

INFT1206 - Web Programming Principles

Week 3: Multimedia and embedding

Agenda

- ▶ Image and figure elements
- ▶ Multimedia – audio and video
- ▶ Embedding technologies
- ▶ Types of images
- ▶ Responsive images

HTML5 - <figure> and <figcaption> tags

- The HTML5 <figure> tag specifies self-contained content, frequently with a caption (<figcaption>), and is typically referenced as a single unit.
- The HTML5 <figure> tag can be used to hold , <video> or <audio> elements.
- The <figcaption> can be positioned either above or below the contained element.

HTML5 - <figure> and <figcaption> tags

➤ Example

```
<div class="picture">
  <figure>
    <figcaption>
      This is a figure caption
    </figcaption>
    
  </figure>
</div>
```

□ [html5figure-1.html](#)

[html5figure-2.html](#)

<audio> and <video> tags

- About multimedia
 - On the web, multimedia comes in many different formats.
 - It can be almost anything you can hear or see. e.g.
 - ▶ Pictures, music, sound, videos, records, films, animations
- HTML5 introduced a built-in multimedia support via the <audio> and <video> elements, offering the **standard** and easy way to embed media into HTML documents.
 - Before HTML5, most audio/video files are played through a plug-in (like flash).
 - Supported by IE 9, Firefox, Opera, Chrome, and Safari

HTML5 <audio> Tags

➤ Example

```
<figure>
  <audio controls>
    <source src="Track03.mp3" type="audio/mpeg" />
    <source src="Track03.ogg" type="audio/ogg" />
    Your browser does not support the audio tag used.
  </audio>
  <figcaption>Audio Caption</figcaption>
</figure>
```

- Multiple <**source**> elements can link to different audio files.
 - The browser will use the first **recognized** format.
- [html5 audio.html](#)

Attributes of <audio> Element

- **controls**
 - Displays the standard HTML5 controls for the audio on the web page.
- **src**
 - It's optional. You may instead use the <source> element with src attribute.
- **autoplay**
- **loop**
- **preload**
- **buffered, muted, played**

The <source> element

- The source element is used to specify multiple media resources for audio and video elements in HTML5. It is an empty element.
- It is commonly used to serve the same media in multiple formats supported by different browsers.
- Attributes
 - src, type, media

HTML5 video Tags

➤ e.g.

```
<figure>
  <video width="320" height="240" controls>
    <source src="movie.mp4"      type="video/mp4"/>
    <source src="movie.ogg"      type="video/ogg" />
    <source src="movie.webm"    type="video/webm" />
    Your browser does not support the video tag / type
  </video>
  <figcaption>Video Caption</figcaption>
</figure>
```

- The **width** and **height** specify the size of the video's display area.
- The **autoplay** and **loop** are additional attributes that can be used with the video tag.
- [html5_video.html](#)

Attributes of <video> Element

- The <video> Element shares many attributes with the <audio> element but has its own attributes:
 - Height, width
 - poster – specifies an image to show while the media item is loading

Embedding technologies-iframe

- <iframe>s are for embedding other web pages
- <embed> and <object> elements are to embed external resources such as PDF files.

Embedding YouTube video

1. First, go to YouTube and find a video you like.
2. Below the video, you'll find a Share button, select this to display the sharing options.
3. Select the Embed button and you'll be given some <iframe> code — copy this.
4. Insert it into your page, and see what the result.

`iframeyoutube.html`

Embedding Maps from Google Map

1. Go to Google Maps and find a map you like.
2. Click on the "Hamburger Menu" (three horizontal lines) in the top left of the UI.
3. Select the Share or embed map option.
4. Select the Embed map option, which will give you some <iframe> code — copy this.
5. Insert it into your webpage, and see what the result.

