

SPA UI: Data Interactions



IT 4403 Advanced Web and Mobile
Applications

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Overview

- SPA UI patterns
 - Handling “more” data items
 - Paging
 - Click for more
 - Scroll for more
 - Slide show
 - Extras/details on demand for a single item
 - Side by side (sticky panel)
 - Overlay
 - Expansion
- Coding techniques with JavaScript/CSS, jQuery, AJAX, and libraries

Dealing with Many/More Items



- Dealing with a large number of search results (data items) is a common case
- UI patterns
 - List them all in one long page (<20)
 - Display by major categories (<50, or <20*number of categories)
 - ***Extras-on-demand*** (display more progressively) >50
 - Paging
 - Click for more
 - Continuous scrolling (scroll for more)
 - Slide show (carousel)



Paging

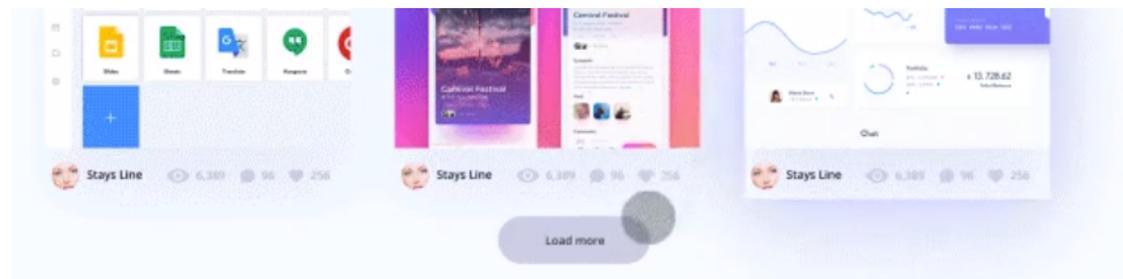


- When there are too many search results to comfortably fit on a single page, split the results into separate pages. Allow the user to navigate between pages using a pagination (paging) control.
- **Pagination Control**
 - Display the navigation controls as a row of links or clickable targets.
 - Present links in the following order: “Prev”, page links, “Next”.
 - Display a left arrow after the label “Prev”, and a right arrow before the label “Next”.
 - Consider providing a link back to first and last page.
 - Display a reasonable number of pagination links (usually showing more than 10 page links is a bad idea).
 - When on first page of results do not display the label or arrow for “Prev”.
 - When on the last page of results do not display the label or arrow for “Next”
 - Do not display a hyperlink for the current page in the page links.
- **Reference**
 - <http://ui-patterns.com/patterns/Pagination>
 - <https://web.archive.org/web/20180605122100/patternry.com/p=search-pagination/>

Click for More



- Use a button to specifically request more results one page after one page



See the example from <https://uimovement.com/design/load-more/>

- A case study to favor this pattern
 - <https://www.orbitmedia.com/blog/why-we-choose-the-view-more-button-instead-of-pagination/>

Continuous Scroll



- Also called infinitely scrolling; this loads more items when the user scroll to the bottom of the page (or results)
- Examples
 - <https://shopping.google.com/u/0/s?cat=B.529370&ved=0CAMQ8IQoAWoYChMI9uix1eW35QIVGtTjBx3v-gzfEI0C>
 - https://twitter.com/search?q=web%20design&src=typed_query
- Pattern references
 - <https://web.archive.org/web/20170910122641/http://patternry.com/p%3Dendless-scrolling/>
- Comparisons
 - <https://uxplanet.org/ux-infinite-scrolling-vs-pagination-1030d29376f1>
 - <https://www.smashingmagazine.com/2013/05/infinite-scrolling-lets-get-to-the-bottom-of-this/>
- Coding practices
 - <https://www.sitepoint.com/jquery-infinite-scrolling-demos/>
 - <http://www.hongkiat.com/blog/infinite-page-scroll/>
 - <https://stackoverflow.com/questions/3898130/check-if-a-user-has-scrolled-to-the-bottom>
 - Libraries
 - <http://jscroll.com>
 - <http://scrollmagic.io>

