

# SPECIFICATIONS FOR DELIVERING CONTENT TO IEEE XPLORE™

## VERSION 4.15G

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A confidential report for IEEE volunteers, staff, and content-providers

April 2024

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## DOCUMENT STATUS RECORD

Release Date	Status	Version	Amendment / Purpose
18 August 2003	Final	2.0	Initial release
7 May 2004		2.1	Revised with required month formats
27 Jan 2006		2.2	Revised DTD to support new content types, new References DTD, Data Rules, Front and Back Cover pagination
28 Jan 2007		2.3	DTD change: Added Author child element under contributors
25 Jan 2008		2.4	DTD change. New elements added: lccn, tcn, conference_name, meeting_location, ieee_acronym. Attributes for ISSN and ISBN. Some elements removed.
16 Oct 2009		2.5	DTD change: - Added attributes DOE, PACS, INSPEC to <index_terms> - Added unicode_given_name and unicode_surname as child elements of person_name - added major_topic and minor_topic as child elements to journal_article - Added new element open_access as child element to journal_article and conference_article - Added new element show_flag as child element to conference_article
4 May 2010		2.6	New section for Standards added
12 April 2012		2.7	DTD change: - Added new elements man_centralid, cs_articleid, sort_order, cshhtml_flag, reference_flag, peer_review_flag, article_status, package_filename, preprint_date, rapidpost_date, onlinepub_date, cover_image - Added attributes "author_role" "author_order" to element <person_name> Added 4 new Standard Relationship values
30 Nov 2012		2.8	Added new section on DOI Rules, ISSN and ISBN validation
October 2015		4.13	Added support for supplemental material. Changed version numbering scheme to match schema numbering. Added "Plagiarized Flag" for conferences. Added <article_editstate> for transactions, journals, and magazines. This tag allows support for regular articles, pre-print, or rapid post articles without the need for another DTD or schema.
October 2016		4.13A	Updated document to refer to "IEEE JATS DTD version 1.51". This JATS-based DTD "ref-jats1.dtd" replaces the older "reflist-component.dtd", Clarified requirements for rapid post and pre-prints.
31 March 2017	Final	4.13B	Clarifies the requirements for <article_sequence>. Defines use of <major_topic> to capture a conference's track or session information. Made topical browse terms consistent.
16 May 2017	Final	4.13C	Administrative changes.
23 August 2018	Final	4.14C	1. Added new elements: <ul style="list-style-type: none"> <li>• &lt;graphical_abstract&gt; to &lt;multimedia&gt;</li> <li>• &lt;supplement_group&gt; and child elements to support Code and Data repositories.</li> <li>• &lt;conference_stage&gt;</li> <li>• &lt;promo_date&gt; for articles</li> <li>• &lt;organization_detail&gt; with child elements &lt;org_name&gt;, &lt;org_div&gt;, &lt;city&gt;, &lt;state&gt;,</li> </ul>

Release Date	Status	Version	Amendment / Purpose
			<ul style="list-style-type: none"> <li>&lt;country&gt;, &lt;zip&gt;, &lt;ringgold&gt;</li> <li>• &lt;email_address&gt; under &lt;person_name&gt;</li> </ul> <ol style="list-style-type: none"> <li>Enforced orcid format to #####-#####-##### where # is an integer and last char may be X</li> <li>Added type "media" as part of &lt;supplement_group&gt; for supporting external links</li> <li>Removed &lt;isbn&gt; from &lt;journal_metadata&gt;</li> </ol>
3 December 2018	Final	4.15	Updated standard_modifier, standard_relationship. Added author_type to person_name
3 July 2019	Draft	4.15a	Added <corp_name> to <author>. Added <ord_dept> to <organization_detail>
6 January 2020	Final	4.15b	Made <org_name>_optional, Added <supplement_group> to Standards.
8 April 2020	Not Released	4.15c	Added <pub_amsid> <issue_amsid> <art_amsid> for Journals, Conferences and Standards. Added <ecfid> for Journals and Conferences. Added <copyright> at the article level for Journals and Conferences
16 September 2020	Final	4.15d	Incorporates changes from version 4.15c. Added <project_code> for Conferences. Swapped the attributes values for "author_role" and "author_type" Added attribute value "primary-corresponding" to "author_role"
21 August 2023	Final	4.15e	<ol style="list-style-type: none"> <li>Added &lt;onlinepub_date&gt; and &lt;promo_date&gt; to <a href="#">action:open action:295106</a>standard_article</li> <li>Added attribute promo_type to &lt;promo_date&gt;</li> <li>Added "technology_trends" as a new value for attribute type in &lt;publication_type&gt; for journals</li> <li>Fixed improper closing tag typo on &lt;copyright&gt;.</li> </ol>
12 February 2024	Final	4.15f	Added "article_id" to "journal_article"
23 April 2024	Final	4.15g	<ol style="list-style-type: none"> <li>Added "online" attribute to &lt;article_editstate&gt; in &lt;journal_article&gt;</li> <li>Added &lt;assocart_doi&gt; in &lt;journal_article&gt;</li> <li>Increased the length of &lt;conference_name&gt;, &lt;full_title&gt;, &lt;normalized_title&gt;, and &lt;abbrev_title&gt; to 300 characters.</li> </ol>

## RELATED DOCUMENTS

1. IEEE Content Types v1.1
2. IEEE Content Delivery Schema (*content\_delivery.xsd*)
3. PDF Specification for IEEE Xplore® v4.12

## 1.0 Overview

This document details the data structure and procedures necessary for delivering issue and article metadata and full article files (i.e., XML and PDF) from Journals, Transactions, Magazines, Conference Proceedings, and Standards destined for inclusion in IEEE Xplore. It is intended for use by content providers (i.e., societies, non-IEEE entities, and external sources/publishers) who are able to provide issue and article metadata (as specified in this document) as well as the article PDF files and any associated multimedia or supplementary material (as specified in Appendix D).

This document requires that the XML provided will be issue-based. However, for some IEEE JATS based workflows the XML may be provided on an article basis. *Please contact IEEE before using this schema on an article basis.*

The latest schema allows an article (PDF) to be declared a regular article, pre-print article, or a rapid post article. This feature eliminates the need for a second DTD or schema. See Section 2.1.5.

The following table gives a list of requirements for submitting XML metadata and also provides the relevant section numbers.

Requirement	Relevant Section(s)
All metadata must be delivered in XML and conform to the IEEE Content Delivery schema	Section 2.1 for Journals and Magazines Section 2.2 for Conferences Section 2.3 for Standards Appendix D for Multimedia or Supplemental Material
All special characters must be converted to Unicode UTF-8 encoding. <i>The exception being author names where only non-accented ASCII is allowed.</i>	Section 3 Unicode Section 3.1 Author Names
All existing publication titles must conform to IEEE naming conventions	Section 4
All PDFs must conform to the IEEE standard for PDFs	Section 5
Requirements for assigning article order and capturing conference track or session information.	Section 2.2 Section 2.2.4.1
Delivery of data (XML & PDF) must be in accordance with IEEE guidelines. This includes file naming conventions, DOI, ISSN, and ISBN rules.	Section 13
All Abstract & Indexing metadata (A&I) must be delivered as a valid XML instance, as defined by the <i>content_delivery.xsd</i> .	Section 6. The most recent version of the schema is available <a href="#">online</a> .
The content provider must submit a sufficient set of samples to IEEE for review prior to beginning production.	Section 7
Definition of content access rules	Section 11
Requirements for copyrights	Section 10
Additional information	Section 8, Section 9, and Section 14

For **non-IEEE content**, it is important to note that the content provider, society, or non-IEEE entity, maintains the relationship with the conversion vendor. **IEEE staff** is available for **general support** regarding the schema, if necessary (see page 27 for details) **but does not provide support regarding conversion issues**.

## 2.0 IEEE Content Delivery schema

### 2.1 Transaction /Journal/Magazine Data Requirements

The following table and samples detail the XML elements required to add Transaction/Journal/Magazine<sup>1</sup> data to IEEE Xplore. Field lengths and number of occurrences are specified in the XML Schema.

Element Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
<b>Depositor Metadata</b>			
Timestamp	Indicates when the material is submitted to IEEE.	Required	Must follow the format: YYYYMMDDHHMM <b>NOTE:</b> Hours (HH) and Minutes (MM) are <i>optional</i>
<depositor> name		Required	Alphanumeric text
<depositor> e-mail address		Required	Alphanumeric text
<b>Transaction/Journal/Magazine Publication Metadata</b>			
publication_type		Required	List: journal, magazine, newsletter, technology trends
full_title	See Section 4.0	Required	Alphanumeric text
normalized_title	See Section 4.0	If available	Alphanumeric text
abbrev_title	See Section 4.0	If available	Alphanumeric text
journal_acronym	Provided by depositor, checked by IEEE to conform to IEEE standard.	Required	Alphanumeric text
Issn	Attributes may be Paper, Electronic, CD, Microfiche	If available	Numeric text, last char is alphanumeric
Coden		If available	Alphanumeric text
<publisher>publisher_name	To be obtained from Copyright page of journal	Required	Alphanumeric text
<publisher_location> city		If available	Alphanumeric text
<publisher_location> country		If available	Alphanumeric text
<copyright>copyright_holder	Name of copyright holder	Required	Alphanumeric text
<copyright>year	Publication copyright year	Required	Numeric text
<pubtopicalbrowse>topic	See Appendix C	If available	Alphanumeric text
<pub_amsid>	Publication AMSid	If available	Numeric
<b>Transaction/Journal/Magazine Issue Metadata</b>			
<publication_date>day		If available	Numeric text
<publication_date>month	See Section 3.3	Required	Alphanumeric text
<publication_date>year		Required	Numeric text
<journal_volume>volume		Required	Alphanumeric text
<journal_volume>issue		Required	Numeric text
<journal_volume>part		If available	Alphanumeric text
<journal_volume>issue_pdf	Issue PDF file name. must end in lower-case ".pdf".	If available	Alphanumeric text
<journal_volume>issue_amsid	Issue AMSid	If available	Numeric
<b>Transaction/Journal/Magazine Article Metadata</b>			
article_sequence	The numeric sequence in which an article appears in the table of contents in its originally published format.	Required	Numeric text
art_amsid	Article AMSid	If available	Numeric
Pubitype	Article content type. See Appendix B	Required	Fixed List
major_topic	Refers to sections within an issue	If available	Alphanumeric text
minor_topic	Refers to sections within an issue	If available	Alphanumeric text
file	PDF filename	Required	Alphanumeric text
title	Article title. See Section 13.1	Required	Alphanumeric text
<contributor><author>	Container elements for	If available	

<sup>1</sup> Magazine metadata will use the same metadata structure and xml elements as defined for journals.

Element Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
	organization and person_name		
Organization	Author's or contributor's organization/ affiliation	If available	Alphanumeric text
organization_detail	Structured version of organization	If available	
org_name	Organization's name	If available	Alphanumeric text
org_div	Organization's division	If available	Alphanumeric text
org_dept	Organization's department	If available	Alphanumeric text
City	City where the organization is located	If available	Alphanumeric text
State	State or Province where the organization is located	If available	Alphanumeric text
Zip	ZIP or Postal Code	If available	Alphanumeric text
Country	County where the organization is located	If available	Alphanumeric text
Ringgold	Ringgold ID	If available	Alphanumeric text
person_name	Container elements for given_name, surname, etc.	Required	
author_order	attribute to <person_name> The order of the author in an article;	If available	Numeric text
author_role	attribute to <person_name> The role of an author. See Section 3.1 for possible values	If available	Alphanumeric text
given_name	Contributor's given name, including middle name(s). May consist of initials.	If available	Alphanumeric text
Surname	Contributor's surname	If available	Alphanumeric text
unicode_given_name	Given name with Unicode values for special characters	If available	Alphanumeric text
unicode_surname	Surname with Unicode values for special characters	If available	Alphanumeric text
Suffix	Suffix of an author name, e.g. junior, senior, III	If available	Alphanumeric text
Nickname	Preferred name e.g. Tom, Bob, etc.	If available	Alphanumeric text
Orcid	Author's orcid ID	If available	Numeric
email_address	Author's email address	If available	Alphanumeric text
corp_name	Corporat Name	If available	Alphanumeric text
Bios	Author's Bio. It may not contain any Unicode or accent marks.	If available	Alphanumeric text
<pages>first_page	See Section 3.2	Required	Alphanumeric text
<pages>last_page	See Section 3.2	Required	Alphanumeric text
<pages>other_pages	List of non-contiguous pages	If available	Alphanumeric text
Abstract	Abstract for the article	If available	Alphanumeric text
open_access	Indicates if the article is available for free. Attributes start_date and end_date	If available	Boolean text, "Y" or "N" Default is "N"
license_uri	URI of the license for the article	If available	Alphanumeric text
Doi	Digital Object Identifier. See Section 13.4	If available	Alphanumeric text
<fundrefgrp>fundref>funder_name	Name of the funding organization from FundRef Registry	If available	Alphanumeric text
<fundrefgrp><fundref>funderid	DOI of funding organization from FundRef Registry	If available	Alphanumeric text
<fundrefgrp><fundref>grant_number	The grant number	If available	Alphanumeric text
ecfid	Electronic Copyright Form ID	If available	Alphanumeric text
article_id	Unique Article ID	If available	Alphanumeric text
<copyright>copyright_holder	Copyright Holder	If available	Alphanumeric text
<copyright>year	Copyright Year	If available	Numeric
copyright_statement	Copyright statement associated with the article PDF	If available	Alphanumeric text
man_centralid	Manuscript Central ID	If available	Alphanumeric text
cs_articleid	Computer society article ID	If available	Alphanumeric text
sort_order	<b>INTERNAL USE ONLY</b>	If available	Numeric text

