

# Background of the Development of Action Plan for Utilization of Artificial Intelligence (AI) Technology (FY2022-2026 edition)

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Project Team for Usefulness Verification of AI-related Technologies



# Development of a New Action Plan

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- In FY2017, the JPO published the "Action Plan for Utilization of Artificial Intelligence (AI) Technology" (hereinafter referred to as the "Action Plan"), describing a six-year plan (until FY2022) for the utilization of AI technology to improve efficiency and quality of the JPO administrative work. Since then, the JPO has promoted the projects while revising the Action Plan annually.
- AI Research Project was conducted in FY2021 in order to consider how AI technology should be used in the JPO over the next five years in light of recent changes in the circumstances surrounding the JPO and rapid advancement of AI technology.
- The AI Research Project was mainly conducted on the following items
  - (1) Review of the progress of the Action Plan to date
  - (2) Recent advancement of AI technology
  - (3) Recommendations on how to proceed in the future based on (1) and (2)
- A new Action Plan (FY2022-2026 edition) was developed considering the results of the AI Research Project and opinions from external experts.

## Outline of the results of the AI Research Project and the direction of the development of new Action Plan

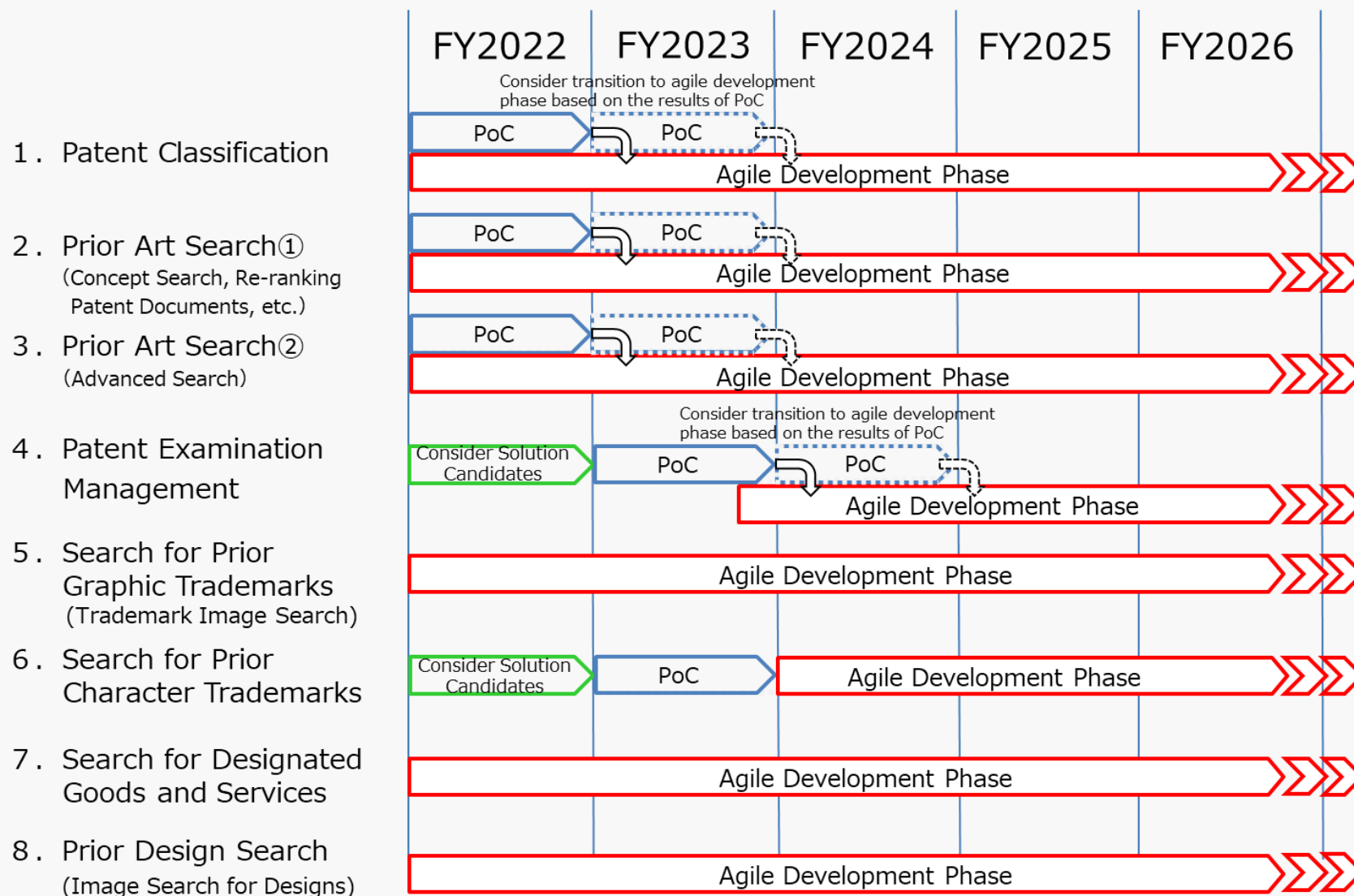
- The progress and achievements of the Action Plan to date (i.e., technology verification through Proof of Concept (PoC) processes, trial provision of tools developed in agile development processes) were positively evaluated in the AI Research Project. The past progress and achievements were also highly evaluated by external experts.
- Recent advancement of AI technologies (especially natural language processing technologies such as BERT) that are considered applicable to the JPO administrative work was confirmed in the AI Research Project.
- In parallel with the AI Research Project, interviews on business issues were conducted with each section and division of the JPO, and new project candidates were discussed while also seeking opinions of external experts.

