

PDF and Acrobat in the Federal Enterprise Architecture

**Adobe Systems
January 15, 2003**





Presentation Goals

- Assess Current State of E-Government Initiatives and Adobe Mission
- Review Current and Future Status of Acrobat and PDF Integration into FEA and E-Government
 - Distinguish Between PDF and Acrobat
 - Uses:
 - Data-oriented
 - Document/ Publishing-oriented
- Acrobat++ Preview and applicability of Acrobat in FEA
- Time-Permitting: Other Adobe Products applicable



Adobe Systems

- \$1.2B revenue, operations in 40 countries
- 20 years of industry-leading products
- We help people *and businesses* communicate better





E-Government Definition and Goals

- Definition: the use of digital technologies to transform government operations in order to improve effectiveness, efficiency, and service delivery
 - Use e-business tools to lessen paperwork
 - Easier, smarter, faster way for citizens to get the services and information they want
 - Use modern, trustworthy technology to become more productive and respond faster and better to the needs of American Citizens
 - Establish Federal Interoperability Standards to facilitate above goals



E-Government Initiatives (24)

- Internal Efficiency & Effectiveness
 - E-Training, Recruitment One-Stop, Integrated HR, e-Clearance, e-Payroll, e-Travel, Integrated Acquisition Environment, e-Records Mgmt.
- Government to Citizen
 - Recreation One Stop, Eligibility Assistance Online, Online Access to Loans, USA Services, EZ Tax Filing
- Government to Business
 - Online Rulemaking Mgmt., Expanding Electronic Tax Products for Businesses, Federal Asset Sales, Int'l Trade Process Streamlining, One-Stop Business Compliance Info
- Government to Government
 - Geospatial Info One Stop, e-Grants, Disaster Assistance, Wireless Public Safety Interop Comm, e-Vital



E-Government Initiatives (24)

- Examples of current Adobe engagement



- Internal Efficiency & Effectiveness
 - E-Training, Recruitment One-Stop, Integrated HR, e-Clearance, e-Payroll, e-Travel, Integrated Acquisition Environment, **e-Records Mgmt. (NARA, US Courts)**
- Government to Citizen
 - Recreation One Stop, Eligibility Assistance Online, Online Access to Loans, USA Services, **EZ Tax Filing (IRS sans politics)**
- Government to Business
 - Online Rulemaking Mgmt., **Expanding Electronic Tax Products for Businesses (IRS)**, Federal Asset Sales, Int'l Trade Process Streamlining, **One-Stop Business Compliance Info (FDA, USDA)**
- Government to Government
 - Geospatial Info One Stop, **e-Grants (NSF)**, Disaster Assistance, Wireless Public Safety Interop Comm, e-Vital



Why Acrobat and PDF?

Not an Exhaustive List



- Reliable Information Distribution Method
 - E-Records
- Strong Integration into business processes (XML and other)
 - Support document process automation
- Familiar Paper Paradigm and Reliable Presentation
 - Transition/ integration of legacy documents into XML workflows
 - Both Online and Offline capability
- Ease of Deployment: Acrobat Client available virtually everywhere



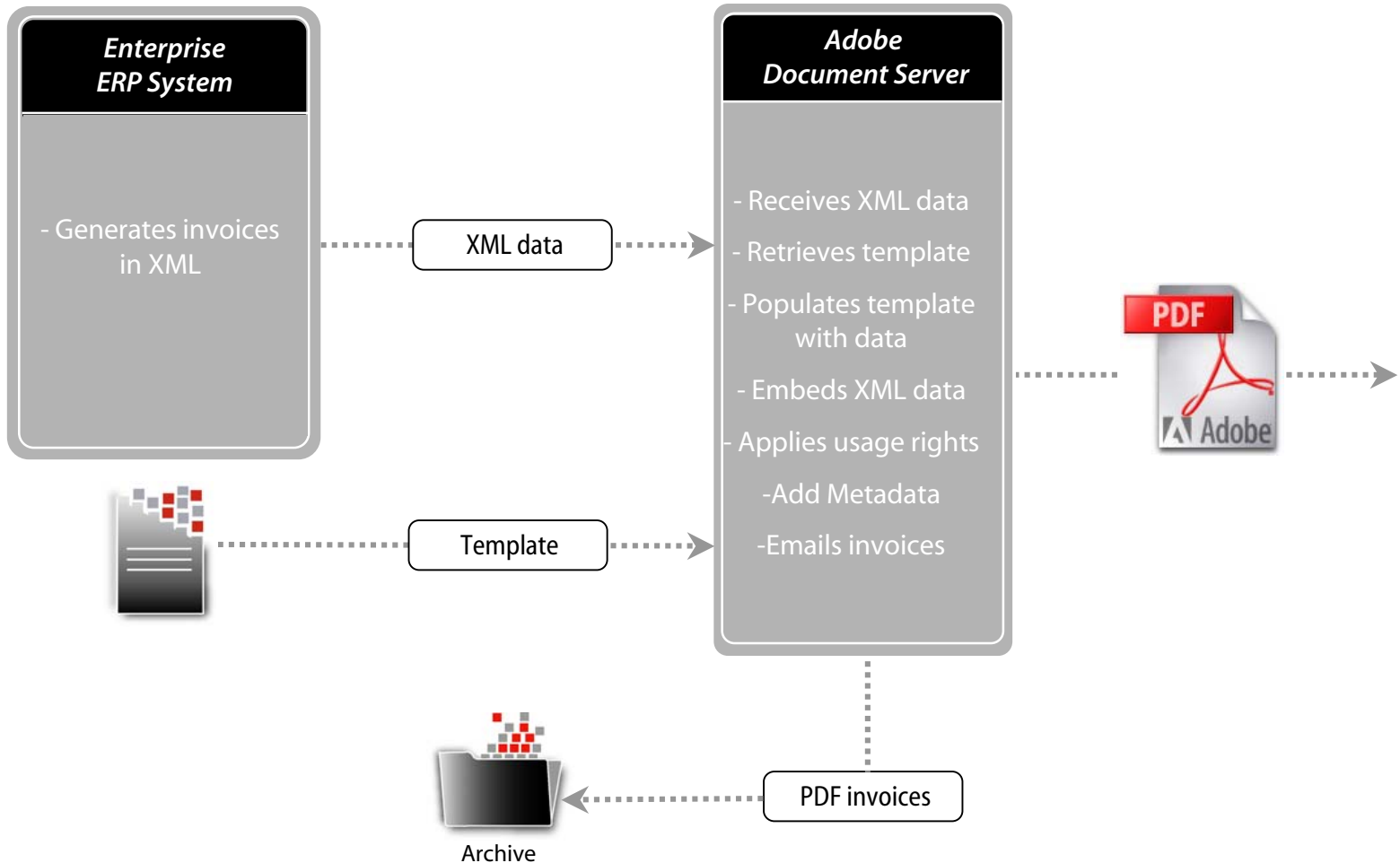
PDF Example Use Cases

- Document/ Bill Presentment
- Offline Form application
- Database/ Web Service-Connected Form Application



Document/Bill Presentment

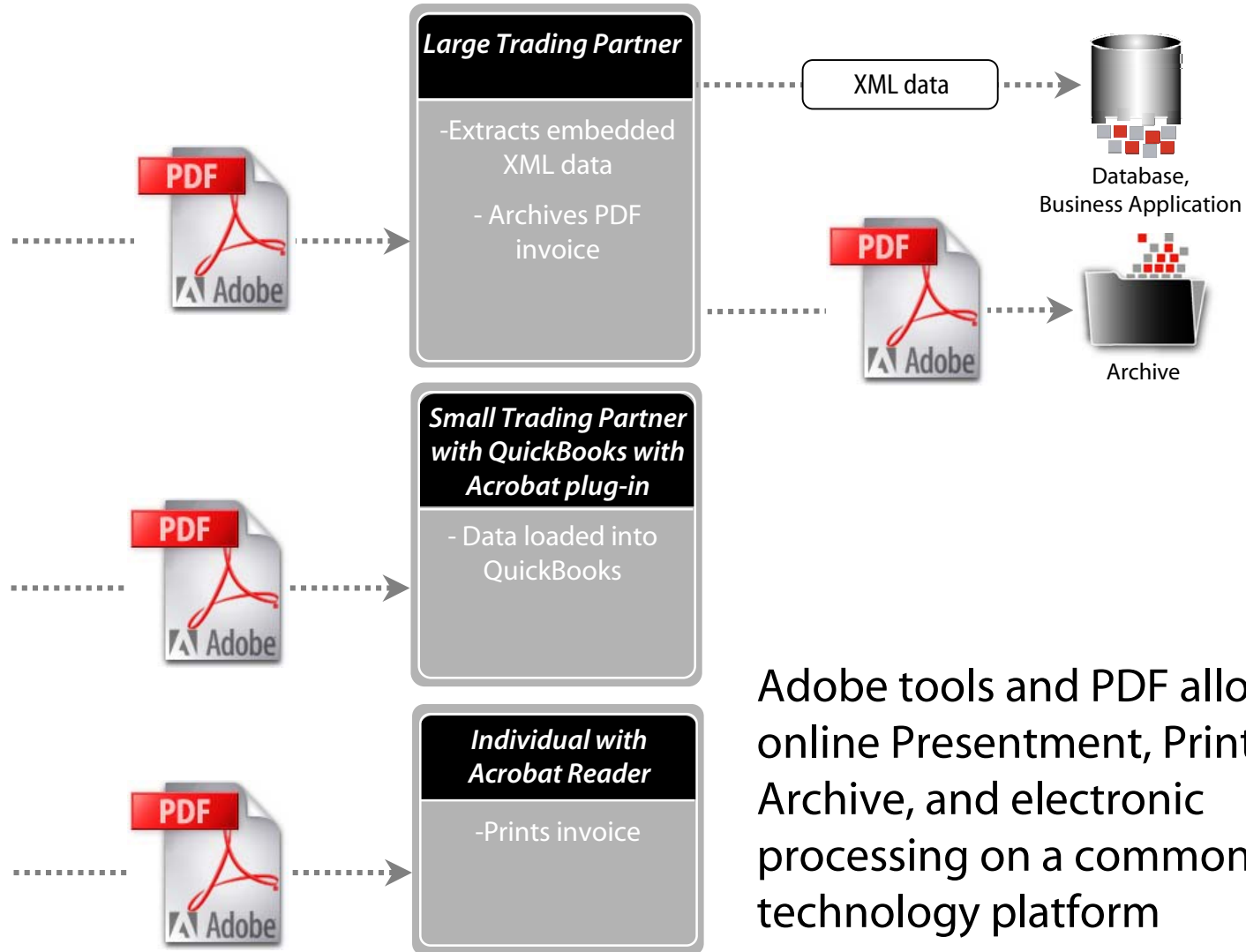
Generation of bills that support automated & manual processes





