Job Ticket
Application Programming Interface
(JTAPI)

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Abstract

The Free Standards Group (FSG) Open Printing Job Ticket Application Programming Interface (JTAPI) provides an abstract interface for applications to read, edit, and write industry standard document processing job tickets (defined outside this specification). This specification defines an abstract model of objects (jobs, documents, etc.) and their operations and attributes for document processing (e.g. scanning, printing, copying, etc.). This specification also defines C language and Java bindings of this abstract object model (including standard header files).

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1. Introduction

This specification describes and defines the Free Standards Group (FSG) Open Printing Job Ticket Application Programming Interface (JTAPI) for the Free Standards Group.   The JTAPI defines the abstract interface and does define a specific job ticket, job ticket file format or job ticket syntax .   An implementation of the JTAPI produces and/or consumes one or more standard or vendor specific job tickets formats.

This specification is intended for software developers, designers and architects that need to read and/or write job tickets.

The purpose of this specification is to define an open standard, the Job Ticket Application Programming, for open printing on Linux/Unix/Posix/Windows/Macintosh/Embedded platforms.   A JTAPI implementation produces and consumes job tickets.   The JTAPI is job ticket syntax neutral.   The JTAPI isolates an application from the syntax of a job ticket to hind details and the structural complexity of specific job ticket along with interoperability between different job ticket file formats.   The JTAPI abstract model is programming language neutral.

2. Background

The International Cooperation for the Integration of Process in Prepress, Press and Postpress (CIP4) is a joint initiative of vendors for the graphical arts industry [cip4].   CIP4 has published a Job Definition Format (JDF) specification.   JDF is a comprehensive XML-based file format proposed industry standard for end-to-end job ticket specifications combined with a message description standard and message interchange protocol to cover all aspects of the commercial printing workflows.

JDF / 1.0 was published April of 2001.   JDF / 1.1 was published in August 2002 [jdf].   JDF / 1.2 is due to be published the end of 2003. Yearly updates are foreseen as the needs of the printing industry evolve.

The Printer Working Group (PWG) is a joint initiative of printer vendors and print system providers to develop printing protocol standards for use on the Internet and within enterprises on their intra nets [pwg]. The PWG has published the Internet Printing Protocol (IPP) in September 2000 [rfc2910, rfc2911]

The PWG is in the process of publishing the PWG Semantic Model which summarizes the printing semantics common to a number of printing protocols, centered around IPP semantics [pwg-sm].   The PWG Semantic Model includes an XML Schema definition.   Therefore, an XML Job Ticket using the semantics of the PWG Semantic Model is possible.

3. Terminology and Acronyms <all>

3.1 Conformance Terminology < All >

 In this document, the uppercase terms "MUST", "MUST NOT", "SHOULD", "SHOULD NOT", and "MAY" are intended to be interpreted as described in [RFC2119]

In this document, each conformance statement uses one of the terms:

Table 1   Conformance Statement Terms

Term	Meaning
MUST	Implementation support is required for conformance to this specification.
SHOULD	Implementation support is strongly recommended for conformance to this specification unless impractical (for example, memory limitations).
MAY	Implementation support is optional for conformance to this specification.

In this document, the term "support" is defined as:

Table 2   Conformance Support Terms

Term	Meaning
"support an operation"	An implementation MUST accept a syntactically correct instance of the operation (includes all required parameters) and MUST return one of the defined results for the invoked operation.
"support an object"	An implementation MUST accept a syntactically correct instance of the object (includes all required attributes), MUST locally instantiate the object and MUST return one of the defined results for the invoked operation.
"support an attribute"	An implementation MUST accept a syntactically correct instance of the attribute (includes a valid value) and MUST locally instantiate the attribute. Further, an implementation MUST accept at least one value (other than the empty value NOT_SET) defined for the given attribute. [[Ira will create sentence]]

[[Editor Note: Are all required attribute required to be support for closed set?]]

[[Editor Note: We need to go through all object, attributes to determine which REQUIRED,

RECOMMENDED, OPTIONAL]]

Element	Object operation or attribute.

3.2 Other Terminology <all>

Table 3   Miscellaneous Terms

Term	Meaning
Job Ticket	A set of one or more job processing activities (e.g. stapling, binding, number of copies, insert sheet), contained within a file or stream, serialized into some file format (for example, the XML instance textual encoding of a CIP4 JDF Job Ticket).
Job	A set of one or more processing activities, contained within a "Job Ticket", described by "Job Description" attributes, and processed according to "Job Processing" attributes.
Document	A single document to be processed, contained within a "Job", described by "Document Description" attributes, and processed according to "Document Processing" attributes.

[[Editor Note: Need a better definition for document]]

Document Processing	
Page	A single logical page in a source document. Multiple source pages may be included in a single "Impression" on a "Side" of a "Sheet".
Sheet	A single physical piece of media.
Side	A single side (front or back) of "Sheet" of media.
Impression	A single image marked (by some means) on a "Side" of a "Sheet".

