATS tag sets. When a JATS user desires to record an attribute value that is not named on a set attribute list, they use the attribute value "custom". This tells a JATS processor that this element is not one of the provided types. The attribute @custom-type then records a type value for the element.

The Best Practice rule (unenforceable in DTDs, but enforceable in Schematron at the user's option) says that, if you use the value "custom" from one of these lists, you should then record what type of custom in the @custom-type attribute.
```
<person-group person-group-type="custom" custom-type="statisticians">
<xref  ref-type="custom" custom-type="data-avail-statement">
```

The Archiving Tag Set (Green) does not "need" @custom-type because it has no defined-value attribute lists, and the @custom-type attribute is a way to extend static values lists. However, if JATS does not allow the @custom-type attribute in Green, it would mean that, for the first time, all Blue and Pumpkin documents would not be valid to Green. Therefore, the tag

sets add @custom-type and the suggested value "custom" to Archiving (Green) everywhere that @custom-type is allowed in publishing (Blue).

4.2   Attributes Used in the New Question/Answer Model

- **@audience** — Names the perspective audience for the question(s), Values are not restricted. @audience is available on the following elements:
  - <question-wrap>
  - <question-wrap-group>

- **@correct** — Marks a multiple-choice option as correct or incorrect, using the values "yes" and "no". The attribute @correct is available only on the <option> element.

- **@pointer-to-explained** — Used in an <explanation> to point to the <question>, <answer>, or <option> that is being explained. Values are one or more @ids of the elements being pointed to (using IDREF). @pointer-to-explained is available only on the <explanation> element.

- **@pointer-to-question** — Used in an <answer> to point to the <question>(s) for which it supplies correct answer(s). @pointer-to-question is available only on the <answer> element.

- **@question-response-type** — Used to mark a question as taking a particular type of answer or set of answers, for example, "multiple-choice" or "essay". Values are restricted to "essay", "fill-in-the-blank", "multi-select", "multiple-choice", "short-answer", and "true-false". @question-response-type is available only on the <question> element.

- **@content-type, @id, @specific-use, @xml:base, and @xml:lang** — Added to the following elements:
  - <answer>
  - <answer-set>
  - <explanation>
  - <option>
  - <question>
  - <question-preamble>
  - <question-wrap>
  - <question-wrap-group>

5   Changes to Attributes

There were the following attribute modifications (in all tag sets unless specifically noted):

- **@assigning-authority** — Added to the many elements and can now be found on the following elements:
  - <article-id>
  - <article-version>
  - <award-id>
  - <compound-kwd>

- <compound-subject>
- <contrib-id>
- <custom-meta>
- <ext-link>
- <extended-by>
- <institution-id>
- <isbn>
- <issn>
- <issn-l>
- <issue-id>
- <journal-id>
- <kwd>
- <kwd-group>
- <nested-kwd>
- <object-id>
- <pub-date>
- <pub-id>
- <resource-id>
- <restricted-by>
- <role>
- <self-uri>
- <subj-group>
- <subject>
- <unstructured-kwd-group> [Archiving only]
- <uri>
- <volume-id>

- **@award-id-type** — This attribute records the type of the *award identifier* for the element <award-id>; it does not record the type of award. For example, an @award-id-type attribute can identify the award ID as a DOI from the Crossref's DOI-based Grant Identifier system. The @award-id-type attribute is available only on the <award-id> element.

- @dtd-version — Through Version 1.3d1 of JATS, @dtd-version was a #FIXED attribute on <article>, with its value set in the schema/DTD, that could not be changed by a JATS user. The attribute was intended to name the high-level version of JATS to which the document was valid. Being #FIXED meant that the attribute was always applicable, even if it was not present in the document. For example, the @dtd-version for JATS 1.3d1 was a #FIXED "1.3d1".

  Having a set version number was convenient for some applications, but inconvenient for others, particularly for repositories that house many versions at the same time, most of which may be valid to many versions of JATS. It was also not a complete description of the version, since it did not include information such as which tag set (Archiving, Publishing), table model(s) used, what version of MathML (MathML 2.0 or MathML 3.0), etc.

To solve these problems, the @dtd-version attribute was made optional and given a new set of values, one for each published version of JATS, with the intention that new values will be added over time.

The revised @dtd-version attribute has a named set of numerical values from "0.4" to "1.3", including "3.0" for NLM DTD 3.0:

```
(3.0 | 0.4 |
 1.0 | 1.1d1 | 1.1d2 | 1.1d3 | 1.1 |
 1.2d1 | 1.2d2 | 1.2 |
 1.3d1 | 1.3d2 | 1.3)
```

New attributes were added to record the tagset, math, and table information. (See Processing Metadata.)

