How to Architect Adobe LiveCycle ES into your Enterprise Solutions

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Technology and Experience Innovation / Professional Services

# What we aim to cover in the next 70 minutes…

- Things to consider when architecting an enterprise application

- Integration and implementation details to make your deployment successful

- Identifying the LiveCycle components to address your needs

- Addressing common solution patterns with LiveCycle

- 3 real world Professional Services implementations

Agenda

- Using LiveCycle out of the box

- Integrating LC into a larger solution

- Example Implementations

  - NA Financial Institution

  - World Bank

  - Large US Federal Agency

- Summary

- Q&A

Definition

- ar·chi·tec·ture (ärk-tkchr) *n.*

  - *Computer Science* The overall design or structure of a computer system, including the hardware and the software required to run it…

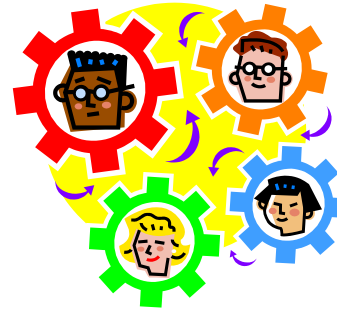# Using LiveCycle out of the box

MAX

Data
Capture

Information
Assurance

Document
Output
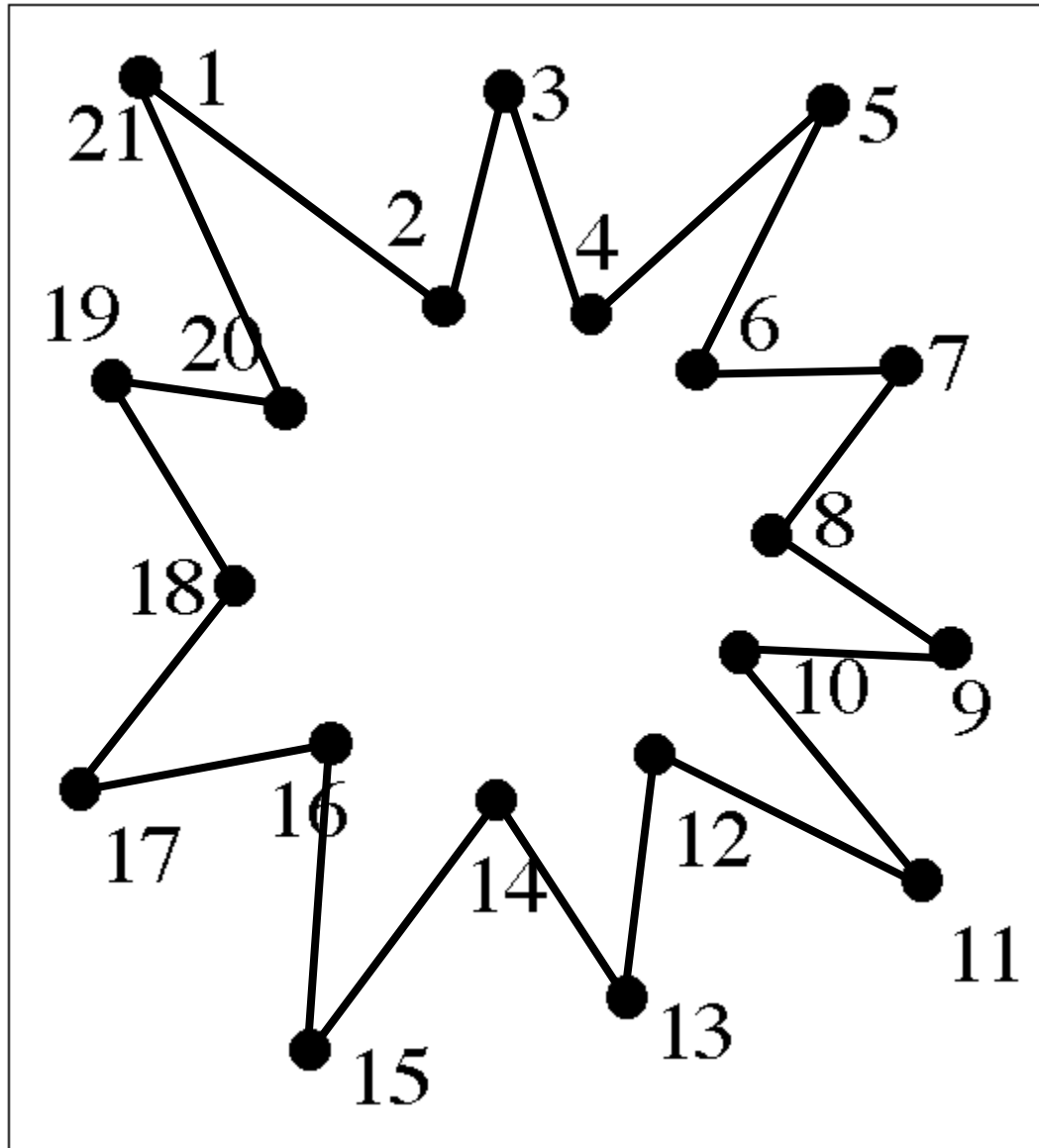
Process
Management
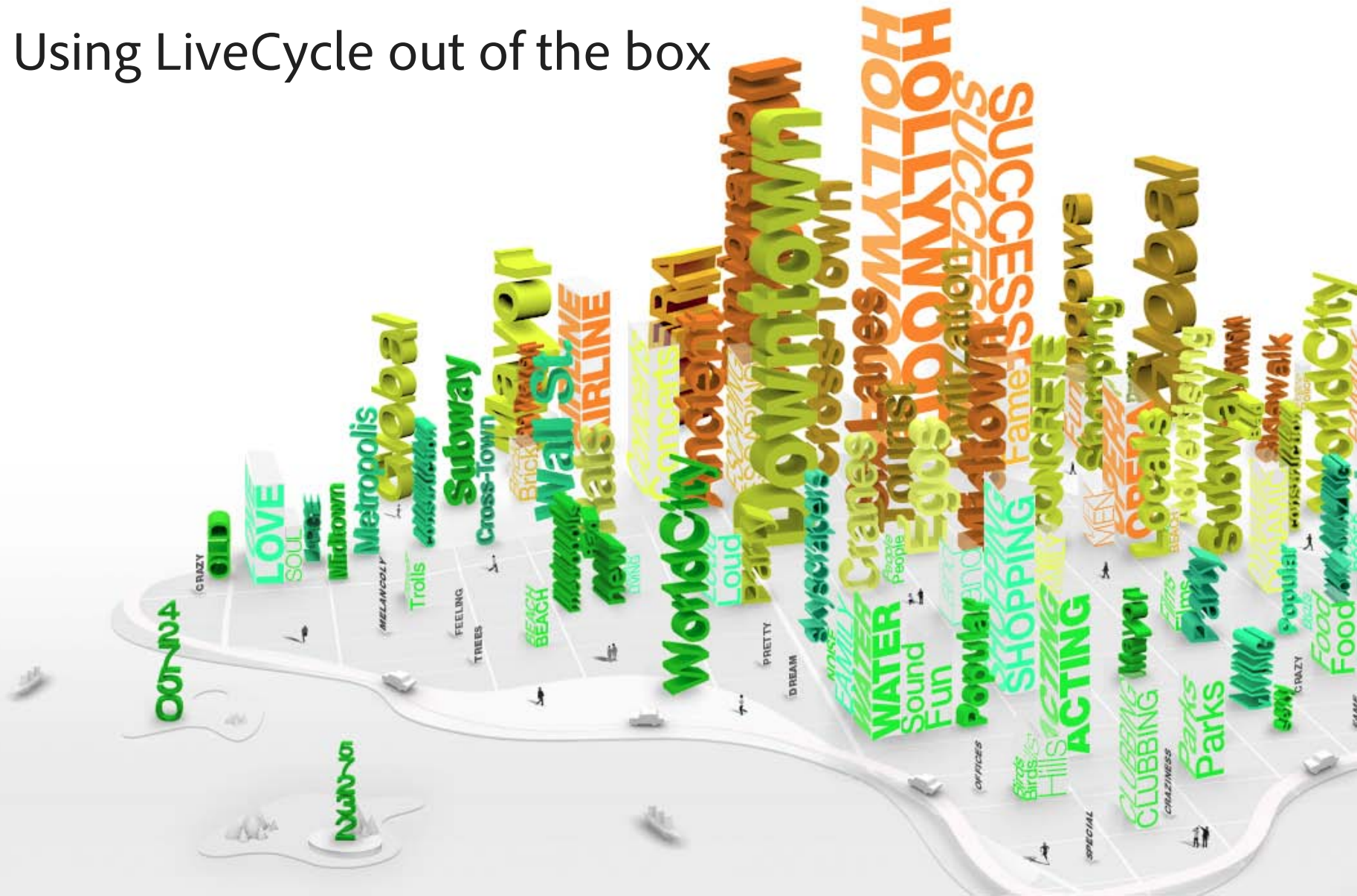
Content
Services

