

Developers guide to customer experience management powered by the Adobe Digital Enterprise Platform

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The expanded number of channels and devices is changing the way customers communicate and engage in the digital world. In addition, the typical end user expects the same kind of experience across the entire spectrum—from web, to mobile, to social media, to enterprise applications. To meet these enhanced customer expectations, most companies are making building these kinds of applications a priority.



The Adobe Digital Enterprise Platform or ADEP (formerly Adobe LiveCycle® and CQ) represents the technology foundation of Adobe Customer Experience Solutions. ADEP services integrate with existing databases, content stores, and applications, allowing developers to build applications that operate across digital devices and platforms. The Adobe Digital Enterprise Platform makes the development process quicker and more efficient, while enabling the creation of a more consistent, richer user experience across devices, platforms, and applications.

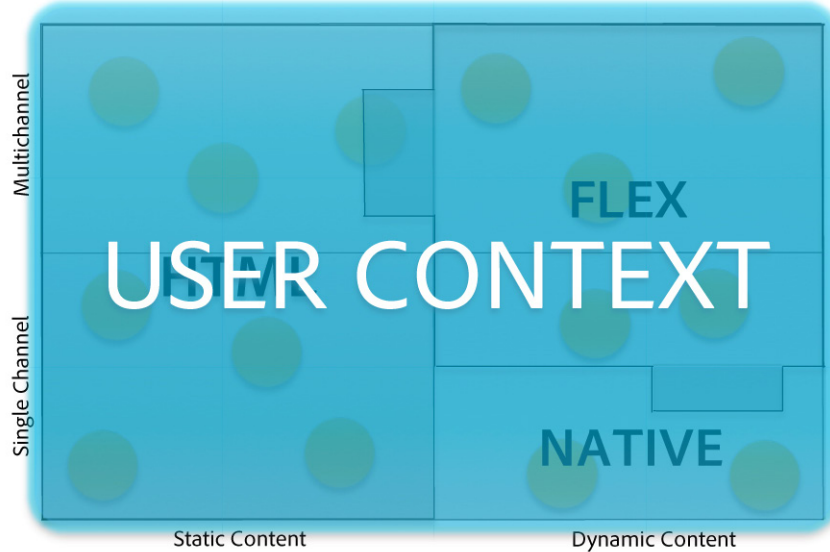
This guide is for developers who want to deploy ADEP in their organizations. It provides an overview of the ADEP components, specifically how these work with CQ, Adobe's open and standards-based web content management (WCM) platform, and Adobe LiveCycle Enterprise Suite. It also describes how these integrated solutions can help the developer build rich, relevant, and scalable customer experience management (CEM) applications.

Today's multichannel marketplace must be properly managed to deliver a relevant and consistent user experience.

Managing the digital spectrum

Today's multifaceted digital landscape is changing quickly, and channels and applications aren't always closely aligned with back-office operations. As a result, companies aren't sure where best to focus their efforts, and they don't always know whether applications and channels are having the expected business impact. This situation creates inefficiencies and makes business optimization efforts difficult. At the same time, many customers are still calling customer service lines and visiting stores, so companies need to make sure that alignment extends to their offline as well as online activities.

Challenge: Manage the mobile spectrum



These challenges create the need to manage across the entire mobile spectrum. Developers, in particular, must be able to blend static and dynamic content in a way that is relevant to the customer as well as the business. Working across multiple channels adds complexity to the task, as does the fact that several devices are running within each channel.

Adobe technology enables the same application—and the same codebase—to run on tablets, various mobile operating systems, and a host of other devices and platforms.

To be successful, developers require ready access to the right toolset. For example, HTML might be the right platform on which to deliver static content, but when you add dynamic content that must be available on various devices, Flex is the better option.



