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#### Find

Bootstrap 3 to 4 transition

Bootstrap 4.0.0 has now been released. Tiki, since version 13, has been integrating Bootstrap 3 for a layout and styling framework. On April 21, the Bootstrap 4 experimental branch (of the Tiki development files) was merged into trunk; branching of branch 19 is scheduled for September, with Tiki 19 set for release in October).

At TikiFestJapan2017, a Bootstrap 4 experimental branch was branched from trunk: https://sourceforge.net/p/tikiwiki/code/HEAD/tree/branches/experimental/bootstrap4/.

## Recent Progress (post branch 19 fork)

The Bootstrap 4 experimental branch has been merged into trunk, and branch 19 has been created and is running on the "pre-dogfood" servers such as nextthemes.tiki.org. Themes.tiki.org is scheduled to be the first of the live project sites to be updated to branch 19 for testing. Issues to be dealt with that show up in this testing or local testing are listed on Theme and config issues at pre-dogfood servers.

## Bootstrap 4 experimental branch

I've started going through the themes directory making the necessary changes. The first goal was to get a completed SCSS compile, for the base files (tiki\_base.css) initially. Of course even after updating many variable names, etc., there were still errors due to the many differences between the Bootstrap versions. Update: All of the themes in the Tiki package now compile without errors and most styling details are implemented; in other words, the themes are mostly updated from Bootstrap 3 to Bootstrap 4 compatibility.

# Scout-App

The PHP SCSS compiler that can be accessed from the terminal in PhpStorm, etc. doesn't give much information about compile errors — sometimes just a line number, but we don't know in what file or the nature of the error. Maybe the author can be approached to improve this. For now, I downloaded a free application called Scout-App (http://scout-app.io, available for all OSs) that gives explicit information about compile errors; it watches for file changes and runs a compile process after each change. So I use this to identify places to fix and then use the compiler in PhpStorm for the compiling.

## **Browser Support**

As Bootstrap 4 states "Dropped IE8, IE9, and iOS 6 support. v4 is now only IE10+ and iOS 7+. For sites needing either of those, use v3." since Tiki 19.x we are dropping the support for these too. See <a href="https://getbootstrap.com/docs/4.0/migration/#browser-support">https://getbootstrap.com/docs/4.0/migration/#browser-support</a>

# Updating a Tiki theme from Bootstrap 3 to 4

Please see Updating a Tiki theme from Bootstrap 3 to 4 for a description of the process that I () have used to update the themes in the Tiki package, as well as the Zukathemes files.

## Tiki code migration

# Generic Bootstrap changes

For a summary of Bootstrap changes between 3 and 4, please read https://getbootstrap.com/docs/4.0/migration/.

# Some main points for Tiki (my quick check):

- Dropped panels, thumbnails, and wells for a new all-encompassing component, cards. So all instances of these in templates, etc. and references in CSS will need to be updated.
- Dropped the Glyphicons icon font. So the related files should be removed from themes/icons.
- Dropped .page-header class. The use of this in Tiki needs to be checked.
- Renamed .img-responsive to .img-fluid. This needs to be updated in the img plugin and other locations.
- Forms multiple changes that'll need updating in Tiki tpls, etc.
- Buttons: Removed .btn-default and added .btn-secondary. Instances of btn-default in tpls, etc. will need to be updated so (in this order):
- 1. Change instances of btn-primary to btn-secondary.
- 2. Change instances of btn-default to btn-primary.
- Dropdowns: Dropdown items now require the .dropdown-item class, so this needs updating.
- Modals multiple changes to deal with. Update: thanks to Jonny for making modals work in the experimental branch.
- Navs and navbars Totally rewritten using flexbox. Also, .navbar-inverse and .navbar-default are renamed to .\*-dark and .\*-light, matching color schemes used elsewhere. Also .navbar-primary is supported, so I think Tiki's Admin Look & Feel should have a checkbox to choose which navbar color scheme to use per site. Themes should support all three variants.
- Pagination Totally rewritten using flexbox.
- Carousel: "Overhauled the entire component to simplify design and styling. We have fewer styles for you to override, new indicators, and new icons."

