Modernization Revolution

System Reform

Japan's Largest System Migration Company

SoftRoad

Achievement

23 Years of history

800+ Projects

50+ Active projects

Personnel

40+ Researchers

460+ Migration engineers

1,700+ System Reform consortium members

Services

Modernize all major types of legacy & open legacy systems

Services from planning to user test support

Create pure open system includes data standardization, etc.

Introduction of IT trends as Business dynamic visualization, etc.

Change and add functions

Customer Appreciation (Presentations & Testimonial)

Recognized by 60+ of top 200 companies listed on Tokyo Stock Exchange

Nissan Motor   **Japan Airlines**   **Idemitsu Kosan**   **TOTO**   **Kirin**   **ITEC Hankyu Hanshin**
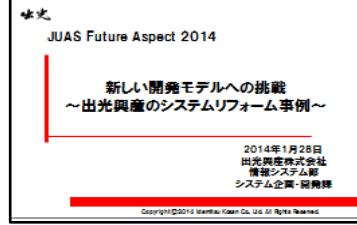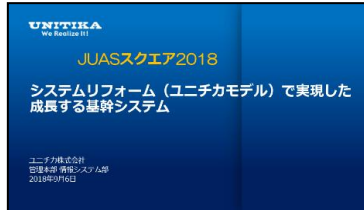
UNITIKA   **Kyocera**   **Mazda**   **Softbank BB**   **Kao**   **Murata Manufacturing**

Petroleum resource   **Hankyu Ad Agency**   **JAL Infotec**   **NITORI**   **Sumitomo Metal Mining**   **Sumitomo Bakelite**

⚠️ Problem with Straight Conversion – Conversion

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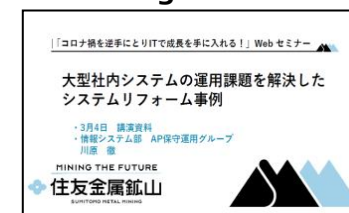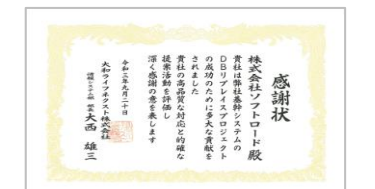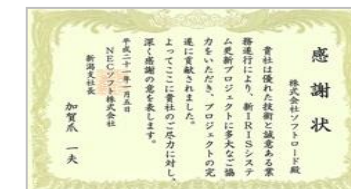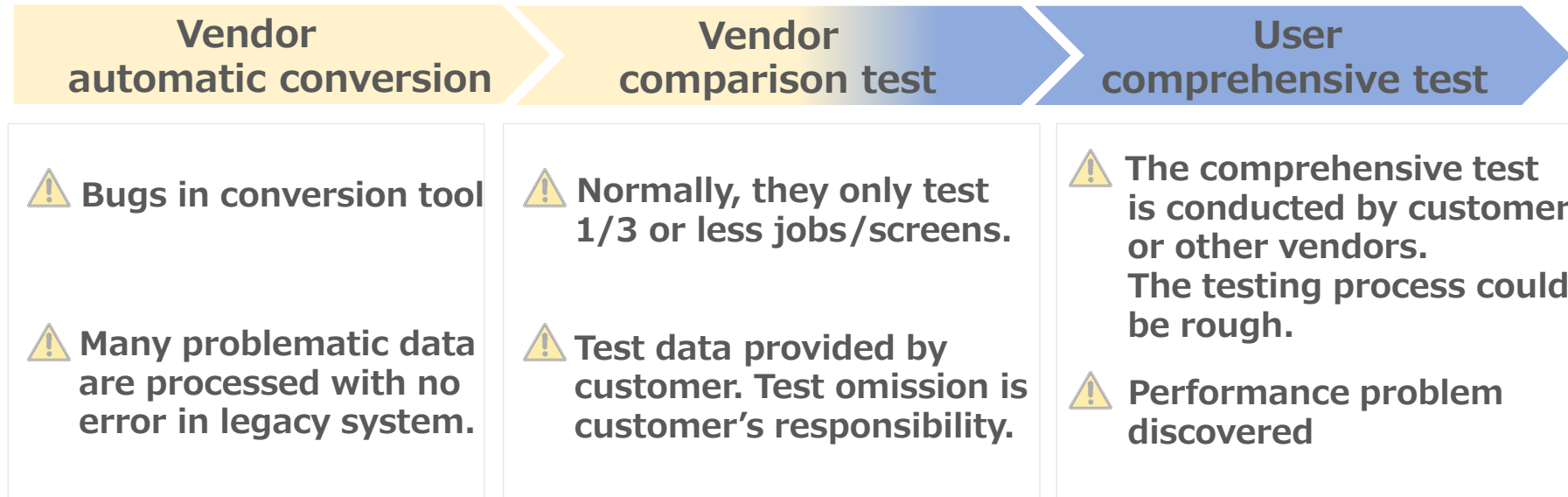
Straight conversion is not powerful enough ⚠️

