

Client Extensions 101: Future proofing your DXP Apps

Learn about Liferay's new universal extension mechanism



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Client Extensions 101

**What problem are we
trying to solve?**

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**Your greatest strength begets
your greatest weakness.**

William Shakespeare

Liferay DXP as a platform

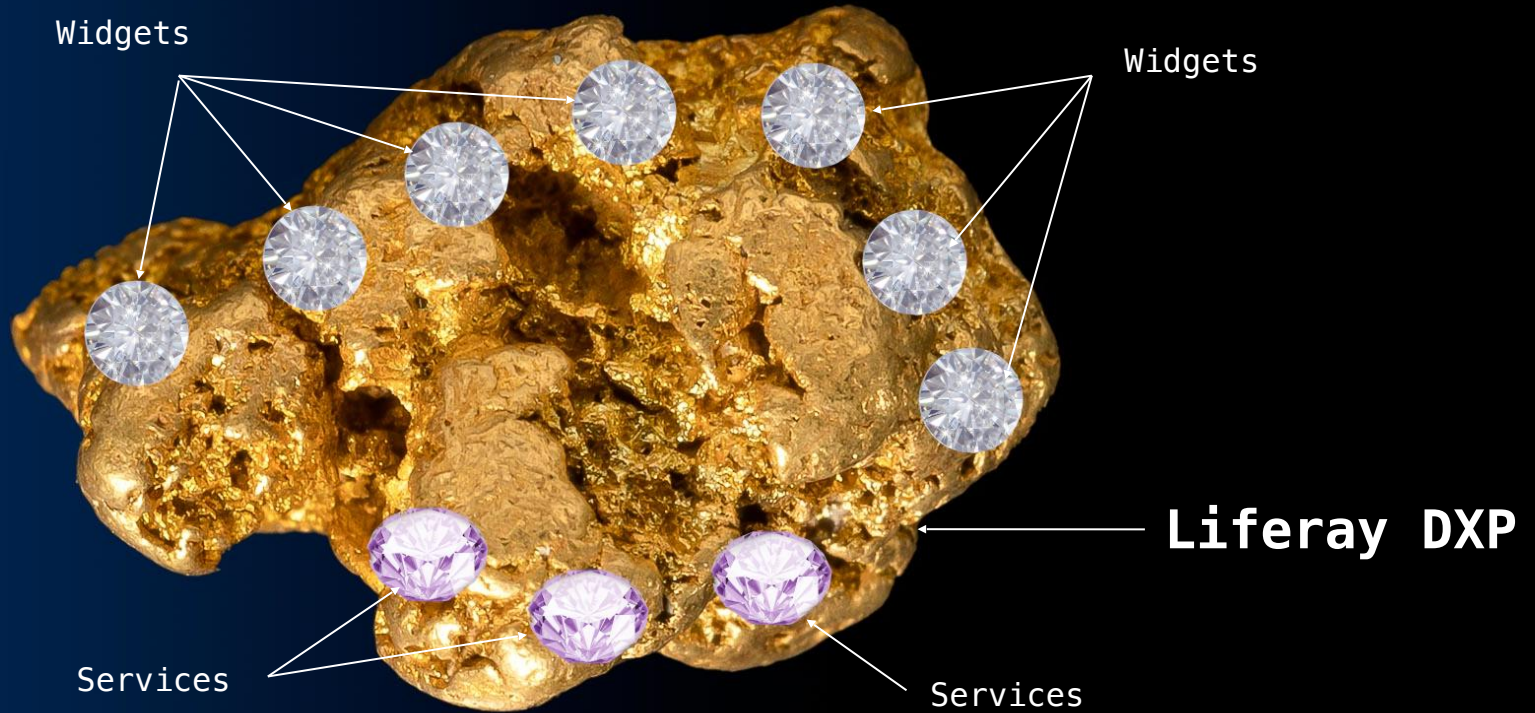


Liferay DXP

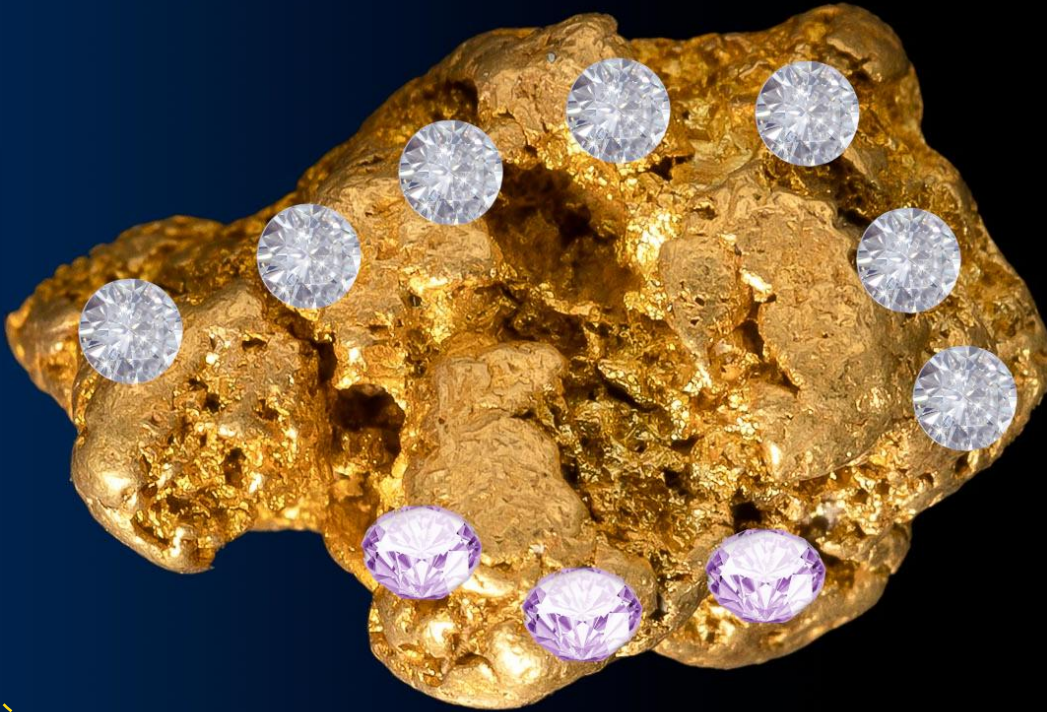
Allows you to build anything on top of it

