

## Note

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## Software Modernization Committee Report

# Toward the Next Stage of Software

~Toward a prosperous Japanese society that shines brightly in the world~

## (Summary)

March 31, 2025

Software Modernization Committee



# The Society Japan is Aiming to Create

- The government aims to realize a **sustainable economic society that solves social issues and enables each citizen to experience affluence and happiness.**



Basic Policy 2024



Society 5.0

## 第1 目指す姿、理念・原則、重点的な取組

### 1. デジタルにより目指す社会の姿 / 2. デジタル社会の実現に向けての理念・原則

#### デジタル社会の目指すビジョン

「デジタルの活用により、一人ひとりのニーズに合ったサービスを選ぶことができ、多様な幸せが実現できる社会」  
 (「デジタル社会の実現に向けた改革の基本方針」(2020.12.25))  
 → 「誰一人取り残されない、人に優しいデジタル化」を進めることにつながる。

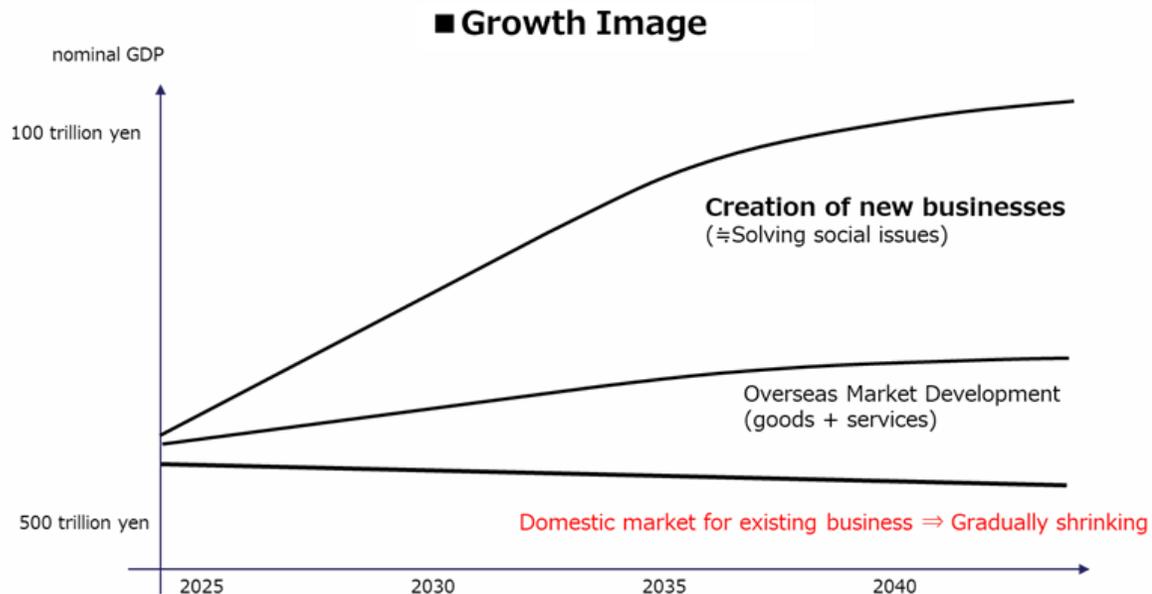
<p><b>① デジタル化による成長戦略</b></p> <p>イノベーションとテクノロジーの社会実装の推進。データを賢く活用し、新たな新しい付加価値・サービスの創出。新しい技術・サービスの積極的な活用、規制改革の徹底等により、社会全体の生産性・デジタル競争力を底上げ、成長を促していく持続可能な社会を目指す。</p>	<p><b>② 医療・教育・防災・子ども等の準公共分野のデジタル化</b></p> <p>官民間やサービス主体間での分野を越えたデータの活用を促進し、国民一人ひとりに最適なサービスを提供。データの取扱いルールを含めたアーキテクチャを設計し、データ連携基盤の構築を進め、安全・安心が確保された社会の実現を目指す。</p>	<p><b>③ デジタル化による地域の活性化</b></p> <p>あらゆる場面で顕在化しているデジタル人材不足の課題に対し、デジタルを活用し、地域において培っている様々な社会課題を解決することで、一つ一つの地域において長らく大切に培われてきた地域の魅力が向上し、持続可能性が確保された社会の実現を目指す。</p>	<p><b>前提となる理念・原則</b></p> <p><b>デジタル社会形成のための基本10原則</b></p> <ol style="list-style-type: none"> <li>① オープン透明</li> <li>② 公平・倫理</li> <li>③ 安全・安心</li> <li>④ 継続・安定・信頼</li> <li>⑤ 社会課題の解決</li> <li>⑥ 迅速・柔軟</li> <li>⑦ 包摂・多様性</li> <li>⑧ 透明・信頼</li> <li>⑨ 新たな価値の創造</li> <li>⑩ 明確・自律・実践</li> </ol> <p><b>国の行政手続オンライン化の3原則</b></p> <p>デジタル第一原則 (デジタルファースト<sup>※1</sup>) / 届出一度きり原則 (ワンストップ<sup>※2</sup>) / 手続一か所原則 (コネクテッド・ワンストップ<sup>※3</sup>)</p> <p><b>BPR(Business Process Reengineering)の必要性</b></p> <p>サービス設計12箇条に基づき、業務改革 (BPR) に取り組む</p> <p><b>構造改革のためのデジタル原則</b></p> <ol