TIS INTEC Group Business Information Meeting Modernization Services

December 3, 2024

TIS Inc.

Speaker Introductions

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TIS Inc.
Managing Executive Officer
Division Director,
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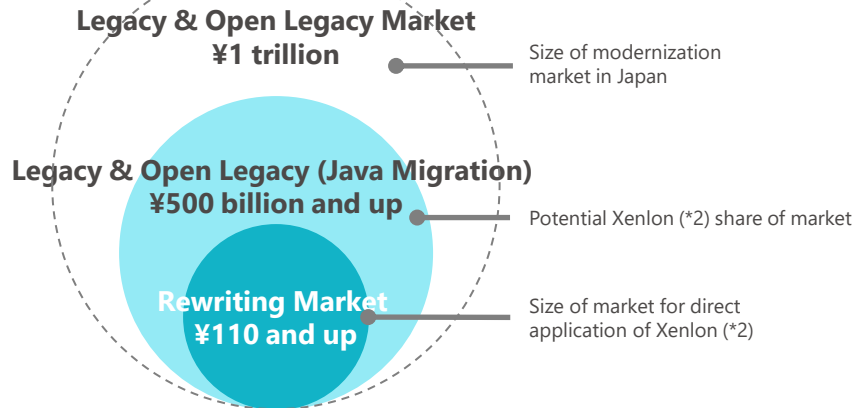**Division Director,**
Financial Industry SBU

Hiroki Kumagai

TIS Inc.
Senior Executive Fellow,

Industries & Public Solutions SBU,

Financial Industry SBU,

and Technology & Innovation SBU

TIS' Modernization Services

Position modernization as growth driver in Industrial IT Business and Financial IT Business pursuits under the current medium-term management plan (2024-2026) and work on **measures (modernization services) to address the risk of social and corporate stagnation and decline inherent with legacy systems.**

Size of Modernization Market in Fiscal 2024 (*1)

Market with high growth potential over next 5–10 years

**Legacy & Open Legacy Market
¥1 trillion**
— Size of modernization market in Japan

**Legacy & Open Legacy (Java Migration)
¥500 billion and up**
— Potential Xenlon (*2) share of market

**Rewriting Market
¥110 and up**
— Size of market for direct application of Xenlon (*2)

*1 Based on "Legacy & Open Legacy Migration Market Trends 2024 Edition (mic-r.co.jp)," by Deloitte Tohmatsu MIC Research Institute Co., Ltd., published in August 2024, and TIS research data
*2 TIS proprietary migrator (rewrite tool)

Estimated Business Scale over Medium to Long Term

CAGR above 20%

**Medium- to long-term target for business
¥100 to ¥130billion**

**Aggregate net sales over three years
¥20 billion**

¥4.8 billion

| Fiscal 2024 | Fiscal 2025 | Fiscal 2026 | Fiscal 2027 | Fiscal 2033 |

■ Financial IT
■ Industrial IT

| **Factors key to reaching targets** | Lead market with **Xenlon** proprietary migration tool | **Commit medium to long-term,** from **promotion of projects** using Xenlon **to helping clients achieve DX goal** | Ensure feasibility with **extensive track record and knowledge gained through large-scale projects** |

Contents

1. Market trends in modernization services and TIS engagement

2. Xenlon's track record and strengths

3. Efforts to further expand business activities

1. Market trends in modernization services and TIS engagement

Trends and Issues in Modernization Market

- Such legacy assets as mainframes, which have long supported corporate activities, run risk of becoming liabilities that lead to social and corporate stagnation and decline.
- Tren d toward open standards rapidly gaining momentum as major manufacturers end production and support for legacy systems and maintenance costs soar.

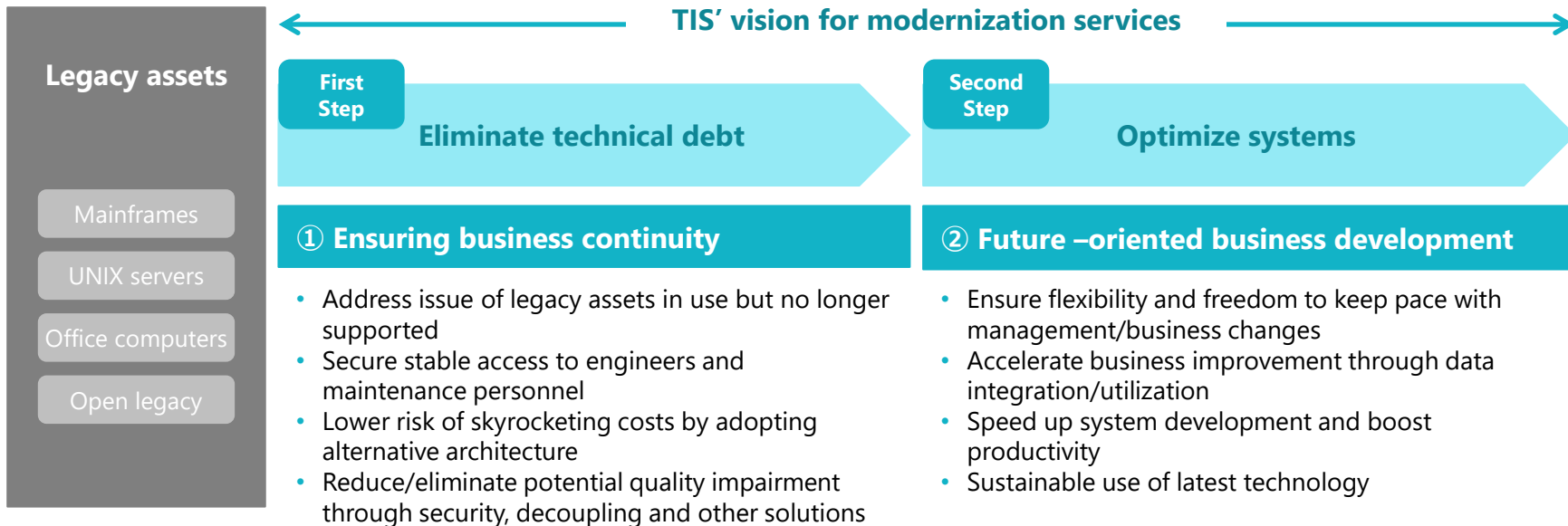| End of maintenance and support for legacy assets	Shortage of IT engineers	Complicates introduction of new technology and presents risk of restricted corporate growth
• End to production and support by major manufacturers, soaring maintenance costs for both legacy and open legacy products • Rapid increase in number of companies considering system renewal not just in time for the 2025 digital cliff but beyond with an eye to modernization in 2030 and 2040	• Anticipating shortage of engineers with ability to maintain existing legacy systems (reliance on specific languages and packages) • Demand for IT professionals in Japan expected to reach about 1.58 million by 2030, but IT industry facing shortage of about 450,000 IT engineers (according to Ministry of Economy, Trade and Industry)	• IT technology continues to evolve, but inability to introduce latest technology could hinder companies' business growth • Open systems are absolutely essential in era where sense of speed is vital to business success
Left unchecked, situation will lead to increase/expansion of **technical debt**	**IT engineer shortage** becoming chronic issue	Open systems make **use of latest technology** sustainable