Provides rich set of APIs

Enriching DXP with Widgets and Services



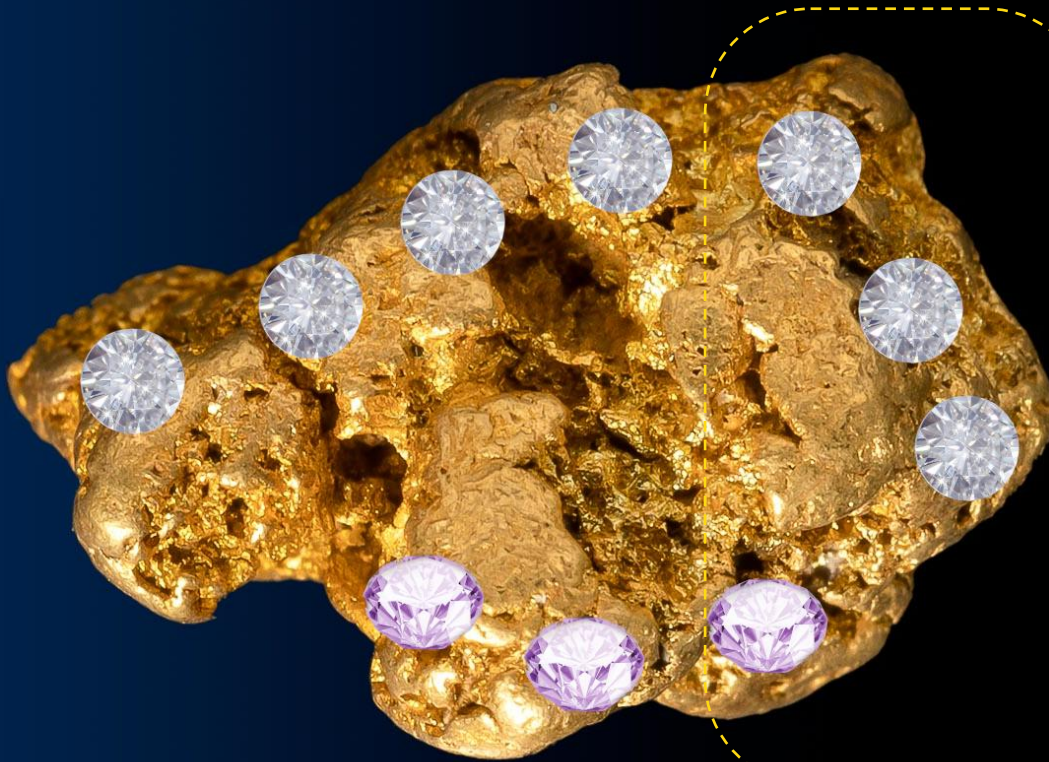
Enriching DXP with Widgets and Services



Widgets and Services are executing in the same JVM as DXP, making scaling challenging

