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**Group Specification**

Experiential Networked Intelligence (ENI);

Detailed Procedure of AI Models Centralized Management and Sharing

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# Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group Experiential Networked Intelligence (ENI).

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](https://portal.etsi.org/Services/editHelp!/Howtostart/ETSIDraftingRules.aspx) (Verbal forms for the expression of provisions).

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# Executive summary

The present document specifies a high-level functional abstraction of the process of intent policy Multi-Stage translating in ENI system in terms of Functional Modules, Internal Reference Points and working pipelines.

# Introduction

With the development of intelligent telecommunication network, multiple AI platforms or AI systems have been developed, resulting in repeated construction and serious fragmented distribution of AI capabilities, and it is impossible to achieve centralized management and sharing of AI capabilities. AI capabilities dispersed to a single point need to be managed and invoked by other systems to provide more efficient services and improve the efficiency of network operation management.

# 1 Scope

# The purpose of this work item is to provide consistent mechanisms for operating, administrating, and managing Smaller AI Models (SAM) compared to large models used in network operation management. This will be done using centralised management of SAMs that are used to perform application related operations. The scope of this GS includes: the motivation for centralised management,; the detailed procedure to manage SAMs that are scattered, and how to enable manage SAMs within the ENI system. 2 References

## 2.1 Normative references

The following referenced documents are necessary for the application of the present document.

[1] ETSI GS ENI 001: "Experiential Networked Intelligence (ENI); ENI use cases".

[2] ETSI GS ENI 005: "Experiential Networked Intelligence (ENI); System Architecture".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI GR ENI 004: "Experiential Networked Intelligence (ENI); Terminology for Main Concepts in ENI".

[i.2] ETSI GS ENI 005 (V2.1.1): "Experiential Networked Intelligence (ENI); System Architecture".

[i.3] ETSI GR ENI 008: "Experiential Networked Intelligence (ENI); Evaluation of categories for AI application to Networks"

# 3 Definition of terms, symbols and abbreviations

## 3.1 Terms

For the purposes of the present document, the terms given in ETSI GR ENI 004 [i.1], ETSI GS ENI 005 [i.2].

## 3.2 Symbols

Void.

## 3.3 Abbreviations

For the purposes of the present document, the following abbreviations apply:

# 4 Introduction of AI models centralized management and sharing

With the continuous accumulation of data and the development of technology，there are many different types of AI models in the AI system. After model training is completed, continuous optimization and update may be required centralized management can realize model iteration and optimization more easily. After the centralized management of the AI model, it can be quickly invoked and applied when needed, improve the utilization rate of the model, but also improve the interpretability and maintainability of the model, and enhance the reliability and stability of the model. Therefore, the centralized management of AI models is very necessary.

AI model centralised management refers to AI model centralised management , the centralized management of all AI models in the system, including model training, deployment, monitoring and optimization, so as to achieve more efficient, consistent and reliable model services and results.

AI model centralised sharing refers to the centralization of AI models into a shared platform or repository so that all users can easily access, use, share, and manage these models. This platform or repository can be internal or external and can provide secure, efficient, and convenient model management and sharing services.

In order to promote model reuse and avoid the cost of training models from scratch, improve model transparency, and increase model reproducibility, this document proposes the process of AI model centralized management and sharing.

SAMs focuses on model management, model deployment, model monitoring and early warning, model evaluation and model iteration in the whole life cycle of machine learning models. Through unified management, operation and maintenance, application, monitoring, evaluation, and interpretation, operators and customers are provided with easy-to-use, efficient, safe and reliable AI capability operation services to help customers manage the growing machine learning models at scale, improve the efficiency of model use, reduce the cost of model integration management, and control the risk of model production environment.