3.3 Acronyms < All >

Table 4   Acronyms

Acronyms	Meaning	Source
CIP4	International Cooperation for the Integration of Processes in Prepress, Press and Postpress	http://www.cip4.org/

Acronyms	*Meaning*	*Source*
JDF	**J**ob **D**efinition **F**ormat	Version 1.1, August 2002. See documentation tab at http://www.cip4.org/
PWG	**P**rinter **W**orking **G**roup	http://www.pwg.org/
FSG	Free Standards Group	
FSG/OP	Free Standards Group – Open Printing	http://www.openprinting.org/
JTAPI	**J**ob **T**icket **A**pplication **P**rogramming **I**nterface	

4. High Level Model

The JTAPI is object oriented where the objects represent well-known printing terminology and functionality.

4.1 Object Conformance

@ is alpha

gray area means not in 1.0 release

white are means in 1.0 release

Table 5　Object Conformance

Object	Conformance – 1.0 Release *(Must, Should, May)*			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
Binding	May	May	May	**Must**
ContactInfo	May	May	May	**Must**
Document	**Must**	**Must**	**Must**	**Must**
Folding	May	May	May	**Must**
ForcePage	May	May	May	**Must**
HoleMaking	May	May	May	**Must**
InsertSheet	May	May	May	**Must**
Job	**Must**	**Must**	**Must**	**Must**
JobDocument Page	**Must**	**Must**	**Must**	**Must**
JobTicketInfo	**Must**	**Must**	**Must**	**Must**
Media	**Must**	**Must**	**Must**	**Must**
PageOverrides	May	May	May	**Must**
SeparatorSheet	May	May	May	**Must**
Stitching	May	May	May	**Must**
Subscription	May	May	May	**Must**
Trimming	May	May	May	**Must**

4.2 Attribute Conformance

Not-Set is required for all attribute implemented.　"{" indicates value the must be supported

Table 6　Attribute Conformance

Object	Conformance – 1.0 Release *(Must, May)*			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
Binding	May	May	May	**Must**

Object	*Conformance – 1.0 Release* (Must, May)			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
binding-reference-edge	May	May	May	**Must** {RIGHT, LEFT}
binding-type	May	May	May	May
ContactInfo	May	May	May	**Must**
contact-info-address	May	May	May	**Must**
contact-info-company	May	May	May	**Must**
contact-info-contact-uri	May	May	May	**Must** <Mail-To Scheme>
contact-info-name	**Must**	**Must**	**Must**	**Must**
contact-info-types	**Must** {SENDER}	**Must** {SENDER}	**Must** {SENDER}	**Must** {SENDER, CUSTOMER, DELIVERY, PICKUP, ACCOUNTIN G }
Document	**Must**	**Must**	**Must**	**Must**
document-binding				
document-compression				
document-copies				
document-destinations				
document-feed-orientation				
document-fit-policy				
document-folding				
document-force-pages				
document-format				
document-jog-offset				
document-hole-making				
document-image-alignment-x				
document-image-alignment-y				

Object	Conformance – 1.0 Release (Must, May)			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
document-image-shift-back-x				
document-image-shift-back-y				
document-image-shift-front-x				
document-image-shift-front-y				
document-include-pages				
document-insert-sheets				
document-margin-bottom				
document-margin-left				
document-margin-top				
document-margin-right				
document-media				
document-natural-language				
document-number-up-x				
document-number-up-y				
document-output-bin-name				
document-output-pages				
document-page-overrides				
document-presentation-direction				
document-print-quality				
document-resolution-x				
document-resolution-y				
document-rotation				
document-scaling-factor-x				
document-scaling-factor-y				
document-sides				
document-stitching				
document-trimming				
@document-uri	**Must**	**Must**	**Must**	**Must**
Folding	May	May	May	**Must**

Object	Conformance – 1.0 Release (Must, May)			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
folding-reference-edge	May	May	May	May
folding-type	May	May	May	**Must** {SADDLE}
Force page	May	May	May	**Must**
HoleMaking	May	May	May	**Must**
hole-making-reference-edge	May	May	May	**Must** {LEFT, RIGHT}
hole-making-count	May	May	May	May
InsertSheet	May	May	May	**Must**
insert-sheet-content	May	May	May	**Must**
insert-sheet-count	**Must**	**Must**	**Must**	**Must**
insert-sheet-media	May	May	May	**Must**
insert-sheet-pages	**Must**	**Must**	**Must**	**Must**
insert-sheet-position	**Must**	**Must**	**Must**	**Must**
Job	**Must**	**Must**	**Must**	**Must**
job-billing-code	May	May	May	**Must**
job-binding	May	May	May	**Must**
job-client-id	May	May	**Must**	**Must**
job-collate	May	May	**Must**	**Must**
@job-comment	May	May	**Must**	**Must**
job-compression	**Must** {NONE)	**Must** {NONE)	**Must** {NONE)	**Must** {NONE)
job-contact-info	May	May	May	**Must**
@job-copies	May	May	**Must**	**Must**
job-create-date-time				
job-create-user-name				
@job-destinations				