- Convert with many bugs.
- Create special Java system with big Java foundation for old language functions.
- Cannot handle many elements of operating environment.
- Cannot conduct inventory strictly.
- etc.

Customers have to deal these issues manually by themselves. It poses big risk on quality, cost, and delivery schedule.

⚠️ Problem with Straight Conversion - Testing

Vendor automatic conversion	Vendor comparison test	User comprehensive test
⚠️ Bugs in conversion tool ⚠️ Many problematic data are processed with no error in legacy system.	⚠️ Normally, they only test 1/3 or less jobs/screens. ⚠️ Test data provided by customer. Test omission is customer's responsibility.	⚠️ The comprehensive test is conducted by customer or other vendors. The testing process could be rough. ⚠️ Performance problem discovered

Vendor lacks analyzing capability, business knowledge. It becomes a difficult job and responsibility of customer.

System Reform Conversion : Language Conversion Using Knowledge-injected AI

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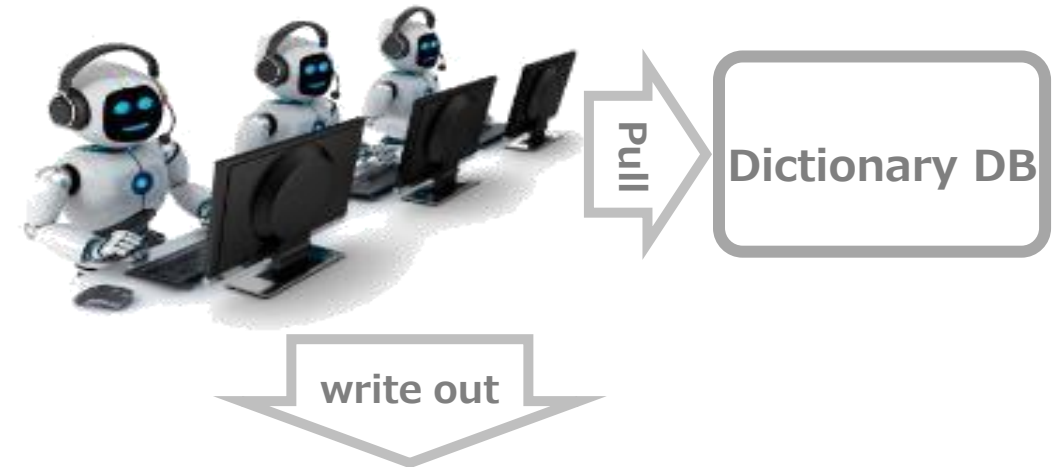**STEP1** Understand the processing content in existing sources

STEP2 Generating the correct language/structure

Grammar・Function Dictionary DB

Language
  COBOL、PL/I、IDLⅡ、JCL、RPG、CL…
  Java、VB、.net、OracleForms …
DB
  Oracle、SQLServer、PostgreSQL …
Framework
  Struts1、Seasar2、Spring、.net …

