



PrintTalk is a consortium of e-commerce and print management vendors seeking to provide an open XML standard to communicate spec, request for quote, quote, order and other business information used in the Graphic Arts industry.

PrintTalk Technical Briefing Paper

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***For more information, visit our website
www.printtalk.org***

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1. Overview

1.1 The organization and membership

PrintTalk is a consortium consisting of companies providing Business Management and e-Commerce Solutions (BMS & eCS) for the Graphic Arts defining a common and open communications interface between their products. Membership is open to any company (Printers, software/hardware vendors, and e-commerce companies) with an interest in this technology. There are two membership levels, *supporter* and *regular*. The difference between the two is that regular members are committed to implementing a PrintTalk compliant system within 6 months and supporters are not. Dues are \$2,000 per year.

The organization has 5 officers that serve as a management team for the organization and an executive committee of nine that make the decisions for the group. The management team consists of an elected president and vice president and an appointed marketing and technical chair. All PrintTalk members are eligible and encouraged to take part in both the technical and marketing committees. Full operational and membership details can be found at www.PrintTalk.org.

1.1.1 Management team

President – Steve Hallberg – Parsec Inc.
Vice President – Jim Mekis – Impresse Inc.
Marketing Chair – Jess Walker – Noosh, Inc.
Technical Chair – Norman Furlong – Impresse, Inc.
Secretary – Kip Smythe - NPES

1.1.2 Executive Board

Collabria, Inc.
Graphic Arts IT
httprint
Impresse Corp.
Noosh, Inc.
Parsec Corporation
printChannel.com
Printers Software, Inc.
Streamline Solutions

1.1.3 Current membership

Avanti Computer Systems, Cirqit.com, Collabria, Inc., Graphic Arts IT, GraphiTech Computer Systems, httprint, Impresse, MediaFlex.com, MicroInk, Noosh, Inc., Pace Systems, Parsec Corporation, Press-tige Software, Printable.com, printChannel.com, Printers Software, Inc., Profit Control Systems, Inc., Streamline Solutions and WAM!NET.

1.2 Why PrintTalk is important

A key issue that printers are dealing with today is integrating e-commerce originated specification data with their estimation software. Without e-commerce, printers receive this information from their customers via phone, fax and email, but the advent of the eprocurement systems changes this. E-commerce removes the limitation for printers to just consume data with their systems but to actively exchange data between the printer's site and the print buyer in real time. The challenge so far has been the establishment of a

commonly adopted data exchange that printers can depend on. Until the advent of PrintTalk, printers had two choices - to enter data by hand creating error prone, time consuming work for their estimators or buy into a proprietary system that locks them into a single vendor for their e-commerce and business management needs. The e-commerce industry is too young to force printers to make a choice like this. Moreover, printers will be faced with customers that have made their own choice of procurement system and will need to be able to consume data from these vendors in a non-proprietary way.

To meet this objective PrintTalk members recognized that no single company could successfully drive this effort no matter their installed base, resources or effort. They understand that printers will be faced with supporting more than one e-commerce vendor and in some cases many. The obvious answer to this issue is a common interface that all e-commerce vendors could agree to use and that as many business management vendors and printers could depend on. The largest competitors in the e-commerce in Graphic Arts market decided essentially the same thing at the same time and so were a number of different management system vendors. In essence, PrintTalk was an idea whose time had come.

PrintTalk will be freely available from the www.PrintTalk.org web site and will facilitate communication to any print management system that is capable of consuming it.

1.3 PrintTalk Objectives

PrintTalk developed because the business management system vendors and the e-commerce vendors saw the advantage in working together in a concerted effort toward a common goal – a freely available, open communication standard that we can all use to exchange commercial and specification data between print buyers and their suppliers

1.3.1 The mission statement of the group is:

To create, implement and gain universal endorsement for an open XML standard, to communicate directly between e-commerce applications and print management systems.

The key to this statement is the communication of the data from within the firewall of the buyer, directly to within the firewall of the printer surpassing any unnecessary and error prone extra delivery steps. For example: when a PrintTalk member company is contracted by a buyer and a printer to collaborate on a print job, they create a direct link to the management system itself, given there is a PrintTalk interface built into the management system.

