PLACECUBE

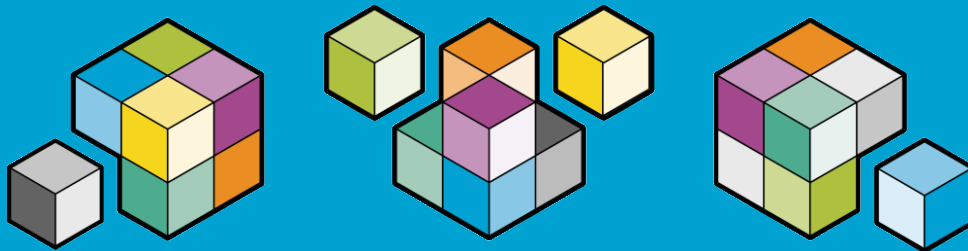# Liferay Digital Experience Platform (DXP) SAAS

G-Cloud 13 Service Definition
September 2022

G-Cloud 13 Service Definition

Liferay Digital Experience Platform (DXP)

G-Cloud Service Name

Liferay Digital Experience Platform (DXP) SaaS

Service Overview

Industry leading (Gartner) open source, Digital Experience Platform from Liferay. Used by organisations, worldwide, to transform service outcomes and engagement with citizens. As Liferay's preeminent Service Partner, Placecube's accredited services enable you to accelerate your digital transformation program and optimise return on investment.

Service Features

- Feature-rich, highly flexible and interoperable Digital Experience Platform
- Fully responsive, out-of-the-box
- Integrated CMS, enterprise Forms builder and Workflow engine
- Case Management, CRM, Intranet /Extranet and low-code extensions from Placecube
- Personalisation through audience targeting and segmentation
- Includes Elasticsearch or Solr search tier options
- Headless API
- Low code functionality
- Native App Builder and create microsites in a few clicks
- Optional E-commerce and Analytics Cloud functionality

Service Benefits

- Accelerate your transformation with feature rich, proven, Digital Experience Platform
- Secure. Trusted by the public sector. DPA and GDPR compliant
- Mobile ready and fully responsive to drive citizen engagement
- Reduce service delivery costs whilst improving service outcomes
- Flexible; select the features that deliver your user requirements
- Graphical workflow designer to build processes and workflow, low code
- Open APIs to extend capability across your organisation
- Unified document repository integrations with Google, SharePoint, Documentum and Alfresco
- Hosted in a dedicated UK public cloud and built to scale
- Delivered by Liferay's premier Service Partner in the UK & Ireland

About Placecube

Now it's easier to build open, integrated services.

Our open platforms are co-created with the public sector for the public sector. We make it simpler for you to create services, integrate systems and personalise user experiences. Together we make your users' digital journeys easier, faster, and better connected.

We work with you to build your Digital Place – your open and connected platform. We accelerate your digital journey through the reuse of existing digital services. We work collaboratively, ensuring that our clients never pay twice for the same development. And we differentiate ourselves through our actions and behaviours, living by the core principle of 'Doing the right thing'.

1. Making digital government more affordable.

By re-using well-designed services, already co-created with the public sector and their users, we make it easier to launch digital strategies that bring people, communities, businesses, and infrastructure closer together for a more connected place. Multi-agency use comes as standard.

2. Open standards confidence, open-source flexibility.

Liferay DXP is our preferred open digital platform for making and re-using services that provides a sustainable way for local public services, health, housing, and communities to rapidly adopt open standards and open source-based digital services in a new style of partnership designed to connect places and communities.

3. Re-usable cube components avoid unnecessary redevelopment.

Clients use this capability to accelerate transformation, avoiding duplication and cost, using integrated tools to enable personalised services, engaged communities and secure collaboration.

4. 19 years working with the public sector.

Placecube has a wealth of government digital experience and has been working with local authorities and other public sector organisations, across Central, Civil, Health & Policing for over nineteen years (since 2003).

