

ICS-CommonMetadata.PDF.1.5

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CIP4 WG DPWG/SC DM

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CIP4

CIP4 WG DPWG/SC DM

Secretariat: CIP4

ICS — Common Document Metadata for PDF

Abstract

This CIP4 JDF Interoperability Conformance Specification (ICS) defines standardized metadata for embedding in PDF including PDF/VT. Such metadata is useful to receiving systems for determining the production intent of the PDF pages and to aid the creation of job tickets.



CIP4 THANKS ITS PARTNER LEVEL



- @ Robert Herriot update the partner member banners
- CIP4 decide on capitalization of normative SHALL, SHOULD, MAY, NOT - currently both lower case and ALL CAPS are used - Decision: ALL CAPS
- @ Rainer Prosi remove all generic references to PDL that do not apply to PDF - this document is PDF only
- @ Rainer Prosi update legacy references to sections that have different numbering - also review and update numbering levels

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Foreword

The International Cooperation for the Integration of Processes in Prepress, Press and Postpress Organization (CIP4) is a not-for-profit association and is registered with the U.S. Department of Justice and the Federal Trade Commission as a Standards Development Organization. CIP4 is established in Switzerland, it has no regular offices; rather is a global organization with representatives in several countries. CIP4 brings together vendors, consultants and end-users in the print communications, Graphic Arts industry, and associated sectors, covering a variety of equipment, software, peripherals, and processes. Members participate in focused working groups to define future versions of Job Definition Format (JDF), to study user requirements, and to design a JDF Software Development Kit (SDK).

Working Groups, such as "Prepress" or "Digital Print Workflow", discuss and agree to changes that are pertinent to their area. These changes are submitted to a Technical Steering Committee (TSC) that is responsible for reviewing and approving all changes to the specifications. The TSC is charged with settling issues that arise between Working Groups and ensuring that the overall architecture of the JDF specification and schema remain sound.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CIP4 shall not be held responsible for identifying any or all such patent rights.

This document was prepared by the Document Metadata sub-group of the Digital Print Workflow Working Group.

1. Introduction

This document defines an Interoperability Conformance Specification for the definition of standard metadata keys for PDF and their meanings for the purposes of driving workflows or aiding the creation of parameterized JDF-based job tickets. The published metadata keys are intended to not only be useful to the CIP4 community, but also for users of non-JDF based job tickets.

The intent is to accomplish this through standardizing the use of metadata in content creation. Note that product or service ICS documents will have the responsibility of specifying which metadata keys are required to be supported or prohibited.

PDF files represent content pages and do not normally contain information identifying the purpose of these content pages. Standardized metadata is a simple mechanism that allows for the exchange of information regarding these content pages to aid the receiver of the PDF files in determining the intended use of those content pages in the final print product. By understanding the intended use of content pages the receiver of the PDF file can make more informed decisions regarding the production process for the final print product.

This version builds on the initial ICS-Common Metadata for Document Production Workflow published in 2010. This version focuses on defining standardized metadata into PDF files including PDF/VT.

This version of the pdf metadata ICS defines standardized metadata to:

- provide summary information to aid in optimizing or simplification of the production process
- provide product intent specifications such as paper media selection and binding information
- provide contact information of the owner of the PDF files
- identify what content pages are intended to represent (e.g. a brochure, letter, postcard, etc)
- identify the intended recipient of each of the content pages for variable document printing applications

Future versions of this specification are expected to be published that standardize additional print application specific metadata using the architecture defined in this specification.

1.1. Scope

- @Tim Donahue add references to normative ISO for PDF; VT; VCR

This Interoperability Conformance Specification (ICS) defines a set of metadata keys and their meanings used in PDF files including PDF/VT and PDF/VCR. The metadata keys defined by this ICS are intended for direct interpretation by a conforming reader but may also be used to create job tickets such as JDF.

This ICS defines a base conformance level that includes the syntax and semantics of metadata keys to aid in the production of variable documents. This base conformance level provides a set of predefined keys but does not require support for any specific set of metadata keys by a conforming reader or conforming writer. CIP4 welcomes any proposals for new standardized keys to be added to the CIP4 metadata hierarchy in future versions of this specification.

1.2. Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- @Robert Herriot Update reference to PDF spec

- @Robert Herriot Update reference to XMP spec

Adobe PDF Reference, fifth edition, version 1.6., Adobe Systems Incorporated (ISBN 0-321-30474-8).

Available from internet <http://www.npes.org/standards/toolspdfx.html>

Adobe PostScript Reference, third edition, Adobe Systems Incorporated (ISBN 0-201-37922-8).

