



Liferay DXP

Features List

Liferay DXP Features List

Liferay Digital Experience Platform (DXP) is a complete platform that provides out-of-the-box capabilities on an extensible architecture to enable you to build digital experiences that look and function the way you need.

With these native platform capabilities, you can get a head start on creating the solutions you need, and with the platform's extensible architecture and incredible flexibility you can configure and tailor those solutions however you need.

Thousands of businesses from around the world, like Airbus, Broadcom, Jose Curevo, and Carrefour, have leveraged Liferay DXP to build customer portals, digital commerce sites, intranets, supplier portals, and other digital experiences.

To help you see how your business can use Liferay DXP, this Features List covers the out-of-the-box capabilities of Liferay DXP's latest Long-Term Support release, grouped by the platform's main capabilities.

Liferay DXP now releases new versions quarterly to give customers more stable releases, exciting new features and updates, and enhanced support — with the Q1 release being the Long-Term Support (LTS) release. Being on the latest long-term support release of Liferay DXP is the best way to guarantee the security and the performance of your digital solutions.

For more information about our LTS releases, visit
www.liferay.com/liferay-service-life-policy.

To try Liferay DXP, visit www.liferay.com/request-a-demo.

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CMS

Liferay DXP provides a robust Content Management System (CMS) that allows business and development teams to create, organize, and manage their content more efficiently.

Content Creation

WYSIWYG Editor

The default editor for Liferay is based on CKEditor. The editor aims to improve the experience when creating new content in Liferay DXP. It includes the ability to preview source written in HTML as it is being typed live, which makes it simple to add new content using only the source code.

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.

Web Content Display

Publish any piece of web content created within Liferay to a page. Web Content Display allows the same content article to be published any number of times, optionally using different display templates, across pages and sites.

Structured Content

Manage and create different content data models to make your use-case specific content management system a reality. Uses a consistent forms-builder experience shared across Forms, Web Content, and Documents.

Display Page Templates

Create Display Page Templates and assign these by default, or manually, to different types of content. Display Page Templates provide a default presentation for all content assigned to them, including a friendly URL, allowing them to be displayed without needing to create a page for each content item. Additionally Display Page Templates can be created for Categories to provide enhanced support for content-heavy sites and applications.

Information Templates	Create Freemarker-based templates for Web Content, Documents, Blogs, Categories, and Assets. Templates can be mapped to Fragments to support sophisticated and consistent presentation of information.
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 Types

Blogs	Liferay DXP's blog widget provides a modern WYSIWYG editor 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.
Knowledge Base (and associated apps)	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. Set expiration and review dates for articles as well so that you can see which articles need to be updated or retired. Knowledge Base includes several apps: • Knowledge Base Display • Knowledge Base Article • Knowledge Base Search • Knowledge Base Section

AI/ML Capabilities

AI Content Creator

Content authors can publish content even faster. Liferay's integration with OpenAI's ChatGPT engine empowers users to generate content in just a few clicks. By defining desired content, tone, and word count, the AI Creator tool will populate content accordingly.

AI Image Generator

Liferay DXP is integrated with DALL-E to supercharge your content creation capabilities. Provide a descriptive prompt and DALL-E will generate an image to complement your content strategy.

Content Permissions

Bulk Permission Management

Administrators can modify access rights for multiple pages effortlessly, saving time and ensuring secure access for the intended users.

Manage Permissions and Scheduling

Manage who sees your content and schedule its publication date and time – all within the publishing workflow. Take full control over content visibility and publication timing, ensuring your content reaches the right audience at the right time.

Content Categorization

Content Metadata

Assign metadata to Web Content such as Display, Expire, and Review dates, assign Friendly URLs for use with Display Page Templates, assign Categories and/or Tags, set default Templates and Display Page Templates, and so on.

Tag Cloud

Displays a cloud of tags from some set of assets in a site.

Dynamic Tagging

Search can be used to look inside content published within the platform, but occasionally it is not enough to help users find their desired content. Dynamic Tagging is available in Liferay, allowing content creators to define keywords associated with their content. Users can add keyword tags to web content, documents, message boards and more, simplifying search and enabling powerful features like the Asset Publisher.

Related Assets

Specify assets that are related to the asset being created. For example, when creating a new web content, users can specify that the content is related to a document, blog post, forum post, or any other asset. When someone views that content, the related assets are also shown so the user can look for more information.

Similar Results

When viewing an asset like a blog or document, the Similar Results widget shows a list of relevant assets based on the similarity of specified fields like title or content.

Content Delivery

Collections

Create, edit, and manage collections of content in “sets” for display in the Collection Display fragment, via Collection Pages or through the Asset Publisher widget. Configured collections can be reused as required.

Publications

Use Publications to develop, track, and publish instance-wide changes across Liferay DXP. Teams of users can create any number of Publications which will track changes made while in Edit mode. When working on a publication, users can review changes, invite other teammates, leave comments, assign permissions, publish the changes immediately, or schedule publication, and if needed delete it entirely.

Changes can also be moved from publication to publication if you do not want to publish an entire publication, and instead publish a subset of changes separately.

When publishing, conflicts can be automatically resolved where possible, or may require manual resolution. A history of all published changes is maintained, and can be used to revert any publication, if required.

**Temporary
Access
Collaboration**

Share Publications for review, without needing to create accounts or go through authentication for external users. This feature makes it easier to invite outside reviewers, such as legal experts or editors, with just a URL.

**Role Based
Content
Delivery**

Liferay DXP allows for multiple user types to access a single URL and access 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, communities, files, and applications.

Staging

Liferay allows multiple teams to work on several variations of a site simultaneously and schedule publication dates for each. For example, three different teams can work on sites for Halloween, Thanksgiving, and Christmas and schedule their variation to publish at different times. Enhanced staging includes automatic versioning with history, undo support at the site and page level, and preview based on scheduled publications.

Within the online editor, pages from a live site can be edited and previewed without affecting what is seen on the public site, and then scheduled for future publishing. Users can use this same method to edit individual pages, entire communities or full websites. Liferay also allows users to “roll-back” to previous versions of pages, sites, or communities.

Staging also supports the creation of custom export configurations in order to export Site pages, and allows the Staging process to be restarted using a previous configuration, saving Administrators the time needed to recreate a prior configuration. Staging also supports publication beyond two environments to support a greater variety of requirements.

Content Localization

Multi-language Support

Create engaging, localized experiences for global users with Liferay's integrated tools.

Users can manage and set different URLs for your desired languages and toggle between different language settings with just one click. Right to left language support is fully functional out of the box without the need to install a separate app.

Import/Export Translations

Export content pages for translation as .xliff or .xlf files. Import translations together as a .zip file or individually as .xliff or .xlf files.

Third-Party Translation Services

Accelerate the automatic translation of web contents and content pages using Liferay's integration with Google Cloud Translation, Amazon Translate, or Microsoft Translator.

Custom Workflows

Use Liferay's workflow builder to enable custom workflows for translation processes to guide the review and publishing process.

Once workflow is enabled, each published translation appears as an individual task that must be approved before the Content Page or Web Content is officially updated. Translation reviewers see a read-only, side-by-side preview of the original and translated texts.

Content Performance

Content Dashboard

The Content Dashboard is a global application for managing your content. From the Content Dashboard page, content authors, and marketers can access and audit all content generated across Sites and Asset Libraries. The Content Dashboard includes the Content Audit Tool, Content Lists, and Content Performance Tool.

