TERMS OF REFERENCE FOR THE R&D PROJECT

TITLE: Study of the cloud services ecosystem and map against existing standards, and identify the gap areas for Standardization

1. BACKGROUND

1.1 Cloud services refer to a broad category of services delivered over the internet, providing on-demand access to computing resources and applications. Instead of owning and maintaining physical servers and infrastructure, users can leverage the computing power, storage, and services provided by cloud service providers. This model offers flexibility, scalability, cost efficiency, and the ability to access resources from anywhere with an internet connection.

1.2 Cloud services have become a fundamental part of modern IT infrastructure, enabling organizations to innovate, scale, and focus on their core competencies without the burden of managing complex hardware and software environments. The landscape continues to evolve with advancements in technologies such as serverless computing, edge computing, and multi-cloud strategies.

1.3 Cloud services standardization refers to the process of establishing and adhering to a set of commonly accepted guidelines, specifications, and practices within the cloud computing industry. Standardization is crucial for ensuring interoperability, security, and seamless integration of cloud services across different providers and platforms. BIS has published several standards covering both the technological as well as services aspect. The list of Standards published by BIS is attached as **Annex A** for information, however, the Sectional Committee on IT & ITeS, SSD 10, has decided to conduct a study to identify the gap areas for standardization in Cloud services.

2. OBJECTIVE

To collect, analyse and map the data from primary and secondary sources in regard to the operations and services in respect to the Cloud Services in the country and identify the gap areas for development of standards pertaining to Cloud services.

3. SCOPE

3.1 Undertake study of existing literature which includes published research papers, study conducted by any other organization, Standard Operating Procedures (SoPs), best practices, international standards/standards of NSBs of foreign country, if any.

3.2 Comparative analysis of data collected on parameters given in para **3.1**.

3.3 Conduct study the cloud services ecosystem and map against existing standards, and identify the gap areas for standardization in Cloud Services along with the following details relevant to Areas/Subjects identified:

a) Classification of Services
b) Statutory and Regulatory Requirements;
c) Cloud Service Provider Requirements (Equipment, Infrastructure and Resources);
d) Requirements for safety and security and its protocol;
e) Grievance redressal mechanism;
f) Roles and responsibilities of employees;
g) Training, competence and qualification of personnel;
h) Maintenance requirements (covering maintenance plan, checklist for critical requirements for maintenance, equipment required for maintenance);
i) Documentation requirements;
j) Use of IT tools for data processing and modeling;
k) Sustainable practices adopted by the service provider

3.4 Identification of the cloud service providers w.r.t large, medium and small scale to conduct study the gap areas as covered under para **3.3** and conduct visits as per the sampling plan given below:

Type	Number of Cloud Service Provider to be visited
MeitY empanelled Cloud Service Providers*	5
Non-MeitY empaneled Cloud Service Providers	5

*List is available on website of MeitY

3.5 Prepare an analytical report covering the details mentioned in para from **3.1** to **3.4**.

4. RESEARCH METHODOLOGY

The development of the standards should follow a structured methodology that includes, but not limited to, the followings:

a) Review of the literature as mentioned in para **3.1**.
b) Collection of feedback through circulation of questionnaire.
c) Conduct visits as mentioned in para **3.4**. After identification of cloud service providers to be visited, take consent of BIS before proceeding further.
d) Witness and observe the requirements given in para **3.3** during the visits.

e) Focused group discussions with experts after the visits to analyze and comparative analysis of the collected data.

f) Prepare a report based on the findings and data collected as per para **3** and provide details of gap areas identified for Standardization.

5. DELIVERABLES

5.1 An analytical report containing information/data as mentioned in para **3** including gap areas identified for Standardization and append evidence containing evidence, statements, questionnaire, details of interviews, outcome of consultation with experts and data collected during literature review and visits.

5.2 Hard as well as soft copy of the report shall be submitted within the timeframe.

6. TIMELINE AND METHOD OF PROGRESS REVIEW

The time frame of completing the study and submitting the report is 4 months from the date of the award of the project.

Stage Wise Timelines:

a) Interim Report covering the review of the literatures, existing stipulations and visits plan for approval of BIS – within 1 months from the date of award of project from BIS.

b) Report of site visits by end of 2 months from the date of award of project from BIS.

c) Draft project report covering all the aspects of the ToR – By end of 3 months from the date of award of project from BIS

d) Submission of final report – 04 months

e) The researcher taking up the project shall clear all doubts on provisions of research including ToR and BIS guidelines before acceptance.

7. SUPPORT BIS WILL PROVIDE

BIS will provide access to latest available editions of Indian standards and/ or international standards relevant to the project, on request.

8. RELEVANT SECTIONAL COMMITTEE AND NODAL PERSON

Sectional Committee:
IT and IT enabled Services, SSD 10

Nodal Officer:
Shri Dharamsoth Santhosh, Sc-C/DD & Member Secretary, SSD 10, Services Sector Department, Email: ssd@bis.gov.in

Annex-A

A. Published Indian Standards in the Service Aspects of Cloud Computing

Sl.no	IS Number	Title
1.	IS/ISO/IEC 19086-1 : 2016	Information Technology Cloud Computing Service Level Agreement SLA Framework Part 1 : Overview and Concepts
2.	IS/ISO/IEC 19086-2 : 2018	Information Technology Cloud Computing Service Level Agreement SLA Framework Part 2 : Metric Model
3.	IS/ISO/IEC/TR 23613 : 2020	Information Technology Cloud Computing Cloud Service Metering Elements and Billing Modes
4.	IS/ISO/IEC/TR 23951 : 2020	Information Technology Cloud Computing Guidance for using the cloud SLA metric model
5.	IS/ISO/IEC 19086-3 : 2017	Information Technology ─ Cloud Computing ─ Service Level Agreement (SLA) Framework Part 3 Core Conformance Requirements
6.	IS/ISO/IEC 19086-4 : 2019	Information Technology ─ Cloud Computing ─ Service Level Agreement (SLA) Framework Part 4 Components of Security and of Protection of PII
7.	IS/ISO/IEC TR 22678 : 2020	Information Technology ─ Cloud Computing ─ Guidance for Policy Development
8.	IS/ISO/IEC TR 23187 : 2020	Information Technology ─ Cloud Computing ─ Interacting with Cloud Service Partners (CSNs)
9.	IS/ISO/IEC 22624 : 2020	Information Technology Cloud Computing Taxonomy Based Data Handling for Cloud Services
10.	IS/ISO/IEC TR 23188 : 2020	Information Technology Cloud computing Edge computing landscape
11.	IS/ISO/IEC TS 23167 : 2020	Information Technology Cloud Computing Common Technologies and Techniques

B. Published Indian Standards in the Technological Aspects of Cloud Computing

Sl.no	IS Number	Title
1.	IS/ISO/IEC 22123-1 : 2021	Information technology Cloud computing Part 1: Vocabulary
2.	IS/ISO/IEC 19944-1 : 2020	Cloud computing and distributed platforms Data flow data categories and data use Part 1: Fundamentals
3.	IS/ISO/IEC 17788 : 2014	Information technology Cloud computing Overview and vocabulary