Adobe has solutions to create applications that work in any environment, regardless of the underlying technology and user interface. In response to emerging trends, Adobe has introduced updated versions of Adobe Flash® Builder® and Flex. These tools enable developers to build applications using one codebase and then run their apps on the Adobe AIR® runtime. The same application can run on tablets, iOS, Android, BlackBerry, and a host of other devices and platforms. And this doesn't just apply to applications on mobile devices. ADEP also works with Adobe Dreamweaver®, PhoneGap, and HTML5. Later this year, several native platforms will be also added.

They can also help address the next big challenge for developers—user context. For example, when customers visit a financial services website for information, and then visit a branch for further information, they expect the company to have an integrated view of their actions, knowing where and when information was gathered and not asking the same questions over and over again. People are using all kinds of channels to interact with enterprises, and the enterprise needs to keep its channels and applications customer-aware, synchronized, and up to date.

The Adobe Digital Enterprise Platform

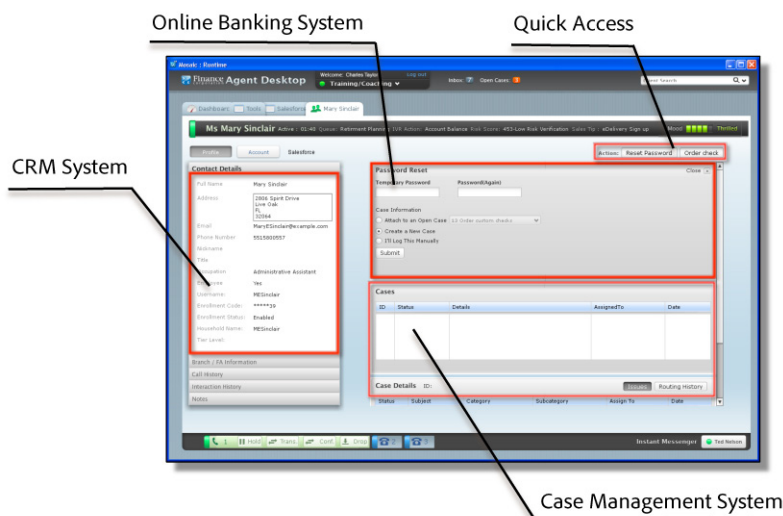
Imagine a mobile application that's designed to drive company revenue. Now imagine that someone in the organization wants to add a feature to this application, such as a tab for breaking news and alerts. The feature request would have to go IT to write the code, which could take days to implement and even more time if multiple code streams were involved. This process builds in a delay between the desired change, its deployment, and the expected revenue increase for the company.

However, if you have ADEP running with Flex and the Integrated Content Review Solution, that extra time isn't needed.† Instead, you locate the application in the Content Repository and simply click it. What comes up is HTML, not the source code, which makes it easier for most users to read and manage. It also makes it easy to add new features just by dragging and dropping content into the application and setting the properties.

Because the platform shares content with the rest of the system, it's easy to browse the Content Repository. After the content is selected, you can activate the page properties to either immediately go live or send the changes for further approval. The application user then just needs to reboot the application to see the change and start the revenue flowing.

Composite applications

Building applications based on multiple smaller components



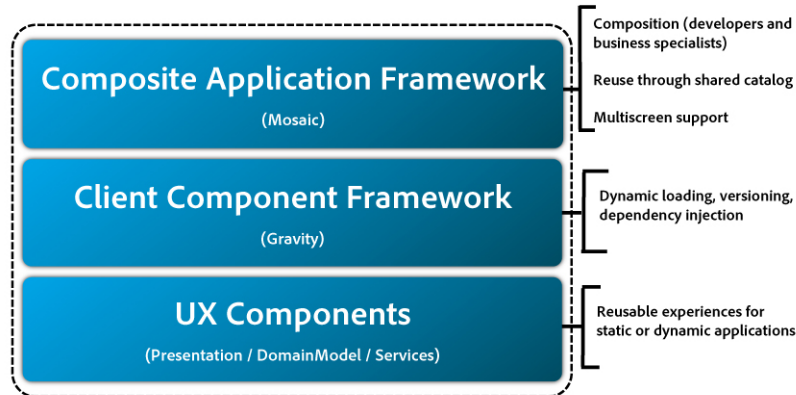
* Integrated Content Review is one of the Adobe Customer Experience Solutions built on the Adobe Digital Enterprise Platform. These extendable and customizable solutions are packaged with a set of production-ready building blocks, reusable components and technical guides to help accelerate development and deployment.