ISO 8601:2004 *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO 3166-1:2006 *Codes for the representation of names of countries and their subdivisions- Part 1: Country codes*

ISO 16612-2 *Graphic technology — Variable data exchange — Part 2: Using PDF/X-4 and PDF/X-5 (PDF/VT-1 and PDF/VT-2)*

Extensible Markup Language (XML) 1.0 (Second Edition), 6 October 2000, World Wide Web Consortium,

Available from internet <<http://www.w3.org>>

JDF Specification, Release 1.5, 2013, CIP4 Organization, Available from internet <<http://www.CIP4.org>>

XML Path Language (XPath) 1.0 specification, 16 November 1999. Available from internet

<<http://www.w3.org/tr/xpath>>

XMP Specification, June 2005, Adobe Systems Incorporated. Available from internet

<<http://www.npes.org/standards/toolspdfx.html>>

1.3. Terms and Definitions

For the purposes of this document, the following terms and definitions apply:

- @Robert Herriot reorder terms below alphabetically

document

collection of related document parts

document part

set of related pages and/or related sets of pages

EXAMPLE chapter pages of a book or all sets of pages intended for a recipient

document part hierarchy

hierarchical data structure that specifies the organization of document parts

document part metadata

metadata associated with a document part

JDF

Job Definition Format

PDL

Page Description Language

EXAMPLE PostScript, PDF and PCL .

job definition

information that specifies the production requirements and workflow of a unit of work involving purposing PDL content to one or more messaging channels

job ticket

electronic specification of process control for print production

print product

outcome of the processing of a document through a print manufacturing process

EXAMPLE a perfect bound book or postcard.

product part

part of a print product

EXAMPLE the cover part of a saddle-stitched booklet.

recipient

the person or institution that receives a print product.

conforming reader

software application that is able to read and process PDF data in accordance with this ICS.

conforming writer

software application that is able to write PDF data in accordance with this ICS.

ICS

Interoperability Conformance Specification

reused content

part of the PDF data that is included more than once in one or more page definitions by reference. In PDF reused content is encoded as indirect objects. Examples include Form XObjects and Image XObjects.

1.4. Conformance

This ICS defines a base conformance level for the exchange of metadata in PDF files. The Base Conformance Level defines the syntax and semantics of metadata properties.

Conforming PDF data SHALL conform to all the technical requirements set out in Clauses 6 and 7 of this ICS.

Conforming PDF data SHALL include the **CIP4_Root/CIP4_Metadata/CIP4_Conformance**, **CIP4_Root/CIP4_Metadata/CIP4_Creator** and **CIP4_Root/CIP4_Metadata/CIP4_ModificationDate** properties at the root of the document part hierarchy of the PDF data as defined in Clause 7 of this ICS.

A conforming writer is a software application that SHALL write PDF data conforming to the format specification of the PDF format and contains metadata conforming to the requirements defined in this ICS.

A conforming reader is a software application that SHALL read and appropriately process PDF data conforming to the PDF format specification and SHALL read and appropriately process the metadata encoded in the PDF data conforming to the requirements defined in this ICS.

1.5. Usage of metadata in production

If print job ticket information such as JDF or explicit production control commands specified in a device control is provided, the job control information specified in the job tickets or production control defines the process behavior of the system. In the absence of print job ticket information such as JDF or explicit production control the documents SHOULD be produced in such a way that the resulting products best match the intent of the metadata.

Note: The job ticket may require usage of the metadata provided in the PDF.

2. Technical Requirements

2.1. Common Metadata Hierarchy

- @Tim Donahue define common metadata hierarchy

This ICS defines metadata properties with key names that are chosen from the common metadata hierarchy.

The first level of the common metadata hierarchy SHALL consist of second class name prefixes as defined in Adobe PDF Reference, Appendix E. The registrant of the second class name prefix controls the hierarchy under that second class name prefix. CIP4 has registered the *CIP4* second class name prefix which SHALL be used for all metadata properties defined in this ICS and SHALL only be used by CIP4 specifications.

Each leaf node of the common metadata hierarchy SHALL be the name of an individual metadata property. This name SHALL conform to the rules of the XML name token and SHALL NOT contain colon or forward slash characters.

The name of each level in the common metadata hierarchy SHALL conform to the rules for the XML name token and SHALL NOT contain colon or forward slash characters.

NOTE 1 The requirement to restrict names in the common metadata hierarchy to adhere to the XML name token facilitates the translation of metadata to XML formats. PDF and non-XML based formats are in general more liberal in their naming requirements.

A vendor wishing to add private metadata properties and levels into the CIP4 hierarchy may do so but SHALL explicitly identify those private metadata properties and levels by specifying an alternate second class name prefix for that property or level. An alternate second class name prefix SHALL be specified by prefixing the name of a metadata property or level with a second class name prefix followed by an underscore character.

EXAMPLE A vendor that is using the second class name prefix **ACME** that wishes to encode a value for a key named **foobar** in the **CIP4_Root/CIP4_Recipient** hierarchy will therefore use a metadata property called **CIP4_Root/CIP4_Recipient/ACME_foobar**.

NOTE 3 A vendor wishing to add private metadata properties is required to register and use a second class name prefix for that private metadata. This ensures maximum interoperability as the CIP4 defined hierarchy can only contain known standard keys with a predefined meaning. The private keys are therefore clearly separated and allow the reader to skip them more readily.

- @Rainer Prosi Update all key pdf xpaths to fully use the exact values including the cip4 prefix. CIP4:Root/a/b replaced by than CIP4_Root/CIP4_a/CIP4_b **Decision** - choose verbose xpaths.

3. The CIP4 Common Metadata Hierarchy

3.1. The Metadata level

The **CIP4_Root/CIP4_Metadata** level contains metadata properties that SHALL only be used in the root of the document part hierarchy. This level provides information regarding the PDF data as a whole.

