X Components & the X Archetype

Workshop

Overlay vs X Components

Overlay was the first solution for the frontend by Empathy.co, we have walked a long way since then

- **Mantainability** - Overlay was created as a stop-gap and with little time for planning how to scale the application
- **Scalability** - X Components had more time to plan and design the architecture, so we were able to have scalability in mind this time around
- **Modular** - We moved from config files to a more developer-friendly approach of modular components
- **Lightweight** - A main friction point with Overlay and previous frontend solutions was the bundle size and the initial loading times of the pages, X Components, thanks to being modular, allows for customization of what components are used and added to the bundle
- **Tree Shaking** - Better bundling tools allows X Components to remove from the bundle code that is not used in the setups, saving more loading time
- **Faster development** - With the inclusion of the Design System, better testing and a more developer-friendly project, the setups for the clients are done much quicker.

Tech Stack

- **Development**
  - Typescript
  - Vue 2.7
  - Tailwind
- **Bundling**
  - Rollup
  - Vite
  - Webpack
- **Testing**
  - Jest
  - Cypress

The X Monorepo

The X Components live inside the X monorepo. All the packages interact with each other, so it’s important to understand how they are structured.

Relevant Packages

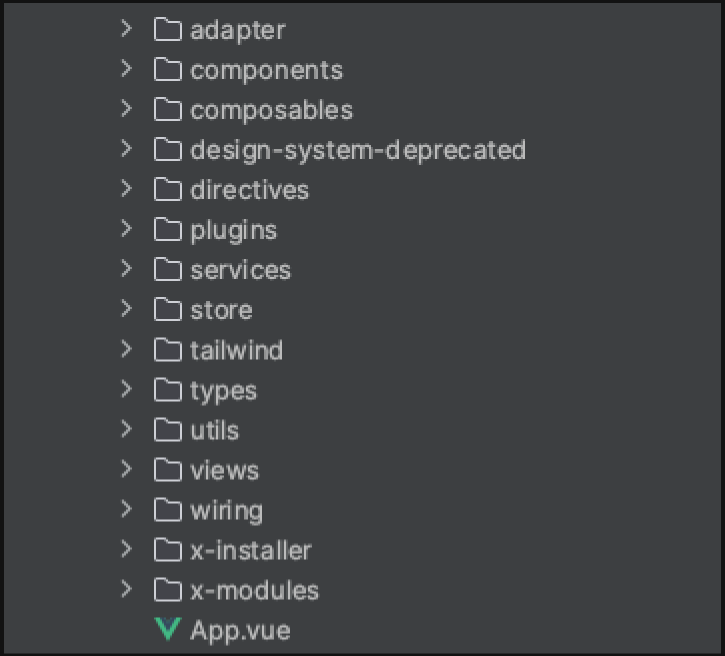
Adapter	library of utils to ease the communication with any API
Platform Adapter	pre-made adapter to communicate with Empathy.co API
Bus	library that provides an event bus for event orchestration
X Components	library of components aimed to create search experiences
Tailwind	tailwind plugin for of the X Components Design System
Translations	contains utilities to convert csv with translations to JSON for the i18n in X Components

The X Components

The Structure in X Components

The X Components package

- Components directory
  - General purpose components
  - Animations
  - Icons
  - Decorators
  - Scroll
- Modules
- Services
- Composables
- Demo views



```
> adapter
> components
> composables
> design-system-deprecated
> directives
> plugins
> services
> store
> tailwind
> types
> utils
> views
> wiring
> x-installer
> x-modules
  App.vue
```

Base Components

- Animations
- Base
- Decorators
- Icons
- Modals
- Result

Animations

Animations are components that just render their slot wrapped by a Vue `` `transition` `` and apply the animation styles to it.

There are many component that accept Animation components as props.

```
<transition v-on="$listeners" name="x-animation-" v-bind="
  <!-- @slot (Required) Transition content -->
  <slot />
</transition>
```

```
<component :is="animation">
  <div
    v-show="isOpen && hasContent">
  // ...
  </div>
</component>
```

Base

"Base" components are minimal components aimed to be used as building blocks for more complex components.

They're used across all the modules and are not coupled to any of them.

Can be imported and implemented by themselves too.

`base-event-button.vue`

```
<button v-on="$listeners" @click="emitEvents">
  <!-- @slot (Required) Button content with a text, an ico
  <slot />
</button>
```

`clear-filters.vue`

```
<BaseEventButton
  v-if="isVisible"
  class="x-clear-filters x-button"
  data-test="clear-filters"
  :disabled="!hasSelectedFilters"
  :events="events"
  :class="cssClasses"
>
  <slot :selectedFilters="selectedFilters">Clear Filters (
</BaseEventButton>
```

Decorators

Decorators are special helpers that provide functionality or modify the behavior of other functionalities.

They're similar to the composables or the mixins.

They need the vue 2 library `` `vue-class-components` `` and `` `vue-property-decorators` `` to work, and don't work with the new Vue 3 syntaxis

```
@XProvide('filters')
public get filtersWithResults(): Filter[] {
```

```
@XInject('filters')
public injectedFilters!: Filter[];
```

Icons

Icons in the X Components are set up as Vue components.

For they to work with the X Design System they have to follow a structure. The package `` `x-svg-converter` `` has a utility to convert from SVG to a X Components-ready Vue component.

```
<template functional>
  <svg
    :class="['x-icon'].concat(data.staticClass, data.class
    viewBox="0 0 8 8"
    fill="none"
    xmlns="http://www.w3.org/2000/svg"
  >
    <path
      d="M1.5 4H6.24683"
      stroke="currentColor"
      stroke-width="0.4"
      stroke-linecap="round"
      stroke-linejoin="round"
    />
    <path
      d="M4 6.5L6.5 4L4 1.5"
      stroke="currentColor"
      stroke-width="0.4"
      stroke-linecap="round"
      stroke-linejoin="round"
    />
  </svg>
</template>
```

Modals

Modals are panels that will overlap the page when opened to show it’s content. An overlay will also obscure the content behind the modal.

Think things like the filters panel or the sorting in mobile.

Modals in X Components can listen to events for opening and closing from anywhere within the app.

`base-events-modal.vue`

```
<BaseModal
  @click:overlay="emitBodyClickEvent"
  @focusin:body="emitBodyClickEvent"
  :animation="animation"
  :open="isOpen"
  v-bind="$attrs"
>
  <slot />
</BaseModal>
```

```
@Prop({ default: (): XEvent[] => ['UserClickedOpenEventsMo
public eventsToOpenModal!: XEvent[];
@Prop({default: (): XEvent[] => ['UserClickedCloseEventsMo
public eventsToCloseModal!: XEvent[];
```

```
@XOn(component => (component as BaseEventsModal).eventsToO
  openModal(_payload: unknown, metadata: WireMetadata): vo
}

@XOn(component => (component as BaseEventsModal).eventsToC
  closeModal(): void {}
}
```

Result

There’s no pre-made result component in X-Components.

A result component will be made in the setup itself (Archetype) by combining the pieces available as base components.

This allows for more modularity and flexibility when approaching a setup.

```
<MainScrollItem>
  <BaseResultLink>
    <BaseResultImage />
  </BaseResultLink>
  <BaseResultLink>
    { result.description }
    <BaseResultCurrentPrice />
    <BaseResultPreviousPrice />
  </BaseResultLink>
</MainScrollItem>
```

Modules

- `device`
- `empathize`
- `extra-params`
- `facets`
- `history-queries`
- `next-queries`
- `popular-searches`
- `queries-preview`
- `query-suggestions`
- `recommendations`
- `related-tags`
- `scroll`
- `search`
- `search-box`
- `semantic-queries`
- `tagging`
- `url`

