

WHITEPAPER

Evolution of Adobe LiveCycle (XFA) Forms

In this document we discuss the evolution of Adobe LiveCycle forms to Adaptive Forms, highlighting the shift from Flash to HTML5 for creating responsive, interactive, and accessible forms integrated with Adobe Experience Manager.

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Evolution of Adobe LiveCycle (XFA) forms:

Let us take a sneak peek on the fascinating journey that Adobe LiveCycle had to embark on, thereby embracing modern standards of web development and getting embedded in the content management system (CMS) of Adobe Experience Manager, AEM, leveraging different technical capabilities the CMS has to offer, while providing values in terms of document generation for archival and print purposes using the robust XFA standards and offer the best of both technology stacks to customers.

Before understanding the evolution of Adobe LiveCycle forms to Adobe Experience Manager Forms, it is equally important to understand the role of Adobe Flash and its relationship with Adobe LiveCycle forms.

Quick introduction on Adobe Flash:

Adobe Flash was a multimedia platform used for creating animations, rich web applications, and interactive content. It was widely used for video playback, online games, and interactive websites. However, due to security issues and the rise of HTML5, Adobe officially ended support for Flash on December 31, 2020.

Relationship Between Adobe Flash and XFA Forms

Adobe LiveCycle is a server-based suite of applications designed to automate and streamline business processes. It includes tools for creating, managing, and processing forms and documents. LiveCycle allowed for the creation of rich internet applications (RIAs) using Flash and interactive forms using XFA. Here's how it utilized Adobe Flash and integrated it with XFA forms:

Rich Internet Applications (RIAs):

- **Adobe Flash Builder:** LiveCycle integrated with Adobe Flash Builder (formerly Flex Builder) to create Rich Internet Applications (RIAs). Developers could use Flash Builder to design interactive and dynamic user interfaces that could be embedded within LiveCycle applications. Flash was used to create dynamic and interactive elements within the Workspace interface, such as animated transitions and interactive dashboards.

Typical Example: Adobe LiveCycle Workspace relied on Adobe Flash Player for its user interface. This allowed for a rich, interactive experience when users accessed and participated in business processes through a web browser.

Customization: Developers could use Adobe Flash Builder to customize the Workspace web interface. This customization enabled the creation of tailored user experiences with interactive elements and dynamic content.