Object	*Conformance – 1.0 Release* *(Must, May)*			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
@job-document-format	**Must** (APPLICATION/OCTET-STREAM)	**Must** (APPLICATION/OCTET-STREAM)	**Must** (APPLICATION/OCTET-STREAM)	**Must** (APPLICATION/OCTET-STREAM)
job-document-natural-language				
job-feed-orientation				
job-fit-policy				
job-folding				
job-force-pages				
job-hold				
job-hole-making				
job-id				
job-image-alignment-x				
job-image-alignment-y				
job-image-shift-back-x				
job-image-shift-back-y				
job-image-shift-front-x				
job-image-shift-front-y				
job-include-pages				
job-insert-sheets				
job-job-offset				
job-margin-bottom				
job-margin-left				
job-margin-top				
job-margin-right				
@job-media				
job-message-to-operator				
@job-name				
job-number-up-x				
job-number-up-y				

Object	*Conformance – 1.0 Release* *(Must, May)*			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
job-output-bin-name				
job-output-pages				
job-page-delivery				
job-page-overrides				
job-print-content-optimize				
@job-rotation				
job-presentation-direction				
job-priority				
@job-print-quality				
job-resolution-x				
job-resolution-y				
job-scaling-factor-x				
job-scaling-factor-y				
job-separator-sheets				
@job-sides				
@job-stitching				
job-subscriptions				
job-trimming				
JobDocument Page	**Must**	**Must**	**Must**	**Must**
JobTicketInfo	**Must**	**Must**	**Must**	**Must**
jt-api-charset				
@jt-api-version				
jt-author-name				
jt-charset				
@jt-comment				
jt-id				
jt-mandatory-attributes				
@jt-syntax-version				
@jt-type				
@jt-length-units				

Object	Conformance – 1.0 Release (Must, May)			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
jt-version				
Media	**Must**	**Must**	**Must**	**Must**
PageOverrides	May	May	May	**Must**
po-binding				
po-destinations				
po-fit-policy				
po-folding				
po-hole-making				
po-image-alignment-x				
po-image-alignment-y				
po-image-shift-back-x				
po-image-shift-back-y				
po-image-shift-front-x				
po-image-shift-front-y				
po-margin-bottom				
po-margin-left				
po-margin-top				
po-margin-right				
po-media				
po-number-up-x				
po-number-up-y				
po-output-bin-name				
po-pages				
po-presentation-direction				
po-resolution-x				
po-reolution-y				
po-rotation				
po-scaling-factor-x				
po-scaling-factor-y				
po-sides				

Object	Conformance – 1.0 Release (Must, May)			
	Embedded/Mobile	*Desktop/Home*	*Office/Network*	*Production*
po-stitching				
po-trimming				
SeparatorSheet	May	May	May	**Must**
separator-sheet-media				
separator-sheet-message				
separator-sheet-type				
Stitching	May	May	May	**Must**
stitching-angle				
stitching-count				
stitching-offset				
stitching-positions				
stitching-reference-edge				
@stitching-type				
Subscription	May	May	May	**Must**
subscription-charset				
subscription-comment				
subscription-events				
subscription-job-attributes				
subscription-language				
subscription-send-to-uri				
Trimming	May	May	May	**Must**
trimming-type				

4.3 Diagram

The following two diagrams (Figure 1.0 and Figure 2.0) describe the JTAPI high level model. The diagrams show the objects that are defined in the JTAPI and the relationships between the objects.