Element Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
cshtml_flag	Indicates if html version of the article is present in CSDL	If available	Boolean text, "Y" or "N" Default is "Y"
reference_flag	Indicates if references are present for the article	If available	Boolean text, "Y" or "N" Default is "Y"
peer_review_flag	Indicates if the article was peer reviewed	If available	Boolean text, "Y" or "N" Default is "Y"
article_status	Indicates the status of the article; possible values are active or inactive; inactive articles will not be displayed in IEEE Xplore	If available	Alphanumeric text
article_editstate	The current lifecycle stage of the article	If available	Fixed list "preprint," "rapidpost", "regular," "online". Default is "regular"
package_filename	Filename of package containing HTML, XML, graphics, etc. Example: 23jproc4complete-1.tar See Section 13.3	If available	Alphanumeric text
cover_image	Filename of cover image. Example: comp16_12.jpg See Section 13.3	If available	Alphanumeric text
preprint_date	Date when the Preprint <sup>2</sup> version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
rapidpost_date	Date when the RapidPost <sup>3</sup> version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
onlinepub_date	Date when the final version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
<promo_date>@promo_type	The type of promo	If available	Alphanumeric text
<promo_date>@start_day	Day the promo period begins	If available	Numeric
<promo>@start_month	Month the promo period begins	If available	Numeric
<promo>@start_year	Year the promo period begins	If available	Numeric
<promo>@end_day	Day the promo period ends	If available	Numeric
<promo>@end_month	Month the promo period ends	If available	Numeric
<promo>@end_year	Year the promo period ends	If available	Numeric
<assocart_doi>	The associated DOI	If available	Alphanumeric text
<index_terms> term	Allowable attributes: author, DOE, PACS, INSPEC	If available	Alphanumeric text
<multimedia>summary	See Appendix D	If available	Alphanumeric text
<multimedia>compressed	See Appendix D	If available	Alphanumeric text
<multimedia>component	See Appendix D	If available	Alphanumeric text
<multimedia>graphical_abstract	See Appendix D	If available	Alphanumeric text
<supplement_group>	See Appendix D	If available	Alphanumeric text
References	Reference filename. See Section 6.1	If available	Alphanumeric text

**Table 1. Transaction /Journal/Magazine Data Requirements****2.1.1 Depositor information example**

```

<head>
  <timestamp>11192002082647</timestamp>
  <depositor>
    <name>Parity Computing</name>
    <email_address>ieeelegacy@cparity.com</email_address>
  </depositor>
</head>

```

<sup>2</sup> Article that has been accepted for publication in a future issue of a journal but has not been fully edited and content may change prior to final publication.

<sup>3</sup> Article that has been accepted for inclusion in a future issue of a journal. Content is final as presented, with the exception of pagination.



**2.1.2 Transaction/Journal/Magazine Publication information example**

```

<journal_metadata>
  <publication_type type="journal"/>
  <full_title>IEEE Transactions on Antennas and Propagation</full_title>
  <normalized_title>Antennas and Propagation, IEEE Transactions on</normalized_title>
  <journal_acronym>TAP</journal_acronym>
  <issn type="Paper">0018-926X</issn>
  <publisher>
    <publisher_name>IEEE</publisher_name>
  </publisher>
  <copyright>
    <copyright_holder>IEEE</copyright_holder>
    <year>2015</year>
  </copyright>
  <pubtopicalbrowse>
    <topic>Fields, Waves & Electromagnetics</topic>
  </pubtopicalbrowse>
  <pub_amsid>8782706</pub_amsid>
</journal_metadata>

```

**2.1.3 Issue information example**

```

<journal_issue>
  <publication_date>
    <month>March</month>
    <year>1970</year>
  </publication_date>
  <journal_volume>
    <volume>18</volume>
    <issue>2</issue>
    <issue_pdf>mar1970.pdf</issue_pdf>
    <issue_amsid>7945302</issue_amsid>
  </journal_volume>
</journal_issue>

```

**2.1.4 Article information example**

```

<journal_article>
  <article_sequence>5</article_sequence>
  <art_amsid>7869261</art_amsid>
  <pubitype type="orig-research"/>
  <file>ieee_aps_ap_1970018_schmid.pdf</file>
  <title>A prediction model for multipath propagation of pulse signals at VHF and UHF over irregular terrain</title>
  <contributors>
    <author>
      <organization_detail>
        <org_name>Sanford Research Institute</org_name>
        <city>Menlo Park</city>
        <state>CA</state>
        <country>USA</country>
      </organization_detail>
      <organization_detail>
        <org_name>Princeton University</org_name>
        <org_div>School of Engineering and Applied Science</org_div>
        <org_dept>Department of Electrical Engineering</org_dept>
        <city>Princeton</city>
        <state>NJ</state>
        <country>USA</country>
      </organization_detail>
    </author>
  </contributors>

```

```

        <ringgold>11111</ringlod>
    </organization_detail>
    <person_name>
        <given_name>Hermann</given_name>
        <surname>Schmid</surname>
    </person_name>
</author>
<author>
    <organization_detail>
        <org_name>Columbia University</org_name>
        <org_div>Fu Foundation School of Engineering and Applied
Science</org_div>
        <org_dept>Department of Electrical Engineering</org_dept>
        <city>New York </city>
        <state>NY</state>
        <country>USA</country>
        <ringgold>12344</ringgold>
    </organization_detail>
    <person_name>
        <given_name>M. J.</given_name>
        <surname>Hytch</surname>
        <unicode_given_name>M. J.</given_name>
        <unicode_surname>H&#x00ff;tch</surname>
        <nickname>Herm</nickname>
        <orcid>0000-0002-1694-233X</orcid>
        <email_address>mjhytch@ieee.org</email_address>
    </person_name>
    <bios>Martin J. Hytch received the Ph.D. from the University of Cambridge,
Cambridge, MA, in 1991, with the Ph.D. thesis entitled "Quantitative
high-resolution transmission electron microscopy (HRTEM)."  

He moved to France to work with the Centre National de la Recherche Scientifique (CNRS),
Center for Chemical Metallurgy, Vitry-sur-Seine, where he joined the CNRS in 1995. Since
moving to the CEMES-CNRS, Toulouse, France, in 2004, he has been working on aberration-
corrected HRTEM and electron holography for the study electronic devices. Since 2009, he has
been the Head of the Nanomaterials group with the CEMES. His research focuses on the
development of quantitative electron microscopy techniques for materials science applications. He
is notably the inventor of geometric phase analysis and dark-field holography (HoloDark), which are
two techniques for the measurement of strain at the nanoscale. The techniques have been applied
to a wide range of material problems and nanostructures. He has published more than 80 papers in
international journals and given over 20 invited talks at international conferences.</bios>
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</contributors>
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    <last_page>258</last_page>
</pages>
<abstract>A prediction model is presented that permits calculation of the probability of
occurrence of distinct multipath propagation of pulse signals at VHF and UHF over irregular
terrain. The model applies to terrain characterized by an irregular distribution of obstacles such
as hills, buildings, trees, etc., so as to make it impractical to calculate the effect of multipath
propagation by diffraction or bistatic-reflection theory. Statistical data on wave propagation
over irregular terrain form the basis for the empirical model developed. Generally, the model
predicts that 1) for constant transmitter-receiver separation, the amplitudes of the received
echoes decrease with increasing echo delay, and 2) for constant echo delay, the occurrence of
echo pulses increases as the transmitter-receiver distance increases.</abstract>
<open_access>N</open_access>
<license_uri>http://creativecommons.org/licenses/by/2.0/legalcode</license_uri>