### Specific Tiki code tasks/bugs

- Side column show/hide anchors don't work properly.
  - 🖶 Fixed in r66950 for basic layout; implement in other layouts and test.
- Card (formerly "panel") background and foreground colors aren't set by card classes, but by separate text and background color classes, like bg-primary and text-dark. Discussion is needed about how to replace our previously used panel-default coloring for former panels coded directly in .tpl files. For modules, the color classes can be input as parameters.
  - This is being resolved, with standard (no particular coloring) cards plus alert colors where needed. Maybe remaining instances to convert.
- Navbars, instead of having \*-default and \*-inverse classes for coloring, now use \*navbar-light and \*-dark, and bg-light and bg-dark classes can also be used, and other background color possibilities possible. So themes should support at least light and dark. The color of the navbar itself (as a menu) can be set in admin-modules (so works already for the "social" fixed-top layout's top).

- ▮ But there should be an admin L&F selector for the top and topbar divs beyond the navbar, for the site.
- I (CMS) Article display will need revising to accommodate FB link image specs. The BS4 equivalent of what is being used now for Tiki's CMS articles is very simple and has no CSS opportunities for modifying the displayed image size.
- ullet Hopefully the article layout revising can also enable positioning the article image / featured image either to the side or above the article text
  - (https://dev.tiki.org/item6596-Wish-enable-post-article-layout-that-has-large-image-above).

- I Tour doesn't work, in a quick test of an existing tour. The first popup appears but the second doesn't. But according to the Bootstrap Tour site it should work so we need to be sure we're linking to the latest master and that our implementation is ok.

## Other possible related changes

- Consolidate menu types ("Bootstrap" and "CSS/suckerfish" and Tiki legacy) and add Smartmenus (http://smartmenus.org/) to enhance default Bootstrap menus.
  - Pluses:
    - Simpler menu backend construction
    - Simpler CSS to maintain (and learn, for new theme authors)
  - Minuses:
    - Bootstrap menus natively have only parent and child levels (but this can be overcome with Smartmenus)
    - Bootstrap parent link only opens dropdown and isn't for navigation (but https://stackoverflow.com/questions/25692514/bootstrap-how-do-i-make-dropdown-navigatio n-parent-links-an-active-link, etc.).
- Related to these, maybe a good time to implement Off-canvas menus and sidebars.
- Put wiki page elements (like wiki topline, pagebar, action icons for print, etc.) in modules for more flexibility in page layout.
- Make the meaning of button colors intuitive and consistent: See Organization of button colors in Tiki.
  - ∘ 

     Mostly done.
- Add second horizontal scroll bar at the top of scrollable tables and other wide content https://github.com/sniku/jQuery-doubleScroll or equivalent (the Github link to the demo site, etc. is now broken) but there's a demo at https://codepen.io/hellokatili/pen/yegxjP.

### [-] Commits to branch outside of the themes directory:

At Jonny's suggestion, the commits to the experimental branch that aren't in the themes directory are being recorded here. This should smooth the merge of the branch back to trunk.

http://sourceforge.net/p/tikiwiki/code/65126

Revision: 65126 http://sourceforge.net/p/tikiwiki/code/65126 Author: chibaguy Date: 2018-01-08 06:14:25 +0000 (Mon, 08 Jan 2018) Log Message: ------ [UPD] Update Classic layout's module.tpl (has shadow div) relative to default modoule.tpl, and to Bootstrap 4 beta 3. Modified Paths: ------branches/experimental/bootstrap4/templates/layouts/classic/module.tpl

#### http://sourceforge.net/p/tikiwiki/code/65112

Revision: 65112 http://sourceforge.net/p/tikiwiki/code/65112 Author: chibaguy Date: 2018-01-07 12:26:15 +0000 (Sun, 07 Jan 2018) Log Message: ----- [FIX] Update navbar class for fixed-top position (.navbar-fixed-top -> .fixed-top). Modified Paths: ------ branches/experimental/bootstrap4/templates/layouts/fixed top modules/layout view.tpl

