Lesson #4: Responsive Design

Bootstrap Framework

What is Responsive Design?

- Responsive design is a series of techniques to make websites accessible to a variety of devices: desktops, laptops, tablets, mobile phones.
- Not a single piece of technology, but rather, a set of techniques and ideas that form a whole.
- The spectrum of screen sizes and resolutions is widening every day, and creating a different version of a website that targets each individual device is not practical.

Fluid Grids

- The first key idea behind responsive design is a fluid grid.
- Creating a fluid layout that expands with the page hasn't been quite as popular in the past as creating fixed width layouts: page designs that have a fixed number of pixels across, and then centered on the page.
- However, when one considers the huge number of screen resolutions present in today's market, the benefit of fluid layouts is obvious.

Fluid Grids

- Instead of designing a layout based on rigid pixels or arbitrary percentage values, a fluid grid is more carefully designed in terms of proportions.
- This way, when a layout is squeezed onto a tiny mobile device or stretched across a huge screen, all of the elements in the layout will resize their widths in relation to one another.

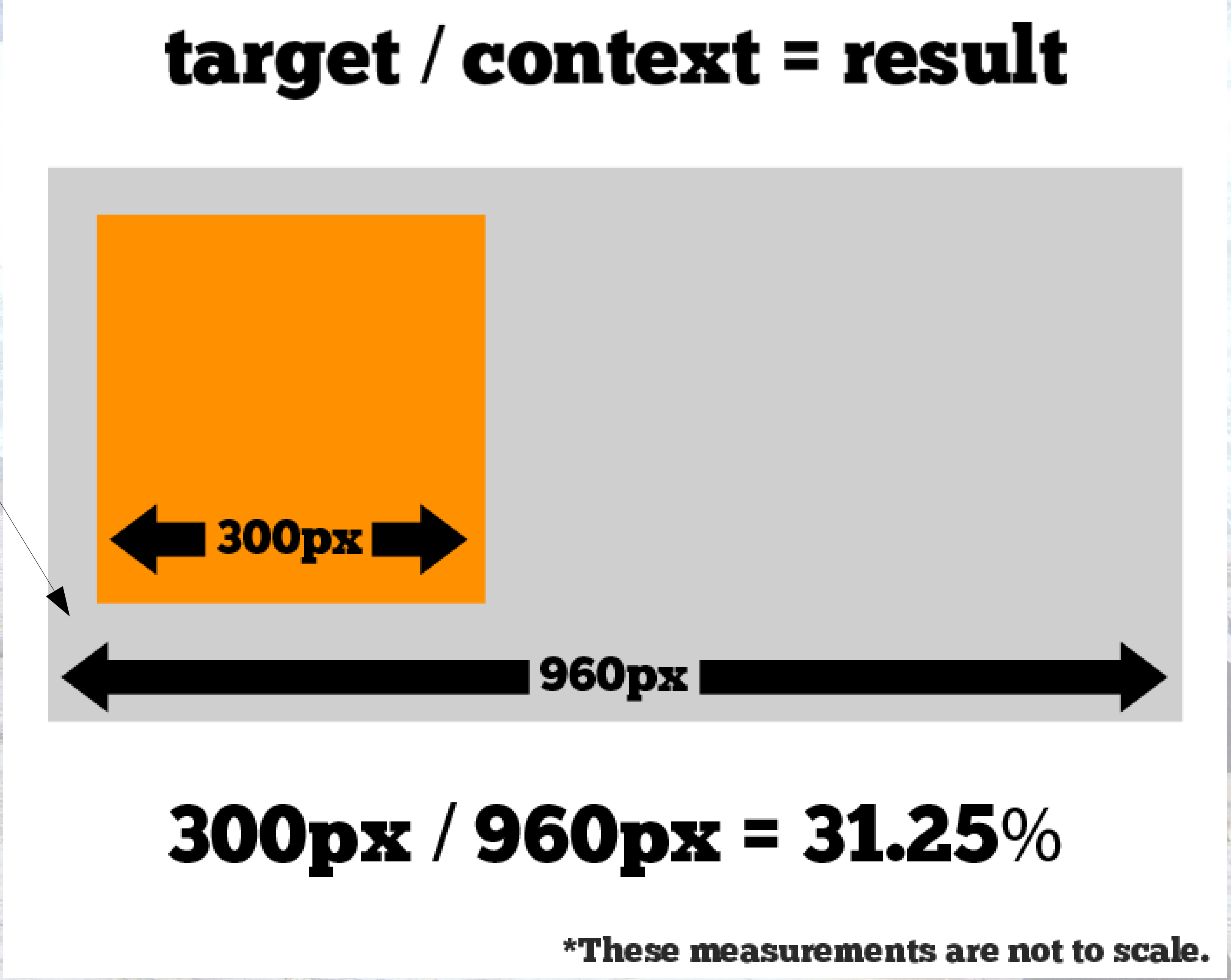
Fluid Grids

- In order to calculate the proportions for each page element, you must divide the target element by its context. Currently, the best way to do this is to first create a high fidelity mockup in a pixel based imaged editor, like Photoshop.
- With your high fidelity mockup in hand, you can measure a page element and divide it by the full width of the page.

Fluid Grids

For example, if your layout is a typical size like 960 pixels across, then this would be your "container" value.

Then, let's say that our target element is some arbitrary value, like 300 pixels wide. If we multiply the result by 100, we get the percentage value of 31.25% which we can apply to the target element.



