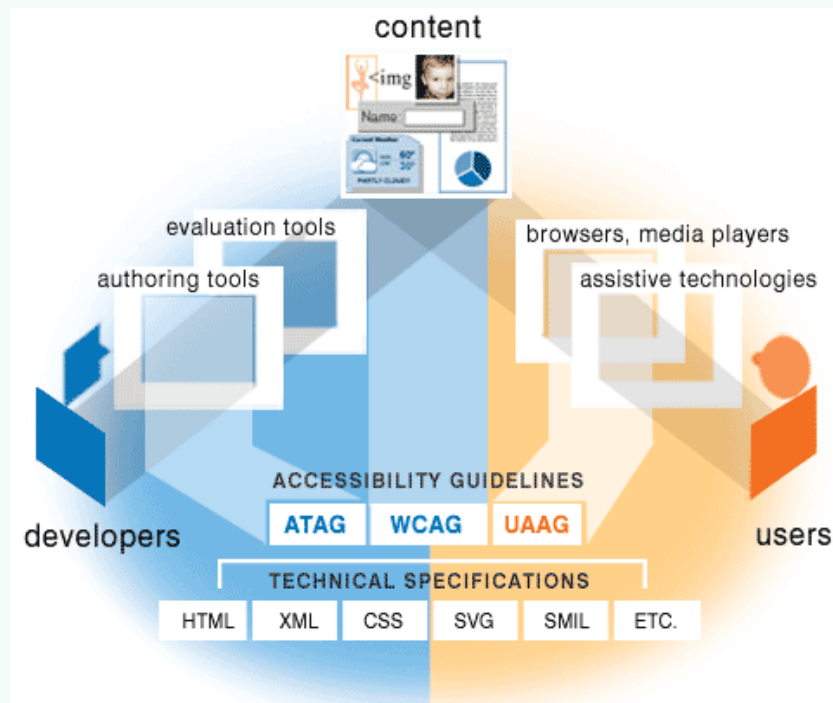


Infographics and Accessibility

Accessible Infographics



[How the components of web accessibility relate to each other. From Web Accessibility for Older Users: A Literature Review. W3C Working Draft 14 May 2008.](#)

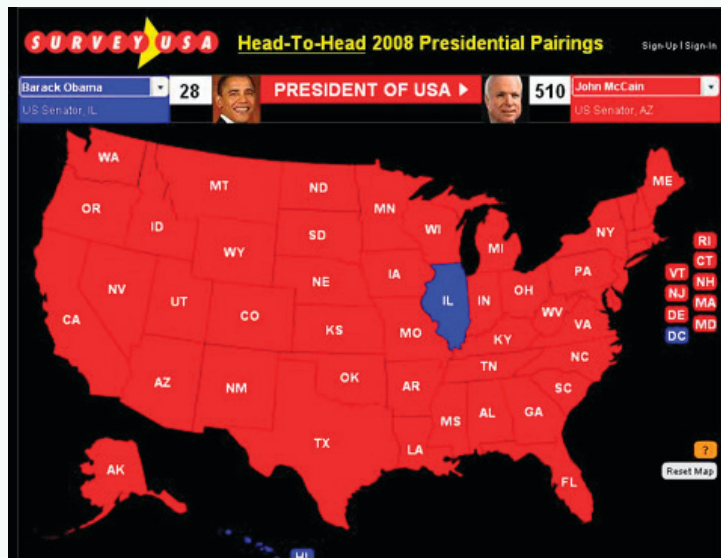
The topics Infographics and Accessibility, when searched together, lead to many research paths. This comes as no surprise in the multimodal learning environment of 2009. We are communicating in dynamic ways to make information more relevant to all learners. These new methods must work for both humans and machines and be accessible to all learners. A few of the paths that will be discussed in this presentation/paper are the design of infographics, accessibility and infographics and programming and infographics.

Accessibility in distance education requires that we consider all types of disabilities when designing course materials. Any design features or technologies used in our formats must be correctly used and supported. Infographics are well defined by Jim Barrat, a freelance researcher, in his blog, [Bigger Picture Research](#),

“The best infographics combine aesthetically pleasing form with information-rich content. The result is often revelatory, yielding insights that require no prior knowledge or special skills to decode.”