JobDocumentPage

JobTicketInfo	1 1	Job	1 0..*	Document

1   1   1   1   1   1   1   1   1

0..*   0..*   0..*   0..* 0..*   0..* 0..*   0..* 0..*

ContactInfo	Subscription	SeparatorSheet	ForcePage	InsertSheet	PageOverrides

1   1

0..1   0..1

Media

Key
   italics abstract class/operation
   1   exactly 1 occurrence
   0..1   0 or 1 occurrence
   0..*   0 or more occurrences
   1..*   1 or more occurrences
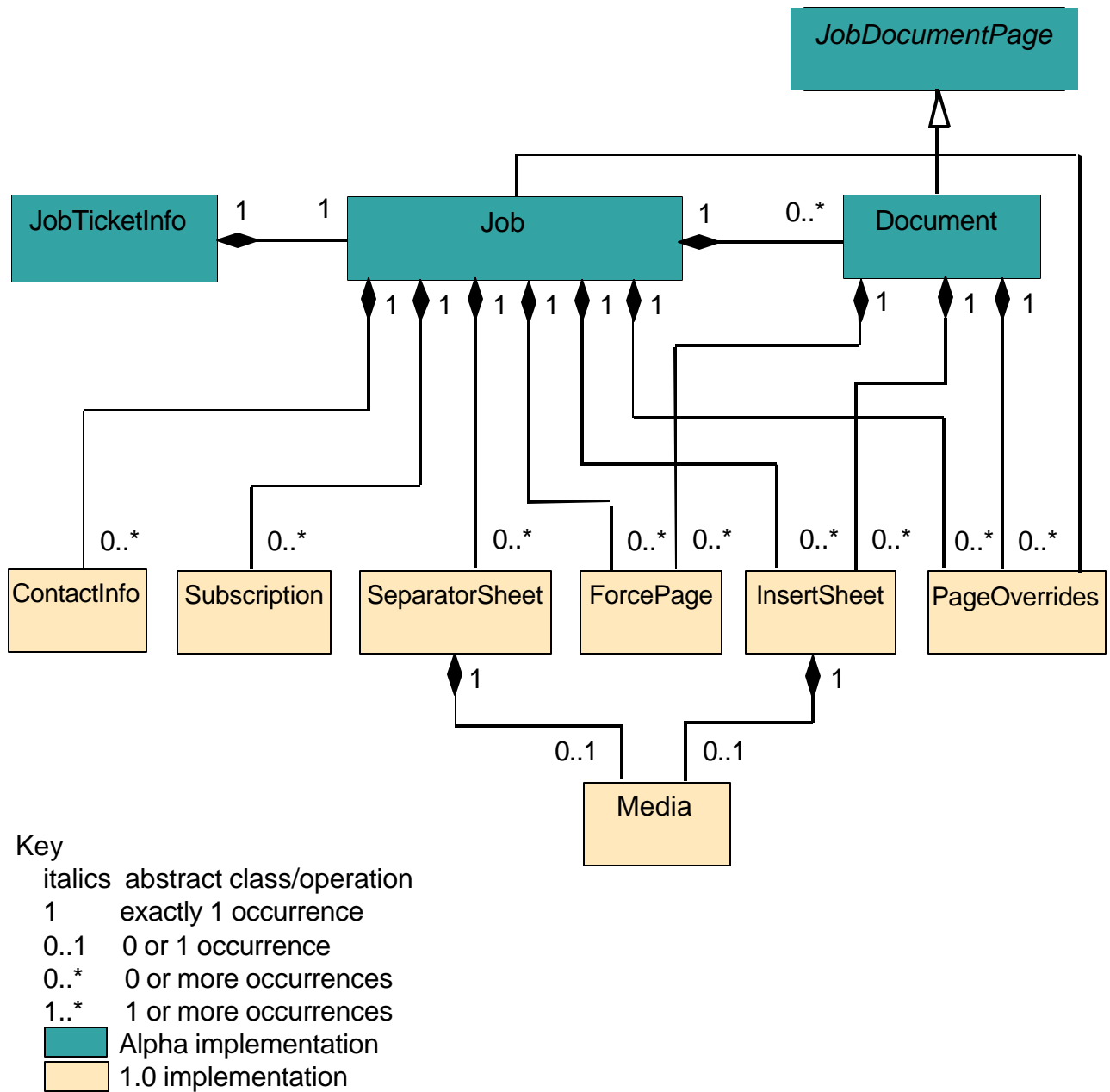   Alpha implementation
   1.0 implementation

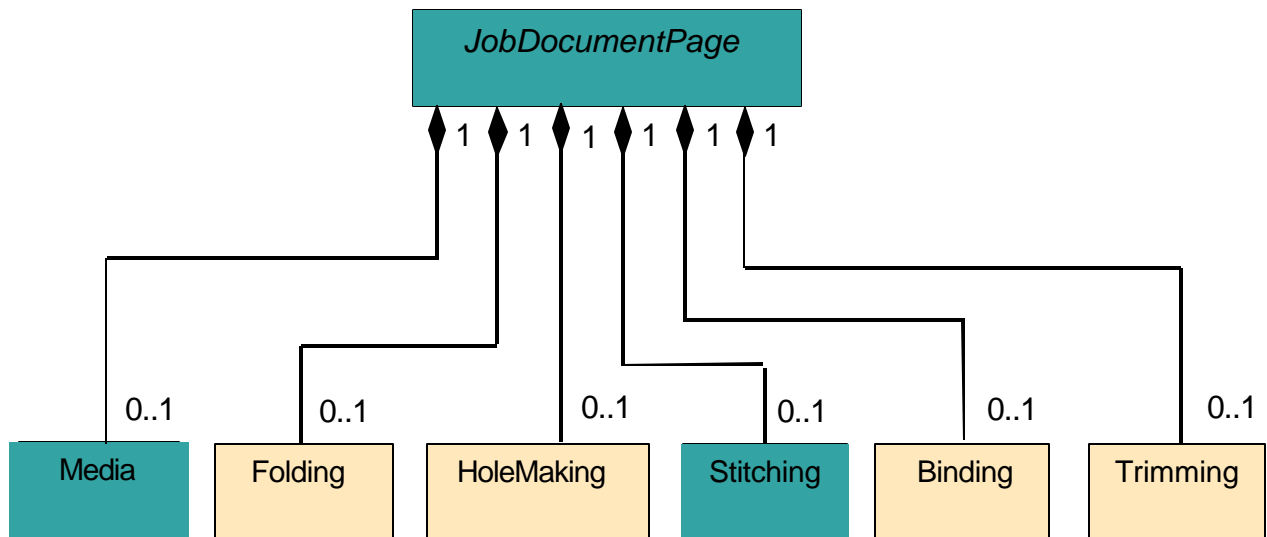**Figure 1.0   JTAPI High Level Model – Part 1**

Figure 2.0   JTAPI High Level Model – Part 2

A job ticket information object (JobTicketInfo) contains one job object (Job) where the job contains zero or more document objects (Document). The JobDocumentPage object is abstract and contains functionality that is common to jobs, documents, and specific pages (PageOverrides) in a job or document. Each of the other objects in the diagrams represent functionality that can be specified for the Job, Document, and PageOverrides objects . For example, the Media object represents the media that the job, document, or specific pages in the job or document is to be imaged/printed on. The section following the diagrams contain more detailed descriptions of each of the objects in the JTAPI model.

