HTML5 & CSS3

A chance to Do things Differently

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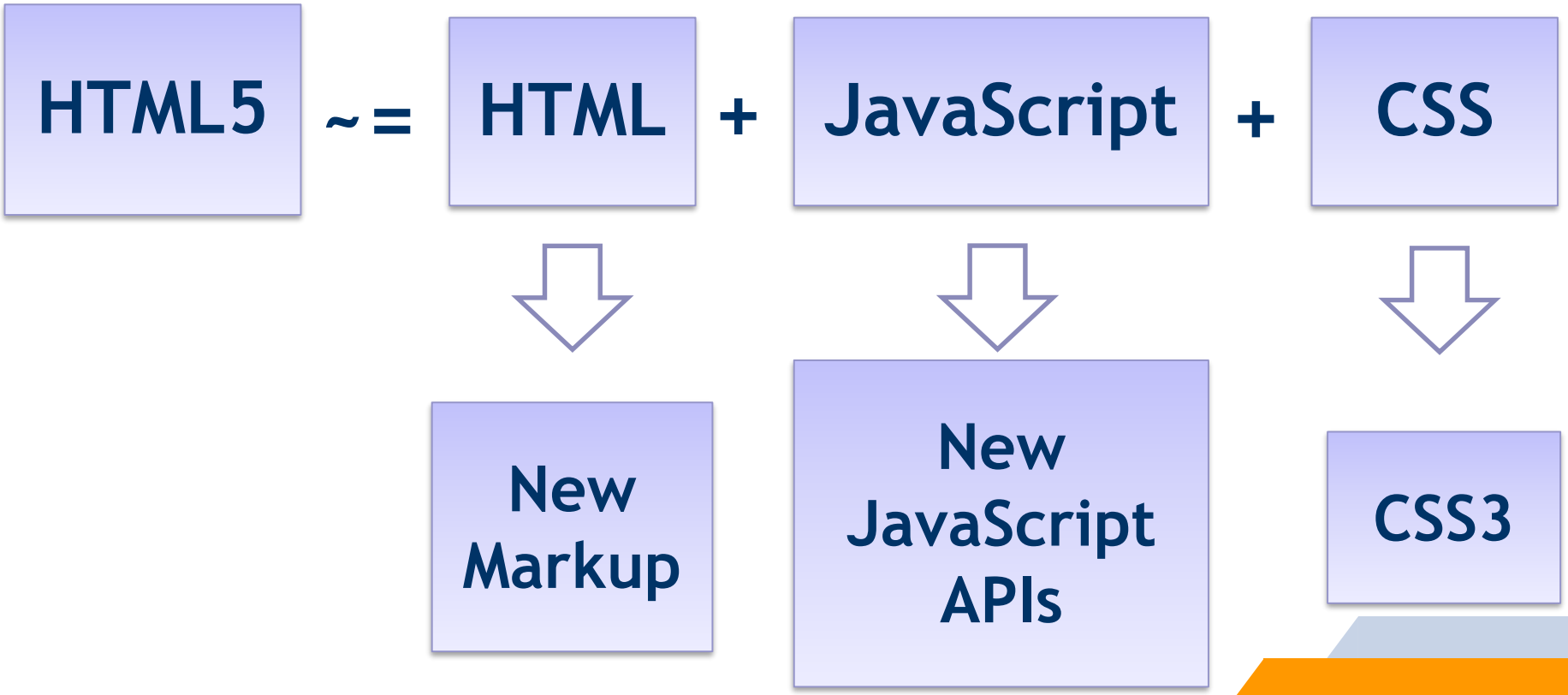
Day 1

What is HTML5

HTML5 is a Constellation of technology



HTML5

A Record of Tomorrow

Overview of Enhancements

- Structure and Semantics
- Forms
- Microdata
- CSS
- Embedded Content and Multimedia
- DOM APIs drag and drop
- Web Storage
- Web worker
- …

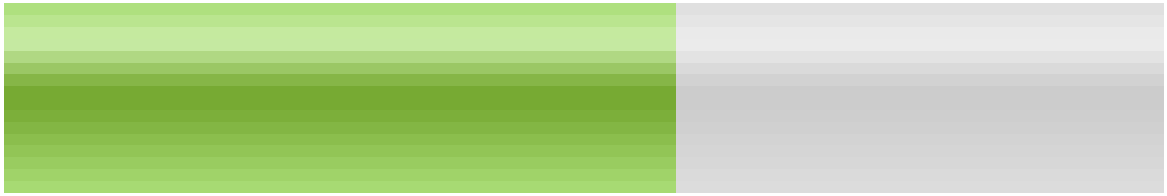
HTML5
includes new elements for
better structure,
better form handling,
drawing, and
media content

New Elements

<meter>

- Representing scalar measurements or fractional values
- Meter is also known as a gauge
- It should not be used to indicate progress
- Attributes:
  - **value**
  - **min**
  - **max**
  - **high**
  - **low**
  - **optimum**