The **CIP4_Root/CIP4_Metadata/CIP4_Conformance** property SHALL have a value of type string that indicates the list of ICS's separated by spaces to which all the metadata in the PDF data adheres. A value of *base* may be used if no other more restrictive ICS applies. Each ICS that restricts the use of metadata properties defined in this ICS SHOULD include a required value for this metadata property that uniquely identifies that ICS. That required value SHALL adhere to the requirements for XML name token.

The **CIP4_Root/CIP4_Metadata/CIP4_Creator** property SHALL have a value of type string that identifies the conforming writer of that metadata.

The **CIP4_Root/CIP4_Metadata/CIP4_ModificationDate** property SHALL have a value of type string that identifies the date at which the PDL data was last modified or created. The data SHALL conform to the format specified in ISO 8601:2004.

NOTE 1 The above property allows detection of the modifications to PDL data by a non-conforming writer. If the PDL specification already encodes a mandatory last modification date. The OS modification date by itself is not necessarily sufficient to detect such modifications.

NOTE 2 A conforming writer that includes metadata in a private namespace MAY need to include a method to detect whether a different application has made changes to the document as such changes may require certain metadata to be updated. Therefore a conforming writer that maintains private metadata SHOULD include a modification date as private metadata in order to detect changes made to the document by applications that do not understand the private metadata. Comparing the modification date stored in private metadata with the metadata modification date stored under **CIP4_Root/CIP4_Metadata/CIP4_ModificationDate** property will allow the application to detect that another application has modified the document (including the metadata) as the other application will not have updated the modification mode in private metadata.

The **CIP4_Root/CIP4_Metadata/CIP4_JobID** property SHALL have a value of type string that identifies the job or contract to which the PDF data as a whole belongs.

- @Lieven Plettinck review definition productID as identifier of the finished product

The **CIP4_Root/CIP4_Metadata/CIP4_ProductID** property SHALL have a value of type string that identifies the output of the DPart.

Note: Whereas **CIP4_Root/CIP4_Metadata/CIP4_JobID** identifies one production run, **CIP4_Root/CIP4_Metadata/CIP4_ProductID** identifies a tracked asset that MAY be produced in multiple production runs.

The **CIP4_Root/CIP4_Metadata/CIP4_Accounting** sub-level SHALL identify the contact information of where to send the bill for the production of the PDL data. The properties of the **CIP4_Root/CIP4_Metadata/CIP4_Accounting** sub-level are defined in 8.1.

The **CIP4_Root/CIP4_Metadata/CIP4_Sender** sub-level SHALL identify the contact information for the sender or originator of the PDL data. The properties of the **CIP4_Root/CIP4_Metadata/CIP4_Sender** sub-level are defined in 8.1.

The **CIP4_Root/CIP4_Metadata/CIP4_Author** sub-level SHALL identify the contact information for the author of the PDL data. The properties of the **CIP4_Root/CIP4_Metadata/CIP4_Author** sub-level are defined in 8.1.

The **CIP4_Root/CIP4_Metadata/CIP4_Administrator** sub-level SHALL identify the contact information regarding the execution of the PDL data. The properties of the **CIP4_Root/CIP4_Metadata/CIP4_Administrator** sub-level are defined in 8.1.

2.2. The Summary level

The **CIP4_Root/CIP4_Summary** level SHALL contain metadata properties that have values that can be determined by inspecting the PDF data.

The **CIP4_Root/CIP4_Summary/CIP4_PageCount** property SHALL have a value of type numeric. The value of this property SHALL equal the total number of pages in the document part in which this property is specified.

The **CIP4_Root/CIP4_Summary/CIP4_Uniform** property SHALL have a value of type dictionary. The value of each dictionary key SHALL be of type boolean. The following keys have been defined:

- *Orientation*: this value SHALL only be used for a document part if and only if all the pages of that document part have the same orientation (e.g. all portrait or all landscape).
- *Size*: this value SHALL only be used for a document part if and only if all the pages of that document part have the same size independent of orientation (e.g. an A4 landscape page is the same size as an A4 portrait page).
- *Color*: this value SHALL only be used if and only if all of the page content of the document part uses multiple colorants.
- *Monochrome*: this value SHALL only be used if and only if all the graphical content of all pages of the document part use a single colorant other than black.
- *Black*: this value SHALL only be used if and only if all the graphical content of all pages of the document part use black colorant.

NOTE When both *Size* and *Orientation* are *true* the dimensions of all pages are the same.

The **CIP4_Root/CIP4_Summary/CIP4_UniformRecipientStructure** property SHALL have a value of type boolean. This property SHALL only be used in the root of the document part hierarchy and SHALL only have the value *true* if and only if the structure of each document part intended for a single recipient has the same structure and corresponding document part leaf nodes have the same number of pages.

The **CIP4_Root/CIP4_Summary/CIP4_UniformNodeStructure** property SHALL have a value of type boolean. This property SHALL only have the value *true* if and only if the structure of each document part contained in the document part in which this property is specified, has the same structure and the corresponding document part leaf nodes have the same number of pages.

NOTE 1 The *UniformNodeStructure* value can only be used on non-leaf document part nodes.

The **CIP4_Root/CIP4_Summary/CIP4_RecipientCount** property SHALL have a value of type numeric. The value of this property SHALL indicate the total number of recipients for which there are document parts contained within the document part in which this property is specified.