Content Audit Tool	The Content Audit Tool shows metrics for the Vocabularies and Categories you define in Liferay. You can include and combine your global Vocabularies here, and filter the Categories to analyze your data in different ways.
Content Lists	Content Lists show content across all Sites and Asset Libraries. From here, you can sort and filter your information using built-in or custom filters. The Content Audit Tool chart changes dynamically based on the filters that you set.
Content Performance Tool	The Content Performance tool is a global application for analyzing performance metrics of your content, like traffic acquisition channels or the number of views over time. Content teams can use the Content Performance tool to periodically assess and adapt their content strategy.
Page Audit Tool	Using Google PageSpeed Insights, the Page Audit Tool helps you examine your pages' SEO and accessibility. Content authors can use this tool to verify that their content is optimized and compliant. After running a Page audit, you can review a description for each issue, along with actionable information to fix the issue.
Page Audit Performance	Page Audit Performance displays performance-related information about the server render time, component type, component's origin, and cache status as well as warning messages about potential performance issues.

Content Retrieval

Versioning and Automatic Versioning Policies	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.
Recycle Bin	All deleted content goes in a Recycle Bin that allows recovery in case of accidental deletion. The Recycle Bin supports full search as well as browsing within deleted folders.

Sites

Liferay DXP provides a comprehensive publishing environment that allows your business teams and developers to deliver personalized digital experiences across multiple channels and devices. You can design a site's appearance, manage site publishing workflows, integrate data and segments, and streamline site creation, making it faster for teams to launch relevant experiences that truly connect with the audiences they serve.

Site Building

Themes	Themes customize the default look and feel of your Site. They allow you to define the style and visual identity of your brand or label across your whole Site. Developers can create custom Themes for maximum flexibility.
Style Books	Non-developer users can customize the look and feel of Themes by creating Style Books. Themes, including the Classic Theme provided out-of-the-box, can expose Tokens to allow style elements to be modified through the UI. Items such as Colors, Spacing, Typography, Buttons, and so on, can be modified.
Fragments	Fragments are predesigned, reusable components featuring configurable styling options that are 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. Fragments can be configured to be displayed or hidden from specific viewports to enable optimal UX for different devices.
Fragment Editor	Easily drag-and-drop from OOTB element/component sets to create fragments or composition of fragments.
Widgets (Portlets)	Reusable, drag-and-drop, and configurable widgets can be used by any business users.

Widget Library	Liferay DXP provides a generous selection of OOTB widgets for different business needs that can be easily added to the page.
Wireframing	Empower designers, developers, and content creators to work together in real-time. With Page Builder and fragments, you can skip the blueprinting step and the need for imagination by generating an interactive structure. Designers, developers and even business users can work collaboratively to create the prototype – shortening the review and feedback cycle.
Site Template	Site templates allow for the creation of templates using a visual building approach. This helps to ensure standards such as accessibility or pre-defined structures.
Site Initializers	Site initializers can help reduce the time required to create a new site by automatically generating core content. However, site initializers will need developer support.
Site Configuration	Offer granular level of control access across several areas of the site. Settings are unique and scoped on a site-by-site basis.

Page Creation

Content Pages Use Content Pages to create pages for structured, unstructured content, and widgets using 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 behavior of the page for mobile devices using styling options for layouts and spacing.

Page Editor The Page Editor allows business users to visually lay out page designs and save them as reusable templates, in context of how it will appear on the live site. Within this interface, users can search through collections and add fragments to the template. Marketers can then customize content and images with a few clicks.

Widget Pages 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. Depending on what the administrator allows, users can customize widget 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.

Widget pages are ideal for dashboards, landing pages, or any page where the primary focus is on functionality.

Utility Pages Utility pages serve specific operational tasks and actions and are usually essential for users to interact with a website or application effectively. Utility pages can be configured for a site's 500 and 404 error pages. In the future, this capability will expand to include other common pages (e.g. sign-in and terms of use pages).

Liferay provides out-of-the-box utility pages that are easily customizable. You can also create utility pages from scratch.

Master Pages	Create custom Master page layouts that can propagate to pages. Areas can be “locked down”, restricting which areas can be edited.
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Page Templates	For pages with consistent designs and similar layout or functionality, you can use a Page Template. These types of pages are aimed at being used as Example pages or Starter pages.
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There are two types of page templates: Widget and Content.

Display Page Templates	Display page templates are built for rendering the “detail” pages for items. It uses underlying Content Pages and allows users to build a detailed design without any technical knowledge.
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When a piece of web content is published with a display page template, it will automatically be given its own page with a unique URL, replacing the default content in the template with the newly added web content.

Site Navigation

Navigation Menus	Menus are decoupled from page navigation in Liferay, giving business users the freedom to create custom menus for sections of the site or remove menus when desired such as on marketing landing pages. A drag-and-drop interface allows you to manage menu hierarchies and save different menu sets. Users can add Pages, URLs, Display Pages, and Sub-Menus as items in any Navigation Menu.
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Mega Menu	Mega menus, and other sophisticated menu capabilities can be easily implemented, without the need to write any code, using the Dropdown fragment, which provides a dropzone into which any other fragment or widget can be deployed.
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Site Map	Displays a structured directory of links to all pages. The Site Map can be used to navigate directly to any page on the site. It can be configured to display the entire site or a sub-section of pages. This site map is automatically generated and the hierarchy can be changed with drag-and-drop allowing administrators to quickly rearrange pages within the site.
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Breadcrumbs	Displays a trail of “parent” pages for the current page. The Breadcrumb app can be placed on public pages as a navigational aid when using Liferay to publish websites.
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Nested Layouts	Nested page layouts are possible through simple drag and drop.
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Site Content

Collection Providers	Collections are sets of content items that you can use to group and filter information. Collections can include many different types of content or just one specific type of content. You can then display them on a collection page, which you can present in your desired format using page fragments.
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Related Items Collection Providers	A special type of Collection Provider which is available when an item or collection is already displayed. For example, Related Assets for an item on a Display Page can now be displayed in a Collection Display Fragment.
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Web Content Prioritization	Create a ranking of assets for publishing.
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Site Content Sharing	Gives you the capability to share various content pieces between child and parent sites. As the administrator of a child site, you are able to use all of the structures, templates, categories, application display templates and more from any of your parent sites that allows for it.
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Multichannel Delivery

APIs

Liferay provides a suite of APIs that allow you to connect securely, work with any client and keep data size manageable, so you can use it as a Headless Platform. There are three different approaches available for clients to connect to Liferay DXP using web APIs:

- Headless REST APIs
- GraphQL API
- Plain JSON Services

Responsive Design

Liferay DXP's CSS framework is responsively designed to work with browsers on all platforms from mobile to tablet to desktop.

Mobile Device Preview

Preview your content on a variety of predetermined or custom screen sizes.

Adaptive Media

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. Liferay will automatically present the most appropriately sized image based on the viewport width for images displayed in Content and Display pages, including background images. This can be overridden by authors if required.

Site Optimization

SEO

Liferay DXP provides many tools to help increase your page's ranking on search engines.

Set friendly URLs for your site to not only make it easy for customers to recall but also optimized for search engines and other tools crawling your site. Use Display Page Templates to quickly display individual content items at a dedicated URL. These layouts are built using both Fragments and Widgets and can be created for Web Content Articles, Documents, Blog Entries, and more. Each template has its own SEO and Open Graph settings that can be filled out both manually and dynamically.