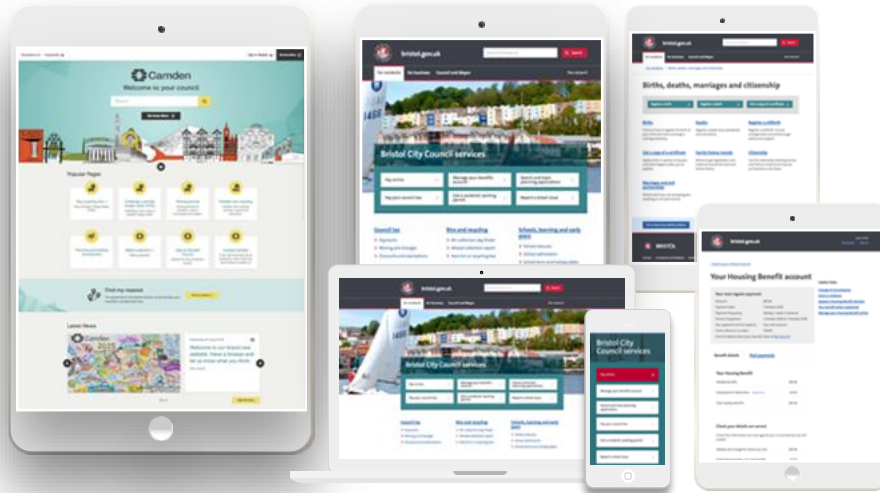### 5. Platinum Liferay Service Partner.

As the UK's preeminent Liferay Service Partner, the Placecube team is highly regarded as a specialist in creating, migrating, and deploying the global leading open-source DXP (Digital Experience Platform).

6. Provider of Knowledge Hub, the open knowledge platform for public service communities everywhere.

A platform to collaborate and share across teams, organisations, and communities. Co-designed with the public sector and used by more than 100,000 users from 5,000 organisations across 80 countries.

About Liferay DXP

Liferay DXP uses a modularised platform approach to provide clients with a scalable, extensible, true Digital Experience Platform (DXP) that provides out-of-the-box tools to help teams create and maintain their own digital services and design consistent digital experiences quickly and easily.

The Liferay DXP platform contains powerful tools and a framework designed for integration across places, giving clients:

- A digital platform that offers full end-to-end integration of the customer's digital experience
- Control of digital development in achievable outcome-producing stages
- Capability to solve local business problems and create digital applications quickly
- A way to prototype quickly and test digital solutions by engaging users earlier in design
- A solution built with Open Standards that promotes interoperability of systems and data
- Flexibility to buy and mix together best-of-breed, fit-for-purpose tech from a variety of providers
- Integration with legacy systems so they don't have to be replaced
- Independence from proprietary software that keeps you 'locked in'
- Freedom from inflexible suppliers for whom change is difficult, costly and slow

Liferay DXP is the global leading (Gartner-rated) open source Digital Experience Platform that is designed to make it easy to create, manage and optimise digital experiences across multiple customer touchpoints to deliver personalised experiences at scale. In order to achieve this, Liferay DXP provides an integrated suite of software tools and components that are designed to connect and integrate with your existing systems, such as multi-site content management, roles, personalisation, forms, publishing, workflow, document management, collaboration, permissions and analytics. This powerful, integrated toolset provides the ability to construct complete end-to-end services quickly and consistently. A more detailed summary of the key features of Liferay DXP can be found in the Appendix to this document.

Integration, Deployment & Management

Concentrate on developing the digital services for your organisation. Leave the infrastructure and software stack to us. You don't have to invest in physical assets; being able to 'rent' virtual infrastructure and software has both cost benefits and practical benefits.

Out-Of-The-Box Integration: Liferay DXP is designed for business speed and productivity with pre-built connectors and templates, out-of-the-box management and an architecture that can scale up and scale out as your needs evolve. Our platform lets you quickly enable service assets or design enterprise grade integrations. Optional integrations are available for Active Directory, Google Drive, Documentum, SharePoint, Alfresco, Tableau, JasperReports, Shibboleth and more. We can also provide integration adapters for a range of common public sector systems and services, including GOV.UK Notify, GOV.UK Pay, Northgate Revenues & Benefits, Civica CX, Northgate OHMS, Capita Pay, Civica Pay, Echo waste management, IDOX Uniform, ESRI ArcGIS, Ordnance Survey Places and more. Please ask for more details.

Software-as-a-Service (SaaS): Liferay DXP Software-as-a-Service solution is ready for immediate deployment over the internet once we have undertaken the necessary onboarding, customisations and integrations you require. Your users will have full administrative rights, allowing them to start creating other users, roles, sites, content and services straight away.

Training

Comprehensive, bespoke training is a standard component of our implementations and it has been developed to support our clients' in becoming self-sufficient.

