The Analytics Portal at Mozilla

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One of my "must do" activities at TDWI conferences is to stroll through the exhibit hall and learn about new vendors and product offerings. There are always companies and products that I have never heard of before. This was the case when I stopped at the Metric Insights' booth at the February 2017 conference in Las Vegas and learned about their *push intelligence portal*.

As I talked with Ben Tonon of Metric Insights, I was impressed by how his company's product could be used to push various kinds of information to executives, managers, and other organizational personnel. The software provides a portal that can provide much of the information needed to run a business, including key performance indicators.

When I expressed interest in learning more about how companies are using Metric Insights' product, Ben offered to put me in contact with several customers. This offer ultimately led to a conversation with Heather Crince at Mozilla. Heather is the senior product manager for Mozilla's highly successful analytics portal, a push intelligence portal that uses Metric Insights' software-as-a-service.

I asked Heather and Ben to join me in describing Mozilla's analytics portal. As you will learn, the success of the portal is due to the technology and its capabilities as well as how end users were engaged, the development methodology employed, and how data quality and governance are handled.

ABOUT MOZILLA

People are familiar with the popular Firefox Web browser for desktop computers and mobile devices. It is the primary product of Mozilla, a subsidiary of the not-for-profit Mozilla Foundation, which has a workforce of approximately 1,200 paid employees and over 40,000 volunteer contributors around the world.

THE BUSINESS NEED

Mozilla is a geographically distributed company. Each organizational unit has historically had its own set of tools to analyze data and create information. The tools include commercial products (e.g., Tableau, Domo), open source software, and software developed in-house. Because of this decentralization and tool diversity, there wasn't a good, consistent way to find information, make decisions, and share information across the organization.

Though a limited number of high-level performance metrics (in the form of KPIs) existed at Mozilla, they were only sent to a similarly limited number of executives. On a monthly basis an analyst team would calculate the KPIs and deliver them in an executive dashboard. There was a need for more dashboards that were accurate and trusted, included more KPIs, and that were easily accessed and understood beyond the executive leadership.

This situation caused Mozilla CEO Chris Beard in February 2016 to champion the development of a system that would provide a "front door" to more timely, reliable, and accurate information. He wanted users to have a consistent experience as they accessed information. Beard also wanted to increase collaboration and the sharing of information. Finally, he wanted to establish ownership and governance for any information provided across the organization.

A project team was chartered to develop a system. Headed by Heather Crince and joined by the head of the Firefox product group, VP Nick Nguyen, the team was made up of product managers, product marketing managers, data scientists, and analysts. They focused on identifying the requirements, use cases, and workflows that would be critical to the system, as well as helping to identify what type of system needed to be built, what content should go into it, which key people should have access to it, and what data these people need.

SELECTING THE SOFTWARE

Three years ago design thinking was adopted as Mozilla's methodology for developing systems. With this approach, the initial problem definition phase requires developers to work closely with future users in order to fully understand workflows, the true problems the system should solve, and the resulting system requirements. With this methodology, there is a strong emphasis on putting the developers "in the shoes" of the user and gaining empathy for their problems and needs. It is a user-centric development process.

As the development team intensively interviewed future users of the system, it became clear that users wanted to be able to more easily locate information and trust its accuracy. They wanted a single source of the truth. This understanding informed the committee's evaluation of the software alternatives. One alternative was to build the software in-house, another was to acquire several components and

assemble them, and yet another was to buy a commercial solution. Acquiring commercial software was the preferred approach because it would allow the portal to be developed more quickly.

There were only a few viable vendor options, however, given the requirements generated by design thinking. In June 2016, the Metric Insights software was chosen from the team's vendor short list. The solution was able to

- Integrate and display the various kinds of information, providing a unified user experience
- Create, manage, and distribute metrics within the software
- Monitor and send alerts based on changes in the KPIs
- Help ensure that the portal contained trusted information—the single source of the truth

MOVING FORWARD

The development team and Metric Insights collaborated to develop a small beta version of the portal. The same evaluation committee that selected the software helped develop and assess the beta version by providing core use cases and identifying workflows. As part of this assessment, the team recorded committee users performing tasks and their reactions to the portal to ensure the project team remained focused on the most important aspects impacting adoption. Initial user comments included "All of the information is in one place and easy to find," "It's clear and intuitive to use," and "We have needed this for so long."