style="list-style-type: none"> <li>① デジタル原則・自動化原則</li> <li>② アジャイルガバナンス原則</li> <li>③ 官民連携原則</li> <li>④ 共通基盤利用原則</li> </ol> <p><b>クラウド第一 (クラウド・バイ・デフォルト) 原則</b></p> <p>情報システムの整備に当たっては、クラウド第一原則を徹底</p> <p><b>個人情報等の適正な取扱いの確保及び効果的な活用の促進</b></p> <p>個人の権利利益の保護と個人情報の適正かつ効果的な活用のバランスを考慮</p>
<p><b>④ 誰一人取り残されないデジタル社会</b></p> <p>デジタルに不慣れな人のほか、利用が困難な人或利用しない人も、デジタル化の恩恵を実感できるよう、アクセシビリティの徹底等を進め、誰もが日常的にデジタル化の恩恵を享受できる「誰一人取り残されない」デジタル社会の実現を目指す。</p>	<p><b>⑤ デジタル人材の育成・確保</b></p> <p>デジタル庁・各府省庁がデジタル人材の育成・確保や産学官で行き来できる環境整備を図るとともに、ICTスキルを継続的に学ぶ環境を整備し、我が国のデジタル人材の定上げと専門性の向上を図り、デジタル人材の育成・確保されるデジタル社会を実現する。</p>	<p><b>⑥ DFFTの推進を始めとする国際戦略</b></p> <p>DFFT<sup>※4</sup>の具体的な推進に資する成果創出に向けて取り組むとともに、信頼を基盤とした国際協力を推進し、プライバシーやセキュリティ等に適切に対応することで、より信頼を維持・増進し、国境を越えた自由なデータ流通が可能な社会の実現を目指す。</p>	

※1: Data Free Flow with Trustの略称。信頼性のある自由なデータ流通のこと。  
 ※2: 届出の手続・サービスが一貫してデジタルで完結すること。  
 ※3: 一度届出した情報は、一度提出するところを不要とする。こと。  
 ※4: 民間サービスを含め、複数の手続・サービスをワンストップで実現すること。

Priority Plan for the Advancement of a Digital Society

# Using Software as a Growth Strategy

- ◆ To realize the society we aspire to, we need to create new businesses that start by **solving social issues as a growth strategy**.
- ◆ The means to solve social issues is **the use of digital technology with a focus on software**.
  - Shift to a "**Software-Defined Society**" that expands the software-defined structure to society as a whole.



## ■ What is Software-Defined?

"Software-Defined" is a concept that seeks to achieve more excellent value by continually updating the software that controls hardware to respond to uncertainty and changing needs. To tackle difficult social issues and create innovative technology, Software-Defined mechanisms must be used to repeatedly test hypotheses and derive solutions while interacting with the real world.

