



Session 3

Understanding Responsive Web Design





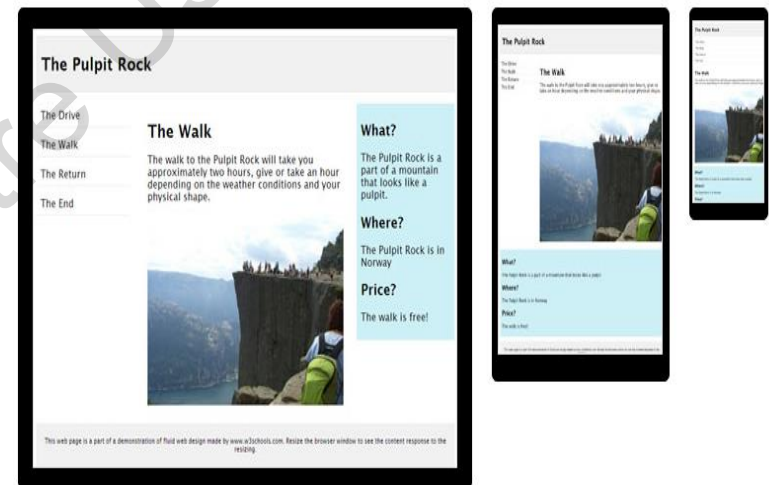
Learning Objectives

In this session, you will learn to:

- Define Responsive UI design
- Describe the evolution of RWD
- Describe the importance of Progressive Enhancement
- Outline the differences between Graceful Degradation and Progressive Enhancement
- Explain the RWD Workflow
- Describe the significance of RWD

What is Responsive User Interface Design?

- Responsive Web Design (RWD) implies the formatting of Website design in a way for optimal viewing and exploring a wide range of devices, including traditional PCs, smartphones, and tablet devices.
- Responsive Web Design offers:
 - Smooth navigation
 - Easy reading
 - Minimum pinching
 - Reduces scrolling and zooming
 - Excellent user experience



Example of RWD

Image Courtesy: <http://www.w3schools.com/>



Advantages to the Users

- A responsive Website is flexible to use
- It shuffles content, resizes images, and adjusts font size
- Allows users to read information as per their choice and needs
- Helps in finding fast and intelligent sites
- Saves time for users while browsing the site
- Helps to increase user's experience

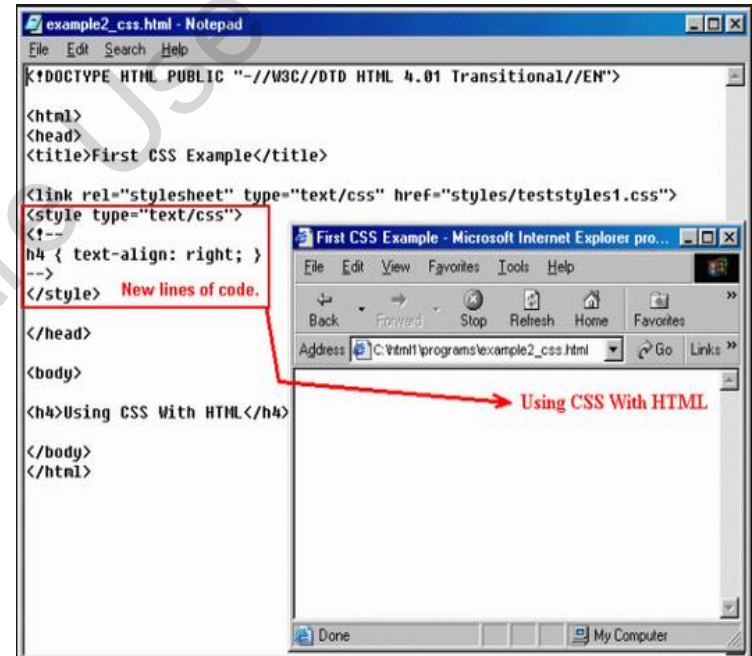


Advantages to the Web Designers

- Streamline the designing process
- Saves time and effort
- Cut down capital employed
- Eliminates the use to maintain multiple Websites
- Reduce maintenance and development cost
- Expand Return on Investment in long run
- Enhance SEO rank
- Better performance means better sales
- Higher conversion rates
- Increasing market share

