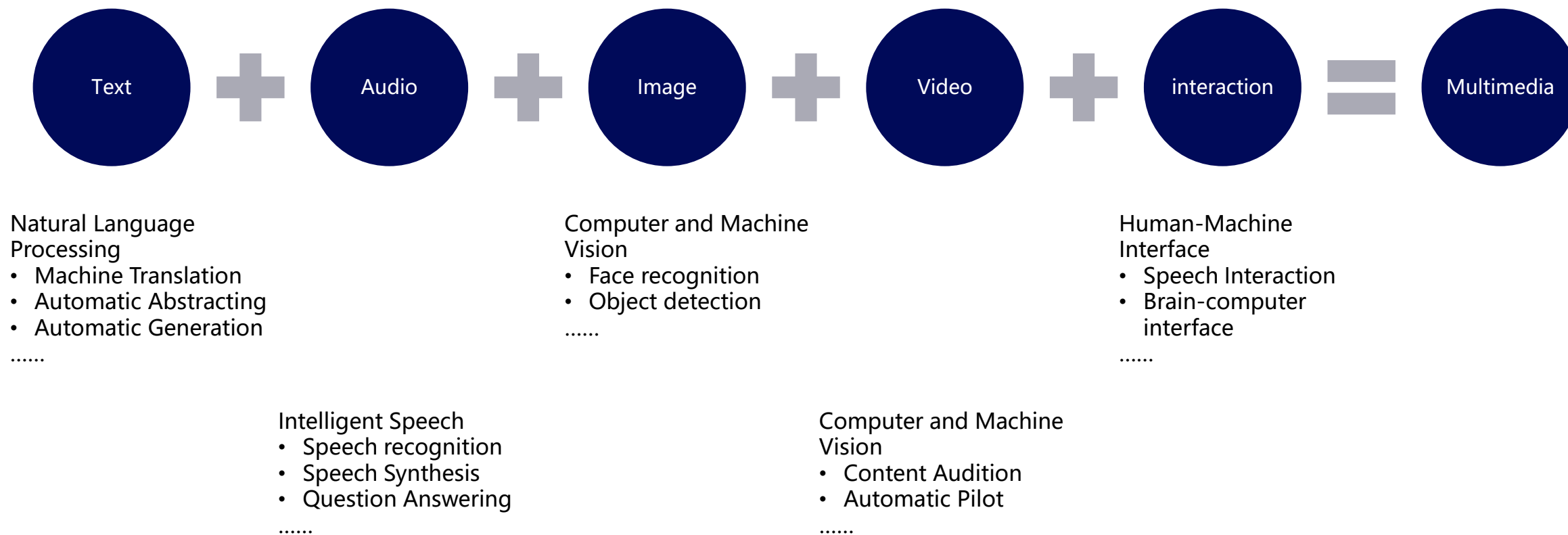


# “Intelligent Multimedia”

## WHAT'S MISSING?

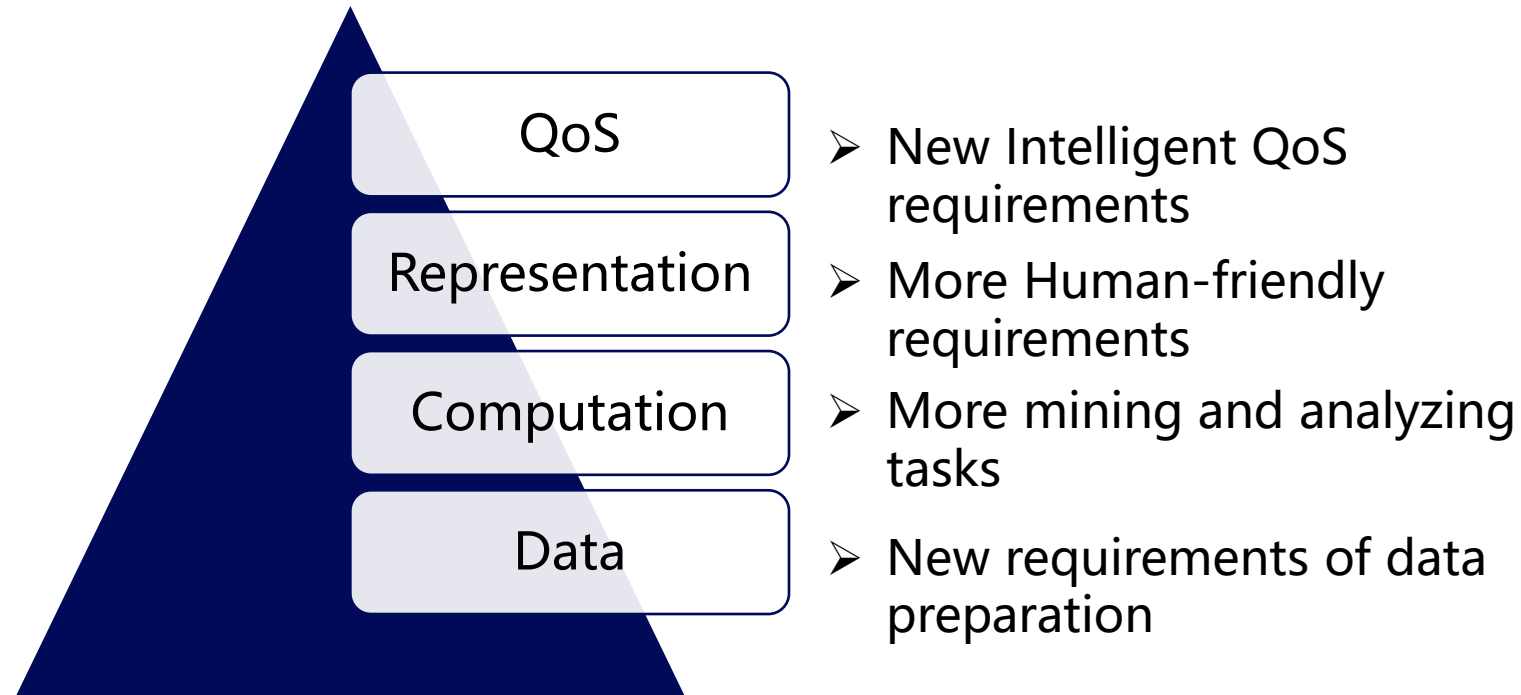
*WANG Yuntao*  
*Chair of FG-EAI*  
*Rapporteur of Q5/21*