Infographics and Accessibility

What are Infographics



[Infographic by Edward Tufte](#)

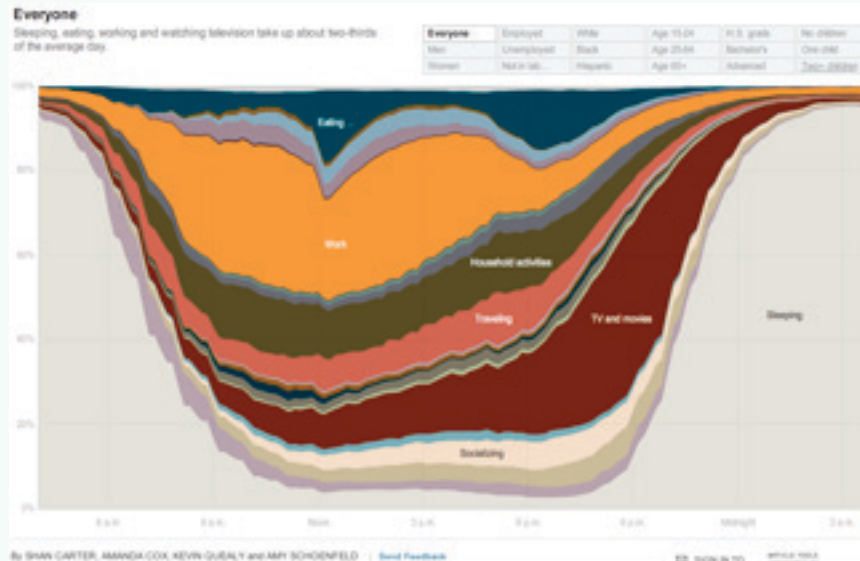
Infographics (short for information graphics) visually represents data to help viewers visually interpret that data. This process is also called data visualization. Data Visualization often relies on color-coding, graphics, icons, statistics, references and facts. When creating an infographic, a designer uses two visual approaches. Designer Sneh Roy, in her article [The Anatomy Of An Infographic: 5 Steps To Create A Powerful Visual](#) defines these visual approaches as Theme Graphics

and Reference Graphics. Theme graphics are similar to branding. They use form, intent, color and subliminal messages to tie elements together and make them tell the same story. Reference graphics are usually icons used to make numerous references using the same instance. They work to reduce the amounts of words. When designed well, they can be useful when presenting to a global audience. Although these approaches are essential to making an infographic successful for some of us, those who are vision impaired need additional features added in. We will discuss this soon when we talk about accessibility.

Infographics are specific and their data is customized to data, topic and audience. Joshua Allen, an evangelist on the MIX Online team posted an article, [5 Tips For Building Effective Infographics](#). MIX Online is a community of web designers and developers sponsored by Microsoft who are interested in making the web accessible for all.

Infographics and Accessibility

Infographic Design Tips



[New York Times Interactive Graphic](#)

How different Groups Spend Their Day

Sunday Business analyzed new data from the American Time Use Survey to compare the 2008 weekday activities of the employed and unemployed.

Joshua lists his tips going from 5 to 1:

5. **Data is King.** All data must match up for it to be valid. Results must be reproducible by anyone.
4. **Resist Scope.** Stay focused on your goal, which is to answer one question and communicate clearly.
3. **Don't Over Architect.** This refers to the programming aspect of infographics and emphasizes the need to keep code generic, maintainable and reusable.
2. **Stay Agile.** Keep a clean separation between your data parsing and your rendering...separate the data from the visual.
1. **Answer One Question.** Be specific, like you are when designing research. You are telling a story without words so it is important to choose the best question.

Infographics and Accessibility

What Makes an Infographic Accessible

Infographics and Accessibility seek to give learners with visual impairments equivalent alternatives to visual representations that they cannot see. Accessibility in design requires that we consider all types of disabilities when designing online course materials. The [Accessible Technology Initiative \(ATI\)](#) is a law passed by the California State University (CSU) in response to the passing of 508 of the Federal Rehabilitation Act, a law that ensures equal rights to all learners.

“It is the policy of the CSU to make information technology resources and services accessible to all CSU students, faculty, staff and the general public regardless of disability.”