```

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<doi>10.1109/TAP.1970.3184573</doi>
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  <funder_id>10.13039/100006196</funderid>
  <grant_number>317999<grant_number>
</fundrefgrp>
<ecfid>12345</ecfid>
<article_id>0040021</article_id>
<copyright>
  <copyright_holder>IEEE</copyright_holder>
  <year>2020</year>
</copyright>
<man_centralid>TC-2009-06-0260</man_centralid>
<reference_flag>Y</reference_flag>
<article_status>active</article_status>
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<preprint_date>
  <day>09</day>
  <month>Dec.</month>
  <year>2010</year>
</preprint_date>
<onlinepub_date>
  <day>09</day>
  <month>Dec.</month>
  <year>2010</year>
</onlinepub_date>
<promo_date start_day="01" start_month="07" start_year="2018" end_day="31"
end_month="08" end_year="2018"/>
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  <term>7820Ci</term>
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<index_terms type="author">
  <term>Multipath channels</term>
  <term>Radio propagation terrain factors</term>
  <term>UHF radio propagation</term>
  <term>VHF radio propagation</term>
</index_terms>
<references>ieee_aps_ap_1970018_schmid-ref.xml</references>
</journal_article>

```

### 2.1.5 Article Edit State

The schema element `<article_editstate>` can have one of 3 predefined attribute values (1) "regular", (2) "preprint", (3) "rapidpost", and (4) "online". These correspond to the 4 possible stages in an article's life. By default, the value is "regular". The value "preprint" is for an article that has been accepted for publication in a future issue of a journal but has not been fully edited and content may change prior to final publication. A value of "rapidpost" is for an article that has been accepted for inclusion in a future issue of a journal. Content is final as presented, with the exception of pagination. Using this tag eliminates the need for a separate DTD/schema for rapid-posts and pre-prints.

The text described in the next two paragraphs is typically added as a watermark. The text must meet these requirements:

1. Does not overprint any existing text.
2. Is sized at 8 points.
3. Is typically set in Times Roman.

4. Typically appears within  $\frac{1}{4}$  of an inch (6-7mm) away from the top of the page. However, it must not overprint existing text (Item 1).

If the <article\_editstate> is “preprint” then the following text must be added to the top of each page: “Article that has been accepted for publication in a future issue of a journal but has not been fully edited and content may change prior to final publication.”

If the <article\_editstate> is “rapidpost” then the following text must be added to the top of each page: “Article that has been accepted for inclusion in a future issue of a journal. Content is final as presented, with the exception of pagination.”

If the <article\_editstate> is “online” then the article is the online version of an article.

**NOTE:** Due to the way the IEEE system is implemented there must be a (1) separate issue XML file for all “regular” articles a (2) separate issue XML file for “rapid-posts” and/or “pre-prints” and a (3) separate issue XML file for all “original” articles.

The XML for the “rapid-posts” and/or “pre-prints” must have <volume>PP</volume> and <issue>99</issue>. For processing purposes the tag <article\_sequence> must be assigned. This tag does not affect the way an article is displayed in IEEE Xplore.

#### **2.1.6 Promotional Date**

The promotional date is an empty tag with attributes for the start and end dates. It applies to individual articles only. Each date must have a month, day, and year. Month, Day, and Year are always numeric values. Providing just a start date means the promotional period never ends. Providing just an end date means the promotion starts as soon as the XML and PDFs are processed by IEEE. When choosing your promotional dates please factor in time needed to process the files.

## 2.2 Conference Data Requirements

The following table and samples detail the XML elements needed to add Conference data to IEEE Xplore.

Element/Attribute Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
<b>Depositor Metadata</b>			
Timestamp		Required	Numeric
<depositor>name		Required	Alphanumeric text
<depositor>e-mail_address		Required	Alphanumeric text
<b>Conference Publication Metadata</b>			
full_title <sup>4</sup>	The title of the conference proceedings	Required	Alphanumeric text
publication_type	Fixed value=conference	Required	Fixed text
conference_name	The name of the meeting /conference. See Section 4	If available	Alphanumeric text
meeting_location	Place where conference was held	Required	Alphanumeric text
normalized_title	See Section 4	Required	Alphanumeric text
abbrev_title	The abbreviated title by which the conference is commonly cited	If available	Alphanumeric text
conference_acronym	Jargon name (e.g. OCEANS, ISSCC)	If available	Alphanumeric text
ieee_acronym	IEEE assigned acronym which may be different from the conference acronym	Required	
isbn	10 or 13 digits possible. Attributes may be Paper, Electronic, CD, Microfiche	If available	Alphanumeric text
issn	Attributes may be Paper, Electronic, CD, Microfiche	If available	Alphanumeric text
lccn	Library of Congress Control Number	If available	Alphanumeric text
tcn	TAB assigned conference number for internal use	If available	Alphanumeric text
project_code	TAB assigned code used for billing Internal Use	If available	Alphanumeric text
Coden		If available	Alphanumeric text
conference_stage	Must be Open-Preview, Early-Access, or Final (if present),	If available	Fixed List
<publisher> publisher_name		If available	Alphanumeric text
<publisher_location> city		If available	Alphanumeric text
<publisher_location> country		If available	Alphanumeric text
<pubtopicalbrowse>topic	See Appendix C	Required	Alphanumeric text
<copyright> copyright_holder		Required	Alphanumeric text
<copyright> year		Required	Numeric
parent_title	The parent conference name or title	If available	Alphanumeric text
pub_amsid	Publication AMS ID	If available	Numeric
<b>Conference Issue Metadata</b>			
<conference_date>start_day		If available	Alphanumeric text
<conference_date>start_month	See Section 3.3	Required	Alphanumeric text
<conference_date>start_year		Required	Alphanumeric text
<conference_date>end_day		If available	Alphanumeric text
<conference_date>end_month	See Section 3.3	Required	Alphanumeric text
<conference_date>end_year		Required	Alphanumeric text
<conference_volume>volume	Volume number of the printed conference proceedings. If <i>single volume</i> must have <b>value=00</b>	Required	Numeric text
<conference_volume>part		If available	Numeric text
<conference_volume>issue_pdf	Name of the complete issue PDF file. Must end in lower-case ".pdf"	If available	Alphanumeric text
<conference_volume>issue_amsid	Issue AMSID	If available	Numeric
<b>Conference Article Metadata</b>			

<sup>4</sup> Note - proceedings\_title is no longer used. Use "full\_title" instead.

Element/Attribute Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
article_sequence	The numeric sequence in which an article appears in the table of contents in its originally published format.	Required	Numeric text
art_amsid	Article AMSid	If available	Numeric
Pubitype	Article content type. See Appendix B	Required	Fixed List
major_topic	First-level heading. Or conference track.	If available	Alphanumeric text
minor_topic	Second-level heading	If available	Alphanumeric text
file	PDF file name. See Section 13.2	Required	Alphanumeric text
article_title	Article title. See Section 13.1	Required	Alphanumeric text
<contributor><author>	Container elements for organization and person_name	If available	
Organization	Author's or contributor's organization/affiliation	If available	Alphanumeric text
organization_detail	Structured version of organization	If available	
org_name	Organization's name	If available	Alphanumeric text
org_div	Organization's division	If available	Alphanumeric text
org_dept	Organization's department	If available	Alphanumeric text
City	City where organization is located	If available	Alphanumeric text
State	State where organization is located	If available	Alphanumeric text
Zip	ZIP or Postal Code	If available	Alphanumeric text
Country	Country where organization is located	If available	Alphanumeric text
Ringgold	Ringgold ID	If available	Alphanumeric text
person_name	Container elements for given_name, surname, etc.	Required	
author_order	attribute to <person_name> The order of the author in an article;	If available	Numeric text
author_role	attribute to <person_name> The role of an author. See Section 3.1 for possible values	If available	Alphanumeric text
given_name	Contributor's given name, including middle name(s). May consist of initials.	If available	Alphanumeric text
Surname	Contributor's surname	If available	Alphanumeric text
unicode_given_name	Given name with Unicode values for special characters	If available	Alphanumeric text
unicode_surname	Surname with Unicode values for special characters	If available	Alphanumeric text
Suffix	Suffix of an author name, e.g. junior, senior, III	If available	Alphanumeric text
Nickname	Preferred name (e.g. Tom, Bob, etc. )	If available	Alphanumeric text
Orcid	Author's orcid ID	If available	Numeric
email-address	Author's email address	If available	Alphanumeric text
corp_name	Corporation's name	If available	Alphanumeric text
Bios	Author's Bio. It may not contain any Unicode or accent marks	If available	Alphanumeric text
<pages>first_page	See Section 3.2	Required	Alphanumeric text
<pages>last_page	See Section 3.2	Required	Alphanumeric text
<pages>other_pages	List of non-contiguous pages	If available	Alphanumeric text
Abstract		If available	Alphanumeric text
open_access	Indicates if the article is available for free. <b>Not supported at present for conferences</b>	If available	Boolean text, "Y" or "N" Default is "N"
license_uri	URI of the license for the article	If available	Alphanumeric text
show_flag	Indicates if the author was physically present at the conference to present the paper	If available	Boolean text, "Y" or "N" Default is "Y"
article_quality	Indicates whether article is not in field of IEEE interest or has quality concerns	If available	Fixed values: "Y", "X" or "N"
Doi	Digital Object Identifier. See Section 13.4	If available	Alphanumeric text
cs_articleid	Computer society article ID	If available	Alphanumeric text
copyright_statement	Copyright statement associated with the article PDF	If available	Alphanumeric text
<fundrefgrp><fundref>funder_name	Name of the funding organization from FundRef Registry	If available	Alphanumeric text

Element/Attribute Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
<fundrefgrp><fundref>funderid	DOI of funding organization from FundRef Registry	If available	Alphanumeric text
<fundrefgrp><fundref>grant_number	The grant number	If available	Alphanumeric text
sort_order	<b>INTERNAL USE ONLY</b>	If available	Numeric text
ecfid	Electronic Copyright Form ID	If available	Alphanumeric text
<copyright>copyright_holder	Copyright Holder	If available	Alphanumeric text
<copyright>year	Copyright Year	If available	Numeric
cshtml_flag	Indicates if html version of the article is present in CSDL	If available	Boolean text, "Y" or "N" Default is "Y"
reference_flag	Indicates if references are present for the article	If available	Boolean text, "Y" or "N" Default is "Y"
peer_review_flag	Indicates if the article was peer reviewed	If available	Boolean text, "Y" or "N" Default is "Y"
article_status	Indicates the status of the article; possible values are active or inactive; inactive articles will not be displayed in IEEE Xplore	If available	Alphanumeric text
package_filename	Filename of package containing HTML, XML, graphics, etc. Example: 23jproc4complete-1.tar See Section 13.3	If available	Alphanumeric text
cover_image	Filename of cover image; Example: comp16_12.jpg See Section 13.3	If available	Alphanumeric text
<index_terms>term	Allowable attributes: author, DOE, PACS, INSPEC	If available	Alphanumeric text
preprint_date	Date when the Preprint version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
rapidpost_date	Date when the RapidPost version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
onlinepub_date	Date when the final version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
<promo_date>@start_day	Day the promo begins	If available	Numeric
<promo_date>@start_month	Month the promo begins	If available	Numeric
<promo_date>@start_year	Year the promo begins	If available	Numeric
<promo_date>@end_day	Day the promo ends	If available	Numeric
<promo_date>@end_month	Month the promo ends	If available	Numeric
<promo_date>@end_year	Year the promo ends	If available	Numeric
<multimedia>summary	See Appendix D	If available	Alphanumeric text
<multimedia>compressed	See Appendix D	If available	Alphanumeric text
<multimedia>component	See Appendix D	If available	Alphanumeric text
<multimedia>graphical_abstract	See Appendix D	If available	Alphanumeric text
<supplement_group>	See Appendix D	If available	Alphanumeric text
References	Reference filename. See Section 6.1	If available	Alphanumeric text

**Table 2. Conference Data Requirements****2.2.1 Depositor information example**

```

<head>
  <timestamp>11192002082647</timestamp>
  < depositor>
    <name>Parity Computing</name>
    <email_address>ieelegacy@cparity.com</email_address>
  </ depositor>
</head>

```

**2.2.2 Conference Publication information example**

```

<conference_metadata>

```

```

<publication_type type="conference"/>
<full_title>2006 Proceedings of the 32nd European Solid-State Circuits
Conference</full_title>
<conference_name>32nd European Solid-State Circuits Conference</conference_name>
<meeting_location>Paris, France</meeting_location>
<normalized_title>The 32nd European Solid-State Circuits Conference, Proceedings
of</normalized_title>
<conference_acronym>ESSCIR</conference_acronym>
<ieee_acronym>ESSC</ieee_acronym>
<isbn type="paper">1-4244-0302-2</isbn>
<isbn type="electronic">978-0-7695-2354-5</isbn>
<issn type="paper">1930-8833</issn>
<lccn>C123499999</lccn>
<tcn>456667-23</tcn>
<project_code>1714K</project_code>
<conference_stage>Final</conference_stage>
<publisher>
  <publisher_name>IEEE</publisher_name>
</publisher>
<copyright>
  <copyright_holder>IEEE USA</copyright_holder>
  <year>2006</year>
</copyright>
<pubtopicalbrowse>
  <topic>Components, Circuits, Devices & Systems</topic>
</pubtopicalbrowse>
<parent_title>Stereoscopic 3D Circuits Conference</parent_title>
<pub_amsid>6937032</pub_amsid>
</conference_metadata>

```

### 2.2.3 Conference Issue information example

```

<conference_issue>
  <conference_date start_month="Sept." start_year="1978" end_month="Sept."
end_year="1978"/>
  <conference_volume>
    <volume>10</volume>
    <issue_pdf>ESSCIR.pdf</issue_pdf>
    <issue_amsid>6937467 </issue_amsid>
  </conference_volume>
</conference_issue>

```

### 2.2.4 Conference Article information example

```

<conference_article>
  <article_sequence>45</article_sequence>
  <art_amsid>6937482</art_amsid>
  <pubitype type="orig-research"/>
  <major_topic> Session 5. Economics and Management of Coastal Regions
</major_topic>
  <file>oceans_1978010_01sep_0143pezz.pdf</file>
  <title>Great Lakes Shoreline Erosion - Western Lake Michigan</title>
  <contributors>
    <author>
      <organization>Univ. of Petroleum and Minerals, School of Engineering,
      Department of Petroleum Engineering, Dhahran, Saudi Arabia</organization>
      <organization_detail>
        <org_name>Univ. of Petroleum and Minerals</org_name>

```



```

    <org_div>School of Engineering</org_div>
    <org_dept>Department of Petroleum Engineering</org_dept>
    <city>Dhahran</city>
    <country>Saudi Arabia</country>
    <zip>36699</zip>
    <ringgold>23456</ringgold>
  </organization_detail>
  <person_name>
    <given_name>J.</given_name>
    <surname>Pezzetta</surname>
  </person_name>
</author>
<author>
  <organization>University of Alaska, College of Engineering and Mines,
  Department of Electrical & Computer Engineering, Fairbanks, Alaska, USA, 99775,
  44432</organization>
  <person_name>
    <given_name>Joseph</given_name>
    <surname>Moore</surname>
    <nickname>Joe</nickname>
    <orcid>0000-0001-7297-7126</orcid>
    <email_address>jmoore@ieee.org</email_addres>
  </person_name>
</author>
<bios>Joe F. Moore, cofounder and CEO of Bonner & Moore Associates from 1956 until
retiring in 2000, is an MIT graduate with a BS in chemical engineering. He has served MIT in various
capacities for 25 years, as president of the Alumni Association, as a member of the Board of Trustees,
and on several Visiting Committees. In 1989, he became a charter member of the President's Circle of
the National Academies of Sciences and Engineering, and the Institute of Medicine, serving as chair
in 2001–2002. He is also a trustee of Southwest Research Institute.</bios>
</contributors>
<pages>
  <first_page>143</first_page>
  <last_page>150</last_page>
</pages>
<license_uri> http://ucpressjournals.com/assets/ucp_sample_auth_agr.pdf</license_uri>
<show_flag>Y</show_flag>
<article_quality>Y</article_quality>
<abstract>Three coastal sites of varying topographic and geologic characteristics were
selected along the Wisconsin shoreline of Lake Michigan for monitoring shoreland
erosion. Periodic (seasonal) plane surveys revealed that the mean recession rates varied
from 0.05 ft (0.015 m)/TDM (thirty-day month) to 2.7 ft (0.082 m)/TDM, the latter having
occurred during the fall/winter of 1975/ 76 along a high, steep, clayey bluff near Port
Washington. While high lake levels have accelerated the processes which induce failure
and slumping, the entire mechanism of bluff undermining and collapse depends largely
on the direct and indirect effects of precipitation including rainfall, sheet &#x0026;
channeled runoff, frost action &#x0026; shore ice.</abstract>
<open_access>N</open_access>
<doi>10.1109/ESSC.2006.1234567</doi>
<fundrefgrp>
  <funder_name>Jet Proplulsion Laboratoyr</fundername>
  <funder_id>10.13039/100006196</funderid>
  <grant_number>317999<grant_number>
</fundrefgrp>
<ecfid>23456</ecfid>
<copyright>

```

```

        <copyright_holder>IEEE</copyright_holder>
        <year>2020</year>
    </copyright>