OOB Functionality Overview

Data Capture

LiveCycle Forms ES
Deploy interactive XML-based forms in Adobe Reader®, Adobe Flash® Player, or web browsers.

LiveCycle Reader Extensions ES
Fill in, sign, comment on, or save Adobe PDF files using only Adobe Reader software.

LiveCycle Barcoded Forms ES
Automate the capture of form data using dynamic 2D barcodes.

LiveCycle Data Services ES
Integrate rich Internet applications (RIAs) with LiveCycle services, J2EE applications, and business logic.

Information Assurance

LiveCycle Rights Management ES
Manage usage rights to protect sensitive documents in PDF, office, or CAD formats.

LiveCycle Digital Signatures ES
Automate the signing, certification, and validation of digital signatures in PDF documents.

Document Output

LiveCycle PDF Generator ES
Automate the creation and assembly of PDF documents from virtually any file format.

LiveCycle PDF Generator 3D ES
Automate the creation and assembly of PDF documents from engineering product data.

LiveCycle Output ES
Dynamically generate personalized documents on demand in print and electronic formats.

LiveCycle Production Print ES
Dynamically generate personalized documents for high-volume production environments.

OOB Functionality Overview

Process Management

LiveCycle Process Management ES
Streamline human-centric business processes across your firewall.