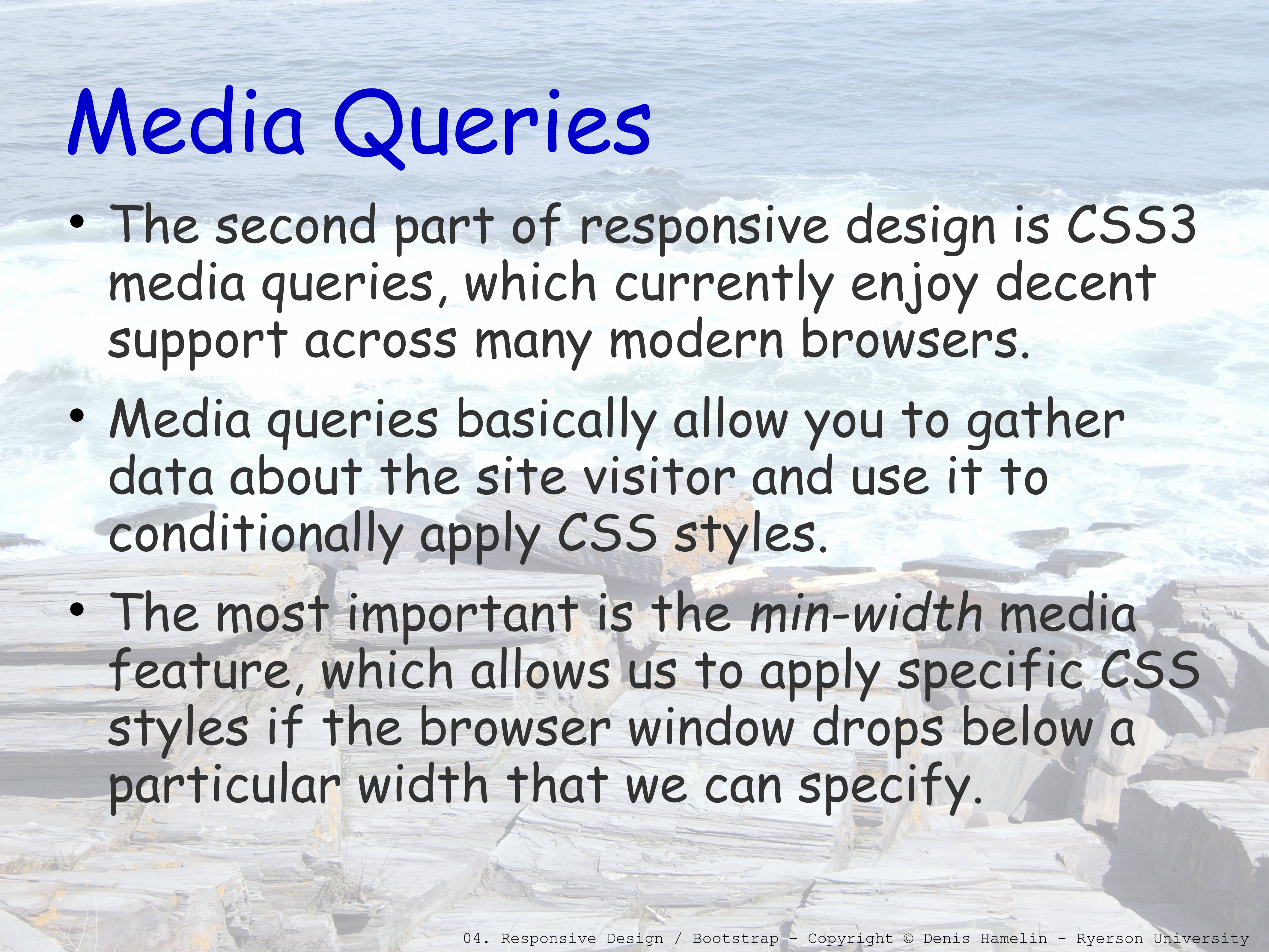
target / context = result

300px / 960px = 31.25%

*These measurements are not to scale.

Fluid Grids

- Fluid grids are a very important part of creating a responsive design, but they can only take us so far. When the width of the browser becomes too narrow, the design can start to severely break down. For example, a complex three-column layout isn't going to work very well on a small mobile phone.
- Fortunately, responsive design has taken care of this problem by using **media queries**.



Media Queries

- The second part of responsive design is CSS3 media queries, which currently enjoy decent support across many modern browsers.