Page Audit Tool

The Page Audit tool displays performance-related information about the server render time, Google PageSpeed Insights, and possible performance issues.

Warnings indicate possible performance issues with page components. Liferay DXP will offer suggestions to help solve the problem and optimize your page.

Page Audit Performance

Page Audit Performance displays performance-related information about the server render time, component type, component's origin, and cache status as well as warning messages about potential performance issues.

A/B Testing

Test variations of your pages on different users. The majority of visitors see the current content and design of your page, while a select group sees an alternative Variant. You can then test the performance of the current page and the variant to determine which version performs better for a given goal, such as bounce rate or clickthrough.

Script Loading for JavaScript Client Extensions

Developers can fine-tune how JavaScript code loads within Liferay Client Extensions, giving your applications a performance boost with smarter script loading.

DAM

With Liferay's Digital Asset Management (DAM) capabilities, content authors are able to organize digital assets, publish assets to multiple channels, and set the appropriate access controls from a single location, without involving IT.

Asset Libraries	Organize Web Content, Documents, Vocabularies, and Categories in dedicated libraries to reuse that content across different sites and have better-isolated control. Connect the asset libraries only to the sites where it is needed to provide access so that content authors can use the assets while creating a page, writing a blog post, and so on.
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Documents	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.
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Documents and Media	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.
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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:

- 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.
- Multiple-file upload allows 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).
- Create shortcuts to videos stored in different video streaming services (Youtube, Vimeo, Facebook and Twitch) to easily create content in the portal and embed them, categorizing, and tagging them to help users search for them.

- Set expiry dates on Documents to ensure that licensed content is only presented while the license is valid. Document Titles and Filenames are independent to provide greater storage and display flexibility
- Create Document Types and author Documents using a consistent forms-builder experience shared across Forms, Web Content, and Documents.

**Document
Previews
and Preview
Generation**

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.

Media Selector

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.

**Inline Image
Editor**

Allows for simple image editing directly from within Liferay, eliminating the need for an external tool while creating content. Resize or crop 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.

**P2P Document
Sharing/Asset
Sharing**

Allows sharing documents and media assets with registered users to increase collaboration for instances where multiple users need to work on a single asset.

**Search
(Documents
and Media)**

Search for documents, video, audio, images and other media types based on file names, tags, categories, extensions, metadata, and the file's text content.

Permissioning

Asset Library Roles

By default, there are four main Asset Library Roles, equivalent to their Site counterparts: Asset Library Owner, Admin, Member, and Content Reviewer. Liferay also allows users to create custom roles and permissions beyond the default given.

Users can also share assets to approved internal or external users, like partners.

Asset Versioning

Users with the appropriate permissions can access and restore previous versions of assets and keep track of new versions.

Workflow Creation

Accelerate the asset creation lifecycle by assigning review and approval workflows. Users will automatically receive notifications to approve, make changes, publish, or even expire assets.

Tags and Categories

Vocabularies

Collect and organize categories related to a specific theme or topic. For example, a retailer could have a vocabulary called “Locations”.

Categories

Categories are the specific classifications for the vocabulary. For the example above, a category could be “North America”. Categories help facilitate search by allowing users to filter based on assigned categories.

Tags

Tags represent informal keywords or labels associated with the content. Tags help users discover content through search or browsing.

Document Types and Metadata Sets

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.).

Auto-Tagging	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. Features include: • Image Auto-Tagging: Tag providers available for images are TensorFlow, Google Cloud Vision and Microsoft Cognitive. • Web Content/Document Auto-Tagging: Tag providers are OpenNLP and Google Natural Language. • Auto-Tagging API: Tag any asset with any service, for your use case by leveraging an API built for extending auto-tagging functionality.
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Taxonomies	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.
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Foster systematic categorization with out-of-the-box Global Vocabularies. Internal vocabularies and categories are not displayed to end-users but are used for administration purposes within to categorize content for the Content Audit tool.

Bulk Management	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.
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Integration to External Assets

CMIS Integration	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.
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Google Drive Plugin	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.
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Online Document Editing	Use the Google Docs editor to allow activities related to creating and editing documents via portal.
Office 365 Integration	Create and edit Office 365 documents, presentations, and spreadsheets stored in Liferay DXP. This feature takes advantage of Liferay's existing permissions system, versioning and sharing capabilities.
File Types	Liferay DXP has the capability to support any file type from Office documents, images, through to audio and video files.

Multichannel Asset Delivery

Adaptive Images	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. Liferay will automatically present the most appropriately sized image based on the viewport width for images displayed in Content and Display pages, including background images. This can be overridden by authors if required.
CDN	Improve resource load times with Liferay's native CDN. Liferay is also able to integrate with existing CDNs to optimize performance on any channel.
Headless APIs	Ensure content can be displayed on any channel with headless APIs. Liferay's headless APIs serve data over the web, so any application capable of making web calls can serve as a client.

Search

Liferay DXP allows you to build digital experiences with dynamic navigation, categories, and search results that can change depending on your audience. The result is a user experience that makes it easy for customers, partners, or employees to locate what they're looking for and discover other highly relevant services, products, or content you can offer them.

Search Capabilities

Full-Text Search	Enable users to search for keywords and phrases within various types of content, including articles, documents, images, videos, and more.
Cross-Site Search	Save visitors time by allowing them to search for information across multiple websites in one place.
Faceted Search	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.
Federated Search	Enable users to search multiple or alternate indexes in Elasticsearch from a single search and display them as separate search results on.
Filter/Sort	Users can filter and sort search results within the UI.
Customizable Search Widgets	Liferay provides a palette of widgets which can be used together to build sophisticated search experiences - including Search Bar, Search Results, Sort, Category Facet, Folder Facet, Modified Facet, User Facet and more. Most of these widgets can have their UI customized through the use of FreeMarker display templates.
Multi-Language Search	Search across all languages for Web Content for multi-language sites and portal instances.

Search Admin Tools	Handle administration tasks like monitoring the health of the Elasticsearch cluster, reindex search indices, and view field mappings. Reduce downtime, improve operational and resource utilization efficiency with the Concurrent and Sync reindex execution modes providing high-availability in search capabilities while the operation is running.
Curated Search Results	Liferay DXP allows granular search tuning through Result Rankings applications. Result Rankings allow explicitly pinning or hiding specific results for a particular search query.
Synonyms	Liferay DXP allows granular search tuning through Synonyms. Synonyms sets allow defining terms with equivalent meaning.
Low-Level Search APIs	Leverage improved search APIs to interact with Elasticsearch. Developers can call the search engine without writing or using models or indexers and allows access to most aggregation and query types of Elasticsearch.
Search Headless API	Search the company index for matching content through a single endpoint and build custom search experiences. Supports facets with translated display terms and also custom searching, filtering, aggregation, and sorting through Search Blueprints.
Elasticsearch Integration	Elasticsearch, the market-leading search engine for modern web applications, is the default search engine in Liferay DXP and provides powerful search monitoring, tuning, and scaling capabilities.
X-Pack Security Integration	Liferay DXP can establish secure connections to Elasticsearch using X-Pack Security.

**Liferay
Enterprise
Search
(optional add-on)**

Liferay Enterprise Search is an add-on subscription that provides end-to-end support for Liferay DXP 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.

Liferay PaaS and SaaS includes LES by default and these features are bundled and enabled by default with all Liferay DXP releases starting from 7.4.