Document/Bill Presentment

Generation of bills that support automated & manual processes

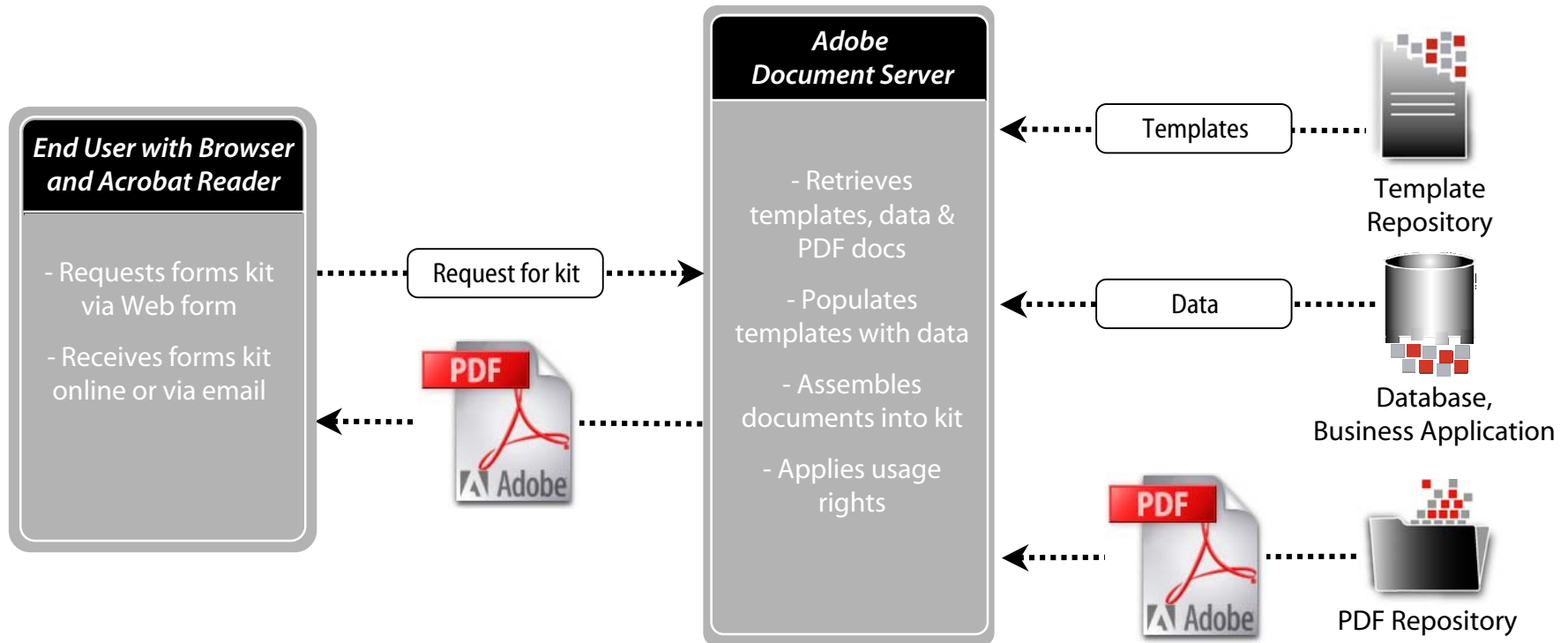


Adobe tools and PDF allow online Presentment, Printing, Archive, and electronic processing on a common technology platform



Form Entry (Compliance/ Applications)

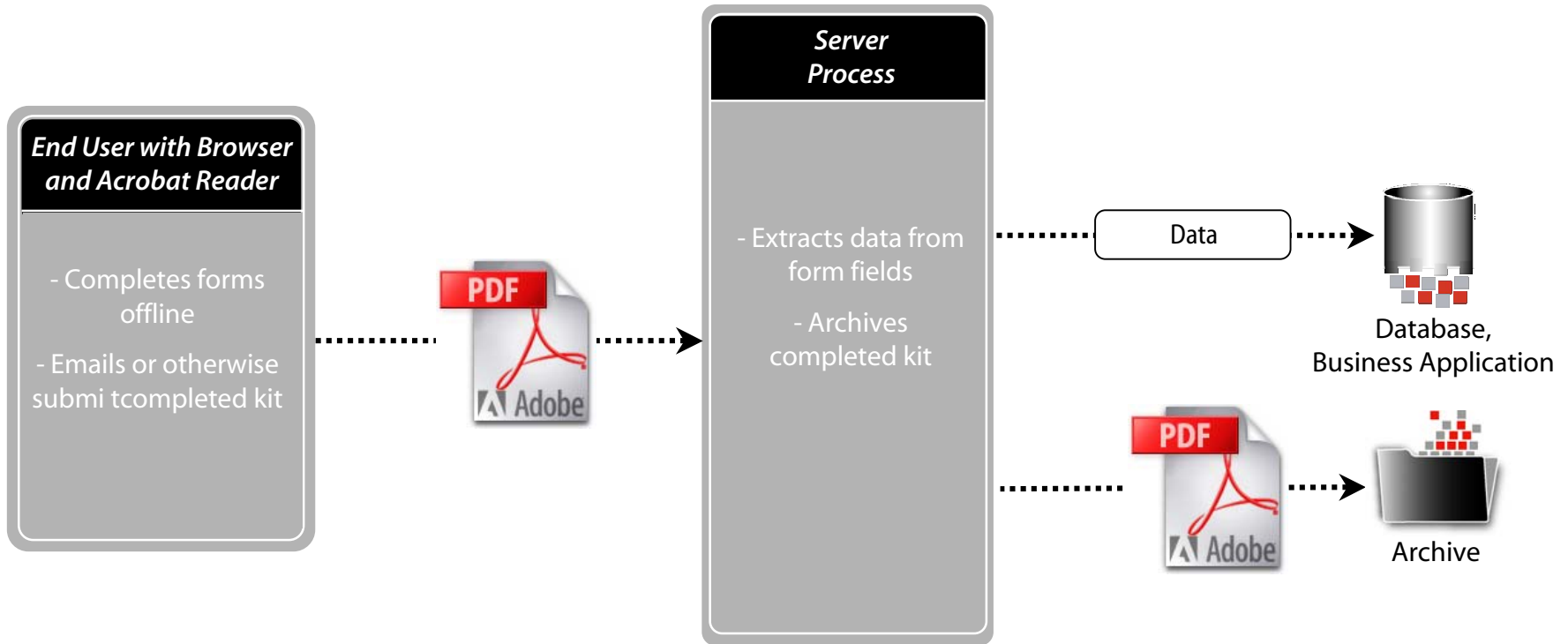
Request for custom-assembled forms kit





Form Entry (Compliance/ Applications)

