HTML 5:
For Developers

Nathaniel T. Schutta
@ntschutta

HTML5 for Developers LiveLessons

http://www.informit.com/store/product.aspx?isbn=0132761718

The Plan

- Forms
- Autofocus
- Input types
- Semantic Elements
- Geolocation
- Canvas

Forms.

Forms aren't interesting.

Right?

HTML5 improves things.

Adds placeholder text!

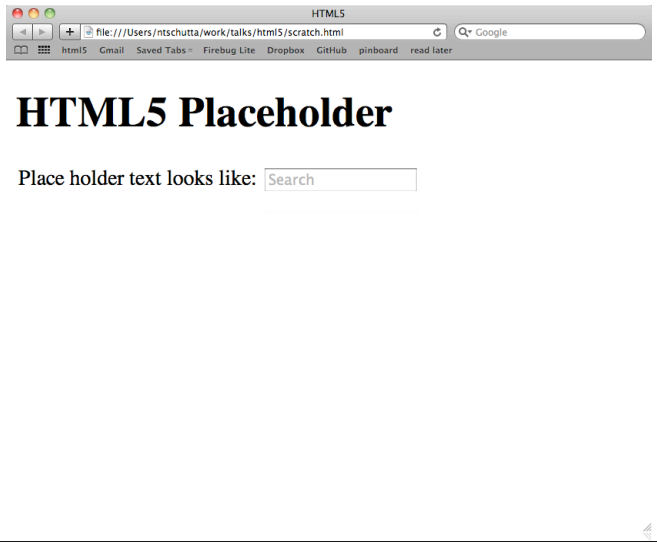
Very helpful.

We've seen this before.

So how do we get
in on the action?

With the placeholder attribute of course!

If your browser supports it, you'll see...

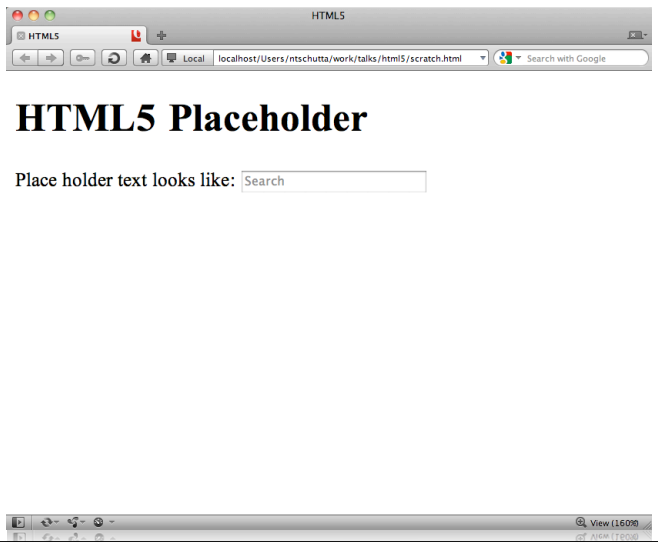



```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Place holder text looks like: <input type="text" placeholder="Search">

</body>
</html>
```

And if your browser doesn't support it?



It's ignored.

Can I add markup?

Sorry.

Text only.

Can I style it?

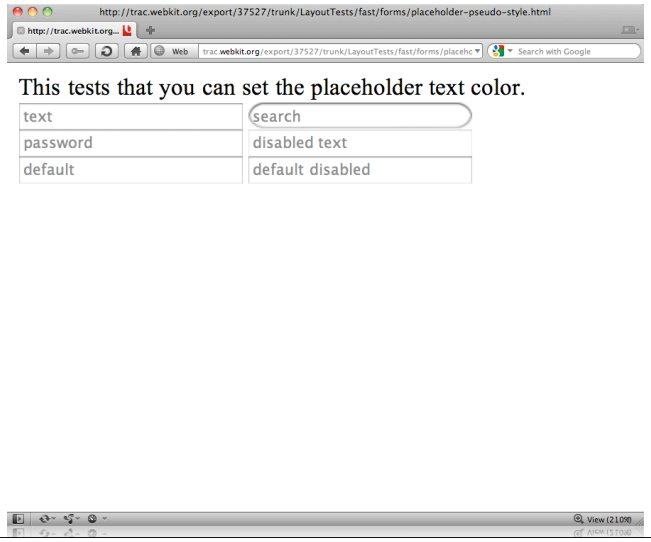
Sort of.

Vendor prefix.

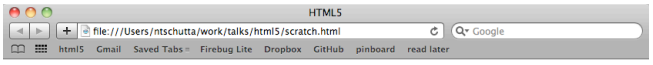
This tests that you can set the placeholder text color.

text	search
password	disabled text
default	default disabled

http://trac.webkit.org/export/37527/trunk/LayoutTests/fast/forms/placeholder-pseudo-style.html



To change it yourself...



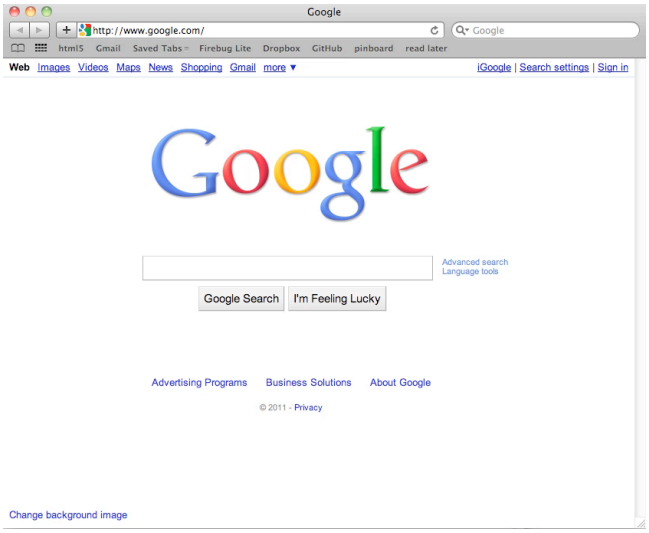
HTML5 Placeholder

Place holder text looks like: Search

```
<style>
::-webkit-input-placeholder {
   color: red;
}
</style>
```

Autofocus.

