PRISM Cookbook

For Profile 1 Implementers

Recipe 7: Preparing articles using relationship elements

July 2008

Getting Started with PRISM Metadata

This document contains Recipe 7 from the PRISM Cookbook for Profile 1 Implementers.

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1. Preface When should I read this cookbook?

While this cookbook has been created with the intent to assist PRISM users with their implementation of the standard, we caution our readers that this document will not answer questions such as “What is metadata?”, “What is PRISM?”, and “Why choose PRISM?”. For answers to those questions please refer to the PRISM 2.0 Introduction document included in the PRISM 2.0 Specification. In fact, we suggest that all readers familiarize themselves with the PRISM 2.0 Introduction before moving head long into the recipes that you find here.

For those still exploring the business issues PRISM helps solve, reviewing the recipes listed in Section 4 of this document will provide you with some examples. There is, however, more material in the PAM User’s Guide and the PRISM 2.0 Introduction that provides insight into why you would use PRISM and what business problems it is intended to solve.

Once you’ve decided that PRISM is the standard for you and your organization this cookbook will help you tackle your implementation.

2. Introduction

NOTE: This is a modularized version of the PRISM Cookbook. This document contains only Recipe 1: Preparing a print article for use by an external partner. For all recipes, please download the complete PRISM Cookbook available at www.prismstandard.org.

The objective of this guide is to assist implementers by providing a set of practical implementation steps for a chosen set of use cases, as well as provide insights into more sophisticated PRISM capabilities.

The PRISM 2.0 Specification consists of eight documents. We recommend that you keep these documents close at hand when working with the PRISM Cookbook, as they will prove to be handy reference resources for the elements utilized in the recipes.

2.1. PRISM Profile 1

This cookbook will address only Profile 1 PRISM implementations. Profile 1 requires the use of well-formed XML, is the most flexible profile, and currently represents the majority of known PRISM implementations.

Our approach to PRISM implementation in this cookbook addresses suggested mark-up methods, and not the ways in which a PRISM adopter would set up tools or systems. Recommendations of specific tools and systems to facilitate mark-up can be obtained by reaching out directly to publishers within the PRISM Working Group.

Profile 1 enables description of resources as complete, standalone XML documents or as inline XML and XHTML mark-up within the content itself.

Separate Profile 2 (XML-RDF) and Profile 3 (XMP) versions of the cookbook may be released by the PRISM Working Group in the future.

2.2. Recipe Format

All recipes begin with a basic description of the business purpose it fulfills.

The recipe ingredients will then be listed and described. In some cases the ingredient list may not be a straight list of elements employed in the recipe, but instead will contain short descriptions of the data needed in order to complete compilation of the XML.

Next, the recipe will include a step-by-step implementation method with accompanying sample XMLs and images. While the order of the steps was carefully considered for each recipe, do not feel beholden to the exact order. Just be sure to note all elements that are indicated as required, and be sure not to skip those steps.

Here is an example of a sample XML as it will be displayed throughout our recipes:

```
<?xml version="1.0" encoding="UTF-8"?>
<prism:metadataContainer
    xml:lang="en-US"
    xmlns:dc="http://purl.org/dc/elements/1.1/"
      xmlns:prism="http://prismstandard.org/namespaces/basic/2.0/">
      <dc:identifier>100340926</dc:identifier>
 </prism:metadataContainer>
```

Each recipe closes with a completed XML article.

At the end of this cookbook you will find several appendixes that include a list of helpful reference materials.

2.3. Domain Terminology

The terms external partner, internal partner, and platform are frequently used in the following recipe descriptions. In order to avoid any misinterpretation of these terms we have included definitions for them here:

External partner
An external partner is frequently an aggregation or syndication partner. Examples include LexisNexis, republishers, Amazon, etc. In the simplest terms, it is a company with whom you share content, but who is not part of your own business corporation. In most situations, an external partner will be a recipient of content. Often times, content will not be shared with an external partner unless a contractual agreement has been drawn up between the two parties. External partners may not be privy to sensitive information or all content, especially when there are rights related limitations.

Internal partner
An internal partner is a business division, department, system, or individual within your company. A system can include intranet websites. Since an internal partner is a portion of your corporation, you may choose to share sensitive metadata and information with them that you would not consider sharing with an external partner. An internal partner may be a recipient of content or they may be a content source.

Platform
The platform identifies the delivery method of the resource. The PRISM Controlled Vocabulary specification provides a defined list of platforms that are applicable to publishers. These values are email, mobile, other, print, recordableMedia, broadcast, and web. With the release of PRISM 2.0 the specification allows for the handling of content that appears on multiple platforms.

2.4. PRISM Namespace Declarations & Controlled Vocabulary URIs

Systems that claim PRISM profile one compliance must recognize and support namespaces as defined. They may use the namespace declarations below in order to use familiar prefixes.

Namespace	Recommended Namespace Declaration
Dublin Core	xmlns:dc="http://purl.org/dc/elements/1.1"
PRISM	xmlns:prism="http://prismstandard.org/namespaces/2.0/basic/"
PRISM Controlled Vocabulary	xmlns:pcv="http://prismstandard.org/namespaces/2.0/pcv/"
PRISM Inline Markup	xmlns:pim="http://prismstandard.org/namespaces/2.0/pim/"
PRISM Aggregator Message	xmlns:pam="http://prismstandard.org/namespaces/2.0/pam/"
PRISM Rights Language	xmlns:prl="http://prismstandard.org/namespaces/2.0/prl/"

The PRISM specification also defines a number of controlled vocabularies. The base URIs for these vocabularies are:

Vocabulary Name	Base URI
PRISM Aggregation Type	http://prismstandard.org/vocabularies/2.0/aggregationtype.xml
PRISM Compliance Profile	http://prismstandard.org/vocabularies/2.0/complianceprofile.xml
PRISM Genre	http://prismstandard.org/vocabularies/2.0/genre.xml
PRISM Platform	http://prismstandard.org/vocabularies/2.0/platform.xml
PRISM Resource Type	http://prismstandard.org/vocabularies/2.0/resourcetype.xml
PRISM Rights	http://prismstandard.org/vocabularies/2.0/rights.xml
PRISM Role	http://prismstandard.org/vocabularies/2.0/role.xml
PAM Class	http://prismstandard.org/vocabularies/2.0/pam.xml

2.5. PRISM Reference Materials

Normative References

Dublin Core Metadata Element Set, Version 1.1: Reference Description.
http://purl.org/dc/documents/rec-dces-19990702.htm

Relation Element Working Draft; Dublin Core Metadata Initiative; 1997-12-19.
http://dublincore.org/documents/relation-element/

Dublin Core Metadata Terms, 2005-01-10.
http://dublincore.org/documents/2005/01/10/dcmi-terms/

PRISM Working Group, 2007,
PRISM Introduction, v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_introduction_2.0.pdf

The PRISM Namespace v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_prism_namespace_2.0.pdf

PRISM Compliance, v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_compliance_2.0.pdf

The PRISM Subset of the Dublin Core Namespace v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_dublin_core_namespace_2.0.pdf

The PRISM Rights Language Namespace v 2.0.
http://www.prismstandard.org/specifications/1.3/PRISM_prism_namespace_2.0.pdf

The PRISM Controlled Vocabulary Namespace v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_controlled_vocabulary_namespace_2.0.pdf

The PRISM Inline Markup Namespace v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_inline_markup_namespace_2.0.pdf

The PRISM Aggregator Message Namespace v 2.0.
http://www.prismstandard.org/specifications/2.0/PRISM_prism_aggregator_message_namespace_2.0.pdf

Guide to the PRISM Aggregator Message v 2.0.
www.prismstandard.org/pam_2.0/PAMGuide_2.0.pdf

Tim Bray, Jean Paoli, C. M. Sperberg-McQueen (eds.), Extensible Markup Language (XML).
http://www.w3.org/TR/REC-xml

Jonathan Marsh (ed.); XML Base.
http://www.w3.org/TR/xmlbase/

Tim Bray, Dave Hollander, Andrew Layman (eds.); Namespaces in XML.
http://www.w3.org/TR/REC-xml-names

Non-Normative References

ISO (International Organization for Standardization), ISO 8601:1988 (E) Data elements and interchange formats - Information interchange - Representation of dates and times, 1998.
http://www.iso.ch/cate/d15903.html

Time Zone Library.
ftp://elsie.nci.nih.gov/pub/

Extensible Markup Language (XML) 1.1, John Cowan, Editor. W3C Recommendation 2002-10-15.
The latest version is available at http://www.w3.org/TR/xml11/.

XML Schema Part 1: Structures, W3C Recommendation, World Wide Web Consortium, 2 May 2001.
The latest version is available at http://www.w3.org/TR/xmlschema-1/.

XML Schema Part 2: Datatypes, W3C Recommendation, World Wide Web Consortium, 2 May 2001.
The latest version is available at http://www.w3.org/TR/xmlschema-2/.

3. Recipe List

NOTE: This is a modularized version of the PRISM Cookbook. This document contains only Recipe 1: Preparing a print article for use by an external partner. For all recipes, please download the complete PRISM Cookbook available at www.prismstandard.org.

The PRISM cookbook contains the following recipes:

1. **Preparing a print article for use by an external partner:** The publisher wants to use PRISM metadata to prepare an article for use by an external aggregation or syndication partner. Examples include LexisNexis, republishers, Amazon, etc. The publisher must determine which identification fields will meet the business requirements for the recipient. The publisher will create a standalone XML file utilizing only PAM elements.

2. **Preparing a print article for use by an internal partner:** A publisher wants to use PRISM metadata to prepare an article for an internal partner. The publisher must determine which identification fields will meet the internal partner's business requirements. This may include creation of a publisher-specific namespace and DTD/XSD that addresses needs not met by PRISM metadata. The publisher will create a standalone XML file utilizing PAM, PRISM, and possibly publisher-specific elements.

3. **Using PRISM to enhance to enhance the searchability of content:** One of the benefits of the PRISM standard is how it can facilitate and enhance search. The variety of PRISM XML elements can be leveraged by a search site to enable users to find content using precise criteria. In this recipe, we will show how PRISM elements relate to different kinds of searches.

4. **Preparing articles that have been published to multiple platforms for use by an external partner:** In this recipe, the article was published in print, on the web, and to a mobile device. The publisher will use PRISM metadata to indicate that the article was published on these platforms. This article will be supplied to an external aggregation or syndication partner. The publisher must determine which identification fields are necessary for each of these platforms and meet the business requirements for the recipient. The publisher will create a standalone XML file utilizing only PAM elements.

5. **Preparing web articles for use by an external partner:** A publisher wants to use PRISM metadata to prepare an article that has originated on a non-print platform, such as the web. The publisher must determine which identification fields will meet the external partner's business requirements. The publisher will create a standalone XML file utilizing only PAM elements.

6. **Preparing print articles with published corrections:** A publisher wants to use PRISM metadata to prepare a published correction for archival needs and/or to send to an external partner. This recipe will have two parts: 1) preparing the correction as it appears in the publication and 2) attaching correction metadata to the corresponding article to meet the external partner's business requirements. The publisher will resend the article, with the correction, utilizing PAM markup.

