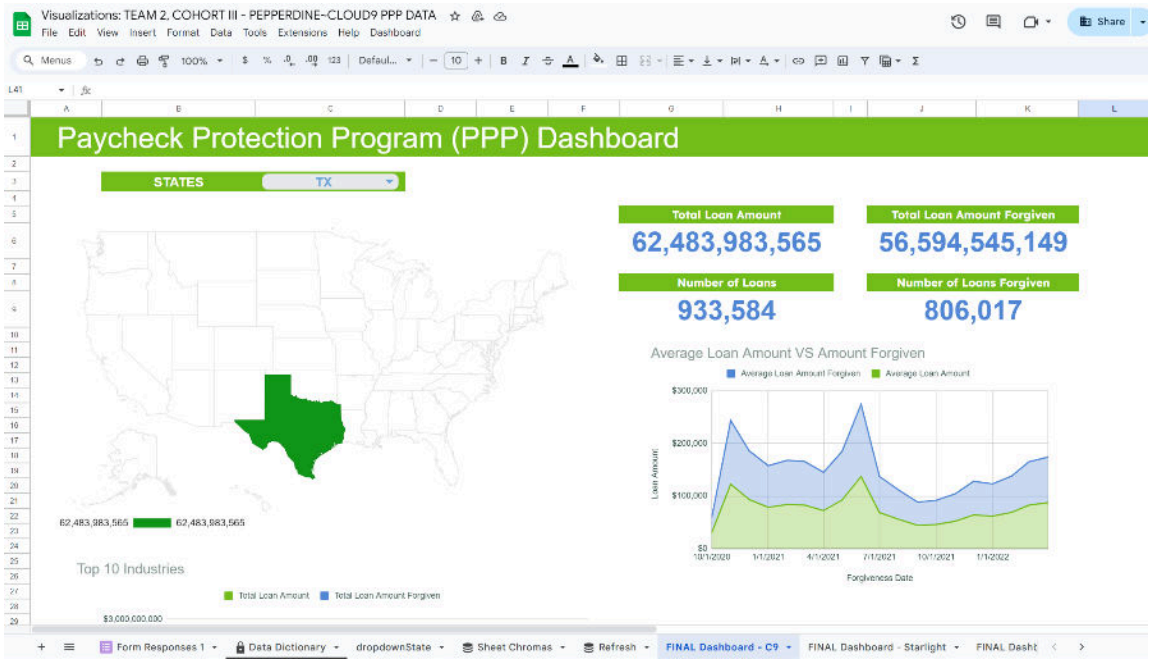
Cloud9 Advisory

C9 Digital

Cloud 9's *Lens* Into Reshaping Business Analytics



***Pictured Above**: Dashboard Created by Pepperdine Master's Students Showcasing the Capabilities of Lens*

Table of Contents

Executive Summary

The 4th industrial revolution has begun, the technology revolution. Technological advancements have erupted over the past decade, most recently with major advancements in cloud computing and generative AI. Due to the quickly emerging technological advancements, small and medium sized businesses (SMBs) are not able to keep up. Companies like these struggle to handle their data due to insufficient resources (e.g., lower budget), tools and software that are difficult to learn and deploy, and a lack of skilled talent or workers . Cloud9's new data analytics tool, *Lens*, is the perfect solution to these problems. *Lens* has a familiar to use interface and is fully cloud-based; making it easy for SMBs to utilize their current skill set but with big data. Cloud9 offers *Lens* as a product for organizations including SMBs, providing guidance along the set-up, implementations, and use process.

Background

Back in 2021, Cloud9 Advisory, a growing small business, had been on the lookout for ways to keep up with the thriving digital age. Lacking a data team, Cloud9 (or 'C9') did not have any coding experts to help with the management of the dataset they wanted to explore - a comprehensive 7GB dataset of PPP loan data. Cloud9's first thought was to collaborate with business analytics students at Pepperdine Graziadio Business School. After collaborating with the students, C9 realized that it would be too complicated to set up multiple different point solutions (ie. Excel, Tableau, Jupyter Notebook, etc) at the company and a platform solution would work best. The students also were not able to work with the entire dataset; instead, they performed calculations and made charts based on subsets of the dataset. This is when C9 realized they would need a cloud-based solution to handle a dataset like this. Cloud-based tools are able to handle much larger datasets as the data is stored remotely; whereas, conversely, many traditional tools require the data to be stored locally on a user's computer. Now that C9 had criteria to be fulfilled for what type of data analytics tool they would want, they searched for a **cloud-based, platform solution**. They realized that Google Cloud Platform fit these requirements, but was complex to understand and use. They decided to partner with Google and work to build a data analytics tool with small-to-medium sized businesses (SMBs) in mind; a solution for regular business people, like us!