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The development of the portal was treated in much the same way Mozilla creates products for the marketplace—experiment, learn, and iterate. Metric Insights gained insights into how their product was used and was responsive to suggestions for improvements. A contract for professional services was helpful in moving the project along and developing a road map of integrations and features needed to continue to improve the experience for portal users.

The analytics portal was rolled out at the beginning of 2017 to the entire organization with a focus on including the product management and marketing teams' data and data-related content. Executive support for the portal was strong and the portal was frequently discussed in executive meetings. Video conferencing "road shows" were held to introduce and promote the portal to users and groups around the world. Fireside chats continue to be held to continue to reach individuals and encourage participation. The portal is featured in the Mozilla onboarding process to ensure that new employees are aware of the need to be data-informed and understand their roles.

As a result of these ongoing efforts, Mozilla is now a more data-informed company. The portal allows users to find information more

quickly, supports informed decision making, and facilitates constant experimentation.

THE ANALYTICS PORTAL'S CONTENTS

At the highest level, the portal can be thought of as having two major information categories. The first is key performance indicators (KPIs) that are centrally calculated and developed by the data services team and made available by the Metric Insights software. The second information category is business-unit-generated content, including analyses performed by the business units, data-definition documents, research findings, survey results, and other data-related content. Together, the KPIs and business-unit-generated content are referred to as the Mozilla Data Collective.

MORE THAN KPIs

Mozilla uses the objectives and key results (OKR) methodology for managing the business. Tracing its roots and having similarities with Peter Drucker's (1954) management by objectives (MBO) and Kaplan and Norton's (2007) strategy maps and balanced scorecards, OKR was invented at Intel and is currently practiced by companies such as Google, Uber, and Zynga.[1] It focuses on establishing broad objectives or goals that are typically qualitative as well as a few quantitative measures (key

