How can implementing richer levels of interaction enhance the user experience of data visualizations in social media monitoring dashboards?
# Table of content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author</td>
<td>4</td>
</tr>
<tr>
<td>Preface</td>
<td>5</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>6</td>
</tr>
<tr>
<td>1.1. Background information</td>
<td>6</td>
</tr>
<tr>
<td>1.2. Problem definition</td>
<td>6,7</td>
</tr>
<tr>
<td>1.3. Field of expertise</td>
<td>7</td>
</tr>
<tr>
<td>1.4. Research question + sub-questions</td>
<td>7</td>
</tr>
<tr>
<td>1.5. Objective</td>
<td>7</td>
</tr>
<tr>
<td>1.6. Methods</td>
<td>8</td>
</tr>
<tr>
<td>2. Information Dashboards</td>
<td>9</td>
</tr>
<tr>
<td>2.1. History</td>
<td>9</td>
</tr>
<tr>
<td>2.2. Definition</td>
<td>11</td>
</tr>
<tr>
<td>2.2.1. Important guidelines</td>
<td>11</td>
</tr>
<tr>
<td>2.3. Variation in use</td>
<td>12</td>
</tr>
<tr>
<td>2.3.1. Categorizing dashboards</td>
<td>13</td>
</tr>
<tr>
<td>2.4. Designing for Usability</td>
<td>14</td>
</tr>
<tr>
<td>3. The use of social media</td>
<td>16</td>
</tr>
<tr>
<td>3.1. Social media monitoring tools</td>
<td>18</td>
</tr>
<tr>
<td>3.2. History</td>
<td>21</td>
</tr>
<tr>
<td>4. Data visualizations</td>
<td>22</td>
</tr>
<tr>
<td>4.1. Definition</td>
<td>22</td>
</tr>
<tr>
<td>4.2. History</td>
<td>24</td>
</tr>
<tr>
<td>4.3. Data visualizations patterns</td>
<td>25</td>
</tr>
<tr>
<td>4.4. Future trends</td>
<td>30</td>
</tr>
<tr>
<td>5. Case: Brand Monitor</td>
<td>32</td>
</tr>
<tr>
<td>5.1. Hypothesis</td>
<td>33</td>
</tr>
<tr>
<td>5.2. Research.</td>
<td>33</td>
</tr>
<tr>
<td>5.2.1. Users</td>
<td>33</td>
</tr>
<tr>
<td>5.2.2. Users journey</td>
<td>34</td>
</tr>
<tr>
<td>5.2.3. Competitor's</td>
<td>36</td>
</tr>
<tr>
<td>5.2.4. Early Testing</td>
<td>37</td>
</tr>
<tr>
<td>5.2.4.1. Sessions</td>
<td>38</td>
</tr>
<tr>
<td>5.2.4.2. Equipment</td>
<td>39</td>
</tr>
<tr>
<td>5.2.4.3. Participants</td>
<td>39</td>
</tr>
</tbody>
</table>
5.2.4.4. Schedule & location 40
5.2.4.5. Metrics 41
5.2.5. Test Results 43
  5.2.5.1. Web survey 43
  5.2.5.2. Cognitive walkthrough 48
5.3. Development 49
  5.3.1. Brainstorm 49
  5.3.2. Concept 51
    5.3.2.1. New features 52
    5.3.2.2. Widgets overall interaction 56
    5.3.2.3. Editing tool bar 58
    5.3.2.4. Actions menu 59
    5.3.2.5. InDisplay interaction 61
5.4. Implementation 65
  5.4.1. Wireframes 65
  5.4.2. Visual design 70
5.5. Validation Test 78
  5.5.1. Paper prototype 79
  5.5.2. Metrics 81
6. Conclusion 82
  6.1. Future thoughts 83
7. Bibliography 84
8. Attachments 87
Period

The internship begins on the 13th of February 2011 and involves 640 hours spread over a total of 80 days. That is 8 hours a day, 5 days a week.

Mentor at company

Boaz Leskes
boaz@buzzcapture.com

Mentor at School

Hans Kemp
06 - 15 48 83 35
hans.kemp@gmail.com
Preface

After almost 5 months of hard work, 80 days of internship and a looooot of coffee, I can proudly confirm that the thesis is done. This is one of the things that back then in 2009 I never thought I was able to achieve.

But here I am, standing on my own feet and getting forward!

The project was a one of kind experience and an eye opener, not just to the working world, but also to all the opportunities that I began to understand and take advantage of. From the beginning until the end of it, I went as a roller coaster which took me through confusion and solutions, from sleepless nights to very satisfying moments and from someone that had no idea what to do to the one I am now. A Communication & Multimedia Designer with a great passion for what he does.

At the end, it was a period we all have to go through and I am glad and satisfied with the results.

Many thanks to:

- **Hans Kemp.**
  “For your wise coaching and for all the patients and the working hours we put together to get me this far”.

- **Boaz Leskes & Alex van de Leeuwen.**
  “For giving me the great chance to fulfill my dream and shear with you all my ideas and experience. Thanks for your time!”

- **My parents.**
  “For teaching me everything I know, and making of me everything I am. This one is for you guys!”. 

- **My good friends Janne, Harry, Joel and Asia.**
  “For always pushing me towards this goal, for believing in me and for always being there even when I was 2 years apart”. Thanks

- **Aniek Aper.**
  “Your presence in my life gave me strength and courage to go on. Thanks for your patients and love when I needed the most”

- **And my brother**
  “For being much stronger than I am. You are an example and as you learned from me before, now I have learned from you. Thank you brother!”
1. Introduction

This research document will explain the steps taken to improve the levels of interaction of the graphical widget in brand monitor. Brand monitor is an information dashboard that allows buzzcapture users/clients to have a quick and simple overview on a daily basis in the volume of discussions, sentiments, and places where these discussions are taking place. In other words, it is a social media monitoring information dashboard.

The research focuses on the implementation of richer levels of interaction and how to integrate those, in order to achieve better customer satisfaction and to provide the user with simpler and more task driven tools that will allow them to interact and make use of the data in comfortable ways.

1.1. Background information

Buzzcapture provides insight to organizations on the buzz in their market. How do consumers perceive brands? Which topics are discussed, and where are these discussions taking place?

All the information collected is analyzed and presented into comprehensible reports. In addition to the reports, Buzzcapture clients have 24/7 access to relevant online discussions on brands, topics, products and companies through Brand Monitor.

Brand Monitor users have insight on a daily basis in the volume of discussions, sentiments, and places where these discussions are taking place.

The data are presented in understandable graphics, which can be saved, used for presentations and shared with colleagues. Brand Monitor users are able to download customized reports and optionally has access to relevant information from news sites and traditional media analysis (radio, TV, printed magazines and newspapers).

1.2. Problem definition

Currently, the Visual data presented (Graph widget) to the user lacks the interaction needed in order to provide the client with a more simple and satisfying result. The lack of user experience, interaction and user-centered design in the actual software, affects the engaging time in between user and software.
“Brand monitor users don’t want to work for hours in order to get the result they need. They want the software to do it for them; they want the software to tell them what’s happening.”

Therefore, it is indispensable that the interaction between the User/Client and the data that is given through Brand monitor matches their needs and wants by providing them with a more efficient and satisfying working product.

1.3. **Field of expertise**

The project will be accomplished making use of various methods like: user research, visual & interaction design, interface design and usability. Each one will be applied at the right moment along the whole 80 days of internship.

1.4. **Research question & sub-questions**

*How can implementing richer levels of interaction enhance the user experience of graphs and charts in social media monitoring dashboard?*

**Possible sub-questions**

- What are Social Media Monitoring tools and how do they work?
- Which interactions methods will be used to enrich the user experience?
- What are the advantages of using interactive data visualizations in social media research tools?

1.5. **Objective**

The challenge lies on delivering more satisfying levels of interaction which allow the user to interact with the data and make a better use of it in order to meet their needs and wants. Besides, Visualizing data is a subject that has called my attention many times in the past. Researching what are the right choices to make, learning how the software works, executing user tests and of course using my visual design experience to get all this together is already a great challenge for me.
1.6. **Method**

The graduation process will start by gaining a better insight into brand monitor actual issues. In other words, get to learn how brand monitor dashboard works and what is there to improve.

Next, begin researching and carrying out some tests (*Web survey & user tests, maybe Interviews*) in order to discover how satisfied the user/clients are with the actual software.

Afterwards, based on results and the data obtained through the research, carry on with brainstorming to introduce better interaction features to the actual Visual data widget in order to introduce better and more efficient levels of interaction, to improve the user experience.

Finally, after gathering ideas and defining what can and can’t be done; begin with the concept, which involves a lot of wireframing, investigating, lots of thinking and visualizing ideas; in order to get a better view of what, the next step will be to test and prove that the steps that have been taking where efficient and that the enhancement of the software user experience was achieved with success.

Moreover, I will analyze step by step how brand monitor works in order to know if there are limitations and understand what the user/client really needs.
2. Information Dashboards

Information dashboards are formidable tools that can tap into the tremendous power of visual perception to communicate. An effective dashboard is not a product that focuses in cute gauges, meters and traffic lights, but rather of informed design. In other words, it is more about science than art, more about simplicity than dazzle. It is above else about communicating.

Moreover, the part of information technology that focuses on reporting and analysis, goes by the name of Business Intelligence (BI).