Modernization is necessary investment to **avoid risk of social and corporate stagnation and underpin future business growth/transformation**

Definition and Scope of Modernization Services

- Modernization services are not one-off pursuit but rather a business category that will support future corporate expansion through continuous efforts to optimize client IT systems.
- Modernization services are defined under the following two steps.
  - First step: Approach aimed at ensuring business continuity by eliminating technical debt, namely, efforts to reduce costs and sidestep EOS (End of Support) issue.
  - Second step: Approach aimed at optimizing systems to promote DX shift, including measures to ensure system agility and flexibility, and expanding clients' corporate activities for the future.

TIS' vision for modernization services

Legacy assets

- Mainframes
- UNIX servers
- Office computers
- Open legacy

First Step — Eliminate technical debt

Second Step — Optimize systems

① Ensuring business continuity

- Address issue of legacy assets in use but no longer supported
- Secure stable access to engineers and maintenance personnel
- Lower risk of skyrocketing costs by adopting alternative architecture
- Reduce/eliminate potential quality impairment through security, decoupling and other solutions

② Future –oriented business development

- Ensure flexibility and freedom to keep pace with management/business changes
- Accelerate business improvement through data integration/utilization
- Speed up system development and boost productivity
- Sustainable use of latest technology

TIS Special Features/SIer Advantage in Modernization Market

- Combination of proprietary rewrite tool Xenlon and long-standing expertise as a system integrator (SIer) afford TIS with capability to demonstrate strengths and advantages in modernization services.

Ownership of proprietary migration tool Xenlon	**Offer access to Xenlon migration tool boasting high migration rate, accuracy, performance and maintainability** • Having our own migration tool underpins continuity of improvement and growth and drives constant expansion of scope and breadth of support to clients • In core system upgrade projects where long-term use is a given, we preclude risk of issues and problems arising from black box created by other companies' tools including speed of resolving technical issues, change in direction due to acquisition of manufacturer, and change/increase in price.
Support for projects hinging on Xenlon, from project promotion to DX	**Commit, with medium- to long-term perspective, to projects utilizing SIer advantage** • Underlying advantages, such as Xenlon's high migration rate, support methodology, track record and implementation know-how that enable us to realize stable progress and high productivity on projects • We not only eliminate technical debt but also commit to meeting needs of corporate clients by accompanying them on journey of subsequent processes, such as maintenance, development and operation after system cutover, as well as proposing and realizing optimal architecture
Apply extensive experience and knowledge related to large-scale projects to ensure feasibility	**Possess capability and track record to carry out long-term, large-scale projects** • Boast project management know-how for successful completion of large-scale projects beyond rewriting as well as ability to mobilize domestic and international partners involved in project execution • Apply risk and troublespot reduction approaches, such as assessment by engineers familiar with characteristics of rewriting, and efficient methods and know-how for quality assurance at testing phase

Efforts to Date

- Xenlon, a focus of attention now, launched about 10 years ago, in 2014, and over the years has been adopted by a wide variety of companies across different industries/sectors and introduced to more than 10 companies in total.
- For some clients, business relationship with TIS continues even after system cutover, with TIS addressing large-volume requests covering system maintenance and operation.
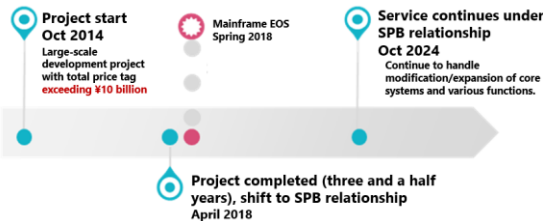
Background to launch

Xenlon Modernization Service

In-house development of Xenlon migration tool with high migration rate

- No tools were available in Japan or overseas with guaranteed performance capability
- Apply TIS architects' experience in designing and implementing interpreters and compilers to develop migration tool based on accumulated knowledge to ensure performance
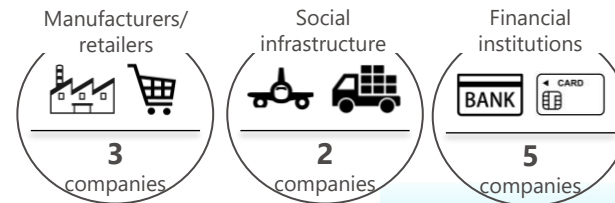
First application of Xenlon was large-scale development project

Successfully migrated system with **more than 10 million steps** just for COBOL to Java

Project start Oct 2014
Large-scale development project with total price tag **exceeding ¥10 billion**

Mainframe EOS Spring 2018

Service continues under SPB relationship Oct 2024
Continue to handle modification/expansion of core systems and various functions.

