

Solution Architecture

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Team ID	LTVIP2025TMID48235
Project Name	Measuring the Pulse of Prosperity: An Index of Economic Freedom Analysis
Maximum Marks	4 marks

What is Solution Architecture?

Solution Architecture provides a structured approach to connect business problems with technical implementation. For the toy manufacturing industry, it bridges the gap between raw sales, demographic, and product data with visual insights that support strategic decision-making.

This architecture ensures that toy sales and consumer behavior data are collected, cleaned, analyzed, and visualized to support functions like production planning, marketing, and inventory management.

It outlines:

- The system components from data collection through dashboard delivery
- Data flow from raw input to Tableau-powered decision support
- Technologies used for integration, automation, and secure sharing
- Access control methods for different stakeholder groups (marketing, logistics, executives)

Goals of the Solution Architecture for This Project:

- Integrate toy sales, regional performance, and customer demographic data into an interactive Tableau dashboard
- Visualize seasonal trends, customer preferences, and product popularity by category
- Provide filter options based on region, age group, gender, product type, and sales period
- Offer role-specific dashboard access for marketing, sales, and inventory teams
- Enable future integration of social media trends, competitor analytics, or forecasting models

Core Components of the Architecture

Layer	Component	Description
Data Integration	ETL Workflow (Tableau Prep, Python)	Extracts and transforms raw sales, product, and demographic data from Excel, CSV, or APIs.
	Local Database / Cloud Drive	Stores cleaned and categorized datasets by toy type, location, time period, and customer segment.
Analytics & Visuals	Tableau Desktop & Server	Builds dashboards showing seasonal trends, top-selling products, demographic breakdowns, and regional performance heatmaps.
Security & Access	Flask + Tableau Roles	Ensures only authorized users can view or edit dashboards; defines viewer/editor roles for different departments.

Layer	Component	Description
Reporting & Alerts	Scheduled Reporting & Sharing	Enables exporting visuals, scheduling weekly reports, and sharing strategic insights across departments.

Data Flow within the System

User Journey and Data Movement:

1. **Data Extraction** – Toy sales and customer data are collected from sales teams, retail systems, or third-party files.
 2. **Data Processing** – Raw data is cleaned, filtered, and segmented by demographic, geography, and product type.
 3. **Dashboard Development** – Tableau connects to the processed data to create charts and dashboards for trend analysis, segmentation, and forecasting.
 4. **User Interaction** – Stakeholders interact with dashboards to filter views, compare segments, and download insights.
 5. **Scheduled Reporting** – Regular reports and visual summaries are auto-generated and shared across teams for timely decision-making.
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Summary

This solution architecture enables:

- Seamless transformation of toy industry data into actionable insights
- Custom dashboards that inform production, sales, and marketing strategies

- Controlled access for each stakeholder type, ensuring data security and relevance
- A scalable structure ready for future expansion such as predictive demand modeling or competitor benchmarking

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