LUVINA SOFTWARE

CASE STUDY

Mitigation of EOSL ricks

https://luvina.net/

PROJECT OVERVIEW

PROJECT: MIGRATION

Development involved transitioning from the old Struts Framework to the new Spring Framework.

OBJECTIVE:

- The server OS (RHEL 6.2) is currently in use for the systems オー人事.net (O.net HR), グループマイページ (Group MyPage), and e明細 (e-Payroll) are set to *reach their End of Support Life (EOSL) in June 2024*.
- Additionally, the middleware and software comprising these systems run on versions that no longer receive support, posing *security risks*.

ACTION:

To mitigate these risks, the servers need to be re-newed and corresponding middleware and software upgraded.

PROJECT OVERVIEW

LOCATION: Japan

INDUSTRY:

Web-based recruitment, dispatch services, and HR management systems.

TIMELINE:

- Phase POC (Estimation and Investigation): January 2023 ~ July 2023
- Phase UT Pre-test (Test Case): August 2023
- Phase Coding: August 2023 ~ October 2023
- Phase UT (Test Case and Testing): October 2023 ~ February 2024
- Phase Ita (Test Case and Testing): March 2024 ~ May 2024

SCALE: 89.4 MM

SERVICES: END OF SERVICE LIFE

OBJECTIVES:

- HR PORTAL: A homepage used by users to search for jobs.
- Group MyPage: A feature accessible to registered members.
- e-Payroll: A feature allowing members to check their salary information and tax deduction slips.

KEY TECHNOLOGIES:

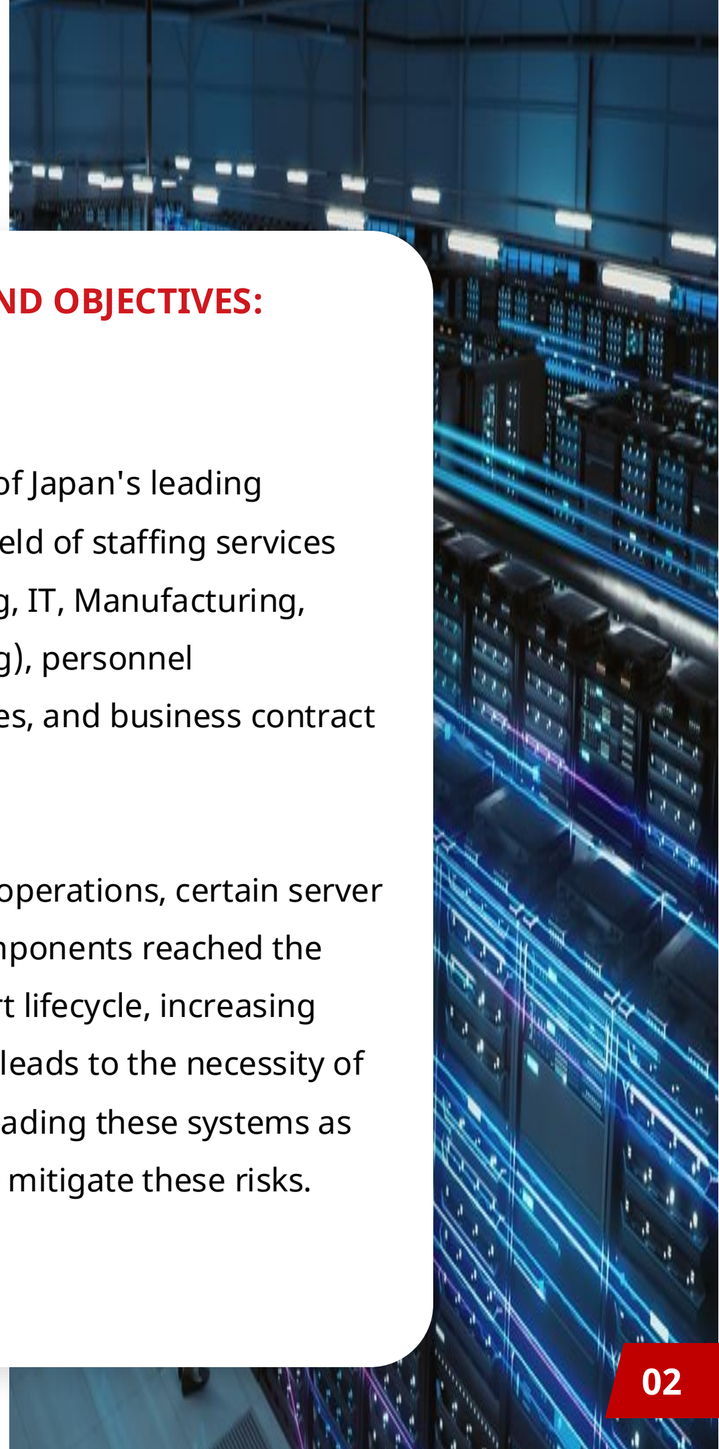
Spring Boot, Oracle Database, Oracle Linux