Addition

Pull

inquiry

Current System
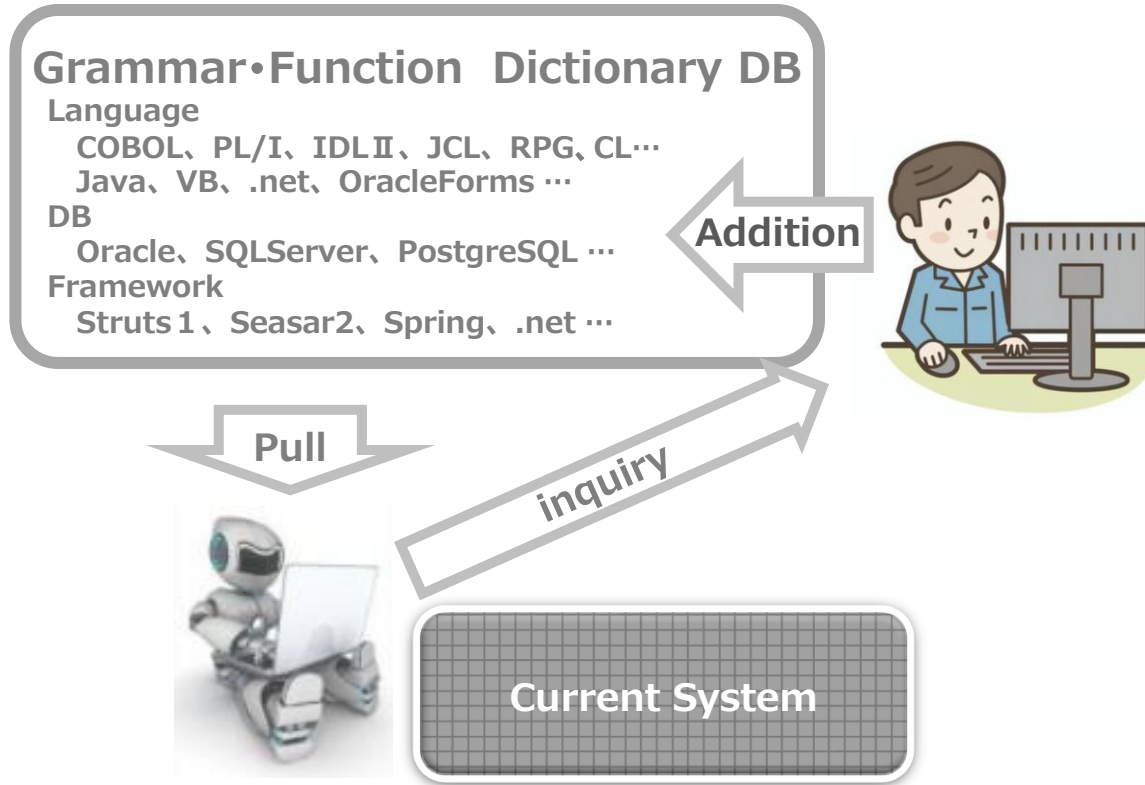
Understand what the program does.
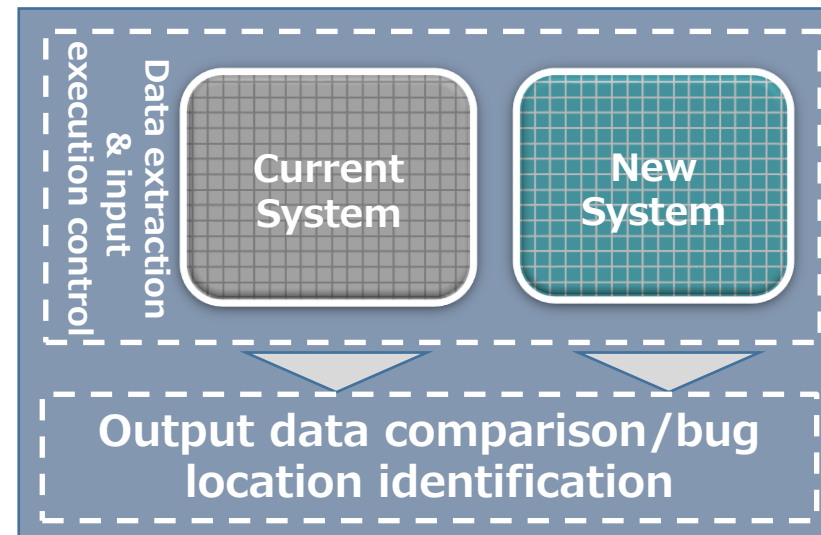
Pull

Dictionary DB

write out

- Correct Java as coded by programmer
- Structure conversion to RDB, CSV
- Conversion to customer Java FW
- Improved performance by OPEN style
- Digit expansion, etc.