Focus Problem : Small-Medium Sized Businesses Struggle to Handle their Data without Experts on their Teams

Big data analytics capabilities (both in terms of people and technology) are scarce within small-medium sized businesses (SMBs). This often leaves SMBs with the feeling of being "drowned in data but starving for information". SMBs particularly have a difficult time handling their data, as their employees typically don't have the background to use complicated applications, and their company does not have an IT team. SMBs need easy-to-use tools, especially ones that have somewhat familiar interfaces (they likely use Excel, so Google Connected Sheets would be somewhat familiar but able to handle big data) . Tools with those qualities would allow SMBs to handle big data without any coding experience.

THE CAUSE

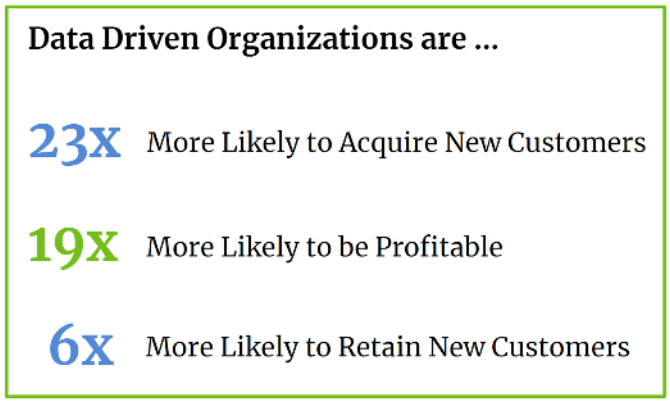
There are a few major reasons why most SMBs have not yet figured out the 'key' to unlocking their big data. The first is that SMBs typically do not have an IT or data team. "But the problem for SMBs is that data analysts tend to be prohibitively expensive, and leadership will often prioritize filling the "must-have" positions first — operations, sales, product managers, whoever is bringing in the revenue to keep the lights on — before they hire a data scientist" (Su). Another issue is that SMBs often struggle to know how to interpret their data or even "where to start". Additionally, datasets are growing faster than on-prem resources; the limitations of

laptops are only getting worse. SMBs also are not always aware or have time to research which tools are available . Furthermore, it is likely that they are using multiple point systems instead of a platform solution. An operations and marketing specialist from an SMB says, "Our four different data systems do not gel well. It is a pain to gather data points from all these systems" (Su). The use of so many point systems not only drives up costs, but makes integration and management more difficult.

THE IMPACT

There are two major impacts of SMBs struggling to handle their data. The first is that these businesses are at a prime spot for a data breach, as they likely do not have efficient security measures in place to protect their data. In fact, "75% of SMBs could not continue operating if they were hit with ransomware" (Rahmonbek). This is a case by case impact, but could have powerful negative consequences.