Wiring

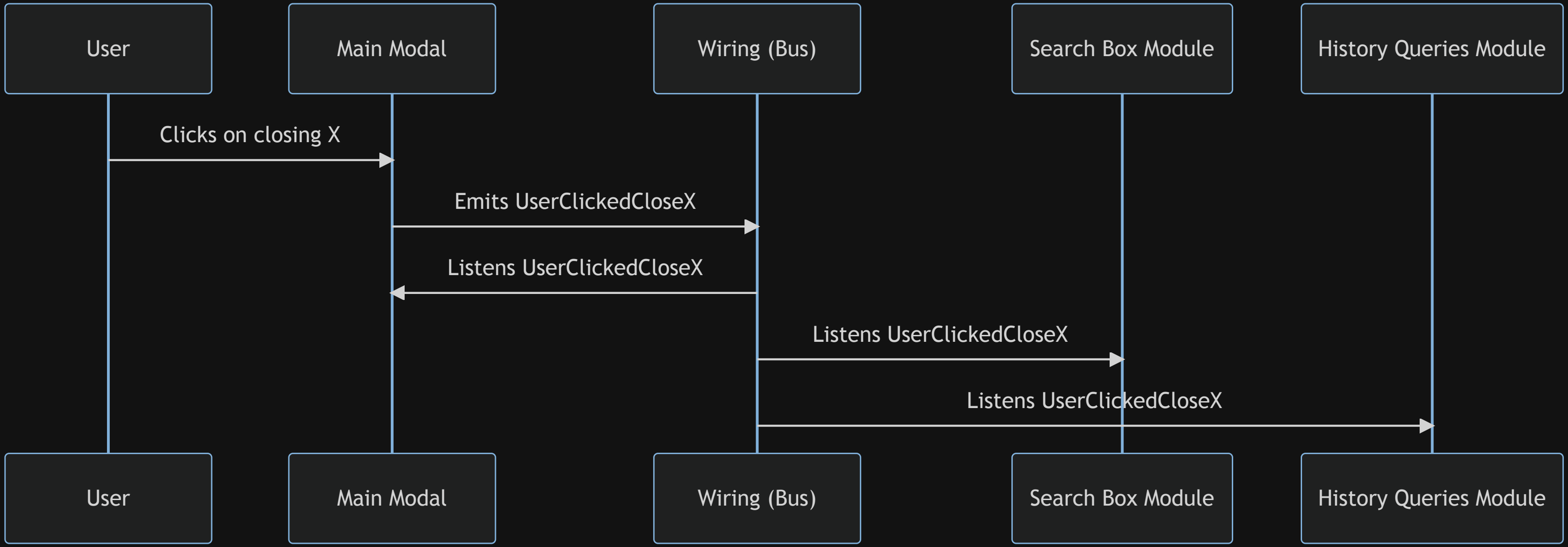
The wiring is the event system that the X Components use to communicate between each other.

Each X Components module has its own wiring to listen to events emitted across all the application and trigger actions from the module itself.

Multiple modules can listen to the same event and react to it.

The wiring of the modules is fully customizable from within a client setup, so you can add/remove/expand listeners and actions of any module.

Wiring flow example



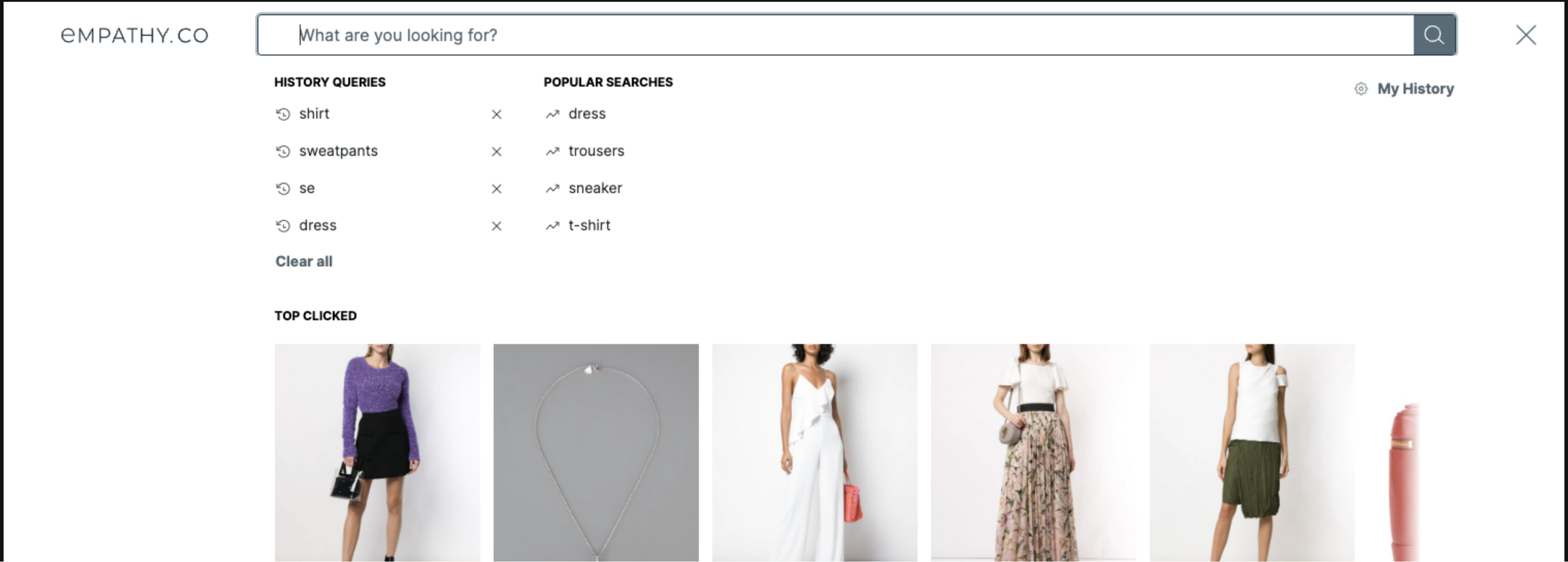
Empathize Module

What?

The Empathize is a modal-like container intended to show search suggestions to the user.

Why?

It's a module because it's a core part of the search experiences, normally pared with the action of searching. Many behaviors of the application depend on checking if the Empathize is open or not, so the module provides that information.



How?

The main component for the empathize is a modal panel to render the other components in. It’s coupled to the events that update the module’s store status.

```
<component :is="animation">
    <div
        v-show="isOpen && hasContent"
        @focusin="open"
        @focusout="close"
    >
        <slot>
            <span ref="noContent" hidden aria-hidden="true" />
        </slot>
    </div>
</component>
```

```
@Prop({ default: ... })
protected eventsToOpenEmpathize!: XEvent[];
@Prop({ default: ... })
protected eventsToCloseEmpathize!: XEvent[];

// Triggered on open or close
changeOpenState(newOpenState: boolean, metadata: WireMetadata): void {
```

```
<Empathize>
    <YourCustomSuggestions />
</Empathize>
```

Empathize Exercise

reset 03:00.00

1. Open the empathize when the button is clicked
2. Empathize contains a title with the text `Suggestions` and a component `CustomSuggestions`
3. The empathize should be animated
4. Emit the event `CustomCloseEvent` when empathize closes

```
<Empathize />
<BaseEventButton>
    Open Empathize
</BaseEventButton>
```

```
<Empathize :animation="fade" :eventsToOpenEmpathize="['CustomOpenEmpathize']">
  <template>
    <h1>Suggestions</h1>
    <CustomSuggestions />
  </template>
</Empathize>
<BaseEventButton :events="['CustomOpenEmpathize']">
  Open Empathize
</BaseEventButton>
```

Extra Params Module

What?

This module contains a collection of params that will be sent in all the requests. These params can be set via snippet config or programatically.

Why?

Sometimes requests to the endpoints require extra data that doesn't fir in the regular requests parameters. This module allows this data to be provided where is required or changed programatically

How?

The components in this module are used to propagate the extra params to the rest of the application and stores. A renderless component that sets the values of the Extra Params is the main component of the module.

```
@Prop({ required: true })
public values!: Dictionary<unknown>;

created(): void {
  this.$x.emit('ExtraParamsInitialized', { ...this.values });
  this.$x.emit('ExtraParamsProvided', { ...this.values, ...this.storeExtraParams });
}
```

Extra Params Exercise

reset 01:00.00

1. Make requests send a parameter called `MyParameter` with a value `'MyValue'`

```
<ExtraParams :values="{
  MyParameter: 'MyValue'
}" />
```

Facets Module

What?

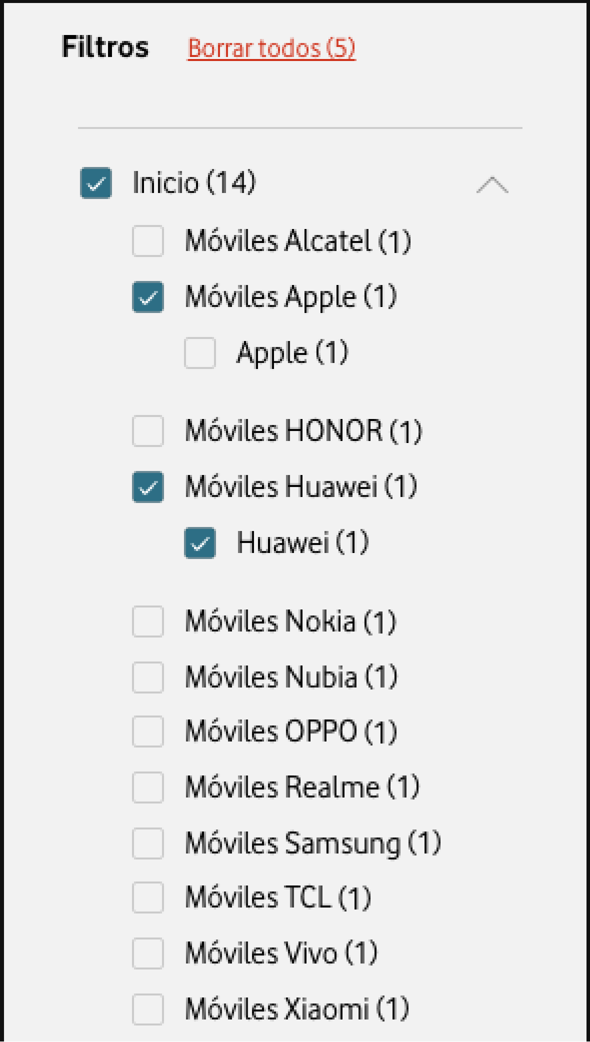
The Facets module stores and controls everything related to the filtering in the requests.

