vizlib

Understanding Visual Analytics:

the power of asking why

Content table

INTRO: Visual Analytics: Everything You Need to Know. Where did it all start? 3

SECTION 1: An introduction to Visual Analytics 4

1.1. What is visual analytics? 5

1.2. How visuals facilitate understanding 7

1.3. What are the benefits of visual analytics? 9

1.4. What's the difference between visual analytics and data visualisation? 13

1.5. Visual analysis for everyone: The Vizlib effect 16

SECTION 2: Using data to tell stories 23

2.1. How does visual analytics relay your data story? 24

2.2. The key elements of data storytelling 26

2.3. Data storytelling tips 30

SECTION 3: How to build a winning visual analytics strategy 32

3.1. Steps to develop a winning visual analytics strategy 33

3.2. The benefits of visual standards 35

3.3. How to get started with a basic dataviz style guide 37

3.4. Templates: The shortcut to professional dataviz 39

SECTION 4: The future of visual analytics 40

4.1. What's the next big thing? 41

4.2. Taking the next step. 44

Where did it all start?

Well, **64,000 years ago**, a Neanderthal sat in a cave in **Cáceres, Spain**, and decided it would be a great idea to stencil around their hand. Who knows why they did it, or if it meant anything other than the good old tag: **'I was here'.**

But the idea caught on and signposted the beginning of visual communication. It didn't take too long, only a few thousand years, before similar cave drawings were used to share essential survival information: "Loads of bison live here" or "Watch out, lions hunt in this area!" And while we eventually evolved from crude visual communication to the written word, the visual representation of data remains a vital and popular tool.

It is easier for the human brain to understand than vast quantities of text or numbers. Even those who can't read, or communicate in a different language, can often still understand symbols, pictograms and the meaning of simple graphs and charts.

Since visuals aid in understanding, the medium is used frequently in the business world, in the form of visual analytics. But what is visual analytics? And how can it improve your business?

SECTION 1

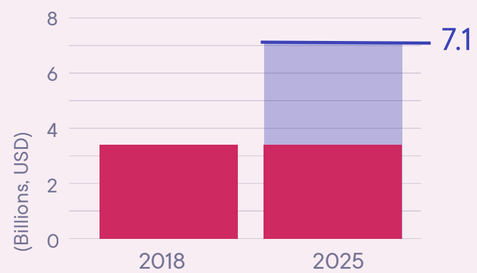
1. An introduction to Visual Analytics

1.1. What is visual analytics?

Visual analytics is a method of exploring and analysing data visually.

It is a dynamic, interactive process that helps you get to the cause of business issues. By exploring data on a deeper level, you're able to gain valuable business insights. Visual analytics enables you to answer 'Why' questions, like why the profits are less on a particular product. It includes two key components: data exploration and data visualisation (which we'll examine in more detail below).

Global Visual Computing Market



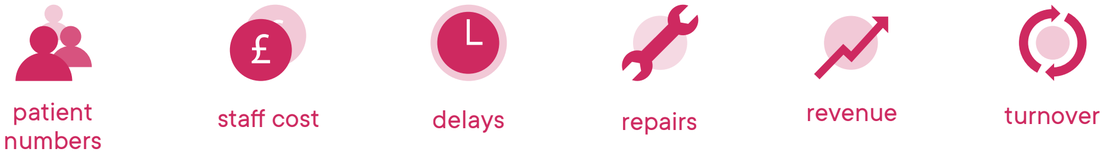
In recent years, visual analytics has become a powerful business tool—the Global Visual Computing Market size is expected to grow from USD 3.32 Billion in 2018 to USD 7.21 Billion by 2025.

And, as a business leader, a growth market catches your attention! It's a sign of opportunity! And it's an opportunity you can and should leverage. Visual analytics transforms raw data into an understandable visual story. It allows you to glean valuable, real-time insights and keep your business on the competitive edge.

Visual analytics also makes data accessible to a wide range of users. It simplifies complex data and enables users to identify patterns within data sets without extensive technical know-how.

For instance, you may be an exec in the healthcare industry trying to keep track of **57 Healthcare Facilities**

You have multiple sets of data for every location, including:



basically, everything you need to determine both your bottom line and productivity levels.

Though a spreadsheet would do the job, detecting patterns in this format would take an enormous amount of time. And while you might be able to employ people to do that task for you, it may still be an inefficient use of resources. Especially if you compare it to the potential value of using a visual analytics solution.

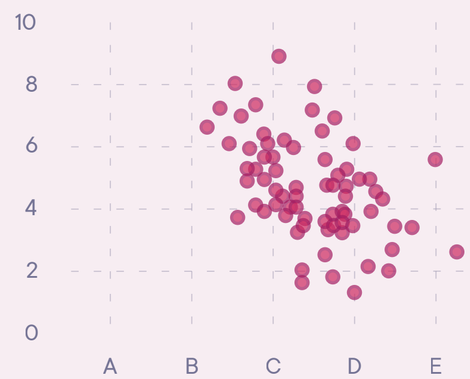
But there is one point to bear in mind when you delve into visual analytics:

It's easy to over-complicate the premise.

And since the aim of visual analytics is to simplify the analysis of data, let's look at how it accomplishes this.

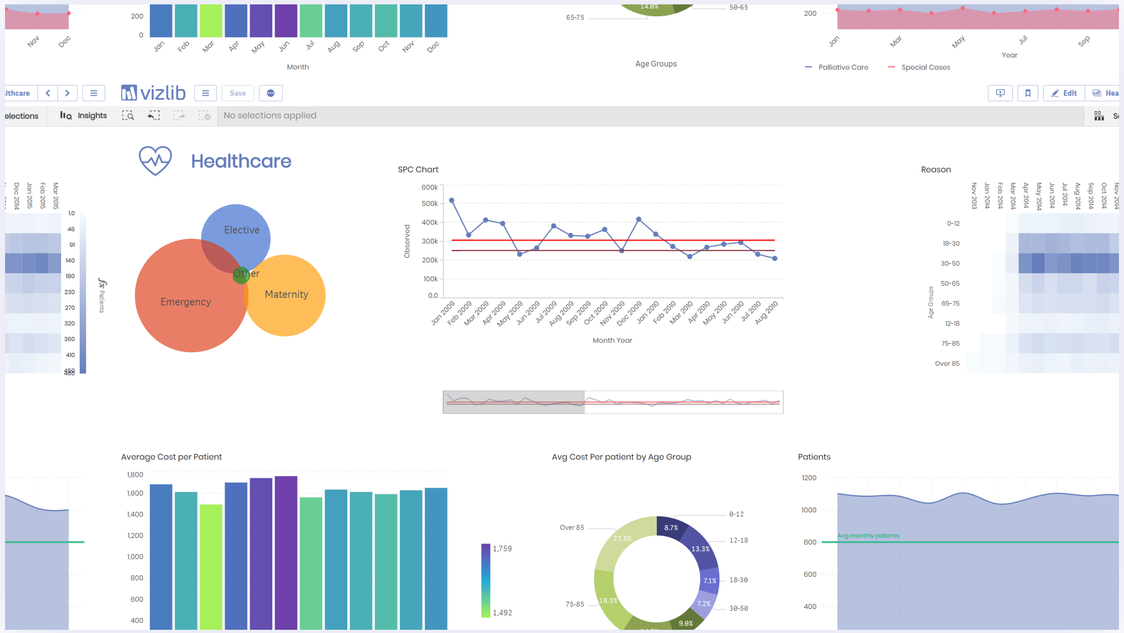
1.2. How visuals facilitate understanding

Even the best of us struggle when confronted with vast quantities of numbers. However, streams of values and other complex data can be simplified. The solution—rendering the data in a visual format. Luckily, humans are incredibly skilled at pattern recognition. If we weren't, we probably wouldn't survive the daily commute. We seek and recognise patterns everywhere – traffic lights, seasons, symptoms of illness, or even the aesthetics of that pair of houndstooth trousers you've had your eye on.



Our ability to recognise patterns carries through to the business world. When we present data in easily digestible patterns, like bar charts, pie charts, graphs or scattergrams, it speeds up the process of understanding. It can even remove the barriers that language often presents. Consequently, data sharing also becomes faster and easier in the business.

Visuals, like an executive dashboard, help business leaders get the insights they need at a glance. An executive dashboard is an interface displaying all the Key Performance Indicators (KPIs) an exec needs to monitor and effectively run their business. In retail, for example, this dashboard helps to easily track data as diverse as added value and warrantee sales to staff absenteeism. While in the health sector, managers use executive dashboards to monitor the ratio between staff levels and patient waiting time.



These visuals reveal patterns and trends quickly and efficiently without requiring reams of text.

And the findings can be compared accurately and in near real time. In short, visuals like sales spikes can be detected at a glance or the contributing factors for service failures can be easily assembled in one dashboard view.