LiveCycle Business Activity Monitoring ES
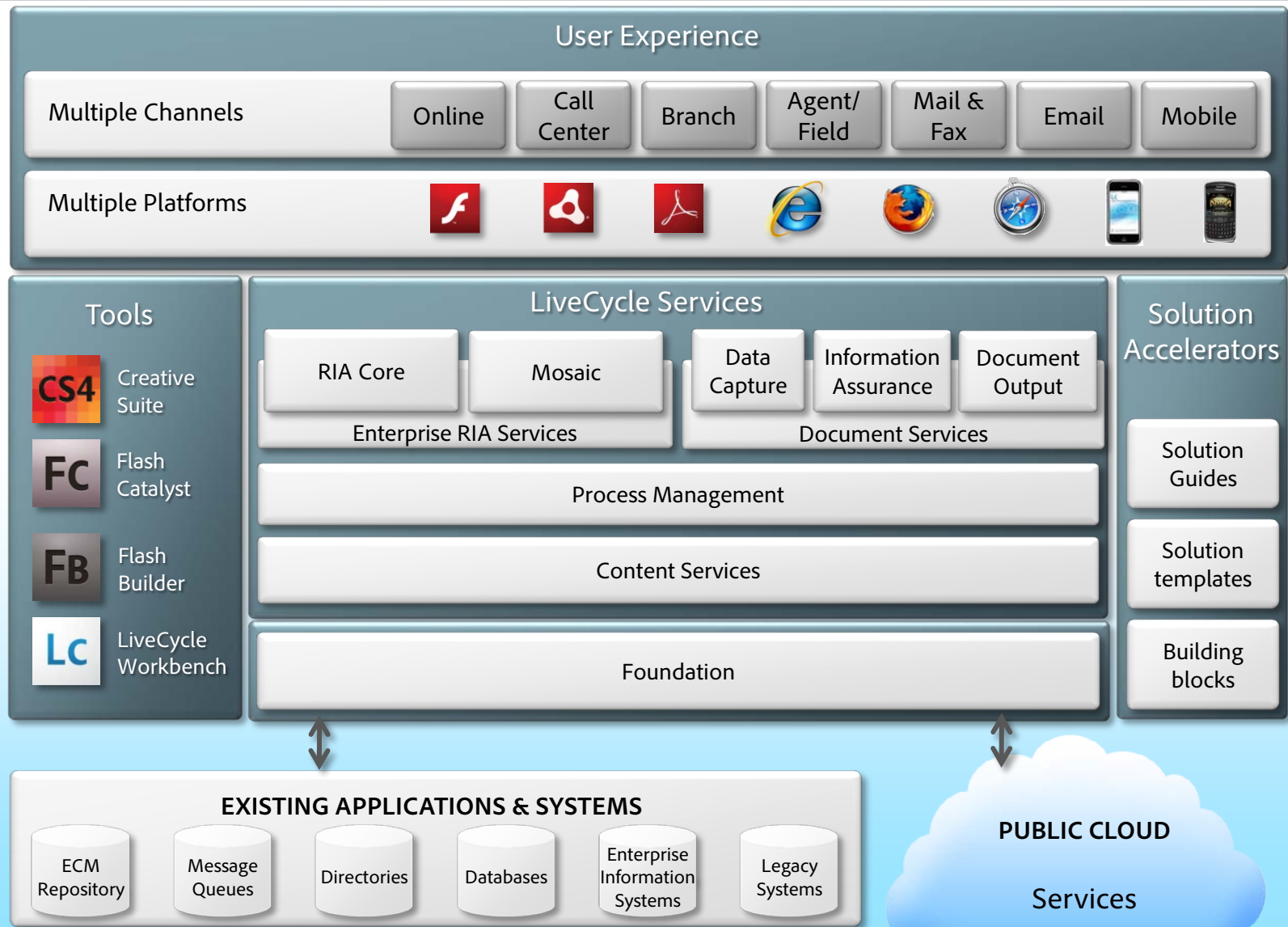Monitor, analyze, and tune your LiveCycle ES applications.
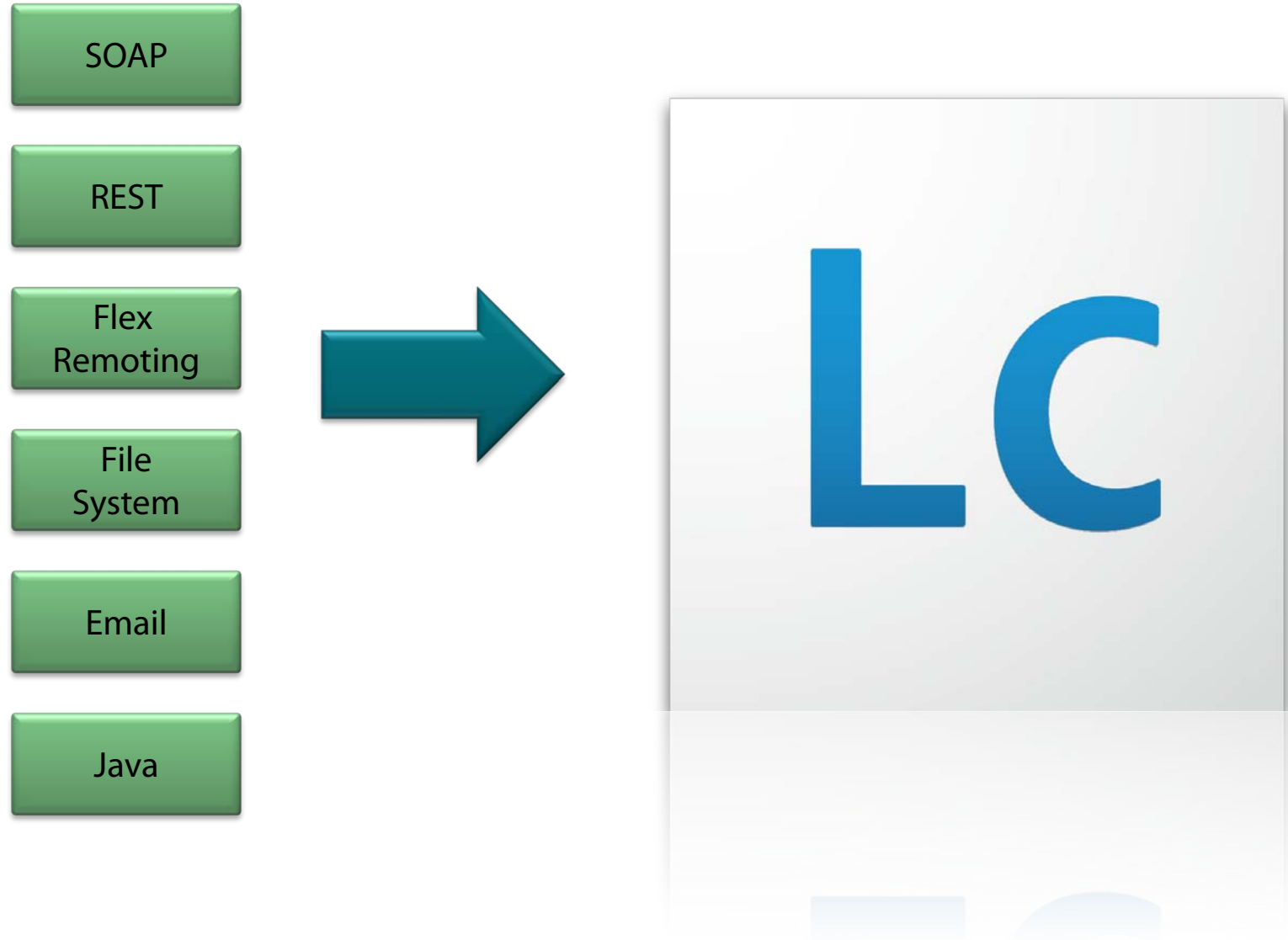
Content Services