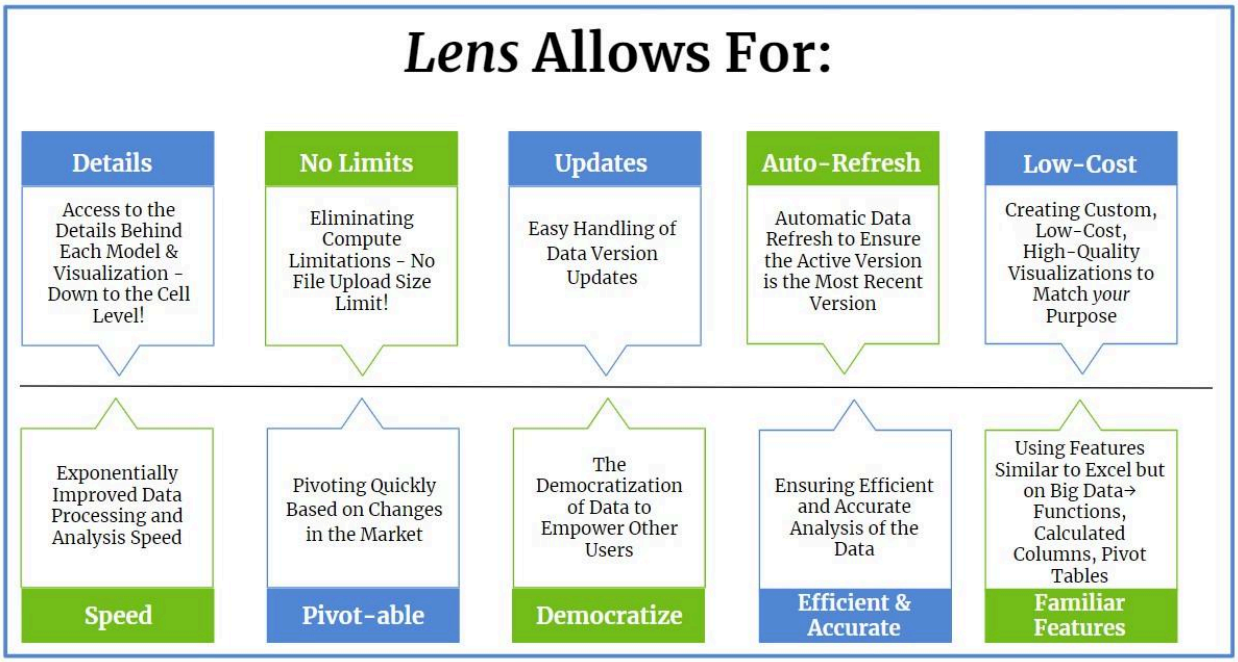
The second major impact is that SMBs are losing out on potential new clients and increased profitability which could be earned by working with their data. By struggling to handle their data, they are missing out on those real-time insights, potential cost cuts, better



marketing results, better customer experience and a competitive edge (compared to the many SMBs not utilizing data). “Data-driven organizations are 23 times more likely to acquire new customers, six times as likely to retain them and 19 times more likely to be profitable” (Meyer). If SMBs are not able to figure out how to handle their data quickly, they are going to miss out on the ‘Fourth Industrial Revolution’ - the digital one (McKinsey & Company).

The Solution : C9 *Lens*

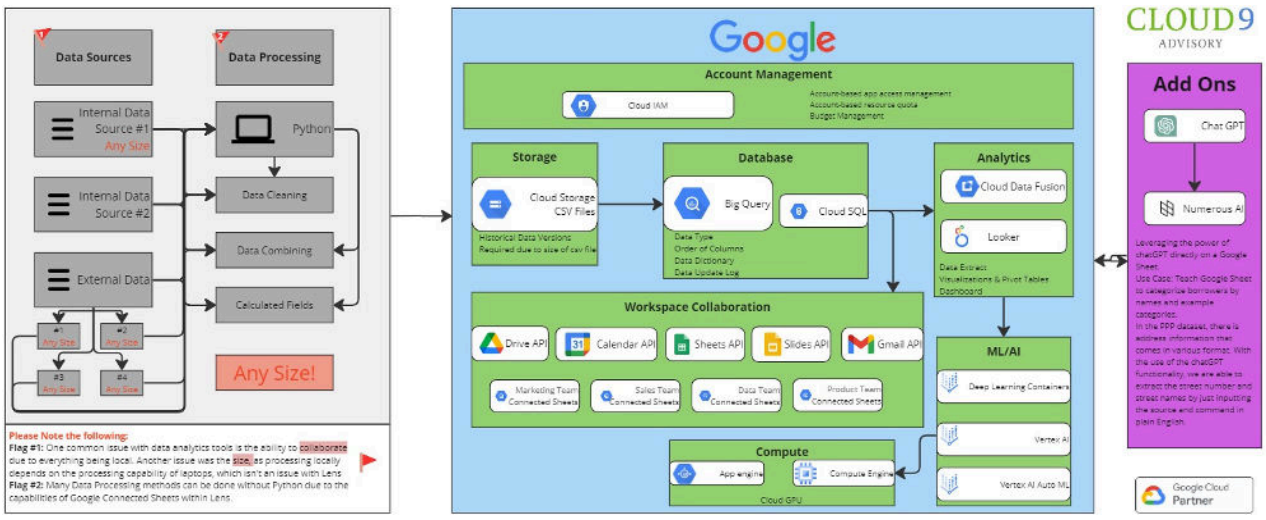
C9 *Lens* transforms data analytics into a simple, familiar interface that is easy to use for anyone; *Lens* is cloud based which makes it big-data friendly, unlike many traditional tools. *Lens* encompasses Cloud9's robust Google partnership by starting with the powerful base of BigQuery (Google's data warehouse), then linking Connected Sheets (a tool with a layout similar to Excel without file size restrictions) as the data analytics tool, and finally, adding any other synergistic apps that might enhance the experience; this includes basic to advanced Artificial Intelligence & machine learning capabilities. *Lens* thrives on Google Workspace communication and organization support apps like Drive, Meet, and Chat to allow for ease of collaboration on big data projects.