Training commences well ahead of live deployment with in-house staff using the system for testing, accelerating their efficiency and ability to react to future business and legal requirements.

We can enhance initial on-site training with scheduled refresher sessions. Ongoing knowledge transfer can be provided through ad-hoc 'ask-the-expert', written guidance and virtual Communities of Expertise; all geared to creating self-sufficient, in-house expertise. A knowledge base is provided to help staff with day-to-day tasks and processes.

Onboarding & Offboarding Support

Our solution is ready-to-use and can be deployed at pace.

Firstly, we will work with you in person and via virtual meetings to discuss branding, design and the tools you want to use. We will then set up sessions to walk through the service, demonstrating the various administrative and end-user interfaces. You will have opportunities to practice, test and ask questions.

Once deployed, we provide a dedicated web-based support desk, available from 09.00-17.00, normal business days as standard. Telephone, on-site or 24/7 extended support can be made available for an extra cost. Our support team consists of highly skilled, experienced professionals, who can help troubleshoot any problems.

Additionally, we have an expert technical and content team who will help you optimise your platform and build your inhouse skills. They can offer additional training days at extra cost.

If you no longer wish to use the service, we can provide an encrypted archive of all client-owned data stored within the platform.

Security & Privacy

We are committed to keeping your data safe and secure and adhere to extremely strict security standards. This includes operating from SOC-1/ISAE-3402/SOC-2/SOC-3 compliant datacentres run by Amazon Web Services (AWS) and maintaining ISO27001 certification covering both our corporate and datacentre environments.

Our cloud software service production systems are hosted by AWS in the UK in some of the most highly specified datacentres available. They're built to exacting, rigorous standards and deliver unparalleled security, power, connectivity and environmental control. It's a world-class infrastructure and keeps our servers running uninterrupted 24/7. The datacentres are engineered with fully redundant connectivity, power and HVAC to avoid any single point of failure. Each datacentre is staffed by highly trained technical support staff.

We manage the infrastructure for you, so you can concentrate on managing your platform and your users. We ensure that all software within the environment, including operating systems, databases and application-level software is fully patched. We use enterprise-grade monitoring solutions on all our cloud environments to allow us to pre-empt and react to system events and resource usage.

The underlying software of our solution, Liferay DXP, is regularly penetration tested and verified by Veracode. The platform is regularly penetration tested by an independent CHECK service provider.

We have appropriate data processing agreements in place with all clients to meet the requirements of the General Data Protection Regulations.

Service Levels, Performance & Availability

We aim to provide at least a 99.9% uptime service availability level. The service is fully resilient, with no single points of failure throughout the technology stack. The service comes with a 4-hour recovery time objective (RTO) and a 1-hour recovery point objective (RPO). This means that in the event of a major loss of infrastructure, the service would be available again within 4 hours, with a data loss of no more than 1 hour.

Availability excludes agreed scheduled maintenance events, customer-caused or third party-caused outages or disruptions, or outages or disruptions attributable in whole or in part to force majeure events. Any service-impacting planned maintenance work is always performed outside of UK business hours, with adequate notification to our clients.

We take nightly backups of all operating system and user data, with a 35-day backup retention as standard.

Governance

Across our organisation, we have established systems in place to enable us to monitor and report against our performance quickly and effectively. We are proud of our track record in which we consistently exceed all these required standards for our existing clients. However, we are not complacent about this, and are constantly reviewing technology, processes and controls in order to ensure we maintain or improve these standards.

Our clients' requirements are typically aligned with our own well-established service standards, so we know we can provide an appropriate level of service having done so for other similar clients for a number of years. Priority classification is also a well-understood prioritisation model, which provides additional assurance that we will deliver reliable support service based on established best practices.

In addition to operating a responsible governance model, and providing outstanding support to our clients, our clients receive additional peace of mind through the eight stated commitments that we openly make about how we will continue to operate.

These eight commitments are just a part of how we uphold our reputation for doing the right thing.

1. **Our subscription pricing will be transparent and fair** – we will not surprise you with hidden costs or seek to charge you extra to keep features, services or integrations working in the way we have committed to you throughout our contract with you. We will only seek a fair return for providing genuine additional benefit and value to your organisation.

2. **We will not charge you a premium to integrate with our software or any digital services we provide** – we will facilitate this through the use of open APIs. When we develop a new interface, it will automatically become part of your existing subscription unless we agree with you in advance that it may put either party at a disadvantage to do so or that, as a pre-requisite, another third party must also be consulted and asked to contribute to the cost.

