


MAX 2006 Beyond Boundaries



Form Submission, Routing and Retrieval using Adobe Flex and LiveCycle

Kevin Ku – Technical Architect
Venkata Adidam – Sr. Consultant
Adobe Consulting

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Customer's Requirement for the Solution

- Web-based and Paperless Operation Environment
- Data Quality
 - Data shall be validated against existing data sources to improve data quality
- Automated Business Processes
- Support Digital Signatures
- Support Service Oriented Architecture (SOA)
- Support Document Archival in TIFF Format
 - Requirement for all documents to be converted to a TIFF format with CCITT G4 compression and in 300 dpi
- All Navigation Interfaces be User Friendly
- Section 508 Compliant

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Presentation Outline

- Customer Challenges
 - Challenges of the current process
 - Requirement for the solution
- Technical Solution
 - How Adobe products meet the requirement
 - Architecture of the solution
 - System architecture
 - Solution Process diagram
 - Solution demo
 - Flex UI
 - Complex Form
 - Workflow Process and QPACs
 - PDF Generator
- Five things to take away
 - Complex PDF form: Acrobat Dialog Object, dynamic forms, digital Signatures
 - Web Services with LiveCycle WF
 - Form Server / XFAAJ library – when and how
 - Integration of Flex and LiveCycle WF and Flex
 - Integration of Flex UI and Adobe Reader – Frame, Session
- Q&A



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How Adobe Products meet the requirement

- Adobe LiveCycle 7 (LC)
 - LC Form Designer
 - LC Workflow Server
 - LC Form Manager
 - LC Forms
 - LC PDF Generator
 - LC Reader Extensions
 - LC Policy Server
 - LC Document Security
 - Adobe Flex 1.5
- Functions
 - Web Interfaces
 - Support multi-level digital signature signing
 - Support dynamic forms with data connection, image upload, Web services
 - Support automated document workflow with escalation, notification, database integration
 - Support form extraction (PDF to XML) and document conversion (PDF to TIFF)
 - Support SOA by providing SOAP, Web Services, Java API and .NET interfaces
 - Support Section 508 Compliance

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Customer Challenges

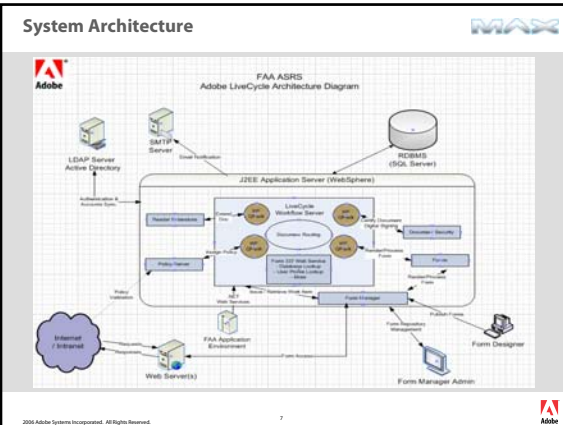
- The Form-337 approval is required for every aircraft alteration and modification in the U.S.
- In 2004/2005 – the FAA processed approximately 70,000 submissions of the Form-337 with 300,000 attached images.
- Present process is completed with paper forms and wet signatures (labor intensive and inefficient leading to processing delays).
- The current form routing process is completed by hand-carries or by mail and requires an extraordinary amount of time, energy and expense.
- The current paper process does not allow for automated search capabilities of individual records when airworthiness safety concerns related to major repairs or alterations are discovered.

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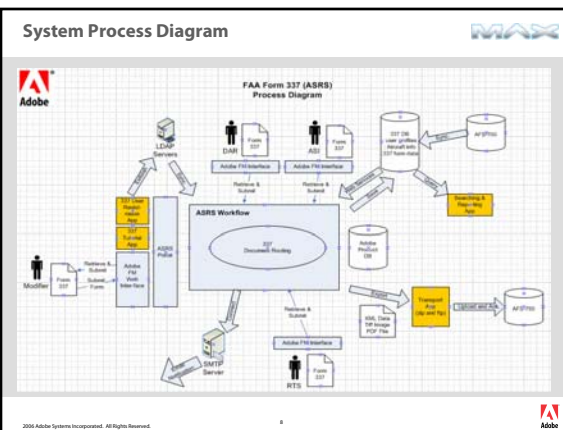
System Components

- System Information:
 - OS: Windows 2003 Server
 - DB: SQL Server 2000
 - LDAP: Microsoft Active Directories (internal and external domains)
 - Java Application Server: WebSphere 5.1.1.11
 - Web Server: Microsoft IIS 6
- Production Environment:
 - 3 Application Servers
 - Server 1: Quad 3.8ghz w/ 4GB RAM and 1.8TB of drive space
 - Adobe LiveCycle Form Server, Reader Extensions, Workflow Server, Form Manager Flex Server 1.5
 - Server 2: Dual 3.8ghz w/ 4GB RAM and 500GB of drive space
 - Adobe LiveCycle Security Server, Policy Server, Document Server v6.1
 - Server 3: Dual 3.8ghz w/ 4GB RAM and 500GB of drive space
 - IBM MQ 5.3

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- ### Five Things for You to Take Away
- Highlight of the 5 technologies used in the solution
 - Complex PDF form: Acrobat Dialog object, image field, dynamic forms, digital Signatures
 - Web Services with LiveCycle WF
 - LC Forms / XPAAJ library – when and how
 - Integration of Flex and LC WF and Flex
 - Integration of Flex UI and Adobe Reader – Frame, Session
- The slide is labeled '2004 Adobe Systems Incorporated. All Rights Reserved.' and '10'.