Gartner Group’s web site defines the business intelligence as:

“An interactive process for the exploring and analyzing structured, domain specific information... to discern business trends or patterns thereby deriving insight and drawing conclusions” ¹

2.1. History

Now at days we call them dashboards, but back in time, they were known as Executive Information System (EIS’s) first developed in the 1980’s. Back then, this implementations toke place in offices of executive and never numbered more than a few. Moreover, in the same decade that the EIS’s arose, it also went into hibernation, preserving its vision in the shadows until the time was ready. Then, in 1990s, data warehousing, online analytical processing (OLAP), and eventually business intelligence worked as partners to tame the wild onslaught of the information age. Back then the emphasis was focused on collecting, correcting, integrating, storing and accessing information in ways that required to guarantee it’s accuracy, timeless and usefulness. Also, further in the 1990s Robert S. Kaplan and David P. Norton introduced the KPI’s (Key Performance Indicator), which was not that popular until late in that decade.

What really caused heads to turn in gratitude of dashboards was the Enron scandal in 2001.

¹ http://www.gartner.com/6_help/glossary/GlossaryB.jsp
“A dashboard’s goal is to have the most important information readily and effortlessly available so you can quickly absorb what you need to know”

“It’s about triggering the visual perception of the user in a short amount of time and understanding short-term memory limits.”

Stephen Few, Information Dashboard Design
2.2. Definition

The two words Information dashboards them elves say a lot about gauges and meters, similar to those found in our cars for the fuel and speed. In the article “Dashboard Confusion”² Stephen Few, discusses few different definitions that have being given to information dashboard through out time. However, in this case we are talking about dashboards that appear on computer screens and involve specific information. So far the most logical and clear definition out there is the one mentioned by Stephen Few in his book “Information Dashboard Design”

An Information dashboard is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.

The meaning behind this definition tells us that a dashboards value is not about particular types of information, but about the information that it displays focusing on a particular purpose. The meaning is a single-screen display, and the purpose is to efficiently monitor the information needed to achieve ones objective.

2.2.1. Important guidelines

Here are some important points, which need to be taken into consideration when implementing dashboard to communicate specific information.

- **Dashboards are visual displays.**  
  This means that no matter what is the information that needs to be shown, it must be presented visually. Usually, combined with text, but with emphasis on the graphical content. Graphical and visual representation can communicate greater efficiency and richer meaning than text alone.

- **Dashboards should display the information needed for specific objective.**  
  This means that what is shown in the dashboard should meet the goal of the user.

---

• **A dashboard should fit in single screen**
  If you must scroll down to see the information, it has transgressed the boundaries for a dashboard. The object is to have the most important information readily and effortlessly available so you can quickly absorb what you need to know.

• **Dashboards are used to monitor information at a glance**
  A dashboard should quickly point out that something deserves your attention and might require actions. The information on a dashboard must be abbreviated in form of summaries or exceptions.

  “**A dashboard does its primary job if it tells you with no more than a glance that you should act**”

2.3. **Variation in use**

There are many ways to categorize dashboards into various types. The way relates the most directly to a dashboard’s visual design involves the role it plays, whether strategic, analytical or operational. The design characteristics of dashboards can be tailored to effectively support the needs of each of these roles.

The following table lists several variables that can be used to structure dashboard taxonomies, along with potential values for each.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role</td>
<td>Strategic</td>
</tr>
<tr>
<td></td>
<td>Analytical</td>
</tr>
<tr>
<td></td>
<td>Operational</td>
</tr>
<tr>
<td>Type of data</td>
<td>Quantitative</td>
</tr>
<tr>
<td></td>
<td>Non-quantitative</td>
</tr>
<tr>
<td>Data domain</td>
<td>Sales</td>
</tr>
<tr>
<td></td>
<td>Finance</td>
</tr>
<tr>
<td></td>
<td>Marketing</td>
</tr>
<tr>
<td></td>
<td>Manufacturing</td>
</tr>
<tr>
<td></td>
<td>Human Resources</td>
</tr>
<tr>
<td>Types of Measures</td>
<td>Balanced scored (ex: KPI’s)</td>
</tr>
<tr>
<td></td>
<td>Six sigma</td>
</tr>
<tr>
<td></td>
<td>Non-performance</td>
</tr>
</tbody>
</table>

### 2.3.1. Categorizing dashboards

Dashboards can be categorized in 3 main roles:

- **Strategic Dashboards**
- **Analytical Dashboards**
- **Operational Dashboards**

First we have **Strategic Dashboards**, also known as executive dashboards, which provides the quick overview that decision makers need to monitor the health and opportunities of the business. Because they are meant for long-term strategic directions more than real-time data, it can benefits from its static snapshot based on monthly, weekly or daily bases. They are usually unidirectional displays that simply show what is going on.

Secondly we have the **Analytical Dashboards**. These dashboards require a different design approach. In this kind of dashboard, the information often demands greater context, such as rich comparisons, more extensive history, and cleverer performance evaluators. An analytical dashboard must support interaction with the data, such as drilling down into underlying details, to enable the exploration needed to make sense of it.

"Brand monitor falls into this type of dashboards"

And finally we have **Operational Dashboards**. Their most relevant characteristic is
their dynamic and immediate nature. When you monitor operations, you must maintain awareness of activities and events that are constantly changing and might require attention and response at a moment's notice. In this case, when something goes wrong or fails you, want to be notified immediately. Also, the information that an operational dashboard displays, is often more specific, providing a deeper level of detail.

As with strategic dashboards, the display media on operational dashboards must be very simple as well.

2.4. **Designing for Usability**

When designing and implementing new features and rules to a dashboard, it is also important to pay attention to several other aspects of design to guarantee that your dashboards are easy to use and do everything they can to support the viewer’s need to respond to the information. Some of these aspects are:

**Organize the information to support its meaning and use.** Keep the following considerations in mind when you determine how to arrange data on the screen:

- Organize groups according to business functions, entities and use
- Co-locate items that belong to the same group.
- Define groups using the least visible means
- Support meaningful comparisons
- Discourage meaningless comparisons

**Maintain consistency for quick and precise interpretation.** Consistency is important not only in the visual appearance of the visual media, but in your choice of display media as well. If two sections of data involve the same type of quantitative relationship and are intended for similar use, you should use the same type of display for both.

**Make the viewing experience aesthetically pleasing.** On a dashboard, your aesthetics talent ought to be applied directly to the display of the data itself, not to meaningless and distracting ornamentation. The aesthetics of dashboards design should always express them selves simply, striving for the eloquence that emerges exceptionally from simplicity. Here are some essential guidelines that will help you

---

5 [http://www.slideshare.net/hursman/effective-dashboard-design-presentation](http://www.slideshare.net/hursman/effective-dashboard-design-presentation)
achieve simple aesthetics with out altering the data:

- Choose colors appropriately. Use background colors that are slightly off white to avoid the stark contrast between foreground colors against a pure white background.

- Choose high resolution for clarity. Images with poor resolution are hard to read, which slow down the process of scanning the dashboard for information.

- Choose the right text. If there will be text, use the best legible and readable font that can be found in order to avoid confusion and misunderstandings.
3. The use of social media

Social media monitoring is like a light in a dark tunnel. If you want to understand what’s being said about you so that you can be a part of it, help your customers where they are voicing their needs, and understand your marketplace, you need social media monitoring.

* Murray Newlands, Social media monitoring Book 6

Back in time, brands were able to present themselves to the public and tell everyone what their brand was all about and broadcast it through radio and television out to the public. Now a day’s brands face a different faith. Today a brand is as much as a result of how you present your self to the public and what people says about you, rather than what you say about yourself. Some brands are created out of discussions between yourself as a company and a consumer, conversations between consumers and other consumers and even with-in the industry it self.

Another significant change in the market nowadays is the shift between applying B2C strategies to implementing more C2C strategies. These way customers communicate with each other producing feedback on that specific brand, allowing the brand to approach and take action by join the conversations. It’s about listening to what your customers needs & wants.

“It’s not anymore about sending marketing, but more about what is the engagement levels ”

One key component in successful social media marketing implementation is building "social authority". Social authority is developed when an individual or organization establishes themselves as an "expert" in their given field or area, so they become an strong influencer in that field or area.

It is through this process of "building social authority" that social media becomes efficient. That is why one of the foundational concepts in social media has become that you cannot completely control your message through social media but rather you can simply begin to participate in the "conversation" in the hopes that you can become a relevant influence in that conversation.

But why are brands so interested in using social media nowadays?

According to *Patrick Petterson, social media expert*, because of the following reasons:

- To generate words of mouth encouragement.
- To develop the brand loyalty and build closer relationship with customers.
- To be aware of what your customers needs and wants are.
- To educate customers and media about company related issues.
- To support product/service sales and events.

One way that we think about a strategic approach to social media is based on a model used by Prof. Gerry Johnson, Prof. Kevan Scholes and Prof Richard Whittington in *Exploring Corporate Strategy (2006)*, which shows all the different sides we consider when thinking about how social media could be used to meet business objectives. The keys to this process are the following three areas:

1. **Analysis:** understanding why you want to use social media, what is already out there, what your consumers want and the resources that are available within your organization.

2. **Strategic choice:** given all the information available from your analysis, the next step is to consider which tools and concepts will produce the best results for your company.

3. **Strategic implementation:** social media is not just about a good idea or a campaign; it is as much of a cultural change as it is a technical one. It requires proper planning to ensure that what you have chosen is executed in a way that makes sense to the rest of your business.

Another one of the key components in successful social media marketing implementation is building "social authority". Social authority is developed when an individual or organization establishes themselves as an "expert" in their given field or area, so they become an strong influencer in that field or area.

It is through this process of "building social authority" that social media becomes efficient. That is why one of the foundational concepts in social media has become that you cannot completely control your message through social media but rather you can simply begin to participate in the "conversation" in the hopes that you can become a relevant influence in that conversation.

