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It’s all Relative: Data Visualization for UX Research Data

Stefanie Owens Follow

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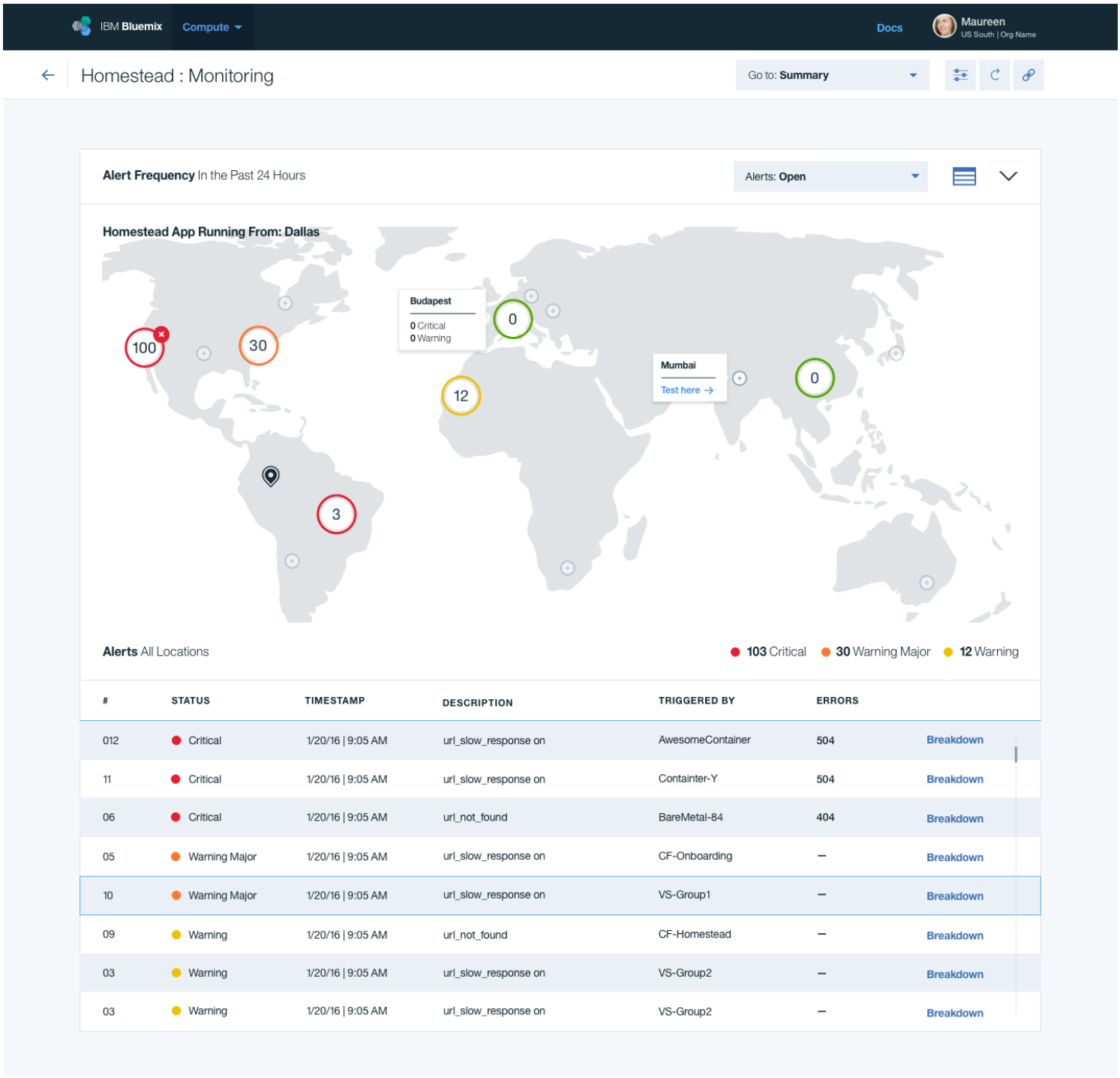
Data visualization is a topic extremely relevant to the world of design and product development, especially in tech companies. As big data becomes ubiquitous across industries, from connected homes to aviation, retail, healthcare, and education, the power to harness and present that data in meaningful, digestible ways is rapidly becoming a *superpower.* I’ve seen countless examples of impactful design work at IBM that takes massive global data sets and presents them to users in a delightful user experience; work such as showing cybersecurity threats on a global scale, or total up-time and application performance for every logged session in your application in the world (see below), to even visualizations tracking the rates of dengue fever acquisition across Taiwan in real-time.