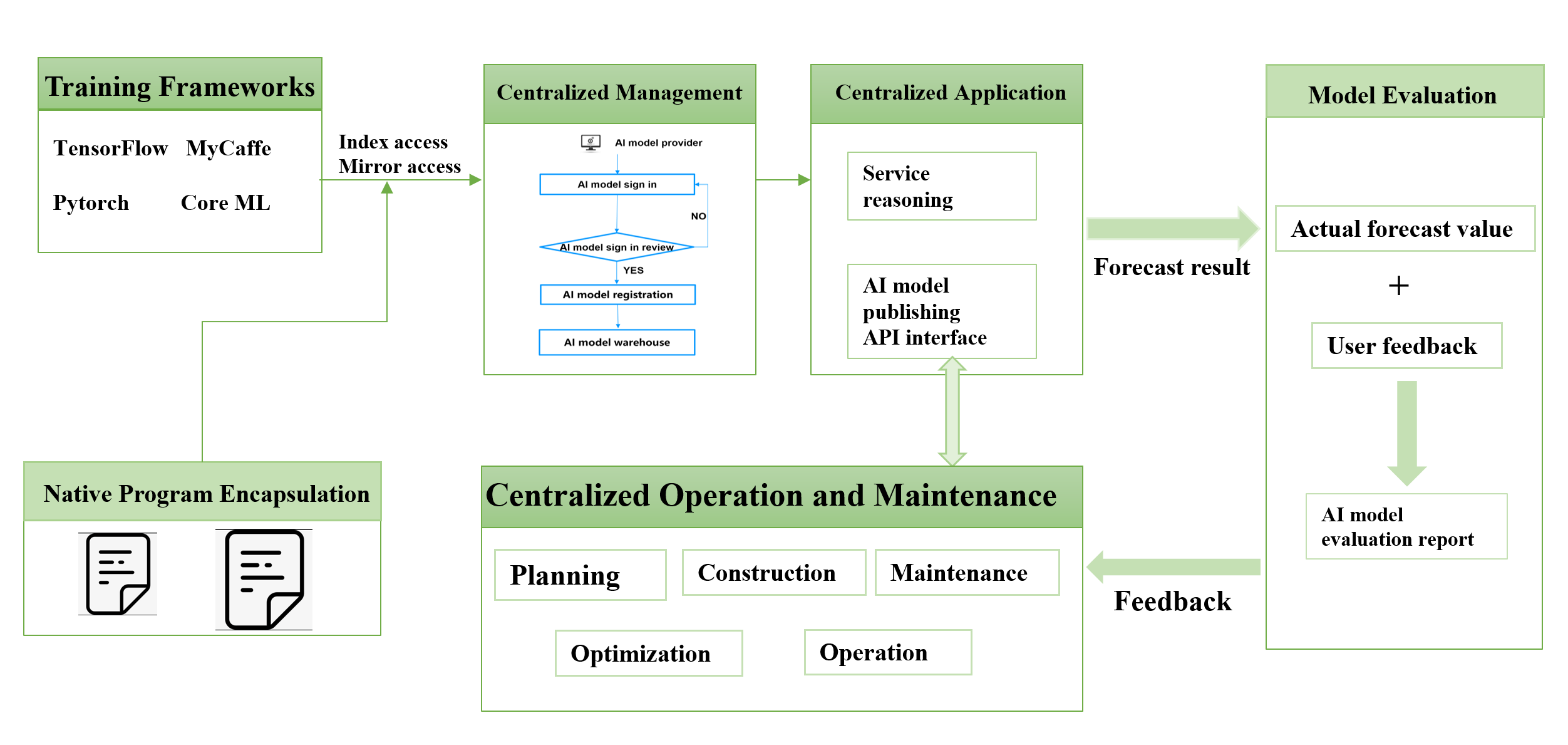


Figure 1. The process of AI model centralized management

# 5 The procedure of AI models centralized management and sharing

The procedure of AI model centralized management, following will be an example of the AI model centralized management process of an operation and maintenance system. The process diagram is shown in Figure 1. The process steps are as follows:

Step 1: AI model sign in: The AI model provider registers the AI model;

Step 2: AI model registration audit: After the registration is completed and submitted, the AI model auditor will audit the information, if the registered fields meet the requirements, the audit will be passed, if there are fields that do not meet the requirements, it will be rejected and the operation and maintenance manager will modify the information again.

