

Your Name: Peter Sarkis

Use Case Title: Retail Sales Performance for a Clothing Chain

EXECUTIVE SUMMARY

StyleRidge Apparel is a Midwest regional clothing chain with 35 stores facing challenges in inventory management, tracking product performance, and inconsistent customer experience across locations. The key objective of this data warehouse project is to centralize and organize data from multiple systems to help business leaders make better decisions. The goals of the project are to combine sales, inventory, and store performance data to reduce stockouts, optimize product placement, and identify sales trends by region and season. The expected outcomes include improved supply chain efficiency, increased sales, and higher overall customer satisfaction.

BUSINESS CONTEXT

StyleRidge Apparel runs 35 retail clothing locations in the Midwest. Often times, customers report that their preferred sizes or styles are out of stock and that product selection varies a lot between stores. These problems lead to poor inventory visibility and a lack of data-driven decision-making. Store managers and product planning team members are limited when it comes to responding to stock concerns because they rely on fragmented systems and spreadsheets as resources. A data warehouse is the right solution because it has the ability to bring together sales, inventory, and product data into one place, which allows for better forecasting, reporting, and planning for what each store needs.

BUSINESS NEEDS AND CHALLENGES

StyleRidge Apparel faces several operational challenges that the data warehouse is designed to address:

Business Challenges:

1. **Inconsistent Inventory:** Some locations are overstocked with products, while others run out or have limited inventory of popular products, leading to lost sales and excess markdowns.
2. **Limited Sales Visibility:** StyleRidge Apparel lacks visibility into product performance by location, category, or season.
3. **Inefficient Clearance Process:** Since StyleRidge does not get insights quickly, clearance decisions are made too late and cut into profits.

Business Needs:

1. **Accurate Inventory Tracking:** Real-time inventory tracking is needed to balance stock across all stores and reduce stockouts and overstock.
2. **Detailed Sales Reports:** Reporting and analysis is needed by product, store, region, and season to guide merchandising and promotions.
3. **Better Tools and Dashboards:** Forecasting tools and dashboards are needed to help teams make decisions not on just spreadsheets, but rather on actual data.

KEY BUSINESS PROCESSES

StyleRidge Apparel's key business processes will be supported by the data warehouse. This includes:

- **Sales Tracking:** Track daily sales across 35 stores by store and region.
- **Inventory Management:** Track stock levels, restocks, and inventory turnover at each store.
- **Markdown Analysis:** Track how discounts are applied and analyzed to impact sales.
- **Seasonal Sales Analysis:** Compare sales from different seasons to help plan inventory for the future.
- **Store Performance Tracking:** Track KPI's such as revenue, sales conversion rate, and profit for each store.

KEY STAKEHOLDERS & GOALS

The following stakeholders are involved in StyleRidge Apparel's data warehouse project:

- **Director of Merchandising:** Aims to improve product planning, ensure popular items are in stock, and reduce clearance markdowns.
- **Regional Store Managers:** Need visibility into which products sell the best in their stores to plan displays and staff better.
- **Inventory Analyst Team:** Analyzes data for restock planning and minimizes stockouts/overstocks.
- **BI/IT Team:** Builds and maintains the systems that run the data warehouse.

BUSINESS GOALS AND OBJECTIVES

StyleRidge Apparel has specific goals that the company aims to achieve with this data warehouse, which includes:

- Improving stock forecasting and reducing stockouts/overstocks.
- Analyzing product performance across seasons and regions.
- Uses historical trends to make more informed markdown decisions.
- Provides real-time dashboards for store performance.
- Helps merchandising and inventory teams work together more smoothly.

SOURCE SYSTEMS

StyleRidge Apparel's current source systems that will feed data into the data warehouse includes:

- **Point-of-Sale (POS) System (Internal):** Collects transactional sales data from all 35 retail stores (product sold, quantity, price, time and date).
- **E-commerce Platform (External):** Tracks online purchases, customer data, and product availability (Shopify is a popular example).

- **Inventory Management System (Internal):** Monitors inventory levels, manages restocks and replenishments, and oversees shipments and warehouse transfers.
- **Store Directory System (Internal):** Contains metadata on each store like location, size, region, staff, etc.
- **Promotions Database (Internal):** Tracks markdowns, discounts, sales, and promotions.

KEY DATA & MEASURES

Key Facts and Dimensions:

- Product details: Product ID, Category, Size, Color
- Store details: Store ID, Region, Location
- Sales Transactions: Quantity, Price, Date and Time
- Inventory: Current, Sold, Restocked
- Markdowns: Price adjustments and Discounts

Key Performance Indicators (KPIs):

- Total Sales Revenue: Total money from product sales
- Sell-Through Rate = Units Sold / Units Received: measures how fast inventory sells from what was received
- Stockout Rate = Days Out of Stock / Total Days Available: tracks how often products are out of stock
- Gross Margin Return on Investment (GMROI): measures profit that is made for every dollar spent on inventory
- Markdown % Impact on Sales: analyzes how discounts affect overall sales
- Replenishment Rate: measures how often inventory is restocked
- Sales by Product Category: tracks how different product categories are performing in sales
- Customer Satisfaction Score (CSAT): measures overall customer satisfaction based on feedback

FUNCTIONAL REQUIREMENTS

- The system should allow users to track sales by product, store, and time.
- The dashboard should display the top-selling and bottom-selling products.
- Users should be able to compare markdown impact on sales.
- The data warehouse should support historical trend analysis for better forecasting.
- Inventory analysts should track inventory turnover to optimize restocking.