Using <meter>



```
<meter value="0.6“
        min=“”
        max=“”
        optimum =" “
        low=" “
        high ="0.6“ >
        Medium
 </meter>
```

https://css-tricks.com/html5-meter-element/

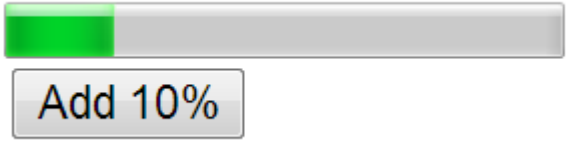
<progress>

- Show completion progress of a task
- Progress bars are widely used in other applications
- Works with scripted applications

- Attributes
  - value : Specifies how much of the task has been completed
  - max : Specifies how much work the task requires in total

- Useful for:
  - Indicate loading progress of an AJAX application
  - Show user progress through a series of forms
  - Making impatient users wait

Using <progress>




```
<progress max=“20”>
                Step 3 of 6
        </progress>

<progress value="0.5“ >
  Half way!
</progress>

<progress id=“pBar" max="100" value="0">
</progress>
```

<mark>

- Marked or Highlighted text
- Indicates point of interest or relevance
- Useful for:
  - Highlighting relevant code in a code sample
  - Highlighting search keywords in a document

Using <mark>

The highlighted part below is where the error lies:

```
var i: Integer;
begin
   i := 1.1;
end.
```

-
```
<p>The highlighted part below is
   where the error lies:</p>
<pre><code>var<var> i</var>: Integer;
begin
   i := <mark>1.1</mark>;
end.</code></pre>
```

is used for computer code

is used to indicate a variable within code.

Forms

Other Form's Controls

- HTML 4 controls are too limited
- Several new types added
- New Input type:
  - color
  - date
  - datetime
  - datetime-local
  - time
  - month
  - week
  - email
  - number
  - range
  - search
  - tel
  - url

http://www.coreservlets.com/html5-tutorial/input-types.html

https://www.wufoo.com/html5/

Other Form's Controls

- <input type="tel">
- <input type="time">
- <input type="color">
- <input type="month">
- <input type="search">
- <input type="number">
- <input type="email">
- <input type="range">
- <input type="date">
- <input type="time">
- <input type="url">
- …

Other Form’s Controls

```
<input type="text" list="d1">
    <datalist id="d1">
        <option label="item#1" value="n1"></option>
        <option label="item#1" value="v1"></option>
        <option label="item#2" value="n2"></option>
       <option label="item#3" value="n3"></option>
    </datalist>
```

Form’s new Attributes

- <input type=“” required>
  - Required: We also have required attribute to mark this field as mandatory.
- <input type=“” autocomplete="off">
  - Autocomplete: tells the browser whether or not the value of this input should be saved for future, should be used to protect sensitive user data
- <input type=“” pattern=“[0-9][A-Z]{3}”>
  - Pattern: custom validate, A part number is a digit followed by three uppercase letters.
- input type=“” placeholder=“”>
  - Placeholder: add a hint inside the text-field, but where the hint automatically disappears when clicking inside it.

Form Validation

Form Validation

- We can present Form Validation using
  - JavaScript Custom Validation
  - HTML Built-in Form Validation
  - CSS rule Validation