LENS ARCHITECTURE

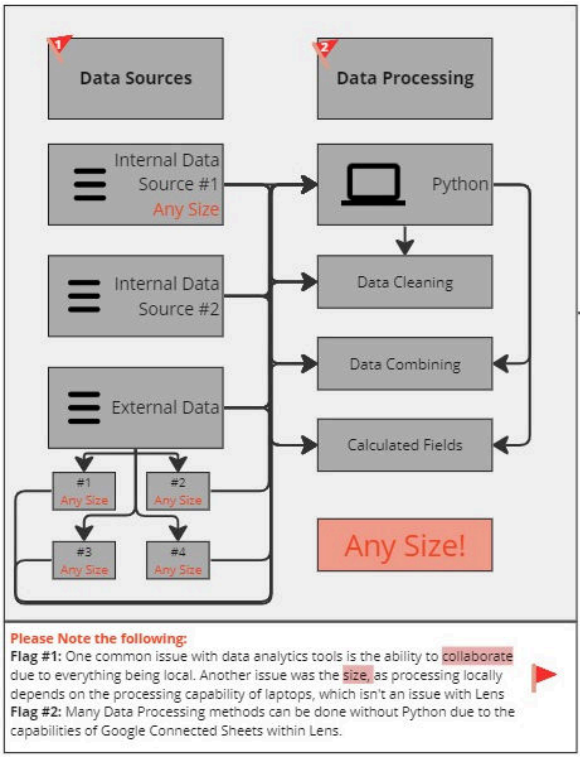
The *Lens* architecture details the workflow of using *Lens*, and includes every aspect of the platform. Users do not need to use every individual tool within *Lens*, but it is important to note that all tools are available if a user wants to expand their individual *Lens* toolkit. The architecture is broken down into 3 overarching components: (1) Data Input, (2) Platform Tools and (3) Additional Add-Ons. The Data Input component details the process of inputting data sources and a potential route of data processing. The Platform Tools component details all tools offered for a variety of purposes and also includes account management for internal security measures. The Additional Add-Ons component incorporates features which can be added-on to the tools as requested to enhance results. See below for an overall view of the entire, detailed *Lens* architecture.

LENS ARCHITECTURE



Component #1 (Data Input):

Lens can handle as many input data sources as needed, and these files can be of any size. In the architecture, an example is shown of two internal data sources and four external data sources being used. For those with Python experience, Python can be used for data cleaning, data combining and creating calculated fields. But these steps can also be done with other *Lens* tools so that no coding is required. Note that a common issue with data analytics tools is the limited ability to collaborate due to keeping files local.

