LUVINA SOFTWARE

CASE STUDY

E-commerce Website Renewal for a Wheel and Auto Parts Company on SFRA

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PROJECT OVERVIEW

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E-commerce Website Renewal for a Wheel and Auto Parts Company on SFRA:
The project involved renewing the client's e-commerce website by migrating it to the Salesforce Reference Architecture (SFRA) platform. The new website was integrated with internal data systems to automatically retrieve real-time inventory information and process payments seamlessly.
Key features included multi-criteria product search, online ordering, secure payment gateway, and flexible API integrations to support order, product, and customer management.

Location: Japan
Industry: E-commerce
Domain: Wheel and auto parts ordering
Duration: October 2022 – June 2023
Scale: 82,251 MM
Services Provided:

- Data migration and engineering
- Proof of Concept (POC)
- Deployment (PG)
- Unit Testing (UT)
- Integration Testing (IT)
- Performance and security testing
- System maintenance

Key Technologies:

- Host server: ExpressJs, Rhino
- Client's server: ES6, Bootstrap, jQuery, HTML5/ISML
- Development tools: VSCode, Sandbox

PROJECT OVERVIEW

Client and Objectives

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The client is a B2C company specializing in high-quality automotive parts and accessories. To enhance user experience and increase sales, they decided to renew their existing e-commerce website by migrating to **Salesforce Commerce Cloud (SFCC)**. The project aimed not only to improve the user interface and optimize shopping performance but also to leverage the full capabilities of SFCC to integrate data, process orders in real time, and deliver a smoother, more personalized shopping journey for end-users

Challenges

- **Complex product data:** The client's extensive and diverse product catalog created a massive and highly complex data set.
- **Frequent updates:** The need to update product information continuously placed heavy pressure on the system.
- **Search limitations:** Due to the data complexity, SFCC's default search function was insufficient, making it difficult for users to find products efficiently.

Luvina's Solution

- Rebuilt the **database structure**, optimizing queries and indexing for better performance.
- Implemented a **middleware server** to send scheduled requests for data retrieval, and applied **OCAPI jobs** to ensure the system always reflected the latest updates.
- Customized the **search functionality** beyond SFCC's default capability, tailoring it to real-world business needs and significantly enhancing user experience.

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Achievements

Quality Assurance

All technical quality metrics, including QA, code review, UT bug testing, TE review, and customer-reported issues, met the required quality standards.

Technical Innovation & Expertise

Successfully migrated a data volume many times larger than SFCC’s recommended limit to the server. Despite performance challenges caused by heavy resource usage, the team applied advanced optimization techniques to resolve the issue effectively.

Enhanced Search & Filtering

Automotive products such as wheels, tires, and spare parts have highly complex attributes. To maximize user experience, the default SFCC search was replaced with a **fully customized search and filter function**, enabling more accurate, efficient, and user-friendly navigation.