**Search
Blueprints**

As a part of LES, Blueprints allows you to override Liferay DXP's search behavior to provide personalized and context-aware search results. Additionally you can boost, hide, or filter results by various factors like proximity, categories, tags, and user segment. A visual query builder enables you to do this all without coding.

**Semantic
Search**

Create a search experience that understands the intent of users' searches and the context of the content leveraging new generation language ML models through third-party providers and the visual query builder of Search Blueprints. Semantic Search is currently a Beta feature.

**Cross-Cluster
Replication**

With the LES Cross-Cluster Replication module you can achieve an alternate form of multi-data-center deployment; it does not allow distributing an Elasticsearch cluster's nodes over multiple data centers, but does allow configuring and connecting separate Elasticsearch clusters in each data center.

**Learning to
Rank**

LES Learning to Rank harnesses machine learning to improve search result rankings. It combines the expertise of data scientists with machine learning to produce a smarter scoring function that's applied to search queries.

Learn more about the benefits of Liferay Enterprise Search [here](#).

Personalization

With Liferay DXP, you can personalize and optimize digital experiences at scale to make it easy for your customers, partners, or employees to find relevant information quickly. Our DXP allows you to target different audience segments with precision, generate tailored recommendations automatically, and test different digital experiences faster so you can optimize user journeys, increase conversions, and maximize results.

Segmentation

Segmentation	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.
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Custom Events	Use the enriched data provided with Custom Events to build personalized experiences.
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Dynamic/ Static Segments	Determine whether to aggregate individuals automatically based on specified criteria or manually.
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Compound Segments	Liferay also provides the ability to create compound segments, by combining existing segments. The Compound Segment inherits the properties from the Segments it's based on and updates the members automatically. You can add additional properties to further customize the Compound Segment.
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Personalized Experiences

Content Page Personalization	Dynamically change the page layout and content based on the user segment criteria of the user viewing the page.
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Collections	Display a collection of content for users matching a specific segment.
Personalization	For situations where a user may belong to multiple segments, you can combine collections entries from all the segments to which the users belong or prioritize a personalized variation to determine which personalized variation is displayed to a user.

Recommendations

Product Recommendations	For ecommerce merchants, Liferay also offers machine learning models for implementing product recommendations based on: • Related products, which are products complimentary to the one your customer is viewing. • Also-bought items, which are products other customers bought, based on the product that a customer is currently viewing. • Similar buyers, which show customers what other customers who are similar to them also bought (based on user profile).
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Personalization Optimization

Optimization	Measure the interaction of targeted user segments with your chosen content to optimize content delivery.
A/B Tests	Run multiple versions of your content to test different layouts, messages, or buttons. Once you run the test, you can publish the version that performs the best for a given metric, such as bounce rate or clickthrough.

Commerce

Liferay makes purchasing simple to encourage repeat orders with a site that makes it easy to do business with you. Liferay's commerce capabilities are integrated natively within the platform.

Site Experience

Storefronts

Leverage the full power of Liferay DXP to create and manage one or even multiple storefronts. In a single platform, you have access to the tools you need to build:

- Engaging product pages
- Efficient product discovery
- Tailored checkout workflows
- Guided sales processes
- Easy-to-search knowledge bases
- Differentiated aftersales experiences

With out-of-the-box Accelerators, you can also quickly and easily set up a functional store using pre-configured components and configurations for a site in a single action. These Accelerators are designed with features that make the experience as smooth as possible by having elements that are both functional and elegant.

Multi-Store and Multi-Channel Support

With Liferay, you can manage multiple stores or channels from one instance, meaning you can manage product content, inventory, orders, and fulfillment across multiple channels in a single place.

Localization

Define what countries, languages, and currencies are supported for each site and support multi-currency across these sites.

Display the correct language for users according to their IP address and location. Other content, including product information and web page content, can also be localized for the user's language.

Catalogs

Drag-and-Drop Page Builder

Create pages by dragging and dropping out-of-the-box applications such as product detail display, shopping cart, search bar, and more.

Catalogs

Store administrators can create multiple catalogs on a single instance.

Multi-Site Catalogs

You can use channels to connect catalogs and products to any place your products are sold: a Liferay-based storefront, third-party marketplaces, or anywhere else.

Catalog Permissions

Site administrators or product managers can control which products in their catalog display to end users, depending on the account, account group, or account role. Partners and suppliers can manage catalogs to allow their products to be sold in your storefront(s) while providing you with final approval controls if desired.

Category Navigation

Organize products through Product Categories to handle multiple products as a single unit.

Product Bundles

Increase sales through the creation of product bundles. You can define values that link a product with other SKUs, and customers can select different option values when adding a product to the cart. Liferay has made product bundles more configurable so that customers can manage more intricate product configurations without needing to contact your team. They will be able to edit bundles in their cart and can decide what product variants to add.

Product Recommendations

Automatically recommend related products based on product content, such as specifications, descriptions, and categorization. Product recommendations are based on what other similar customers have purchased, the product a customer is currently viewing, and previous products that the customer has purchased.

Product Management

Product Types	Liferay supports four out-of-the-box product types: Simple, Grouped, Virtual, and Diagram. • A simple product is any physical product for which inventory is tracked • Grouped products include two or more products that are packaged together and sold as a single item. • Virtual products are any non-tangible product, such as files or services. • Shop by Diagram allows customers to see the individual parts of a product and click to find and purchase those specific products.
Product Categories	Use Product Categories to group related products and quickly display them together on your Site using widgets and fragments.
AI-Generated Product Descriptions	Sellers can add products even faster. Liferay’s integration with OpenAI’s ChatGPT engine empowers users to quickly generate Product Descriptions. By defining desired content, tone, and word count, the AI Creator tool will populate Product Descriptions accordingly.
Product Options	Product Options provide a convenient and flexible way to customize Products. With Options, you can add fields to Products sold in your Channel, allowing customers to choose from Product variants, bundles, and more.
Product Configurations	Ensure streamlined operations and enhanced control over products and their availability for channels, order types, and accounts.
SKU Creation	You can manually or automatically create multiple active SKUs for a Product using the Option’s defined values. Once created, each SKU represents a purchasable version of the Product that’s displayed in the Product Details widget.
Product Media	Upload images and attachments directly to a Product to use for display images and product resources.

Product Attachments	Upload a downloadable document for a product which often provides additional information not already in the product's description or specifications. You can upload multiple attachments especially if there is more than one SKU (product variant).
Product Availability	Store owners can configure Availability Estimates to inform customers when an out of stock product will become available again.
Product Relations	Connect products that are related for up-sell and cross-sell opportunities.
Integration with Existing PIM/ERP	Liferay integrates with your existing PIM or ERP system so that you can quickly surface product information that resides within these systems. If you do not have a system for managing your product information or need to enrich the product information you have from an existing tool, you can use Liferay to enter and manage the following type of product content: • Product options such as size, color, and discounted bundles. • Specifications such as dimensions, color, weight, and capacity. • Images to help customers make a product selection. • Categories to help organize your products. • Exploded diagrams that help customers find parts for larger equipment.

Order Management

Order Management Dashboard	Manage and handle orders through a single dashboard.
Quick Order Entry	Customers are able to easily and quickly add multiple items to the cart through a variety of order entry methods, such as manual order entry, file upload, previous order history, and from a favorites or wish list.

