

# Recommendation

## **ITU-T M.3385 (04/2023)**

SERIES M: Telecommunication management, including  
TMN and network maintenance

Telecommunications management network

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## **Intelligence levels evaluation framework of artificial intelligence enhanced telecom operation and management**

## ITU-T M-SERIES RECOMMENDATIONS

### Telecommunication management, including TMN and network maintenance

|                                                                                 |                      |
|---------------------------------------------------------------------------------|----------------------|
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| Integrated services digital networks                                            | M.3600-M.3999        |
| Common channel signalling systems                                               | M.4000-M.4999        |

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## Recommendation ITU-T M.3385

### Intelligence levels evaluation framework of artificial intelligence enhanced telecom operation and management

#### Summary

Recommendation ITU-T M.3385 provides a detailed evaluation framework, evaluation rating method and automatic evaluating process for intelligence levels of systems which follow the framework of artificial intelligence enhanced telecom operation and management (AITOM).

This Recommendation is included in the series of Recommendations about intelligence levels of artificial intelligence enhanced telecom operation and management (IL-AITOM).

#### History \*

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#### Keywords

Artificial intelligence enhanced telecom operation and management (AITOM), evaluation framework, intelligence level.

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# Recommendation ITU-T M.3385

## Intelligence levels evaluation framework of artificial intelligence enhanced telecom operation and management

### 1 Scope

This Recommendation is included in the series of Recommendations about intelligence levels of artificial intelligence enhanced telecom operation and management (IL-AITOM). [ITU-T M.3384] provides principles of IL-AITOM including the definition, classification rules, evaluated objects and the general evaluation implementation architecture of IL-AITOM. Based on [ITU-T M.3384], this Recommendation provides a detailed evaluation framework, evaluation rating method and automatic evaluating process for intelligence levels of systems which follow the framework of artificial intelligence enhanced telecom operation and management (AITOM) presented in [ITU-T M.3080]. This Recommendation is used to guide the evaluation implementation of IL-AITOM and is helpful in discerning the telecom operation and management weak points for improvement.

The scope of this Recommendation comprises:

- Overall evaluation framework of IL-AITOM and detailed definitions;
- Evaluation rating method of IL-AITOM;
- Automatic evaluating process of IL-AITOM.

### 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.

[ITU-T M.3080] Recommendation ITU-T M.3080 (2021), *Framework of artificial intelligence enhanced telecom operation and management (AITOM)*.

[ITU-T M.3384] Recommendation ITU-T M.3384 (2023), *Intelligence levels of artificial intelligence enhanced telecom operation and management*.

### 3 Definitions

#### 3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

**3.1.1 artificial intelligence (AI)** [b-ITU-T F.749.13]: An interdisciplinary field, usually regarded as a branch of computer science, dealing with models and systems for the performance of functions generally associated with human intelligence, such as reasoning and learning.

**3.1.2 operation stage** [ITU-T M.3384]: General subsets for processes of telecom operation and management.

#### 3.2 Terms defined in this Recommendation

None.

## 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

|          |                                                                     |
|----------|---------------------------------------------------------------------|
| AHP      | Analytic Hierarchy Process                                          |
| AI       | Artificial Intelligence                                             |
| AITOM    | AI enhanced Telecom Operation and Management                        |
| IL-AITOM | Intelligence Levels of AI enhanced Telecom Operation and Management |
| IMT      | International Mobile Telecommunication                              |
| QoS      | Quality of Service                                                  |
| SLA      | Service Level Agreement                                             |
| SOMM     | Smart Operation Maintenance and Management                          |

## 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 Recommendation is to be claimed.

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

## 6 Background

Research is ongoing in standards development organizations (SDOs) on methods for intelligence levels evaluation in artificial intelligence enhanced telecom operation and management (AITOM). Currently [b-3GPP TS 28.100] studying intelligence level evaluation of IMT-2020 network is in progress. [b-ITU-T Y.3173] containing a framework for evaluating the intelligence levels of future networks is proposed. [b-TM Forum IG1252] describes the autonomous networks level methodology. The above studies are mainly focused on certain network fields. This Recommendation however specifies a detailed evaluation framework and evaluation rating method focusing on intelligence levels of AI enhanced telecom operation and management (IL-AITOM). Due to the numerous parameters in the method, the automatic evaluating process for IL-AITOM is further proposed to realise automatic evaluation and so improve evaluating efficiency.

