The Semantic Web

apple pie recipe

apple pie recipe
apple pie recipe **from scratch**
apple pie recipe **drink**
apple pie recipe **alton brown**

About 39,400,000 results (0.55 seconds)

Apple Pie by Grandma Ople **Recipe** - Allrecipes.com

allrecipes.com/recipe/apple-pie-by-grandma-... ▾ Allrecipes.com ▾

★★★★★ Rating: 4.8 - 5,797 reviews - 1 hr 30 mins - 512 cal

"This was my grandmother's **apple pie recipe**. I have never seen another one quite like it. It will always be my favorite and has won me several first place prizes ...

Easy Classic Apple Pie - 947 Photos - Recipes Like - Read Reviews

Perfect **Apple Pie recipe** from Pillsbury.com

www.pillsbury.com/recipes/...apple-pie/1fc2b60f-0a4... ▾ Pillsbury Company ▾

3 hrs - 230 cal

A classic **apple pie** takes a shortcut with easy Pillsbury® unroll-fill refrigerated pie crust.

Brown Butter Creamy Apple Pie - Easy Apple Pie Foldover - Caramel Apple Pie

Lady Gaga | Free Music, Tour Dates, Photos, Videos +1

www.myspace.com/**ladygaga** - Cached

Lady Gaga's official profile including the latest music, albums, songs, music videos and more updates.

Judas	♫ 4:10	Judas
The Edge Of Glory	♫ 5:21	Born This Way
Born This Way	♫ 4:20	Born This Way
Yoü And I	♫ 5:07	Born This Way