- Learn more about best practices in data visualisation
- And learn how to master KPI dashboarding
- Discover how to add additional data context with Viztips without overwhelming your audience

1.3. What are the benefits of visual analytics?

Visual analytics has become widely adopted in the business world. One of the main reasons for its growing popularity and success is that it has closely mirrored advancements in technology. Modern analytics solutions can quickly translate your data into practically any kind of visual representation. And it's achievable with just a few mouse clicks. Then, milliseconds later, when the data is displayed visually, you can instantly change what data you are looking at, and how you look at it.

Executive dashboards are a great example of this dynamism.

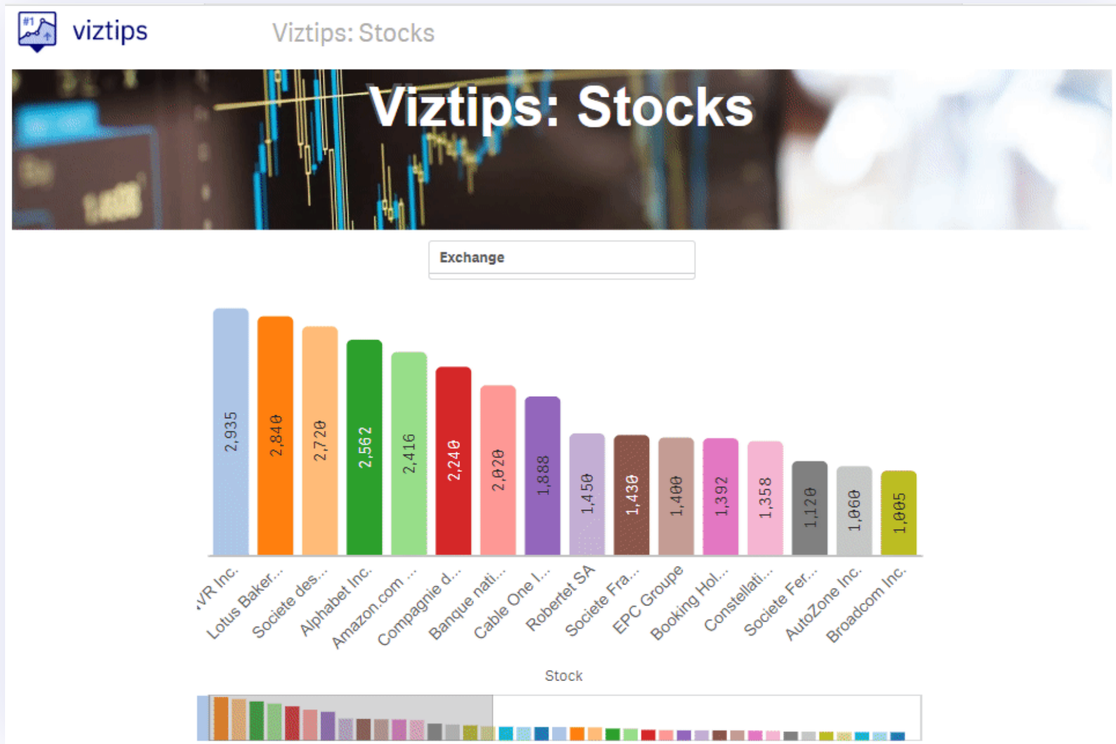
They enable business leaders to drill down into a micro-level view of their data or pull back into the macro. Execs can delve into any part of the business to diagnose potential issues this way. Or discover things they may otherwise have missed and answer questions they may not have thought to ask.

Dashboards and other visual analytics tools help them remain at the top of their game. And those aren't the only benefits of visual analytics.

Accessibility

Leading visual analytics solutions are easy to use and require little or even no coding skills. This opens up access to users of all data literacy levels. Everyone in a business, not just the tech-savvy or dedicated analytics teams should be able to dig into and use data to improve their performance, even organisations without a strong tech base.

Though these solutions focus on being user-friendly, companies can maximise their visual analytics output by improving the data literacy levels of all employees. When the majority can read, understand and communicate with data, and derive insights, the benefits of visual analytics grow exponentially. Data literacy has become a critical skill for the 21st century. And data is the kingmaker. This is evident in the skyrocketing success of data rulers like Amazon, Apple and Google.



Improve accessibility with Vizlib Viztips. Viztips provides an intuitive, in context drill-down experience on hover without overwhelming the user. This helps to encourage more users to explore data confidently.

Extracting insights

Data is produced at an incredible rate in today's business world. It's difficult to find time to extract relevant information from the data deluge, let alone use it to drive your competitive position. According to a recent Inside Big Data survey, 72% of businesses collect data but never use it. Approximately half of the respondents believe it's because data processing takes too long. Well, this is where visual analytics comes to the party. Visual analytics software can manage all the data you can throw at it, and translate it into useful bites in merely a few clicks.

Vizlib Custom Report

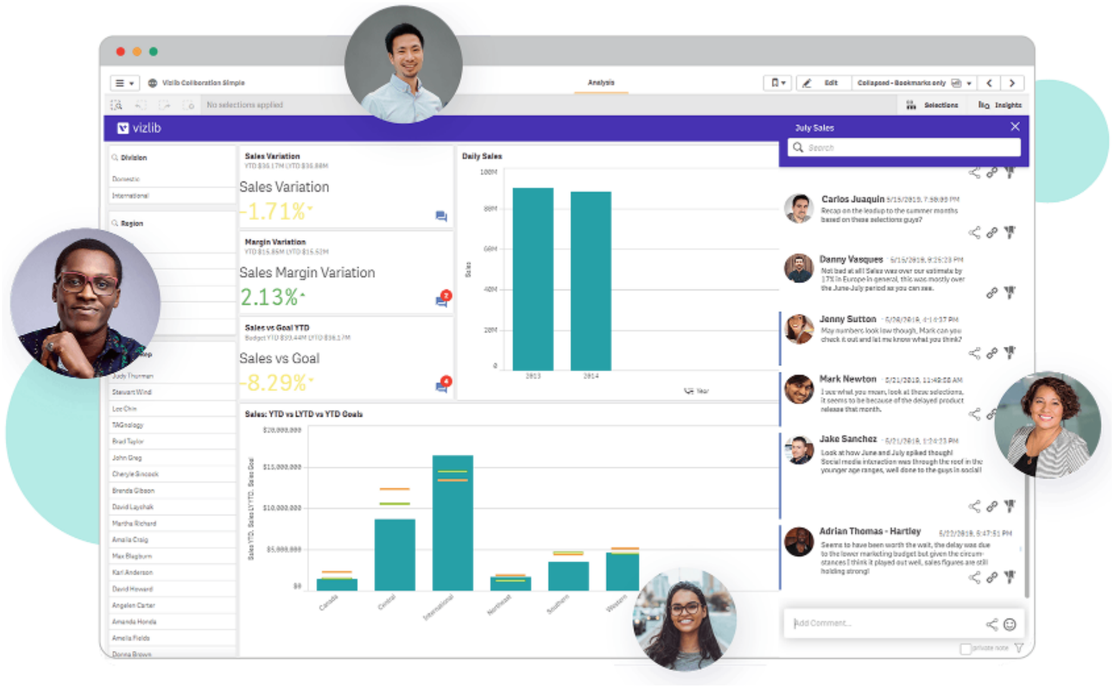
Consumables | Country | Sales | Discount | Table | Analytic Search

Consumables	Country	Sales	Discount
Totals		**121 616**	**1 221**
Apples	Finland	1 605	18
Apples	Netherlands	1 567	11
Bananas	Netherlands	4 920	38
Bananas	Finland	4 531	44
Coconuts	Netherlands	8 887	93
Coconuts	Finland	8 138	80
Dates	Finland	13 299	132
Dates	Netherlands	11 224	114
Elderberries	Netherlands	18 120	169
Elderberries	Finland	13 658	165
Figs	Finland	19 048	171
Figs	Netherlands	16 619	186

You can easily extract actionable insights with Vizlib's Analytic Search capability . Users get fast, easy access to data with a familiar web-like search interface that makes data exploration simple and intuitive.

Collaboration

Visual analytics is a great medium for sharing business information. Managers and execs can share key data findings and collaborate easily with visual analytics software. Smooth collaboration can fast-track problem solving and result in more agile changes in the business. This collaborative feature makes visual analytics a powerful business tool.