3. **We will use and support open standards** – we will strive to re-use, develop, and contribute to a growing library of open-source code and supporting collaborative initiatives to develop open standards. We require third party partners to meet these standards. This includes a commitment to publish open-source code so that it is accessible to others who may wish to adopt it, and to support growing open source communities in which we participate. Our intention is always to promote re-use wherever possible and avoid duplication of investment and costs on the part of our clients and partners.

4. **We will uphold the principles of data protection, security, and privacy by design** – personal data will remain private, open data will be open to share and any data services we provide will be designed for the benefit and improvement of your services. We will never seek to undermine the trust users place in services we provide through inappropriate collection, manipulation, or exploitation of user data.

5. **We believe web accessibility is essential, always** – we will strive to meet leading standards of accessibility in any services we provide or websites that we build, and we will uphold this principle in any quality review we undertake. This includes conformance with Web Content Accessibility Guidelines standards as a minimum.

6. **We will always seek to minimise the impact or disruption of any change** – when you entrust us to provide software and services on your behalf, we will always seek to co-ordinate and communicate any changes, updates or new releases so that your services are not disrupted. Where a fault occurs, we will remedy this fault according to the highest professional standards, by communicating openly with you and rectifying the issue as quickly as possible.

7. **We believe you have a right to know how your service is performing at all times** – we will share performance data summaries with you at no additional cost and will be open to discussing any additional detail you may require where it is reasonable and practical to do so without imposing any further charges. We will only seek to charge for requests that require significant development effort to provide.

8. **We are committed to Place by design** – our investment in place-based initiatives, through our solutions and technology, will always be designed to bring government, businesses and communities closer together to promote healthy, thriving local ecosystems with improved outcomes and sustainability for the Place. We will act responsibly and make a positive contribution to society.

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Appendix: Key Features of Liferay DXP

Identity Management and Access Control (Application Security)

- **Identity Management Support** — Liferay DXP is compatible with LDAP, SAML, OAuth, OpenSSO/OpenAM, SiteMinder, Facebook Login, CAS and OpenID Connect.
- **Service Access Policies** — Define which services or service methods can be invoked remotely with an additional layer of web service security.

- **User Management** — Create and manage users, organisations, user groups, roles and password policies. View all of the live portal sessions of your users.
- **Personal Data Management** — Export and erase users' personal data via an administration interface to address user privacy regulations like GDPR.

Platform Services

- **Clustering and Performance Monitoring** — Liferay DXP supports clustering at any combination of tiers (presentation, service, business logic and database), advanced caching and performance monitoring support (JMX, Java profiling and more).
- **High Availability and Scalability** — Maximise uptime while updating your clustered environment with rolling restarts, support for blue-green deployment, and cloud deployment through DXP Cloud.
- **Auditing and Optimization** — Access key performance statistics (hits/page, avg time/hit, max time per request and more) for all applications and pages. Track and manage user activity on the platform with built-in auditing.
- **Single Page Applications** — Liferay DXP uses Senna.js, to provide dynamic web experiences

by loading only the necessary parts of a page with a refresh, providing faster performance.
- **Development Standards and Technologies** — AJAX, iCalendar, Microformat, JSR-362 (Portlet 3.0), JSR-371 (MVC 1.0), JSR-344 (JSF 2.2), Spring 4.1, CMIS 1.0/1.1, Hibernate collection of projects, OSGi Core 6.0 and SAML 3.0.
- **Back-End APIs** — OOTB APIs allow connections to assets, cache, comments, data handlers, file storage, geolocation, membership policies, message bus, permissions, recycle bin, scheduler, scripting, search, upgrade and workflow.
- **Custom Fields** — Customise and edit field attributes without modifying the database for pages, web content, blog entries, documents, images and more. Developers can also use this functionality in their custom applications.

- **Dynamic Virtual Hosting** — A single instance can be duplicated to quickly create hosted websites within one Liferay deployment. Each clone can have a unique URL, custom theme and design.
- **Multitenancy** — Organise users by business-defined categories such as department, geography or office. Each organisation and site can inherit or define its own permissions and administer user, group and role management.
- **Site Administration** — Create and manage sites for different audiences. Each site gets its own pages, content management system and permissions. Admins to change the theme, insert JavaScript and metadata, create menus and more.
- **Search Administration** — Easily manage and control indexing and other search engine features.
- **Built-in Shell Interface for Module Administration** — Interact with and manage Liferay DXP's module framework through a built-in Gogo shell interface.