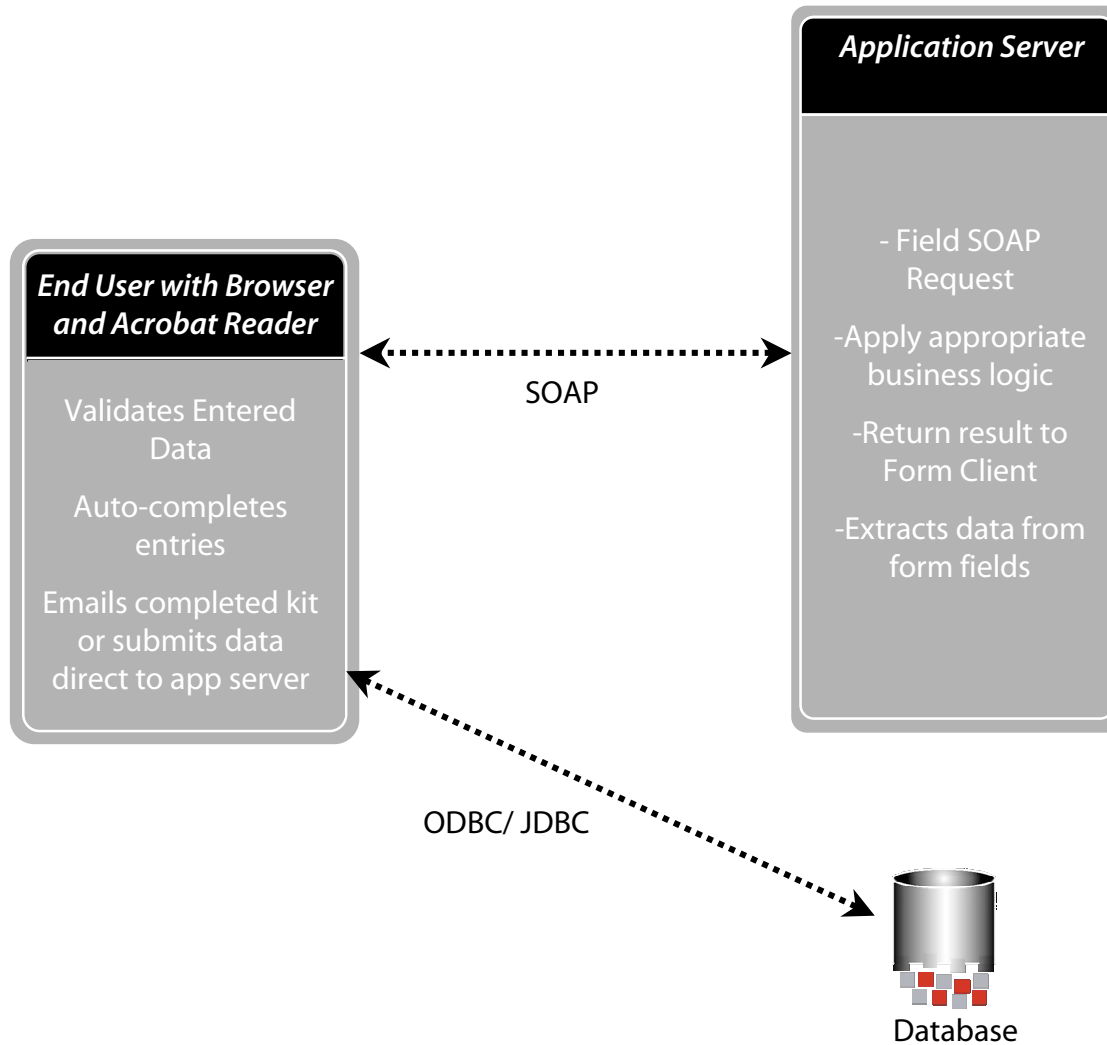
Submission of completed forms kit





Form Entry (online)

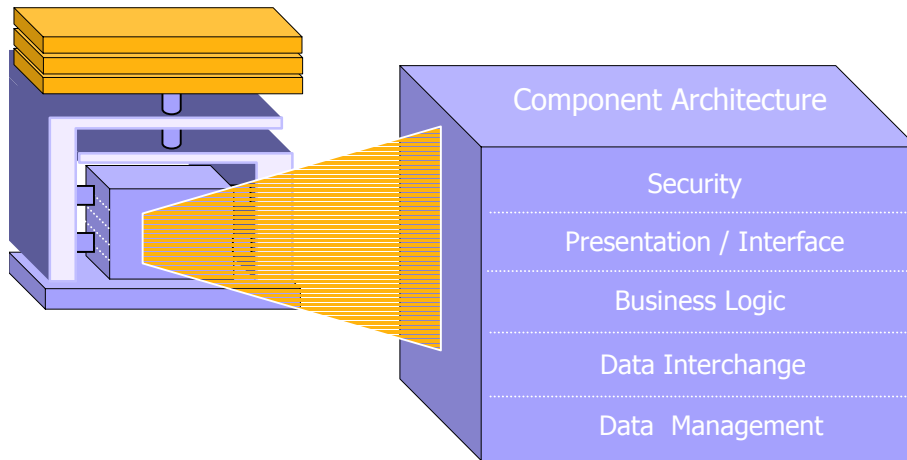
Online query and interaction



Add on-line connectivity to Databases and web-service-based processing to provide rich intelligent presentation front-end



PDF and Acrobat Map to Significant Portions of FEA Component Architecture



Security

- X.509 PDF ACROBAT
- NIST / FIPS 186
- Secure Socket Layers (SSL) ACROBAT

Presentation / Interface

- HTML, SVG ACROBAT
- JSP, ASP, ASP.Net
- DHTML, CSS, XHTML ACROBAT
- XSL-FO, SVG ACROBAT
- PDF PDF ACROBAT
- XFT PDF ACROBAT

Data Management

- XBRL, JOLAP, OLAP ACROBAT
- JDBC, ODBC ACROBAT
- ADO, ADO.Net ACROBAT
- SOAP ACROBAT

Data Interchange

- XML PDF ACROBAT
- ebXML
- RDF, XMP, DC PDF ACROBAT
- WSUI
- XSLT ACROBAT

Business Logic

- Java/J2EE (EJB) ACROBAT
- C, C++, JavaScript PDF ACROBAT
- COM/COM+, C# ACROBAT
- Visual Basic ACROBAT



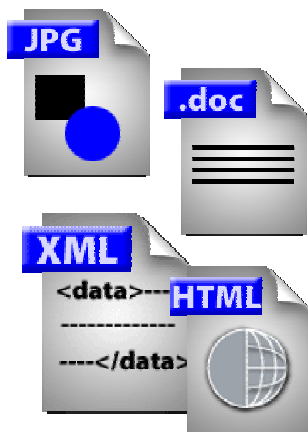
PDF and Acrobat Today

- PDF Adoption
- PDF Standardization
- Acrobat Deployment

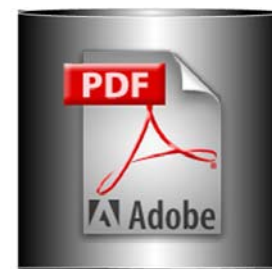


1999: PDF is a Dynamic Content Container

- Content
- Images
- Forms
- Form Data
- Transaction Data
- Metadata
- Rich Media



Packaged into
Adobe PDF



- Reliable, Printable Presentation
- Archivability
- Metadata
- Form Data



Technology Foundation

PDF Adoption



- Critical to U.S. government agencies and regulated industries
 - Standard format for submission and distribution
 - FDA, DOC, FAA, CDC, DOJ, LOC, U. S. Courts, others
 - Number of PDFs on external sites
 - +2 million on .gov
 - Internal Revenue Service – www.irs.gov
 - Half billion PDF forms downloaded to date
 - Public utilities, telecommunications, transportation, environmental, and safety
 - Number of PDFs on external sites
 - Department of Transportation - DOT 24,000
 - Federal Communications Commission – FCC 34,000
 - Food and Drug Administration – FDA 72,000
 - Environmental Protection Agency – EPA 112,000



Technology Foundation

PDF Adoption



- Mandated by governments, international organizations, and standards bodies around the world
 - Australia, Brazil, Italy, Japan, Netherlands, UK
 - Election Commission of India publishes list of 600 million voters on CD-ROM
 - Law requires that the e-version look identical to paper version
 - Must be published in all 18 official languages using the appropriate fonts for each
 - Number of PDFs on external sites
 - European Union - EU 200,000
 - World Health Organization – WHO 32,000
 - United Nations – UN 81,000
 - World Bank 42,000
 - ISO, ANSI, BSI, Standards Australia, Japanese Standards Association, and others worldwide



PDF Progress on Standards Tracks

- **PDF/X PDF for pre-press content Exchange (ISO 15930:2002)**
 - Intended to reduce frequent errors in pre-press content exchange, such as font embedding, wrong color, inconsistent file creation, and more
- **PDF/A - PDF for Archival**
 - New archiving standard effort initiated between NPES and AIIM
 - Specification for digital documents
 - Ensuring preservation of content over an extended period of time and the ability to retrieve and render with predictable and consistent results
 - Process in place to move toward an ISO standard
 - <http://www.aiim.org/standards.asp?ID=25015>
- **PDF/is - Internet Fax**
 - Proposal phase of IEEE Printer Working Group (PWG), Internet Fax (IFX) Committee
 - PDF/is allows the streaming transmission of high quality documents to and from Internet Fax devices and PC's
 - Unlike faxes today, PDF/is will permits faxes with XML metadata, color, high-resolution, compression, and security including encryption and digital signatures



And PDF doesn't come only from Adobe



- Adobe Licensees
 - Partners - ESPS, Cardiff, CDC Solutions, Datalogics, Metavante, Zinio
- Independent Implementations
 - Viewers - XPDF, GhostScript, Ansy
 - Creators - Ghostscript, TIFF2PDF, HTMLDOC
 - RenderX, Apache:FOP, Digital Applications, Apple, Corel
- And there are many more libraries (C, Java, PERL)
- And resources (www.planetpdf.com, www.pdfzone.com)



Acrobat on the Desktop

- **Acrobat**
 - 1,800+ partners offer solution add-ons, plug-ins, consulting, training, and support
 - Over 8.5 million seats sold
 - Adobe's fastest growing product
- **Reader**
 - Half billion licenses to date
 - Windows
 - Macintosh
 - Unix/ Linux
 - Bundled with 60% of all PDAs
 - 675,000+ links to Acrobat Reader download
 - Distributed by top 10 PC manufacturers

Roles of XML and PDF Today

- Publishing Flow Perspective
- Data Perspective





Document Formats in Enterprise Workflows

The right tool for the right job



Why XML?

