

Recommendation **ITU-T F.748.55 (03/2025)**

SERIES F: Non-telephone telecommunication services

Multimedia services

Technical requirements and evaluation methods of robotic process automation systems

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Recommendation ITU-T F.748.55

Technical requirements and evaluation methods of robotic process automation systems

Summary

Recommendation ITU-T F.748.55 provides the technical requirements and evaluation methods of robotic process automation (RPA) systems. Some key indicators to evaluate the capabilities of robotic process automation system are set.

History*

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Keywords

AI technologies, development and tests, management and monitoring, robotic process automation system, work execution.

* To access the Recommendation, type the URL <https://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T F.748.55

Technical requirements and evaluation methods of robotic process automation systems

1 Scope

This Recommendation specifies the technical structure, evaluation methods and indicators for robotic process automation (RPA) systems and other related aspects. The service providers and customers can use them for professional technical tests.

This Recommendation lists the technical requirements and evaluation methods for robotic process automation system in five dimensions:

- the development and tests;
- the management and monitoring;
- the work execution;
- the involved AI technologies.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

None.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 manned mode: When, in the process of operation, the robot system needs human intervention by requiring manual command or input to carry out the complete task flow.

3.2.2 robotic process automation: Automation that uses software robots based on certain rules of interactive action to automate repetitive software tasks on systems, software applications and web that once required human actions.

3.2.3 unattended mode: When in the process of operation, there is no need for humans to be involved in the tasks, and the task flow is completely carried out by the robot autonomously.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AI Artificial Intelligence

API	Application Programming Interface
BOM	Browser Object Model
CPU	Central Processing Unit
CRM	Customer Relationship Management
DOM	Document Object Model
ERP	Enterprise Resource Planning
GPU	Graphics Processing Unit
ID	Identity Document
MAC	Media Access Control
NLP	Natural Language Processing
OA	Office Automation
OCR	Optical Character Recognition
RPA	Robotic Process Automation
UI	User Interface

5 Conventions

In this Recommendation:

The keywords "**is required to**" indicate a requirement which must be strictly followed and from which no deviation is permitted if conformance to this document is to be claimed.

The keywords "**is recommended**" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement needs not be present to claim conformance.

The keywords "**can optionally**" and "**may**" indicate an optional requirement which is permissible, without implying any sense of being recommended. These terms are not intended to imply that the vendor's implementation must provide the option, and the feature can be optionally enabled by the network operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with the specification.

6 The technical structure for robotic process automation system

A typical robot process automation (RPA) system includes three main parts: the controller, the designer and the software robots. The controller can provide the capabilities such as offering, deploying, triggering, monitoring, measuring, or tracking status of the workflows. The designer enables the development and optimization of software robots. The software robots are customized processes which can be used to perform specific tasks or collect essential data. In recent years, with the development of artificial intelligence (AI) technologies, some AI capabilities have been integrated into RPA system as functional components to expand the overall system capabilities. See Figure 1.