7. **Preparing articles using relationship elements:** A publisher wants to prepare an article with relationships to other objects which may exist as a separate identifiable resource or may need to be included within an existing resource. This recipe will show how to express these complex relationships in PAM XML. A resource could be any of the following (this, however, is not a definitive list): story, sidebar, table, chart, illustration, photograph, cartoon, cover, video, info graphic. This recipe will use a story and a graphic that have been identified as separate resources.

4. Recipes

4.7. Preparing articles using relationship elements

4.7.1. Basic Description

A publisher wants to prepare an article with relationships to other objects which may exist as separate identifiable resources or may need to be included within an existing resource. The below recipe will show how to express these complex relationships in PAM XML.

A resource could be any of the following (this, however, is not a definitive list):

Story	Sidebar
Table	Chart
Illustration	Photograph
Cartoon	Cover
Video	Info graphic

This example will use a story and graphic that have been identified as separate resources.

4.7.2. Ingredients

This recipe will demonstrate use of these Dublin Core elements:

dcterms:hasPart
dcterms:isPartOf

4.7.3. Step-by-step

1. The following story was published in *Aviation Week & Space Technology*. It consists of a story and an illustration.

The illustration is identified as a separate resource. It is necessary to establish a link between these two XML articles, in order to show the parent/child relationship between them.

SINGAPORE AIRSHOW

Eastern Action

There's no shortage of new aircraft developments in Asia

BRADLEY PERRETT/BEIJING

Asian aircraft projects are multiplying at a rate that can only alarm industrialists in Europe and the Americas who like to think of their regions as the real home of aviation technology.

While Asian countries' progress in building sophisticated components has long been recognized, they are now also engaged in a broad push to get into the business of developing complete, advanced aircraft. And this will be evident at this week's Singapore Airshow 2008. The joint venture between the Civil Aviation Authority of Singapore and the Defense Science & Technology Agency runs Feb. 19-24.

Note the three countries leading that push: technically advanced Japan, economically mighty China, and ever ambitious **South Korea. Their latest efforts and plans make for an interesting comparison** with the trickle of new programs emerging in Western Europe, for example.

"If you look at the financial and intellectual resources that are here and you couple that with the mass of the world's economic center of gravity, it is perfectly logical that this is happening," says one senior western aerospace executive based in Asia who has long experience in the region.

Asia has hardly caught up with Western aerospace production, nor has any country in the region reached the all-around technical capabilities of the U.S., Russia or the aerospace leaders of Western Europe. But, taking a historical view, Asian countries are doing what France did in the 1950s and '60s as it sought to catch up with the U.S. and Britain: launching a range of projects that are progressively closing the know-how gap.

Of course, Asian countries have been trying to do that for **decades, off and on. The difference now is that concrete results** are emerging.

For example, the AE-100, a 100-seat airliner project of the 1990s, was supposed to introduce Asia to the world of building complete commercial jets, bringing together Airbus and aerospace firms in China and Singapore. It followed an earlier Sino-German project of the late 1980s, the MPC75. Both aircraft ended up as little more than drawings—good evidence **for anyone inclined to scoff at Asia's latest attempts and say** "Been there, tried that, and failed."

But the AE-100's successor, the Chinese ARJ21 regional jet, is now a metal and carbon-fiber reality, standing on its undercarriage in Shanghai and due to fly for the first time next month. And it isn't a joint program. Manufacturer Avic I has itself developed the aircraft, integrating major systems from advanced Western suppliers.

The project has orders for 121 aircraft, almost all from Chinese airlines, its initial target market—just as early Airbus production was supported by German and French airline buys.

Moreover, it is clear that initial development of the ARJ21 is at least as much a learning exercise for the industry as it is an attempt to earn a profit, even though Chinese executives repeatedly stress the need to achieve market success (AW&ST Sept. 17, 2007, p. 26).

State-dominated companies have earmarked an investment of $7.8 billion for a follow-on aircraft with more than 150 seats **and a takeoff weight of more than 100 metric tons (220,000 lb.)**, apparently a small widebody. Since the government has listed it among projects of national importance, it will now be **politically difficult to abandon.**

More immediately, Avic I is moving ahead with a 70-seat turboprop airliner, the MA700. Unlike its predecessors, the project aims at Western certification and broad international sales.

The weight of the world's aerospace industry is clearly moving, says Hadi Winarto, assistant professor of aerospace technology at the Royal Melbourne Institute of Technology. He thinks China, in particular, is logically using its considerable economic resources to meet some of the demands of its own huge market.

"They would be silly to buy everything from overseas," he says, adding "Asian technology is not at the level of Europe's, but it is catching up fast."

Japan is another country that has previously tried and failed to get into building competitive commercial aircraft. And it, too, is trying again. Its aircraft, the 70-to-90-seat Mitsubishi MRJ, is also a regional jet, breaking new ground in composites and its use of Pratt & Whitney geared turbofans. Mitsubishi is working toward a launch in the next month or so, with 40-billion-yen ($370-million) worth of government subsidies.

The South Korean aerospace sector rarely lacks proposals for the government to support new projects, and one of the latest would produce yet another Asian regional aircraft, a 60-seater. The government is thinking about it.

South Korean industry, supported by the defense ministry, is aiming very high on the military side, with a drive to develop a manned stealth fighter, the KFX, something that no Western European country is planning. Indeed, collaboration in the South Korean project may turn out to be the means by which one of the European fighter builders sustains its manned combat aircraft expertise (AW&ST Nov. 19, 2007, p. 32). The KFX project has run into opposition, but the South Korean armed forces and industry have a habit of pushing a domestic project until they get at least a partial go-ahead. A huge helicopter project called KMH was rejected in 2003, but it has now morphed into the KUH program, which is in full-scale development with an aim of building 245 utility helos in partnership with Eurocopter.