Guest Checkout	Guest checkout functionality can be enabled on a per-channel basis so that users can submit orders without a registered account on the site.
Checkout Step Client Extension	Checkout Step Client Extension allows new steps to be added to the checkout process.
Order Workflows	You can build workflows that streamline the purchase process so that your buyers can ensure orders are fulfilled correctly and efficiently.
Automated Order Splitting	Separate items placed from different suppliers into individual supplier orders.
Subscriptions	Liferay DXP enables you to create and manage subscriptions for simple, grouped, and virtual products that your customers order regularly. Liferay's digital commerce capabilities provide Payment and Delivery Subscriptions out-of-the-box.
Sales Forecasting	With ML and predictive analytics, Liferay provides sales forecasting to estimate revenue and identify potential opportunities for growth.
Returns	Buyers can easily initiate return requests from their order history, specify the reason for the return, and request a refund.

Pricing

Account Groups	Group your customer base into different types of customers to support account-based buying.
Price Lists	Liferay provides a robust pricing system to fine-tune product prices. Liferay has the concept of a price list where the different prices corresponding to a SKU can be stored. Price lists can include base price lists, base promotion lists, and custom price and promotions lists only specific to eligible customers.

Tiered and Bulk Pricing

Offer price reductions based on quantity of products ordered. Bulk Pricing will apply the same tier price to all items in a qualifying order whereas Tiered Pricing applies different prices according to defined price tiers.

Discount Rules

Liferay provides comprehensive discount management. There can be two types of discounts: percentage discounts and flat discounts. Discounts can be applied to categories, products, product groups, shipments, SKUs, or order total.

Request a Quote

Hide pricing and require customers to request a quote on products for your sales agents to handle.

Custom Pricing and Discounts

Allow sellers to create different pricing and discounts for different types of orders.

Exchange Rates

Liferay DXP is integrated with the European Central Bank for automatic updates to exchange rates. Exchange Rates can also be manually defined or connected to a different external service.

Tax Rates

Add tax rates to a tax category and apply those rates to products and shipping costs.

Payment

Payment Methods

Liferay DXP handles payments through three payment methods:

- Offline: Liferay does not process the payment.
- Online Standard: Liferay processes the payment entirely. This option is not available out-of-the-box but you can add additional methods using the payment integration client extension or the payment method extension point.
- Online Redirect: Liferay passes the information to a third-party payment processor, redirecting the buyer to complete the payment on the processor's website. Examples include Mercanet and PayPal.

Payment Method Extension Point

Additional payment methods can be added using the Payment Method Extension Point.

Payment Integration Client Extension

Additional payment method Client Extensions can be added using the Payment Integration Client Extension.

Payment Method Client Extensions

Payment Method Client Extensions can be installed from the Liferay Marketplace. Examples include Adyen and Stripe.

Refunds

Once processed, the refund goes back to the original payment method. Issue partial or full refunds for online payments with complete control over the amount, and configure specific refund reasons to provide clear explanations to your customers. Liferay also makes it mandatory to select a reason to complete a refund.

Account and User Management

Self-Service Account Management

Customers can manage their own accounts, such as organization information, shipping addresses, etc.

Supplier Roles

Liferay DXP provides an out-of-the-box Supplier Role that gives suppliers the ability to manage their own product catalogs and channels. This greatly reduces the effort to set up suppliers and support multiple vendors in your sites.

Sales and Service Rep Support

Sales Network

Manage many-to-many account relationships more easily with Liferay DXP. The organizational structure of your sales networks can be mirrored and visualized in Liferay using the Organizations feature. Organizations are hierarchical arrangements of Users that can model real-world organizational hierarchies that enable distributed and simplified management of Users, Roles, Permissions, and Accounts.

Organizations make user management simple. When a user in an organization is reassigned or transfers to another organization, their roles and permissions automatically update based on their new organization membership. For a sales network, this means streamlined and secure access management to customer accounts.

Sales Rep Dashboard

Customize your own Sales Rep Dashboard with critical information such as Recent Orders, Shipping, and Loyalty Information. Give your team the tools needed to proactively act on their accounts to grow business with them and avoid customers churn.

Loyalty Score Alert

Notify your sales rep when there's an unexpected dip in purchasing for an account, indicating that they may be at risk of churn.

Account Switcher

Allow sales reps to view sites exactly as their assigned accounts see it, including personalizations and catalogs. Sales reps can build orders and checkout on behalf of accounts with attribution.

Shipping Management

Shipping Management UI	Once a shipment has been created, shipping information can be edited and products added to be shipped from the Shipment Detail view in the Order Management Dashboard.
Multishipping	Multishipping lets customers ship items from a single order to different addresses and on different dates.
Integration	Liferay DXP is able to integrate and pull information from warehouse management, ERP, and existing logistics systems.
Flat-rate and Variable Rate Shipping	Liferay DXP provides flexible shipping options, including flat-rate for simplicity and variable rates based on factors, such as weight and order subtotal.
Shipping Method Client Extension	Shipping Method Client Extension allows integration with external shipping engines for shipping cost calculations.
UPS Shipping Engine Client Extension	The UPS Shipping Engine Client Extension enables customers to provide shipping options from UPS.
Warehouse Management	Add warehouses from where product inventory is managed and shipped. Product quantities can be managed per warehouse.

Integrations and Connectors

Headless Commerce	Use Liferay DXP as a headless platform with a set of REST APIs following the OpenAPI standard. This includes both Administration and Delivery APIs. Administration APIs allow you to integrate with backend systems, such as ERPs or warehouse inventory management systems, to help you manage storefronts in one platform. Delivery APIs help facilitate multi-channel use cases so that you can support a wide variety of storefronts.
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**Pre-built
Connectors**

Liferay has native connectors you can leverage to connect to:

- TradeCentric (formerly PunchOut2Go) to streamline purchasing processes and transact electronically.
 - Mulesoft to build automated ETL processes through its operations.
 - Manage data from SugarCRM directly from Liferay using Proxy Objects.
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Low-Code

With Liferay DXP's Low-Code and No-Code capabilities, you can streamline a wide range of business processes without needing to rely on IT for help, including collecting and sharing data, generating and distributing reports, or creating a system to track and resolve issues and requests.

Objects

Objects

With Liferay Objects, you can build and deliver applications without having to write code or deploy modules.

With Objects, you can define custom data structures, set up relationships between data, manage entries, and assign actions that execute under specified conditions. You can also design experiences to determine how fields and relationships appear.

Liferay Objects are fully integrated with Liferay's core frameworks to provide a unified experience across the platform and leverage all of Liferay's capabilities, such as headless APIs, Permissions, Workflow, and Page Builder.

**Objects
Relationships**

Users are now able to relate entities by creating object relationships. Adapting to the context of the use case, define one-to-many or many-to-many relationships between objects entries and define how they are displayed in the custom experiences.

Objects Model Builder	Visually understand the structure of your Objects and how they connect with each other in a diagram view. This panoramic view of your application will make it easier to validate the accuracy of your platform models. With it, you can create, manage, and extend data models and quickly configure definitions, fields, and relationships.
Layouts and Views	Users are able to create customized layouts for their applications, in that way, they can provide for their customers a unique experience of adding data.
Actions	Create actions that will be triggered by specific events as, when adding, updating, and deleting entries. In that way, automate your process and avoid human mistakes.
Picklists	Define a predefined list of options to use while modeling data in Liferay Objects. Users can manage lists and use it across multiple different objects, in that way, they can guarantee consistency and avoid mistakes while modeling their data.
State Manager	Configure the states and possible transitions of your data, design the flow for each state and use validations and actions to add business logic for different states. States can also be used alongside workflow statuses to define more complex review and approval processes.
Gather Data Inside of the User Context	In order to provide users the ability to gather more accurate data from their customers and employees, Liferay Objects is also integrated with the page builder, leveraging form fragments and display page templates to add and edit data directly into pages.
Display Data to Create Experiences with Liferay Objects	By publishing an Object, they are also integrated with the Info Framework, allowing users to create experiences with its application data. Besides being able to display specific entries in pages, a Collection Provider will also be automatically created for each object, allowing users to create full flexible experiences using Fragments.