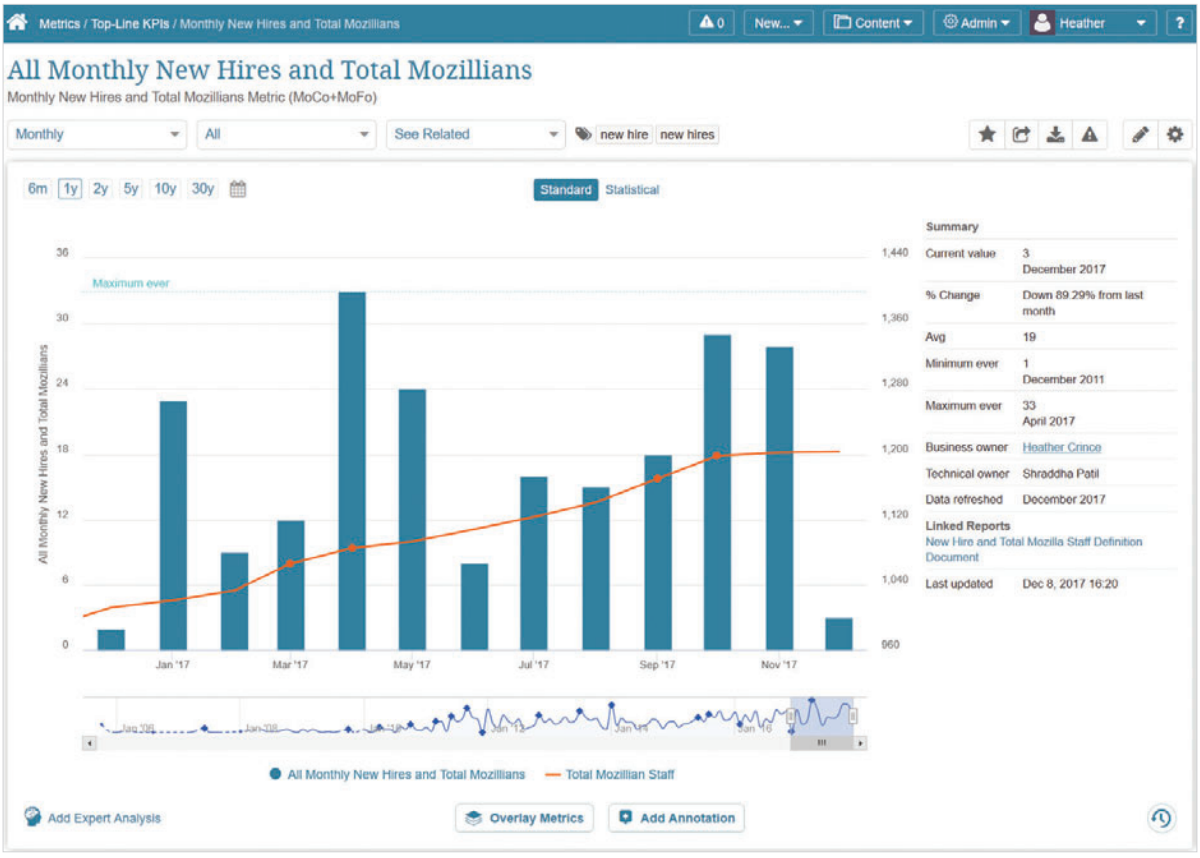

Figure 1: The dashboard depicting Mozilla's new hire KPIs.

[1] An excellent video that features Ben Lamorte discussing OKR is available at https://allianceenterprises.wistia.com/medias/wzn2ubmld0

results, KPIs) that show the progress toward achieving each goal or objective. The OKRs are reviewed and potentially changed, perhaps monthly or quarterly, depending on the cadence of the business.

Mozilla uses OKRs at the organization, business unit (e.g., Firefox browser), and project/program levels. In working through the development of the metrics, the team discovered that some of existing metrics were not actionable and needed to be changed, and that new KPIs needed to be added. However, the number of KPIs is limited to five or six organization-wide and four or five for each business unit or project group. The placement of the KPIs in the portal has made them more visible throughout the organization. The KPIs are reviewed on a monthly basis by the data owners, executives, and other business users.

As with many companies, the number of active users is a critical metric and Mozilla is no different. In particular, there is interest in Firefox's active user counts, so KPIs associated with it are closely watched. Active user counts are often a rallying point for the entire organization—not only overall counts but also in particular markets (e.g., Spain). To actively manage this and other key metrics, such as new hires (see Figure 1), Metric Insights' software allows Mozilla to integrate data sources, build KPIs within the software, and monitor trends and anomalies.

Figure 1 graphically shows the growth of Mozillians over time. The bars represent new Mozillians joining each month, with the cumulative totals toward annual targets. At the right of the screen are summary statistics for the time period (which can be changed using the buttons at the top left), as well as other documents or reports that are related.

One goal for the analytics portal was to increase collaboration and information sharing. The Metric Insights software supports this goal and also helps provide context for the information displayed. For example, the *Add Annotation* button at the bottom middle of the screen is used by data champions (the people from each content area who ensure that appropriate, available content is submitted) and coordinators to add context for the information shown. Such an annotation might be, "The upturn in active users corresponds with the digital marketing campaign" or "The spike in month two is a known anomaly."

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The *Add Expert Analysis* button on the bottom left is used by the data coordinators to provide insights about how the information was created, such as indicating what websites were used in calculating the market share statistics. It is a source of metadata for the screen.

There is also an *Add a Comment* button on the bottom of the screen that can be used by any user to engage with the business or technical owner of the content, ask a direct question related to the content, or add additional context or information that might be helpful to any user of the content. For example a user

might ask, "What caused the decrease in active user counts in October?" Another user might then add a comment about why the active user counts decreased.

There are also specific projects or initiatives to increase active user counts, the success or failure of which are monitored through KPIs. For example, a marketing campaign in the important German market might focus on Firefox's security and privacy features (logical because of Germany's high level of concern over these issues). The success of the campaign would then be assessed through the market share KPIs for Germany.

Any company KPIs have triggers associated with them that initiate alerts if performance meets or falls short of targets. Such push technologies make it easier for users to be aware of developments that are important to them. Alerts can be triggered by specific events (e.g., a KPI falling a specified percentage below a specific value) or a pattern that suggests a potential problem. The triggers are collaboratively set by the data champions and the portal's staff. These managed alerts are an important part of the push technology available with the Metric Insights' software.

BUSINESS SUBMITTED CONTENT

Having all the analytics content in a single, searchable place is a powerful feature. However, the support of senior management was critical in getting people to understand the need and to create a culture for placing content in the portal. The data champions mentioned previously are assigned their responsibilities by the senior managers in the areas they represent. The champions are then supported by data coordinators who tend to be more technical and familiar with the available content. The openness and sharing that is in the DNA of Mozilla's culture also contributes to people submitting content to the portal.