Almost 100% conversion: extremely high quality, low cost, and high maintainability.

QA of System Reform : ①complete verification of all technical elements

Automated Testing Tools

- Run the program
- Compare results
- Identify bug location
- Etc.

Data extraction & input execution control

Current System

New System

Output data comparison/bug location identification

Achieving Test Coverage
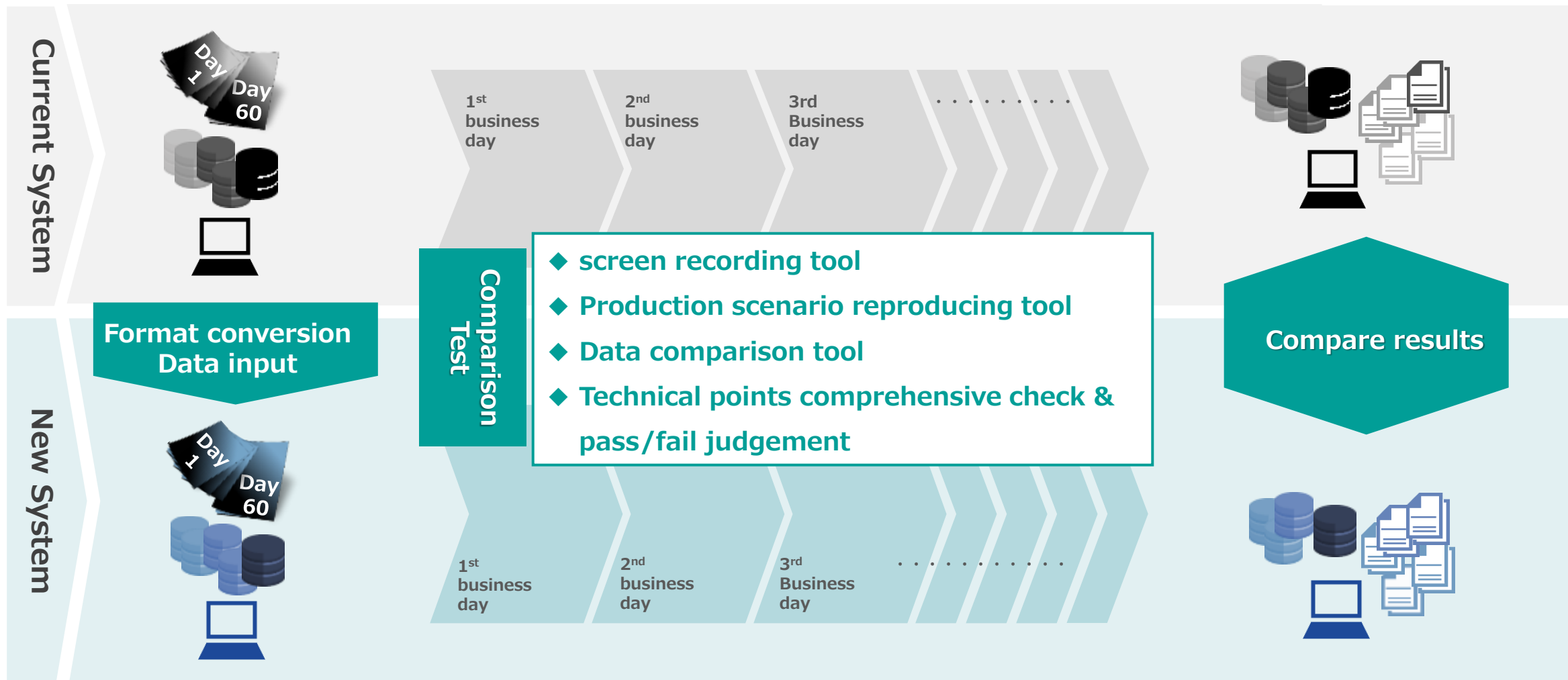
- Identify each technical point implemented/not implemented
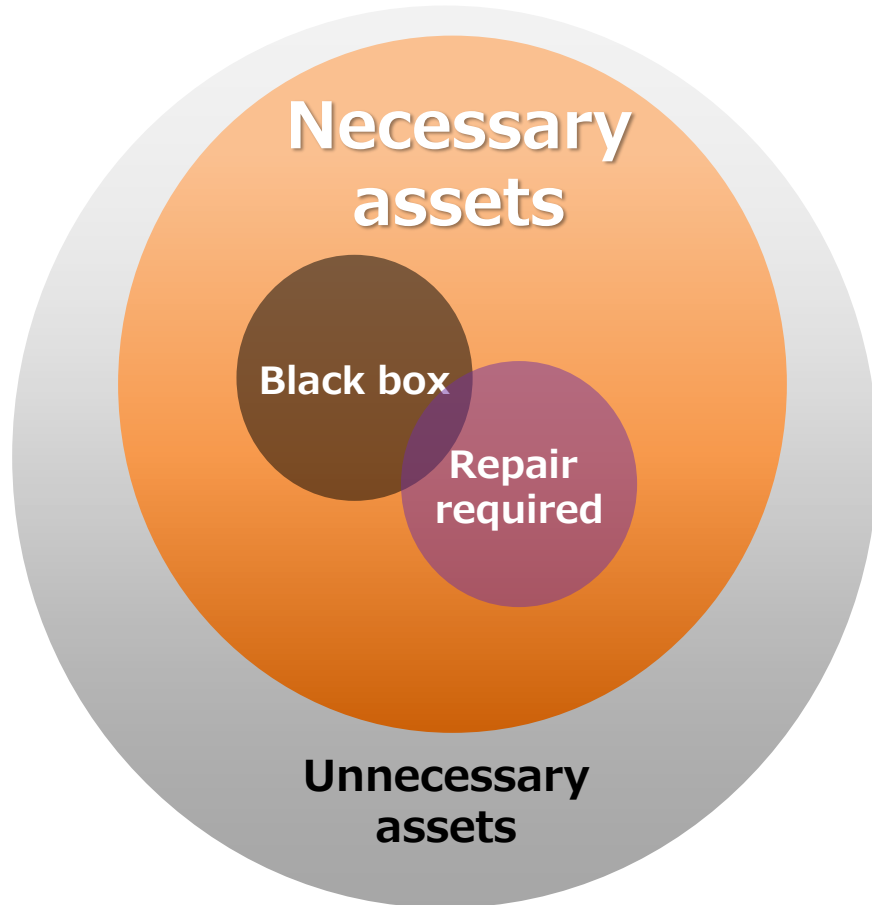- Instructions for missing test points
- Pass judgment
- Etc.