Integration and Interoperability

- **Integration Framework** — Liferay DXP is a central presentation layer platform for integrating content and services from back-end or legacy applications. It supports integration with SOAP, REST, RSS and proprietary APIs.
- **Front-End Toolkits** — Developer tools to create, update and maintain themes built on Liferay DXP and create OSGi bundles containing NPM dependencies.
- **IntelliJ IDEA Plugin** — Integration with IntelliJ IDEA that can be configured for use with Liferay DXP development.
- **Developer Studio** — An all-in-one, integrated development environment for building apps and modules. Developer Studio makes it easy to use project creation wizards to create modular projects based on Maven, Gradle and bndtools.
- **Liferay Connected Services (LCS)** — Liferay Connected Services is a cloud-based management solution so users can easily manage and install fix packs across several servers and clusters, detect performance issues and monitor events.
- **Liferay Marketplace** — Developers can sell, share and download themes, integration plugins and entire applications built on Liferay DXP in Liferay Marketplace.
- **Liferay Workspace** — Liferay Workspace is a highly structured environment for modular development. Import Workspace projects into any IDE with built-in Maven or Gradle support, eliminating the need to use only Eclipse for development.
- **Blade CLI** — Liferay development projects can be completely controlled from the command-line using Blade CLI. Blade CLI

performs development tasks such as creating new projects, installing Liferay Servers and more.

- **Frameworks Support** — Support for popular JavaScript frameworks such as Angular, Vue.js, React and modern JavaScript workflows are included out of the box. Java frameworks such as JSF, SpringMVC (Spring Framework 4.3) and PortletMVC4Spring

(Spring Framework 5.1), Vaadin are supported.

- **Upgrade Tool** — Simplify the upgrade process from previous versions of Liferay by letting system administrators restart failed upgrades, reducing troubleshooting time.
- **Lexicon** — A design language to provide a common framework for building interfaces within the Liferay product ecosystem.

Collaboration and Social

- **Blogs** — Liferay DXP includes a full featured blogging platform built for easy content authoring and sharing. The newest features include friendly URL creation, estimated reading times and inline videos.
- **Recent Bloggers & Blogs Aggregator** — Dynamically display a list of recent bloggers or an aggregation of blog entries across the entire site or by specific organisations.
- **Knowledge Base** — Create a robust knowledge base for onboarding materials, employee training or customer support. Create, review and publish articles with commenting and ratings to gather feedback.
- **Social Networking** — Add social networking features such as an activity wall, friends list, @ mentions, activity tracker and social activity. Easily bookmark URLs in the platform and share them to a group of users.

- **Wiki** — Create wiki sites with versioning capabilities, categories, Creole, HTML, or plain text modes, WYSIWYG editing, drag-and-drop support for page creation, page history and reversion, and permissions.
- **Forums and Message Boards** — Forums leverage threaded views, categories, avatars, drag-and-drop file attachments, category and thread grouping, notification management, previews, dynamic list of recent posts and forum statistics.
- **Calendar** — A community-based calendar with task lists that allows users to create, manage and search for events. Events can be shared across communities and reminders can be set up through email, notifications or SMS.
- **AlloyEditor** — A modern WYSIWYG editor with a context-aware toolbar that stays out of the way until it is needed. Content authors can also preview content

written in HTML as it's being typed live.

- **Inline Image Editor** — Resize, crop and make colour adjustments to images uploaded from within applications that use an item selector. The image editor is customizable so developers can create and deploy tools that modify images.
- **Alerts and Announcements** — Broadcast updates across sites or target announcements to specific roles.
- **Polls** — Allows users and administrators to create multiple choice polls that keep track of votes and display results on the page.
- **Invitations** — Allow users to invite others to join a specified site, with support for notifications.

