Project Design Phase-II
TechnologyStack(Architecture&Stack)
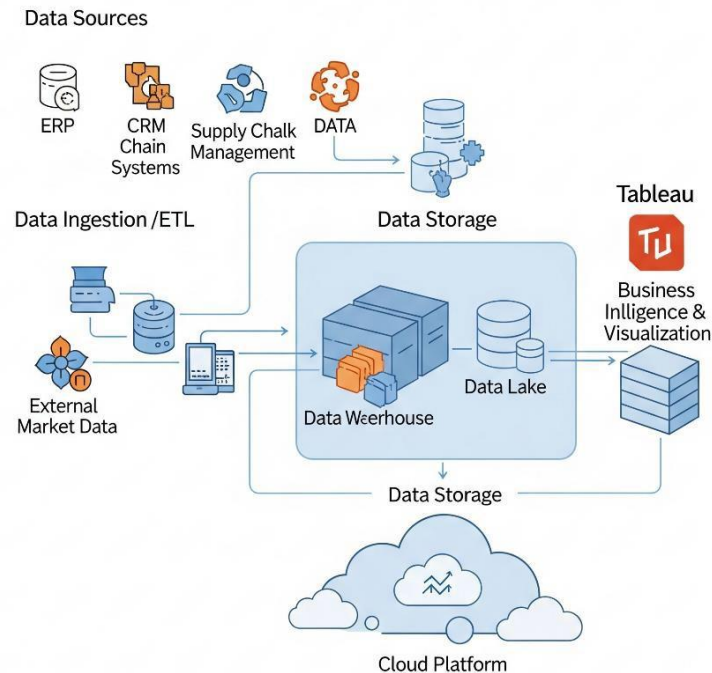
Date	13 FEB 2026
TeamID	LTVIP2026TMIDS85654
ProjectName	ToyCraftTales:Tableau'sVisionintoToy ManufacturerData
MaximumMarks	4Marks

TechnicalArchitecture:

- ➤ <u>CorePurpose</u>: "ToyCraft Tales" leverages aTableau-centric architecturetotransform rawtoymanufacturerdataintoactionableinsights, driving informed decision-making.

- ➤ <u>DataIntegration& Processing</u>: ItseamlesslyintegratesdiverseinternalERP data(e.g., sales, inventory, production)and externalmarket data. This is achieved through a robust ETL pipeline that handles cleansing, modelling, and ensures data integrity.

- ➤ <u>DataStorage& Performance</u>: Theprocessedinformationresidesinascalabledatawarehouse, optimizedforhistorical analysis andensuring high performance.

- ➤ <u>Visualization& UserAccess</u>: TableauServerservesasthecentral platform, deliveringinteractivedashboardsandreportswithhigh availability and usability to various user roles, including Sales Analysts and Executives.

- ➤ <u>Security&Automation:</u>Thesystem incorporatesstrongsecuritymeasureslikeuserauthenticationandrole-basedaccess, includingrow-level security, alongside reliable automated data refreshes.

Example:ASalesAnalyst, for instance, canquicklyaccessareal-timesalesperformancedashboard, effortlesslydrillingdownbyspecificproduct categories or geographic regions to identify emerging trends.

ToyCraft Tales: Tableau's Vision into Toy Manufacturer Data

Data Sources
ERP
CRM Chain Systems
Supply Chalk Management
DATA
Data Ingestion /ETL
Data Storage
External Market Data
Data Weerhouse
Data Lake
Data Storage
Cloud Platform
Tableau
Business Inlligence & Visualization

Guidelines:

✓ <u>Data Integration</u>: Information is gathered from factory systems (likesales,inventory)andoutsidemarketsources.Thisrawdatais then cleaned and organized, ready for use.

✓ <u>Data Storage</u>: All prepared data is stored in a scalable data warehouseforanalyzingpasttrends.Adatalakealsoholdsraw, unprocessed information.