Step 3: AI model registration: After registration is complete, submit the registration button.

Step 4: Determine the access type: Determine the AI model access mode of the AI model registration, and upload the corresponding file to the AI model warehouse of the AI management platform.

Step 5: AI model release: AI models are categorized and managed, and then released to form an AI model catalog, realizing the unified visibility of AI model and saved in AI model warehouse.

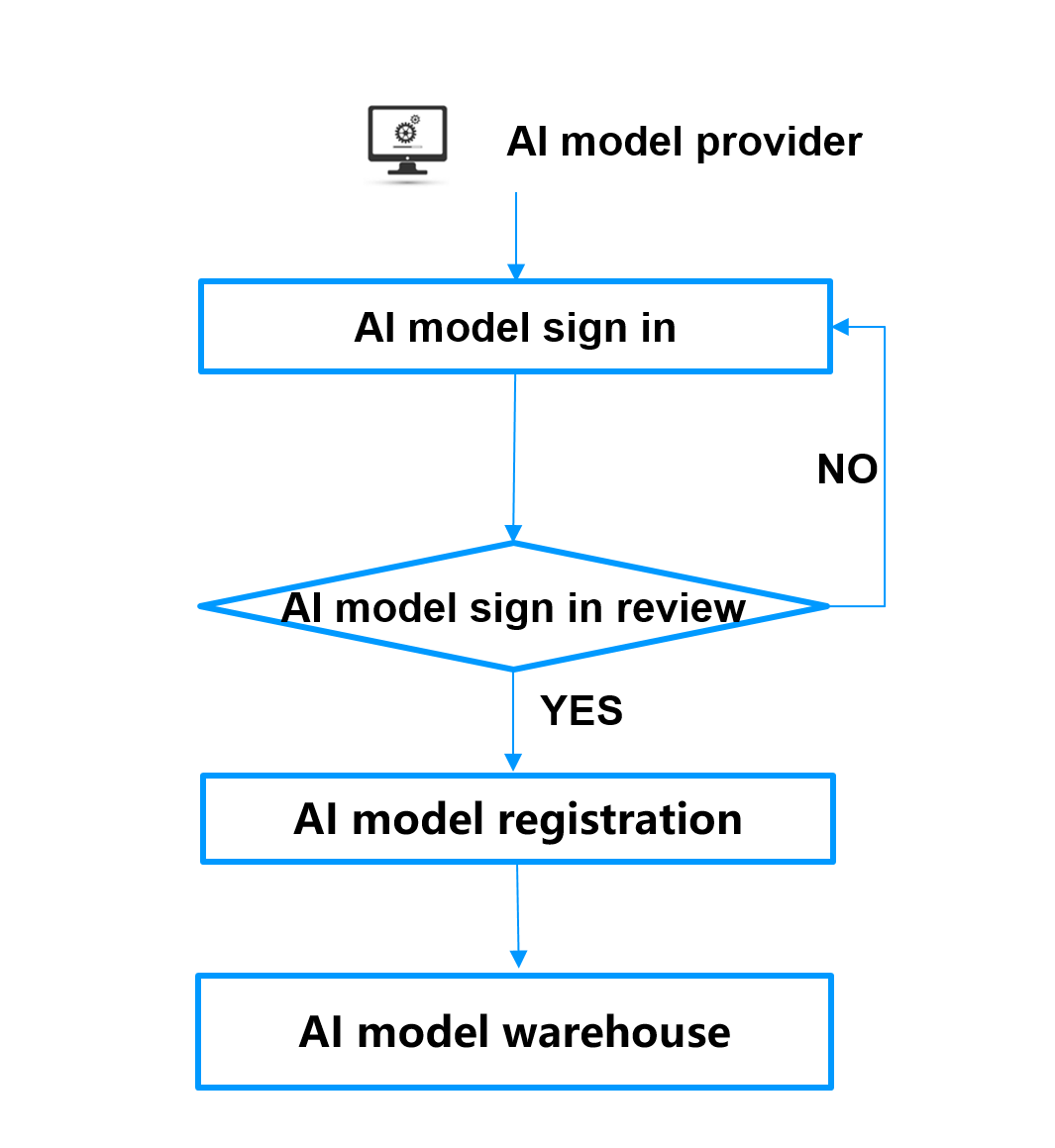


Figure 1：AI model Centralized management process

The process of AI model centralized sharing will be illustrated as an example below. The flow chart is shown in Figure 2. The process steps are as follows:

Step 1: AI model retrieval: Find the required AI model;

Step 2: AI model subscription: when the required AI model is retrieved, AI model subscription is performed.