DXP exposes many extension points (APIs), making upgrades challenging

Enriching DXP with Widgets and Services



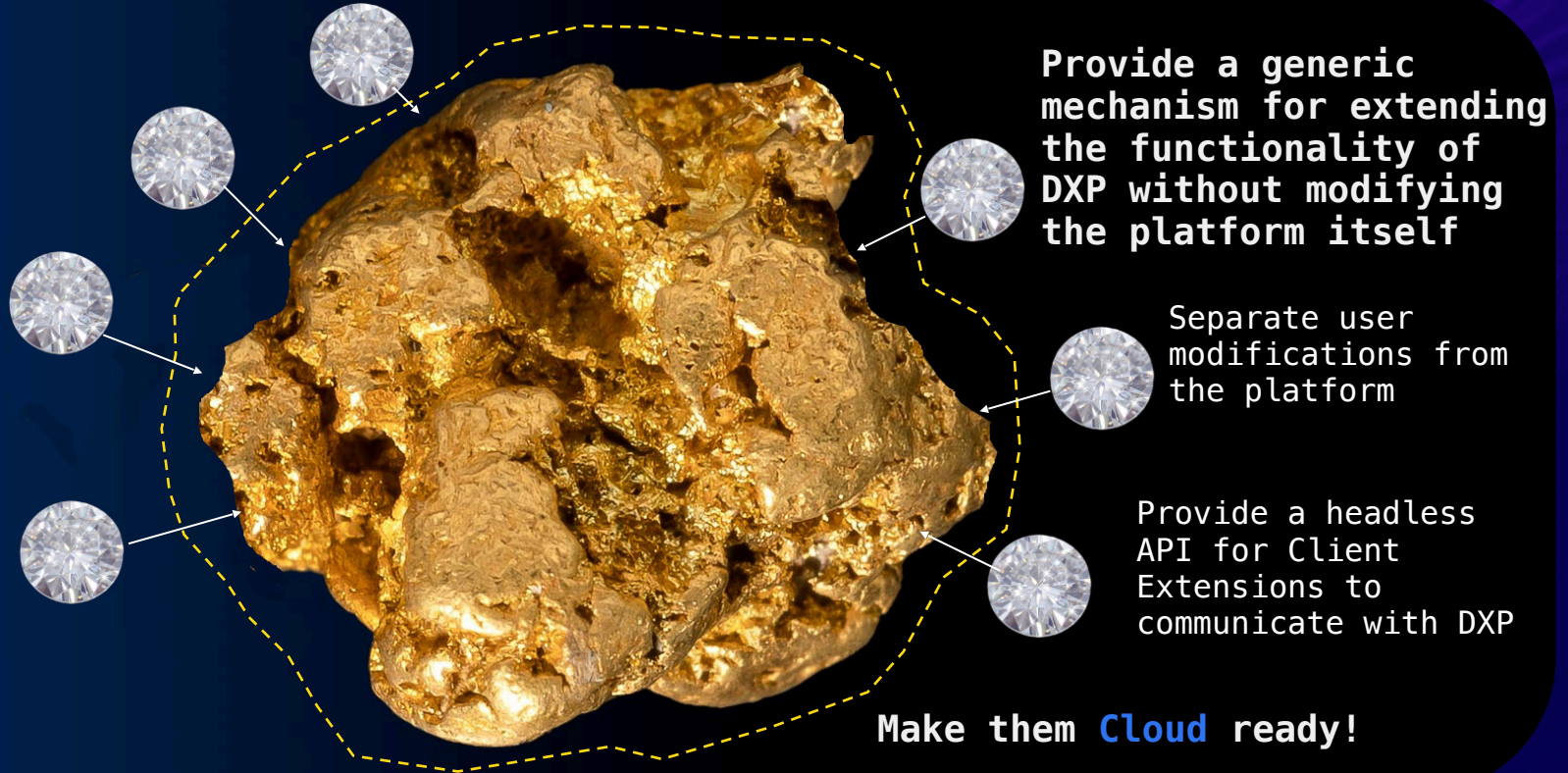
How do you improve this part of DXP without affecting the user applications?

