

Successful deployment of interactive voice response (IVR) solutions is integral to delivering a stellar customer experience. Ensuring that proper analytics are in place for your IVR technology is going to be crucial if you want a highly-effective big data strategy.

Big data provides insights as they take place in real time as well as over time. Cost-cutting measures may seem tempting if your IVR solution is producing simple logs, but ignoring the value of real-time analytics is a major underinvestment in your big data strategy. Without analytics, you have no sure way of knowing your ROI on your IVR investment or the ability to properly assess gaps in the customer experience. Given that customer experience is going to be the primary determinant in how businesses compete in the 2020s, you can't afford to ignore the power of analytics. Since telephony isn't going anywhere any time soon, it's crucial to have the ability to analyze voice responses and patterns in a quick and seamless fashion.

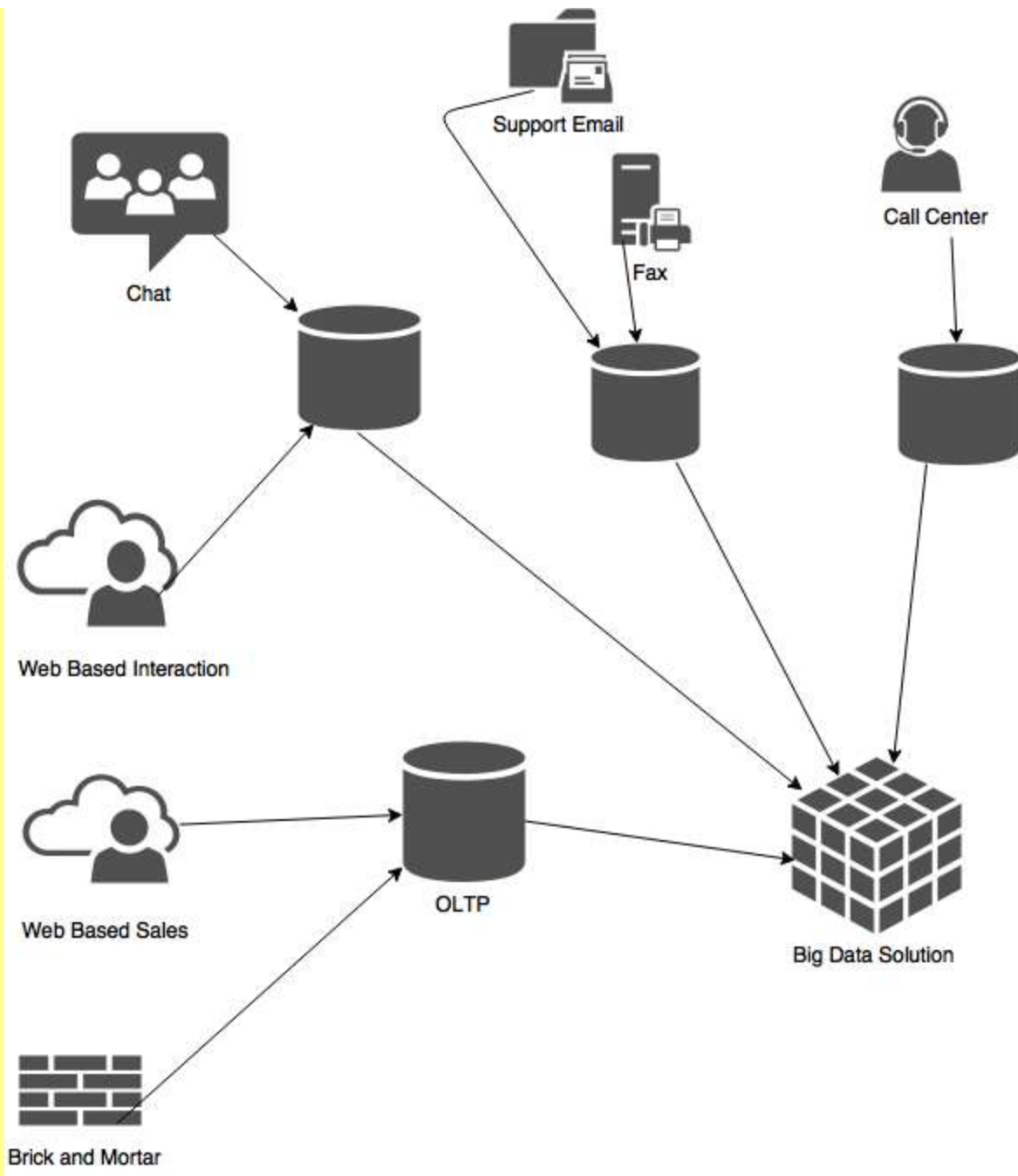
Understanding Big Data