# We should we do?

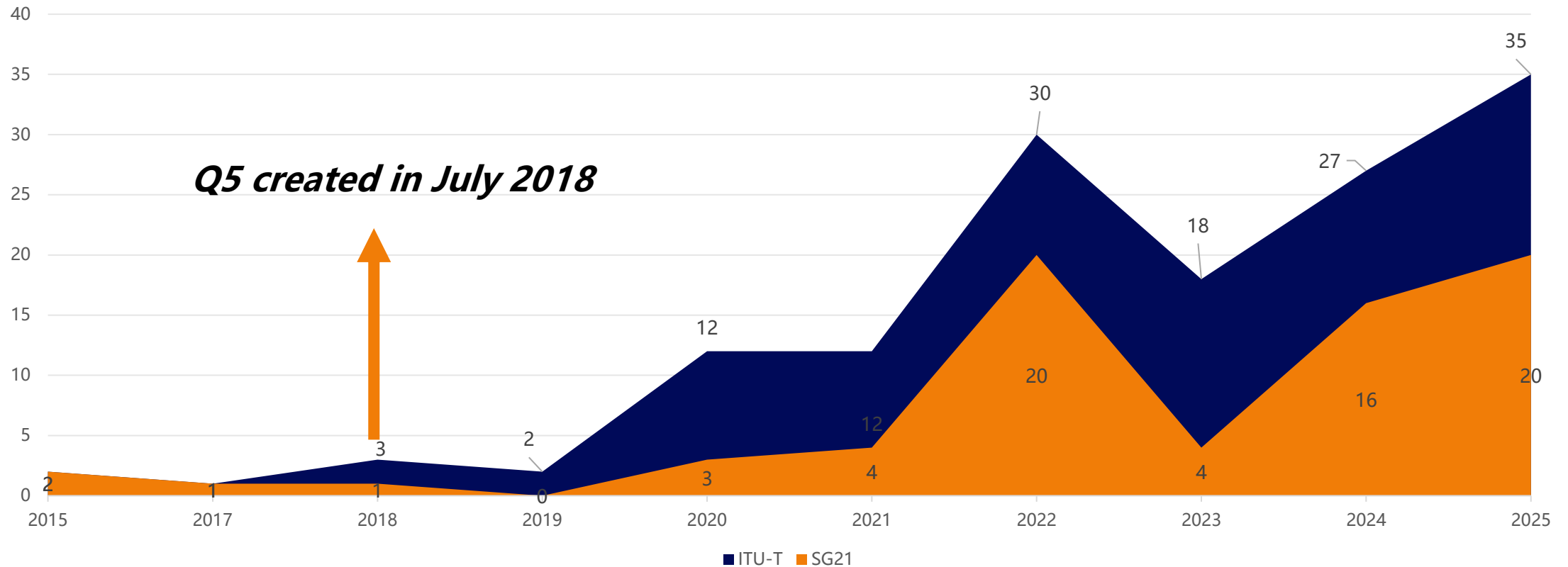
## Figure out the framework

Applications are booming, we need to identify the common technical barriers behind all these applications, and figure out the Intelligence Enablers.



- ITU-T Q5/21 Has Become the Leading Contributor to AI and AI+ standards, with an annual share exceeding 60%

ITU-T and SG21 AI Standards Publication Statistics



- **Total standard projects developed: 125 items, under study: 61 items, published: 64 items.**
- Q5/21 has been the flagship for ITU-T AI external engagement, participating in ITU-T and ISO IEC on AI standards-related SPCG preparatory activities, and co-establishing the MPEG jointly with JPEG AI Joint Working Group.