- Media queries basically allow you to gather data about the site visitor and use it to conditionally apply CSS styles.
- The most important is the *min-width* media feature, which allows us to apply specific CSS styles if the browser window drops below a particular width that we can specify.

Media Queries

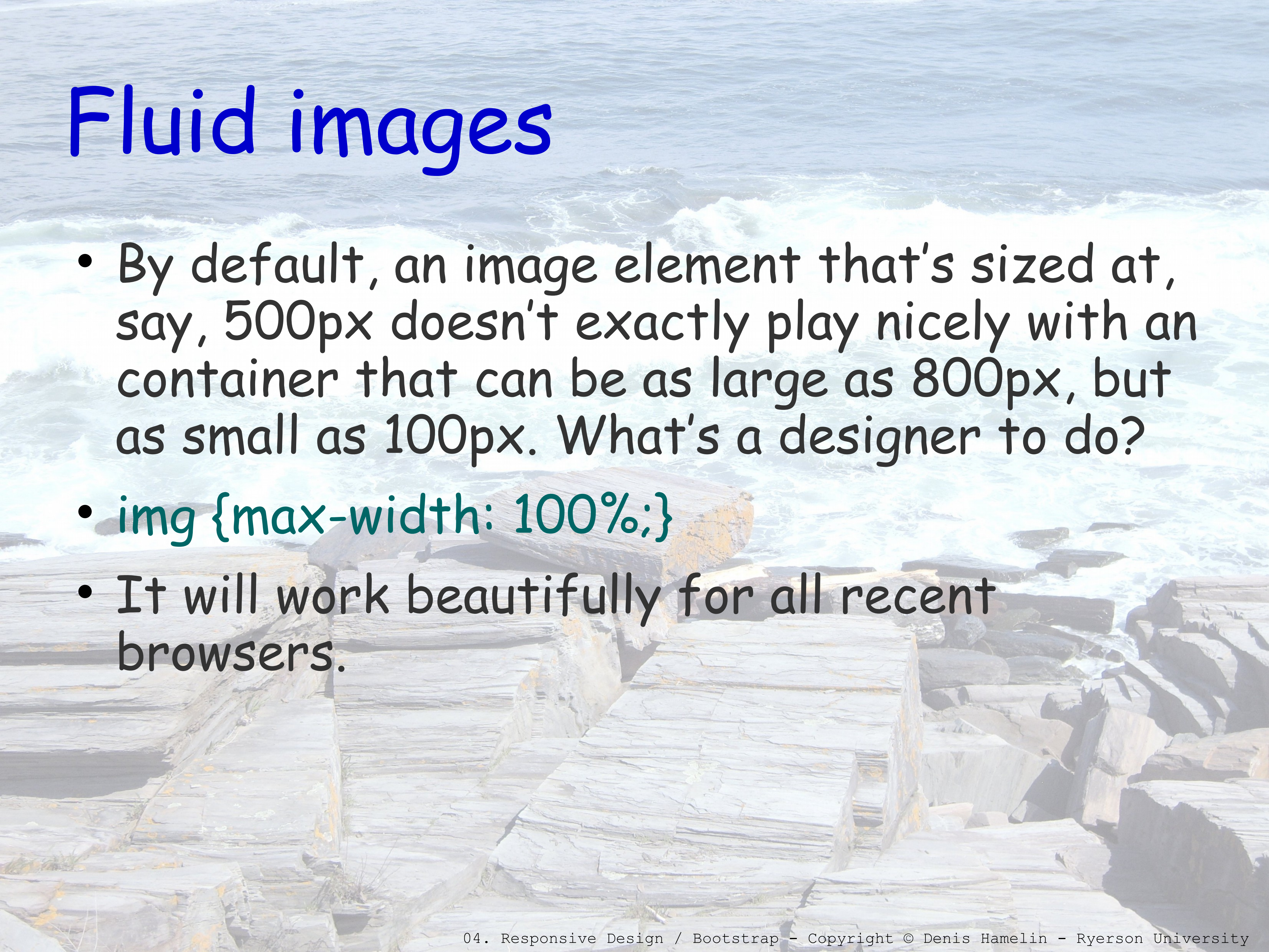
- This is an example for an iPhone 5 in portrait and landscape:
- @media only screen and (min-device-width : 320px) and (max-device-width : 568px) { /* STYLES GO HERE */}
- This is an example for an iPhone 5 in portrait only:
- @media only screen and (min-device-width : 320px) and (max-device-width : 568px) and (orientation : portrait) { /* STYLES GO HERE */ }