CLIENT AND OBJECTIVES:

Client:

Staffservice is one of Japan's leading companies in the field of staffing services (Office, Engineering, IT, Manufacturing, Healthcare, Nursing), personnel introduction services, and business contract management.

Objective: During operations, certain server OS and system components reached the end of their support lifecycle, increasing security risks. That leads to the necessity of renewing and upgrading these systems as soon as possible to mitigate these risks.



PROJECT OVERVIEW

CHALLENGES

STRATEGYS & SOLUTIONS

Ensuring Security and System Consistency Post-Migration

Luvina investigated technical issues and provided detailed consultation on the migration process, including:

- *Advising on the transition from Struts to Spring Framework while ensuring that the new system operates identically to the current one;*
- *And optimizing functions and removing unnecessary code to streamline the new system.*

Maintaining the Functionality and System Integrity

- *Investigating the migration of the code character set (from SJIS to UTF8) and the authentication function (login).*
- *Maintaining the operational principles of the system so that it mirrors the existing environment (including flow, URL structure, etc.).*

Meeting Strict Release Milestones of October 2024

We created a detailed development plan and collaborated closely with the client throughout various phases to ensure the project met all functional requirements & still stayed on track.

Proof of Concept (POC) → Estimation → Coding → Testing (UT, Ita)

Investigating and Applying the Right Migration Methods

- *Analyzing the entire source code for the Framework migration (Struts to Spring Boot) and developing tools to enhance productivity and quality during the migration process.*
- *Support in coding and testing helped ensure a smooth transition.*

PROJECT OVERVIEW

ACHIEVEMENTS

TOOL DEVELOPMENT:

Six conversion tools were developed, achieving the following:

- Front-End Conversion: Approximately 80% of the Front-End source code (.jsp) was converted.
- Back-End Conversion: Around 50% of the Back-End source code (Action-Service-Controller) was converted.

DATA INTEGRITY:

All data remained intact, with no changes observed after migration

SOLUTION IMPLEMENTATION

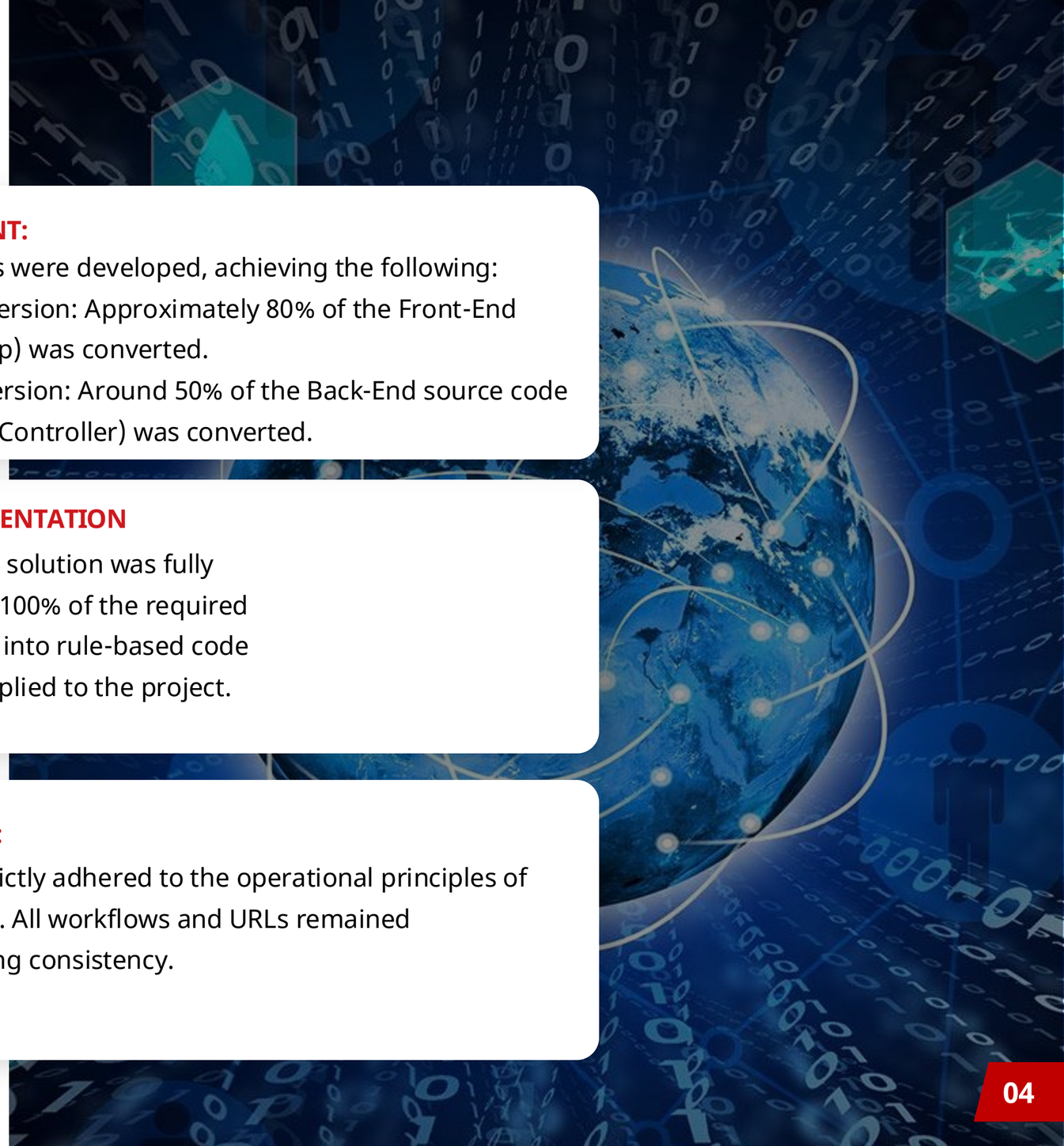
The transformation solution was fully implemented, with 100% of the required changes translated into rule-based code and successfully applied to the project.

