
Ai2html and Its Impact on the News Graphics Industry

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Abstract

Ai2html (ai2html.org) is a script for Adobe Illustrator created at The New York Times that converts Illustrator documents into HTML and CSS. Since its open-sourcing in March 2015, the script had a profound impact on how news organizations create graphics for the Web, and mobile devices in particular. In this paper, we describe the conception of ai2html, via commentary by the creator and users of the script, and detail how it is used by practitioners in visual journalism.

Author Keywords

Adobe Illustrator; HTML; CSS; Web standards; graphic design; responsive design; mobile design; journalism.

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MobileVis '18 Workshop at CHI 2018, April 21, 2018, Montreal, QC, Canada. <https://mobilevis.github.io/>

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ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; J.7. Computer Applications: Computers in Other Systems (Publishing); K.4.3. Computers and Society: Organizational Impacts;

Introduction

I work at the graphics desk at Bloomberg News, the editorial department at Bloomberg LP.

We are a team in the newsroom with non-traditional skills, ranging from design, statistics, to programming. We do original reporting, and also take projects initiated from the newsroom at large. We innovate in our field by putting forward novel visual designs to tell better stories, and by conceiving or integrating tools that help the newsroom better report and present information. We're constantly looking to improve our methods, at automating our processes and making our workflow reproducible.

In my day to day, I am usually involved in building news applications (CEO pay ratio tracker) or in covering breaking news with charts and maps (European elections in 2017).

To serve our mobile readers is at the top of our list of priorities. According to the Pew Research Center, 45% of Americans often get news from a mobile device in

Using ai2html: Summary of advantages

- Gets Illustrator pros involved in web-based graphics
- Fast for breaking news
- Graphics made in Illustrator can also be used in print
- Aesthetically pleasing annotations are easier to make in Illustrator
- Crisp, selectable (SEO-friendly) text in an ai2html graphic
- Text can be translated into other languages in browsers supporting that feature.

2017, up from 21% in 2013. Of those who got news from desktop and mobile, 65% of them preferred mobile, up from 56% in 2016. [1]

I participate in this workshop on data visualization for mobile devices with the aim to understand the questions framed around the problem of revealing information on smaller screens. I first encountered CHI during graduate studies in interaction design, and I'm curious about the breadth of the research and approaches in human-computer interaction.

Ai2html: an introduction

As a participant to this workshop, I want to offer insights on a workflow that has had a profound impact on the news graphics field for several years, especially since 2015.

At the center of this workflow is ai2html, an Adobe Illustrator script which converts Illustrator artwork into HTML-based graphics, with CSS and images. The script was first created by Archie Tse of The New York Times in the early fall of 2011. A critical moment for ai2html was when the script was open-sourced in March 2015, and adopted by many newsrooms throughout the world, including ours.

Support for responsive graphics is one of ai2html's most important features with respect to mobile design, added about a year before its open-sourcing.

In a typical Illustrator file that ai2html acts on, the designer creates at least two versions of a graphic, usually one for desktop screens (at roughly 1000 pixels of width or greater), and another for mobile screens (at roughly 500 pixels of width or fewer), but frequently

versions in between targeted toward screen sizes in between (say, for tablets). There are other possible combinations that we'll discuss in the examples section.

Ai2html operates on Illustrator art by separating the text from other elements in the file, like the background of a locator map or the shapes and rules of a simple chart. It then outputs HTML that overlays this text on top of an image, in PNG, JPEG or SVG format, that comprises of the graphic's other elements. This process ensures that the type renders at a predictable point size, no matter the viewport dimensions. The type renders sharply and becomes selectable.

Now Deputy Graphics Editor at The New York Times, Tse offers these thoughts on the conception of ai2html:

Static graphics still make up the bulk of what we produce. And most of the design principles we have honed over decades of making print graphics translate quite well onto the web. So, it seemed natural to figure out how to turn Illustrator into a tool for making high-quality web graphics.

Around the time when I started developing ai2html, Illustrator graphics exported as images for a web page looked unprofessional. The text was blurry — there were few retina displays back then — and the fonts often looked different than the html text on the page.

We actually had a debate over whether ai2html was a crutch that would keep our department stuck in the old print world and discourage graphics editors from learning how to create visualizations using code.

Over time, I think the answer to that question has been that for certain types of graphics, it's still faster to create them in Illustrator and ai2html than to do it in code. Certainly, there are tremendous advantages to coding up a visualization, like being able to repeat the visualization many times with different data.