Semantics & Structured Data

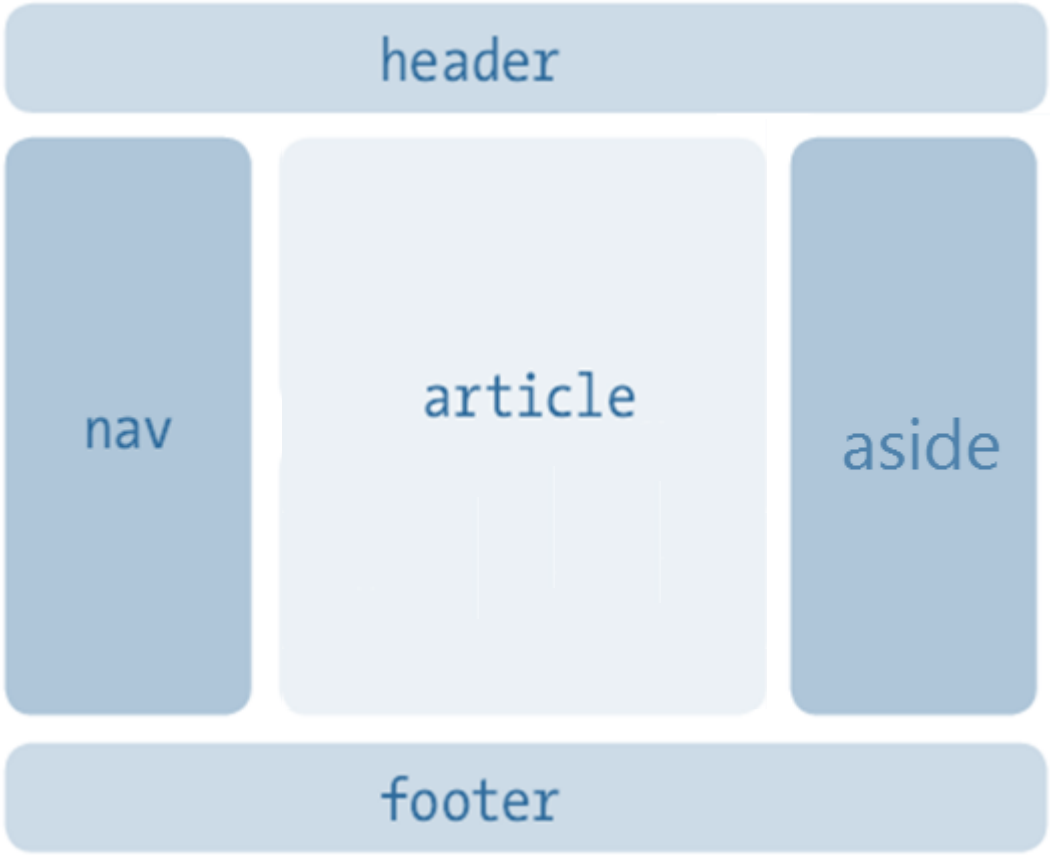
Semantic HTML

- Semantic HTML is the idea of using HTML elements for what they are rather than how they may appear in the browser by default.
- It is HTML that introduces meaning to the web page rather than just presentation.
- Semantic tags make it clear to the browser what the meaning of a page and its content is.

Elements clearly describes its meaning to both browser & developer

New Semantic Elements

- Markups that describe its content without presenting it e.g.
  - <header>
  - <hgroup>
  - <nav>
  - <section>
  - <article>
  - <aside>
  - <footer>
  - etc.



Structured Data

https://developers.google.com/search/docs/guides/intro-structured-data?visit_id=636758461413700902-4066872858&rd=1

- Structured data is a standardized format for providing information about a page and classifying the page content

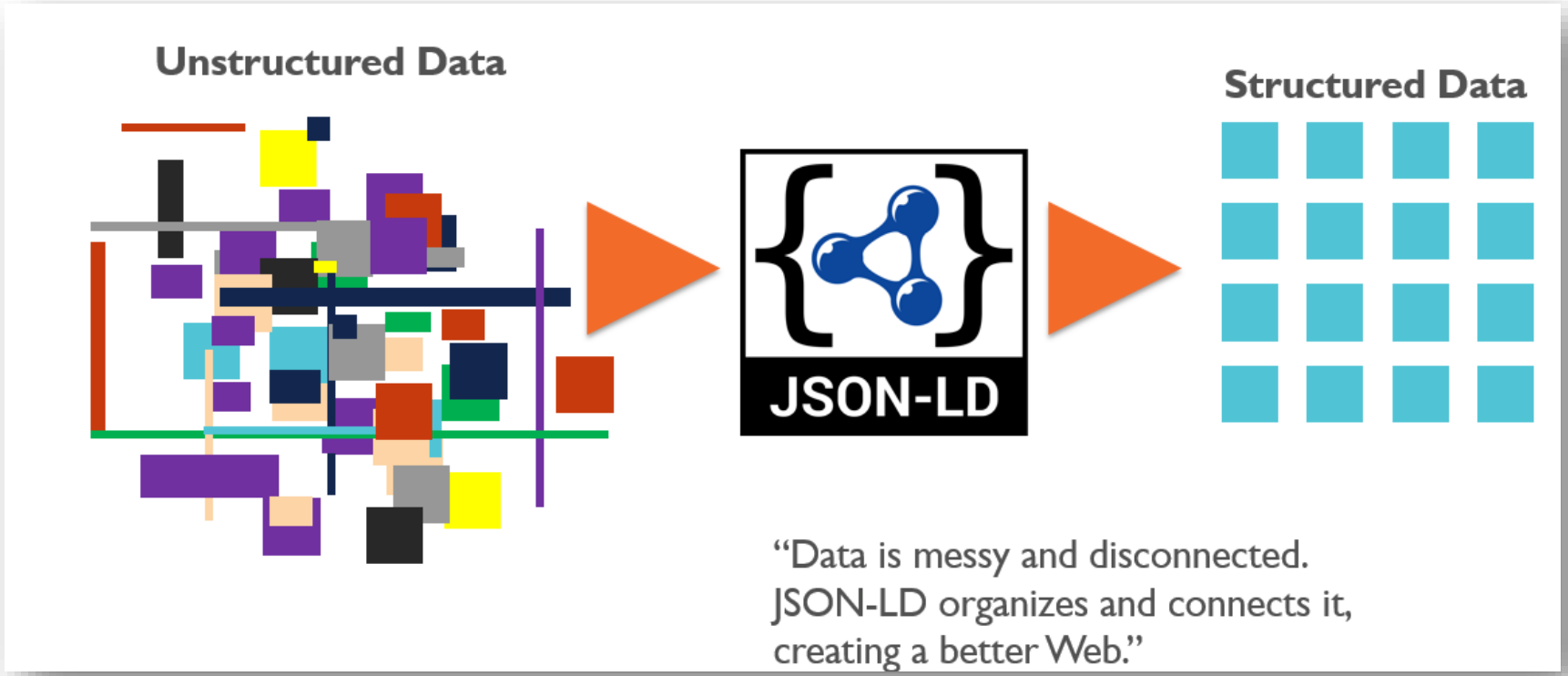
- Search engines use structured data to
  - understand the content of the page
  - gather information about the web and the world in general.
  - enable special search result features and enhancements like appear in a graphical search result.