---

7 *Exploring Corporate Strategy. Prof. Gerry Johnson, Prof.Kevan Scholes and Prof Richard Whittington, 2006*
Subsequently, in order to succeed at carrying out the best strategy with well though tactics, it is necessary to measure and monitor how those activities are taking place and how are they evolving. This is where social media monitoring tools come into action and offer brands the possibility to keep track of everything concerning your brand in social media channels.

3.1. Social media monitoring tools

Now, social media and marketing are indistinguishably linked with each other. Clients are always active in social media where they share all their options and communicate with anyone. They post all they want for the whole world to see, and communicate their feelings and experiences through out this social networks. It’s all a huge amount of buzz and feedback, that might not seem to be important at first look, but it means a world of opportunities for people like marketers and communication managers. Knowing things like:

- What your client is saying about your product or service?
- Know how they experience it?
- Are they satisfied?
- And does it meet their needs and a wants?

Are arguments that are important to consider for the success of a company. Moreover, when consumers today are exposing their comments and complaints via social media networks, it’s essential for organizations to establish the right strategy, and effectively integrate those strategies and processes into customer service operations. Tracking what’s being said online about the company becomes an important first step.
Social CRM is a philosophy and a business strategy, supported by a technology platform, business rules, processes and social characteristics, designed to engage the customer in a collaborative conversation in order to provide mutually beneficial value in a trusted and transparent business environment. It’s the company’s response to the customer’s ownership of the conversation.”

Then, the question is how do you get to know that through out social media? Well there for we have social media monitoring tools.

Mostly of the time, the only way companies know that customers have questions, comments, or concerns is if they contact customer service, make the news, form a public group, or if they buy patterns, stock values, etc. For every inbound customer inquiry, there are a significant percentage of existing and potential customers actively discussing the same topic out in the open, simply looking for guidance, opinions, acknowledgment and/or information. These discussions usually transpire without company participation, leaving people to resolve issues and questions on their own. As a result, this leaves the door open for the competition to enter the conversation and steer customers in their direction.

---

8 Paul Greenberg, Social CRM model (customer relationship management)
**Social media measurement** refers to the tracking of various social media content such as blogs, wikis, micro-blogs, social networking sites, video/photo sharing websites, forums, message boards, and user-generated content in general as a way for marketers to determine the volume and sentiment around a brand or topic in social media.⁹

Social media monitoring tools are powerful tools that help brands; companies and individuals to keep up with all relevant social media mentions about their brand. They are meant to follow and track everything that is being written and buzzed about you or your brand through out social media networks, and provide you with an overview of what is being buzzed, in an easy way in order to allow you to take action if needed. In other words, it’s about helping companies track and respond to these real-time conversations that impact their brand.

To maximize its potential, it is important to control it strategically and treat it as an integral part of a company’s overall customer service strategy. Some businesses took one step further and assist customers with issues via social networks. This practice can save businesses time and money.

---


3.2. History

Since mass media usually has been limited simply of print media, naturally the monitoring was also limited to this media. Romeike, a polish newsagent, established the world’s first press clipping agency in London in 1852. In that time writers, actors, artists and musicians would visit his shop to look for articles about themselves in his Continental stock. It was then that Romeike realized that he could turn this into a profitable business. ¹⁰

Alfred Cherie established one of these agencies in Paris in 1879. He offered a press-clipping service to Parisian actors, enabling them to buy reviews of their work rather than purchasing the whole newspaper.

With the growth of the Internet in the 1990s, Social media came along introducing a new type of communication channel, which was accessible for everyone. Social media network monitoring service extended their services to the monitoring of online information sources using new digital search and scan technologies to provide output of interest to their clients.

Typically, individual or organizational clients—e.g. private companies and corporations, charities, government departments and ministries, -- will subscribe to a media monitoring service to keep track of what is being said about them, their field of operations, their competitors, or other specified topics of interest.

4. Data visualizations

Due to a massive amount of data being produced nowadays, there is a great demand for good and effective ways to present this data. Data visualization is continuously growing as an important part of business intelligence. It is being investigated, talked about, requested by people who work with data, purchased by people who hold the purse strings, and used by a growing percentage of people in the workforce, like analysts and strategists.

4.1. Definition

“Data graphics visually display measured quantities by means of the combined use of points, lines, a coordinate system, numbers, symbols, words, shading and color.”

“Edward Tufte” 11

Data visualizations can be defined as the communication of information using graphical representations. A single picture can contain a variety of information and can be processed much more quickly than a comparable page of words. Visualizations provide an alternative to, or a supplement for, textual or verbal information. It provides a far richer description of the information than the word-based counterpart.

Data visualization offers a powerful means both to make sense of data and to then communicate what we’ve discovered to others. However, despite their potential, the benefits of data visualization are being demoralized nowadays by a general lack of understanding of the subject. Many of the current trends in data visualization are actually producing the opposite of the intended effect, which turns into confusion rather than understanding.

---

Why should we be interested in visualization? Well, because the human visual system is a pattern seeker of gigantic power and subtlety. The eye and the visual cortex of the brain form a massively parallel processor that provides the highest-bandwidth channel into human cognitive centers. At higher levels of processing, perception and cognition are closely interrelated, which is the reason why the words ‘understanding’ and ‘seeing’ are synonymous. However, the visual system has its own rules. We can easily see patterns presented in certain ways, but if they are presented way or published in part without the review and approval of the author in other ways, they become invisible...the more general point is that when data are presented in certain ways, the patterns can be readily perceived. If we can understand how perception works, our knowledge can be translated into rules for displaying information. Following perception based rules, we can present our data in such a way that the important and informative patterns stand out. If we disobey the rules, our data will be incomprehensible or misleading.13

---

4.2. History

Before we get into it, let’s take a quick look at some history. Despite the fact that ancestors to data visualization date back to the 2nd century AD, most developments have occurred in the last two and a half centuries, mostly during the last 30 years. One of the earliest tables that have been preserved was created in the 2nd century in Egypt to organize astronomical information as a tool for navigation. A table is primarily a textual representation of data, but it uses the visual attributes of alignment, white space, and at times rules (vertical or horizontal lines) to arrange data into columns and rows. Tables, along with graphs and diagrams, all fall into the class of data representations called charts. Even though tables are mainly textual, their visual arrangement was a powerful first step towards later developments, which shifted the balance from textual and visual representations of data.

In the 17th century, Rene Descartes, the French philosopher and mathematician probably best known for the words “Cogito ergo sum” (“I think therefore I am”), invented this method of representing quantitative data originally, not for presenting data, but for performing a type of mathematics based on a system of coordinates. Later, however, this representation was recognized as an effective means to present information to others as well. Following Descartes’ innovation, it wasn’t until the late 18th and early 19th centuries that many of the graphs that we use today, including bar charts and pie charts, were invented or dramatically improved by a Scottish social scientist named William Playfair.

Next, the person who introduced us to the power of data visualization as a means of exploring and making sense of data was the statistics professor John Tukey of Princeton, who in 1977 developed a predominantly visual approach to exploring and analyzing data called exploratory data analysis. But in 1983 data visualization aficionado Edward Tufte came along with his groundbreaking book The Visual Display of Quantitative Information, which showed us that there were effective ways of displaying data visually and then there were the ways that most of us were doing it, which were sadly lacking in effectiveness. One year later, in 1984, Apple Computer introduced the first popular and affordable computer that focused on graphics as a mode of interaction and display. This paved the way for the use of data visualizations that we could view and interact with using a computer.

---

Given the availability of affordable computers with powerful graphics, a new research specialty emerged in the academic world, which was given the name “information visualization.”

In addition to these milestones in the development of data visualization, another event in the second half of the 20th century greatly influenced the quality of data visualization, but in the wrong direction: the proliferation of the IBM PC. Before the personal computer became commonplace in the workplace, if you needed to present data graphically, you were faced with a labor-intensive process involving the use of a T-square, draftsmen’s triangles, and a collection of special pencils and pens. It sometimes took hours to produce a graph that could be displayed in a meeting or attached to a printed report. When the process took this much time and effort, people responsible for this work usually took time to develop graphical communication skills. But with the advent of the PC and the proliferation of business software such as the electronic spreadsheet, this changed. With the PC, the click of a mouse could transform a host of numbers into a graph and people who knew nothing about graph design suddenly became Rembrandts of graphical communication—or so they imagined. Despite Edward Tufte’s efforts beginning in the 1980s, the quality of data visualization went largely ignored, especially in form of business graphs, despite their exponential growth.

Now that the stage has been set with the backdrop of history, let’s take a look at what are the most important patterns to be considered when using data visualizations to communicate the data the right way.

### 4.3. Data Visualization patterns

Within Data Visualizations, there are many patterns that were proven to work well as a method to visualize data\(^ {15} \). Many of this patterns focus mainly on 2D visualizations. This means that because nowadays there is a high usage of 2D visualizations, there are also many patterns.

The following list explains well-known 2D patterns that are mainly used nowadays\(^ {16} \). This list doesn’t mention all charts that exist out there, but shows the recommended charts for the Brand Monitor.

---

\(^{15}\) [http://docent.cmd.hro.nl/kemja/finalprojects/?p=1367 Alex Talmon – Interactieve Datavisualisaties](http://docent.cmd.hro.nl/kemja/finalprojects/?p=1367)

\(^{16}\) *Interactive data visualizations. Matthew Ward, Georges Grinstein, Daniel Keim. A.K. Peters, 2010*
Simple Bar Chart

Bar charts are used to visualize absolute magnitudes of nominal data items. They can theoretically consist of only one single data item, but in most cases are used to additionally compare the quantitative value of several entities with each other. Bar charts as a major group of standard display are distinguished charts from line charts and pie charts as they do not display constant developments over an interval but measure the values of discrete data items. Also, they display absolute numerical values rather than proportions.