- Ease of Development
- Widely known and understood technology
- Large set of tools
- Data exchange and integration



Why PDF?

- Reliable presentation
- Portable use on-line & off-line
- Acrobat Reader on virtually every PC desktop & PDA
- Print stream integration (ease of creation)
- Personalized documents, but long-term stable presentation



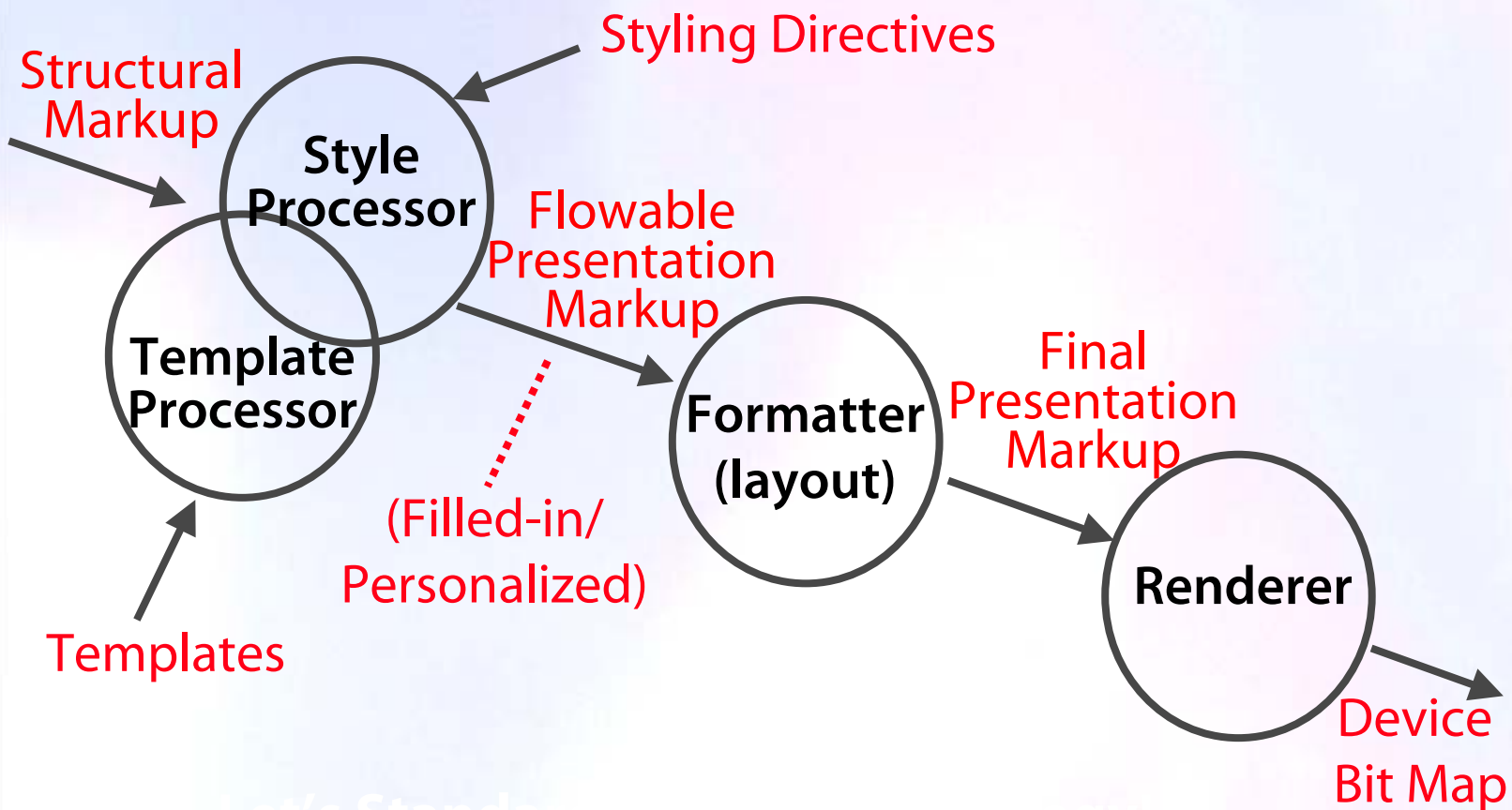
2001: XML within PDF and Acrobat 5

- XML **for** forms data (XFDF, XFD) and template (XFT)
- XML **for** embedded data (original or supplementary material)
- XML **for** metadata (XMP, RDF)
- XML **for** content structure in PDF (Tagged PDF)
 - Structure for reflowable display on desktop PCs, PDAs and other handheld devices, such as eBooks
 - Structure for accessibility
 - Structure for context-sensitive search