## http://sourceforge.net/p/tikiwiki/code/65093

Revision: 65093 http://sourceforge.net/p/tikiwiki/code/65093 Author: chibaguy Date: 2018-01-05 17:53:05 +0000 (Fri, 05 Jan 2018) Log Message: ------ [FIX] Adjust grid classes on center, left and right columns for correct size and order in various display sizes. Modified Paths: -------branches/experimental/bootstrap4/templates/layouts/fixed\_top\_modules/layout\_view.tpl

# http://sourceforge.net/p/tikiwiki/code/65092

Revision: 65092 http://sourceforge.net/p/tikiwiki/code/65092 Author: chibaguy Date: 2018-01-05 17:47:55 +0000 (Fri, 05 Jan 2018) Log Message: ------ [FIX] Adjust grid classes on center, left and right columns for correct size and order in various display sizes. Modified Paths: ------branches/experimental/bootstrap4/templates/layouts/header\_middle\_footer\_containers\_3-6-3/layout\_vie w.tpl

## http://sourceforge.net/p/tikiwiki/code/65091

Revision: 65091 http://sourceforge.net/p/tikiwiki/code/65091 Author: chibaguy Date: 2018-01-05 17:03:14 +0000 (Fri, 05 Jan 2018) Log Message: ------ [FIX] Adjust grid classes on center, left and right columns for correct size and order in various display sizes. Modified Paths: ------branches/experimental/bootstrap4/templates/layouts/basic/layout\_view.tpl branches/experimental/bootstrap4/templates/layouts/classic/layout\_view.tpl branches/experimental/bootstrap4/templates/layouts/social/layout\_view.tpl

### http://sourceforge.net/p/tikiwiki/code/65089

Revision: 65089 http://sourceforge.net/p/tikiwiki/code/65089 Author: chibaguy Date: 2018-01-05 14:06:02 +0000 (Fri, 05 Jan 2018) Log Message: ------ [FIX] Put side-col-toggle divs in a row div to prevent interference with content columns. (Todo: find out why flex widths aren't working.) Modified Paths: ------ branches/experimental/bootstrap4/templates/layouts/social/layout view.tpl

### http://sourceforge.net/p/tikiwiki/code/65088

Revision: 65088 http://sourceforge.net/p/tikiwiki/code/65088 Author: chibaguy Date: 2018-01-05 12:48:15 +0000 (Fri, 05 Jan 2018) Log Message: ------ [FIX] Adjust grid classes on center, left and right columns for correct size and order in various display sizes. Modified Paths: ------branches/experimental/bootstrap4/templates/layouts/social/layout view.tpl

### http://sourceforge.net/p/tikiwiki/code/65033

Revision: 65033 http://sourceforge.net/p/tikiwiki/code/65033 Author: chibaguy Date: 2017-12-31 09:36:39 +0000 (Sun, 31 Dec 2017) Log Message: ------ [UX] Don't display side-column toggles in narrow screens; adjust grid classes. Modified Paths: -------branches/experimental/bootstrap4/templates/layouts/basic/layout\_view.tpl

# http://sourceforge.net/p/tikiwiki/code/64411

Revision: 64411 http://sourceforge.net/p/tikiwiki/code/64411 Author: chibaguy Date: 2017-10-28 10:07:43 +0000 (Sat, 28 Oct 2017) Log Message: ------ [UPD] Add dropdown-link classes in Page actions dropdown. Modified Paths: ------ branches/experimental/bootstrap4/templates/tiki-wiki\_topline.tpl Modified: branches/experimental/bootstrap4/templates/tiki-wiki\_topline.tpl

