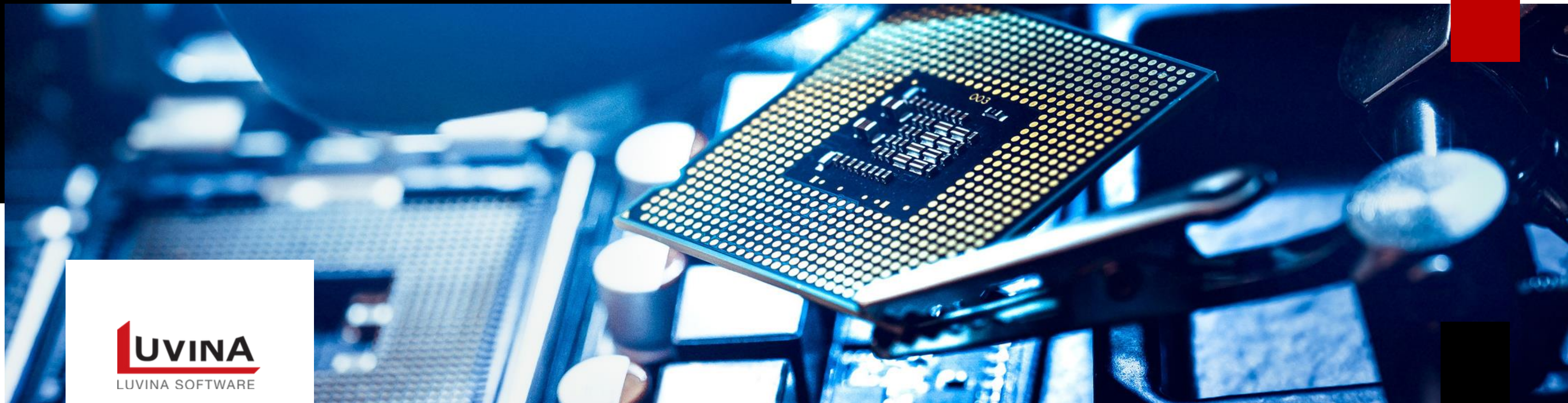




CASE STUDY

E-commerce system upgrade for a retailer of electronic chips



<https://luvina.net/>



PROJECT OVERVIEW



PROJECT OVERVIEW

This project focused on developing and upgrading the e-commerce system for a Japanese retailer of electronic chips. The new system integrated features such as global purchasing, automated pricing based on competitor data, electronic data exchange with suppliers, and order management through to distribution and warehouse operations.

Country: Japan

Industry: Retail (Electronic Chips)

Business Areas: E-commerce, Sales Management, Distribution Centers

Services: Software Development

Timeline:

Pilot Project: 09/2011 – 12/2011

ODC Project: 01/2012 – 08/2019

Renewal Project: 2017

ODC Project: 06/2021 – 4/2026

Scale:

Pilot Project: 12.3 MM

ODC Project: 6–20 MM

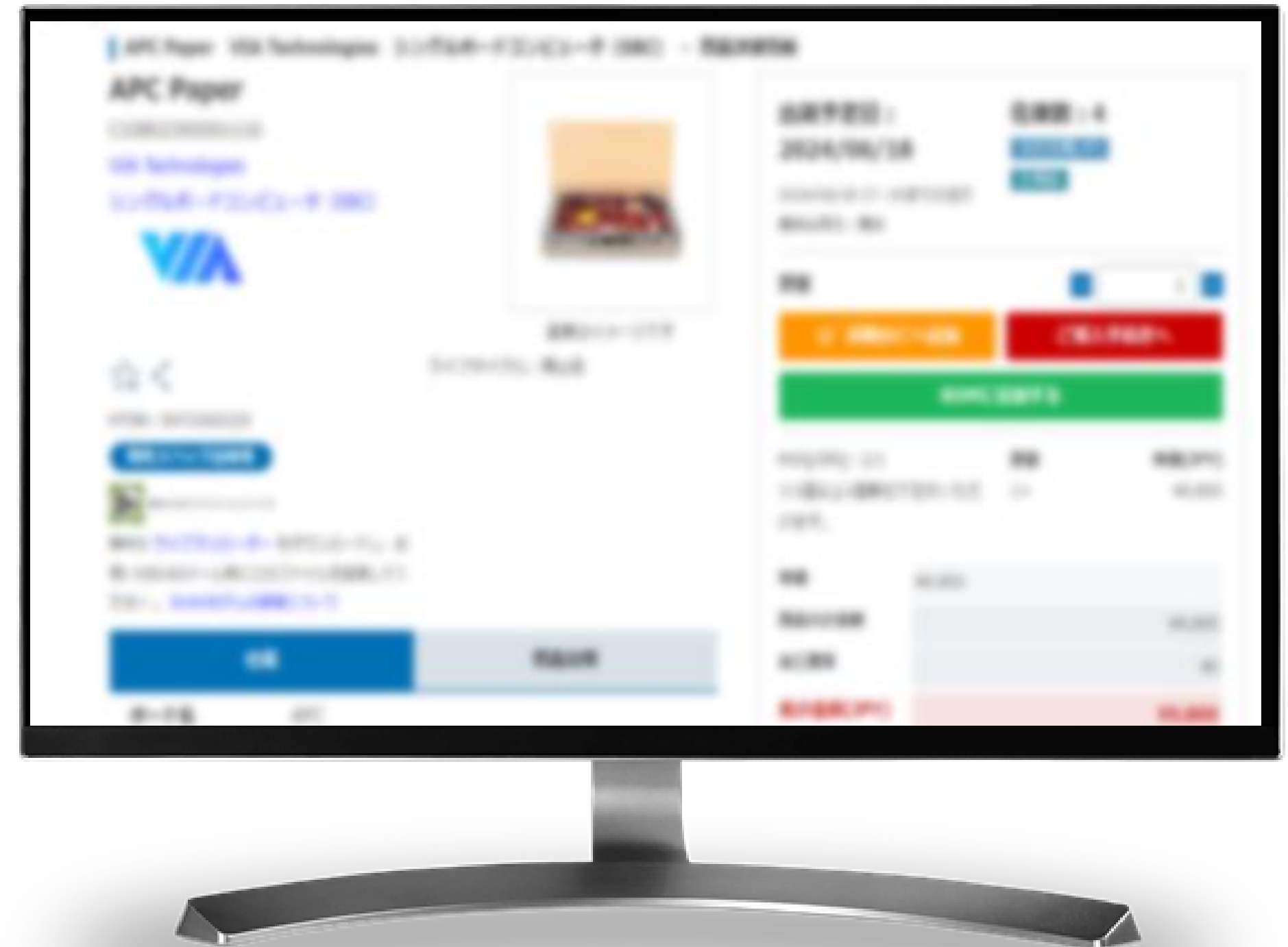
Renewal Project: 6–20 MM

ODC Project: 10–18 MM

Technologies:

E-commerce: JEE7, JSF, EJB, JPA, JAX-WS, MapR-HBase, Elastic Search, Oracle

Sales Management & Distribution Center: Seasar2, Swing, Oracle, Magento





Client background

The client is one of Japan's leading companies in electronic components and semiconductors. Facing an increasingly competitive and fast-changing e-commerce market, the client needed to continuously upgrade their system to keep pace with user expectations and industry trends.

Previously, procurement was handled manually via email and fax, that was time-consuming and difficult to scale. The client sought a solution to fully digitize supplier data exchange, automate operations, accelerate supply speed, expand product catalogs, and optimize inventory for a better user experience.



Client needs

- A trusted technology partner capable of executing complex improvements on the existing system.
- A competitive e-commerce platform with smart pricing capabilities. Specifically, the client requested a solution that could scan market prices daily, analyze data, and automatically set the optimal price for each product, ensuring a competitive edge the next day.
- Full automation of the ordering process, including order changes and supplier response handling.