Publishing: Abstract Model

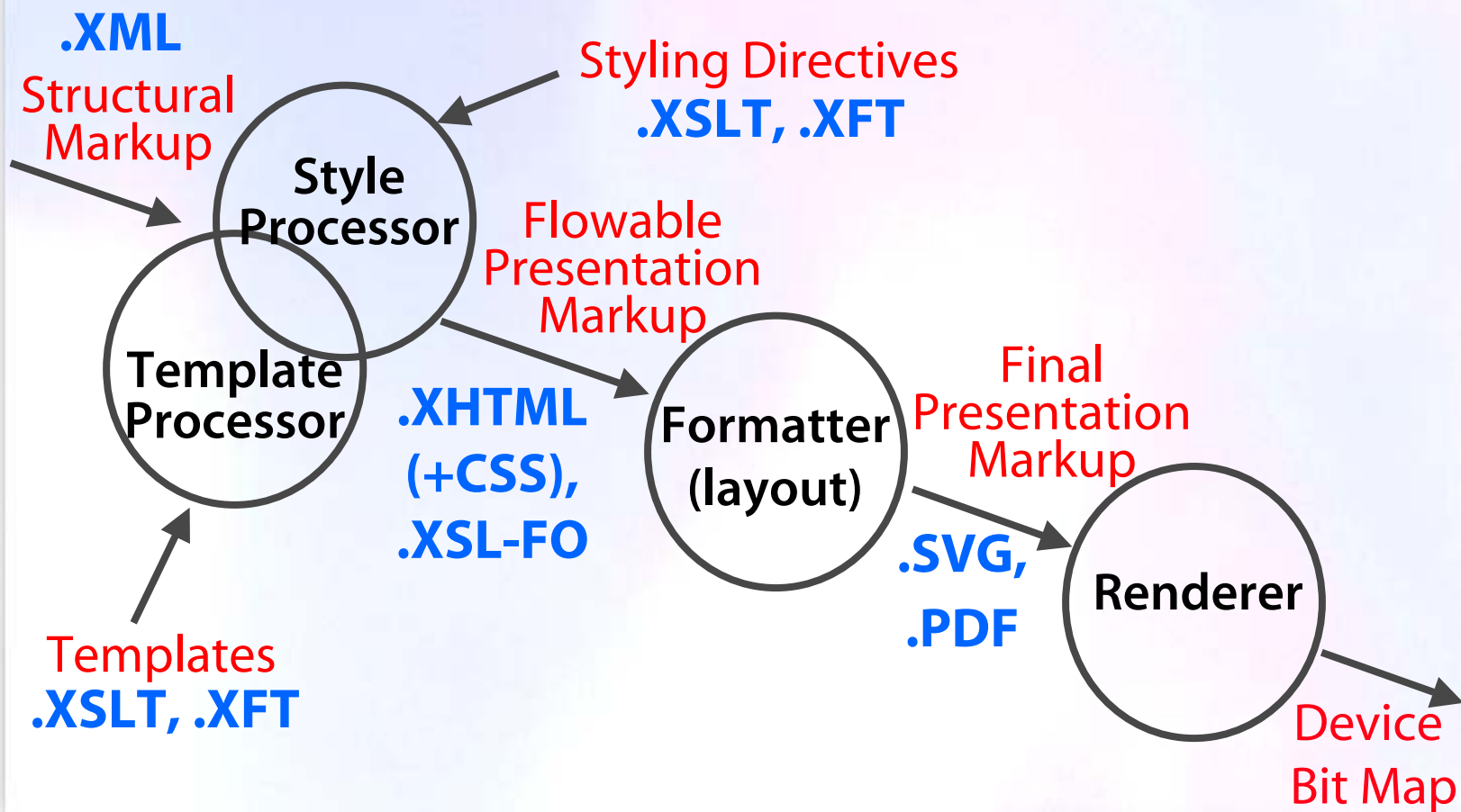
- From Markup to Bit Maps





Publishing: Abstract Model - Standards Mapping

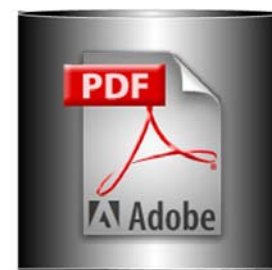
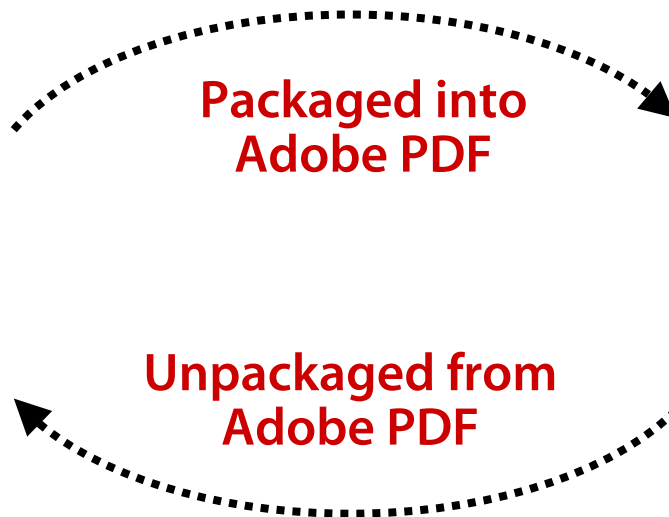
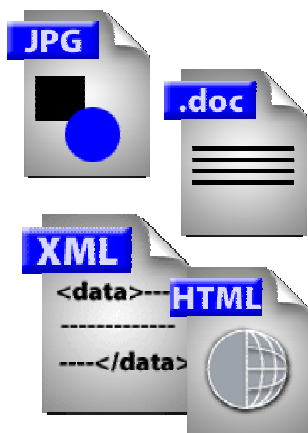
- Examples exists for all red item





2001: PDF is a Dynamic Content Container

- Content
- Images
- Forms
- Form Data
- Transaction Data
- Metadata
- Rich Media



- Reliable, Printable Presentation
- Archivability
- XML Data
- Metadata
- Form Data

PDF/ XML/ Acrobat Directions





The following slides on futures

- Are nondisclosure information
 - Will be discussed at session
 - But are not available for dissemination prior to meeting



Future: Acrobat++ Demonstration

- It's easier to see this in practice than theory



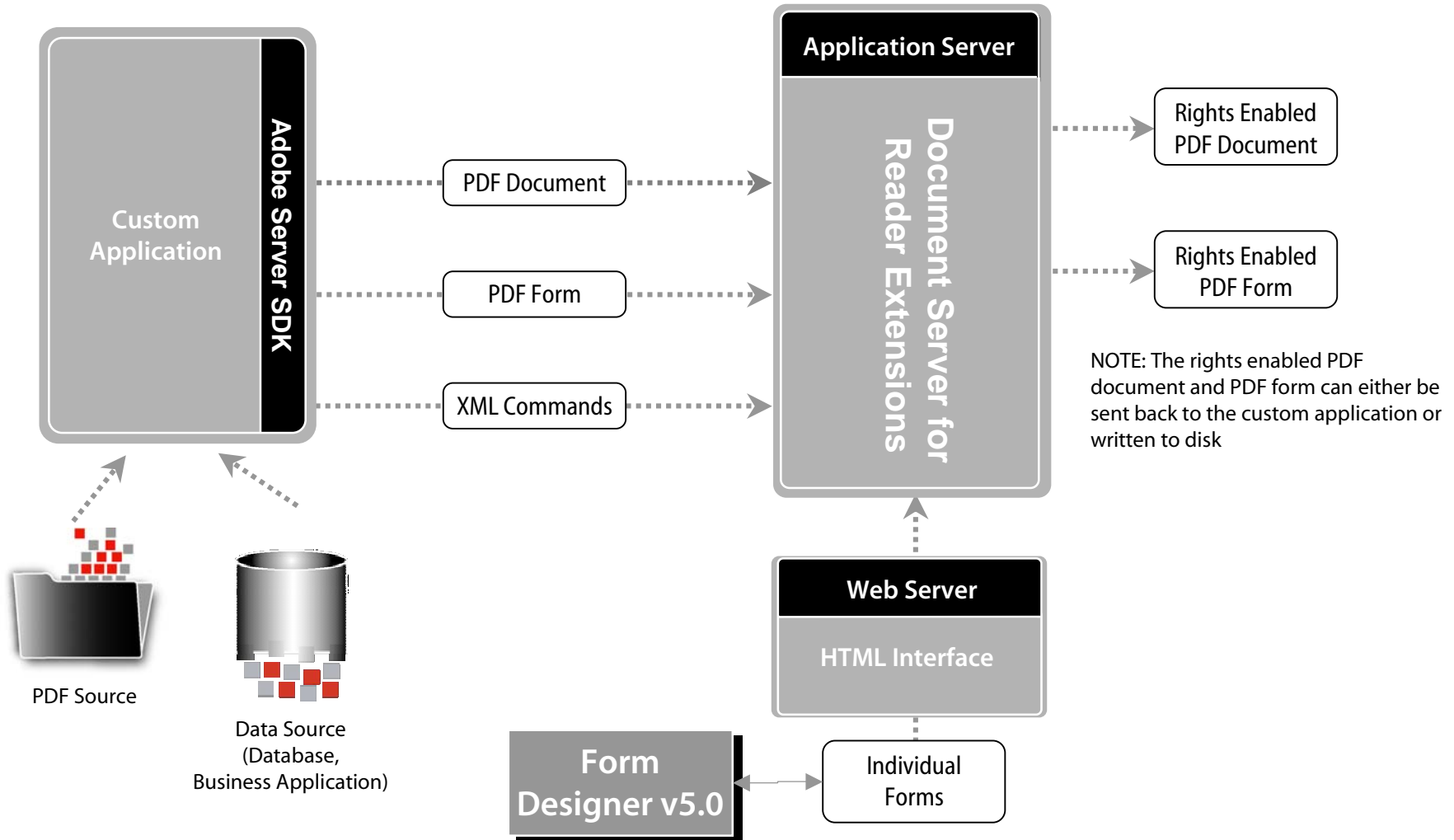
Deployment of Intelligent Acrobat Forms without Constituent Cost



- Adds new business model for Acrobat
 - Advanced forms functionality is enabled on the server
 - Adobe Document Server 5.0 *for Reader Extensions*
 - Which enables Reader 5.1 functionality
 - Benefits: Ease of Deployment, paper paradigm for user, archive and print
- Acrobat Reader 5.1 features that can be enabled
 - New version of Acrobat Reader that includes the capability to read new “usage rights” embedded in a PDF file and turn on eForms related features
 - Save a copy with changes
 - Work off-line
 - Digitally sign
 - Comments and annotations (includes attachments)
 - Return of complete, signed PDF document



Adobe Document Server for Reader Extensions Architecture





US Department of Agriculture

Challenges

- Provide powerful electronic forms to constituents without causing undue burden
- Comply with US eGov mandates, including GPEA

Solution

- Document Server for Reader Extensions assigns usage rights to USDA's PDF forms
- Acrobat Reader 5.1 provides constituents access to features like digital signatures and offline submissions

Results

- Streamlined forms-based processes
- Lower administrative and printing costs



Summary

- Broad use of PDF within Governments and Industry worldwide
 - Reliable Presentation, archival
- Significant Progress towards enterprise integration through XML, Web Services
- Ease of transition from legacy paper systems to electronic
- Ease of deployment and cost structure with Reader 5.1 and ADSRE, allowing advanced functions and offline workflow

Adobe XML Publishing Product Overview





PDF/XML Technology Insertion into Adobe Products



- Server Products
 - Adobe Document Server (D)
 - Adobe Output Server (D)
 - Adobe Forms Server
 - Adobe Workflow Server
- Publishing Tools
 - FrameMaker (D), InDesign
 - Photoshop, Illustrator
 - Golive
 - Adobe Workgroup Services (metadata and collaboration) (D)



Product Support

XML Support Areas	XML Support Areas												
	Acrobat 5	Acrobat Future	Acrobat Reader 5.1	InDesign 2	FrameMaker 7	FrameMaker 7.0 Server	InCopy 2.0	Illustrator 10	Photoshop 7	GoLive 6	Adobe Graphics Server	Adobe Document Server	Adobe Forms Server
eXtensible Metadata Platform (XMP)	X	X	X	X	X	X	X	X	X	X	X	X	
Tagged PDF	X	X	X	X	X	X						X	
SVG Support	X	X	X	X	X	X		X		X	X	X	
XML import		X		X	X		X	X		X		X	X
XML export	X	X		X	X	X	X			X		X	X
XML creation		X		X	X		X			X			X