Target source image

Tested once

Not tested

Tested twice

⭐ Certain technical point

― Source not tested

― Source tested

Test Automation & Thorough Testing of Technical Points

Comparison test with high-volume data from actual business days

Current System

Day 1 / Day 60

1st business day | 2nd business day | 3rd Business day | . . . .

Format conversion Data input

Comparison Test

◆ **screen recording tool**

◆ **Production scenario reproducing tool**

◆ **Data comparison tool**

◆ **Technical points comprehensive check & pass/fail judgement**

Compare results

New System

Day 1 / Day 60

1st business day | 2nd business day | 3rd Business day | . . . .

Overview of System Reform

Current System

New System

Necessary
assets

Black box

Repair
required

Unnecessary
assets

Ai **Sliming
Conv.**

Functional repair

Necessary
assets

**Pure Java System
Normalized Database
IT Trend**
Business visualization
Building data infrastructure
Cloud usage, etc.

**Functions
Modification
& Addition**

**With AI, we provide extremely high quality and low-cost modernization
with function improvement.**

Remarkably High Quality

Post-delivery Defect

* JUAS :   Japan Information Systems Users Association

JUAS Standard Goal: 0.25

Statistics for multiple languages migration projects in major languages
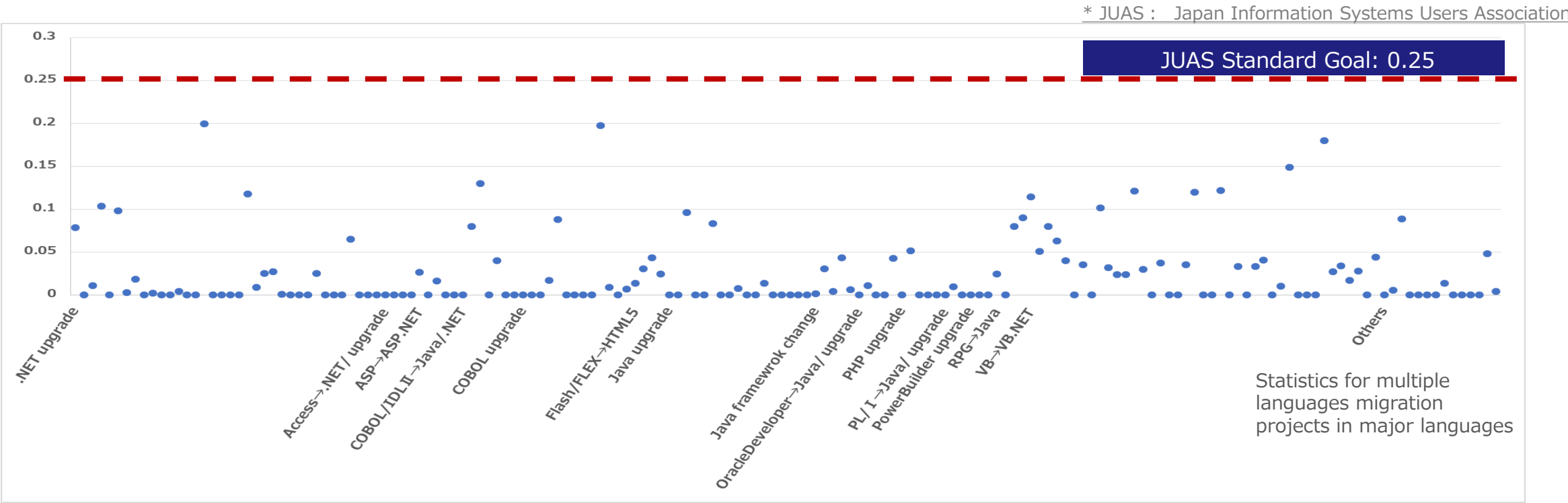
Data source: All system migration projects with a scale of 10KL (thousand line) or more **from January 2017 to December 2021**.
Formula used by JUAS to calculate Defect Density:
   (2 * number of significant defects + number of general defects + 0.5 * number of slight defects) / scale (person-months)
Scale(person-months): calculated by JUAS standard productivity

Major patterns of language conversion

* Please consult us for other conversion patterns.

Legacy system	COBOL ⇒	Version upgrade (OPENCOBOL), Java, .net, PL/SQL
	RPG ⇒	Java, .net, PL/SQL
	PL/ I ⇒	Version upgrade (open) , Java, .net, PL/SQL
	NATURAL ⇒	Java, .net
	APL ⇒	VBA, .net, Java
	IDL Ⅱ ⇒	Java
	EASY PLUS ⇒	Java
	Fortran ⇒	C, VB, .net／C#, .net, Java
	Assembler ⇒	COBOL, C, Java
OPEN system	VB ⇒	VB.net, C#.net, ASP, .net, Java
	ASP ⇒	ASP.net, PHP, Java
	.net ⇒	Version upgrade, Java
	Java ⇒	Version upgrade (including framework changes)
	OracleDeveloper ⇒	Version upgrade, Java, .net
	ACCESS ⇒	Version upgrade, .net, Java
	Flex／Flash ⇒	HTML5
	PowerBuilder ⇒	Version upgrade, .net, Java
	Delphi ⇒	Version upgrade, .net, Java
	Notes ⇒	SharePoint, Java
	PHP ⇒	Version upgrade, Java, ASP, .net
	HOLON ⇒	.net, Java
	VAGen ⇒	Java, .net

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Major patterns of OS and DB conversion

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OS: ※Please consult us for other conversion patterns.