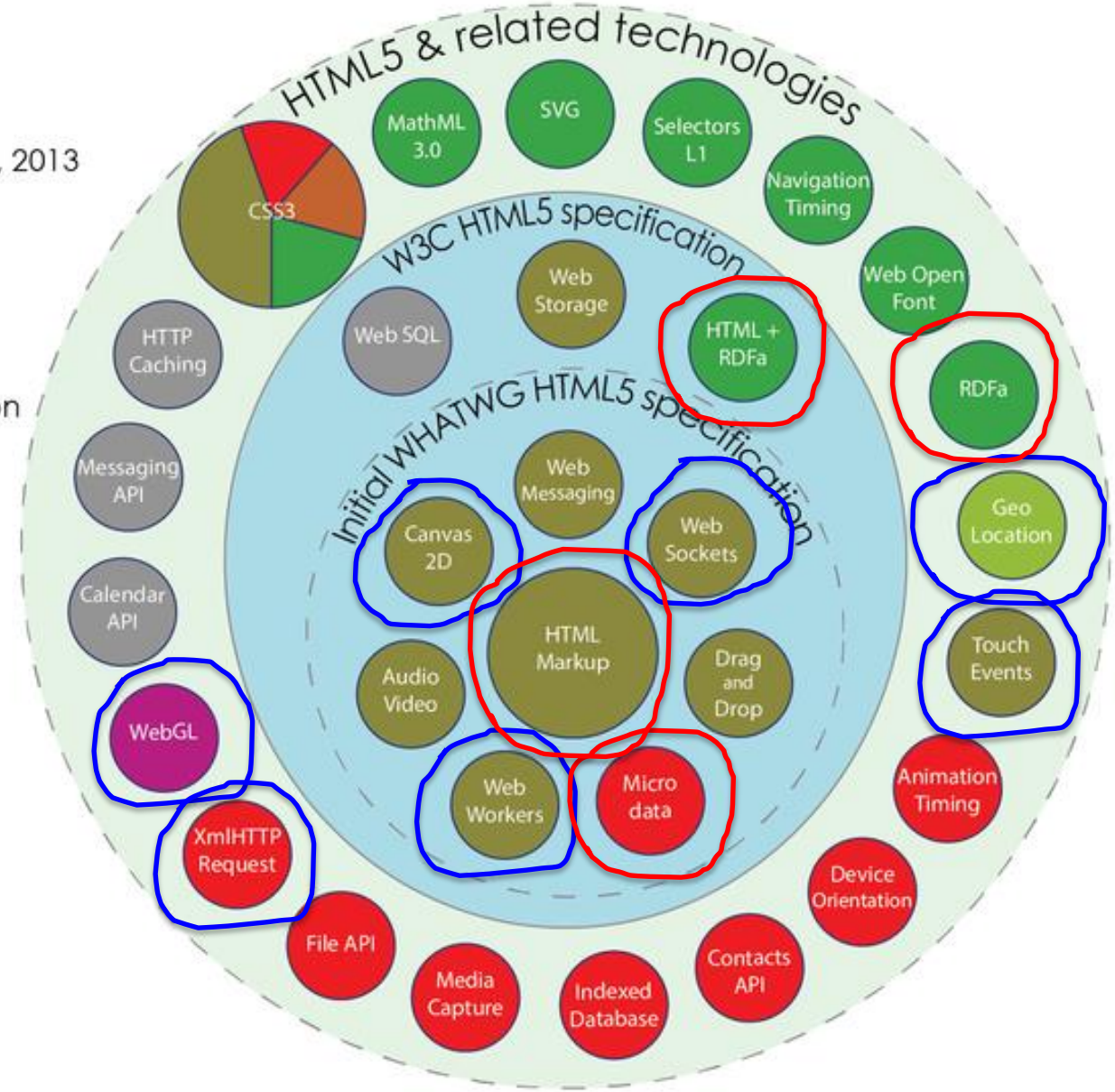
Overview

- HTML5 semantic markup
  - Why?
  - Common tags
- Custom markup
  - Microdata
  - Microformats
  - RDFa
  - JSON-LD

HTML5

Taxonomy & Status on January 20, 2013

- W3C Recommendation
- Proposed Recommendation
- Candidate Recommendation
- Last Call
- Working Draft
- Non-W3C Specifications
- Deprecated



Semantic web: Why?

- The problem:
  - Web pages are hard for computers to parse
    - Lots of `<div>` tags with different IDs/classes
    - Is `<div>` with ID "menu" a navigation sidebar or a restaurant menu?
    - What part of the page is:
      - A blog post? The date of the post?
      - Header of the web site? Footer?
      - Figure? Caption of figure?
  - Web pages are hard for some humans to parse
    - Users who are visually-impaired, only audio feedback
    - Users who are motor-impaired, only can use a few buttons

Semantic web: What is it?

"The Semantic Web is an extension of the current web in which information is given well-defined meaning, better enabling computers and people to work in cooperation"

-Tim Berners-Lee, May 2001, Scientific American

"The Semantic Web provides a common framework that allows data to be shared and reused across application, enterprise, and community boundaries. It is a collaborative effort led by W3C with participation from a large number of researchers and industrial partners. It is based on the Resource Description Framework (RDF)."

-W3C 2015

New HTML5 semantic tags

Tag	Description
<article>	Defines an article
<aside>	Defines content aside from the page content
<bdi>	Isolates a part of text that might be formatted in a different direction from other text outside it
<command>	Defines a command button that a user can invoke
<details>	Defines additional details that the user can view or hide
<summary>	Defines a visible heading for a <details> element
<figure>	Specifies self-contained content, like illustrations, diagrams, photos, code listings, etc.
<figcaption>	Defines a caption for a <figure> element
<footer>	Defines a footer for a document or section
<header>	Defines a header for a document or section
<hgroup>	Groups a set of <h1> to <h6> elements when a heading has multiple levels
<mark>	Defines marked/highlighted text
<meter>	Defines a scalar measurement within a known range (a gauge)
<nav>	Defines navigation links
<progress>	Represents the progress of a task
<ruby>	Defines a ruby annotation (for East Asian typography)
<rt>	Defines an explanation/pronunciation of characters (for East Asian typography)
<rp>	Defines what to show in browsers that do not support ruby annotations
<section>	Defines a section in a document
<time>	Defines a date/time
<wbr>	Defines a possible line-break