Stacked Bar Chart

In a stacked bar chart, each bar represents a whole set quantitative data. A bar is then separated into segments so that each segment represents a single item of the corresponding set. Stacked bar charts are therefore an alternative representation for quantitative multiset data. Stacked bar charts let the user directly compare the total magnitude of several datasets within one diagram while providing additional information about the composition of these sets from their single items. The value of a whole dataset is the most important information to retrieve from this visualization - the magnitude of single items can be read and interpreted, but their precise evaluation is hampered because the segments of a bar do not share the same base.

Multiset Bar Chart

The concept of multiset bar charts is based on the Simple Bar Chart pattern, but additionally allows several datasets to be displayed within one diagram. Thus, these diagrams let the user inspect and compare several sets of quantitative data while occupying significantly less display space than a set of multiple conventional bar charts. It is often used to sub-divide discrete entities for further and more detailed exploration, like for instance the months in an unemployment chart that are divided into male and female figures.

Span bar chart

Span charts are useful for displaying ranges of datasets between a minimum and a maximum. Datasets are not represented by all of their members, but characterized only by their extreme values. The bar chart layout allows direct comparison between these datasets. The Span Chart pattern is derived from a more sophisticated graph
layout style called box plot, which is mainly used in experimental science to visualize large quantities of measured data and allow direct visual access to a dataset’s key information.

**Dot matrix chart**

The dot matrix is a one-dimensional representation form for discrete quantitative data. Instead of merging the discrete values into a continuous representation such as a bar or pie chart, it retains the “countability” of the data by employing a series of proxy elements. The special view on quantifiable information the dot matrix offers to the user (he can literally count the amount of data displayed) is the result of a trade-off with the display’s accuracy. Thus, this representation pattern is only useful when an appropriate scale ratio is applied.

**Simple line Chart**

Line charts display the quantitative value of an observed object over a continuous interval. In most cases, this interval is a time span, and the graph describes how the object’s variable changes over this time interval. The line chart is a widely used diagram type, and due to its familiar structure easy to grasp. Besides the individual values themselves the most significant information that can be derived from it is the gradient of the curve, which provides information about the intensity of the attribute’s change over time. Also, minimum and maximum values can be easily identified from such a representation.

**Multiset line chart**

A line chart is used to display the behavior of one single value over an interval. However, there are situations in which it is important to let the user directly compare several variables and their development over the same interval. Instead of drawing several charts next to each other with each one displaying one single graph, create a single coordinate system that fosters the requirements of each variable within the same system.
Two-axis column chart

The two-axis column line chart is a combination of a simple bar chart and a simple line chart. By mixing this two together in one chart it is possible to identify trends with in data and compare this result with other data. For instance a bar chart that shows how many articles has being sold during the last months and a line chart that shows the markets sells levels.

Stacked areas

An area chart displays the development of quantitative values over an interval. It resembles a line chart as it uses lines connecting data points with each other. The specific characteristic of the area chart is that the area below the line is filled with a certain color or texture. When more lines are added to the graphic, they are “stacked” on top of the previous line. This makes the area chart a preferred diagram type for displaying several data sets within the same chart with stress on a total magnitude several variables add to.

Pie chart

A pie chart is a circular object divided into multiple polar segments. It displays the relative magnitude of several quantitative values compared to each other, or, in other words, the distribution of several values that belong to the same dataset. The full circle represents the total magnitude of this dataset, equal to 100 percent, while each segment stands for the magnitude of one particular variable. Segment area, arc length and arc angle of each segment are proportional to the value the segment represents. The segments of a pie chart are usually labeled with percentage numbers rather than total values (although they can feature both for the sake of understanding).

Ring chart

Ring charts are an extension of the conventional pie chart. They allow the display of several datasets of the same configuration, or those with data related to each other, within one chart, making the different sets and their characteristics immediately comparable. Ring charts relate to pie charts just like stacked area charts to line diagrams: By incorporating several datasets of identical type and scale into the same representation, it is much easier for the user to make comparisons between these sets than having several pie charts standing next to each other. Another, more pragmatic
advantage of this chart method is the space saving aspect: The more sets you incorporate into one ring chart, the more area you save compared to a set of pie charts.

All the different charts mentioned above are the best qualified to use on an information dashboard if clear and direct communication want to be achieved. In case of using other types of graphs or chart it is necessary to have a greater understanding of data visualization in order to keep and achieve the goal.

One great invention is the Chart suggestion table designed by Andrew Abela in 2009. In the table he shows four different reasons why people will use to make use of a chart. Comparison, Relationship, Distribution and Composition

2009 A. Abela, www.extremepresentation.com
4.4. Future trends

One of the inspiring new trends in business intelligence nowadays is the growing recognition that the greatest benefits of data visualization will come in the form of analytics. **Visual analysis** software allows us to not only represent data graphically, but also to interact with those visual representations, filter out what’s not relevant, drill into lower levels of detail, and highlight subsets of data across multiple graphs simultaneously. This makes good use of our eyes and assists our brains, resulting in insights that cannot be matched by traditional approaches. Static graphs delivered on paper or electronically on computer screen help us communicate information in a clear and informative way, which is a benefit that should not be undervalued, but it is from visual analytics that businesses will develop their greatest benefits.

Also, one of the most powerful techniques of visual analysis involves the **simultaneous display of multiple graphs**. Edward Tufte promoted a form of display that he calls *small multiples*[^1], which uses a series of small graphs arranged together within eye span so they can be compared. Each graph represents a different subset of data belonging to a full data set, such as a series of line graphs that displays a company’s expenses through time, with a separate graph per department. Small multiples greatly expand the number of variables (dimensions) that can be viewed together and compared. A different approach to the simultaneous display of multiple graphs uses each to examine a different aspect of a common data set. For instance, several graphs, perhaps of different types (*bar graphs, line graphs, scatterplots, etc.*), could be displayed together to simultaneously examine several aspects of a data set, allowing us to discover connections in the data that might not ever surface if the graphs were viewed separately. Visual analysis products that support displays such as these are rapidly becoming recognized for the rich analytical insights they make available to our eyes.

Likewise, there is no better and prominent example of data visualization in the awareness of business people today, than **Information dashboards**. These displays, which combine the information that’s needed to quickly monitor an aspect of the business on a single screen, are powerful additions to the business intelligence resource. When properly designed for effective visual communication, dashboards support a level of awareness—a *picture of what’s going on*—that could never be stitched together from traditional reports. Unfortunately, most dashboard products and most of the

vendors that develop and sell them, fail to take full advantage of data visualization’s power. Instead, these dashboards tend to look and function more like video games than serious information displays. In fact, many dashboards and dashboard products, while raising the visibility of data visualization, have only managed to give it a bad name due to poor design.

Visual communication involves semantics and syntax, much like verbal language. To do it right, you must know the rules in order to communicate effectively with graphs. Today, due in part to the pioneering work of Edward Tufte and William Cleveland beginning in the 1980s, and more recently to the efforts of Gene Zelazny, Naomi Robbins, and Stephen Few, the message is finally getting out that graphical communication requires fundamental skills that must be learned\(^\text{18}\).

5. Case: Brand Monitor

The Project was born in Buzzcapture, when the buzzcapture crew decided to upgrade their software. Buzzcapture monitoring tool, brand monitor exist since 2006 when the company was found and it is one of the leading social media-monitoring tool in the Netherlands.

Now, before get into the core, lets take a look at the brand monitor background again!

- Buzzcapture provides insight to organizations on the buzz in their market.

- How do consumers perceive brands and which topics are discussed, and where are these discussions taking place?

- Information collected is analyzed and presented into comprehensible reports. *(Done by hand so far)*

- Buzzcapture clients have 24/7 entrées to relevant online discussions on brands, topics, products and companies through Brand Monitor.

- The data are presented in understandable graphics, which could be shared with colleagues.

- Brand Monitor users are able to download customized reports.

- Optionally have access to relevant information from news sites and traditional media analysis (radio, TV, printed magazines and newspapers)

Many of the descriptions mentioned above, are facts that buzzcapture relay on even though some won’t work as described. In short, many of the interaction featured in the actual brand monitor dashboard are not user friendly and/or user-centered.

5.1.
5.1. **Hypothesis.**

Based on the project offered and the project proposal delivered to Buzzcapture the question to be answered is the following:

*How can implementing better levels of interaction enrich the user experience of data visualizations in social media monitoring dashboard?*

The actual brand monitor dashboard doesn’t not fulfill with any dashboard standards. The current product is more of a website than an information dashboard. After investigating the current issues that triggered this project to start, it was clear that there were two major issues that had to be taken in consideration:

1. Brand monitor dashboard, as it’s called, is actually a website. The interface does not fulfill any information dashboard parameters and design.

2. In the dashboard there are a series of graphical widgets that provide the user with the visual data concerning insights in the nature of sentiment, volume, opportunities and threats. In this case, these widgets provide the user with only bar charts and tag clouds and the user can only mail or save the widgets.

As a result, this case chapter focuses on researching and implementing the best interaction methods in order to implement higher levels of interaction in order to provide the user with more useful and productive ways of making use of the information provided by the brand monitor.

5.2. **Research**

5.2.1. **The Users**

Brand monitor **target group** users are men and women between 25 and 40 years old. They are mostly marketing, corporate communication and PR professionals.

All **users get to know** Brand monitor after being introduced to it by experts from Buzzcapture. All clients receive training in how to use the different products from Buzzcapture, including Brand monitor.

Their **work environment** is characteristic of typical organizations where everyone works with the same type of computer and with the same software.

For instance, all PC’s are either HP of DELL and mostly every one still uses IE6 and IE7.
5.2.2. **User Journey**

The following illustrations show how the users journey of a Brand monitor clients looks like and how do clients obtain reports from buzzcapture.

