Project Design Phase
Solution Architecture

Date	19 June 2025
Team ID	LTVIP2025TMID48853
Project Name	Cosmetic Insights – Navigating Cosmetics Trends and Consumer Insights with Tableau
Maximum Marks	4 Marks

Solution Architecture:

Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

- Find the best tech solution to solve existing business problems.

- Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.

- Define features, development phases, and solution requirements.

- Provide specifications according to which the solution is defined, managed, and delivered.

KEY ASPECTS OF YOUR SOLUTION ARCHITECTURE

1. User Layer (Entry Point)

- o Users include:
    - Cosmetic consumers: use filters to discover products
    - Marketers: analyze trends and user behavior
- o Interact via a simple, responsive web interface with embedded Tableau dashboard

2. User Interface (Frontend)
- o Technologies: HTML, CSS, Bootstrap, JavaScript
- o Features:
    - Filters: skin type, budget, brand, rating
    - Search and comparison interface
    - Embedded Tableau dashboards for data visuals

3. Application Layer (Backend)
- o Technologies: Python (Flask/Streamlit) or JavaScript (Node.js)

- Functions:
  - Pass user inputs (filters) to Tableau
  - Handle login/auth (if used)
  - Process and fetch data from review/product databases
  - Optional: route feedback submission

4. Visualization Layer (Dashboard)

- Tool: Tableau Public or Tableau Server
- Displays:
  - Top trending cosmetic products
  - Charts by skin type, rating, region, category
  - Comparison visuals for price, review score, ingredients

5. Data Sources

- Sources:
  - Product Data: CSV / MySQL / Google Sheets
  - Review Data: Customer ratings & feedback
- Features:
  - Structured datasets allow filtering and charting
  - Can be updated regularly or live connected

6. Feedback Engine (Optional)

- Collects product ratings/reviews from users
- Stores in review repository
- Feeds into Tableau to update user satisfaction visuals

7. Hosting & Storage

- Tableau Public: for hosting dashboards
- GitHub Pages / Heroku: for web app or frontend
- Google Drive / Firebase: for storing files and datasets

8. Data Flow

- User → UI → Backend → Tableau → Visualization

   ○ Optionally, Feedback → Stored → Updates Dashboard

9. Scalability

   ○ Add more product datasets
   ○ Support multi-category expansion: skincare, makeup, fragrance
   ○ Add AI/ML trend prediction module in future

10. Security (Optional/Advanced)

- OAuth for secure login (Google, LinkedIn)
- Backend validation for data inputs and review authenticity

Example - Solution Architecture Diagram:

Cosmetic Insights:
Navigating Cosmetics Trends and Consumer Insights with Tableau