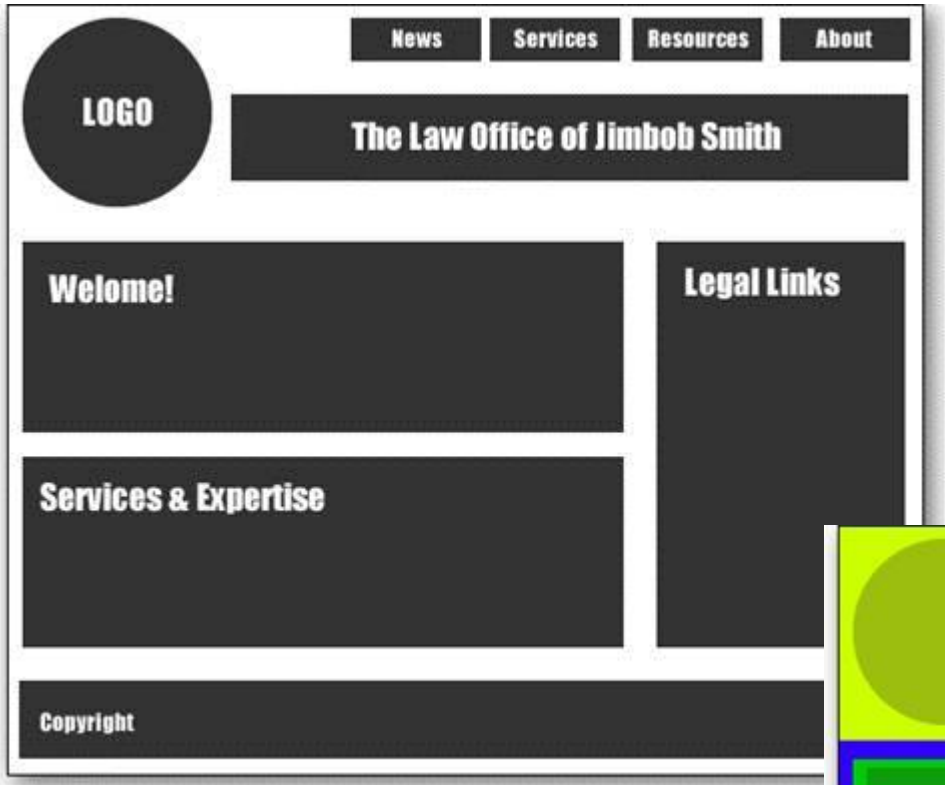


Figure 1 - General browser layout for fictitious home page

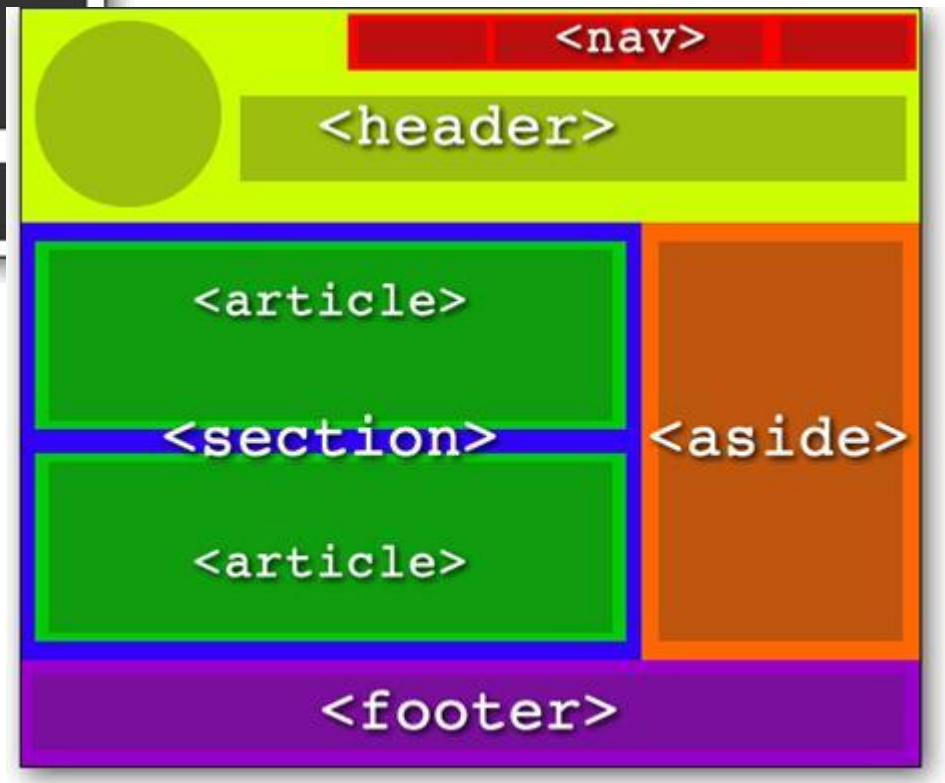
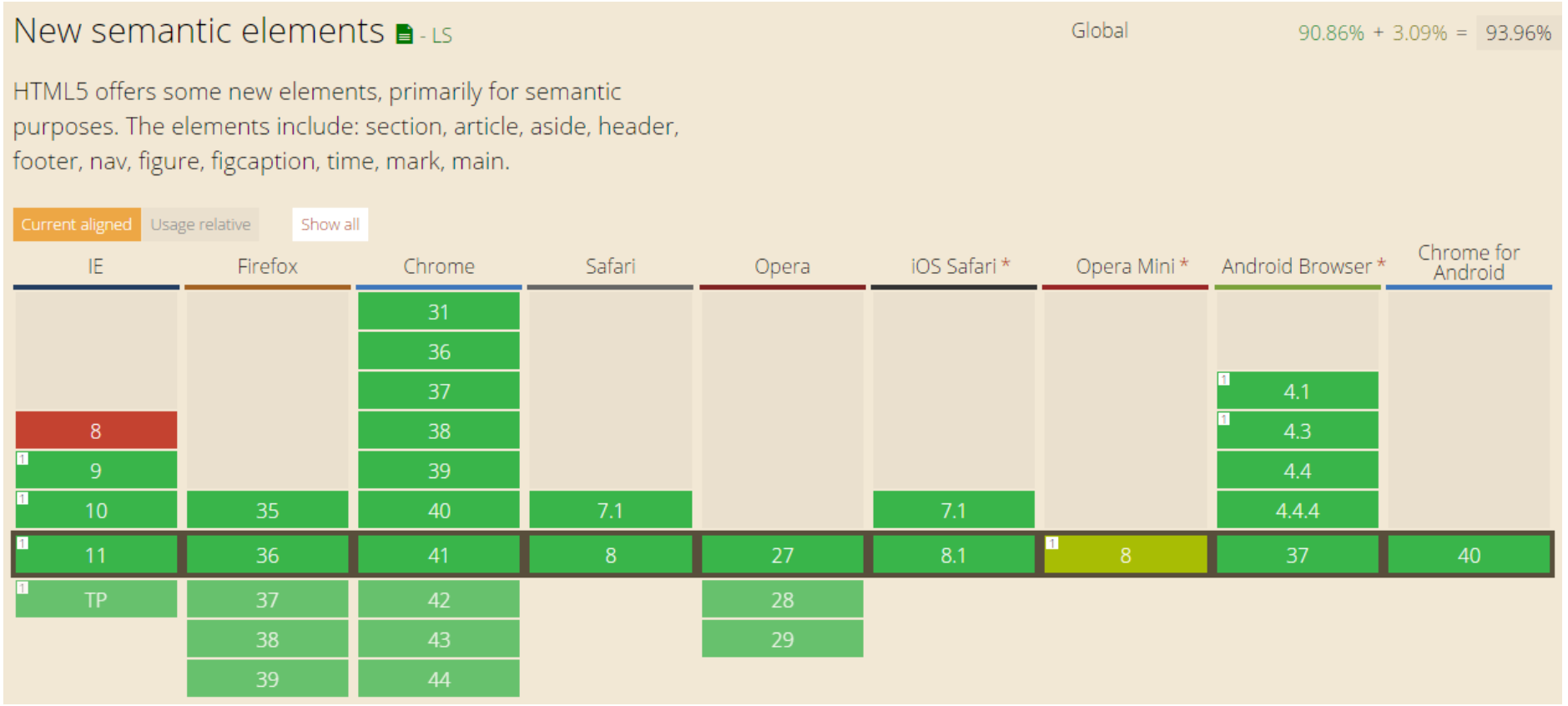