When one is upgraded, all have to be upgraded

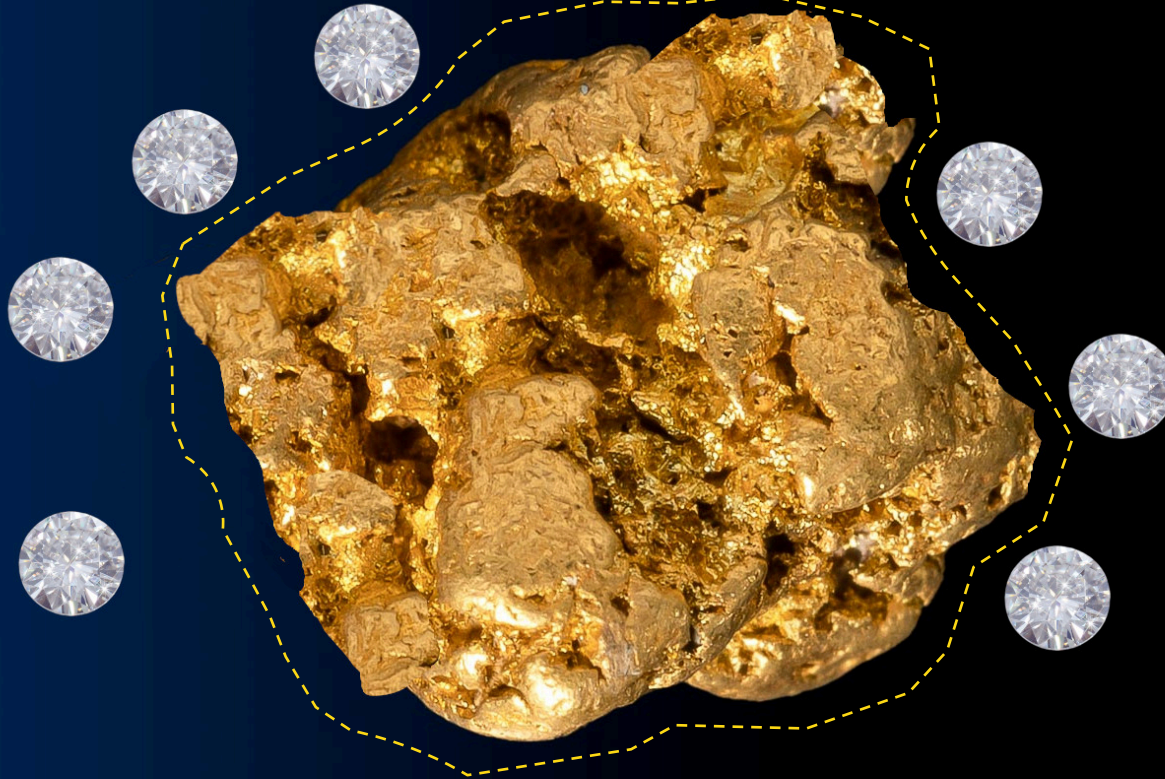
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What is the solution?

