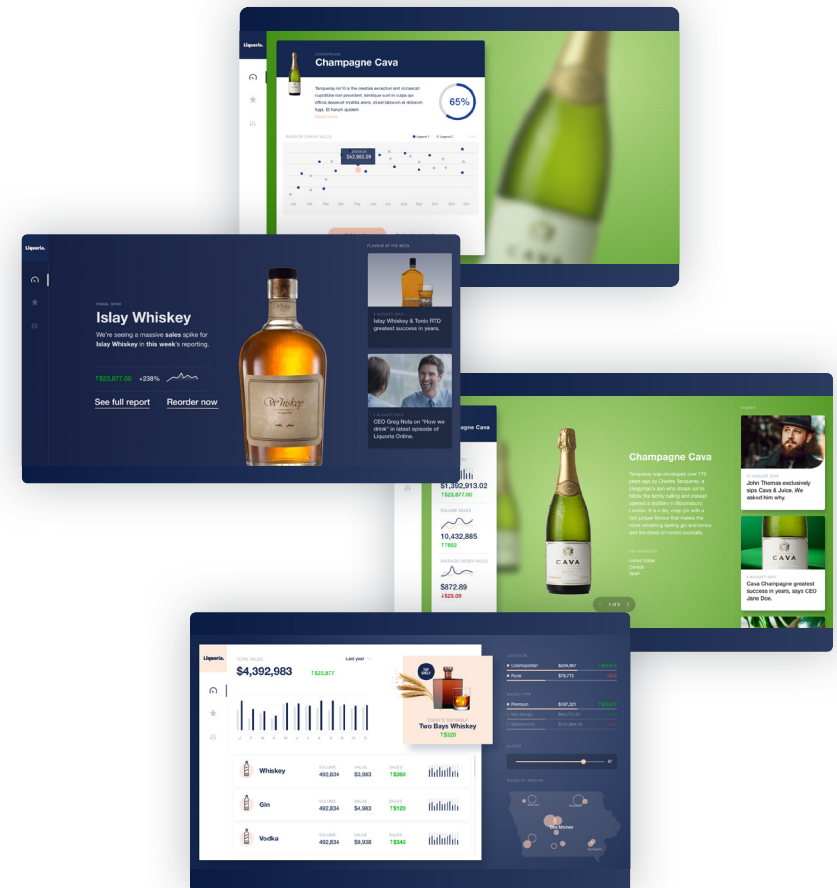


How To Deliver Modern Dashboards That Automate Action



Modern dashboards and their new possibilities

Dashboards have dominated the BI and analytics scene for over 30 years and have been the core requirement in any analytics solution. They have become the default for presenting data to business users to help them monitor and understand their business better.

The goal of dashboards was to empower the business by providing them with self-service analytics. But the current dashboard design and usage fundamentally hasn't changed since the early days of business intelligence (BI) and, as a result, they have not adapted to the changing needs of business users.

Today, to make their dashboards sound relevant, many dashboard vendors tout 'actionable' dashboards that empower your end users to make data-driven business decisions. But you know the reality. The end users constantly come back to analysts for answers, more insights, and queries on what the numbers are really telling them. The dashboards are not truly empowering the people the analysts are building them for.

Although these traditional dashboards do give the business users insights into your organization's data (to an extent), any resulting action requires them to go to other applications and start implementing from there.

A Gartner research note stated, "One of the big barriers to mainstream user adoption in the past 20 years of BI has been the unnatural process of taking users out of their natural workflow (by making them log in to another portal to access BI capabilities, for example). The market has been embedding reports for decades, but that isn't the same as having a true understanding of the tasks and workflows of a specific process, and providing a data-rich application experience."¹

Users have to constantly switch between applications to understand what data they need, perform data discovery, deduce

the required action off the back of that insight, and then take the necessary action. For example, a Purchasing Manager in retail will have to enter their BI application to keep checking the stock levels of each retail location. They will drill to see which SKUs and colorways are selling the fastest, then they will decide which SKUs they need to restock where. To restock, they need to go into their stock management system to then fill out the new order requests after emailing suppliers to negotiate on prices. It's tedious to switch between so many applications. In less data-driven roles, some people may opt to not look at the data at all and go on gut feel until it's critical.

Often when business users do use the data, there's no clear and logical action step to take once they've viewed it on their dashboard. They've seen a data change...now what?