Why?

Filtering is a very important part of any search experience, we needed clear ways of managing what the filtering options are, how to show them, make them accesible to other modules, etc

How?

The wiring of the module handles events that changes the state facets directly or requires it to change The `` `facets` `` component renders the list of the components, depending of the type. There are also individual components to render the different types of filters in the facets and list components to help when rendering the list of filters (adds search, collapse, etc).


Filtros Borrar todos (5)

- [✓ Inicio (14)]
  - Móviles Alcatel (1)
  - [✓ Móviles Apple (1)]
    - Apple (1)
  - Móviles HONOR (1)
  - [✓ Móviles Huawei (1)]
    - [✓ Huawei (1)]
  - Móviles Nokia (1)
  - Móviles Nubia (1)
  - Móviles OPPO (1)
  - Móviles Realme (1)
  - Móviles Samsung (1)
  - Móviles TCL (1)
  - Móviles Vivo (1)
  - Móviles Xiaomi (1)

`Facets.vue`

```
<li
  v-for="({ facet, slotNameById, slotNameByModelName }, facetId) in mappedFacets"
>
  <slot v-if="$scopedSlots[slotNameById]"
    v-bind="{ facet, selectedFilters: selectedFiltersByFacet[facetId] || [] }"/>

  <slot v-else-if="$scopedSlots[slotNameByModelName]"
    v-bind="{ facet, selectedFilters: selectedFiltersByFacet[facetId] || [] }"/>

  <slot v-else
    v-bind="{ facet, selectedFilters: selectedFiltersByFacet[facetId] || [] }"
  >
    This is the {{ facet.label }} facet. Pass something into its slot to display content.
  </slot>
</li>
```

`simple-filter.vue`

```
<RenderlessFilter v-slot="{ filter, clickFilter, cssClasses, isDisabled }" :filter="filter">
  <slot v-bind="{ filter, clickFilter, cssClasses, isDisabled }">
    <button @click="clickFilter">
      <slot :filter="filter" name="label">{{ filter.label }}</slot>
    </button>
  </slot>
</RenderlessFilter>
```

Facets Exercise

reset 04:00.00

1. All the facets use a dynamic slots
2. The filters of the facet of type `HierarchicalFacet` uses the filter component of `hierarchical-filter`
3. The filters of the facet of id `identifiableFacet` should show just the name of the filter

```
facetsInStore = [{
    id: 'identifiableFacet',
    label: 'identifiableFacet',
    modelName: 'SimpleFacet',
    filters: [...]
  },
  {
    id: 'hierarchicalFacet',
    label: 'Hierarchical Facet',
    modelName: 'HierarchicalFacet',
    filters: [...]
  }];
```

```
<Facets>
    <template #identifiableFacet="{ facet, selectedFilters }">
      <FiltersList v-slot="{filter}">
        {{ filter.label }}
      </FiltersList>
    </template>
    <template #hierarchical-facet="{ facet, selectedFilters }">
      <FiltersList v-slot="{filter}">
        <HierarchicalFilter :filter="filter" />
      </FiltersList>
    </template>
</Facets>
```

History Queries Module

What?

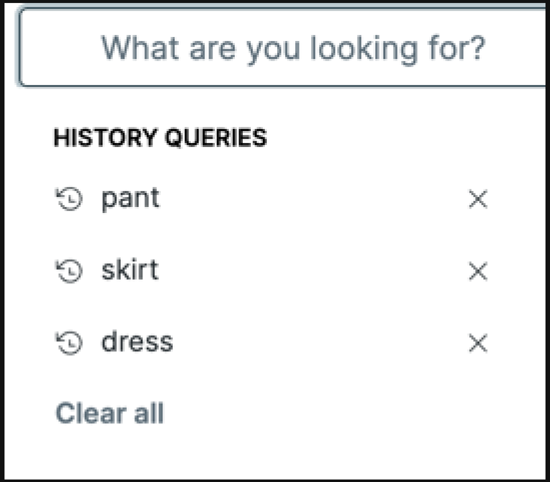
Module containing the queries already searched by the user.

Why?

We need a module here to handle of all the logic for suggesting past queries, storing in `LocalStorage`, what queries are stored ot not, My History, etc.

How?

Basic approach for the module is a list of the suggestions coming from the history queries store. There are already two components to help with this, `history-queries` and `history-query`.



`history-queries.vue`

```
<BaseSuggestions v-bind="$attrs" :suggestions="historyQueries">
  <template #default="baseScope">
    <slot name="suggestion" v-bind="{ ...baseScope }">
      <HistoryQuery :suggestion="baseScope.suggestion">
        <template #default="historyQueryScope">
          <slot name="suggestion-content" v-bind="{ ...baseScope, ...historyQueryScope }" />
        </template>
        <template #remove-button-content="removeHistoryQueryScope">
          <slot name="suggestion-remove-content"
                v-bind="{ ...baseScope, ...removeHistoryQueryScope }"
          />
        </template>
      </HistoryQuery>
    </slot>
  </template>
</BaseSuggestions>
```

History Queries Exercise

reset 04:00.00

1. Use `history-queries` component
2. Have the `history-query` suggested have the part matching the current query highlighted
3. The remove button should be a minus icon

```
<HistoryQueries>
  <HistoryQuery
    class="x-suggestion-group-md"
    :suggestion="suggestion"
    suggestionClass="x-suggestion x-suggestion-md"
  >
    <template #default="{ query }">
      <Highlight :text="suggestion.query" :highlight="query" />
    </template>

    <template #remove-button-content>
      <Minus class="x-icon-md" />
    </template>
  </HistoryQuery>
</HistoryQueries>
```

Identifier Results Module

What?

Module containing the results of a search by identifier, a special search for querying by product id

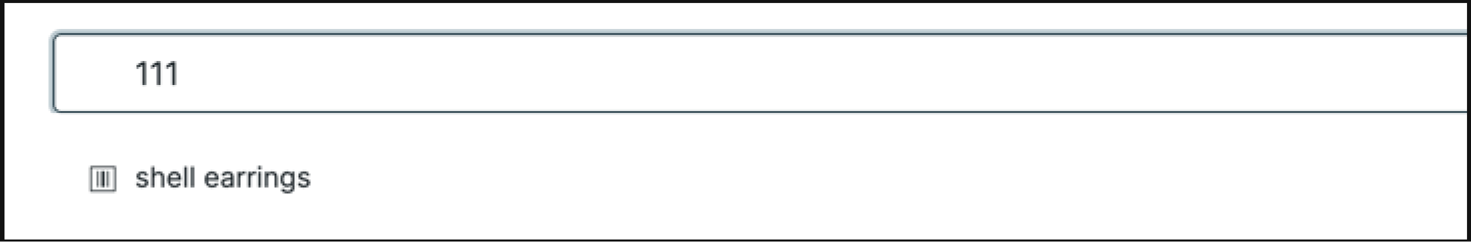
Why?

Retrieves results for the queries from a specific endpoint (through an adapter), requiring configurations for things like items to request, debounce time and, most importantly, the regex expression that activates the identifier search.

How?

If the query being typed matches with the regex configured in the module a request to the identifier search is made. The response of that request is loaded in the module as Results.

The components in the module are straight-forward rendering list for the list of identifier results and rendering component for the name of the result.