    <reference_flag>N</reference_flag>
    <article_status>active</article_status>
    <package_filename>ttc2011050628.tar</package_filename>
    <promo_date start_day="01" start_month="06" start_year="2018" end_day="31"
end_month="07" end_year="2018"/>
    <index_terms>
        <term>Acceleration</term>
        <term>Fluctuations</term>
        <term>Geological measurements</term>
        <term>Ice</term>
    </index_terms>
</conference_article>

```

#### 2.2.4.1 Article Order and Track

The `<article_sequence>` gives the order of the PDFs in the publication. The first PDF has an `<article_sequence>` contents of 1. The second `<article_sequence>` contents of 2. This is used in IEEE Xplore to order the papers in the Table of Contents.

If a conference has tracks, sessions, etc., then the track or session title is placed in the `<major_topic>` tag. *The `<major_topic>` tag must contain the track or session name<sup>5</sup> for each paper that belongs to the track or session.* All papers within a track or session must be grouped together in consecutive order. The session or track text (data) must be exactly the same for all articles belong to a session or track<sup>6</sup>. For example, `<major_topic> Session 5. Economics and Management of Coastal Regions </major_topic>`.

#### 2.2.4.2 Promotional Date

The promotional date is an empty tag with attributes for the start and end dates. It applies to individual articles only. Each date must have a month, day, and year. Month, Day, and Year are always numeric values. Providing just a start date means the promotional period never ends. Providing just an end date means the promotion starts as soon as the XML and PDFs are processed by IEEE. When choosing your promotional dates please factor in time needed to process the files.

If the "Conference Stage" is "Open-Preview" then **both** Promotional *start* and *end* dates are required. The dates must be given as Month, Day, and Year.

<sup>5</sup> If the paper is not part of a track or session, then do not include `<major_topic>` for that paper.

<sup>6</sup> The spelling, punctuation, and case must be exactly the same for every paper in the track or session.

## 2.3 Standard Data Requirements

The following table and samples detail the XML elements needed to add Standard data to IEEE Xplore.

Element/Attribute Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
<b>Depositor Metadata</b>			
timestamp		Required	Numeric
<depositor>name		Required	Alphanumeric text
<depositor>e-mail_address		Required	Alphanumeric text
<b>Standards Publication Metadata</b>			
full_title	The title of the standard	Required	Alphanumeric text
normalized_title	See Section 4.0	Required	Alphanumeric text
standard_number	Standard number and the year. Example: 802.11-2006	Required	
standard_id	Internal unique ID for the standard	Optional	Alphanumeric text
standard_type	See Section 3.4.2	Required	Alphanumeric text
standard_subtype	See Section 3.4.3	Required	Alphanumeric text
associated_punumber	Refers to the Xplore Publication Number for the Active standard which the Redline standard is associated with.	Optional	Numeric text
ieee_acronym	IEEE assigned acronym Currently defaults to IEEESTD	Optional	Alphanumeric text
isbn	10 or 13 digits possible. Attributes may be Paper, Electronic, CD, Microfiche	If available	Alphanumeric text
<publisher> publisher_name		If available	Alphanumeric text
<publisher_location>city		If available	Alphanumeric text
<publisher_location>country		If available	Alphanumeric text
<copyright>copyright_holder		Required	Alphanumeric text
<copyright>year		Required	Numeric
<sponsor>committee	The committees that sponsored the creation of the standard	Required	Alphanumeric text
<approval_date>day		If available	Numeric
<approval_date>month	See Section 3.3	If available	Alphanumeric text
<approval_date>year		Required	Numeric
standard_status	See Section 3.4	Required	Alphanumeric text
<standard_status>standard_modifier	See Section 3.4.1	Required	Alphanumeric text
standard_relationship	Relationship for the standard	If available	Alphanumeric text
<standard_relationship>type	There are 17 values. See Section 3.5	If available	Single Alphabetic character
<standard_relationship>prodnum	IEEE Product Number	If available	Alphanumeric text
<standard_relationship>relationship_date	Date relationship established.	If available	Alphanumeric text
root	Standard root value (e.g. 802)	If available	Numeric
root_title	Title of root standard	If available	Alphanumeric text
<standardtopicset>standard_topic	Topic of standard family	If available	Alphanumeric text
family	Parent of the standard	If available	Alphanumeric text
family_title	Title of standard family	If available	Alphanumeric text
<package_group>package	Used to designate packages in Xplore	If available	Alphanumeric text
product_number	IEEE assigned number for the product. Each media type has a different product number	If available	Alphanumeric text
<packagememberset>packagemember	Package that standard belongs to	If available	Alphanumeric text
<standard_bundle>bundle_name	Bundle's group name	If available	Alphanumeric text
<standard_bundle>bundle_type	Standard's group for selling	If available	Alpha text
<standard_bundle>base_standard_product_number>	Product number of Standard	If available	Alphanumeric text

Element/Attribute Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
<standards_bundle>bundle_product_number>	Product number of Standards bundle	If available	Alphanumeric text
<ICS_codes>codeterm	International Classification for Standards	If available	Alphanumeric text
pub_amsid	Publication AMSid	If available	Numeric
<pubtopicalbrowse>topic	See Appendix C	If available	Alphanumeric text
<b>Standard Issue Metadata</b>			
<publication_date>day		If available	Numeric text
<publication_date>month	See Section 3.3	Required	Alphanumeric text
<publication_date>year		Required	Numeric text
issue_amsid	Issue AMSid	If available	Numeric
<b>Standard Article Metadata</b>			
article_sequence	The numeric sequence in which an article appears in the table of contents in its originally published format.	Required	Numeric text
art_amsid	Article AMSid	If available	Numeric
file	PDF file name. See Section 13.2	Required	Alphanumeric text
title	Article title. See Section 13.1	Required	Alphanumeric text
<contributor><author>	Container elements for organization and person_name	If available	
<author>organization	Author's or contributor's organization/ affiliation	If available	Alphanumeric text
organization_detail	Structured version of organization	If available	
org_name	Organization's name	If available	Alphanumeric text
org-div	Organization's division	If available	Alphanumeric text
org_dept	Organization's department	If available	Alphanumeric text
city	City where organization is located	If available	Alphanumeric text
state	State where organization is located	If available	Alphanumeric text
zip	ZIP or Postal Code	If available	Alphanumeric text
country	Country where organization is located	If available	Alphanumeric text
ringgold	Ringgold ID	If available	Alphanumeric text
<person_name>given_name	Contributor's given name, including middle name(s). May consist of initials.	If available	Alphanumeric text
<person_name>surname	Contributor's surname	If available	Alphanumeric text
<person_name>unicode_given_name	Given name with Unicode values for special characters	If available	Alphanumeric text
<person_name>unicode_surname	Surname with Unicode values for special characters	If available	Alphanumeric text
<person_name>suffix	Suffix of an author, e.g. junior, senior	If available	Alphanumeric text
nickname	Preferred name (e.g., Tom, Bob, etc.)	If available	Alphanumeric text
orcid	Author's orcid ID	If available	Numeric
email_address	Author's email address	If available	Alphanumeric text
corp_name	Corporation's Name	If available	Alphanumeric text
bios	Author's Bio. It may not contain any Unicode or accent marks	If available	Alphanumeric text
<pages>first_page	See Section 3.2	Required	Alphanumeric text
<pages>last_page	See Section 3.2	Required	Alphanumeric text
<pages>other_pages	List of non-contiguous pages	If available	Alphanumeric text
abstract		If available	Alphanumeric text
scope	Scope of standard		Alphanumeric text
purpose	Purpose of standard		Alphanumeric text
open_access	<b>Placeholder for future use. Not currently supported.</b>	If available	Boolean text, "Y" or "N" Default is "N"
license_uri	<b>Placeholder for future use. Not currently supported.</b>	If available	Alphanumeric text
doi	Digital Object Identifier. See	If available	Alphanumeric text

Element/Attribute Field	Explanation	Fields Required for IEEE Xplore Citation Record	Format of Field
	Section 13.4		
package_filename	Filename of package containing HTML, XML, graphics, etc. Example: 23jproc4complete-1.tar See Section 13.3	If available	Alphanumeric text
cover_image	Filename of cover image; Example: 802.11cover.jpg See Section 13.3	If available	Alphanumeric text
onlinepub_date	Date when the final version of the article was published online	If available	Day (Numeric text) Month (Alphanumeric text) Year (Numeric text)
<promo_date>@promo_type	The type of promo	If available	Alphanumeric text
<promo_date>@start_day	Day the promo begins	If available	Numeric
<promo_date>@start_month	Month the promo begins	If available	Numeric
<promo_date>@start_year	Year the promo begins	If available	Numeric
<promo_date>@end_day	Day the promo ends	If available	Numeric
<promo_date>@end_month	Month the promo ends	If available	Numeric
<promo_date>@end_year	Year the promo ends	If available	Numeric
<index_terms> term	Allowable attributes: author, DOE, PACS, INSPEC	If available	Alphanumeric text
<multimedia>summary	See Appendix D	If available	Alphanumeric text
<multimedia>compressed	See Appendix D	If available	Alphanumeric text
<multimedia>component	See Appendix D	If available	Alphanumeric text
<multimedia>graphical_abstract	See Appendix D	If available	Alphanumeric text
<supplement_group>	See Appendix D	If available	Alphanumeric text
references	Reference filename. See Section 6.1	If available	Alphanumeric text

**Table 3. Standards Data Requirements****2.3.1 Depositor information example**

```

<head>
  <timestamp>20100203</timestamp>
  <depositor>
    <name>John Smith</name>
    <email_address>j.smith@ieee.org</email_address>
  </depositor>
</head>

```

**2.3.2 Standard Metadata example**

```

<standard>
  <standard_metadata>
    <standard_type type="standard_docs"/>
    <standard_subtype type="IEEE standard"/>
    <full_title>IEEE P1671.6/D10, January 2015</full_title>
    <normalized_title>IEEE P1671.6/D10, January 2015</normalized_title>
    <standard_number>P1671.6/D10, Jan 2015</standard_number>
    <standard_id>4933</standard_id>
    <isbn type="electronic">978-0-7381-9548-3</isbn>
    <publisher>
      <publisher_name>IEEE</publisher_name>
      <publisher_location>
        <city>Piscataway</city>
        <country>USA</country>
      </publisher_location>
    </publisher>
    <copyright>
      <copyright_holder>IEEE</copyright_holder>
      <year>2015</year>
    </copyright>
  </standard_metadata>
</standard>

```

```

</copyright>
<sponsor>
  <committee>IEEE-SASB Coordinating Committees</committee>
</sponsor>
<approval_date>
  <day>10</day>
  <month>02</month>
  <year>2015</year>
</approval_date>
<standard_status status="active">
  <standard_modifier type="Unapproved"/>
  <standard_modifier type="Draft"/>
</standard_status>
<standard_relationship type="V" prodnum="STDUD20127"
relationship_date="2014-12-02">Any other information can be sent here</standard_relationship>
<root_title>Field Testing</root_title>
<root>1671</root>
<family_title>IEEE Standard for Automatic Test Markup Language (ATML) for
Exchanging Automatic Test Information via XML: Exchanging Test Station Information</family_title>
<family>1671.6</family>
<package_group>
  <package>Testing, Instrumentation and Measurement, and Metric
Practice</package>
</package_group>
<product_number type="electronic">STDUD20115</product_number>
<packagememberset>
  <packagemember>STDSELECT</packagemember>
</packagememberset>
<standard_bundle>
  <bundle_name>IEEE Test Procedure for Single-Degree-of-Freedom
Spring-Restrained Rate Gyros</bundle_name>
  <bundle_type>Mandatory</bundle_type>
  <base_standard_product_number>STD20023</base_standard_product_number>
  <bundle_product_number>STD16022</bundle_product_number>
</standard_bundle>
<pubtopicalbrowse>
  <topic>Aerospace</topic>
  <topic>Bioengineering</topic>
</pubtopicalbrowse>
<standardtopicset>
  <standard_topic>Interfaces</standard_topic>
  <standard_topic>Control</standard_topic>
  <standard_topic>Subtitles</standard_topic>
</standardtopicset>
<ICS_codes>
  <code_term codenum="0000">test data</code_term>
  <code_term codenum="35.110">Networking</code_term>
</ICS_codes>
<pub_amsid>2410</pub_amsid>
</standard_metadata>

```

### 2.3.3 Standard Issue information example

```

<standard_issue>
  <publication_date>
    <day>10</day>
    <month>02</month>
    <year>2015</year>
  </publication_date>

```

```

        <issue_amsid>1058</issue_amsid>
    </standard_issue>

```

#### 2.3.4 Standard Article information example

