

Ajax and Web Accessibility

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Accessing Higher Ground
Accessible Media, Web and Technology Conference

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Agenda

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Presentation File

You can find this presentation file here (Google Doc Presentation):

http://docs.google.com/Presentation?id=dc39pw4c_67hcjvc3dt

Or from the Web Axe blog entry:

<http://webaxe.blogspot.com/2008/11/ajax-and-web-accessibility-presentation.html>

Who Is Dennis?

- Author/host of [Web Axe](#) podcast
- Co-founder of [Refresh Detroit](#)
- Currently works at Research In Motion (RIM) (Blackberry) as Senior Software Developer
- Done web accessibility work for numerous organizations including:
 - Yodlee MoneyCenter (personal finance web application)
 - Ford Motor Company
 - QuickenLoans.com
 - Federal Aviation Administration (FAA)
 - Government of the United Kingdom

Audience Experience

- Who has experience with:
 - Web coding/programming?
 - Ajax?
 - Designing or managing web sites?
 - Web accessibility?

Web Accessibility Concepts

"POUR"

- Perceivable
 - non-text content, time-based media, layout, visual, audio
- Operable
 - keyboard, enough time, navigation
- Understandable
 - readable, predictable, error recovery
- Robust
 - interpreted reliably by a wide variety of user agents, including assistive technologies

What is Ajax?

- a group of interrelated web development technologies used for creating engaging, interactive web applications
- creates the ability to retrieve data from the server "asynchronously" in the background (no reloading of the entire page)

What is Ajax?

- **Asynchronous JavaScript And XML**
- Not a true acronym since it can be used with multiple data types, not just XML (such as JSON, text, and HTML)
- May use of a variety of technologies including:
 - HTML
 - XMLHttpRequest object
 - DOM & JavaScript
 - Server-side scripting
 - Query languages (such as MySQL)
 - Databases

What is Ajax?

NETFLIX Dennis Lembree | Your Account | Buy / Redeem Gift | Help

Browse DVDs | Watch Instantly | Your Queue | **Movies You'll ♥** | Friends & Community | DVD Sale \$5.99

Movies, actors, directors, genres **Search**

Suggestions (225) | Suggestions by Genre ▾ | Rate Movies | Rate Genres | Movies You've Rated (134)

Suggestions by Genre

You have [225 Suggestions](#) from 134 ratings.

☆☆☆☆☆ COMEDY SUGGESTIONS (21)

The Clique
Because you enjoyed: [Mean Girls](#)
Add
☆☆☆☆☆
 Not Interested

Ferris Bueller's Day Off
Because you enjoyed: [Back to the Future](#), [Office Space](#)
Add
☆☆☆☆☆
 Not Interested

Ghostbusters
Because you enjoyed: [Back to the Future](#), [Raiders of the Lost Ark](#)
Play Add
☆☆☆☆☆
 Not Interested

She's the Man
Because you enjoyed: [10 Things I Hate About You](#), [Mean Girls](#), [13 Going on 30](#)
Add
☆☆☆☆☆
 Not Interested

Ferris Bueller's Day Off (1986)

Take the day off and watch John Hughes's uproarious ode to skipping school! Ferris Bueller (Matthew Broderick) knows every trick to faking an illness (and offers a point-by-point primer). With everyone convinced he's at death's door, Ferris grabs his girlfriend (Mia Sara) and best friend (Alan Ruck) and hits the streets of Chicago! But will the evil Dean of Students (Jeffrey Jones) put a premature end to Ferris's mental health day?

Starring: Matthew Broderick, Alan Ruck
Director: John Hughes
Genre: Comedy
Rating: PG-13

☆☆☆☆☆ **4.2** Our best guess for Dennis
☆☆☆☆☆ **4.1** Member Average

★ Recommended based on 2 ratings

< previous | 1 2 | next >

Big
Because you enjoyed: [Back to the Future](#), [Ghost](#), [Tootsie](#)
Add
☆☆☆☆☆
 Not Interested

John Tucker Must Die
Because you enjoyed: [10 Things I Hate About You](#), [Mean Girls](#), [13 Going on 30](#)
Add
☆☆☆☆☆
 Not Interested

What is Ajax?

The image is a screenshot of the Twitter homepage from around 2006. The background is a dark, patterned wallpaper. At the top left is the Twitter logo. At the top right is a navigation bar with links: Home, Profile, Find People, Settings, Help, and Sign out. The main content area is a white box with a text input field for a tweet, a character count of 140, and an 'update' button. Below the input field is a 'Latest' section showing a list of tweets. The first tweet is from 'dennisl' about the ACH conference. Other tweets are from 'jeresig', 'chipcullen', 'cheryloz', and 'meyerweb'. On the right side, there is a sidebar with a profile for 'dennisl' showing 36 following, 61 followers, and 668 updates. Below the profile are navigation links: Home, @Replies, Direct Messages (18), Favorites, Everyone, and Following (with an 'add' link). The 'Following' section shows a grid of small profile pictures.

twitter

Home Profile Find People Settings Help Sign out

What are you doing? 140

update

Latest: finally at the Millennium hotel in Boulder; gotta prepare for the ACH conference early tomorrow <http://www.colorado.edu/Atc...> *about 1 hour ago*