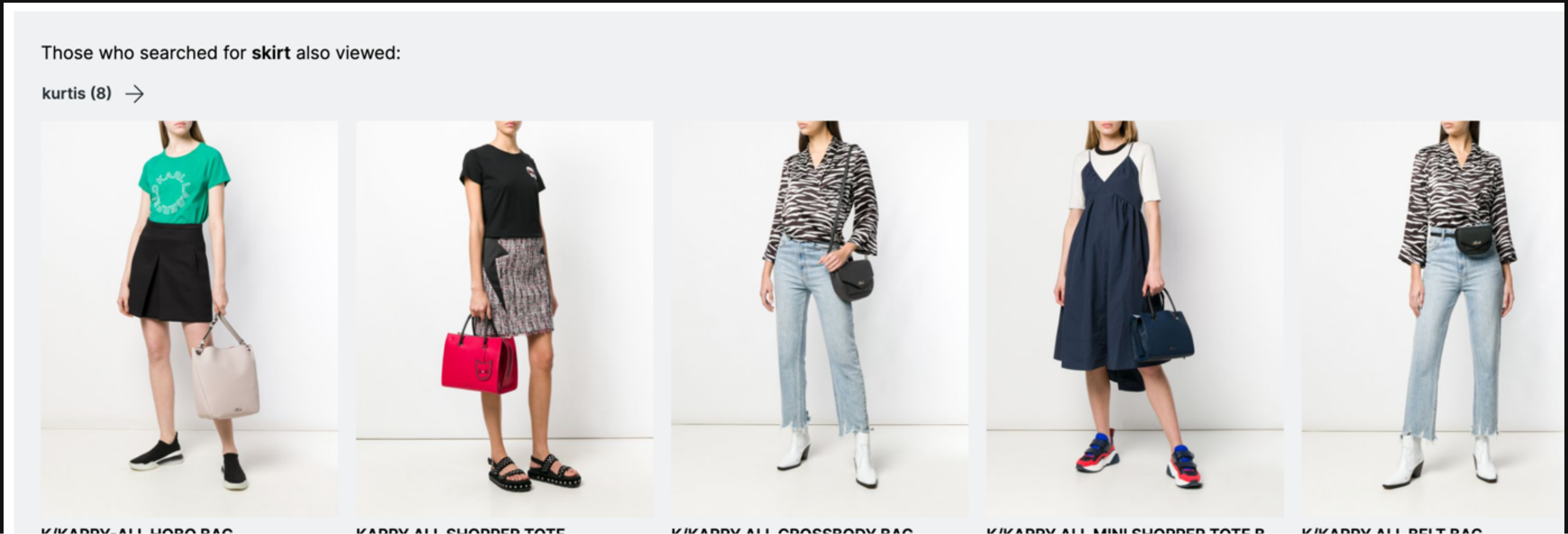
Next Queries Module

What?

Module to handle Next Queries, terms usually searched by the users after the current query.

Why?

The next queries are requested in its own endpoint through the adapter and the module stores the results. On top of the next query terms, the module can also request and store a preview of what the results of requesting that term would be.


Those who searched for **skirt** also viewed:

kurtis (8) →

How?

The `next-queries` and `next-query` components follow a similar approach of using `base-suggestions` for the listing and `base-suggestion` for the individual elements that we saw previously.

To take advantage of the preview results for each next query there's also the component `next-query-preview`, that displays the results preview for a next query suggestion.

```
<ul v-if="suggestionResults">
  <slot
    :suggestion="suggestion"
    :results="suggestionResults.items"
    :totalResults="suggestionResults.totalResults"
  >
    <li
      v-for="result in suggestionResults.items"
      :key="result.id"
      class="x-next-query-preview__item"
      data-test="next-query-preview-item"
    >
      <slot name="result" :result="result">
        <span data-test="result-name">{{ result.name }}</span>
      </slot>
    </li>
  </slot>
</ul>
```

Next Queries Exercise

reset 04:00.00

1. Show the preview of a next query
2. Each next query should render a maximum of 5 result previews
3. Previews should be contained inside an `sliding-panel` component
4. Title in the `sliding-panel` should link to a search of the next query **Hint:** Use the `items-list` component and a made-up `result` component that receives a result as prop to list the previews

```
<NextQueryPreview
  #default="{ results, totalResults, suggestion }"
  :suggestion="nextQuery"
  :maxItemsToRender="5"
>
  <SlidingPanel>
    <template #header>
      <NextQuery :suggestion="nextQuery">
        {{ suggestion.query }}
      </NextQuery>
    </template>
    <ItemsList :items="results">
      <template #result="{ item: result }">
        <Result :result="result" />
      </template>
    </ItemsList>
  </SlidingPanel>
</NextQueryPreview>
```

Popular Searches Module

What?

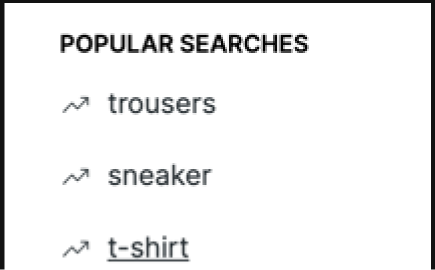
Module to handle the requesting and storing of popular searches, suggestions from it’s own endpoint that return the most searched terms of the store.

Why?

Being it’s own endpoint (managed by an adapter) and having that information accessible through the store across all the app is important when dealing with terms that are likely to be clicked by the user.

How?

Popular searches can be requested at any time as they don’t depend on the current query. The wiring handles when to request them and the module stores them. Once again, a pair of components based on `` `base-suggestions` `` and `` `base-suggestion` `` are enough to render the information in this module anywhere in the app.



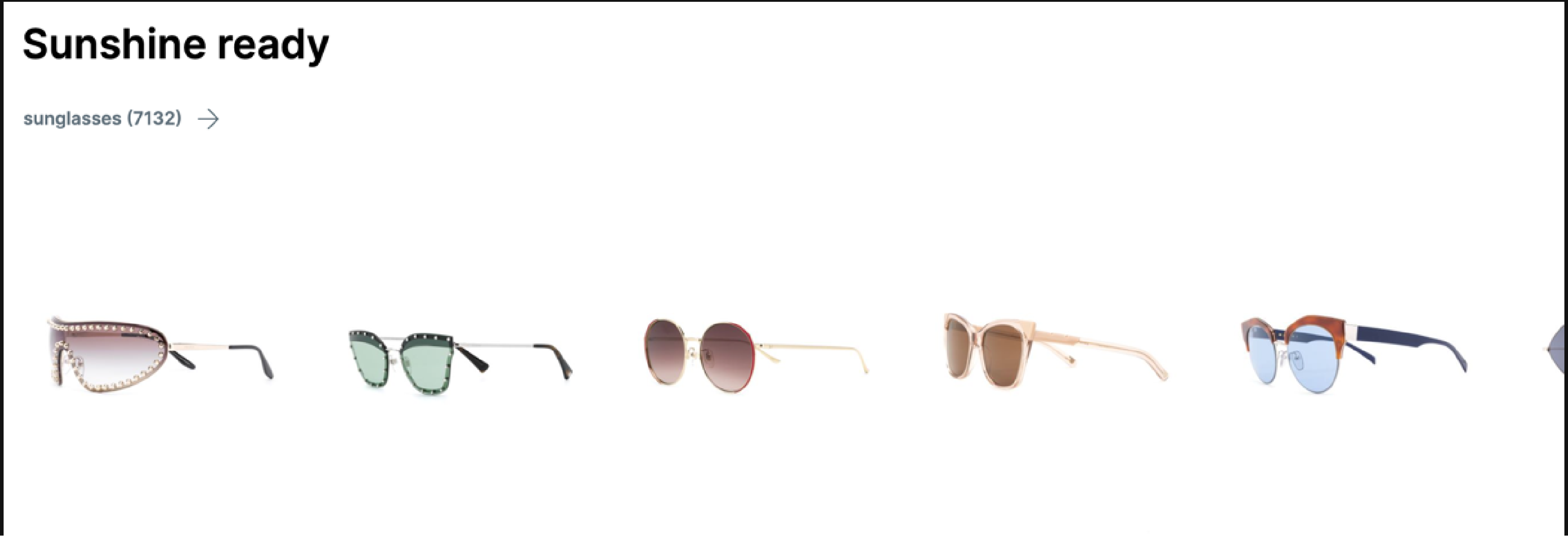
Queries Preview Module

What?

This module is used to preview requests to the search endpoint. It exposes components that allow to retrieve the results for any arbitrary query.

Why?

The module does a specific request to the search endpoint and stores the response. The specifics of the request are configurable, so having them stored in the module so they're customizable and easily edited is a core part of the intent of the module



How?

The Component `query-preview` is tasked with rendering and triggering the request to the endpoint when it's created. The props to the component and the config in the module store shape the request to the search endpoint and once the results come from the response they're displayed

```
<NoElement v-if="queryPreviewResults && queryPreviewResults.totalResults">
  <slot
    :query="query"
    :results="queryPreviewResults.results"
    :totalResults="queryPreviewResults.totalResults"
  >
    <ul data-test="query-preview" class="x-query-preview">
      <li
        v-for="result in queryPreviewResults.results"
        :key="result.id"
        class="x-query-preview__item"
        data-test="query-preview-item"
      >
        <slot name="result" :result="result">
          <span data-test="result-name">{{ result.name }}</span>
        </slot>
      </li>
    </ul>
  </slot>
</NoElement>
```

Queries Preview Exercise

reset 03:00.00

1. Use the `query-preview-list` component
2. Show this previews only if there’s no query currently. **Hint**: Use `$x`
3. Provide the query preview info externally. **Hint**: Check the `queriesPreviewInfo` type
4. Use a made-up `result` component that receives a result as prop to list the previews

```
<QueryPreviewList
  v-if="!$x.query.searchBox && queriesPreviewInfo"
  :queries="queries"
  #default="{ results }"
>
  <Result
    v-for="result in results"
    :key="result.id"
    :result="result"
  />
</QueryPreviewList>
```

```
@XInject('queriesPreviewInfo')
public queriesPreviewInfo!: QueryPreviewInfo[];

protected get queries(): string[] {
  return this.queriesPreviewInfo.map(item => item.query);
}
```

Query Suggestions Module

What?