Media Queries

- This is an example for an iPad in portrait and landscape:
- @media only screen and (min-device-width : 768px) and (max-device-width : 1024px) { /* STYLES GO HERE */}
- This is an example for an iPad in landscape only:
- @media only screen and (min-device-width : 768px) and (max-device-width : 1024px) and (orientation : landscape) { /* STYLES GO HERE */}

Media Queries

- In an ideal world, you would adjust your layout to perfectly match every device width, but often times you have to pick and choose where you spend your efforts.
- From a more practical perspective, the resolutions that a design targets will be based on the resolutions of the people using that design, time and budget constraints, highly contextual situations, and so on.



Fluid images

- By default, an image element that's sized at, say, 500px doesn't exactly play nicely with an container that can be as large as 800px, but as small as 100px. What's a designer to do?
- img {max-width: 100%;}
- It will work beautifully for all recent browsers.

Mobile-Friendly Websites

- A mobile-friendly page is not the same thing as a responsive page although the latter is usually considered mobile-friendly as well.
- A mobile-friendly website is one that is designed to work the exact same way across devices. This means that nothing changes or is unusable on a computer or mobile device. Features like navigation drop-downs are limited, as they can be difficult to use on mobile. And no Flash animation is used.

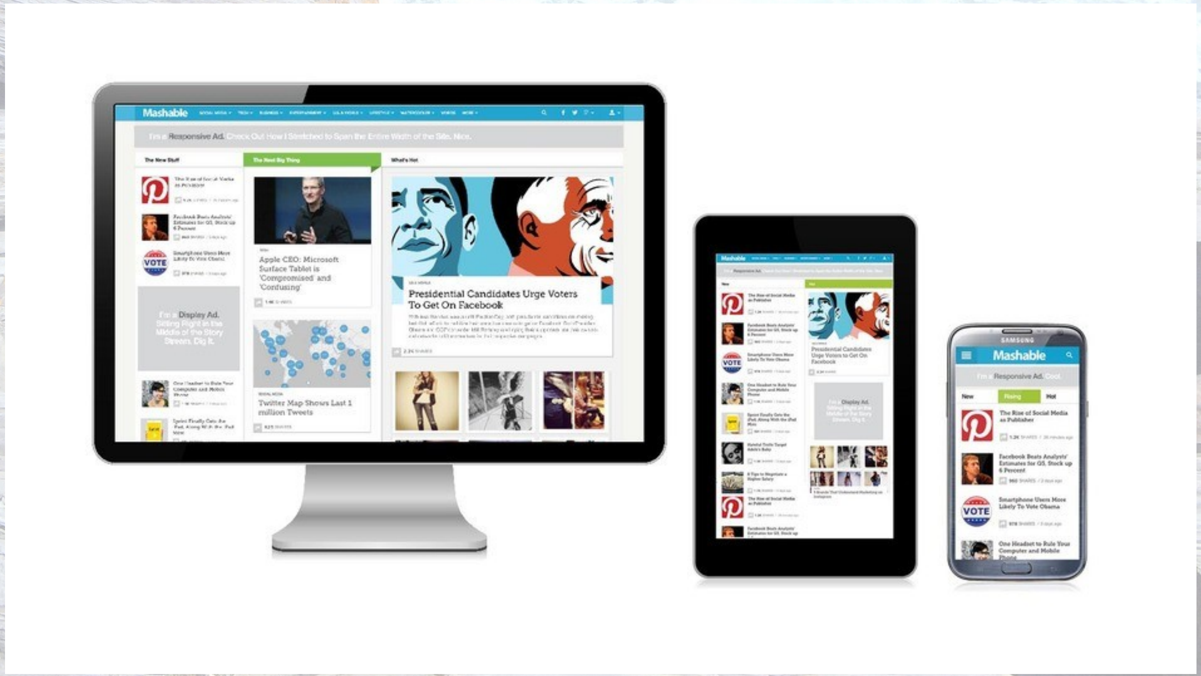
Responsive vs. Mobile Friendly

- Dynamic content that changes
- Navigation is condensed
- Optimized images
- Correct padding and spacing
- Reliant on mobile operating systems to function
- **responsivedesignchecker.com**

- Static content that doesn't change
- Simplified navigation
- Images display smaller
- Not reliant on a mobile operating system to function properly
- **search.google.com/test/mobile-friendly**

The article that started it all

- Follow this link and read the seminal article by Ethan Marcotte that started the whole responsive design movement:
- http://alistapart.com/article/responsive-web-design