4.4 Object Descriptions

The "@" symbol after object indicates that the object is part of the Alpha release.

4.4.1 Binding

A Binding object specifies how a job, document, or range of pages in a job or document are to be bound. A Binding object contains attributes that specify the type of binding to perform (such as, tape or soft cover), and the edge of the sheet to bind.

4.4.2 ContactInfo

A ContactInfo object contains information about a person who is to be contacted regarding the job. A ContactInfo object contains attributes that specify the name, address, company, URIs, and role of the person who is to be contacted. The role of the person identifies why the person is interested in the job. Some typical roles are Administrator, Customer, Delivery, and Approver.

4.4.3 Document[@]

Each Document object in a job references one or more files to be processed. A Document object contains attributes that describe the document and how it is to be processed.

Note: For the Alpha implementation, only one file per Document object is supported.

4.4.4 Folding

A Folding object contains information that specifies how a job, document, or range of pages in a job or document is to be folded. A Folding object contains attributes that specify the type of folding (such as, z-fold and saddle fold) and the reference edge from which to perform the folding operation.

4.4.5 ForcePage

A ForcePage object is used to specify that a single page, identified by an input page number, is imaged on a specific side (front or back) and/or specific cell of the sheet. Forcing a page is typically performed when the first page of each chapter is to be imaged on the front side of a sheet, also known as "chapter starts". A ForcePage object can also be used to only image on the back side of a back cover. ForcePage is only valid when two-sided printing is specified.

ForcePage will force a page to be imaged on the specified side even if the page would normally fall on the other side. For example, if the second page would normally be imaged on the back side of the sheet and it is to be forced to the front side, then the back side of the current sheet is left blank and the second page is imaged on the next sheet.

4.4.6 HoleMaking

A HoleMaking object specifies how a job, document, or range of pages in a job or document is to be punched or drilled. A HoleMaking object contains attributes that specify the number of holes to punch and the edge of the sheet to punch.

4.4.7 InsertSheet

An InsertSheet object specifies information that describes an insert sheet that is to be inserted in the job or document. An insert sheet will not be imaged/printed with content from the document data stream.

An InsertSheet object contains attributes that specify where the insert sheet is to be placed in the job or a document (before or after specific page numbers), the media that is to be used for the insert sheet, the number of insert sheets to insert, and other insert sheet information.

4.4.8 Job[@]

A Job object specifies a description of a job and how it is to be processed. A Job object contains attributes that specify job-name (description) and number-of-copies (processing).

4.4.9 JobDocumentPage[@]

JobDocumentPage is an abstract object that contains attributes that can be specified for the Job, Document, or PageOverrides objects. For example, one media can be specified for the entire job, which can be overridden by another media for a specific document in the job, which can be overridden by another media for specific pages in the job or document.

4.4.10 JobTicketInfo[@]

A JobTicketInfo object specifies job ticket information, such as a comment describing the job ticket, the version of the JTAPI, the type or syntax (JDF, PWG, etc.) of job ticket, and other job ticket information. A JobTicketInfo object does not contain job processing information.

4.4.11 Media[@]

A Media object specifies a media that is to be used when printing the job, document, or a range of pages in the job or document. A Media object contains attributes that specify a name that describes the media dimensions (for example, na_letter_8.5x11in), the color of the media, the actual media dimensions, and other media information.

4.4.12 PageOverrides

A PageOverrides object specifies a single page number or a range of consecutive page numbers, and the attributes that override the corresponding attributes that are specified in the Job or Document object that contains the PageOverrides object.

4.4.13 SeparatorSheet

A SeparatorSheet object specifies information that describes separator sheets. A separator sheet will not be imaged/printed with content from the document data stream.

A SeparatorSheet object contains attributes that specify where the separator sheets are to be placed (before or after the job or document, between copies, etc.), the media that is to be used for the separator sheet, and a message that is to be imaged/printed on the separator sheet.

4.4.14 Stitching @

A Stitching object specifies how a job, document, or range of pages in a job or document are to be stapled/stitched. A Stitching object contains attributes that specify the number of stitches, the type of stitch (for example, corner, edge, or saddle), the edge of the sheet to stitch, and other stitching information.

4.4.15 Subscription

A Subscription object specifies subscription for notification of events that are to be sent to a specific destination. A Subscription object contains attributes that specify the events to be sent, the character set, the language, the comment text to be included in the notification, delivery method (for example, email), and other subscription information.

4.4.16 Trimming

A Trimming object specifies how a job, document, or range of pages in a job or document are to be trimmed. A Trimming object contains an attribute that specifies the type of trimming to perform (for example, default trimming, face, gutter, or tab) and other trimming information.