Objects APIs	By creating a custom object, DXP automatically generates a new Rest API with a set of end points and updates them as the objects are modified. This provides a full headless experience with no code necessary to create the APIs.
API Builder	Build APIs based on custom Objects in a Low-Code/No-Code UI. Define the whole structure of the API, from the endpoint's name to the data model of the request and response schemas.
Objects Integration with DXP Native Frameworks	In order to provide the seamless experience with native capabilities from the portal, Liferay Objects is fully integrated with DXP's frameworks, being integrated with Workflow, headless, permissions, Blueprints, Search, Forms, Fragments, Assets, and Info Framework.
Proxy Objects	Manage data from external systems through Liferay without persisting that data in Liferay DXP.
Data Migration Center	Manage data export and import tasks independently, eliminating the need to wait for IT assistance. With the Data Migration Center, you can export and import Object Definitions and Entries.
Object Data GDPR Compliance	Apply GDPR rules to object entries. If you choose to delete a user's personal data, the object entries related to that user will also be deleted.

Data Sets

Data Set Manager	With the data set manager, you can create data set views and customize how users see your data set. Choose which fields are displayed, define and pre-apply filters, set default sorting rules, redirect users to a different URL where they can perform actions, and configure pagination options for your data set view.
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Data Set View Actions

Create actions linked to the elements in your data set. There are five item action types: Async, Headless, Link, Modal, and Side Panel. Async actions operate behind the scenes, allowing complex or time-consuming operations to be carried out in the background while users continue interacting with the application.

Headless actions determine the specific permissions and functionalities that can be executed through the API.

Link actions direct users to a specified URL.

Modal actions send users to a specific URL that is rendered in a modal window.

Side panel actions send users to a specified URL that is rendered in a side panel.

Forms

Forms

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.

Form Rules

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.

Multi-Language Support for Forms

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.

Fields and Properties

Field types included in the default form fields including text, file upload, numeric, password, grid, boolean, and search location fields. The ability to create form field sets, by grouping fields together and repeating that group of fields help speed up the creation of long forms where repeated inputs may be necessary. Fields can be hidden to support use cases where data needs to be defined by administrators but not modified by form submitters. Confirmation options can be added for text fields, Masks can be created for numeric fields, Validation is available for many field types, including Dates. An API also allows users to create new customized field types, with a provided Blade template and documentation.

Forms Structure

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.

Validation

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.

Data Provider Integration

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.

Entries Management	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.
Form Entries Data Storage	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.
Forms Reports with Analytics Cloud	Forms reports detail the number of views, submissions, failed submissions, abandonment and completion time, user information, and device usage.
Forms Reports	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.
GDPR Coverage	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. Data Erasure (AKA Right to be Forgotten) Administrators can review Form's entries that potentially contain personal information and edit, anonymize or delete as needed through a simple interface. Data Export (AKA Right to Data Portability) Administrators can export a user's personal data submitted through Forms before going through the erasure process.

Workflows

Workflow Framework

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, saving your development team a lot of effort by reusing Liferay’s workflow administration tools and providing seamless integration with all supported workflow engines.

Process Builder

Liferay DXP provides a user-friendly, no-code interface to build sophisticated logic and automate workflows. The tool includes a visual timeline to simplify the flow of logic and clearer condition logic to better understand relationships between actions.

Reports

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.

User-Driven Workflow and Approval

Not only is there an 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.

Workflow Metrics

Gain insight into how long certain workflow events take to complete, with options to filter by Workflow Version. Users can create SLAs to set deadlines on a workflow process’s events. 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. Reports can be sorted by Item Subject, Created Date, Created By, Due Date, and Assignee.

Interface Design

Page Templates	Create single or multi-page interfaces that make it easy for users to complete business processes. Liferay DXP does provide basic page templates out-of-the-box, but additional custom page templates can be created.
Style Books	Ensure consistent design and experience across different pages using Style Books. They determine various visual settings on the Site, including spacing between any page elements, colors, and fonts. Each of these settings applies equally to every page using Style Books.
ThemeCSS Client Extension	Override default Liferay theme settings and tailor colors, fonts, and other design elements to allow for seamless personalization of your website's theme.
Graphical Designer	Quickly add text, buttons, animations, and other graphical elements to your interface without coding.
Headless APIs	Allow front-end developers to create alternative interfaces for different end points using a complete set of headless APIs.

Integration

Liferay DXP is an incredibly flexible platform that allows you to integrate external backend or legacy applications faster, and simplify complexity by connecting disparate systems, tools, and data into one unified view.

Integration Capabilities

Integration Framework	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.
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Frameworks Support

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.

Pre-Built Connectors

Liferay comes with a library of pre-build connectors to quickly create integrations between common systems. Some of these connectors include:

- **Salesforce.** Import account, user, and order data from Salesforce to Liferay.
 - **SugarCRM.** Manage data from SugarCRM directly from Liferay leveraging Proxy Objects.
 - **Mulesoft.** Design Mule Flows to batch import, update, and delete records.
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Headless APIs

Headless APIs empower front-end developers to deliver richer, faster, and more responsive user experiences. Front-end developers can use their native tools and frameworks to build digital experiences that go well beyond simple websites and mobile apps. These digital experiences include virtual assistants, kiosks, IoT/smart devices, and a number of different social media channels.

Our set of APIs, available as REST and GraphQL, provide access to structured content, DM, categories, keywords, commerce features, and other components.

REST API Builder

For APIs that Liferay DXP doesn't natively provide, you can build your own custom APIs using our REST API Builder.

Import/Export Data

Liferay makes it easy to bring in and move data between Liferay and external systems, such as MySQL, SAP, Salesforce, etc. by using:

- Liferay Objects API. End users could create data input into backend systems without writing code. An admin can create the forms needed via Form Containers, store all data into an Object and leverage an ETL to extract the data via Objects API, to map to a set of backend APIs.
- The Mulesoft Connector to design Mule Flows to batch import, update, and delete records.

- The Data Migration Center, currently in beta status, leverages the Batch Engine framework and the headless APIs to allow users to easily perform export and import operations using as file types JSON or CSV.

Client Extensions

Client Extensions make it easier to customize Liferay solutions without directly modifying the Liferay platform. This allows customers to modify the portal's functions and behaviors through code without needing to touch the Liferay core or compromising upgrades and maintainability.

This also allows developers to use whatever browser language or framework to build custom solutions that can connect to the platform. These improvements make it easier for users to create custom solutions and for Liferay to release new updates faster and streamline delivery.

Modularity

Liferay provides a highly modular architecture that allows for greater extensibility, stability, and flexibility. Developers can use a development model based on OSGi standards for where Client Extensions cannot cover their use cases.