Structured Data Supported formats

- JSON-LD (https://json-ld.org/)
  - JavaScript Object Notation for Linked Data
  - JSON-LD uses a JavaScript object in your HTML page to define data.
  - JavaScript notation embedded in a <script> tag in the page head or body.
- Microdata
  - Microdata uses HTML tags and attributes to define data like RDFa.
  - It nests the structured data within HTML content
  - It is typically used in the page body, but can be used in the head.
- RDFa
  - Resource Description Framework in Attributes
  - Commonly used in both the head and body sections of the HTML page.

https://developers.google.com/search/docs/guides/sd-policies

JSON-LD



https://moz.com/blog/json-ld-for-beginners

Microdata

https://www.w3.org/TR/microdata/

- Microdata a new lightweight semantic meta-syntax.
- Microdata defines five HTML attributes that can be applied to any HTML5 tag.
- It helps search engines and other applications better understand our content and display it in a useful, relevant way.
- It gives us a whole new way to *add extra semantic information and extend HTML5*.
- It provides a meaning of an Item.

Microdata

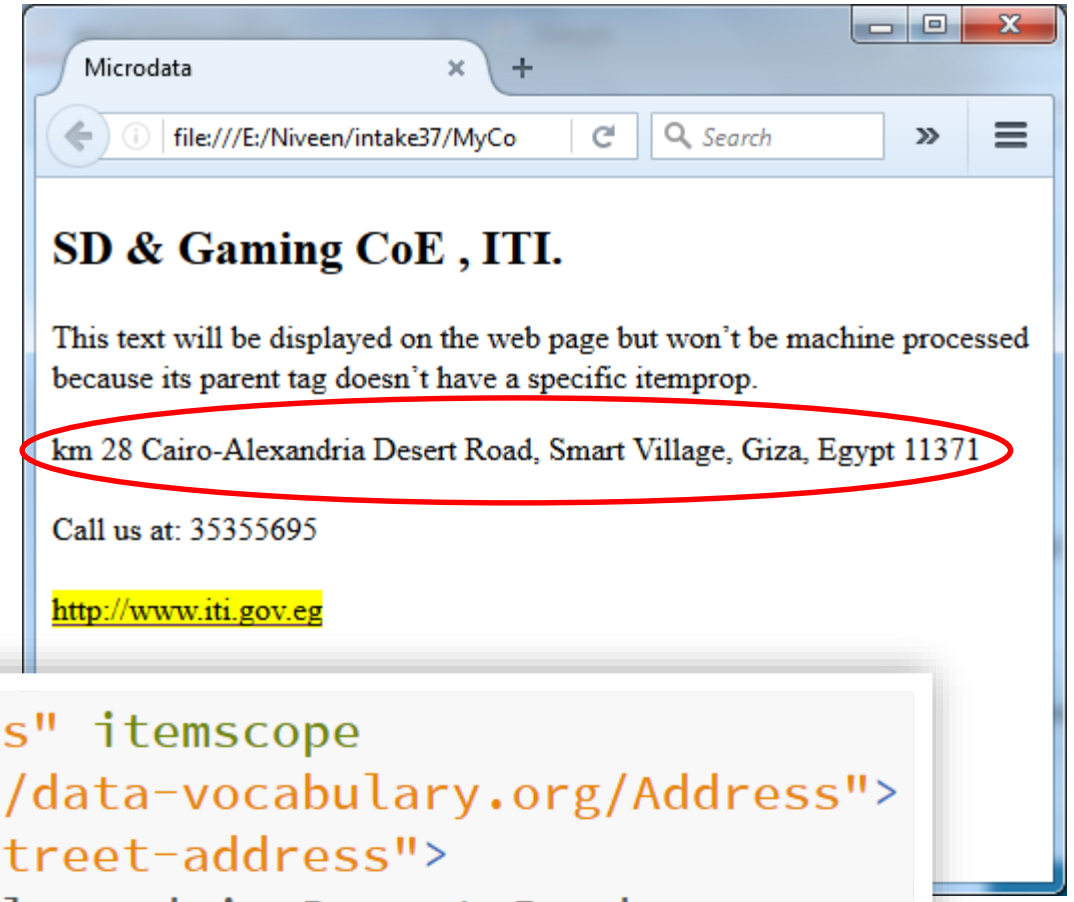
- Instead of elements, these name-value pairs are defined via attributes:
  - **itemscope**
    - Indicates the element is a microdata element and its child elements are part of its microdata format.
  - **itemprop**="property-name"
    - An individual data element that adds a *property* to a microdata item
  - **itemtype=**"URL"
    - Defines the vocabulary to be used by the microdata format.