**1 Foundation Models**  
(incl. LLMs, etc.), 21items

**2 Algorithm**  
(algorithms), 16items

**3 Data**  
(data), 4items

**4 Computation**  
(computing power & systems), 17items

**5 Embodied AI and Robotics**  
(embodied AI & robotics), 7items

**6 AI Agents**  
(AI agents), 5items

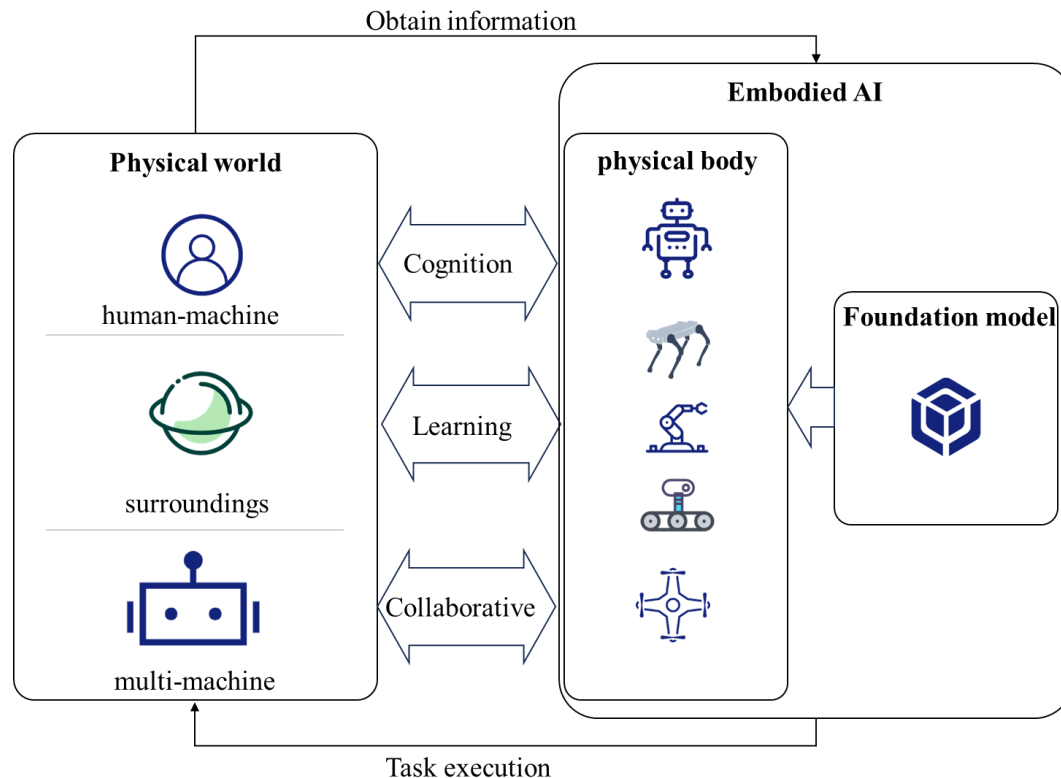
**7 AIGC**  
(AIGC), 3items

**8 Vertical Industry**  
(vertical industry applications), 45items

- In Q5/21, We have established a testing framework for AI encompassing three key dimensions: **foundational technologies**, **middle-layer capabilities** and **top-level applications**. They focus on foundation models, AI agents, embodied AI, AIGC and so on.
- **29 standards** related to AI testing, 15 approved, 1 determined, 3 pending, 10 currently under study.

| foundational technologies |                                                                                               |                        | middle-layer capabilities |                                                                                                              |                            | top-level applications |                                                                                                                     |                        |
|---------------------------|-----------------------------------------------------------------------------------------------|------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------|----------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------|
| Domains                   | Title/Subject                                                                                 | Status                 | Domains                   | Title/Subject                                                                                                | Status                     | Domains                | Title/Subject                                                                                                       | Status                 |
| Algorithm                 | Trusted contribution evaluation framework on federated machine learning services              | ITU-T F.748.24 2024-04 | Foundation model          | Assessment criteria for s: Benchmark                                                                         | ITU-T F.748.44 2025-03     | AIGC                   | Technical requirements and assessment methods of generative artificial intelligence enabled multimedia applications | Determined 2025-01     |
|                           | Assessment criteria for federated machine learning platforms                                  | Under study            |                           | Requirements and evaluation methods for retrieval augmented generation of large scale pre-trained model      | ITU-T F.748.52 2025-03     | Vertical Applications  | Technical requirements and evaluation methods of AI-based driver behaviour detection application                    | ITU-T F.748.41 2025-03 |