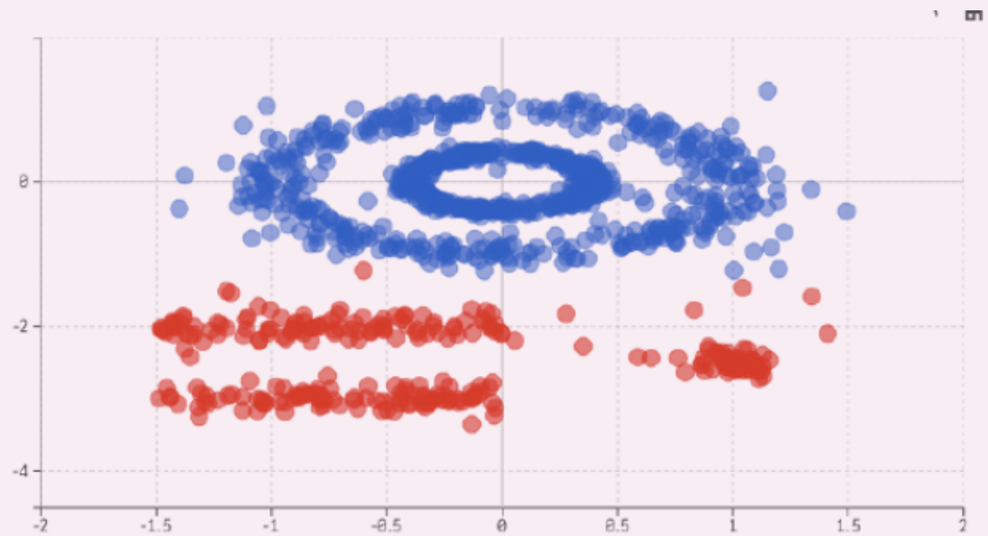


Streamline collaboration with Vizlib Teamwork . You'll enable in-context and real-time conversations inside your dashboards. Teams can ask and answer questions in minutes, save time and make better decisions.

- Learn more about the benefits of smooth collaboration with the data team

1.4. What's the difference between visual analytics and data visualisation?

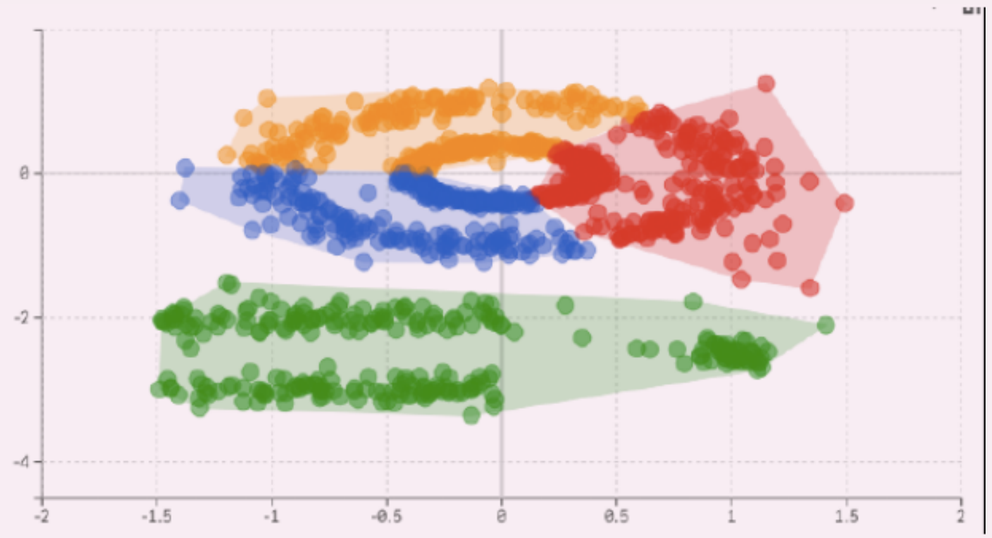
Data visualisation is a visual representation of data.



Integrated Clustering within the Vizlib Scatter Chart for Qlik Sense, part of Vizlib Library

It answers 'what' questions like 'What is our revenue compared to the same time last year?' and displays the data with visual objects like charts and graphs. These data visualisation objects allow users to recognise patterns and trends in their data.

But to answer 'why' questions, we turn to **visual analytics.**



Integrated Clustering in Vizlib Scatter Chart

It is the process of analysing data and representing the in-depth analytical findings visually. Visual analytics helps you analyse data from different perspectives to identify interesting data points like outliers or trends which require deeper investigation. These findings are then displayed using data visualisation objects.

A key element of visual analytics is the ability to view graphs and charts from multiple angles. So, you're not just identifying your key data points and trends, but also where there may be gaps in your data and peripheral areas of interest. In essence, it's a means of clarifying complex data analysis.

Thanks to the evolution of dashboarding from Excel spreadsheets to end-to-end analytics platforms like those offered by Business Intelligence (BI) specialists like Qlik, visual analytics is easy to adopt in any business. You don't need to have an agenda to explore data, but can simply rove the data for useful nuggets, and when you find them, investigate them further without the need for in-depth technical knowledge.

Business leaders that embrace data and harness it's ever-increasing value through visual analytics, will have a seat in the front of the Fourth Industrial revolution bandwagon.

- Learn more about driving BI user-adoption and deepening insights

1.5. Visual analysis for everyone: The Vizlib effect

That Neanderthal may have earned his fleeting novelty and social status with his paint pot illustrations, but the advent of visual analytics elevates everyone up the data evolution chain. With access to data and the ability to use data effectively, individuals and the entire business wins.

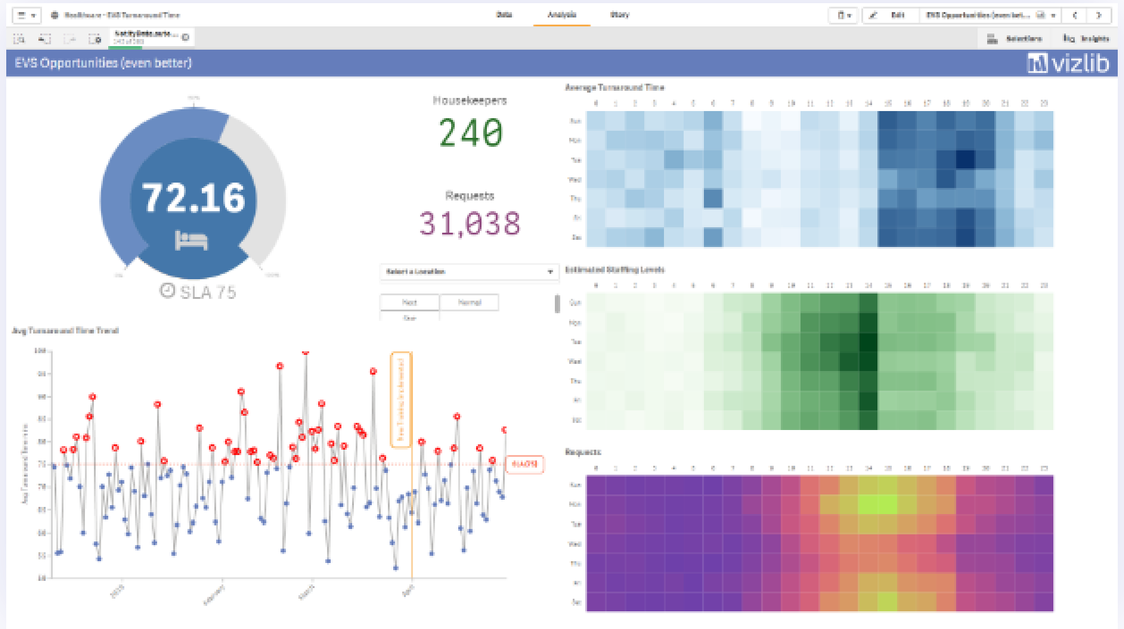
Adopting visualisation tools that are easy-to-use will ensure everyone's included, whatever their data literacy level. Yet, not all businesses are reaping the same rewards from visual analytics. Let's look at some potential barriers.

Lack of technical skills:

Perhaps your business doesn't have the luxury of a dedicated team of analysts, but you still want to communicate your data story effectively to your audience. Vizlib offers dashboarding and visual analytics tools that require no coding! With Vizlib Library you can design pixel-perfect dashboards and visual analytics. The components like charts, graphs or a KPI Designer are easy-to-use and customise.

Can’t share findings intuitively:

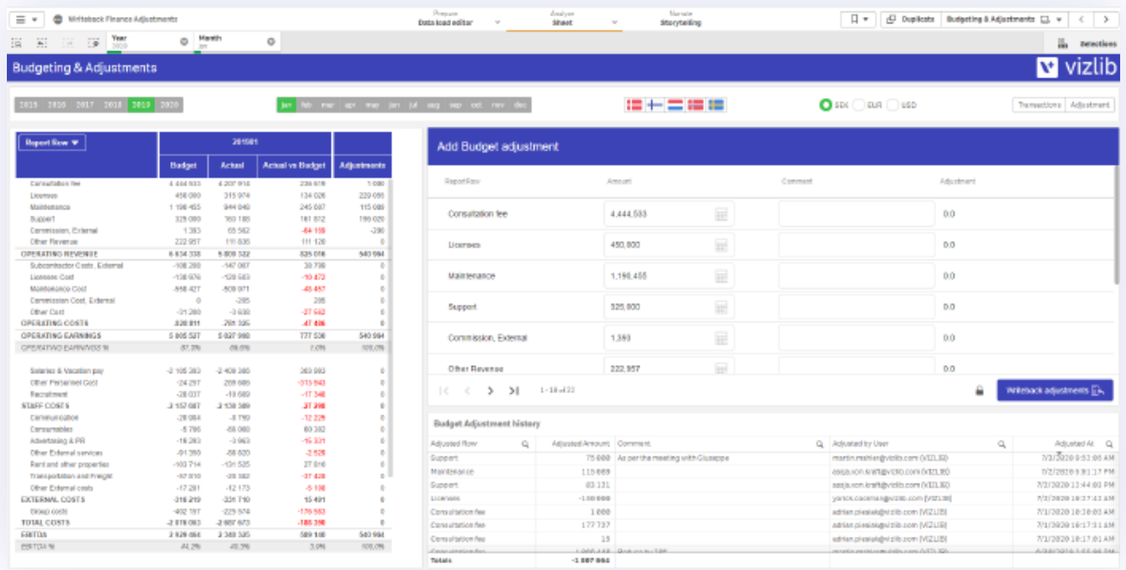
Spotting key insights in your data leads to positive business change and added value. But, say you want to quickly query your findings with a colleague, manager or another team to get their take on it. You should be able to easily include them in the analysis process—data sharing, brainstorming, inviting an entire team to share their knowledge on one dashboard, even integrating different levels of communication, like a group or personal messaging, without leaving the dashboard. Vizlib Collaboration gives you precisely that functionality to share insights quickly and easily, and it encourages data literacy in your business.