Figure 2 - New HTML5 semantic elements applied to layout for fictitious site

http://msdn.microsoft.com/en-us/scriptjunkie/gg454786

Semantic element support



http://caniuse.com/#feat=html5semantic

<section>

- According to W3C:
  - "represents a generic section of a document"
  - "a thematic grouping of content, typically with a heading"
- Not a generic container for styling
  - That's the job of
  - Avoid if <article>, <aside>, <nav> more appropriate
- Examples:
  - Chapters, tabbed pages in a tabbed dialog box
  - Numbered sections of a thesis

<section> example

```
<article>
  <hgroup>
    <h1>Apples</h1>
    <h2>Tasty, delicious fruit!</h2>
  </hgroup>
  <p>The apple is the pomaceous fruit of the apple tree.</p>
  <section>
    <h1>Red Delicious</h1>
    <p>These bright red apples are the most common found in many
       supermarkets.</p>
  </section>
  <section>
    <h1>Granny Smith</h1>
    <p>These juicy, green apples make a great filling for
       apple pies.</p>
  </section>
</article>
```

<article>

- Self-contained chunk of content
  - Something you may want to share
  - Independently distributable or reusable (syndication)
- Examples:
  - Forum post
  - Magazine/newspaper article
  - Blog entry
  - User-submitted comment
  - Interactive widget

```
<article itemscope itemtype="http://schema.org/BlogPosting">
 <header>
  <h1 itemprop="headline">The Very First Rule of Life</h1>
  <p><time itemprop="datePublished" datetime="2009-10-09">3 days ago</time></p>
  <link itemprop="url" href="?comments=0">
 </header>
 <p>If there's a microphone anywhere near you, assume it's hot and
 sending whatever you're saying to the world. Seriously.</p>
 <p>...</p>
 <section>
  <h1>Comments</h1>

  <article itemprop="comment" itemscope itemtype="http://schema.org/UserComments" id="c1">
   <link itemprop="url" href="#c1">
   <footer>
    <p>Posted by: <span itemprop="creator" itemscope itemtype="http://schema.org/Person">
     <span itemprop="name">George Washington</span>
    </span></p>
    <p><time itemprop="commentTime" datetime="2009-10-10">15 minutes ago</time></p>
   </footer>
   <p>Yeah! Especially when talking about your lobbyist friends!</p>
  </article>

  <article itemprop="comment" itemscope itemtype="http://schema.org/UserComments" id="c2">
   <link itemprop="url" href="#c2">
   <footer>
    <p>Posted by: <span itemprop="creator" itemscope itemtype="http://schema.org/Person">
     <span itemprop="name">George Hammond</span>
    </span></p>
    <p><time itemprop="commentTime" datetime="2009-10-10">5 minutes ago</time></p>
   </footer>
   <p>Hey, you have the same first name as me.</p>
  </article>

 </section>
</article>
```

Headers and footers

- `<header>`
  - Represents a group of intro or navigational aids
  - Top of: sections, articles, body of page
  - You can have multiple