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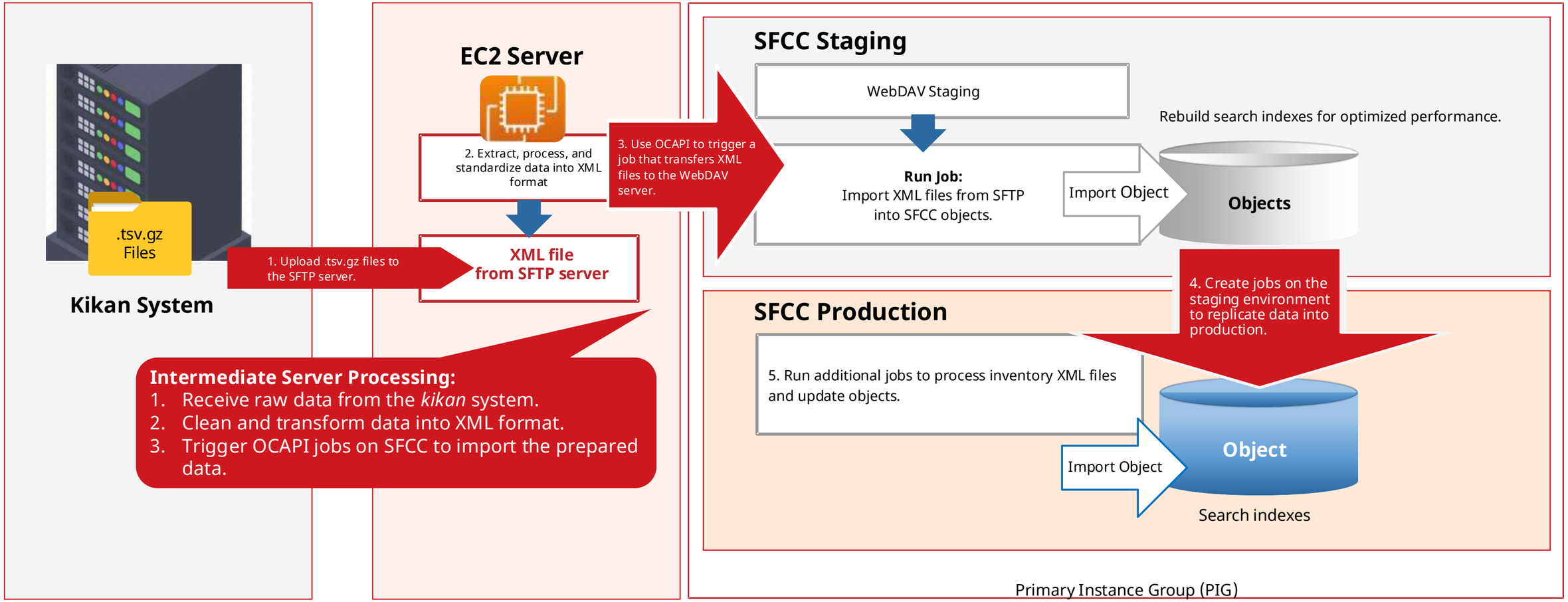
FEATURES & USE CASES

KEY FEATURES

Daily Large-Scale Data Updates:
Enabled smooth and consistent updates of large, complex datasets from the *kikan* system into SFCC.



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PROJECT EXECUTION OVERVIEW

PROJECT PHASES & KEY TASKS

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Phases	SP0	SP1	SP2	SP3	SP4	SP5	SP6
Key Tasks	**Foundation Setup** • Create object structures on SFCC • Build development environments • Integrate data flow from the *kikan* system to SFCC	**Core Features Development** • Header, footer, and navigation menu • Page NotFound handling • Product search (excluding equipment gallery search) • Product listing page *(mock integration not yet applied)*	**User Account & Product Details Features Development** • Product detail page • Member registration • Login functionality • Password reminder • Mock integration for Phase 1 features	**Shopping & Checkout Features Development** • Shopping cart page • Checkout process • Partial bug fixes from UAT of Phase 2	**Advanced Purchase Features Development** • Payment settlement • Integration with equipment gallery • Search from equipment gallery • Guest checkout function • Partial bug fixes from UAT of Phase 3	**User Experience Expansion Features Development** • My Page • Top page • Content management pages • Contact Us page • Free keyword search • Partial bug fixes from UAT of Phase 4 • Complete bug fixes from Phases 0–3	**Administration & Final QA** • Admin functions development • Bug fixes from UAT of Phase 5
Start	2022/10/01	2022/11/01	2022/12/01	2023/01/01	2023/02/01	2023/03/01	2023/04/01
End	2022/10/31	2022/11/30	2022/12/31	2023/01/31	2023/02/28	2023/03/31	2023/04/30

