**UI Component – Carousel**

Index:

* What and Why – Brief Explanation
* Rationales
* Feasibility Study
* Web component and its API
* References and Notes

**What and Why – Brief Explanation**

A slideshow component for cycling through elements—images or slides of text—like a carousel.­­

Brief about types of carousels available in major frameworks:

* Slide only carousels.
* With control carousels.
* With indicators.
* With caption and content.

Figure: Slide only

A grey rectangular object with black text

Description automatically generated

Figure: With controls

A grey rectangular object with black text

Description automatically generated

With Indicators

A grey rectangular object with text

Description automatically generated

With captions

A grey rectangular object with text

Description automatically generated

Where in ING’s eco system carousel can help

* On products lending page(s) (ING closed environment) – <https://mijn.ing.nl/>
* On ING Winkel (Open Environment) – <https://www.ing.nl/punten/overview>
* On ING Today – <https://ing.sharepoint.com/sites/intranet-34>

Figure: ING Product shop

A person smiling at camera

Description automatically generated

Use case: This is product lending page of Personal loan, on those lending pages we also explain about our products. Providing carousel here allows to present more data (visually / graphically) to the customers might help.

Figure: ING Winkel

A screenshot of a website

Description automatically generated

Use case: I guess, that is quite promising case where a carousel might help

Figure: ING Today

A screenshot of a website

Description automatically generated

Use case: ING Today is primary source of information for ING employees. Using Carousel can deliver most important updates.

**Rationales:**

There are major questions though, I went through lion-web, ing-web, w3c, and some famous UI frameworks.

**Lion web, Do we have this feature planned, does this feature exists in ing-web**

* At least, I could not get this information in my search that if this feature is planed or requested in the discussion forum.

**A screenshot of a computer

Description automatically generated**

**ARIA Authoring Practices Guide (APG) –** [**Click here for the complete article**](https://www.w3.org/WAI/ARIA/apg/patterns/carousel/)

* Typically, one slide is displayed at a time, and users can activate next or previous slide. In some implementations, rotation automatically starts when the page loads.
* Slides may contain any type of content.
* Ensuring all users can easily control and are not adversely affected by slide rotation is an essential aspect of making carousels accessible. And that is quite a task to do carefully.
* For instance, the screen reader experience can be confusing and disorienting if slides that are not visible on screen are incorrectly hidden, e.g., displayed off-screen.
* If slides rotate automatically and a screen reader user is not aware of the rotation, the user may read an element on slide one, execute the screen reader command for next element, and, instead of hearing the next element on slide one, hear an element from slide 2 without any knowledge that the element just announced is from an entirely new context.

**Performance**

* Carousels typically having images, and animations. Additional to that it is a processing heavy operation. For example – complete hiding and showing elements/slides.
* What bounds/limitations must be placed on number of items or image size, type, and resolution.

**Feasibility Study:**

1. Components

* A carousel container element encompasses all components (Carousel controls, and slides)
* Slide/Slides
* Rotation Control – Control to start/stop automatic slide rotation.
* Next slide control
* Previous slide control
* Slide picker control(s) – Group to pick a slide (indicator).

Nice to Have

* Label/Captions – Textual information over slides (TODO – Plan later)
* Active Link – Clicking text / slide – Redirect (TODO – Plan later)

1. Accessibility

* Set on container aria-roledescription set to – carousel.
* Labels, its accessible label is provided by property – aria-labelledby / aria-label. More on it [Here](https://www.w3.org/WAI/ARIA/apg/patterns/carousel/)
* Rotation control should have accessible label. Also, property aria-label.
* Each slide has an accessible name (unique). Also, accessibility properties.
* Color contrast of Text and Rotation controls.
* Screen reader announcement of slide changes.
* If, Slides/Elements of the Carousel have some message it should be as caption. Images including text cannot be read by screen readers. (TODO – Can be brainstormed later)

1. Keyboard Interaction (Basic Interactions)

* Toggle the auto rotation of slides – Recommended (Enter or Space)
* Moves focus through interactive elements – Recommended (Tab)
* Rotation control – Recommended (Tab)

1. Standards for components

* As per ING standards, Minimum size of button should be – 44px by 44px.
* ING also have contrast ratio requirements for text.
* Standards for Images / Content
  + Pixels (TODO: Could not find ING Guidelines yet) – <https://brandportal.ing.com> might have some more information. Industry Standard 1080 x 1080px / Aspect Ratio – 1:1

1. Performance considerations

* A carousel is a UX component that displays content in a slideshow-like manner. Large, above-the-fold carousels often contain a page's [Largest Contentful Paint (LCP) element](https://web.dev/lcp" \l "what-elements-are-considered),
* Avoid use of [non-composited animations](https://developer.chrome.com/docs/lighthouse/performance/non-composited-animations) that can contribute to [Cumulative Layout Shift (CLS)](https://web.dev/cls). On pages with autoplaying carousels, this has the potential to cause infinite layout shifts.
* Keep it simple mostly HTML. Avoid costly JS operations.

**Web Component and its API:**

Name: LionCarousel

<lion-carousel></lion-carousel>

Public API:

* Object <Configuration>
* Map <Slides>

[{

imgUrl:

}]

**References:**

* APG - Carousel (Slide Show or Image Rotator) Pattern - [Here](https://www.w3.org/WAI/ARIA/apg/patterns/carousel/)
* Auto Rotating Image Carousel Example with Buttons for Slide Control (APG) with Accessibility best practices - [Here](https://www.w3.org/WAI/ARIA/apg/patterns/carousel/examples/carousel-1-prev-next/)
* Complete Inspirational Example
  + <https://www.w3.org/WAI/tutorials/carousels/working-example/>
  + <https://www.w3.org/WAI/tutorials/carousels/full-code/>
* Performace considerations – Web vital patterns (Web Dev)
  + <https://web.dev/patterns/web-vitals-patterns/carousels>
  + <https://web.dev/articles/carousel-best-practices>
* Orange Juice, Contribution guidelines - [Here](https://webdemos.feature-testing.ing.net/p00019-ing-web-v4/develop/web-systems/core/matchmediacontroller/index.html)
* Orange Juice, Image component – might be useful - [Here](https://webdemos.feature-testing.ing.net/p00019-ing-web-v4/components/image/overview/index.html)

**Notes (For product and later use):**

1. General considerations

* Carousels work well in situations where using additional vertical space to display additional content is not an option. Carousels on product pages are often a good example of this use case. However, carousels are not always used effectively.
  + Carousels, particularly if they contain promotions or advance automatically, are easily [mistaken](https://www.nngroup.com/articles/auto-forwarding/) for advertisements by users. Users tend to ignore advertisements—a phenomenon known as [banner blindness](https://www.nngroup.com/articles/banner-blindness-old-and-new-findings/).
  + Carousels are often used to placate multiple departments and avoid making decisions about business priorities. As a result, carousels can easily turn into a dumping ground for ineffective content.