Vizlib Collaboration with Vizlib Gantt for smooth project collaboration.

From collaboration to closing the analytics loop

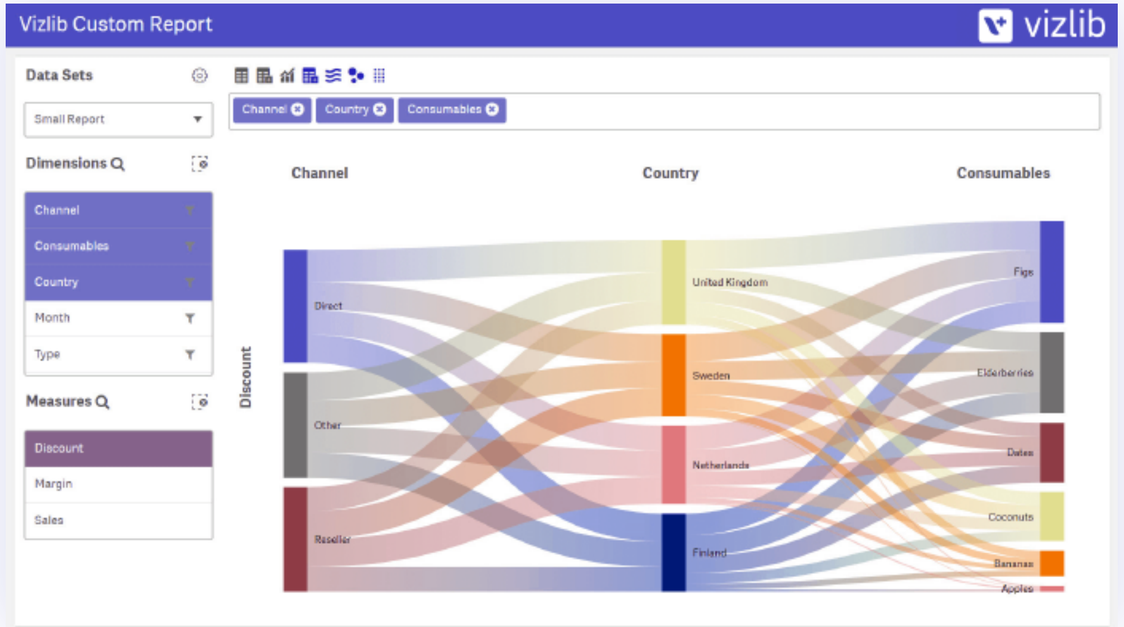
Vizlib writeback capabilities empower you to close the analytics loop by linking up your business tools to eliminate spreadsheet risk and streamline your workflows for seamless collaboration.



Vizlib Collaboration with Vizlib Gantt for smooth project collaboration.

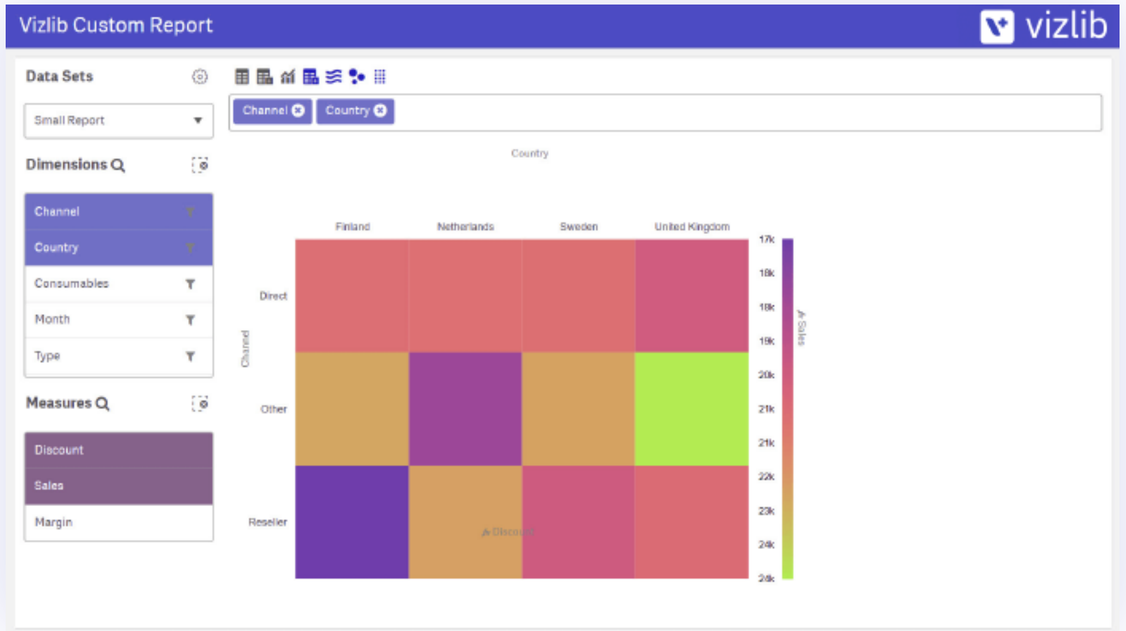
Data analysis is too time consuming:

What happens when an unscheduled meeting crops up and you need to present data findings to the CEO? You need an intuitive, user-friendly interface to help you visualise your data points fast. Vizlib Self-Service provides you with the self-service analytics to create ad hoc reports and customise them for your audience quickly.



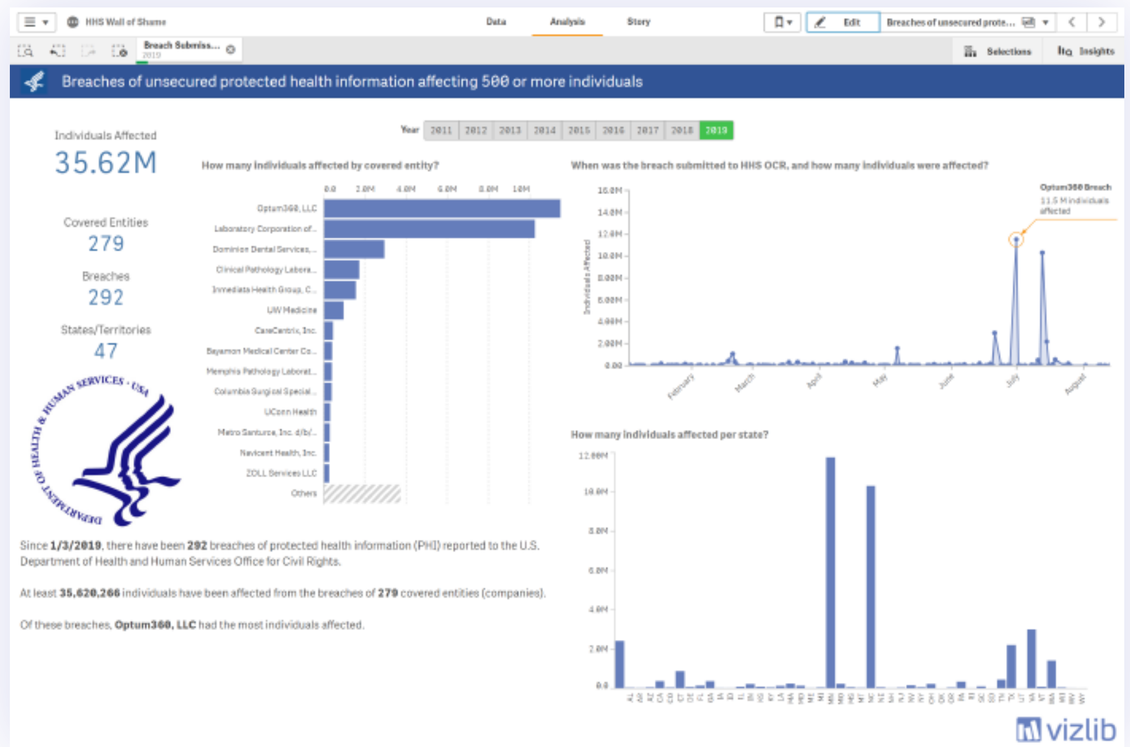
Simplify data exploration

Vizlib's Analytic Search capability enables fast, easy access to your data. The familiar web-like search interface makes data exploration simple and intuitive. All data users can deep-dive into their data with full confidence and flexibility!