Client Extensions



Evolving and upgrading the Portal



New version of
DXP was released

Client Extensions
continue to work

Client Extensions in a nutshell

`client-extension.yaml` file is the source of truth

Client Extensions work on both **Liferay Experience Cloud** and **DXP Self-Hosted**

Packaged in a single artifact – **Liferay Universal File format archive** – the **LUFFA** file

Orchestration of Client Extensions is done automatically on **Liferay Experience Cloud**

On DXP **self-hosting**, you can still use all previous customizations (OSGi configs and modules)

Operating **outside DXP**. **Not** deployed in the same JVM

Communicating with DXP only using the **headless API**, and in a **secure way**

Written in an **arbitrary language** (where applicable)

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Secure communication

Secure communication

Based on OAuth2

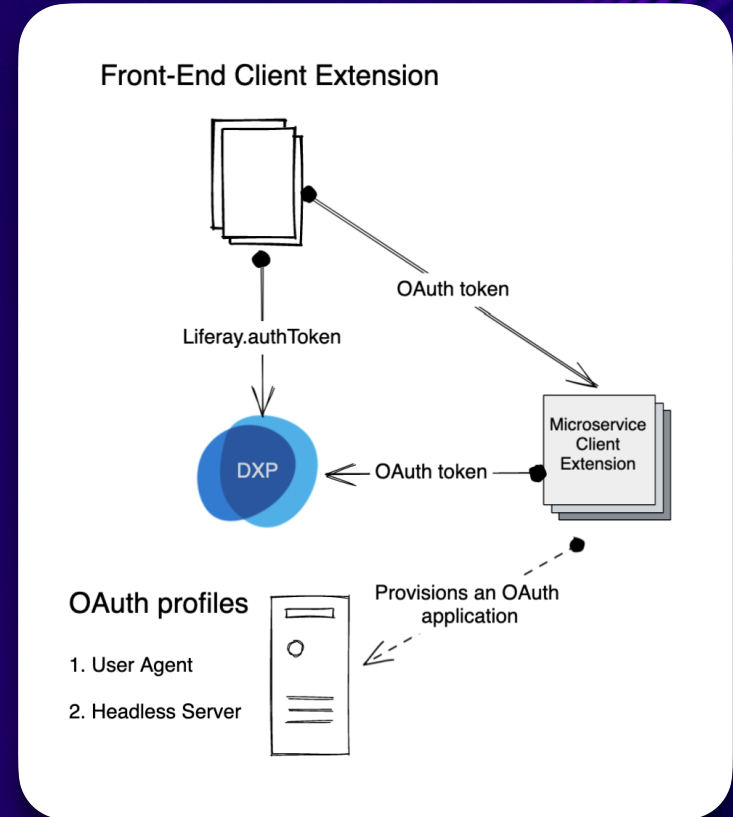
Front-End Client Extensions can use OOTB `Liferay.authToken` to communicate directly with DXP's headless API

Microservice Client Extensions can register an OAuth2 Application in DXP (User Agent or Headless Server profiles)

All communication among Client Extensions and DXP is secure by default!