Challenges

-  **Complex Sales & Distribution Management:** The system required integration across multiple layers of operations, from sales (orders, revenue) to distribution centers (inventory in/out), demanding a flexible and robust solution.
-  **Performance Optimization for Search & Data Retrieval:** The system needed powerful technologies to enhance search and retrieval performance, ensuring seamless and continuous price optimization.
-  **Lack of Standardized Supplier Communication:** Without unified standards, supplier data exchange was slow, unsynchronized, and prone to manual errors.



Luvina's solution

Luvina not only focused on system development but also invested in building comprehensive business documentation and conducting internal seminars to ensure all team members deeply understood client processes. This approach improved solution quality and alignment with real operations.

Solution 1: Automated Market Price Scanning

Luvina's engineers developed a robot that automatically scans competitor data and collects pricing information daily. This tool analyzes and sets the most competitive price for each product.

Solution 2: Full Automation of Supplier Data Exchange

Luvina designed and implemented an automated procurement information exchange system using the international EDIFACT standard. This eliminated manual processes, improved processing speed, and ensured high accuracy.

	Challenge	Before	After
Solution 1	Time	Manually calculated product prices, then updated in the master DB.	Automated calculation of optimal prices, automatically updated in DB.
	Operational Cost	Required staff to calculate and update product prices.	Robot runs autonomously , eliminating the need for manual work.
Solution 2	Time	Data exchange via email/fax was slow .	Data exchange automated through EDIFACT batch processes, drastically reducing time and improving supply diversity and inventory availability.
	Accuracy	Manual updates often led to errors.	Data exchange accuracy guaranteed at 100% .
	Operational Cost	Staff required to manually draft and send communications (mail, fax).	Automated data exchange system, no manual effort required.

SOLUTION 1 - ACHIEVEMENTS



BUSINESS IMPACT

Rapid revenue growth by maintaining competitive and attractive product pricing.



STRATEGIC ALIGNMENT

Enabled stronger supplier connectivity, laying the ground work for long-term supply chain expansion.

SOLUTION 2 - ACHIEVEMENTS



BUSINESS IMPACT

Reduced costs, improved efficiency, and ensured accuracy in supplier communications.



ROI

Expanded customer base through diversified product offerings and improved competitiveness.



STRATEGIC ALIGNMENT

Strengthened supplier collaboration and addressed client concerns around supply chain stability.

PROJECT OVERVIEW

ACHIEVEMENTS

Through these strategic technology solutions, Luvina helped the client achieve impressive business and operational results:



ACCELERATED REVENUE GROWTH

Automated daily price optimization attracted more buyers and significantly boosted sales.



OPTIMIZED OPERATIONS & COST SAVINGS

The combination of market price robots and EDIFACT-based data exchange reduced manual effort, cut costs, and improved accuracy in supplier interactions.



LONG-TERM STRATEGIC FIT

Beyond immediate needs, the solutions enhanced supplier connectivity and established a solid foundation for future supply chain expansion.



EXPANDED CUSTOMER BASE & IMPROVED ROI

Product diversification and consistently competitive pricing sustainably grew the user base and delivered stronger returns on investment.



FEATURES & USE CASES



The solution integrates multiple systems to support internal management, sales operations, logistics, external data input, and global e-commerce. Together, these modules form a seamless ecosystem enabling automation, data accuracy, and operational efficiency.

01

CATS - Internal Management Website

- Manage, search, and analyze information such as received orders, purchase orders, and revenue.
- Track, search, and retrieve data on inventory, inbound, and outbound goods.
- Manage selected data masters and interface labels on the User Web.

02

SALES MANAGEMENT SYSTEM

- Manage data masters (model number, manufacturer, unit price, supplier, customer, employee).
- Manage received orders (details, allocation, payment method, order changes).
- Manage purchase orders (orders sent).
- Direct and monitor warehouse inbound/outbound operations.
- Manage and analyze revenue and profit margins.

03

LOGISTICS MANAGEMENT

- Manage goods and storage racks inside the warehouse.
- Handle inbound operations based on purchase/shipping instructions or special inbound requests.
- Handle outbound operations based on received orders/shipping instructions or special outbound requests.
- Conduct visual and X-ray inspections of goods.