The **CIP4_Root/CIP4_Summary/CIP4_Content/CIP4_Referenced** property SHALL have a value of type array of string. The value of this property SHALL contain the identifier for each reused content definition referenced from pages contained within the document part in which this property is specified. For ISO 16612-2 (PDF/VT), the value of the */GTS_XID* key of the recurring *XObject* SHALL be used.

The **CIP4_Root/CIP4_Summary/CIP4_Content/CIP4_ReferenceCount** property SHALL have a value of type array of integer. Each entry in this array value SHALL be the number of references, within the document part in which this property is defined, for the reused content indicated in the corresponding entry of the **CIP4_Root/CIP4_Summary/CIP4_Content/CIP4_Referenced** property on the same document part.

The **CIP4_Root/CIP4_Summary/CIP4_Content/CIP4_Identical** property SHALL have a value of type array of integer. These integers reference the zero based page numbers in the context of an individual recipient that contain

identical non-variable content and MAY be pre-produced in a hybrid workflow. Negative numbers count backwards from the last page in the context of an individual recipient.

The **CIP4_Root/CIP4_Summary/CIP4_Intent** property defines a set of uniform intent resources and SHALL have a value of type array of dictionary.

Values are:

CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_BindingIntent
CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_LayoutIntent
CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_MediaIntent
CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_FoldingIntent

- @Rainer Prosi Add all valid types here
- @Rainer Prosi Move uniform Intents from **CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_XXXIntent** to **CIP4/Summary/Uniform/XXXIntent**
- @Rainer Prosi change data type of **CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_XXXIntent** to array of dictionary and update definition to describe that this is a summary of all settings.

Each key **CIP4/Summary/Intent** dictionary, e.g. **CIP4_Root/CIP4_Summary/CIP4_Intent/CIP4_BindingIntent** SHALL have a value of type array of indirect references to a dictionary.

Each entry in this array SHALL reference a dictionary valid for the same key under **CIP4/Intent**. **Each such dictionary SHALL only be** referenced by child **CIP4/Intent** properties that are defined within a document part that also references the dictionary from **CIP4/Summary/Intent**. Each dictionary SHOULD be referenced at least once by **CIP4/Intent** properties that are defined within the document part in which this property is defined.

2.3. The Recipient level

The **CIP4_Root/CIP4_Recipient** level contains metadata properties with information regarding the intended recipient of the pages in a given document part.

The **CIP4_Root/CIP4_Recipient/CIP4_Uniqueid** property SHALL have a value of type string. The value of this property SHALL uniquely identify the recipient within the PDL data. For any given page in the PDL data there SHALL only be a single document part that specifies this property.

The **CIP4_Root/CIP4_Recipient/CIP4_Contact** sub-level SHALL define the contact information for the recipient linked to the document part on which properties in the **CIP4_Root/CIP4_Recipient/CIP4_Contact** level are defined. The properties of the **CIP4_Root/CIP4_Recipient/CIP4_Contact** sub-level are defined in 8.1. These properties SHALL only be present on document parts that also specify the **CIP4_Root/CIP4_Recipient/CIP4_Uniqueid** property.

2.4. The Production level

The **CIP4_Root/CIP4_Production** level contains metadata properties that may be used to parameterize the job ticket. The **CIP4_Root/CIP4_Production/CIP4_CopyCount** property SHALL have a value of type integer and SHALL be a positive value. The value of this property SHALL indicate the number of copies requested of a document part.

NOTE 1 In the case where a contained document part also specifies the **CIP4_Root/CIP4_Production/CIP4_CopyCount** property then the total number of copies are multiplied.

- All discuss whether this is overkill?
- define definition of "non-variable" in context of **CIP4_Root/CIP4_Production/CIP4_Static**
- do we need to differentiate between only static and some static

The **CIP4_Root/CIP4_Production/CIP4_Static** property SHALL have a value of type array of integer. These integers reference the zero based page numbers in the context of this **DPart** that contain non-variable content and MAY be pre-produced in a hybrid workflow.

2.5. The Intent level

JDF Intent specifies the creator's view of a product or document. Providing intent level information within a PDF allows a PDF creator to specify additional properties how the respective pages that are referenced by the **DPart** SHALL be used in the context of a finished product.

2.5.1. Mapping of the encoding of JDF Intent

Explicit product definitions SHALL only be specified in the CIP4/Intent hierarchy. This hierarchy is based on the Intent resources that are defined in chapter 7 of JDF1.5.

The key names in CIP4/Intent SHALL match the respective JDF Intent resource element names. Any attributes on a JDF Intent resource SHALL be specified as keys in their respective parent level. Attributes in the JDF namespace SHALL be specified using the local name without any namespace prefixes. The data types of the attributes SHALL be mapped according to table below:

JDF datatype	PDF datatype	Comments
Integer double IntegerSpan NumberSpan	number	Non numeric values such as NaN and INF SHALL NOT be specified.
List	Array of base type	Any list that is encoded in JDF as a whitespace separated list of base type is encoded as an array of the respective base type, e.g. IntegerList will be encoded as an Array of number. List includes named list types such as XYPair, Rectangle, Matrix, CMYKColor etc.
Range	Array of 2 base type	Any range is encoded as an array of 2 elements of the respective base type, e.g. IntegerRange will be encoded as an Array of 2 numbers.
NMTOKEN Enumeration ID EnumerationSpan NameSpan	Name	
NMTOKENS Enumerations	Array of Name	
boolean OptionSpan	boolean	
String StringSpan	string	
Any other singular datatype	string	This includes dateTime, date, duration, etc.