LiveCycle Content Services ES
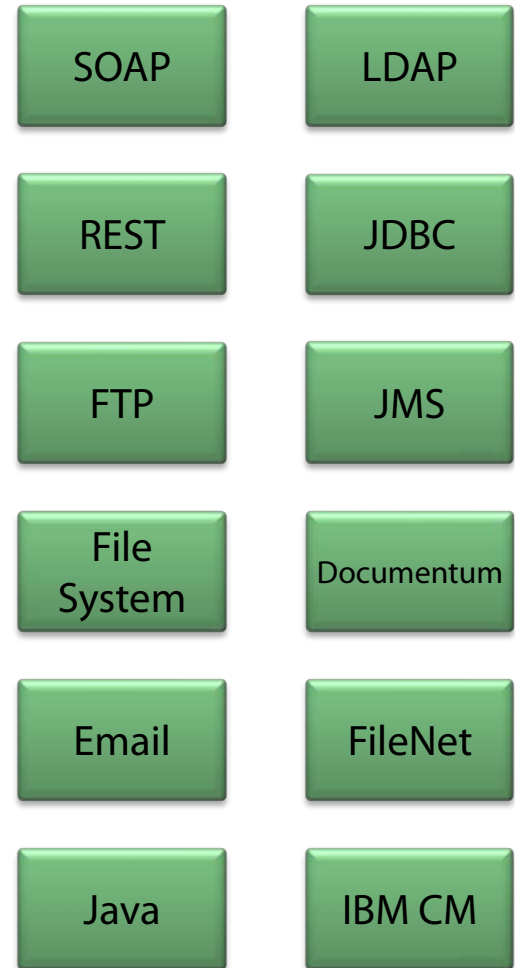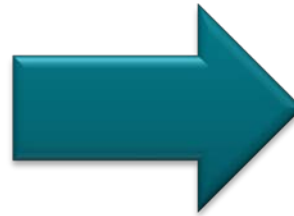Store, manage, and collaborate on the content used in your LiveCycle ES applications.

LiveCycle ES Connectors for ECM
Extend your LiveCycle ES applications to connect with industry-leading ECM systems.

Architecture & Solution Component Design

User Experience

Multiple Channels

| Online | Call Center | Branch | Agent/Field | Mail & Fax | Email | Mobile |

Multiple Platforms

Tools

CS4 Creative Suite

FC Flash Catalyst

FB Flash Builder

Lc LiveCycle Workbench

LiveCycle Services

| RIA Core | Mosaic |

Data Capture | Information Assurance | Document Output

Enterprise RIA Services

Document Services

Process Management

Content Services

Foundation

Solution Accelerators

Solution Guides

Solution templates

Building blocks

EXISTING APPLICATIONS & SYSTEMS

| ECM Repository | Message Queues | Directories | Databases | Enterprise Information Systems | Legacy Systems |

PUBLIC CLOUD

Services

SOAP

REST

Flex Remoting

File System

Email

Java

Lc

Integration

Lc

SOAP

LDAP

REST

JDBC

FTP

JMS

File System

Documentum

Email

FileNet

Java

IBM CM

Integrating LC into a larger solution

What you need to consider?

- Your users!

- Requirements

- An existing environment

- Client -side software/hardware/architecture

- Deployment, load balancing clustering, disaster recovery

- Servers – OS, database, JVM, shared drives, email, LDAP, application

- Security – SSL, data encryption , DRM

- Performance – it needs to be fast!

- Integration points – SOA, JMS, remoting , watch folders

- Your data

- Network considerations

  - Cache management

  - Transaction execution

  - Outside the firewall

- Environmental Considerations

  - 3rd-Party products

  - User accounts

- Virtualization

  - # of environments

  - Disk I/O

- Any existing integration points

- Your users!

Platform matrix

Foundation-based solution components – Page 1 of 4						
Solution component	**Operating system**	**Application server**	**JDK**	**Database**	**Hardware requirements**	**Additional (all combinations)**
Adobe LiveCycle ES • Barcoded Forms • Business Activity Monitoring* • Content Services • Digital Signatures • Connectors for ECM • Forms • Output • PDF Generator • PDF Generator 3D • Process Management • Reader Extensions • Rights Management * LiveCycle BAM ES and BAM ES Extended are not LiveCycle ES Foundation-based Solution Components but have the same Platform support as the other solution components.	Microsoft® Windows ® Server 2003, Enterprise Edition, Standard Edition, SP1 and R2 (32bit architectures)	JBoss 4.0.3SP1	Sun JDK 5.0 Update 11 or later updates to 5.0	MySQL 5.0 IBM DB2 V9.1, V8.2 or V8.1 FP 7a Oracle 9i Oracle 10g MS SQL Server 2005 SP1 (SP2*) (Standard and Enterprise Edition)	Intel® Pentium® 4 or AMD x86 or x86/64 or equivalent, 1GHz processor, VMWare ESX & GSX 2GB RAM min	Certified LC8 LDAP List • Sun ONE 5.1 • Sun ONE 5.2 • Microsoft Active Directory 2000 • Microsoft Active Directory 2003 • IBM Tivoli Directory Server 6.0 • Novell eDirectory 8.7.3 • Lotus Domino 8.x
		BEA WebLogic 9.2, (Advantage & Premium)	BEA JRockit® JDK	IBM DB2 V9.1, V8.2 or V8.1 FP 7a Oracle 9i Oracle 10g MS SQL Server 2005 SP1 (SP2*) (Standard and Enterprise Edition)		
		BEA WebLogic 10, (Advantage & Premium)	BEA JRockit® JDK	MySQL 5.0		
		IBM® WebSphere 6.1.0.7 (Base Edition & Network Deployment Edition)	JDK supplied with application server	IBM DB2 V9.1, V8.2 or V8.1 FP 7a Oracle 9i Oracle 10g MS SQL Server 2005 SP1 (SP2*) (Standard and Enterprise Edition)		
	Microsoft Windows Server 2003, Enterprise Edition, Standard Edition, SP1 and R2 (64bit architectures)	JBoss 4.2.0 EAP (64 bit application server and JDK)	Sun JDK 5.0 Update 11 or later updates to 5.0	MySQL 5.0 IBM DB2 V9.1, V8.2 or V8.1 FP 7a Oracle 9i Oracle 10g MS SQL Server 2005 SP1 (SP2*) (Standard and Enterprise Edition)	Intel® Pentium® 4 x86/64 or equivalent, 1GHz processor, VMWare ESX & GSX 3GB RAM min	Email support • Exchange 2000 • Exchange 2003 • Exchange 2007 • Lotus Domino 6/7 • SendMail (included with RedHat 4) • Novel GroupWise 6/7
		BEA WebLogic 10, (Advantage & Premium) (64 bit application server and JDK)	BEA JRockit® JDK	IBM DB2 V9.1, V8.2 or V8.1 FP 7a Oracle 9i Oracle 10g MS SQL Server 2005 SP1 (SP2*) (Standard and Enterprise Edition)		
		IBM® WebSphere 6.1.0.7 (Base Edition & Network Deployment Edition) (64 bit application server and JDK)	JDK supplied with application server	IBM DB2 V9.1, V8.2 or V8.1 FP 7a Oracle 9i Oracle 10g MS SQL Server 2005 SP1 (SP2*) (Standard and Enterprise Edition)		