1.4 PrintTalk Goals and Status

1. The goals of the group are to release the first part of the specification at GRAPH EXPO® and CONVERTING EXPO® 2000 and collect feedback from outside companies and organizations. The technical team has met weekly and is on track to achieve this very important goal. Other portions of the specification will be released through the end of the year.
2. Gain new members from both inside and outside the management system and e-commerce vendor community. PrintTalk members feel it's important to gain support from large print companies in order to get the proper feedback on the group's progress. Interest has been phenomenal and we expect to double in size by the end of GraphExpo.
3. Work closely with large standards organization to gain faster and wider adoption of our work. In particular the CIP4 standards group seems ideally positioned for collaborating with PrintTalk. Two key CIP4 members, Adobe and Heidelberg are fully supportive of PrintTalk and the group intends to keep this relationship moving forward.

4. Have deployments of the standard working within 6 months of the published date of the specification. This is on track, with several vendors demonstrating PrintTalk implementations at GraphExpo.

2. Technical definition

2.1 Introduction

PrintTalk gives printer Business Management Systems (BMS) a single format by which to speak to e-commerce companies. PrintTalk provides a common means of communicating printing specifications and business needs between printers, their customers and their suppliers. Printing needs can change rapidly, as can customer needs. PrintTalk provides both the flexibility and control to easily adapt if a buyer chooses a new e-commerce provider, or to automate the way a printer works with suppliers and subcontractors. While a few printers may choose to build their own interface using PrintTalk, most uses will be the result of a printer requesting PrintTalk capability of their Business Management System supplier. The PrintTalk specification defines a freely available, open communication interface between printers and their customers. The PrintTalk implementation embraces use of the Job Definition Format (JDF) and Commerce eXtensible Markup Language (cXML). The group's work has been recognized as an implementation of the JDF standard, and its work is embedded within the 1.0 release of JDF. The PrintTalk interface specification is distributed free of any license fees or royalties, in order to address the need for end-to-end connectivity in the printing industry.

The following pages describe the technical philosophy used to develop the specification and the first four PrintTalk business objects: *Request for Quote*, *Quote*, *Purchase Order*, and *Confirmation*. Usage examples are furnished. The JDF intent list has been enhanced to provide a richer descriptive capability. While JDF describes the piece to be printed, PrintTalk's business logic is based on cXML, the widely accepted "commerce" XML standard.

2.2 Technical Philosophy

Several principles that formed the basis of the PrintTalk philosophy:

Interoperability - The buyers who use e-commerce sites and printers who use business management systems should be able to transact business transparently, without having to concern themselves with the details of data communications between the two systems. Likewise, the systems that are linked through a PrintTalk communication channel should be able to exchange information in standard and reliable manner.

Ease of Use - The PrintTalk protocol should be easy to understand and implement.

Leverage existing standards - All attempts will be made to leverage existing, accepted standards and incorporate their use into PrintTalk

Support for Arbitrarily Complex Jobs - There should be no restriction on the size or complexity of jobs that communicate using PrintTalk. Conversely, complexity should not be required to describe simple jobs.

Flexibility - The ability to expand PrintTalk in two ways:

1. Enhance specification according to the needs of the membership
2. Incorporate new standards where it makes as PrintTalk enters new vertical markets.

2.3 Business Object List

The following table lists the business objects currently supported by PrintTalk. Each object corresponds to a business transaction used in the commercial print industry. The list will expand as the PrintTalk specification grows to support other transactions and new industries. The first column lists the business transaction name, the second its description and use, the third indicates whether the transaction is sent from the Buyer to the Printer and the fourth indicates whether the transaction is sent from the Printer to the Buyer. In some cases, the transaction will be used bidirectionally.