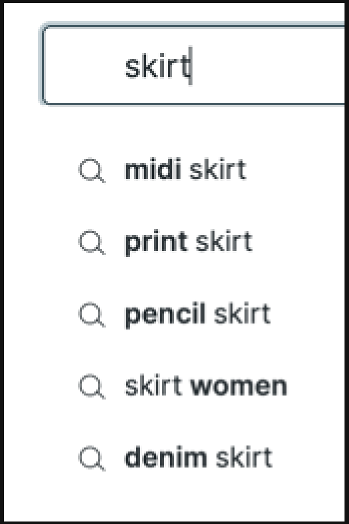
It handles all the suggestions given to the user while he is typing on the search box.

Why?

Autocomplete is part of any worthwhile search experience. A dedicated endpoint takes care of receiving the query and returning the suggestions. The module stores them and handles the config for the requests

How?

The module's wiring checks when the user is typing a query to send the requests and store them in the store. Like with other suggestion modules, two components using `` `base-suggestions` `` and `` `base-suggesiton` `` handle the rendering.



Recommendations Module

What?

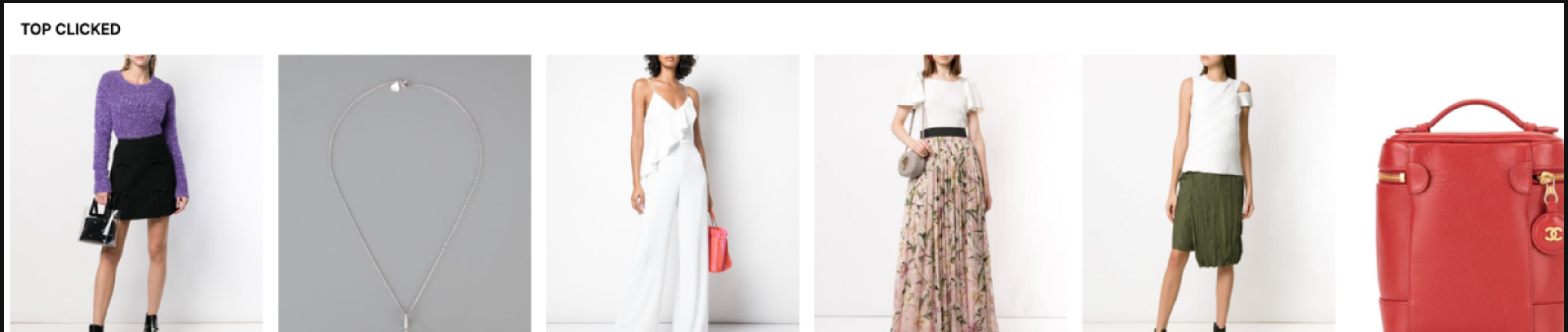
Module for recommendations that are the most clicked products.

Why?

Similar principle to the popular searches module, the recommendations are likely to be clicked by the user and are not bound to a specific part of the website. The dedicated endpoint returns the recommendations and result objects and the form of the request depends on the configuration in the module.

How?

The idea is requesting the recommendation right away because the request is not expected to change. The module has a component to render the list of recommendations as results in a simple way.



Related Tags Module

What?

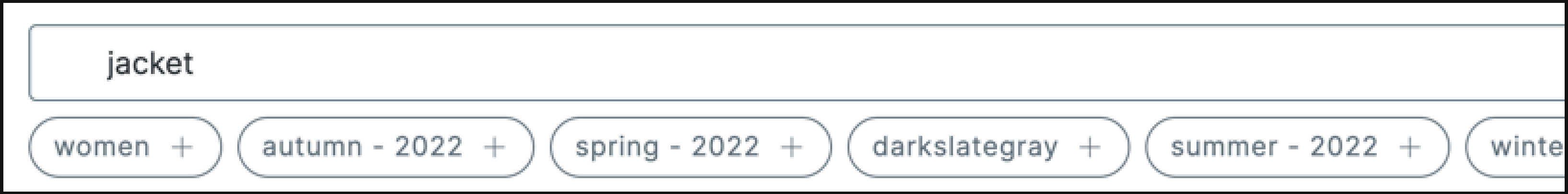
Suggestions of keywords to compliment the current query.

Why?

The module needs to store the related tags, store the selected suggestions and make request calls through its specific adapter.

How?

The Related Tags depend entirely of the query, so when a query is accepted the request for the tags will be made and the response stored. They are treated as buttons instead of suggestions, so the components for rendering are a regular list of buttons, but the customization options with slots are very similar.



Related Tags Exercise

reset 04:00.00

1. Render related tags within a sliding panel
2. The related tag should render its text
3. If the related tag is selected it should have a minus icon in the right
4. If the related tag is not selected it should have a plus icon in the right
5. If the related tag is curated it should have a curated check icon icon in the left

```
<SlidingPanel v-if="$x.relatedTags.length">
  <RelatedTags :highlightCurated="true">
    <template #related-tag-content="{ relatedTag, isSelected, shouldHighlightCurated }">
      <CuratedCheckIcon v-if="shouldHighlightCurated" />
      {{ relatedTag.tag }}
      <CrossTinyIcon v-if="isSelected" />
      <PlusIcon v-else />
    </template>
  </RelatedTags>
</SlidingPanel>
```

Scroll Module

What?

This module handles the state of the scroll. It is in charge of restoring the scroll position, and it contains info related to the scroll in the page, such as the scroll direction, if the user is near the end of the page, etc.

Why?

This module stores the data of any scroll that uses a scroll X Component in a dictionary in the module's store. This is so its current position can be restored (the module tracks the id of the current element in the scroll's view) and so it can rely the information about its position relative to the start or the end of the scrolling space.

How?

The `scroll` component is the backbone of the module. It uses the `base-scroll` component and it's the one communicating with the module through events, to use it is enough to wrap the components that you want to apply the scroll to. Aside from the utility components in the module the other parts that are important are the `main-scroll` and the `main-scroll-item`.

The `main-scroll` is an extended `scroll` component that adds the functionality of tracking the current component in view so the scroll position can be restored if the page is loaded from the URL, the `main-scroll-item` adds the ids and the tracking communication to the components they wrap.

`scroll.vue`

```
<BaseScroll
  @scroll="emitScroll"
  @scroll:direction-change="emitScrollDirectionChange"
  @scroll:at-start="emitScrollAtStart"
  @scroll:almost-at-end="emitScrollAlmostAtEnd"
  @scroll:at-end="emitScrollAtEnd"
  v-on="$listeners"
  :id="id"
  v-bind="$attrs">
  <slot />
</BaseScroll>
```

`main-scroll-item.vue`

```
@Prop({ required: true })
public item!: Identifiable;
@Prop({ default: () => NoElement })
public tag!: string | typeof Vue;

@XInject(ScrollObserverKey)
public firstVisibleItemObserver!: ScrollVisibilityObserver | null;

async mounted(): Promise<void> {
  await this.$nextTick(); // Mounted does not guarantee that child components are mounted too
  this.$watch('firstVisibleItemObserver', this.observeItem, { immediate: true });
}
```

Scroll Module Exercise

reset 03:00.00

1. Have a scroll using `main-scroll`
2. List the results with `results-list`
3. Have the results be `main-scroll-item` article
4. Use a made-up `result` component that receives a result as prop to list the previews

```
<MainScroll>
  <Scroll id="main-scroll">
    <ResultsList>
      <MainScrollItem :item="result" tag="article">
        <Result :item="result" />
      </MainScrollItem>
    </ResultsList>
  </Scroll>
</MainScroll>
```

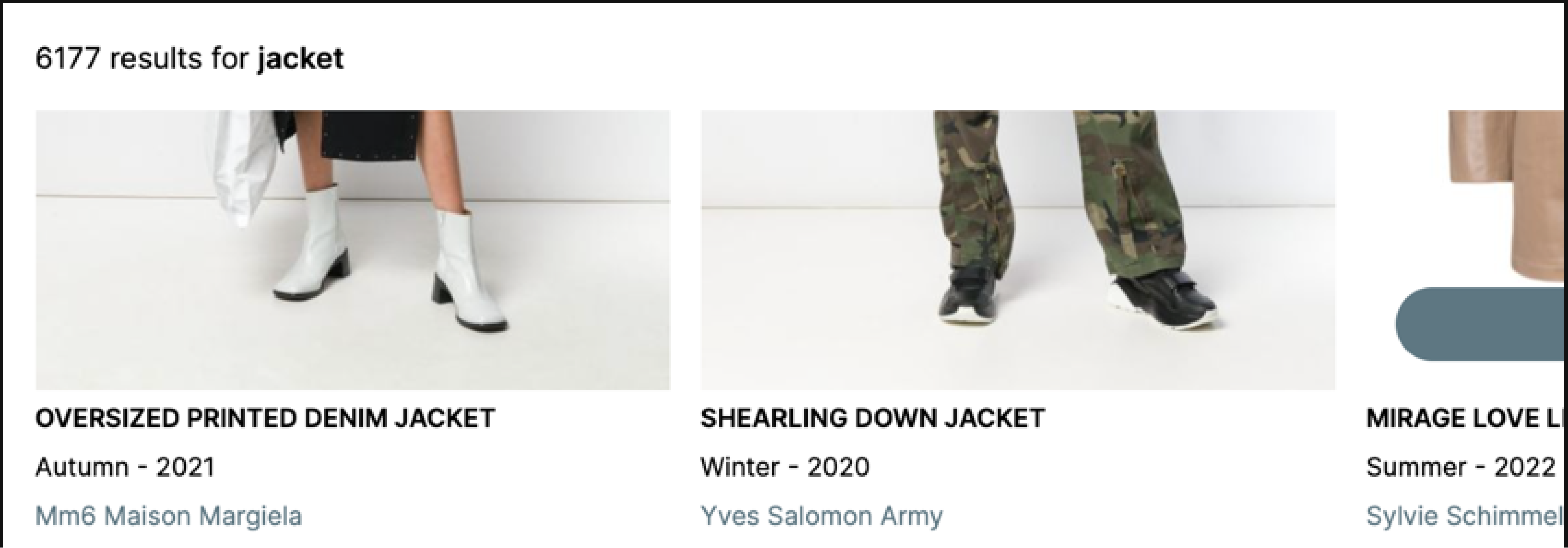
Search Module

What?