Product: Bluemix Availability Monitoring—Visual Design: Natalie Caudell (www.nataliegcaudell.com)



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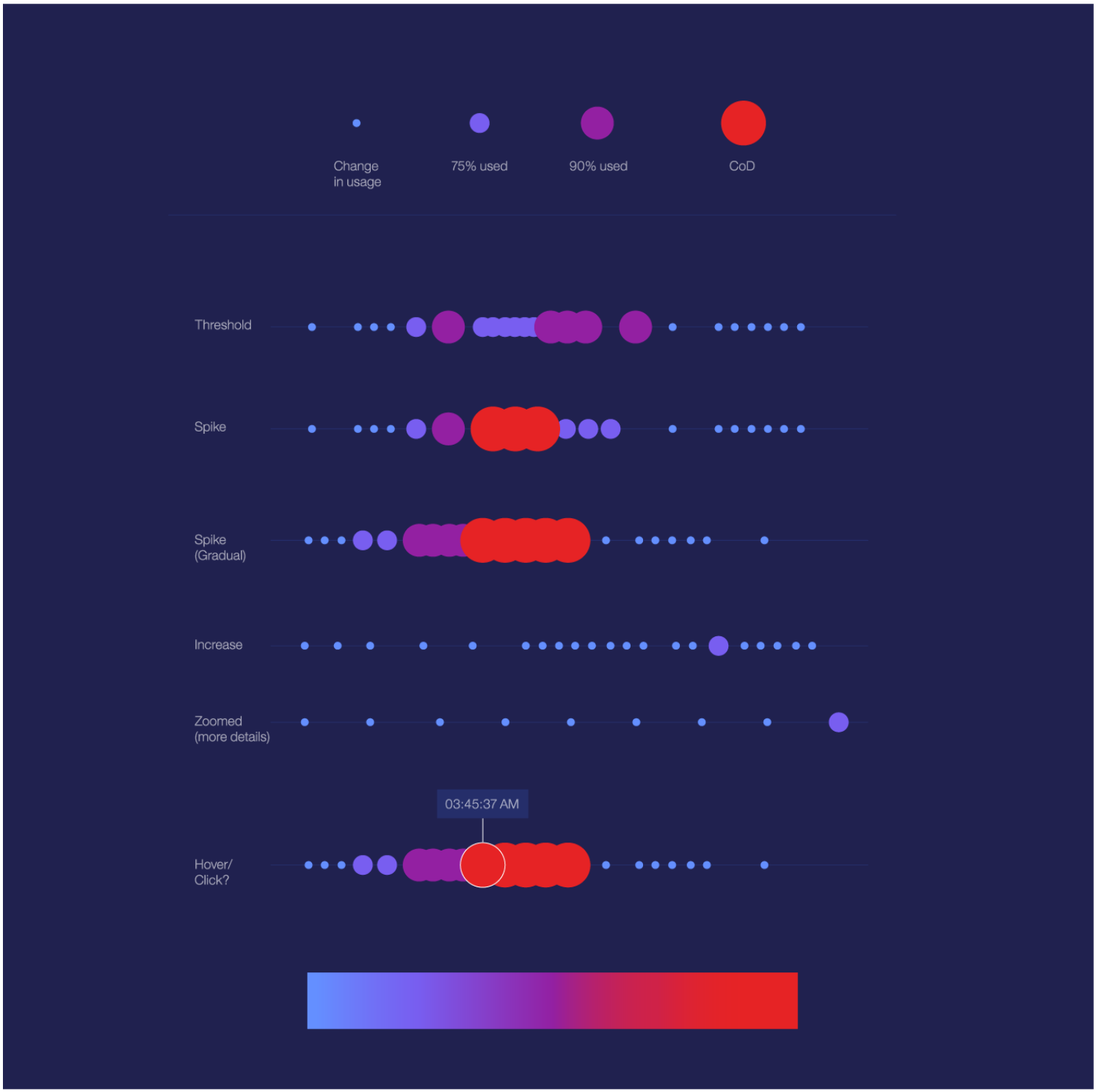
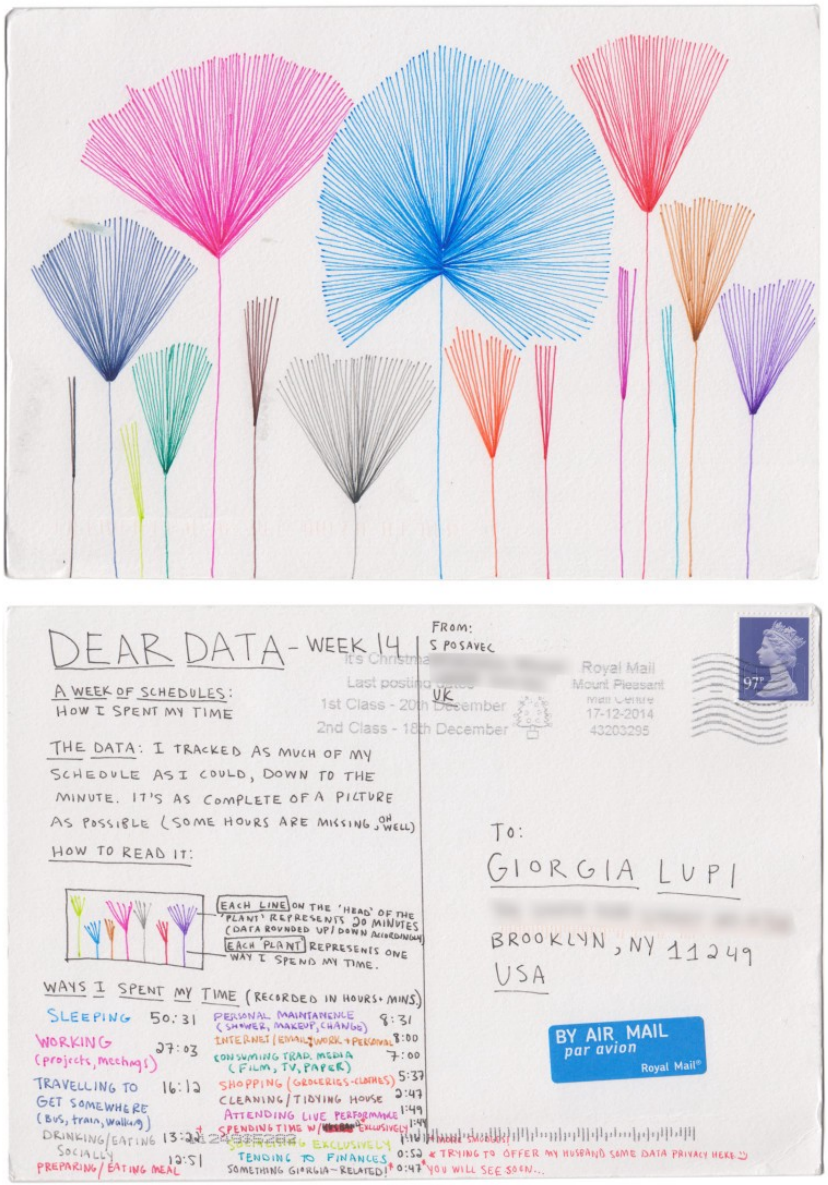