Mashable
Presidential Candidates Urge Voters To Get On Facebook
Apple CEO: Microsoft Surface Tablet is 'Compromised' and 'Confusing'
Twitter Map Shows Last 1 million Tweets

Bootstrap

- Bootstrap is a free front-end framework for faster and easier web development.
- Bootstrap includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many other, as well as optional JavaScript plugins.
- Bootstrap also gives you the ability to easily create responsive designs.

Bootstrap

- Bootstrap was developed by Mark Otto and Jacob Thornton at Twitter, and released as an open source product in August 2011 on GitHub.
- Anybody with just basic knowledge of HTML and CSS can start using Bootstrap.
- Bootstrap's responsive CSS adjusts to phones, tablets, and desktops.
- Bootstrap is compatible with all modern browsers (Chrome, Firefox, Internet Explorer, Safari, and Opera).

Bootstrap

- There are two ways to start using Bootstrap on your own web site.
- You can download Bootstrap from getbootstrap.com.
- You can include Bootstrap from a Content Delivery Network (MaxCDN). It is a better choice because many users already have downloaded Bootstrap from MaxCDN when visiting another site. As a result, it will be loaded from cache when they visit your site, which leads to faster loading time.

Bootstrap (head part)

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Bootstrap Example</title>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <link rel="stylesheet" href="http://maxcdn.bootstrapcdn.com/bootstrap/3.3.5/css/bootstrap.min.css">
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.3/jquery.min.js"></script>
  <script src="http://maxcdn.bootstrapcdn.com/bootstrap/3.3.5/js/bootstrap.min.js"></script>
</head>
```

Bootstrap

- Bootstrap also requires a containing element to wrap site contents.
- There are two container classes to choose from:
- The **.container** class provides a responsive fixed width container
- The **.container-fluid** class provides a full width container, spanning the entire width of the viewport
- Note: Containers are not nestable (you cannot put a container inside another container).

