



A Technical Use Case with
CTSI-Global Business Intelligence

BUILDING SUCCESSFUL EMBEDDED ANALYTICS AT SCALE



A small analytics team at the global supply-chain giant CTSI-Global builds and provides embedded analytics to over 40% of their clients—**that's thousands of users across customers over many countries , accessing datasets that reach billions of records** (and growing), all while handling custom requirements per client and running on minimal hardware resources. CTSI-Global's industry-leading Business Intelligence solution enables clients to consume insights from out-of-the-box analytics and also empowers end-users to build their own metrics on their centralized data. It's clearly working, with every new client at CTSI-Global subscribing to their embedded analytics offering.

This picture was starkly different, before CTSI-Global had a modern way to provide interactive visualizations that enabled deep views of the millions of freight invoices generated each day. In 2015, CTSI-Global took the first steps towards providing insights on the centralized shipping data that they collect using modern business intelligence (BI) technologies and chose Sisense to support their goal of embedding analytics into their client-facing SaaS applications.

CTSI-Global is the world's largest privately held freight bill audit and payment services provider in the world and a leading global provider of BI, transportation management systems (TMS), and supply chain consulting services. They offer white-labeled Sisense embedded in their SaaS applications as their analytics offering.

To read more about CTSI-Global's modern BI launch story, [click here](#).

From a modest beginning in 2015, CTSI-Global's analytics solution has grown in leaps and bounds to a be an industry BI leader in the logistics space.

Below are key best practices followed at CTSI-Global that ensured their success:

Building Through Agile Growth

A key component to CTSI-Global's success was agile growth -- iteration and expansion. **They went to market quickly (in just two months)** and continued to develop, refine, and improve their offering over time as they incorporated learnings from the field.

Adaptive Analytics for Rapid Growth

Out-of-the-box, CTSI-Global's analytics solution comes with a set of pre-built apps supporting end-user ad-hoc data exploration leveraging decades of experience in the industry and the availability of quality data from multiple systems. Each client has data stored in different databases, with a 10-20% variation between each client and custom data/fields and custom requirements.

CTSI-Global utilizes Sisense's high-performance agile logical data mashup layer to **mash up customer data from single-tenant MSSQL databases, a multi-tenant database, and various other data sources, into individual client ElastiCubes (data models)**. Each client has a separate set of dashboards while the administration is common across the assets. They chose a partially single-tenant approach to deployment. The flexibility of Sisense's unique logical layer enabled CTSI-Global to adapt to new requirements and deploy custom changes quickly through an iterative development process.

CTSI-Global starts with a base Data Model blueprint that works for all clients. When onboarding each new client, an automated process using the Sisense PSM Shell commands connects to new data sources and makes necessary custom changes to the base data model. For example, the single-tenant, client specific datasource contains tables with a common set of fields and custom fields specific to that client. Once the Sisense Data Model is connected to the right datasource, a simple refresh on the base model will bring in any custom fields from that datasource. On average, about 80-90% of the data structure is similar for every client but the rest is unique to individual clients.



Sisense Tip: Sisense enables fully multi-tenant data models using row-level security. Each client will only get to see their slice of the data.

Manage Scale with Automation

As a deployment scales, automating repeated, manual processes is vital. At CTSI-Global, where almost every new client signs on for their analytics solution, their analytics team automated processes using the Sisense APIs:

- **Data Model Customization and Deployment:** Programmatically manipulate Data Models and deploy via [Sisense PSM Shell commands](#).
- **Integrate Users and Security:** User integrations are handled using SSO and [Sisense REST APIs](#) endpoints to add users and [set up row-level security](#).
- **Deploy Dashboards:** Sisense REST APIs endpoints under API v1.0 POST/dashboards can be utilized to export dashboards, change the underlying data source to connect to the correct data source, import dashboards to create a new set, and share the dashboards to the right users/groups. Any customizations or new functionality/visualizations added via the [Javascript APIs](#) will be incorporated into the dashboard exports as well.
- **Schedule Data Loads:** Data Loads can be scheduled using the Sisense UI. However, if there are specific requirements for timing and the order of the builds, data loads can be kicked off using the PSM shell commands. A simple batch script can kick off builds at a given interval.
- **Migration between Environments:** Sisense's [Copy to Server](#) functionality along with Data Model automation process can be used to easily migrate assets from one environment to another.
- **Deploy at Scale with Integrated Installation:** Utilize Sisense silent installers to install Sisense along with the parent application installation automatically.

Architecture to Scale

CTSI-Global handles data sizes from the **millions to billions of records for thousands of users across customers over many countries** and growing. Instead of investing in heavy resources right off the bat, CTSI-Global found it beneficial to scale as needed by tracking and monitoring resource utilization and usage analytics. With Sisense's modularity, CTSI-Global was able to split the Sisense architecture into the data-loading layer and the query nodes and only multiply the data loading nodes based on their unique and specific needs. This, in combination with Sisense's In-Chip® Performance Accelerator, smart caching of queries, and high-performance columnar database enabled CTSI-Global to support growing customer needs seamlessly.



Sisense Tip: Utilize Sisense's [Monitoring](#) tools and [Usage Analytics](#) to track system resources, query times, and user behavior across apps. For disaster recovery and very high-usage and Big Data, Sisense can also be configured in a [High-Availability configuration](#) using a simple installation wizard.

Empowering Clients to do More on Their Own

The less friction there is—in technology, people, or knowledge—the faster clients can gain insights to make better decisions, ultimately reaching ROI more quickly.

