

# Liferay DXP 7.3

Features Overview

# Table of Contents

Foundation . . . . .	1
Integration and Interoperability . . . . .	1
Platform Services . . . . .	2
Identity Management and Access Control . . . . .	4
Experiences . . . . .	6
Content Management . . . . .	6
Experience Management . . . . .	9
Segmentation and Personalization . . . . .	11
Multichannel Support . . . . .	12
Operations . . . . .	14
App Builder . . . . .	14
Forms . . . . .	15
Workflow and Business Productivity . . . . .	18
Digital Asset Management . . . . .	19
Collaboration and Social . . . . .	21
Developer Tools . . . . .	24
Search . . . . .	25
Analytics . . . . .	26
Cloud and Infrastructure . . . . .	27
What's Next . . . . .	28

# Foundation

Successful digital businesses require platforms that are built on solid, reliable IT. Liferay DXP delivers with features like modular architecture, a powerful search engine and advanced tools for testing and upgrades.

## Integration and Interoperability

Transform the way your business is run by using a platform can evolve alongside your strategy. Liferay's incredibly flexible architecture empowers businesses to bring systems and data together on one platform.

<b>Integration Framework</b>	Liferay DXP is a central presentation layer platform for integrating content and services from back end or legacy applications. Liferay DXP supports multiple methods to integrate, including SOAP, REST, GraphQL, RSS, as well as proprietary APIs.
<b>Frameworks Support</b>	Support for popular JavaScript frameworks such as Angular, Vue.js, React and modern JavaScript workflows are included out-of-the-box (OOTB). Java frameworks such as JSF, SpringMVC, Vaadin are supported.
<b>Custom Fields</b>	Administrators can customize, edit, add and change user attributes (name, company, date or any other information that needs to be tracked or logged by your system) directly from Liferay, without needing to modify their database. This support extends to Pages, Web Content, Blogs Entries, Documents and its folders, images and its folders, Segments, bookmarks and its folders, forum messages, calendar events and wiki pages. Liferay also offers a framework so that developers can leverage this functionality in their custom applications to support custom fields for their own entities.
<b>Modularity</b>	Liferay provides a highly modular architecture that allows for greater extensibility, stability and flexibility. Developers can enjoy an elegant development model based on OSGi standards. Modularity leads to many benefits such as: <ul style="list-style-type: none"><li>• Greater flexibility including the ability to remove unused modules.</li><li>• Faster implementation of new features with users getting new modules as they're ready rather than at the next GA release from Liferay.</li><li>• Reduced complexity with greater stability since updates and bug fixes are delivered independently and routinely.</li><li>• Quicker deployment since modules can be installed, uninstalled, started or updated all while running Liferay DXP.</li></ul>

# Platform Services

Liferay DXP gives businesses the ability to manage backend systems through powerful administration interface tools along with a flexible, modular architecture that enables agile growth with user needs. Key functionality includes site administration, identity management, search and more.

<b>Multitenancy and Virtual Hosting</b>	Multiple virtual instances serving different groups of users with different domains can be administered in a single instance of Liferay DXP, leading to cost savings and operational efficiency for your organization. Enterprises have the ability to organize users by business-defined categories such as departments, geographies or offices, as well as by cross-departmental teams and workgroups. Each organization and site can inherit or define its own permissions and administer user, group and role management for the various applications it chooses to include. A single instance can be used to create many websites quickly to create hosted websites within one Liferay deployment and each clone can have its own unique URL, custom theme and design. For example, a single deployment could host <code>www.companyA.com</code> and <code>www.companyB.com</code> with completely different themes, pages and applications.
<b>High Availability and Scalability</b>	Maximize uptime while updating your clustered environment with rolling restarts, support for blue-green deployment and cloud deployment through Liferay DXP Cloud.
<b>REST APIs</b>	Out-of-the-box APIs allow connections to assets, cache, comments, data handlers, file storage, geolocation, membership policies, message bus, permissions, recycle bin, scheduler, scripting, search, upgrade and workflow.
<b>Search Administration</b>	Easily manage and control indexing and other search engine features.
<b>Simplified UI</b>	Liferay DXP simplifies the user experience of internal, external and channel websites —notably those that allow users to login for personalized services or views and those that require a workflow approval process to update content and integrate or aggregate multiple existing services. Liferay DXP provides a presentation layer for integrating all enterprise systems into a single easy-to-use interface for end users.

<p><b>Quick Configuration</b></p>	<p>A fast, responsive interface makes Liferay DXP extremely easy and enjoyable to use for everyone in your organization. Typically time-consuming tasks such as altering a page layout, adding new applications and content and changing the look and feel can all be done in a couple of clicks without ever refreshing the page.</p>
<p><b>Product Menu</b></p>	<p>Administrators and registered users have access to administrative and personal applications from the Product Menu, leaving the screen real estate available for site navigation and page design. The product navigation is fully extensible to allow customizing it for any need. All the tools for managing the current page are now in a bar (Product Menu, Add Content, Add Application, Add Page, Edit Page, Device Preview).</p>
<p><b>Site Administration</b></p>	<p>Users can create and manage sites and their respective audiences. Each site gets its own set of pages, content management system, shared calendar and permissions. Users belonging to multiple communities can easily navigate between sites. Page settings allow site administrators to change the look and feel with one click, manage site pages, insert JavaScript and metadata, set friendly URLs, create page sets to help you organize your pages/navigation and more.</p> <p>One-click page and site creation are possible: web structures and templates allow common web layouts to be predefined and saved for future web pages. With one-click page creation, users can create a new page and immediately begin adding content to the page layout, allowing web pages to be set up within minutes without any developer support required. Users can also create Sites with sets of predefined pages configured to their needs. These site templates can be dynamic, allowing all changes to the parent template to be inherited by associated children sites.</p>
<p><b>Auditing and Optimization</b></p>	<p>To help administrators monitor the platform's performance and better optimize resources, Liferay DXP gives administrators access to key performance statistics (hits/page, average time/hit, maximum time per request, and more) for all applications and pages. Meanwhile, our Auditing feature allows administrators to track and manage user activity within the platform.</p>
<p><b>Clustering and Performance Monitoring</b></p>	<p>Liferay DXP supports clustering at any combination of tiers (presentation, service, business logic and database), advanced caching and performance monitoring support (JMX, Java profiling and more).</p>