Cascading Style Sheets

- Responsive Web Design (RWD) is a way of laying-out and coding a Website so that the Website can provide an excellent viewing experience.
- Cascading Style Sheets (CSS) helps the developer to point out when a certain style takes effect and provides printer-friendly style sheets if needed.



Example of a CSS

Evolution of RWD

- Cameron Adams in 2004 was the first to demonstrate a site layout example that adapts to browser viewport width.
- In May 2010, Ethan Marcotte's article coined the term Responsive Web Design and defined fluid grid/flexible images/media queries.
- In 2011, a book titled Responsive Web Design described the theory and practice of Responsive Web Design.

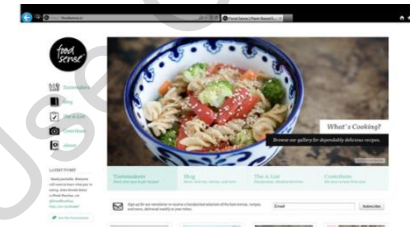


Example of a Responsive Web Design

Image Courtesy:
<http://www.smashingmagazine.com/>

Fundamental Techniques for RWD

- **Fluid, Proportion-based Grids:** Arrange the grid columns in proportion based on page element sizing.
- **Flexible images:** Displays within the size available.
- **CSS3 Media Queries and Screen Resolutions:** Enable the Websites pages to utilize diverse CSS styles sheet based on media rule.



Navigation Appears on the Left



In an 800x600 Resized Window, Navigation Switches to the Top



*Same site on a Windows Phone
Image Courtesy: msdn.microsoft.com*



What is Progressive Enhancement?

- Allows Web developers to apply on building the best possible Websites while adjusting the issues inbuilt in those Websites being accessed by multiple unknown user-agents.
- Three different layers of Progressive enhancement used to enhance the experience of interacting with the Website are:
 - First layer: HTML
 - Second layer: CSS
 - Third layer: JavaScript
- A Practical Example: The ultimate goal for users is to have a drag-and-drop experience that saves the menu order via AJAX. All user-agents should enable user to interact with our list in the way most appropriate to them.

Practical Example - First Layer - HTML

- In the first layer, the semantic mark-up of the navigation is shown in navigation-1.html.

```
<form action="record.php" method="post">
  <fieldset>
    <legend>record of Navigation</legend>
    <ol>
      <li id="homepage-12">Homepage <label
for="menu-id-12">Change the order for
Homepage</label><input type="text"
name="homepage-12" id="menu-id-12"
value="1" /></li>
      <li id="contact-23">Contact Us
<label for="menu-id-23">Change the order
for Contact Us</label><input type="text"
name="contact-23" id="menu-id-23"
value="2" /></li>
      <li id="about-16">About Us <label
for="menu-id-16">Change the order for About
Us</label><input type="text" name="about-
16" id="menu-id-16" value="3" /></li>
      <li id="latest-14">Latest News
<label for="menu-id-14">Change the order
for Latest News</label><input type="text"
name="latest-14" id="menu-id-14" value="4"
/></li>
    </ol>
  </fieldset>
  <p><input type="acknowledge"
value="record new order" /></p>
</form>
```