http://www.adobe.com/products/livecycle/pdfs/lces_update1_sysreqs.pdf

Design and Integration

- More than just creating architecture /UML diagrams

- Tendency is to tackle the technology and focus on "technical requirements"

- Avoid "Lets start coding" cowboy mentality

- Understating the current domain/ solution that has been deployed (Discovery)

- How does it affect the users?

- Need to consider

  - Usability, maintainability, modularity, packaging, reusability, security

- Understand the current environment and which components need to be augmented/changed

- Do we need to modify existing services to support the new functionality?

- Division of labor - Who is doing what?

- Separate your design into logical sections- (divide and conquer)

- Start small and then go large
  - i.e. pass 1 or 2 data elements to establish a valid connection
  - Add additional elements to your domain/ schema

- Identify repeatable patterns
  - Validation routines on data capture
  - Rendering operations
  - Variable re-use

- Think atomic services

- KIS – Keep it simple !

Implementation

- Coding Standards

  - Forms

  - Custom components

  - Avoid hard-coded literal values

  - Exception Handling

- Service Implementation

  - Process granularity

  - Design of the API for external consumers

  - Ensure the process is discoverable

  - Make the operation of the process clear

  - Document the process requirements

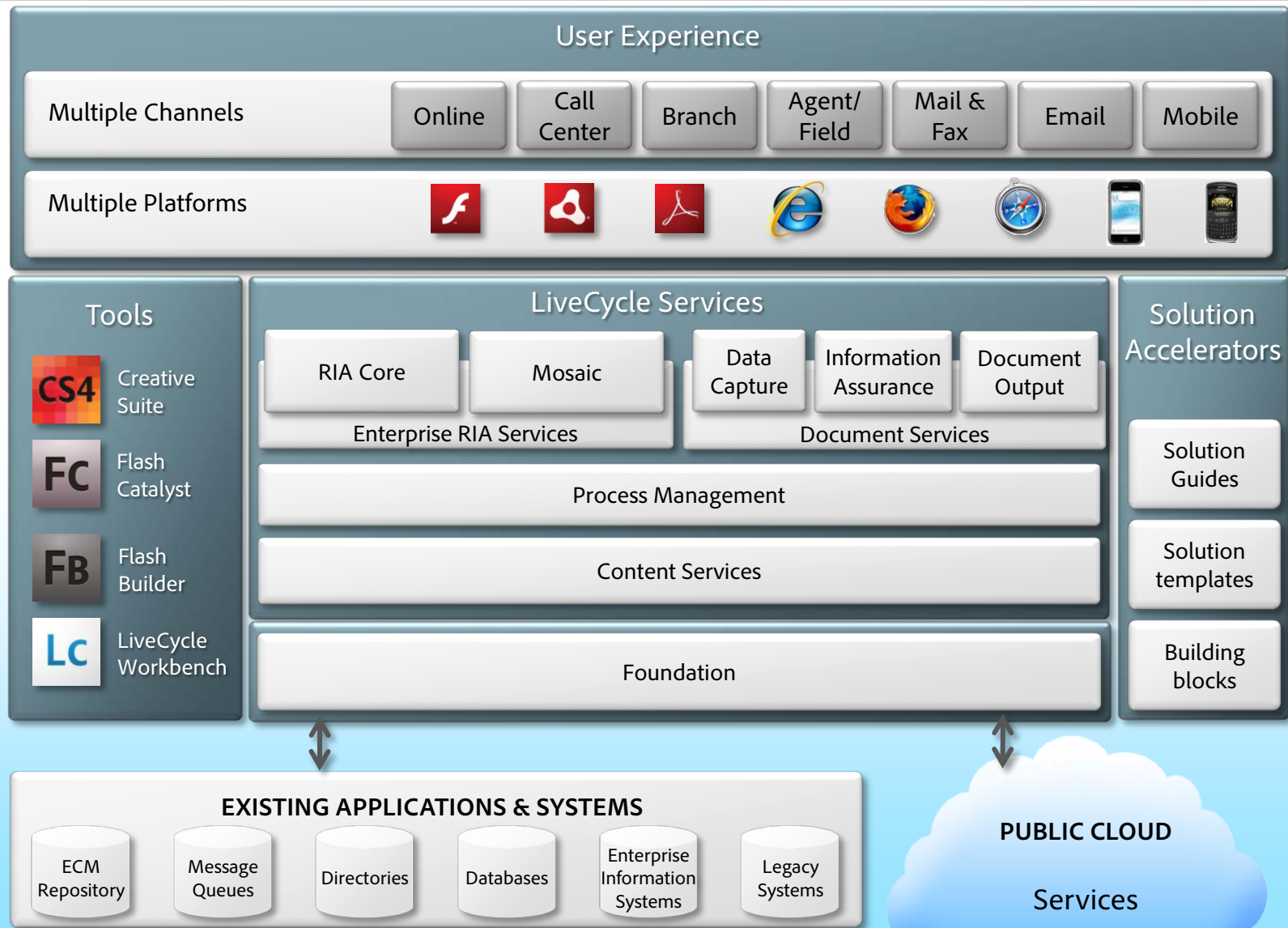 - Consider endpoints and access security

- ## Process/Service Versioning

  - Strict process versioning makes it clear when the process was last updated, and allows the LCA (LiveCycle Archive file) to be as robust and accurate as possible.