```

<standard_article>
    <article_sequence>1</article_sequence>
    <art_amsid>26668</art_amsid>
    <file>P1671.6_D10.pdf</file>
    <title>IEEE Draft Standard for Automatic Test Markup Language (ATML) Test
Station Description</title>
    <pages>
        <first_page>1</first_page>
        <last_page>31</last_page>
    </pages>
    <abstract>An exchange format, using extensible markup language (XML), for
identifying all of the hardware, software, and documentation associated with a test station is
specified in this document. This test station may be used with a test program set to test and
diagnose a unit under test
    </abstract>
    <scope>This standard defines an exchange format, utilizing eXtensible Markup
Language (XML), for both the static description of a test station, and the specific description of
test station instance information.
    </scope>
    <purpose>
    </purpose>
    <onlinepub_date>
        <day>30</day>
        <month>11</month>
        <year>2021</year>
    </onlinepub_date>
    <promo_date promo_type="COVID-19" start_day="01" start_month="12"
start_year="2021" end_day="31" end_month="12" end_year="2099"/>
    <index_terms type="author">
        <term>ATML instance document</term>
        <term>automatic test equipment (ATE)</term>
        <term>Automatic Test Markup Language (ATML)</term>
        <term>automatic test system (ATS)</term>
        <term>test station</term>
        <term>XML schema</term>
    </index_terms>
</standard_article>
</standard>

```

#### 2.3.5 Standard Status Values

Standard status is the current status of the standard. It is an attribute with fixed values. The default is "Active"

The possible values are:

active  
inactive  
superseded

#### 2.3.6 Standard Modifier Values

Standard Modifier is the current modifier that is linked to the status of the standard. It is an attribute with fixed values. The default is "Approved"

The possible values are:

Approved  
Draft  
Unapproved  
Amended  
Withdrawn  
Redline  
Reserved  
Stable  
Under Review  
NA

### 2.3.7 Standard Type

Standard type is the type of standard with 6 values. The default value is “standard\_docs”.

standard\_docs  
whitepapers  
research\_documents  
test\_specifications  
registered\_disclosure\_docs  
engineering\_reports

### 2.3.8 Standard Subtype

Standard subtype is the subtype of “standard\_docs” with 6 values.

IEEE standard  
SMPTE standard  
SMPTE recommended practice  
SMPTE engineering guideline  
SMPTE amendment  
SMPTE overview document

### 2.3.9 Standard Relationship Values

Standard relationship is the relationship for the standard with 16 type values:

A	Administratively Withdrawn
C	Corrigendum to
D	Stabilized
E	An Errata is available
F	Reaffirmed
G	Adopted by
I	An interpretation is available
N	Translation of
O	Adoption of
P	Supplement to
R	Replaced by
S	Superseded by
T	Amendment to
V	Revision of
W	Withdrawn
X	Active: Reserved
Z	Inactive: Reserved
B	Inactive: Withdrawn

## 3.0 Unicode

All special characters must be converted to [Unicode](#) and represented as hexadecimal Unicode entities. For example, the special character ≠ would be represented as its Hex Unicode equivalent, &#x2260;. *Special rules apply for use in author names, please refer to Section 3.1.*



### 3.1 Author Names

Author names submitted to Xplore must not contain any special characters, entities or Unicode values. This is done because IEEE standardizes (normalizes) author names and uses the normalized names to facilitate searching. *Therefore, there **cannot be any Unicode within these fields** <given\_name> , <surname>, or <suffix>.* Instead the closest standard alphabetical character must be used, e.g., would be used in lieu of è. All accents should be ignored in author names.

Should an author name contain *special characters* the hex Unicode version of the *author name* may be provided through the *separate elements* <unicode\_given\_name> and <unicode\_surname>. These elements must contain the name and the **hex Unicode equivalent of the special characters**.

The **only** allowed values of Author Role are:

- ✓ corresponding
- ✓ primary
- ✓ coauthor
- ✓ primary-corresponding
- ✓ other

The only allowed values of Author Type are:

- ✓ author
- ✓ reviewer
- ✓ editor
- ✓ editor-in-chief
- ✓ chair
- ✓ production\_editor
- ✓ other

**Only one** attribute value is allowed for author role. ***All other author roles must be mapped to one of the existing roles listed above.***

### 3.2 Front and Back Cover Pagination

Front and Back cover pages generally do not contain any pagination. In order to maintain consistency, the following pagination should be used:

Front Cover	c1
Inside Front Cover	c2
Inside Back Cover	c3
Back Cover	c4

### 3.3 Publication Month Formats

Months within publication dates should use IEEE standard formats. The month name should be abbreviated as shown below.

MONTHS	ABBREVIATIONS
January	Jan.
February	Feb.
March	March
April	April
May	May
June	June
July	July
August	Aug.
September	Sept.
October	Oct.
November	Nov.
December	Dec.

MULTI-MONTH FORMATS	
Jan.-Feb.	Jan.-March
March-April	
	April-June
May-June	
July-Aug.	July-Sept.
Sept.-Oct.	
	Oct.-Dec.
Nov.-Dec.	

Please note: March, April, May, June and July are never abbreviated.

If Season information is present rather than month, any of the following formats may be used:

Spring		First Quarter
Summer		Second Quarter
Fall	Autumn	Third Quarter
Winter		Fourth Quarter

### 3.4 Author Affiliations

The **author affiliation** is information on where the author was employed at the time the research was submitted for publication. If an author is affiliated with more than 1 institution, then the first affiliation is for the organization that the research work was done for. This is followed by any other affiliations. We recommend the other affiliations be listed in reverse-chronological order (newest to oldest). Each affiliation should contain as much information as available. The following tags are available for use:

1. **<org\_name>**-The name of the organization, university, or company worked for.
2. **<org\_div>** The top level part of the organization, institution or company that a department belongs. For example, the division of a university might be the School of Engineering. With the departments being Department of Electrical Engineering, Department of Civil Engineering, Department of Mechanical Engineering, etc.
3. **<org\_dept>**<sup>7</sup>-The department or section within the employer's organization. **DO NOT** include mail stop, street address, or postal codes, email addresses in **<org\_dept>**.
4. **<city>**-Use the full name. **Do not** abbreviate.
5. **<state>**-Use **Region or Province** for non-United States locations.
6. **<zip>**-The Zip Code or Postal Code
7. **<country>**-Spell out the country names. The only abbreviations are USA and UK.
8. **<ringgold>**-The assigned numeric Ringgold ID for the organization, institution, or company. These IDs can be at the **<org\_name>**, **<org\_div>** or **<org\_dept>** levels.

### 4.0 Publication Titles and ISSNs or ISBNs

Titles should be as they appear on the front cover of the publication together with the issue's corresponding ISSN or ISBN. Legacy publications often have variation in the title and ISSN or ISBN that may not represent the current publication's title. IEEE captures these title variations. Therefore, the publication title and ISSN or ISBN must correspond to its published title for that year. IEEE will map to the current publication title and ISSN, if such a relationship exists.

- **Full\_title** The element full\_title is the unaltered title, as it appears in the publication. For conferences, full\_title is the proceedings title. For example, "Proceedings of the 2004 Automation Conference."
- **Conference\_name** is the name of the meeting (conference) and not the proceeding title. Should be "2004 Automation Conference." NOT "Proceedings of 2004 Automation Conference."
- **Normalized\_title** is the way IEEE Xplore displays the title, i.e., subject first followed by rest of the verbiage. Examples are:  
*Antennas and Propagation, IEEE Transactions on*  
*Solid-State Circuits, IEEE Journal of*  
*Robotics and Automation. Proceedings. 1984 IEEE International Conference on*
- **Abbrev\_title** is the abbreviated title by which a journal is commonly cited. Examples are:  
*IEEE Trans. Magn.*  
*IEEE Trans. Nucl. Sci*

### 5.0 IEEE PDF Specifications

All PDFs must conform to the current IEEE PDF standard. Copies of the IEEE PDF specification may be downloaded from <https://www.ieee.org/publications/services/services-resources.html>. It is important to note that data is **not** extracted from the metadata fields embedded in a PDF file i.e., nothing from the File→Document Properties→Document Summary ...fields are extracted.

<sup>7</sup> If it is unclear if you should use **<org\_div>** or **<org\_dept>** use **<org\_div>**.

## 6.0 References (Citations)

References must be tagged in compliance with “IEEE JATS DTD version 1.51”. The DTD’s name is “ref-jats1.dtd”. This is necessary in order to create internal (IEEE) and external (CrossRef) links. References shall be delivered in a separate file for each article along with the xml metadata file and PDFs. The “IEEE JATS DTD version 1.51” is available on the IEEE Publishing Technology Resource page. Appendix A shows tagged examples of references. Appendix A is also available on the IEEE Publishing Technology Resource page.

### 6.1 File Naming Convention for References

The filename of the reference should match the pdf filename with a “-ref.xml” appended to it. Filenames shall be stored in the references element.

For example: `<file>12TASC01.pdf</file>`  
`<references>12TASC01-ref.xml</references>`

### 6.2 XML Coded References Example