But an inherent quality of the news business is that most of what we produce are one-offs: custom created for a particular story. And Illustrator allows us to quickly make fine-tuned customizations that would be time-consuming if done in code.

One of the very noticeable advantages of using ai2html is the production time it saves to news organizations, especially to some that had a paper workflow: "Ai2html allowed us to port over some of the concepts of responsive web design to traditional graphic design," says Nathan Griffiths, who was the graphics editor at The Associated Press from 2014 to 2017. "Instead of producing two or more graphics (web, print, mobile), we could usually produce one graphic and use ai2html to tweak parameters optimized for each platform", says Griffiths.

The process of making ai2html is incremental, adapting to the needs of Tse's team: "The fun thing about the ai2html project is that most anything we think we should have done differently, we just go ahead and do it. It's an evolving effort that we keep refining and upgrading as we find things that we want it to do."

Tse also credits Matthew Bloch, creator of the mapping tool Mapshaper, with refactoring the ai2html code to make it faster and easier to extend, as well as adding features pertaining to SVG output.

Impact on the industry

Of the twelve graphics pages (not including single-image graphics) by the Bloomberg Graphics team that were published in the month of March 2018, 9 contained at least one ai2html graphic.

Of the 57 Malofiej award-winning infographics in the breaking news, features and criteria categories for their 2017 competition, 31 had at least an ai2html component in them.

News Organization	Total Malofiej-winning graphics	Those using ai2html
Berliner Morgenpost (Germany)	1	-
Bloomberg (USA)	2	1
Financial Times (UK)	3	1
FiveThirtyEight (USA)	2	-
Google News Lab (USA)	3	-
La Nación (Argentina)	1	-

Graphics for mobile devices

Has ai2html encouraged graphic artists to design for small screens first?

Archie Tse, Deputy Graphics Editor at The New York Times and creator of ai2html doesn't think so, but offers this to contrast: "I think [though] that having a workflow that puts both mobile and desktop graphics in a single Illustrator file helps us learn faster about what design choices work better on small platforms and what works better on large ones."

Cynthia Hoffman, Design Director of the graphics desk at Bloomberg, says: "Ai2html allows one to craft an experience specific to a small screen. Especially in the way our [build system's] template organizes wide, medium, sub-medium and small screen in one document, a designer can optimize the way in which one idea is delivered in a variety of instances."

Los Angeles Times (USA)	1	-
National Geographic Magazine (USA)	5	4
Quartz (USA)	2	-
Reuters (USA)	4	4
Science (USA)	1	1
South China Morning Post (Hong Kong)	1	-
Tampa Bay Times (USA)	1	-
TASS News Agency (Russia)	1	-
The Guardian (UK)	2	1
The Guardian (USA)	2	1
The New York Times (USA)	12	9
The Washington Post (USA)	11	8
Univision Noticias (USA)	1	1
ZEIT Online (Germany)	1	-
TOTAL	57	31

Table 1: Winners at the Malofiej 26 infographic awards for graphics published in 2017 [2]

Production workflow

Prior to our adoption of ai2html, Adobe Illustrator was already at the center of our production workflow for web-based graphics.

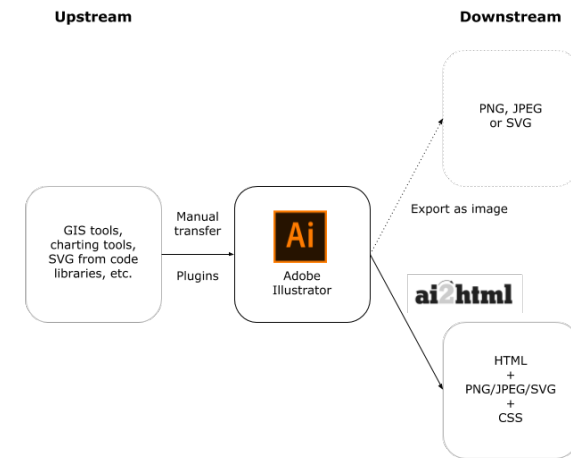


Figure 1: Typical news graphic production workflow centered on Adobe Illustrator, before and after ai2html

Illustrator by itself is not very useful on its own to conceive complex data-driven graphics. **Upstream** in the process we could define three large categories of sources for graphics that we subsequently refine in Illustrator: (1) geographic information system tools like QGIS, (2) programming languages that generate charts and data-driven forms like R and Python, and (3) internal charting tools.