STAKEHOLDER INTERVIEW TRANSCRIPT (GENERATED WITH AI)

STAKEHOLDER INTERVIEW TRANSCRIPT #1

Interviewer: Data Analyst (Me)

Interviewee: Director of Merchandising – StyleRidge Apparel

Me: Hi, thank you for taking the time to meet with me today. Can you start by telling me a bit about your role and your main responsibilities?

Director of Merchandising: Yes, I manage the product strategy for all stores and regions. My goal is to ensure we have the right products in the right places at the right time, balancing high-demand items with inventory limits, especially during different seasons.

Me: What challenges do you face when it comes to inventory management and product sales?

Director of Merchandising: A big challenge is understanding which products are performing well in each store, especially during different seasons. Currently, we have limited visibility so we cannot easily see sales trends by product across regions, which makes it hard to adjust our inventory when things change, like when a product suddenly becomes popular.

Me: How do you think a data warehouse could help address these challenges?

Director of Merchandising: With a data warehouse, I would be able to get real-time insights into product performance across all regions. This would allow me to make better decisions on restocking, plan promotions more effectively, and analyze seasonal trends so that we can avoid having too much or too little stock.

Me: What specific data would you find most useful to help you manage product strategies?

Director of Merchandising: I need access to data like product sales by region, inventory levels, and how products are performing over time. Having better insights into seasonal shifts and customer demand across different stores would really help me make smarter decisions.

Me: How would you define success for this data warehouse project?

Director of Merchandising: Success means having a tool that helps us predict product demand more accurately, manage inventory to avoid overstock or stockouts, and boost profitability by making data-driven decisions. If we can improve product availability and sell-through, that would be a big win.

Me: Thanks again for your time today. Your insights have been really helpful!

Director of Merchandising: You're welcome! I am happy to help.

STAKEHOLDER INTERVIEW TRANSCRIPT #2

Interviewer: Data Analyst (Me)

Interviewee: Regional Store Manager – StyleRidge Apparel

Me: Hello, thank you for taking the time to meet today. Can you tell me about your role and how you manage things at the stores?

Regional Store Manager: I manage several stores in my area. My job is to make sure we have enough stock, keep the staff working efficiently, and track overall sales. I rely mostly on reports, but they do not always give me the information I need quickly.

Me: What kind of information would help you make better decisions and improve sales?

Regional Store Manager: I need more details on which products sell the most at each store. If I could see real-time sales and stock levels, it would help me decide when to restock or move products faster.

Me: How do you currently handle situations when a store runs out of popular items or has too much of an item that is not really selling?

Regional Store Manager: At the moment, it is mostly uncertain. We do not always know when we run out of stock, and sometimes we end up with too much of products that do not sell. Having sales trend data would help us make better decisions to avoid this.

Me: What features would you want in the data warehouse to help you track products and sales?

Regional Store Manager: I would like a system that shows real-time inventory and sales at each store. It would also be helpful to see how products are selling over time, so I can plan promotions and restocking.

Me: How would you measure success with this project?

Regional Store Manager: Success means being able to predict demand and keeping the right products in stock. It is a win if I can make decisions based on clear data.

Me: Thank you for sharing. I really appreciate your time!

Regional Store Manager: No problem, happy to help!

STAKEHOLDER INTERVIEW TRANSCRIPT #3

Interviewer: Data Analyst (Me)

Interviewee: Inventory Analyst – StyleRidge Apparel

Me: Hi there, thanks for joining me today. Can you tell me about your role and how you track inventory?

Inventory Analyst: I keep track of inventory in all the stores, make sure products are reordered in a timely fashion, and monitor stock levels. However, the data is currently spread out across different reports, which makes my job harder.

Me: What problems do you face with inventory management, and how could a data warehouse help?

Inventory Analyst: The biggest problem is predicting what we will need to reorder. Sometimes, we either run out of popular items or end up with too much of something that does not sell well. I believe that real-time sales data would help me know when to reorder and how much to order.

Me: What would you want to track or analyze if you had better data?

Inventory Analyst: I would want to track which products are selling the fastest, and also how products are doing across different regions and stores. Looking at seasonal trends would help me order the right amounts of stock as well.

Me: How would having real-time data change the way you work?

Inventory Analyst: It would save me a lot of time because I could see up-to-date data on sales and stock rather than running reports manually. It would help me make better decisions about when to restock, and avoid running out or overstocking items.

Me: What would success look like for you with this project?

Inventory Analyst: Success to me would be reducing stockouts and overstocking by having better sales and inventory data. It would also help me order the right amount of stock at the right time.

Me: Thanks so much for your time today. This has been really helpful!

Inventory Analyst: You're welcome! Glad to help anytime.