The flowchart shown below shows buzzcapture reporting process. The illustration shown on the next page (page 33) is a representation of what the brand monitors user journey looks like. This visual representation is based on information obtained after researching the target group and what does the target group does with the data provided by the dashboard.
Brand Monitor user's journey

Brand monitor Users

Brand Managers
Marketing Managers
Communication
PR manager
HR managers

buzz
capture

and

goes to work...

Checks mail

Checks agenda

Attend to meeting

Log in, Brand Monitor

Look for relevant posting!
Look at influential Sources.
Check for interesting topics.
Quick check for shifts in Graphs!

When needed mail graphs or save them.

Goes on with work and other tasks
5.2.3. Competitor’s Monitoring

Monitoring help with branding and marketing and can help identify quality control or customer care problems that may have gone unnoticed. Monitoring is only one piece of the puzzle, however. It’s important to find out who is saying what, and where the conversation is happening so you can respond appropriately.

Nowadays in the market there is a bunch of monitoring tools, which can do the job, but only a few stand out of the crowd. Few of them are:

**Radian 6**

Radian6 is a powerhouse that gives you the ability to slice-and-dice your data until your head spins. Integrated workflow, alerts, sentiment, monitoring across blogs, forums, news, Twitter, and more is what this social media monitoring tool has to offer. It helps you track quite a lot of signals and get insights into your brands performance on various social media channels. They cover almost all the social media channels like blogs, twitter and Facebook. It provides detailed analytics reports and charts, perfect for that presentation you want to pull off. 19

**Lithium (Scout labs)**

Monitors your search-specific mentions and sentiment in social media outlets and outputs them into easy-to-read graphs and numbers resembling the stock market. Lithium will aggregate information from a variety of platforms including blog posts and comments, Twitter, Facebook, Flickr and many others, and it will assess emotions surrounding your brand pre-, mid- and post campaign so you can adjust your strategies accordingly. We miss ScoutLabs, which is now part of Lithium. 20

**Clipit**

Clipit makes clear online news and daily scans nearly 10,000 online sources, including news and press releases, but also discussion forums, 20

---

blogs (including comments), newsletters, reviews and social networks like Facebook, Twitter and Hyves.  

**Collective Intellect**

Collective Intellect, which started out by providing monitoring to financial firms, has evolved into a top-tier player in the marketplace of social media intelligence gathering. Using a combination of self-serve client dashboards and human analysis, Collective Intellect offers a robust monitoring and measurement tool suited to mid-size to large companies with its Social CRM Insights platform. It applies spam management techniques and text analysis to clean data sets, delivering customers rich intelligence.  

**Sysomos**

Sysomos’s Heartbeat is a real-time monitoring and measurement tool that provides constantly updated snapshots of social media conversations delivered using a variety of user-friendly graphics. Heartbeat organizes conversations, manages workflow, facilitates collaboration and provides ways to engage with key influencers.  

5.2.4. *Early testing.*

Currently there is a relative lack of awareness concerning what happens with the data provided by Brand monitor and how clients are using it. The target of the research tactics, aims towards what can’t be seen after the data is delivered to the user.

- **What happens to the data?**
- **Who makes use of it?**
- **Why do they use it?**

---

21 [http://www.clipit.nl/hoe-werkt-clipit](http://www.clipit.nl/hoe-werkt-clipit)
All this is planned with one specific purpose in mind, to gain better inside into the user/clients journey and use the feedback to re-think and re-design the data visualization widget from Brand monitor.

The planned surveys and interviews will cover the following issues:

- How does the user works with Brand Monitor?
- What does the user do with the Visual Data?
- Does the dashboard meet the user needs?
- What is the level of interaction between Visual data and the user?

**Note:** The following testing techniques focus only on the issues of the Visual widget from Brand Monitor.

### 5.2.4.1. Sessions

In order to obtain the best result possible there were two different research tactics applied.

- **Web Survey.**
  
  Sent to clients via mail.

- **Cognitive walkthrough**
  
  With 3 co-workers from Buzzcapture & 3 colleagues from next-door company.

**Web Surveys:** The web surveys (questionnaire) will be prepared in Google Docs. This is the simplest way of doing it and it delivers as good results as other programs.

Moreover, in order to be aware of how people use the dashboard, and to begin getting an idea of which step should be taken to re-design and re-think the visual widgets functionality, it is necessary to carry out a Cognitive Walkthrough test.

The **Cognitive Walkthrough** inspection technique focuses on the feature set of a product. The inspectors are usually given use cases with the end result to be obtained from the use of the product. Each feature is analyzed for its accessibility, understandability, and other aspects of usability.

It will be a short performance test focusing on gaining more Qualitative data about how do the users work and interact with the dashboard.
**Note:** All techniques will be used combined in order to get the best out of the interviews.

### 5.2.4.2. Equipment

The following equipment and programs will be used:

**Web Surveys:**

- Google Docs (Spreadsheets, form). Easy to set up and delivers good results.
- List of clients that have logged in Brand Monitor. Max of 60 clients will be mailed.

**Cognitive walkthrough:**

- Stop Watch.
- Users Personal Computer
- Task Questionnaire
- Note book (to take notes)

### 5.2.4.3. Participants

**Cognitive walkthrough:**

From Buzzcapture:

- Elske Fontein. Social media analyst.
- Djure de Wit Social media analyst
- Yoshi Tuk Communication science intern

From Headline (company in same building):

- Tatsuru Miyazaki Account manager
- Franci Wessels Brand strategist
- Hans Ruigrok Director headline
5.2.4.4. Schedule & location.

The realization of the questionnaire Web survey will be set up and send between the 28 Feb and the 4th of March.

The research will take place at the user's environment, which in this case will be the companies. With in the coming two-weeks there will be at last 6 interviews taking place at different locations.

The following timetable shows the time that will be needed in order to execute the interviews. Between this week 28 of February and the week of the 7 of March the testing should be relatively done.

<table>
<thead>
<tr>
<th>Month</th>
<th>Feb</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week’s</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>14-Feb</td>
<td>21-Feb</td>
</tr>
<tr>
<td>Thesis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature Research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TEST PHASE</td>
<td>Surveys</td>
<td>Interview</td>
</tr>
<tr>
<td>Analyze results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brainstorm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireframing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: During the testing period after the Web survey and the Cognitive Walkthrough test, Buzzcapture’s crew and I agreed that we have enough data to continue and discarded the interviews.
5.2.4.5. Metrics

The following questionnaire was discussed with the Buzzcapture team in order to cover all the issues that are to be investigated.

Web Survey questionnaire

1. What is your name and work function at the company?
2. What is your general impression of Brand Monitor?
3. How often do you use Brand Monitor?
4. What is the reason for you to login?
5. Which information in Brand Monitor do you find essential?
6. How do you report or share your information from Brand Monitor?
7. Describe how you acquire your desirable data from Brand Monitor?
8. In which or form would you like to receive your proactive information from Brand Monitor? Describe shortly your needs of information
9. Do you use other monitoring tools to receive news out of online or social media? If yes! Which tools do you use?
10. Can you mention few improvement wishes for the actual Brand Monitor?
11. What are your wishes for the future version?
12. Which aspects of social media are important for your company?
13. If you could put all technical/financial consideration aside, what is the best feature you would like to see added to the Brand monitor? Please share your wildest ideas.
14. What else do you want to tell us about Brand Monitor?

Cognitive walkthrough questionnaire

In order to gain the best out of the test planned, choosing for the right technique was a must. The choice was to carry out a Cognitive walkthrough.

What is it?
Cognitive walkthrough implicates one or a group of evaluators inspecting a user interface by going through a set of tasks and evaluate its understandability and ease of learning. The user interface is often presented in the form of a paper mock-up or a working prototype, but it can also be a fully developed interface.

http://www.usabilityhome.com/FramedLi.htm?CognWalk.htm
**Why use it?**

Because we want to know the effectiveness of the software and that is exactly the advantages of caring out this kind a test. By inspecting a user interface and going through a set of tasks to observe how the user behave and makes use of the software, the evaluator can see how a user behaves with the software, what steps she/he takes and record how much time it takes the user to get the task done.

**Task Questionnaire**

The following list of tasks emphasis on knowing how the users from brand monitor work with the graph widget and it’s interactive features. The goal is to acquire as much information as possible by observing and documenting how do they use it.

The following question shows the tasks that will be asked to the user.

1. Please, find the “Share Buzz politici” graph, the look or search for data out of May 2009 and find out which politici had the highest volume percentage in that period.

2. Go to TOPICS and look for the “Buzzvolume Stemwijzer.” Could you please find a couple of example postings from the month of June?
   - *Is it clear what happens after clicking?*
   - *Could you describe what happened?*

3. Please go back to BRANDS and look for the “Share buzz politieke partijen” graph.
   - *Could you please set it at the top of the list (so you can find it more easily the next time)?*

4. Please send the Graph “Share of buzz – Grootste Partijen” to this e-mail address: alejandro@buzzcapture.com

5. Suppose you have no need to see the “Tag Clouds” Boxes. Please go back to BRANDS click them away.

6. Then, you get an email where you are asked to find what are the more important subjects of the day. You need to set them back on! How do you do that?
   - *Do you know where to find them again?*
   - *Is it clear how this works?*
7. Imagine you need to save one of the Charts for a presentation you need to prepare;  
   a. Please look in BRANDS and save for your self the Geert Wilders Chart?

8. In which week did CDA have more buzz than VVD? Please search for the following graphs in BRANDS;  
   a. CDA Buzz volume Graph  
   b. VVD Buzz volume Graph  
And compare the weekly results.

