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# Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group <long ISGname> (<short ISGname>).

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# Executive summary

# Introduction

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# 1 Scope

The present document will investigate telecommunication intelligent customer services that use large language models. The present document will describe different types of telecommunication intelligent customer services, and then specify how to solve multiple scenario problems, improve customer service efficiency and reduce the reliance on manual labour. A large language model also supports rapid adaptation to tasks through fine tuning. The customer service oriented models can be created by analyzing and understanding multiple scenarios.

# 2 References

## 2.1 Normative 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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## 3.1 Terms

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## 3.2 Symbols

For the purposes of the present document, the [following] symbols [given in ... and the following] apply:

## 3.3 Abbreviations

For the purposes of the present document, the [following] abbreviations [given in ... and the following] apply:

# 4 Introduction

## 4.1 Background on intelligent customer service based on large language model

Intelligent customer service includes scenarios such as speech recognition, work order processing, knowledge question and answer, ect. The introduction of AI technology helps to handle data of telecommunication intelligent customer service, solve scenario applications, improve customer service efficiency and reduce the reliance on manual labour.

Although AI technology has brought many benefits to intelligent customer service, there are still the following problems to be solved in the application of AI in intelligent customer service: AI models are difficult to reuse in multiple scenarios, data needs to be manually labeled, and models are difficult to process massive data, etc.

The large language model for telecommunication intelligent customer service can process the massive data, realize model pre-training and model fine-tuning for different tasks, and the fine-tuned models can be used in the scenarios of customer service.

The large language model supports efficient annotation of massive data. Large language model supports rapid adaptation to tasks through fine-tuning. The customer service oriented models could be created by analyzing and understanding multiple types of data for comprehensive analysis of multiple scenarios.

## 4.2 Introduction of intelligent customer service based on large language model

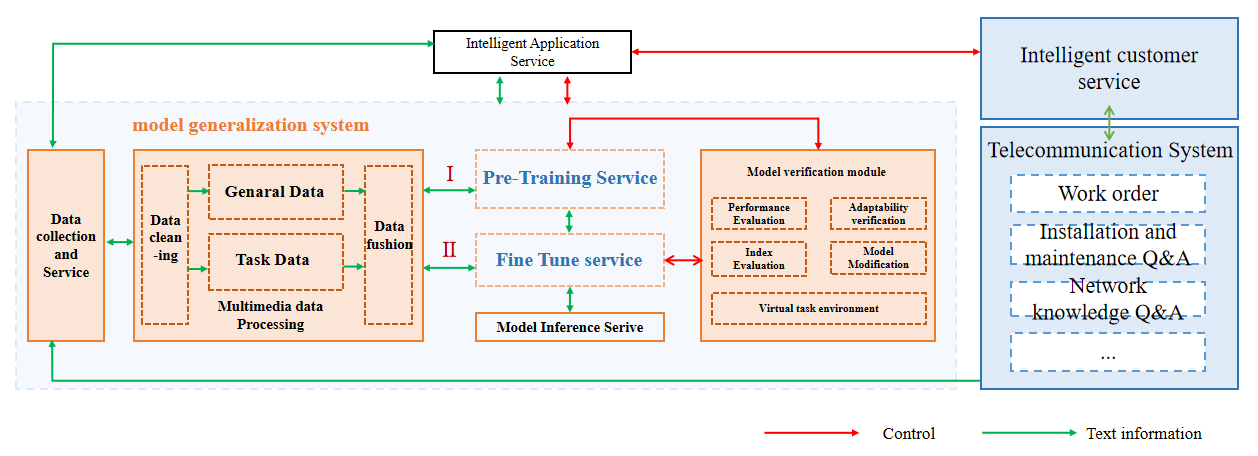
The telecommunication intelligent customer service based on large language model can process the text data, realize model pre-training and model fine-tuning for different tasks, and the fine-tuned models can be used in the scenarios of customer service.

# 5 Framework

## 5.1 Framework of intelligent customer service based on large language model

The intelligent customer service based on large language model mainly includes data collection and service module, multimedia data processing module, pre-training service module, fine tune service module and model verification module.

Data collection and service module collects the general data and task data of the telecommunications system. Data is cleaned, annotated, and fused in the data processing module. The large language model pre-trains the model based on the general data. The system fine tunes the model based on the task data, and generate models for specific scenarios. Then the generated model was verified through the model verification module to confirm that it can be adapted to the actual scenario of the intelligent customer service. Ultimately, the generated model is used to solve the specific scenario problem of customer service.



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