- ## Test-Driven Development

  - Use of an continuous integration server

  - Customer tests for all scenarios - Happy path and corner cases

  - Leverage xUnit

  - Quantity vs. Quality

- ## Configuration Management

  - Source code version control

  - Use automation of configuration management LC API's

- ## Deployment and Promotion

  - LCA, assets, and whatever gates and processes you need to adhere too.

Implementation 1
NA Financial Account Opening

Problem

- Needs to streamline account opening process

- Taking too long, prone to errors

- Currently using print and fill for all applications

- Paper workflow

- Supports multiple channels – branch, online, phone and manual

- Security

- New and existing clients

- All forms need to be accessible using screen readers

- All forms need to be government approved

- Needs to go live by Jan 1st

- No partying the night before ☹

- 50 forms, 1 large workflow and 6 supporting processes

- Targeting ~15,000 applications a week

- Adobe Professional Services

  - 5 resources: Sr. Project Manager, Technical Architect, 2 Senior Consultants, Technical advisor

- Client

  - 12 resources: 4 PM's, many architects, mainframe admin, offshore QA, operations…

- Duration = 9 months

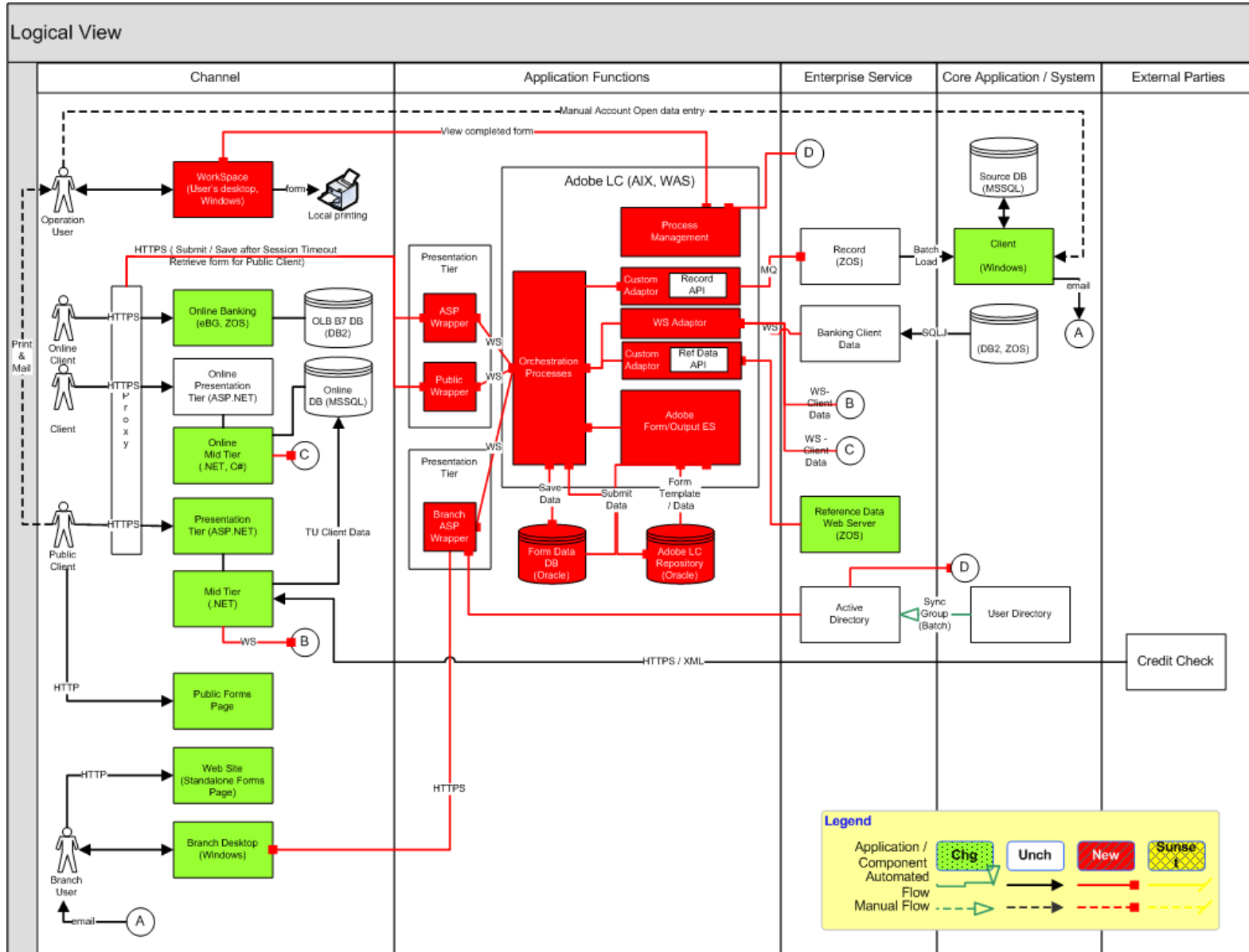 - Prototype phase - 2 months

  - Define and Deliver 2+5 months

- Pre-population of account information based on client card number – *Forms ES*

- Data capture via guides and accessible PDF – *Forms ES, Designer, Guide Builder*

- Server-side validation of data integrity- *Custom Component Workbench*

- Initiate a workflow for back-end operations processing – *Process Management*

- Auto printing of application due to internal processes – *Output ES*

- Storage as a document of record in the mainframe - *Custom Component Content Services*

LiveCycle ES

User Experience

Multiple Channels

| Online | Call Center | Branch | Agent/ Field | Mail & Fax | Email | Mobile |

Multiple Platforms

Tools

CS4 Creative Suite

FC Flash Catalyst

FB Flash Builder

Lc LiveCycle Workbench

LiveCycle Services

| RIA Core | Mosaic | | Data Capture | Information Assurance | Document Output |

Enterprise RIA Services   Document Services

Process Management

Content Services

Foundation

Solution Accelerators

Solution Guides

Solution templates

Building blocks

EXISTING APPLICATIONS & SYSTEMS

| ECM Repository | Message Queues | Directories | Databases | Enterprise Information Systems | Legacy Systems |