The search module contains the results for the current query, as well as several components used to show the results, modify the sort, render the spellchecked query, etc.

Why?

It handles everything related to the request to the search adapter. It's the endpoint that returns most information and influencing more functionalities across the setup.


6177 results for **jacket**

OVERSIZED PRINTED DENIM JACKET
Autumn - 2021
Mm6 Maison Margiela

SHEARLING DOWN JACKET
Winter - 2020
Yves Salomon Army

MIRAGE LOVE L
Summer - 2022
Sylvie Schimmel

How?

When a new request through the search adapter is needed (user accepted a query for example) the module sends the requests and stores the response. The endpoint will store things like all the result types (regular, promoted, banners, etc), the number of results, keep track of the pagination, the facets that will be used by the facets module, etc. Some of that data will be consumed in other parts of the setup and other will be handled by the search module itself.

The main task of the components inside the module is the rendering of results and similar elements. There are lists or individual components for almost each of these objects. This is because, normally, we want to style each type differently from the rest and each has a different structure.

Result, **Banner Promoted**, **Partial**

When creating a setup normally we want a single list (grid) that contains all these elements (results, promoted, etc) but each with each own rendering strategy. To accomplish this, the list components in the module can work from within each other. The ``result-list`` can wrap any other list of the module, and it will render the results plus the elements of that list, and the next list that gets wrapped within will do the same. Lastly, the way each type of element will render is determined by the named slots in the last chained list.

`banner.vue`

```
<component
  :is="banner.url ? 'a' : 'figure'"
  v-if="!imageFailed"
  v-on="banner.url ? anchorEvents() : {}"
  :href="banner.url"
>
  <img @error="imageFailed = true" :src="banner.image"/>
  <h2 v-if="banner.title"> {{ banner.title }} </h2>
</component>
```

`promoted.vue`

```
<a @click="emitClickEvent" :href="promoted.url">
  <img :src="promoted.image"/>
  <h2 class="x-promoted__title">
    {{ promoted.title }}
  </h2>
</a>
```

`results-list.vue`

```
<NoElement>
  <slot v-bind="{ items, animation }">
    <ItemsList :animation="animation" :items="items">
      <template v-for="(_, slotName) in $scopedSlots" v-slot:[slotName]="{ item }">
        <slot :name="slotName" :item="item" />
      </template>
    </ItemsList>
  </slot>
</NoElement>
```

`items-list-injection.mixin.ts`

```
protected stateItems!: ListItem[];

@XProvide(LIST_ITEMS_KEY)
public get items(): ListItem[] {
  return [];
}

@XInject(LIST_ITEMS_KEY)
public injectedListItems: ListItem[] | undefined;
```

Search Module Exercise

reset 04:00.00

1. Render a list of results
2. Render a list of banners
3. Render a list of partials
4. The elements should be rendered in this order: banners -> promoteds -> results
5. Use made-up component `result` that receives an `item` prop
6. Use default `banner` and `promoted` components

```
<ResultsList>
  <PromotedsList>
    <BannersList>
      <template #result="{ item }">
        <Result :item="item" />
      </template>
      <template #banner="{ item }">
        <Banner :item="item" />
      </template>
      <template #promoted="{ item }">
        <Promoted :item="item" />
      </template>
    </BannersList>
  </PromotedsList>
</ResultsList>
```

Search Box Module

What?

This module contains all the logic related to the search input. Enables the rest of the modules.

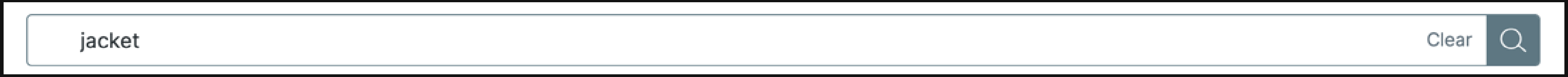
Why?

The source of truth for the query and hence the most part of the other modules. Only has to handle a string of data but the events it handles sets the whole page in motion.

How?

Aside from mirroring the content of the search input to the module store and emit that the query has changed, the `search-input` emits events for most of the interactions that can be done with an input.

Also, the module keeps track of the actions made by the user with a state machine. This is so some components can be aware of the chain of actions by the user and determine their behavior more accurately.



```
<input
  ref="input"
  @mouseenter="emitUserHoveredInSearchBox"
  @mouseleave="emitUserHoveredOutSearchBox"
  @blur="emitUserBlurredSearchBox"
  @click="emitUserClickedSearchBox"
  @focus="emitUserFocusedSearchBox"
  @input="emitUserIsTypingAQueryEvents"
  @keydown.enter="emitUserPressedEnterKey"
  @keydown.up.down.prevent="emitUserPressedArrowKey"
  @beforeinput="preventSpecialKey"
  v-on="$listeners"
  :maxlength="maxLength"
  :value="query"
  autocomplete="off"
  enterkeyhint="search"
  inputmode="search"
  type="search"
/>
```

Semantic Queries Module

What?

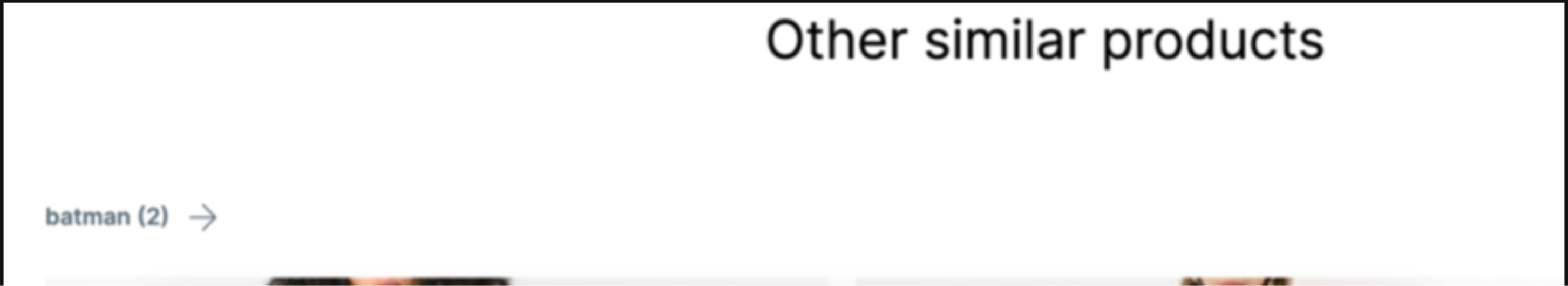
The semantic queries are those that are related to the search query in its meaning, for example, jacket and blazer. They are usually rendered when there are few or no results.

Why?

They're another kind of suggestion with its own adapter, so we need the module to control all that logic and store the data. Aside from the usual configurations found in other suggestion modules, this one has a configurable threshold, to filter out terms that are not relevant enough.

How?

This is a suggestions module and as such roughly follows the same structure as the others, `` `base-suggestions` `` to render the list of therms and `` `base-suggestion` `` for the individual elements.



Semantic Queries Exercise

reset 03:00.00

1. Render a list of semantic queries
2. Use the `query-previews` component to render the results from the semantic queries
3. Use the semantic query term as header before the results
4. Use a med-up `result` component with an `item` prop

```
<SemanticQueries #default="{ queries, findSemanticQuery }">
  <QueryPreviewList
    :queries="queries"
    #default="{ query, results, totalResults }"
  >
    <SemanticQuery
      :suggestion="findSemanticQuery(query)"
    >
      {{ query }}
    </SemanticQuery>
    <Result
      v-for="result in results"
      :key="result.id"
      :item="result"
    />
  </QueryPreviewList>
</SemanticQueries>
```

Tagging Module

What?

This module is in charge of sending the requests to track some user actions.