The more data you have on hand, the more formidable a competitor you become. In the age of big data, it's not enough to simply collect customer data for marketing purposes. Salesforce found that [64% of customers](#) expect companies to interact with them without delays which while it seems unrealistic, is important to bear in mind since 70% of customers also say that today's technology makes it easier than ever to go to a competitor. Thus, having as much data on the customer experience that you can feasibly gather will be crucial to your organization's long-term survival.

There are five chief measures of big data that provide the insights needed to guide decision-making and determining if there are problems that need to be solved. They are typically called the Five V's:

- Volume
- Velocity
- Variety
- Veracity
- Value

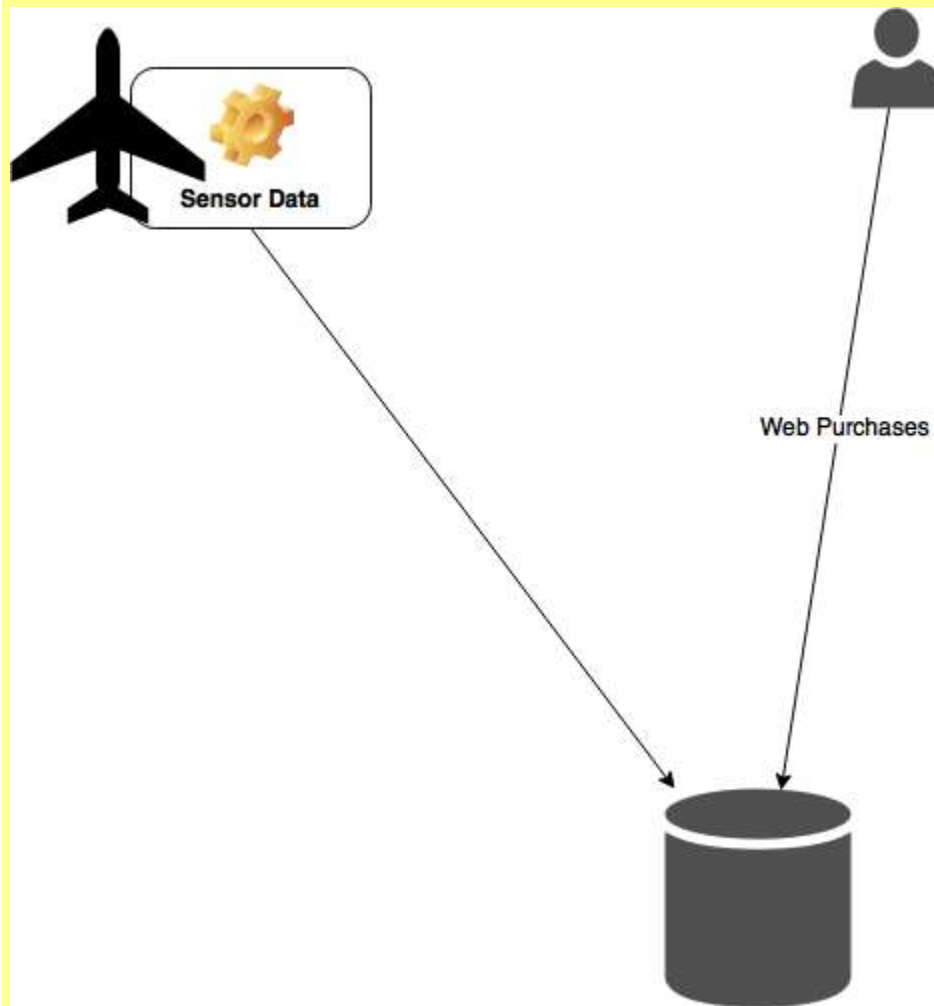
Volume refers to the aggregate data from all sources being generated in a certain timeframe. Here are some of the sources to consider when accounting for data that lends insights on the customer experience:



IVR analytics would obviously come from the call center data and manual solutions (like parsing call logs) can end up creating unnecessary work, especially if the volume keeps increasing.

Of course, the call center isn't the only place data comes from. The variety is also present in the other channels where your organization has presence including email and other online contact centers, social media, reviews, and internal data collection. IVR solutions are the most critical for call centers and internal customer service departments but can also be implemented in other areas to provide more insights on the customer experience.

As for velocity, this refers to how fast the data is coming in. The size of the organization and call volume are primarily what dictates this, but the nature of the products and services being sold, and where and how they are sold, also factors in.



After accounting for volume, variety, and velocity, veracity comes in which pertains to the quality of the data. Data quality mostly depends on how it's collected. For instance, social media scrapes aren't as high-quality as call records and customer service web forms that have fields which need to be validated because the former can't be easily traced to an existing customer. Knowing the customer's native language, location, and other data points can provide additional insights on closing customer experience gaps.

Value is a more nebulous aspect of big data in that it highly depends on the organization's business model, their goals, and how their big data strategy will achieve those goals. For example, a car dealership has several touchpoints in the customer journey. People like to browse dealership blogs to learn more about car models before making a decision, but someone who signs up for the email list is more serious about buying a car soon. Blog post impressions will be of less value than email signups and conversions.

Depending on the size of your organization, products and services offered, and business model in place, IVR can play a major role when it comes to veracity and value even if there's a lot of variety. If there is significant call volume and/or call center data is of higher value than other data collected such as web and social data, a robust IVR analytics solution is more likely to be an integral investment in ensuring the efficacy of your big data strategy.

Why Do IVR Analytics Get Neglected in Big Data Strategies?

The initial concern that halts customer service departments from wanting to build on their IVR solution with analytics is that it's seen as an unnecessary add-on. The IVR solution by itself needs to be custom designed and built with high proprietary software and deployment costs. Deployment and testing that is customized to the organization's unique needs based on call volume, caller demographics, and the nature of the products and services needs to ensure that customers won't get frustrated while customer service resources don't get strained. Adding IVR "reporting" or analytics to the package often puts the buyer over budget and it isn't seen as necessary.

This is often a mistake because analytics are usually the first thing that the buyer realizes they need post deployment. How will they know if the IVR solution is producing a return on the investment and generating quality data and insights? Where are customers exhibiting frustration or deciding when to hang up? IVR analytics can easily answer these burning questions and provide actionable proof of the solution's performance.

Most of all, when it comes to value and veracity of your call center data, IVR analytics are going to fill in major gaps that were being overlooked. Those analytics can tell you everything from which menus need to be changed to the DNIs being strained from overuse, linguistic and dialectical differences, and so much more.

The Consequences of Underinvestment in IVR Analytics

Many organizations will try to find an IVR analytics solution to cut costs. Simply parsing log files can seem tempting to save money on initial deployment, without warning for how arduous the task is which actually costs money by constraining your human resources.

Log-based solutions are the first attempt to do so since you're aware that log files have most of the information that you need to generate reports. This leads to the following questions:

- Where are the logs?
- How do we copy them on a regular basis?
- How do we keep the log parser from processing duplicates?
- What about permissions to copy the files?
- Firewall access?

There are others, but these are the most crucial points which determine from the outset whether you're better off automating this task with an analytics add-on or trying to build reports in-house (unless call volume is extremely low, automation is the option that saves more time and human hours.)