Business Transaction	Description	B to P	P to B
1. Request for Quote	For custom orders. Not used for reorders, catalog orders or fulfillment orders	•	
2. Quote	Response to RFQ. Obligates Printer as offer of contract.		•
3. Request for Re-quote	A quote that contains a reference to a previous quote, unless any of the original specifications have changed, then it becomes a new RFQ.	•	
4. Re-quote	Refers to original quote. Preserves history.		•
5. Purchase Order	For finished goods orders, PO is initiation point. Obligates Buyer, implies Contract, except in cases in which PO is initiation point	•	
6. Purchase Order Response	A positive or negative response to the Purchase Order		•
7. Change Order Request for Quote	Buyer-originated starting point for a change order.	•	
8. Change Order Quote	Printer-originated starting point for a change order.		•
9. Change Order Acceptance	Contract, unless Quote and Acceptance terms differ.	•	
10. Change Order Confirmation	Optional. Required in cases in which buyer makes a change to Acceptance doc.		•
11. Order Status Request	Optional. Useful in cases in which the printer system does not ship status in real time.	•	•
12. Order Status Update	General message to production status updates and shipments.	•	•
13. Invoice	Includes additional charges and discounts.		•
14. Content Push/Pull	Describes where data is located and how to get it.	•	•
15. Report Request	Request for report, either buyer or printer origin.	•	•
16. Report	Reports can span jobs.	•	•

3. Examples

The following are examples of working code that illustrate the PrintTalk principles.

3.1 PrintTalk Structure

The PrintTalk implementation is built on widely adopted, openly available XML definition. The business objects that describe the commercial exchange of information between the e-commerce services and print management systems use the cXML standard for the envelope. The job specification is described using the new JDF standard. The job specification is encapsulated within the business object and, as the basis for the exchange of data, will be used to populate the print manager's estimation software.

3.1.1 PrintTalk Encoded as an XML document

The encoding used for the PrintTalk data exchange is XML, using a DOCTYPE declaration of "PrintTalk," validated with a PrintTalk dtd. The dtd is not yet published, but will be made freely available when it is ready.

All PrintTalk objects contain two parts -- a *Header* and a *Request*, in the style of cXML. The Header is in fact a cXML header, and provides user identification and authentication information. The Request contains the business logic.

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE PrintTalk SYSTEM "PrintTalk.dtd">
<PrintTalk version="1.0"
payloadID="com.sendingcompany.time.globallyuniqueid" timestamp="2000-07-
15T05:00:00-08:00">
  <Header/>
  <Request/>
</PrintTalk>
```

3.1.2 The Header

PrintTalk uses the From/To/Sender header format to identify and authenticate the XML document. The originator of the business transaction is identified in the From section, the recipient in the To section and the agent of the sender, if any, in the Sender section

```
<Header>
  <From>
    <Credential domain="DNS">
      <Identity>APrintBuyer.com</Identity>
    </Credential>
  </From>
  <To>
    <Credential domain="DNS">
      <Identity>AnExcellentPrinter.com</Identity>
    </Credential>
  </To>
  <Sender>
    <Credential domain="DNS">
      <Identity>AnE-commerceCompany.com</Identity>
      <SharedSecret>password</SharedSecret>
    </Credential>
    <UserAgent>Print Buyer v.54.9</UserAgent>
  </Sender>
```

</Header>

3.1.3 The Request

The Request contains a Components section and a section for the Specific requests, each of which references related components by ID. In the case of an RFQ, the Components of the RFQ would be Shipping Address, Shipping Methods and Jobs. The Individual RFQ's would be in the following section, with IDRefs to the Addresses, Shipping Methods and Jobs in the Components Section. See the RFQ for an example. The simplest Quote does not require a Components section because if the RFQ is to be bid on without modification, the RFQ itself may be referred to in its entirety by using the *BuyerID* and *BuyerAuxID* fields. See the Quote example for this usage.

Note that the XML tag labeled "Request" is a cXML construct and has no semantic relationship to a Request for Quote business object. All PrintTalk objects contain the XML element "Request."

Contact, Shipping Method and Date are all borrowed from the cXML spec. Contact includes Address information as a sub-element. Details may be found the in the cXML spec. PrintTalk uses the cXML date format for dates in all PrintTalk objects, i.e. "2000-07-15T05:00:00-08:00"

3.1.4 The Job Specification

Within the Request → xxxComponents section, the part of any PrintTalk Business Object that refer to a Job or "thing that needs to be printed" is located in a section labeled "Jobs". Within the Jobs section are the individual jobs, each of which contains exactly one "Spec". The Spec consists entirely of JDF nodes, as defined by the JDF specification. (See <http://www.job-definition-language.org> for the full specification).

3.1.5 Example JDF node

This JDF example is not intended to accurately reflect the richness of JDF. This is merely a simplified illustration of how JDF is used within PrintTalk. More complete examples of JDF can be found in the JDF specification. This Briefing Paper is based on the information available in the JDF Draft Spiral 3.21. Note that many of JDF's *Intent* definitions that are used to describe the buyer's intent were designed by the PrintTalk consortium and are included in later drafts of the JDF Specification.