The nature of infographics presents a challenge. Data visualization is valuable because it improves comprehension...but what if you cannot see the image clearly enough to read the words or icons? What if you cannot see it at all and are relying on a screen reader to interpret content? When designing websites, designers often use “Alternative Test” to describe images. This works for labeling a simple picture, but what about a complex graphic?

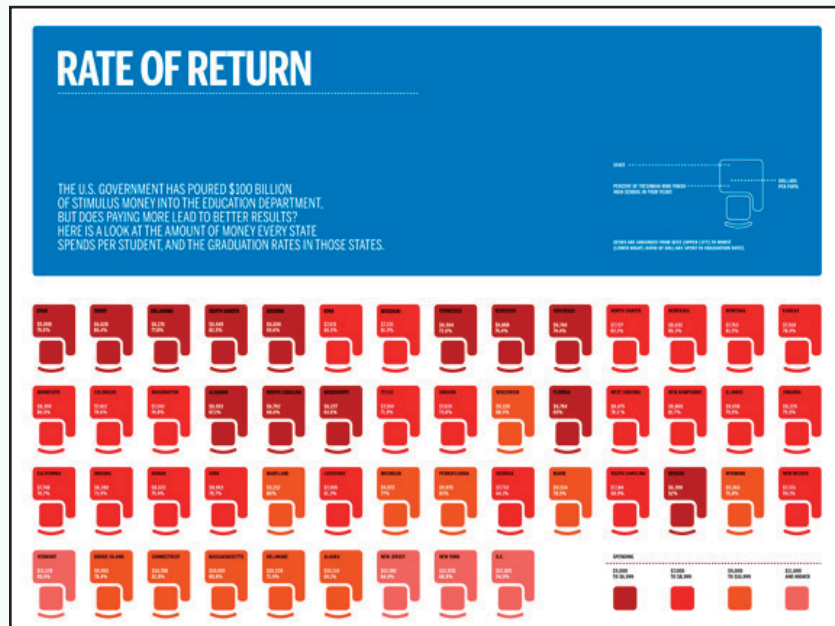
Most of the infographics on the web are Flash driven and Flash is not accessible. The [WebAim](#) (Web Accessibility In Mind) website notes that Flash content is time based and often changes.

This “limits the ability of the screen reader to read the content in a sufficient or timely manner.”

Although there is marginal access with new technologies, many do not have these up-to-date screen reader versions. Making Flash content “self-voicing” can help because users will not require a screen reader to hear content. Alternative content should also be equivalent content. Using a long text document is not enough. Equivalent content is formatted appropriately with images, icons, paragraphs and color. It’s important to give the user the option of turning Flash content on or off. Put the alternative content on the same page for ease of use.

Infographics and Accessibility

Programming, Infographics & Accessibility



[GOOD Magazine.](#)

Transparency: How Education Spending Affects Graduation Rates.

There is a lot going on in the world of programming and in the development of new web standards. In his article, Joshua Allen shares valuable information about ways to extract data, validate it and use it in infographics. Jeremy Keith, also of MIX Online, wrote an article on [The Value of Class Pattern](#).

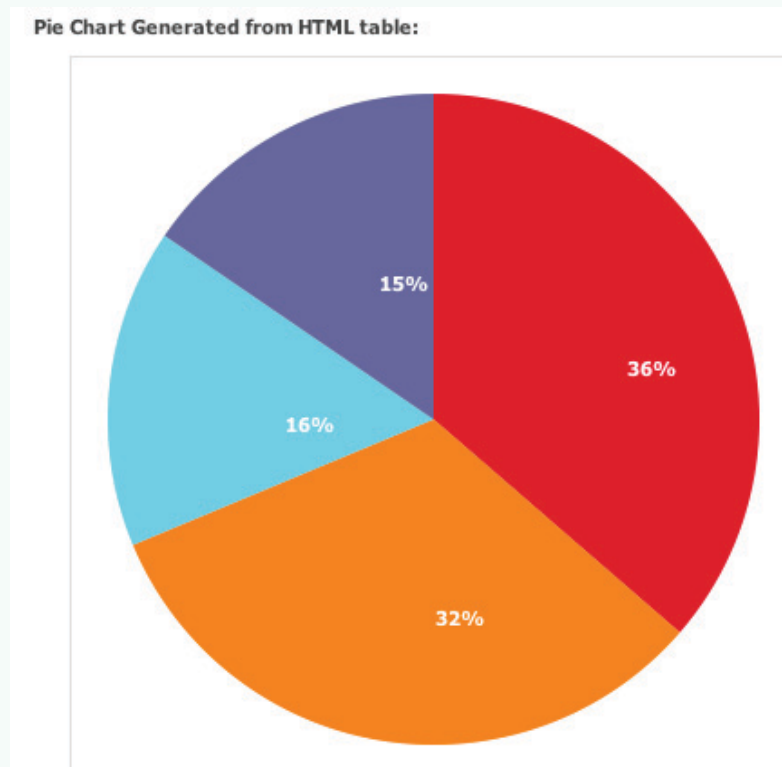
Jeremy writes about microformats, which are little bits of semantically rich markup. Semantic structure refers to the order of the information that is presented and how it is organized. Screen readers read tags placed in the code that tell it what order things need to be read in.