✓ <u>Visualization:</u>Tableaucreatesclear,interactivedashboardsfrom this data, letting different company roles easily see important business numbers.

✓ <u>Infrastructure</u>: The main parts of thesystem operate on a cloud platform,ensuringitcangrowandisalwaysavailable.Itsecurely connects to the factory's local systems.

✓ <u>SmartFeatures&Security</u>:Thesystemusessmartprograms(ML) to help predict sales or spot inventory issues. Strong security ensures only approved people can see specific data.

Example:ASalesAnalystcanquicklyviewadashboardshowinghowtoys are selling in different regions right now.

Table-1:Components&Technologies

S.No.	Component	Description	Technology
1	UserInterface	How users interact with the analytics dashboards and reports, typically through web browsers.	TableauWebInterface,TableauDesktop,Web Browsers
2	Application Logic-1 (Data Ingestion&ETL)	Processes for extracting raw data from various sources,cleansing,transforming,andloadingitinto the data storage layer.	Python (Pandas, PySpark), SQL, Cloud ETL Services(e.g.,AzureDataFactory,AWSGlue, Google Cloud Dataflow)
3	Application Logic-2(Data Preparation& Analytics Engine)	Customlogicfordatamodeling,aggregations, calculations,andpreparingoptimizeddatasets specifically for Tableau consumption.	SQL(storedprocedures,views),Pythonscripts, Tableau Prep
4	Database(Data Warehouse)	Thecentral,structuredrepositoryforintegratedand transformed analytical data. Optimized forcomplex queries and reporting.	Snowflake,GoogleBigQuery,AmazonRedshift, Azure Synapse Analytics
5	CloudDatabase (Data Lake)	Storesraw,unstructured,orsemi-structureddatafrom varioussourcesbeforetransformation, used for future analysis.	AmazonS3,AzureDataLakeStorage(ADLS), Google Cloud Storage (GCS)
6	FileStorage	Temporaryorarchivalstorageforrawdatafiles,logs, or intermediate ETL outputs.	Cloud BlobStorage(e.g.,AWSS3,AzureBlob Storage)
7	ExternalAPI-1 (ERP/CRM Connectors)	Integrateswiththetoymanufacturer'sinternal operational systems to pull sales, inventory, production, and customer data.	RESTAPIs,JDBC/ODBCConnectors,Custom Data Connectors
8	ExternalAPI-2 (Market Data Providers)	Connectors/APIstoingestexternalmarkettrends, competitor analysis, and demographic data.	RESTAPIs,Vendor-specificSDKs
9	Machine LearningModel	Utilizedforpredictiveanalyticscapabilitiessuchas sales forecasting, demand prediction, or inventory anomaly detection.	Python(Scikit-learn,TensorFlow),CloudML Services(e.g.,AWSSageMaker,AzureML)
10	Infrastructure (CloudPlatform)	Theunderlyingcloudcomputingenvironmenthosting all services and managing resources.	AmazonWebServices(AWS),MicrosoftAzure, Google Cloud Platform (GCP)
11	Infrastructure(BI Server)	Thededicatedserverenvironmentforhosting, managing,anddeliveringTableaudashboardsand user interactions.	TableauServer(deployedonCloudVMslike EC2, Azure VMs, GCE)

Table-2:ApplicationCharacteristics:

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Toolsusedinthesystemfor processing and handling data.	Python libraries (like Pandas),ApacheSpark, SQL.
2	Security Implementations	Howwekeepdatasafeand control who can see what.	Securelogins(SSO),data rules (Row-Level Security inTableau),data encryption.
3	Scalable Architecture	Howthesystemcangrowto handlemoredataand users easily.	Cloud services that grow automatically,elasticdata warehouses.
4	Availability	Makingsurethesystem is always working and reachable when needed.	Cloudfeaturesforalways-on service, like backup systems and load balancers.
5	Performance	How fast dashboards load and how quickly you get answerstoyourquestions.	Fast databases, smart waystostoredataforquick access, and efficient queries.