Governed Self-Service Analytics, Content Creation, and Ad-hoc Data Exploration

CTSI-Global empowered clients with a self-service solution letting them build and design their own dashboards, reaching time-to-value faster. The Analytics team was no longer a bottleneck. CTSI-Global provided this key point of differentiation by leveraging Sisense's inherent agility, fueled by Sisense's decoupled visualization layer. This layer supports agile dashboard development without the need for predefined queries or pre-aggregated views, ad-hoc data exploration in all directions, data model reuse across use cases, and an overall ease-of-use that empowers even non-technical users.

Embed Insights In-Context

CTSI-Global helped clients close the insights-to-action gap by embedding [white-labeled Sisense](#) analytics using iFrames within their client applications. Since the amount of real estate is limited on the main page of the application, they also provided a way for clients to pop up another tab with the full-fledged white-labeled Sisense for content creation and designing.



Sisense Tip: Embed Sisense using [iFrames](#) or via [SisenseJS](#). iFrames are easy to use for embedding dashboards within an application. SisenseJS, on the other hand, can be used when individual elements of the analytics dashboard need to be embedded within the parent application for tightly integrated analytics. Embedding, along with automated user authentication and authorization, will provide a seamless user experience.

Designing the Right Process to Ensure Success at Scale

As with any product, it is important to build a Customer Success team and develop the right processes and practices to support and scale embedded analytics.

Client Onboarding

A great way to improve self-service, user engagement and adoption is to offer onboarding. CTSI-Global started offering five hours of training on client's data as a part the Analytics offering, which including workshop-style dashboard-designing using the client's data. As a result, the client not only learns about the tool in an interactive way, but also gets another dashboard that they can use.



Sisense Tip: Share documentation out-of-the-box with Sisense's white-labeled documentation and equip yourself with the skills to provide impactful onboardings with Sisense's Train-the-Trainer Workshops.

Building First-Line Support for Clients

When analytics become part of a product, client services teams need to become first-line support for the analytics product. The Analytics Team at CTSI-Global ensures that client onboarding teams are sufficiently trained so that they understand each dashboard and can field most questions themselves. Client Service Representatives use Sisense post go-live to ensure that customer invoices are being processed correctly and in the proces showcase the dashboards. Client Service Representatives are also aware of internal process to reach out to their Analytics Lead if there's an issue that they cannot fix themselves.



Sisense Tip: Level up client support with Sisense's First-Line Support Workshops.

Handling Change Requests

A good product continues evolving with Customer feedback and learning. CTSI-Global maintains an open channel between their Analytics Team and the field. Based on the client service representatives' knowledge and experience, they escalate to the Analytics Lead if there are requests they can't handle themselves.

Custom Development Services

Sometimes clients have analytics requests that are too complicated for them to handle or the clients don't have the resources to handle development themselves. CTSI-Global provides consulting services to handle these custom requests. This not only adds another revenue stream but also ensures that clients are not left in a lurch.

Getting Buy-In from the Key Stakeholders to Support and Grow the Solution

CTSI-Global found that there are three sets of people that played key roles in their success.

Whoever is going to support it

While CTSI-Global's Analytics team provides advanced support, they don't provide first line support. The first line is client services and it is imperative to get buy-in from the client service teams to ensure success.

Whoever is selling it

One of the biggest factors in success at CTSI-Global is the enthusiasm of the Sales team. The sales team at CTSI-Global talks about Analytics even before a client buys the Product. In fact, the Sales Team members are some of the most skilled at designing dashboards at CTSI-Global. They demo Analytics during the sales lifecycle process using either a demo data set (similar to a customer data set) or on anonymized client data directly. Some prospects even work with the dashboards themselves.

Whoever is managing it

Finally, the team that manages the product brings everything together. They prioritize, learn from the field, improve the product over time, and continue the training and empowerment of others in the field.

Marketing the Work. Letting People Know.

It is easy to not bother marketing the analytics solution. Seeing interest in the content around analytics, CTSI-Global is increasingly taking up marketing initiatives like blogging and social media shares. Even simple initiatives can go a long way in driving engagement and interest across existing clients and prospects.

Partnering with the Analytics Provider for True Success

Considering your Analytics provider as a partner and not just a vendor can play a key role in success. CTSI-Global made sure to stay engaged with Sisense's Customer Success team on a regular basis and they leveraged Sisense's highly-rated Customer Success team's go-live focused onboarding process, unlimited technical support, dedicated customer success managers, and the Sisense community to make the most of their BI journey.

Wrapping Up

Through agile development, focusing on the right processes, getting buy-in from key stakeholders, investment in the right technology, and building a true partnership with their analytics provider (Sisense), CTSI-Global was able to meet the complex challenge of building a comprehensive embedded analytic solution from multiple data sources (including Big Data sets) for a wide range of users from CXOs to operational-level workers, with custom requirements per client, all at a rapid pace. Better yet, CTSI-Global built the solution to scale without compromising on agility or performance with a very small team maintaining it.

While the impact numbers speaks for themselves and ROI is important, the benefits of a successful embedded analytics implementation at CTSI-Global went beyond just ROI. Analytics became a **true market differentiator for CTSI-Global and increased their market share substantially**. The solution not only provided value out of the box but also enabled their customers to perform analyses by themselves. Customer delight can be hard to put to paper but is key to any product's success.



The almost boundless agility of Sisense, combined with an efficient process framework, let us deliver and organically scale a market-differentiating product.

Todd Winton, Development Manager, CTSI-Global

CTSI-Global Dashboards



SHIPMENT EXECUTION

Manage all aspects of a shipment, from creation to tracking to ensuring on-time delivery, while seeing any related KPI.

FREIGHT AUDIT & PAYMENT

Create reports not only against your invoice data and KPIs but also track CTSI-Global performance as FAP provider.

CARRIER REPORT CARD

Compare, graph, and trend all key shipping variables, including carrier and mode performance in one standardized format.