STAKEHOLDER INTERVIEW TRANSCRIPT #4

Interviewer: Data Analyst (Me)

Interviewee: IT/BI Team Member – StyleRidge Apparel

Me: Hi, thanks for taking the time to meet today. Can you tell me about your role and how you help with new data systems?

IT/BI Team Member: Sure, I am responsible for making new data systems work well with our existing ones. I make sure all the data from different systems goes into our central warehouse and is easy to access for the team.

Me: What challenges do you think we might face when setting up the data warehouse?

IT/BI Team Member: One of the main challenges will be making sure data from different systems can work together. We will also need to make sure the system can handle a lot of data, especially for real-time reports.

Me: How will you manage data coming from both in-store and online systems?

IT/BI Team Member: We'll need to make sure we connect systems like the POS and e-commerce accordingly. We will use a process called ETL (Extract, Transform, Load) to make sure data is accurate and consistent before adding it to the warehouse.

Me: What features are important for the data warehouse to work well and be updated over time?

IT/BI Team Member: The system should be scalable to handle growing data, easy to update, and include automatic checks to keep the data accurate.

Me: What does success look like for you in this project?

IT/BI Team Member: Success means having a reliable, easy-to-use system that brings data together and gives the team accurate info when they need it. The more seamless and automatic it is, the better.

Me: Thanks for your time today!

IT/BI Team Member: No problem, my pleasure!

SUCCESS METRICS

Success will be measured for this project through metrics that include:

- Increased sales by 10% through improved inventory planning.
- Minimize revenue loss from markdowns by 15%.
- Reduced stockouts by 20% across all locations.
- Improve sell-through rate by 25% in the first six months.
- Improved customer engagement and retention.

ASSUMPTIONS AND RISKS

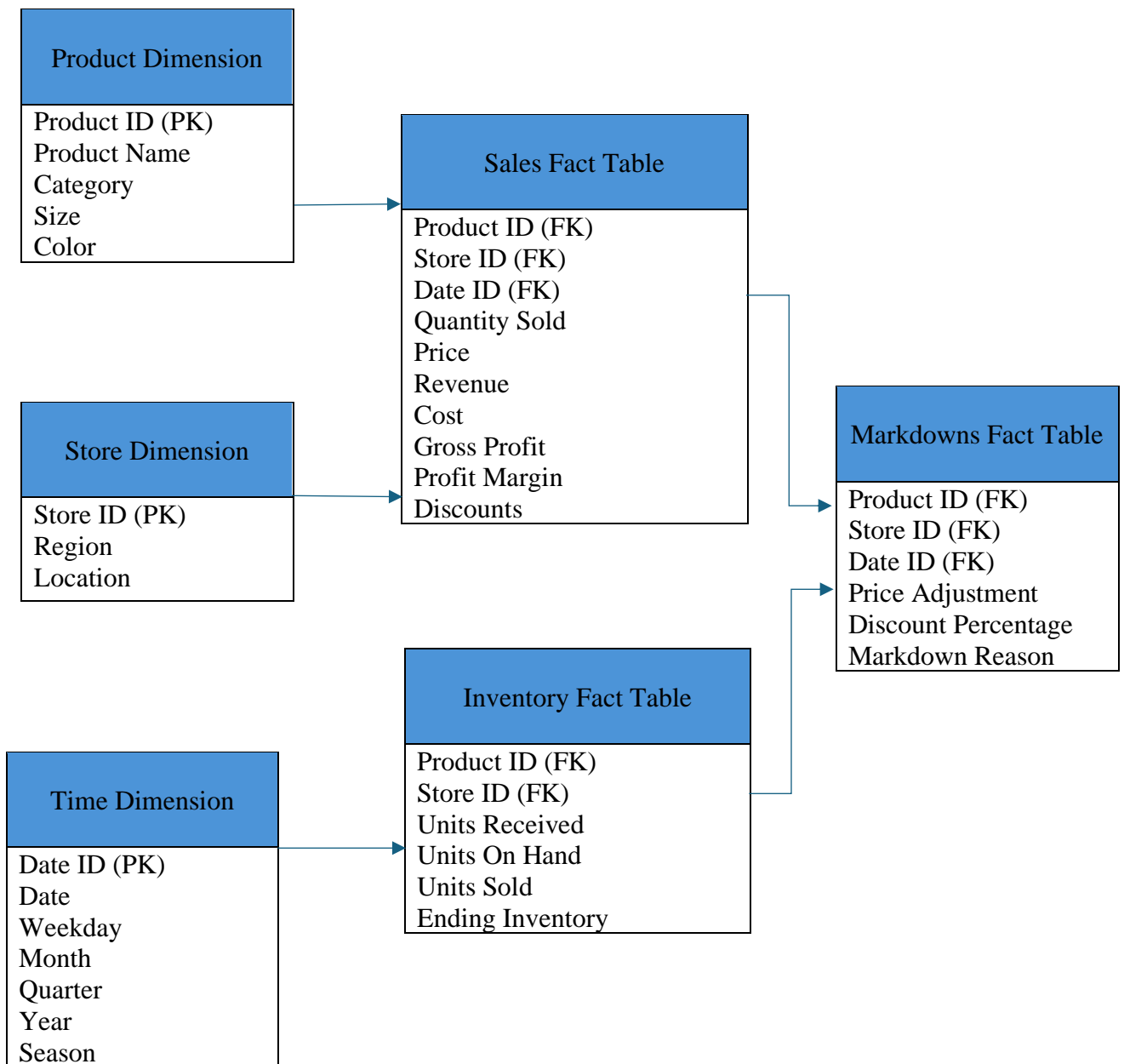
Assumptions:

- All key systems (POS, inventory, e-commerce) can export data consistently.
- Historical data is available for at least 1 to 2 years.
- Stakeholders will provide feedback throughout the design phase.