Order of Navigation

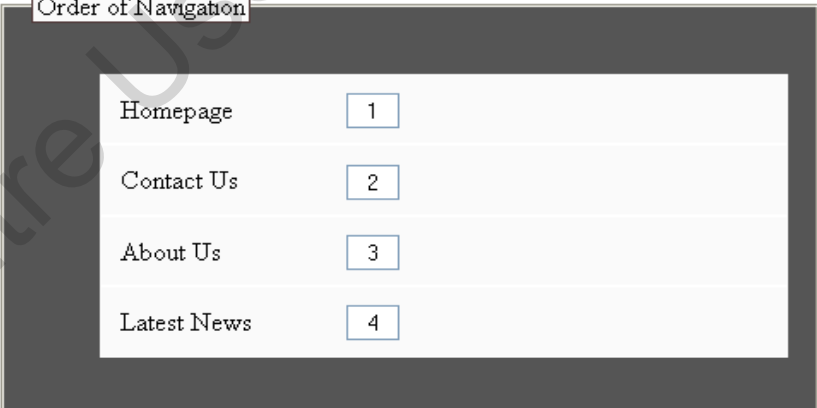
1. Homepage Change the order for Homepage
2. Contact Us Change the order for Contact Us
3. About Us Change the order for About Us
4. Latest News Change the order for Latest News

navigation-1.html

Practical Example - Second Layer - CSS

- The second layer is added to give the form a bit of visual elegance.

```
name="code">
<style type="text/css">
form {width: 50%;margin: 0 auto;}
fieldset {background: #555555;padding: 1em;}
legend {border:1px #513939 solid;background:
#FAFAFA;}
label {position: absolute;margin-left: -999em;}
ol {list-style: none;position: relative;}
body {font: 100% serif;}
ol li {border: 1px #FFF solid;background:
#FAFAFA;padding: 0.7em;}
olli:hover {border: 1px #513939 solid;}
input[type='text'] {width: 2em;text-align:
center;position: absolute;left: 40%;}
</style>
```



The screenshot shows a web form titled "Order of Navigation" with a dark grey header and footer. The main content area is white and contains a table with four rows. Each row has a text label and a small input field with a number. Below the table is a button labeled "Save new order".

Order of Navigation	
Homepage	1
Contact Us	2
About Us	3
Latest News	4

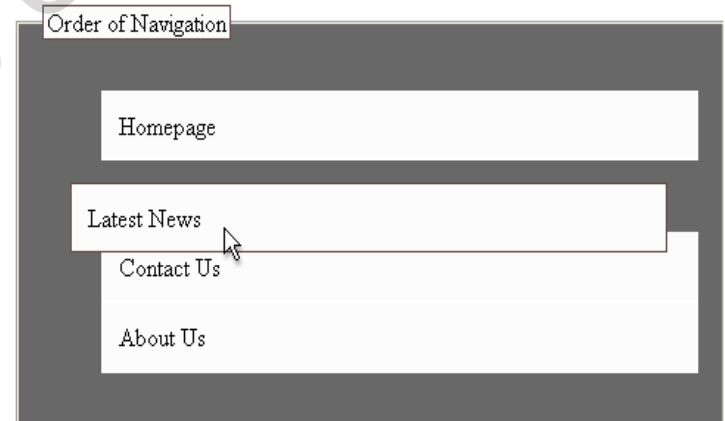
Save new order

navigation-2.html

Practical Example - Third Layer - JavaScript

- The JavaScript layer is added that allows the user to simply drag-and-drop the navigation items according to the way they need. Use jQuery to make the process as painless as possible.

```
<script type="text/javascript">
$(document).ready(function(){
  $('input').hide();
  $('ol').sortable({items: 'li',
    update: function(event, ui) {
      var new_order = $('ol').sortable('toArray');
      $.each(new_order, function(i, element) {
        $('input[name='+element+']').attr('value', i+1);
      }); $.post("record.php", {
        'new_order': $('form').serialize()
      })
    }
  });
});
</script>
```