Why?

Tracking user behavior is obviously valuable and this module takes care of it (sending request to the specific endpoint, managing session, etc) but it also makes sure that no tracking is done before the user actually accepts it.

How?

A renderless component sends it all into motion and enables the tracking. Then, specific actions warrant a tracking request, for example, when a result is clicked. To fine grain this tracking the request sends properties like location and feature, that vary depending on where the result is and why it’s showing. Normally this information is relied using provide and inject to pass the data to the events that then the wiring of the module uses to make the requests `tagging.vue`

```
@Prop({ default: 30000 })
public clickedResultStorageTTLMs!: number;
@Prop({ default: 'url' })
public clickedResultStorageKey!: string;
@Inject('snippetConfig')
protected snippetConfig?: SnippetConfig;
@Prop()
public sessionTTLMs: number | undefined;
@Prop()
public queryTaggingDebounceMs: number | undefined;
@Prop()
protected consent?: boolean;

@XEmit('ConsentProvided')
public get activeConsent(): boolean {
  return this.consent ?? this.snippetConfig?.consent ?? false;
}

@XEmit('TaggingConfigProvided')
public get config(): TaggingConfig {
  return {
    queryTaggingDebounceMs: this.queryTaggingDebounceMs as number,
    sessionTTLMs: this.sessionTTLMs as number,
    clickedResultStorageTTLMs: this.clickedResultStorageTTLMs,
    clickedResultStorageKey: this.clickedResultStorageKey
  };
}
```

Tagging Exercise

reset 02:00.00

1. Use tagging component
2. Use a made up `` `result` `` component with an `` `item` `` prop
3. Make the result send a tagging request with location equal to `` `'predictive_layer'` ``

```
<Tagging :consent="true" />
<LocationProvider location="predictive_layer">
  <Result
    :item="result"
  />
</LocationProvider>
```

URL Module

What?

It manages the browser URL parameters to preserve them through reloads and history navigations.

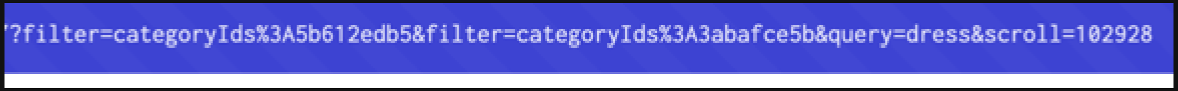
Why?

Updating the URL when required and restoring the X Components store status when loading from URL.

How?

Wiring updates the URL when needed.

Renderless component parses the URL parameters and emits the events to update the stores of the modules.



```
?filter=categoryIds%3A5b612edb5&filter=categoryIds%3A3abafce5b&query=dress&scroll=102928
```

`url-handler.vue`

```
protected parseUrlParams(): ParsedUrlParams {
  const urlSearchParams = new URL(window.location.href).searchParams;
  return this.managedParamsNames.reduce<ParsedUrlParams>(
    (params, name) => {
      const urlKey = this.getUrlKey(name);
      if (urlSearchParams.has(urlKey)) {
        if (name in initialUrlState) {
          const urlValue = urlSearchParams.getAll(urlKey);
          params.all[name] = this.parseUrlParam(name, urlValue);
        } else {
          params.all[name] = params.extra[name] = urlSearchParams.get(urlKey);
        }
      }
      return params;
    },
    { all: { ...initialUrlState }, extra: { ...this.initialExtraParams } }
  );
}

protected emitEvents(): void {
  const { all, extra } = this.parseUrlParams();
  const metadata = this.createWireMetadata();
  this.$x.emit('ParamsLoadedFromUrl', all, metadata);
  this.$x.emit('ExtraParamsLoadedFromUrl', extra, metadata);
  if (all.query) {
    this.$x.emit('UserOpenXProgrammatically', undefined, metadata);
  }
  this.urlLoaded = true;
}
```

Device Module

DEPRECATED, use the `` `create-use-device` `` composable instead.

Customizing a Setup

X Design System

The Design System in the X Package aims to provide a fast was of customizing the X components for the different setups.

It’s based in the Tailwind CSS framework and exported as a plugin for it.

Tailwind provides out-of-the-box utilities for most of the CSS properties, and the X Design System extends it with more utilities and components tailored for the X Components.

Tailwind

Tailwind is a utility-first CSS framework for rapidly building custom user interfaces.

It allows you to extend and modify the default theme to fit your needs.

Further customization can be added with custom plugins for Tailwind.

Plugins can rage from small utilities to fully fledged custom themes with components and dynamic capabilities.

```
<div class="relative flex min-h-screen flex-col>
  <img
    src="/img/beams.jpg"
    alt=""
    class="absolute top-1/2 left-1/2 max-w-none -translate-x-1/2 -translate-y-1/2" />
  <div class="max-h-[300px]"></div>
    <div class="shadow-xl sm:mx-auto sm:max-w-lg sm:rounded-lg sm:px-10">
    </div>
  </div>
</div>
```

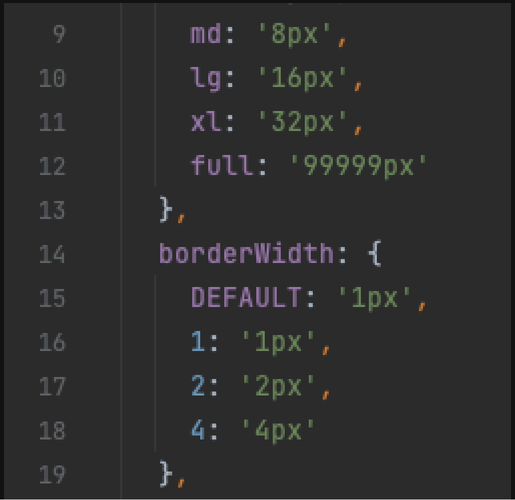
X Tailwind Plugin

The X Tailwind plugin is the plugin made for the X Design System to expand on things that we needed and provide a robust framework to work and customize setups faster.

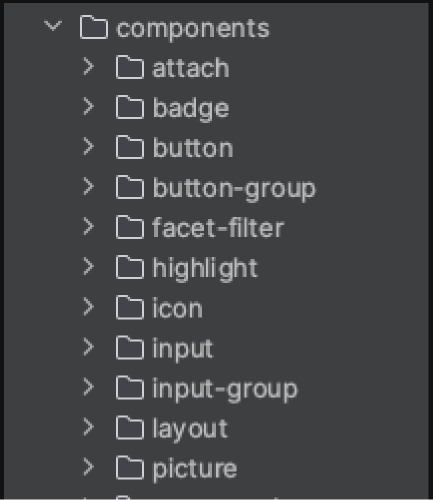
There are 2 main things that this plugin provides, one is the theme itself and the other are the custom components styles.

The theme provides a set of colors, fonts, spacings, and other properties that the base utilities of Tailwind use, as well as the components.

The custom components are bundles of styles that modify the look and feel of the X Components when applied to those elements. Things like `x-button`, `x-suggestion` and `x-icon` are used throughout the client's setup.



```
    md: '8px',
    lg: '16px',
    xl: '32px',
    full: '99999px'
  },
  borderWidth: {
    DEFAULT: '1px',
    1: '1px',
    2: '2px',
    4: '4px'
  },
```

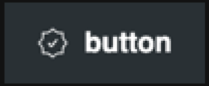
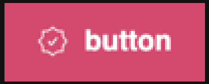
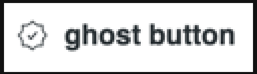
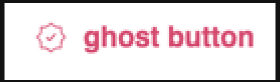


```
⌄ components
  › attach
  › badge
  › button
  › button-group
  › facet-filter
  › highlight
  › icon
  › input
  › input-group
  › layout
  › picture
```

