JATS2RDF (v1.2): a mapping of JATS metadata to RDF

**This work**:

*Source document*: Mapping from the Journal Publishing Tag Set of ANSI/NISO Z39.96-2012, JATS: Journal Article Tag Suite (version 1.0), published 22 August 2012, that has public URL <http://www.niso.org/apps/group_public/document.php?document_id=8975>

*URL*: URL of this mapping document: <http://purl.org/spar/jats2rdf>

*Authors*: David Shotton, Deborah Aleyne Lapeyre and Silvio Peroni(david.shotton@zoo.ox.ac.uk**,** dalapeyre@mulberrytech.com,essepuntato@cs.unibo.it)

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*Described in*: Peroni S, Lapeyre DA and Shotton D (2012). From Markup to Linked Data: Mapping NISO JATS v1.0 to RDF using the SPAR (Semantic Publishing and Referencing) Ontologies. A paper for the *2012 JATS Conference*, Washington DC, USA, 16-17 October 2012 (<http://jats.nlm.nih.gov/jats-con/>).

Preprint available at <http://purl.org/spar/jats2rdf/mapping-paper>.

**Revision history**:

*This version*: v1.2, Revised by Silvio Peroni 19 October 2012, and by David Shotton 7 November 2012, with URL typo for the XSLT corrected 04/12/2012.

*Previous versions*: v1.1, Revised by Silvio Peroni and David Shotton 08 October 2012.

v1.0, Revised by Silvio Peroni 14 September 2012.

v0.8.5, Revised by Silvio Peroni 13 September 2012.

v0.8, Revised by Silvio Peroni 10 September 2012.

v0.7.7, Revised by David Shotton 30 August 2012.

v0.6.1, Revised by Silvio Peroni 22 August 2012.

v0.6, Revised by David Shotton 17 August 2012.

v0.5, Revised by David Shotton 14 August 2012.

v0.4, revised by David Shotton 24 July 2012.

v0.3, revised by Silvio Peroni 23 July 2012.

v0.2, revised by David Shotton 20 July 2012.

*Original version*: v0.1, created by Silvio Peroni and David Shotton, 13 July 2012.

**XSLT:**

An XSLT Transform to automate the creation of RDF metadata from a JATS-marked up document is available from <http://purl.org/spar/jats2rdf/xslt>.

**Application exemplars**:

An RDF metadata file describing the NISO JATS Version 1.0 XML example (<http://purl.org/spar/jats2rdf/example>) has been created using this JATS2RDF mapping, and is available from: <http://purl.org/spar/jats2rdf/example/rdf>

A similar RDF metadata file for the paper by Peroni S, Lapeyre DA and Shotton D (2012) describing this mapping document, referred to above, has also been created using this mapping, and is available from: <http://purl.org/spar/jats2rdf/mapping-paper/rdf>

**Introduction**

The purpose of this mapping document, of metadata entities from the Journal Publishing Tag Set of ANSI/NISO Z39.96-2012, JATS: Journal Article Tag Suite (version 1.0) to RDF using ontology terms, is to enable JATS metadata in XML to be mapped automatically to RDF using an XSLT Transform, and to be published in RDF as Open Linked Data, enabling these metadata to be understood programmatically and integrated automatically with similar data from elsewhere.

In this mapping, terms from FRAPO, the Funding, Research Administration and Projects Ontology (<http://purl.org/cerif/frapo/>), and from the following SPAR (Semantic Publishing and Referencing) Ontologies ([http://purl.org/spar/](http://www.google.com/url?q=http%3A%2F%2Fpurl.org%2Fspar%2F&sa=D&sntz=1&usg=AFQjCNFVUpfezihsGSbrAdosp2-YpnnsgA)) are frequently used:

BiRO, Bibliographic Reference Ontology (<http://purl.org/spar/biro>)

CiTO, Citation Typing Ontology (<http://purl.org/spar/cito>)

DataCite Ontology (<http://purl.org/spar/datacite>)

FaBiO, FRBR-aligned Bibliographic Ontology (<http://purl.org/spar/fabio>)

DEO, Discourse Elements Ontology (<http://purl.org/spar/deo>)

PRO, Publishing Roles Ontology (<http://purl.org/spar/pro>)

PSO, Publishing Status Ontology (<http://purl.org/spar/pso>)

PWO, Publishing Workflow Ontology (<http://purl.org/spar/pwo>)

SCORO, Scholarly Contributions and Roles Ontology (<http://purl.org/spar/scoro>)

as are terms from the other ontologies listed in Table 1.

These are supplemented by terms from Dublin Core, FOAF (Friend of a Friend Vocabulary), PRISM (Publishing Requirements for Industry Standard Metadata) and FRBR (Functional Requirements for Bibliographic Records).

***Table 1: Ontology namespace declarations***

|  |  |  |
| --- | --- | --- |
| ***Abbreviation*** | ***Ontology Name*** | ***URI*** |
| *Default prefix* | A fictional namespace for examples | http//www.example.org/resource/ |
| biro | BiRO, the Bibliographic Reference Ontology | http://purl.org/spar/biro/ |
| cito | CiTO, the Citation Typing Ontology | http://purl.org/spar/cito/ |
| co | The Collections Ontology | http://purl.org/co/ |
| datacite | The DataCite Ontology | http://purl.org/spar/datacite/ |
| dc | Dublin Core Metadata Elements v1.1 | http://purl.org/dc/elements/1.1/ |
| dcterms | Dublin Core Metadata Initiative Metadata Terms | http://purl.org/dc/terms/ |
| deo | The Discourse Elements Ontology | http://purl.org/spar/deo/ |
| dqm | The Data Quality Management Vocabulary | http://purl.org/dqm-vocabulary/v1/dqm# |
| fabio | FaBiO, the FRBR-aligned Bibliographic Ontology | http://purl.org/spar/fabio/ |
| foaf | FOAF, the Friend of a Friend Vocabulary | http://xmlns.com/foaf/0.1/ |
| frapo | FRAPO, the Funders, Research Administration and Projects Ontology | http://purl.org/cerif/frapo/ |
| frbr | FRBR, Functional Requirements for Bibliographic Records | http://purl.org/vocab/frbr/core# |
| literal | The Literal Reification Pattern  | http://www.essepuntato.it/2010/06/literalreification/ |
| mediatypes | Linked Data URIs for MIME Media Types | http://purl.org/NET/mediatypes/ |
| prism | PRISM, Publishing Requirements for Industry Standard Metadata | http://prismstandard.org/namespaces/basic/2.0/ |
| pro | PRO, the Publishing Roles Ontology | http://purl.org/spar/pro/ |
| prov | The Provenance Ontology | http://www.w3.org/ns/prov# |
| pso | PSO, the Publishing Status Ontology | http://purl.org/spar/pso/ |
| pwo | PWO, the Publishing Workflow Ontology | http://purl.org/spar/pwo/ |
| rdf | RDF namespace | http://www.w3.org/1999/02/22-rdf-syntax-ns# |
| rdfs | RDF Schema | http://www.w3.org/2000/01/rdf-schema# |
| scoro | SCORO, the Scholarly Contributions and Roles Ontology | http://purl.org/spar/scoro/ |
| skos | SKOS, a Simple Knowledge Organization System | http://www.w3.org/2004/02/skos/core# |
| swanrel | The SWAN Discourse Relationships Ontology | http://purl.org/swan/2.0/discourse-relationships/ |
| swc | The Semantic Web Conference Ontology | http://data.semanticweb.org/ns/swc/ontology# |
| swrc | Semantic Web Research Community Ontology | http://swrc.ontoware.org/ontology# |
| trait | OntoMedia Trait Representation | http://contextus.net/ontology/ontomedia/ext/common/trait# |
| tvc | The Time-indexed Value in Context Pattern | http://www.essepuntato.it/2012/04/tvc/ |
| vcard | Representing vCard Objects in RDF | http://www.w3.org/2006/vcard/ns# |
| xsd | XML Schema Definition | http://www.w3.org/2001/XMLSchema# |

***JATS reference***

In this document, the abbreviation "JATS" refers to the Journal Publishing Tag Set of ANSI/NISO Z39.96-2012, JATS: Journal Article Tag Suite (version 1.0):

Mulberry Technologies, Inc. (2012). Journal Publishing Tag Library. ANSI/NISO JATS Version 1.0 May 2012. Sponsored by the National Center for Biotechnology Information (NCBI) and the National Library of Medicine (NLM). <http://jats.nlm.nih.gov/publishing/>

National Information Standards Organization (2012). JATS: Journal Article Tag Suite. ANSI/NISO Z39.96-2012, Approved August 9, 2012 by the American National Standards Institute. <http://jats.niso.org/>

Note that the following mappings are made on the assumption that any document bearing JATS markup is in electronic (digital) format.