http://schema.org/docs/gs.html

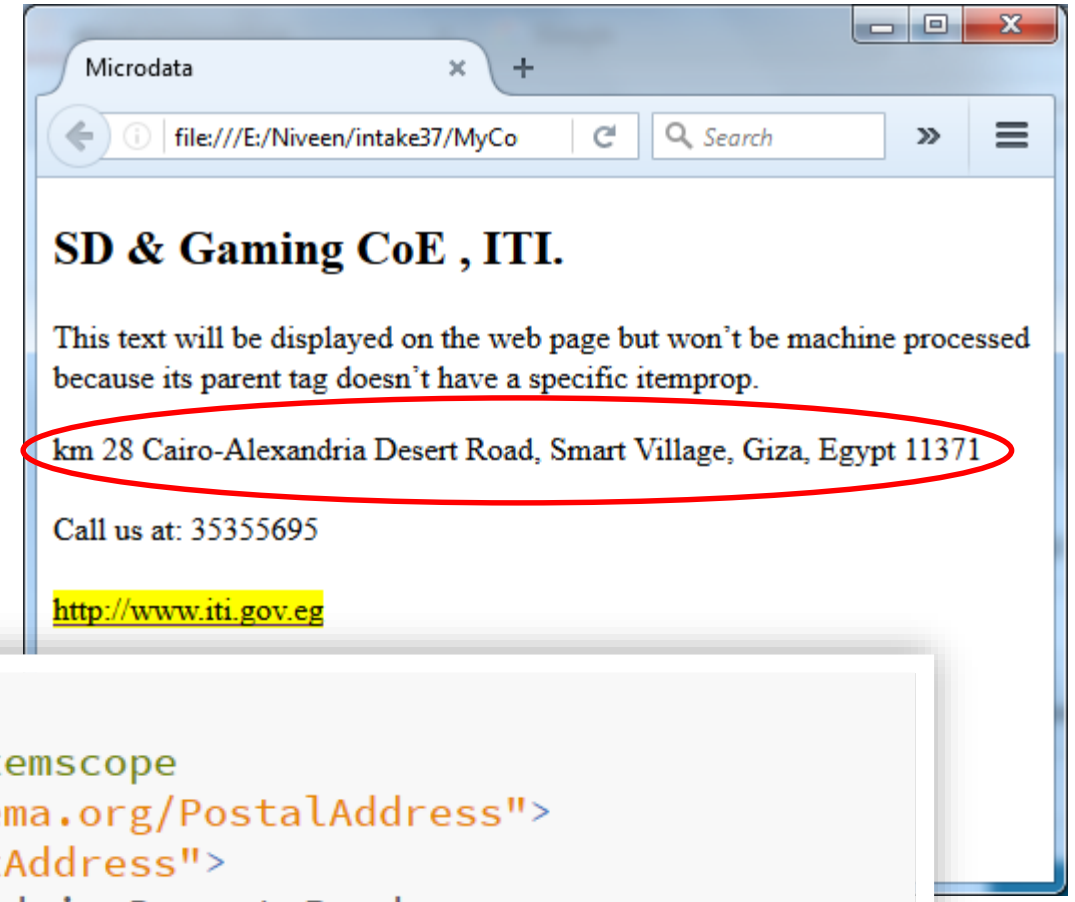
~~http://data-vocabulary.org/~~

Schema.org
(often called Schema) is a semantic vocabulary of tags (or microdata) that you can add to your HTML to improve the way search engines read and represent your page in SERPs

Web designers and site owners use search engine optimization (SEO) methods to make their sites & pages appear at or near the top of a SERP.