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Over time, people have been surprised by how much content is available in the organization and the portal. It has also increased the amount of information sharing. When describing the portal, Matt Grimes, manager of Firefox Strategy and Insight, says, "It saves a ton of time. You can go to the portal to see what work has already been done. If you are starting a new project, you may not have to start from scratch." The portal reveals analyses that are related or similar and allows future studies to draw and build upon previous work.

Figure 2 shows all of the available content for the Firefox add-ons and Web extensions team, as assembled by the data coordinator specifically for that team. Each of the four tiles (i.e., folders) represents a piece of content (e.g., a report) related to add-ons and Web extensions. The three tiles with the green checkmarks contain certified content (a concept discussed later).

If you click on the gray gear, a popup box appears with a description of the content, the name of the person who uploaded the content,

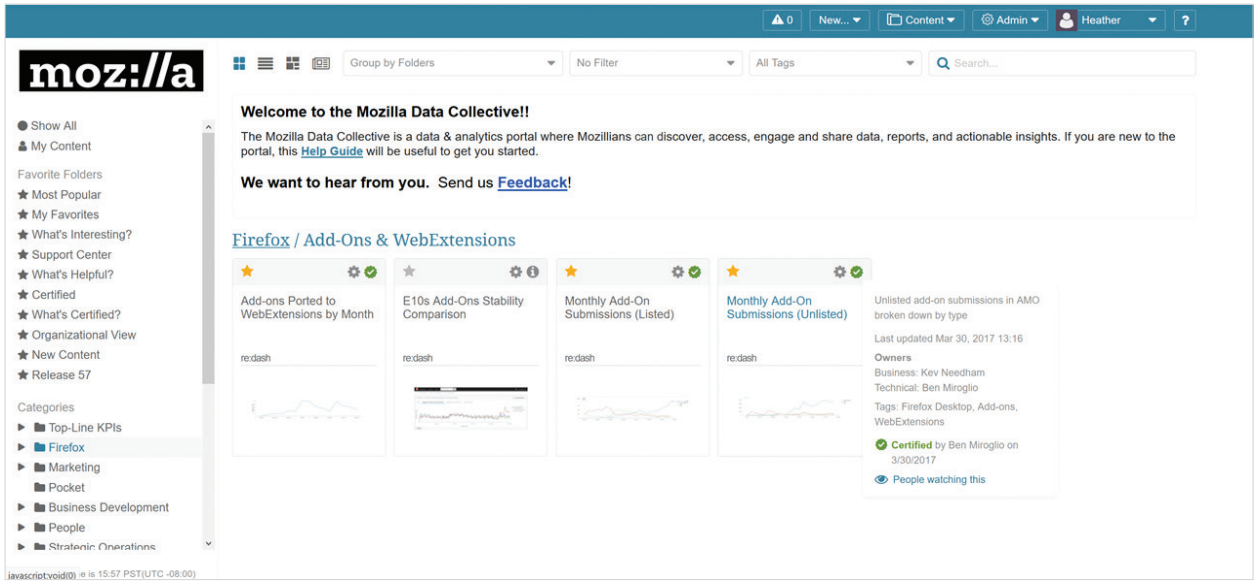

Figure 2: Accumulated data for Firefox add-ons and Web extensions.

who certified it, and when. This provides metadata for each document. The popup box also contains links to related content. Users can bookmark specific pieces of content—as indicated by the gold stars—which are then put in a separate folder where they can be found more easily. This helps cut out irrelevant noise when specific content must be found. Directly above the content tiles is a Feedback link that allows users to ask questions about the system. This generates answers for users and provides valuable information for the staff about how the portal might be changed to make it easier to use.

When new content is added, the data champions and coordinators can use the software's notification feature to send a message to an individual or a distribution list of users who might be interested in the new content. It is another way of alerting users about changes that might be important to them.

This capability is also used to communicate with the senior executive team when a KPI has changed and is certified.

DATA QUALITY AND GOVERNANCE

It is critical to have accurate and trusted data and calculations in order to avoid the "dueling spreadmart" problem (different users bringing alternative Excel-based analyses to meetings and arguing over which is the correct one to base decisions on). Mozilla is careful to review everything that is placed in the portal.

For example, when a user completes an analysis, its status is set to *unreviewed* and it cannot be added to the portal. The next step is for data stewards to review the analysis and, if it is judged to be correct, its status is changed to *reviewed* and may be included in the portal. The highest standard is when the originator and reviewers state that the analysis is *certified* and can be used in discussions and

communications across the organization (e.g., in PowerPoint presentations).