Project completed (three and a half years), shift to SPB relationship April 2018

First stage business growth (2014–2023)

Support various clients in core system modernization (Number of companies using service: 10)

Manufacturers/retailers
3 companies

Social infrastructure
2 companies

Financial institutions
5 companies

Build partnerships to promote continued business relationship

Second stage business growth (2024–) *Details in following slides

Expand lineup of modernization services and reinforce response structure

Established specialized response team for each client segment

Financial

Industrial

Manufacturers/retailers
1 company

Social infrastructure
1 company

Financial institutions
2 companies
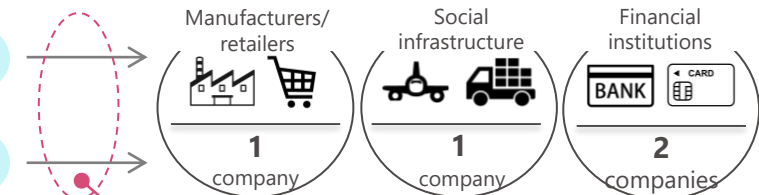
Improve provided value through expanded menu of services and functions
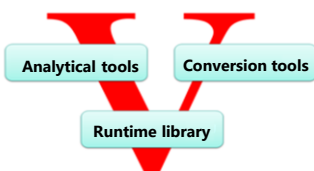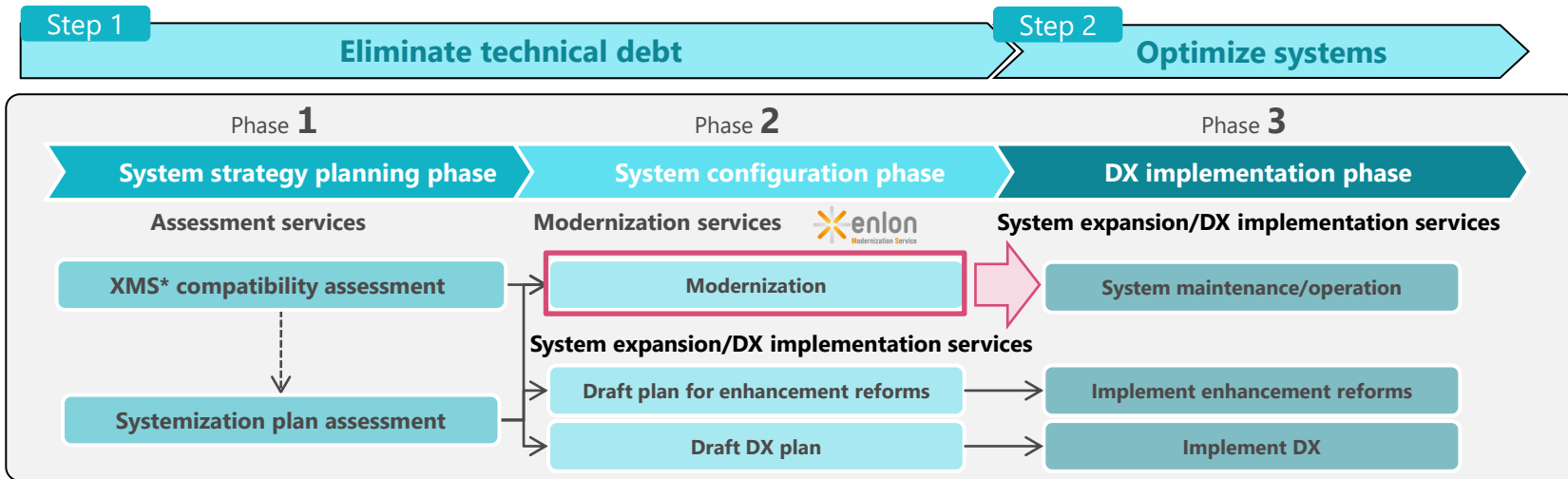
*Projects currently progress in 2024

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2. Xenlon's track record and strengths

What is Xenlon?

- TIS' modernization services will be moving into two steps. Step 1 was split into two phases, with services offered in each phase. Xenlon Migrator, our own rewriting tool, is vital to Phase 2 modernization services and in combination with other tools, that is, analytical and conversion tools, will underpin modernization of clients' legacy assets.

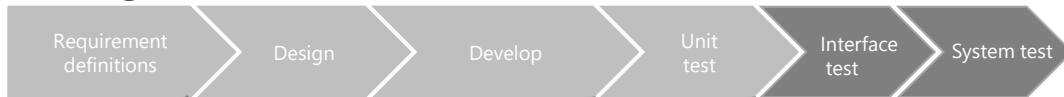**General overview of TIS' modernization services and Xenlon Modernization Service**

Step 1	Step 2
Eliminate technical debt	**Optimize systems**

Phase **1**	Phase **2**	Phase **3**
System strategy planning phase	**System configuration phase**	**DX implementation phase**
Assessment services	Modernization services	System expansion/DX implementation services
XMS* compatibility assessment	Modernization	System maintenance/operation
	System expansion/DX implementation services	
Systemization plan assessment	Draft plan for enhancement reforms	Implement enhancement reforms
	Draft DX plan	Implement DX

Analytical tools	Suite of tools to create optimal conversion conditions for client legacy assets
Conversion tools	Generate Java source code from COBOL, COBOL/S, EasyPlus and other source codes
Runtime library	Library that executes language operations in Java Product that runs in real operating environment along with source code generated by conversion tool

Analytical tools Conversion tools Runtime library

© 2024 TIS Inc.   *Xenlon Modernization Service (XMS)
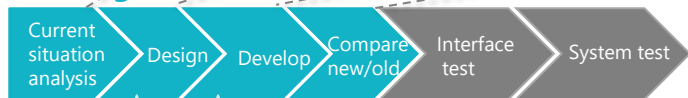
Xenlon Impact and Market Size

- Rebuilding requires that the person in charge has a good grasp of current operations and be closely involved in the project and the project itself moves forward in a waterfall style with documentation already in place (or in preparation). Also, system freeze periods tend to be longer, incurring significant cost.
- For the above reasons, many companies are shifting their focus from rebuilding to rewriting, and we see rewriting as a market with room for expansion.