Visual Design: Kylee Barnard http://www.kyleebarnard.com/

Data sets as large as those that IBM works with at the enterprise level require a particular prowess of data visualization skills. However, how might data visualization translate to UX research, where oftentimes the researcher:

1. Might not have extensive visual design training, and
2. Might only have access to a small sample of users with whom to conduct their research.

Data visualization at the levels above is its own ball-game: being able to visualize millions or even billions of data points into an interface that can drill up or down in order to create meaning. However, regardless of the number of data points, there is a magical process that any designer must go through regardless of data size in order to provide the right context and transform individual data points into actual *information* for the user.



Source for "Dear Data" Images: http://forthmagazine.com/visual-art/2015/04/dear-data-project-artwork-by-giorgia-lupi-stefanie-posavec/

Even the tiniest of data sets can use imagery to shed new light on collected data. I love the work "Dear Data" by Giorgia Lupi and Stefanie Posavec where they creatively developed ways of visualizing their day-to-day lives via postcards to one another from across the Atlantic. Taking minute data sets such as the number of compliments one gave and received in a week, or tracking ones' schedule for a week or a day yielded fascinating methods with which to give that data new legs through visualization.

Source for "Dear Data" Images: http://forthmagazine.com/visual-art/2015/04/dear-data-project-artwork-by-giorgia-lupi-stefanie-posavec/

This brings me to the particular interest I had, and the reason I recently led a discussion across UX research teams at IBM about how best to visualize user research data. A significant portion of my job, and likely any user researcher's job, is to report their findings to the rest of the project stakeholders in a relevant and timely manner.

This is particularly challenging to manage in an agile environment, where you're at a constant tug-of-war for speed and relevancy of your insights while preparing and maintaining a rigorous research approach to ensure the validity of your findings, however small the sample size. How can you communicate these insights in a meaningful, memorable

way that breaks free from the typical text-based Keynote presentation to a room full of executives?

I throw in the comment about sample size in particular because of the frequent pressure one receives from executives or other stakeholders to prove that their insights from even a handful of people are enough to sway product and design decisions. The short answer is yes, but it depends. We don’t often have the luxury of conducting academic-level research in order to inform product and design at IBM due to the speed and scale at which we must work, but what we *can* do is to try to understand our users and their needs qualitatively, and drive the design strategy as the data dictates.

信息应由数据解释.
因此，难以避免损害数据准确性的视觉效果。

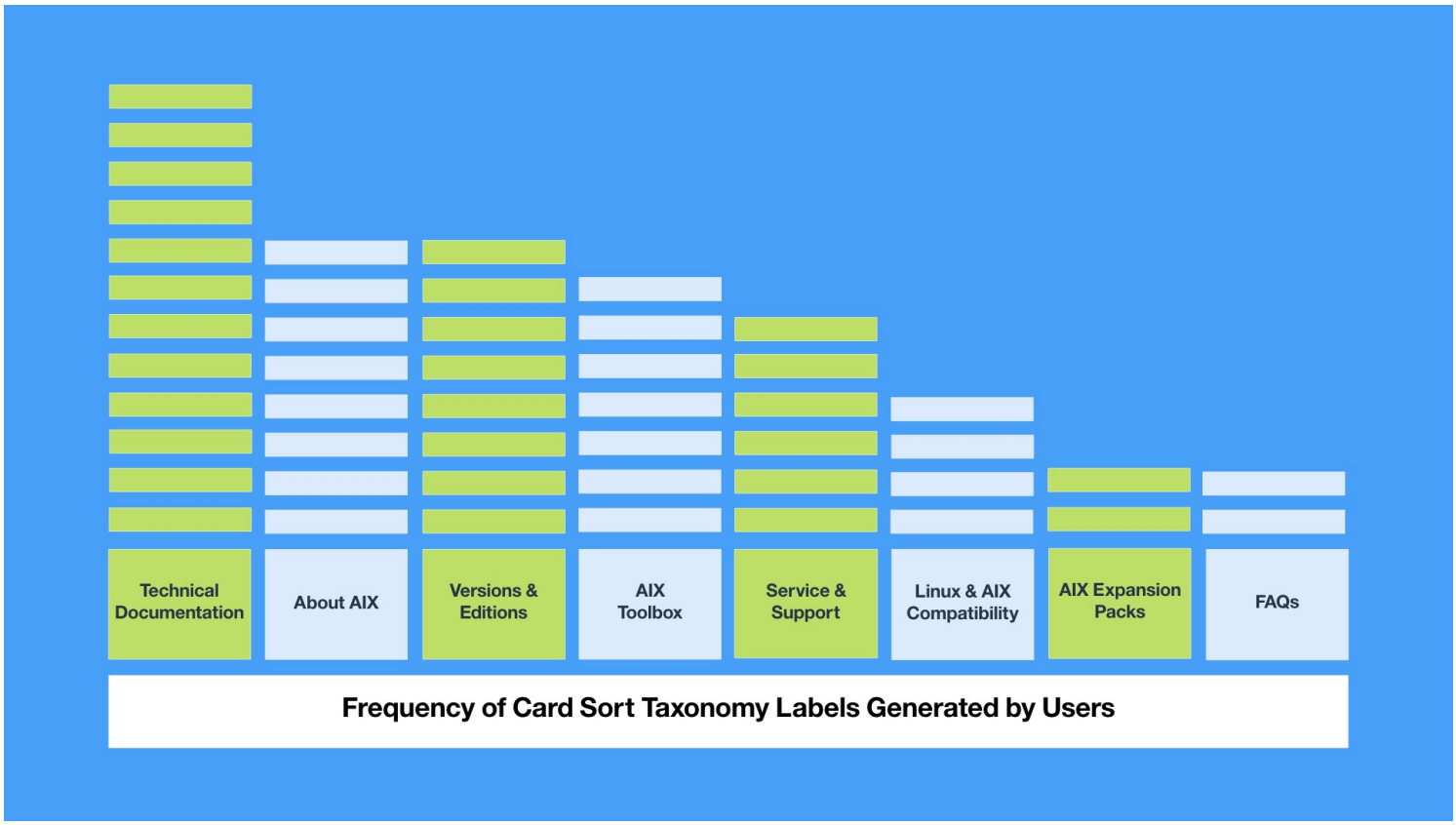
The most important part is to let the data do the talking. This is why it is particularly challenging to create visualizations that accurately let the data have its own voice, and not misconstrue any of its meaning by the way its portrayed through visuals.