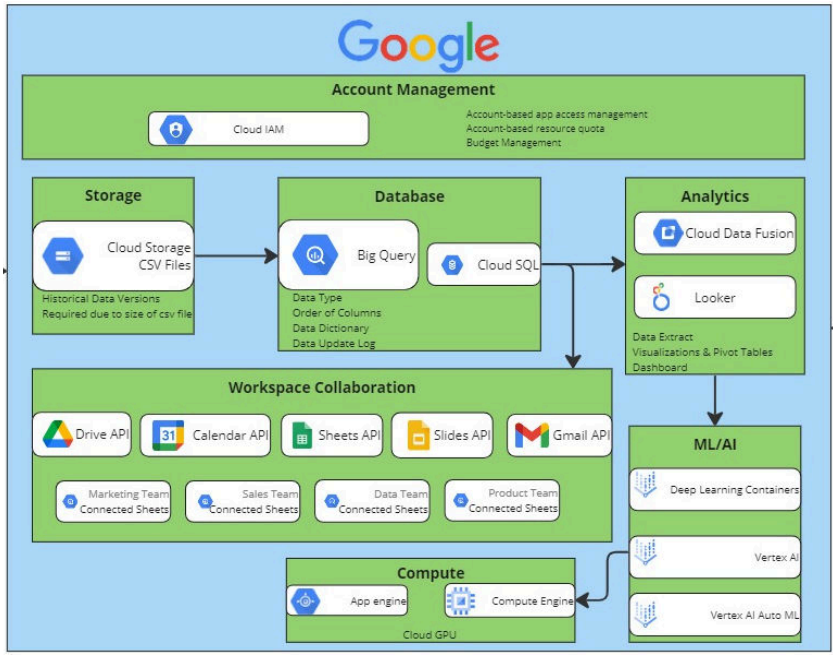


Another Issue with traditional tools is processing capability with large files; this is not an issue for *Lens*, as it can handle billions of cells of data.

Component #2 (Platform Tools):

Lens begins with data storage, utilizing Google's cloud storage, which contains the CSV files of each inputted data source. The data is then connected to Google's Data Warehouse, BigQuery. This allows the data to be linked to all of the other apps. Cloud SQL is also an option for this step. Google's Workspace Collaboration tools such as Drive, Calendar, Sheets, Slides, and Gmail keep communication between team members easy, while also allowing for increased data visibility. Connected Sheets is what *Lens* uses as a Data Visualization tool. The BigQuery data is visualized here in an

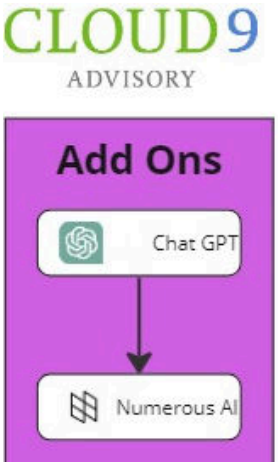
similar-to-Excel format, allowing users to create calculated columns, pivot tables and charts on the entire (even for billion-cell) dataset, not just a subset. Multiple connected sheets can be made, for example one for the marketing team, sales team, data team and product team. Additionally, tools such as Cloud Data Fusion and Looker are also available to fulfill any extra data extract and dashboarding needs. Furthermore, new Artificial Intelligence and Machine Learning tools are being added to *Lens*, such as Deep Learning Containers, Vertex *AI* and AutoML. The cloud GPU (compute engine & app engine) power the tools from the back end. Lastly, Cloud IAM is used to assign roles and permissions to employees, ensuring security standards are met. This is done by account based app access management, and allows for account based resource quotas and budget management.



Component #3 (Additional Add-Ons):