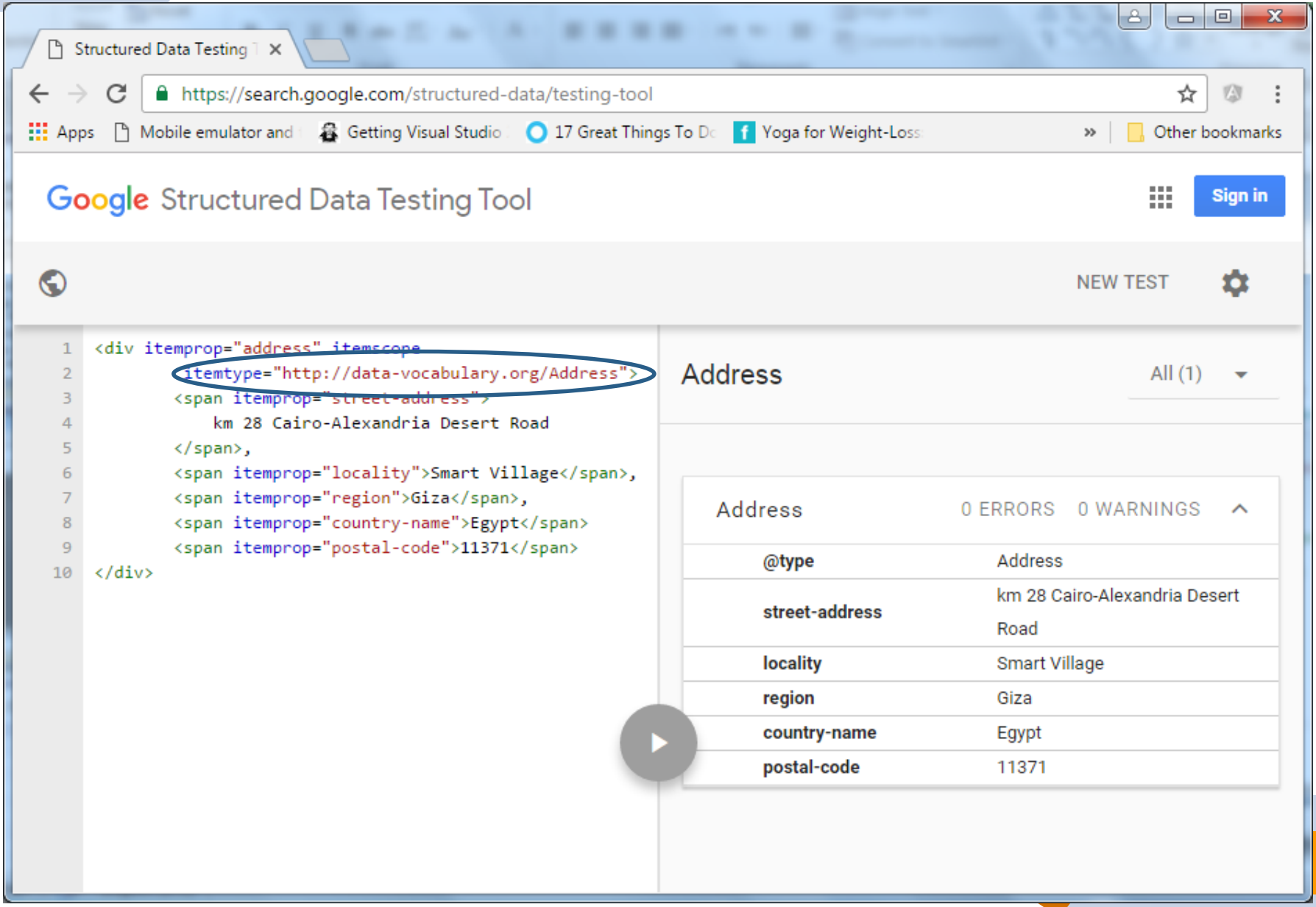


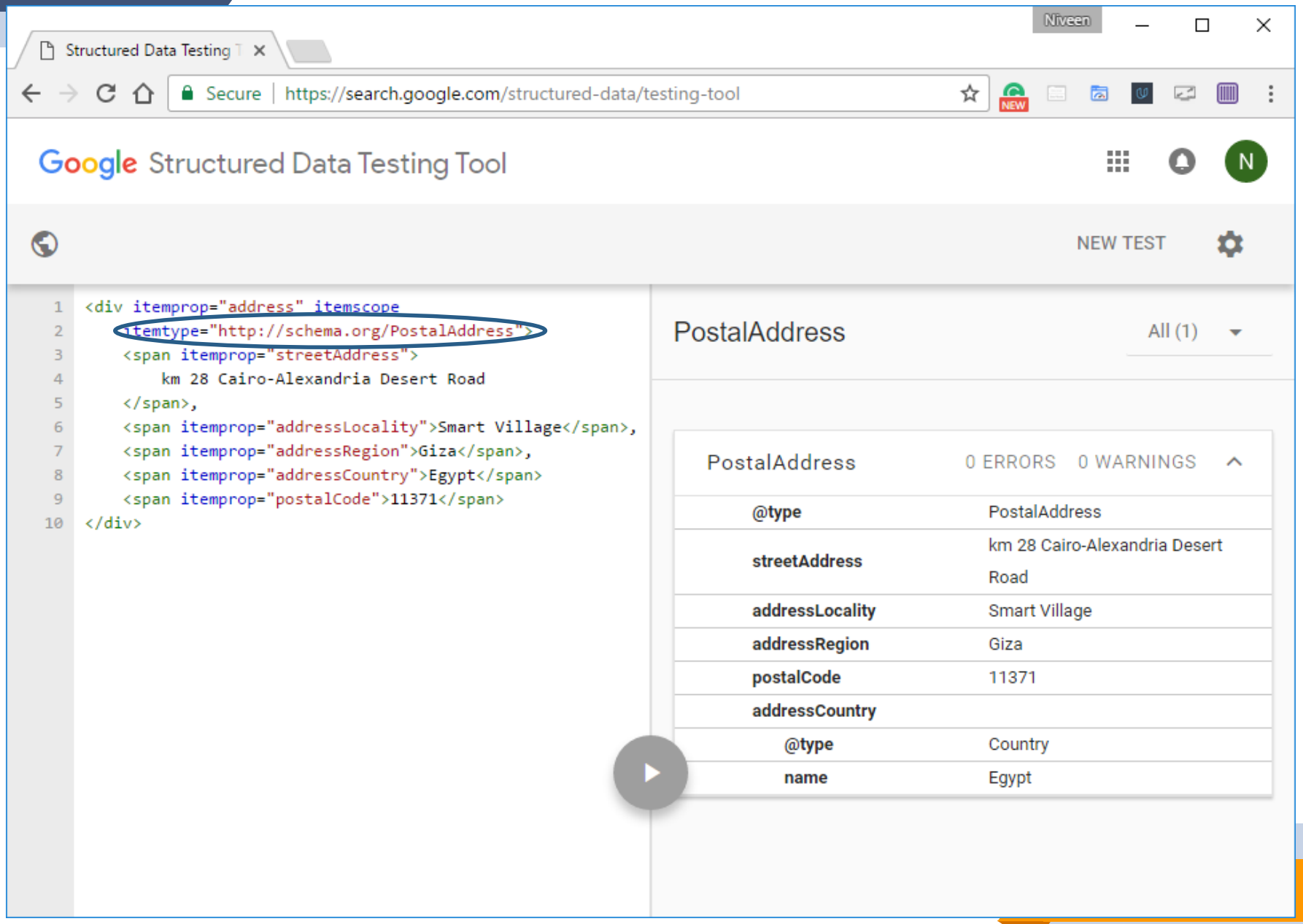

```
<div itemprop="address" itemscope
     itemtype="http://data-vocabulary.org/Address">
    <span itemprop="street-address">
        km 28 Cairo-Alexandria Desert Road
    </span>,
    <span itemprop="locality">Smart Village</span>,
    <span itemprop="region">Giza</span>,
    <span itemprop="country-name">Egypt</span>
    <span itemprop="postal-code">11371</span>
</div>
```




```
<div itemprop="address" itemscope
     itemtype="http://schema.org/PostalAddress">
    <span itemprop="streetAddress">
        km 28 Cairo-Alexandria Desert Road
    </span>,
    <span itemprop="addressLocality">Smart Village</span>,
    <span itemprop="addressRegion">Giza</span>,
    <span itemprop="addressCountry">Egypt</span>
    <span itemprop="postalCode">11371</span>
</div>
```