5. C Language Implementation Framework < who >

5.1 Header Files Relationships < who >

5.2 Header File Naming Convention < who >

5.3 List of Header Files < who >

5.4 Header Files

5.4.1 jtapi_defines.h

```
/*_____ jtapi_defines.h _____*/
/*         1         2         3         4         5         6       */
/*3456789012345678901234567890123456789012345678901234567890123456678*/
/*******************************|*************************************/
/*                                                                  */
/*          Copyright (c) 2003 Free Standards Group        */
/*                                                                  */
/* Permission is hereby granted, free of charge, to any person      */
/* obtaining a copy of this documentation files, to deal in the     */
/* documentation without restriction, including without limitation  */
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/*******************************|*************************************/


/*******************************|*************************************/
/*                                                                  */
/*          Job Ticket Application Programming Interface      */
```

```
/*                        Attribute Definitions                    */
/*                                                                 */
/*******************************|*********************************/


/*******************************|*********************************/
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/*******************************|*********************************/


/*******************************|*********************************/
/*                                                                 */
/* Revision Log                                                    */
/* Date     Version  Who                                           */
/* 09.10.03 1.00.00  All Contributors                              */
/* ------ Original Code                                            */
/*                                                                 */
/*******************************|*********************************/


#if !defined __JTAPI_DEFINES_H__


/*------------------------- Includes  -------------------------*/
/*******************************|*********************************/


/*------------------------- Data Types -------------------------*/
/*******************************|*********************************/


/*----------------------- Generic Macros -----------------------*/
/*******************************|*********************************/
```

```
/*------------------------ Definitions --------------------------*/
/*******************************|********************************/
      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <Binding> Object Attribute                          */
#define BINDING_REFERENCE_EDGE      "binding-reference-edge"   /*RE */
#define BINDING_TYPE                "binding-type"             /*BT */


      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <ContactInfo> Object Attribute                      */
#define CONTACT_INFO_ADDRESS        "contact-info-address"
#define CONTACT_INFO_COMPANY        "contact-info-company"
#define CONTACT_INFO_CONTACT)URI    "contact-info-contact-uri"
#define CONTACT_INFO_NAME           "contact-info-name"
#define CONTACT_INFO_TYPES          "contact-info-types"


      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <Document> Object Attribute                         */
#define DOCUMENT_URI                "document-uri"


      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <Folding> Object Attribute                          */
#define FOLDING_REFERENCE_EDGE      "folding-reference-edge"
#define FOLDING_TYPE                "folding-type"


      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <ForcePage> Object Attribute                        */
/* None                                                        */


      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <HoleMaking> Object Attribute                       */
#define HOLE_MAKING_REFERENCE_EDGE  "hole-making-reference-edge"
#define HOLE_MAKING_COUNT           "hole-making-count"


      /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
      /*** <InsertSheet> Object Attribute                      */
```

```
#define INSERT_SHEET_CONTENT        "insert-sheet-content"
#define INSERT_SHEET_COUNT          "insert-sheet-count"
#define INSERT_SHEET_MEDIA          "insert-sheet-media"
#define INSERT_SHEET_PAGES          "insert-sheet-page"
#define INTERT_SHEET_POSITION       "insert-sheet-position"


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <Job> Object Attribute                                 */
#define JOB_BILLING_CODE            "job-billing-code"
#define JOB_BINDING                 "job-binding"
#define JOB_CLIENT_ID               "job-client-id"
#define JOB_COLLATE                 "job-collage"
#define JOB_COMMENT                 "job-comment"
#define JOB_COMPRESSION             "job-compression"
#define JOB_CONTACT_INFO"           "job-contact-info"
#define JOB_COPIES                  "job-copies"
#define JOB_CREATE_USER_NAME        "job-create-user-name"
#define JOB_DESTINATIONS            "job-destinations"
#define JOB_DOCUMENT_FORMAT         "job-document-format"
#define JOB_DOCUMENT_NATURAL_LANGUAGE "job-document-natural-language"
#define JOB_FEED_ORIENTATION        "job-feed-orientation"
#define JOB_FIT_POLICY              "job-fit-policy"
#define JOB_FOLDING                 "job-folding"
#define JOB_FORCE_PAGE              "job-force-page"