Programming and accessibility are intertwined.

Two acronyms have come up repeatedly in my research—DOM and CSV. DOM stands for Document Object Model. It is a standard Application Programming Interface (API) to the structure of documents. DOM makes it possible for programmers to write applications that work on all browsers and servers and on all platforms. Various Working Groups within the World Wide Web Consortium (W3C) are working on DOM. SCV is an acronym for Comma Separated Values. These files are commonly used to transport

Infographics and Accessibility

Programming, Infographics & Accessibility



The filament group Creating [accessible charts](#) using canvas and jQuery

large amounts of tabular data between companies or applications that are not directly connected. DOM and CSV are two tools that are helpful in working with the assistive technologies that provide accessibility.

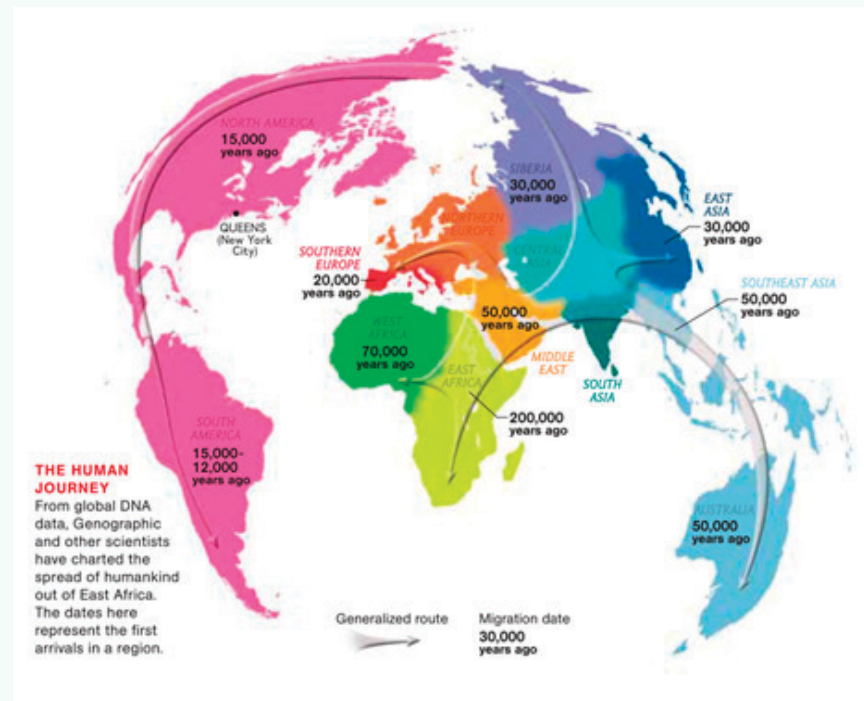
HTML5 is around the corner. This will change the way we access the web for the better. In his talk on [The Future of HTML 5](#), Bruce Lawson, who works for Opera, noted that HTML5,

“has extra bling that makes writing web apps easier. Most of the things it brings are things that we already do, but we do them hacking around in JavaScript or stuff like that, or maybe a bit of Flash, and what HTML 5 brings is a robust, hopefully cross-browser way of doing these things that is a standard, that doesn’t involve voodoo magic with JavaScript. It doesn’t replace JavaScript. Most of it is about JavaScript and DOM APIs.”