https://search.google.com/structured-data/testing-tool




Niveen
Structured Data Testing
Secure
https://search.google.com/structured-data/testing-tool
Google Structured Data Testing Tool
N
NEW TEST
1 <div itemprop="address" itemscope
2 itemtype="http://schema.org/PostalAddress">
3
4 km 28 Cairo-Alexandria Desert Road
5 ,
6 Smart Village,
7 Giza,
8 Egypt
9 11371
10
PostalAddress
All (1)
PostalAddress
0 ERRORS
0 WARNINGS
@type
PostalAddress
streetAddress
km 28 Cairo-Alexandria Desert Road
addressLocality
Smart Village
addressRegion
Giza
postalCode
11371
addressCountry
@type
Country
name
Egypt

Developers can test pages containing Microdata using Google's Rich Snippet Testing Tool

HTML5 data Attributes

- Store some extra information that doesn't have any visual representation.
- The name of a custom data attribute begins with data-* , and must be at least one character long after this prefix.
- The attribute value can be any string that contains only [a-z], [0-9], (-), (.), (:), (_).
- It should not contain ASCII capital letters (A to Z).

Embedded Content & Multimedia

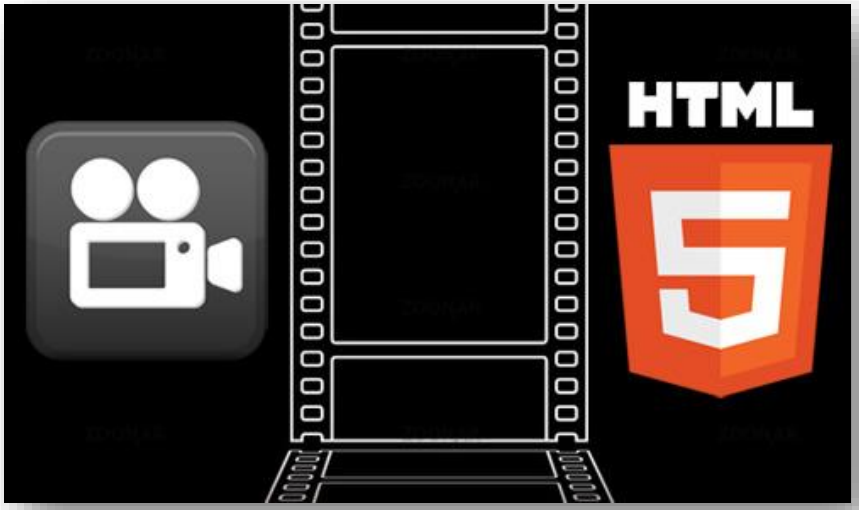
Multimedia

No need for plugin to play video and audio

HTML 5 will do it for you

Video & Audio

- HTML5 offers the ability to easily embed media into HTML documents.
- Media playback can be controlled via JavaScript and media events.



- Nothing to install.
- Works in all browsers and phones (adding native support to browsers).