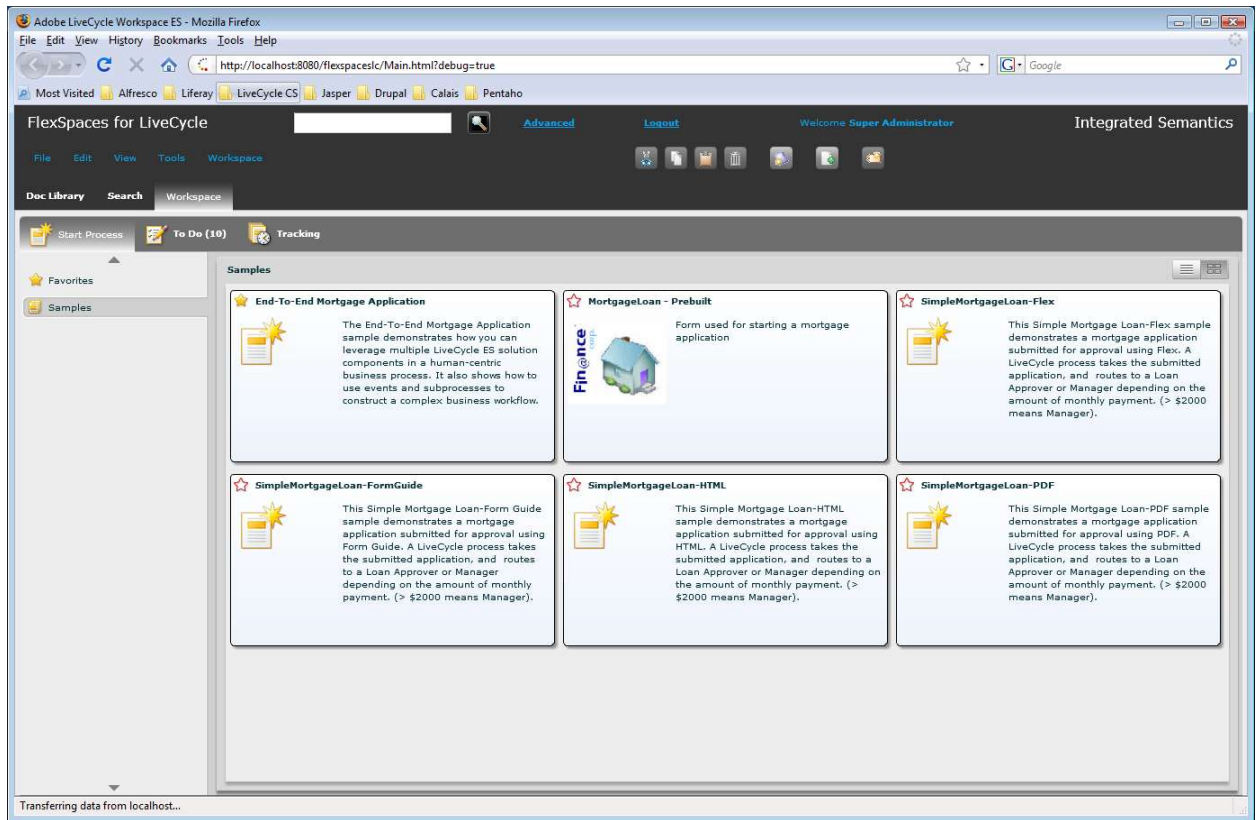


Figure 1. Adobe LiveCycle Workspace with a form – Reproduced from [Integrated Semantics' published article](#).

- Form Guides:** LiveCycle allowed the creation of Flash-based form guides, which are interactive, wizard-like interfaces that guide users through form completion. These guides leveraged Flash's capabilities to provide a more engaging user experience. Flash-based form guides were embedded in Workspace to help users complete complex forms by providing step-by-step instructions and visual aids

XFA Form in Adobe Flash workspace Example:

The screenshot displays the Adobe LiveCycle Workspace ES interface. At the top, the title bar reads "ADOBE LIVECYCLE WORKSPACE ES" and includes navigation links for "Preferences", "Messages", "Help", "Logout", and "Welcome Ron Nagy". Below the title bar, there are tabs for "Start Process", "To Do (12)", and "Tracking". A sidebar on the left lists various categories such as "Favorites", "Help and FAQs", "Attendance and Leave", "Community Involvement", "Employee Stock", "Facilities", "Finance Only", "Information Technology", "Legal Agreements", "Manager Only", "PAR", "Payroll", "Performance", "Procurement", "Sales", "Security", and "Travel and Expenses". The main workspace is titled "Non-Exclusive License Agreement Version A - Content License for Products and Marketing". It features a "Task Details" pane on the left with sections for "Signing Party", "Date and Requester", "Media Types", and "Description and Delivery". The "Form" pane on the right contains the following fields: "Signing Party" (with a sub-section "Adobe Systems Incorporated NON-EXCLUSIVE LICENSE AGREEMENT VERSION A CONTENT LICENSE FOR PRODUCTS AND MARKETING"), "First Name", "Last Name", "Job Title", "Email Address", "Company Name", "Country" (set to "United States"), "Address", "Address (line 2)", "City", "State", and "Postal Code". A "Next" button is located at the bottom right of the form. At the bottom of the workspace, there are buttons for "Save In Draft Folder" and "Complete".

Figure 2. Adobe LiveCycle Form Rendition in Workspace View.
Reproduced from Adobe's [ROI Case Study](#)

Transition to HTML5 Workspace

With the decline of Flash, Adobe introduced HTML Workspace, which replicated and extended the capabilities of the Flash-based Workspace. HTML Workspace is compatible with more devices and does not require Flash Player, making it more versatile and accessible.

What is HTML Workspace?