Very handy.



Often done with JavaScript.

Most of the time,
this is great.

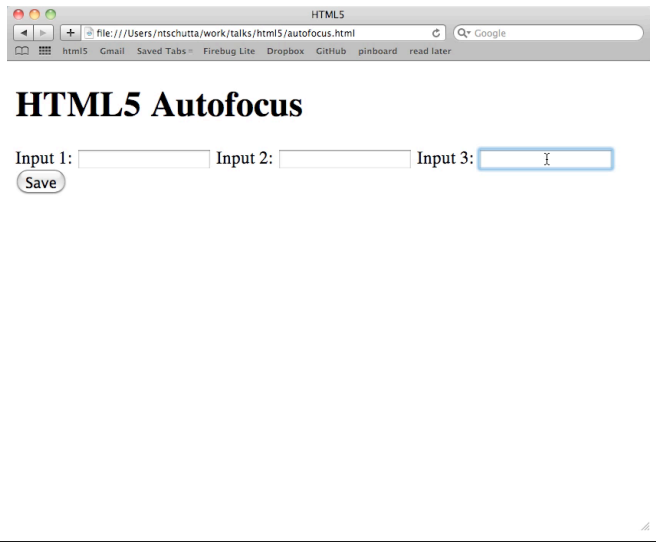
Except when you're
not expecting it...

Helpfully "moves" your focus.

And you can't opt out.

HTML5 gives us the autofocus attribute.

After page load, moves focus to the field.

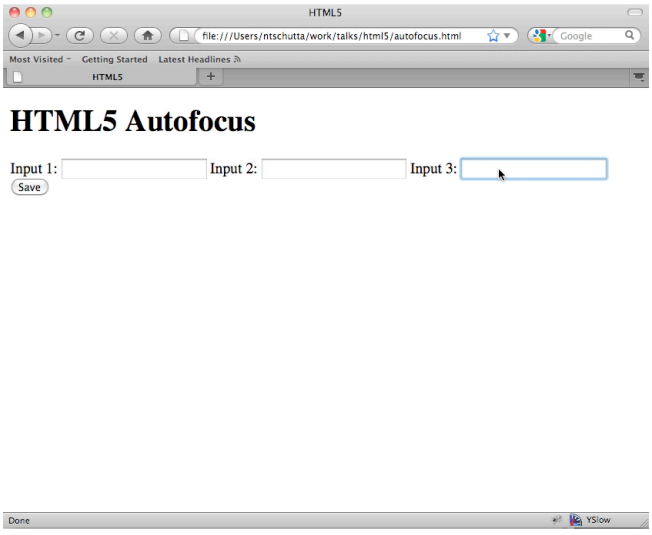



```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5</title>
</head>
<body>
    <h1>HTML5 Autofocus</h1>
    <form>
      Input 1: <input type="text" autofocus>
      Input 2: <input type="text">
      Input 3: <input type="text">
      <input type="submit" value="Save">
    </form>
</body>
</html>
```

And if your browser doesn't support it?

Wait for it...

It's ignored!



So what do you do about that?

No worries!

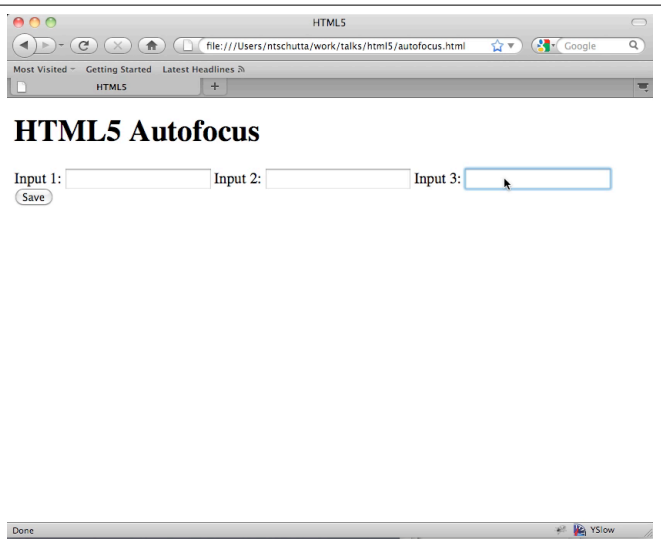
Add the attribute.

Do some feature detection.

Use your own script.

Or rely on a library.

Like say jQuery ;)



```
<script src=jquery-1.5.js></script>
<script>
  $(document).ready(function() {
    if (!("autofocus" in document.createElement("input"))) {
      $("#first").focus();
    }
  });
</script>
```

New Input Types.

We've spent a lot of time developing apps.

With a really limited palette.

Text box, text area, drop down, radio button...

Pretty limited.

Libraries help!

But why doesn't the browser do more?

Now it can!

HTML5 adds 13 new types.

And if your browser doesn't support it?

No worries.

Unknown types treated as text.

Even works in IE 6!

So what's been added?