Another challenge that developers face is that applications are often made up of smaller pieces, and it makes sense to reuse or integrate content. For example, content that's displayed on the HTML screen might also be presented on the mobile device. Both formats are built in a modular fashion, as they should be, because that makes them easier to manage.

Adobe makes it possible to pull up information from back-end enterprise systems and make it usable for the user or developer. This ability helps businesses get as much value as possible out of their systems. In addition, ADEP provides a set of frameworks that enables developers to leverage the modular nature of the platform, which is great for both the server and the client.

Here is what's included in the ADEP component model for dynamic and static applications:

Solution: Component model for static and dynamic applications



Enabling modular development, deploy, test, and reuse

The integrative nature of ADEP components helps make the process of building applications simpler and quicker.

- Composite Application Framework, previously known as LiveCycle Mosaic, which blends modules created in Flex with modules created on other frameworks to make them work together more smoothly
- Client Component Framework, which is an OSGi inspired dependency injection framework for ActionScript
- UX (User Experience) components that ensure that static and dynamic content are reusable across channels and platforms

Component Application Framework

In previous versions of Adobe LiveCycle, building Mosaic applications was a bit complicated because you had to implement the Mosaic API and structure within the composite application tile. But with the introduction of dependency injection, you can classify the application as a regular module and not a specific application type. To know that it is part of the Composite Application Framework, you just look at its metadata tags. Next, you import the Composite Application Framework runtime libraries and bind a few properties to make the interfaces for Composite Application Framework, tile, and the context all work together, crating a shared integrated context across all three modular layers.

To create a new application, you start a new project, and Flash Builder pulls up all the extensions to Flash Builder and Flex 4.5, including ADEP and all its plug-ins. After you select the options you want, Flash Builder asks you for server information, which pulls up the Content Repository and shows you where the application will be stored. Next, you choose the platform, which will pull up the necessary libraries.

Client components

Leveraging a Java™ content repository alongside the application module has several advantages. If you want to make changes to content in the repository, you can do it without making changes to the repository itself. You can select an item from the repository and view it in the browser. You can make changes to the content, or replace it with a new uploaded item that goes from the browser into the repository. Because it's an integrated platform, content can be added and pulled without having to add more coding.

UX components

In the past, developers who built applications with Flash and Flex technology had trouble displaying certain documents because resizing and reframing were difficult. The UX components make this step easier, because they contain components like the web document viewer. You can drop a web document viewer component into your application, set the display size and URL, set the content type, and load the document into the server. When you resize the browser, the size of the document automatically changes.

If you need to build a complex workflow into your application but you don't want to invest in an expensive business process management solution, ADEP offers another option. By leveraging the simple task component, you can create, update and manage tasks within your application.

ADEP architecture

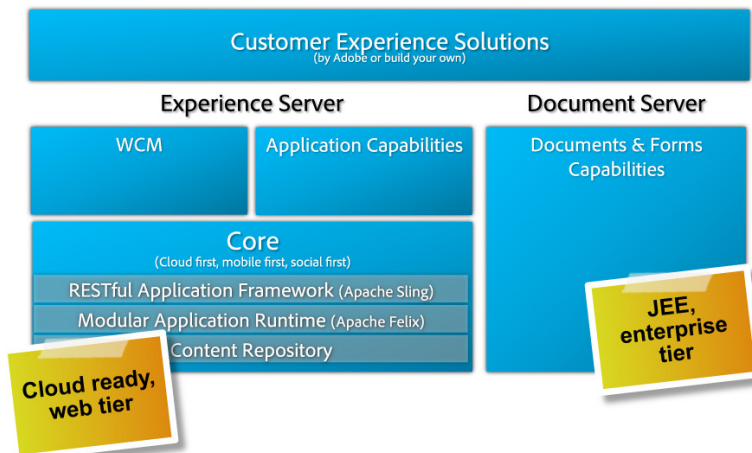


The Digital Experience Platform takes advantage of Adobe's technology portfolio to create a more flexible and integrated application-building experience.