Risks:

- Data from different systems may not be fully integrated or clean.
- Staff may be resistant to adjusting workflows or adopting new tools.
- Integration challenges or data issues could cause delays in the project timeline.

DIMENSIONAL MODEL DIAGRAM



DIMENSION DESCRIPTIONS

Product Dimension:

- This dimension describes each product sold by StyleRidge Apparel, which is useful for the details about the product and its categorization.
- Attributes: Product ID (PK), Product Name, Category, Size, and Color
- Example Values: Product ID: 1007, Product Name: Slim-Fit Black T-Shirt, Category: T-Shirts, Size: L, Color: Black
- Hierarchies/Groupings: Category → T-Shirts, Pants, Socks, etc. / Size → S, M, L, XL

Store Dimension:

- This dimension provides details about each StyleRidge Apparel store, such as its location and region.
- Attributes: Store ID (PK), Region, and Location
- Example Values: Store ID: 023, Region: Midwest, Location: Chicago, IL
- Hierarchies/Groupings: Region → Northeast, Midwest, West Coast / Location → City based, Chicago, IL

Time Dimension:

- This dimension helps track when each sale, inventory update, or markdown happens. It supports analysis by day, month, season, and year.
- Attributes: Date ID (PK), Date, Weekday, Month, Quarter, Year, and Season
- Example Values: Date ID: 20250527, Date: 2025-05-27, Day: 27, Month: May, Quarter: Q2, Year: 2025, Weekday: Saturday, Season: Spring
- Hierarchies/Groupings: Day → Month → Quarter → Year / Month → Season

Sales Dimension:

- This dimension measures each sales transaction's details, such as the quantity, price, revenue, and related metrics. It is also known as the Sales Fact Table since it includes links to other dimension tables through foreign keys. These links help connect the sales data to information about products, stores, and time. This setup makes it easier to analyze sales across products, locations, and time periods.
- Attributes: Product ID (FK), Store ID (FK), Date ID (FK), Quantity Sold, Price, Revenue, Cost, Gross Profit, Profit Margin, and Discounts

- Example Values: Product ID: 1007, Store ID: 023, Date ID: 20250527, Quantity Sold: 3, Price: \$15.00, Revenue: \$45.00, Cost: \$24.00, Gross Profit: \$21.00, Profit Margin: 46.7%, Discounts: \$3.00
- Hierarchies/Groupings: Sales transactions can be grouped and analyzed through connected dimensions:
 - **Time Dimension:** Day → Month → Quarter → Year / Month → Season
 - **Product Dimension:** Product → Category
 - **Store Dimension:** Location → Region

Inventory Dimension:

- This dimension tracks product availability, which helps with tracking how much of each product is currently available, sold, received, and remaining on hand.
- Attributes: Product ID (FK), Store ID (FK), Units Received, Units On Hand, Units Sold, and Ending Inventory
- Example Values: Product ID: 1007, Store ID: 023, Units Received: 100, Units On Hand: 30, Units Sold: 70, Ending Inventory: 30
- Hierarchies/Groupings: Inventory Level → Low, Medium, High

Markdowns Dimension:

- This dimension records any price adjustments or discounts applied to products during StyleRidge Apparel sales events or promotions.
- Attributes: Product ID (FK), Store ID (FK), Date ID (FK), Price Adjustment, Discount Percentage, and Markdown Reason
- Example Values: Product ID: 1007, Store ID: 023, Date ID: 20250527, Price Adjustment: -\$4.00, Discount Percentage: 10%, Markdown Reason: Seasonal
- Hierarchies/Groupings: Discount Type → Seasonal, Clearance, Promotion / Discount Percentage → Low (0–20%), Medium (21–49%), High (50%+)

FACT TABLE DESCRIPTION

- The fact tables measure key business metrics, store sales transaction data, and are connected to the related dimensions for in-depth analysis. Specifically, StyleRidge Apparel's data warehouse includes three separate fact tables to capture key business processes: Sales, Inventory, and Markdowns. These fact tables store transaction-level data and link to shared dimension tables (Product, Store, and Time) for deeper analysis. The grain of each fact table is defined as the following – Sales Fact Table: A single product sold at a specific store on a specific date; Inventory Fact Table: Records of a product at a store, capturing quantities received, sold, and on hand; and Markdowns Fact Table: A price adjustment applied to a product at a store on a specific date.