EFFICIENCY GAINS

During the Continuous Delivery (CD) phase, the project was completed one week ahead of the planned schedule.

SYSTEM INTEGRITY:

The new system strictly adhered to the operational principles of the existing system. All workflows and URLs remained unchanged, ensuring consistency.



PROJECT OVERVIEW

ACHIEVEMENT – KNOW HOW

Migration	Tasks	What we do
Struts to Spring Boot	Documentation	Coding Sequence Rules (Source Code Conversion Process)
		Security Vulnerability Investigation
		Template UT – Checklist UT
		Template Ita – Checklist UT
		Project Operation Flow
	Conversion Tools	Action to Service Source Conversion Tool
		Configuration to Controller Source Conversion Tool
		UTF8 Encoding Conversion Tool
		SQL File to Entity Conversion Tool
		iBatis to MyBatis3 Conversion Tool
		JSP Tag Conversion Tool

SOLUTIONS - KEY FEATURES & ALIGNMENT TO GOAL

Tool Automation – Building Conversion Tools

- Reduces the manual effort required during the conversion process.
- Enables bulk file conversion in a short time.
- Minimizes the need for adjustments after conversion, reducing the occurrence of bugs compared to manual conversion.
- Ensures consistent code that is easy to modify and maintain.

Rule (Wiki) Conversion Methodology

- Provides detailed and comprehensive guidelines for converting the entire source code.
- Establishes a common understanding across the entire team during development.
- Facilitates easy and simultaneous horizontal implementation if changes occur.
- Ensures consistent code that is easy to modify and maintain.

Diffsource – Testing Partition for Converted Source Code

- Focuses testing specifically on the areas of the source code that have been converted.
- Reduces the likelihood of missing test cases, over-testing, or unnecessary test cases.
- Enhances and ensures the quality of the conversion and consistency with the current system.

IMPLEMENTATION- TIMELINE

[01,2023] - [07,2023]
[POC]

- Define requirements
- Review conversion patterns
- Consider tool automation, code the tool
- Investigate common conversions, verification, etc.
- Code sample conversion

[08,2023] - [10,2023]
[Coding]

- Code JSP conversion
- Code Action | Service conversion
- Code Logic conversion
- Code Database conversion
- Code Auto test (Selenium)