Xenlon
Modernization Service

Rebuilding

| Requirement definitions | Design | Develop | Unit test | Interface test | System test |

Rewriting

| Current situation analysis | Design | Develop | Compare new/old | Interface test | System test |

Minimize design space

Automate conversion with Xenlon

Compared with rebuild development...

Quality	Cost	Duration	Risk
High quality ensured!	**Half the cost!**	**Project completed in half the time!**	**Minimized risk!**

Size of Modernization Market in Fiscal 2024 (*1)

Legacy & Open Legacy Market
¥1 trillion

Legacy & Open Legacy (Java Migration)
¥500 billion and up

Rewriting Market ¥110 billion and up

Size of modernization market in Japan

Potential Xenlon (*2) share of market

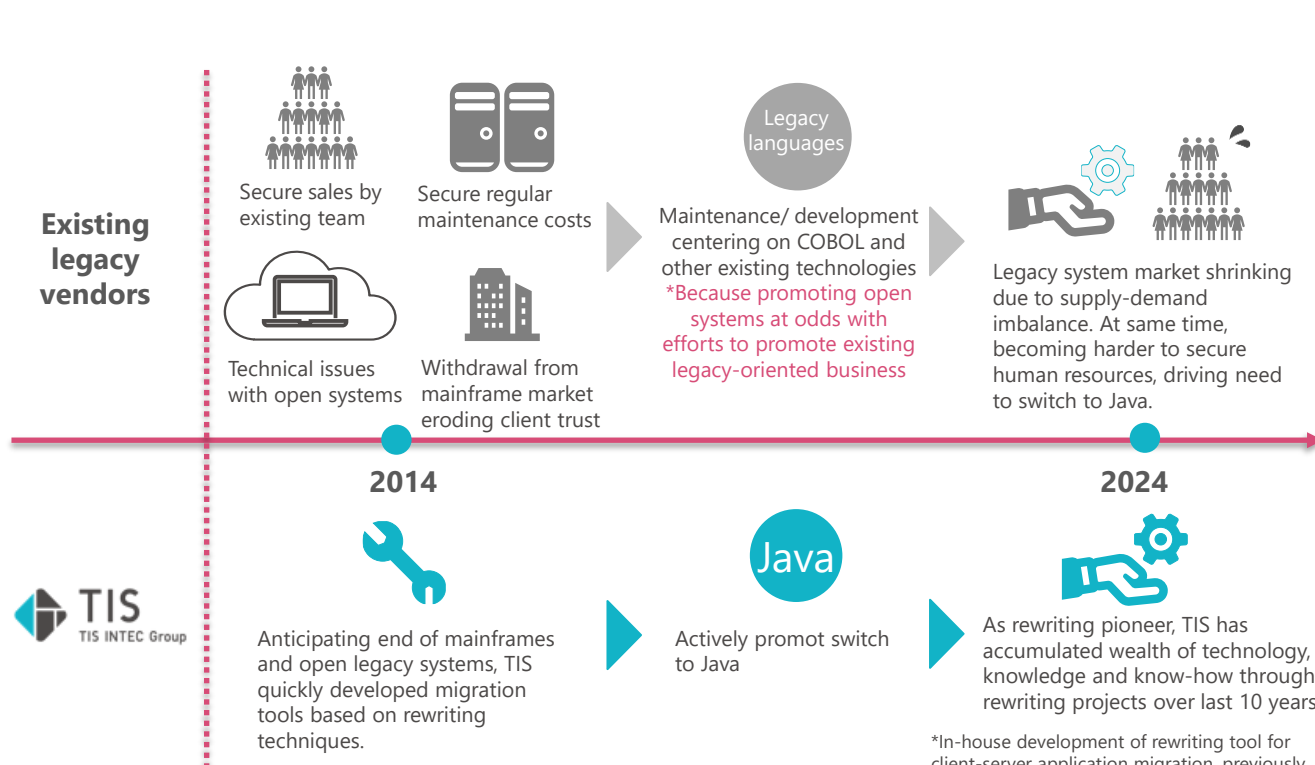Size of market for direct application of Xenlon (*2)
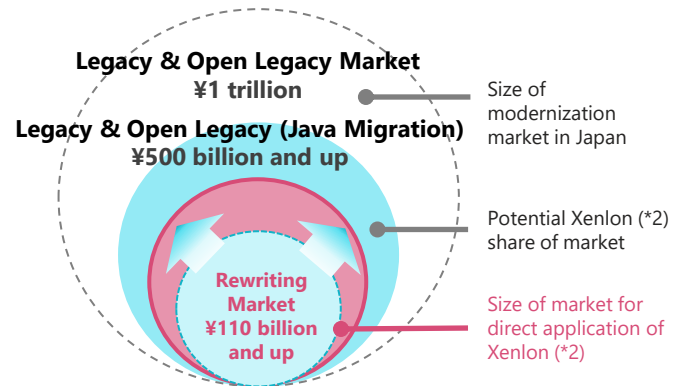
Highlighting impact of Xenlon