KFX faces a government review in the next few months. If it isn't approved, the defense ministry and industry will probably fall back to their next trench, proposing that the government instead pay for a stealth demonstrator. Korea Aerospace Industries would also like to build a single-seat combat version of the T-50 supersonic trainer, which Lockheed Martin helped design in the 1990s.

One argument for a South Korean stealth demonstrator would be that rival Japan has already launched one, the ATD-X Shinshin, the most advanced aircraft to be attempted in Asia. Its airframe, engines and advanced electronics are all Japanese (AW&ST Feb. 2, p. 26).

Reviewing ATD-X designs, one European engineer with experience in Asian high-technology projects says, "This is as advanced as anything that European companies could develop."

"In terms of innovation and advanced projects, the game is now in Asia," he adds, asking not to be named because of the sensitivity of his consultancy work. "The people involved in Asian projects are more enthusiastic than in the West, partly because they are doing such interesting things. Employees also identify more with the aims of the company. And the companies have more money to spend."

The ATD-X isn't a production project, but Japan's P-1 maritime patroller and C-X transporter are, with planned orders for 80 and 44, respectively. The airframes are new and Japanese, and so are the P-1's engines and combat system. The P-1 is the size of an Airbus A320 and the C-X is larger than an A400M. Both are in development (AW&ST June 18, 2007, p. 104).

China's effort to close the gap with Western and Russian military aircraft builders is hardly new. But it has made a huge stride forward if, as the Pentagon now says, its new J-10 fighter is comparable with the Eurofighter Typhoon and Dassault Rafale. The J-10 was confirmed to be in service in 2006, just as Britain was introducing its first squadron of Typhoons.

India's most advanced projects are cooperative developments with Russia—and criticized in India for inadequate technological transfer. The much-delayed domestic LCA Tejas light fighter is still not in service, 22 years after it was launched.

Pilotless technology is opening opportunities for many countries outside of the elite aerospace club, because an unmanned aircraft is relatively cheap to develop. But defense ministries and contractors in both Japan and South Korea are working on larger than usual surveillance drones.

South Korea's aircraft, already designed and awaiting approval, would be comparable to the largest of the U.S. General Atomic Q-9 series. The Japanese aircraft has a requirement to detect ballistic missile launches and would have a greater wingspan than Northrop Grumman's RQ-4 Global Hawk.

The move toward pilotless aircraft particularly suits aerospace industries in the region, says Jorg Schlüter, an assistant aerospace professor at Nanyang Technological University of Singapore.

"In this field the technology is more a question of what the payload is going to do" than the design of the unequipped aircraft, he says. "I see opportunities for Asia because here they have very strong electronics technology."

But, considering the wider developments in Asia, Schlüter suggests that Asian countries might be making a mistake with **their strong effort to develop national aircraft, because the era** of single-country programs is drawing to a close.

The development push "is more to do with national pride," he says. "In 20 years most of the aircraft being manufactured won't be national projects."

Most economists would add that highly subsidized civil projects, at least, make little sense; a subsidy is virtually an admission that an activity is wasting resources and should cease. But, in aerospace, economics competes with national pride. ?

South Korea's Agency for Defense Development wants to push the country into building a stealth fighter, such as this concept it has released! If this bid fails, it will probably ask for a demonstrator instead.

Below is the XML for this article. (**Article)**

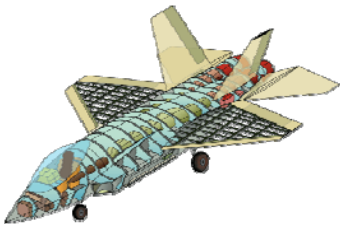
Note: Please refer to the steps in Recipe 1 on how to create a PAM XML. Most body text has been removed in this example; the full body text is included in the final XML at the end of this recipe.

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE pam:message SYSTEM "pam.dtd">
<pam:message xmlns:dc=http://purl.org/dc/elements/1.1/
     xmlns:pam=http://prismstandard.org/namespaces/pam/2.0/
     xmlns:prism=http://prismstandard.org/namespaces/basic/2.0/
     xmlns:prl=http://prismstandard.org/namespaces/prl/2.0/
     xmlns:pim="http://prismstandard.org/namespaces/pim/2.0/">
<pam:article xml:lang="en">
<head>
     <dc:identifier>MHP_IMS_AW_AW10549</dc:identifier>
     <pam:status>A</pam:status>
     <prism:originPlatform prism:platform="print"/>
     <dc:title>Eastern Action</dc:title>
     <prism:alternateTitle prism:platform="web">Asia Rapidly
     Becoming a Key Region for New Aircraft</prism:alternateTitle>
     <dc:creator prism:role="writer" prism:place="Beijing">Bradley
     Perrett</dc:creator>
     <prism:publicationName>Aviation Week &amp; Space
     Technology</prism:publicationName>
     <prism:issn>1935-6269</prism:issn>
     <dc:publisher>aw</dc:publisher>
     <prism:coverDate>2008-02-18</prism:coverDate>
     <prism:volume>168</prism:volume>
     <prism:number>7</prism:number>
     <prism:startingPage>64</prism:startingPage>
     <prism:section>Singapore Airshow</prism:section>
     <dc:description>Asian aircraft projects are multiplying at a
     rate that can only alarm industrialists...</dc:description>
     <prism:copyright>Copyright  &#169; 2008 The McGraw-Hill
     Companies, Inc. http://www.mcgraw-hill.com</prism:copyright>
</head>
<body>
<h1>Eastern Action</h1>

<p prism:class="deck">There&#8217;s no shortage of new aircraft
developments in Asia</p>