<b>Single Page Applications</b>	<p>Users experience faster loading and greater performance on the Liferay platform through Single Page Applications, a technology that provides dynamic and responsive web experiences by taking only the parts of a page that need to be loaded rather than reloading the entire page. This can be achieved in Liferay DXP through Senna.js, a SPA engine.</p>
<b>Development Standards and Technologies</b>	<p>AJAX, iCalendar, Microformat, JSR-362 (Portlet 3.0), JSR-371 (MVC1.0), JSR-344 (JSF 2.2), Spring 3.0, CMIS 1.0/1.1, Hibernate collection of projects, OSGi Core 6.0 and SAML 3.0.</p>
<b>Gogo Shell</b>	<p>Interact with and manage Liferay DXP's module framework through a built-in Gogo shell interface.</p>

## Identity Management and Access Control

Liferay DXP gives businesses the ability to connect backend systems through integration along with a flexible, modular architecture that enables agile growth with user needs. Key functionality includes site administration, identity management, search and more.

<b>Security</b>	<p>Liferay DXP is thoroughly tested for security issues through White Hat Security, a leading provider of application risk assessment and management services. This independent third-party security audit means that Liferay DXP has successfully undergone rigorous testing based on the most widely accepted and comprehensive methods, and that the platform meets customer requirements for addressing security issues in an effective and proactive manner. In addition, Liferay DXP is developed according to secure coding best practices and guidelines such as the OWASP Top 10 and the CWE/SANS Top 25. Our continuous security testing process includes regular security code reviews, penetration testing by ethical hacking firms, continuous white and black box security scans from third-party firms and continuous vulnerability monitoring of third-party libraries included in Liferay DXP. Whenever new potential security vulnerabilities are found by Liferay's security team, customers are notified and provided with a security update or fix pack.</p>
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<b>Identity Management</b>	<p>Liferay offers a customizable single sign-on (SSO) that integrates with LDAP, SAML 2.0, OpenID Connect, Token Based SSO, Kerberos, OpenSSO/OpenAM, SiteMinder, Facebook Login and CAS. For example, the SAML 2.0 Provider allows Liferay to act as your SSO server to authenticate all applications integrated.</p>
<b>Access Control</b>	<p>The CORS (Cross-Origin Resource Sharing) system settings provide a way to configure CORS headers for Liferay services.</p> <p>OAuth 2 is the de facto standard for access delegation, for providing authorization between systems. OAuth 2 allows your application to access protected data inside your platform.</p> <p>Multi-factor authentication, in turn, is an architectural approach to accessing resources sequentially through multiple authentication verifiers.</p>
<b>Service Access Policies</b>	<p>Define which services or service methods can be invoked remotely with an additional layer of web service security.</p>
<b>User Management</b>	<p>Create and manage users, organizations, user groups, roles and password policies. View all of the live portal sessions of your users.</p>
<b>Data Protection</b>	<p>Data protection tools in Liferay DXP help companies address GDPR and other privacy regulations and maintain control over how their platform manages user data. Companies can erase a user's personal data and export a user's personal data in a machine-readable format upon request. For data erasure, administrators can review content that potentially contains personal information and edit or delete as needed through a simple interface. Both tools include APIs for third-party apps to implement this feature or override the default behavior for out-of-the-box apps. The management dashboard allows for simplified bulk deletion, anonymization and filtering and scoping abilities for greater context in personal data review. Administrators are informed of which applications will automatically delete or anonymize data during the auto-anonymization process.</p>

# Experiences

Liferay DXP is designed to support personalized experiences across digital touchpoints including web, mobile and connected devices. Features around business productivity also help companies create useful experiences for employees and partners, making the platform a solid foundation for almost any project. Create consistent, personalized experiences quickly and easily.

## Content Management

Content management features provide support for creating and managing structured web content and digital assets for developers and business users, including a modern UI, content authoring, geolocation, staging tools and others.

### Liferay CMS

The main interface for Liferay's integrated web publishing system allows users to create, edit and publish content as well as take advantage of reusable content templates and structures. These structures and templates enable users to quickly build pages and websites while maintaining a common look and feel across an entire site. It also allows for one-click changes in layout and one-click creation of full pages. There is a built-in workflow, article versioning, search and metadata.

- **Structured Content:** Manage and create different content models and web content needed, for making sure your use case-specific content management system becomes a reality.
- **Content previews:** Easily preview created content within an associated display page, within a page before publication in a fragment and in draft form within a Widget page.
- **Content Modelling:** Easily create and manage content models for your web content through Web Content Structures.
- **Collections:** Create, edit and manage collections of content in "sets" for asset publisher display. Reuse configurations for content sets.