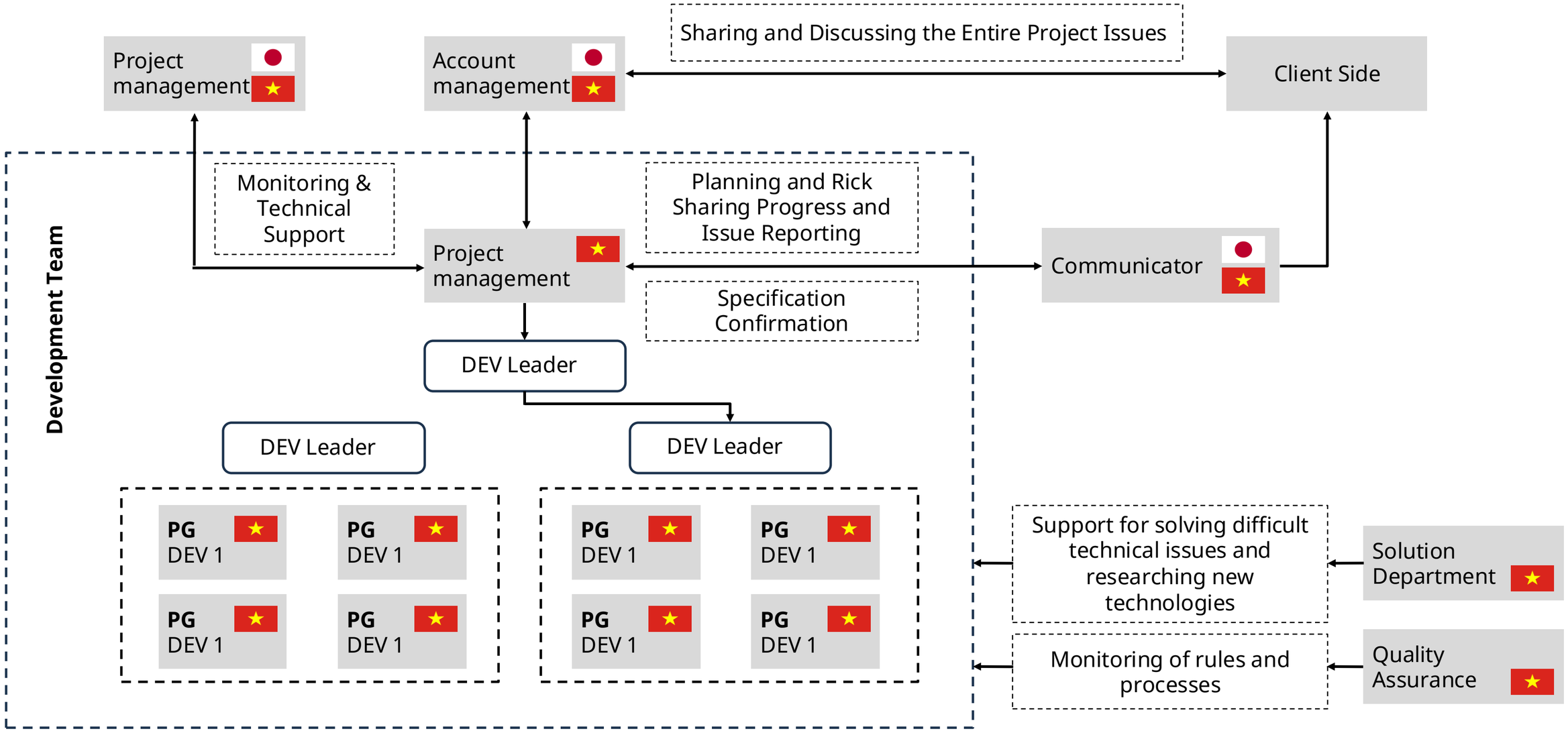
[10,2023] - [02,2024]
[UT]

- Create UT (Unit Test) test cases
- Testing
- Evidence
- Code Auto test (Selenium)