04

EXTERNAL DATA INPUT

- Collect product information from multiple sources such as purchased datasets or files shared by the parent company and suppliers.
- Collect, map, and process raw data to create standardized data for sales operations: model numbers, inventory quantities, unit prices, and technical parameters.

05

EXTERNAL LINKS

- A restricted e-commerce site with limited functionality.
- Allow partners to search products, check pricing, and place orders through a dedicated authentication system.

06

USER WEB (Global E-Commerce)

- User registration (account creation) and profile management.
- Product and inventory search and browsing.
- Place orders, request quotations, and negotiate prices.
- Track order history, quotation/negotiation records, and complete payments.

07

WEB-EDI (Supplier Portal)

- Respond to the client company inquiries about product details, inventory, and pricing.
- Issue purchase order slips.
- Export procurement data.

End Customers (Buyers)	Internal Staff (Employees)
• Can purchase electronic components and semiconductors at the most competitive prices. • Can access a broad range of products globally via the client’s e-commerce platform.	• Logistics and sales staff benefit from an automated system for exchanging information with suppliers. • Streamlined handling of inventory, pricing, and expected shipping schedules.



PROJECT EXECUTION OVERVIEW



Phase	Duration	Team Size	Key Activities
Pilot Phase	09/2011 – 12/2011	2 members	• Implement system improvements & fixes • Apply initial enhancement requests
Maintenance	01/2012 – Present	6–10 members	• Continuous enhancement & bug fixes • Developed competitive User Web platform • Ongoing system upgrades • Implement new features per business growth

What We Do (Across All Phases)