5.2.5. Results

5.2.5.1. Web survey’s results

We received 35 responses of the 60 mails that were sent.

**Note:** The results you are about to read are concerning the whole brand monitor.  
This because it was important for Buzzcapture to know what their customers were doing with the dashboard and for me to know who does the user behave with the dashboard and how do they use the widget.

What is your general impression of Brand Monitor?

*Positive feedback:*

- Fast  
- Works intuitive  
- UI works fine  
- Gives a good overview (overzichtelijk)

*Negative feedback:*

- Not possible to set up queries (search)  
- Lack of depth of analysis (shallow information)  
- Position of recent postings is bad (click a chart, not always clear the postings appear on the left side)  
- Outdated design  
- Sometimes hard to use  
- Too much scrolling down
What are the reasons to log in?

- Create reports
- Link news events to effects in social media
- Curiosity
- Competitor analyses
- See important sources
- See Hot Topics
- See Trends in discussions
- See what’s going on and respond to it (take action)
- To verify ‘gut’ feelings, get insights to improve communication,
- See what people are talking about

Which information in the brand monitor is essential to you?

- Who are the brand Promoters / Critics
- The quotes (recent postings) that support the figures
- Metrics, hard figures
- The relative position of own brand in the market
- Brand comparisons (volume / sentiment)
- To see movements (in the market/buzz)
- Categorization of sources (blogs, vs social networks, vs twitter, vs forums, etc)
  
  (this is not available yet)
- Ability to respond
- Get insights on our brand reputation

How do you report or share information?

- Through Excel
- Print screen
- Regular reporting, for marketing plans purposes.

**Note:** Clients rely on Buzzcapture’s weekly or monthly reports. This are manually created for clients (they pay for it).

How do you retrieve information from the brand monitor?

- Copy/paste
- Email
- Send charts.
How would you like to receive information from the brand monitor?

- Email
- Via SMS
- Twitter (DM)
- PDF
- Excel
- Alerts (push notification)

Which Other Tools Do You Use To Get Information?

- Clipit
- Tweetdeck
- Google Alerts
- Co Tweet
- Twitter search.

Can you mention few improvement wishes for the actual Brand Monitor?

- Show more postings (*we only get the tip of the iceberg*)
- Get more in depth analyses (*click through, get an analyses of subset of data*)
- Make charts more interactive
- Create 1 experience with FDA, Buzzcare: 1 experience
- Password recovery (*forgot password thing*)
- See buzz (related postings) related to charts at once (in 1 preview)
- Visual improvements
- Improve the design
- Ability to insert KPI's
- Ability to add comments to charts

What Part Of Social Media Is Important For Your Organization?

- Signals from consumers
- Interaction
- Reputation management
- Sentiments around brands
- Insights in Trends
- This information is important for spokespeople
- See how the Competition is doing, status of their reputation
Social media is a new communication channel for us

- Interesting news source for PR purposes
- Source for actuality (news)
- Gives the ability to respond quickly to news

**What Would You Like To See In The New Brand Monitor?**

- Users want to create reports themselves, export them and add their comments
- Users want to create charts and search themselves → self service
- Direct link/access to Buzzcare
- Improved ROI version (timeline, compare brands, benchmark)
- Improve design
- Mobile app
- More metrics (likes, shares, retweets, click throughs, views, etc.)
- Add events to charts (basically: insert comments into charts)
- Export to Excel
- Link with FDA (Brand Monitor should be part of a product suite)

The general opinion about the current Brand Monitor is ok but below good. It is clear that it lacks the positive feeling and the happiness from really satisfied customers.

Negativity is being caused by the design, which feels outdated, the lack of interactivity and (as a result) a lack of depth in analyses options for the user. The User Interface should focus more on the user needs & wants.

So basically it’s the way the UI work that doesn’t make sense to the users. This problem becomes bigger when there’s a lot of charts enlarged which requires the user to scroll down a lot as well.

*Most users log in on a weekly basis.* One of the goals is to increase the amount of time people log in, especially for corp. communications and PR people, who are focused on daily news.
Every day 3 9%
Weekly 21 60%
Once a month 4 11%
Not a lot 5 14%
Almost never 2 6%
5.2.5.2. **Cognitive Walkthrough results**

*What data we collected*

After testing, the data obtained was sufficient enough to give an idea of how do the user behave and use brand monitor.

Some of the major issues involve points like the amount of time it takes the user to execute the asked task, how easy do they learn the functionality, how do they carry out the task and do they understand what they are doing.

During the test period the following data was gathered:

- Voice recordings of the test sessions.
- Task estimated time.
- Personal notes from each participant.

*Major issues*

The following list of findings focus only on the graphs shown in the brand monitor.

1. A lot of scrolling for each times the user search for specific graphs.

2. Feedback after clicking on specific graphs is not clear. Users don’t understand what happened.

3. After clicking on minimizing button, graphs disappear and it is not clear what happens and where to find it back. Minimizing doesn’t seem to be the problem, but when the user looks to maximize the page back they don’t know where to find it or what to do. Users don’t understand what is the “index graphic” for.

4. For some cases, before getting it right, users feel the need to execute other actions in order to understand the functionality of the software. It's not clear to them what some of the action do. *Ex: when wanting to set the graphics on the top of the list, users tempt to click and try many other things before understanding how to do it.*

5. Users make use of right click actions to save graphs instead the graph saving function. It is not clear that this function is already available in the graphic widget.
6. When needing to compare graphs, user needs to take more than 2 or 3 steps to get it done. Bar charts are not easy to compare graphs.

7. In some graphs, the meaning of color is not clear.
   *Ex: Some users don’t understand what the color of the Buzz volume charts means*

8. Date selector advanced options menu (in graph) aren’t always clear for the user.
   *Sometimes they have no idea of what to do with it and or what is it for...*

The results from the test show that there is a general lack of interaction. Because this test focused mainly gaining more insight information on how do clients use the Widget display, it was important to execute tasks that will allow the user to interact with what ever levels of interaction were available for them.

It is clear that there is some room for improvement in order to achieve better levels of satisfaction with clients, and a better working product.

### 5.3. Development

During this stage of the project, research was mostly complete and re-thinking new features and implementing new ideas was now the main goal. Brainstorm session, focus group meetings and discussing new ideas were now part of the next level.

#### 5.3.1. Brainstorm

After gathering all the ideas in to one list, a Focus group meeting was called to discuss the ideas and get the CAN or CAN’T from the others, so that we could agree correctly on what is going to be implemented. The following list mention all new ideas were agreed on.

- Display sentiment volume in sources & influential charts (per source) and ability to click through to line chart per source, topics, brands mentioned there.
- Total buzz of project: set start date in order to see meta data of the project in a flexible way
- Visualization in radar & polar chart on topics around a brand
- Drag & drop charts next to each other
- Minimize / maximize widget window
- Advance tab menu. Option menu
- Show the query behind the chart: what is the chart based on and provide the ability to edit that.
- Exported chart must be directly usable in reports
- Export to: PDF, as image, Excel, email. When mailed, there must be an option to add comments and add examples of postings
- Select chart type (PIE, line, bar) but show default the best option.
- Industry benchmark chart for volume, sentiment, ROI
- Improve ROI chart: show progress over time, brand/campaign comparison
- Show future projection
- Zoom in and out on desired data
- Add comments, event to charts
- Hover on data points shows numbers
5.3.2. Concept
The following section represents the concept ideas born as a result of the brainstorm sessions that were carried out during the last months.
Many of the new ideas focus on enhancing the levels of interaction for Brand monitor and making the Display Widget more useful for the user in order to allow the clients to have a better use of the data that the dashboard provides.
The concept ideas mentions below are:

- Based on the results obtained out of the different research methods that were carried out.
- Based on the brainstorm and focus group sessions.
- Result of a series of agreement on what can & can’t be done and buzzcapture wants.

All different ideas were categorized in 4 different sets of features:
- New features
- Widgets overall interaction
- Editing tool bar
- Advanced Action menu
- InDisplay Interaction

**Display’s Interaction:**
This section will allow the user to zoom in and out of data, select specific period and even add comments to graphs.

**Widgets Interaction:**
Will allow the user to interact with the widgets body.

**Action menu:**
Allows user to execute task driven action with the data shown on the widget

**Editing tool bar:**
Allows the user to customize the data in the display.
5.3.2.1. **New features**

**Add sentiment graph to each Sources & Influential.**

The following idea consists in adding a bar graph to every row inside the SOURCES & INFLUENTIALS widget. The meaning is to visualize the levels of sentiment on a horizontal bar chart for each of the sources. Eventually this visual preview could be clickable to which can result into a pop-up that show the user more detailed data from that particular Source or Influential

![Sentiment Graph Example](image-url)
Add a benchmark graph for each brand

One of the new features of the new brand monitor will be the introduction of a benchmark graph the results of the brand during that specific period of time and the market speciation’s.

This way the user are allowed to check on how the other companies are doing in their market and take actions if necessary.

For example: In this case the light blue bar will be the market average and the dark blue will be the companies achievements.
**Introduce a Visual representation of the actual ROI.**

In the actual ROI widget, users receive results just in numbers out of calculation of values. In the new ROI widget the user will have a graph representation of those results that are showed. Each time that a user selects a brand and a time frame, the graph will show the user a visualization of that selection.

Additionally, the user will be given the choice to look at the benchmark from that specific brand and time. It will be presented as a check box or a switch that the user can use to show the benchmark in the graph.
Add Radar & Polar: 100% stacked spider chart to Visualize topics around a brand of theme.

This idea consists in adding a radar & polar graph 100% graph to provide the user with an overview of what are the top brands around that specific topic or the other way around. This way the user has a more general idea of who are the top brands concerns on that topic in their market.