- ### Building a Complex Form using LiveCycle Form Designer
- Use data connections for external data sources
 - Web Services and OLE DB
 - Use dynamic subforms – expand and shrink PDF forms
 - Use Acrobat dialog object
 - Use digital signature
 - Signature validation
 - Submit form to Workflow in PDF format to preserve the signatures
 - Use image field
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- ### Solution Demo
- User Interfaces
 - Flex interface
 - Adobe LiveCycle Form Manager interface
 - Complex Form
 - Demo dynamic forms function
 - Web service calls
 - Dialog box in PDF
 - Image upload
 - Business Processes
 - Demo workflow routing, attachment, QPACS, data extraction, database integration
 - Document Conversion
 - Demo PDF document conversion process
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- ### Web Services with LiveCycle Workflow
- Drag-Drop approach to creating a Web Service
 - PDF calls a Web Service for validation, data lookups, etc.
 - Note: PDFs targeted for Adobe Reader requires Adobe Reader Extensions
 - Quick Demo – “Hello World”
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LiveCycle Forms/Reader Extensions/XPAAJ

- LiveCycle Forms/Reader Extensions – what we used it for?
 - Render an XDP to PDF
 - Pre-populating data
 - Followed by Reader Extending the PDF
- XPAAJ – what we used it for?
 - Extracting XML

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LiveCycle Forms/Reader Extensions/XPAAJ

- Merging data with PDF
 - Pass in the XML data as an InputStream


```
//Convert the XML data to a String.
StringBufferInputStream sis = new StringBufferInputStream(xmlString);
```
 - Save the resulting merged document.


```
//Import the XML data into the PDF.
pdfDocument.importFormData(sis);
```
 - Get the Merged Document


```
//Get the Merged Document
InputStream result = pdfDocument.save();
```
- Why did we use LiveCycle Forms?
 - We needed to initialize the submit URL for compatibility with other LiveCycle products. Your requirement may differ.
 - LiveCycle Designer can directly convert XDP to PDF.

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LiveCycle Forms/Reader Extensions/XPAAJ

- Rendering a PDF with LiveCycle Forms
 - sFormQuery - specifies the form to render
 - sFormPreference - can render HTML as well.
 - sOptions - run-time options
 - sUserAgent - info. about target device.
 - sApplicationWebRoot - application's web root.
 - sTargetURL - where to submit PDF data to?
 - sContentRootURI - where is the XDP located?
 - sBaseURL - for HTML refs where are the HREFs pointing to?

```
EJBClient ofFormServerObject = new EJBClient();
IOutputContext ofFormServerOutput = ofFormServerObject.renderForm(
    xdp.getName(), // sFormQuery
    "PDFForm", // sFormPreference
    xmlData.getBytes(), // xml data
    "XMLData=true", // sOptions
    "Mozilla/4.0", // sUserAgent
    "" // sApplicationWebRoot
);
IProcessFormServlet taskID = "taskID"; // sTargetURL
xdp.getParentFile().toURL().toString(), // sContentRootURI
null // sBaseURL
);
```

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LiveCycle Forms/Reader Extensions/XPAAJ

- LiveCycle Forms vs. XPAAJ
 - Both can extract XML Data
 - Both can merge XML Data with a PDF
- LiveCycle Forms
 - Can render other formats
 - Has EJB/Web Service APIs (adds Over Head but Enterprise Applications can share)
 - Does more - More complex
- XPAAJ
 - Can only work with PDF
 - A client-side library with only the Java Interface (no overhead each application must be Java based)
 - Does less - Less complex

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LiveCycle Forms/Reader Extensions/XPAAJ

- Extracting Data from XPAAJ
 - Create a PDFDocument using the factory.
 - Export the XML Data

```
InputStream pdf = new ByteArrayInputStream(myPDF);
//Create a PDF Document
PDFDocument pdfDocument = PDFFactory.openDocument(pdf);
//Extract the xdpData
InputStream xdpData =
    pdfDocument.exportFormData(FormDataFormat.XFA);
```

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Integrating Flex with LiveCycle Workflow

- LiveCycle Workflow
 - J2EE based API
 - Create Workflow Components – QPACs
 - Quick Process Action Components
 - Create Workflow Tasks
 - Query Workflow
 - User settings

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Integrating Flex with LiveCycle Workflow

- Create Workflow Task**

```

CreateTaskResult taskResult
= taskManager.createTask(
    form
    ,instructions
    ,attachments
);


```
- Querying on Submitted workflow processes**

```


POFQuery pofQuery = pofObjectManager
    .newQuery(BOIPProcessInstance.OBJECT_TYPE);
pofQuery.addFilter(BOIPProcessInstance.A_CREATOR_ID,
    POFFilter.EQUALS, wfUserContext.getAuthenticatedUser().getOID());
pofQuery.addFilter(BOIPProcessInstance.A_STATUS, POFFilter.EQUALS,
    BOIPProcessInstance.PROCESS_INSTANCE_RUNNING);
pofQuery.addSort(BOIPProcessInstance.A_ID, POFSort.ASCENDING);
Collection col = pofObjectManager.retrieveBOObjects(pofQuery);

```

 - POFQuery – Object to query the Workflow.
 - POFilter - specifies data to be returned by a query

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Integration of Flex UI and Adobe Reader


- Current situation**
 - Flash does not communicate to Reader
 - Reader does not communicate to Flash
 - Both can communicate to Server
- Our solution**

```

<html>
<head></head>
<body>
<frame src="GetNewForm.do"> <!-- Gets the PDF from a servlet -->
<frame src="Attachment_View.do"> <!-- Flash view -->
</body>
</html>

```

 - Used HTML Frames
 - Flash on one Frame
 - Reader on another Frame

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Q&A

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