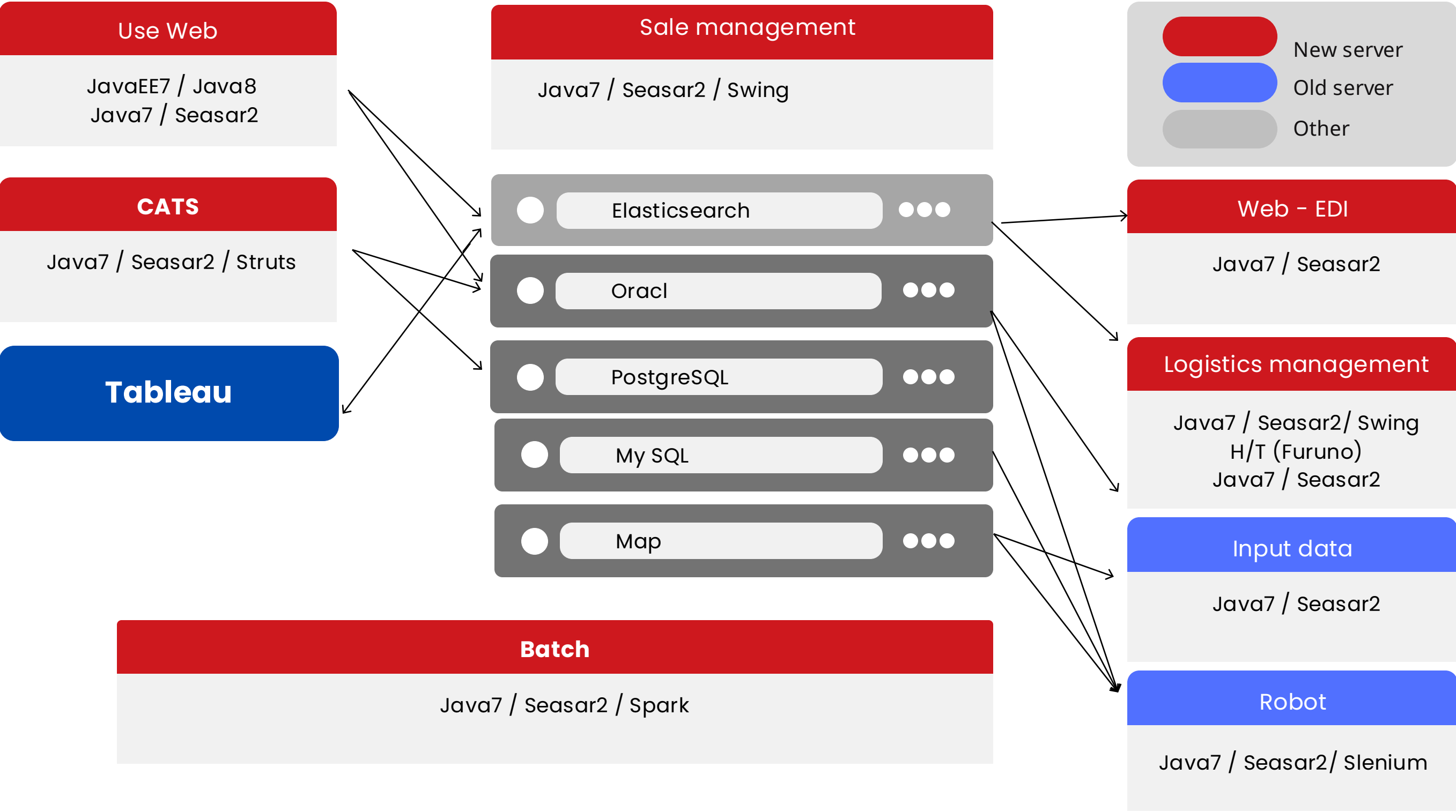
1. Requirement & Design

- Study requirement definition documents
- Create detailed design
- Review detailed design with the client (including live review sessions when needed)
- **Output:** Updated detailed design after review + QA confirmations with supplier