*1 Based on "Legacy & Open Legacy Migration Market Trends 2024 Edition (mic-r.co.jp)," by Deloitte Tohmatsu MIC Research Institute, published in August 2024, and TIS research data
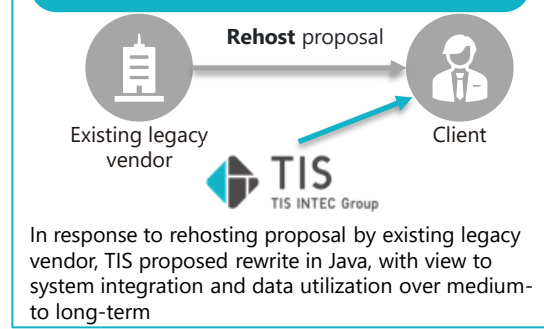*2 TIS proprietary migrator (rewrite tool)

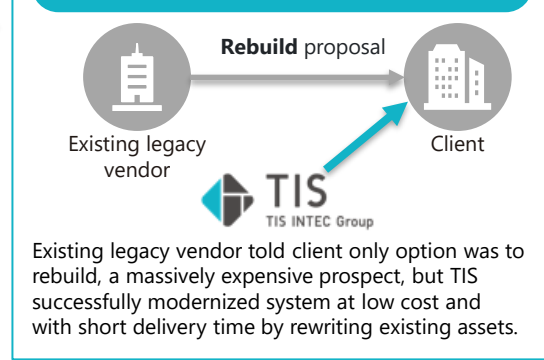# Initiatives and Strengths in Modernization Services Driven by Xenlon

- TIS does not manufacture mainframes, UNIX servers or any kind of hardware. Therefore, take client perspective in actively pursuing research and investment into Java so as to ensure current program assets contribute to business over medium to long term. Believe experience and know-how accumulated so far differentiates TIS' solutions from rivals in industry.

Existing legacy vendors

Secure sales by existing team

Secure regular maintenance costs

Technical issues with open systems

Withdrawal from mainframe market eroding client trust

Legacy languages

Maintenance/ development centering on COBOL and other existing technologies
*Because promoting open systems at odds with efforts to promote existing legacy-oriented business

Legacy system market shrinking due to supply-demand imbalance. At same time, becoming harder to secure human resources, driving need to switch to Java.

2014

2024

Anticipating end of mainframes and open legacy systems, TIS quickly developed migration tools based on rewriting techniques.

Java

Actively promot switch to Java

As rewriting pioneer, TIS has accumulated wealth of technology, knowledge and know-how through rewriting projects over last 10 years

*In-house development of rewriting tool for client-server application migration, previously available only through rebuilds

Case study① Approach to rehosting proposals

Rehost proposal

Existing legacy vendor

Client

In response to rehosting proposal by existing legacy vendor, TIS proposed rewrite in Java, with view to system integration and data utilization over medium- to long-term

Case study② Approach to rebuilding proposals

Rebuild proposal

Existing legacy vendor

Client

Existing legacy vendor told client only option was to rebuild, a massively expensive prospect, but TIS successfully modernized system at low cost and with short delivery time by rewriting existing assets.

Xenlon Advantages

- Reason behind independent development of Xenlon was a lack of tools, even from overseas vendors, that satisfied client requirements and provided guaranteed performance. Xenlon was thus a response to an obvious need for a tool that could ensure maintainability of core systems over medium to long term following switch to Java (cutover).
- Xenlon goes beyond maintainability, however, bringing together wealth of insights and know-how on technical elements needed for open source development and measures to address performance issues that pop up when migrating from legacy systems. TIS aims to turn Xenlon into intellectual property.

Evaluation of tools from overseas and domestic peer companies at time of development

Tools created by overseas companies

Tools created by peer domestic companies

Evaluation	• Low conversion rate • Post-conversion program assuming revision (low readability)
Demerits	• Quality cannot be guaranteed without extensive testing • Black-boxing hinders improvements TIS wants to make

Pre-conversion example

```
XX  XXX
XX  XX-XXX        XXX  X(XX).
XX  XXXXXX        XXX  X(XX).
```

What conversion looks like

TIS	Company A	Company B

`public class XXnX xxxxxx XXxx {`
`  <XX>`
`  xxxxxx XXxx XX = XXxx(XX);`
`  xxxxxx XXXxx XX = XXXxx(X);`
`  xxxxxx XXxx XX = XXxx(X);`
`}`
	`public class XXx xxxxxxx XxxxxxXxxxxx {`
	`  xxxxxxx xxxxx Xxxxx xxxx = xxx`
	`  Xxxxx(xxxXxxx()).xxxxx("XXX");`
	`  xxxxxxx xxxxx Xxxxxxxxxx xX = xxx Xxxxxxxxx`
	`  (xxxx.xxx XxxxxXxxx (XX. X. xxxxx)). xxxxx("XX");`
	`  xxxxxxx xxxxxx Xxxxxxxxxx xX = xxx Xxxxxxxxx`
	`  (xxxx.xxx XxxxxxxxxxxxXxxx(X)).xxxxx("XX");`
	`  xxxxxxx xxxxxx Xxxxxxxxxx xX = ...`
	`}`
		`public class XxxXXXX xxxxxxxxxx XxxxXxxxxxx{`
		`  XxxxXxxx xxxx = xxx XxxxXxxx();`
		`  XxxxxXxxx xXx = xxx XxxxxXxxx().xxxXX(xxxx);`
		`  XxxxxXxxxX xX_xxx = xXx.xxxXxxx(xxx`
		`  XxxxxXxxxX(X,XxxXxxx.XXXX,`
		`              XxxxXxxx.XXXXXXXX));`
		`  XxxxxXxxxX xxxxxX = xXx.xxxXxxx(xxx XxxxxXxxxx(X));`
		`  XxxxxXxxxX xX_xxxx = ...`
		`  {xxxx.xxxXxxxx();}`

○ • Code is complete and simple!
• Supports highly versatile structure!