#define JOB_HOLD                    "job-hold"
#define JOB_HOLD_MAKING             "job-hole-making"
#define JOB_IMAGE_ALIGNMENT_X       "job-image-alignment-x"
#define JOB_IMAGE_ALIGNMENT_Y       "job-image-alignment-y"
#define JOB_IMAGE_SHIFT_BACK_X      "job-image-shift-back-x"
#define JOB_IMAGE_SHIFT_BACK_Y      "job-image-shift-back-y"
#define JOB_IMAGE_SHIFT_FRONT_X     "job-image-shift-front-x"
#define JOB_IMAGE_SHIFT_FRONT_Y     "job-image-shift-front-y"
#define JOB_INCLUDE_PAGES           "job-include-pages"
#define JOB_INSERT_SHEETS           "job-insert-sheets"
#define JOB_JOB_OFFSET              "job-job-offset"
#define JOB_MARGIN_BOTTOM           "job-margin-bottom"
```

```
#define JOB_MARGIN_LEFT              "job-margin-left"
#define JOB_MARGIN_TOP               "job-margin-top"
#define JOB_MARGIN_RIGHT             "job-margin-right"
#define JOB_MEDIA                    "job-media"
#define JOB_MESSAGE_TO_OPERATOR      "job-message-to-operator"
#define JOB_NAME                     "job-name"
#define JOB_NUMBER_UP_X              "job-number-up-x"
#define JOB_NUMBER_UP_Y              "job-number-up-y"
#define JOB_OUTPUT_BIN_NAME          "job-output-bin-name"
#define JOB_OUTPUT_PAGES             "job-output-pages"
#define JOB_PAGE_DELIVERY            "job-page-delivery"
#define JOB_ROTATION                 "job-rotation"
#define JOB_PRESENTATION_DIRECTION   "job-presentation-direction"
#define JOB_PRIORITY                 "job-priority"
#define JOB_PRINT_QUALITY            "job-print-quality"
#define JOB_RESOLUTION_X             "job-resolution-x"
#define JOB_RESOLUTION_Y             "job-resolution-y"
#define JOB_SCALING_FACTOR_X         "job-scaling-factor-x"
#define JOB_SCALING_FACTOR_Y         "job-scaling-factor-y"
#define JOB_SEPARATOR_SHEETS         "job-separator-sheets"
#define JOB_SIDES                    "job-sides"
#define JOB_STITCHING                "job-stitching"
#define JOB_SUBSCRITPIONS            "job-subscriptions"
#define JOB_TRIMMING                 "job-trimming"


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <JobDocumentPage> Object Attribute                     */
/* None                                                         */


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <JobTicketInfo> Object Attribute                       */
#define JT_API_CHARSET               "jt-api-charset"
#define JT_API_VERSION               "jt-api-version"
#define JT_CHARSET                   "jt-charset"
#define JT_COMMENT                   "jt-comment"
#define JT_ID                        "jt-id"
```

```
#define JT_MANDATORY_ATTRIBUTES      "jt-mandatory-attributes"
#define JT_SYNTAX_VERSION            "jt-syntax-version"
#define JT_TYPE                      "jt-type"
#define JT_LENGTH_UNITS              "jt-length-units"
#define JT-VERSION                   "jt-version"


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <Media> Object Attribute                               */
/* None                                                         */


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <PageOverrides> Object Attribute                       */
/* None                                                         */


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <SeparatorSheet> Object Attribute                      */
#define SEPARATOR_SHEET_MEDIA        "separator-sheet-media"
#define SEPARATOR_SHEET_MESSAGE      "separator-sheet-message"
#define SEPARATOR_SHEET_TYPE         "separator-sheet-type"


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <Stitching> Object Attribute                           */
#define STITCHING_ANGLE              "stitching-angle"
#define STITCHING_COUNT              "stitching-count"
#define STITCHING_REFERENCE_EDGE     "stitching-reference-edge"
#define STITCHING_TYPE               "stitching-type"


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <Subscription> Object Attribute                        */
#define SUBSCRIPTION_CHARSET         "subscription-charset"
#define SUBSCRIPTION_COMMENT         "subscription-comment"
#define SUBSCRIPTION_EVENTS          "subscription-events"
#define SUBSCRIPTION_JOB_ATTRIBUTES  "subscription-job-attributes"
#define SUBSCRIPTION_LANGUAGE        "subscription-language"
#define SUBSCRIPTION_SEND_TO_URI     "subscription-send-to-uri"
```

```
    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** <Trimming> Object Attribute                          */
#define  TRIMMING_TYPE              "trimming-type"


/*------------------ Data Structure Declarations ----------------*/
/*******************************|********************************/


    /* %%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
    /*** xxx Object                                           */



/*-------------------- Global Declarations ---------------------*/
/*******************************|********************************/


/*-------------------- Function Declarations --------------------*/
/*******************************|********************************/


#define __JTAPI_DEFINES_H__


#endif


/*_____ jtapi_defines.h _____*/


/*34567890123456789012345678901234567890123456789012345678901234567890*/
/*       1         2         3         4         5         6          */
/*******************************|********************************/
/*%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%|%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
/*** End of File *** End of File *** End of File *** End of File ****/
/*%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%|%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%*/
```