<p>Asian aircraft projects are multiplying at a rate that can only
alarm industrialists in Europe and the Americas who like to think
of their regions as the real home of aviation technology.</p>
. . .
<p>Most economists would add that highly subsidized civil projects,
at least, make little sense; a subsidy is virtually an admission
that an activity is wasting resources and should cease. But, in
aerospace, economics competes with national pride.</p>
</body>
</pam:article>
</pam:message>
```

Below is the XML for the illustration **(Illustration)**



```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE pam:message SYSTEM "pam.dtd">
<pam:message xmlns:dc=http://purl.org/dc/elements/1.1/
     xmlns:pam=http://prismstandard.org/namespaces/pam/2.0/
     xmlns:prism=http://prismstandard.org/namespaces/basic/2.0/
     xmlns:prl=http://prismstandard.org/namespaces/prl/2.0/
     xmlns:pim="http://prismstandard.org/namespaces/pim/2.0/">
<pam:article xml:lang="en">
<head>
     <dc:identifier>MHP_IMS_AW_AW105491</dc:identifier>
     <dc:title>Stealth Fighter Illustration</dc:title>
     <pam:status>A</pam:status>
     <prism:originPlatform prism:platform="print"/>
     <prism:publicationName>Aviation Week &amp; Space
     Technology</prism:publicationName>
     <prism:issn>1935-6269</prism:issn>
     <dc:publisher>aw</dc:publisher>
     <prism:coverDate>2008-02-18</prism:coverDate>
     <prism:volume>168</prism:volume>
     <prism:number>7</prism:number>
     <prism:startingPage>65</prism:startingPage>
     <prism:section>Singapore Airshow</prism:section>
     <dc:description>Stealth Fighter Illustration</dc:description>
     <prism:copyright>Copyright  &#169; 2008 The McGraw-Hill
     Companies, Inc. http://www.mcgraw-hill.com</prism:copyright>
</head>
<body>

<pam:media>
     <dc:type>illustration</dc:type>
     <dc:format>image/EPS</dc:format>
     <pam:mediaReference pam:refid="AW_02_18_2007_704.eps"/>
     <pam:credit>HANS MICHAUD/AW&amp;ST</pam:credit>
     <pam:caption>South Korea&#8217;s Agency for Defense
     Development wants to push the country into building a stealth
     fighter, such as this concept it has released. If this bid
     fails, it will probably ask for a demonstrator
     instead.</pam:caption>
</pam:media>

</body>
</pam:article>
</pam:message>
```

2. Using the **dcterms** elements **hasPart** and **isPartOf**, we will insert a reference to the identifiable resource. This identifier could be any identifier that could be used to retrieve the resource. Best practice would be to identify the resource with a URI. In this instance, however, the filename has been used as the reference.

dcterms:hasPart	This element allows for an article to identify images, sidebars, tables, etc. that exist as a separate identifiable resource. dcterms:hasPart can be used multiple times to reflect more than one resource.
dcterms:isPartOf	This element allows for a separate identifiable resource to be used in multiple articles. isPartof can be used multiple times to reflect more than one article that requires the use of this resource. This element is not required as it may only be necessary to have the article point to a resource.

Illustration

```
<head>
     <dc:identifier>MHP_IMS_AW_AW105491</dc:identifier>
     <dc:title>Stealth Fighter Illustration</dc:title>
     . . .
     <prism:section>Singapore Airshow</prism:section>
     <dcterms:isPartof>AW_20080218-p64.xml</dcterms:isPartof>
     <dc:description>Stealth Fighter Illustration</dc:description>
     . . .
</head>
```

Article

```
<head>
     <dc:identifier>MHP_IMS_AW_AW10549</dc:identifier>
     <dc:title>Eastern Action</dc:title>
     . . .
     <prism:section>Singapore Airshow</prism:section>
     <dcterms:hasPart>AW_02_18_2007_704.eps</dcterms:hasPart>
     <dc:description>Asian aircraft projects are multiplying at a
     rate that can only alarm industrialists in Europe and the
     Americas who like to think of their regions as
     ...</dc:description>
     . . .
</head>
```

4.7.4. Completed XML Articles

Finished XML for both articles. **Article 1** now has a link that establishes its parent relationship with **Illustration 1**. It is important to note that **Illustration 1** could have many articles referencing it.

Illustration

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE pam:message SYSTEM "pam.dtd">
<pam:message xmlns:dc=http://purl.org/dc/elements/1.1/
     xmlns:pam=http://prismstandard.org/namespaces/pam/2.0/
     xmlns:prism=http://prismstandard.org/namespaces/basic/2.0/
     xmlns:prl=http://prismstandard.org/namespaces/prl/2.0/
     xmlns:pim="http://prismstandard.org/namespaces/pim/2.0/">
<pam:article xml:lang="en">
<head>
     <dc:identifier>MHP_IMS_AW_AW105491</dc:identifier>
     <dc:title>Stealth Fighter Illustration</dc:title>
     <pam:status>A</pam:status>
     <prism:originPlatform prism:platform="print"/>
     <prism:publicationName>Aviation Week &amp; Space
     Technology</prism:publicationName>
     <prism:issn>1935-6269</prism:issn>
     <dc:publisher>aw</dc:publisher>
     <prism:coverDate>2008-02-18</prism:coverDate>
     <prism:volume>168</prism:volume>
     <prism:number>7</prism:number>
     <prism:startingPage>65</prism:startingPage>
     <prism:section>Singapore Airshow</prism:section>
     <dcterms:isPartof>AW_20080218-p64.xml</dcterms:isPartof>
     <dc:description>Stealth Fighter Illustration</dc:description>
     <prism:copyright>Copyright  &#169; 2008 The McGraw-Hill
     Companies, Inc. http://www.mcgraw-hill.com</prism:copyright>
</head>
<body>

<pam:media>
     <dc:type>illustration</dc:type>
     <dc:format>image/EPS</dc:format>
     <pam:mediaReference pam:refid="AW_02_18_2007_704.eps"/>
     <pam:credit>HANS MICHAUD/AW&amp;ST</pam:credit>
     <pam:caption>South Korea&#8217;s Agency for Defense
     Development wants to push the country into building a stealth
     fighter, such as this concept it has released. If this bid
     fails, it will probably ask for a demonstrator
     instead.</pam:caption>
</pam:media>

</body>
</pam:article>
</pam:message>
```