△ • Redundancy (200% higher than TIS' model)
• Dependent on tool-specific frameworks

△ • Redundancy (100% higher than TIS' model)
• Strong named entry and low redability

Xenlon was developed to showcase responsibility carried by TIS as SIer in modernization projects!

Xenlon Advantages
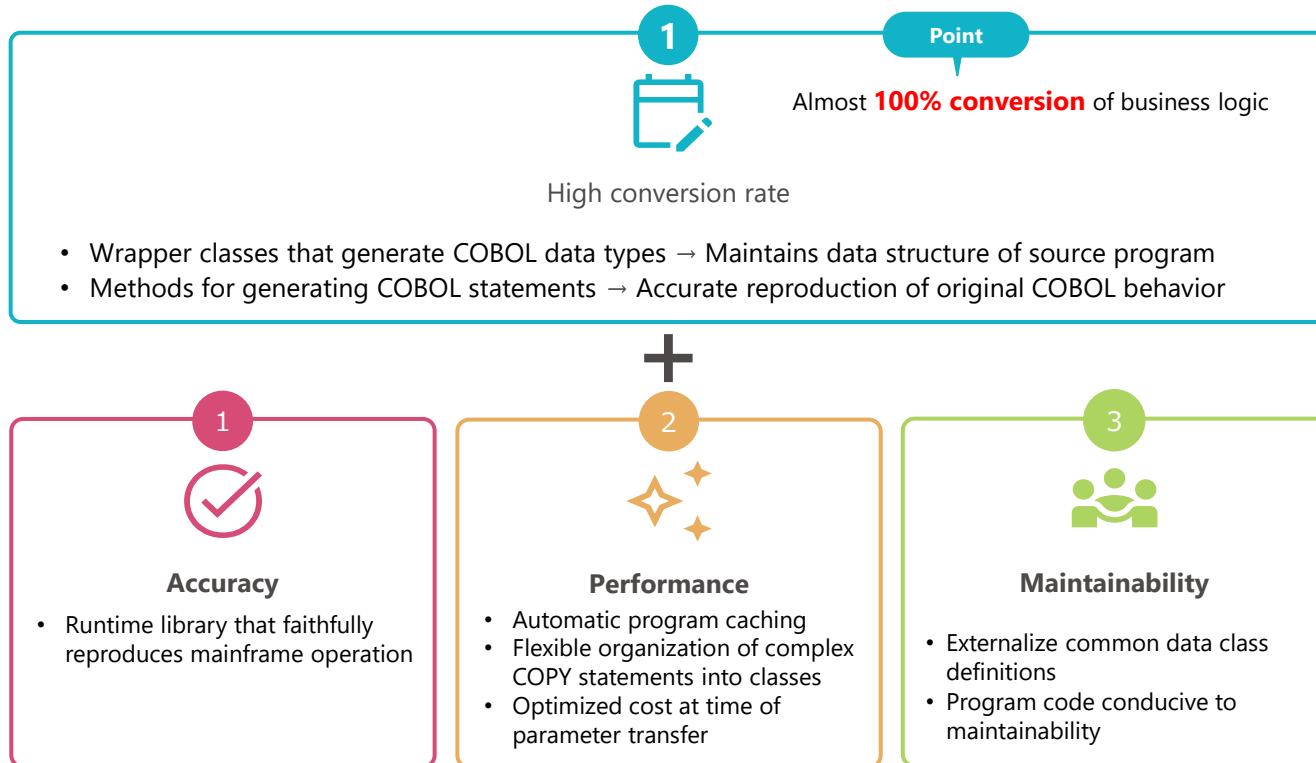
Point

Access to one-stop services	High maintainability	Fine-tuned performance response

Xenlon Advantages

- Xenlon is a high-performance migrator boasting a high conversion rate plus advantages of accuracy, performance and maintainability, and covers all key elements of a rewrite project.

Advantages

1

Point

Almost **100% conversion** of business logic

High conversion rate

- Wrapper classes that generate COBOL data types → Maintains data structure of source program
- Methods for generating COBOL statements → Accurate reproduction of original COBOL behavior

+

1 Accuracy
- Runtime library that faithfully reproduces mainframe operation

2 Performance
- Automatic program caching
- Flexible organization of complex COPY statements into classes
- Optimized cost at time of parameter transfer

3 Maintainability
- Externalize common data class definitions
- Program code conducive to maintainability

Xenlon Advantages

- Xenlon not only converts COBOL, a representative legacy language, but also supports other programming languages and presents advanced technical capabilities applicable to modernization of databases and peripheral systems including those for form- and file-processing. Patented for performance and maintainability, which are key challenges in migration projects, Xenlon distinguishes TIS from the competition.

Xenlon's extensive reach

Patents showcasing technological power of Xenlon

Supports wide range of languages and processing methods!
Facilitates modernization in short period of time and at low cost!

Six patents held by TIS

Current	Migration challenges	New
Language (procedural) COBOL, PL/I, Easy, RPG, COBOL/S, IDL II, JCL	Differences in language specifications (data types, operations)	**Language (object-oriented)** Java
Database (Networks) IMS (IBM), AIM (Fujitsu)	Differences in data structures (network structure, table structure)	**Database (Relational)** DB2, Oracle, postgress, …
Screen processing methods IPF, Message, …	Support for web frameworks	**Screen processing methods** Nablarch, Spring…
Form processing method FORM (Fujitsu)	Differences in overlays and form definitions	**Form processing method** SVF
Hardware (OS) IBM, Fujitsu, Hitachi, NEC	Differences in job-control methods by manufacturer	**Hardware (OS)** Linux, windows

Performance: 4

Improved maintainability: 2

Note: IBM, Fujitsu, NEC, Hitachi and names, including product names, belong to the respective companies and are registered trademarks of these respective companies.