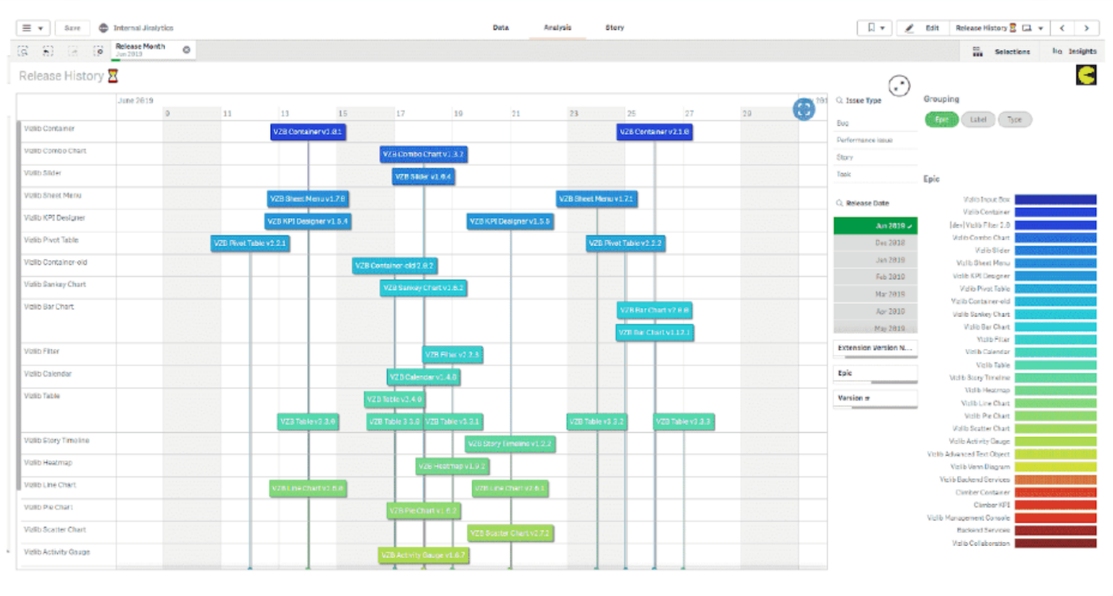
Getting financial reports shipshape

Financial reporting must always be accurate and of the highest quality. You can meet and exceed the standards set by you CFO with the Vizlib Finance Report. Create financial reports that communicate the right financial data story clearly to your audience.



Poor project management:

Do projects keep running over time or over budget? With the new addition to the Vizlib product offering, Vizlib Gantt, you get an intuitive and powerful planning tool to keep projects on track, stay within budget and optimise your resources.



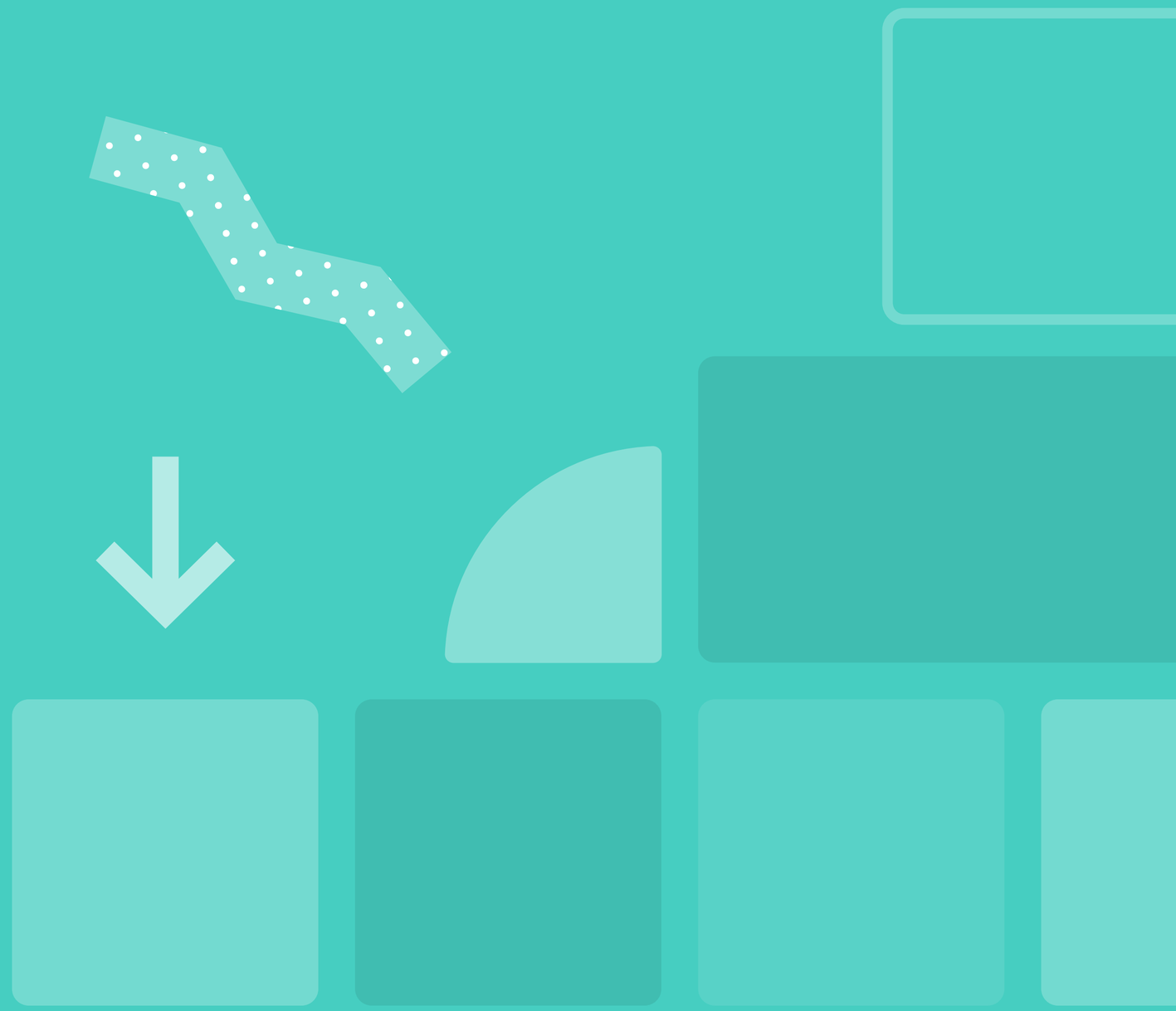
Combining Vizlib's powerful value-added products with Qlik's extraordinary associative engine can rocket a business' visual analytics out of the dark ages!

And begin them on the journey to effective data storytelling.

- Discover more on best practices for creating effective financial dashboards

SECTION 2

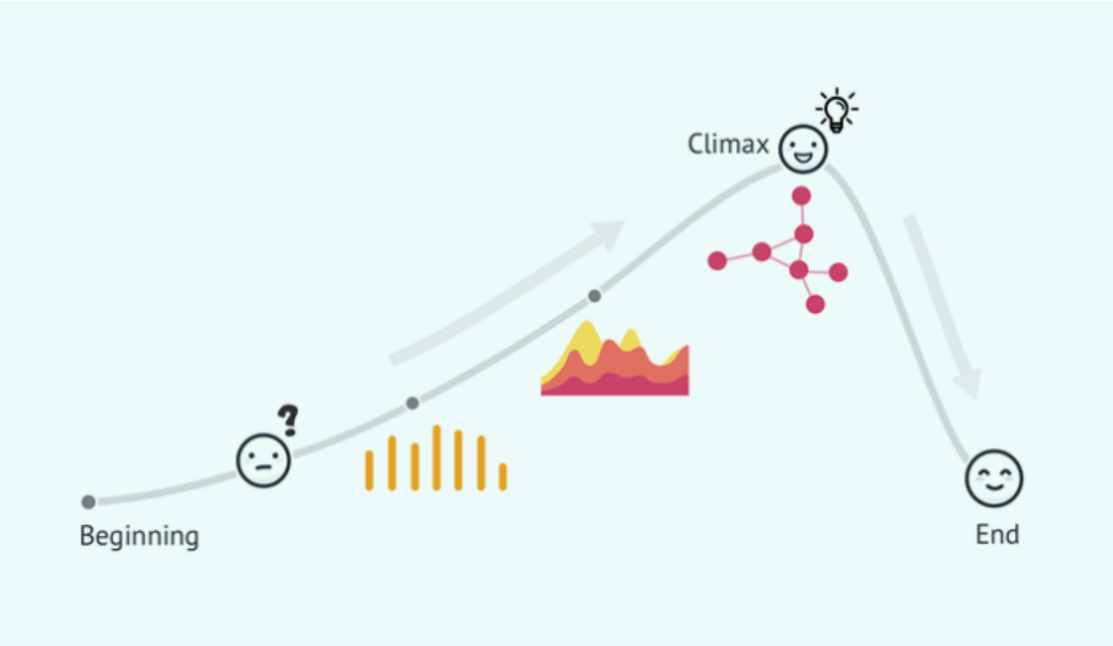
2. Using data to tell stories



2.1. How does visual analytics relay your data story?

Visual analytics is a means to analyse data and display the pertinent findings visually. This data transformation can also be taken a step further. Visualisations can be turned into data stories. Traditionally, storytelling has been a way to convey an important message or moral through generations of people. They capture the imagination of readers, or those hearing the story, and result in the learning or message behind the story sinking in.