In an ideal world, your corporate analytics platform would be integrated with all your business applications - Salesforce for sales, Marketo for marketing operations, Sage for finance, etc. - and the relevant data would be available at every point of decision making, within each application. This would merge analytics with action. But that's just not possible. While BI tools can typically query data from these applications and present analytics, the workflow stops at the dashboard.

But there is another way.

What if you could embed the action into the dashboard so the user could complete the workflow in one place - your BI platform?

Read on to find out how you can build modern dashboards that truly drive action in your business.

¹ Gartner 'Recent Acquisitions Signal Big Changes to the Analytics and Business Intelligence Platform Market', Kurt Schlegel, James Richardson, Rita Sallam, Austin Kronz, 17 September 2019. The Gartner Report(s) described herein, (the "Gartner Report(s)") represent(s) research opinion or viewpoints published, as part of a syndicated subscription service, by Gartner, Inc. ("Gartner"), and are not representations of fact. Each Gartner Report speaks as of its original publication date (and not as of the date of this Prospectus) and the opinions expressed in the Gartner Report(s) are subject to change without notice.

The three stages of dashboard maturity

There are three stages in dashboard maturity: communicate, analyze, and take action.

Dashboards were created back when BI and analytics was performed by a team of analysts who had to use complex BI tools to extract data, meaning it took many days to create a single report. Then, to deliver insights in an easy-to-consume way for the C-suite, several aggregated reports were placed on a one-sheet to give an overview at a glance. Because of the data's complexity, dashboards were the domain of the BI analyst. Dashboards were simply designed for communication, not analysis or action.

Today's traditional dashboards are still communication tools at their core - stage one of dashboard maturity. They communicate KPIs and other high level, aggregated metrics.

When dashboards have interactive capabilities like drilling and filtering, they offer some form of analysis - stage two. But the analysis process is tedious and time consuming, and typically not user friendly. However, with the new wave of machine learning and augmented analytics, there are better options available, like natural language query and the automation of insights.

But the third stage - take action - has remained elusive (despite the marketing hype of 'actionable' dashboards). Users are left hanging once they've uncovered an insight. They have to leave the dashboard application to take the appropriate responsive action elsewhere. The workflow is broken and time consuming.

To ensure dashboards reach stage three of maturity - driving action - modern dashboards should be a seamless part of the end user's workflow. We're not talking about embedding dashboards into applications, but embedding actions into the dashboards themselves. Picture an e-commerce retailer. The purchaser looks at their dashboard with their stock levels and see the one new product (SKU) is close to selling out - an unprecedented surge in sales has caused an urgent need. Next to the SKU stock report on the dashboard is an 'order' button. On pressing 'order', the action calls on the purchasing software's API and automatically enters and submits the order information including the SKU quantity, color etc. The insight was 'actionable' without the need to leave the dashboard.

And that's just one part of the new powers of modern dashboards. But why has it taken so long for dashboards to become truly actionable?



Four **problems** with today's traditional dashboards

Traditional dashboards used throughout enterprises today continue to have a number of issues.

1. Analyst-focused tools issue

Because only analysts were able to use the early analytics tools and so became the gatekeepers of dashboard platform purchases, the analytics vendors have consistently focused on delivering analyst-focused tools. That wouldn't be too much of a problem, except business users are demanding more access to analytics and dashboards, which are now being used more widely in business. This puts huge pressure on analysts to respond to every data discovery and dashboard building request.

With the rapid changes in technology and the greater availability of analytics tools, the dashboard vendors have failed to see that the primary user of the dashboard is now the business user - that's who you build dashboards for. This has left the end user frustrated at their inability to influence the design and usage of dashboards and left the analyst frustrated at the deluge of requests for data analysis and report building that they are unable to keep up with. Self-service BI came in as a work-around, but data governance was lost in that process. Data governance is crucial to maintaining data accuracy so there is one source of truth with reliable figures that everyone can use to make accurate business decisions.

This has left dashboards hanging as a moderately helpful tool for end users to look at occasionally when queries come along. But dashboards still aren't part of daily operations if you're not an analyst. This has been a source of frustration for every role in the business.

2. Data discovery issue

Unlike in the 90s, data can now be delivered on-demand and queried. You can even query transaction information in situ. However, although dashboards can be informative on a high level, they do not offer up insights easily to the business user - a lot of analyst work goes into uncovering the changes in the data that really matter. Hunting for insights is an analyst's job yet time and resources are limited despite more people than ever wanting data insights. This creates a bottleneck.