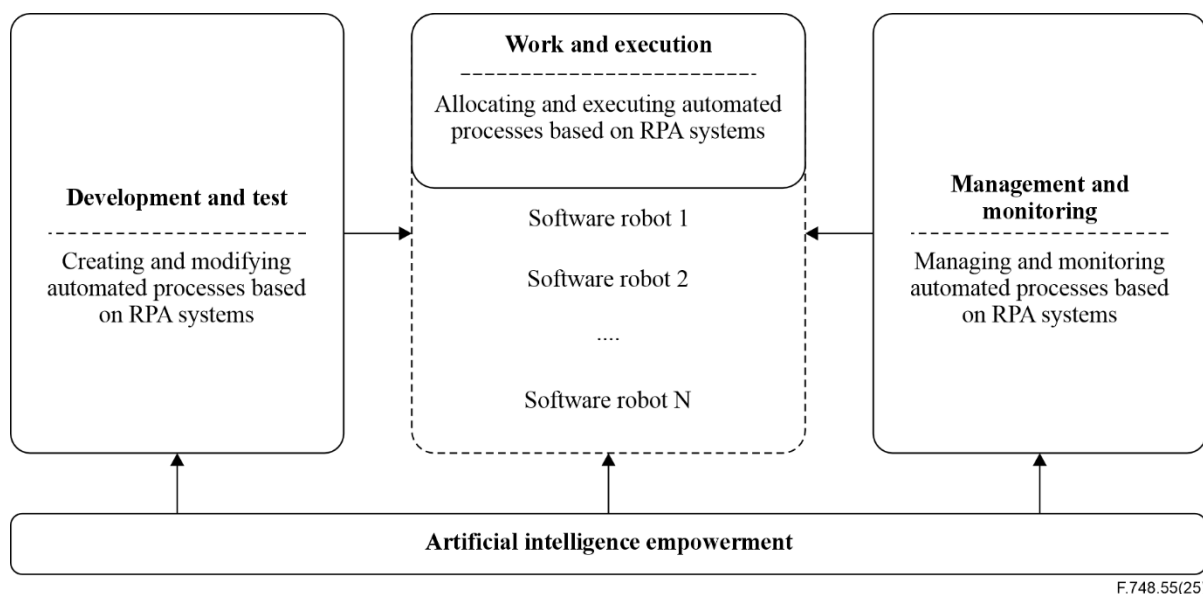


Figure 1 – The technical structure of RPA system

7 Development and test of RPA system

7.1 Development mode

7.1.1 Technical requirements

Through the development of RPA processes, companies can closely align automation capabilities with diverse business scenarios. A good development mode can guarantee an efficient and high-quality process building. The capability classification methods and related descriptions are listed in Table 1:

Table 1 – The capability classification methods of development mode

Competency levels	Descriptions
Basic functions	<ul style="list-style-type: none"> a) It is recommended to support different development modes, such as visual development, coding development and recording development. b) It is recommended to support the automatic optimization of existing processes. c) It is recommended to support the visual development using low-code technologies. d) It is recommended to support hotkey operations, such as using hotkeys to save, run, debug, or search for items. e) It is recommended to support the basic management of third-party libraries, such as loading and unloading them. f) It is recommended to support adjustments to development interfaces, such as size, theme, or location of the object. g) It is recommended to support providing application programming interfaces (APIs) and code auto-complement function during the development phase. h) It is recommended to support the online cooperation among different developers. i) It is recommended to support the real-time transformation between the visual development and coding development.

Table 1 – The capability classification methods of development mode

Competency levels	Descriptions
Advanced functions	<ul style="list-style-type: none"> a) It is recommended to support detecting and analysing the user's actions on the user interface (UI). b) It is recommended to support the transformation between recording development and visual development. c) It is recommended to support exporting the entire or partial process for secondary development. d) It is recommended to support developing the process via script editors.

7.1.2 Evaluation methods

- a) The product information is recommended to be checked to determine whether the robotic process automation system supports the functions listed in Table 1. The product information is provided by the service providers.
- b) The listed items are recommended to be checked by setting product functional tests. The checked items involve the development model types, the system stability in each development mode, and the usability for developers.

7.2 Development templates

7.2.1 Technical requirements

The development templates are important tools for ensuring development efficiency. Development templates can guide the user to develop or modify similar processes rapidly. The capability classification methods and related descriptions are listed in Table 2:

Table 2 – The capability classification methods of development templates

Competency levels	Descriptions
Basic functions	<ul style="list-style-type: none"> a) It is recommended to support a variety of development templates. b) It is recommended to support quick creation of new processes using existing templates. c) It is recommended to support displaying function descriptions and instructions for development templates. d) It is recommended to support exporting the edited processes as new development templates, and to allow local storage or cloud storage. e) It is recommended to support explaining the abilities of the templates through different ways, such as written explanations and video displays. f) It is recommended to support providing the pre-set development templates on general applications, such as office software and office systems. g) It is recommended to support providing development templates based on attributes and characteristics of different industries. h) It is recommended to support providing development templates based on different business areas or positions. i) It is recommended to support the centralized management for development templates. j) It is recommended to support providing warning tips when upgrading the template's version.