<p><b>Web Content Display</b></p>	<p>Publishes any piece of web content created within Liferay WEM to a page. Web Content Display is used to display most of the web content on Liferay.com and other Liferay-driven websites and can be arranged on a page with a convenient drag-and-drop.</p> <ul style="list-style-type: none"> <li>• Asset Publisher: Dynamically display any piece of content, such as images, blogs, documents and web content, either through a set of publishing rules or by manual selection. Improvements made in configuration allows for better management of content display.</li> </ul>
<p><b>Modern UI</b></p>	<p>Liferay supports modern UI frameworks and Single Page Applications (SPAs). Users experience faster loading and greater performance on the Liferay platform through SPAs, a technology that provides dynamic and responsive web experiences by taking only the parts of a page that need to be loaded rather than reloading the entire page. This can be achieved in Liferay DXP through Senna.js, a SPA engine.</p> <p>Support for third-party UI frameworks include Metal.js, Twitter Bootstrap, JQuery, ReactJS, AngularJS, Senna.js, Vaadin and more.</p>
<p><b>Enterprise DAM</b></p>	<p>Manage documents, video, audio, images and other media types in a unified repository. Allow groups to store, tag, lock and search for assets, use them on site pages or download them for use offline. For more information about digital asset management, please refer to page <a href="#">19</a>.</p>
<p><b>Auto-Tagging</b></p>	<p>Leverages third-party machine learning services to provide personalized experiences and improve the findability of assets by automatically adding tags to images and documents upon upload.</p> <p>Features include:</p> <ul style="list-style-type: none"> <li>• Image Auto-Tagging: Tag providers available for images are TensorFlow, Google Cloud Vision and Microsoft Cognitive.</li> <li>• Web Content/Document Auto-Tagging: Tag providers are OpenNLP and Google Natural Language.</li> <li>• Auto-Tagging API: Tag any asset with any service, for your use case by leveraging an API built for extending auto-tagging functionality.</li> </ul>
<p><b>Search</b></p>	<p>Search for documents, video, audio, images and other media types based off of file names, tags, metadata and the file's text content.</p>

<p><b>Asset Libraries</b></p>	<p>Organize content in dedicated libraries to help reuse content across different sites and have better-isolated control on them. Connect the asset libraries only to the sites where it is needed to provide access so content authors can use the assets stores while creating a page, or writing a blog post.</p>
<p><b>Content Dashboard &amp; Content Audit Tool</b></p>	<p>Streamline the content audit process and minimize the effort of finding gaps in company's content strategy execution. Content Dashboard is a one-stop-place where content authors will be able to access all the contents, not only for a given site, but for all the sites and asset libraries in a Liferay instance. It includes the Content Audit Tool to make it easier for content teams to run content audits.</p>
<p><b>Taxonomies</b></p>	<p>Create taxonomies through the use of tags, vocabulary and categories to classify and organize content within Liferay DXP. Foster systematic categorization with out-of-the-box Global Vocabularies. Tag web content, documents, message board threads and more to dynamically share content with other users. Faceted search leverages tags to allow users to filter results by specific criteria across the platform.</p>
<p><b>Content Performance Analytics</b></p>	<p>Integration with Liferay Analytics Cloud provides reports that help users understand the number of views and clicks, as well as the current content engagement level, including the ability to drill down to the asset level to better understand the audience. Search Engine Traffic insights allows marketers and content authors to assess SEO strategy.</p>

# Experience Management

Empower any member of your team to build and customize web pages in order to deliver enhanced digital experiences that are tailored to your users' needs. Additionally, leverage analytics for insights on how to improve these experiences.

<b>Fragments</b>	Fragments are predesigned, reusable components used to quickly build new pages. Fragments use inline editing to change text and images and can incorporate Liferay DXP applications for advanced functionality. Fragments can be configured to be updated to all pages when updated thanks to an automatic propagation mechanism.
<b>Fragment Editor</b>	Easily drag-and-drop from OOTB element/component sets to create fragments or composition of fragments.
<b>Fragments Toolkit</b>	CLI tool allows front-end developers to code fragments in their own code editors and upload without the need to redeploy.
<b>Widgets (Portlets)</b>	Reusable, drag-and-drop and configurable widgets can be used by any business users.
<b>Widget Library</b>	Liferay DXP provides a generous selection of OOTB widgets for different business needs, that can be easily added to the page.
<b>Liferay JS Bundle Toolkit</b>	A JS widget creator allows non-java developers to easily create frontend apps using the latest libraries through the CLI tool.
<b>Pages</b>	<p>Use Content Pages to create pages for structured and unstructured content, as well as applications through a drag-and-drop interface. Use page fragments and content mapping to define how different types of structured web content are displayed on a page. Use the Viewport navigation to view and define the responsive behaviour of the page for mobile devices using styling options for layouts, and spacing.</p> <p>Use Collection Pages to group pages built with a Display Page Template. It will facilitate the administration of the pages resulting from a collection of content and their associated Display Page Template.</p> <p>The traditional method of creating pages through adding and configuring applications (widgets) to a page layout of columns and rows is available through Widget Pages.</p>

<b>Display Page Templates</b>	When mapped to a structured content, it creates pages for those structured content, using the display page template.
<b>Page Templates</b>	Create page layouts with content, sections, widgets. These types of pages are aimed at being used as Example pages or Starter pages.
<b>SEO</b>	Liferay DXP optimizes updates to site map information and other metadata so that new pages are searchable by external search engines. SPA technology provides dynamic page loading without hurting SEO. The redirections management application allows admins to create from the UI redirections to help with page rearrangements or move users temporarily to the desired place. Combined with listing the 404 hits, admins can react before search engines penalize the sites or users start complaining for not finding what they were looking for. The OpenGraph support allows tailoring marketers messaging when sharing pages on social platforms. For marketers and content authors, valuable metrics on search engine traffic and best performing keywords by region are provided in the display page context.
<b>Page Analytics</b>	Integration with Liferay Analytics Cloud helps you visualize a page list and understand performance through an aggregate view.
<b>Page Customization</b>	Depending on what the administrator allows, users can customize pages by adding, removing, positioning content or application attributes (e.g., zip code for weather application). These pages can be made public (published as a website with a unique friendly URL) or kept private.

# Segmentation and Personalization

In order to facilitate deeper personalization of digital experiences, Liferay DXP provides features for role-based content delivery, audience targeting and segmentation.