PUBLIC CLOUD

Services

Implementation 2
World Bank

Problem

- Branches worldwide

    - Support 5 languages, English, French, Spanish, Korean, Bahasa (Indonesia)

- Lots of paperwork to do anything

- International clients

- Creation of legal document package with signatures

- Wizard-style data capture that needs to be sent via email

- Needs to be secure

- Pre-fill some of the know data into the forms

- Offline save, submit outside web browser

Project size

- 1 MVC Form, multiple languages

- 5 workflow processes, 1 supporting process for 1 parent process, modularity

- ~500 corporate accounts, relatively low volume

- Adobe Professional Services

  - 3 resources: Sr. Project Manager, Technical Architect, Senior Consultant

- Client

  - 5 resources: 2 PM's, no architects, occasional admin, offshore QA and Knowledge Transfer, operations…

- Duration – 12 months

  - Prototype phase - 4 months

  - Define and Deliver –3/5 months

- Creation of legal documents – *Forms ES* and *Designer ES*

- Custom components - *Workbench ES*

- Creating a PDF package of documents - *Foundation*

- PDF package is password protected attachments for additional forms - *Digital Signatures ES*

- Support 5 languages, English, French, Spanish, Korean, Bahasa (Indonesia) – *Forms ES*

- Pre-fill of client data into the forms - *Forms ES*

- PDF offline save, submit outside web browser *- Reader Extensions ES*

- Non-interactive version of final document - *Output ES*

LiveCycle ES

User Experience

Multiple Channels

| Online | Call Center | Branch | Agent/ Field | Mail & Fax | Email | Mobile |

Multiple Platforms

Tools

CS4	Creative Suite
FC	Flash Catalyst
FB	Flash Builder
Lc	LiveCycle Workbench

LiveCycle Services

| RIA Core | Mosaic | | Data Capture | Information Assurance | Document Output |
| Enterprise RIA Services | | | Document Services | | |

Process Management

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PUBLIC CLOUD

Services

Sample Form

Section B - Registered Address

Address Line 1	
Address Line 2	
Address Line 3	
City	**State / Province / County**
Postal / Zip Code	**Country**

Go to...

< PREVIOUS   NEXT >

Sample Form

MAX

MAX
CONNECT. DISCOVER. INSPIRE.

나항 - 등록 주소지

주소란 1	
주소란 2	
주소란 3	
시(市)	주(州)/도(道)/국가
우편번호	국가

으로 가십시오

< 이전   다음 >

Adobe

Solution architecture
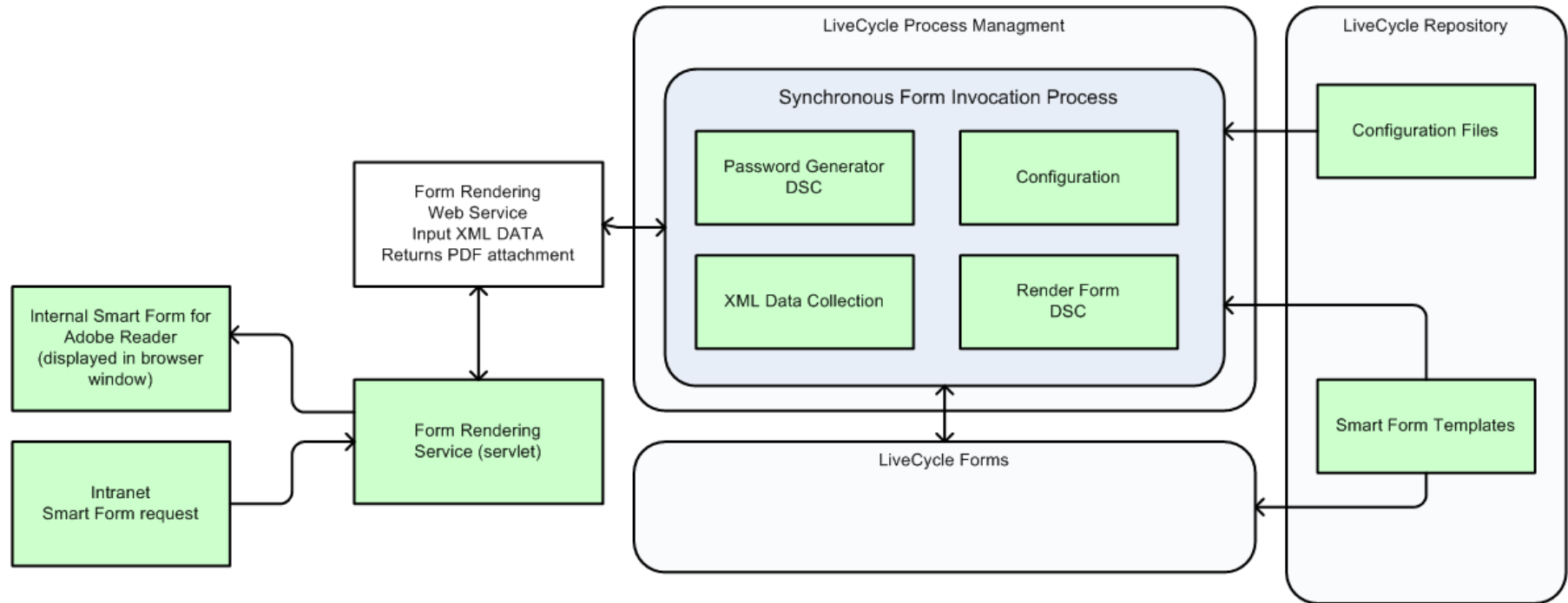
Implementation 3
Large Federal Agency

Problem

- E-Government, Government Paperwork Elimination Act (GPEA)

- Form processes is paper-based, manual, lengthy, difficult to track, and wasteful