The content of the graph itself will be customizable, so that the user can choose which brands do they want to see.

For Example: What does KPN clients say about their TV service?
5.3.2.2. **Widgets Overall Interaction**

The following ideas focus more on the interaction of the widget itself. The example are presented as recommendation to achieve better levels of interaction

**Add widget Drag & drop functionality**

This functionality consists in grabbing a widget and dragging it on to another one. Then this two merged together and show the user a new widget with the comparison of the two. Depending on the two types of data a new graph will show up matching the data required.
**Introduce Minimize / Maximize functionality**

This action will require the top head of the widget to stay static. The meaning is to make the content body roll up and minimize itself, leaving only the top bar behind in the place where the action took place. This way the user will know that the content was hidden and not gone. Also when wanting the content back, the user will be able to maximize (roll down action) the content.
5.3.2.3. *Editing Tool bar.*

The meaning is to introduce a tool bar that will provide the user with task driven commands that will allow them to edit the content of the widgets display.
**Edit the type of graph and looks of it.**
The display will show default the best graphic option depending on the data. Then, it will be the users choice to select a different type of graph in order to achieve better levels of personalization.

**Choose different time frame**
The user will be able to choose between days, weeks and years with a simple click.

**Show queries**
In the tool bar the user will have access to the queries trough a button that when clicked will show the user a pop-up with the queries used for that graph. Eventually there will be an option to add or remove queries if whished

By introducing this personalization medium to the widget, the users will have more access to self-personalization features. This way user will be able to customize what they want to see.

**5.3.2.4. Advance actions menu**
The introduction of an advance action menu is a new feature that will allow the user/client to execute different task driven actions like exporting, mailing, saving, etc on each widget. The goal of this action menu is to provide the user with different actions that will allow them to make better use of the data that is provided by the dashboard.

“Google docs example.”
This advanced actions menu will contain the following options:

**Export excel**

When clicking on this option the user receives an Office Excel sheet with generalized *(Graph, numbers and important postings)* data about the wished widget. This will allow the user to create and customize own reports when making one.

**Mail it:** User will be able to mail the wished graph to who ever they wish. When mailed, there will be an option to add comments and add examples of postings

**Save as:** This option will allow the user to save what they wish to save for them selves. When selecting this option the user will be able to choose. For instance: save it as PNG, JPG, etc.

![Share of Buzz Politici](image)
5.3.2.5. Displays Interaction

The new in display interaction feature, is what will allow the user to play and interact with the data presented in the display of the widget. However, due to a considerable lack of interaction levels and the lack of dashboard look and feel, the introduction of these features will take place in a future version of the brand monitor.

“Example of how the action menu might look like.”
**Zoom in and out on desired data**

This feature will allow the user to zoom IN & Out of desired period to gain more insight on desired data.

---

http://www.highcharts.com/demo/line-ajax
Add comments, event to charts
This new option will allow the user to click on remarkable point in the graphs and check and add comments. The comment box will only appear after clicking on that specific point in a graph.
**Hover on data points shows numbers**

This option will allow the user to look at the relevant changes in data on specific points in the graph. This can be done in a pie chart, bar chart or line chart like shown below.
5.4. Implementation
At this stage of the project there was enough information gathered to begin visualizing the new ideas. The goal was to implement the new features in the widget as in a low fidelity wireframe, then after further agreements implement these new ideas in a visual prototype and test it in order to validate the new interaction.
Still, the actions shown in the wireframes focus on improving the widget interaction levels.

5.4.1. Wireframes

Action Menu
It consists out of drop down menu, which shows up when clicking on the button on the right upper corner, on the header of the widget. The drop down menu give the user access to 4 different commands, which allow him/her to make better use of, the data provided on that specific widget.

Export graph:
Allows the user to export an Excel sheet with all the most relevant data related to that graph.

Mail graph:
Allows the user to mail the graph and add comments when doing it. Also add extra graphs if needed.

Save as:
Allows the user to save the graphs as JPG & PNG. This can be use in reports.

Delete graph:
Allows the user to delete the graph that she/he dont want to have active.
**Editing tool bar**

This tool bar will allow the user to make changes on the widgets display like, changing the type of chart that is shown, show the queries and choose between different time frames. The user can access the tool bar by clicking on the EDIT tab below the header. By doing so the tool bar slides open and shows itself between the header and the body of the widget.

**Choose different chart**
will allow the user to choose for a different graphical view.

**See queries**
this button will show the user the queries that belong to that graph. User will be able to add and delete them as well.

**onClick on the tab**
body slides down to show the editing tool bar.
**Drag & Drop**
This added functionality will allow the user to drag and drop widgets as she/he wishes. The goal behind this idea is to 1) allow the user to order and personalize the order of the graph as she/he wishes to see them and 2) to compare graph.
The comparison action takes place when the user grabs the wishes graph and drags it on top of another graph. This action will merge the two graphs that were selected and dragged into each other and result into a new graph with an explanation of this two. After doing the comparison the user will be able to reset the comparison and the two graphs that were dragged will appear back as they were.

**Drag & Drop for comparison**
*Drag and drop on each other:* users will be able to drag two wished graphs on top of each other. The two data merge and will show a comparison graph of both selections.
**Hover on data point**

The hover on data points in an action that allows the user to have a preview of the most important changes when placing the cursor on any graphs. The mouse over action will then trigger a small message box that show the user relevant data concerning that specific point in the graph. Once the user moves the mouse away from the graph the message box will disappear.

One important feature of this hover message box is the ability to place comments once the message box appears. With in the message box there will be a button that allows the user to place a comment on that specific point in the graph. Once the comment is places that specific section of the graph will show a change. For instance: if it’s a bar chart, the bar will be highlighted, if it’s a line chart, the point where the comment is placed will be bigger than the others.

**Hover on data points**

- **onHover:**
  users sees relevant information from that specific chart.
  Optional add comment button

- **When adding comments:**
  user types name and comment clicks on add and done.

  Comments are added to the message box
**Minimize & Maximize**

The minimization and maximization functionality will allow the user to make more space in the current dashboard in order to solve the scrolling problem. This action consists in adding a minimization button on the top left of the widget when the widgets body is open and a maximization button when it is closed. When open, if the user clicks on the minimization button (-) the body rolls up and hides behind the header. When closed the user can open the widgets body by simply clicking on the maximization button (+) and the body will slide down to its original place.

The 5 wireframes that were explained above are the main functionalities we (Buzzcapture’s crew and I) agreed on in order to improve the interaction levels in the dashboard.
5.4.2. Visual design

The following visuals represent the visual prototype of the widget with the new features included. Due to the out of date look and feel of the brandmonitor, a boost in the visual design was needed. However, design consistency was a mayor role player during this phase of the project, so the new design had to look better but avoid confusing the user with something completely new they don’t know. In order to avoid this, the new design look as the old one with few visual improvements. The goal was to provide the user with better interaction levels.

Action menu activated, showing the different options
Screen after selecting mail graph at the action menu
When selecting to save a graph the browser menu jumps on top of the widget and allows the user to select where to save it and what format to chose
When opening edit tool bar body moves that to make space for the tool bar
Users can make use of different charts for better understanding of the data.
Example of when a user chooses a different chart.
By adding the color legend together with the graph instead of making the user click on one of the bars, the user won’t have the need to do one more click to know which color is what, and the overview of the graph will be immediately clear.
Preview of how do header bars looks like when one is open and the other is closed.
5.5. Validation Test

During the last stages of the project, a validation test took place. This test was done in order to know if the new features that were implemented in the new version of the widget worked as planned. Moreover, mainly it was important to see how the user will behave and feel with the new features.

Because the prototype shows more interface interaction than interaction in the visual data, the test of choice had to be effective enough to proof that the steps taken work out, but not to complex like to take a big amount of time to do it.

The test of choice was a Paper Prototype test, which in this case is about making a paper version of the dashboard that shows the new design of the widgets and all the new functionalities.

Next, a group of participants where chosen from the same environment as before, only this time there were different personas. Then a simulation scenario is needed in order to make the user execute tasks that show the potential of the new features. The test was record to be able to observe the user emotional behavior and performance with the new features mean while they interact with it.

During the test sessions, the users were asked to feedback on what they though about the new features and add ideas if they had any.
5.5.1. Metrics

The following task scenario was written focusing on showing the user how the new features will work. Also, the goal of the test was to try out the new ideas and see which effect will it cause on the users, how would the users use it and where is room for improvement.

1. You check your TO DO list and you need to make the report that you were asked yesterday. You need some visuals that can support the data you are explaining in the report. Therefore you need to save the Share of buzz politici chart.
   - Save this chart for your self? How do you it?

2. Next, you want to know how is everything going with the CDA and the VVD. So you look for these two graphs and you drag them to the top.

3. Then you notice some interesting changes in the graphs... you decide to compare these two.
   - Drag one on top of the other one!

4. Later you want to keep working on your report. But you are curious to check the graphs results differently. You want top change the type of graph.
   - How do you do this?
   - Select the pie chart!
   - Then close the Edit Tool Bar.

5. Then you receive a mail from a colleague, asking you to send him a preview of the Share of buzz bar chart.
   - Change the graph again.
   - Mail the graph to your colleague.