<b>Experiences</b>	Easily personalize anything on a page for different audience segments through the page editor.
<b>Segmentation</b>	<p>Create audience segments based on user behavior (e.g., page visited, device, last login date), user attributes (e.g., country, gender, language), social media profiles or custom fields. Target specific audiences for personalization for delivering prescriptive customer journeys (e.g., promoting products to a specific vertical or showing offers to a subset of customers). Now in Liferay CE/DXP 7.3, you can reuse existing segments and combine them with complex rules to create new audiences. In DXP, this allows marketers to mix DXP and Analytics Cloud segments to create new and more powerful criteria.</p> <p>Functionalities include:</p> <ul style="list-style-type: none"><li>• Creating complex rules to segment your visitors.</li><li>• Targeting unauthenticated visitors based on cookies, device, URL, geolocation and locale.</li><li>• Executing use case-specific segmentation rules.</li><li>• Allowing advanced segmentation rules to have consistent functionality with the segmentation rules provided in Analytics Cloud. Segments will be available at the root level along with Users, Organizations, Roles and User Groups.</li><li>• Managing and moving segments to different scopes.</li><li>• Segmenting users based on profile and organization fields.</li></ul>
<b>Optimization</b>	Measure the interaction of targeted user segments with your chosen content to optimize content delivery. This functionality is available through <a href="#">Liferay Analytics Cloud</a> .
<b>Role-Based Content Delivery</b>	The Liferay platform allows multiple user types to access a single URL and a unique page view depending on the user's role, group, organization or personal preferences. Administrator-controlled and user-customized, Liferay DXP provides a central platform for determining enterprise content policy, including who can edit and publish content, files, communities and applications.

<b>Page Customization</b>	An administrator can allow users to customize pages without affecting other users or site members. Users can customize pages by adding, removing, positioning content or application attributes. These pages can be made public (published as a website with a unique friendly URL) or kept private.
<b>Content Recommendations</b>	Automated personalization of content based on a user's past behavior powered by Analytics Cloud integration, with behavior-based segmentations and interest-based content recommendations.
<b>Collections</b>	Personalize content sets for reuse across multiple pages. You can also integrate your own info provider and make it available as a Collection Easily manage segmentation targeting for collection lists.

## Multichannel Support

Liferay DXP provides multichannel delivery and support for the ability to offer great experiences across various channels, devices and touchpoints. REST APIs provide further ability to integrate other methods of delivery and support a range of applications and other systems.

<b>Headless CMS</b>	A new generation of REST and GraphQL APIs helps developers consume content from any channel they need including mobile apps, chatbots or wearables. Front-end developers are free to create a presentation layer using the technologies they commonly use (Angular, React, NodeJS, etc.), leveraging on their experience while keeping all the functionality that Liferay provides such as user management, content repository, documents and media, forms and blogs. Additionally, Liferay provides a toolkit that helps developers to create their own APIs, for example, for exposing services from back end or legacy applications.
<b>Mobile Experience Suite</b>	Liferay DXP's mobile experience suite is a collection of software to enable responsive design, native and hybrid app development, push notifications and mobile integration with different Liferay instances and applications.
<b>Mobile Device Rules</b>	Feature and framework for defining different platform behavior based on device type with a built-in set of device definitions for most mobile device platforms (iOS, Android, etc.) and an optional device detection database for purchase.

<b>Responsive Design</b>	Liferay DXP's CSS framework is responsively designed to work with browsers on all platforms from mobile to tablet to desktop.
<b>Mobile Device Preview</b>	Preview your content on a variety of predetermined or custom screen sizes.
<b>Adaptive Media</b>	Adaptive Media is an application in Liferay that dynamically adjusts images to best fit the screen size of the device being used. It also offers deep control over how images are loaded and displayed, allowing companies to address performance issues across a wide variety of devices and varying network speeds between users and countries.
<b>Native App Development with Liferay Screens</b>	Rapidly develop native apps with a collection of fully native mobile components, using all the power of your Liferay platform as an enterprise grade mobile back end.
<b>Hybrid App Development with Liferay Screens</b>	Liferay Screens enables software developers to use Apache Cordova or Xamarin to build cross-platform applications from one codebase designed for the web on a PC and embed that content into a Screens app for mobile use. Sites and applications designed for PC can be rendered in screenlets with no additional code. The resulting apps allow native mobile capabilities and navigation to be mixed with HTML content seamlessly.
<b>Liferay Push</b>	Liferay Push exposes a framework that lets developers send push notifications from the Liferay platform to native Android and iOS apps.
<b>Liferay Mobile SDK</b>	The Liferay Mobile SDK is a framework for building native mobile apps that integrate with your different Liferay DXP instances and their portlets.
<b>Mobile Sync App</b>	The Android and iOS mobile app for Liferay Sync gives you the convenience of sharing and viewing files in tandem across your devices while enjoying most of the desktop client's capabilities. The mobile client allows you to be connected to one account at a time and, in order to save storage space on your device, you choose the files with which you want to work in lieu of automatic downloads.

# Operations

Streamline common business processes and gather information from your users with out-of-the-box features for creating forms and workflows.

## App Builder

<b>App Builder</b>	As its name implies, this application empowers business users with an intuitive GUI to define forms and table views and leverage workflows to build applications with the goal of digitizing and automating business processes. Applications can be deployed in standalone fashion or added to pages as a widget or through the product menu.
<b>Custom Objects</b>	Create Custom Objects to represent and store business specific data in Liferay. This is somewhat similar to how developers can define entity models using Service Builder or similar tools, but all done through the interface and using a Low-Code UX.
<b>Form Views</b>	Create multiple Form Views for each custom object in order to collect data from the target users of the application.
<b>Table Views</b>	Create multiple Table Views to display, update and delete captured data in the application.
<b>Deployment Types</b>	Applications built in App Builder can be deployed in standalone fashion or added to pages as a widget or through the product menu.
<b>Form View Rules</b>	Just like Forms portlet, App Builder also provides a Rule Builder to allow users to define dynamical behaviors for fields of each Form View of the application, like set visibility of a field or using a predefined condition to enable or disable a field. To start defining rules in a Form Views, click in the Rules option present in the right menu bar of the Form View builder.
<b>Multi-Language Support for Apps</b>	Users can also internationalize the applications created through App Builder by translating and making Apps available in several different languages. To create localized applications, you just need to select and translate the fields to the languages you want in the Form View Builder of the application.