Slideshow/Carousel



- Acting like a slide show, more results are displayed upon requests
- Examples
 - Amazon “related to items you viewed”, “customers who bought this item also bought”, etc.
 - <https://shopping.google.com/u/0/s?cat=B.529370&ved=0CAMQ8IQoAWoYChMI9uix1eW35QIVGtTjBx3v-gzfEI0C> (for each category)

Customers who bought this item also bought

Page 1 of 3

Designing with the Mind in Mind: Simple Guide to Understanding User...
› Jeff Johnson
★★★★☆ 34
Paperback
\$37.96 ✓prime

Mobile Computing
Devi Kamal
Paperback
\$25.97

Android Programming: The Big Nerd Ranch Guide (3rd Edition) (Big Nerd Ranch...
› Bill Phillips
★★★★☆ 51
Paperback
\$35.82 ✓prime

Starting Out with C++:
Early Objects (9th Edition)
Tony Gaddis
★★★★☆ 24
Paperback
\$150.98 ✓prime

Cryptography Engineering:
Design Principles and Practical Applications
› Niels Ferguson
★★★★☆ 45
Paperback
\$38.98 ✓prime

Pages with related products. See and discover other items: [web app development](#), [web design and development](#), [mobile app development](#), [sql 2016](#), [mobile application development books](#), [Learning SQL](#)

- Used when space is a consideration
 - Limit the results in a limited area
 - Often used for related items or recommendations

“Load More” Coding Examples List



- Live demo of all examples at <http://it4203.azurewebsites.net/demo/data-layout>
- Examples can be downloaded on the content page. Please put all files to your server and see its effects. These AJAX examples need sever side support.

File	Example Description
load-more-1-paging.html	Load more with pagination
load-more-2-button.html	Load more with an explicit load more action (button click)
load-more-3-scroll.html	Load more with continues scrolling
load-more-4-slide.html	Load more using slideshow/carousal. Applied coding practices using jQuery animate <ul style="list-style-type: none">• https://www.w3schools.com/jquery/jquery_animate.asp• http://api.jquery.com/animate/

Request Item Details



- The Visual Information-Seeking Mantra summarizes many visual design guidelines and provides an excellent framework for designing Information visualization applications.
- It has a wide impact on user interface design for general information seeking including web applications.
- Basic steps



Applying it to Search



- Widely applied to search for any data items



- Live examples

- <https://chrome.google.com/webstore/search/book> (more details on a separate page on clicking)
- <https://www.apmex.com/search?q=eagle&vt=g> (more details on hovering, and on a separate page on clicking)

Details-on-Demand and SPA



- Normally details-on-demand (clicking on an item in a list of results) will bring users to another page
- In SPA, the display of individual item details will stay on the same page by default.
- How to design this? Some basic patterns:
 - Side-by-side (overview+detail, or master/detail layout)
 - Overlay
 - In-line expansion

Side-by-Side Split Screen



- List of results (overview) and details are display at the same time on the screen, no interference. Looks like the old frames.
- Variations
 - Side-by-side vs. Top-to-bottom
 - Show/hide, adjustable size
 - Two columns
 - Sticky region (top/bottom bar, side panel, etc.)

Search

Mail Search Save Advanced

New Get Mail Delete Reply Reply to All Forward Spam View

Sorted by: Date 45 conversations

Academic Administrative Review - KSU 11 KB 1:19 PM

Volunteer for KSU Fall 2015 Commencement Ceremonies - asaleem (asaleem@kennesaw.edu) KSU 12 KB 10:25 AM

KSU Daily News - Faculty - Click here KSU 19 KB 9:32 AM

KSU Daily News - Faculty - Click here KSU (38) Nov 07

Universal availability of retirement annuity KSU 11 KB Nov 02

Don't forget to complete your mandatory KSU 4 KB Nov 02

Open Enrollment - Important Information KSU 11 KB Oct 23

Volunteer for KSU Fall 2015 Commencement Ceremonies - asaleem (asaleem@kennesaw.edu) November 9, 2015 10:22 AM

From: KSU Inform

To: faculty announcement staff announcement

Volunteer for KSU Fall 2015 Commencement

Calling all Faculty, Staff, and Student Assistants!