***FaBiO and BiRO classes***

The FaBiO and BiRO ontology classes are structured according to the FRBR model of Works, Expressions, Manifestations and Items. In this mapping document, mappings are always made to the Expression that bears the JATS markup. The mappings statements in this document *presume* the following RDF relationships between this Expression (:textual-entity, representing the article) and its corresponding Work (:conceptual-work), Manifestation (:digital-embodiment) and Item (:digital-item)

:textual-entity
 a fabio:Expression ;
 frbr:realizationOf :conceptual-work ;
 frbr:embodiment :digital-embodiment ;
 fabio:hasRepresentation :digital-item .

These relationships are specified in the first mapping statement in Table 2, that for JATS <article>, and are then presumed to exist, rather than being explicitly re-stated every time they apply.

Note further that we have chosen to use the term ":textual-entity" rather than ":this-article" to specify the document to which the JATS markup is applied, because the JATS definition of "article" is so broad that it includes things that are *not* articles:

" **<article>** This element can be used to describe not only typical journal articles (research articles) but also much of the non-article content within a journal."

This and other mapping decisions are explained in the paper:

Peroni S, Lapeyre DA and Shotton D (2012). From Markup to Linked Data: Mapping NISO JATS v1.0 to RDF using the SPAR (Semantic Publishing and Referencing) Ontologies. A paper for the *2012 JATS Conference*, Washington DC, USA, 16-17 October 2012 ([http://jats.nlm.nih.gov/jats-con/).](http://jats.nlm.nih.gov/jats-con/%29.)

Preprint available at <http://purl.org/spar/jats2rdf/mapping-paper>.

In the following tables, the mapping for each <element> is followed by mappings for @attributes appropriate for that <element>. The exemplar RDF usage statements are given in Turtle notation (<http://www.w3.org/TeamSubmission/turtle/>), and represent the mapping of those elements of the XML statements shown in **bold type**.

***Table 2: JATS metadata for the elements <article> and <sub-article>***

|  |  |  |
| --- | --- | --- |
| Element/attribute name | XML example | RDF translation |
| article | **<article xml:lang=”en”>**  **...** **</article>** | :textual-entity  a fabio:Expression ; frbr:realizationOf :conceptual-work ; frbr:embodiment :digital-embodiment ; fabio:hasRepresentation :digital-item ; dcterms:language [  a dcterms:LinguisticSystem ; dcterms:description “en”^^dcterms:RFC5646 ] .  |
| @article-type (“abstract”) | <article  **article-type=”abstract”**> ...</article> | :textual-entity a fabio:Abstract ; frbr:summarizationOf [ a fabio:Expression ] . |
| @article-type (“addendum”) | <article  **article-type=”addendum”**> ...</article> | :textual-entity a fabio:Addendum . |
| @article-type (“announcement”) | <article  **article-type=”announcement”**> ...</article> | :conceptual-work a fabio:Announcement . |
| @article-type (“article-commentary”) | <article  **article-type=”article-commentary”**> ...</article> | :textual-entity a fabio:Comment ; cito:discusses [ a fabio:Article ] . |
| @article-type (“book-review”) | <article  **article-type=”book-review”**> ...</article> | :textual-entity a fabio:BookReview ; cito:reviews [ a fabio:Book ] . |
| @article-type (“books-received”) | <article  **article-type=”books-received”**> ...</article> | :conceptual-work a fabio:NotificationOfReceipt ; swanrel:relatesTo [ a fabio:Book ] . |
| @article-type (“brief-report”) | <article  **article-type=”brief-report”**> ...</article> | :textual-entity a fabio:BriefReport . |
| @article-type (“calendar”) | <article  **article-type=”calendar”**> ...</article> | :conceptual-work a fabio:TimeTable . |
| @article-type (“case-report”) | <article  **article-type=”case-report”**> ...</article> | :textual-entity a fabio:ReportDocument .:conceptual-work a fabio:CaseReport . |
| @article-type (“collection”) | <article  **article-type=”collection”**> ...</article> | :textual-entity a foaf:ExpressionCollection . |
| @article-type (“correction”) | <article  **article-type=”correction”**> ...</article> | :conceptual-work a fabio:Correction . |
| @article-type (“discussion”) | <article  **article-type=”discussion”**> ...</article> | :conceptual-work a fabio:Opinion . |
| @article-type (“disertation”) | <article  **article-type=”dissertation”**> ...</article> | :textual-entity a fabio:Thesis . |
| @article-type (“editorial”) | <article  **article-type=”editorial”**> ...</article> | :textual-entity a fabio:Editorial . |
| @article-type (“in-brief”) | <article  **article-type=”in-brief”**> ...</article> | :textual-entity a fabio:InBrief ; frbr:partOf :periodical-issue ; frbr:summarizationOf [ a fabio:Article ; frbr:partOf :periodical-issue ] .:periodical-issue a fabio:PeriodicalIssue . |
| @article-type (“introduction”) | <article  **article-type=”introduction”**> ...</article> | :conceptual-work a deo:Introduction . |
| @article-type (“letter”) | <article  **article-type=”letter”**> ...</article> | :textual-entity a fabio:Letter . |
| @article-type (“meeting-report”) | <article  **article-type=”meeting-report”**> ...</article> | :textual-entity a fabio:ReportDocument .:conceptual-work a fabio:MeetingReport . |
| @article-type (“news”) | <article  **article-type=”news”**> ...</article> | :textual-entity a fabio:NewsItem . |
| @article-type (“obituary”) | <article  **article-type=”obituary”**> ...</article> | :conceptual-work a fabio:Obituary . |
| @article-type (“oration”) | <article  **article-type=”oration”**> ...</article> | :textual-entity a fabio:Oration . |
| @article-type (“partial-retraction”) | <article  **article-type=”partial-retraction”**> ...</article> | :textual-entity  cito:retracts [ frbr:partOf [ a owl:Thing ] ] .:conceptual-work a fabio:Retraction . |
| @article-type (“product-review”) | <article  **article-type=”product-review”**> ...</article> | :textual-entity cito:reviews [ a owl:Thing ] .:conceptual-work a fabio:ProductReview . |
| @article-type (“rapid-communication”) | <article  **article-type=”rapid-communication”**> ...</article> | :textual-entity a fabio:RapidCommunication . |
| @article-type (“reply”) | <article  **article-type=”reply”**> ...</article> | :textual-entity  cito:repliesTo [ a frbr:Endeavour ] .:conceptual-work a fabio:Reply . |
| @article-type (“reprint”) | <article  **article-type=”reprint”**> ...</article> | :digital-embodiment frbr:reproductionOf  [ a fabio:Manifestation ] . |
| @article-type (“research-article”) | <article  **article-type=”research-article”**> ...</article> | :textual-entity a fabio:Article .:conceptual-work a fabio:ResearchPaper . |
| @article-type (“retraction”) | <article  **article-type=”retraction”**> ...</article> | :textual-entity  cito:retracts [ a owl:Thing ] .:conceptual-work a fabio:Retraction . |
| @article-type (“review-article”) | <article  **article-type=”review-article”**> ...</article> | :textual-entity a fabio:ReviewArticle ; cito:reviews [ a owl:Thing ] . |
| @article-type (“translation”) | <article  **article-type=”translation”**> ...</article> | :textual-entity frbr:translationOf  [ a fabio:Expression ] . |
| sub-article | <article> ... **<sub-article  xml:lang=”it”> ... </sub-article>** ...<article> | :sub-textual-entity a fabio:Expression ; frbr:partOf :textual-entity ; frbr:realizationOf :sub-conceptual-work ; frbr:embodiment :digital-embodiment ; fabio:hasRepresentation :digital-item ; dcterms:language [  a dcterms:LinguisticSystem ; dcterms:description “it”^^dcterms:RFC5646 ] .:sub-conceptual-work frbr:partOf :conceptual-work .  |
| Note: The same attribute mappings apply to <sub-article> as to <article>, using *:sub-textual-entity* and *:sub-conceptual-work* instead of *:textual-entity* and *:conceptual-work* respectively. |