Adobe Workgroup Services (AWS) Component Technologies



- XMP (Metadata Description Services)
 - XML for Metadata
 - Based on W3C and industry standards (RDF, Dublin Core)
 - Available via open source license
 - Foundation Layer for specifications like PRISM
- File Management Services
 - "Source control" mechanism for creative pros
 - Integrated support for WebDAV protocol



Metadata - What Our Customers Asked For



Open	Built on standards (XML, RDF)
Extensible	Supports custom schemas
Universal	Supports many file formats: JPEG, GIF, TIFF, EPS, PDF, HTML, XML, PNG, Photoshop...
International	Unicode, multilingual
Robust	Keep metadata with asset



Adobe Server Solutions

Adobe Output Server





“Typical” Document Output

no graphics or company logos

basic font and overall appearance

poor readability

Accelio Invoice

BILL TO:
Allen Machinery Inc.
Rev VerMulin
500E Illinois St.
Newberg, OR
971322307
United States

SHIP TO:
Allen Machinery Inc
Rev BevMulin
500 E Illinois St
Newberg, OR
971322307
United States

SHIPPING INFORMATION:
Date Shipped: 03/01/2001
Shipped From: Ottawa
Bill of Lading #: 000495
Shipping Terms: PPD
Gross Weight: 20lbs
Net Weight: 20lbs
Carrier: Airbrn Exp

TELEPHONE NUMBER: (503) 538-3141
FAX NUMBER: (503) 537-0974 x

REMIT TO:
Accelio Corporation
560 Rochester Street
Ottawa, Ontario
K1S 5K2
1-866-327-2256

QTY	DESCRIPTION	PRICE	EXTENDED PRICE
1	FormFlow® Second Ed MRI Form Des. Media Only CD	1,495.00	1,495.00
1	Premium-new-2nd Line Support-FormFlow® Second Ed MRI Form Des. Media Only CD-07/11/01 to 07/10/02	269.10	269.10

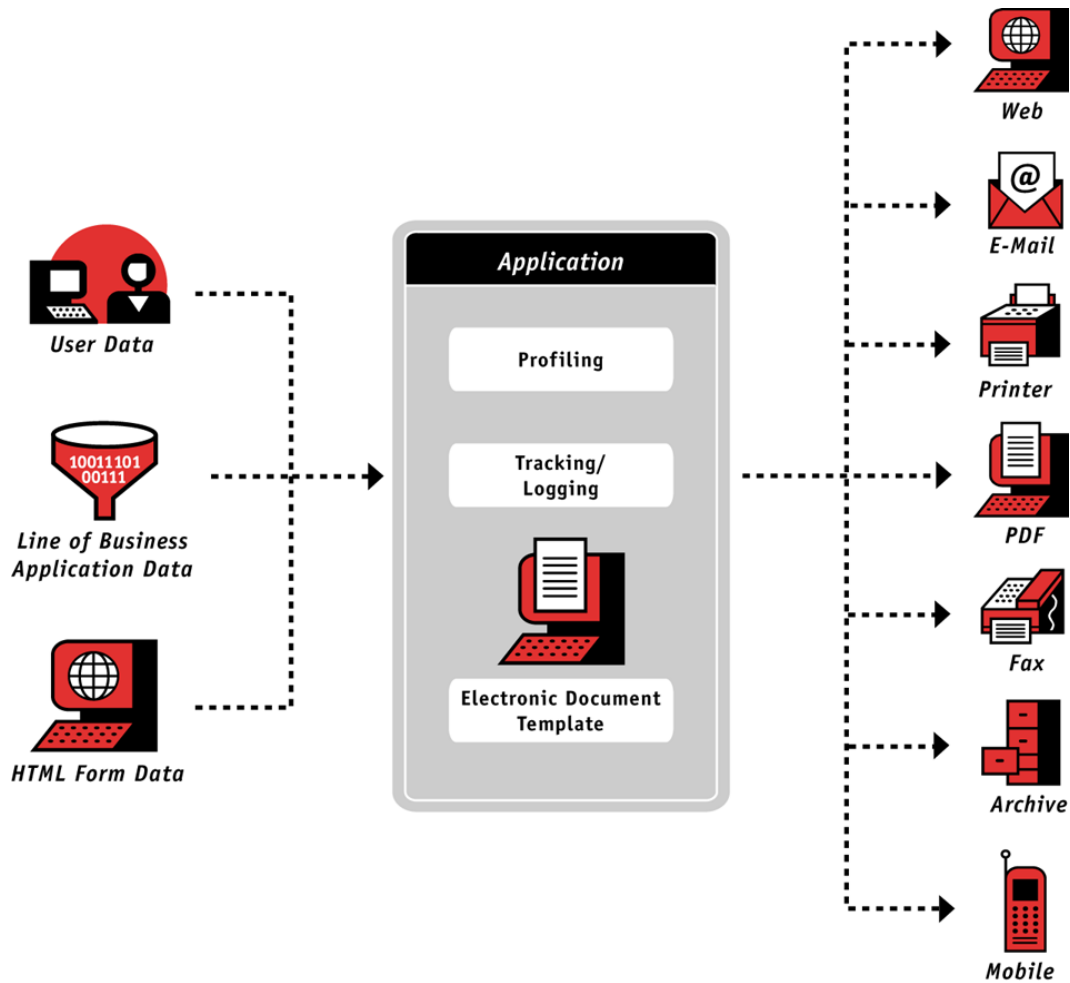
SUBTOTAL: 1,764.10
 SHIPPING CHARGES: 30.00
 TAX TOTAL: 0.00
 GRAND TOTAL: 1,794.10 USD

PAYMENT INFORMATION:
1.5% interest per month after 30 days.

INVOICE NUMBER: US-58531
 INVOICE DATE: 03/01/2001
 COMPANY ID: 243791
 CUSTOMER ORDER NUMBER: 120623
 PAYMENT METHOD: On Account
 INVOICE CURRENCY: USD
 PAYMENT TERMS: 30 Days, 2% Cash Discount
 AMOUNT DUE BY: 01/31/2001
 TAX/VAT NUMBER: 30828



Adobe Output Server





Adobe Output Server Document (includes SAP and Oracle eBusiness)



include logos
and colors

create personalized
documents for
each customer

documents dynamically
grow or shrink based
on the data



Invoice

PAGE 1 OF 1
INVOICE NUMBER: US-58531



MARKETING MESSAGE:
Accelio will be offering
"Form Designer"
training sessions
commencing May 2001.

Register by March 31 to
receive a 30% discount.
Please contact your
Accelio training provider
at 1-800-553-9772.

BILL TO:
Allen Machinery Inc.
Bev VerMulin
500 E Illinois St.
Newberg, OR
971322307
United States

SHIP TO:
Allen Machinery Inc
Bev VerMulin
500 E Illinois St
Newberg, OR
971322307
United States

SHIPPING INFORMATION:
Date Shipped: 03/01/2001
Shipped From: Ottawa
Bill of Lading #: 000495
Shipping Terms: PPD
Gross Weight: 20lbs
Net Weight: 20lbs
Carrier: Airbn Exp

TELEPHONE NUMBER:
(503) 538-3141 x

FAX NUMBER:
(503) 537-0974 x

AMOUNT DUE:
1,794.10 USD

INVOICE DATE:
03/01/2001

COMPANY ID:
243791

CUSTOMER ORDER NUMBER:
120623

PAYMENT METHOD:
On Account

INVOICE CURRENCY:
USD

PAYMENT TERMS:
30 Days, 2% Cash Discount

AMOUNT DUE BY:
01/31/2001

TAX/VAT NUMBER:
30828

QTY	DESCRIPTION	PRICE	EXTENDED PRICE
1	FormFlow® Second Ed MR1 Form Des. Media Only CD	1,495.00	1,495.00
1	Premium-new-2nd Line Support-FormFlow® Second Ed MR1 Form Des. Media Only CD-07/11/01 to 07/11/02	269.10	269.10

REMIT TO:
Accelio Corporation
560 Rochester Street
Ottawa, Ontario
K1S 5K2
Tel: 1-877-327-2256

FOR MORE INFO VISIT:
www.accelio.com

NOTES:

PAYMENT INFORMATION:
1.5% interest per month after 30 days.

SUBTOTAL: 1,764.10
SHIPPING CHARGES: 30.00
TAX TOTAL: 0.00
GRAND TOTAL: 1,794.10 USD

easily incorporate
complex design
elements such as
barcodes

print data
anywhere
on the page

fonts and styles
are enhanced
improving
Readability

Source content
could be
XML also



Adobe Server Solutions

Adobe Document Server



XML, SVG, and PDF in Adobe Document Server



The Adobe Document Server is a dynamic document server that enables enterprises to automate their document production workflows and provide key audiences with the personalized, focused documents that drive business.

Built to integrate with the leading enterprise applications, as well as custom systems, the Adobe Document Server is scalable and flexible enough for any environment.