### Example) Software-Defined Vehicle

Even after selling the car, the software can be updated remotely to add functions and improve performance. This makes it possible to improve performance, driving assistance, and accident prevention functions and increases the possibility of realizing new functions that were previously impossible.



### Example) Software-Defined Satellite

The Voyager spacecraft, launched in 1977, has been exploring beyond the solar system while undergoing software updates. Most recently, in October 2023, the fuel injection system was changed to extend the satellite's life.



**Software's growing influence on society/industry has reached a new level**

# A major shift in software development due to raging technological innovation



## The evolution of AI is leading to a major shift in software development.

- AI assists and takes over routine tasks such as code creation and test execution, dramatically improving productivity.
- Software development becomes an "**Building Blocks**" with open source and API standardization.
- **Labor-intensive work will be drastically reduced** ⇒ Shift from man-months to transactions based on results (= value).
- Increasing productivity through **the use of AI is essential** to expand the use of digital technology under a declining population.

## Human Role Shift in Software Development Occurs.

- AI is replacing development processes, and the role of humans is shifting to upstream processes such as strategic planning, planning, and requirements definition.
- Humans **evaluate the validity of AI products (fitness-for-purpose judgments)**.
- Overall perspective, conceptualization, and comprehensive judgment based **on advanced engineering** skills are required.

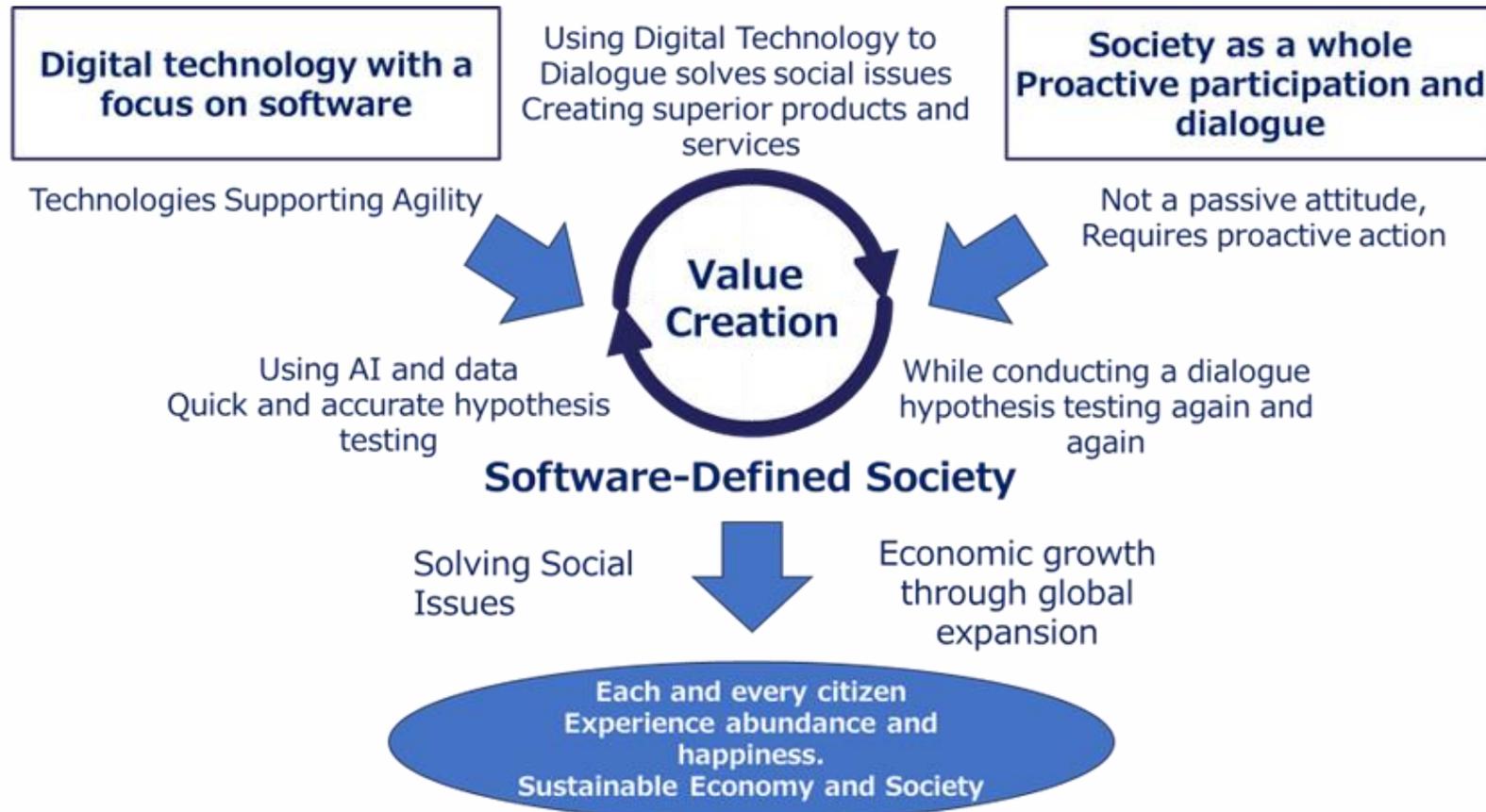
## Reskilling for Increasingly Sophisticated Human Resource Requirements Reskilling to meet.