Lawson also talked about a [jQuery Plug-in](#) written by [Filament Group](#) of Boston. [jQuery](#) is a fast, concise, library that simplifies how to traverse HTML documents, handle events, perform animations, and add AJAX.

Infographics and Accessibility

Programming, Infographics & Accessibility



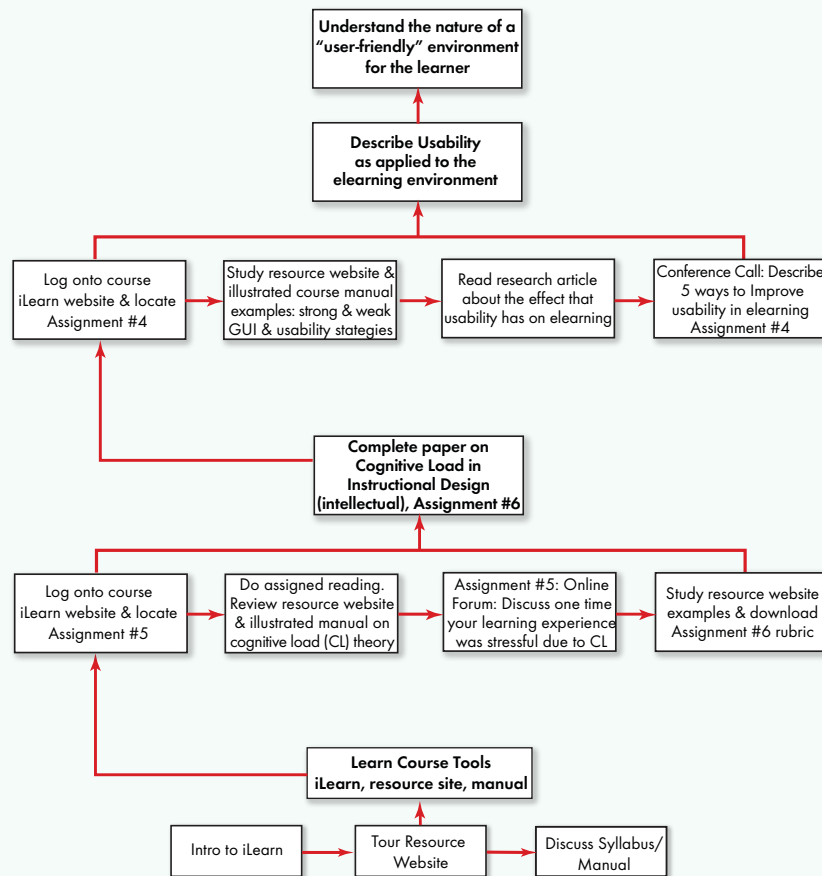
[Data Mining](#) —Text mining, visualization and social media—is a blog that covers data visualization, social media and data mining

This plug-in is used to graph information on an accessible data table. The plug-in gets the information out of the data table and makes it into a graph using canvas, which is an “immediate graphics mode” that was developed by Apple. With the jQuery plug-in Canvas is not accessible.

Scalable Vector Graphics (SVG) also offers a number of features to make graphics more accessible and usable on the web. The W3C paper [The Accessibility Features of SVG](#) notes that SVG has great potential for accessibility because it is built on top of Extensible Markup Language (XML). SVG are vector images, which means they are created using a mathematical language. They are not pixel based so they can be enlarged with no loss of image quality. This makes them ideal for users with low vision who need to enlarge images and also for mobile applications. Structural information can be added to any image as metadata. SVG authors can include a text description for each logical component of an image, greatly improving accessibility. If these components are combined hierarchically, users who cannot see can create a rough mental model of an image.