Click-to-Chat

Liferay includes out-of-the-box integration to 10 popular Click-to-Chat providers. Administrators configure Click-to-Chat by providing the appropriate Provider ID / API key details. If needed, different providers can be configured for each site and/or virtual instance. A subscription is required from a provider to use this feature - check the providers' documentation for details

DocuSign

Liferay includes out-of-the-box integration to DocuSign to support the use of Electronic Signature processes. A subscription to DocuSign is required to use this feature.

Liferay Marketplace

With Liferay Marketplace, partners and citizen developers can showcase the apps and solutions they have developed on Liferay. Other users can use them to accelerate the creation of their own solutions. Visit our [Marketplace](#) to learn more.

Security

Secure your users, data, and solutions with enterprise-grade security features. Liferay's programs and platform have been certified by many external third-party organizations including ISO, CSA, SOC, and more. For more details, visit our [Trust Center](#).

Authentication

OpenID Connect	OpenID Connect is one authentication approach that Liferay supports. It is typically used in B2C types of applications to allow users to connect to Liferay using well-known providers, such as Google, Facebook, Apple, or Github.
Federated Authentication (Single Sign-On)	Liferay DXP supports LDAP and provides sign-on (SSO) integration capabilities through the OpenID Connect and SAML 2.0 standards to connect with solutions and services like OpenAM, PingFederate, Google, PingOne, Okta, MS Azure AD, Oracle Identity Cloud. The SAML 2.0 connector also allows Liferay DXP to act as a SAML 2.0 Identity Provider server to authenticate all applications integrated. Token Based SSO is also supported for integrating other kinds of SSO solutions, for example: SiteMinder, Kerberos etc, through cookie/request/header or session parameters.
Multi-factor Authentication	Multi-factor authentication (MFA) is an architectural approach to accessing resources sequentially through multiple authentication verifiers. Liferay includes support for email-based one-time passwords, time-based one-time passwords and APIs to enable the development of custom factors. Support is also provided for FIDO 2.0 hardware-based authentication devices such as Fingerprint readers, Cameras, and dedicated FIDO 2.0 security keys.

Authorization

Roles and Permissions

Roles are a collection of permissions. Permissions are the individual checks that grant a user access to an action or resource.

Liferay DXP provides some default roles, but also gives you the flexibility to create your own custom roles.

OAuth 2.0 Support

OAuth 2.0 is an industry-standard authorization protocol (RFC 6749) where users can grant access for a third-party site to fetch or manipulate user data without user's authentication credentials.

Liferay DXP allows the portal administrator to register trusted third-party sites and configure the scope of accessible web services or REST applications resources. When a portal user visits the third-party site that needs portal data, the site can ask the user to authorize an access to the Liferay DXP resources for the site. The third-party site then accesses the Liferay DXP data and resources on behalf of the user, but only with the user permissions and OAuth 2.0 token, never with the user credentials.

Identity Management and Access Control

Role-based Permission Framework

With role-based access control, you can ensure only appropriate users view and use your application's data.

Service Access Policies

Define which services or service methods can be invoked remotely with an additional layer of web service security.

Authentication Verifiers

Authentication Verifiers are for determining if the provided credentials — whether that's a user name/password, a token, an HTTP header, or a parameter — match a user account.

CORS	The CORS (Cross-Origin Resource Sharing) system settings provide a way to configure CORS headers for Liferay services.
OAuth 2	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. Registered OAuth 2.0 Applications can be configured as Trusted Applications, allow users to have their device remembered, and have all device authorizations removed with a single click.
SCIM (System for Cross-domain Identity Management) Support	SCIM allows user identity information to be synchronized across multiple systems. Simplify identity management, the user provisioning across different systems with Liferay SCIM implementation.

Data Protection

Right to Be Forgotten	Personal data is considered erased when the data can no longer be reasonably linked to an identifiable individual. In Liferay DXP, administrators can review content that potentially contains personal information and edit, anonymize or delete as needed through a simple interface.
Right to Data Portability	With Liferay DXP, administrators can export a user's personal data per application before going through the erasure process.
Cookie Management	Cookie Management now supports Liferay and Third-Party Cookies, with GDPR support. When the Explicit Cookie Consent Mode is enabled, no cookies are set until the user agrees to their usage.

Web Service Security Layers

IP Permission Layer	The IP address from which a web service invocation request originates must be white-listed in the Liferay DXP server's portal configuration. Any attempted web service invocation coming from a non-whitelisted IP address will automatically fail.
Authentication Verification Layer	The authentication verification layer serves to validate provided credentials and to create portal authorization contexts for Service Access Policies, OAuth 2.0 Resource Server access checks and user permissions layer.
Service Access Policy Layer	Service access policies allow the portal administrator to whitelist web service endpoints available to remote clients.
User Permission Layer	Properly implemented web services have data permission checks. The user invoking a web service must have the appropriate Liferay DXP permissions to manipulate with the respective entities and data.
OAuth 2.0 Resource Server Authorization Layer	This layer, similar to Service Access Policies, restricts access to JSON WS and REST resources for clients relying on OAuth 2.0 authorization credentials. The access is restricted based on OAuth 2.0 scopes that were granted during authorization phase by user and must match the scopes required by the respective JSONWS or REST application endpoints.
CORS Support	Cross-origin resource sharing (CORS) is a standard allowing users to request resources stored on another origin, or web server at a different domain. Users can leverage CORS on Liferay in order to enable JavaScript clients or Single Page Applications to use Liferay Portal web services as a headless server.

For a more detailed look into our security practices, documentation, and certifications, visit the [Liferay Trust Center here](#).

Cloud

Leverage Liferay's cloud infrastructure and tooling to simplify, secure, and deliver digital applications on Liferay DXP. Deploy Liferay DXP any way you need, including using Liferay's SaaS or PaaS offerings.

Cloud Infrastructure

Service Layer	Liferay Cloud uses the GCP POP Network and the GKE Ingress to improve web traffic coming from ISP networks, providing a sophisticated form of DDoS protection, CDN, load balancing, and WAF.
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Environment Layer	Liferay Cloud uses Kubernetes to automate, scale, and manage service Docker container images, enabling flexible traffic access.
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Application Management

On Liferay PaaS, you can manage your applications with a few clicks. On Liferay SaaS, the Liferay team will manage your Liferay DXP application for you.

Environments Management	Production and UAT environments are created as virtual instances on your Liferay DXP instance. These environments are provisioned to deploy custom apps for the Production DXP and UAT DXP virtual instances respectively.
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Environment Variables	Set environment variables to adjust the way a service will behave in each environment. Protect credentials, secret keys, or any other information.
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Log Management	Access logs and monitor the performance of your extension environments.
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Plan and Usage Dashboard	Gain insight into the management of Liferay Cloud resources across different environments. This allows you to request precise allocation of available resources and to more efficiently manage them.
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Backups	Liferay fully manages backups and recovery. Backups are taken every 4 hours and retained for 30 days. In the event of a failure, recovery is also fully managed by the Liferay team. All backups are encrypted at rest.
Custom Domains	Easily add custom domains by creating A records from your preferred DNS tool and pointing them to your services.
Multi-Region	Create environments in different regions such as the USA, Germany, Brazil, India, Australia, and more. Improve network latency by having a location close to your users' requests.

Development Lifecycle for Liferay PaaS

Streamline the development cycle with a full CI/CD strategy that enables zero downtime deployments.