***Table 3: JATS metadata for the element <article-meta>***

|  |  |  |
| --- | --- | --- |
| Element/attribute name | XML example | RDF translation |
| article-id | <article-meta> **<article-id>XXX</article-id>**</article-meta> | :textual-entity dcterms:identifier “XXX” . |
| @pub-id-type(“art-access-id”) | <article-id  **pub-id-type=”art-access-id”>** XXX</article-id> | :textual-entity datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent ; rdfs:label “An archive” ] ] . |
| @pub-id-type(“arxiv”) | <article-id **pub-id-type=”arxiv”**> XXX</article-id> | :textual-entity fabio:hasArXivId “XXX” . |
| @pub-id-type(“coden”) | <article-id **pub-id-type=”coden”**> XXX</article-id> | :textual-entity fabio:hasCODEN “XXX” . |
| @pub-id-type(“doi”) | <article-id **pub-id-type=”doi”**> XXX</article-id> | :textual-entity prism:doi “XXX” . |
| @pub-id-type(“doaj”) | <article-id **pub-id-type=”doaj”**> XXX</article-id> | :textual-entity datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent ; rdfs:label “DOAJ” ] ] . |
| @pub-id-type(“isbn”) | <article-id **pub-id-type=”isbn”**> XXX</article-id> | :textual-entity frbr:embodiment [ a fabio:Manifestation ; prism:isbn “XXX” ] .***or***:textual-entity frbr:partOf [ a fabio:Expression ; frbr:embodiment [ a fabio:Manifestation ; prism:isbn “XXX” ] . |
| @pub-id-type(“manuscript”) | <article-id **pub-id-type=”manuscript”**> XXX</article-id> | :textual-entity datacite:hasIdentifier [ a datacite:Identifier ; datacite:usesIdentifierScheme  datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ] . |
| @pub-id-type(“medline”) | <article-id **pub-id-type=”medline”**> XXX</article-id> | :textual-entity fabio:hasPubMedId “XXX” . |
| @pub-id-type(“other”) | <article-id **pub-id-type=”other”**> XXX</article-id> | :textual-entity dcterms:identifier “XXX” . |
| @pub-id-type(“pii”) | <article-id **pub-id-type=”pii”**> XXX</article-id> | :textual-entity fabio:hasPII “XXX” .# See footnote [[1]](#footnote-1) |
| @pub-id-type(“pmcid”) | <article-id **pub-id-type=”pmcid”**> XXX</article-id> | :textual-entity fabio:hasPubMedCentralId “XXX” . |
| @pub-id-type(“pmid”) | <article-id **pub-id-type=”pmid”**> XXX</article-id> | :textual-entity fabio:hasPubMedId “XXX” . |
| @pub-id-type(“publisher-id”) | <article-id  **pub-id-type=”publisher-id”**> XXX</article-id> | :textual-entity datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “A Publisher” ] ] . |
| @pub-id-type(“sici”) | <article-id **pub-id-type=”sici”**> XXX</article-id> | :textual-entity fabio:hasSICI “XXX” . |
| @pub-id-type(“std-designation”) | <article-id  **pub-id-type=”std-designation”**> XXX</article-id> | :conceptual-work a fabio:TechnicalStandard ; fabio:hasStandardNumber “XXX” . |
| article-categories | <article-meta> ... **<article-categories> <subj-group> <subject>XXX</subject> <subj-group> <subject>YYY</subject> </subj-group> </article-categories>** ...</article-meta> | :textual-entity fabio:hasSubjectTerm  :term1 , :term2 .:term1 a fabio:SubjectTerm ; rdfs:label “XXX” ; skos:narrower :term2 .:term2 a fabio:SubjectTerm ; rdfs:label “YYY” .  |
| article-title | <article-meta> ... <title-group> **<article-title>XXX</article-title>** </title-group> ...</article-meta> | :textual-entity dcterms:title “XXX”@en . |
| subtitle | <article-meta> ... <title-group> ... **<subtitle>XXX</subtitle>** </title-group> ...</article-meta> | :textual-entity fabio:hasSubtitle “XXX”@en . |
| trans-title | <article-meta> ... <title-group> ... **<trans-title-group @xml:lang=”it”**> **<trans-title>XXX</trans-title> </trans-title-group>** </title-group> ...</article-meta> | :textual-entity fabio:hasTranslatedTitle “XXX”@it . |
| alt-title | <article-meta> ... <title-group> ... **<alt-title>XXX</alt-title>** </title-group> ...</article-meta> | :textual-entity prism:alternateTitle “XXX” . |
| pub-date | <article-meta> ... <title-group> ... **<pub-date> <day>DD</day> <month>MM</month> <year>YYYY</year> </pub-date>** </title-group> ...</article-meta> | :conceptual-work dcterms:date  “YYYY-MM-DD”^^xsd:date .***or***:textual-entity dcterms:date  “YYYY-MM-DD”^^xsd:date .***or***:digital-embodiment dcterms:date  “YYYY-MM-DD”^^xsd:date .# See footnote [[2]](#footnote-2) |
| @date-type(“accepted”) | <pub-date **date-type=”accepted”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work frbr:realization [ a fabio:Expression ; dcterms:dateAccepted YYYY-MM-DD”^^xsd:date ] . |
| @date-type(“corrected”) | <pub-date **date-type=”corrected”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work fabio:hasCorrectionDate  “YYYY-MM-DD”^^xsd:date ; frbr:realization [ a fabio:Expression ; frbr:revision [ a fabio:Expression ; dcterms:created “YYYY-MM-DD”^^xsd:date ] ] .# See footnote [[3]](#footnote-3) |
| @date-type(“preprint”) | <pub-date **date-type=”preprint”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity a fabio:Preprint ; fabio:hasDistributionDate “YYYY-MM-DD”^^xsd:date . |
| @date-type(“retracted”) | <pub-date **date-type=”retracted”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity  fabio:hasRetractionDate “YYYY-MM-DD”^^xsd:date . # See footnote [[4]](#footnote-4) |
| @date-type(“received”) | <pub-date **date-type=”received”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work frbr:realization [ a fabio:Expression ; fabio:hasDateReceived “YYYY-MM-DD”^^xsd:date ] . |
| @date-type(“rev-recd”) | <pub-date **date-type=”rev-recd”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work frbr:realization [ a fabio:Expression ;  frbr:revision [ a fabio:Expression ;  fabio:hasDateReceived “YYYY-MM-DD”^^xsd:date  ] ] .# See footnote 3 |
| @date-type(“rev-request”) | <pub-date **date-type=”rev-request”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work fabio:hasRevisionRequestDate “YYYY-MM-DD”^^xsd:date . |
| @date-type(“pub”) | <pub-date **date-type=”pub”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [ prism:publicationDate “YYYY-MM-DD”^^xsd:date ] .# See footnote [[5]](#footnote-5) |