Forms, Workflow and Business Process Automation

- **Forms** — Create forms for everything from business process automation to replacing complex paper applications. Validate data entered, apply conditional rules, prepopulate fields, authenticate users and more.
- **Form Rules** — Predefined form rules include required fields, autofill selects, show and hide, jump to a page, calculations, conditional success pages, and an API to create and execute new custom rules for your form needs.
- **Personalization with Form Rules** — Create personalised forms with conditional rules, allowing dynamic behaviour in forms, and personalise the questions or fields to show/require based on user responses.
- **Validation** — Define validation logic for a specific form field by creating custom messages for form validation errors.
- **Forms Structure** — A drag-and-drop interface makes it easy for business users to structure and design their form fields on a page. Standalone forms can have unique URLs independent of site navigation.
- **Field Library** — Liferay DXP comes with a library of form fields so that users can easily begin building the forms they need.
- **Fields and Properties** — Field types include file upload, numeric, password and grid fields. Save form field sets for easy reuse in creating new forms. New custom field types can be created with a provided API.
- **Form Entries Management** — Users can receive email notification for new form entries and export entries into different formats: CSV, XML and XLS format. Entries have workflow integration provided so 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.

- **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.
- **Multi Language Support** — Add localizations for Forms to achieve better global support, including situations where fields in the same language require different formats between countries (e.g., address and date formats).
- **Forms API** — Data engine APIs to help IT build more flexible business applications. These APIs can be used to execute CRUD operations on data definitions and make it possible for developers to quickly assemble business applications that can scale with flexibility.

- **Forms Reports with AC** — Forms reports detail the number of views, submissions, failed submissions, abandonment and completion time, user information and device usage.
- **Dynamic Data Lists** — Users can create custom lists of information that can be published as workflow-enabled forms.
- **Workflow** — Define any number of simple to complex business processes or workflows, leveraging users, groups and roles established in Liferay DXP with a graphical interface.
- **User-Driven Workflow and Approval** — Create workflows based on your own requirements. For example, administrators can require approval for new document uploads.
- **Workflow Process Analytics** — Define due dates for a workflow process and for specific tasks within the workflow process. See the status of all open instances within the workflow process in real time.

Content Management

- **Structured Content** — Manage and create different content models and web content needed, for making sure your use case-specific content management system becomes a reality.
- **Content Previews** — Easily preview created content within an associated display page, within a page before publication in a fragment and in draft form within a Widget page.

- **Content Modelling** — Easily create and manage content models for your web content through Web Content Structures.
- **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.
- **Content Sets** — Create, edit and manage collections of content in

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"sets" for asset publisher display. Reuse configurations for content sets.

- **Enterprise DAM** — Manage documents, video, audio, images and other media types in a unified repository. Allow groups to store, tag, lock and search for assets, use them on site pages or download them for use offline.
- **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.
- **Online Document Editing** — Leverage the Google Docs editor to allow activities related to creating and editing documents via portal.
- **Document Previews** — Provide a preview of the document (including images, videos, audio clips) to easily identify the content of the document.
- **Automatic Versioning Policies** — Introduces intelligent/definable versioning to enrich historical and auditing context of a document's lifecycle.
- **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.
- **Document Types** — Create and manage abstracted document assets with specific metadata common to all assets of its type, such as: Request for Proposal,

Statement of Work, Annual Report, Presentation.

- **CMIS Integration** — Integrate back office systems in order to surface assets to customers or add social and other metadata. Mount and browse SharePoint, Alfresco and other CMIS-compliant repositories within Liferay DXP.
- **Auto-Tagging** — Leverages third-party machine learning services to provide personalised experiences and improve the findability of assets by automatically adding tags to images and documents upon upload.
- **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.
- **Google Drive Plugin** — Create shortcuts to Google Drive files in their Documents and Media repositories so that they can be managed within a Liferay DXP site.
- **Enterprise File Sync and Sharing** — WebDAV functionality and Liferay Sync provide real-time document synchronisation on desktop and mobile environments and across browsers.

- **Search** — Search for documents, video, audio, images and other media types based off of file names, tags, metadata and the file's text content.
- **Live Preview** — Automatically generate a full document preview within the DAM interface.
- **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.

Experience Management

- **Fragments** — Fragments are designed, reusable components used to quickly build new pages. Fragments use inline editing to change text and images, and can incorporate Liferay DXP applications for advanced functionality.
- **Fragment Editor** — Easily drag and drop from OOTB element/component sets to create fragments.
- **Fragments Toolkit** — A CLI tool for front-end developers allows them to code fragments in their own code editors and upload without the need to redeploy.
- **Widgets (Portlets)** — Widgets are reusable and configurable by business users and can be added with a drag and drop.
- **Widget Library** — Liferay DXP provides a generous selection of OOTB widgets for different business needs that can be easily added to a page.