```
<JDF ID="Job1SpecJDF1.1" Type="Product">
  <Comment>Cover</Comment>
  <ResourcePool>
    <InkingIntent/>
    <MediaIntent/>
    <SizeIntent/>
    <ProofingIntent/>
    <LaminatingIntent/>
  </ResourcePool>
</JDF>
```

3.2 Request for Quote

The following are items specific to the PrintTalk *Request For Quote* object.

3.2.1 Top-Level RFQ

```
<RequestForQuote currency="USD">
  <BuyerID>RFQ-50</BuyerID>
```

```

<BuyerAuxID>RFQ-50-internal</BuyerAuxID>
<DueDate>2000-08-01T16:00:00-06:00</DueDate>
<Description>Request for perfect bound book</Description>
<Contacts/> <!-- Standard cXML Contact format -->
<RequestForQuoteComponents/>
  <IndividualRequestForQuotes/>
</RequestForQuote>

```

3.2.2 RFQ Components

All of the actual requests are placed in this section.

```

<RequestForQuoteComponents>
  <ShippingMethods/> <!-- Standard cXML Shipping Methods format -->
  <Addresses/> <!-- Standard cXML Address format -->
  <Jobs>
    <Job jobID="Job1">
      <Name>My job</Name>
      <JobType>Book</JobType>
      <Comment/>
      <Description>My 144 page perfect bound book</Description>
      <Spec>
        <JDF/><!-- This is where the JDF nodes go -->
      </Spec>
    </Job>
  </Jobs>
</RequestForQuoteComponents>

```

3.2.3 The Individual RFQ's

All of the actual requests are placed in this section. The DeliveredJob element contains the item that requires a quote. In the DeliveredJob, the quantity and date are included directly as attributes, while the Job, Shipping Address and Shipping Method are included by reference.

```

<IndividualRequestForQuotes>
  <IndividualRequestForQuote>
    <DeliveredJob quantity="7500" date="2000-07-31T05:00:00-08:00"
jobIDREF="Job1" addressIDREF="Address1"
shippingMethodIDREF="ShippingMethod1">
      <AdditionalQuantities>
        <AdditionalUnit>1000</AdditionalUnit>
      </AdditionalQuantities>
    </DeliveredJob>
  </IndividualRequestForQuote>
</IndividualRequestForQuotes>

```

3.3 Quote

The following are items specific to the PrintTalk Quote object.

3.3.1 Top-Level Quote

```

<Quotes>
  <!--BuyerID and BuyerAuxID from RFQ -->

```

```

<BuyerID>RFQ-50</BuyerID>
<BuyerAuxID>RFQ-50-internal </BuyerAuxID>
<SupplierID>Quote-23</SupplierID>
<SupplierAuxID>Quote-23-internal</SupplierAuxID>
<!--ExpirationDate: when a quote expires -->
<ExpirationDate>2000-08-15T00:00:00-08:00</ExpirationDate>
<Description>My 144 page perfect bound book</Description>
<Detail>Longer version of description</Detail>
<SupplierTerms>net30</SupplierTerms>
<Contacts/>
<Quotations/>
</Quotes>

```

3.3.2 Quotations

All of the actual quotations are placed in this section.