```
<div
class="container">
   <div>This is my
content.</div>
</div>
```

Bootstrap Grid System

- Bootstrap's grid system allows up to 12 columns across the page.
- If you do not want to use all 12 column individually, you can group the columns together to create wider columns.
- Bootstrap's grid system is responsive, and the columns will re-arrange automatically depending on the screen size.
- Visit this page for more details: http://www.w3schools.com/bootstrap/bootstrap_grid_basic.asp

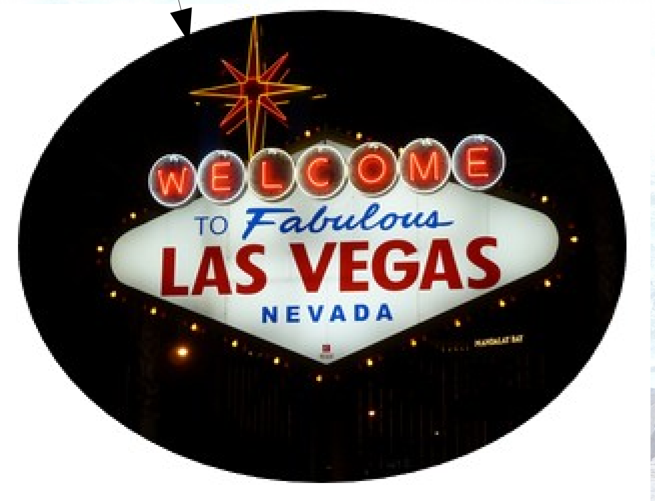
Bootstrap Text

- Bootstrap's global default font-size is 14px, with a line-height of 1.428. This is applied to the <body> and all paragraphs.
- In addition, all <p> elements have a bottom margin that equals half their computed line-height (10px by default).
- HTML elements are styled a little bit different by Bootstrap than browser defaults.

See this page for more details: http://www.w3schools.com/bootstrap/bootstrap_typography.asp

Bootstrap Images

- Bootstrap support style images (img-rounded, img-circle, img-thumbnail, img-responsive).



Responsive Embeds

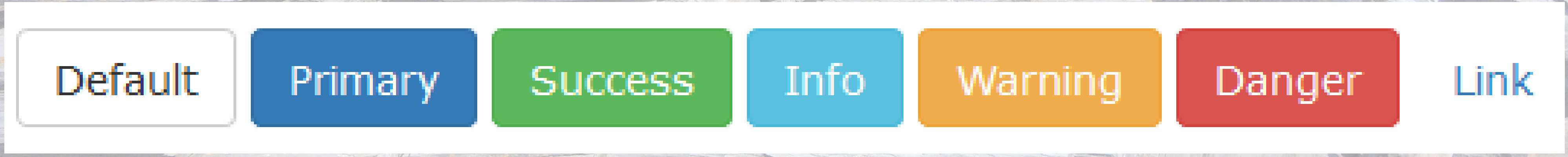
- Let videos or slideshows scale properly on any device. Classes can be applied directly to <iframe>, <embed>, <video>, and <object> elements. The following example creates a responsive video by adding an .embed-responsive-item class to an <iframe> tag (the video will then scale nicely to the parent element). The containing <div> defines the aspect ratio of the video:

```
 <div class="embed-responsive embed-responsive-16by9">

   <iframe class="embed-responsive-item"
src="video.mp4"></iframe>

</div>
```

Bootstrap Buttons

Bootstrap provides seven styles of buttons:

```
<button type="button" class="btn btn-default">Default</button>
<button type="button" class="btn btn-primary">Primary</button>
<button type="button" class="btn btn-success">Success</button>
<button type="button" class="btn btn-info">Info</button>
<button type="button" class="btn btn-warning">Warning</button>
<button type="button" class="btn btn-danger">Danger</button>
<button type="button" class="btn btn-link">Link</button>
```



- Buttons can also be grouped together: http://www.w3schools.com/bootstrap/bootstrap_button_groups.asp

Bootstrap Glyphicons

- Bootstrap includes 200 glyphs from the Glyphicon Halflings set. Glyphicons Halflings are normally not available for free, but their creator has made them available for Bootstrap free of cost. As a thank you, you should include a link back to Glyphicons whenever possible. A glyphicon is inserted with the following syntax:

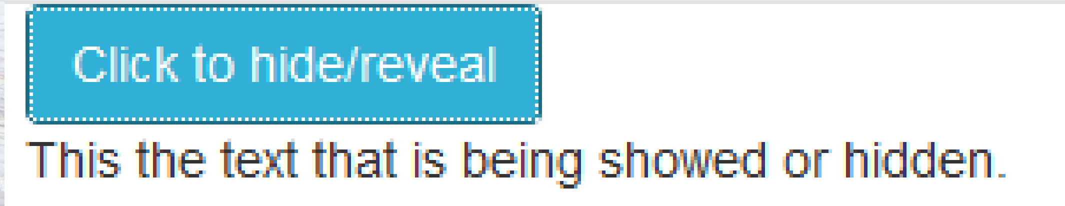
```
<span class="glyphicon glyphicon-name"></span>
```

- See the complete list at http://www.w3schools.com/bootstrap/bootstrap_ref_comp_glyphs.asp

Bootstrap Collapsible

- Collapsibles are useful when you want to hide and show large amount of content.
- The .collapse class indicates a collapsible element (this is the content that will be shown or hidden with a click of a button).