As seen before, certified content is marked as such in the portal. Both the data and the analysis have passed the highest review standards and are now essentially the ever-sought-after single version of the truth. In meetings at Mozilla, when someone cites a metric or an analysis, people will ask whether it is reviewed or certified. Building this culture around certified content is a key to the portal's success.

PLANS FOR MOVING FORWARD

The people and processes used in certifying content are important to having accurate, reliable, and trusted data. For those KPIs built and managed within Metric Insights, efforts are currently underway to use its functionality to automatically detect problems and anomalies in data before the data is published to the dashboard.

For example, the software can monitor data loads, and if a problem is detected (such as a partial load), an email or text alert can be sent to the support staff so the problem can be fixed—another example of a managed alert. The goal is to reach the point where problems are recognized and corrected before they are ever found and reported by users.

Another opportunity for improvement is where a new data point in a key metric suggests a serious problem that is actually less severe when taken in the context of other available information. For example, the previous day's data might indicate a significant drop in sales in a particular region. The data staff can be notified of such anomalous data points before releasing updated dashboards to users so they can add important context (e.g., "there was a website outage for four hours in the evening") and thus avoid causing unnecessary stress among the dashboard's users.

Work is underway to develop a structure for better organizing content submitted by users. Without structure, it can be difficult for users to find, integrate, and act on such disparate content. Mozilla is planning to use a storytelling paradigm where related content is organized in folders such that the content tells a story, complete with beginning, middle, and end. For example, initial field surveys could be the "beginning," experimental results the "middle," and final product launch statistics the "end." Such organization would be done by the data champions, with help from the data coordinators.

Planning is also underway to make Mozilla's publicly available information (such as the operating systems and hardware that the Firefox browser being used on) accessible through the portal but with a user interface designed for the public. Currently, the public does not have a single place to find all of the available information, which has particular value to organizations such as game developers and others. Such a public interface would focus on search and download capabilities.

KEYS TO SUCCESS

The usual set of factors required for BI/analytics project success was present at Mozilla—a business need, strong and committed management sponsorship and support, user input and involvement, a strong development team, a good technical infrastructure, and solid project

management. However, several considerations and how they were handled merit discussion.

Mozilla made excellent use of future system users, who continue to be advocates and influencers across the organization. This group, which includes senior managers and representatives from the Firefox product group and marketing, first worked on evaluating the software alternatives. Then, they helped determine the information requirements and later tested the beta version of the system. They were also a major contributor of content for the portal. This consistency of involvement throughout the entire development process helped ensure that the system met business needs, was easy to use, had the right content, and possessed a strong core of users and advocates.

Mozilla's analytics portal is highly successful because it enables Mozillians to effectively discover, access, engage, and share information. Previously, information was largely siloed in various tools and systems across the organization. Getting people to submit content to systems can be challenging. People are busy doing their jobs. Others may not recognize that content should be submitted or just are not psychologically inclined to do so (not everyone posts to Facebook or tweets). Mozilla is fortunate in that the organizational culture is to share information. Beyond that, however, people (data champions and coordinators) and processes (certifying content) have been established to help ensure that appropriate, reviewed/certified content is available in the portal.

With its portal, Mozilla is striving to allow business leaders to more proactively manage. This objective is supported by pushing key information to users rather than forcing them to seek it out. As with many organizations, Mozilla has considerable data and information. The challenge is to filter and deliver that which is needed with minimal user effort. Managed alerts are a powerful technology for achieving this goal.

CONCLUSION

Sean Rich is the senior director of enterprise applications, and shares his perspective on many of the reasons why the analytics portal is thriving.

> What's made the analytics portal successful is the approach. The team combined the best of design thinking and the best of systems thinking to solve the data problem at Mozilla. They recognized that it wasn't just a portal that needed to be built but rather that a community of interrelated roles that relied on common agreements. Today we have multiple organizations working together in a tight-knit community toward common objectives—that's the secret formula.

It is a model that warrants consideration by other organizations. ●

REFERENCES

Drucker, P., [1954]. *The Practice of Management*, Harper, New York.

Kaplan, R.S. and D.P. Norton, [2007]. "Using the Balanced Scorecard as a Strategic Management System," *Harvard Business Review*, July-August.