- `<footer>`
  - Info such as: who wrote it, links to related documents, copyright, privacy policy, …
  - Bottom of: sections, articles
  - You can have multiple

Header/footer example

```
<header>
  <h1>Scientist discover way to reduce headaches</h1>
  <b><p>Sleeping with your shoes strongly correlated with
waking up with a headache</p></b>
</header>
<article>
  <p>Blah blah blah blah blah</p>
  <p>Blah blah blah...</p>
</article>
<footer>
  Copyright 2012 by Author
</footer>
```

<hgroup>

- Represents the headings of a section
  - Group of <h1> … <h6> elements if multiple levels
    - e.g. subheadings, alternative titles, taglines

```
<hgroup>
  <h1>The reality dysfunction</h1>
  <h2>Space is not the only void</h2>
</hgroup>
<hgroup>
  <h1>Dr. Strangelove</h1>
  <h2>Or: How I Learned to Stop Worrying and Love the Bomb</h2>
</hgroup>
```

<nav>

- Navigation and links
  - Used for groups of links, not a single link
    - e.g. Links to all articles in a forum thread
  - Not needed for links in <header>, <footer>

Figure 1 - General browser layout for fictitious home page

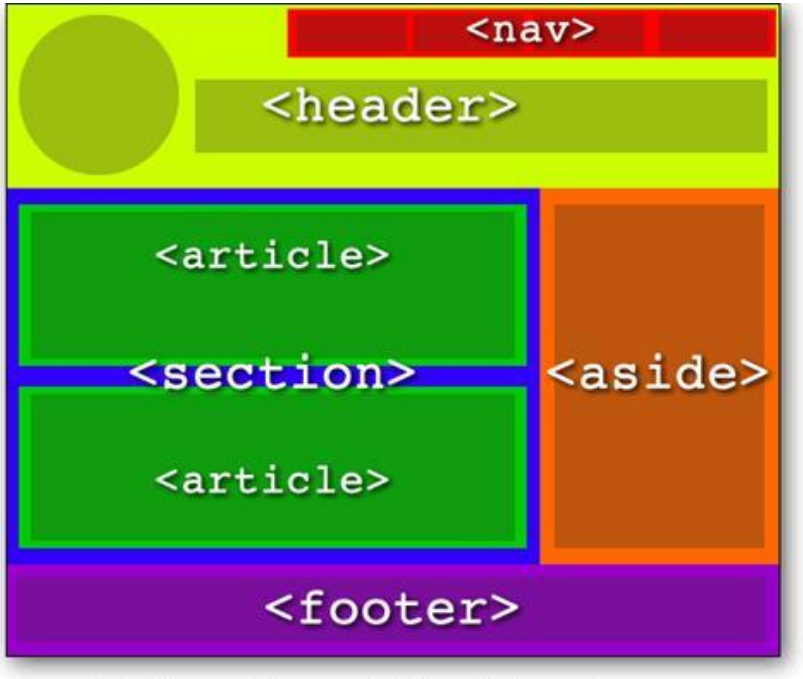


Figure 2 - New HTML5 semantic elements applied to layout for fictitious site

http://msdn.microsoft.com/en-us/scriptjunkie/gg454786

```
 <header>
  <h1>Wake up sheeple!</h1>
  <p><a href="news.html">News</a> -
     <a href="blog.html">Blog</a> -
     <a href="forums.html">Forums</a></p>
  <p>Last Modified: <span itemprop="dateModified">2009-04-01</span></p>
  <nav>
   <h1>Navigation</h1>
   <ul>
    <li><a href="articles.html">Index of all articles</a></li>
    <li><a href="today.html">Things sheeple need to wake up for today</a></li>
    <li><a href="successes.html">Sheeple we have managed to wake</a></li>
   </ul>
  </nav>
 </header>
 <div>
  <article itemprop="blogPosts" itemscope itemtype="http://schema.org/BlogPosting">
   <header>
    <h1 itemprop="headline">My Day at the Beach</h1>
   </header>
   <div itemprop="articleBody">
    <p>Today I went to the beach and had a lot of fun.</p>
   </div>
   <footer>
    <p>Posted <time itemprop="datePublished" datetime="2009-10-10">Thursday</time>.</p>
   </footer>
  </article>
</div>
 <footer>
  <p>Copyright 2010 The Example Company</p>
  <p><a href="about.html">About</a> -
     <a href="policy.html">Privacy Policy</a> -
     <a href="contact.html">Contact Us</a></p>
 </footer>
```