## 7 Evaluation framework of IL-AITOM

### 7.1 Overview

The evaluation framework of IL-AITOM is proposed in Figure 7-1 and includes six parts:

- Classification on the intelligence level of AITOM defined five generic levels ranging from Level 1 to Level 5.
- The selection model of an evaluated object gives a three-dimensional model that considers the operation stage, system granularity, and service to identify an evaluated object.
- Evaluation dimensions including intent mapping, data collection, analysis, decision and action implementation create a complete closed-loop from the requirement to the realization in operation and management activities.
- Evaluation sub-dimensions are further fine-grained divisions of evaluation dimensions as a guide to break down the evaluation task.
- Evaluation tasks are minimum evaluated units for an evaluated object.

- Evaluation rating gives the convergence calculation process from scores of evaluation tasks to the intelligence level of an evaluated object.

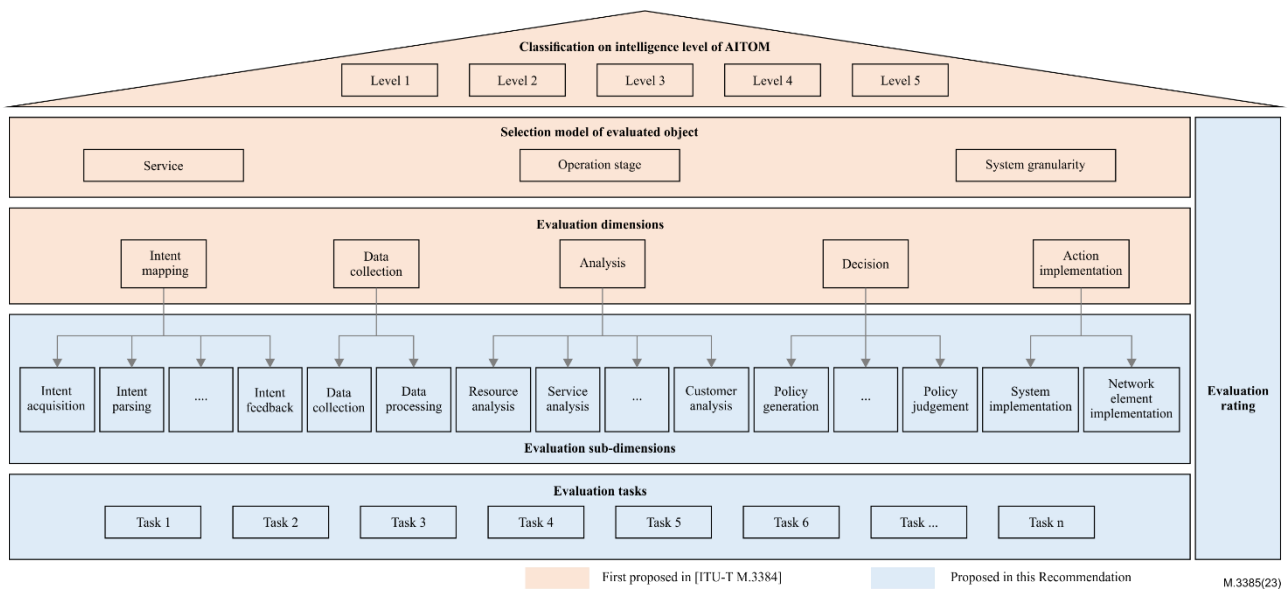


**Figure 7-1 – Evaluation framework of IL-AITOM**

## 7.2 Evaluated object

Referred to [ITU-T M.3384], the evaluated object of IL-AITOM is identified with three features namely: service, operation stage and system granularity. To refine evaluation granularity, the operation stages including planning and construction, operations readiness and support, fulfilment, assurance, billing and revenue are further expanded into multiple operation sub-stages.

- a) Planning and construction includes but is not limited to the following sub-stages:
  - i) Requirements assessment: the activities in this operation sub-stage are to understand, forecast and analyse cloud or network requirements.
  - ii) Installation and deployment: the activities in this operation sub-stage are to import cloud or network design and complete deployment.
  - iii) Configuration and test: the activities in this operation sub-stage are to complete cloud or network configuration, service test, etc.
- b) Operations readiness and support includes but is not limited to the following sub-stages:
  - i) Process support: the activities in this operation sub-stage are to design a process for other operation stages.
  - ii) Staff support: the activities in this operation sub-stage are to manage staff assignments for other operation stages.
- c) Fulfilment includes but is not limited to the following sub-stages:
  - i) Service ordering: the activities in this operation sub-stage are to select customer services and place orders through different channels.
  - ii) Service provision: the activities in this operation sub-stage are to complete automatic service configuration, activation and testing on completion.
- d) Assurance includes but is not limited to the following sub-stages:
  - i) Troubleshooting: the activities in this operation sub-stage are to implement monitoring, diagnosis and analysis of network and service faults, deal with complaints, generate fault recovery solutions, etc.