Article

```
<?xml version="1.0" encoding="US-ASCII"?>
<!DOCTYPE pam:message SYSTEM "pam.dtd">
<pam:message xmlns:dc=http://purl.org/dc/elements/1.1/
     xmlns:pam=http://prismstandard.org/namespaces/pam/2.0/
     xmlns:prism=http://prismstandard.org/namespaces/basic/2.0/
     xmlns:prl=http://prismstandard.org/namespaces/prl/2.0/
     xmlns:pim="http://prismstandard.org/namespaces/pim/2.0/">
<pam:article xml:lang="en">
<head>
     <dc:identifier>MHP_IMS_AW_AW10549</dc:identifier>
     <pam:status>A</pam:status>
     <prism:originPlatform prism:platform="print"/>
     <dc:title>Eastern Action</dc:title>
     <prism:alternateTitle prism:platform="web">Asia Rapidly
     Becoming a Key Region for New Aircraft</prism:alternateTitle>
     <dc:creator prism:role="writer" prism:place="Beijing">Bradley
     Perrett</dc:creator>
     <prism:publicationName>Aviation Week &amp; Space
     Technology</prism:publicationName>
     <prism:issn>1935-6269</prism:issn>
     <dc:publisher>aw</dc:publisher>
     <prism:coverDate>2008-02-18</prism:coverDate>
     <prism:volume>168</prism:volume>
     <prism:number>7</prism:number>
     <prism:startingPage>64</prism:startingPage>
     <prism:section>Singapore Airshow</prism:section>
     <dcterms:hasPart>AW_02_18_2007_704.eps</dcterms:hasPart>
     <dc:description>Asian aircraft projects are multiplying at a
     rate that can only alarm industrialists in Europe and the
     Americas who like to think of their regions as
     ...</dc:description>
     <prism:copyright>Copyright  &#169; 2008 The McGraw-Hill
     Companies, Inc. http://www.mcgraw-hill.com</prism:copyright>
</head>
<body>
<h1>Eastern Action</h1>

<p prism:class="deck">There&#8217;s no shortage of new aircraft
developments in Asia</p>

<p>Asian aircraft projects are multiplying at a rate that can only
alarm industrialists in Europe and the Americas who like to think
of their regions as the real home of aviation technology.</p>

<p>While Asian countries&#8217; progress in building sophisticated
components has long been recognized, they are now also engaged in a
broad push to get into the business of developing complete,
advanced aircraft. And this will be evident at this week&#8217;s
Singapore Airshow 2008. The joint venture between the Civil
Aviation Authority of Singapore and the Defense Science &amp;
Technology Agency runs Feb. 19-24.</p>

<p>Note the three countries leading that push: technically advanced
Japan, economically mighty China, and ever ambitious South Korea.
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Their latest efforts and plans make for an interesting comparison
with the trickle of new programs emerging in Western Europe, for
example.</p>

<p>&#8220;If you look at the financial and intellectual resources
that are here and you couple that with the move of the
world&#8217;s economic center of gravity, it is perfectly logical
that this is happening,&#8221; says one senior western aerospace
executive based in Asia who has long experience in the region.</p>

<p>Asia has hardly caught up with Western aerospace production, nor
has any country in the region reached the all-around technical
capabilities of the U.S., Russia or the aerospace leaders of
Western Europe. But, taking a historical view, Asian countries are
doing what France did in the 1950s and &#8217;60s as it sought to
catch up with the U.S. and Britain: launching a range of projects
that are progressively closing the know-how gap.</p>

<p>Of course, Asian countries have been trying to do that for
decades, off and on. The difference now is that concrete results
are emerging.</p>

<p>For example, the AE-100, a 100-seat airliner project of the
1990s, was supposed to introduce Asia to the world of building
complete commercial jets, bringing together Airbus and aerospace
firms in China and Singapore. It followed an earlier Sino-German
project of the late 1980s, the MPC75. Both aircraft ended up as
little more than drawings&#8212;good evidence for anyone inclined
to scoff at Asia&#8217;s latest attempts and say &#8220;Been there,
tried that, and failed.&#8221;</p>

<p>But the AE-100&#8217;s successor, the Chinese ARJ21 regional
jet, is now a metal and carbon-fiber reality, standing on its
undercarriage in Shanghai and due to fly for the first time next
month. And it isn&#8217;t a joint program. Manufacturer Avic 1 has
itself developed the aircraft, integrating major systems from
advanced Western suppliers.</p>

<p>The project has orders for 123 aircraft, almost all from Chinese
airlines, its initial target market&#8212;just as early Airbus
production was supported by German and French airline buys.</p>

<p>Moreover, it is clear that initial development of the ARJ21 is
at least as much a learning exercise for the industry as it is an
attempt to earn a profit, even though Chinese executives repeatedly
stress the need to achieve market success (AW&amp;ST Sept. 17,
2007, p. 76).</p>

<p>State-dominated companies have earmarked an investment of $7-8
billion for a follow-on aircraft with more than 150 seats and a
takeoff weight of more than 100 metric tons (220,000 lb.),
apparently a small widebody. Since the government has listed it
among projects of national importance, it will now be politically
difficult to abandon.</p>
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<p>More immediately, Avic 1 is moving ahead with a 70-seat
turboprop airliner, the MA700. Unlike its predecessors, the project
aims at Western certification and broad international sales.</p>

<p>The weight of the world&#8217;s aerospace industry is clearly
moving, says Hadi Winarto, assistant professor of aerospace
technology at the Royal Melbourne Institute of Technology. He
thinks China, in particular, is logically using its considerable
economic resources to meet some of the demands of its own huge
market.</p>

