



Job Ticket Application Programming Interface (JTAPI)

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Authors (alphabetical)

<i>Authors</i>	<i>Company</i>	<i>Email</i>
Claudia Alimpich	International Business Machines	alimpich@us.ibm.com
Tom Hastings	Xerox	hastings@cp10.es.xerox.com
Till Kampeter	Mandrake	till.kampeter@gmx.net
Ira McDonald	High North	imcdonald@sharplabs.com
Glen Petrie (Editor)	EPSON	glen.petrie@eitc.epson.com

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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[[Editor: Is this the correct copyright notice for an FSG standards?]]

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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 not 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 ticket 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 hide 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”, “REQUIRED”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “OPTIONAL” are intended to be interpreted as described in [RFC2119]

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

<i>Term</i>	<i>Meaning</i>
MUST	Implementation support is REQUIRED for conformance to this specification.
SHOULD	Implementation support is RECOMMENDED for conformance to this specification.
MAY	Implementation support is OPTIONAL for conformance to this specification.

In this document, each operation, object, or attribute is defined as:

<i>Term</i>	<i>Meaning</i>
REQUIRED	Each implementation MUST support object operations or attributes.
RECOMMENDED	Each implementation SHOULD support object operations for interoperability
OPTIONAL	Each implementation MAY support object operations or attributes .

[[Editor note: Should we include SHOULD and RECOMMENDED]]

In this document, the term “support” is defined as:

<i>Term</i>	<i>Meaning</i>
“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.

<i>Term</i>	<i>Meaning</i>
“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.
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3.2 Other Terminology <all>

<i>Term</i>	<i>Meaning</i>
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”.