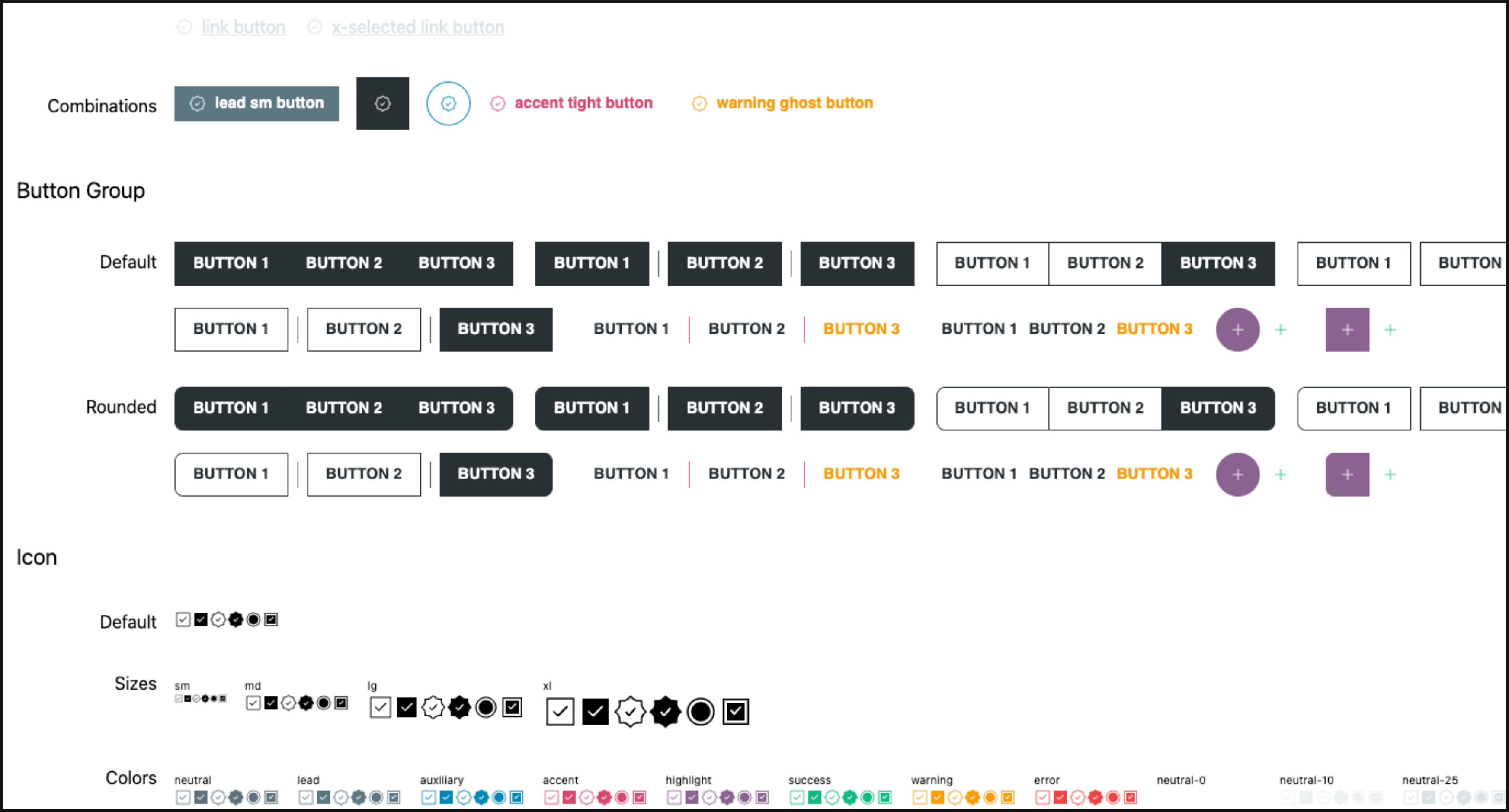
Variants

Given that the plugin was made with customization in mind, each component has many variants to adapt to the needs of the setup.

The variants can be color variants, size variants, styling variants (outlined, ghost), etc. They're also designed to be combined.

Button	Color Variant	Style Variant	Color+Style Variant
			

XDS Showcase



link button x-selected link button

Combinations lead sm button accent tight button warning ghost button

Button Group

Default BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON

BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 + + + +

Rounded BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON

BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 BUTTON 1 BUTTON 2 BUTTON 3 + + + +

Icon

Default

Sizes sm md lg xl

Colors neutral lead auxiliary accent highlight success warning error neutral-0 neutral-10 neutral-25

Tailwind in X Components

The Design System with Tailwind is not integrated with the X Components, and they don’t necessarily use the classes out-of-the-box (with a few exceptions like the Icons).

The Components work without the Design System.

To use the Design System in a project with X Components it’s necessary to add Tailwind to the project and load the X Tailwind plugin in it. This will make available all the utilities and styled components in the project, ready to pair with the X Components.

The idea of this pairing is to have a constraint in how the components will look, so the setups for the clients are faster to develop, and at the same time make them flexible enough to adapt to the custom requirements that may appear.

X Translations

Texts in the X Components themselves are written in english, but to handle internalization for the customer's setups we use the vue-i18n package.

The package uses language files to store the translations for each language in a JSON format

The X Translation package aids to the creation of these files by converting from `` `.csv` `` translation files to the JSON format that the package uses and vice-versa.

The usual workflow with the internalization would be: create the setup with english language as the base, exporting the english language JSON file to `` `.csv` ``, add other languages to that file, finally convert the `` `.csv` `` with all the translation to JSON files and add them to the project.

X Icons

Icons in X Components setups are intended to be SVGs wrapped in Vue Components.

The SVGs should have a specific structure regarding the stroke and fill colors to work with the Design System. In essence the colors should be changed to the `` `currentColor` `` keyword and all the `` `fill=none` `` specified.

The package X SVG Converter provides a script conversion tool to transform any SVG to the format that the Design System use.

X Adapter

The adapter is the middleman between the backend endpoints and the X Components.

When using the X Components with a backend you'll need to set up different adapters to handle the requests and responses from the backend and communicate them to the front.

The X Components modules call a specific adapter to request the information and map the response. The modules will request to the endpoint with a format and expect the response with a specific structure, the adapter has the task of convert the request to something that the endpoint understands and to map the response into something the module expects.

Roughly speaking, each adapter consists of 3 parts that would need to be configured. The endpoint that will be called, the request mapper and the response mapper.

The endpoint is very straightforward, it's just the URL that will be called.

The request and response mappers are functions called before the request and after the response respectively. They are the ones that will adapt the formats to the needs of eahc part of the requests, and they do so with Schemas

Schemas

A schema is a dictionary that indicates what values from an object should be mapped to what field from another. They are used by the mappers to know how to map requests and responses.

Imagine you have a search requests where the endpoint expects the query value to be `` `keyword` `` but the X Components are sending it as `` `query` ``. You can create a schema for the request mapper that maps the requests as the endpoint expects it:

```
const searchRequestSchema = {
  keyword: 'query',
}
```

In the same way you can use a schema to map the response from the endpoint to the format that the X Components expect:

```
const searchResponseSchema = {
  images: ({imageStrings}) => imageStrings.split(','),
}
```

X Platform Adapter

The X Platform Adapter is a pre-built X Adapter with all the adapter endpoints configured to work with Empathy’s backend.

The X Adapter allows for overriding of the mappers and schemas, so the idea of the X Platform Adapter is to have something working with an existing endpoint out of the box and override the configurations as needed.

The alternative to using the X Platform Adapter is to create a new X Adapter form the ground up.

X Archetype

A pre-built setup to work as starting point

The X Archetype is a fully ready search experience using the X Components, the X Design System and the X Platform Adapter.

Instead of creating a project from scratch for each new setup, cloning the X Archetype and build from it is the recommended approach. The X Components give a lot of customization points to cover the bases for most of the requirements of a setup.

The components themselves are very customizable with the slots and the config props, and the stores in the modules have their own configuration. We also checked the XDS and how easy changing the theme of the colors, spacing, etc is with Tailwind, and the Adapter covers the mapping of endpoints for the X components regardless of the format. We'll cover these more in detail, but there are more customization capabilities to X Components that we only saw just briefly.

The **Snippet config**, **XPluginOptions** and **Callbacks** enable customizations that weren't available directly through the components slots or props.

Snippet Config

Quick config setup

The snippet config is a JSON object that functions as a global config object for the X Components setup.

The configurations in this object can be things like the language, the currency or the environment, that affect the behaviour of the page globally, or specific things like the consent for the tagging.

This object is passed in the `initX` object of the `window` and by default it takes the values from the URL (without using the URL module).

```
window.initX = {
  instance: popFromURLParameters('instance') || 'empathy';,
  env: getEnv(),
  scope: popFromURLParameters('scope') || 'desktop',
  lang: popFromURLParameters('lang') || 'en',
  device: popFromURLParameters('device') || 'mobile',
  uiLang: popFromURLParameters('uiLang') || lang,
  currency: popFromURLParameters('currency') || 'EUR',
  [...]
}
```

XPluginOptions

Customize X Components behaviour and features

Part of the setup for an X Components project is initializing the X Plugin and apply it to the Vue instance.

The plugin is used to add the basics the X Component need to work, like the adapter and the store, but can be used to override things like the modules stores and the wiring.

On top of these options, there are the install options, specified when installing the X in a Vue app and, aside of the plugin options, adds things like installing extra plugins with access to the snippet config for the initialization.

Callbacks

React to events in the X Components from outside

Callbacks are functions defined in the client side that will be called by the X Components when the specified events happen.

They’re defined in the snippet config under the ``callbacks`` key, but they’re important enough to warrant their own section.

``snippet-callbacks-vue``

```
protected get eventListeners(): XEventListeners {
  const { callbacks } = this.snippetConfig;
  return callbacks
    ? map(callbacks, (eventName, callback) => {
      return (payload: unknown, metadata: WireMetadata) => {
        const callbackReturn = callback(payload as never, metadata);
        this.$x.emit('SnippetCallbackExecuted', {
          event: eventName,
          callbackReturn,
          payload: payload as never,
          metadata
        });
      };
    })
    : ({} as XEventListeners);
}
```