Infographics and Accessibility

The Appeal of Accessible Infographics

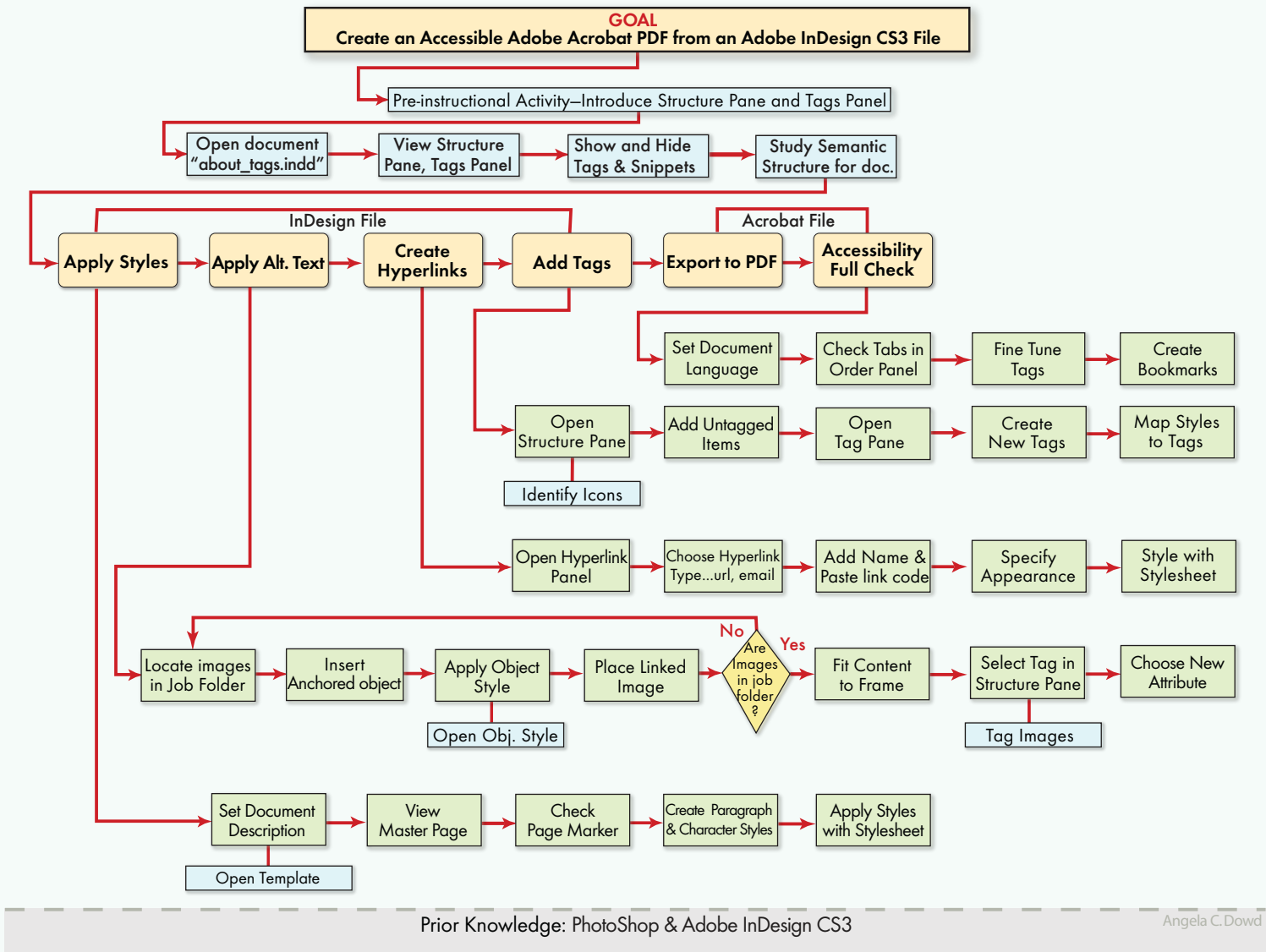


NO PRIOR KNOWLEDGE NEEDED

I became interested in this topic because I found myself limited when I tried to create infographics, charts and timelines that are accessible. I realized that just embedding the fonts is not the answer. A screen reader reads content in a linear way and it may not make sense at all to the learner. Loving visual communication as I do, it is sad to imagine that some people cannot share the beauty that color and form bring to my life. I have considered studying Flash, but know that it is not accessible. Doing this research has been inspiring. It gives me hope that soon we will be able to access the web without plug-ins and platform problems and proprietary interests that make accessing information cumbersome. For ethical reasons and for legal reasons designers need to provide accessible content that is also equivalent. This is now possible and becoming more likely. I know there is more I can do towards creating accessible graphics and am working on making changes myself.

To acknowledge some feedback from last night, it is true that some infographics display data that has not been validated or can distort the truth. Joshua Allen touches on data validity in his [MIX Online article](#).

Infographics and Accessibility



Infographics and Accessibility

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