# http://sourceforge.net/p/tikiwiki/code/64410

Revision: 64410 http://sourceforge.net/p/tikiwiki/code/64410 Author: chibaguy Date: 2017-10-28 08:48:26 +0000 (Sat, 28 Oct 2017) Log Message: ------ [UPD] Add Bootstrap 4 classes to navbar ul item and a . Modified Paths: ------ branches/experimental/bootstrap4/lib/smarty\_tiki/block.tabset.php Modified: branches/experimental/bootstrap4/lib/smarty\_tiki/block.tabset.php

## http://sourceforge.net/p/tikiwiki/code/64409

Revision: 64409 http://sourceforge.net/p/tikiwiki/code/64409 Author: chibaguy Date: 2017-10-28 08:22:36 +0000 (Sat, 28 Oct 2017) Log Message: ------ [UPD] Increase thumbnail size. Modified Paths: ------ branches/experimental/bootstrap4/templates/admin/include\_look.tpl Modified: branches/experimental/bootstrap4/templates/admin/include look.tpl

# http://sourceforge.net/p/tikiwiki/code/64408

### http://sourceforge.net/p/tikiwiki/code/64407

Revision: 64407 http://sourceforge.net/p/tikiwiki/code/64407 Author: chibaguy Date: 2017-10-28 07:50:33 +0000 (Sat, 28 Oct 2017) Log Message: ------ [UPD] Update remaining layout files to Flexbox. Modified Paths: ----------- branches/experimental/bootstrap4/templates/layouts/basic/layout\_view.tpl branches/experimental/bootstrap4/templates/layouts/classic/layout\_view.tpl branches/experimental/bootstrap4/templates/layouts/fixed\_top\_modules/layout\_view.tpl branches/experimental/bootstrap4/templates/layouts/header\_middle\_footer\_containers\_3-6-3/layout\_view.tpl

### http://sourceforge.net/p/tikiwiki/code/64383

Revision: 64383 http://sourceforge.net/p/tikiwiki/code/64383 Author: chibaguy Date: 2017-10-26 16:09:30 +0000 (Thu, 26 Oct 2017) Log Message: ------ [FIX] Fix content column order. Modified Paths: ------ branches/experimental/bootstrap4/templates/layouts/basic/layout\_view.tpl Modified: branches/experimental/bootstrap4/templates/layouts/basic/layout view.tpl

# http://sourceforge.net/p/tikiwiki/code/64381

Revision: 64381 http://sourceforge.net/p/tikiwiki/code/64381 Author: chibaguy Date: 2017-10-26 12:48:52 +0000 (Thu, 26 Oct 2017) Log Message: ------ [UPD] Update following upgrade to Bootstrap 4 beta 2. Amelia compiles ok now also, but still working out a good arrangement of files, etc. Modified Paths: ------ branches/experimental/bootstrap4/lib/smarty\_tiki/block.accordion\_group.php (Replaced CSS selector "panel" with "card", only.) ...

# http://sourceforge.net/p/tikiwiki/code/64379

# http://sourceforge.net/p/tikiwiki/code/64316

Revision: 64316 http://sourceforge.net/p/tikiwiki/code/64316 Author: chibaguy Date: 2017-10-18 16:58:00 +0000 (Wed, 18 Oct 2017) Log Message: ----- [FIX] Typo (heading should be header). Modified Paths: ------ branches/experimental/bootstrap4/templates/module.tpl

# http://sourceforge.net/p/tikiwiki/code/64308

Revision: 64308 http://sourceforge.net/p/tikiwiki/code/64308 Author: chibaguy Date: 2017-10-18 10:20:21 +0000 (Wed, 18 Oct 2017) Log Message: ------ [UPD] Plugin warning updated to BS4 (more class changes, etc.). Modified Paths: ------ branches/experimental/bootstrap4/templates/tikiplugin\_blocked.tpl

# http://sourceforge.net/p/tikiwiki/code/64307

Revision: 64307 http://sourceforge.net/p/tikiwiki/code/64307 Author: chibaguy Date: 2017-10-18 10:18:43 +0000 (Wed, 18 Oct 2017) Log Message: ------ [UPD] Updated button types (classes) for Bootstrap 4 (no more "default"; now "primary, secondary, etc.") Modified Paths: -------branches/experimental/bootstrap4/lib/smarty tiki/function.button.php