<p><b>Fieldsets</b></p>	<p>App Builder also provides a fieldset capability, which allows users to create, update and reuse frequently used groups of fields in different objects and forms views. This way, users don't have to recreate one same group of fields (e.g. address) over and over for each application. To start creating and using fieldsets, access the Fieldset tab on the right sidebar of the Form View Builder.</p>
<p><b>Process Driven Apps</b></p>	<p>One of the main values offered by App Builder is the automation of business processes through Workflow Powered Apps. For this use case, we offer a separate and special-made experience that allows users to define the stages of the process and specify which information of the Custom Object should be requested and/or displayed in each step of the application. Users can also make use of Workflow Metrics to understand the performance and health of the App's processes.</p>

## Forms

Design and build personalized forms to replace complex paper applications.

<p><b>Forms</b></p>	<p>Design, publish and manage forms with a simple-to-use drag-and-drop interface. Instead of making users fill up a long and tiring form, break it down, improve the experience and take advantage of the multiple pages. Share with your target audience a form URL published into a standalone page. Assign your form to a workflow so it will follow a process suited to your business after user submission. Allow users and administrators to create multiple choice polls that keep track of responses. Ultimately, customize your forms to show or hide fields, only asking relevant questions to the users.</p>
<p><b>Form Rules</b></p>	<p>Create personalized forms with conditional rules using the Form Rules feature. Conditional rules allow users to introduce dynamic behavior in forms and allow personalization of the questions or fields to show/require based on how users respond on your forms. A predefined set of form rules allows for quick customizations to users' form fields, including: setting a required field, enabling fields/options, autofill selects, show and hide, jump to a page, calculations, conditional success pages and an API to create and execute customized rules for your form needs, for forms created programmatically. Define validation logic for a specific form field by creating custom messages for form validation errors. This helps improve the completion rate of your forms.</p>

<b>Multi-Language Support for Forms</b>	<p>Add a translation for each form field when building forms. Similar to creating translations for web content, the ability to add translations for form fields allows for better support globally, where common things like names, surnames and address formats vary between countries.</p>
<b>Fields and Properties</b>	<p>Field types included in the default form fields including file upload, numeric, password and grid fields. The ability to create form field sets, by grouping fields together and easily repeat that group of fields help speed up the creation of long forms where repeated inputs may be necessary. An API also allows users to create new customized field types, with a provided Blade template and documentation.</p>
<b>Forms Structure</b>	<p>Structuring your forms is easy with the drag-and-drop interface. Users can easily layout their form fields on a page and better design their form layouts through the intuitive interface. Users can also configure a URL for redirects after a form submission and standalone forms can have URLs independent of the default site navigation.</p>
<b>Validation</b>	<p>Users can define validation logic for a specific form field by creating custom messages for form validation errors, which can help improve the completion rate of your forms.</p>
<b>Field Library</b>	<p>Liferay DXP comes with a default predefined library of form fields, as well as capabilities that help you build a library of fields so that users can easily begin building forms they need by reusing preset fields. The set can be arranged once and deployed across a variety of situations for the business.</p>
<b>Data Provider Integration</b>	<p>Integrate external web services using a Data Provider to apply to fields and benefit from live data. You can pre-populate fields with data from external services and import and export Data Provider definitions.</p>
<b>Entries Management</b>	<p>Liferay DXP provides functionality for improving the end user experience upon form completion. End users can receive email notifications after a form entry and export entries into different formats: CSV, XML, and XLS. Entries have workflow integration provided, so that they can also go through a workflow process after submission.</p>

<p><b>Form Entries</b> <b>Data Storage</b></p>	<p>Save the data you gather with your forms. Use our StorageAdapter API to give more flexibility to your data management and store the data inside Liferay Database or externally depending on the use case.</p>
<p><b>Data Engine APIs</b></p>	<p>Data engine APIs to help IT build more flexible business applications. These APIs can be used to execute CRUD operations on data definitions and make it possible for developers to quickly assemble business applications that can scale with flexibility.</p>
<p><b>Forms Reports with Analytics Cloud</b></p>	<p>Forms reports detail the number of views, submissions, failed submissions, abandonment and completion time, user information and device usage.</p>
<p><b>Forms Reports</b></p>	<p>A built-in summary report of the answers received in forms, allowing users to not only see the data collected, but also have an overall analysis of answers of each field according to the field type.</p>
<p><b>GDPR Coverage</b></p>	<p>Because web forms are among the most common interfaces for collecting user-provided data, there needs to be a GUI and development tools to design forms that comply with GDPR requirements. Doing so means implementing 2 Data Protection Features within Forms.</p> <p>Data Erasure (AKA Right to be Forgotten)</p> <p>Administrators can review Form's entries that potentially contain personal information and edit, anonymize or delete as needed through a simple interface.</p> <p>Data Export (AKA Right to Data Portability)</p> <p>Administrators can export a user's personal data submitted through Forms before going through the erasure process.</p>

# Workflow and Business Productivity

Workflow and reporting features give users more ways to simplify processes and provide access to information.