- **Measures:** *Quantity Sold:* The total number of units sold per transaction, *Total Revenue:* Quantity Sold x Price, *Total Discounts:* The total discount applied in a transaction, *Profit Margins:* The percentage of revenue that remains as profit after all expenses, and *Ending Inventory:* The amount of goods available for sale at the end of a period.

This grain fits the business case because it separates sales performance, inventory flow, and promotions which allow for a more focused analysis that supports goals like better stock forecasting, fewer stockouts, and improved product placement for StyleRidge Apparel.

LOGICAL ARCHITECTURE SKETCH

- The architecture for StyleRidge Apparel's data warehouse starts with data being collected from various operational systems, including Point-of-Sale (POS) systems for sales transactions, inventory management software for stock levels and restocks, and pricing systems for markdowns and discounts. An ETL (Extract, Transform, Load) process pulls raw data from different systems, cleans it up, and loads it into a cloud-based data warehouse. Inside the warehouse, the data is set up in a star schema, with three fact tables: Sales, Inventory, and Markdowns which are each linked to shared dimension tables like Product, Store, and Time. The StyleRidge team can then use Business Intelligence (BI) tools to build reports, dashboards, and run analytics from the warehouse.
- The tools/platforms used would be from SAP Datasphere to extract, clean, and manage the data before loading it into the warehouse. The data will be stored and modeled within SAP Datasphere, using its integrated tools for building the dimensional model. For reporting and dashboards, we will use SAP Analytics Cloud (SAC) to create visualizations and share insights with stakeholders. Although I am familiar with tools like Tableau, the focus for this project will remain on SAP platforms.
- The data initially lives in operational systems like POS, inventory, and pricing systems, but after ETL, it lives in the cloud-based data warehouse. The data is then transformed during the ETL process, which cleanses, standardizes, and formats the data appropriately for the warehouse structure. The data gets queried directly from the data warehouse using BI tools for reporting and analytics purposes.
- The data warehouse will be refreshed nightly (3:00 AM CT), to ensure that sales, inventory, and markdown data are fresh at the start of each business day. In urgent cases, such as stockouts or sudden price changes, smaller ad hoc refreshes may occur during business hours. Currently, all tables are scheduled for an update once per night, but smaller updates may be added later if operational needs change.

RATIONALE AND ASSUMPTIONS

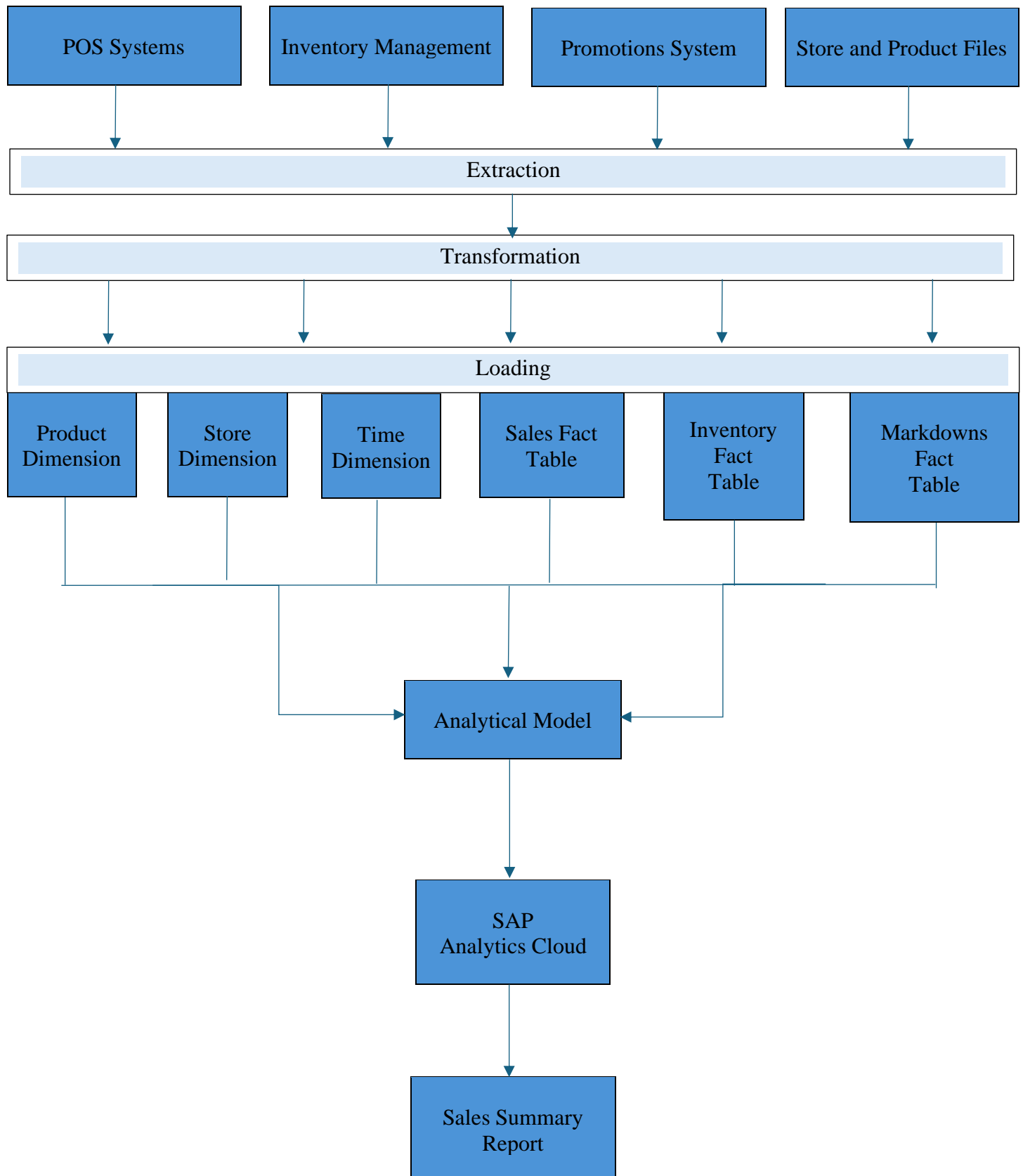
- I chose a star schema because it makes it easy for the StyleRidge Apparel team to see the connections between sales, products, stores, inventory, and markdowns, which created a clear and simple data model. Also, the star schema I chose supports efficient querying, especially for product performance, stock levels, and discounts.
- Some tradeoffs or simplifications I made was that I did not include a separate Customer dimension, assuming that the sales data is anonymous. This choice was made to keep the model focused on overall sales trends and inventory management rather than individual customer behavior. I also chose to keep the Time dimension minimal, using Date ID to track the date of transactions without breaking it down into more granular times like hour or minute for example. This keeps the model simple and aligned with StyleRidge Apparel's business goals.
- This model supports the stakeholder goals from Milestone 1 by addressing key business needs. The Sales Fact Table captures important details about each transaction, while the Inventory Fact Table tracks monitors product availability and performance, helping StyleRidge Apparel forecast stock and avoid running out of items. The Markdowns Fact Table tracks discounts to help with product placement. By understanding sales trends and