<p>&#8220;They would be silly to buy everything from
overseas,&#8221; he says, adding &#8220;Asian technology is not at
the level of Europe&#8217;s, but it is catching up fast.&#8221;</p>

<p>Japan is another country that has previously tried and failed to
get into building competitive commercial aircraft. And it, too, is
trying again. Its aircraft, the 70-to-90-seat Mitsubishi MRJ, is
also a regional jet, breaking new ground in composites and its use
of Pratt &amp; Whitney geared turbofans. Mitsubishi is working
toward a launch in the next month or so, with 40-billion-yen ($370-
million) worth of government subsidies.</p>

<p>The South Korean aerospace sector rarely lacks proposals for the
government to support new projects, and one of the latest would
produce yet another Asian regional aircraft, a 60-seater. The
government is thinking about it.</p>

<p>South Korean industry, supported by the defense ministry, is
aiming very high on the military side, with a drive to develop a
manned stealth fighter, the KFX, something that no Western European
country is planning. Indeed, collaboration in the South Korean
project may turn out to be the means by which one of the European
fighter builders sustains its manned combat aircraft expertise
(AW&amp;ST Nov. 19, 2007, p. 32). The KFX project has run into
opposition, but the South Korean armed forces and industry have a
habit of pushing a domestic project until they get at least a
partial go-ahead. A huge helicopter project called KMH was rejected
in 2003, but it has now morphed into the KUH program, which is in
full-scale development with an aim of building 245 utility helos in
partnership with Eurocopter.</p>

<p>KFX faces a government review in the next few months. If it
isn&#8217;t approved, the defense ministry and industry will
probably fall back to their next trench, proposing that the
government instead pay for a stealth demonstrator. Korea Aerospace
Industries would also like to build a single-seat combat version of
the T-50 supersonic trainer, which Lockheed Martin helped design in
the 1990s.</p>

<p>One argument for a South Korean stealth demonstrator would be
that rival Japan has already launched one, the ATD&#8209;X
Shinshin, the most advanced aircraft to be attempted in Asia. Its
airframe, engines and advanced electronics are all Japanese
(AW&amp;ST Feb. 2, p. 36).</p>
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<p>Reviewing ATD-X designs, one European engineer with experience
in Asian high-technology projects says, &#8220;This is as advanced
as anything that European companies could develop.&#8221;</p>

<p>&#8220;In terms of innovation and advanced projects, the game is
now in Asia,&#8221; he adds, asking not to be named because of the
sensitivity of his consultancy work. &#8220;The people involved in
Asian projects are more enthusiastic than in the West, partly
because they are doing such interesting things. Employees also
identify more with the aims of the company. And the companies have
more money to spend.&#8221;</p>

<p>The ATD-X isn&#8217;t a production project, but Japan&#8217;s P-
1 maritime patroller and C-X transporter are, with planned orders
for 80 and 44, respectively. The airframes are new and Japanese,
and so are the P-1&#8217;s engines and combat system. The P-1 is
the size of an Airbus A321 and the C-X is larger than an A400M.
Both are in development (AW&amp;ST June 18, 2007, p. 104).</p>

<p>China&#8217;s effort to close the gap with Western and Russian
military aircraft builders is hardly new. But it has made a huge
stride forward if, as the Pentagon now says, its new J-10 fighter
is comparable with the Eurofighter Typhoon and Dassault Rafale. The
J-10 was confirmed to be in service in 2006, just as Britain was
introducing its first squadron of Typhoons.</p>

<p>India&#8217;s most advanced projects are cooperative
developments with Russia&#8212;and criticized in India for
inadequate technological transfer. The much-delayed domestic LCA
Tejas light fighter is still not in service, 23 years after it was
launched.</p>

<p>Pilotless technology is opening opportunities for many countries
outside of the elite aerospace club, because an unmanned aircraft
is relatively cheap to develop. But defense ministries and
contractors in both Japan and South Korea are working on larger
than usual surveillance drones.</p>

<p>South Korea&#8217;s aircraft, already designed and awaiting
approval, would be comparable to the largest of the U.S. General
Atomic Q-9 series. The Japanese aircraft has a requirement to
detect ballistic missile launches and would have a greater wingspan
than Northrop Grumman&#8217;s RQ-4 Global Hawk.</p>

<p>The move toward pilotless aircraft particularly suits aspiring
aerospace industries in the region, says Jorg Schluter, an
assistant aerospace professor at Nanyang Technological University
of Singapore.</p>

<p>&#8220;In this field the technology is more a question of what
the payload is going to do&#8221; than the design of the unequipped
aircraft, he says. &#8220;I see opportunities for Asia because here
they have very strong electronics technology.&#8221;</p>

<p>But, considering the wider developments in Asia, Schluter
suggests that Asian countries might be making a mistake with their
```

```
strong effort to develop national aircraft, because the era of
single-country programs is drawing to a close.</p>

<p>The development push &#8220;is more to do with national
pride,&#8221; he says. &#8220;In 20 years most of the aircraft
being manufactured won&#8217;t be national projects.&#8221;</p>

<p>Most economists would add that highly subsidized civil projects,
at least, make little sense; a subsidy is virtually an admission
that an activity is wasting resources and should cease. But, in
aerospace, economics competes with national pride.</p>
</body>
</pam:article>
</pam:message>
```