- Need to processes approximately 70,000 forms /month

- Multiple steps of approval take several days or weeks via the mail

- There is no method of tracking the progress and status of the submission

- Each submission package was manually scanned and converted to TIFF files to be stored into the mainframe repository

Project size

- 90 forms, 6 workflows, 7000 users

  - 3000 internal users, 4000 external users

- Adobe Professional Services

  - 3 resources: Sr. Project Manager, Technical Architect, Senior Consultant

- Client

  - 4 resources: 1 PM, 2 architects, QA

- Duration = 10 months

  - Prototype phase - 2 months

  - Define and Deliver 3/5 months

- A web-based and paperless operation environment – *Customized Workspace Forms & Output ES*

- Improve data quality. Data is validated against existing various data sources to ensure data quality – *Forms ES*

- Automate the current form submission processes - *Process Management ES*

- Support multi-level digital signature signing and record tracking

- Support Enterprise Service Oriented Architecture (SOA) *Foundation*

- Archiving TIFF images – *PDF Generator ES*

- Integrate with the backend mainframe content management system *– Content Services*

- Support section 508 compliance mandate- *Designer & Forms ES*

LiveCycle ES

User Experience

Multiple Channels
Online | Call Center | Branch | Agent/Field | Mail & Fax | Email | Mobile

Multiple Platforms

Tools

- **CS4** Creative Suite
- **FC** Flash Catalyst
- **FB** Flash Builder
- **Lc** LiveCycle Workbench

LiveCycle Services

RIA Core | Mosaic | Data Capture | Information Assurance | Document Output

Enterprise RIA Services | Document Services

Process Management

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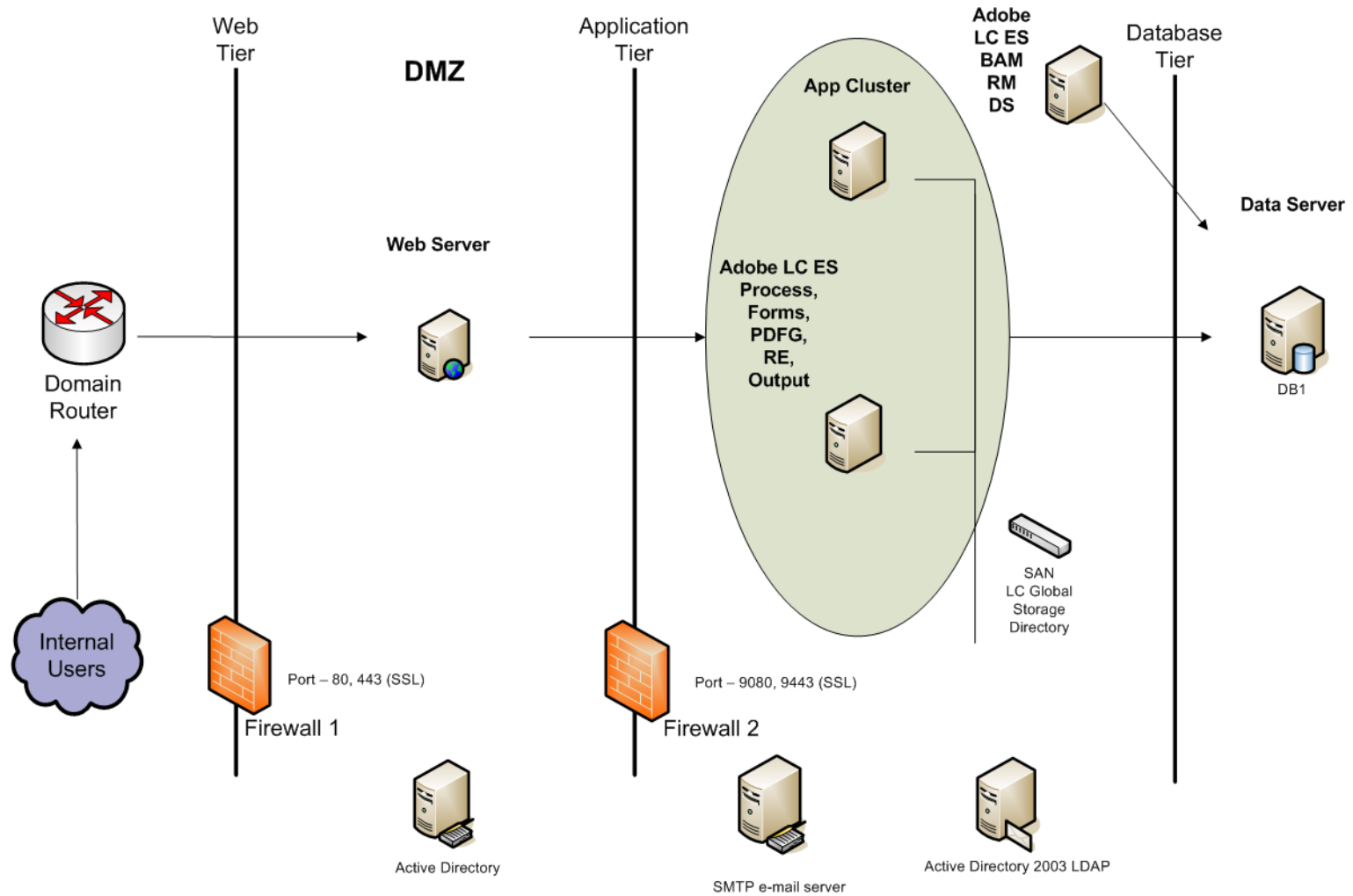
PUBLIC CLOUD

Services

Current Workspace

Customized Workspace

Solution architecture

- Identify the dots and then connect them

- Understand what LC modules are required based on your requirements

- Identify your integration end points

- Avoid large upfront design and "cowboy"coding

- Divide and conquer, start small and then go large - think atomic services

- Test driven development, continuous integration

- Using what you can out of the box to minimize risk, time to complete

- Understand your users

Get Started with LiveCycle ES2

- Windows/JBOSS DVDs available here at MAX!

  - Stop by the LiveCycle station in the Adobe booth

- First **250 developers** to register can get hosted access online!

  - http://www.adobe.com/devnet/aedp/dev_exp/

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