```

<Quotations>
  <Quotation>
    <SupplierID>Quote-23</SupplierID>
    <SupplierAuxID>Quote-23-internal</SupplierAuxID>
    <Comment>7500 Job150s delivered to Address100 by date</Comment>
    <IndividualRequestForQuote>
      <BuyerID>RFQ-50</BuyerID>
      <BuyerAuxID>RFQ-50-internal</BuyerAuxID>
    </IndividualRequestForQuote>
    <QuotationPriceSet>
      <PriceSet>
        <Price>25800.00</Price>
        <Tax>2128.50</Tax>
        <PriceAdditionalQuantities AdditionalUnit="3500.00"/>
      </PriceSet>
    </QuotationPriceSet>
  </Quotation>
</Quotations>

```

3.3.3 Quote Components

Optional section. Is used in the case in which a print estimator wishes to bid on items that differ from the RFQ specification in any way. This includes altering the shipping address, shipping method or job specification information. Note similarity with *RequestForQuoteComponents*.

```

<QuoteComponents>
  <ShippingMethods/>
  <Addresses/>
  <Jobs/>
</QuoteComponents>

```

3.4 Purchase Order

The following are items specific to the PrintTalk *Order* object.

3.4.1 Top-Level Purchase Order

```
<PurchaseOrder orderDate="2000-07-26T17:00-08:00" type="new">
  <!--type - left as a reminder that we might need it for reorders-->
  <!--BuyerID and BuyerAuxID from RFQ -->
  <BuyerID>RFQ-50</BuyerID>
  <BuyerAuxID>RFQ-50-internal</BuyerAuxID>
  <PurchaseOrderId>PO100</PurchaseOrderId>
  <Contacts/>
  <Comment/>
  <BuyerTerms/>
  <PurchaseOrderItem/>
  <BillTo/>
  <!--Although a total is implied by Quotation, we include a total to
make sure that there is no confusion over what was quoted.-->
  <Total>
    <Money currency="USD">12.34</Money>
  </Total>
</PurchaseOrder>
```

3.4.2 PO Items

Each Purchase Order line item is placed in this section. Note that the Quotation section refers back to the original Quote.

```
<PurchaseOrderItem/>
  <Quotation>
    <SupplierID>Quote-23</SupplierID>
    <SupplierAuxID>Quote-23-internal</SupplierAuxID>
  </Quotation>
</PurchaseOrderItem>
```

If the quantity changes in the PO, use the *DeliveredJobQuantityOverride* tag instead of creating an entirely new Quotation.

```
<PurchaseOrderItem>
  <!-- quantities override the quantities in the DeliveredJobs
associated with the Quotation -->
  <Quotation>
    <SupplierID>Quote-23</SupplierID>
    <SupplierAuxID>Quote-23-internal</SupplierAuxID>
    <DeliveredJobQuantityOverride quantity="1000"
deliveredJobId="1"/>
  </Quotation>
  <Total>
    <Money currency="USD">15.77</Money>
  </Total>
</PurchaseOrderItem>
```

3.5 Purchase Order Response

The following item is specific to the PrintTalk *Purchase Order Response* object. It's pretty straightforward.

```
<PurchaseOrderResponse purchaseOrderResponseDate="2000-07-26T17:00-08:00"
accepted="true">
  <Contacts/>
  <PurchaseOrder orderDate="2000-08-29T17:00:00-08:00" type="new">
    <BuyerID>RFQ-50</BuyerID>
    <BuyerAuxID>RFQ-50-internal</BuyerAuxID>
    <PurchaseOrderId>PO100</PurchaseOrderId>
  </PurchaseOrder>
  <Comment>Comments from the printer.</Comment>
</PurchaseOrderResponse>
```

4. For more information

These are just a few examples and by no means represent all the features of PrintTalk. Still in its infancy, the PrintTalk consortium is continuing to revise and extend the PrintTalk spec. Please visit the website (<http://www.printtalk.org>) for the latest specification and examples.