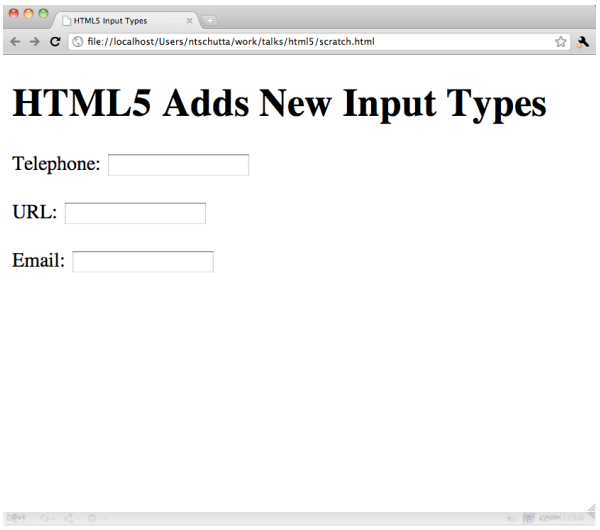
- search
- spinner
- slider
- color picker
- telephone number
- url
- email
- date, month, week, timestamp
- datetime

What do they do?

The spec doesn't say.

In many cases, they look just a text box.

For example...




```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Telephone: <input type="tel"> <br/> <br/>
    URL: <input type="url"> <br/> <br/>
    Email: <input type="email"> <br/> <br/>

</body>
</html>
```

Impressed?

Yeah...

So what's the point?

What about the iPhone?

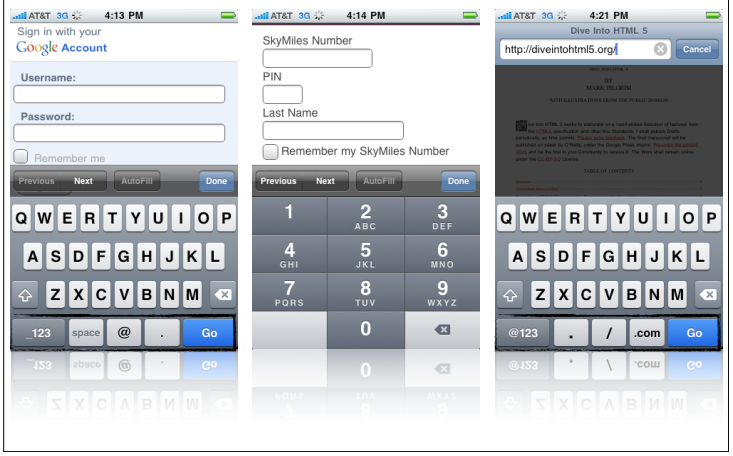
No keyboard.

"Need a keyboard."

Really?

Can't reconfigure a physical keyboard.

But when it's software...



That's useful!

Frustrating when sites don't.

And it costs you nothing.

Search.

Speaking of inputs that don't look much different...

HTML5 Adds New Input Types

Search:

HTML5 Adds New Input Types

Search:

HTML5 Adds New Input Types

Search:

HTML5 Adds New Input Types

Search:

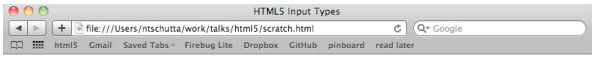
```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Search: <input type="search" autofocus> <br/><br/>

</body>
</html>
```

Rounded corners!

Oh, and an X...



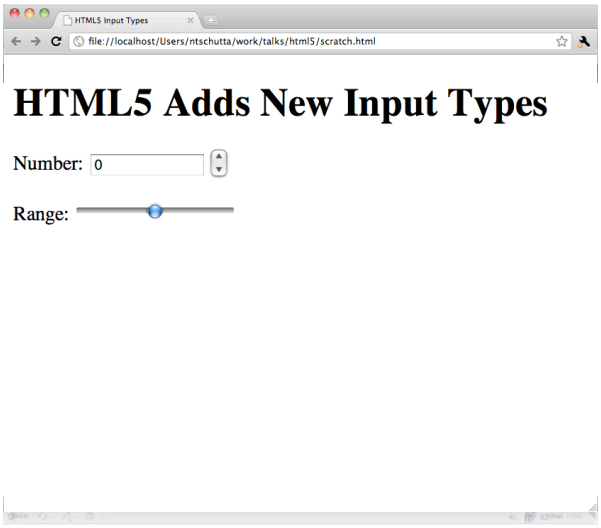
HTML5 Adds New Input Types

Search:

Numbers.

Like email addresses & URLs, they're special.

How about spinners and ranges?




```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Number: <input type="number"
                   step="2"
                   value="0"
                   min="0"
                   max="10"> <br/> <br/>

    Range: <input type="range"> <br/> <br/>

</body>
</html>
```

Attributes are optional.

Default step value is 1.

Ranges.

Slider control.

Shades of thick clients!

```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Number: <input type="number"
                   step="2"
                   value="0"
                   min="0"
                   max="10"> <br/> <br/>

    Range: <input type="range"> <br/> <br/>

</body>
</html>
```

Also includes some handy JavaScript.

stepUp(n)
stepDown(n)

Increase/decrease
the value by n.

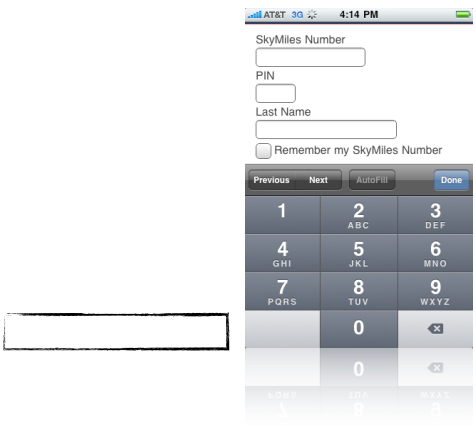
valueAsNumber

Returns value
as a number!

The value attribute
is a string...

Useful?

Back to the iPhone...