After gathering all of the log files, it makes sense to load them into a database and form a reporting schema. But while this decision is often made on the premise of keeping IVR deployment costs down, it's also made with one major design flaw: all of the different use cases for your database full of reports.

Going back to “the five V's”, volume drives your need for how robust the database it. Velocity and variety might not have been a problem, but the database may be missing the data that you want and need on account of value and veracity. This makes common solutions like programs written to pull data from the database and exported to Excel sheets unwieldy and time-consuming to work with because the input parser, database, and post-processing code all need to be changed to export the correct data sets. This process continues until someone in the department realizes that this approach is now getting too costly and time-consuming. Upon realizing that the data in each log file is too scattered, efforts are usually made to create a singular record that has all of the valuable call data in it. Suddenly, the typical upfront investment of \$50,000 doesn't sound too egregious given that the database likely required additional team sources and having to get the parser rewritten and entire web-based interface built. None of these things come without literal costs, be it through hiring or opportunity costs for existing team members.

This is especially true if the organization experiences a surge in sales and recognition, hitting a very high call volume exceeding 50,000 calls per day and constantly rising. The database no longer can handle both the volume and velocity at which call data is being generated now as it wasn't for designed for it. Most of all, fast real-time reporting is definitely not possible which causes the massive success your organization just experienced to be short-lived when the customer experience suffers and valuable insights are missed. To avoid this, organizations start investing in the robust enterprise-grade solutions needed all along: message queues for real-time feeds and several multicore machines to run them all, a smartly-designed database built from the ground up, and an efficient tool to build and deploy reports.

Building, testing and scaling these take a significant investment that could've been scaled and fine-tuned over time simply by paying upfront for IVR analytics. When making this investment while still forming your big data strategy, it results in streamlined and cost-efficient IVR solution that is custom-designed. The analytics are then deployed in the testing process and this involves installing pre-built binaries for Call Data Record (CDR) processing, a database schema and the reporting front end. Throughout the testing process, you will get real-time reports on the overall progress and evaluation of the IVR's performance. At the same time, you will develop an understanding of the capabilities of your reporting system.

When it's time for the IVR to go live, the same components are deployed and you can immediately see real live real-time reports once callers start using it.

Going the pre-built route that builds on the analytics solution incrementally saves a lot of time, money, and frustration over time that offers basic but insightful reporting in the first few months of use. The ability to build custom reports and extend schemas is then doable for another price.

Nevertheless, making the investment upfront causes fewer bottlenecks and less strain on staff in addition to a more pleasant customer experience.

Best Practices for IVR Analytics

Having the means to decode IVR analytics is only one piece of the puzzle when it comes to gathering insights intended to improve the customer experience and address system gaps and design flaws. Every organization has different needs and criteria when it comes to the The Five V's of big data and how IVR data ties in with meeting their objectives. These best practices for IVR data analytics, and answers to the common questions about effectively utilizing these analytics, can help you derive the most value from your IVR solution post-implementation.

When developing a schema around IVR analytics, the following concepts are central to it:

- **Raw data collection frequency:** how often you pull IVR data for processing. Batch mode is a common solution that pulls log files once per day, for instance. Direct feeds are data consumed immediately upon call completion. The ideal IVR analytics solutions would allow for both full and micro batch mode access. The raw data's age impacts how it can be reported on.
- **Raw data aggregation frequency:** the process where the raw data is processed and mathematically summarized according to rules the organization defines. Data can be summed or be subject to statistical calculations to be considered aggregated. The frequency of aggregation affects when you can report on the data. If data is aggregated just once a day but is collected by the hour, reports will be 24 hours stale by the time you are looking at the summarized data.
- **Data aggregation fidelity:** the minimum time period for which data is aggregated and stored. If you summarize total daily calls, then the report will only display call volume by the day opposed to a more granular view of calls by the hour (and subsequent reports on calls per hour.) The ideal analytics solution would have data stored and displayed up to the hour to allow for the more practical amount of freedom in generating reports.

Bearing these concepts in mind, this then leads to the most common IVR analytics questions and answers.