Appendix A Alphabetical Listing of PRISM Elements

Following the element name is the namespace, which corresponds to the PRISM specification document where you can obtain more information about that element. Elements indicated in blue are part of the PRISM Aggregator Message (PAM).

- aggregationType (prism:)
- alternateTitle (prism:)
- article (pam:)
- byteCount (prism:)
- caption (pam:)
- channel (prism:)
- complianceProfile (prism:)
- contributor (dc:)
- copyright (prism:)
- corporateEntity (prism:)
- coverDate (prism:)
- coverDisplayDate (prism:)
- creationDate (prism:)
- creator (dc:)
- credit (pam:)
- dateReceived (prism:)
- description (dc:)
- distributor (prism:)
- doi (prism:)
- edition (prism:)
- eIssn (prism:)
- embargoDate (prism:)
- endingPage (prism:)
- event (prism:, pim:)
- expirationDate (prism:)
- extension (pam:)
- format (dc:)
- genre (prism:)
- geography (prl:)
- hasAlternative (prism:)
- hasCorrection (prism:)
- hasFormat (dc:)
- hasPart (dc:)
- hasPreviousVersion (prism:)
- hasVersion (dc:)
- hasTranslation (prism:)
- identifier (dc:)
- industry (prism:, pim:, prl:)
- isCorrectionOf (prism:)
- isPartOf (dc:)
- isRequiredBy (dc:)
- issn (prism:)
- issueIdentifier (prism:)
- issueName (prism:)
- isTranslationOf (prism:)
- isVersionOf (dc:)
- keyword (pim:, prism:)
- killDate (prism:)
- language (dc:)
- location (prism:, pim:)
- media (pam:)
- mediaTitle (pam:)
- mediaReference (pam:)
- message (pam:)
- metadataContainer (prism:)
- mimetype (pam:)
- modificationDate (prism:)
- nonpublishedMediaTitle (pam:)
- number (prism:)
- object (prism:, pim:)
- organization (prism:, pim:)
- originPlatform (prism:)
- pageRange (prism:)
- person (prism:, pim:)
- publicationDate (prism:)
- publicationName (prism:)
- publisher (dc:)
- quote (pim:)
- receptionDate (prism:)
- refid (pam:)
- relation (dc:)
- requires (dc:)
- rights (dc:)
- rightsAgent (prism:)
- section (prism:)
- source (dc:)
- startingPage (prism:)
- status (pam:)
- subject (dc:)
- subsection1 (prism:)

- subsection2 (prism:)
- subsection3 (prism:)
- subsection4 (prism:)
- teaser (prism:)
- textDescription (pam:)
- ticker (pim:, prism:)
- timePeriod (prism:)
- title (dc:)
- type (dc:)
- url (prism:)
- usage (prl:)
- versionIdentifier (prism:)
- volume (prism:)
- wordCount (prism:)

Appendix B Functional Listing of PRISM Elements

The following is a functional list of PRISM elements. Following the element name is the namespace and the document in the PRISM documentation package where that element appears:

DATE METADATA

- coverDate (prism:)
- coverDisplayDate (prism:)
- creationDate (prism:)
- dateReceived (prism:)
- embargoDate (prism:)
- expirationDate (prism:)
- killDate (prism:)
- modificationDate (prism:)
- publicationDate (prism:)

IDENTIFICATION

- contributor (dc:)
- corporateEntity (prism:)
- creator (dc:)
- doi (prism:)
- edition (prism:)
- eIssn (prism:)
- identifier (dc:) * REQUIRED
- issn (prism:)
- issueIdentifier (prism:)
- issueName (prism:)
- number (prism:)
- publicationName (prism:)
- publisher (dc:)
- source (dc:)
- title (dc:)
- versionIdentifier (prism:)
- volume (prism:)
- url (prism:)

CONTENT DESCRIPTION

- alternateTitle (prism:)
- channel (prism:)
- complianceProfile (prism:)
- description (dc:)
- distributor (prism:)
- event (prism:, pim:)
- genre (prism:)
- industry (prism:, pim:)
- keyword (pim:, prism:)
- language (dc:)
- location (prism:, pim:)
- object (prism:, pim:)
- organization (prism:, pim:)
- originPlatform (prism:)
- person (prism:, pim:)
- quote (pim:)
- section (prism:)
- subject (dc:)
- subsection1 (prism:)
- subsection2 (prism:)
- subsection3 (prism:)
- subsection4 (prism:)
- teaser (prism:)
- ticker (pim:, prism:)
- timePeriod (pim:, prism:)
- type (dc:)

PHYSICAL DESCRIPTION

- aggregationType (prism:)
- byteCount (prism:)
- endingPage (prism:)
- format (dc:)
- pageRange (prism:)
- startingPage (prism:)
- wordCount (prism:)

RELATIONSHIPS

- hasAlternative (prism:)
- hasFormat (dc:)
- hasPart (dc:)
- hasPreviousVersion (prism:)
- hasVersion (dc:)
- hasTranslation (prism:)
- isCorrectionOf (prism:)
- isFormatOf (dcterms:)
- isPartOf (dc:)
- isRequiredBy (dc:)
- isTranslationOf (prism:)
- isVersionOf (dc:)
- relation (dc:)
- requires (dc:)

RIGHTS

- copyright (prism:)
- embargoDate (prism:)
- expirationDate (prism:)
- geography (prl:)
- industry (prl:)
- rights (dc:)
- rightsAgent (prism:)
- usage (prl:)