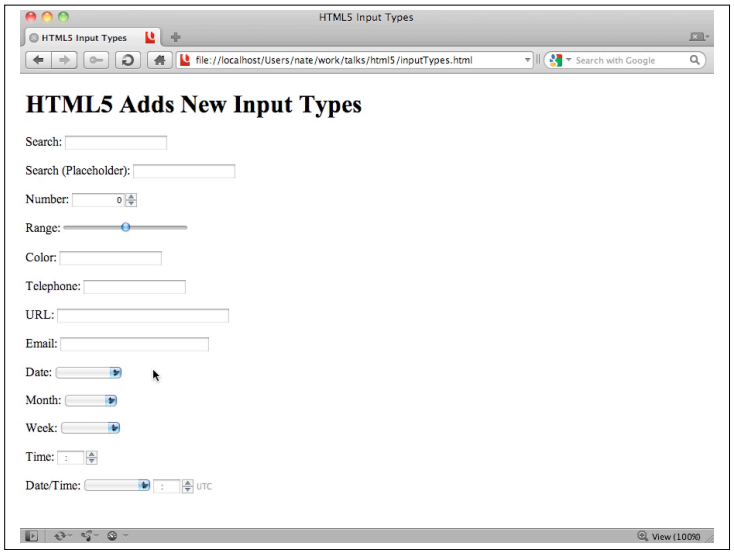
Date pickers.

Why don't we have a native date picker?

Now we do!

But it's only in Opera.

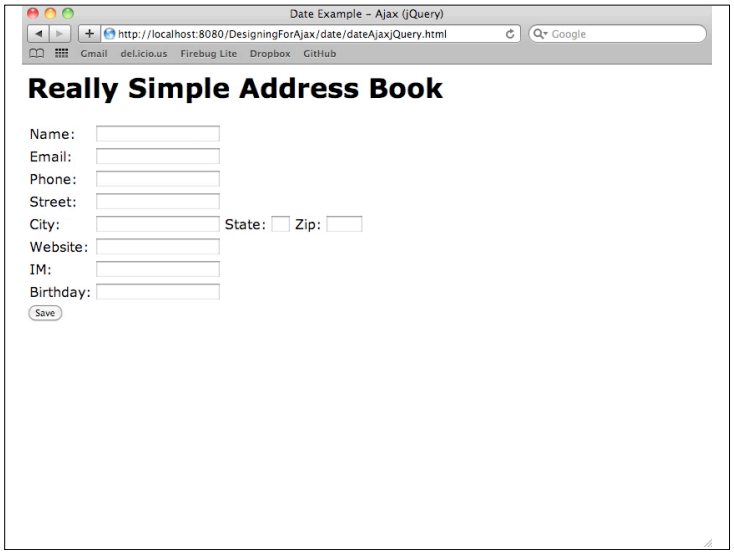
And you may not like it.




```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Date: <input type="date"> <br/> <br/>
    Month: <input type="month"> <br/> <br/>
    Week: <input type="week"> <br/> <br/>
    Time: <input type="time"> <br/> <br/>
    Date/Time: <input type="datetime"> <br/> <br/>

</body>
</html>
```



CSS could be improved.

But which would your users' prefer?

Fallback to a library.

Speaking of pickers.

Color!

Pick a color, get
a hex value!

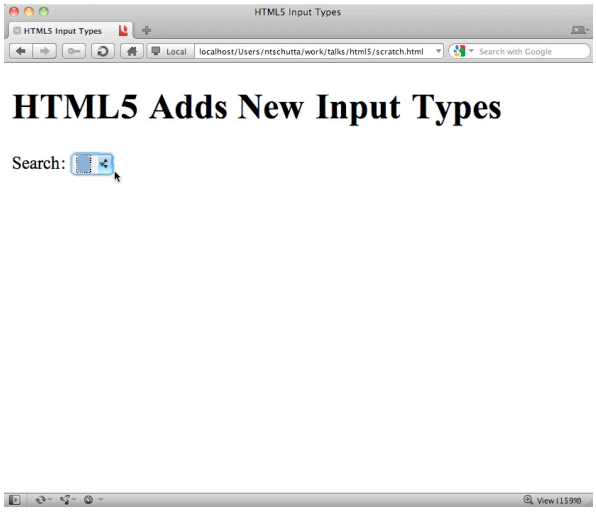
Cool!

Only works in Opera.

Bummer.

Uses native picker.

Except on Linux.




```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>

    Color Picker: <input type="color">

</body>
</html>
```

Validation!

Email address.

Yes, you can do this
in JavaScript today.

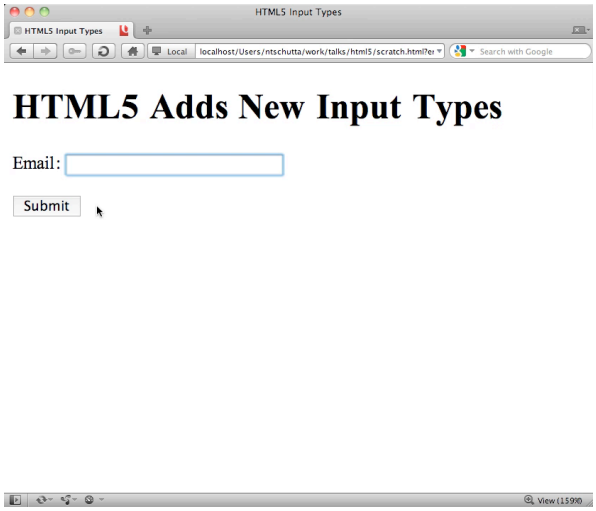
Maybe you already do.

It's hard!

What if JS is disabled?

And you're still validating
on the server right?

HTML5 to the rescue!



Validation is on by default.

Also works for url and numbers.

Even respects min/max.

Don't want to validate?

Use novalidate attribute.

Support is...soft.

Safari and Chrome,
no error messages.