- @hreflang — Language of the target to which a link is pointing. A processor following the link would expect to find a document in the language named. Note: The @hreflang is not the language of the link itself or of the article or structural object in which the link is embedded. In JATS 1.3d1, @hreflang was available on the <related-article> and <related-article> elements.

  The @hreflang is now available all the elements that can use @xlink:href:
  - <abbrev>
  - <article-version>
  - <award-desc>
  - <award-group>
  - <award-id>
  - <award-name>
  - <bio>
  - <chem-struct>
  - <collab>
  - <conference>
  - <contrib>
  - <custom-meta>
  - <element-citation>
  - <email>
  - <ext-link>
  - <extended-by>
  - <funding-source>
  - <funding-statement>
  - <graphic>
  - <inline-graphic>
  - <inline-media>
  - <inline-supplementary-material>
  - <institution>
  - <issue-id>
  - <license>
  - <long-desc>

- <media>
- <mixed-citation>
- <named-content>
- <nlm-citation>
- <product>
- <pub-id>
- <related-article>
- <related-object>
- <resource-name>
- <restricted-by>
- <self-uri>
- <supplementary-material>
- <support-source>
- <uri>
- <volume-id>

- @vocabulary attributes: — All four vocabulary attributes (@vocab, @vocab-identifier, @vocab-term, @vocab-term-identifier) added to the following elements:

  - <custom-meta>
  - <see-also>

- **@xml:lang** — Added to the following elements:

  - <issue-title>
  - <issue-title-group>
  - <issue-subtitle>
  - <trans-title-group>

- *Documenting usage* for preprints — JATS Tag Libraries will document that when a citation is of type preprint (@publication-type ="preprint"), then the title of the preprint should be tagged as an <article-title>. The value "preprint" will be added to the @publication-type description and to the suggested values for @publication-type.

- @id and @xml:base given to all new elements.

6 Modified Element Description and Use

The following elements already existed in JATS 1.2. Their models have not changed, but their definitions and expected uses have been clarified or changed:

- **<source>** — Was defined as the title of a *document* (for example, journal, book, conference proceedings) that contains (is the source of) the material being cited. The source definition has broadened to be *resource-related* rather than document-centric and indicate the multi-level nature of cited material.

  New Definition: "Title of the resource (for example, journal, book, podcast, conference proceedings, TV show) that contains (is the source of) the material being cited in a bibliographic reference or product. In the case of a resource that has titles at multiple

hierarchical levels, this is the title of the largest titled resource (e.g., the TV show name and not the episode title)."

- **\<part-title\>** was defined similarly in relationship to a *document*, and is now defined in relationship to a *resource*.

    New Definition: "Title of a portion of a larger resource (for example, a chapter in a book, module in a course, episode of a podcast or television series) described in a bibliographic reference."

- **\<chapter-title\>** — is deprecated and should be replaced in citations by \<part-title\>.

7 New Parameter Entities

The following parameter entities, were added:
- %award-desc-atts;
- %award-desc-elements;
- %award-name-atts;
- %award-name-elements;
- %block-alternatives.class; (Holds the elements that may be included inside a Block Alternatives elements: boxed-text | fig | fig-group | table-wrap | table-wrap-group.)
- %block-alternatives-model;
- %extended-by-atts;
- %extended-by-elements;
- %issue-title-group-atts;
- %issue-title-group-model;
- %issue-subtitle-atts;
- %issue-subtitle-model;
- %processing-meta-atts;
- %processing-meta-model;
- %restricted-by-atts;
- %restricted-by-elements;
- %subj-group.class; (Holds just \<subj-group\>)

7.1 PEs Added for Question/Answer

The following parameter entities, were added:
- %answer-atts;
- %answer-model;
- %answer-para-level;
- %answer-set-atts;
- %answer-set-model;
- %answer-types;
- %block-display-minus-explanation.class;
- %explanation-atts;
- %explanation-model;

- %option-atts;
- %option.class;
- %option-model;
- %question-answer.class;
- %question-answer.ent;
- %question-atts;
- %question-model;
- %question-preamble-atts;
- %question-preamble-model;
- %question-wrap-atts;
- %question-wrap.class;
- %question-wrap-group-atts;
- %question-wrap-group-model;
- %question-wrap-model;