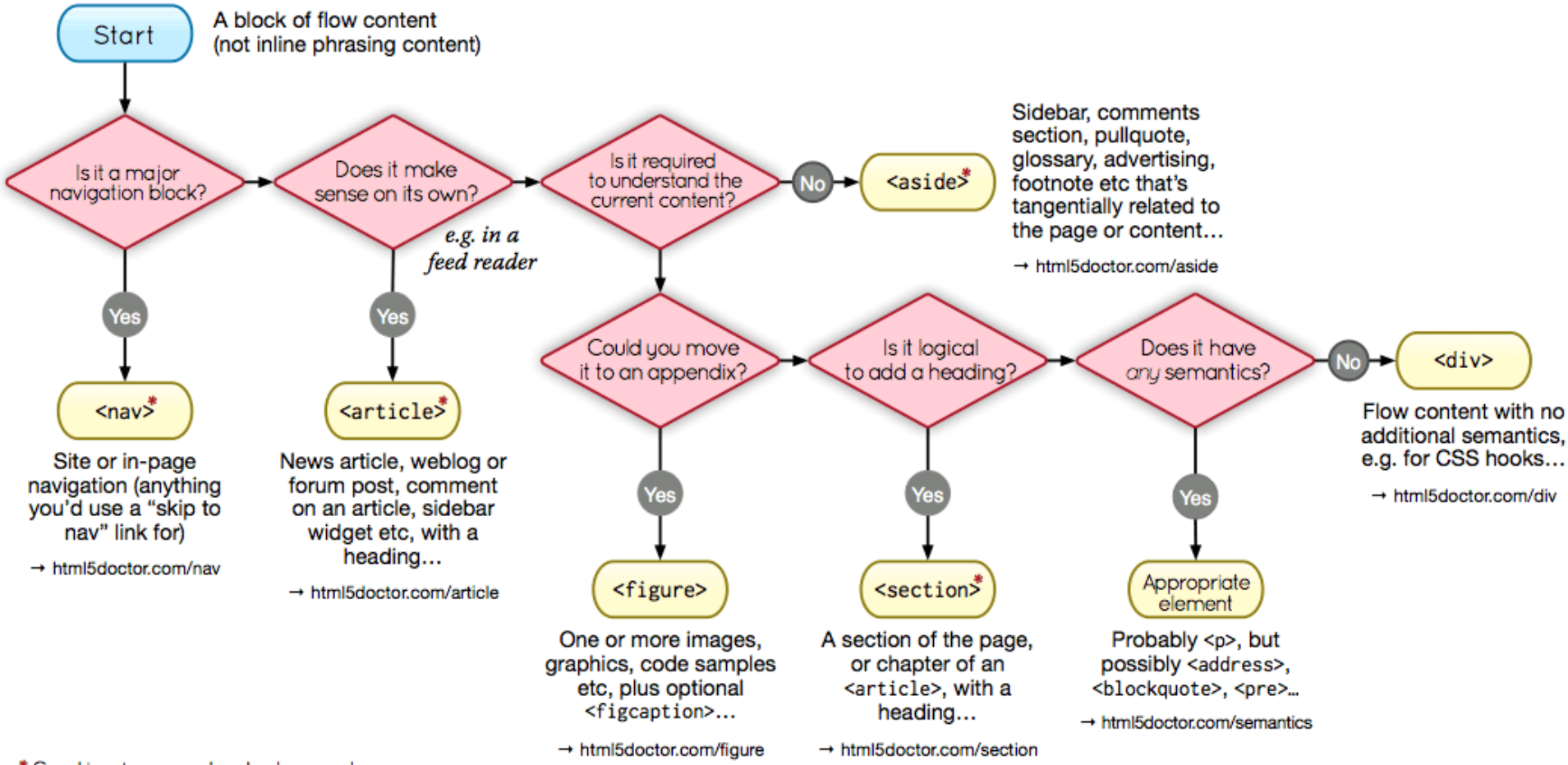
Some other elements

- <aside>
  - Chunks of content outside main flow of text
  - Sidebar, quote, after-though
- <time>
  - Machine readable time/date
- <abbr>
  - Expansion of an abbreviation
- <mark>
  - Mark words, for highlighting or editing

HTML5 Element Flowchart

Sectioning content elements and friends

By @riddle & @boblet
www.html5doctor.com



*Sectioning content element

These four elements (and their headings) are used by HTML5's outlining algorithm to make the document's outline
→ html5doctor.com/outline

2011-07-22 v1.5
For more information:
www.html5doctor.com/semantics

Even more meaning

- Problem: How does W3C know what I need?
  - I want to markup:
    - Names: companies, first names, last names, pet names
    - Sarcastic comments in forum posts
    - Info about the CDs in my library
  - Extend HTML in some way so I can add my own tags or attributes

Approaches

- Microdata
  - Web Hypertext Technology Working Group (WHATWG)
    - Development of HTML / APIs, formed by Apple, Mozilla, Opera
    - Response to "W3C's direction with XHTML, lack of interest in HTML and apparent disregard for the needs of real-world authors"
  - Adds: `<itemid>` `<itemprop>` `<itemref>` `<itemscope>` `<itemtype>`
- Microformats
  - Grassroots effort: "humans first, machines second"
  - Conventions on class attribute of HTML tags
- RDFa (Resource Description Framework with attributes)
  - W3C recommendation
  - Adds: `<about>` `<datatype>` `<profile>` `<prefix>` `<property>` `<resource>` `<typeof>` `<vocab>`