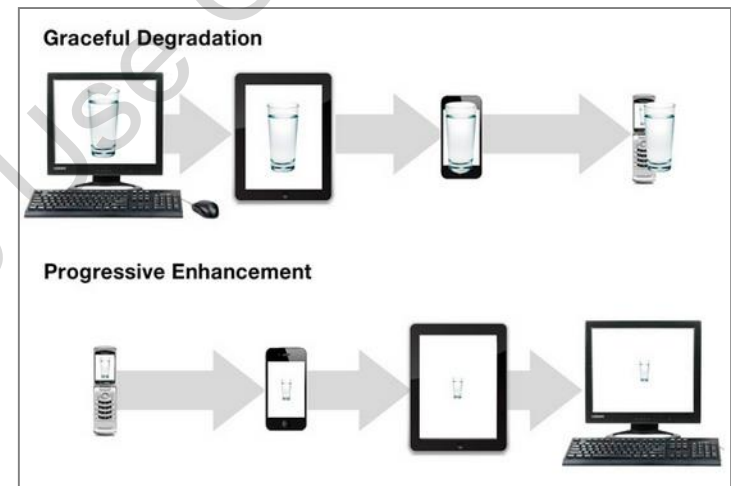


navigation-3.html

Difference Between Graceful Degradation and Progressive Enhancement

Graceful Degradation is used in fields other than Web design, such as fault tolerant, mechanical, and electrical system.

- The basis for Graceful Degradation is to first build for the latest device and then for less capable devices.
- Example: A universal drop-down or fly-out menu.
- Progressive Enhancement starts with the basic version and then adds enhancements for those browsers which can handle them.
- Example: An unobtrusive script is avoided by user agents that do not support it, but is applied by modern and adequate devices.

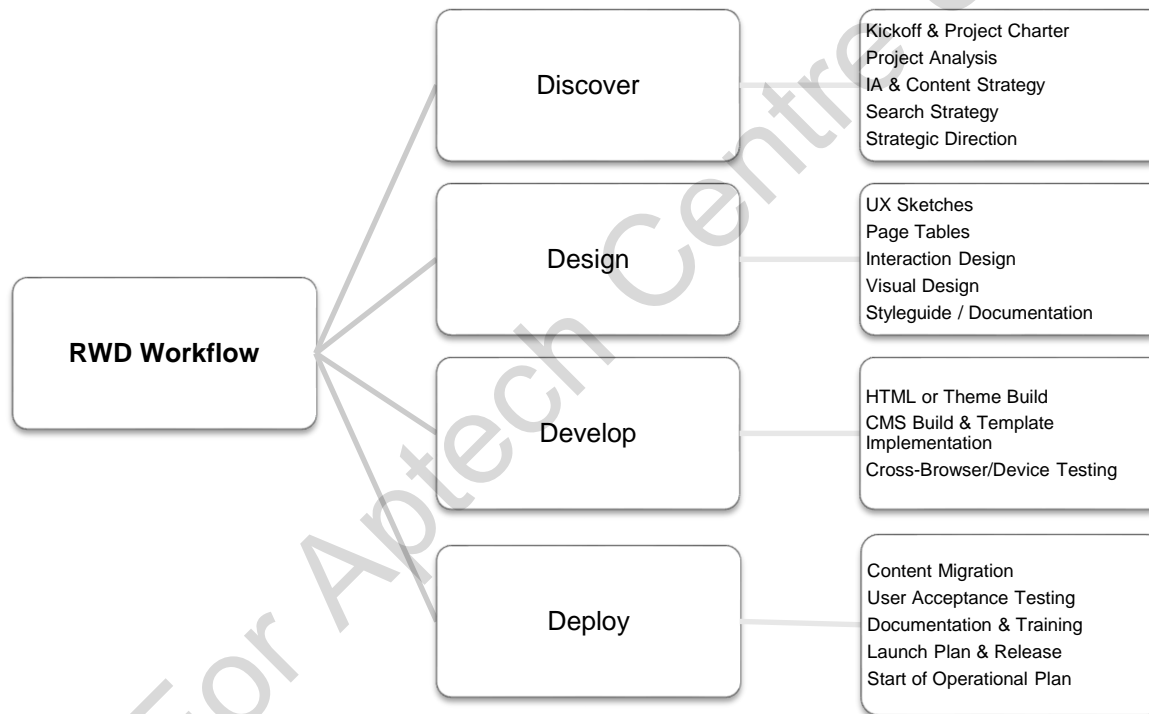


Difference Between Graceful Degradation and Progressive Enhancement

Image Courtesy:
<http://bradfrost.com/blog/web/mobile-first-responsive-web-design/>