HTML Workspace was initially introduced as a replacement for the Flash-based LiveCycle Workspace. It provided a web-based interface for users to interact with business processes and forms, leveraging HTML5 to ensure compatibility across various devices and browsers

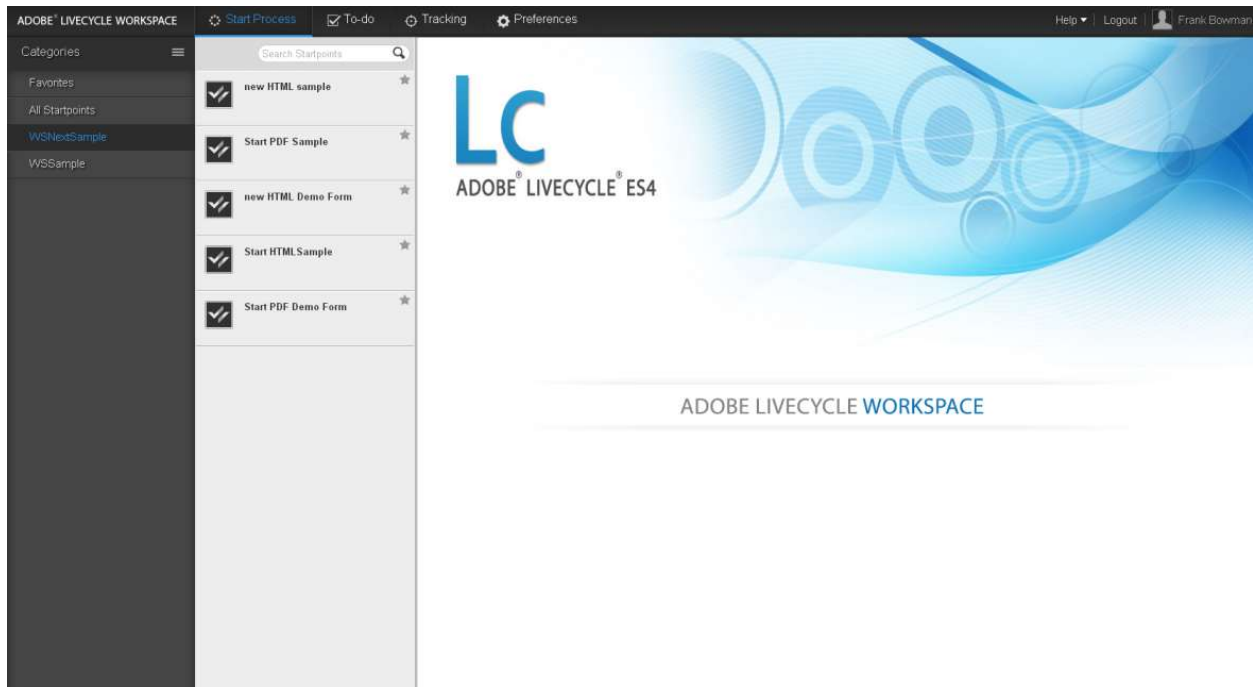


Figure 3: HTML Workspace. Reproduced from Adobe's [Introduction-html-workspace](#) webpage.

Advent of HTML5: Decline of Adobe Flash

HTML5 forms got officially published as a W3C Recommendation by 2014, prior to major browsers began HTML5 features implementation, thereby motivating widespread adoption of HTML5 forms.

The rise of HTML5 significantly contributed to the decline of Adobe Flash, where major browsers noticed security vulnerabilities and frequent updates to Flash, where these browsers brought in strict security measures making it harder for Flash to run securely. Flash was resource-intensive and could lead to performance issues, such as high CPU usage and battery drain on mobile devices. Flash was not supported on many mobile devices, notably Apple's iOS devices (iPhones and iPads).

HTML5 offered better compatibility across different browsers and devices, including mobile platforms, improved performance, native support for multimedia elements, better accessibility

without the need of additional plugins, vast support from major browsers as HTML5 was promoted as the new standard for web development.

All the above factors lead to an eventual deprecation of Flash and a major shift to HTML5 standard.

Many major browsers started to block or restrict Flash content by default. Users had to enable Flash manually on a site-by-site basis by around 2015-2017, eventually leading to the final phase-out of Flash player, declaring its end of support by 2020, marking the end of an era.

Even though this decline of Flash player and the rise of an acceptable standard – HTML5, by all major browsers was not a direct reason, it did play a role in the broader context of web technology evolution that influenced the development of newer solutions like Adaptive Forms. Here are the major factors that influenced the advent of Adaptive forms:

Transition to Modern Web Technologies

With the decline of Flash, Adobe shifted towards HTML5 and other modern web technologies for creating interactive forms. Adaptive forms are part of this transition.