### http://sourceforge.net/p/tikiwiki/code/64306

Revision: 64306 http://sourceforge.net/p/tikiwiki/code/64306 Author: chibaguy Date: 2017-10-18 09:41:05 +0000 (Wed, 18 Oct 2017) Log Message: ------ [UPD] Plugin warning updated to BS4. Todo: find (or wait for from Bootstrap) method for auto-inverse text color against dark background. Modified Paths: ------ branches/experimental/bootstrap4/templates/tiki-plugin blocked.tpl

Revision: 64302 http://sourceforge.net/p/tikiwiki/code/64302 Author: chibaguy Date: 2017-10-17 15:55:08 +0000 (Tue, 17 Oct 2017) Log Message: ------ [UPD] Update basic and social layout files to flexbox (social navbar not right yet). Modified Paths: ------ branches/experimental/bootstrap4/templates/layouts/basic/layout\_view.tpl branches/experimental/bootstrap4/templates/layouts/social/layout\_view.tpl

## http://sourceforge.net/p/tikiwiki/code/64301

Revision: 64301 http://sourceforge.net/p/tikiwiki/code/64301 Author: chibaguy Date: 2017-10-17 11:55:22 +0000 (Tue, 17 Oct 2017) Log Message: ----- [UPD] Update to flexbox layout classes. Modified Paths: ------ branches/experimental/bootstrap4/templates/layouts/basic/layout\_view.tpl

# http://sourceforge.net/p/tikiwiki/code/64297

Revision: 64297 http://sourceforge.net/p/tikiwiki/code/64297 Author: jonnybradley Date: 2017-10-17 10:37:26 +0000 (Tue, 17 Oct 2017) Log Message: ------ [FIX] bootstrap4: popper.js was removed from BS4, replace temporarily with the CDN version for a quick fix (thanks chibaguy) Modified Paths: ------- branches/experimental/bootstrap4/lib/setup/theme.php

# http://sourceforge.net/p/tikiwiki/code/64296

Revision: 64296 http://sourceforge.net/p/tikiwiki/code/64296 Author: chibaguy Date: 2017-10-17 10:02:07 +0000 (Tue, 17 Oct 2017) Log Message: ------ [UPD] Less to SCSS transition (update file names, variables, etc.). Also (so far) made a simple replacement of "panel" with "card" in module.tpl. Modified Paths: ------ branches/experimental/bootstrap4/templates/module.tpl (plus theme files)

### http://sourceforge.net/p/tikiwiki/code/64190

Revision: 64190 http://sourceforge.net/p/tikiwiki/code/64190 Author: chibaguy Date: 2017-10-10 04:10:27 +0000 (Tue, 10 Oct 2017) Log Message: ------ [UPD] Beginning Less to SCSS transition (updating variable name syntax). Modified Paths: -------branches/experimental/bootstrap4/templates/styleguide/sections/navbars.tpl (plus theme files)

#### http://sourceforge.net/p/tikiwiki/code/64184

Revision: 64184 http://sourceforge.net/p/tikiwiki/code/64184 Author: jonnybradley Date: 2017-10-09 09:13:47 +0000 (Mon, 09 Oct 2017) Log Message: ----- [FIX] bootstrap4: Catch all scss exceptions Modified Paths: -----

branches/experimental/bootstrap4/lib/core/Tiki/Command/ScssCompileCommand.php

## http://sourceforge.net/p/tikiwiki/code/64183

Revision: 64183 http://sourceforge.net/p/tikiwiki/code/64183 Author: jonnybradley Date: 2017-10-09 08:40:01 +0000 (Mon, 09 Oct 2017) Log Message: ------ [FIX] bootstrap4: Removed exceptions display by mistake - oops, back now Modified Paths: --------branches/experimental/bootstrap4/lib/core/Tiki/Command/ScssCompileCommand.php