New Action Plan was developed based on the following policies.



- Continue with the existing overall approach
- Incorporate new technologies
- Add new projects to solve newly identified business issues

# Action Plan for Utilization of AI technology (FY2022-2026 edition)



## Projects under consideration to be listed in the Action Plan (Appendix: Action Plan)

The following projects will be listed in the Action Plan when they meet certain conditions after preliminary preparations have been made, including the establishment of a staff organization, study of solution candidates, clarification of technical standards, and examination of cost-effectiveness.

- Responding to inquiries by phone, email
- Digitization of paper documents into text data
- Support for confirming the designated goods and services of international trademark applications
- Support for prohibiting public access to certain types of submitted documents
- Suggestion of trademark distinctiveness

(※) There may be changes, such as the addition of new projects to the Appendix or the deletion of projects from Appendix, depending on the results of future consideration.

# Details of each project (Projects listed in the Action Plan) (1)

<b>1. Patent Classification [Continued + new PoC]</b>	
<b>Aims</b>	Improve efficiency and quality of prior art search for foreign patent documents
<b>Outline</b>	Predict JPO patent classifications (theme codes, FIs, F-terms) for foreign patent documents using machine-translated Japanese text as input
<b>The Way Forward</b>	In parallel with continuing the agile development phase, a new PoC project* will be conducted in FY2022. Transition to agile development phase (incorporation of new technologies) will be considered based on the results of the new PoC project
<b>2. Prior Art Search (1) (Concept Search, Re-ranking Patent Documents, etc.) [Continued + new PoC]</b>	
<b>Aims</b>	Improve efficiency and quality of prior art search
<b>Outline</b>	<ul style="list-style-type: none"> <li>•Retrieve similar documents to the application being examined based on similarity of text data</li> <li>•Calculate scores representing the similarity based on text data and meta data contained in the application being examined and the target prior patent documents and re-rank the documents in order of the scores</li> </ul>
<b>The Way Forward</b>	In parallel with continuing the agile development phase, a new PoC project* will be conducted in FY2022. Transition to agile development phase (incorporation of new technologies) will be considered based on the results of the new PoC project
<b>3. Prior Art Search (2) (Advanced Search) [Continued + new PoC]</b>	
<b>Aims</b>	Improve efficiency and quality of prior art search
<b>Outline</b>	<ul style="list-style-type: none"> <li>•Display patent documents with figures that are highly relevant to the figures of the application being examined</li> <li>•Suggest useful keywords for creating search queries based on text data of the application being examined</li> <li>•Consider new search paradigms that utilize AI technology, etc.</li> </ul>
<b>The Way Forward</b>	In parallel with continuing the agile development phase, a new PoC project* will be conducted in FY2022. Transition to agile development phase (incorporation of new technologies) will be considered based on the results of the new PoC project
<b>4. Patent Examination Management [New]</b>	
<b>Aims</b>	Conduct management tasks around the patent substantial examination process more effectively and efficiently
<b>Outline</b>	Consider how to implement management tasks such as appropriate distribution of applications effectively and efficiently, taking account into the use of AI technology, etc.
<b>The Way Forward</b>	Solution candidates will be considered in FY2022 and a new PoC project will be conducted in FY2023. Transition to agile development phase will be considered based on the result of the PoC project