```
<ref id="ref7">
  <label>[7]</label>
  <mixed-citation publication-format="print" publication-type="confpaper">
    <person-group person-group-type="author">
      <string-name>
        <given-names>D.</given-names>
        <surname>Caratelli</surname>
      </string-name>,
      <string-name>
        <given-names>M. C.</given-names>
        <surname>Vigan&oacute;</surname>
      </string-name>,
      <string-name>
        <given-names>G.</given-names>
        <surname>Toso</surname>
      </string-name>, and
      <string-name>
        <given-names>P.</given-names>
        <surname>Angeletti</surname>
      </string-name>
    </person-group>,
    &rdquo;<article-title>Analytical placement technique for sparse
      arrays</article-title>&rdquo;
    presented at the
    <conf-name>32nd ESA Antenna Workshop</conf-name>,
    <conf-loc>Noordwijk, The Netherlands</conf-loc>,
    <conf-date>Oct. 5&ndash;8, 2010</conf-date>.
  </mixed-citation>
</ref>
```

See Appendix A for sample XML file with tagged references.

References that do not conform to this format will not be displayed in IEEE Xplore. Furthermore, the complete reference section must be submitted for inclusion. Partial reference lists will not be included in IEEE Xplore.

## 7.0 QC of Data

Prior to a full submission of data, the content provider shall submit a sample of 10-20 issues for verification and validation by IEEE staff. This sample must include the different kinds of publications being submitted. The possibilities are conference, journal, magazine, and standard. The content provider (whomever creates the XML file) **must validate** all XML instances against the Content Delivery Schema (using any XML validation tool) **prior to sending** the files to IEEE. **Failure to do so will result in IEEE rejecting the XML file and associated PDFs and other related files.**

Please make sure that the samples include multimedia or supplemental material if the production files will. **NOTE:** If conferences and transaction will contain multimedia or supplemental material than one sample conference and one sample transaction must contain this material.

### 8.0 Approximate Time to Load Back File Content into IEEE Xplore

Content will be available in IEEE Xplore approximately 4-6 weeks after the full data set has been received by IEEE Content Management.

### 9.0 Cost

Contact IEEE Marketing, Sales, and Design ([n.maddali@ieee.org](mailto:n.maddali@ieee.org)) for a specific cost estimate.

### 10.0 Copyright

IEEE will accept IEEE copyrighted content from a Society, as long it meets IEEE requirements and is approved by Technical Activities Department. A statement of copyright must be submitted confirming copyright ownership or permission from the copyright holder to post content electronically.

For non-IEEE copyrighted material please contact the IEEE Sales and Marketing department. The contact is Renny Gudia at [r.gudia@ieee.org](mailto:r.gudia@ieee.org).

### 11.0 Content Access Rules

#### 11.1 IEEE Content

Once the content is submitted to IEEE Content Management, the Society must also submit a form to IEEE Technical Activities Periodicals Department ([l.creighton@ieee.org](mailto:l.creighton@ieee.org)) indicating Society member access rules. Contact IEEE Publications Business Development for a copy of the form. All content will automatically become available to IEEE/IEE Electronic Library (IEL) subscribers.

#### 11.2 Non-IEEE Content

If the content is not published by IEEE then please contact either Naveen Maddali [n.maddali@ieee.org](mailto:n.maddali@ieee.org) in IEEE Marketing, Sales, and Design to define content access rules.

### 12.0 Types of Publications Hosted in IEEE Xplore

Currently, IEEE Xplore hosts only Transactions, Journals, Magazines, Conference Proceedings and Standards content. Newsletters are not part of the collection hosted on IEEE Xplore. Since it is likely that Newsletters may be included in IEEE Xplore, we will accept that content and hold it for future use.

Digital Object Identifiers (DOIs) are assigned to all articles if they were delivered without DOIs and if the publication is copyrighted by the IEEE. These DOIs will be registered at CrossRef which enables cross-publisher linking. For non-IEEE copyrighted material please seek assistance from Technical Activities Dept. for DOI assignment.

### 13.0 Delivery of Data to IEEE

All XML metadata and the associated PDF files must be delivered simultaneously to IEEE Content Engineering. Initial deliveries should go to Ira Polans <[i.polans@ieee.org](mailto:i.polans@ieee.org)>. A zip file should be delivered for each issue. **The zip file must consist of a single XML issue metadata file and the corresponding PDF files within a single directory.** See Section 13.3. It is required that all articles belonging to an issue within the same XML instance. **Issues are not permitted to span several XML files.** These files can be delivered in a variety of formats: FTP, CD/DVD or USB.

If using FTP for file delivery IEEE recommends using one of these programs:

1. FileZilla for Windows
2. winscp for Windows
3. Fetch for MacIntosh
4. lftp for Linux

Whichever tool is used to transfer the files it must be configured as described below:

1. If using Filezilla make sure that “Encryption” is set to “Use explicit FTP over TLS if available”. If using CoreFTP use “**AUTH TLS**” for both login and data transfer. Use “passive” file transfer if that is an option.
2. If you have an existing account, use port 21. If the account is new, use port 2100. If the specified port does not work, try the other port.
3. If your site uses a firewall, please make sure that the high ports (40000-40500) are enabled. This is necessary for the file and data transfer to work. By **default, many firewalls** block these high ports.

Once IEEE establishes an account for the ftp server IEEE will provide the server name, login, and password.

See Section 13.3 for delivery of additional content such as HTML, full-text XML, etc.

### 13.1 Data Rules

IEEE requires the data provider to follow the rules below in order to apply uniform display capabilities in Xplore.

- Publication titles should be in Word case (each word capitalized unless it is two letters or less). Must not be in all caps.
- Article titles should be in Title case (first letter of the sentence is capitalized); Proper nouns and acronyms are capitalized. Must not be in all caps. Article title is required and cannot be a space or without a value.
- No empty tags are allowed within the XML file. For example, <abstract></abstract> or <abstract/> is not allowed.
- <CR><LF> characters are not allowed within the data of any valid element.
- Publication year cannot be greater than current year plus 2.
- Volume<sup>8</sup> number, Issue number, and Part number cannot be “0” (zero).

### 13.2 File Naming Conventions for PDF, XML, and Folders

- Must take the form of: [filename].[extension]
- Valid characters for filename are: a-z, A-Z, 0-9, -, \_  
**NOTE:** The comma is a *delimiter*! It is **not** allowed in the filename.
- May not contain any of these characters: @#%(^)
- May only have a single period "." separating the filename from the extension.
- Spaces are prohibited.
- *Maximum file name length 50 characters.*
- File name extensions **must** be in lower case.
- The only allowable extensions for [filename] is “pdf” (for PDF files) or “xml” (for XML files).
- Reference filenames must match pdf filenames, using different extensions (see section 6.1).

**NOTE:** Folders must follow the same rules. However, they do not include an extension.

### 13.3 Additional files for an article or issue

There are four types of additional files that may be associated with an XML file and the PDF files

- The first is an *optional cover image* for each issue of a journal, magazine, or conference. Cover images are .jpg files (*other formats are not supported*) of size 110x150 pixels and 300 dpi resolution. The cover image should typically be included with the first article (sequence=1) of the issue. The <cover\_image> element<sup>9</sup> is where the cover image .jpg filename is stored; e.g., comp16\_12\_2010.jpg
- The second is an *optional full issue PDF* for a journal, magazine, or conference. This single PDF file is a cover-to-cover representation of the publication. The PDF file should follow the specification “Requirements for Creating PDF Documents for IEEE Xplore, Version 4.13”. The full issue PDF is stored in <issue\_pdf>. This element is found under <journal\_issue> and then <journal\_volume>. This file might be named “full\_issue.pdf”.

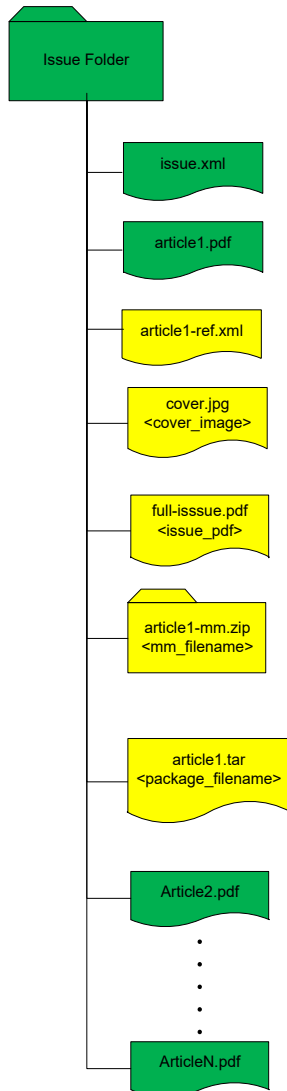
<sup>8</sup> The only exception is for single volume conferences. In this case the value is 00.

<sup>9</sup> Only a single <cover\_image> per issue is allowed for production purposes. The schema doesn’t enforce this requirement however.

- The third is an *optional supplemental material or multimedia files*. The four options are (1) compressed [a single zip file containing all the additional files and the required readme file], (2) component files [a collection of individual files related to the article], (3) graphical abstract [a visual, image, or audio file that summarizes the paper], and (4) supplement group which relates programming code and datasets to the article. Refer to Appendix D for specific detailed requirements.
- The fourth is an *optional tar file*. This file may contain full-text XML, graphics files, HTML version of the article, etc. The name of the tar file is stored in <package\_filename> in the XML file. The full text XML, graphics, HTML, and other files associated with the article should be packaged into a tar file for each article.

### 13.3.1 Packaging Files for Delivery to IEEE

The diagram below shows the expected arrangement of the issue zip file:



In the diagram above objects in **green are required**. Objects in *yellow are optional*. Text appearing between “<” are the tag names where the data (full file names) goes in the issue.XML file.

## 13.4 DOI Rules

- DOI prefix must contain 10.#### or 10.#####/ (where # is a positive integer). There maybe either 4 or 5 positive integers after the “10.”.

- The DOI suffix may only contain characters: **a-z, A-Z, 0-9**, and the following **"-.\_:()/"**  
**NOTE:** The double-quote are a *delimiter only*! Double-quotes are **not** allowed in DOIs.
- Spaces are not allowed in DOIs.

### 13.5 ISSN and ISBN validation

ISSN and ISBN values supplied should be valid.

- For ISSN values, please refer to [www.loc.gov/issn/check.html](http://www.loc.gov/issn/check.html) for the check digit algorithm in order to validate the ISSN number.
- For ISBN values, please refer to User's Manual in <http://www.isbn-international.org/> for the check digit algorithm in order to validate the ISBN number.
- The ISSN and ISBN should be captured with a consistent separator (i.e., space, dash, or no separator) in all of the XML files.

### 14.0 Further Information

For further information regarding the above detail please contact:

Technical Issues	Business Issues
Bratati Biswas <a href="mailto:b.biswas@ieee.org">b.biswas@ieee.org</a>	Naveen Maddali <a href="mailto:n.maddali@ieee.org">n.maddali@ieee.org</a>

## Appendix A XML Coded Reference Sample

```

<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE ref-wrapper PUBLIC "-//IEEE//DTD IEEE References JATS-based DTD v1.51//EN" "ref-jats1.dtd">
<ref-wrapper dtd-version="1.51" xmlns:mml="http://www.w3.org/1998/Math/MathML"
  xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <article-id pub-id-type="arnumber">1234567</article-id>
  <article-id pub-id-type="doi">10.1109/TNANO.2016.2543606</article-id>
  <ref-list>
    <title>References</title>
    <!--Book-->
    <ref id="ref1">
      <label>[1]</label>
      <mixed-citation publication-format="print" publication-type="book">
        <person-group person-group-type="author">
          <string-name>
            <given-names>A.</given-names>
            <surname>Tafløve</surname>
          </string-name>
        </person-group>,
        <source>Computational Electrodynamics: The Finite-Difference Time-Domain
Method</source>.
        <publisher-loc>Norwood, MA</publisher-loc>:
        <publisher-name>Artech House</publisher-name>,
        <year>1996</year>.
      </mixed-citation>
    </ref>
    <!--Book with Editors-->
    <ref id="ref2">
      <label>[2]</label>
      <mixed-citation publication-format="print" publication-type="book">
        <person-group person-group-type="author">
          <string-name>
            <given-names>C.</given-names>
            <surname>Bennett</surname>
          </string-name>
        </person-group>,
        <source>What happens when you book an airline ticket? The collection and processing of
passenger data post 9/11 Global Surveillance and Policing: Borders, Security, Identity</source>,
        <person-group person-group-type="editor">
          <string-name>
            <given-names>E.</given-names>
            <surname>Zureik</surname>
          </string-name> and
          <string-name>
            <given-names>M.</given-names>
            <surname>Salter</surname>
          </string-name>
        </person-group>, Eds.,
        <publisher-loc>Cullompton, UK</publisher-loc>:
        <publisher-name>Willan</publisher-name>,
        <year>2005</year>,
        pp. <fpage>113</fpage>–<lpage>138</lpage>.
      </mixed-citation>
    </ref>
    <!--Book with Chapter Title-->
    <ref id="ref3">
      <label>[3]</label>
      <mixed-citation publication-format="print" publication-type="book">
        <person-group person-group-type="author">
          <string-name>
            <given-names>T.</given-names>
            <surname>Ogura</surname>
          </string-name>
        </person-group>,
        &ldquo;<chapter-title>Electronic government and surveillance-oriented society</chapter-
title>,&rdquo;
        in <source>Theorizing Surveillance: The Panopticon and Beyond</source>,

```



```

        <publisher-loc>Cullompton, UK</publisher-loc>:
        <publisher-name>Willan</publisher-name>,
        pp. <fpage>270</fpage>&ndash;<lpage>295</lpage>,
        <year>2006</year>.
    </mixed-citation>
</ref>
<!--Book Online-->
<ref id="ref4">
    <label>[4]</label>
    <mixed-citation publication-format="online" publication-type="book">
        <person-group person-group-type="author">
            <string-name>
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    The University of Western Ontario, assignee.
    <patent country="can">Patent 5,147,678</patent>,
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    <label>[30]</label>
    <mixed-citation publication-format="print" publication-type="report">
        <person-group person-group-type="author">
            <string-name>
                <given-names>G. J.</given-names>
                <surname>Burke</surname>
            </string-name> and
            <string-name>
                <given-names>A. J.</given-names>
                <surname>Poggio</surname>
            </string-name>
        </person-group>,
        &ldquo;<source>Numerical Electromagnetics Code-Method of Moments</source>,&rdquo;
        <institution>Lawrence Livermore National Lab.</institution>,
        Tech. Rep. <pub-id specific-use="repno">UCID-18834</pub-id>,
        <month>Jan.</month>
        <year>1981</year>.
    </mixed-citation>
</ref>
<!--Report Online-->
<ref id="ref31">
    <label>[31]</label>
    <mixed-citation publication-format="online" publication-type="report">
        <institution>Wireless Innovation Forum</institution>,
        <source>Use cases for cognitive applications in public safety communications systems, Vol. 2:
Chemical plant explosion scenario,</source>
        <month>Jan.</month>
        <year>2011</year>. [Online]. Available:
        <uri>http://groups.winnforum.org/p/cm/ld/fid=84</uri>,
        Document <pub-id specific-use="repno">WINNF-09-P-0015-V1.0.1.WINF</pub-id>.
    </mixed-citation>
</ref>
<!--Report Online using "date-in-citation"-->
<ref id="ref32">
    <label>[32]</label>
    <mixed-citation publication-format="online" publication-type="report">
        <source>Chipcon Products from Texas Instruments</source>,
        <year>2007</year>. Accessed:
        <date-in-citation>
            <month>Nov.</month>
            <year>2010</year>
        </date-in-citation>.
        [Online]. Available: <uri>http://focus.ti.com/lit/ds/symlink/cc1000.pdf</uri>
    </mixed-citation>
</ref>
<!--Standard Online-->
<ref id="ref33">
    <label>[33]</label>
    <mixed-citation publication-format="online" publication-type="standard">
        <std>
            <source>NERC Reliability Standard</source>
            <pub-id pub-id-type="std-designation">BAL-003-0.1b</pub-id>&mdash;Frequency
Response and Bias</std>.
        [Online]. Available: <uri>http://www.nerc.com/files/BAL-003-0_1b.pdf</uri>
    </mixed-citation>
</ref>
<!--Standard print-->
<ref id="ref34">

```