<b>Workflow Framework</b>	Liferay DXP allows you to incorporate workflow into any of your own custom applications by leveraging Liferay's workflow APIs. This provides a better end user experience, saves your development team a lot of effort by reusing Liferay's workflow administration tools and provides seamless integration with all supported workflow engines.
<b>Reports</b>	Business intelligence and reporting tool showing activity and history of various applications in the platform (e.g., documents downloaded by groups, statistics on message board threads, most active users). It can also make use of the JasperReports application.
<b>Workflow</b>	Workflow allows a user to define any number of simple to complex business processes/workflows, deploy them and manage them through a web interface. These processes have knowledge of users, groups and roles. A graphical workflow designer gives you a point and click interface to create workflows. It can be used in conjunction with Kaleo Forms or standalone to create workflow definitions without having to write XML.
<b>Dynamic Data Lists</b>	A Dynamic Data List is a user-defined collection of records, similar to a spreadsheet. Users can create custom lists of information that can be published as workflow-enabled forms. These forms can be shared dynamically with other users to capture information such as an RSVP, tasks tracking and managing issues. Dynamic Data List record sets also include versioning for records.
<b>User-Driven Workflow and Approval</b>	Not only is there embedded workflow for content, Liferay DXP also allows users to create their own workflow and define the number of approval paths based on their own unique business requirements and operational needs. For example, administrators can implement an approval process for new document uploads before they appear in the Document Library.
<b>Workflow Metrics</b>	Gain insight into how long certain workflow events take to complete. Users can set deadlines on a workflow process's events; these configurations are called Service Level Agreements (SLAs). Once defined, Workflow Reports can measure compliance with SLAs to help users better understand the throughput performance of processes in a given timeframe and better optimize these processes.

# Digital Asset Management

Manage and publish any asset on one central system to not only enable your employees or customers to easily collaborate and share documents and media, but also reduce the amount of time spent searching for those assets.

<b>Documents</b>	Features around document and media management offer administrators more control over how assets are stored, shared and accessed. Additionally, Liferay DXP can integrate with repositories such as SharePoint, Google Drive and Alfresco.
<b>Documents and Media</b>	<p>Unified document repository that houses documents, video, audio, images and other media types from one place. It can be leveraged across an enterprise, within a specific group, or for a single individual as a web repository.</p> <p>Enterprise-wide repositories allow groups to store assets, tag them, lock them, search for and leverage them in web pages or download them for use offline. It provides a clean and attractive display to find and browse all images, video and other media assets. Other features include:</p> <ul style="list-style-type: none"><li>• Check in/check out, metadata and versioning. Document file formats may be converted at the time of upload. Items saved are displayed through the Display app and Document and Media Display app.</li><li>• Multiple-file upload allowing users to upload and store a document in one file format while making it available for download in other formats (i.e., a .doc file can be available for download as a PDF with Liferay providing the conversion at download time).</li></ul>
<b>Bulk Management</b>	Manage digital assets and files at scale with an improved tool for bulk management of tags, categories and file operations like deletion, moving files, etc.
<b>Google Drive Plugin</b>	Lets users create shortcuts to Google Drive files in their Documents and Media repositories. These documents can be viewed and managed from Documents and Media. Once deployed, you can configure this app from the Control Panel.
<b>CMIS Integration</b>	Integrate back office systems in order to surface assets to customers or add social and other metadata. Mount and browse SharePoint, Documentum, Alfresco and other CMIS-compliant repositories within Liferay DXP.

<b>Document Types and Metadata Sets</b>	Administrators can create their own custom metadata sets and document types into language familiar to users. For example, financial reports, surveillance videos, and so on can be defined in a way that makes sense for the business functions of the content (e.g., author, reporting period, etc.).
<b>Online Document Editing</b>	Leverage the Google Docs editor to allow activities related to creating and editing documents via portal.
<b>Office 365™ Integration</b>	Integration with Office 365 allows the creation and editing of documents, presentations and spreadsheets stored in Liferay DXP. This feature takes advantage of the existing permissions system, versioning and sharing capabilities that it is included with Liferay DXP 7.2.
<b>Document Previews and Preview Generation</b>	Provide a preview of the document (including images, videos, audio clips) to easily identify the content of the document. Automatically generate a full document preview in Liferay DXP.
<b>P2P Document Sharing/Asset Sharing</b>	Allows sharing documents and media assets with registered users to increase collaboration for instances where multiple users need to work on a single asset.
<b>Search (Documents and Media)</b>	Search for documents, video, audio, images and other media types based off of file names, tags, metadata and the file's text content.
<b>Document Types and File Types</b>	Create and manage abstracted document assets with specific metadata common to all assets of its type, such as: Request for Proposal, Statement of Work, Annual Report, Presentation. Liferay DXP also has the capability to support any file type.
<b>Versioning and Automatic Versioning Policies</b>	Liferay DXP versions documents and increments them as you make changes, enabling you to rollback and view the version history. Introduces intelligent/definable versioning to enrich historical and auditing context of a document's lifecycle.
<b>Media Selector</b>	Easily upload or select files with the built-in media selector. This feature is also highly extensible so that new sources of media (e.g., Google, Flickr, YouTube) can be added to any application.

<p><b>Inline Image Editor</b></p>	<p>Allows for simple image editing directly from within Liferay, eliminating the need for an external tool while creating content. Resize, crop and make colors adjustments to any image uploaded to Documents and Media from within blogs or any other application that uses an item selector. The image editor has been designed in a way to make it easy to customize and allows for developers to create and deploy tools that modify images.</p>
<p><b>Enterprise File Sync and Sharing</b></p>	<p>Liferay Sync is a central, easy-to-use document sharing service that automatically synchronizes documents across popular desktop and mobile environments, empowering users to share files with a simple drag-and-drop for Liferay's Documents and Media. It exposes and synchronizes content and documents to both desktop and mobile environments with support for Windows, Mac OS, Android and iOS. You can also log all your document changes and versions. Users can seamlessly work on the same file together with versioning and revision tracking. Liferay DXP also has WebDAV functionality so users can access shared assets through browsers.</p>
<p><b>Single Sign On Support</b></p>	<p>Any SSO implementation that works against Liferay DXP will work with Liferay Sync as well (SiteMinder, OpenSSO, OAM, SAML, Shibboleth, etc.).</p>

## Collaboration and Social

Collaboration in Liferay DXP is supported with applications for blogs and social networking, as well as a solid set of tools for forums, message boards and other functionalities. Connect people and systems together on a modern interface focused on getting work done.