Just doesn't submit ;)

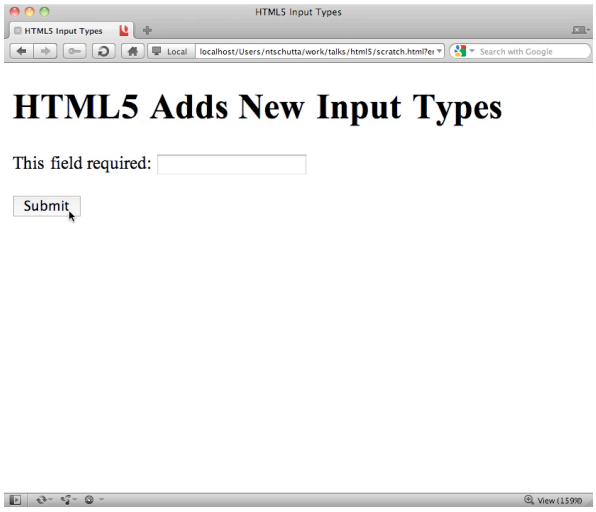
Very user friendly.

Required fields.

Add the required attribute!

Appearance varies by browser.

For example...




```
<!DOCTYPE HTML>
<html>
<head>
    <title>HTML5 Input Types</title>
</head>
<body>
    <h1>HTML5 Adds New Input Types</h1>
    <form>
        This field required: <input name="foo" required>
        <input type="submit" value="Submit">
    </form>
</body>
</html>
```

New semantic elements.

HTML5 adds new elements.

- section
- nav
- article
- aside
- hgroup
- header
- footer
- time
- mark

Defines things we've
been doing for years.

With divs and ids.

It works, but
lacks meaning.

Common markup.

Again, nod to what we're actually doing.

More meaningful than divs!

So what do these elements mean?

`<section>`

Thematic grouping of content.

Might have heading or an outline.

Chapters, tabs.

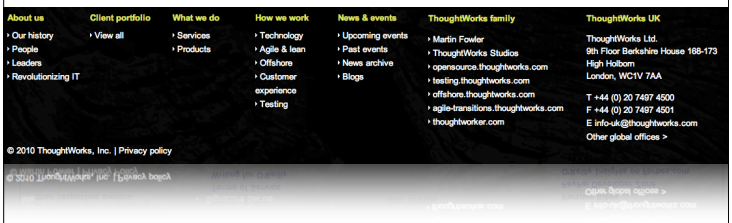
Intro, part 1, part 2...part N, conclusion.

<nav>

Section with links.

Major navigation blocks.

Common in footers.



Nothing tells you that's navigation though.

Common yes...

Accessibility.

Screen readers,
keyboard only users.

<article>

Reusable or distributable.

Post, blog entry, comment.

Think syndication.

<aside>

Tangential content.

Sidebars, pull quotes.

<hgroup>

Group of set of headings (h1-h6).

<header>

Introduction.

Could contain hgroup or headings.

Does't create a new section.

Not a new scope for headers/footers.

```
<div id="header">
...
</div>
```

```
<header>
...
</header>
```

```
<footer>
```

Usually at the bottom of a section.

Often contains copyright, contact info, help, privacy, etc.

Whatever lives in the `div id="footer"` ;)

Does't create a new section.

`<time>`

Encode time/date for machine use.

Meetings, birthdays, anniversaries ;)

```
<time datetime="2011-02-22" pubdate>February 22, 2011</time>
```

3 parts.

1. Machine readable.

```
<time datetime="2011-02-22" pubdate>February 22, 2011</time>
```

YYYY-MM-DD

Quite flexible.

http://www.whatwg.org/specs/web-apps/current-work/multipage/common-microsyntaxes.html#valid-global-date-and-time-string

Want time?

Add T, time in 24 hour, timezone offset.

```
datetime="2011-02-22T11:21:37-07:00"
```

2. Human readable.

```
<time datetime="2011-02-22" pubdate>February 22, 2011</time>
```

Text doesn't have to match the datetime attribute.

It's human readable!

Next Sunday, tomorrow, in three days...

Could even be empty.

pubdate flag.

```
<time datetime="2011-02-22" pubdate>February 22, 2011</time>
```

Boolean.

Says timestamp is publication date.

For article or
the document...

<mark>

Think highlight.

Call attention to something.

And if your browser
doesn't support it?

Unknown elements
rendered inline.

However, many of these elements are block.

In older browsers...

Style them as block.

HTML5 Reset.

http://html5doctor.com/html-5-reset-stylesheet/

Oh, before 9, IE won't style unknown elements.

Despite your CSS.

Also affects the DOM.

The workaround?

Create the element
in JavaScript.

IE will allow
you to style it.

Don't want to do
that yourself?

No worries.

HTML5 enabling script.

http://remysharp.com/2009/01/07/html5-enabling-script/

What's all the fuss about?

Divs work, right?

Document outline.

http://gsnedders.html5.org/outliner/

Before, headings were our only hope.

Sectioning content (article, aside, nav, section)...

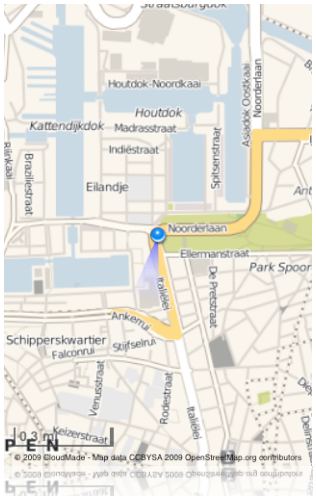
Create new nodes.

Each has its
own hierarchy.

Aids composability.

Geolocation.

Where in the
world are you?



http://www.offmaps.com/

Very helpful on phones!

Technically not a part of HTML5.

Geolocation Working Group.

Wide browser support.

Your browser doesn't support it?