One Microservice Client Extension can securely call another Microservice Client Extension

Front-End Client Extensions can securely call a Microservice Client Extension



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Classification of Client Extensions

Classification of Client Extensions

Front-End

Provides front-end resources (JS, CSS, images) that are used on the client (browser) side

Examples:

- Custom Element
- Global CSS
- Global JS
- Theme JS
- Theme Favicon
- Theme SpriteMap
- Static Content
- ...

Configuration

Transfers runtime configuration which changes DXP behavior

Examples:

- OAuth2 Application User Agent
- OAuth2 Application Headless Server
- Instance Settings
- ...

Classification of Client Extensions

Microservice

Executable business logic or workload (such as Resource servers, Jobs or CronJobs)

Examples:

- NotificationType
- Object Action
- Workflow Action
- ...

Batch

Declarative import of DXP resources

Examples:

- Batch Engine
- Site Initializer
- Configurations-as-code
- ...

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Deployment of Client Extensions

Deployment of Client Extensions

What happens when you deploy a Liferay Universal File format archive (LUFFA)?

Self-hosted

- Client Extensions Config is read by DXP
- Client Extension is registered
- Some workloads can be hosted by DXP, other require orchestration
- Some require special configuration variables

Liferay Experience Cloud

- LCP API service sends Client Extensions Config to Virtual Instance of DXP
- The workload is orchestrated automatically
- The configuration is injected automatically

Deploying Client Extensions to the Cloud

Available Liferay Experience Cloud workloads based on Client Extension classification

Classification	Docker image	Liferay Experience Cloud managed
Front-End	<code>liferay/caddy:latest</code>	Deployment
Batch	<code>liferay/batch:latest</code>	Job
Configuration	<code>liferay/noop:latest</code>	Job
Microservice	Userdefined	Deployment, Job, CronJob

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Creating applications out of Client Extensions

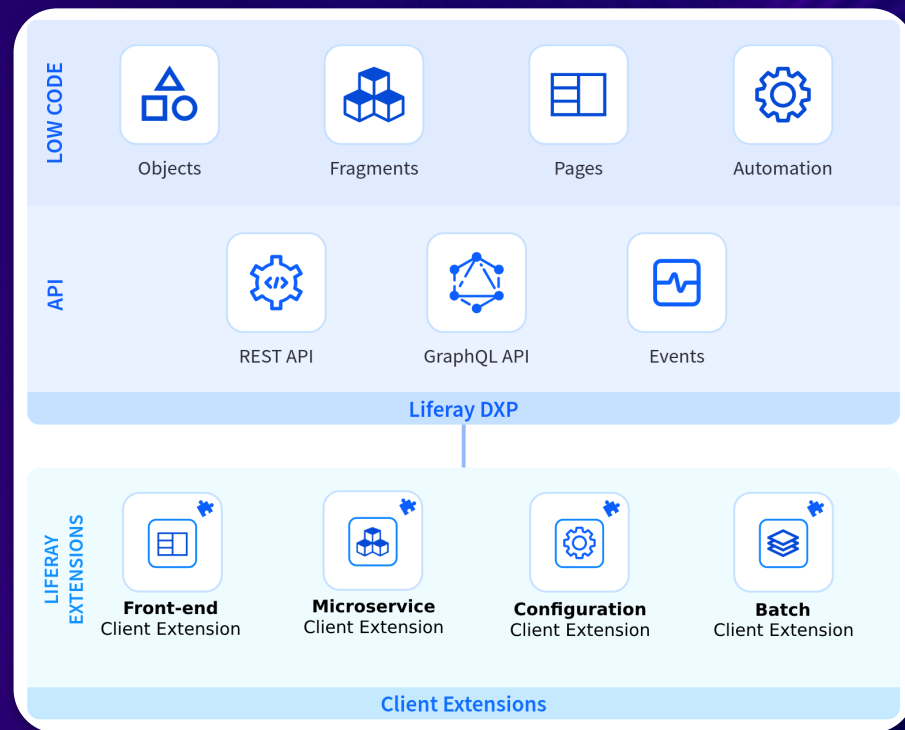
Creating applications out of Client Extensions