In business, the benefits are the same. Data storytelling is about adding the components of storytelling to your data findings to capture your audience's attention and direct their thinking and actions.



Story Components

A Protagonist

The world they live in

Their transformation journey

Much like a traditional story, the components include a protagonist, the world they live in and their transformation journey. It begins with the protagonist or hero mucking about in their world, where everything is currently in balance. This would be your business status quo.

First: a crisis

Then the hero experiences **a crisis,** which rocks their world. This would be a business situation that requires urgent attention.

Next: hero's journey

Next, they embark on their **hero's journey**; their quest to restore balance in their universe. This is the visual journey through your data story your audience sees.

Lastly: a climax

And, lastly, their story has **a climax**, where the hero risks everything to restore order in their world. Here, you've driven home the right message with your data story and have persuaded the audience to take the right action.

These components form the framework for data storytelling. The framework helps you present data in an inspiring and persuasive manner. And its success hinges on the ability to show rather than tell the core message. It should not only highlight what matters, but to who and what action they should take.

2.2. The key elements of data storytelling

The fundamental aim of data storytelling is to persuade your audience to take a particular action. The best approach is by establishing their trust. And you'll gain their trust when you replicate their world—create a familiar setting, speak their language, communicate what they need to know and handle their concerns.

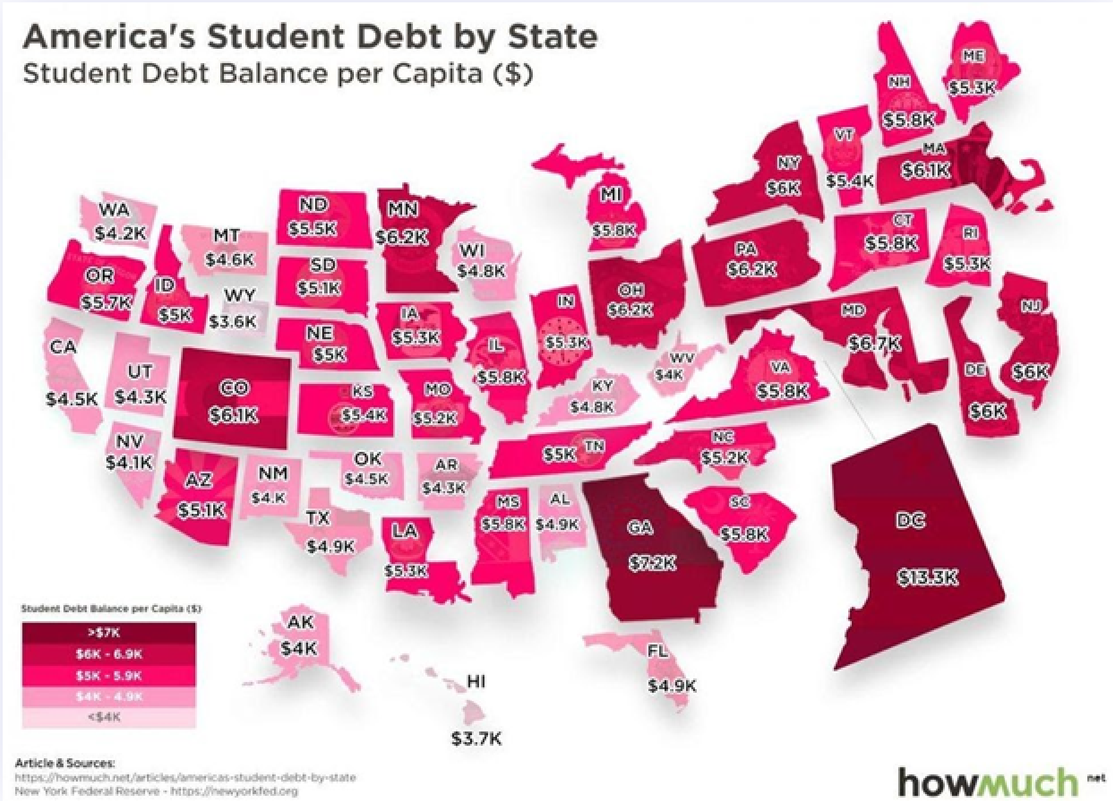
Maintain a relevant focus

Focus your visual communication on your audience and their world. Your visualisation should be familiar to them. They should recognise their world in it, if you speak their language and use examples that are real to them. Limit your data story to a specific problem. Don't include visualisations that look pretty, but are not relevant to your audience.

The customisation options in Vizlib Table for Vizlib Library help to focus your audience

Triggering crisis

In a story, the hero won't take action unless they're put in a crisis. And to get your audience to take action, you need to trigger that response by creating a crisis or level of urgency in your data story. The urgency should 'jump out' of your visualisation like a flashing emergency light. This will steer the viewer to what really matters and compel them to take a particular action. Your visualisations should clearly distinguish the data exceptions that matter most.

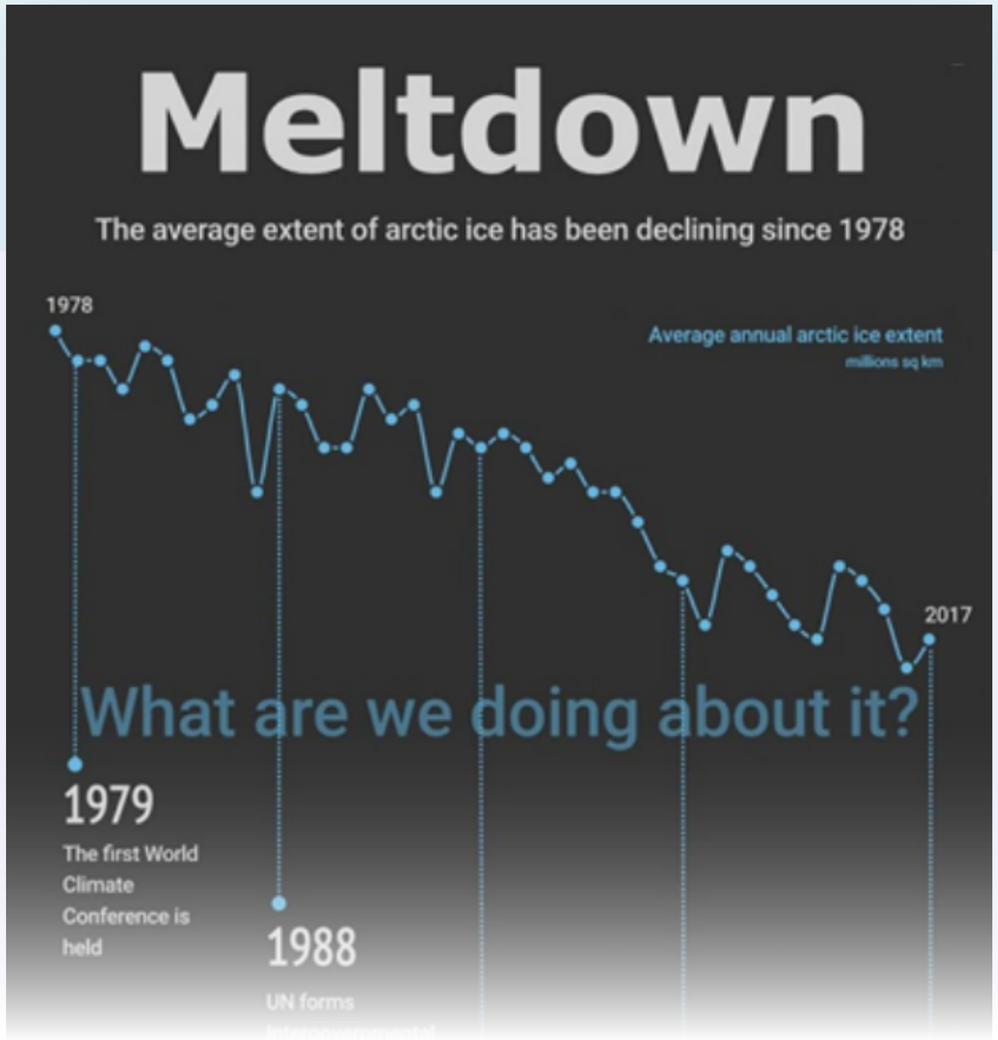


The decision-making journey

Stories take a hero on a journey, which progressively changes and empowers them as they overcome obstacles on the way. In data storytelling, the audience progresses through an information journey. The journey should lead them from high-level questions to more detailed questions then finally to a specific action point.