XML elements that are specified in JDF with a maximum cardinality of 1 SHALL be encoded as a metadata key whose value is a dictionary.

XML elements that are specified in JDF with a maximum cardinality of 2 or more SHALL be encoded as a metadata key whose value is an array of dictionaries.

The name of the metadata key SHALL be the local name of the element with a CIP4_ prefix in both cases.

Note: The span elements defined in JDF1.5, section 7.4.2 are mapped to the datatype as defined by Span/@Actual.

JDF Partitioning is not supported. The explicit values SHALL be specified in the context of the DPart node. **Note:**

When encoding Intent data in PDF, the Intent data MAY be encoded as indirect objects and referenced multiply.

2.5.2. Intent referencing

Each key under CIP4/Intent may be an indirect reference to a dictionary that is referenced from CIP4_Root/CIP4_Summary/CIP4_Intent under the same name.

- Is this a typo? I'd assume **CIP4_Root/CIP4_Metadata/CIP4_Class**

The **CIP4_Root/CIP4_Intent/CIP4_Class** property SHALL have a value of type string restricted to the XML NMTOKEN values. The value of this property SHALL indicate a class of production requirements to be applied to the document part on which this property is defined.

- [@Rainer Prosi](#) create example that uses MetaDataMap, Class and JDF

NOTE 2 Whenever possible the **CIP4_Root/CIP4_Production/CIP4_Part/ProductType** SHOULD be used to drive production requirements instead of the above CIP4_Root/CIP4_Production/CIP4_Part/Class.

- Should this be a *should* to open the list?
- @Rainer Prosi add new values from JDF 1.5

The **CIP4_Root/CIP4_Intent/CIP4_ProductType** property SHALL have a value of type name. The value of this property SHALL indicate what the document part represents. The name SHOULD be one of the following:

- *Map*
- *Envelope*
- *Label*
- *Box*
- *Poster*
- *Postcard*
- *Newspaper*
- *Chapter*
- *Section*
- *Letter*
- *Body*: Generic content inside of a Cover.
- *Book*: Body with a Cover and a Spine
- *Booklet*: Body with a Cover without a Spine (typically stapled)
- *Brochure*: A single folded sheet
- *Leaflet*: A single unfolded sheet
- *BusinessCard*
- *Cover*: A single sheet covering a side of a print product.
- *WrapAroundCover*: A single sheet containing the Front Cover, Spine and Back Cover.
- *Spine*: The binding side of a print product
- *Insert*: A product part intended to be inserted into a print product
- *Jacket*: Hard cover case jacket
- *CoverLetter*: A letter accompanying another print product
- *ResponseCard*: A SelfMailer to respond to an offer
- *SelfMailer*: A document to be sent via the post without an additional envelope.

EXAMPLE A PostCard is a single-sheet self-mailer. A wafer-sealed document is also a self-mailer.

- @Paul Jones write NOTE 3 and what the should means.

NOTE 3 The value of the **CIP4_Root/CIP4_Intent/CIP4_ProductType** property can be any name but for sake of interoperability and automatic processing the property SHOULD be given a value listed in this specification if the finished product has the same physical characteristics or purpose. Therefore an invoice should be classified as a Letter if it is sent in an windowed envelope or as a SelfMailer if the invoice pages will be folded and glued into an addressed envelope. A data sheet should be classified as a Leaflet if it is a single unfolded sheet or as a Brochure if it's a single folded sheet or a Booklet if it contains multiple pages stapled together.

2.6. Supported JDF Intents

This chapter lists the recommended JDF Intent dictionaries. All Intent values are optional. Intent values that are not listed in this section MAY be mapped according to the rules in the previous section.

2.6.1. CIP4_Root/CIP4_Intent/CIP4_BindingIntent

The CIP4_Root/CIP4_Intent/CIP4_BindingIntent specifies details of Binding. All pages that are referenced by this DPart Node or any of this DPart Node's descendant DPart Nodes SHALL be bound together according to the method specified in BindingIntent.

- @Rainer Prosi Add discussion of the Context of BindingIntent and what is bound.

CIP4_Root/CIP4_Intent/CIP4_BindingIntent/CIP4_BindingSide property SHALL have a value of type name. The name SHALL be one of the following:

- *Left*: to be used for binding on the left edge of the product part
- *Right*: to be used for binding on the right edge of the product part
- *Top*: to be used for binding on the top edge of the product part
- *Bottom*: to be used for binding on the bottom edge of the product part

- is BindingType open or closed list - it currently is open (should)

CIP4_Root/CIP4_Intent/CIP4_BindingIntent/CIP4_BindingType property SHALL have a value of type name. The name SHOULD be one of the following:

- *ChannelBinding* – No folding and no hole punching are implied.
- *CoilBinding* - No folding is implied. Either a system specified hole puncher SHALL be activated or the appropriate pre-punched Media SHALL be selected.
- *CornerStitch* -Stitch in the corner that is at the clockwise end binding edge. For example, to stitch in the top left corner, set BindingSide = "Left". No folding and no hole punching are implied.
- *PlasticComb* - No folding is implied. Either a system specified hole puncher SHALL be activated or the appropriate pre-punched Media SHALL be selected.
- *Ring* - No folding is implied. Either a system specified hole puncher SHALL be activated or the appropriate pre-punched Media SHALL be selected.
- *SaddleStitch* – An F4-1 fold is implied. no hole punching is implied.
- *SideStitch* - No folding and no hole punching are implied.
- *Tape* - No folding and no hole punching are implied.
- *WireComb* - No folding is implied. Either a system specified hole puncher SHALL be activated or the appropriate pre-punched Media SHALL be selected.