inventory levels, StyleRidge Apparel can make sure the right products are available at the right locations and times, which ultimately helps improve the overall customer experience.

ETL DESIGN SUMMARY

- The data would be extracted from several sources. Sales transactions, including product ID, store ID, quantity, price, date, and time will all come from the POS Systems, which may be in CSV format or from SAP. Inventory levels and restocking information will be pulled from the Inventory Management System. Markdowns and discounts will be sourced from the Promotions System. Things like store locations, product information, categories, sizes, and colors will be extracted from Store and Product Files, which may be available in CSV, Excel, or SAP table formats.
- Several key transformations are needed to prepare the data for analysis. Sales data will be combined with inventory and markdowns through joins across related tables. Surrogate keys may be created if needed to ensure consistent joins between systems. Data types will be cleaned and converted such as changing price and quantity fields to numeric formats. Date and time values will be structured in year, month, day, and hour formatting to support better reporting. Also, calculated fields will be used such as total revenue (quantity x price) and total discounts (price adjustment x quantity). Filtering the data is necessary to remove null values, test entries, and duplicate records.
- During the initial phase, data may be uploaded manually using CSV files or mock tables. For full implementation, connectors to source systems such as SAP or others would be used to program the data loading process. Once cleaned and transformed, the data will be loaded into Fact and Dimension views within the platform. Each dimension (Product, Store, Inventory, and Markdowns) will have its own dedicated view. The Sales Fact View will link to these dimensions using foreign keys and will include calculated fields such as total revenue and total discounts.

DATA FLOW DIAGRAM/SCREENSHOTS



SEMANTIC LAYER OVERVIEW

- The structure of the semantic layer will include structured views for key dimensions such as products, stores, inventory, and markdowns, which will make it easier for business users to access relevant information. For example, the Product View will provide details like product name, category, and size, while the Store View will display location and region data. These views will simplify the reporting process by translating raw data into easily understandable information.
- Key outputs for business users will include dashboards and reports that display important metrics like total sales, inventory levels, and markdown performance. Business users will be able to filter data by different attributes such as time, location, product, and promotion, which makes it easier to analyze trends and make informed decisions.
- Calculated fields will be used to provide deeper insights into sales performance. For example, total revenue (quantity sold x price) and total discounts (price adjustment x quantity). Also, the data will be formatted consistently with values like sales shown as currency and dates in a clear, standardized format to ensure that the reports are easy to read and understand for users. These insights will help users at StyleRidge Apparel make informed decisions regarding inventory restocking, product pricing, and sales strategies.

SAMPLE OUTPUT OR TABLE STRUCTURE

- Some sample data tables and rows are shown below. These include sample rows from some of the key dimension tables and from one of the fact tables, which shows how data is structured after the ETL process.