Taking action

Data storytelling should result in your audience taking the action you want them to. The design of the visualisations should lead them instinctively to that final conclusion and action. This includes what information is shown, how it's displayed and where it's positioned. Know what information your audience needs to support their decision-making. Then sequence the visuals to lead them to the correct action.



2.3. Data storytelling tips

Here are a few tips to get your data storytelling started.

The decision-making journey

Adding real characters to your data story will hook the audience and help to drive the story narrative. Using a character, like a salesperson, will keep your audience's attention longer. Hopefully until the conclusion – the action they should take.

Include humour

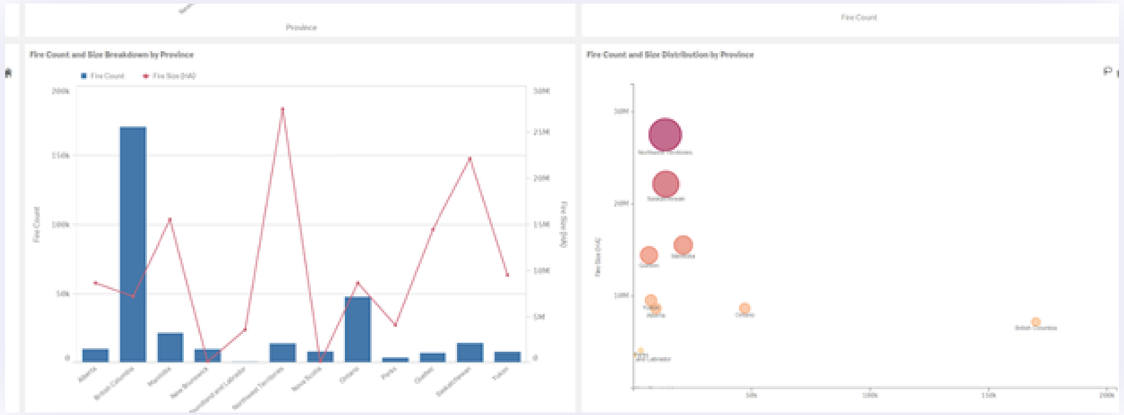
Humour is a great mechanism for keeping people in a good mood. When they're in a good mood, they're more engaged and will be more present for your data journey. But don't let your humour stray too far from your audience's world though!

Cover key questions

- What happened?
- Why did it happen?
- What you've discovered?
- Why is this discovery important to your specific audience?

Present data as evidence

Support your discovery with data that validates your point. This will support your business case and help to demonstrate the business value in your suggestions. Make sure the data enhances your point and doesn't merely repeat it, otherwise you could lose your audience's attention.



Vizlib Scatter Chart, Slider and KPI Designer, part of Vizlib Library , validating the point that you need nearly 600 ice-cream cones when it's 25 degrees to ensure you have happy consumers!

- Check out our webinar on taking the leap from dashboarding to data storytelling

SECTION 3

3. How to build a winning visual analytics strategy

3.1. Getting started with your visual analytics strategy

As a business leader, you want to improve your business' performance and generate greater business value. Adopting tools that facilitate your strategic goals are an imperative. And when the tools are easy to use, you can make changes quickly and realise profits sooner.

Visual analytics is the game changer you need to get real-time business insights, enhance your decision making and maintain a competitive edge. You can begin developing a visual analytics strategy for your business by keeping a few basic steps in mind.

Your strategy should begin by **asking the right questions.**

Establish what information you need to support your business decisions and strategic planning. The questions should tie into the company's pain points and strategic goals. For example, what areas of the business need attention and what areas are generating the best profits?

Next, you'll need to **prepare your data**

by cleaning it up and collating any data housed in silos. Input all the data, which may have missing values or varying degrees of granularity, into a single data model.

Now, you'll **develop the visual analytics assets.**

It's helpful to begin with a wireframe, or a sketch of what the dashboard will look like. The wireframe should include all the critical questions you established earlier in your strategy. You and your team would benefit most from visual analytics software which is user friendly and provides the interactivity you need.

Once you've developed your visual analytics, you're ready to **generate business insights.**

Your visual analytics should simplify your data and allow you to spot insights that can drive strategic decisions, forecast profits, manage and leverage risk and create more business value.

3.2. The benefits of visual standards

Visual standards are not something we take notice of even though they are ubiquitous. Often, we only notice them when they're gone! For instance, there are many signs and symbols that you're probably familiar with and rely on every day. Just think about it—what would happen if you were driving in a foreign country and their symbol for a stop sign was a blue triangle?

Similarly, the need for standardisation and consistency is crucial in the field of visual analytics. And can take the form of data visualisation standards. These standards or guidelines provide a framework for creating uniform dataviz designs and ensure a company's branding is consistent.

> Without an agreed-upon set of standards, visualisations may communicate the wrong message or a confusing message to your audience.

As a result, it may also take longer for data consumers to read and understand charts correctly if the same information is communicated in several different ways on various dashboards. And that confusion is the opposite of what dataviz should achieve in business intelligence. It should be simplifying the data to generate clear business insights and fast action.

Companies that implement visual standards and dashboard consistency enjoy several benefits:

- **Conciseness:** Keep the dashboard as uncluttered as possible to deliver a clear, concise data message.
- **Clarity:** When everyone uses the same visual standards, the clearer the message since the meaning of the visual elements remain constant.
- **Comprehension:** Visual standards help your audience recognise and comprehend the meaning of your visuals quicker, leading to quicker action!
- **Cost:** Dashboards that are understood quicker save the valuable time of your senior management and execs!
- **Speed:** Approved dataviz templates accelerate the app development process—once your team has discovered the visual formula for effective chart design, you don't need to reinvent the wheel.

3.3. How to get started with a basic dataviz style guide

Organisations should develop a data visualisation style guide to create standardised and professional dataviz. This could include the **what**, like what type of chart to use, the **why**, why colour should not be overused, and the **how**, to provide basic action steps for implementation.

You could easily include a few fundamental principles by following those established by the International Business Communication Standards (IBCS). Their visualisation standards guide the design of business visualisations and form the acronym 'success' (and should hopefully set you on a path to such):

S.	SAY	Convey a MESSAGE
U.	UNIFY	Apply Semantic Notion
C.	CONDENSE	Increase Information Density
C.	CHECK	Ensure Visual Integrity
E.	EXPRESS	Choose Proper Visualisation
S.	SIMPLIFY	Avoid Clutter
S.	STRUCTURE	Organize Content

Your visualisation guide should form part of your organisation's design system. Why? Because the guide will draw from other sources like branding and editorial guides to ensure those main principles pull through to all data visualisations.

Next, choose a software solution that offers high levels of customisation (such as Vizlib). Personalised or customised dataviz will more likely hook your audience and hold their attention. Not all visualisation tools can deliver eye-catching visuals, though, at least not without many hours of input. We found that one of the most effective solutions for creating and upholding visual standards is templates! Templates can help you to quickly and easily develop professional, eye-catching dataviz.

3.4. Templates: The shortcut to professional dataviz

Templates in data visualisation are pre-designed visual elements that you or other users can select for their dataviz. They're often created by experienced designers (or specialists in your team) and allow those with less time or skill to benefit from high-quality dataviz designs.

And the advantage of templates extends beyond their professional design. They also help maintain visual consistency and a uniform layout – a standardised look that aligns with the company's overall design system.

> **Using templates can also reduce the time it takes to create visualisations.**
>
> And save money, since you don't need a designer to develop an asset from scratch.

If you'd like to empower all your data users to create beautiful, pre-designed charts quickly, try Vizlib Templates. This capability enables execs and all data users, that may lack the time or skill, to create pixel-perfect visualisations.