```
<div class="container">

<button type="button" class="btn btn-info" data-
toggle="collapse" data-target="#demo">Click to
hide/reveal</button>

<div id="demo" class="collapse">This the text that is
being showed or hidden.</div>

</div>
```



This the text that is being showed or hidden.

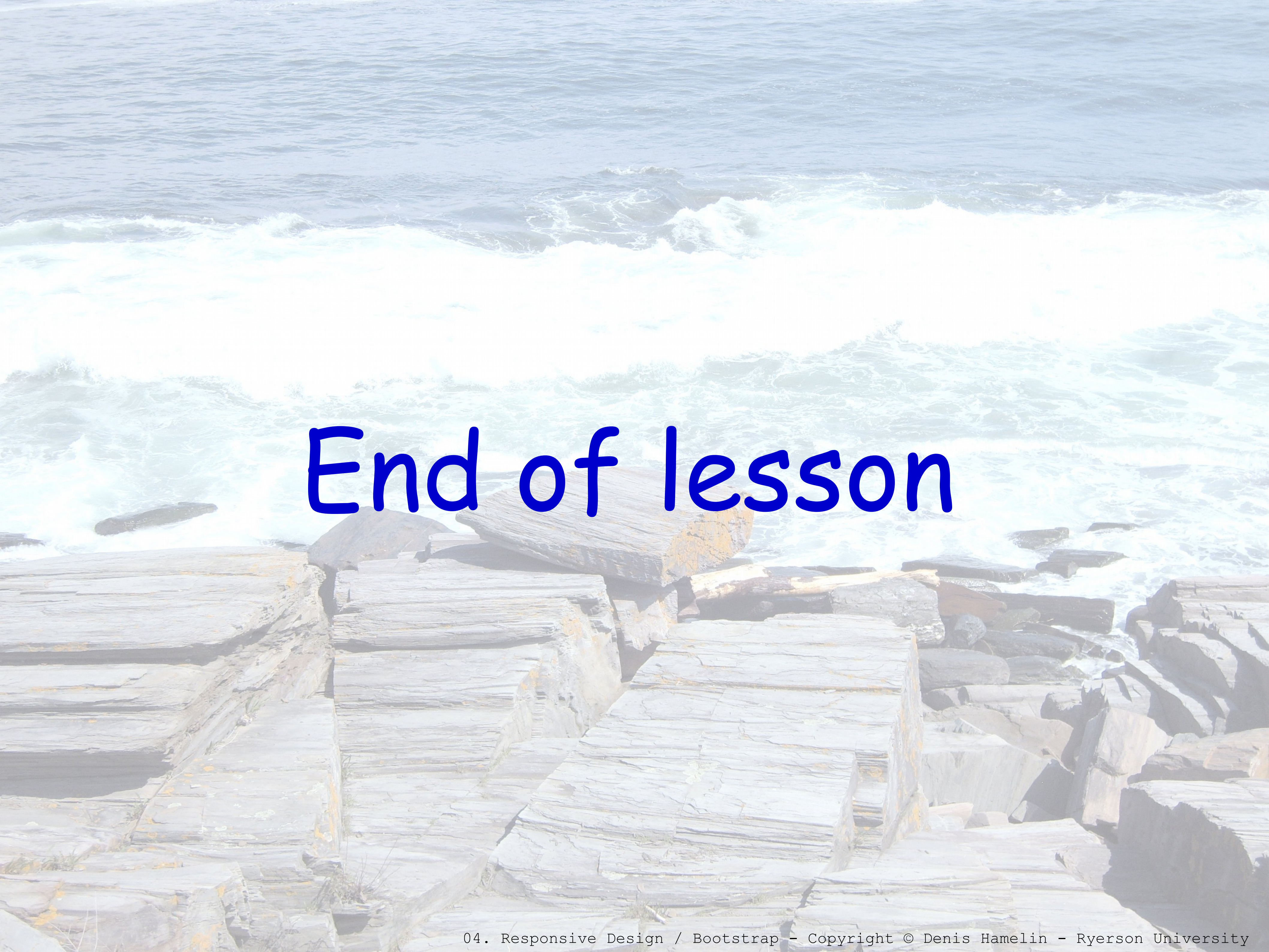
Bootstrap Carousel Plugin

- The Carousel plugin is a component for cycling through elements, like a slideshow.
- See this page for more details:

http://www.w3schools.com/bootstrap/bootstrap_carousel.asp

This lesson is just an introduction of the basic features of Bootstrap. You can get the whole tutorial here:

http://www.w3schools.com/bootstrap/



End of lesson