PROJECT PHASES

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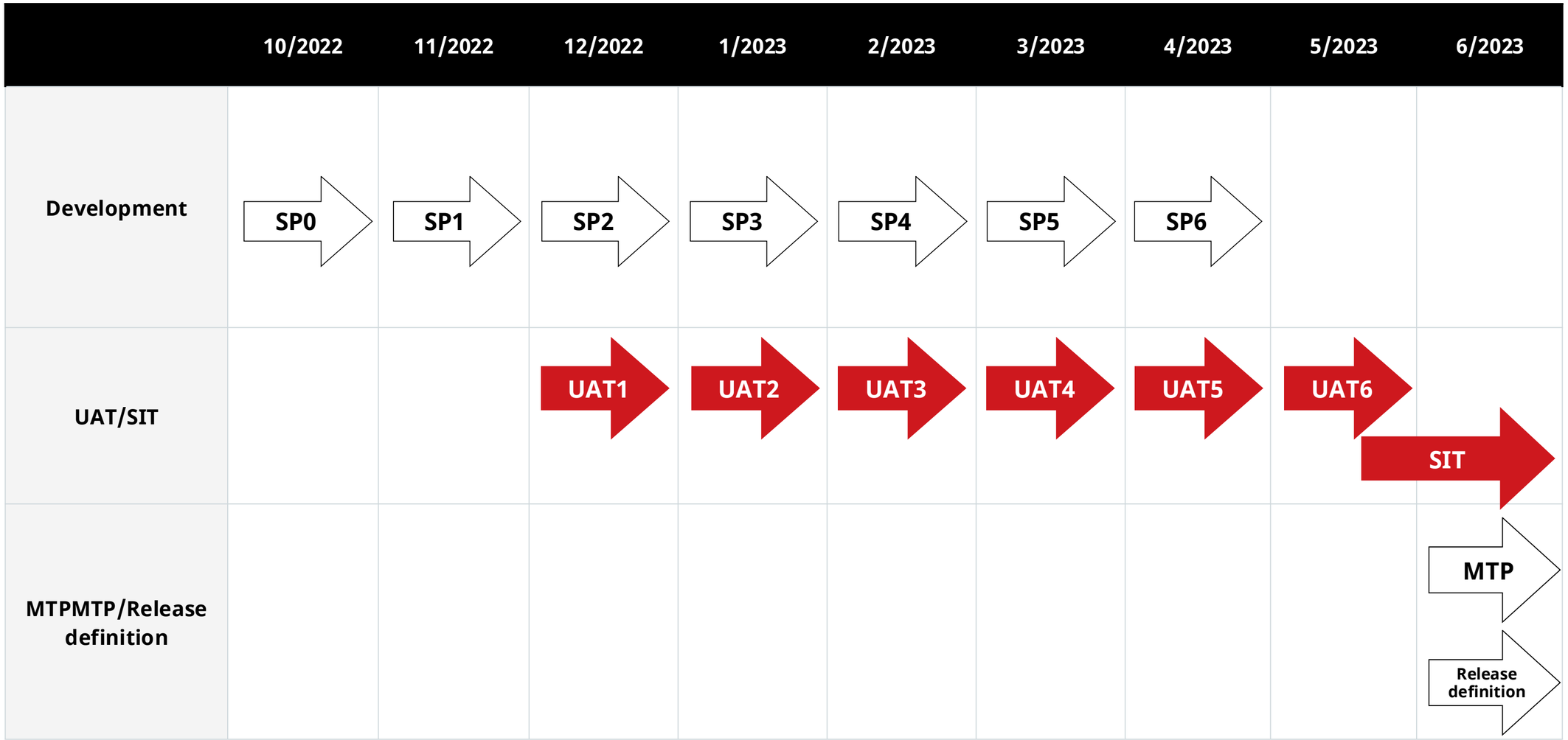