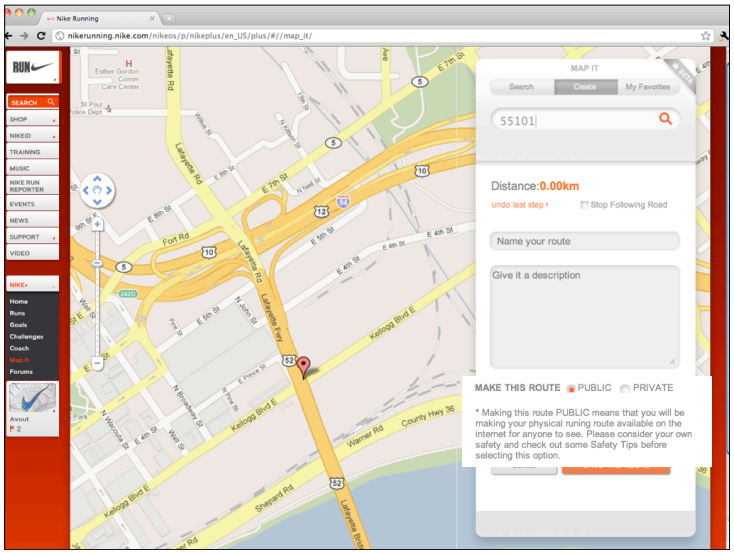
Device specific options.

Privacy issue?

Absolutely.

If you know where the device is...

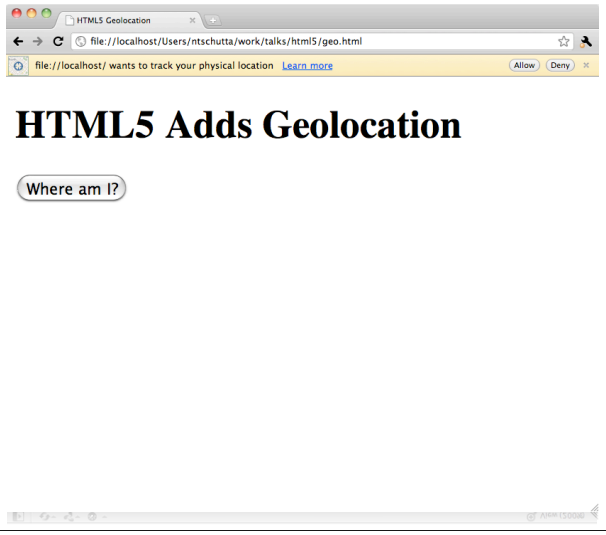
http://icanstalku.com/why.php

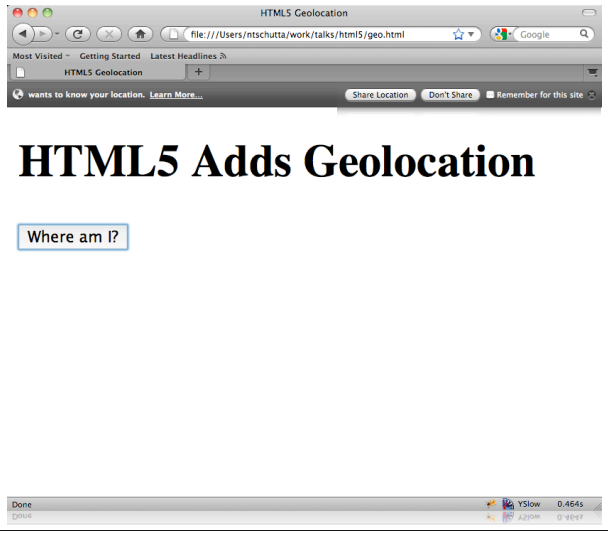


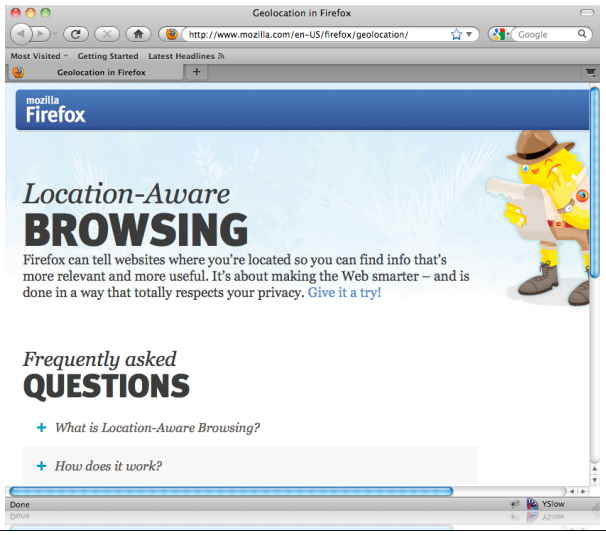
Opt-in.

http://www.w3.org/TR/geolocation-API/#security

Browsers tell you before data is sent.







Infobars are smart.

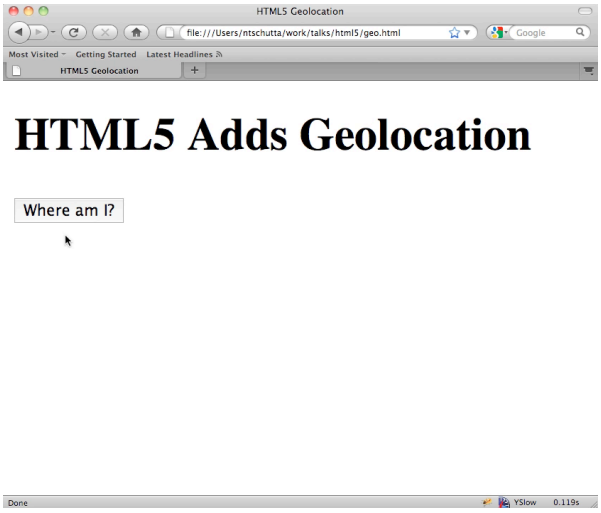
Often give link to further information.

Aren't modal.