| @publication-format(“print”) | <pub-date  **publication-format=”print”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:PrintObject ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“electronic”) | <pub-date  **publication-format=”electronic”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:DigitalManifestation ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“ebook”) | <pub-date  **publication-format=”ebook”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity a fabio:Book ;  frbr:embodiment [ a fabio:DigitalManifestation ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“video”) | <pub-date  **publication-format=”video”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work a fabio:MovingImage ; fabio:hasManifestation [ a fabio:Manifestation ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“audio”) | <pub-date  **publication-format=”audio”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work a fabio:SoundRecording ; fabio:hasManifestation [ a fabio:Manifestation ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“online”) | <pub-date  **publication-format=”online”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:DigitalManifestation ; frbr:exemplar [ a fabio:ComputerFile ; fabio:isStoredOn fabio:internet ] ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“web”) | <pub-date  **publication-format=”web”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:DigitalManifestation ; frbr:exemplar [ a fabio:ComputerFile; fabio:isStoredOn fabio:web ] ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| @publication-format(“XXX”) | <pub-date  **publication-format=”XXX”**> **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:Manifestation ; dcterms:format [ a dcterms:MediaTypeOrExtent ; rdfs:label “XXX” ] ; dcterms:date “YYYY-MM-DD”^^xsd:date ] . |
| season | <pub-date> **<season>SSS</season>** **<year>YYYY</year>**</pub-date> | :textual-entitiy literal:hasLiteral [ a dcterms:date ; fabio:hasSeason “SSS” ; literal:hasLiteralValue “YYYY”^^xsd:gYear ] . |
| @calendar | <pub-date **calendar=”XXX”**> **<year>YYYY</year>**</pub-date> | :textual-entity literal:hasLiteral [ a dcterms:date ; literal:hasLiteralValue “YYYY”^^xsd:gYear ; fabio:usesCalendar “XXX” ] . |
| @pub-type(“epub”) | <pub-date **pub-type=”epub”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:DigitalManifestation ; prism:publicationDate “YYYY-MM-DD”^^xsd:date ] . |
| @pub-type(“ppub”) | <pub-date **pub-type=”ppub”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [  a fabio:PrintObject ; prism:publicationDate “YYYY-MM-DD”^^xsd:date ] . |
| @pub-type(“epub-ppub”) | <pub-date **pub-type=”epub-ppub”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment  [ a fabio:DigitalManifestation ; prism:publicationDate “YYYY-MM-DD”^^xsd:date] ,  [ a fabio:PrintObject ; prism:publicationDate “YYYY-MM-DD”^^xsd:date] . |
| @pub-type(“epreprint”) | <pub-date **pub-type=”epreprint”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work frbr:realization [  a fabio:Preprint ; frbr:embodiment [ a fabio:DigitalManifestation ; fabio:hasDistributionDate “YYYY-MM-DD”^^xsd:date ] ] . |
| @pub-type(“ppreprint”) | <pub-date **pub-type=”ppreprint”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work frbr:realization [  a fabio:Preprint ; frbr:embodiment [ a fabio:PrintObject ; fabio:hasDistributionDate “YYYY-MM-DD”^^xsd:date ] ] . |
| @pub-type(“ecorrected”) | <pub-date  **pub-type=”ecorrected”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work  fabio:hasCorrectionDate “YYYY-MM-DD”^^xsd:date ; frbr:realization [  a fabio:Expression ; frbr:revision [ a fabio:Expression ;  dcterms:created “YYYY-MM-DD”^^xsd:date ; frbr:embodiment [  a fabio:DigitalManifestation ] ] ] .# See footnote 3 |
| @pub-type(“pcorrected”) | <pub-date **pub-type=”pcorrected”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :conceptual-work  fabio:hasCorrectionDate “YYYY-MM-DD”^^xsd:date ; frbr:realization [  a fabio:Expression ; frbr:revision [ a fabio:Expression ;  dcterms:created “YYYY-MM-DD”^^xsd:date ; frbr:embodiment [  a fabio:PrintObject ] ] ] .# See footnote 3 |
| @pub-type(“eretracted”) | <pub-date **pub-type=”eretracted”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [ a fabio:DigitalManifestation ;  fabio:hasRetractionDate  “YYYY-MM-DD”^^xsd:date ] .# See footnote 4 |
| @pub-type(“pretracted”) | <pub-date **pub-type=”pretracted”**>  **<day>DD</day> <month>MM</month> <year>YYYY</year>**</pub-date> | :textual-entity frbr:embodiment [ a fabio:PrintObject ;  fabio:hasRetractionDate “YYYY-MM-DD”^^xsd:date ] . # See footnote 4 |
| issue | <article-meta> ... **<issue>XXX</issue>** ...</article-meta> | :textual-entity frbr:partOf :periodical-issue .:periodical-issue a fabio:PeriodicalIssue ; frbr:realizationOf  :conceptual-papers-collection ; prism:issueIdentifier “XXX” .:conceptual-papers-collection a  fabio:WorkCollection . |
| issue-id | <article-meta> ... **<issue-id>XXX</issue-id>** ...</article-meta> | :periodical-issue prism:issueIdentifier “XXX” .See footnote [[6]](#footnote-6) |
| issue-title | <article-meta> ... **<issue-title>XXX</issue-title>** ...</article-meta> | :periodical-issue dcterms:title “XXX”@en . |
| issue-sponsor | <article-meta> ... **<issue-sponsor>XXX</issue-sponsor>** ...</article-meta> | :conceptual-papers-collection frapo:isFundedBy [ a foaf:Agent ; foaf:name “XXX” ] . |
| issue-part | <article-meta> ... **<issue-part>XXX</issue-part>** ...</article-meta> | :periodical-issue prism:section “XXX” . |
| @seq | <issue **seq=”XXX”**> ... </issue> | :periodical-issue  fabio:hasSequenceIdentifier “XXX” . |
| volume | <article-meta> ... **<volume>XXX</volume>** ...</article-meta> | :periodical-issue frbr:partOf :periodical-volume .:periodical-volume a fabio:PeriodicalVolume ; frbr:partOf fabio:Periodical ; prism:volume “XXX” . |
| volume-id | <article-meta> ... **<volume-id>XXX</volume-id>** ...</article-meta> | :periodical-volume prism:volume “XXX” .# See footnote [[7]](#footnote-7) |
| volume-series | <article-meta> ... **<volume-series>XXX</volume-series>** ...</article-meta> | :periodical-volume  fabio:hasSequenceIdentifier “XXX” . |
| isbn | <article-meta> ... **<isbn>XXX</isbn>** ...</article-meta> | :textual-entity frbr:partOf :periodical-issue .:periodical-issue frbr:embodiment [ a fabio:Manifestation ; prism:isbn “XXX” ] .***or***:textual-entity frbr:partOf :periodical-volume .:periodical-volume frbr:embodiment [ a fabio:Manifestation ; prism:isbn “XXX” ] .# See footnote [[8]](#footnote-8) |
| supplement | <article-meta> ... **<supplement>XXX</supplement>** ...</article-meta> | :textual-entity a fabio:Supplement ; dcterms:description "XXX" . |
| fpagelpagepage-range | <article-meta> ... **<fpage>XXX</fpage> <lpage>WWW</lpage> <page-range> XXX-YYY, ZZZ-WWW </page-range>** ...</article-meta> | :textual-entity frbr:embodiment [ a fabio:Manifestation ; prism:startingPage “XXX” ; prism:endingPage “WWW” ; prism:pageRange “XXX-YYY, ZZZ-WWW” ] . |
