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| |  |  | | --- | --- | | 2/24/2015 | Increasing data and analytics capacity | |

# Project Proposal

The ability to increase data and analytics capacity within the USAID is dependent upon the ability of not only users being connected with data, but users being connected with data in a meaningful manner. With so much data available to assist with nearly every issue your organization faces, it is critical to ensure the right tools are available for the situation. Developing an effective platform to ensure efficiency will be dependent upon three major factors.

* A platform that is not only capable of processing vast amounts of data, but capable of outputting this result in a meaningful way.
* The ability to maintain data integrity through its results.
* Developing a platform that can be integrated into any platform and accessed from any situation that needs be.

At Azimuth1, we pride ourselves on the innovative methods we apply to convey data to our customers. Utilizing the latest technologies, we strive to develop creative solutions to common problems. This day in age, we have the entire world of data at our fingertips. But there is an information overload, which prevents data from reaching its full potential. Creating a smooth link between how data is retrieved, processed, and ultimately rendered to the user, in a simple way is what we strive for. Our areas of expertise include big data, statistical predictive modeling, and interactive data visualization. We support advanced analytics to a variety of sectors, including energy, environmental, logistics, and security customers.

Public APIs, such as Twitter, Flickr, and FourSquare present vast pools of data. The entire web, for that matter, can be data scraped, and analyzed for data. Discerning meaningful information from the web is a challenge that involves knowledge of everything from machine learning algorithms to having an understanding of the topic at hand. While information can be obtained through trial-and-error, results have show us that user interpretation is the driving force behind decision making. The power of web based visualization techniques is perhaps exemplified best through D3. But having a knowledge of both visualization techniques and the libraries to utilize them, are second to actually understanding how to tell a story to the user and how to allow the user to decipher his or her own meaning.

Geospatial software, such as ArcGIS, GeoServer, OpenLayers have all contributed to a huge growth in GIS. The idea of conveying data through a geospatial medium has provided invaluable insight into our ever changing world. Yet, there has become a disconnect with how these technologies have come to be technologically defined and how their potential to be utilized. Understanding the differences with GIS as a technology, and GIS as a science, has helped us to develop solutions that incorporate a large body of knowledge. Developing customized interpolation methods and other geospatial algorithms is our approach. While there is generally always a library or tool to perform a need operation to help reach a conclusion, nothing surpasses the ability of the user to manipulate and visualize data under their terms.

Many challenges will determine success of this program, one of which being the ability for the developers to be fully engages with the potential end-users throughout the program. Through our development process, we strive to remove the disconnect between those who generate and process the data, and the decision makers who interpret the data. A functioning platform should allow for every involved party to comprehend and interpret results on their own. And developers must understand the key concepts in order to achieve success with a product.

With the advance of Open Source technologies, it has created a rush of innovation with the growth of GitHub and organizations such as MapBox.

The processing of millions of data records was once was a much larger feat before the past few years. NoSQL databased have resulted in faster development of platforms, because of ease of use. While SQL is dominant for its power, recent alternatives provide quicker and flexible deployment. With multi-core processing widely available, such as through Hadoop, processing times are decreasing and users will seemingly only be limited by their client device. But even this is changing. With the inclusion of WebGL, Web Workers, and Typed Arrays into browsers, CPUs and GPUs can be maximized to their full potential to give users a great understanding of the world around them. While a browser can have less benefits than installed software, the latest tools through Node.js, such as Atom-Shell, have proven that we are fast approaching a point where users can have the benefits of both.

A common approach to develop web based applications is to generate platforms based on the LAMP Stack (Linux-Apache-MySQL-PHP). The difficulty with this approach is the ability to combine completely different technologies into a single working application. By utilizing the MEAN stack (MongoDB-Express-Angular-Node.js), an application benefits through much tighter integration and easier trouble shooting. With LAMP, a user (or a team) must master the Linux operating system, Apache Web Server, SQL Database language, and PHP server-side language, in addition to front-end technologies. With the MEAN approach, a fully working product can be developed using JavaScript with much more flexibility in the deployment platform.

Approaching this project, we would go in with

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