Further Evolution of Xenlon

- Will leverage Xenlon's advanced technology and competitive advantages in modernization market to support clients in their efforts to shift away from legacy systems and build and operate systems that will contribute to medium- to long-term business growth. In addition, seeking further evolution of services, TIS remains committed to upfront investment and further evolution of Xenlon by augmenting high conversion rate (Advantage 1) with agility (Advantage 4).

Realize new added value

We will continue to invest in R&D and human resources to enhance processing methods that address clients' needs and make the testing phase more efficient, thereby augmenting Xenlon with the strength of agility.

Enhance processing methods that address clients' needs

Make testing phase more efficient

1 High conversion rate
+
④ Agility

1 Accuracy
2 Performance
3 Maintainability
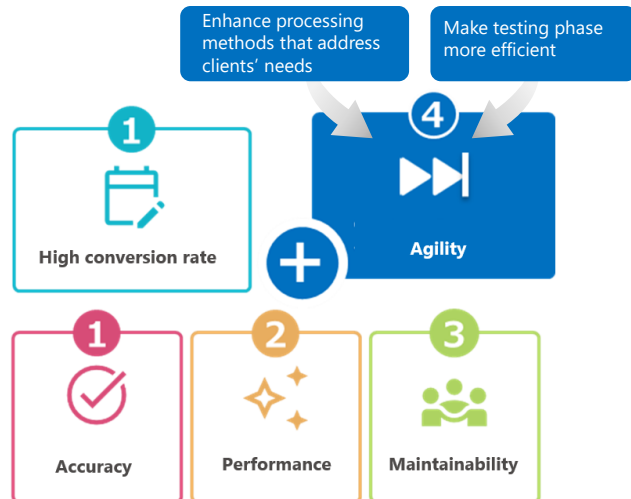
Summary of Xenlon initiatives

Past Efforts

Developed Xenlon conscious of post-Java maintenance

Acquired high-level technical expertise and knowledge as rewriting pioneer

Patented six technologies that underpin performance/maintainability

Future Goal

Realize new added value (agility)

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3. Efforts to further expand business activities

Moving toward Further Business Expansion (Industrial IT)

- Previously, TIS' modernization services centered on IT promotion (system approach) and support to push clients' projects forward. But to provide support delving deeper into clients' business domains and thereby expand their business activities, TIS teamed up with JFE Steel Corporation, which has built proven track record in modernization, for improved value provided to clients.
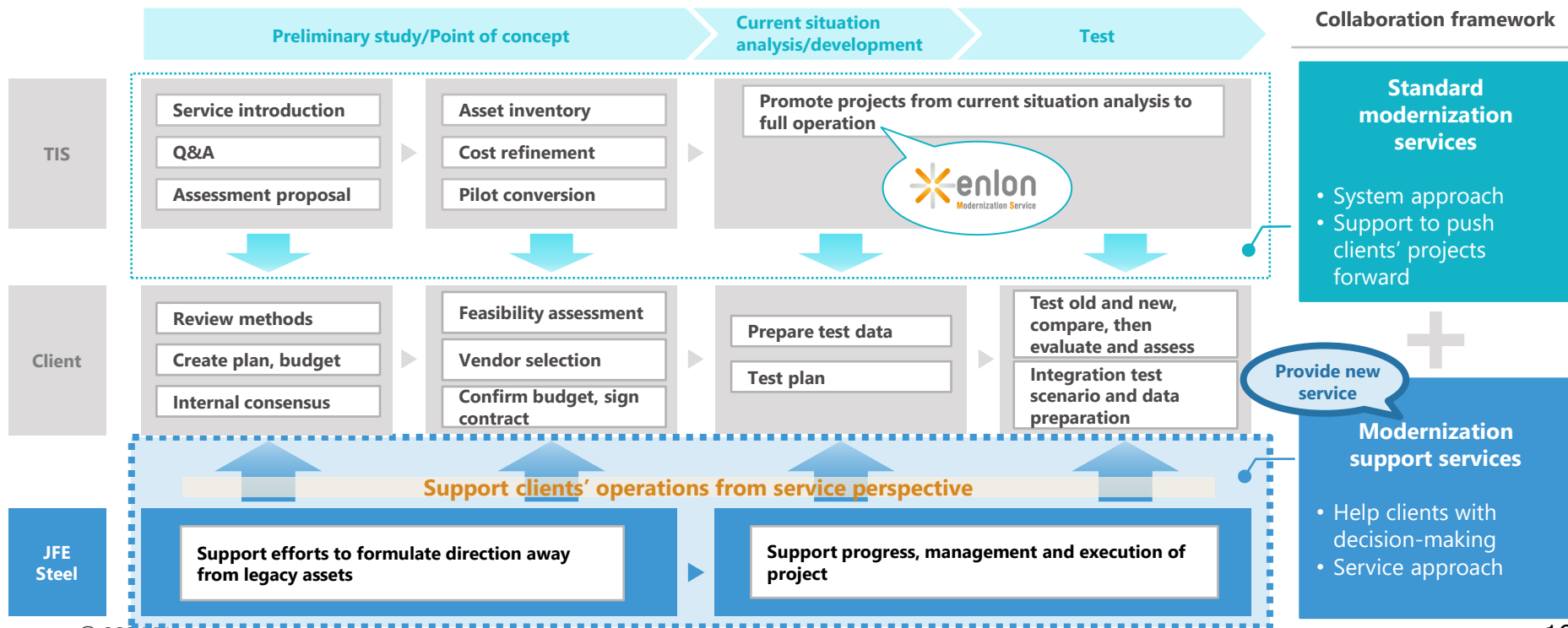
Moving toward Further Business Expansion (Financial IT)

- To help clients address current legacy asset status and associated issues, TIS will continue to expand modernization menu, with Xenlon at core. Enhancing existing Modernization Services for assembler and implementing Pega Infinity™ as Pega partner, TIS will broaden scope of solutions to meet diverse client needs.