| elocation-id | <article-meta> ... **<elocation-id>XXX</elocation-id>** ...</article-meta> | :textual-entity frbr:embodiment [ a fabio:Manifestation ; fabio:hasDigitalArticleIdentifier “XXX” ] . |
| product | <article-meta> ... **<product>...</product>** ...</article-meta> | :textual-entity cito:discusses :this-product .:this-product a owl:Thing . |
| @product-type(“book”) | <product **product-type=”book”**> ...</product> | :this-product a fabio:Book .# See footnote [[9]](#footnote-9) |
| @product-type(“software”) | <product **product-type=”software”**> ...</product> | :this-product a fabio:ComputerProgram . |
| @product-type(“article”) | <product **product-type=”article”**> ...</product> | :this-product a fabio:Article . |
| @product-type(“issue”) | <product **product-type=”issue”**> ...</product> | :this-product a fabio:PeriodicalIssue . |
| @product-type(“website”) | <product **product-type=”website”**> ...</product> | :this-product a fabio:WebSite . |
| @product-type(“film”) | <product **product-type=”film”**> ...</product> | :this-product a fabio:Film . |
| @product-type(“XXX”) | <product **product-type=”XXX”**> ...</product> | :this-product a [  a owl:Class ; rdfs:label “XXX” ] . |
| supplementary-material | <article-meta> ... **<supplementary-material> ... </supplementary-material>** ...</article-meta> | :textual-entity cito:citesAsRelated  :supplementary-information.:supplementary-information  a fabio:SupplementaryInformation . |
| @mimetype*and*@mime-subtype | <supplementary-material **mimetype=”XXX” mime-subtype=”YYY”**> ...</supplementary-material> | :supplementary-information frbr:embodiment [ a fabio:DigitalManifestation ; dcterms:format mediatypes:XXX/YYY ] . |
| date | <article-meta> ... <history> **<date> ... </date>** </history> ...</article-meta> | :conceptual-work dcterms:date  “YYYY-MM-DD”^^xsd:date .***or***:textual-entity dcterms:date  “YYYY-MM-DD”^^xsd:date .***or***:digital-embodiment dcterms:date  “YYYY-MM-DD”^^xsd:date .# See footnote [[10]](#footnote-10) |
| Note: <date> can take the @date-type attribute. The mappings for @date-type are as shown above for <pub-date>.  |
| copyright-statement | <article-meta> ... <permissions> **<copyright-statement> ... XXX ... </copyright-statement>** </permissions> ...</article-meta> | :textual-entity dcterms:rights “XXX” .  |
| copyright-year | <article-meta> ... <permissions> **<copyright-year> XXXX </copyright-year>** </permissions> ...</article-meta> | :textual-entity  fabio:hasCopyrightYear "XXXX"^^xsd:gYear . |
| copyright-holder | <article-meta> ... <permissions> **<copyright-holder> XXX </copyright-holder>** </permissions> ...</article-meta> | :copyright-agent  a foaf:Agent ; foaf:name “XXX” ; pro:holdsRoleInTime [ pro:withRole pro:copyright-owner ; pro:relatesToDocument :textual-entity ] . |
| license | <article-meta> ... <permissions> **<license xlink:href=”YYY”> ... XXX ... </license>** </permissions> ...</article-meta> | :textual-entity  dcterms:license <YYY> . |
| kwd | <article-meta> ... **<kwd>XXX</kwd>** ...</article-meta> | :textual-entity prism:keyword “XXX” . |
| award-group | <article-meta> ... **<award-group> ... </award-group>** ...</article-meta> | :textual-entity frapo:isOutputOf :investigation .:investigation a frapo:Investigation . |
| funding-source | <award-group> **<funding-source country=”YYY”>  XXX  </funding-source>**</award-group> | :funding-agent a foaf:Agent ; foaf:name “XXX” ; frapo:country “YYY” ; frapo:funds :investigation . |
| award-id | <award-group> **<award-id>  XXX  </award-id>**</award-group> | :funding-agent frapo:awards :award .:award a frapo:Grant ; frapo:hasGrantNumber “XXX” frapo:funds :investigation . |
| principal-award-recipient | <award-group> **<principal-award-recipient>  XXX  </principal-award-recipient>**</award-group> | :funding-recipient-agent a foaf:Agent ; foaf:name “XXX” ; pro:holdsRoleInTime [  pro:withRole scoro:funding-recipient ; pro:relatesToEntity :investigation ] . |
| principal-investigator | <award-group> **<principal-investigator>  XXX  </principal-investigator>**</award-group> | :principal-investigator a foaf:Agent ; foaf:name “XXX” pro:holdsRoleInTime [  pro:withRole scoro:principal-investigator ; pro:relatesToEntity :investigation ] . |
| conference | <article-meta> ... **<conference> ... </conference>** ...</article-meta> | :textual-entity a fabio:ConferencePaper .:conceptual-work swc:relatedToEvent :conference .:conference a swc:ConferenceEvent . |
| conf-date | <conference> **<conf-date>XXX</conf-date>**</conference> | :conference swrc:date “XXX” . |
| conf-name | <conference> ... **<conf-name>XXX</conf-name>**</conference> | :conference swrc:eventTitle “XXX” . |
| conf-acronym | <conference> ... **<conf-acronym>XXX</conf-acronym>**</conference> | :conference frapo:hasAcronym "XXX". |
| conf-num | <conference> ... **<conf-num>XXX</conf-num>**</conference> | :conference swrc:number “XXX” . |
| conf-loc | <conference> ... **<conf-loc>XXX</conf-loc>**</conference> | :conference swrc:location “XXX” . |
| conf-sponsor | <conference> ... **<conf-sponsor>XXX</conf-sponsor>**</conference> | :conference swc:hasSponsorship [  a swc:Sponsorship ; swc:isProvidedBy [ a foaf:Organization ; foaf:name “XXX” ] ] . |
| conf-theme | <conference> ... **<conf-theme>... XXX ...</conf-theme>**</conference> | :conference dcterms:description “XXX” . |
| related-article | <article-meta> ... **<related-article> ... </related-article>** ...</article-meta> | :textual-entity  frbr:relatedEndeavour :related-textual-entity .:related-textual-entity a fabio:Article . |
| @id  | <related-article **id="XXX"**> ...</related-article> | :related-textual-entity dcterms:identifier “XXX” . |
| related-object | <article-meta> ... **<related-object> ... </related-object>** ...</article-meta> | :textual-entity  frbr:relatedEndeavour :related-object .:related-object a frbr:Expression . |
| @object-id | <related-object **object-id="XXX"**> ...</related-object> | :related-object dcterms:identifier “XXX” . |
| @object-id-type(“doi”) | <related-object object-id="XXX" **object-id-type=”doi”**> ... </related-object> | :related-object prism:doi “XXX” . |
| self-uri | <article-meta> ... **<self-uri xlink:href=”XXX”> "YYY" </self-uri>** ...</article-meta> | :textual-entity frbr:arrangement [  a fabio:Expression ; dqm:hasURI “XXX”^^xsd:anyURI ;  dcterms:description “YYY” ] . |