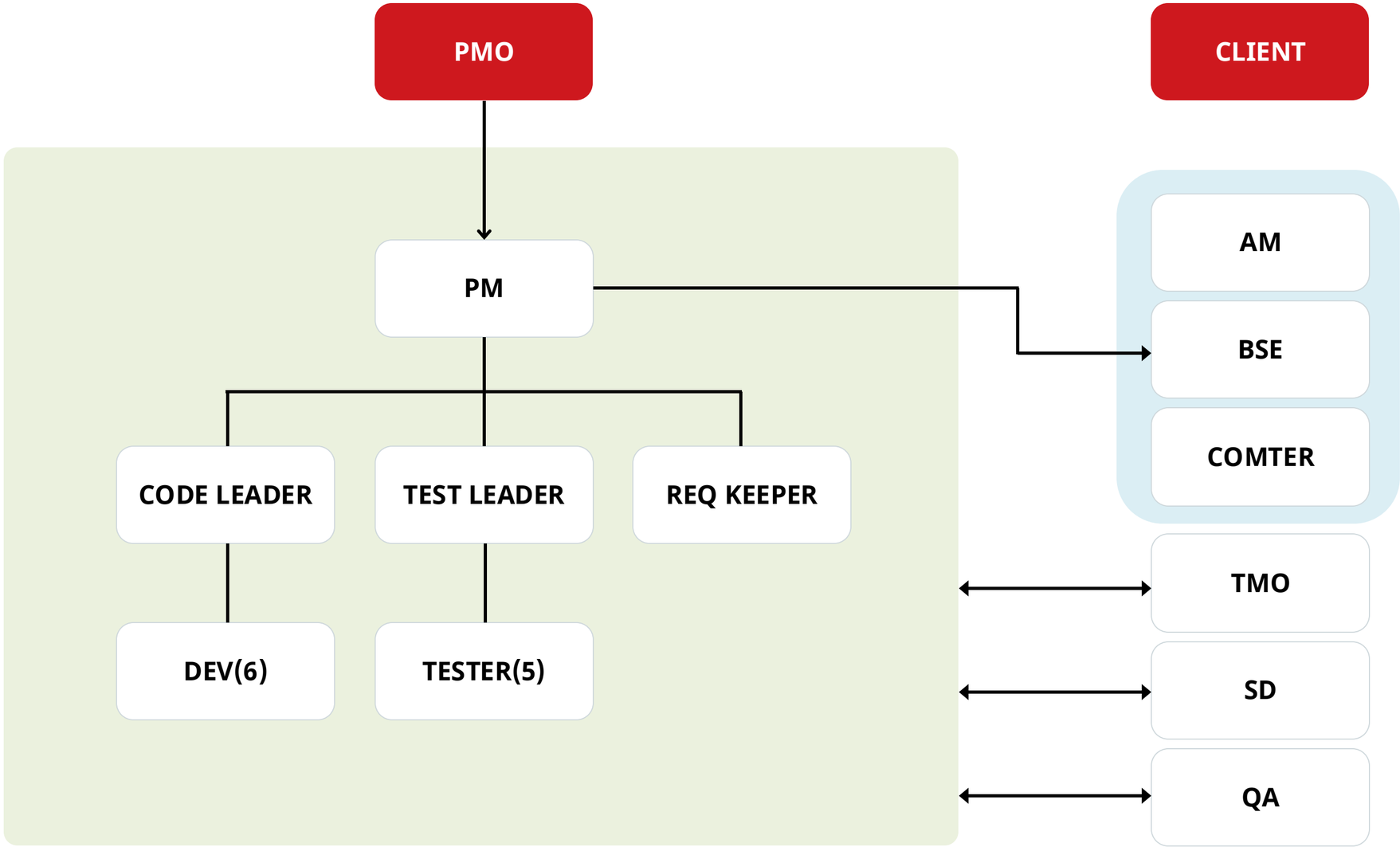
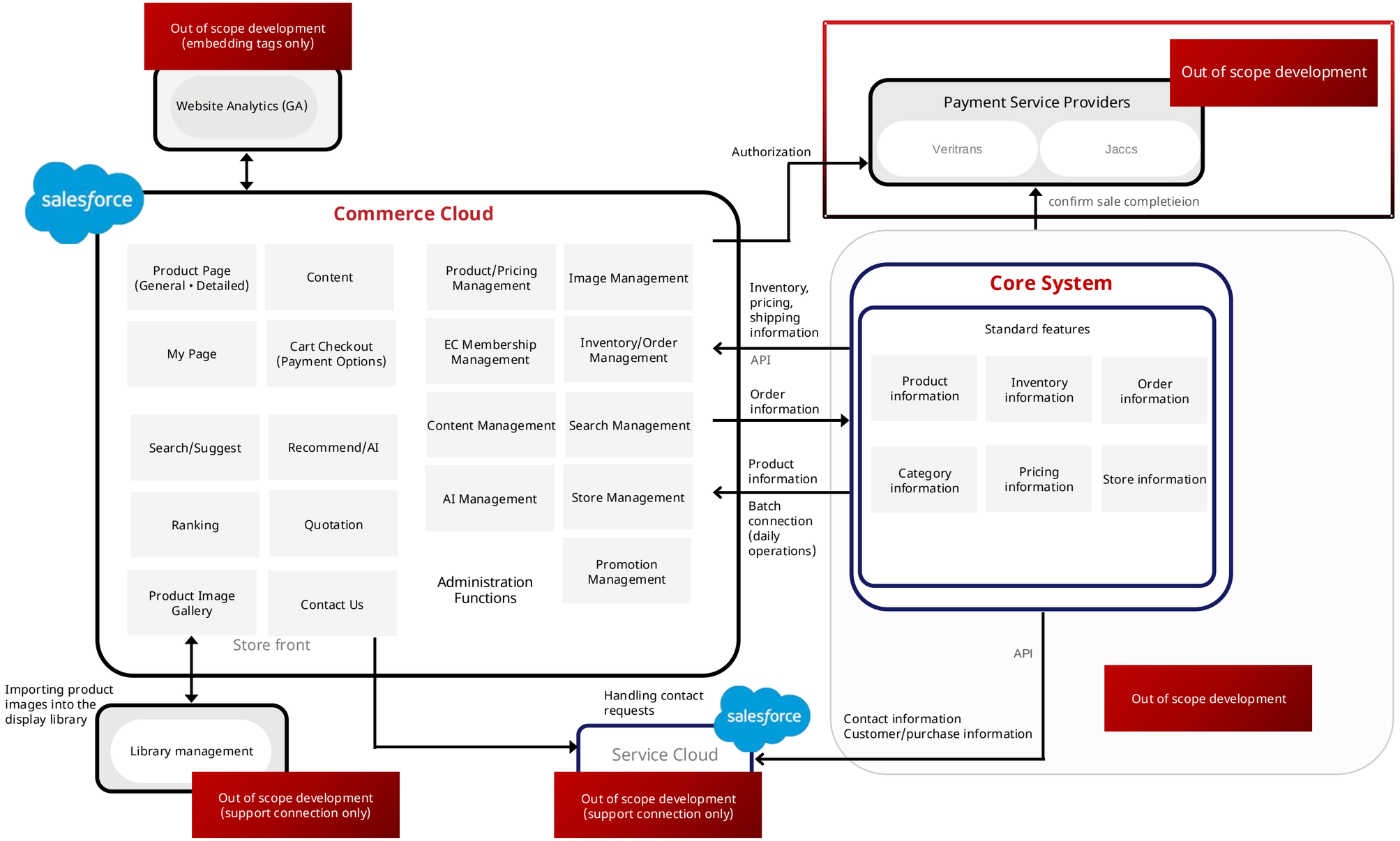