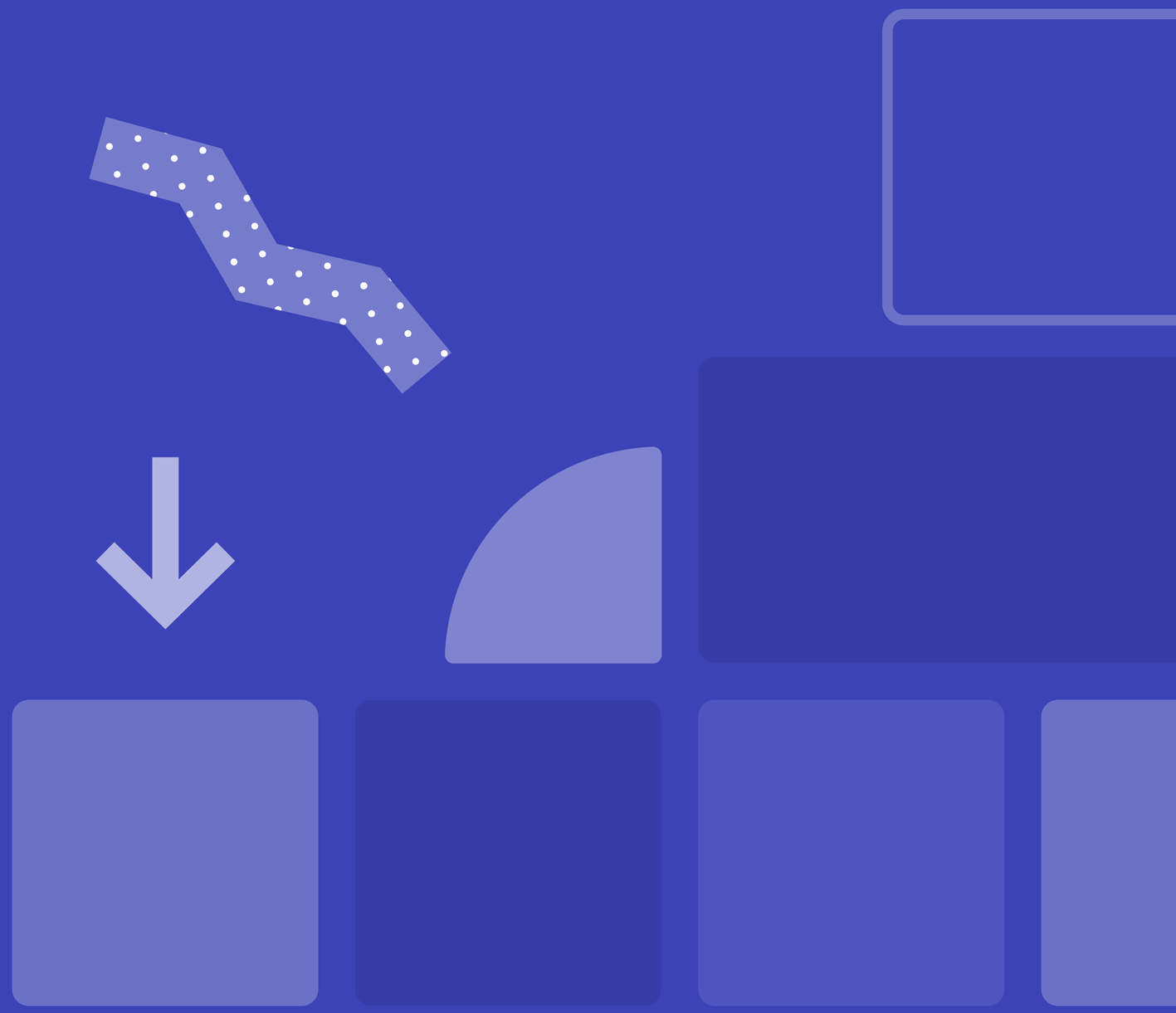
Vizlib Templates enables companies to generate a consistent, standardised and professional look for their data visualisations

You can discover more in the Vizlib Templates documentation here.

The adoption of visual standards can help your business save time, establish professional design standards and, ultimately, get your audience hooked and keep them hooked!

SECTION 4

4. The future of visual analytics



4.1. What's the next big thing?

Let's see what trends will soon rock the world of data analysis and visualisation.

VR and data visualisation

The merging of spatial computing like VR and AR with data visualisation is advancing dataviz from two dimensions to a 3D world. The ability to view the x, y, and z axis, will speed up and enhance data analysis. Not to mention, make you feel like you're in a Star Wars movie!

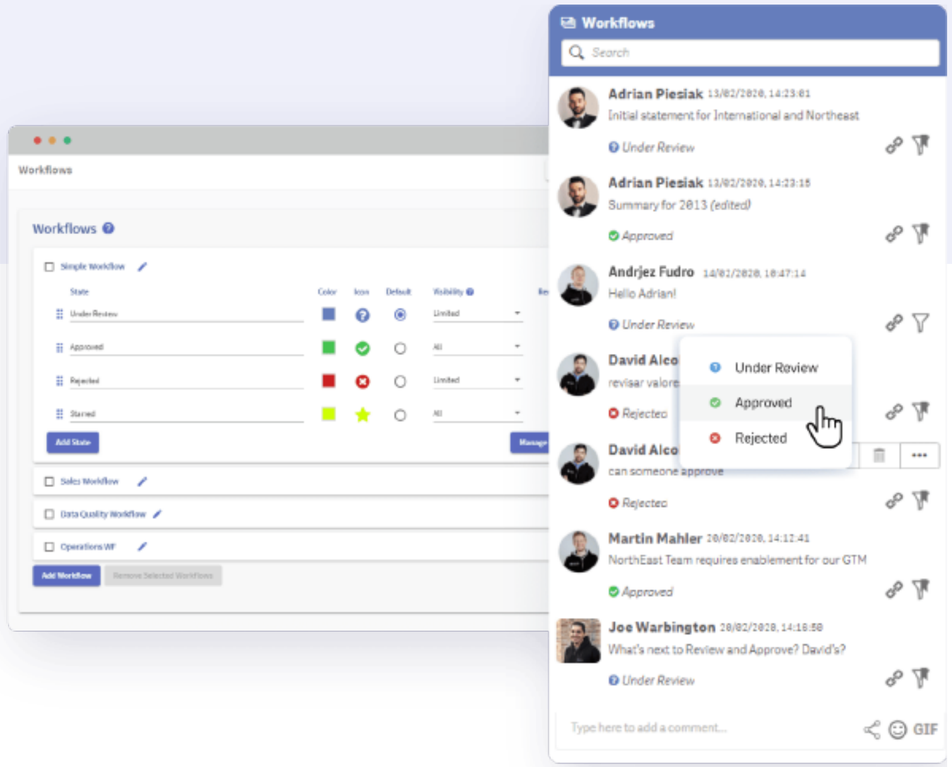
Live dashboarding

Visual analytics is moving beyond the ability to show recent past data into the realm of live dashboards that will show what is happening from second to second in your business. You'll really have your finger on the pulse!

Collaborative business intelligence

The power of collaboration is becoming increasingly popular in the business intelligence field. The technology is moving beyond connecting two colleagues to allowing seamless information sharing between teams and ultimately whole systems!

Set up efficient, streamlined team collaboration and automate business processes in Qlik Sense with Vizlib Workflows. Users can request to review, approve, reject or delegate tasks without leaving their dashboard.



Predictive analytics

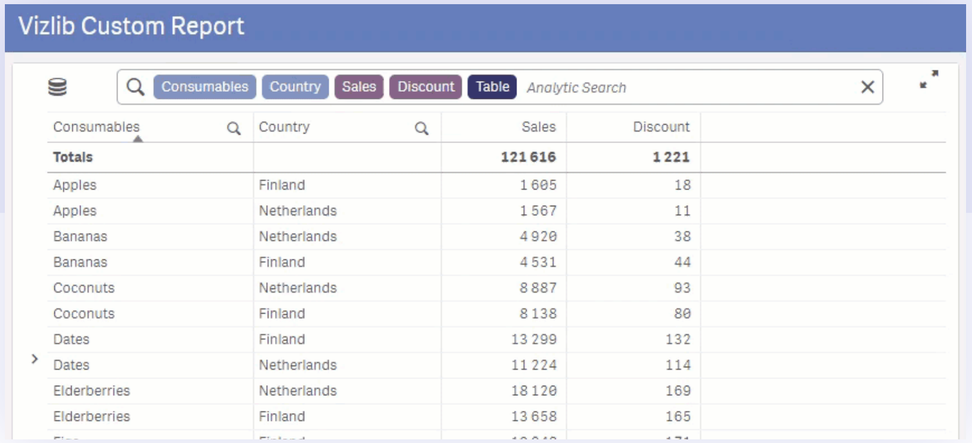
Analytics is going beyond the ability to forecast or predict future patterns and events. Soon, predictive analytics will have the capacity to determine what decisions should be taken to reach a specific goal. It will try to establish what the effect of future decisions will be. And then adjust the decisions before they are actually made! These types of developments are verging on sci-fi territory like the Minority Report!

If you'd like to learn more about forecasting and how to future-proof your business, take a look at our advanced analytics blog.

Natural language processing (NLP)

NLP is a part of Artificial Intelligence that computers use to understand human languages. This technology is moving beyond merely understanding human language to determining the intent, context and mood of the speaker!

With Vizlib's Analytic Search Speech Recognition capability, you can use voice control to navigate your data and get to answers faster, instantly pulling dimensions and measures from your dataset.



Consumables	Country	Sales	Discount
Totals		**121 616**	**1 221**
Apples	Finland	1 605	18
Apples	Netherlands	1 567	11
Bananas	Netherlands	4 920	38
Bananas	Finland	4 531	44
Coconuts	Netherlands	8 887	93
Coconuts	Finland	8 138	80
Dates	Finland	13 299	132
Dates	Netherlands	11 224	114
Elderberries	Netherlands	18 120	169
Elderberries	Finland	13 658	165

4.2. Taking the next step

The evolution of visual learning is a journey—its humble beginnings in the dark ages with Neanderthal stick figures painted on cave walls to present day three-dimensional visualisations—a near replication of the real world

As technology trends continually narrow the gap between human and machine, the opportunities in business widen.

And business leaders that embrace the potential of data and visualise opportunities for change will head up the advance into a new era.

For more on the transformative power of visual analytics, visit the Vizlib website.

→ TAKE ME TO VIZLIB