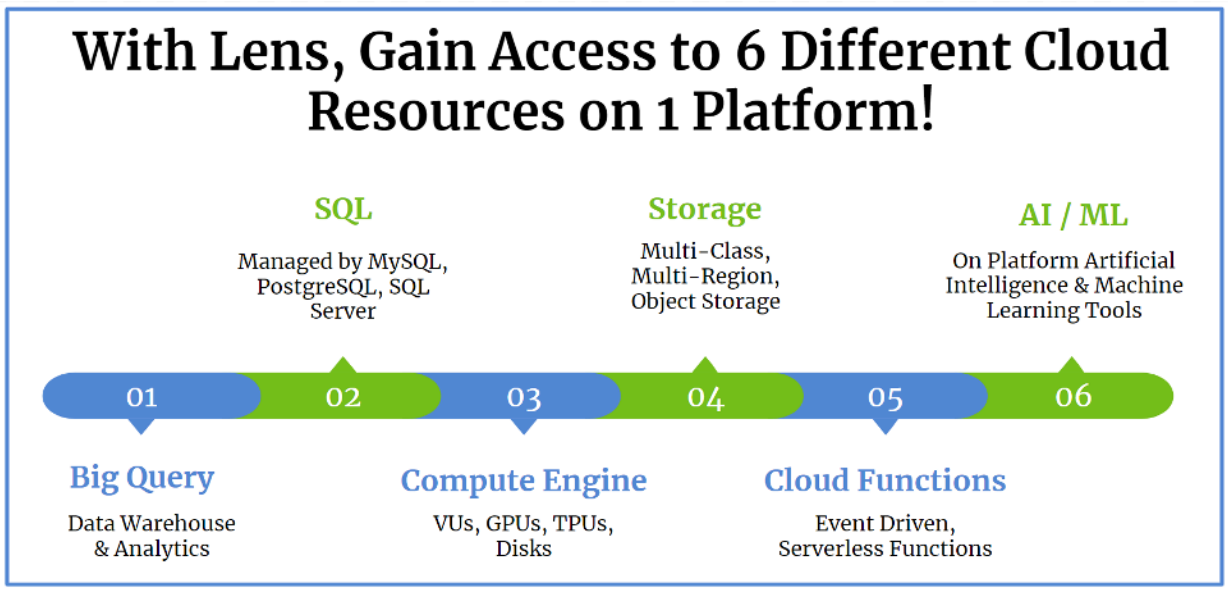
Lens' add-on component of the architecture is a place where small apps can be incorporated into *Lens*. New add-ons will be added to the architecture over time as minor apps which can make any step of the data analysis process even simpler for *Lens*

users. The current add-on available is Numerous.AI, which leverages the power of Chat GPT within Google Sheets. This add-on has various AI-performed functions, such as extracting pieces of data within a column into a new column, re-formatting columns, and generating and filling new columns with classification, sentiment, among other things. The tool allows users to simply call upon the AI and type a command in plain English and the column will become filled.



LENS MAKES IT EASY

By using *Lens*, anyone can do big data analytics. With *Lens*, users gain access to six different cloud resources on one platform, allowing users to complete the entire data analytics process with *Lens* (data storage, ETL, modeling, dashboarding). This eliminates the need for manually integrating point solutions with traditional tools.



Lens is perfect for those already familiar with Google resources or already use Gmail at work. *Lens* is a unique analytics platform that is easy to adopt and scale due to the user-friendly applications behind the scenes that transform into a simple interface for valuable business insights. *Lens* is so user-friendly that individuals familiar with Google Sheets or Excel can easily adopt it with little difficulty. "83% of people are proficient in Excel", making *Lens* the tool which best fits in with the current skills of business employees (Richardson). Those without an analytics or coding background should not feel overwhelmed with *Lens*, as coding skills are not a requirement to use the tool. However, those with coding proficiency have opportunities to leverage their skills in *Lens* by utilizing BigQuery Studio and Apps Script; these are two coding tools that can provide powerful insights.