Focus on business requirements

By extending DXP with your code, your own tech-stack, without worrying about upgrades or DXP internals

Leveraging the full power of Liferay Experience Cloud or your own infrastructure

By combining Client Extensions and deploying them on your own infrastructure or on Liferay Experience Cloud



Creating applications out of Client Extensions

Zero-downtime upgrade of your applications on Liferay Experience Cloud

Deploying a new version of your Client Extensions on LXC will be done with zero-downtime

Seamless upgrades on Liferay Experience Cloud

Upgrading DXP on Liferay Experience Cloud is done by Liferay's Site Reliability Engineers



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Where do I start?

Read the official documentation!

Client Extensions Documentation

learn.liferay.com is your knowledge portal

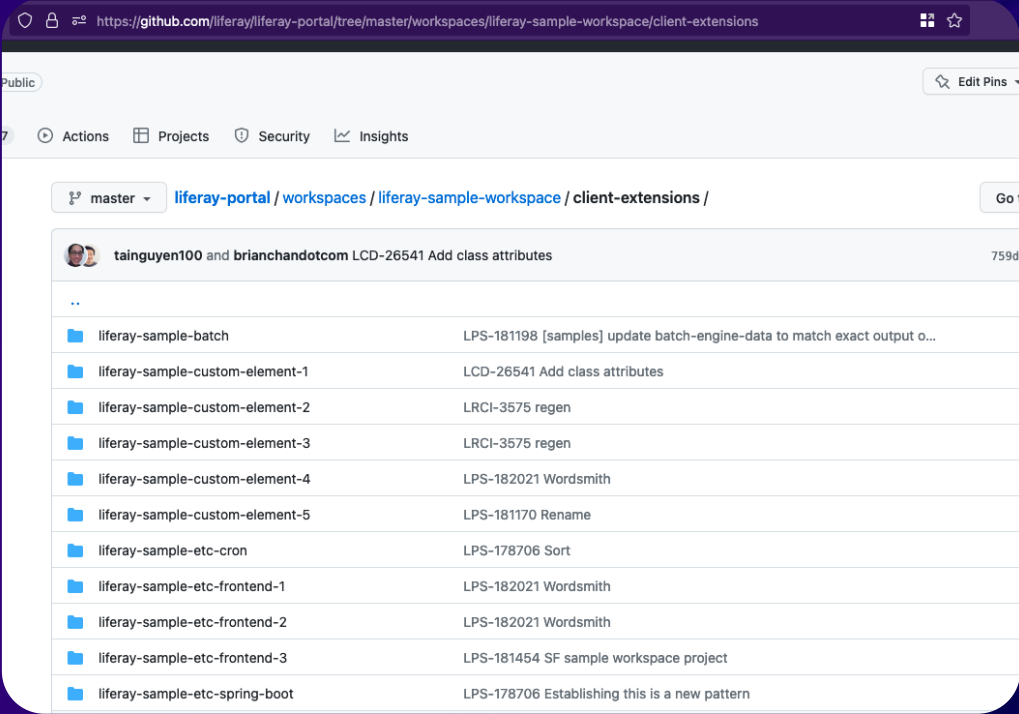
Contains reference documentation, how-to, assembling and packaging, and much more!