6. After this, you notice a slight change on the “Sentimentvergelijking Coalitie”.
   - First, make some space on top by MINIMIZING the top widget.
   - Then, open the edit tool bar from the Sentimentenvergelijking Coalitie graph and check the queries.
   - Close the queries & tool bar.
   - Take a look at the data from the middle bar.
   - Add comments for your colleague.
7. Now you need to export the same chart for your self so that you can add this data into a report.
   - *Please export this graph for your self*

8. To finish your morning check up, you want to take a look at the daily influential. Now you go to influential and look for important changes.
   - *Export this widget to your self.*

**Time**
All users had the same task scenario. Buzzcapture completed the tasks in an average time of less than 12:00 min. Other participant needed more time to execute the task asked. The longest test toke 16:45 min.
5.5.2. Test results

These are the result that the paper prototype test delivered. Each relevant result is backed up with some interesting feedback from the participants:

- All the new features had a good impact on the users. There was positive feedback about the new implementations.
  
  Leida, Social media analyst,
  “Wow, if we had this feature working on the dashboard it will make it easier for me to make the reports…”
  “I like what you have done but I think that the design still looks to old”

- User found Action menu pretty useful and handy to execute task driven action at the moment of reporting, saving and mailing. Buzzcapture experts found it handier than the actual one.
  
  Kenzo, ICT expert,
  “Nice man, I can see that you have given the new idea some time to get them right…although it will look better in a new shine skin…”

- Drag and dropping was a predominant action in this test again. User shows satisfaction when able to organize the lay out the way the wish to see it.
  
  Michiel, Concept developer,
  “It looks like crap but it is nice that at least you can organize it the way you want…”

- The comparison feature - which works with drag & drop - was not intuitive enough for some user. There was interest because of the way it works, but there was confusion at the moment of executing the action since it is not a normal user action.
  
  Lotte, project manager at headline
  “It is not hard to learn, but it is also not that clear what you need to do with it. Once you do it once, then it is ok!”

- The minimization and maximization feature saves space on the interface. This solves the scrolling problem for the moment. The best solution to this issue will be to make the graphs scrollable and not the whole layout. Like this the interface will be more user friendly.
  
  Kenzo, ICT expert,
  “Nice… now I know where the graphs are after I click them away…”
6. Conclusion

A social media-monitoring tool like Brand monitor is a powerful tool that if designed correctly, it can deliver more than just great result, satisfaction when using it and loyalty towards buzzcapture.
After 80 days studying information dashboard, data visualization and gaining a better understanding of how brands and companies make use of social media to implement their marketing strategies, there were enough proof and facts to come to the following conclusions:

- Social media monitoring tools are powerful analytic instruments. However, in order for these tools to work appropriately they relay on a set of rules and guidelines that need to be taken in consideration when designing one. If interface designers don’t pay attention to the guidelines and theories of information dashboards and data visualization, then this instruments won’t meet their goal.

- Because the dashboard and its functionality are interconnected with each other, it’s of no use to redesign just a part of the dashboard. It should be done as a whole so that its effectiveness stays intact.

- At the moment of re-designing the dashboard it is important to focus more on a task driven functional system that will focus more on how the user will use the data on the dashboard. This way it will be the user’s choice to personalize its own view of the dashboard.

- The need for applying a complete new visual design to the widget depended on how the dashboard interface will look like in the future. Because of the presence of the two different parties during the project (*me working in the Widget and User Intelligence from Amsterdam working on the dashboards interface*); it was of no use to apply changes to the visual design of the interface. A newer version was being designed and the design and functionality of it were more advanced.
6.1. **Future Suggestions**

These are some of the recommendations to be taken into consideration for the next version:

1. Provide the user with a choice menu or action menu where they are able to choose what they want to see directly. Or in case there is going to be a new version of the dashboard, make sure that the design is task driven, so that the users will have the choice of first select what they want to see and then get results. Give them the choice to set the graph they wish to have on the dashboard, To personalize their own customized data.

2. Bar charts are not the best when comparing data and periods of time. Therefore, make use of different and specific graphs depending the data provided and the data needed by the user.

3. The more there is on the monitoring tool the more the user have the chance of getting lost on his task. When designing an information dashboard, especially a monitoring tool, the interface should be quick, clear and simple.

4. Making use of interactive data visualization on an information dashboard is a great combination for success. So long this two are designed and with eye to detail and with a well though strategy.
7. Bibliography

Books

- *Information Dashboard Design.*
  Stephen Few
  January 2006
  First Edition

- *Interactive data visualization*
  Stickdorn / Schneider
  2010

- *The Visual Display of Quantitative Information*
  Edward R. Tufte
  August 2009
  Second Edition

- *Information Design Workbook*
  Kim Bare
  2009

- *This is service Design Thinking*
  Stickdorn / Schneider
  2010

- *A designer’s research manual*
  Jenn & Ken Visocky O’Grady
  2006

Web sites

- Definition of Business Intelligence:
  http://www.gartner.com/6_help/glossary/GlossaryB.jsp

  Effective dashboard design presentation
  http://www.slideshare.net/hursman/effective-dashboard-design-presentation

- S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology)

- Paper prototyping models
  http://speckyboy.com/2010/06/24/10-effective-video-examples-of-paper-prototyping/

- 4 Ways to Measure Social Media and Its Impact on Your Brand

- How to Measure Social Media ROI for Business
• Other social media monitoring tools
  http://www.coosto.nl/home/
  http://www.lithium.com/
  http://www.radian6.com/

• Cognitive Walkthrough testing technique
  http://www.usabilityhome.com/FramedLi.htm?CognWalk.htm

• Dashboard examples (For research):
  http://www.geckoboard.com
  http://www.bbc.co.uk/history/interactive/timelines/british/index.shtml
  http://patternry.com/p=information-dashboard/
  http://letsfreckle.com/
  http://chartbeat.com/
  https://secure.roambi.com/register

• Data visualizations web sources and examples
  http://www.tableausoftware.com/info-aesthetics
  http://www.niceone.org/lab/refugees/
  http://www-958.ibm.com/software/data/cognos/manyeyes/visualizations
  http://www.bbc.co.uk/white/spectrum.shtml
  http://www.amcharts.com/
  http://www.anychart.com/products/anychart/overview/
  http://www.ejschart.com/index.php
  http://www.highcharts.com
  http://www.juiceanalytics.com/chart-chooser/
**Articles**


- **Visual Communication**
  Information Visualization, Second Edition, Colin Ware, Morgan Kaufmann Publishers, 2004

- **Data Visualization for Human perception**


- **Dashboard Confusion, Stephen Few, March 2004.**

- **Murray's Newland social media book**

- **Exploring Corporate Strategy**
  Prof. Gerry Johnson, Prof. Kevan Scholes and Prof Richard Whittington, 2006
  [http://books.google.com/books?id=8KS4gKNgLysC&dq=Head+of+Business+Unit+at+Bayer+HealthCare&ie=ISO-8859-1&source=gbs_gdata](http://books.google.com/books?id=8KS4gKNgLysC&dq=Head+of+Business+Unit+at+Bayer+HealthCare&ie=ISO-8859-1&source=gbs_gdata)

- **Top social media monitoring vendors**

**Attachments**

- **Infographic The History of Social Media**

- **Infographic How Executives Use Social Media**
1. Question asked on ux.stackexchange.com looking for feedback and other opinion.

**How effective is a ribbon menu work on a social media-monitoring dashboard?**

**Ribbon**
A ribbon by definition is a bunch of menus placed on tabs. Because the tabs “stick” after being selected, it makes most sense when you can divide your commands at the top level into discrete tasks, where you expect users to execute multiple commands on a single tab without needing a command on another tab.

In practice, this is rarely how things work in apps, and the ribbon actually has greatest use in highly complex apps with 100s of commands. That number of commands becomes difficult to physically fit in the page without using tabs, even when employing lots of pulldown menus. Anytime you have 100s of commands some are going to be hard to find, but a well-designed ribbon is better than the alternatives, such as cascade menus or multiple hide-able toolbars. Unless you have 100s of commands, you probably don’t want a ribbon.

**Toolbar**
Sometimes people use “ribbon” to mean a single toolbar. This is a line of command controls, such as command buttons, typically across the top of your page. It provides easy-to-find one-click access to commands. It’s excellent when you have relatively few (less than 20) commands. If you use split buttons and menu buttons for your less commonly needed commands, then a toolbar can easily accommodate upwards of a 100 commands while still providing easy access to the top commands.

Traditionally, toolbars are label with icons. However, using *icons alone is generally a bad practice*. They just don’t make very good labels most of the time. Text is usually better, and modern toolbars make heavy use of text, although icons may be used in addition to text to reinforce the label’s meaning. Icons alone are only worth considering if you have very limited space, very few commands, and your commands use standard or otherwise strongly evocative icons (e.g., the fat B for bold font).

**Sidebar Menu**
A sidebar menu is effectively a toolbar on the left side of the page. In contrast to toolbars, they are traditionally labeled with text alone, but you can add icons too if you want. Users are used to sidebars on the web, which is good for your case. If you have more than eight commands, it’s helpful to subordinate your commands into labeled groups to improve findability, which is easier to do with a sidebar menu than a top-of-
I believe sidebar menus have several additional advantages over top-of-page toolbars that make them generally more attractive. I see no reason why something like split buttons or menu buttons can’t also be used on a sidebar menu to keep rarely used commands out of the way. Knowing nothing else, I say this is your best choice.

**Menu Bar**

Finally, there is the traditional GUI menu bar, composed of multiple pull-down menus across the top, and usually combined with a redundant icon-only toolbar so experts have easier access to common commands. With the advent of split buttons and menu buttons, a toolbar or sidebar can handle just as many commands as a menu bar, while menu bars are typically saddled with the disadvantage of a toolbar without text labels. These days, I would only advise menu bars in order to leverage experience from older related apps. Specifically, it’s good for a desktop-style document-centered application where commands fit well in the standard File Edit View menus and the toolbar is largely limited to standard icons (e.g., New, Save, Print, Bold, Italic, etc.). Probably not what you want for a web-based dashboard.