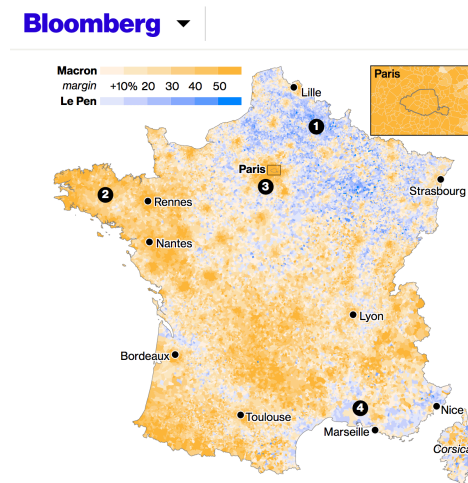
Downstream, we would export the image created in Illustrator in a raster graphics format (PNG, JPG) or a vector graphics format (SVG), and embed these onto webpages. To create responsive graphics, one of the frequently used schemes was to produce two or more SVGs and display the one adapted to the user's screen by detecting the size of the container on client-side.

We have used and still use other methods to create responsive graphics. JavaScript, often with a library such as D3 or a framework like svelte, is the way to go in the browser.

Ai2html opened up possibilities downstream, by serving beautiful graphics in HTML that can be integrated to a web-page that users can interact with by scrolling and clicking on desktop, and by touching, on mobile.

Ai2html used in the wild

1. Bloomberg: French presidential election maps
<https://www.bloomberg.com/graphics/2017-french-election-maps/>

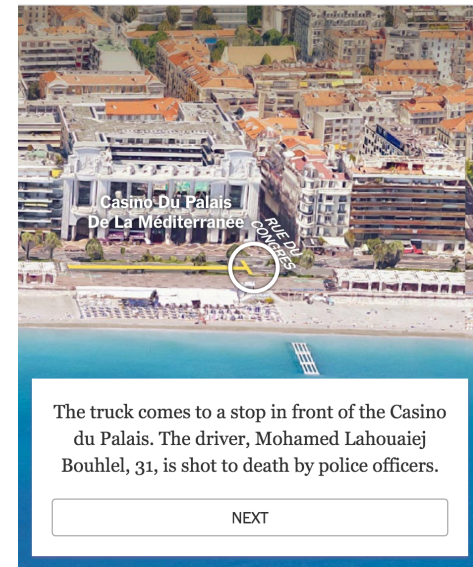


We used a combination of GIS tools and other Illustrator scripts to automatically color a map template. Illustrator was useful for placing annotations naturally. This tweet contains a video screen capture showing how the responsiveness works:

<https://twitter.com/cedricsam/status/979129312828907523>

2. The New York Times: Nice terrorist attack breaking news graphics
<https://www.nytimes.com/interactive/2016/07/14/world/europe/trail-of-terror-france.html>

The New York Times



This interactive graphic is made of a very wide, horizontally-oriented artboard representing the waterfront of the French city of Nice. Only two "versions" of the map needed to be made, with JavaScript code allowing the user to move through the graphic horizontally.

3. The Washington Post: Travel the Path of the Solar Eclipse
<https://www.washingtonpost.com/graphics/national/mapping-the-2017-eclipse/>



This *scrollytelling* feature made out of ai2html graphics placed one after the other. The maps were carefully crafted using mapping software. The authors explained how they made it here: <https://source.opennews.org/articles/how-we-made-washington-post-eclipse-scroller/>

Discussion

Ai2html has facilitated the delivery of high-quality graphics for the web and mobile devices and helped integrate the talents of graphic designers to a production workflow for creating visual journalism that abides to web standards.

As in examples 2 and 3 provided above, Illustrator graphics can be married to a user interface created for the web browser, to create delightful storytelling experiences, while optimizing production time.

Ai2html must not be misconstrued as a one-stop shop solution to all that is graphic-making in the web world. For instance, creating text-heavy graphics in Illustrator might be unsustainable when you have multiple sizes of the same graphic to create and when a better code-based solution exists.

The script is open-source and its very important role in the news graphics industry could surely warrant more development to be initiated by the community.

Ai2html may not have encouraged mobile-first design, but it has at least provided a pipeline for creating responsive graphics for the web from Illustrator and allowed designers to better consider how each version of their graphics works best for each platform.

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References

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