3. Workflow issue

Next, there are the dashboard workflow issues for the end user. In requesting and overseeing dashboard designs and builds, there's little to no collaboration. There is no structured way for the end user to communicate effectively what they want from the dashboard, how they want it to be laid out, and how they want it designed.

There is also no collaboration between end users and between end users and analysts over the insights they uncover. This forces the end user to flit between multiple applications to check data, get insights, share ideas and queries, and take business action once the insight is fully understood. And then there is the problem of what action are they supposed to take next, anyway? There's a fundamental issue of workflow.

Four **problems** with today's traditional dashboards

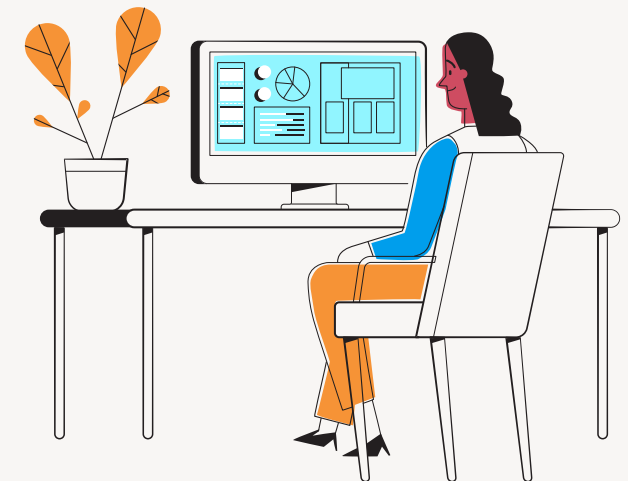
4. Design issue

Next, the dashboard isn't always engaging and rarely conforms to the brand identity of the organization using it because of the constraints of the grid format. Design is a key consideration if you are offering analytics either internally or part of your software because great design can create ownership for your end users.

Typically, dashboard platforms have kept design options limited to analytical layouts. For example, four charts are laid out 2x2 across a single page, which is best practice for clear data display. However, while this makes sense and appeals to the analyst designing the dashboard, this often doesn't represent how the business user ultimately will use that data for action. In addition, designing for an analyst with analyst-focused tools doesn't cater for the wider group - end users who have varying levels of data literacy.

Time for a solution

It's time to make dashboards deliver insights for the business user, work within the user's workflow, and make the dashboard on-brand and visually appealing. Pushing analytics into third party applications is difficult and often impossible. But it should be possible to see the data and take the required action in the same place. So what if it was possible to build actions right into the dashboard?



The new possibilities within modern dashboards

There's a new era for analytics. New low code and flexible design capabilities have broken the old mold of analyst-focused dashboards.

The business user is the largest user group of the dashboard but that does not do away with the critical roles of the analyst, developer, and IT. IT needs to ensure governance, security, and ease of integration. Developers can code new buttons, forms, charts, and capabilities. And analysts are typically required for data integration, data preparation, data discovery, and building best practice dashboards and reports. But none of this is of much use if the dashboard doesn't meet the end user's needs. Here are some new capabilities you must build into your dashboards to future-proof your organization.

Prototype dashboards within the platform

A dashboard is usually requested by an end user and built by an analyst or IT. However, dashboard design can be a major factor between the use or abandonment of the data. Often, the end user has a good idea of what they want the dashboard to look like but a design explanation often requires a meeting in person and scribbles on a notebook or shared document that can be difficult to decipher a couple of days later. If the analyst doesn't understand the business user's role and requirements, the end product is unlikely to be what the user wanted and the dashboard fails.

Let the end user in on the build process by choosing a dashboarding platform that offers a dashboard prototyping or wireframing capability to ensure they get a dashboard that fulfills their needs. They can quickly and easily lay out exactly what they want, collaborate in real-time, and have agreed understanding of what is needed, all from within the analytics platform itself.