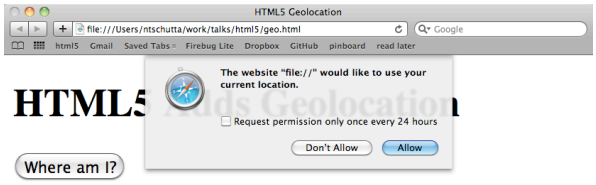
Tab specific.

Blocks.

You can go about your business in other tabs.



How does this work?



```
function whereAmI() {
  if (Modernizr.geolocation) {
    navigator.geolocation.getCurrentPosition(showLocation);
  } else {
    alert("this browser doesn't support geolocation, sorry!");
  }
}

function showLocation(position) {
  var latitude = position.coords.latitude;
  var longitude = position.coords.longitude;
  $("#location").html("lat: " + latitude + " and long: " + longitude);
}
```

New property.

`navigator.geolocation`

Simple API.

`getCurrentPosition()`

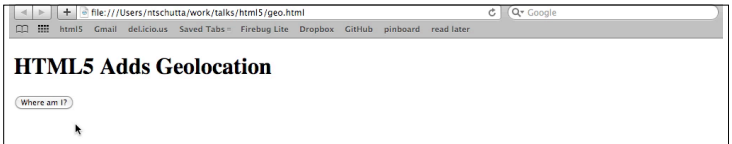
Browser "determines location," creates `Position`.

`Position` contains `Coordinates` & timestamp.

Coordinates

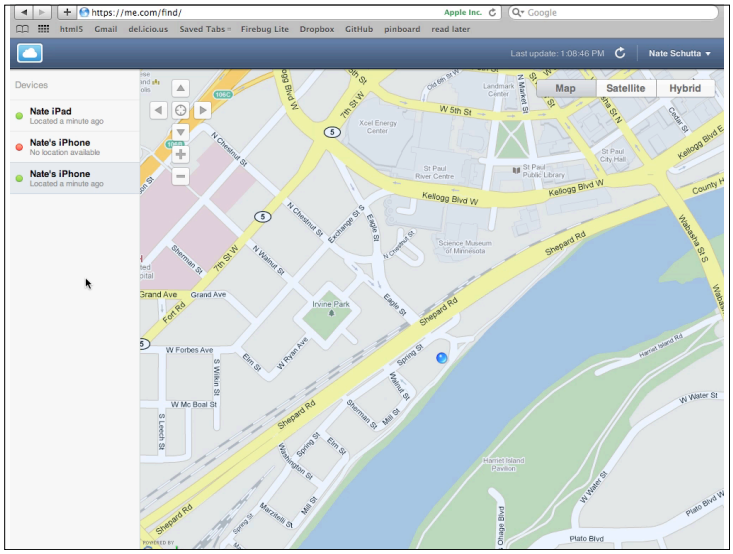
- latitude (double)
- longitude (double)
- altitude (double or `null`)
- accuracy (double)
- altitudeAccuracy (double or `null`)
- heading (double or `null`)
- speed (double or `null`)

You supply a callback function.



How accurate is it?

Can be *very* accurate.



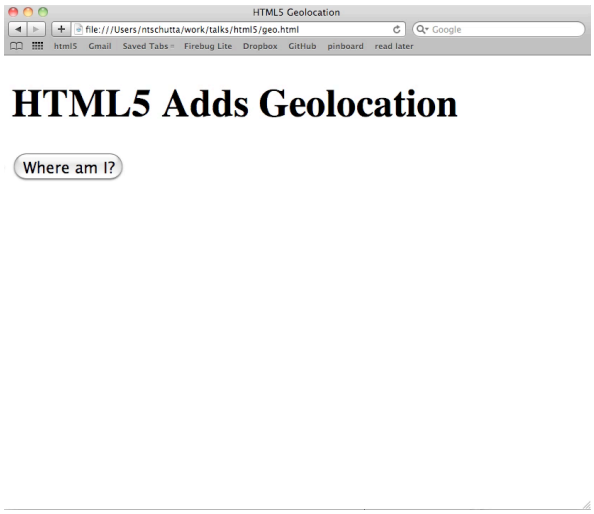
Your function receives a Position object with:

`coords` & `timestamp`

Can take some time ;)

`getCurrentPosition()`

Optional second arg: error callback function.




```
function whereAmI() {
  if (Modernizr.geolocation) {
    navigator.geolocation.getCurrentPosition(showLocation, handleError);
  } else {
    alert("this browser doesn't support geolocation, sorry!");
  }
}

function showLocation(position) {
  var latitude = position.coords.latitude;
  var longitude = position.coords.longitude;
  $("#location").html("lat: " + latitude + " and long: " + longitude);
}

function handleError(error) {
  if(error.code == 1) {
    var message = "You want to keep your location private, that's OK!"
  }
  $("#location").html("Ooops! " + message);
}
```

Callback gets a `PositionError` object.

Two attributes.

code & message

Code values...

- PERMISSION_DENIED (1)
- POSITION_UNAVAILABLE (2)
- TIMEOUT (3)
- UNKNOWN_ERROR (0)

`getCurrentPosition()`

Optional third argument.

PositionOptions

- enableHighAccuracy (boolean)
- timeout (long)
- maximumAge (long)

All attributes are optional.

Higher accuracy may be slower.

Some devices have separate permissions.

Timeout is based on network time, not user.

Age allows you to cache positions.

IE? Out of luck < 9.

Are other options.

Gears, device specific.

geo.js

http://code.google.com/p/geo-location-javascript/

Layer over various approaches.

Canvas.

Graphics!

Graphs, shapes, animations, etc.

Controlled via scripting.

Pretty simple.

```
<canvas id="canvas" width="800" height="800"></canvas>
```

That's it?

Only two attributes:
width and height.

Optional, default is
300 pixels by 150 pixels.

CSS sizing as well.

Can be styled like an image
- boarder, margin, etc.

Specifying fallback content.