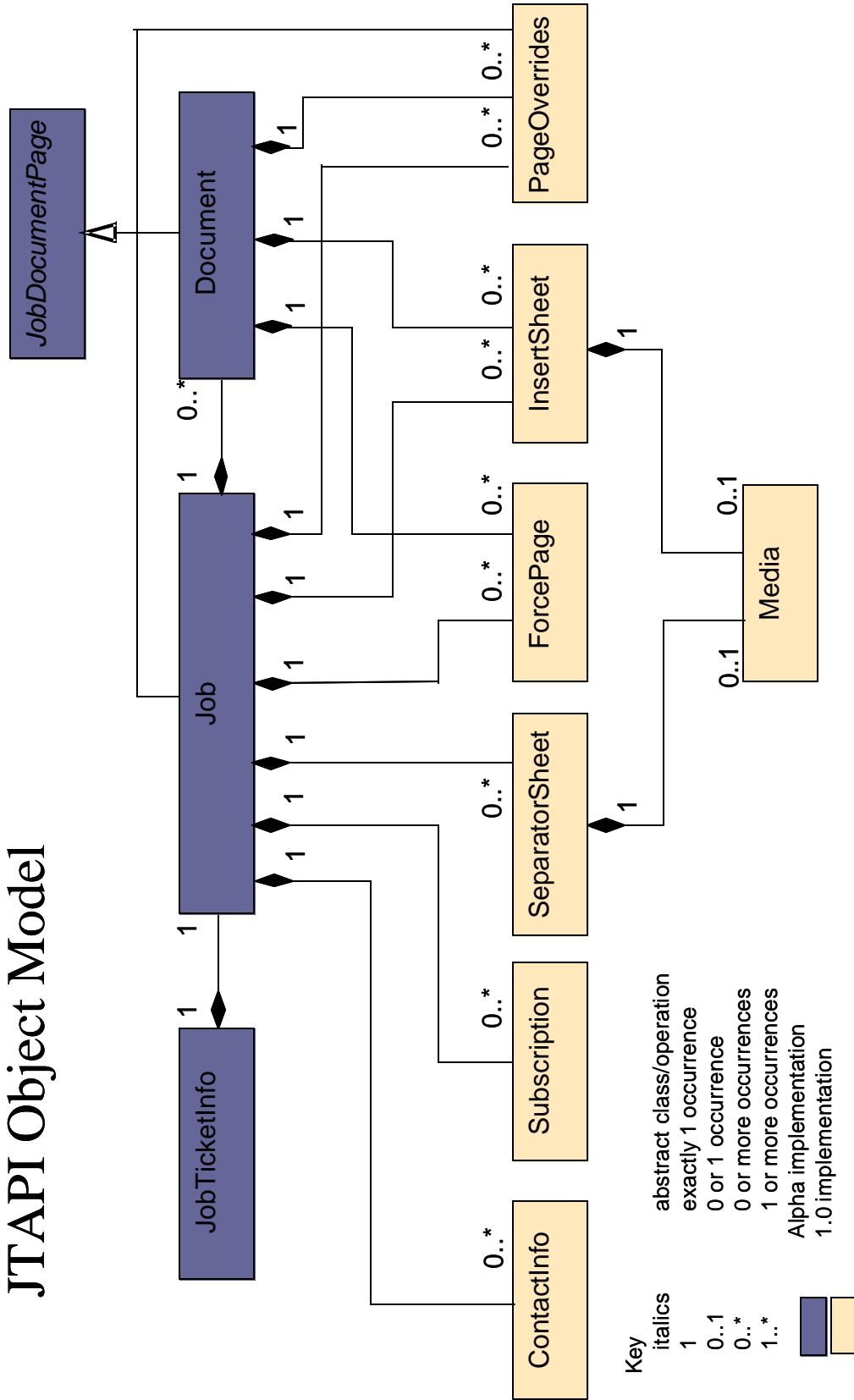
3.3 Acronyms < All >

<i>Acronyms</i>	<i>Meaning</i>	<i>Source</i>
CIP4	International Cooperation for the Integration of Processes in Prepress, Press and Postpress	http://www.cip4.org/
JDF	Job Definition Format	Version 1.1, August 2002. See documentation tab at http://www.cip4.org/
PWG	Printer Working Group	http://www.pwg.org/
FSG	Free Standards Group	
FSG/OP	Free Standards Group – Open Printing	http://www.openprinting.org/
JTAPI	Job Ticket Application Programming Interface	

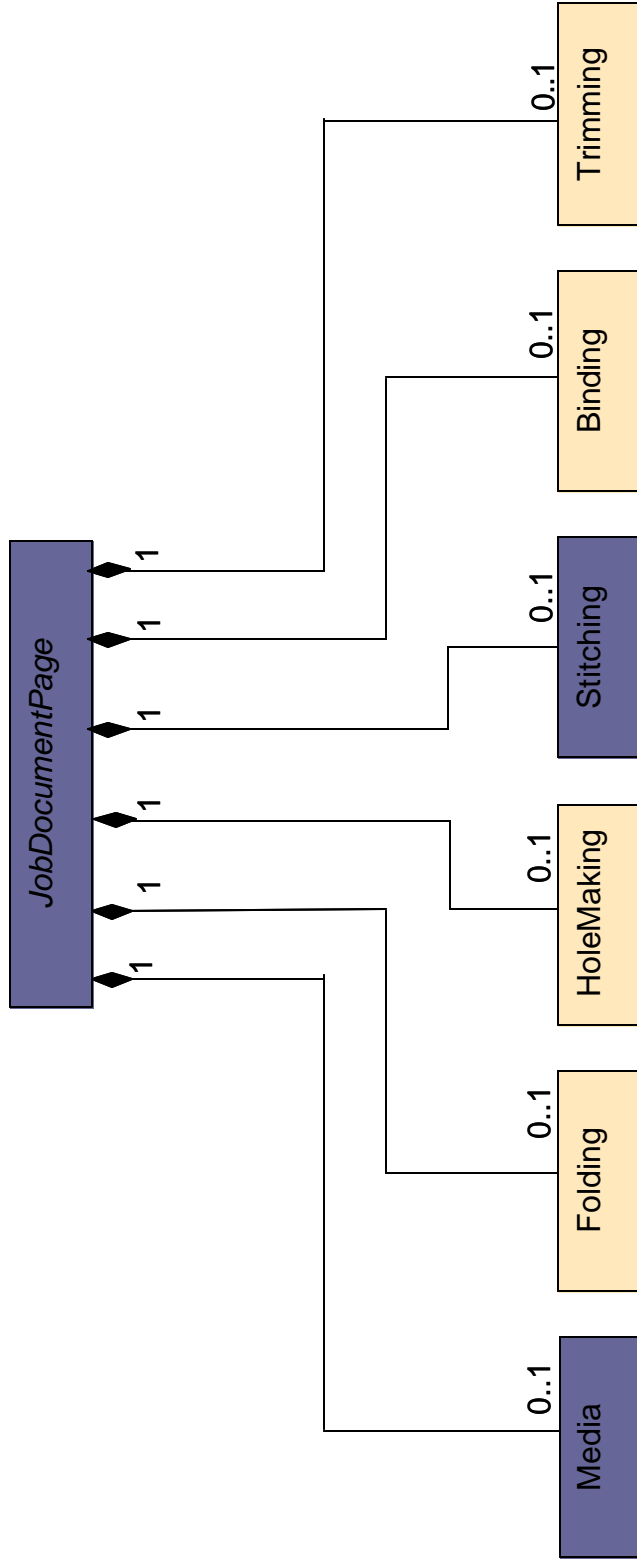
4. High Level Model < Claudia >

4.1 Diagram < Claudia >

JTAPI Object Model



JTAPI Object Model (cont)



Complete set of UML diagrams:

ftp://ftp.pwg.org/pub/pwg/fsg/jobticket/JTAPI_Diagrams/

4.2 Object Descriptions < Claudia >

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 >

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. Set 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/...](ftp://ftp.iana.org/assignments/charset-reg/)

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

<i>Date</i>	<i>Affected Version</i>	<i>Author</i>	<i>Change</i>
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.

End of Document