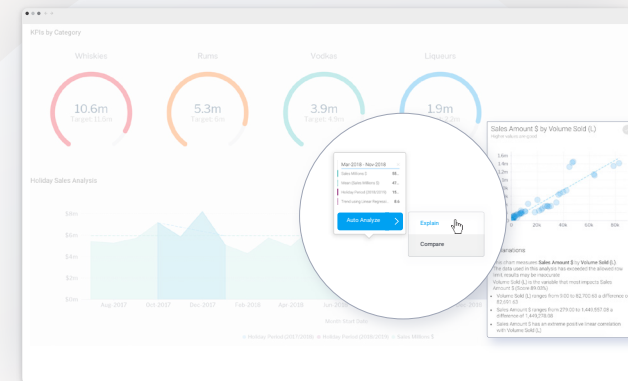
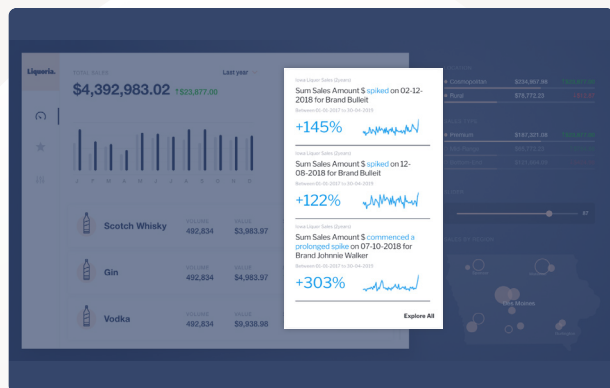
The new possibilities within modern dashboards

Deliver dashboards with insight assistance

Step one on the way to actionable dashboards that become part of the workflow for users is ensuring the data is readily understood and that insights are fast to find. While most BI tools are great for monitoring business results, they don't always explain what caused those results. Traditionally, a business user has had to ask a data analyst what happened or do their own self-service analysis. Neither approach is productive. Data analysts are overwhelmed with requests and many business questions go unanswered.

Fortunately, more and more BI tools provide automated help. They combine machine-learning with human insight so business users can uncover insights faster. People can get the answers they need quickly, and data analysts can spend more time providing deeper insight into business questions.

These automated capabilities come in many variations. This could be a Google-like search bar or an on-page interaction. This could look like clicking on a spike on a chart and having the tool automatically analyze your data to present the most statistically significant reasons for that spike.



Automated Data Discovery

Even better, analytics vendors are building machine learning capabilities that automatically detect changes in data and automatically notify users of the most important changes as they happen.

These features allow users to gain insights faster with no manual effort and therefore uncover answers without the need to go back to a data analyst. This technology can also uncover 'unknown unknowns', that the user wasn't looking for in the first place because the machine can trawl through more data that can be done manually. Decisions are more informed and made faster to optimize the business.

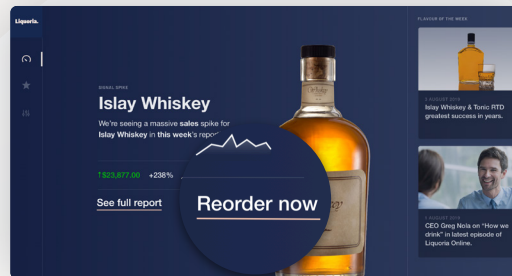
The new possibilities within modern dashboards

Build actions into the dashboard

Finally, an actionable dashboard requires actions to be built into the dashboard. Although dashboards have been built for fast assembly with drag-and-drop and graphical user interfaces, more analytics vendors are offering the ability to embed custom code. This opens up a multitude of possibilities from custom designs and layouts to inbuilt widgets and action buttons.

Imagine being able to see a change in your data - a change that means you need to act fast to fix a problem in your business operations - and you can enact that change. For example, you can drop the prices of your hotel rooms when there are too many vacancies on the upcoming weekend. To do so, you simply fill out the form that sits next to the room vacancy report with details of how many rooms, the room types, and the discount. Submitting the information automatically updates the price points on your website.

Embedding actions into the dashboards typically requires a developer to code custom workflows using proprietary languages to pass values from one application to another. Some vendors have their own proprietary coding language that developers must learn in order to build applications. Ideally you should look at vendors that enable coding in more common languages, such as Javascript.



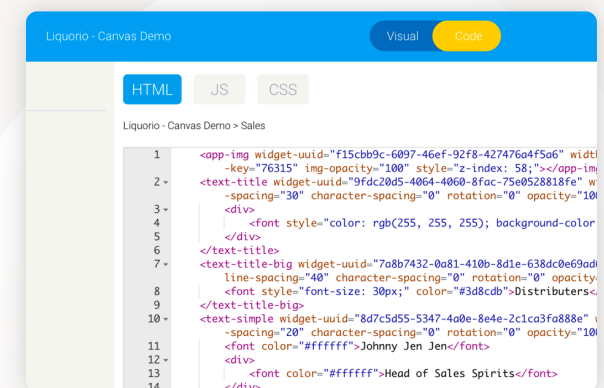
allows you to make the dashboard visually appealing and logical for end users so they are engaged with the application.