Continuous Integration	Take advantage of a full CI strategy with our out-of-the-box Jenkins instance. Run automated unit tests, integration tests, and inspection of code quality.
Continuous Deployment	Trigger a new build on every new commit and choose which environment you want to deploy to. Ensure that your system can be reliably released at any time.
Zero Downtime Deployments	Reduce service interruption by leveraging a zero downtime deployment strategy. Maximize uptime and relieve anxiety about maintenance windows.
Git Repos Integration	Liferay DXP supports integration of GitHub, Bitbucket, GitLab, and Azure Git repositories via DevOps with Jenkins, including PAT generation for Authentication.
Dependency Management	Declare the dependencies of your services and make sure they are deployed in the sequence that is best for your application.

Persistent File System	Enable access to a persistent file system and keep your files in the same state even after redeployment or restarting of your services.
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Port Configuration	Manually choose which HTTP port to expose in the load balancer or block outside access to a service if needed.
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Maintenance for Liferay PaaS

Usage Monitoring	View real time metrics for CPU, memory (RAM) and data transfer usage for all of your services.
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Health Monitoring	Monitor the health status of each of your services and be the first to know when things don't go as expected.
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Advanced Monitoring	View tailored dashboards with information on JVM, garbage collection, response times and much more with out-of-the-box integration for Dynatrace Software Intelligence .
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Real Time Alerts	Receive real time alerts when a service is near exceeding its allocated resources. View the status and resolution of each issue that may affect project performance, as well as environment health.
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Maintenance for Liferay SaaS

Let the Liferay team handle maintenance, upgrades, and updates so that you can have the time back to focus on what matters to your business.

Platform Maintenance	The Liferay team will maintain the platform regularly according to a predetermined schedule.
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Liferay Service Maintenance	The Liferay team will perform updates and upgrades on the Liferay service. During these times, there will be a weekly downtime of 1-2 times within a 4-hour window every week.
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Cloud Security

High Availability	Liferay commits to a monthly availability (MA) of 99.95% for the Liferay Cloud Infrastructure.
Data Center Locations	Liferay Cloud system hosting is provided primarily by Google Cloud Platform. While the base of Liferay SaaS and PaaS is hosted in North America, customer applications can be hosted in the location of the customer's choice, based on the available locations. Currently, available hosting locations include North America, South America, Asia, Australia, Europe, and the United Kingdom, with more locations to come.
Private Network	Enable services to communicate securely between each other via hostname within their own private network.
Public/Private Access	Set up services so they are accessible to the public or only available within a project's private network.
HTTPS	Encrypt traffic and secure the way you send data between your services and browsers. Generate SSL certificates and their renewals automatically.
Database with Encryption at Rest	Add an extra level of security with a database that has encryption at rest and encryption in transit.
Data Recovery and Automated Backups	Automated backups ensure that data and documents are protected and ready for restoration in case of data corruption or failure. With Liferay SaaS, Liferay's team automatically backs up your data on a regular interval. To protect customer data, backups are restricted to the cloud instance's data region and are never transported outside of it. Request a manual backup, a backup restore, or a copy of your data by opening a Support ticket. With Liferay PaaS, you can fine-tune your automated update schedule and restore data from backups yourself when necessary.

VPN Connection	Enable secure integrations and access crucial company data centers by connecting your project to a VPN and configuring specific forwarding ports for maximum protection.
IP Filtering	The Liferay monitoring team will implement IP filtering on the WAF. Additionally, customers with a private cluster can provide a list of IPs to block.
Firewall Rules	Customers with a private cluster can set up firewall rules that will be set up for all environments in their project.
Web Application Firewall (for Liferay SaaS)	DXP and Extension environments on Liferay SaaS are protected by a WAF.
Virus Scans	ClamAV is available for customers to scan files uploaded to the Document Library.
SAST (for Liferay SaaS)	The Liferay team will perform SAST on the Liferay DXP core. Customers can also perform SAST testing on their custom apps.
DAST (for Liferay SaaS)	The Liferay team will perform DAST testing on the Liferay DXP Core. Customers can also perform DAST testing on their custom apps. The Liferay team must be notified as there will be limits on the extent of testing allowed.
Integration of Private Service Connect and Cloud Interconnect	With the integration of Private Service Connect and Cloud Interconnect, users now have secure and dedicated channels for seamless communication and data transfer between their on-premises systems and Liferay Cloud. This means enhanced data security, reduced delays, and consistent top-notch performance. Your data will travel safely and efficiently, improving your overall experience.

AI

Liferay makes AI easily accessible to all users to help accelerate tasks, business processes, and content creation.

AI

AI-Powered Content Generation

With Liferay's AI Creator Tool through native integration to tools like ChatGPT, content creators can simply define their word count, tone, and a short description to begin generating content to work with. Find more information on this feature within the [CMS](#) capability.

AI-Powered Image Generation

Generate unique and relevant images directly within your DAM system. Powered by DALL-E, content creators are able to define a description, image size, and number of images to automatically generate images. Find more information on this feature within the [CMS](#) capability.

AI-Powered Product Information Generation

Liferay's OpenAI integration also can be used to create product descriptions and images with a single click, improving content creation efficiency. Find more information on this feature within the [CMS](#) capability.

AI-Powered Translations

Liferay integrates the following service APIs to generate automatic translations of Content Pages and Web Content: Google Cloud Translation, Amazon Translate, and Microsoft Translator. With a single click, you can translate content across content fields and pages into the selected language. Find more information on this feature within the [CMS](#) capability.

Auto-tagging Assets

Automatically tag assets such as text-based documents, web content, blog entries, and images upon upload. This not only helps save time for your team, by organizing assets in a structured manner, but also makes these assets easier for users to search for. Find more information on this feature within the [DAM](#) capability.

Automatic Product Recommendations

Liferay can present product recommendations to customers based on their role, history, or previously purchased products.

A few product recommendations include:

- Content-Based Product Recommendations: Recommends Products similar to the currently viewed Product.
- User Personalized Recommendations: Recommends Products based on the purchase history of similar customers
- Context Aware User Personalized Recommendations: Recommends Products of similar categories and the buying history of similar customers
- “You May Also Like” Recommendations: Recommends Products based on the purchase history of all customers
- Also-Bought Product Recommendations: Recommends Products frequently purchased with the viewed Product

Find more information on this feature within the [Personalization](#) capability.

Semantic Search

Customize search results based on user intent with Semantic Search. Semantic Search parses index content and users’ natural language search phrases with a machine learning model, so that results better reflect the intent of their search. **Semantic Search is currently a Beta feature.**

Find more information on this feature within the [Search](#) capability.

Sales Forecasting

Use AI-powered sales forecasts to help your sales and finance teams estimate revenues and identify potential opportunities for growth.

Find more information on this feature within the [Commerce](#) capability.

Integration to other AI platforms

While Liferay DXP provides native AI capabilities, the platform’s incredible flexibility and extensible architecture makes it easy to integrate with other AI platforms as well. We provide an extensive set of headless APIs and batch processing capabilities to make it easy to connect to the AI technologies you need.

Find more information on this feature within the [Integration](#) capability.

Conclusion

These are just the out-of-the-box features Liferay DXP provides. With the platform's incredible flexibility and extensible architecture, you can create a solution that looks and functions the way you need.

Request your demo at liferay.com/request-a-demo.



Liferay helps organizations build for the future by enabling them to create, manage, and scale powerful solutions on the world's most flexible Digital Experience Platform (DXP). Trusted globally by over a thousand companies spanning multiple industries, Liferay's open-source DXP facilitates the development of marketing and commerce websites, customer portals, intranets, and more. Learn how we can use technology to change the world together at liferay.com.

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