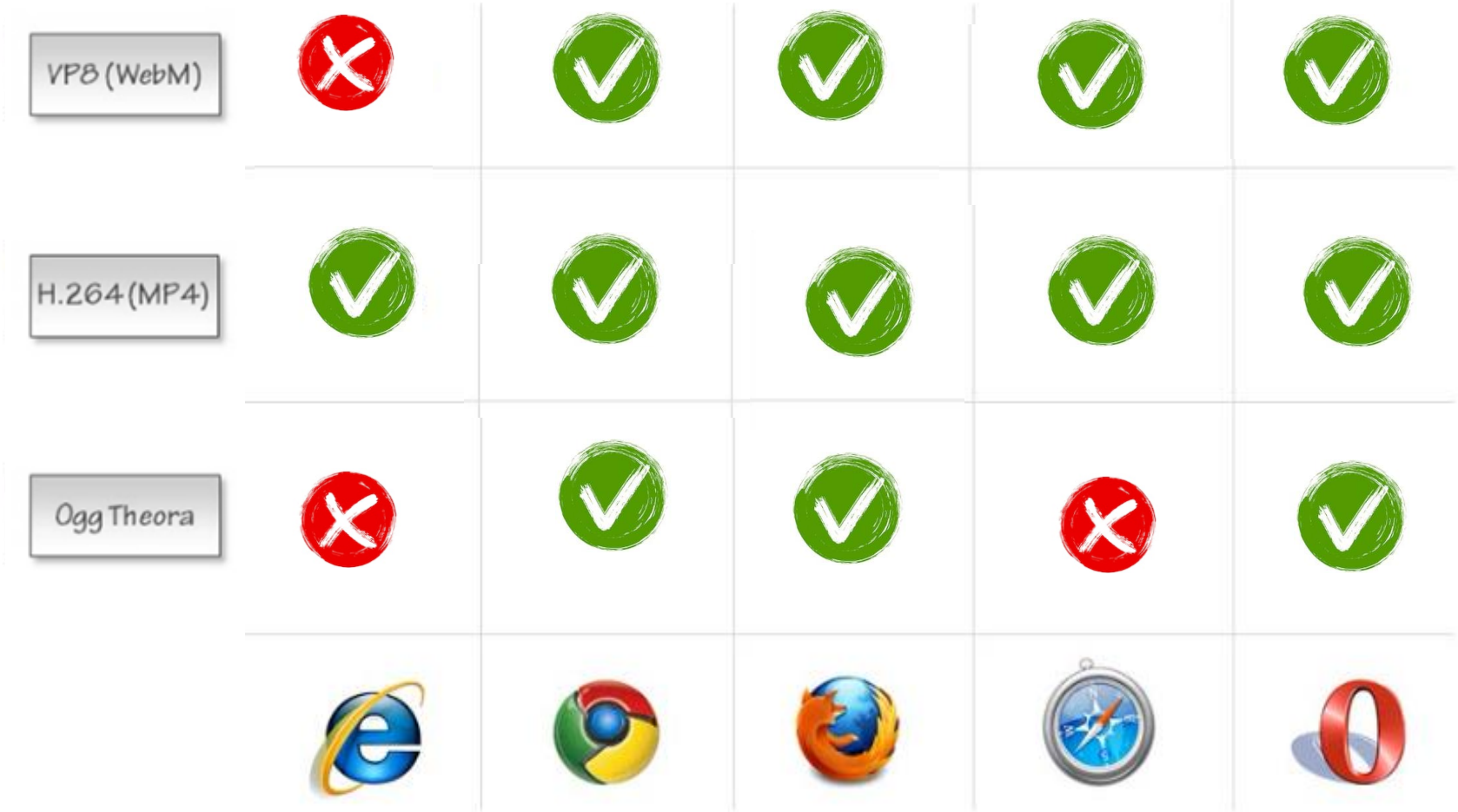
Native Media format for HTML5

- Video
  - webM
  - H.264(mp4)
  - oggTheora
- Audio
  - wav
  - mp3
  - oogVorbis

- No common format to use.
- We have to encode in different multiple formats.
- Need of converter to convert into different format.

Native Video Browser Support

https://en.wikipedia.org/wiki/HTML5_video



Native Audio Browser Support

Media Attributes

Attribute	Description
src	Specifies the URL of the **media** source file
controls	Specifies whether or not to display **media** controls (such as a play/pause button etc).
autoplay	Specifies whether or not to start playing the **media** as soon as it has been loaded. Depending on browser policy
loop	Specifies whether to keep re-playing the **media** once it has finished.
poster=""	display a frame of the **video** (as a .jpg, .png..)
width=""	Specifies the width, in pixels, to display the **video**.
height=""	Specifies the height, in pixels, to display the **video.**

- NOTE:
  - HTML5 isn't extension for XHTML
    - There is no need to have a value for each attribute, otherwise set its value either to true or its name

Media Methods & Properties

Method	Description
load()	Re-loads the audio/video element
play()	Starts playing the audio/video
pause()	Pauses the currently playing audio/video

- controls
- loop
- autoplay
- played
- paused
- ended

- playbackRate → range [0, 16]
- currentTime
- duration
- src
- muted
- volume → range [0, 1]

https://developer.mozilla.org/en/docs/Web/Guide/Events/Media_events

Assignments