- **Taxonomies** — Create taxonomies through the use of tags, vocabulary and categories to classify, organise and dynamically share content within Liferay DXP. Faceted search leverages tags to allow users for filtered results across the platform.
- **Content Analytics** — Integration with Liferay Analytics Cloud provide reports that help users understand the number of views and clicks, as well as the current content engagement level.

- **Liferay JS Bundle Toolkit** — Developers can easily create front-end apps using the latest libraries through a CLI tool with this JS widget creator for non-Java developers.
- **Pages** — Create pages for structured and unstructured content, as well as applications for a variety of use cases through a drag-and-drop interface. Use page fragments and content mapping to define how different types of structured web content are displayed on a page.
- **Display Page Templates** — Map it to a structured content and it creates pages for those structured content, using the display page template.
- **Page Templates** — Easily drag and drop to create page layouts with content, sections and widgets.
- **SEO** — Liferay DXP optimises updates to site map information

and other metadata so that new pages are searchable by external search engines. SPA technology provides dynamic page loading without hurting SEO.

Segmentation & Personalisation

- **Experiences** — Easily personalise anything on a page for different audience segments through the page editor.
- **Segmentation** — Target specific audiences for personalization for delivering prescriptive customer journeys. Manage and move segments to different scopes and segment users based on profile and organisation criteria.
- **Rule Builder** — Create complex rules to segment your visitors.
- **Session Rules** — Target unauthenticated visitors based on cookies, device, URL, geolocation and locale.
- **Extension Points** — Create use case-specific segmentation rules.
- **Segments Integration with AC** — Allows advanced segmentation

Multichannel Support

- **Headless APIs - Content Delivery** — New REST APIs that 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 sites. The Rest APIs provide access to structured content, DM, categories, keywords, etc.

- **Page Analytics** — Integration with Analytics Cloud helps you visualise a page list and understand performance through an aggregate view.

rules to have consistent functionality with the segmentation rules provided in Analytics Cloud. Segments will be available at the root level along with Users, Organisations, Roles and User Groups.
- **[BETA] Content Recommendations** — Automated personalization of content based on a user's past behaviour powered by Analytics Cloud integration, with behaviour-based segmentations and interest-based content recommendations.
- **Content Sets** — Personalise content sets for reuse across multiple pages. Easily manage segmentation targeting for content lists.

- **Headless APIs - Content Management** — In addition to providing access to content, the new REST APIs enable developers to manage content: add, edit, remove, etc.
- **Headless APIs - Content Participation** — Community sites, portals and intranets need to support user participation in the form of ratings, comments, likes, etc. The new REST APIs will

support user participation interactions with comments and ratings.

- **Mobile SDK** — The Mobile SDK is a framework for building native apps that integrate with Liferay DXP applications, speeding up the delivery of native iOS, Android or Windows apps for mobile and connected devices.
- **Mobile Device Rules** — Liferay DXP includes a framework for defining platform behaviour based on device type with a built-in set of definitions for most mobile device platforms and an optional device detection database for purchase.
- **Mobile Components Library** — Rapidly develop native apps with a collection of fully native mobile

components, using Liferay DXP as a mobile back end.

- **Adaptive Media** — Liferay DXP dynamically adjusts images to best fit the screen size of each device. It also offers deep control over how images are loaded, addressing performance issues across varying network speeds.
- **Responsive Design** — Sites created on Liferay DXP are mobile responsive out of the box. Liferay DXP's CSS framework is designed to work with browsers on all platforms and page previews are offered for every screen size.
- **Push Notifications** — Developers can send push notifications from Liferay DXP to native Android and iOS apps or cross-platform apps with Xamarin.

Search

- **Elasticsearch 6.5 Integration** — Out-of-the-box integration with a best-of-breed search engine provides a fast, scalable solution for enterprise sites.
- **Solr 7.4 Integration** — Integration with Solr 7.4, a popular enterprise search platform, can be configured for use with Liferay DXP through an app found in Liferay Marketplace.
- **Multi Language Search** — Search across all languages for Web

Content for multi-language sites and portal instances.

- **Filter/Sort** — Users can filter and sort search results within the UI.
- **Low-Level Search APIs** — Leverage improved search APIs to interact with either Elasticsearch or Solr. Developers can call the Search Engine without writing or using models or indexers, and allows access to every aggregator and query type of Elasticsearch.
- **Search Admin Tools** — Customise search results rankings.