ADEP ties into Adobe Creative Suite[®], allowing designers to get involved in the development process using Adobe Illustrator[®], Adobe Photoshop[®], and other design tools, without having to add a whole new toolset. It also integrates with the Adobe Online Marketing Suite, powered by Omniture[®], to enable analytics. Tools like Adobe Test&Target[™] allow you to segment your user base to target content, while Adobe SiteCatalyst[®], the industry-leading web analytics solution for actionable, real-time intelligence across multiple marketing channels, can tell you how applications are being used and how they are performing against business goals.

Front-end clients can leverage HTML5, PDF, Flash, and AIR to tie into back-end systems. A single layer of the ADEP architecture contains services from Adobe, along with the services you build yourself. These services can work with either one of two servers—the Adobe Experience Server or the Adobe Document Server.

Adobe Digital Enterprise Platform product architecture

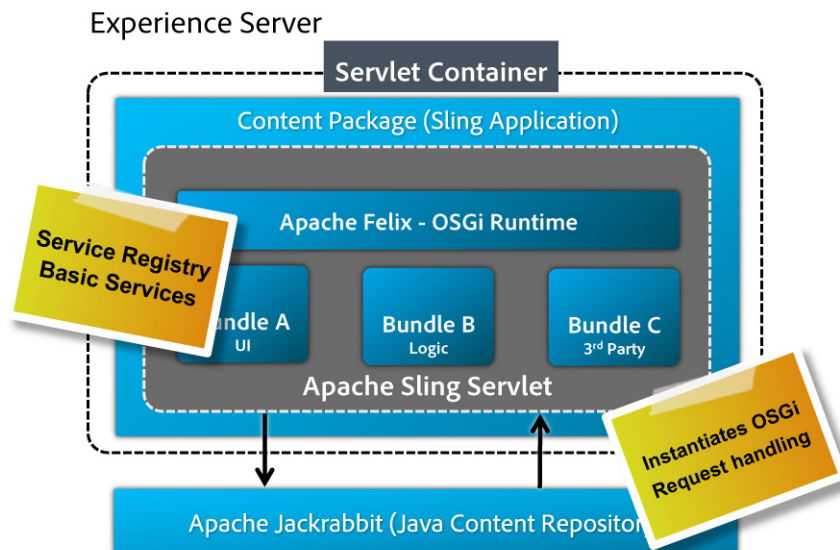


The Experience Server is built on open source packages like Apache Sling, Apache Felix, and Apache Jackrabbit. Web content management (WCM) capabilities sit on top of that foundation, as do application capabilities such as data services. Within this layer, these capabilities are bundled together, creating a self-contained server that's ready for the cloud. The Document Server is where you find document and form capabilities, such as PDF generation, security, rights management, and process management.

When it comes to applications, modularity is important. You must be able to use software modules to compose applications that are flexible and functional enough to be of value to users. All the ADEP modules are self-contained, so items like forms and PDF documents run within a service container. But while they're isolated from each other, they can also be programmed to work together to create a more comprehensive experience.