```

<label>[34]</label>
<mixed-citation publication-format="print" publication-type="standard">
  <std>
    <source>Test Method for Strength of Glass by Flexure</source>,
    <std-organization>ASTM</std-organization> Standard
    <pub-id pub-id-type="std-designation">C158-02</pub-id>
  </std>,
  <year>2007</year>.
</mixed-citation>
</ref>
<!--Standard print with "specific-use"-->
<ref id="ref35">
  <label>[35]</label>
  <mixed-citation publication-format="print" publication-type="standard">
    <std>
      <source specific-use="IEEE">IEEE Standard for Wireless LAN Medium Access Control
(MAC) and Physical Layer (PHY) Specifications</source>
      <pub-id pub-id-type="std-designation">P802.11</pub-id>
    </std>,
    <month>Nov.</month>
    <year>1997</year>.
  </mixed-citation>
</ref>
<!--Software-->
<ref id="ref36">
  <label>[36]</label>
  <mixed-citation publication-format="online" publication-type="software">
    <source>Ngspice. (2011). </source>
    [Online]. Available: <uri>http://ngspice.sourceforge.net</uri>
  </mixed-citation>
</ref>
<!--Software with collab-->
<ref id="ref37">
  <label>[37]</label>
  <mixed-citation publication-format="other" publication-type="software">
    <source>MSDN Library Visual Studio 6.0</source>,
    <collab>Microsoft</collab>,
    <year>2001</year>.
  </mixed-citation>
</ref>
<!--Thesis Print-->
<ref id="ref38">
  <label>[38]</label>
  <mixed-citation publication-format="print" publication-type="thesis">
    <person-group person-group-type="author">
      <string-name>
        <given-names>F.</given-names>
        <surname>Jensen</surname>
      </string-name>
    </person-group>,
    &ldquo;<source>Electromagnetic Near-Field Far-Field Correlations</source>,&rdquo;
    Ph.D. dissertation,
    <institution content-type="department">Dept. of Electrical Engineering</institution>,
    <institution content-type="institution">Technical University of Denmark</institution>,
    <publisher-loc>Lyngby, Denmark</publisher-loc>,
    <year>1970</year>.
  </mixed-citation>
</ref>
<!--Thesis Online-->
<ref id="ref39">
  <label>[39]</label>
  <mixed-citation publication-format="online" publication-type="thesis">
    <person-group person-group-type="author">
      <string-name>
        <given-names>F.</given-names>
        <surname>Jensen</surname>
      </string-name>
    </person-group>,
    &ldquo;<source>Electromagnetic Near-Field Far-Field Correlations</source>,&rdquo;
    Ph.D. dissertation,

```

```

        <institution content-type="department">Dept. of Electrical Engineering</institution>,
        <institution content-type="institution">Technical University of Denmark</institution>,
        <publisher-loc>Lyngby, Denmark</publisher-loc>,
        <year>1970</year>.
        [Online]. Available: <uri>www.tud.ed/jensen/diss</uri>
    </mixed-citation>
</ref>
<!--To be published-->
<ref id="ref40">
    <label>[40]</label>
    <mixed-citation publication-format="online" publication-type="periodical">
        <person-group person-group-type="author">
            <string-name>
                <given-names>A.</given-names>
                <surname>Sand</surname>
            </string-name>,
            <string-name>
                <given-names>M.</given-names>
                <surname>Stevens</surname>
            </string-name>, and
            <string-name>
                <given-names>G.</given-names>
                <surname>Parkin</surname>
            </string-name>
        </person-group>,
        &ldquo;<article-title>Internet-enabled calibration: An analysis of different topologies and a comparison
of two different approaches</article-title>,&rdquo;
        <source specific-use="IEEE">IEEE Trans. Instrum. Meas.</source>,
        to be published.
    </mixed-citation>
</ref>
<!--Unpublished private communication-->
<ref id="ref41">
    <label>[41]</label>
    <mixed-citation publication-format="other" publication-type="unpubd">
        <person-group person-group-type="author">
            <string-name>
                <given-names>A.</given-names>
                <surname>Harrison</surname>
            </string-name> </person-group>,
        <source>private communication</source>,
        <month>May</month>,
        <year>2016</year>.
    </mixed-citation>
</ref>
<!--Unpublished article-->
<ref id="ref42">
    <label>[42]</label>
    <mixed-citation publication-format="other" publication-type="unpubd">
        <person-group person-group-type="author">
            <string-name>
                <given-names>B.</given-names>
                <surname>Smith</surname>
            </string-name>
        </person-group>,
        &#x201c;<source>An approach to graphs of linear forms</source>,&#x201d; unpublished.
    </mixed-citation>
</ref>
</ref-list>
</ref-wrapper>

```

## Appendix B Content Types with Description

### Journal Content Types (Pubitypes)

Content Type	Description
Advert	Advertisements
Awards	Article & people awards (includes the former list-award)
Blank	Blank pages
breaker-page	Pages that contain continuation text, used most often between parts of a conference proceedings. Includes conference copyright page.
call-for-papers	Call for papers. Used for a range of announcements: Calls for Papers; Calendars; Contributions; Misc. fillers.
commentary	Commentary (includes conference "Keynote Address" and Trans Professional Communication "Interface" articles)
comment-reply	Comments / Replies; Discussion/Closure TPWRD, TPWRS have comment-replies
content-announce	Information on future special issues, future articles, future TOCs of other publications, etc.
disting-lecturers	Distinguished lecturers listings.
errata	Corrections to an article
front-cover	Front covers that do not contain TOCs and are not blank.
future-events	Information on future conference locations and topics.
index-author	Author index
index-edics	EDICS (Editor's Information Classification Scheme). Areas of expertise with subcategorized topics.  NOTE: Name changed to INDEX-EDICS for consistency with other index Content Types
index-subject	Subject index
info-author	Information for authors
info-society	All Society related material, including society news, Board of Governors meeting minutes, lists of IEEE fellows, etc.
issue-survey	Survey of the articles in this issue. Includes "scanning the issue," "issue summaries," "special issue/special section intros," and "conference highlights"
list-contrib	Contributor Listings
list-reviewer	Reviewer and referee listings
list-staff	Staff or Society listings
lit-survey	Survey of the literature
obit	Obituaries, memoriams, or dedications.
opinion	An opinion piece, as in an editorial, forward/opening remarks, or a letter to the editor. In some magazines this type may look like a Section, a Column or Department (e.g. in Spectrum called "FORUM" section).
orig-research	Articles containing original research, published at any point in time. Includes reprinted articles.
patent-abstract	Patent abstracts.
prolog	Used only for Proceedings of the IEEE. Introductory piece to an article within the issue. A prolog or summary introduction to a full document.
reader-survey	Reader surveys
review	Reviews of current or newly available literature, software, products, etc. Reviews of one or more of books, software, videos, CDs, DVDs, and other media. Includes reviews of current or newly available literature, software, products, etc.
summary-abstract	Summary of abstracts in the current issue
teaser-abstract	The TEASER-ABSTRACT is the abstract of an article/ paper that is presented elsewhere or in a different format (electronic versus paper). This type can be used also for items noted as 'Extended Abstracts' that do not fall under other categories.
tech-survey	Scanning the technology. Overview article describing an old or new technology.
toc	Table of contents
tutorial	Article aimed at teaching someone about a technical topic.

**Magazine Content Types (Pubitypes)**

<b>Content Type</b>	<b>Description</b>
advert	Advertisements
awards	Article & people awards (includes the former list-award)
blank	Blank pages
breaker-page	Pages that contain continuation text, used most often between parts of a conference proceedings. Includes conference copyright page.
bylaws	Society bylaws. Bylaw listings, changes, etc.
call-for-papers	Call for papers. Used for a range of announcements: Calls for Papers; Calendars; Contributions; Misc. fillers.
cartoon	Cartoons. Non-technical diverting Magazines content.
commentary	Commentary (includes conference "Keynote Address" and Trans Professional Communication "Interface" articles)
comment-reply	Comments / Replies; Discussion/Closure TPWRD, TPWRS have comment-replies
content-announce	Information on future special issues, future articles, future TOCs of other publications, etc.
disting-lecturers	Distinguished lecturers listings.
errata	Corrections to an article
front-cover	Front covers that do not contain TOCs and are not blank.
future-events	Information on future conference locations and topics.
game	Games. Non-technical Magazines content; includes contest information.
index-author	Author index
index-subject	Subject index
info-author	Information for authors
info-society	All Society related material, including society news, Board of Governors meeting minutes, lists of IEEE fellows, etc.
issue-survey	Survey of the articles in this issue. Includes "scanning the issue," "issue summaries," "special issue/special section intros," and "conference highlights"
list-contrib	Contributor Listings
list-dissertation	List of Ph.D. dissertations
list-reviewer	Reviewer and referee listings
list-staff	Staff or Society listings
lit-survey	Survey of the literature
obit	Obituaries, memoriams, or dedications.
opinion	An opinion piece, as in an editorial, forward/opening remarks, or a letter to the editor. In some magazines this type may look like a Section, a Column or Department (e.g. in Spectrum called "FORUM" section).
orig-research	Articles containing original research, published at any point in time. Includes reprinted articles.
panel-discussion	An article containing report of an organized panel discussion.
puzzle	Puzzles. Non-technical diverting Magazines content; includes 'brain teasers' and 'crossword puzzles.'
reader-survey	Reader surveys
review	Reviews of one or more of books, software, videos, CDs, DVDs, and other media. Includes reviews of current or newly available literature, software, products, etc.
summary-abstract	Summary of abstracts in the current issue
teaser-abstract	The TEASER-ABSTRACT is the abstract of an article/ paper that is presented elsewhere or in a different format (electronic versus paper). This type can be used also for items noted as 'Extended Abstracts' that do not fall under other categories.
tech-survey	Scanning the technology. Overview article describing an old or new technology.
toc	Table of contents
topical-info	Non-engineering topical information. Includes articles analyzing, for example, 401K laws and options, etc.
tutorial	Article aimed at teaching someone about a technical topic.

**Conference Content Types (Pubitypes)**

<b>Content Type</b>	<b>Description</b>
advert	Advertisements
awards	Article & people awards (includes the former list-award)
blank	Blank pages
breaker-page	Pages that contain continuation text, used most often between parts of a conference proceedings. Includes conference copyright page.
bylaws	Society bylaws. Bylaw listings, changes, etc.
commentary	Commentary (includes conference "Keynote Address" and Trans Professional Communication "Interface" articles)
content-announce	Information on future special issues, future articles, future TOCs of other publications, etc.
errata	Corrections to an article
front-cover	Front covers that do not contain TOCs and are not blank.
future-events	Information on future conference locations and topics.
game	Games. Non-technical Magazines content; includes contest information.
index-author	Author index
index-subject	Subject index
info-author	Information for authors
info-society	All Society related material, including society news, Board of Governors meeting minutes, lists of IEEE fellows, etc.
list-contrib	Contributor Listings
list-reviewer	Reviewer and referee listings
list-staff	Staff or Society listings
lit-survey	Survey of the literature
Obit	Obituaries, memoriams, or dedications.
Opinion	An opinion piece, as in an editorial, forward/opening remarks, or a letter to the editor. In some magazines this type may look like a Section, a Column or Department (e.g. in Spectrum called "FORUM" section).
orig-research	Articles containing original research, published at any point in time. Includes reprinted articles.
panel-discussion	An article containing report of an organized panel discussion.
Review	Reviews of current or newly available literature, software, products, etc. Reviews of one or more of books, software, videos, CDs, DVDs, and other media. Includes reviews of current or newly available literature, software, products, etc.
teaser-abstract	The TEASER-ABSTRACT is the abstract of an article/ paper that is presented elsewhere or in a different format (electronic versus paper). This type can used also be for items noted as 'Extended Abstracts' that do not fall under other categories.
tech-survey	Scanning the technology. Overview article describing an old or new technology.
Toc	Table of contents
Tutorial	Article aimed at teaching someone about a technical topic.

### Appendix C Topical Browse Terms

The IEEE topical browse terms are listed below. They are usually assigned by the IEEE indexing department. **They must not be assigned** *unless prior agreement* is reached with IEEE. The topical browse terms are captured in the tag <pubtopicalbrowse>.

1. Aerospace
2. Bioengineering
3. Communication, Networking and Broadcast Technologies
4. Components, Circuits, Devices and Systems
5. Computing and Processing
6. Engineered Materials, Dielectrics and Plasmas
7. Engineering Profession
8. Fields, Waves and Electromagnetics
9. General Topics for Engineers
10. Geoscience
11. Nuclear Engineering
12. Photonics and Electrooptics
13. Power, Energy and Industry Applications
14. Robotics and Control Systems
15. Signal Processing and Analysis
16. Transportation

## Appendix D Supplemental Material or Multimedia Files

### Overview

Supplemental material<sup>10</sup> may be delivered to IEEE as:

*Compressed files—A single zip file containing all the supplemental material*

In the first option, all the multimedia or supplemental material is put in a single zip file. The zip file must contain a readme file. The name of the readme<sup>11</sup> file must end in either “readme.txt” (for text) or “readme.pdf” (for PDF) respectively. Without a *readme file* the supplemental material **won’t** be processed by IEEE.

*Unlinked Components—One or more files related to the article*

In the second option, additional files are associated with the main article and are downloadable from Xplore. The files are typically audio, video, and graphics files. The files may include source code and data sets.

*Graphical abstract—A summary of the article*

In the third option, a summary of the article is provided. It is an image, a video, an audio, or a PowerPoint file. The graphical abstract should highlight the main point of the article and include a caption describing the static image that’s first displayed in IEEE Xplore.

*Supplement group—Which relates programming code and datasets to the article*

In the fourth option, linking to an external data repository or database is allowed. This option is available for journals or magazines.

### Recommended Supplemental File Formats

The following file types are recommended. Other formats may be used as needed.

*Audio:*

- .aiff (Audio Interchange File Format)
- .au (Unix audio)
- .midi
- .mov (Quicktime audio)
- .mp3
- .ra (Real Audio)
- .wav (Windows audio)

*Video:*

- .asf and .wma (Microsoft Media Player)
- .avi (Microsoft’s Audio-Video Interleaved)
- .gif (animated GIFs)
- .mpeg
- .mov (Quicktime)

*Graphics:*

- .jpg (Joint Photographic Expert Group)

*IEEE recommends keeping the total file size (either zip or other related files) under 25 MB for fast download.* Larger sizes are permitted however.

See the next four sections on the following pages for additional details.

<sup>10</sup> In this appendix the terms “supplemental material” and “multimedia” mean the same thing.

<sup>11</sup> The readme file describes the content of the zip file and provides contact information. Contact information is necessary, as IEEE does not provide technical support for supplemental material.



### Compressed Supplemental File Tags

The following tags are used with compressed supplemental material. After each tag is a description of the tag and whether it is required or optional.

Tag Name	Description	Required or Optional
summary	A brief summary of the compressed objects	Optional
compressed	A container tag that holds the compressed multimedia tags	Required
mm_filename	Name of the zip file containing the multimedia objects	Required
mm_filesize	Total compressed size of the multimedia objects <b>in bytes</b>	Required
platform	The platform or operating system the multimedia objects are intended to be used on	Required
readme_file	A file describing in detail the contents of the zip file. The file must end in either readme.txt or readme.pdf	Required
compression_type	The compression type used. Must <b>always</b> be ZIP..	Required

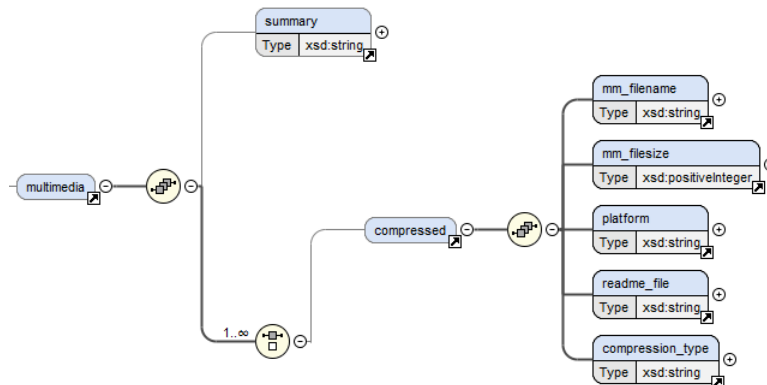
Below is an example of supplemental material using the compressed option.