<p><b>Collaboration</b></p>	<p>Collaboration in Liferay DXP is supported with applications for blogs, forums, message boards and other functionalities. Social networking features such as an activity wall, friends list, @ mentions, activity tracker and social activity are also available to further support collaboration activities. Easily bookmark contents in the platform and share them to a group of users all available for download through the Liferay Marketplace.</p>
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<b>Knowledge Base (and associated apps)</b>	<p>Allows users to add and categorize content in the form of articles. Content can be added directly through the web or imported from external sources with category-based navigation. This helps users easily find answers to questions they may have. Knowledge Base includes several apps:</p> <ul style="list-style-type: none"> <li>• Knowledge Base Display</li> <li>• Knowledge Base Article</li> <li>• Knowledge Base Search</li> <li>• Knowledge Base Section</li> </ul>
<b>Search and Tagging</b>	<p>Tag web content, documents, message board threads and more to dynamically share important or interesting content with other users. Users can then search for relevant information through faceted search, allowing one to filter results by specific criteria within specific apps, communities, the entire platform and even external integrated applications.</p>
<b>Invitations</b>	<p>Allows users to invite others to join a specified site and sends a notification.</p>
<b>Page Comments</b>	<p>Allows users to leave comments on any user page.</p>
<b>Page Ratings</b>	<p>Allows users to leave ratings on any user page.</p>
<b>Page Flags</b>	<p>Allows users to report inappropriate content on a page.</p>
<b>Blog</b>	<p>Liferay DXP's blog widget provides a modern WYSIWYG editor (AlloyEditor) designed to create entries quickly and a modern card design for displaying blogs. The inline image editor also allows for easy image editing directly within Liferay DXP. You can drag-and-drop images right into the blog text. If you want to add format to some text, just select it and a modern toolbar will offer the format options. Additional features include friendly URL creation, estimated reading time, unsubscribe from emails, publication date, RSS support, threaded user and guest comments, tags and labels, social bookmarking links, email notifications of blog replies and an entry rating system. You can also add videos inline while writing a new entry from popular services such as YouTube, Vimeo, Facebook Video and Twitch.</p>
<b>Blogs Aggregator</b>	<p>Grabs blog entries from the entire portal or by specific organizations.</p>



<b>Recent Bloggers</b>	Dynamically displays a list of recent bloggers.
<b>Forums/Message Boards</b>	A full-featured forums solution with threaded views, categories, RSS capability, avatars, drag-and-drop file attachments, drag-and-drop image additions, section renaming, category and thread grouping, notification management, previews, dynamic list of recent posts and forum statistics. Message Boards work with Liferay's fine-grained permissions to give detailed levels of control to administrators and users.
<b>Questions</b>	Allow users to have a dedicated place for questions and answers where they can look for answers to the problems they are facing or help others. It takes full advantage of the GraphQL APIs and the message boards infrastructure. Users can group the questions on different topics, ask any question they have, vote the answers, mark the most valuable answer so others can check it easily, etc.
<b>Wiki (and associated apps)</b>	A straightforward Wiki solution with versioning capabilities, categories, Creole, HTML, or plain text modes, WYSIWYG editing, drag-and-drop support for page creation, page history and reversion and permissions.
<b>Calendar</b>	A community-based calendar with task lists that allows users to create, manage and search for events. Events can be shared across communities and event reminders can be set up to alert users of upcoming events by email, notifications or SMS. You can also create and manage company resources through the calendar.
<b>RSS</b>	These allow users to get dynamically updated digests of critical news topics, blogs and other publications. Users can configure the order of topics displayed and how many articles are shown per provider.
<b>Alerts and Announcements</b>	Offers a free form text area that can display and update new information quickly. You can target announcements to readers by group or role.
<b>Microblogs</b>	Microblogs can be used to update your status on a Liferay social network and post your activities including @ mentions.
<b>Polls</b>	Allows users and administrators to create multiple choice polls that keep track of votes and display results on the page.

# Developer Tools

Liferay gives you control over maintaining and extending your Liferay DXP instance with developer tools for building, managing and controlling Liferay projects with convenience and added simplicity.

<b>Front-End Toolkits</b>	A set of tooling that Liferay created to help developers use NPM in their projects so that they can deploy them to Liferay DXP and see everything working seamlessly with little effort. These toolkits help developers create, update and maintain themes built on Liferay DXP as well as help produce an OSGi bundle containing the needed NPM dependencies so that it can be run when deployed to Liferay DXP.
<b>IntelliJ IDEA Plugin</b>	Integration with IntelliJ IDEA that can be configured for use with Liferay DXP development.
<b>Liferay Marketplace</b>	Developers can sell, share and download themes, integration plugins and entire applications built on Liferay DXP in Liferay Marketplace.
<b>Liferay Workspace</b>	Liferay Workspace is a highly structured environment for modular development. Import Workspace projects into any IDE with built-in Maven or Gradle support, eliminating the need to only use Eclipse for development.
<b>Blade CLI</b>	Liferay development projects can be completely controlled from the command-line using Blade CLI. Blade CLI performs development tasks such as creating new projects, installing Liferay Servers and more.
<b>Upgrade Tool</b>	A revamped Upgrade Tool simplifies the upgrade process from previous versions of Liferay. The standalone tool lets system administrators restart failed upgrades, reducing the time spent troubleshooting.
<b>Lexicon</b>	Lexicon is a design language created to provide a common framework for building interfaces within the Liferay product ecosystem. Lexicon is a guide to provide a satisfactory and unified experience to its users.
<b>REST API Builder</b>	Similar to the service builder, this tool accelerates development by generating scaffolding needed to develop business logic for custom REST and GraphQL APIs.
<b>Developer Studio</b>	An all-in-one, integrated development environment for building apps and modules. Developer Studio makes it easy to use project creation wizards to create modular projects based on Maven, Gradle and bndtools.