1. How often should raw data be collected?

Hourly micro-batching is usually the best practice because it allows you to view report data that is more than one hour out of date, giving users the most flexibility.

2. On what time period should data be aggregated?

Daily roll-ups are more efficient than weekly roll-ups because they lend teams more powerful insights on the days that have heaviest call volume and/or specific reasons for calling. This grants management the ability to allocate customer service resources more effectively: if a call center manager sees more calls on Wednesday than any other day of the week, they need to know the daily call trends rather than an aggregate weekly roll-up.

Daily roll-ups show data-driven caller behaviors that would tell the manager what time of day on Wednesdays more agents should be available to reduce wait times and hang-up rates.

3. How will we know that we need to take action?

Given that every organization has different needs and goals, this common question is too broad to have a definitive answer. However, having a robust set of IVR analytics can help solve problems by providing data-driven answers.

Having rich and thorough data reports to work with can fuel smart decision-making that improves both the bottom line and the efficacy of the IVR solution. For example, a call center manager may have concerns that the IVR is broken or not working as intended if callers are not being routed to the right type of agent which is causing problems with scheduling agents as well as increasing attrition rates and making for a poor customer experience.

With the insights provided by the IVR analytics, turn detail reports can reveal the percentage of callers reaching the appropriate agents. The values matched with each caller would show where the bottleneck is taking place in the IVR solution and what needs to be changed so calls are being correctly routed and in a timely fashion. This results in problem with an actionable solution: to have the failed calls transcribed and analyzed, such as determining that customers typically say they don't have the part or model number that agents are requesting so agents can be given more resources and automated help solutions like FAQs and chatbots made more helpful and insightful for customers to find this information prior to calling.

All of this is possible with the graphs generated by the IVR solution's analytics module, with comparative results before and after changes are made to the IVR system for proof of whether this course of action was effective or not. This makes the analytics solution an integral part of the IVR platform and provides you with actionable information to maximize your ROI as it relates to IVR performance.

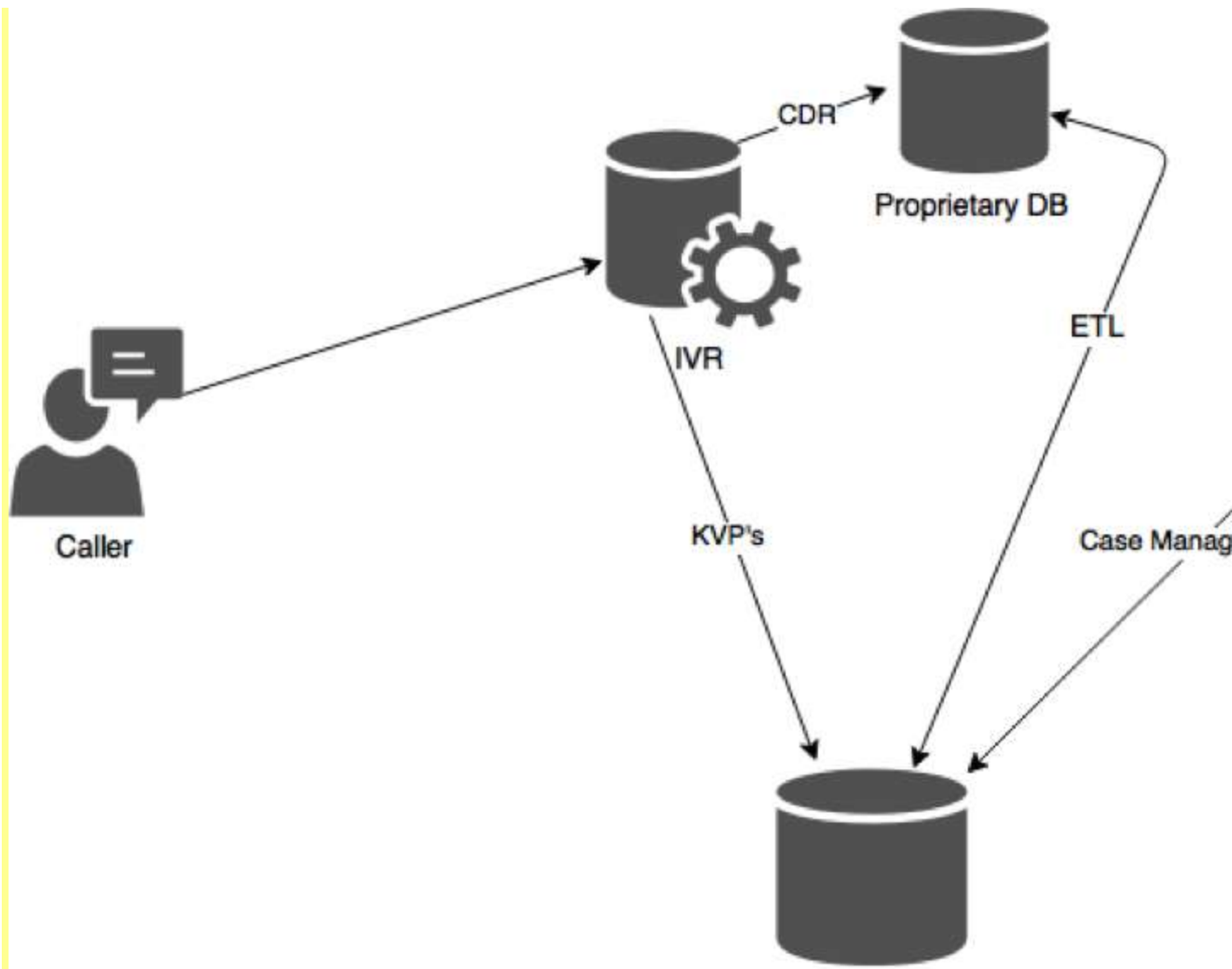
Facing the Big Data Challenge with IVR Analytics