- A minimum of 20 volunteers is needed to ensure that our graduates and guests enjoy this momentous occasion.
- A great way to see a special student or student assistant graduate!
- Socialize and meet new friends.
- Witness tradition and legacy.
- Kennesaw Catering will provide a complimentary meal for those who volunteer for two consecutive ceremonies.
- Attire: Black Bottom (dress pants or skirt, no jeans), White

Search

Mail Search Save Advanced

New Get Mail Delete Reply Reply to All Forward Spam View 45 conversations

	From	Subject	Folder	Size	Received
<input type="checkbox"/>	KSU Inform	Academic Administrative Review - w/ KSU		11 KB	1:19 PM
<input type="checkbox"/>	KSU Inform	Volunteer for KSU Fall 2015 Commencement	KSU	12 KB	10:25 AM
<input type="checkbox"/>	KSU Inform	KSU Daily News - Faculty - Click here	KSU	19 KB	9:32 AM
<input type="checkbox"/>	KSU Inform	KSU Daily News - Faculty - Click here	(38)		Nov 07
<input type="checkbox"/>	KSU Inform	Universal availability of retirement annuity	KSU	11 KB	Nov 02
<input type="checkbox"/>	KSU	Don't forget to complete your mandatory	KSU	4 KB	Nov 02

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Resource

- http://time-tripper.com/uipatterns/Overview_Plus_Detail
- <http://www.oracle.com/webfolder/ux/middleware/alta/patterns/MasterDetail.html>



Sticky Panel

- Sticky panel is a variation of side-by-side
 - Partial view is sticky or fixed on the screen, meaning it does not move as the page is scrolling
 - Commonly used for page header/footer, menu, action bar, which is frequently used by users.
 - <https://www.smashingmagazine.com/2012/09/sticky-menus-are-quicker-to-navigate/>
- Example
 - <https://www.google.com/search?q=web&tbm=isch>
 - <https://www.travelstart.co.za/>
- Coding practices
 - <http://learnlayout.com/position.html>

Overlay



- Content is displayed in a division over the page and other elements, covering the results page (completely or partially)
- Variations and examples
 - Full screen modal view: <http://www.bing.com/images/>
 - Partial screen modal view:
 - http://www.zillow.com/homes/for_sale/
 - <http://mori-m-foundation.or.jp/wordpress/english/publications2>
 - Partial screen overlay view (non blocking): <https://twitter.com/jgzheng> (clicking on any twit)
 - Floating/pop-up div (panel): <http://www.productchart.com/smartphones/>
 - In-place expanded overlay: <http://www.apmex.com/search?q=gold&vt=g>
 - Partial fixed overlay (moveable)
- Reference
 - <https://uxplanet.org/best-practices-for-modals-overlays-dialog-windows-c00c66cddd8c>
 - <https://web.archive.org/web/20171205130517/http://patternry.com/p%3Doverlay/>

Overlay Coding Techniques



- Basic technique
 - “position: fixed”: the element is positioned relative to the browser window
 - Together with attributes of “top, left, right, bottom”
- CSS examples and reference:
 - https://www.w3schools.com/css/css_positioning.asp
 - https://www.w3schools.com/cssref/pr_class_position.asp
- More overlay techniques
 - <http://tympanus.net/codrops/2013/11/07/css-overlay-techniques/>

In-Line Expansion



6 of 80 Items Active Filters: Name: nameofsomething × Status: Running × Clear All Filters

>	<input type="checkbox"/>		Event One	The following snippet of text is rendered as link text.	8 Hosts	6 Cluster	10 Nodes	8 Images	⋮
>	<input type="checkbox"/>		Event Two	The following snippet of text is rendered as link text.	4 Hosts	2 Cluster	11 Nodes	6 Images	⋮
∨	<input type="checkbox"/>		Event Three	The following snippet of text is rendered as link text.	8 Hosts	6 Cluster	10 Nodes	8 Images	⋮

Event Three Details

Hostnames	Hostceph1
Device Path	/dev/disk/pci-00000.05:00-sas-0.2-part1
Time	January 15, 2016 10:45:11 AM
Serverity	Warning
Cluster	Cluster 1

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Details are displayed, upon request, immediately beside or under the item overview, and push other items aside or down.