HTML5 introduced new capabilities for web forms, such as native input types, validation, and improved accessibility. This laid the groundwork for creating more sophisticated and user-friendly forms using modern web technologies, which Adaptive Forms leverage.

What are Adaptive Forms?

Adaptive Forms are a type of digital form designed to be flexible and responsive. These forms are responsive as they automatically adjust their layout and appearance based on the device used, like smartphone, tablet or desktop. These forms can change in real-time based on user's input, driving visibility of certain fields or triggering certain business validations and so on. These forms are designed to be intuitive and easy to navigate, making it simpler for people to fill them out without getting confused or frustrated.

In short, these are modern replacements for Flash-based forms, using HTML5 for responsive and interactive form experiences.

This transition reflects the evolution of web technologies and Adobe's commitment to providing robust, secure, and versatile form solutions.

Enhanced User Experience

Demand for Responsive Design: The decline of Flash highlighted the need for forms that work seamlessly across various devices and screen sizes. Flash's limitations in responsiveness and mobile support led to a demand for solutions that provide consistent user experience across all platforms. Adaptive Forms were designed to be responsive and adaptable, addressing these needs effectively.

Traditional forms, especially XFA forms, were not designed for modern, responsive web environments. They struggled to adapt to different screen sizes and devices, making them less effective for mobile users. Adaptive Forms were created to deliver a consistent and responsive experience across all devices, from desktops to smartphones.

Accessibility: There was a growing need for forms to be accessible to users with disabilities, in compliance with standards like WCAG (Web Content Accessibility Guidelines). Adaptive Forms were developed with accessibility in mind, ensuring they could be used by a broader audience.

Integration with Modern Platforms

AEM and Web Standards: Adobe Experience Manager (AEM), which incorporates Adaptive Forms, evolved to embrace modern web standards and technologies. The decline of Flash and the shift towards HTML5 influenced AEM's development to include more advanced and compatible solutions for form management, such as Adaptive Forms.

Web Standards Compliance: Adaptive Forms are built using HTML5, CSS3, and JavaScript, which are standard technologies in modern web development. This compliance ensures better compatibility with various browsers and platforms, unlike XFA forms that relied on proprietary technologies.

Seamless Integration with AEM

Content and Forms Unification: AEM is a leading platform for web content management, and the integration of forms into this ecosystem was a natural progression. Adaptive Forms allow organizations to seamlessly blend content and forms within the same platform, enabling more cohesive digital experiences.

Analytics and Personalization: By integrating forms into AEM, organizations can leverage Adobe's suite of tools for analytics, personalization, and targeting. Adaptive Forms allow for detailed tracking of user interactions, which can be analyzed to improve form performance and conversion rates. This integration will be a substantial grid in today's world of analytics, where data is key and being analyzed rigorously thereby providing organizations with deep insights on different applications.

Futureproofing

Adobe LiveCycle, which supported XFA forms, was eventually succeeded by AEM Forms. The shift to Adaptive Forms was part of Adobe's broader strategy to phase out older technologies and move towards more future-proof solutions that align with the latest trends and standards in web development.

Scalability: Adaptive Forms are designed to scale with modern cloud-based environments, providing better performance, reliability, and scalability compared to older technologies.

Use Cases

Adaptive Forms:

- Best suited for modern web applications where responsiveness, accessibility, and integration with AEM and other web technologies are crucial.
- Ideal for organizations looking to provide a seamless and interactive user experience across devices.

HTML5:

- Apt solution for makeshift Adobe LiveCycle (LC) applications, where XDPs need to be rendered on various mobile devices and desktop browsers, without the need for special plugins for host platforms.
- Ideal for seamless integration into web applications and existing web-based workflows with features like scribble signatures and custom widgets thereby improving usability on touchscreen devices.

Adobe LC XFA Forms:

- Traditionally used in enterprise environments where complex, data-driven forms are required, especially in scenarios involving heavy backend integration.
- Suitable for use cases where forms need to be embedded within PDFs and filled out in Adobe Acrobat/Reader.

Summary

In short, this paper portrays the fascinating journey that XFA forms and related technology stacks had embarked on. It will offer a concise overview of the evolution of forms, enriched with intriguing facts that will engage readers and enhance their understanding of the topic.