So, how do you visualize qualitative data collected from user research?

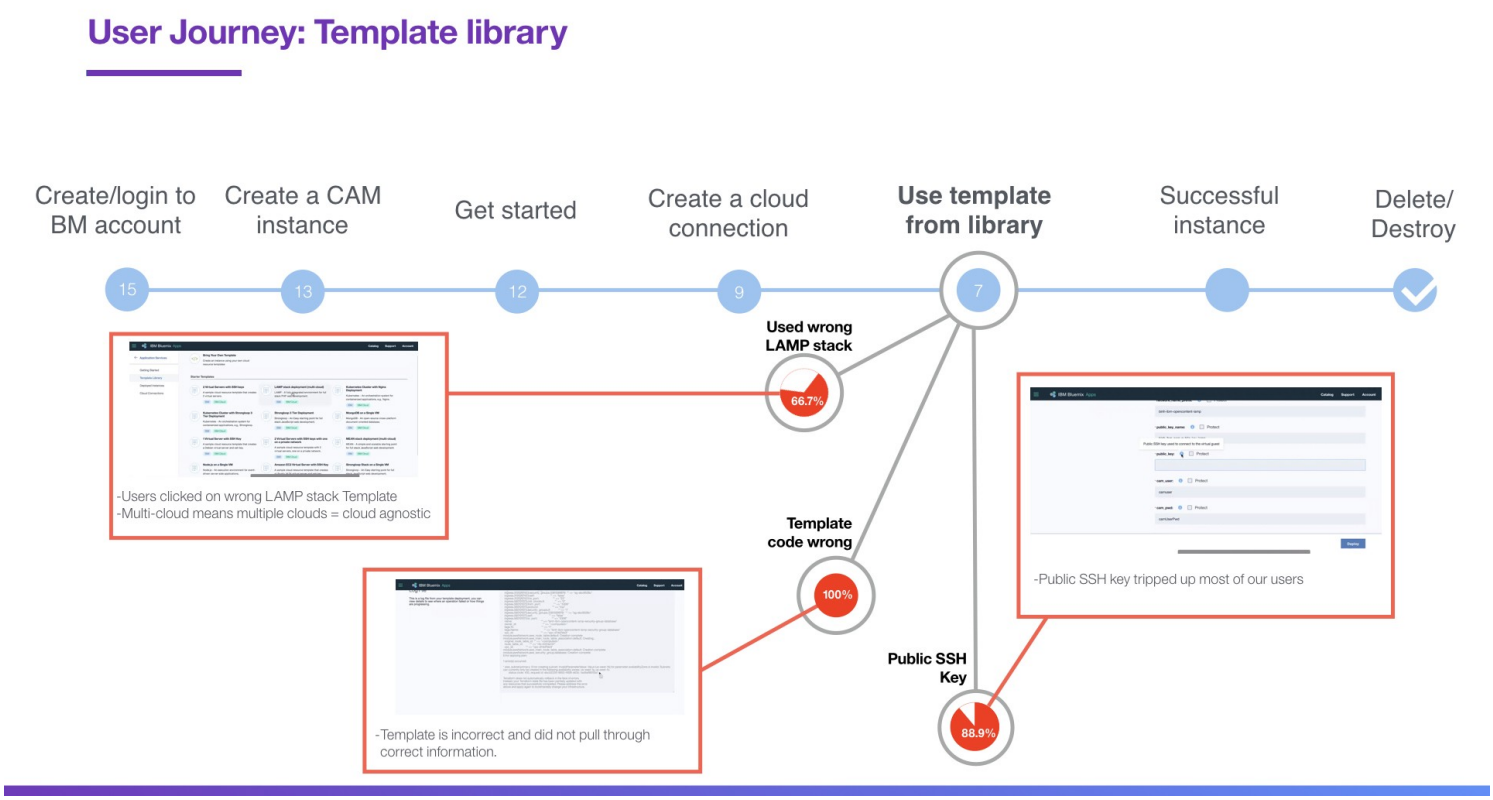
It’s all about relativity and relationships.