TEAM STRUCTURE



TECHNICAL DETAILS – SYSTEM OVERVIEW



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EXTRA POINTS

EXTRA POINTS – CHALLENGES/LESSONS

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Context

The system experienced issues with timeouts and slow response times.

Root Cause of Slow Response

- The product index on the site contained a very large number of records and oversized documents.
- Current status: Index size ~4.55 GB with ~4 million records.
- Recommendation from Salesforce (12/29): Product index should be limited to ≤1 million documents and ≤1 GB in size.

Reason for Oversized Index

- Approximately 3,000–4,000 categories were defined to represent vehicle types.
- Each vehicle category contained many subcategories based on tire/rim size and product type.
- Each subcategory was assigned hundreds of products (some >400 items).
- These exponential relationships caused the product index to expand significantly.

Solution Implemented

- Removed large categories from the index and replaced them with custom objects (~60,000), representing vehicle and rim/tire size. Each object stores the list of product IDs.
- For product search:
  - Identify products within categories based on product type and applied filters (color, manufacturer, type, etc.).
  - Match product IDs with the corresponding custom object.
  - Use custom code to filter the final product list that satisfies both conditions.

Summary

Instead of relying on categories, the system now uses custom objects to manage product relationships. This significantly reduced the index size, aligning it with SFCC's recommendations and improving overall system performance.

EXTRA POINTS – SECURITY

STRICT SECURITY REQUIREMENTS

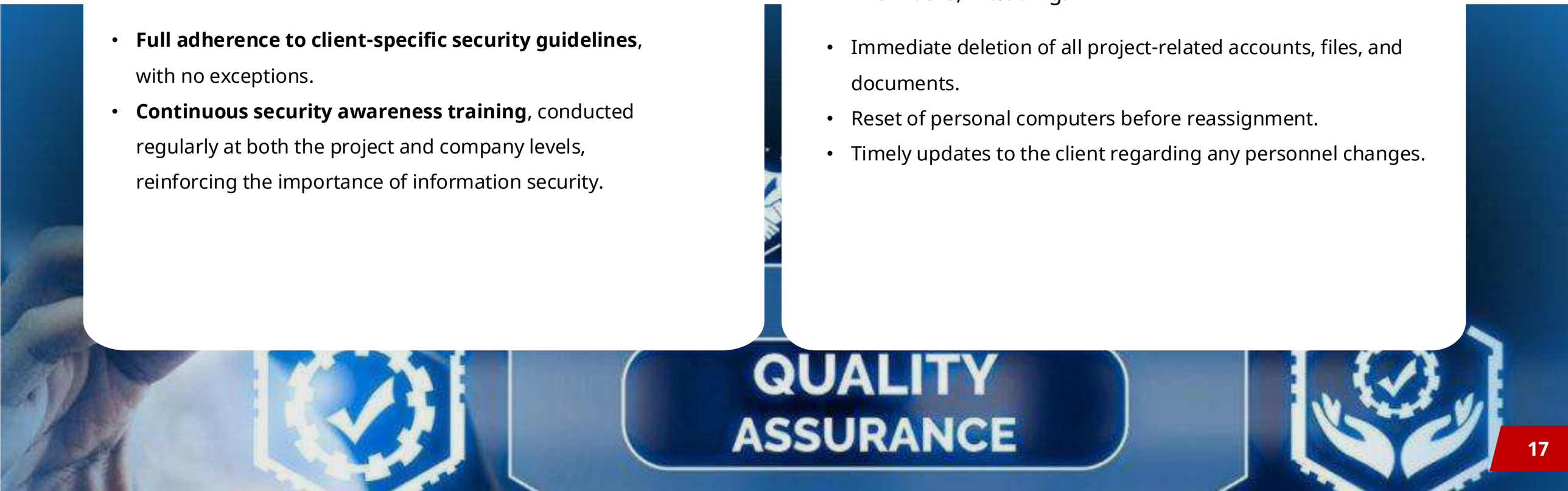
The project was conducted under rigorous security standards, fully aligned with **ISO 27001**, and subject to annual audits by accredited certification bodies. To ensure compliance and protect client data, the following security controls were enforced:

Strict security policies for project members

- **Full adherence to client-specific security guidelines**, with no exceptions.
- **Continuous security awareness training**, conducted regularly at both the project and company levels, reinforcing the importance of information security.

Clear exit protocols for departing project members, including:

- Immediate deletion of all project-related accounts, files, and documents.
- Reset of personal computers before reassignment.
- Timely updates to the client regarding any personnel changes.



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