Product Dimension Table:

Product ID	Product Name	Category	Size	Color
1007	V-Neck Shirt	Men’s T-Shirts	M	Black
1008	Slim-Fit Jeans	Men’s Jeans	32	Navy
1009	Casual Shoes	Men’s Footwear	9.5	White

Store Dimension Table:

Store ID	Region	Location
023	Midwest	Chicago, IL
024	Midwest	Akron, OH
025	Midwest	Milwaukee, WI

Sales Fact Table:

Product ID	Store ID	Date ID	Quantity	Price \$	Total Revenue	Cost \$	Gross Profit	Profit Margin	Total Discounts
1007	023	20250509	2	\$20.00	\$40.00	\$25.00	\$15.00	37.5%	\$11.00
1008	024	20250508	3	\$10.00	\$30.00	\$18.00	\$12.00	40%	\$5.00
1009	025	20250507	4	\$5.00	\$20.00	\$10.00	\$10.00	50%	\$2.00

- The sample summary report below shows key sales metrics across three StyleRidge locations. It highlights the top-selling product categories, total sales amounts, stockout rates, and average discount percentages. This helps identify which stores and products are performing well, where inventory issues exist, and how heavily each store relies on markdowns.

Sales Summary Report:

Store Location	Top-Selling Category	Total Sales	Stockout Rate	Average Discount %
Chicago, IL	T-Shirts	\$14,000	12%	25%
Akron, OH	Jeans	\$9,000	15%	19%
Milwaukee, WI	Footwear	\$6,000	10%	17%

REFLECTION ON PROGRESS

- The data flow for the project was designed to pull from multiple sources such as the POS system, inventory management, and markdown promotion systems. The goal was to centralize this data in a cloud-based data warehouse through the use of ETL processes to clean and transform the data before loading it into the fact and dimension tables. The dimensional model uses a star schema to easier analyze sales performance and inventory management.
- What's working well so far is the structure of the data model itself. The star schema with the three fact tables linked to the dimensions makes it easy to query and analyze key metrics. Also, the sample data and reports provide a good overview of the expected outputs.
- Although I did not use SAP directly, what's still in progress is finalizing the implementation details, particularly connecting to data sources and automating the ETL process. I did not encounter any specific SAP challenges, but I expect future work could involve setting up the right connectors and ensuring smooth integration with SAP tools like SAP Datasphere and SAP Analytics Cloud.

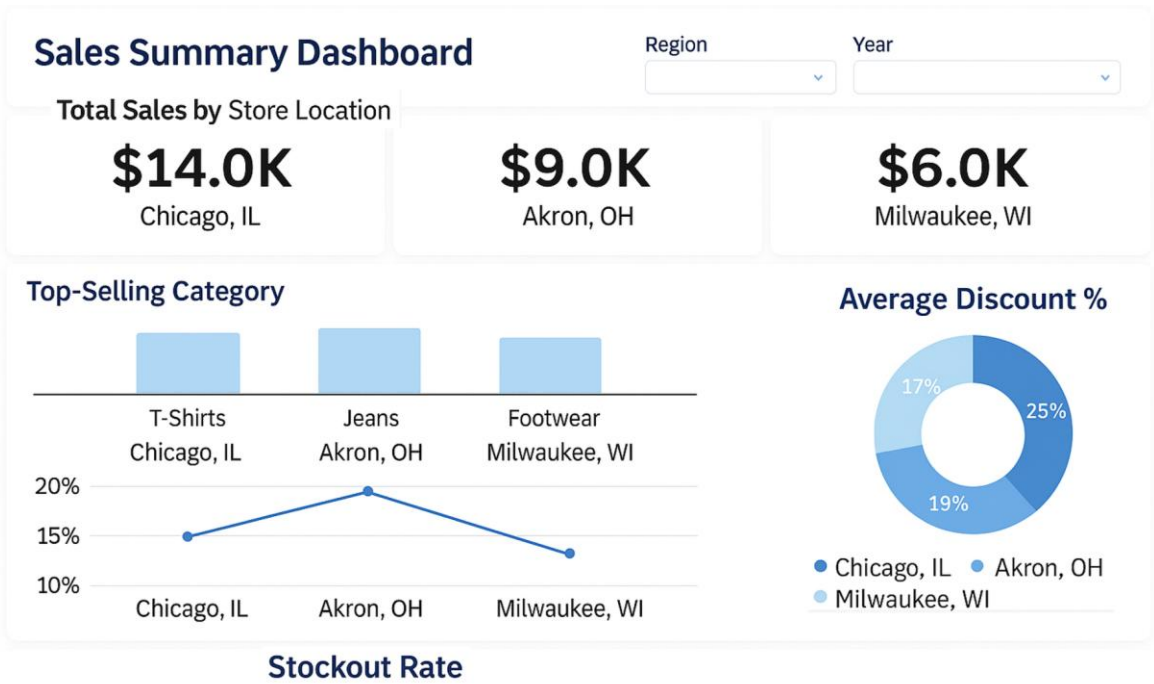
DASHBOARD OVERVIEW

The purpose of the BI dashboard is to help StyleRidge Apparel’s key stakeholders such as regional retail managers and executives monitor and improve sales, inventory, and markdown strategies across all 35 stores. It provides valuable insights such as total revenue, stockout rates, and the impact of discounts. These insights help users understand how each store and product is performing. They also make it easier to spot bestsellers, underperformers, and the effectiveness of different promotions. The dashboard brings together key operational data in one place, which helps users make smarter decisions about restocking, pricing, and managing overall store performance.