- Improvement in the ability to identify and master advanced technologies other than AI as they emerge one after another.
- Significantly reduced programming effort, but enhanced abstract thinking ability to conceive and control mechanisms that push the limits of human knowledge and augment it to cope with rapid increases in input devices, data volume, and processing volume.
- A managerial perspective is also needed to use AI to advance strategy, planning, and requirements definition, and to implement it in business and society.
- Enhancement of the system to systematically train **software engineers who will lead the transformation** of society and business, both in terms of quality and quantity.

# Our vision for the next stage of software

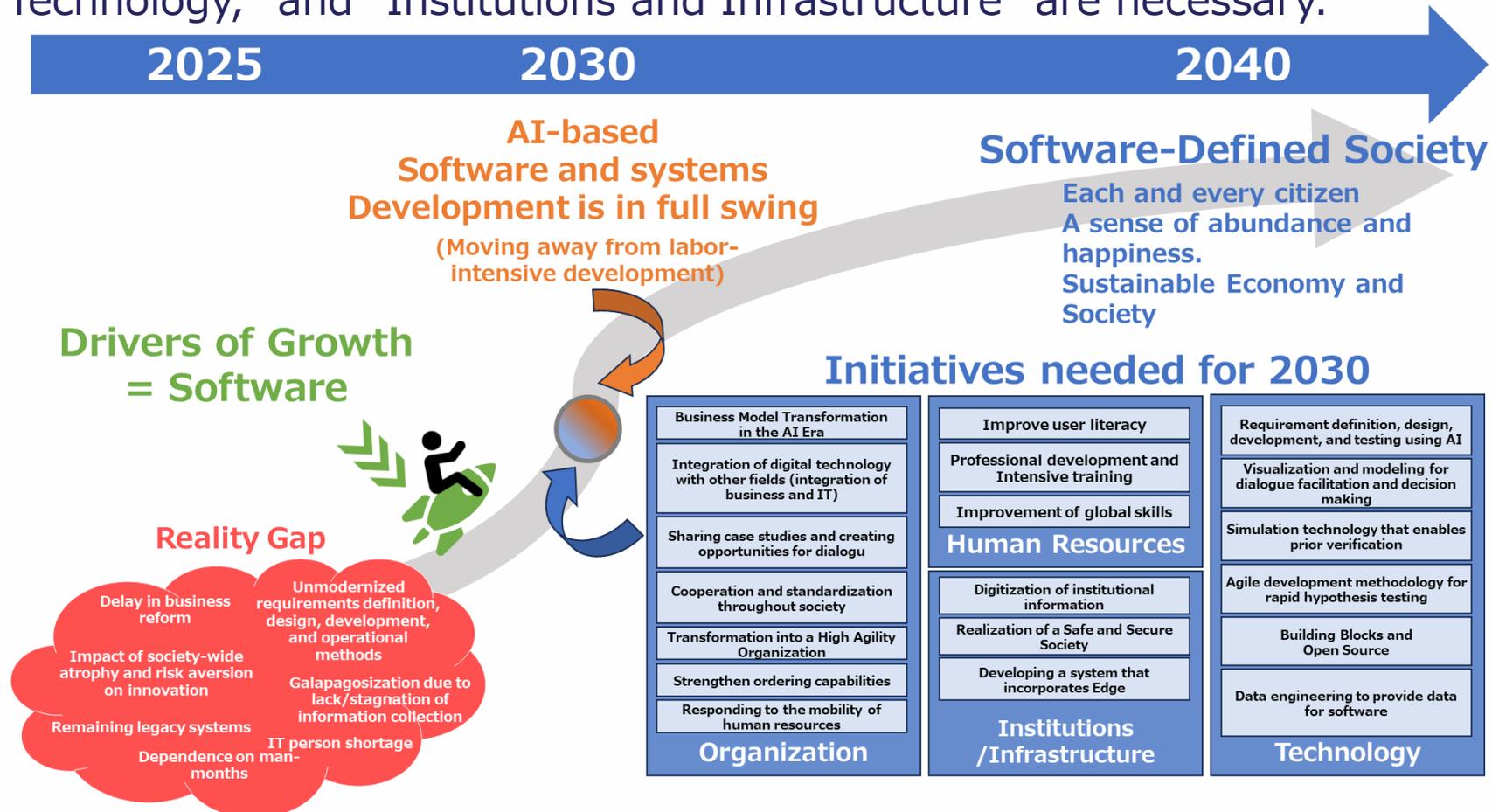
To form a social feedback loop by stimulating extensive dialogue on the foundation of a sense of social unity rooted in traditional culture. On this basis, we will **accelerate the transition to a software-defined society** by repeating **rapid and accurate hypothesis testing of AI** and other software-enabled **digital technology applications**, while promoting data utilization and responding to real needs.

This will help solve social issues and promote economic growth, enabling the realization of a sustainable economy and society.



# Roadmap ~Toward the Next Stage of Software~

By 2030, AI-based software and system development is expected to be in full swing, and we will see a shift away from labor-intensive development. In order to respond to such an era and realize the aforementioned vision, efforts from the perspectives of "Organization," "Human resources," "Technology," and "Institutions and Infrastructure" are necessary.