Pega Infinity

Low-code development tool that provides advanced BPM functions and supports automation and management of business processes. Includes wide range of APIs and facilitates seamless connection to external systems

Background to lineup expansion

Diversifying market/client needs and irregular/sudden product updates has led multiple major financial institutions to rebuild front-end systems with low-code tools instead of opening architecture.

Aim in expanding lineup

Facilitates modernization to highly mobile and robust core system through rebuild of back end using Xenlon, which ensures safety and stability of legacy assets, and highly flexible and agile front end using BPM.

Modernization Services for assembler

A TIS original solution, this menu supports modernization of assembler assets, enabling clients to eliminate black-boxing of program assets and convert languages

Background to lineup expansion

Many cases where current programs hinge on COBOL and PL/I, but also many cases where assembler assets remain and are incorporated, which hinders modernization process. In addition, cannot identify status of specifications for most.

Aim in expanding lineup

By reinforcing lineup with Modernization Services for assembler, which is outside scope of Xenlon, TIS can offer comprehensive modernization proposals and one-stop solutions to clients with assembler assets.
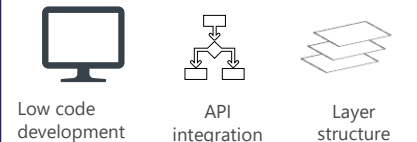
Financial modernization lineup

PEGA

+

Modernization Services for assembler

+

Xenlon Modernization Service

Client perception of next-gen architecture

BI tool   Service app   CRM   SFA

Front end

Low code development   API integration   Layer structure

Back end

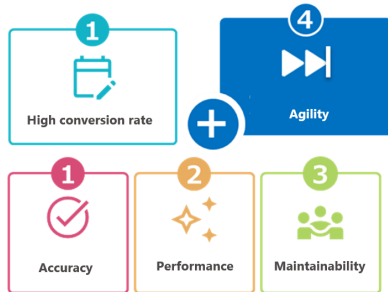| Application	
Database	Middleware
OS	Hardware
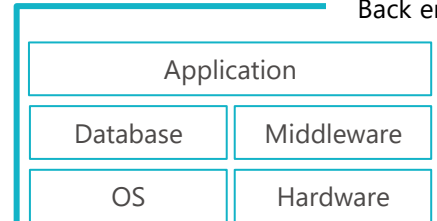
Working toward Business Goals

- Capitalizing on market trends and utilizing advantages inherent in Xenlon, TIS will propose and introduce solutions to clients who fit SPB strategy criteria, aiming for net sales of around ¥100 billion to ¥130 billion in medium to long term. Will also build up order backlog by securing long-term projects and promoting shift from ordinary client connection to SPB following solution implementation, a process that will require efforts to reinforce strengths, including inventory of intellectual property.

Improving advantages

Xenlon Modernization Service

Advantages: From 1+3 to stronger 1+4

1 High conversion rate
4 Agility
+

1 Accuracy
2 Performance
3 Maintainability

Financial
Industrial

Expand modernization menu, strengthen lineup through partnerships

Expanded menu Partnerships Enhanced quality

Desired business scale

Financial IT
Industrial IT

CAGR above 20%

Medium- to long-term target for business
¥100 to ¥130billion

Aggregate net sales over three years ¥20 billion

¥4.8 billion

Fiscal 2024
Fiscal 2025
Fiscal 2026
Fiscal 2027
Fiscal 2033

Securing future stock business*

*Business generating recurring revenue

Turn into strategic partnership business (SPB)

SPB: Business that considers and promotes strategies to industry top class as partner and supports' core operations

Client approach

	Mission critical	Peripheral	Front end	New
Maintenance/ operation				
Service APL				
Middleware	Initial scope of modernization			
Hardware				

Support to maintain (system maintenance) and operate (system improvement) will be provided after upgrade

Expand scope of support from mission critical to peripheral

Build lasting relationship by using mission critical innovation as hook

Toward Sustainable Corporate Growth

- To achieve Group Vision 2032, announced in May 2024, we defined unique areas of business activity as strategic domains that will underpin sustainable growth.

Modernization services are not one-off pursuit but rather a business category that will lead to **creation and expansion of SPB**, a core activity of Financial IT Business and Industrial IT Business, and fuel **sustainable business growth of TIS INTEC Group**

Net sales: About ¥300 billion

SPB 30%
SIS 10%
CCB 10%
IOS 30%

Strategic domain ratio

80%
Fiscal 2033

Net sales: About ¥200 billion

SPB 38%
IOS 10%
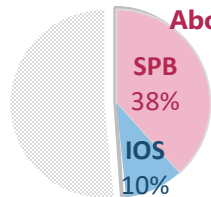
Strategic domain ratio: 48%

Fiscal 2024

Fiscal 2027

Group **VISION 2032**

Society oriented, operationally diverse, globally active
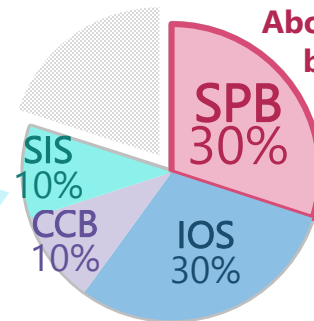
Strategic Domains

Social Innovation Service (SIS)	**Co-Creation Business (CCB)**
IT & Business Offering Service (IOS)	**Strategic Partnership Business (SPB)**

Organic coordination cycle

Medium-Term Management Plan (2024–2026)

Frontiers 2026
We will set **frontier development** as a fundamental strategy and strive for **sustainable growth paralleling higher added value**. We will strive to achieve **changes in society and for corporate clients** by **enhancing quality across all value chains**, starting with **forward-looking market development** and **business domain expansion**.

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Make society's wishes come true through IT.

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