Google rich snippets

- What custom semantic tags should I add?
  - One answer: those supported by Google
- Google rich snippets
  - "designed to give users a sense of what's on the page and why it's relevant to their query"
  - Supported data types:
    - Product, Recipe, Review, Event, SoftwareApplication

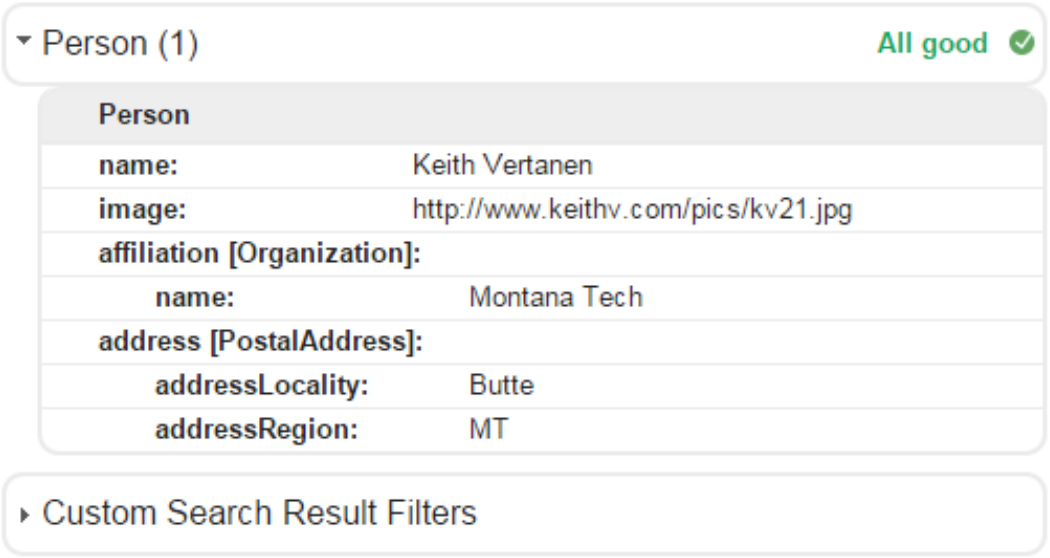
http://www.google.com/webmasters/tools/richsnippets

Microdata details

- Microdata vocabularies
  - Meaning for an item
  - Design your own custom one, or link to one
    - http://schema.org
- Attributes
  - `itemscope`
    - Creates an item, children of this element have info
  - `itemtype`
    - URL to the vocabulary describing item
  - `itemprop`
    - Value of a particular property of the item

```
<section itemscope itemtype="http://schema.org/Person">
  <h2 itemprop="name">Keith Vertanen</h2>
  <img itemprop="image"
       src="http://www.keithv.com/pics/kv21.jpg"
       alt="What a handsome guy" />
  <p>I am an assistant professor at
     <span itemprop="affiliation">Montana Tech</span>.
  </p>
  <address itemprop="address" itemscope
           itemtype="http://schema.org/PostalAddress">
    <b>Address:</b>
    <p itemprop="addressLocality">Butte</p>
    <p itemprop="addressRegion">MT</p>
   </address>
</section>
```

http://keithv.com/websci/keith.html



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

schema.org

Q: What is the purpose of schema.org?
Schema.org is a joint effort…to improve the web by creating a structured data markup schema supported by major search engines. On-page markup helps search engines understand the information on web pages and provide richer search results.

Q: Why are Google, Bing, Yandex and Yahoo! collaborating? Aren't you competitors?
Currently, there are many standards and schemas for marking up different types of information on web pages. Creating a schema supported by all the major search engines makes it easier for webmasters to add markup, which makes it easier for search engines to create rich search features for users.