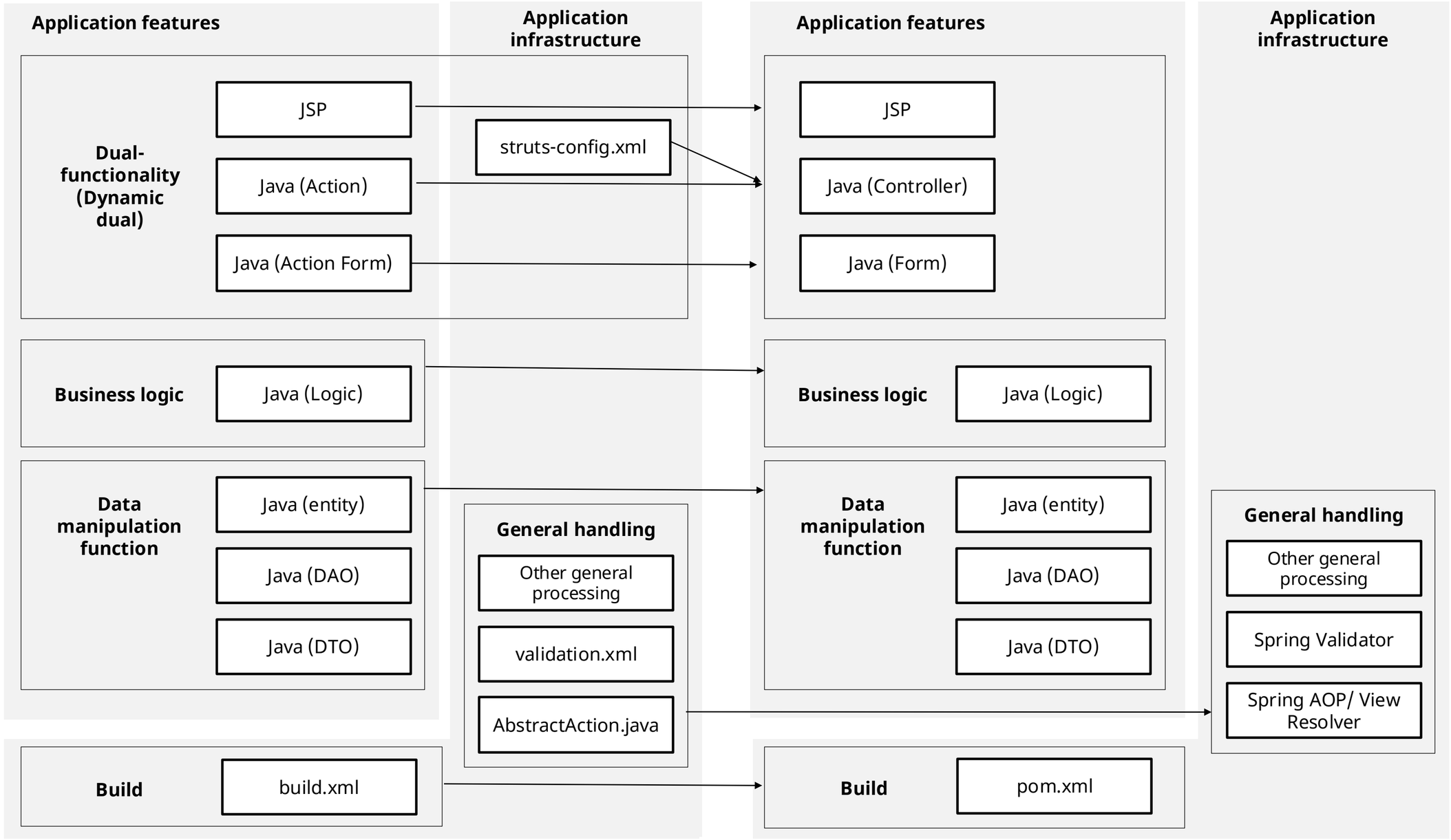
020,2024] - [05,2024]
[ITa]

- Create ITa (Integration Test) test cases
- Testing
- Evidence
- Code Auto test (Selenium)

IMPLEMENTATION - TEAM STRUCTURE



TECHNICAL DETAILS - OVERVIEW



TECHNICAL DETAILS - TECHSTACKS

	From (Front／Back)	To (Front)	To (Back)	Note
OS	RHEL6.2 2024/6/30	Oracle Linux8.2（64bit) 2034/5/31	RHEL6.2 2024/6/30	Front: Target Back: Non-target (including the web server)
DB (Oracle)	Oracle11.2.0.4 2020/12/31	—	Oracle11.2.0.4 2020/12/31	The database is outside the scope of processing.
Web server	Apache 2.2.16 2017/12/31	Apache 2.4.46 (Date not yet announced)	Apache 2.2.16 2017/12/31	Front: Target Back: Non-target
AP server	WebSphere 8 2018/4/30	WebSphere 8.5.5 or 9 2030 (Date not yet announced) + 3 years of extended support	WebSphere 8 2018/4/30	
Java	JDK 1.6 2018/7/1	JDK 8 (JDK 1.8.0_20) (Adopt Open JDK) 2026/5 onwards	JDK 1.6 2018/7/1	
Framework	Struts 1 2013/4/5	Spring Boot 2.7.3 2025/2/18	Struts 1 2013/4/5	

Thank You

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