Built on Adobe document and imaging technology, gives ease of use and design while delivering performance



PDF Document Creation Workflow

Adobe Document Server Capabilities



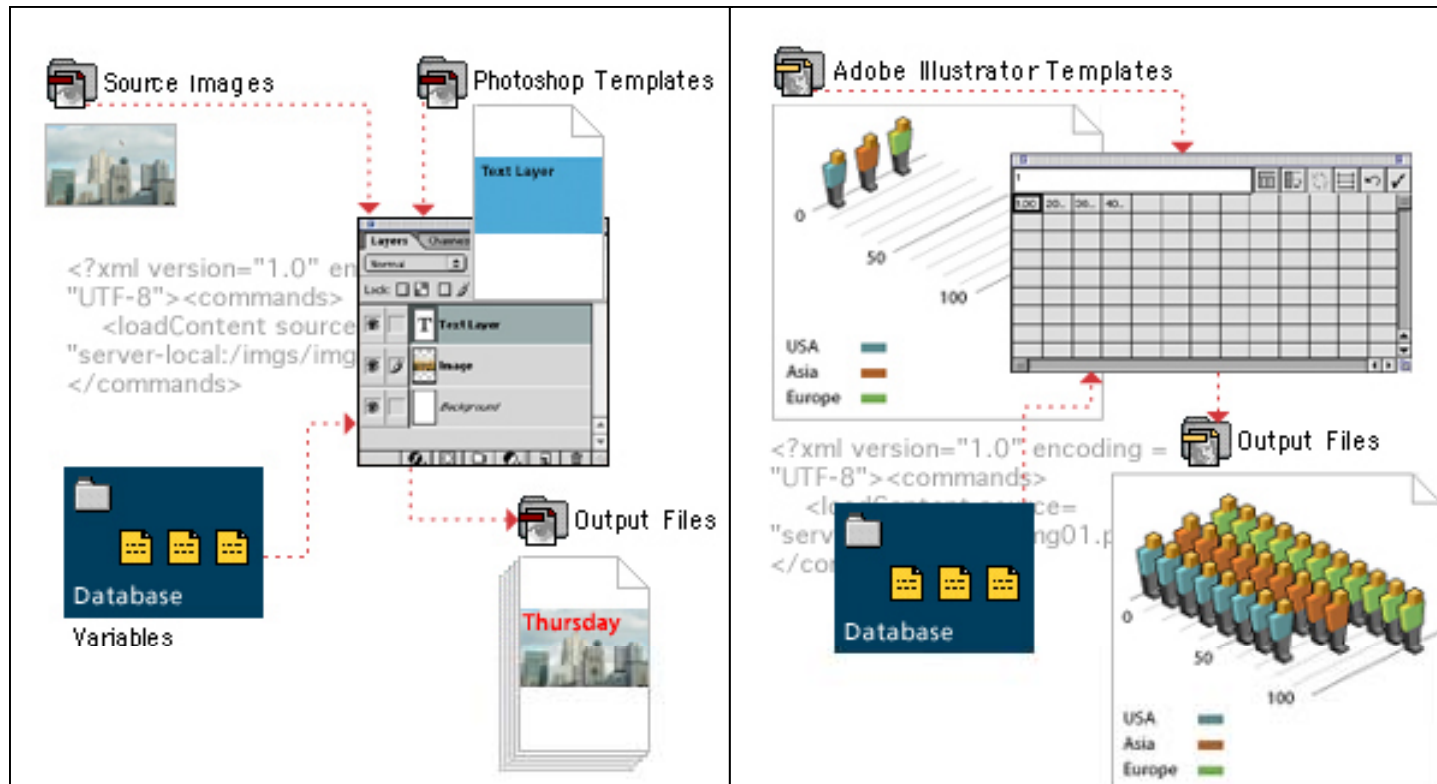
1. Create components for documents (Adobe Graphics Server)
 - Create images using Photoshop templates
 - Create SVG charts and graphs using SVG templates created in Illustrator
2. Create documents combining these components with XML content and document templates
 - Flow XFDF and images/graphics into fields of a PDF form
 - Flow XSL-FO and images/graphics [into a FrameMaker template]
3. Distill PostScript and Encapsulated PostScript files into PDF
4. Create compound documents by manipulating and assembling these new documents with existing pages, data, or documents
5. Embed/ Extract XMP metadata or XML data within PDF documents
6. Deliver documents in PDF and image formats



Adobe Graphics Server - Templates and XML Data Integration

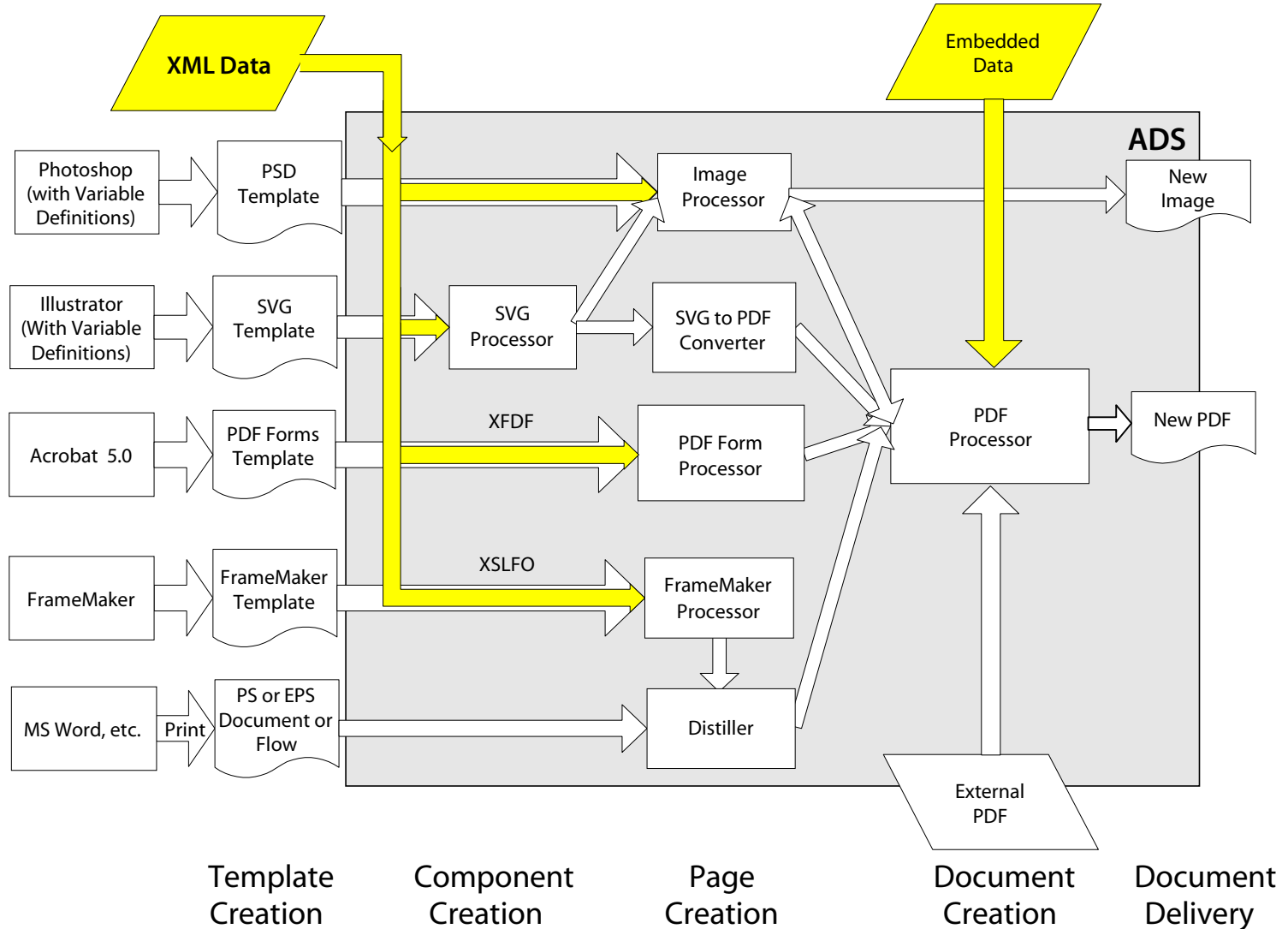


Graphics Server uses XML-based commands to create and manipulate images in the server environment.