***Table 4: JATS metadata for the element <journal-meta>***

|  |  |  |
| --- | --- | --- |
| Element/attribute name | XML example | RDF translation |
| journal-meta | <article> <front>  **<journal-meta> ... </journal-meta>** ...  </front> ...</article> | :textual-entity frbr:partOf :journal .:journal a fabio:Journal ;  frbr:realizationOf [ a fabio:WorkCollection ] . |
| journal-id | <journal-meta> **<journal-id  xml:lang=”en”>XXX</journal-id>** ...</journal-meta> | :journal dcterms:identifier “XXX”@en . |
| @journal-id-type(“YYY”) | <journal-id **journal-id-type=”YYY”**> XXX</journal-id> | :journal datacite:hasIdentifier [  a datacite:Identifier ; literal:hasLiteralValue “XXX” ; datacite:usesIdentifierScheme [ a datacite:IdentifierScheme ;  rdfs:label "YYY" ] ] .***or***:journal datacite:hasIdentifier [  a datacite:Identifier ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; dcterms:description  “Identifier scheme authority” ; rdfs:label “YYY” ] ] .# see footnote [[11]](#footnote-11) |
| @journal-id-type(“archive”) | <journal-id **journal-id-type=”archive”**> XXX</journal-id> | :journal datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “An archive” ] ] . |
| @journal-id-type(“aggregator”) | <journal-id **journal-id-type=”aggregator”**> XXX</journal-id> | :journal datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “An aggregator” ] ] . |
| @journal-id-type(“doaj”) | <journal-id **journal-id-type=”doaj”**> XXX</journal-id> | :journal datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “DOAJ” ] ] . |
| @journal-id-type(“doi”) | <journal-id **journal-id-type=”doi”**> XXX</journal-id> | :journal prism:doi “XXX” . |
| @journal-id-type(“index”) | <journal-id **journal-id-type=”index”**> XXX</journal-id> | :journal datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “An indexing service” ] ] . |
| @journal-id-type(“issn”) | <journal-id **journal-id-type=”issn”**> XXX</journal-id> | :journal prism:issn “XXX” . |
| @journal-id-type(“nlm-ta”) | <journal-id **journal-id-type=”nlm-ta”**> XXX</journal-id> | :journal literal:hasLiteral [ a fabio:hasShortTitle ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “PubMed” ] ] . |
| @journal-id-type(“pmc”) | <journal-id **journal-id-type=”pmc”**> XXX</journal-id> | :journal literal:hasLiteral [ a fabio:hasShortTitle ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “PubMed Central” ] ] . |
| @journal-id-type(“publisher-id”) | <journal-id **journal-id-type=”publisher-id”**> XXX</journal-id> | :journal datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:local-resource-identifier-scheme ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; rdfs:label “A Publisher” ] ] . |
| journal-title | <journal-meta> ... <journal-title-group> **<journal-title  @xml:lang=”en”> XXX</journal-title>** </journal-title-group> ...</journal-meta> | :journal dcterms:title “XXX”@en . |
| journal-subtitle | <journal-meta> ... <journal-title-group> **<journal-subtitle  @xml:lang=”en”> XXX</journal-subtitle>** </journal-title-group> ...</journal-meta> | :journal fabio:hasSubtitle “XXX”@en . |
| trans-title | <journal-meta> ... <journal-title-group> <trans-title-group **@xml:lang=”it”**> **<trans-title>XXX</trans-title>** </trans-title-group> </journal-title-group> ...</journal-meta> | :journal fabio:hasTranslatedTitle “XXX”@it . |
| trans-subtitle | <journal-meta> ... <journal-title-group> <trans-title-group **@xml:lang=”it”**> ... **<trans-subtitle> XXX</trans-subtitle>** </trans-title-group> </journal-title-group> ...</journal-meta> | :journal fabio:hasTranslatedSubtitle “XXX”@it . |
| abbrev-journal-title | <journal-meta> ... <journal-title-group> **<abbrev-journal-title  @xml:lang=”en”> XXX</abbrev-journal-title>** </journal-title-group> ...</journal-meta> | :journal fabio:hasShortTitle “XXX”@en . |
| abbrev-type("YYY") | <abbrev-journal-title  **abbrev-type=”YYY”**> XXX</abbrev-journal-title> | :journal literal:hasLiteral [ a fabio:hasShortTitle ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent ; rdfs:label “YYY” ] ] . |
| issn | <journal-meta> ... **<issn>XXX</issn>** ...</journal-meta> | :journal prism:issn “XXX” . |
| issnl | <journal-meta> ... **<issn-l>XXX</issn-l>** ...</journal-meta> | :journal fabio:hasIssnL “XXX” . |
| isbn | <journal-meta> ... **<isbn>XXX</isbn>** ...</journal-meta> | :periodical-issue a fabio:PeriodicalIssue ; frbr:part :textual-entity ; frbr:partOf :journal ; frbr:embodiment [ a fabio:Manifestation ; prism:isbn "XXX" ] .***or***:periodical-volume a fabio:PeriodicalVolume ; frbr:part :textual-entity ; frbr:partOf :journal ; frbr:embodiment [ a fabio:Manifestation ; prism:isbn "XXX" ] .# See footnote [[12]](#footnote-12) |
| publisher | <journal-meta> ... **<publisher>...</publisher>** ...</journal-meta> | :journal dcterms:publisher :this-publisher .:this-publisher a foaf:Organization . |
| publisher-name | <publisher> **<publisher-name>XXX</publisher-name>**</publisher> | :this-publisher foaf:name “XXX” .# See footnote [[13]](#footnote-13) |
| publisher-loc | <publisher> ... **<publisher-loc>XXX</publisher-loc>**</publisher> | :this-publisher tvc:hasValueInTime [ a tvc:ValueInTime ; tvc:withValue [  a vcard:VCard ; vcard:addr [ a vcard:Address ; vcard:locality “XXX” ] ] ; tvc:withinContext :journal ] . |