# Proposed activities centered on this committee for FY2025 and beyond



Of the necessary axes of initiatives for 2030 listed in the roadmap, this committee, The Committee plans to sequentially implement the initiatives mainly related to software enhancement, after determining their priority.

Point of view	Axis of an initiative	Proposed Activity Themes
General	• General	<b>Public Awareness Activities (Software-Defined Society, Value-oriented, etc.)</b>
	• Information Gathering and Analysis	<b>Gathering and publicizing the latest domestic and international trends</b>
Organization	• Cooperation and standardization throughout society	<b>Facilitating dialogue across organizational boundaries</b>
Technology	• Requirement definition, design, development, and testing using AI	<b>Advancement of AI utilization</b>
	• Visualization and modeling for dialogue facilitation and decision making	<b>Promotion of advanced requirements definition, modeling &amp; simulation</b>
	• Simulation technology that enables prior verification	
	• Agile development methodology for rapid hypothesis testing	
Institutions and infrastructure	• Building Blocks and Open Source	<b>Promote open source and Building Blocks</b>
	• Data engineering to provide data for software	<b>Promoting Data Engineering</b>
	• Digitization of institutional information	<b>Promotion of Legal Tech</b>
		<b>Promote standardization of contracts, terms and conditions, etc</b>
	• Developing a system that incorporates Edge	<b>Promotion of Cloud-Edge-IoT</b>

# IPA

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