Revision: 64182 http://sourceforge.net/p/tikiwiki/code/64182 Author: jonnybradley Date: 2017-10-09 08:28:55 +0000 (Mon, 09 Oct 2017) Log Message: ------ [ENH] bootstrap4: Use scss compile directly in the ScssPhp\Compiler, so we can handle exceptions and display the problem rather than outputting them to the css file Modified Paths: -------branches/experimental/bootstrap4/lib/core/Tiki/Command/ScssCompileCommand.php

## http://sourceforge.net/p/tikiwiki/code/64178

Revision: 64178 http://sourceforge.net/p/tikiwiki/code/64178 Author: jonnybradley Date: 2017-10-09 05:24:33 +0000 (Mon, 09 Oct 2017) Log Message: ------ [ENH] bootstrap4: Add scss:compile command and remove less (untested, scss files coming soon Modified Paths: ------- branches/experimental/bootstrap4/lib/core/Tiki/Command/ConsoleApplicationBuilder.php Added Paths: ------ branches/experimental/bootstrap4/lib/core/Tiki/Command/ScssCompileCommand.php Removed Paths: ------ branches/experimental/bootstrap4/lib/core/Tiki/Command/LessCompileCommand.php

## http://sourceforge.net/p/tikiwiki/code/64177

Revision: 64177 http://sourceforge.net/p/tikiwiki/code/64177 Author: jonnybradley Date: 2017-10-09 04:43:29 +0000 (Mon, 09 Oct 2017) Log Message: ------ [UPD] bootstrap4: Add leafo/scssphp and remove less.php Modified Paths: ------ branches/experimental/bootstrap4/vendor\_bundled/composer.json branches/experimental/bootstrap4/vendor\_bundled/composer.lock

### http://sourceforge.net/p/tikiwiki/code/64176

Revision: 64176 http://sourceforge.net/p/tikiwiki/code/64176 Author: jonnybradley Date: 2017-10-09 04:09:40 +0000 (Mon, 09 Oct 2017) Log Message: ----- [FIX] bootstrap4: Add include for bundled popper.js now required for bootstrap4 dropdowns Modified Paths: ------ branches/experimental/bootstrap4/lib/setup/theme.php

## http://sourceforge.net/p/tikiwiki/code/64175

Revision: 64175 http://sourceforge.net/p/tikiwiki/code/64175 Author: chibaguy Date: 2017-10-09 03:44:03 +0000 (Mon, 09 Oct 2017) Log Message: ----- [FIX] Use correct Bootstrap 4 beta information. Modified Paths: ---------branches/experimental/bootstrap4/vendor\_bundled/composer.json

## http://sourceforge.net/p/tikiwiki/code/64174

Revision: 64174 http://sourceforge.net/p/tikiwiki/code/64174 Author: chibaguy Date: 2017-10-09 03:40:27 +0000 (Mon, 09 Oct 2017) Log Message: ----- [FIX] Use correct Bootstrap 4 beta information. Modified Paths: -------branches/experimental/bootstrap4/vendor bundled/composer.lock

http://sourceforge.net/p/tikiwiki/code/64173

Revision: 64173 http://sourceforge.net/p/tikiwiki/code/64173 Author: chibaguy Date: 2017-10-09 02:10:06 +0000 (Mon, 09 Oct 2017) Log Message: ----- [FIX] Use better Bootstrap 4 version number. Modified Paths: ------ branches/experimental/bootstrap4/vendor bundled/composer.json

## http://sourceforge.net/p/tikiwiki/code/64172

Revision: 64172 http://sourceforge.net/p/tikiwiki/code/64172 Author: chibaguy Date: 2017-10-08 16:40:00 +0000 (Sun, 08 Oct 2017) Log Message: ------ [UPD] Switch to Bootstrap 4 beta. Modified Paths: ------ branches/experimental/bootstrap4/vendor bundled/composer.json

http://sourceforge.net/p/tikiwiki/code/65853

Revision: 65853 http://sourceforge.net/p/tikiwiki/code/65853 Author: jonnybradley Date: 2018-04-01 07:47:12 +0000 (Sun, 01 Apr 2018) Log Message: ------ [FIX] bootstrap4: Fix three of the ways bs modals are opened for AJAX content use, buttons with data attributes, openModal and clickModal (i.e. tracker fields) and plugin edit. Some refactoring and convergence would be nice after we merge back to trunk... Modified Paths: ------- branches/experimental/bootstrap4/lib/jquery\_tiki/pluginedit.js branches/experimental/bootstrap4/lib/jquery tiki/tiki-jquery.js