 **dennisl** finally at the Millennium hotel in Boulder; gotta prepare for the ACH conference early tomorrow <http://www.colorado.edu/Atc...> *about 1 hour ago from web*

 **jeresig** Just wrote a long post all about the accuracy of time in JavaScript: <http://bit.ly/Ztd4> (In short: Windows XP is hurting bad.) *about 1 hour ago from web*

 **chipcullen** how does the night get away from me? how?? *about 2 hours ago from BeTwittered*

 **cheryloz** drank a few glasses of cabernet and is now ready for bed. *about 2 hours ago from Twidget*

 **meyerweb** Just realized pretty much every tweet recently has

 **dennisl**

36 following | 61 followers | 668 updates

Home

@Replies

Direct Messages 18

Favorites

Everyone

Following [add](#)



Positive Aspects of Ajax

- Fast
- Engages the user
- Cool factor

Negative effects on web accessibility

- Requires JavaScript
- Breaks convention of web page refreshes (standard client-server interaction)
 - Cannot be bookmarked
 - Breaks the Back button
- Users may be unaware of updated content (especially users of screen readers)

Other:

- Poor for SEO (Search Engine Optimization)
- Poor support in many mobile devices, text browsers, etc.

How to prevent negative effects

- Don't use Ajax
- Offer the option to disable Ajax
- Provide alternative content
 - Complex
 - Expensive

How to prevent negative effects

- Ensure users are aware of updated content
 - Highlight the areas that have been updated
 - Add focus to the areas that have been updated (may disorientate user)
 - Use JavaScript alert (usability issues)

How to prevent negative effects

- Ensure the site works if JavaScript isn't enabled
 - To ensure maximum accessible content
 - Use progressive enhancement via Hijax (see Jeremy Keith)
 - Develop functionality with standard server-side calls
 - If JavaScript is available, hijack (or stop) that call and replace with Ajax

Example of Intermediate Solution

[continue to next slide]

Contact

Please complete and submit the form below to contact CheckEngine USA about its web services.



*Required

*Your Name:

Business Name:

*Phone Number:

*Email:

Web Site:

Message:

*0 + 1 + 2 = ?
(To avoid spam, this confirms that you're a human user.)

Submit

Contact

Submitting...

Please complete and submit the form below to contact CheckEngine USA about its web services.



*Required

*Your Name:

Business Name:

*Phone Number:

*Email:

Web Site:

Message:

*0 + 1 + 2 = ?

(To avoid spam, this confirms that you're a human user.)

Contact

Your message has been sent successfully. Thank you for your interest in CheckEngine USA. A representative will contact you soon.

Please complete and submit the form below to contact CheckEngine USA about its web services.



*Required

*Your Name:

Business Name:

*Phone Number:

*Email:

Web Site:

Message:

*0 + 1 + 2 = ?
(To avoid spam, this confirms that you're a human user.)

Submit

Example of Intermediate Solution

HTML:

```
<form id="formContact" method="post" action="contactProcess.php">
```

Web Page URL:

<http://checkengineusa.com/ce/contact.php>

JavaScript URL:

<http://checkengineusa.com/ce/include/script/contactFormAjax.js>

Example of Intermediate Solution

```
addLoadEvent(prepareContactForm);

function prepareContactForm() {
    if(!document.getElementById) {
        return;
    }
    if(!document.getElementById("formContact")) {
        return;
    }
    document.getElementById("formContact").onsubmit =
function() {
    if(!validateContactForm()){
        return false;
    }
    var data = "";
    for (var i=0; i<this.elements.length; i++) {
        data+= this.elements[i].name;
        data+= "=";
        data+= escape(this.elements[i].value);
        data+= "&";
    }
    data+="ajax=true";
    return !sendData(data);
};
}
```

```
function sendData(data) {
    var request = getHTTPObject();
    if (request) {
        request.onreadystatechange = function() {
            parseResponse(request);
        };
        request.open( "POST", "contactProcess.php", true );
        request.setRequestHeader("Content-Type", "
application/x-www-form-urlencoded");
        request.send(data);
        return true;
    }
    else {
        return false;
    }
}
```

Conclusion

- Ajax can provide an enhanced user experience
- Be judicious when implementing Ajax; explore all options; don't overuse
- If you use Ajax, it should be implemented correctly
 - Use Hijax so JavaScript is not required
 - Ensure users are aware of updated content

Questions?

Suggested Reading

Stop using Ajax!

<http://dev.opera.com/articles/view/stop-using-ajax/>

AJAX accessibility for websites

<http://www.webcredible.co.uk/user-friendly-resources/web-accessibility/ajax-accessibility.shtml>

Making Ajax Work with Screen Readers

<http://juicystudio.com/article/making-ajax-work-with-screen-readers.php>

Hijax: Progressive Enhancement with Ajax

<http://domscripting.com/presentations/xtech2006/>

AJAX and Screenreaders: When Can it Work?

<http://www.sitepoint.com/article/ajax-screenreaders-work>

WCAG 2.0 Specification

<http://www.w3.org/TR/WCAG20/>

Ajax on Wikipedia

[http://en.wikipedia.org/wiki/Ajax_\(programming\)](http://en.wikipedia.org/wiki/Ajax_(programming))