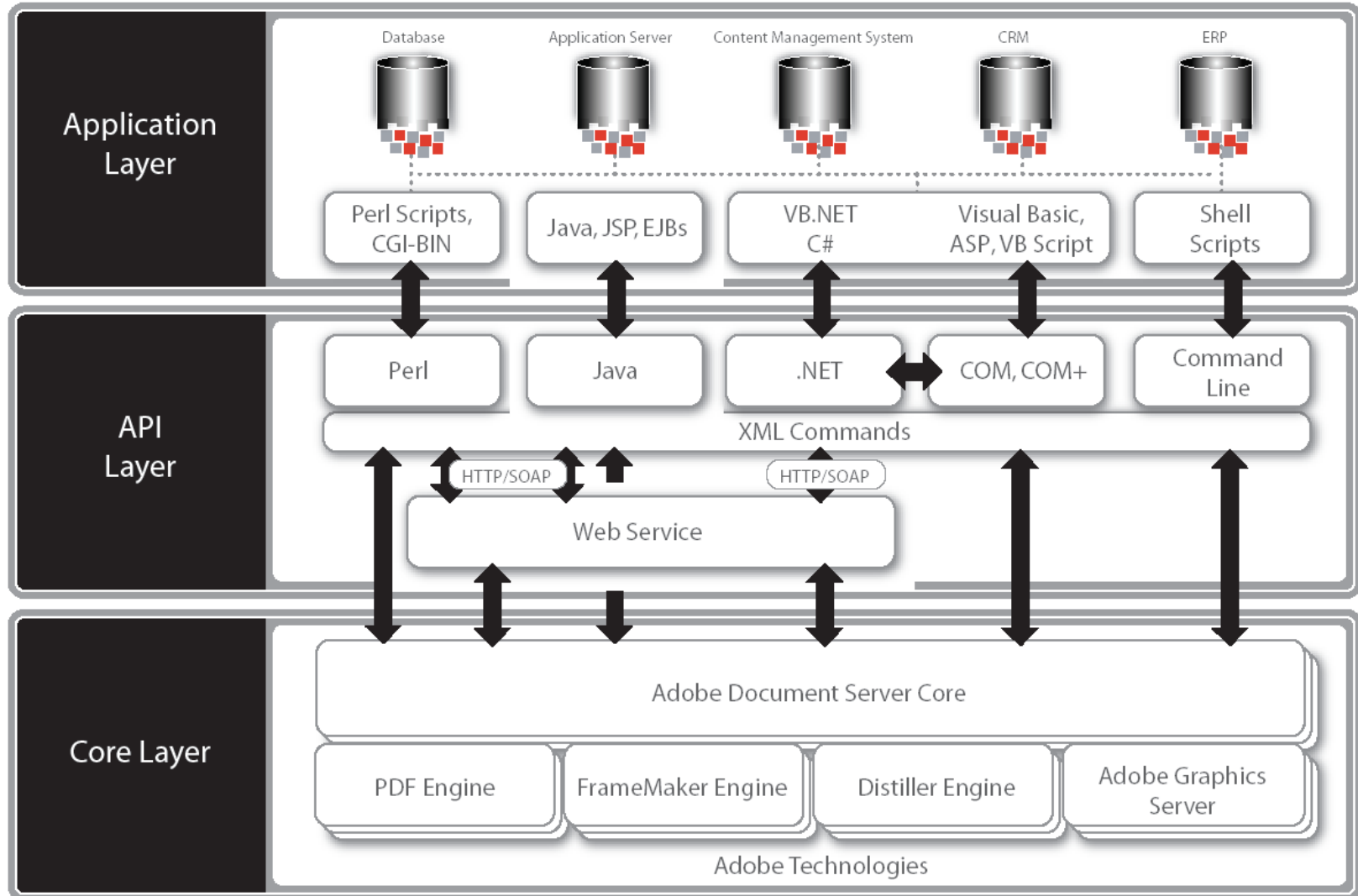


Adobe Document Server Data Flows





Adobe Document Server Architecture



Adobe Publishing Solutions

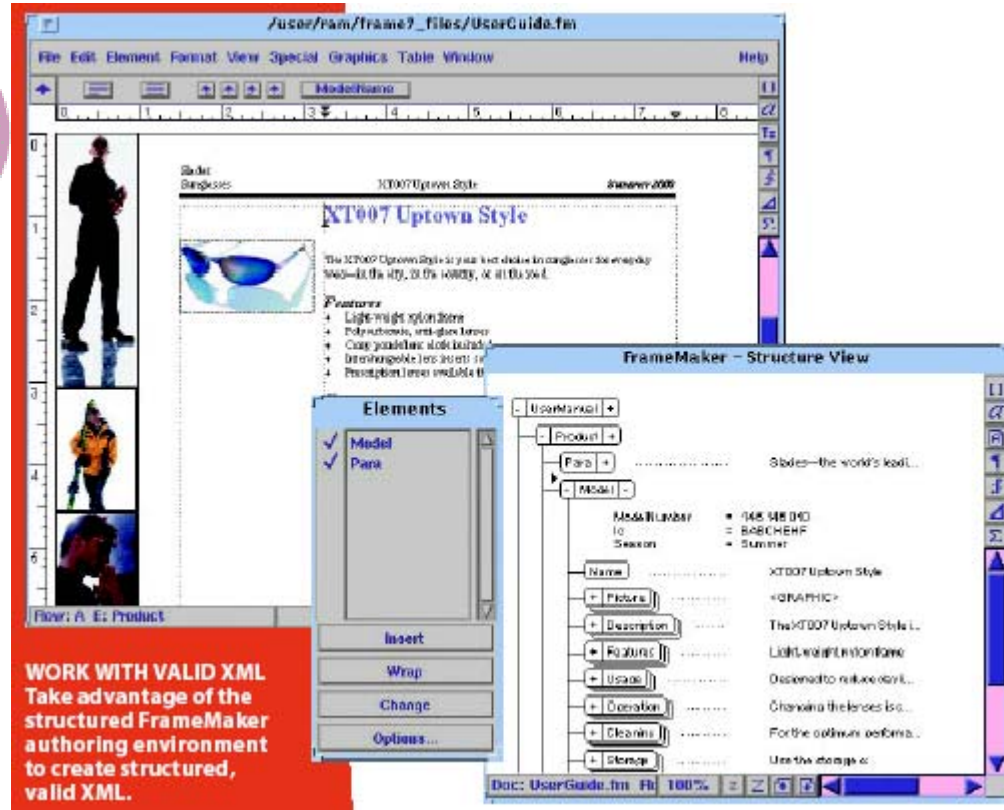
FrameMaker 7, XMP and AWS





XML and FrameMaker

Adobe FrameMaker 7

The screenshot shows the Adobe FrameMaker 7 interface. The main window displays a document titled "UserGuide.fm" with a table of contents on the left and a main text area. The text area shows a section titled "XT007 Uptown Style" with a description and a list of features. The "Structure View" window is open, showing a hierarchical tree of the document's structure, including "Product", "Para", and "Model". The "Elements" window is also open, showing a list of elements like "Model" and "Para".

WORK WITH VALID XML
Take advantage of the structured FrameMaker authoring environment to create structured, valid XML.



FrameMaker 7.0 and XML

- WYSIWYG, context-sensitive guided authoring environment
- Full XML round-tripping
- Support for Namespaces
- CSS2 Export
- Support for Unicode
- SVG
- Industry standard applications



FrameMaker 7.0 Overview

Content

Structure View

The screenshot shows the Adobe FrameMaker 7.0 interface. On the left, the 'Content' view displays a document page with an image of a mobile phone and a text block describing the 'Power key'. On the right, the 'Structure View' shows a hierarchical tree of the document's structure, including elements like 'Figure', 'Graphic', 'Option', and 'IndexEntry'. Below the Structure View, an 'Elements' catalog is visible, showing a list of elements with a checked 'Caption' item. Red arrows point from the 'Content' and 'Structure View' headers to their respective views in the screenshot.

Content View: A photograph of an EarthTouch Communicator phone with various keys labeled (Power key, Message light, Selection key, Back key, Menu key, Place/Answer call key, VoiceMail key, End call key, Emergency call key). Below it, a text block describes the Power key: "Before you can make calls, answer calls, or use any of the special features of your EarthTouch phone, it must be turned on. To preserve the battery charge when not in use, turn the phone off." A small inset box says "To turn the phone on or off: Press the Power key, and hold it down for 1 full second."

Structure View: A hierarchical tree showing the document's structure. The root is 'Figure', which contains 'Graphic'. 'Graphic' has a format type of 'G-IF' and 'ByReference'. Below 'Graphic' is 'Option', which contains 'OptionLabel', 'Head', and 'IndexEntry'. The 'IndexEntry' elements have a 'Uniquelid' attribute set to '<no value>'.

Elements Catalog: A list of elements with a checked 'Caption' item. Below the list are buttons for 'Insert', 'Wrap', 'Change', and 'Options...'.

Element Catalog

FrameMaker 7.0 and Network Publishing



WYSIWYG
Editing
Environment

FrameMaker
Document Model
in memory



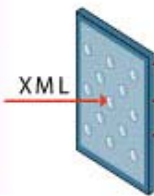
FDK
Clients



.fm, .mif
PDF
SGML
XML



Store



XSLT
Transformation
Engine

.mif
HTML
WML



Web Server

.mif
HTML
WML



Web Browser



Web Phone



FrameMaker



Palm Reader



Microsoft Reader



Webworks Publisher
Standard Edition 7.0
(included with FrameMaker 7.0)

.pdb
.lit

Acrobat Reader is available on many platforms,
including Windows, Mac, UNIX, Palm & Windows CE



PDF

.fm

HTML

Print



Tools for the New Work[®]



PDF/Acrobat & E-Government Initiatives



Internal Efficiency & Effectiveness	E-Travel	E-Records Mgmt.	Automated travel processing, PDF/A
Government To Citizen	Online Access to Loans	EZTax Filing	Electronic Grants/Loans (NSF)
Government To Business	Expanding Electronic Tax Products	One-Stop Business Compliance Info	Compliance Info (FDA, USDA)
Government to Government	E-Grants	E-Authentication	Digital Signature And Security