## [+] Testing a quick and dirty BS4 integration (older information)

Two kinds of changes to deal with

Looks like there are basically two kinds of changes we'll need to cope with. One is the switch from Less to Sass. That's pretty straightforward as it mostly involves file names and variable names in those files (@variable to \$variable, etc.). Of course, there are some method differences but probably not many that will cause trouble for us (one I came across is a color function - Less uses "spin" and Sass uses "adjust\_color"). Also, paths like the image path variable have slightly different syntax. But I adjusted these as I came across them and will post some docs.

The second kind of change is with the Bootstrap bits themselves. In my "trunk - bootstrap 4 alpha", I found the grid layout and typography worked nicely already (BS4 switches to rem for the grid and for the typography), but panels and wells have been replaced by the card class, so in the templates we're going to have to do those replacements. Forms, especially horizontal forms, have changed quite a bit and will need to be adjusted. Also, the navbar is being simplified, as apparently we're not alone in having trouble wrangling content into that area. Menus and tabs weren't working yet either in my installation or at the Bootstrap 4 demo so apparently, they're still being worked out.

There are also Sass-variable files for Chosen. And <a href="https://github.com/haubek/bootstrap4c-chosen">https://github.com/haubek/bootstrap4c-chosen</a> can be added. It's MIT licensed but not at Packagist.com currently. But it works great, enabling theme colors nicely in Chosen selectors.

Interestingly, for Bootstrap 5, they're planning to move from Sass to PostCSS. ("Bootstrap 6" written originally in the previous sentence was a typo; thanks to Marc for correcting that.) PostCSS has a lot of momentum. Apparently, its power comes from the modules you add to it; it can do the standard Sass thing but can be configured to do custom things so you're not limited to the abilities of Sass or Less or whatever.

#### Useful links

### **Bootstrap 4**

http://blog.getbootstrap.com/2018/01/18/bootstrap-4/ - Bootstrap 4.0.0 release announcement https://getbootstrap.com - Overview - Currently v4.0.0

https://getbootstrap.com/docs/4.0/getting-started/introduction/ - Bootstrap 4 documentation

https://github.com/twbs/bootstrap/milestones

https://www.quackit.com/bootstrap/bootstrap 4/examples/

https://scotch.io/bar-talk/whats-new-in-bootstrap-4

http://bootstrapbay.com/bootstrap4/ (Bootstrap 4 Cheatsheet)

https://medium.com/wdstack/bootstrap-4-whats-new-visual-guide-c84dd81d8387#.b2sxbfsf6

http://www.hongkiat.com/blog/boostrap-4-best-features/

https://hackerthemes.com/bootstrap-cheatsheet/

https://bootstrapcreative.com/resources/bootstrap-4-css-classes-index/

https://www.udemy.com/bootstrap-4/

http://codepen.io/search?q=bootstrap+cards&limit=all&depth=everything&show forks=false

# SCSS (Sass)/Less

http://scout-app.io - Scout-App - Easy/informative SCSS compiling

https://gist.github.com/chriseppstein/674726 - Sass/Less Comparison

https://css-tricks.com/sass-vs-less/

https://github.com/haubek/bootstrap4c-chosen

# **Flexbox** (Bootstrap 4 default layout method)

https://css-tricks.com/snippets/css/a-guide-to-flexbox/

Smashing Magazine: What Happens When You Create A Flexbox Flex Container?

# Page Alias

Bootstrap+3+to+4+transition