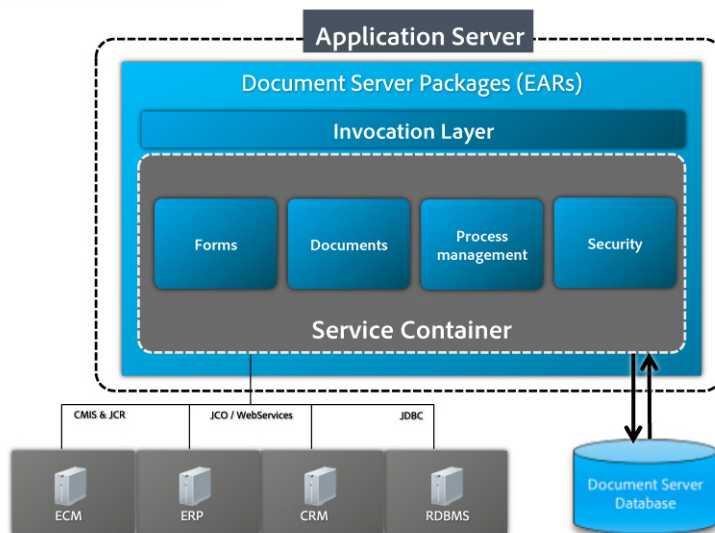
The same is true in the Experience Server. The core is built on an OSGi framework in Apache Felix, and all the services, including data services and composite applications, are in self-contained bundles. This modularity makes the resulting applications easier to build and manage. It also allows the right application to leverage the right stack.

For example, if you want to build a service that's used on both on premise and the cloud, you can create a "shared nothing" model, where the application is synchronized across platforms without sharing data. This works really well for the Experience Server, but the Document Server needs a long-lived transactional system that stores data for longer periods and still makes it easy to call forms and documents when needed. Going forward, ADEP will enable some Document Server functions to move over to the Experience Server based on the user's needs.



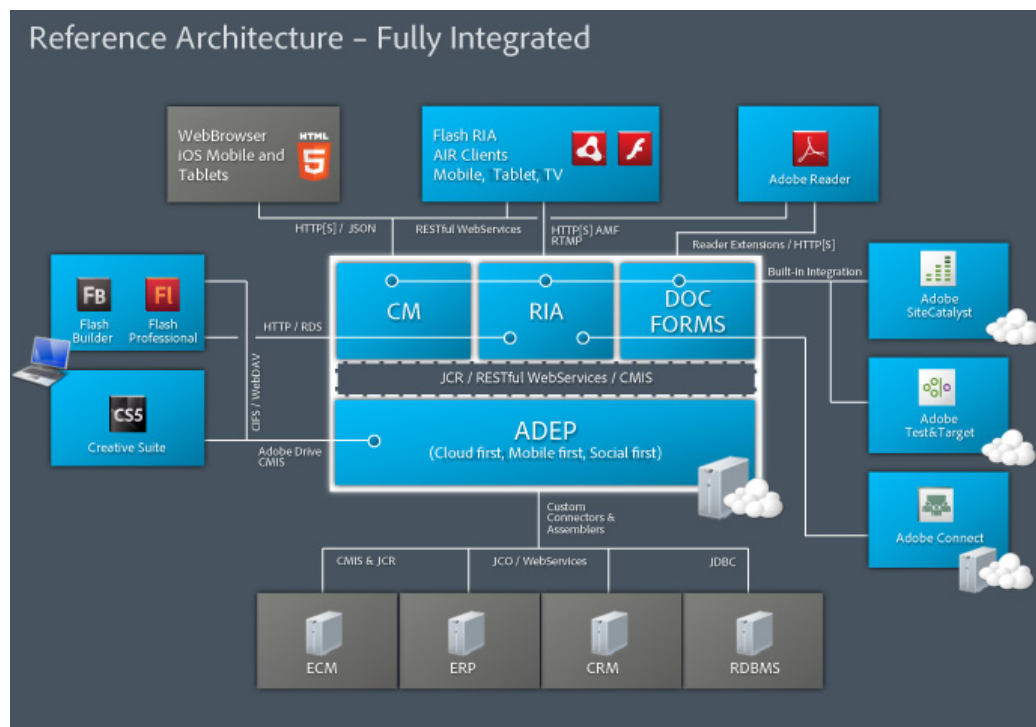
The Experience Server holds a servlet container that is fully functional and self-contained, but you can also run the container in an application server or in another servlet container. Within the container is the content package, which is a Sling application and contains Apache Felix. When you want to run a function or retrieve content, Felix pulls from one of the bundles and communicates with the Content Repository. The Felix runtime also provides the service registry and some basic services that provide the capabilities of the platform. The service registry is responsible for handling all requests and calling up the OSGi.