Legacy system	Main frame	⇒	Linux, Unix, Windows
OPEN system	Windows	⇒	Version upgrade, Linux, Unix
	Unix	⇒	Linux, Windows
	Linux	⇒	Version upgrade, Windows

DB ※Please consult us for other conversion patterns.

Legacy system	VSAM/ISAM/VSAS, ADABAS, IMS DB, AIM, XDM/RD／XDM/SD, ADBS, RIQS／RIQSII, etc.	⇒	Oracle, SQL Server, DB2, PostgreSQL
OPEN system	SQLServer	⇒	Version upgrade, Oracle, DB2, PostgreSQL
	Oracle	⇒	Version upgrade, SQL Server, DB2, PostgreSQL
	DB2	⇒	Version upgrade, Oracle, SQL Server, PostgreSQL
	PostgreSQL	⇒	Version upgrade, Oracle, SQL Server, DB2
	MySQL	⇒	Version upgrade, Oracle, SQL Server, DB2, PostgreSQL

With the most flexible conversion tool, in addition to the above patterns, we are able to respond to difficult migrations requirement such as changes to customer frameworks, special language / DB migration, data conversion to RDB, etc.

Provide Added Value to User Companies

Top level adding value

low cost & low user workload modernization

Use full AWS advantage by cloud native

Excerpt of Past Projects ①

COBOL⇒JAVA

◆**New mission-critical accounting system**

Legacy system size: 3000KL

Main migration requirements: COBOL ➡ Java

Fujitsu XSP ➡ Red Hat Enterprise Linux 8.4(AWS)

◆**Cost management system**

Legacy system size: 1000KL

Main migration requirements: COBOL, COBOLS, COBOLX, IDLⅡ, macro ➡ Java

NEC ACOS4 ➡ Linux

◆**Next-term mission-critical system**

Legacy system size: 700KL

Main migration requirements: YPS/COBOL ➡ Java

Fujitsu MSP ➡ Linux

◆**Production management mission-critical system**

Legacy system size: 2200KL

Main migration requirements: COBOL ➡ Java

IBM OS IV/XSP ➡ Windows Server

◆**ACOS system**

Legacy system size: 5300KL

Main migration requirements: COBOL/S, HPL, PL/I, FORTRAN ➡ Java

ADBS, RIQS ➡ Oracle Database 19c

NEC ACOS4/XS R2.11➡ Red Hat Enterprise Linux

COBOL⇒JAVA+OPENCOBOL

◆**Six systems of production & sales & after-service in manufacturing industry on two IBM mainframes**

Legacy system size: 5500KL

Main migration requirements: COBOL ➡ Java/MF COBOL

Natural ➡ Java

PL/I ➡ MF PL/I

ADABAS ➡ SQL Server

IBM OS/390 V2 ➡ Windows Server

◆**Mainframe system**

Legacy system size: 500KL

Main migration requirements: COBOL ➡ Java /MF COBOL

XDM/RD + XDM/SD + PDMⅡ ➡ PostgreSQL

Hitachi VOS3 ➡ Windows Server

◆**Production management system**

Legacy system size: 3300KL

Main migration requirements: COBOL, PL/I, ASM ➡ MF COBOL

IBM z/OS ➡ Red Hat Enterprise Linux

◆**Shipment management system**

Legacy system size: 400KL

Main migration requirements: COBOL ➡ NetCOBOL

AIM/NDB ➡ Oracle12c

Fujitsu OSIV XSP ➡ Windows Server 2012 Standard

Excerpt of Past Projects ②

RPG⇒JAVA

◆**Sales & in-stock & claims & debts & accounting in manufacturing**

Legacy system size: 4300KL

Main migration requirements: COBOL, RPG, RPGLE, CLP, CLLE ➡ Java

AS400 ➡ Red Hat Enterprise Linux

◆**Information system**

Legacy system size: 500KL

Main migration requirements: COBOL, CLP ➡ Java

DB2 ➡ Enterprise Postgres SE media (64)14

IBM i(V7R4) ➡ Linux

◆**Manufacturing system**

Legacy system size: 400KL

Main migration requirements: RPG/RPGLE/COBOL/CLP ➡ Java 17(OracleJDK17)