## Details of each project (Projects listed in the Action Plan) (2)

<b>5. Search for Prior Graphic Trademarks (Trademark Image Search) [Continued]</b>	
<b>Aims</b>	Improve efficiency and quality of searches for prior graphic trademarks
<b>Outline</b>	Calculate the degree of similarity based on the feature values of the image of the applied trademark and the images of the prior trademarks, and display from the one with the highest degree of similarity
<b>The Way Forward</b>	In parallel with continuing the agile development phase, implement the AI competition winners' models in FY2021 into the image search system of the JPO
<b>6. Search for Prior Character Trademarks [New]</b>	
<b>Aims</b>	Improve efficiency and quality of searches for prior character trademarks
<b>Outline</b>	Consider using AI technology in the search for prior character trademarks with similar pronunciations
<b>The Way Forward</b>	Solution candidates will be considered in FY2022 and a new PoC project will be conducted in FY2023. Transition to the agile development phase will be considered based on the result of the PoC project
<b>7. Search for Designated Goods and Services [Continued]</b>	
<b>Aims</b>	Improve efficiency and quality of designated goods and services search
<b>Outline</b>	Search for matches with published examples or previously accepted results and the goods and services applied for, and present candidates for similarity group codes to be assigned
<b>The Way Forward</b>	Continue agile development phase to improve usability and accuracy
<b>8. Prior Design Search (Image Search for Designs) [Continued]</b>	
<b>Aims</b>	Improve efficiency and quality of prior design search
<b>Outline</b>	Utilize image search technology in prior design search
<b>The Way Forward</b>	Continue agile development phase while considering technology to be utilized

## Outline of each project (Projects listed in the Action Plan Appendix)

Project	Outline
<b>Responding to inquiries by phone, email</b>	Consider the utilization of AI technology to reduce the time required for responding to inquiries by phone, e-mail for the following points, for example <ul style="list-style-type: none"> <li>• Transcription of telephone responding</li> <li>• Extraction of essential parts of the inquiry from transcribed data</li> <li>• Automatic generation of responses from inquiry text</li> </ul>
<b>Digitization of paper documents into text data</b>	To reduce the time required for confirming the contents of paper documents and input data regarding them, verify the usefulness of extracting and textualizing data as a set of item names and input data from various layouts of paper documents
<b>Support for confirming the designated goods and services of international trademark applications</b>	To reduce the time required for confirming designated goods and services of the international trademark applications, consider to support to check whether the designated goods and services of the international applications exceed the scope of the designated goods and services designated in the priority application of them or not
<b>Support for prohibiting public access to certain types of submitted documents</b>	Consider the utilization of AI technology to improve the efficiency of the process of prohibiting public access to documents submitted to the JPO in accordance with the content of the documents
<b>Suggestion of trademark distinctiveness</b>	To understand the difficulty of the applications being examined, consider the utilization of AI technology to assess the difficulty of judging distinctiveness of the applied trademarks



# Direction of Future Initiatives

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- Continue to improve efficiency and quality of the JPO administrative work through the utilization of AI technology, while also considering BPR.
- Accumulate internal knowledge and experiences on the utilization of AI technology within the JPO through the proactive initiatives of JPO staff in each phase of the Action Plan.
- Continue steady and efficient implementation of the Action Plan working with the external parties including private sector companies and AI experts.
- Provide information and exchange opinions strategically at international conferences, etc. and take the lead in the world in applying AI technology to IP administrative work.