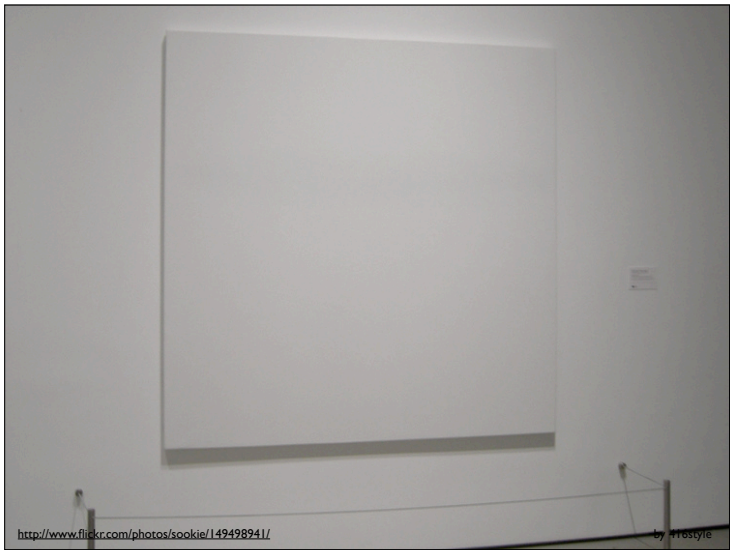
```
<canvas id="fallback" width="800" height="800">
   Put fallback content here...perhaps an image.
</canvas>
```

Content between tag.

Ignored by browsers supporting canvas...

Canvas tag is ignored by browsers lacking support.

Canvas starts like any canvas...



Up to you to fill it!

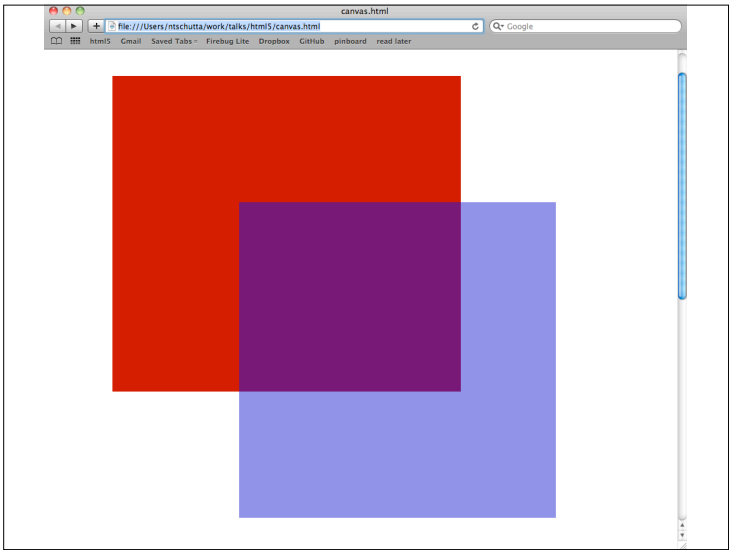
To draw, we need a context.

```
var ctx = canvas.getContext("2d");
```

For now, just 2D...

Likely 3D in the future.

Once we have a context, we can draw!




```
<head>
    <script type="application/javascript">
        function draw() {
            var canvas = document.getElementById("canvas");
            var ctx = canvas.getContext("2d");

            ctx.fillStyle = "rgb(200,0,0)";
            ctx.fillRect(100, 100, 550, 500);

            ctx.fillStyle = "rgba(0, 0, 200, 0.5)";
            ctx.fillRect(300, 300, 550, 500);
        }
    </script>
</head>
<body onload="draw()">
<canvas id="canvas" width="800" height="800"></canvas>

<canvas id="fallback" width="800" height="800">
   Put fallback content here...perhaps an image.
</canvas>
```

One primitive - rectangle.

Three methods.

```
fillRect(x, y, width, height);
strokeRect(x, y, width, height);
clearRect(x, y, width, height);
```

All take the same arguments...

x and y position of left corner of rectangle...

Width and height.

fillRect - filled rectangle.

strokeRect - outline.

clearRect - clears area, makes it transparent.

So that's it? Rectangles?

No!

Paths.

We can draw shapes.

- beginPath - creates path
- closePath - tries to close the shape
- stroke - draws an outlined shape
- fill - draws a solid shape
- moveTo - moves the "pen", doesn't draw

https://developer.mozilla.org/en/Canvas_tutorial%3aDrawing_shapes

```
function draw() {
    var canvas = document.getElementById("canvas");
    var ctx = canvas.getContext("2d");

    ctx.beginPath();
    ctx.arc(75,75,50,0,Math.PI*2,true); // Outer circle
    ctx.moveTo(110,75);
    ctx.arc(75,75,35,0,Math.PI,false);   // Mouth (clockwise)
    ctx.moveTo(65,65);
    ctx.arc(60,65,5,0,Math.PI*2,true);  // Left eye
    ctx.moveTo(95,65);
    ctx.arc(90,65,5,0,Math.PI*2,true);  // Right eye
    ctx.stroke();

}
```

Arc? Draws circles.

- x
- y
- radius
- startAngle - start point, radians
- endAngle - end point, radians
- anticlockwise - boolean, clockwise or not

lineTo(x, y) - Straight lines

Curves.

quadraticCurveTo,
bezierCurveTo

And of course you can combine these...

You can also use images.

Get an image - from page of from scratch.

drawImage(image, x, y)

Useful as backdrops...

Can also scale images.

Add width and height.

You can also crop...

And on and on!

Colors, gradients, line styles, patterns...

Rotating, scaling, transforms, compositing.

Animations!

Whew!

We've barely scratched the surface!

Lots more...

Great time to get started!

HTML5 for Developers LiveLessons

http://www.informit.com/store/product.aspx?isbn=0132761718

Questions?!?

Thanks!

Please complete your surveys.