The importance of IVR analytics to overall big data strategy has been established. The Five V's are what shapes the strategy for every organization and its particular needs and goals.

In executing the IVR solution and its analytics module as part of your big data strategy, it seems like a no-brainer to just make it happen. But how? Taking the call data and feeding it into your data stream, which then gets processed and used for subsequent analytics, seems like the obvious course of action. However, there are two major problems you encounter when attempting to do so: sparse data and access to the raw Call Data Record (CDR). It is common to see the data sent from the IVR as Key-Value-Pairs (KVP's). For example:

ANI=7022317656, DNIS=23456,breadcrumbs=authentication,menu1,product_choice_menu,exit

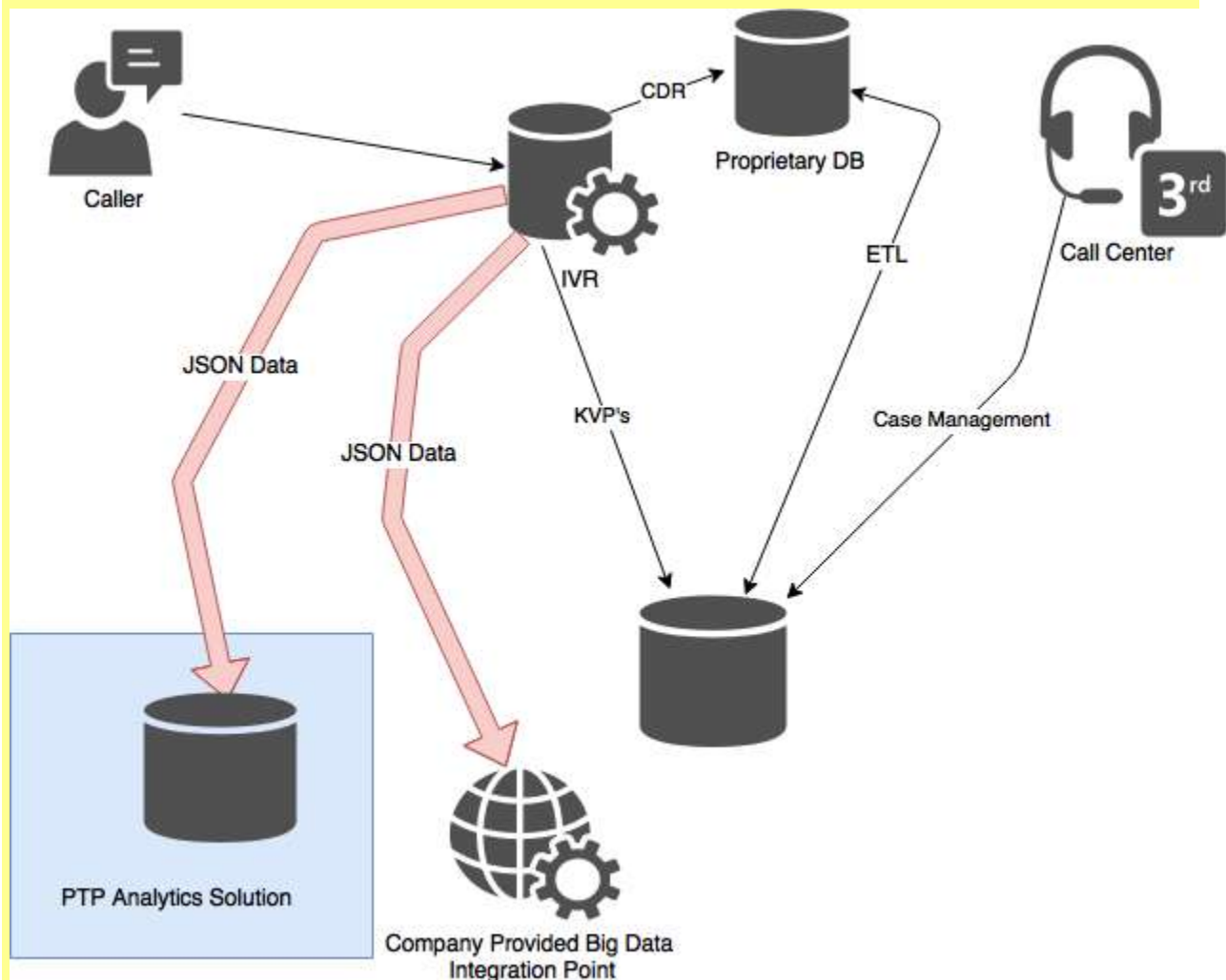
This data is sparse because it's difficult to manage complex data with KVP's. The figure below graphically depicts the typical data flow. This sparse data is difficult to interpret (affects veracity and value). How many retries were there? What happened to cause the caller to exit so quickly? A second issue with KVP's is that they are flat. It is difficult to put together a meaningful hierarchical or relational structure.



The CDR often has detailed information in it and the IVR vendor usually provides one that they will write to a proprietary database. The main issue this raises is when you need to train staff or bring on new hires to learn the proprietary schema-- that is, if the vendor even grants you access to it. Once the schema is understood and SQL queries can be written, it then can create new data which augments the big data solution already in place.

But then this causes issues when you need CDRs to contain additional information: you have to open a vendor ticket and hope in vain that they implement your request in an update, which isn't a very secure way to achieve your organizational objectives and provide a smooth user experience for both employees and customers.

By having a custom-built IVR analytics solution deployed at the start of your big data strategy rather than post-implementation, CDRs can be as detailed as you need them to be without needing to worry about vendors granting your team access to schemas.



With PTP's IVR analytics modules, the data can be optionally fed into our IVR Analytics tool or sent to a big data integration point of your choice. The analytics system allows you to see how your IVR is performing and your integration point allows you to customize the ETL layer so you can integrate into existing RDBMS, NoSQL or other big data solutions.

With big data driving and customer experience equally driving the present and future of business, IVR analytics are investment that your organization can't afford to ignore. PTP can assist you with integrating these solutions whether you are in the first stages of your big data strategy formation or you are well into execution and deployment. Our [IVR solution](#) is poised to enable you to easily integrate into your data architecture.