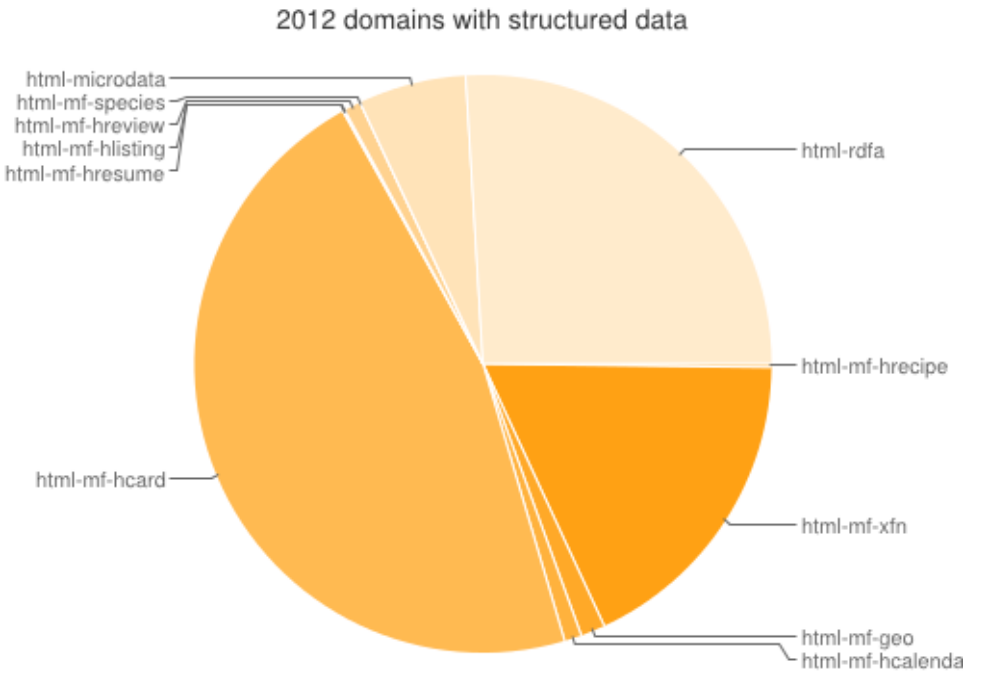
Q: Why microdata? Why not RDFa or microformats?
Focusing on microdata seemed like a pragmatic decision at the time. For some time now we have been supporting multiple syntaxes, specifically including RDFa and JSON-LD.

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

Microformat example

```
<div class="vcard">
   <img class="photo" src="www.example.com/bobsmith.jpg" />
   <strong class="fn">Bob Smith</strong>
   <span class="title">Senior editor</span> at <span class="org">ACME Reviews</span>
   <span class="adr">
      <span class="street-address">200 Main St</span>
      <span class="locality">Desertville</span>, <span class="region">AZ</span>
      <span class="postal-code">12345</span>
   </span>
</div>
```

- Microformat
  - Uses class attribute
  - "Humans first, machines second"



http://microformats.org/

RDFa example

```
<html>
  <body>
    <div xmlns:v="http://rdf.data-vocabulary.org/#" typeof="v:Person">
       My name is <span property="v:name">Bob Smith</span>,
       but people call me <span property="v:nickname">Smithy</span>.
       Here is my homepage:
       <a href=http://www.example.com rel="v:url">www.example.com</a>.
       I live in Albuquerque, NM and work as an
       <span property="v:title">engineer</span>
       at
       <span property="v:affiliation">ACME Corp</span>.
    </div>
  </body>
</html>
```

- RDFa
  - Implemented by Best Buy
  - 30% increase in organic search traffic
  - 15% increase in Click-Through Rate (CTR)

Without Markup | Microdata | RDFa | JSON-LD

```
Springfield Town Hall
Hours:
   Mon-Fri 9am - 5:30pm
   Sat 9am - 12pm
   Closed Sun
```

Without Markup | Microdata | RDFa | JSON-LD

```
<div itemscope itemtype="http://schema.org/CivicStructure">
  <span itemprop="name">Springfield Town Hall</span>
  Hours:
  <meta itemprop="openingHours" content="Mo-Fr 09:00-17:30">Mon-Fri 9am - 5:30pm
  <meta itemprop="openingHours" content="Sa 09:00-12:00">Sat 9am - 12pm
  Closed Sun
</div>
```

Without Markup | Microdata | RDFa | JSON-LD

```
<div vocab="http://schema.org/" typeof="CivicStructure">
  <span property="name">Springfield Town Hall</span>
  Hours:
  <meta property="openingHours" content="Mo-Fr 09:00-17:30">Mon-Fri 9am - 5:30pm
  <meta property="openingHours" content="Sa 09:00-12:00">Sat 9am - 12pm
  Closed Sun
</div>
```

Without Markup | Microdata | RDFa | JSON-LD

```
Springfield Town Hall
Hours:
   Mon-Fri 9am - 5:30pm
   Sat 9am - 12pm
   Closed Sun
```

Without Markup | Microdata | RDFa | JSON-LD

```
<script type="application/ld+json">
{
  "@context": "http://schema.org",
  "@type": "CivicStructure",
  "name": "Springfield Town Hall",
  "openingHours": [
    "Mo-Fr 09:00-17:30",
    "Sa 09:00-12:00"
  ]
}
</script>
```

https://www.youtube.com/watch?v=vioCbTo3C-4

Summary

- Semantic markup
  - Using tags/attributes to describe meaning
  - Separates presentation from semantics
  - Makes automated page processing easier
    - Parsing meaning from arbitrary page: AI complete
  - Multiple standards
    - Microdata
    - Microformats
    - RDFa
    - JSON-LD