[iframegooglemap.html](#)

Embedding pdf files using <object> or <embed>

```
<object
  data="mypdf.pdf" type="application/pdf"
  width="800"
  height="1200">
<p>
  You don't have a PDF plugin, but you can
  <a href="mypdf.pdf">
    download the PDF file.
  </a>
</p>
</object>
```

embedpdf.html

Types of images

- ▶ **Raster images** are defined using a grid of pixels.
 - A raster image file contains information showing exactly where each pixel is to be placed, and exactly what color it should be.
 - Popular web raster formats include Bitmap (.bmp), PNG (.png), JPEG (.jpg), and GIF (.gif)
- ▶ **Vector images** are defined using algorithms.
 - A vector image file contains shape and path definitions that the computer can use to work out what the image should look like when rendered on the screen.
 - The SVG format allows us to create powerful vector graphics for use on the Web.
- ▶ [vector-versus-raster.html](#)

What is SVG?

- ▶ SVG is an XML-based language for describing vector images.
- ▶ It's basically markup, like HTML, except that you've got many different elements for defining the shapes you want to appear in your image, and the effects you want to apply to those shapes.

Example of SVG

```
<svg  
    version="1.1"  
    baseProfile="full"  
    width="300"  
    height="200"  
    xmlns=http://www.w3.org/2000/svg  
>  
    <rect width="100%" height="100%"  
        fill="black" />  
    <circle cx="150" cy="100" r="90" fill="blue" />  
</svg>
```

Adding SVG to your pages

```

```

[vector-versus-raster.html](#)

Responsive images

- ▶ Responsive images : images that work well on devices with widely differing screen sizes and resolutions.
- ▶ Issues arise when you start to view the site on a narrow screen device like cell phone.

Art direction problem

- ▶ not-responsive.html: It is difficult to see faces of the two people within the first content image.
- ▶ **Solution:** would be to display a cropped version of the image which displays the important details of the image when the site is viewed on a narrow screen. A second cropped image could be displayed for a medium-width screen device, like a tablet.

responsive.html

Resolution switching problem

- There is no need to embed large size images on the page if it is being viewed on a mobile screen
=> waste bandwidth
- A small raster image starts to look grainy when displayed larger than its original size.
- Solution: multiple resolutions would be made available to the user's web browser. The browser could then determine the optimal resolution to load based on the screen size of the user's device.

Responsive image technologies

- *Responsive image technologies* were implemented recently to solve the problems indicated above by letting you offer the browser several image files, either all showing the same thing but containing different numbers of pixels (*resolution switching*), or different images suitable for different space allocations (*art direction*).

Resolution switching: Different sizes

```

```

- ▶ **srcset** defines the set of images we will allow the browser to choose between, and what size each image is.
- ▶ **sizes** defines a set of media conditions (e.g. screen widths) and indicates what image size would be best to choose, when certain media conditions are true
- ▶ Media condition ((max-width:600px)): describes a possible state that the screen can be in i.e when the viewport width is 600 pixels or less

Resolution switching: Same size, different resolutions

```

```

- You can allow the browser to choose an appropriate resolution image by using **srcset** with x-descriptors and without **sizes**

Art direction

- **Art direction problem** involves wanting to change the image displayed to suit different image display sizes.

```
<picture>
  <source media="(max-width: 799px)" srcset="elva-480w-close-portrait.jpg" />
  <source media="(min-width: 800px)" srcset="elva-800w.jpg" />
  
</picture>
```

- [not-responsive.html](#)
- [responsive.html](#)

About Audio/Video Formats

► Audio file formats

- mp3 audio format (Wikipedia)
- ogg audio/video format (Wikipedia)

► Video file formats

- mp4 video format (Wikipedia)
- webm audio/video format (Wikipedia)

Resourceful Links

- MDN - [HTML element reference](#)
- MDN - [Articles tagged: Multimedia](#)
- MDN- [Multimedia and embedding](#)
- MDN- [Mozilla splash page](#) (Assignment 2-part 1)

Thank you!

Any Questions?