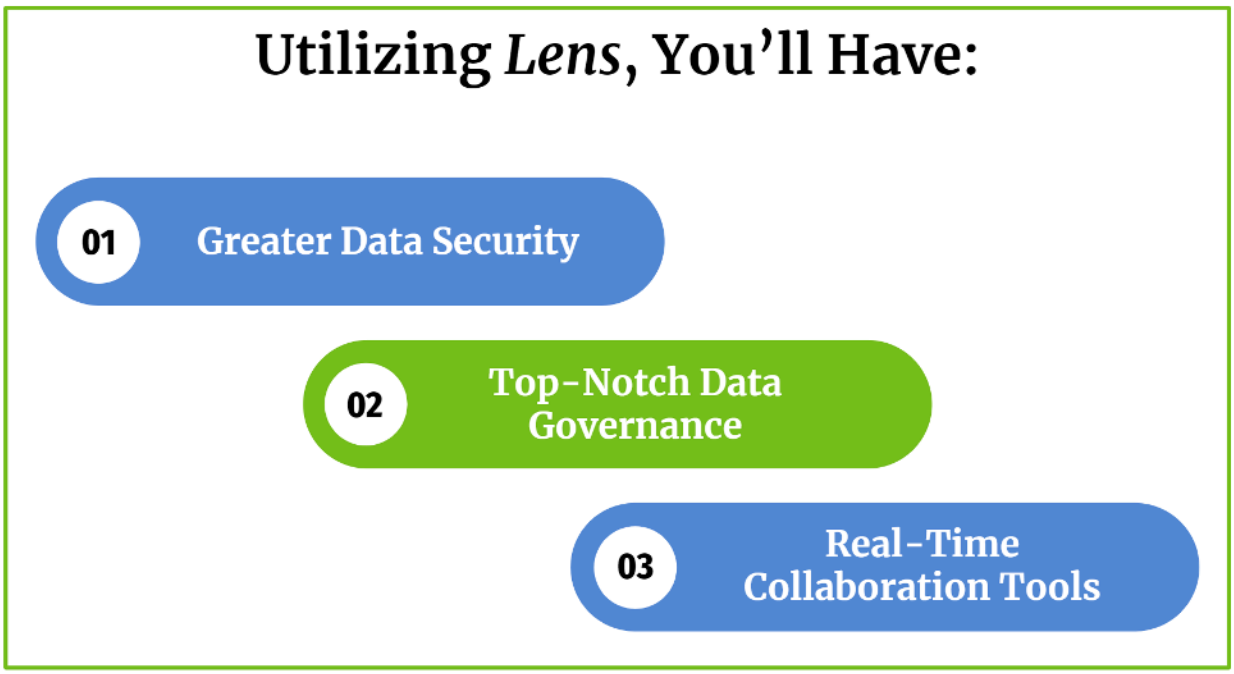
Lens gives everyday business users the ability to uncover valuable insights that drive profitable decision making. *Lens* has the ability to see the details within the data like no other big data platform. The ability to drill down and comment in specific cells directly in the *Lens* dashboards or within Google Chat improves the communication experience by cutting down on bulky emails and leaving a clear trail of evidence for any time review.

"[With *Lens*] We're not really pulling the data into the spreadsheet, rather it lives in the database where it belongs.
The ability to go and so easily analyze and visualize the data is really powerful."

Dr. Alfonso Berumen
Practitioner of Decision Sciences, Graziadio Business School

WHY GOOGLE PRODUCTS

Cloud9 chose to partner with Google for the digital branch of the company because Google products ensure data security, data governance, and real-time collaboration. *Lens* utilizes these Google big data products, many of which are also used by big companies, proving them to be both just as valid and usable as other popular tools. In fact Google Cloud Platform (GCP) is within the top 25 skills on data-related job postings; GCP and BigQuery chart 7th and 8th respectively (Barousse). Google products are even used by widely known brands such as Wayfair, PWC, Dow Jones, Verizon, LinkedIn, Target, Paypal, Deloitte, BMW, AT&T, Dominos, and Spotify, among many others.



WHY CLOUD-BASED IS WORTH IT

(1) GAIN FLEXIBILITY

The cloud works on pay-as-you-go pricing; providing users with the ability to crank up or down their use of resources as needed. The cloud also comes with the flexibility of being able to increase the tech capabilities by user demand; meaning it can handle a dramatic unprecedented increase in users.

(2) REDUCE COSTS & COMPLEXITY

Unlike traditional IT approaches, there is no slow scaling up expense. Using the cloud also eliminates up front costs of hardware installation, and IT specialists for set up and management.

(3) RELIABILITY, SECURITY & COMPLIANCE

Data is much more secure on the cloud than on a local device or hard drive (devices such as these are easy to steal). The cloud is able to deliver data backup unlike traditional tools, which helps much better prepare in the case of disaster recovery.

(4) PORTABILITY

Lens customizes solutions for users in any business to be mere clicks away from a whole new statistical analysis. It's so portable in fact, that most of *Lens* can be accessed on any device from anywhere.