This design flexibility comes from the analytics platform providing the ability to edit the dashboard HTML and CSS. Developers and graphic designers can customize and extend dashboard design using a GUI drag-and-drop or code elements directly (depending on complexity and preference). With that, you have complete freedom to produce dashboards however you want them and produce bespoke analytical experiences.

Flexibility for pixel perfect design

If you are a software vendor with analytics embedded in your application, dashboards are an integral part of your application and should look and feel just like the rest of your software. And for those who are using dashboards internally in your organization, branding and visual appeal are important to the adoption and use of your analytics. Today's analytics platforms are finally allowing you to design dashboards, not just individual reports, with complete freedom - no more adherence to the fixed grid layout.

This design freedom enables developers to provide a seamless brand experience between the analytics module and the rest of the application. The design flexibility also



Actionable Dashboard Use Case

Actionable dashboards with embedded action capabilities will completely transform the way business users approach their data, how they use their dashboards, and how they make business decisions.

Job Listing Website

We've all used job sites before, usually as candidates trying to find that next exciting role. Large employment providers like recruitment agencies are typically big customers of the leading job sites and spend a lot of time advertising the positions they have available to attract the best talent.

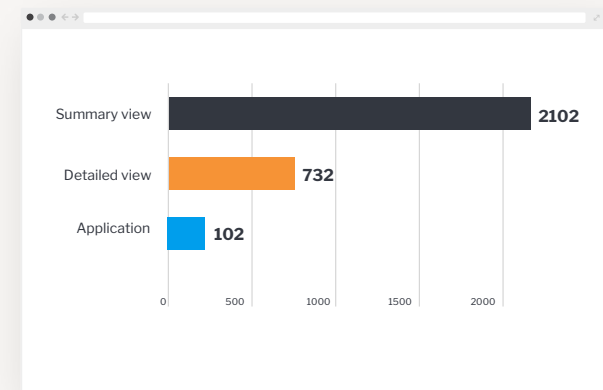
Large job listing sites will provide their customers (employers) with analytics around the performance of their job adverts. If we look at the typical flow of viewing and interacting with job listings, customers will see:

- **Summary View**
- **Detail View**
- **Application**

At each of the three stages, a customer will usually spend on advertising to increase the views and interactions with the summary view, detail view, and application process of their job adverts in the hope of eventually filling placements.

The job listing site wants their customer to spend on advertising and the customer wants to ensure their ads gain enough exposure to hire the best talent and fill their placement.

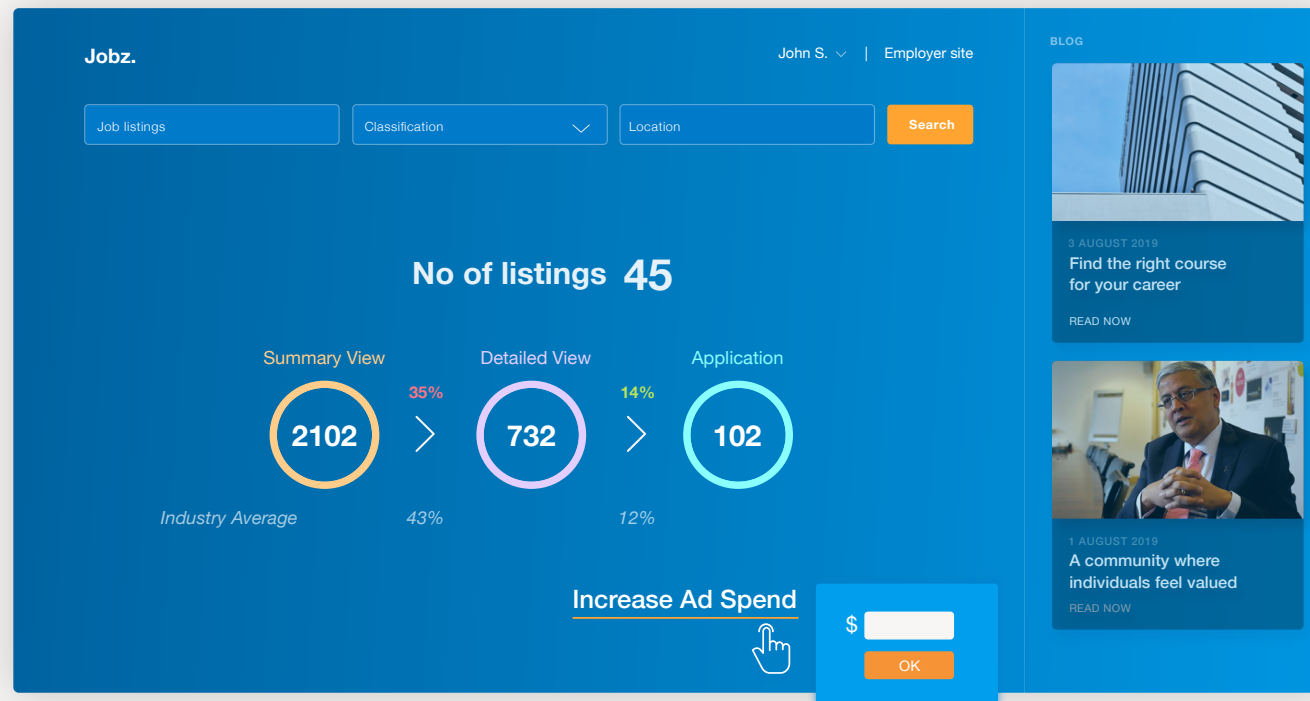
The listing site could provide traditional analytics to their customers that visually represents each stage and the number of placements, which could look like this:



This is the traditional analytics view that tells the customer how many of their ads are performing. From here, the customer can analyze the report, decide if they want to spend more on advertising, then log onto their advertising portal, navigate to their ads, and commit additional spending.

Think about how much better the experience would be for the customer if we were to provide the analytics were built around the way they understand the flow of data.

Actionable Dashboard Use Case



Now the customer is seeing the flow of data built around their experience. They can clearly see the areas in which they aren't performing and know where to spend more ad dollars. No need to analyze the data and come up with a next course of action, the analytics is built around the way the customer experience.

Typically, the customer (employer) would still have to log into their ad portal if they want to increase their ad spend. It's a process that requires switching between applications. With this example the customer can increase their ad spend right from their dashboard.

By clicking on the 'Increase Ad Spend' button the customer is prompted to add in the spend amount and the dashboard is automatically passing that amount and the related ad data across to the ad spend platform and performing the action automatically. No need to manually jump from application to application and manually perform the task.

A summary of actionable dashboards

Traditional dashboards are limited in their scope. Too many analysts end up building more and more reports on demand to satisfy the increasing business need to see data in greater detail because the dashboards are stuck at the communication level and haven't developed sophisticated analysis capabilities.

With the dawn of machine learning and AI in analytics, analysis is becoming simpler for the end user. But dashboards need to go one further. Dashboards need to move from communication, to analysis, to action.

We need to stop expecting people to break their workflow to go between their BI tool to check the data for insights and their other applications where they take action. We need to make the dashboard truly actionable so they never need to leave the analytics platform to implement an insight. The insights, decisions, and actions are then based on the data. With the ability to code the dashboard directly, IT and developers can build actions - forms and buttons - into the dashboard that will call on APIs and automatically update the external system with the new information.

Use wireframes within a platform to collaborate on dashboard designs to optimize their usefulness, use insight assistance with machine learning algorithms to ensure insights are fast and accurate, embed actions right within the dashboard, and use the incredible flexibility of coding within the dashboard to design dashboards that meet your brand needs exactly.

This opens up new possibilities within your organization for the daily use of data. When dashboards are truly actionable, they become integrated with daily decision making. They become relevant, intuitive, and inextricable from the user's workflow.

Yellowfin actionable dashboards

Yellowfin delivers the type of modern dashboard that has been outlined in this paper. Yellowfin Modern Dashboards look great out of the box, but with our user-friendly design and developer tools, you can easily create highly customised dashboards to suit your specific needs. A free-form dashboard canvas your designers will love enables you to easily assemble creative, on-brand infographics, and actionable dashboards. And our new code mode, code widgets, and content APIs give you the freedom to do things in your dashboards that we haven't even thought of yet.

Request a demo of Yellowfin

See the Yellowfin suite of products in action and discover how our modern actionable dashboards can deliver transformational value to your organization. Request a demo with one of our team.

Get a demo and find out how you can use Yellowfin internally to optimize your business or embed it in your own application to add value for your customers.

[Request a Demo](#)





Things change. Know why.

Yellowfin is a global Business Intelligence and analytics software vendor with a suite of world-class products powered by automation. Yellowfin is recognized as an innovator by the world's leading analyst firms. More than 27,000 organisations and more than three million end-users across 75 countries use Yellowfin every day. For more information, visit www.yellowfinbi.com.

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