CIP4_Root/CIP4_Intent/CIP4_BindingIntent/CIP4_SaddleStitching/CIP4_StitchNumber property SHALL have a value of type integer. SHALL only be present if **CIP4_Root/CIP4_Intent/CIP4_BindingIntent/BindingType=SaddleStitch**.

CIP4_Root/CIP4_Intent/CIP4_BindingIntent/CIP4_SideStitching/CIP4_StitchNumber property SHALL have a value of type integer. SHALL only be present if **CIP4_Root/CIP4_Intent/CIP4_BindingIntent/BindingType=SideStitch**.

2.6.2. CIP4_Root/CIP4_Intent/CIP4_FoldingIntent

- @Rainer Prosi Add discussion of implied Folding and HoleMaking from Binding and wraparound stuff.

The **CIP4_Root/CIP4_Intent/CIP4_FoldingIntent** specifies details of folding of the finished product that are NOT implied by the value of **CIP4_Root/CIP4_Intent/CIP4_BindingIntent/BindingType** and SHALL have a value of type name. If a **CIP4_Root/CIP4_Intent/CIP4_BindingIntent/CIP4_BindingType** implies a given Fold, then **CIP4_Root/CIP4_Intent/CIP4_FoldingIntent** SHALL NOT be specified to describe that fold. Production folds such as those used if impositioning SHALL NOT be specified. All pages that are referenced by this DPart Node or any of this DPart Node's descendant DPart Nodes SHALL be folded together according to the method specified in FoldingIntent.

CIP4_Root/CIP4_Intent/CIP4_FoldingIntent/CIP4_FoldingCatalog property SHALL have a value of type name. The name SHOULD be one of the following:

- *F2-1* - No Fold.
- *F4-1* - Single Fold.
- *F6-1* - Zigzag Fold.
- *F6-3* - Altar Fold.
- *F6-4* - Tri Fold.
- *F6-7* - Z-Fold
- *F8-2* - Parallel Fold
- *F8-4* - Gate Fold

Note that additional values of **FoldingCatalog** MAY be supported.

The **CIP4_Root/CIP4_Intent/CIP4_FoldingIntent/CIP4_FoldReferenceEdge** SHALL have a value of type name and specify the reference edge for the folding


- *Left*: to be used when the reference edge is the left edge of the sheet. This is the default value.
- *Right*: to be used when the reference edge is the right edge of the sheet
- *Top*: to be used when the reference edge is the top edge of the sheet
- *Bottom*: to be used when the reference edge is the bottom edge of the sheet

The **CIP4_Root/CIP4_Intent/CIP4_FoldingIntent/CIP4_FoldReferenceSide** SHALL have a value of type name and specify the reference side for the folding

- *FirstPageOutside*: to be used when the content of the first page is outside of folded document, i.e. content of the front side of the folded sheets is visible on top of folded document. This is the default value.

- *FirstPageInside*: to be used when the content of the first page is inside the folded document, i.e. content of the back side of the folded sheets is visible on top of folded document.

- @Rainer Prosi Jean-Marc Are any further folds missing?
- @Jean-Marc Steux Added 6-7, 8-2 and 8-4
- @Jean-Marc Steux How to specify if the first page is inside or outside (Component/@Orientation with a FlipXXX value ?)
- @Rainer Prosi add fold reference edge - note : currently missing in JDF 1.5 but see

 **JDF-50** - Problem authenticating. Please check your username and password and try again.

 Details of the folding schemes and additional values can be found in: JDF1.5 Fig 8-30
- @Rainer Prosi : what does the sentence "Production folds such as those used if impositioning SHALL NOT be specified" means ???
@Jean-Marc Steux : don't specify f16-4 for a saddle stitch bruchure that happens to be produced as an 8-up signature on a large sheet.

2.6.3. CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent

The **CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent** specifies details of hole punching.

The **CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent/CIP4_HoleReferenceEdge** SHALL have a value of type name and specifies the reference edge for the line of holes.

- *Left*: to be used for holes on the left edge of the product part
- *Right*: to be used for holes on the right edge of the product part
- *Top*: to be used for holes on the top edge of the product part
- *Bottom*: to be used for holes on the bottom edge of the product part
- *Pattern*: to be used for holes as implied by **CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent/CIP4_HoleType**

The **CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent/HoleType** SHALL have a value of type Array of Name and defines the hole patterns. If a **CIP4_Root/CIP4_Intent/CIP4_BindingIntent/BindingType** implies a given HoleMakingIntent and more than that HoleMakingIntent is required, e.g. Ringbinding in a two-hole Binder but holes for both two-hole and thress-hole binding are required, then the complete **CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent** including the an entry specifying two holes SHALL be specified.