***Table 5: JATS metadata for the element <contrib>.***

|  |  |  |
| --- | --- | --- |
| Element/attribute name | XML example | RDF translation |
| contrib | <article> ... **<contrib>...</contrib>** ...</article> | :conceptual-work dcterms:contributor :this-agent .:this-agent a foaf:Agent .# See footnote [[14]](#footnote-14) |
| @contrib-type(“author”) | <contrib **contrib-type=”author”**> ...</contrib> | :conceptual-work dcterms:creator :this-agent .:this-agent pro:holdsRoleInTime [ pro:withRole pro:author ; pro:relatesToDocument :conceptual-work ] . |
| @contrib-type("XXX") | <contrib **contrib-type=”XXX”**> ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole [ a pro:Role ; rdfs:label “XXX” ] ; pro:relatesToDocument :conceptual-work ] .# See footnote [[15]](#footnote-15) |
| @corresp(“yes”) | <contrib **corresp=”yes”**> ...</contrib> | :this-agent pro:holdsRoleInTime [  pro:withRole scoro:corresponing-author ; pro:relatesToDocument :textual-entity ] . |
| @deceased(“yes”) | <contrib **deceased=”yes”**> ...</contrib> | :this-agent a trait:Dead .  |
| @equal-contrib(“yes”) | <!-- Agent 1 --><contrib **equal-contrib=”yes”**> ...</contrib>...<!-- Agent 2 --><contrib **equal-contrib=”yes”**> ...</contrib> | :this-agent-1 scoro:makesContribution [ a scoro:ContributionSituation ;  scoro:hasContributionContext :conceptual-work ; scoro:isEqualToContributionSituation  \_:contribution-2 ] .\_:contribution-2 a scoro:ContributionSituation ; scoro:hasContributionContext :conceptual-work .:this-agent-2  scoro:makesContribution \_:contribution-2 . |
| @equal-contrib(“no”) | <contrib **equal-contrib=”no”**> ...</contrib> | :this-agent scoro:makesContribution [ a scoro:ContributionSituation ; scoro:hasContributionContext  :conceptual-work ] . |
| contrib-id | <contrib> **<contrib-id>XXX</contrib-id>** ...</contrib> | :this-agent dcterms:identifier “XXX” . |
| @contrib-id-type(“ORCID”) | <contrib-id **contrib-id-type=”ORCID”**> XXX</contrib-id> | :this-agent datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:orcid; literal:hasLiteralValue “XXX” ] . |
| @contrib-id-type(“JST”) | <contrib-id **contrib-id-type=”JST”**> XXX</contrib-id> | :this-agent datacite:hasIdentifier [  a datacite:Identifier ; datacite:usesIdentifierScheme datacite:jst; literal:hasLiteralValue “XXX” ] . |
| @contrib-id-type(“YYY”) | <contrib-id **contrib-id-type=”YYY”**> XXX</contrib-id> | :this-agent datacite:hasIdentifier [  a datacite:Identifier ; literal:hasLiteralValue “XXX” ; datacite:usesIdentifierScheme [  a datacite:IdentifierScheme ; rdfs:label "YYY" ] ] .***or***:this-agent datacite:hasIdentifier [  a datacite:Identifier ; literal:hasLiteralValue “XXX” ; prov:wasAttributedTo [  a prov:Agent , foaf:Organization ; dcterms:description  “Identifier scheme authority” ; rdfs:label “YYY” ] ] .# see footnote [[16]](#footnote-16) |
| anonymous | <contrib**><anonymous />**</contrib> | :this-agent foaf:name “Anonymous” . |
| collab | <contrib> **<collab @xml:lang=”en”>XXX</collab>**</contrib> | :this-agent a foaf:Group ; foaf:name “XXX”@en . |
| collab-alternatives | <contrib> **<collab-alternatives>** <collab **@xml:lang=”en”**> XXX</collab> <collab **@xml:lang=”it”**> QQQ</collab> **</collab-alternatives>**</contrib> | :this-agent a foaf:Group ; foaf:name “XXX”@en , “QQQ”@it . |
| @collab-type(“assignee”) | <collab **collab-type=”assignee”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole scoro:patent-holder ; pro:relatesToDocument :conceptual-work ] . |
| @collab-type(“authors”) | <collab **collab-type=”authors”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole pro:author ; pro:relatesToDocument :conceptual-work ] . |
| @collab-type(“editors”) | <collab **collab-type=”editors”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole pro:editor ; pro:relatesToDocument :textual-entity ] . |
| @collab-type(“compilers”) | <collab **collab-type=”compilers”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole pro:compiler ; pro:relatesToDocument :conceptual-work ] . |
| @collab-type(“guest-editors”) | <collab **collab-type=”guest-editors”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole pro:guest-editor ; pro:relatesToDocument :textual-entity ] . |
| @collab-type(“inventors”) | <collab **collab-type=”inventors”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole scoro:inventor ; pro:relatesToDocument :conceptual-work ] . |
| @collab-type(“translators”) | <collab **collab-type=”translators”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole pro:translator ; pro:relatesToDocument :textual-entity ] . |
| @collab-type(“YYY”) | <collab **collab-type=”YYY”**> ...</collab > | :this-agent pro:holdsRoleInTime [ pro:withRole [ a pro:Role ; rdfs:label “YYY” ] ; pro:relatesToDocument :conceptual-work ] . |
| name*and*string-name | <contrib> ... **<name> ... </name>** ...</contrib>*or*<contrib> ... **<string-name> ... </string-name>** ...</contrib> | :this-agent a foaf:Person . |
| surname | <contrib> ... <name> **<surname>XXX</surname>** </name> ...</contrib> | :this-agent a foaf:Person ; foaf:familyName “XXX” . |
| given-names | <contrib> ... <name> **<given-names>PPP QQQ</given-names>** </name> ...</contrib> | :this-agent a foaf:Person ; foaf:givenName “PPP QQQ” . |
| @initials | <name> <surname **initials=”X”**> XXX</surname> <given-names **initials=”PQ”**> PPP QQQ</given-names></name> | :this-agent a foaf:Person ;  foaf:familyName “XXX” ; foaf:givenName “PPP QQQ” ; frapo:familyNameInitial “X” ; frapo:givenNameInitial “PQ” . |
| prefix | <name> ... **<prefix>XXX</prefix>**</name> | :this-agent a foaf:Person ; foaf:title “XXX” . |
| suffix | <name> ... **<suffix>XXX</suffix>**</name> | :this-agent a foaf:Person ; frapo:hasNameSuffix “XXX” . |
| name-alternatives | <contrib> ... **<name-alternatives>** <name> <surname **xml:lang=”en”**> DDD</surname> </name> <name> <surname **xml:lang=”gr”**> ΔΔΔ</surname> </name> **</name-alternatives>** ...</contrib> | :this-agent a foaf:Person ; foaf:familyName “DDD”@en , “ΔΔΔ”@gr . |
| degrees | <contrib> ... **<degrees>XXX</degrees>** ...</contrib> | :this-agent frapo:hasDegreeSuffix “XXX” . |
| address | <contrib> ... **<address> ... </address>** ...</contrib> | :this-agent tvc:hasValueInTime [ a tvc:ValueInTime ; tvc:withValue :this-agent-contact-info ; tvc:withinContext :conceptual-work ] .:this-agent-contact-info a vcard:VCard . |
| addr-line(child of address and aff) | <address> **<addr-line>XXX</addr-line> <addr-line>YYY</addr-line> <addr-line>ZZZ</addr-line>**</address>*or*<aff> **<addr-line>XXX</addr-line> <addr-line>YYY</addr-line> <addr-line>ZZZ</addr-line>**</aff> | :this-agent-contact-info vcard:address [  a vcard:Address ; vcard:label “XXX YYY ZZZ” ] . |
| country(child of address and aff) | <address> **<country>XXX</country>**</address>*or*<aff> **<country>XXX</country>**</aff> | :this-agent-contact-info vcard:address [  a vcard:Address ; vcard:country-name “XXX” ] . |
| fax(child of address and aff) | <address> **<fax>XXX</fax>**</address>*or*<aff> **<fax>XXX</fax>**</aff> | :this-agent-contact-info vcard:tel [  a vcard:Fax ; literal:hasLiteralValue “XXX” ] . |
| institution(child of address and aff) | <address> **<institution>XXX</institution>**</address>*or*<aff> **<institution>XXX</institution>**</aff> | :this-agent-contact-info vcard:org [  a vcard:Organization ; vcard:organization-name “XXX” ] . |
| phone(child of address and aff) | <address> **<phone>XXX</phone>**</address>*or*<aff> **<phone>XXX</phone>**</aff> | :this-agent-contact-info vcard:tel [  a vcard:Tel ; literal:hasLiteralValue “XXX” ] . |
| email(child of address and aff) | <address> **<email>XXX</email>**</address>*or*<aff> **<email>XXX</email>**</aff> | :this-agent-contact-info vcard:email <XXX> . |
| ext-link(child of address and aff) | <address> **<ext-link>XXX</ext-link>**</address>*or* | :this-agent-contact-info dcterms:relation <XXX> . |
| uri(child of address and aff) | <address> **<uri>XXX</uri>**</address>*or*<aff> **<uri>XXX</uri>**</aff> | :this-agent-contact-info  dqm:hasURI “XXX”^^xsd:anyURI . |
| aff | <contrib> ... **<aff> ... </aff>** ...</contrib>***and***<contrib> ... **<xref ref-type=”aff” rid=”affid” />** ...</contrib>**<aff id=”affid”> ... </aff>** | :this-agent pro:holdsRoleInTime [ pro:withRole scoro:affilate ; pro:relatesToOrganization :this-organization ; pro:relatesToDocument :conceptual-work ] .:this-organization a foaf:Organization ; tvc:hasValueInTime [ a tvc:ValueInTime ; tvc:withValue :this-agent-contact-info ; tvc:withinContext :conceptual-work ] .:this-agent-contact-info a vcard:VCard . |
| author-comment | <contrib> ... **<author-comment>** **... XXX ...** **</author-comment>** ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole pro:author ; pro:relatesToDocument :conceptual-work ; datacite:hasDescription :author-comment ] . :author-comment a fabio:Comment ; frbr:partOf :textual-entity ; dcterms:creator :this-agent ; dcterms:description “XXX” . |
| bio | <contrib> ... **<bio> ... XXX ... </bio>** ...</contrib> | :textual-biography  frbr:realizationOf [ a fabio:Biography ; frbr:subject [ a foaf:Person ] ] ; frbr:partOf :textual-entity ; dcterms:description “XXX” . |
| email(child of contrib) | <contrib> **<email>XXX</email>**</contrib> | :this-agent foaf:mbox <XXX> . |
| uri(child of contrib) | <contrib> ... **<uri>XXX</uri>** ...</contrib> | :this-agent dqm:hasURI “XXX”^^xsd:anyURI . |
| on-behalf-of | <contrib> ... **<on-behalf-of>XXX</on-behalf-of>** ...</contrib> | :this-agent pro:holdsRoleInTime [  pro:withRole scoro:agent ; pro:relatesToDocument :textual-entity ; pro:relatesToOrganization [  a foaf:Organization ; foaf:name “XXX” ] ] . |
| role(editor-in-chief) | <contrib> ... **<role>editor-in-chief</role>** ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole pro:editor-in-chief ; pro:relatesToDocument :textual-entity ] . |
| role(chief scientist) | <contrib> ... **<role>chief scientist</role>** ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole scoro:chief-scientist ; pro:relatesToDocument :conceptual-work ] . |
| role(photographer) | <contrib> ... **<role>photographer</role>** ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole scoro:photographer ; pro:relatesToDocument :conceptual-work ] . |
| role(research associate) | <contrib> ... **<role>research associate</role>** ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole scoro:postdoctoral-researcher ; pro:relatesToDocument :conceptual-work ] . |
| role(XXX) | <contrib> ... **<role>XXX</role>** ...</contrib> | :this-agent pro:holdsRoleInTime [ pro:withRole [ a pro:Role ; rdfs:label “XXX” ] ; pro:relatesToDocument :conceptual-work ] . |