With most user research data in an agile environment, you’re not going to have a ton of data to wrangle, so it is difficult to argue that this data should be graphed or charted at all, when the sample size itself might call into question some of the assertions that such a visualization would represent. Instead, it’s more important to put the qualitative data on some sort of spectrum that is relative, not concrete, in order to find out the relationships between the data points and the context that they build.

重要的是，定性数据是以相对的方式测量的，而不是具体的方式。这种方式有助于找出数据点与数据点构建的上下文之间的关系。



For example, here’s a graphic I made to help communicate what labels were written the most by users during an open card sort.



Research by Priya Noel, showing failure rates during a particular part of a user journey

为什么显示用户reseacrh数据很重要?

1. 视觉数据可以作为综合工具。可视化数据有助于解释数据的含义。

2. 可视化数据有助于向非技术性的受众解释信息。非技术人员并不总是有时间消化您提供的所有数据。

Why is visualizing user research data important?

1. It can be helpful as a **synthesis tool.** Figure out a way to visually map out your data in order to help you process its meaning.

2. As mentioned above, it's also useful for **reporting findings** to an extended team or sponsoring executives. Especially when you are dealing with an executive audience, they don't always have time to digest all of the data you present, so how might you make the findings as engaging as possible?

I've had executives' eyes glaze over and not remember a thing I said about the user before, but then years later they'll comment on how they know that the System Usability Score went way up after our design project because of how I showed it on a graph. Many business-oriented audiences are receptive to and accustomed to numbers. However, if you don't have quantitative research that is statistically valid, then presenting a number can often cause more trouble than it is worth.

Me: "The change in these two scores shows directional improvement."

Everyone in the room: "<spouts off sudden statistical knowledge trying to tear apart your findings>"

Admittedly, this mostly happens when I'm telling them data that supports an argument they don't want to hear.

可视化定性用户研究的结果通常是关于相对性和观察用户旅程的趋势，重点是将它们相互比较。
关注用户的言行，并使用最佳工具准确传达数据。

All of that to say, visualizing qualitative user research findings is most often about relativity and seeing trends in users' journeys, with a focus on comparing them to one another. Focus on what the users say and do, and use the best tool to convey the data accurately and speak to what it is telling.

To help your brainstorming process, here are a few helpful links to data visualization inspiration. Please share others! I eat this stuff up!

The Motherload of all Javascript Data Viz Galleries, D3:
https://github.com/d3/d3/wiki/Gallery

Ideas for Starting with Data Viz:
https://medium.com/@EvanSinar/7-data-visualization-types-you-

should-be-using-more-and-how-to-start-4015b5d4adf2

IBM Design Data Visualization Guidelines:
https://www.ibm.com/design/language/experience/data-visualization/

From the Accurat Folks (who helped with IBM Design Data Vis)
https://medium.com/accurat-studio/the-architecture-of-a-data-visualization-470b807799b4

Some cool, interactive data vis examples:
http://flowingdata.com/2015/12/15/a-day-in-the-life-of-americans/

http://www.informationisbeautiful.net/visualizations/best-in-show-whats-the-top-data-dog/

http://www.informationisbeautiful.net/visualizations/gender-pay-gap/

http://www.nikon.com/about/sp/universcale/scale.htm

https://www.nytimes.com/interactive/2014/upshot/buy-rent-calculator.html

http://www.washingtonpost.com/wp-srv/special/sports/wizards-shooting-stars/

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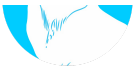
Stefanie Owens is a software designer at IBM based in Austin, Texas. The above article is personal and does not necessarily represent IBM's positions, strategies or opinions.



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