- @Paul Jones To do select values for holmaking.

Each name contained in **CIP4_Root/CIP4_Intent/CIP4_HoleMakingIntent/CIP4_HoleType** SHALL be a catalog ID listed in Appendix L of the JDF specification.

2.6.4. CIP4_Root/CIP4_Intent/CIP4_LayoutIntent

The **CIP4_Root/CIP4_Intent/CIP4_LayoutIntent** specifies details of the page layout.

The **CIP4_Root/CIP4_Intent/CIP4_LayoutIntent/CIP4_Sides** SHALL have a value of type Name and specified which sides to print and how front and back pages are oriented.

OneSided – Page contents will only be imaged on the front side of the media or for the outside of a cover.

OneSidedBack – Page contents will only be imaged on the back side of the media or for the inside of a cover.

TwoSidedHeadToHead – Impose pages upon the front and back sides of media Sheets so that the head (top) of page contents back up to each other.

TwoSidedHeadToFoot – Impose pages upon the front and back sides of media Sheets so that the head (top) of the front backs up to the foot (bottom) of the back.

- @Rainer Prosi To do discuss boundaries and padding when switching media or binding.

2.6.5. CIP4_Root/CIP4_Intent/CIP4_MediaIntent

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent** specifies details of the selected media to be printed on. This ICS provides 2 methods for selecting media. Media MAY be selected by name by specifying **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/MediaQuality**. Not that this requires out of bands sychronization of the supported values of **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/MediaQuality**. Media may be specified in more detail by supplying any of the additional keys of **CIP4_Root/CIP4_Intent/CIP4_MediaIntent** that are listed below.

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_MediaQuality** SHALL have a value of type string and defines the media to be selected in a device specific manner. This MAY be a media identifier from a device media catalog, a media source such as an input tray or a Media size or any other media selection method that the device understands.

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_Grade** SHALL have a value of type integer in a range of 1-5 and defines the media Grade of paper material is defined in accordance with the paper “types” set forth in [ISO12647-2:2004].

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_ISOPaperSubstrate** SHALL have a value of type name in the range of *PS1* through *PS8*. ISOPaperSubstrate type of paper material is defined in accordance with the Print Substrate set forth in [ISO12647-2:2013].

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_Weight** SHALL have a value of type double. It specifies the intended weight of the media, measured in grammage (g/m^2) of the media.

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_MediaColor** is a machine readable color descriptor and SHALL have a value of type Name.

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_MediaColorDetails** is a human readable color descriptor and SHALL have a value of type String.

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_FrontCoatings** describes the preprocess coatings of the front side of the Media and SHALL have a value of type Name. Values are:

None
Coated
Glossy
HighGloss
InkJet
Matte
Satin
Semigloss

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_BackCoatings** describes the preprocess coatings of the back side of the Media and SHALL have a value of type Name. Values are the same as in **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/FrontCoatings**.

The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent/CIP4_MediaTypeDetails** describes the details of the media such as *Envelope* or *Labels* and SHALL have a value of type Name.

- @CIP4 To do these intent - related attributes that are now deprecated - where do they go? Do we need to retain deprecated elements from the 1.0 ICS? Decision : provide appendix with list of all removed properties
- @Paul Jones add note defining how to derive preprinted workflow from intent
- @Robert Wallner Shouldn't MediaType be handled like MediaColor with CIP4_MediaType with a value of type Name and CIP4_MediaTypeDetails with a value of type String?

NOTE The **CIP4_Root/CIP4_Intent/CIP4_MediaIntent** does not allow for pre-printed paper to be specified as this is considered part of the production process rather than a product intent. Each page whose content starts with the same static optional content can be produced using preprinted media by switching off the static optional content and using appropriate preprinted media. The benefit of this workflow is that the PDF has the correct appearance and the selection and placement of the pre-printed paper in a paper tray can be correctly identified by looking at the PDF. Static optional content can be identified by examining the usage directory of optional content groups. The value of the PageElement key will be a dictionary with a SubType key with a value of BG or L.

2.6.6. Optional CIP4 Intent types

The following CIP4 Intent Resources MAY be mapped to PDF Metadata. Their use is strictly optional.

- **CIP4_EmbossingIntent**
- **CIP4_InsertingIntent**
- **CIP4_LaminatingIntent**
- **CIP4_ProductionIntent**
- **CIP4_ScreeningIntent**
- **CIP4_ShapeCuttingIntent**

2.6.7. Excluded CIP4 Intent types

The following CIP4 Intent Resources SHALL NOT be mapped to PDF Metadata:

- **CIP4_ArtDeliveryIntent:** The PDF has – by definition – already been delivered.
- **CIP4_DeliveryIntent:** Distribution and Delivery of the printed products are out of scope.
- **CIP4_NumberingIntent:** All variable data information SHALL be encoded in the PDF.
- **CIP4_PackingIntent:** Packaging of the printed products is out of scope.
- **CIP4_ProofingIntent:** Proofing and approval of the printed products are out of scope.
- **CIP4_PublishingIntent:** Newspaper and magazine publication are out of scope.
- **CIP4_SizeIntent:** Deprecated in JDF.

2. Common metadata structures

@Rainer Prosi clarify that these are reused elements

2.7. Contact Information

Contact information is encoded with properties relative to a level of the metadata hierarchy. The usage of the **Contact** is defined by the parent dictionary of the respective **Contact** dictionary.