Step 3: Judgment of whether retraining is required: determine whether AI model reuse requires retraining, and if retraining is required then proceed to AI model retraining step 4, and if model retraining is not required then proceed directly to step 6 to extract relevant files from the AI model repository;

Step 4: AI model retraining: invoke the model training-related functions of the AIOps platform for AI model retraining;

Step 5: AI model release: the AI capabilities after retraining are released and stored in the AI model repository;

Step 6: AI model warehouse: find the relevant image files of AI models from the AI model repository and extract them, and provide them to AI model subscribers.

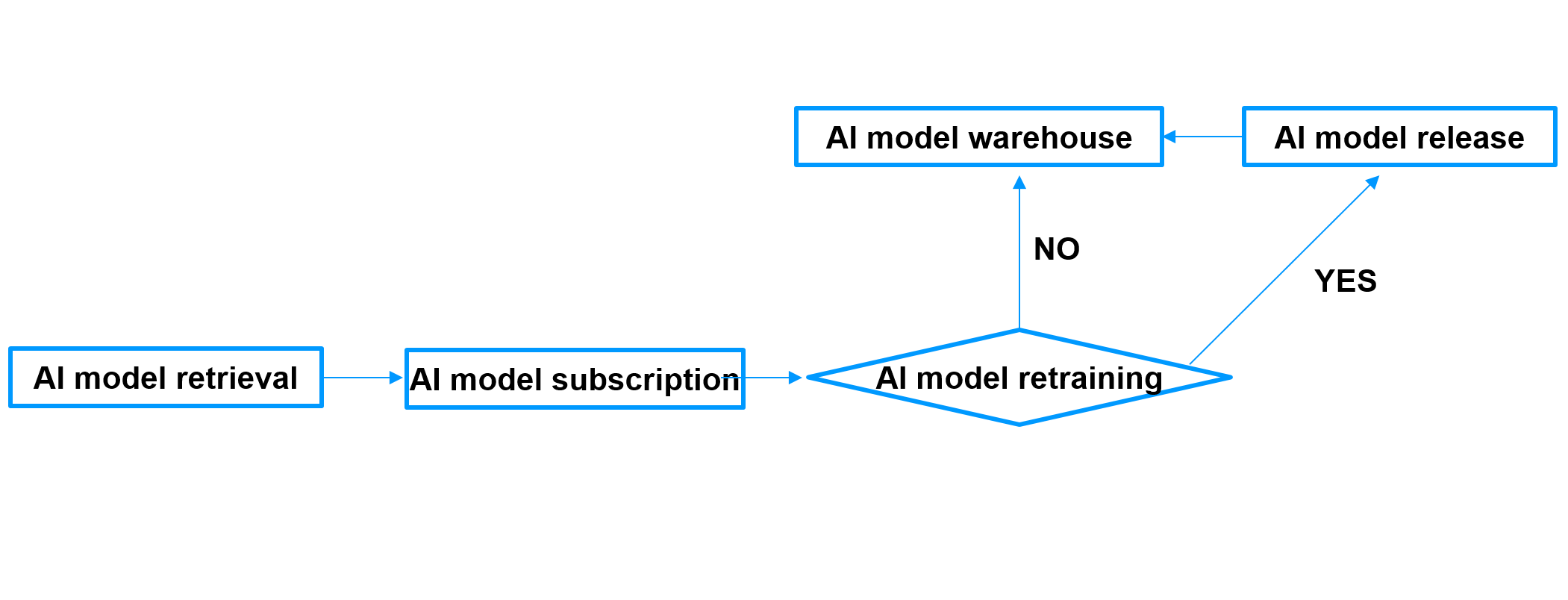


Figure 2：AI model sharing process

# 6 The Methods about sharing AI model

## 6.1 The way AI models are shared

There are five methods to share AI models:

* Re-training haring: re-training the AI model that has been accepted to make it reusable in different regions, specialties and scenarios
* Reasoning call: model reasoning in the cloud through API interface call
* Module embedded reference: package the AI model in the form of SDK, embed it in other systems, and provide reasoning environment and computing resources by other systems
* Mirror download: package and download AI reasoning model and its running environment to other systems, and other systems provide computing resources

## 6.2 The Methods about sharing the AI models within ENI architecture

This section focuses on sharing the AI model internally into the ENI system. The ENI system uses API Broker to negotiate between the ENI system and the secondary system.

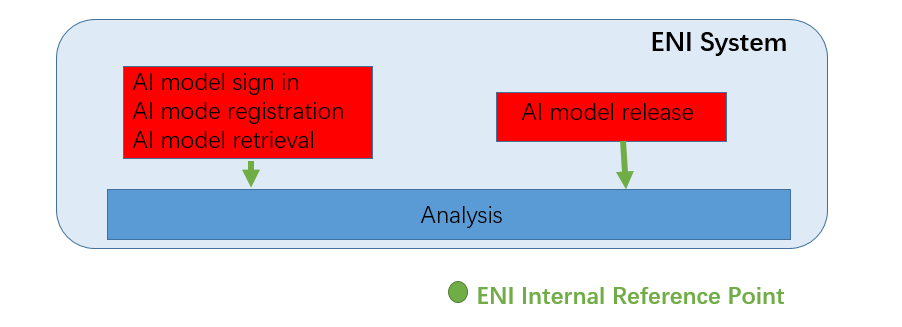


Figure 3 The Methods about sharing the AI models within ENI architecture

## 6.3 The Methods about sharing the AI models with other systems

This part is mainly about sharing AI models of external systems. The ENI system should be interoperable with other systems such as SDN, MEF etc. Call and use existing functional interfaces and functions as often as possible. The ENI system provides a number of APIs for interworking with external systems to exchange information. If these APIs can satisfy both the ENI system and external systems, ENI systems should reutilize APIs provided by existing external systems as external ENI APIs.

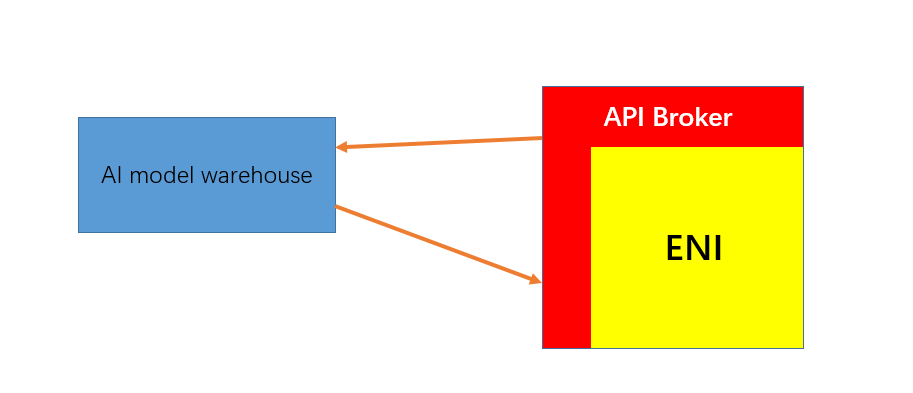


Figure 4 The Methods about sharing the AI models with other systems

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