```

<journal_article>
  <multimedia>
    <summary>Summary text goes here</summary>
    <compressed>
      <mm_filename>antenna.zip</mm_filename>
      <mm_filesize>1234899</mm_filesize>
      <platform>windows</platform>
      <readme_file>smith.readme.pdf</readme_file>
      <compression_type>ZIP</compression_type>
    </compressed>
  </multimedia>
</journal_article>

```

The diagram below shows the compressed model starting with the multimedia tag.



### Unlinked Component Supplemental File Tags

The following tags are used with component supplemental material. After each tag is a description of the tag and whether it is required or optional. The first examples shows how to tag a single component. See the next page for how to tag multiple components.

Tag Name	Description	Required or Optional
summary	A brief summary of the components	Optional
component	A container tag that holds the tags about each component	Required
mm_filename	The file name of the component file	Required
mm_filesize	The file size of the component file <b>in bytes</b>	Required
component_type	The type of component	Required
component_doi	The DOI assigned to the component. Must follow <i>DOI assignment rules</i> .	Optional
platform	The platform or operating system the object is intended to be accessed on	Required
description	A description of the component file	Required
title	The title of the component file	Optional
person_name <sup>12</sup>	A container element for information about a contributor	Optional
<person_name>given_name	The author's given name <b>without</b> accent marks	Required
<person_name>surname	The author's surname or family name <b>without</b> accent marks	Required
<person_name>unicode_given_name	The author's given name <b>with</b> accent marks	Optional
<person_name>unicode_surname	The author's surname or family name <b>with</b> accent marks	Optional
<person_name>suffix	The suffix of an author name such as Jr, Sr, III	Optional
<person_name>nickname	The author's nickname	Optional
<person_name>orcid	The author's ORCID	Optional
<person_name>email_address	The author's email address	Optional

Below is an example of supplemental material using a *single* component file.

```

<journal_article>
  <multimedia>
    <summary>Summary text goes here</summary>
    <component>
      <mm_filename>antenna.zip</mm_filename>
      <mm_filesize>1234899</mm_filesize>
      <component_type>wav</component_type>
      </component_doi>
      <platform>windows</platform>
      <description>Supplemental material description goes here</description>
      <title>Supplemental material title goes here</title>
      <person_name>
        <given_name>Robert</given_name>
        <surname>Smith</surname>
        <nickname>Bob</nickname>
        <email_address>rsmith@ieee.org<email_address>
      </person_name>
    </component>
  </multimedia>
</journal_article>

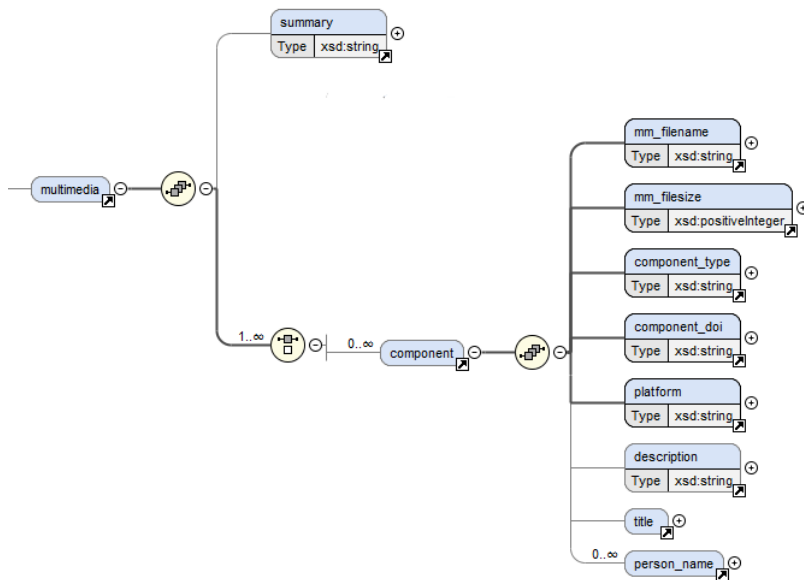
```

<sup>12</sup> IEEE **requires** the *author's name* **does not** contain *accent marks*. There are *optional Unicode* tags for the accented name.

**NOTE:** If there are *more than one* component for an article, each component file is enclosed in its own <component>/</component> pair of tags. At a high-level three components are tagged as:

```
<journal_article>
  <multimedia>
    <summary>Summary text goes here</summary>
    <component>
      <!--Component 1 Metadata Here-->
    </component>
    <component>
      <!--Component 2 Metadata Here-->
    </component>
    <component>
      <!--Component 3 Metadata Here-->
    </component>
  </multimedia>
</journal_article>
```

The diagram below shows the component model starting with the multimedia tag.



### Graphical Abstract Tags

The following tags are used with a graphical abstract. After each tag is a description of the tag and whether it is required or optional.

Element Name	Description	Required or Optional
summary	A brief summary of the graphical abstract	Optional
graphical_abstract	A container tag that holds the tags for the graphical abstract	Optional
mm_filename	The file name of the actual graphical abstract (either image, video, audio, or power point)	Required
mm_filesize	The file size of the multimedia file in <b>MB</b>	Required
cover_image_filename	Filename of the image displayed on IEEE Xplore	Required
ga_type	Has values of either "graphic" or "video"	Required
ga_summary	A caption describing the cover image	Required

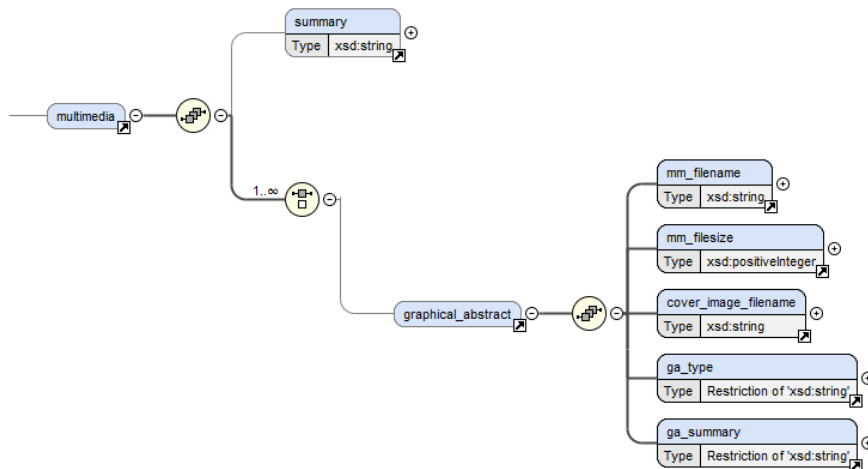
Below is an example of a graphical\_abstract.

```

<journal_article>
  <multimedia>
    <summary>Summary text goes here</summary>
    <graphical_abstract>
      <mm_filename>access-gagraphic-2355098.jpg</mm_filename>
      <mm_filesize>56780</mm_filesize>
      <cover_image_filename>mco20180300c3.jpg</cover_image_filename>
      <ga_type>video</ga_type>
      <ga_summary>An abstract representation of the main components, including
Presentation, Query, Service, and Data access tiers, in the Semantic Interoperability and Evolution
for Malaria Analytics (SIEMA) platform.</ga_summary>
    </graphical_abstract>
  </multimedia>
</journal_article>

```

The diagram below shows the graphical abstract model starting with the multimedia tag.



### Supplement Group Tags

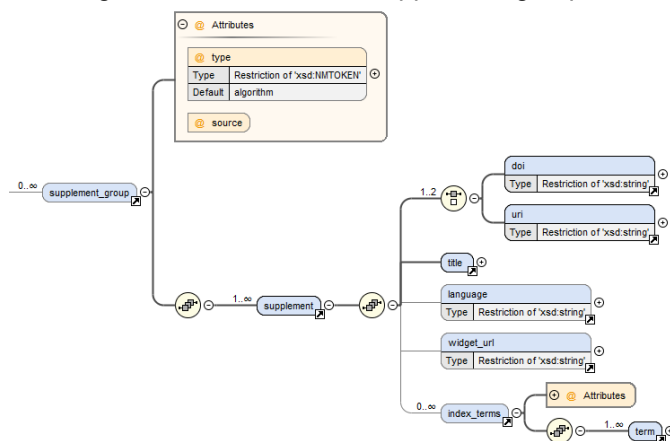
The following tags are used with a supplemental group. After each tag is a description of the tag and whether it is required or optional. Use this option when the supplemental material resides in an external repository or database.

Tag Name	Description	Required or Optional
supplement_group	A container tag that holds the tags about the supplement_group.	Optional
doi	The DOI	Required**
uri	The file name of the actual supplement group	Required**
title	The title of the supplement group	Required
language	The programming languages used by the supplement group (separated by commas). If the "type" attribute is "media" then omit <sup>13</sup> <language>.	Optional
widget_url	<b>Internal Use ONLY</b>	Optional
index_terms	Any index terms associated with the supplement_group	Optional
<b>NOTE:</b> **One is required. Both may be supplied.		

A supplement\_group has two attributes. The first is "type" and has one of these fixed values "dataset", "algorithm", or "media". The second is "source" which is the name of the repository or database that contains the supplement\_group. For example "code-ocean", "dryad", etc.

```
<journal_article>
  <supplement_group type="algorithm" source="code-ocean">
    <supplement>
      <doi>10.24433/CO.572c4c71-c5c6-4230-b372-f901ea0b79e0</doi>
      <uri>https://codeocean.com/2018/03/07/a-fast-exact-functional-test-for-directional-
association-and-cancer-biology-applications</uri>
      <title>A fast exact functional test for directional association and cancer biology
applications</title>
      <language>R, Python, C++</language>
      <index_terms type="author">
        <term>exact functional test</term>
        <term>directional association</term>
        <term>functional dependency</term>
      </index_terms>
    </supplement>
  </supplement_group>
</journal_article>
```

The diagram below shows the supplement group model.



<sup>13</sup> Do **not** use <language/> either.