Why C9 *Lens* vs. Google Products In General

Wondering why it's best to partner with Cloud9 and use *Lens* instead of just buying straight from Google? Cloud9 has already done the work to understand all of the complex Google documentation (which, by the way, are *not* easy to understand, even with a data background) encompassing each Google product within *Lens*. The C9 digital team has invested **thousands of hours** reading documentation, testing and building *Lens*, and creating user guides. Cloud9's thorough onboarding process will guide clients through every step of the way, and provide easy-to-understand user guides for each *Lens* tool. *Lens* user guides may be in the form of either a document or slideshow, and will always contain detailed step-by-step instructions, screenshots, and links. This can be especially helpful for understanding IAM roles and permissions, working with AI & ML, and just generally learning more about how to use the tools within *Lens*. Additionally, since Cloud9 is a Google Partner, C9 is able to access additional resources that are only accessible through partner status; which furthermore allows C9 to give access to our clients to earn Micro-Credentials and Google Certifications. Lastly, Google has approved Lens as a Qualified Solution, providing extra reassurance that Lens is a powerful analytics tool reviewed by the best.

Cloud9 can connect your business to Lens in a variety of ways ranging from a blank slate with incredibly powerful database capabilities to a full scope implementation complete with information transfer from new company to C9, base report, visualizations, and dashboard creations, training, and levels of ongoing support - all supported by our long-standing partnership with Google.

Contact Us - Business prices to come soon!

Conclusion:

Being a small company themselves, Cloud9 knows how hard it can be to do data analysis without a full sized data team on-hand. C9 uses *Lens* themselves as their main data storage tool, data analysis tool, and data visualization tool. C9 created *Lens* with SMB's in mind, bringing an up-to-date yet easy to manage tool to the right customer. *Lens* is unique in the way that it always has more to offer. Business professionals without a coding background can use all of *Lens* at its base layer; but students in the data field can use add-ons and additional ML and AI tools to elevate *Lens* to an even more powerful platform for their data projects.

Resources:

Barousse, Luke. "Top Skills & Pay of Data Nerds." *Top Skills & Pay of Data Nerds*, datanerd.tech/. Accessed 13 Feb. 2024.

McKinsey & Company. "What Is Industry 4.0 and the Fourth Industrial Revolution?" *McKinsey & Company*, 17 Aug. 2022.

Meyer, Robyn. "Four Ways SMBs Can Harness the Power of Data, without a Data Scientist." *InsideBIGDATA*, 28 Nov. 2023.

Rahmonbek, Komron. "35 Alarming Small Business Cybersecurity Statistics in 2022 | StrongDM." *Discover.strongdm.com*, 22 Feb. 2023.

Su, Bill. "5 Key Factors Holding Small Businesses Back from Joining the 'Data Revolution.'" *Medium*, Analytics for Humans, 8 June 2018.

Appendix:

FEATURES & FUNCTIONS

DETAILS - *Lens* allows users to to see the details of each individual record. A summary of 500 records is shown on-screen within Connected Sheets at all times, but the details of each record is accessible through a variety of ways (filtering, pivot tables, extracts).

SPEED - *Lens* not only handles billions of cells of data, but processes them at top-notch speed so that analysis is quick and easy.

NO LIMITS - *Lens* can handle datasets of any size due to its cloud-based technology, eliminating compute limitations commonly encountered when analyzing large files with traditional tools.

PIVOT-ABLE - *Lens* can be integrated with any Google tool, allowing users to add-on new Google tools to their existing *Lens* project as their company grows.

UPDATES - *Lens* can easily handle data updates and even additions of new datasets.

DEMOCRATIZE - *Lens* makes data analysis easy; even those without any coding or data background have the power of big data analytics at their fingertips.

AUTO-REFRESH - *Lens* ensures users are working with real-time, trusted versions of their data. The live connection between *Lens'* data visualization tool and data

warehouse tool means the data is easy to refresh, supporting the entire business ecosystem.

EFFICIENT & ACCURATE - *Lens* lets users examine the details within a data set, seeing specific records by eye can be both reassuring and help maintain accuracy for business owners. *Lens* performs pivot tables and charts on the entire dataset, not just a subset to provide full results and not subset based estimations.

LOW-COST - *Lens* offers a variety of tools all under one price, saving money as users are not paying multiple companies for access to a singular tool.

FAMILIAR FEATURES - *Lens* has a familiar interface; the *Lens* Dashboarding Tool looks nearly identical to Excel, but is able to handle much larger datasets.