# Search

Recapture time users spend looking for information with powerful out-of-the-box search capabilities.

<b>Liferay Enterprise Search (optional add-on)</b>	Liferay Enterprise Search is an add-on subscription that provides end-to-end support for Liferay DXP 7.3 and Elasticsearch, as well as additional modules for integration with Liferay DXP. Users can monitor their search cluster health, replicate search clusters, leveraging ML-driven relevance tuning, and more.
<b>Elasticsearch integration</b>	Elasticsearch, the market-leading open source search engine for modern web applications, is the default search engine in Liferay DXP and provides powerful search monitoring, tuning and scaling capabilities.
<b>X-Pack Security integration</b>	Liferay DXP can establish secure connections to Elasticsearch using X-Pack Security.
<b>Solr integration</b>	Integration with Solr, a popular enterprise search platform, can be configured for use with Liferay DXP through an app available in Liferay Marketplace.
<b>Multi-Tier Search</b>	A platform with web content, documents, images, wikis, blogs and other user-created content becomes a massive repository of data. Search becomes a vital aspect for users of the system since it is essential that users can find the content they need when they want it. Liferay's search also allows users to search across all assets within the platform to which they currently have access, while also restricting them from assets in which they do not. This multi-tier search capability ensures that users have access to only open content or content available to them based on their roles and membership in various communities.
<b>Faceted Search</b>	Liferay provides users an efficient way to instantly refine search results by drilling down with specific constraints that match the user's search criteria. For example, a retail site built on Liferay would allow you to search for merchandise by inputting various combinations of criteria, such as color, size and price.
<b>Filter/Sort</b>	Users can filter and sort search results within the UI.
<b>Multi-Language Search</b>	Search across all languages for Web Content for multi-language sites and portal instances.
<b>Search Admin Tools</b>	Customize search results rankings.

<b>Search Tuning Tools</b>	Liferay DXP allows granular search tuning via the Synonyms and Result Rankings applications. Synonyms sets allow defining terms with equivalent meaning. Result Rankings allow explicitly pinning or hiding specific results for a particular search query.
<b>Low-Level Search APIs</b>	Leverage improved search APIs to interact with either Elasticsearch or Solr. Developers can call the search engine without writing or using models or indexers and allows access to every aggregator and query type of Elasticsearch.

## Analytics

Enhance your digital marketing strategies with powerful analytics that will provide key insights into your customers. See [Liferay Analytics Cloud](#) for more information.

<b>Workflow Process Analytics</b>	Create due date definitions for workflow processes and for workflow tasks. Liferay DXP provides analytics for all instances of open and in progress processes in real time allowing for easy identification of operational bottlenecks and insight to optimize efficiency.
<b>Customer Profile Analytics</b>	Pull customer data from multiple sources to create in-depth analytics and a single view to create known users. Visualize customer data, build dynamic segments and analyze segments and individuals. Integration with Salesforce allows for enhanced customer profiles through tracked user and account behavior on your digital touchpoints.
<b>Page Analytics</b>	Measure page performance through page data visualizations in an aggregated view. Track behavior and understand page performance with touchpoint charts, bounce rate metrics and time on page. Track interactions on your custom solution developed with DXP using simple tags.
<b>Traffic and Path Analytics</b>	Display traffic types, filter and visualize paths for easy source identification. Display assets and filter interactions on each asset by touchpoint.

<b>Asset Analytics</b>	<p>Track and visualize engagement levels for assets and web content through an aggregate view. Asset-specific reports detail use case-specific insight about usage, views and engagement. Liferay DXP 7.3 includes engagement and SEO metrics in the very context of the display pages.</p>
<b>A/B Testing</b>	<p>Content creators can use A/B testing to create and customize tests to evaluate which elements on Content Pages perform better and edit content accordingly. Liferay DXP's A/B tests leverage Bayesian statistics to identify the probable values of lift for a variant, allowing your business to make more informed decisions. Native integration with Liferay Analytics Cloud allows for data collected for the running test to determine a winning variant. <a href="#">Learn More &gt;</a></p>

## Cloud and Infrastructure

Simplify infrastructure management and reduce IT spending so that you can focus on what matters in your business.

<b>Cloud Deployment</b>	<p>Liferay DXP can be deployed quickly and managed in the cloud with Liferay DXP Cloud, an enterprise PaaS offering available with a separate subscription. Liferay DXP Cloud takes care of many infrastructure needs to free up IT resources to focus on building the new applications and features that bring value to the business.</p> <p>On-premise and hosted cloud configurations are also supported by Liferay with multiple hosting and managed hosting providers available today including AWS EC2, Azure and more. See <a href="#">Liferay DXP Cloud</a> for more information.</p>
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## High Availability and Scalability

The Liferay platform has been tested to support tens of thousands of simultaneous virtual users as an infrastructure portal and in collaboration use cases on a single application server. It has also been deployed in large installations with millions of active users in the most demanding environments. Liferay DXP is highly scalable—for example, it has been certified to work seamlessly with data grid products for massive scalable data caches.

Additionally, customers can feel secure in deploying Liferay to cloud-based environments—many users have deployed the platform to private clouds built on top of VMWare, Xen and KVM technologies and to public cloud infrastructures like Amazon EC2.

## What's Next

Learn more about how Liferay can help your business take the next step in your digital strategy.

Request a demo from one of our team members at [liferay.com/request-a-demo](https://liferay.com/request-a-demo).



Liferay makes software that helps companies create digital experiences on web, mobile and connected devices. Our platform is open source, which makes it more reliable, innovative and secure. We try to leave a positive mark on the world through business and technology. Hundreds of organizations in financial services, healthcare, government, insurance, retail, manufacturing and multiple other industries use Liferay. Visit us at [liferay.com](https://liferay.com).

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