>	<input type="checkbox"/>		Event Four	The following snippet of text is rendered as link text.	4 Hosts	2 Cluster	10 Nodes	8 Images	⋮
>	<input type="checkbox"/>		Event Five	The following snippet of text is rendered as link text.	0 Hosts	0 Cluster	0 Nodes	0 Images	⋮



In-Line Expansion Examples

- Usage:
 - Often used with list view or table view.
- Variations:
 - Accordion, or simple expansion: the expansion of another item will automatically close the last expanded one.
 - Compound expansion: multiple items can be expanded at the same time. The expanded item will be closed only when requested.
- Examples
 - <https://www.forbes.com/forbes-400/> (table row expansion)
 - <https://dealsea.com> (view comments)
- References
 - <https://web.archive.org/web/20180605113851/http://patternry.com/p%3Dinline-expand/>
 - <http://spyrestudios.com/inline-expansion-why-and-where-to-use-it/>
 - <http://ui-patterns.com/patterns/ProgressiveDisclosure>



In-line Expansion Coding Techniques

- Basic technique
 - Use of CSS attribute “display: none”
 - Together with some animation of “height”
 - Use jQuery toggle shortcut methods
- Example and references
 - https://www.w3schools.com/css/css_display_visibility.asp
 - jQuery effects
 - <http://api.jquery.com/toggle/>
 - <http://api.jquery.com/slidetoggle/>
 - <http://api.jquery.com/fadeToggle/>

Details-on-Demand Example List



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Files	Description
1a.two-column.html 1b.split-screen.html 1c.sticky-side-panel.html	These three files shares the exact same JavaScript, but use different CSS to achieve the slightly different effects. 1a. Normal side-by-side two column design + fixed header 1b. Split screen (like frames); using absolute position 1c. Flow list + fixed side panel; using fixed position
2.modal-overlay.html	Grid + page overlay (modal); using fixed position.
3.inline-expansion.html	Inline expansion + flow list: using jQuery toggle Some changes to the book list template

More Techniques/Examples



- CSS position
 - <http://learnlayers.com/position.html>
 - <https://developer.mozilla.org/en-US/docs/Web/CSS/position>
 - <http://alistapart.com/article/css-positioning-101>
 - <https://css-tricks.com/almanac/properties/p/position/>
- Complete screen split
 - <http://blog.stevensanderson.com/2011/10/05/full-height-app-layouts-a-css-trick-to-make-it-easier/>
- Sticky/fixed panel
 - <https://css-tricks.com/scrollfollow-sidebar/>
 - <http://stugreenham.com/demos/fluid-width-with-a-fixed-sidebar/>
 - <https://limpid.nl/lab/css/fixed/right-sidebar>
 - <http://codepen.io/jamesdarren/pen/ivmch>
- jQuery UI widgets
 - <https://jqueryui.com/accordion/>
 - <https://jqueryui.com/dialog/>
 - <https://jqueryui.com/tabs/>
- Toggle
 - <http://www.randomsnippets.com/2011/04/10/how-to-hide-show-or-toggle-your-div-with-jquery/>
- Sticky scroll plugins
 - <http://www.sitepoint.com/10-jquery-sticky-scroll-plugins/>
- More Layout Patterns
 - <http://designingwebinterfaces.com/designing-web-interfaces-12-screen-patterns>
 - <http://www.slideshare.net/theresaneil/ria-screen-layouts>