Document Server



The Document Server requires an application server, and is deployed as a set of enterprise application archives (EARs). The invocation layer provides a common set of protocols to invoke document services such as forms, documents, security, or process management. It enables you to connect to back-end resources like your ECM, customer relationship management (CRM), or enterprise resource planning (ERP) platforms. The Document Server also requires an SQL database.

Bringing it all together



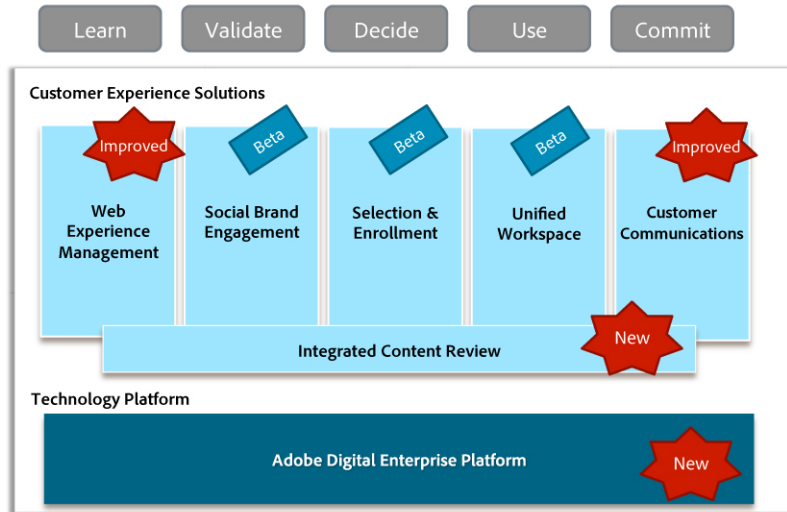
All these pieces fit together into a fully integrated ADEP solution:

- Runtime tools from the client sit on the top layer. These include HTML5, Flex, Flash, or Adobe Reader®.
- The application-building tools, including Flash Builder, Flex, Flash Professional, and Creative Suite, contribute content to the platform.
- Next come content management, rich Internet applications (RIAs), and document and forms technologies, including the Composite Application Framework, data services, documents, and forms.

- ADEP uses RESTful web services and Content Management Interoperability Services, which can be managed on premises or in the cloud.
- Tools are built-in to integrate design and analytics.
- At the bottom, are the tools that connect applications to the back-end systems.

Additionally ADEP will soon include a wide range of CEM solution:

New platform and solutions for the multichannel, digital consumer



- Social brand engagement will enable integration with various social media, as well as the ability to analyze and manage consumer sentiment on those channels.
- Selection and enrollment tools will create a set of questions whose answers are used to target specific offers to specific users.
- Unified workspace tools will allow call center representatives and other support staff to perform tasks offline and then upload their changes and updates when they go back online.

Key takeaways

- ADEP is a new platform and set of solutions specifically designed to support the application development process and the multichannel, digital consumer.
- ADEP software modules are self-contained, highly cohesive, and loosely coupled, making the resulting applications easier to build and manage.
- ADEP modules are isolated from each other, but they can be programmed to work together to create a more comprehensive and rich customer experience.
- Integration with design tools, analytics tools, and back-end systems helps streamline applications, tying them to core business processes throughout the organization.
- Adobe development tools enable applications that work on any device or platform.
- CEM tools in future releases will add even more value to the enterprise as customer expectations continue to evolve.

Additional resources

- Attend Developer Deep Dive events: <http://cem.events.adobe.com/devcomm>
- Visit the Adobe Developer Connection: www.adobe.com/devnet.html
- Sign up for a trial: <http://www.adobe.com/devnet/enterprise-platform.html>
- Join the conversation: <http://forums.adobe.com/community/adep>



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