KEY METRICS & VISUALIZATIONS

- **Total Sales by Region:** Shows revenue by region to identify strong and weak store locations.
- **Top-Selling Categories by Store:** Highlights the most popular product types across different stores, helping managers know what to restock and promote.
- **Stockout Rate:** Shows how often items run out of stock, helping managers address potential inventory issues.
- **Average Discount Percentage:** Displays the amount of discount given, providing insight into how promotions affect sales.
- **Gross Profit Margin by Product:** Measures profit per product, guiding focus on the most profitable items.

SAMPLE DASHBOARD OUTPUT



This dashboard provides a sales performance overview for StyleRidge Apparel across Chicago, Akron, and Milwaukee. Chicago leads in total sales (\$14K), followed by Akron (\$9K), and Milwaukee (\$6K). Each location’s top-selling category is shown, with T-Shirts in Chicago, Jeans in Akron, and Footwear in Milwaukee. The Average Discount % indicates Chicago offers the highest discounts at 25%. The region and year filters allow users to drill down into specific views to support further decision-making.

DATA FLOW SUMMARY

The data flows from three primary source systems: Point-of-Sale (POS), Inventory Management, and Markdown Tracking. During ETL, data is extracted, cleaned, and standardized. Revenue and profit are calculated during transformation using quantity, price, and cost. The processed data is then loaded into three fact tables: Sales, Inventory, and Markdowns which are linked by the dimensions: Product, Store, and Time. Although SAP was not actually used in this project, the data flow was planned as if it would integrate with SAP Datasphere. In this setup, a semantic layer would provide clean and ready data that feeds into SAP Analytics Cloud to power the reporting dashboard. Since Milestone 3, the overall structure stayed the same, with just some final adjustments made to metric definitions and formatting.

REFLECTION

What I learned from this milestone is how to effectively transform raw transactional data into meaningful visual insights that business users can easily understand. The process of designing the data flow from source systems to the final dashboard mockup highlighted the importance of proper data transformation and structuring for accurate and reliable reporting. What worked well was aligning the dashboard metrics closely with real business questions, like identifying the most profitable stores and products that frequently run out of stock.

If I had more time I would enhance the dashboard by building it as an interactive, live visualization in SAP Analytics Cloud. This would include adding visual filters and drill-down features to allow managers to explore product-level trends more easily. Overall, this dashboard mockup supports the original business problem by providing the StyleRidge team with a clear, centralized, and actionable view of key performance indicators, helping them make more informed decisions.

AI USAGE STATEMENT

Milestone 1:

Tool Used: ChatGPT

Prompt: I am a data analyst conducting interviews with stakeholders at StyleRidge Apparel, which is focused on improving inventory management, sales performance, and regional trends. I need you to create interview transcripts for stakeholders that include the Director of Merchandising, Inventory Analysts, Regional Managers, and a member of the IT/BI team. Please make sure each transcript has 3-5 Q&A exchanges that help gather insights for building a data warehouse to address the company's business challenges. I would like it in interview format.

Note: AI was used to create realistic interview conversations that matched StyleRidge Apparel's business goals and challenges. The transcripts were then revised in my own words for clarity and relevance.

Milestone 2:

Tool Used: ChatGPT

Prompt: I am a data analyst working with stakeholders at StyleRidge Apparel, which is focused on improving inventory management, sales performance, and regional trends. I need help brainstorming and organizing my dimensional model and architecture description to clearly show how my solution functions.

Note: AI was used only to brainstorm ideas and help visualize how to organize my dimensional model and technical architecture. All final decisions about structure, attributes, and overall design were based on my own understanding and the project requirements.

Milestone 3:

Tool Used: ChatGPT

Prompt: I am a data analyst working with stakeholders at StyleRidge Apparel, which is focused on improving inventory management, sales performance, and regional trends. I need some help brainstorming and organizing the ETL design, semantic layer, and reporting structure.

Note: AI was used only to brainstorm ideas and help visualize how to organize the ETL flow, semantic layer, and reporting

structure. All final decisions about the data model, transformation logic, and overall design were based on my own understanding and the project requirements.

Milestone 4:

Tool Used: ChatGPT

Prompt: I am a data analyst working with stakeholders at StyleRidge Apparel, which is focused on improving inventory management, sales performance, and regional trends. I need some help with creating a sample dashboard output as I did not use SAP or BI tools, so I need help turning my sample sales summary data into a realistic dashboard mockup that reflects the business context and metrics I developed in earlier milestones. Can you please help me design a visual that meets the assignment criteria?

Note: AI was used to assist with generating a sample dashboard mockup, in accordance with the Milestone 4 guidelines which allow visual mockups in place of working dashboards. I provided the summary table, business context, and visual layout requirements based on my own work in earlier milestones. ChatGPT helped transform that input into a clear, presentation-ready mockup. I chose not to hand-sketch the dashboard, as I felt a digitally generated visual would better reflect the clarity and style expected in professional reporting. Before submitting, I also confirmed with my professor that a mockup would be acceptable for this milestone. Although I initially experimented with Tableau and Power BI (tools I had never used before), I ultimately opted for the mockup route for clarity and consistency. I made final decisions regarding dashboard structure, labels, and titles to ensure alignment with the project goals.