***Table 6: JATS metadata for the element <ref-list>***

Note that the mappings for a large number of elements – e.g. <*article-title>*, <*collab>*, <*pub-date>* – and for their attributes have already been handled in previous tables.

|  |  |  |
| --- | --- | --- |
| Element/attribute name | XML example | RDF translation |
| ref-list | **<ref-list> ... </ref-list>** | :textual-entity frbr:part :ref-list .:ref-list a biro:ReferenceList . |
| ref | <ref-list> **<ref id=”XXX”> ... </ref> <ref id=”YYY”> ... </ref> ...**</ref-list> | :ref-list co:item :iref-XXX .:iref-XXX a co:ListItem ; co:itemContent :ref-XXX ; co:nextItem :iref-YYY ; co:index “1” .:iref-YYY a co:ListItem ; co:itemContent :ref-YYY ; co:nextItem :iref-ZZZ ; co:index “2” .:ref-XXX a biro:BibliographicReference .:ref-YYY a biro:BibliographicReference .# (etc. until list is complete) |
| element-citation*and*mixed-citation | <ref id=”XXX”> **<element-citation> ... </element-citation>**</ref>***and***<ref id=”XXX”> **<mixed-citation> ... </mixed-citation>**</ref> | :ref-XXX a biro:BibliographicReference ; biro:references :textual-entity-XXX .:textual-entity cito:cites :textual-entity-XXX .:textual-entity-XXX a fabio:Expression ; frbr:realizationOf :conceptual-work-XXX .# See footnote [[17]](#footnote-17) |
| @publication-type(“book”) | <element-citation  **publication-type=”book”**> ... </element-citation>***and***<mixed-citation  **publication-type=”book”**> ... </mixed-citation> | :textual-entity-XXX a fabio:Book .# See footnote [[18]](#footnote-18) |
| @publication-type(“letter”) | <element-citation  **publication-type=”letter”**> ... </element-citation>***and***<mixed-citation  **publication-type=”letter”**> ... </mixed-citation> | :textual-entity-XXX a fabio:Letter . |
| @publication-type(“journal”) | <element-citation  **publication-type=”journal”**> ... </element-citation>***and***<mixed-citation  **publication-type=”journal”**> ... </mixed-citation> | :textual-entity-XXX a fabio:JournalArticle . |
| @publication-type(“patent”) | <element-citation  **publication-type=”patent**> ...</element-citation>***and***<mixed-citation  **publication-type=”patent**> ... </mixed-citation> | :textual-entity-XXX a fabio:PatentDocument . |
| @publication-type(“report”) | <element-citation **publication-type=”report”**> ...</element-citation> ***and***<mixed-citation **publication-type=”report”**> ... </mixed-citation> | :textual-entity-XXX a fabio:ReportDocument . |
| @publication-type(“standard”) | <element-citation **publication-type=”standard”**> **...<**/element-citation>***and***<mixed-citation **publication-type=”standard”**> **...<**/mixed-citation> | :conceptual-work-XXX a fabio:Specification ] .# See footnote [[19]](#footnote-19) and [[20]](#footnote-20) |
| @publication-type(“working-paper”) | <element-citation  **publication-type=”working-paper”**> ... </element-citation>***and***<mixed-citation  **publication-type=”working-paper”**> ... </mixed-citation> | :textual-entity-XXX a fabio:WorkingPaper . |
| @publication-type(“ZZZ”) | <element-citation **publication-type=”ZZZ”**> ...</element-citation>***and***<mixed-citation **publication-type=”ZZZ”**> ...</mixed-citation> | :textual-entity-XXX a [ a owl:Class ; rdfs:label “ZZZ” ; rdfs:subClassOf fabio:Expression ] . |
| chapter-title | <element-citation> ... **<chapter-title>XXX</chapter-title>** ...</element-citation>***and***<mixed-citation> ... **<chapter-title>XXX</chapter-title>** ...</mixed-citation> | :textual-entity-XXX a fabio:BookChapter ; frbr:partOf :textual-entity-XXX-collection ; dcterms:title "XXX" .:textual-entity-XXX-collection a fabio:Book . |
| part-title | <element-citation> ... **<part-title>XXX</part-title>** ...</element-citation>***and***<mixed-citation> ... **<part-title>XXX</part-title>** ...</mixed-citation> | :textual-entity-XXX dcterms:title "XXX" ; frbr:partOf :textual-entity-XXX-collection .:textual-entity-XXX-collection a fabio:Book . |
| source | <element-citation> ... **<source>XXX</source>** ...</element-citation>***and***<mixed-citation> ... **<source>XXX</source>** ...</mixed-citation> | :textual-entity-XXX-collection  dcterms:title “XXX” . |
| edition | <element-citation> ... **<edition>XXX</edition>** ...</element-citation>***and***<mixed-citation> ... **<edition>XXX</edition>** ...</mixed-citation> | :textual-entity-XXX-collection prism:edition “XXX” . |
| gov | <element-citation> ... **<gov>XXX</gov>** ...</element-citation>***and***<mixed-citation> ... **<gov>XXX</gov>** ...</mixed-citation> | :textual-entity-XXX a fabio:DocumentReport .:conceptual-work-XXX a fabio:Report . |
| person-group | <element-citation> ... **<person-group>YYY</person-group>** ...</element-citation>***and***<mixed-citation> ... **<person-group>YYY</person-group>** ...</mixed-citation> | :person-group a foaf:Group ; foaf:name “YYY” ; pro:holdsRoleInTime [ a pro:RoleInTime ; pro:withRole pro:contributor ; pro:relatesToDocument :textual-entity-XXX ] . |
| @person-group-type(“translators”) | <person-group **person-group-type=”translators”**> YYY </person-group> | :person-group a foaf:Group ; foaf:name “YYY” ; pro:holdsRoleInTime [ a pro:RoleInTime ; pro:withRole pro:translator ; pro:relatesToDocument :textual-entity-XXX ] .  |
| @ person-group-type("XXX") | <person-group **person-group-type=”XXX”**> YYY </person-group> | :person-group a foaf:Group ; foaf:name “YYY” ; pro:holdsRoleInTime [ a pro:RoleInTime ; pro:withRole [ a pro:Role ;  rdfs:label “XXX” ] ; pro:relatesToDocument :textual-entity-XXX ] . |
| etal | <element-citation> ... **<etal />**  ...</element-citation>***and***<mixed-citation> ... **<etal />**  ...</mixed-citation> | :textual-entity-XXX a [  owl:Restriction ; owl:onProperty dcterms:creator ; owl:minCardinality  “{$count\_specified\_authors + 1}” ] . |
| patent | <element-citation> ... **<patent>YYY</patent>**  ...</element-citation>***and***<mixed-citation> ... **<patent>YYY</patent>**  ...</mixed-citation> | :textual-entity-XXX a fabio:PatentDocument ; fabio:hasPatentNumber “YYY” . |
| std | <element-citation> ... **<std> ... </std>**  ...</element-citation>***and***<mixed-citation> ... **<std> ... </std>**  ...</mixed-citation> | :conceptual-work-XXX a fabio:TechnicalStandard . |
| annotation | <element-citation> ... **<annotation> XXX </annotation>**  ...</element-citation>***and***<mixed-citation> ... **<annotation> XXX </annotation>**  ...</mixed-citation> | :ref-XXX frbr:part :annotation .:annotation a fabio:Comment ; dcterms:description “XXX” ; dcterms:references :textual-entity-XXX . |
| date-in-citation | <element-citation> ... **<date-in-citation content-type="XXX">**“YYYY-MM-DD” **</date-in-citation>**  ...</element-citation>***and***<mixed-citation> ... **<date-in-citation content-type="XXX">**“YYYY-MM-DD” **</date-in-citation>**  ...</mixed-citation> | :textual-entity-XXX literal:hasLiteral [  a dcterms:date ; rdfs:label “XXX” ; literal:hasLiteralValue  “YYYY-MM-DD”^^xsd:date ] . |
| std-organization | <std> ... <std-organization> **YYY** </std-organization> ...</std> | :conceptual-work-XXX dcterms:creator :std-org .:std-org a foaf:Organization ; foaf:name “YYY”; pro:holdsRoleInTime [ pro:withRole pro:author ; pro:relatesToDocument  :conceptual-work-XXX ] . |

1. The PPI identifies an item such as a chapter within a serial or book, which has the same expression whether it appears in a hardback or a paperback version of the book, despite the fact that these will have different ISBNs. [↑](#footnote-ref-1)
2. Here, and also for <date>, the alternatives are valid, since <pub-date> can be applied to so many different things in different contexts. [↑](#footnote-ref-2)
3. The FRBR Work layer is the only one that may change during time, from the first draft to the final published version or subsequently corrected version. The individual Expression at each stage is a static document that does not change, while every revision of a past Work realization results in a new Expression. For this reason, the statement defining the date on which a correction is made to the content of the document applies specifically to the Work that underlies the particular document bearing the JATS markup (in our mapping, the entity *:conceptual-work*). This also applies to @date-type (“ecorrected”) and @date-type "pcorrected". [↑](#footnote-ref-3)
4. Retractions apply to published Expressions (here *:textual-entity*) or their Manifestations. You cannot retract a Work. [↑](#footnote-ref-4)
5. It is the Manifestation's publication date that is critical, since print and electronic Manifestations of the same Expression can have different publication dates. [↑](#footnote-ref-5)
6. The previously defined statement ":textual-entity frbr:partOf :periodical-issue ." is assumed here and subsequently. [↑](#footnote-ref-6)
7. The previously defined statement ":periodical-issue frbr:partOf :periodical-volume." is assumed here and subsequently. [↑](#footnote-ref-7)
8. Here, the alteratives are valid, since the mapping depends on the subject entity to which the ISBN relates. [↑](#footnote-ref-8)
9. The previously defined statement ":textual-entity cito:discusses :this-product ." is assumed here and subsequently. [↑](#footnote-ref-9)
10. Here, as for <pub-date>, the alternatives are valid, since <date> can be applied to so many different things in different contexts. [↑](#footnote-ref-10)
11. These alternatives are valid, since this element can be used either to identify an identifier scheme, or to identify the organization or authority responsible for that identifier scheme. [↑](#footnote-ref-11)
12. Here, the alteratives are valid, since the mapping depends on the subject entity to which the ISBN relates. [↑](#footnote-ref-12)
13. The previously defined statement ":journal dcterms:publisher :this-publisher ." is assumed here and subsequently. [↑](#footnote-ref-13)
14. In JATS <contrib> is specified as a container element for information about a single person. However, <collab>, referring to a group of people, is permitted within <contrib>, as well as within <contrib-group>, enabling, for example, an organization or a consortium of people to be named as a single author in an article's author list. So, rather than use *foaf:Person* as the object of the mapping here, we make a more generic mapping to *foaf:Agent*, which has sub-classes *foaf:Person*, *foaf:Group* and *foaf:Organization*. [↑](#footnote-ref-14)
15. The previously-defined statement ":conceptual-work dcterms:creator :this-agent ." is assumed here and subsequently. [↑](#footnote-ref-15)
16. These alternatives are valid, since this element can be used either to identify an identifier scheme, or to identify the organization or authority responsible for that identifier scheme. [↑](#footnote-ref-16)
17. The previously defined statement ":ref-XXX a biro:BibliographicReference ." is assumed here and subsequently. In addition, note that several elements (e.g. *name*) may appear within both *element-citation* and *mixed-citation* without the appropriate context that characterises their meaning (e.g. *contrib*). In these cases, additional statements are added to link *:conceptual-work-XXX* to its contributors implicitly defined by such “out-of-context” tags (e.g. *:conceptual-work-XXX dcterms:creator :agent-XXX*). [↑](#footnote-ref-17)
18. The previously defined statement ":ref-XXX biro:references :textual-entity-XXX ." is assumed here and subsequently. [↑](#footnote-ref-18)
19. *fabio:Specification* includes the sub-classes *fabio:TechnicalStandard*, *fabio:ReportingStandard* and *fabio:MinimalInformationStandard*, among other types of specification. These more specific classes can be used here, in place of *fabio:Specification*, if the nature of the "standard" being described by JATS is known. [↑](#footnote-ref-19)
20. The previously defined statement ":textual-entity-XXX frbr:realizationOf :conceptual-work-XXX ." is assumed here and subsequently. [↑](#footnote-ref-20)