Responsive Work Design Workflow

- Responsive Work Design workflow consists of four main processes: Discover, Design, Develop, and Deploy.





RWD Workflow - Discover

- **Kick-off and Project Charter:** Helps in establishing communication protocols, milestones and timelines, deliverables and scope, and roles and expectations.
- **Project Analysis:** Helps in determining the requirements of the project, from a technical, creative, and organizational perspective.
- **Content and Search Strategy:** Helps in creating a site map for a project and show where everything belongs. It also helps to develop a document summarizing best practices for Search Engine Optimization.
- **Strategic Direction and Planning:** Helps all of the information found during the discovery phase compiled into a concise document that outlines the search, content, technical, and creative strategies.



RWD Workflow - Design

- **UX Planning and Design:** Helps in working through a constant process to create rough wireframes, or UX sketches, for key views.
- **Page Tables:** Keep content independent from design or presentation, analyze each content area in priority order, and identify the most important messages to communicate in each area.
- **Interaction Design:** Helps in creating rough greybox HTML prototypes to demonstrate responsive interaction patterns.
- **Visual Design:** Helps to create static visual mock-ups, browser-based prototypes, color palettes, and typography that give each site a unique look and feel.
- **Guidelines and Documentation:** Helps in creating a style guide that will document the design system so that they can be properly implemented.



RWD Workflow - Develop

- **HTML or Theme Build:** Creates HTML/CSS/JavaScript themes that are functional, browser-tested, and HTML pages are ready for testing to make sure all content is governed by CSS and meets W3C standards.
- **Cross-Browser/Device Testing:** Helps in testing and demonstrating how page templates render in major Web browsers and mobile devices.



RWD Workflow - Deploy

- **Content Migration:** Helps clients to create and maintain useful and usable content.
- **User Acceptance Testing:** Helps to confirm that a new site meets the objectives and requirements as defined early in the project.
- **Documentation and Training:** Helps to prepare text and video documentation to help understand and use new CMS and site.
- **Launch Plan and Release:** Helps in creating a launch plan to archive the current Website and release the new Website to the public and also quality checklist to make sure that all project requirements are met.
- **Start of Operational Plan:** Helps in achieving a milestone of changing a Website when a development is required.



Significance of RWD

- Web designers need to keep the same look and feel of their Websites in various computer browsers before the reproduction of mobile devices with advanced Web-browsing capability. RWD is highly significant in regard with:
 - Time and Money
 - Pervasion of Mobile Devices
 - User Experience
 - Device Agnostic
 - Way Ahead



Summary

1-2

- Responsive Websites has changed the entire outlook of Web industry. It offers significant benefits to Web designers and online businesses.
- Responsive Web Design involves using CSS and HTML to resize, hide, shrink, enlarge, or move the content to make it look good on any screen.
- Using CSS makes it easy to develop sites that can be viewed in a device of any size, such as desktop, laptop, tablet, or smartphone.
- Progressive Enhancement (PE) is the principle of starting with a strong foundation and then adding enhancements to it if you know certain visiting user-agents can handle the improved experience.

- The concept of Progressive Enhancement is applied by breaking different layers to improve the experience of interacting with the Website.
- The concept of Graceful Degradation and Progressive Enhancement are applied in order to make a Website available to any user agent.
- Using responsive design will help create a Website that will not only look good and work efficiently on the devices that are on the market now, but are also likely to do the same on any devices that may be available in the future.