2.7.1. Contact/Person

The **Person** property SHALL have a value of type dictionary or type string. The dictionary value may contain the following keys, which each SHALL have a value of type string:

- **NamePrefix:** a prefix to the name of the recipient., e.g. *Mr., Ms., Dr.,* etc.
- **NameSuffix:** a suffix to the name of the recipient, e.g. *jr., III,* etc.
- **FirstName:** the first name of the recipient
- **AdditionalNames:** the middle name(s) of the recipient
- **LastName:** the last name of the recipient
- **JobTitle:** the job function of the recipient within the organization
- **Organization:** the name of the organization to which the recipient belongs
- **Department:** the name of the department within the organization to which the recipient belongs

NOTE: A string value is used where the original database does not provide all the individual details of the persons name.

2.7.2. Contact/Address

The **Address** property SHALL have a value of type dictionary. The value of this property SHALL identify the postal address of the recipient within the PDL data. The dictionary value may contain the following keys, which each SHALL have a value of type string unless otherwise stated:

- **AddressLines:** an array of string representing the complete address as a sequence of address lines
- **Block:** the name or number of the block
- **Level:** the level within the building
- **Suite:** the name or number of the suite within the building
- **StreetName:** the name or number of the street where the building is located
- **CivicNumber:** the civic number of the building
- **Street:** contains the complete street address which is a combination of the values of the *Block, Level, Suite, StreetName* and *CivicNumber* when they are not available seperately
- **City:** the name of the city in which the building or postal box is located
- **PostalCode:** the postal code of the building (may include the routing code)
- **PostBox:** the postal box number
- **Region:** the name of the region (e.g. state, province, etc.) in which the building or postal box is located
- **Country:** the name of the country in which the building or postal box is located
- **CountryCode:** the ISO 3166-1 code of the country in which the building or postal box is located

NOTE: This ICS does not define the method to convert the above dictionary values into address lines as this is country and language specific.

NOTE: An address may be encoded as a set of address lines, metadata or both. The latter case may occur where the original database does not provide all the individual details of the address.

2.7.3. Contact/ComChannel

The **ComChannel** property SHALL have a value of type array of dictionary. The value of each array element of this property SHALL identify means of contacting the recipient within the PDL data. Each dictionary value may contain the following keys:

- **ChannelType**: name value indicating the type of the communication channel to use to contact the recipient. One of the following name values SHALL be used: *Phone*, *Mobile*, *Email*, *Fax* or *InstantMessaging*.
 - **ChannelTypeDetails**: string value with details regarding the communication channel. For *InstantMessaging* channels this value SHALL define the name of the service vendor.
 - **ChannelUsage**: array of name values indicating the purpose of the communication channel. Each array entry SHALL use one of the following name values: *Business*, *Private*, *DayTime*, *NightTime* or *Weekend*.
 - **Locator**: SHALL be specified as a string value containing the locator of the communication channel such as the telephone number or email address. Where possible URL syntax SHOULD be used for the value of this key.
- ☑ JDF also allows for Contact/Person/ComChannel - should we differentiate, allow, disallow? subtle difference is that Contact is a role whereas person is - well a person... Decision - Only Contact/ComChannel
 - ☑ I assume array of dictionary is correct we can have phone + fax + foobar
 - ☑ how do we mark required here? **ChannelTypeDetails** and **ChannelUsage** are purely optional - Decision add explicit required / optional into the description - use ISO 32000-1 formatting.

3. (informative) Common Metadata Hierarchy

3.1. Registered Second Class Name Prefixes

Prefix	Namespace URN	Organization
GTS_	<input type="checkbox"/> ISO what is the GTS URN?	NPES & ISO
CIP4_	<i>urn:cip4.org:CommonMetadata:CIP4</i>	CIP4

4. PDF Metadata Encoding Examples

Examples using PDF encoding using DPM in ISO PDF/VT (please refer to Annex C of the ISO PDF/VT standard for additional examples):

```

/DPM <<
  /CIP4_Root <<
    /CIP4_Metadata <<
      /CIP4_Conformance (base) /CIP4_Creator (ACME) /CIP4_ModificationDate (2014092
    >>
  >>
>>
/DPM <<
  /CIP4_Root <<
    /CIP4_Recipient <<
      /CIP4_UniqueId (123456) /CIP4_Contact <<
        /CIP4_Person <<
          /CIP4_FirstName (Stefan) /CIP4_LastName (Daun) /CIP4_Organisation (Fr
        >>
        /CIP4_Address <<
          /CIP4_AddressLines [ (Fraunhoferstr. 5) (64284 Darmstadt) (Germany) ]
          /CIP4_StreetName (Fraunhoferstr.) /CIP4_CivicNumber (5)/CIP4_PostalCo
        >>
        /CIP4_ComChannel [
          <<

```

```
        /CIP4_ChannelType /Phone
        /CIP4_Locator (tel:+1.234.567.8910)
    >>
    <<
        /CIP4_ChannelType /EMail
        /CIP4_Locator (mailto:foo@bar.com)
    >>
    ]
>>
    /ACME_Gender /Male /ACME_Offer (Discount10)
>>
>>
>>
```

@Rainer Prosi add intent to example

No labels