QRY ➡ Java 17

DB2/400 ➡ PostgreSQL 11

IBM i 7.2 ➡ Red Hat Enterprise Linux 8(AWS)

◆**Mission-critical system**

Legacy system size: 2800KL

Main migration requirements: RPG4, CLP ➡ Java 17

QUERY ➡ Java 17

DB2/400 ➡ Microsoft SQL Server

IBM i V7R1 ➡ Windows Server 2019

JAVA system update

◆**Mission-critical system**

Legacy system size: 2100KL

Main migration requirements: Struts1+ Seasar2 + S2Dao ➡ Thymeleaf3+SpringBoot + Mybatis

◆**Sales system**

Legacy system size: 500KL

Main migration requirements: Struts1.1 + Hibernate ➡ Spring MVC 5.2 + Hibernate 5.4

◆**Store equipment management system**

Legacy system size: 500KL

Main migration requirements: Struts2 + Spring Framework + iBatis ➡ SpringBoot+MyBatis

◆**Insurance company's Java system**

Legacy system size: 2800KL

Main migration requirements: WACs(JavaEE) ➡ NSF(Struts1)

◆**Auto company's Java system (three systems)**

Legacy system size: 1000KL

Main migration requirements: WACsV4.3.4、Struts1.1 ➡ SpringMVC 4.3.10

◆**Airline's Java system (three systems)**

Legacy system size: 1600KL

Main migration requirements: WACs4.0 ➡ Struts2.2 + Spring3.0

◆**Manufacturing management system**

Legacy system size: 3300KL

Main migration requirements: Apcoordinator + Fujitsu EZD V2.1 ➡ customized SpringBoot

2.7.5+ EJB 3

Excerpt of Past Projects ③

C/S system ⇒ WEB

◆Base system

Legacy system size: 2600KL

Main migration requirements: VB6.0 ➡ Java+VB.NET

◆Housing-related system

Legacy system size: 800KL

Main migration requirements: VB5.0 ➡ Java

◆Production statistics management system

Legacy system size: 190KL

Main migration requirements: PowerBuilder ➡ Java

◆Insurance management system (30 systems)

Legacy system size: 300KL

Main migration requirements: Delphi 10.1 ➡ Java

VB.NET2015 ➡ Java

◆Management system

Legacy system size: 300KL

Main migration requirements: Delphi 10.1 ➡ Java1.8

◆Production management system

Legacy system size: 330KL

Main migration requirements: Oracle Forms 12c ➡ Java(OpenJDK16)

◆Product management system

Legacy system size: 900KL

Main migration requirements: C ➡ Java17

Pro*C ➡ Java17

Others

◆Business support system (VB⇒VB.NET)

Legacy system size: 1450KL

Main migration requirements: VB6.0/C ➡ VB.NET2017

FlexGrid/True DBGrid Pro ➡ ComponentOne

SPREAD 7.0J ➡ VB.NET standard controls

◆Management system (VB⇒VB.NET, DB change)

Legacy system size: 1600KL

Main migration requirements: VB6.0/C ➡ VB.NET2017,

PLSQL ➡ T-SQL

Oracle 9i ➡ SQL Server

◆Import & export management system (FLEX⇒HTML5, de-IE)

Legacy system size: 2000KL

Main migration requirements: Flash + ActionScript2.0 ➡ HTML5 + TypeScript

Struts1.2 ➡ SpringMVC

IE11 ➡ Edge 40, Chrome 64

◆Attendance check-in system (PHP framework change)

Legacy system size: 2800KL

Main migration requirements: PHP 4.4.9 ➡ PHP 7.4, Mojavi 2.0 ➡ Laravel 6

◆Management system (OracleForms upgrade)

Legacy system size: 200KL

Main migration requirements: OracleForms6i ➡ OracleForms12c

◆Management system (PowerBuilder upgrade)

Legacy system size: 460KL

Main migration requirements: PowerBuilder 6.5 ➡ PowerBuilder 2017

The End

SoftRoad

Let us usher in a new era of system development.

For more information,
please scan the QR code below.

Contact Us

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