The screenshot shows the Liferay Learn documentation page for Client Extensions. The page is titled "Client Extensions - Liferay Learn" and is located at <https://learn.liferay.com/w/dxp/building-applications/client-extensions>. The page features a navigation menu on the left with the following items: "Go Back", "Building Applications", "Working with Client Extensions", "Packaging Client Extensions", "Front-End Client Extensions", "Microservice Client Extensions", "Configuration Client Extensions", and "Batch Client Extensions". The main content area is titled "Building Applications" and contains a diagram illustrating the Liferay DXP architecture. The diagram is organized into three main sections: "LOW CODE", "API", and "LIFERAY EXTENSIONS". The "LOW CODE" section includes "Objects", "Fragments", "Pages", and "Automation". The "API" section includes "REST API", "GraphQL API", and "Events". The "LIFERAY EXTENSIONS" section includes "Front-end Client Extension", "Microservice Client Extension", "Configuration Client Extension", and "Batch Client Extension". A blue bar labeled "Liferay DXP" is positioned between the "API" and "LIFERAY EXTENSIONS" sections, with a line connecting it to the "Client Extensions" bar below. Below the diagram, there is a section titled "With client extensions, you can" followed by a list of three bullet points: "Apply custom JavaScript or CSS, while avoiding dependencies on Liferay's code", "Embed applications hosted remotely into a custom element on a Liferay page", and "Apply the same configurations or objects to multiple environments, by converting them into client extensions".

Check the Liferay Sample Workspace!

Liferay Sample Workspace for Client Extensions

It contains multiple examples of Client Extensions



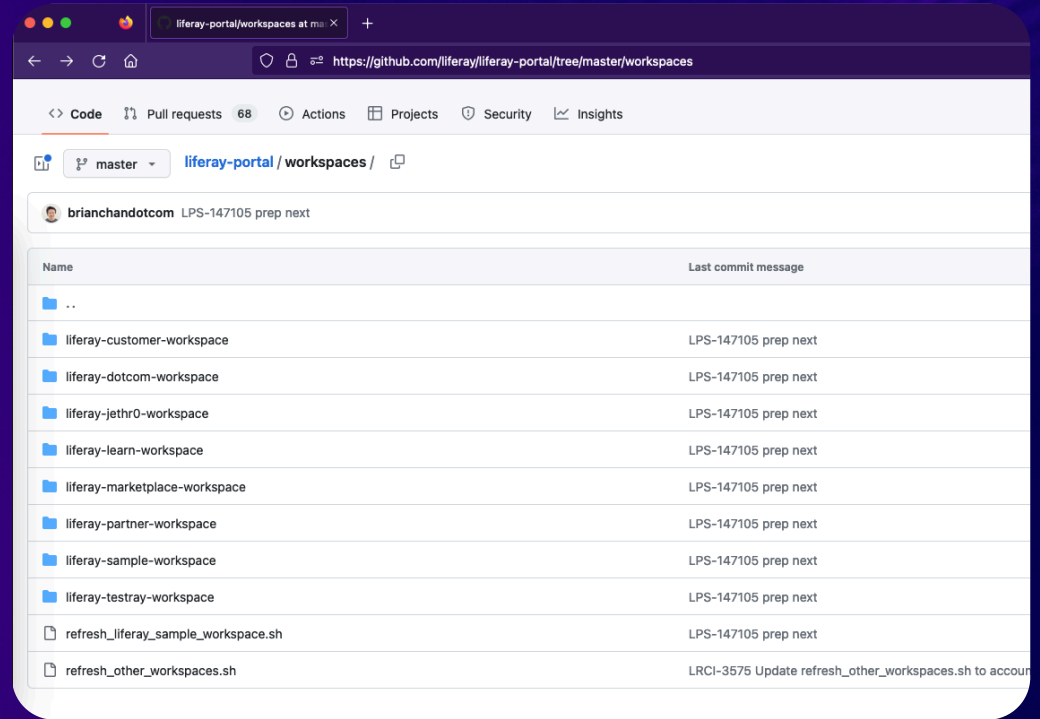
This is all that fits in an image, but don't worry, there are many more examples!



Dogfooding

Liferay is already using **Client Extensions** for its own products!

[https://
learn.liferay.com
workspace](https://learn.liferay.com/workspace)



Feedback!

Client Extensions are
brand new and still
evolving

Please provide your
feedback!

Your
Feedback
Matters!

Thank you!



How was this session?

Please share your rating in
the event app. Thank you!