6. Java Implementation Framework

To be determined.

7. Conformance

[[Note: Should there be statement of the client/applications conformance using the API ?]]

A conforming library implementation of the Job Ticket API v1.0:

(1) MUST support the abstract object model defined in Section 3 of this specification;

(2) MUST publish one or more sets of standard header files verbatim from Section 4 or Section 5 of this specification;

(3) MAY publish one or more sets of vendor extension header files for each supported language binding defined in this specification;

(4) MUST support every required object and attribute (with at least one supported value) defined in this specification;

(5) MAY support any optional object or attribute (with at least one supported value) defined in this specification;

(6) SHOULD support read/write access to one or more industry standard job ticket formats (defined outside this specification);

(7) MAY support read/write access to one or more vendor-specific job ticket formats (defined outside this specification).

(8) MUST identify supported job ticket formats in any claim of conformance to this specification.

8. Internationalization

Each library implementation of the Job Ticket API MUST accept a charset tag [RFC2978] to specify the character set and encoding for all text strings. Each library implementation of the Job Ticket API MUST default to the UTF-8 [RFC2279] transform of [ISO10646] for text strings.

ISSUE: The Job Ticket API does NOT support the transfer of a language tag [RFC3066] to specify the natural language of text strings, although all XML-based job ticket formats support a language tag. Therefore the Job Ticket API only partially conforms to the IETF Policy on Character Sets and Languages [RFC2277].

9. Security

The Job Ticket API does NOT support the transfer of any user security credentials. Each implementation of the Job Ticket API is a library that may be statically or dynamically linked with an application program. The application program itself may be authenticated and authorized by the native host operating system (by means outside the scope of this specification) for read and/or write access to job tickets stored on local or network file systems. A conforming implementation MUST not store any sensitive information (password, private keys, etc). The JTAPI does not define or support encryption of a job ticket.

10. Normative References

[ISO639]   multi-part International Standard, presently consisting of [ISO639-1] and [ISO639-2].

[ISO639-1] Codes for the Representation of Names of Languages -- Part 1: Alpha-2 Code, ISO/IEC 639-1, 2000.

[ISO639-2] Codes for the Representation of Names of Languages -- Part 2: Alpha-3 Code, ISO/IEC 639-2, 1998.

[ISO3166] multi-part International Standard, presently consisting of [ISO3166-1] and [ISO3166-2].

[ISO3166-1] Codes for the Representation of Names of Countries and their Subdivisions, Part 1: Country Codes, ISO/IEC 3166-1, 1997.

[ISO3166-2] Codes for the Representation of Names of Countries and their Subdivisions, Part 2: Country Subdivision Codes, ISO/IEC 3166-2, 1998.

[ISO10646] multi-part International Standard, presently consisting of [ISO10646-1] and [ISO10646-2].

[ISO10646-1] Information Technology - Universal Multiple-Octet Code Character Set (UCS) - Part 1: Architecture and Basic Multilingual Plane, ISO/IEC 10646-1, September 2000.

[ISO10646-2] Information Technology - Universal Multiple-Octet Code Character Set (UCS) - Part 2: Supplemental Planes, ISO/IEC 10646-2, January 2001.

[RFC2119] Bradner. Key words for use in RFCs to Indicate Requirement Levels, RFC 2119, March 1997.

[RFC2396] Berners-Lee, Fielding, Masinter. URI Generic Syntax, RFC 2396, August 1998.

[RFC2910] Herriot, R., Butler, S., Moore, P., Turner, R., "Internet Printing Protocol/1.1: Encoding and Transport", RFC 2910, September 2000.

[RFC2911] R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, " Internet Printing Protocol/1.10: Model and Semantics", RFC 2911, September 2000.

[RFC2978] Freed, Postel. IANA Charset Registration Procedures, RFC 2978, October 2000.

[RFC3066] Alvestrand. Tags for the Identification of Languages, RFC 3066, January 2001.

11. Informative References

[cip4] The International Cooperation for the Integration of Processes in Prepress, Press and Postpress (CIP4) located at http://www.cip4.org/

[jdf] The Job Definition Format (JDF), version 1.1, August 2002. Sett the Document tab at: http://www.cip4.org

[pwg] The Printer Working Group located at http://www.pwg.org/

[pwg-sm] Zehler, P., Hastings, T., and Albright, S., Printer Working Group (PWG): Semantic Model, March 26, 2003, work in progress at ftp://ftp.pwg.org/pub/Semantic-Model/wd-sm010-20030326.pdf

[IANA-CHAR] IANA Registry of Character Sets ftp://ftp.iana.org/assignments/charset-reg/...

[IANA-MIME] IANA Registry of MIME Media Types ftp://ftp.iana.org/assignments/media-types/...

[RFC2277] Alvestrand. IETF Policy on Character Sets and Languages, RFC 2277, January 1998.

[RFC2279] Yergeau. UTF-8, a Transformation Format of ISO 10646, RFC 2279, January 1998.

APPENDIX: X Changes < Editor >

Date	*Affected Version*	*Author*	*Change*
08.12.03	0.30	G. Petrie	Added comments from T. Hastings in the introduction and reference sections.
08.12.03	0.30	G. Petrie	Added comments from I. McDonald in the reference section. Added comments and changes based on discussion from 08.12.03 weekly job-ticket meeting. Many section affected.
08.15.03	0.40	G. Petrie	Added comments and changes based on discussion from 08.12.03 weekly job-ticket meeting. Many section affected.
08.19.03	0.50	G. Petrie	Updated minor change to headings.

Date	Affected Version	Author	Change
08.26.03	0.50 Claudia	G. Petrie	Added Sections 4.0, 4.1 and 4.2 from Claudia's version of 0.50, dated 08.19.03
08.28.03	0.55	G. Petrie	Edits and changes based on 08.28.03 weekly job-ticket meeting for Section 4.0, 4.1, 4.2. The addition table/figure labels and a table/figure table-of-content
10.15.03	0.77	G. Petrie	Updates to attribute compliance table based on 10.14.03 meeting. The addition of attribute #define/string-names to C language header section.

End of Document