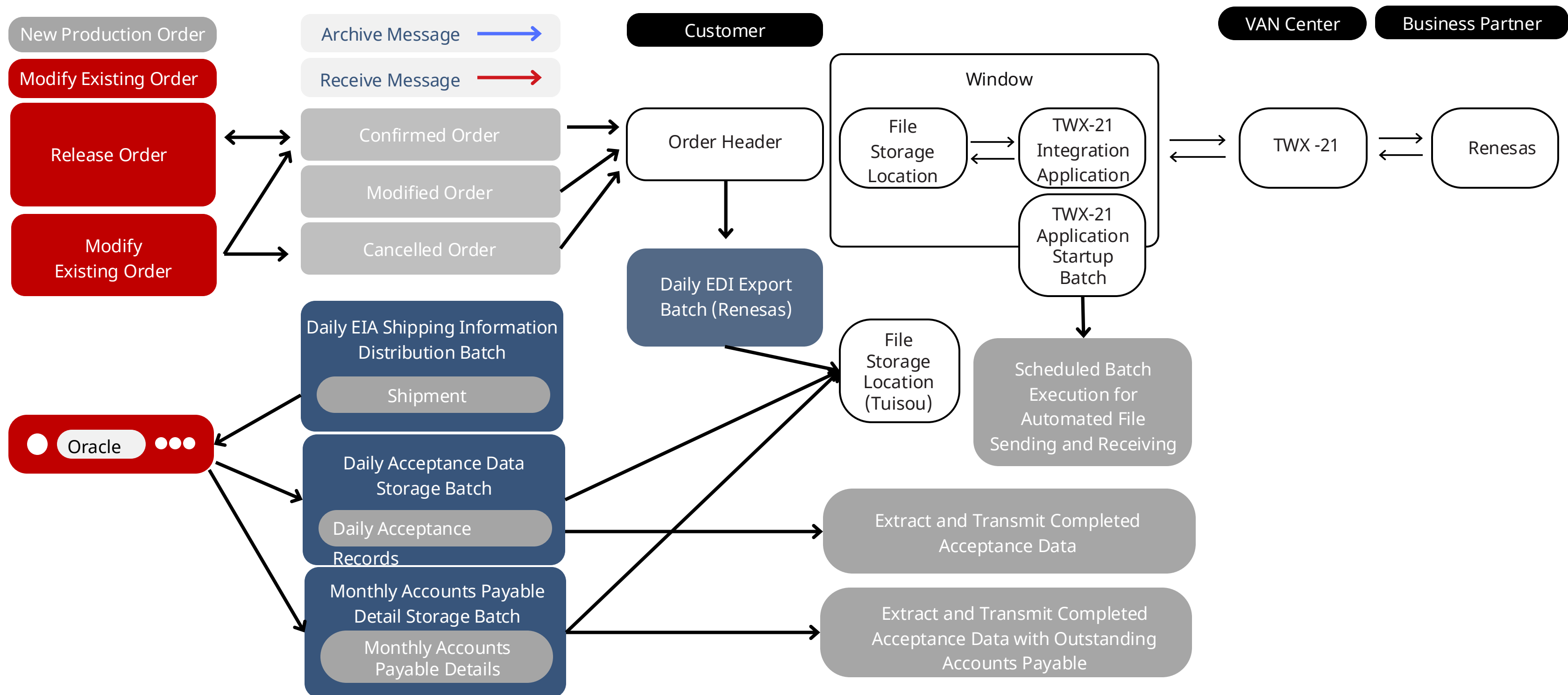
2. Product Development

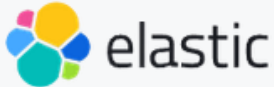
- **Development:** Source code committed to GIT
- **Testing:** Test cases & test results delivered

The project was not handled solely by the development team. Instead, it was executed through close coordination with multiple specialized support teams to ensure progress, quality, and scalability across every phase.



TECHNICAL DETAILS – OVERVIEW



Framework	Programing language	DB	Other
◦JEE7:JSF		◦Elastic Search 	EDIFACT
◦Seasar2		◦MapR-Hbase	
◦EJB		◦Oracle 	TWX-21
◦JPA			



WHAT MAKES US DIFFERENT?



Handling a system that spans sales, purchasing, logistics, and warehouse operations requires more than coding expertise.

Our team absorbed the client's intricate workflows, adapted quickly across multiple phases, and stayed aligned even as business priorities evolved over a long-running project.



Why it matters:

This deep understanding enabled us to propose solutions - not just deliver tasks - and ensured consistency across years of system enhancements, despite personnel changes.

Strong Knowledge Continuity in Long-Term Engagements

A project that spans over a decade faces inevitable challenges: shifting requirements, new members onboarding, changing vendors.

How we solved it:

Built standardized business documentation and internal knowledge bases.

Maintained structured onboarding for new members.

Ensured knowledge continuity across all development phases and maintenance cycles.

Impact:

Smooth team transition, stable productivity, and predictable quality throughout the entire project lifecycle.

This project operated under strict security requirements, following ISO 27001 standards with annual audits.

Security measures include:

- Strict security rules for all project members
- Compliance with the client's internal security policies
- License verification for all libraries used in plugins (treated as commercial products)
- Mandatory cleanup when members leave the project (account deletion, data wipe, laptop reset)
- Transparent updates to the client on all personnel changes

Outcome: Zero security incidents over years of operation.



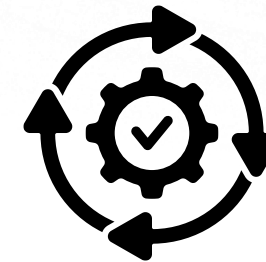
A Mature, End-to-End Quality Assurance Framework

Quality is not an afterthought. Luvina applies a multi-layer QA system across development and testing.



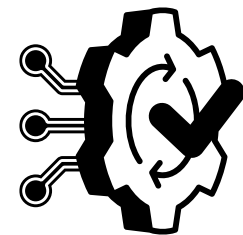
Development Quality Control

- Full coding checklists per module
- Double code review before handover to QA



- Structured review of test cases & test evidence before delivering to the client
- Strict adherence to project-specific testing checklists

Test Quality Control



Continuous Improvement

- Regular defect analysis with the client
- Updated checklists, coding guidelines, and testing rules after each phase
- Enhanced reusability & consistency for future cycles

QUALITY
ASSURANCE

AFTER-SALE
SERVICES

Impact: A stable, predictable quality baseline throughout multi-year development and maintenance.

Why Clients Choose Luvina

- Faster time-to-value for complex systems

- Lower long-term maintenance cost thanks to structured documentation

- Reliable delivery across multi-vendor setups

- Zero security incidents in years of operation

- Stable productivity & high-quality output



Thank You

CONTACT US



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