|                           | Quality Metrics and Evaluation Methods for Federated Machine Learning Services                | Under study            |                           | Assessment criteria for foundation models: General                                                           | Under study                |                        | Technical requirements and evaluation methods of AI based code generation in multimedia applications                | ITU-T F.748.45 2025-03 |
| Computation               | Technical specification for artificial intelligence cloud platforms: Performance evaluation   | ITU-T F.748.26 2024-02 |                           | Assessment criteria for foundation models: Vision                                                            | Under study                |                        | Technical requirements and evaluation methods of robotic process automation system                                  | ITU-T F.748.55 2025-03 |
|                           | Metric and evaluation methods for AI-enabled multimedia application computing power benchmark | ITU-T F.748.18 2022-12 |                           | Assessment criteria for foundation models: Time series                                                       | Under study                |                        | Technical requirements and evaluation methods of 3D digital human system based on smart mobile devices              | ITU-T F.748.31 2024-10 |
|                           | Deep learning software framework evaluation methodology                                       | ITU-T F.748.12 2021-06 |                           | Assessment criteria for foundation models: multimodal                                                        | Under study                |                        | Metrics and evaluation methods for image-based re-identification algorithm                                          | ITU-T F.748.33 2024-10 |
|                           | Metrics and evaluation methods for deep neural network processor benchmark                    | ITU-T F.748.11 2020-08 |                           | Requirements and evaluation metrics for large language model operators                                       | Under study                |                        | Technical requirements and evaluation methods of intelligent levels of intelligent customer service systems         | ITU-T F.746.16 2022-12 |
|                           |                                                                                               |                        |                           | Evaluation Method for Adaptability of AI Systems to Foundation Models                                        | Pending SG/WP confirmation |                        | Requirements and evaluation methods of non-interactive 2D real-person digital human application systems             | ITU-T F.748.14 2022-03 |
| AI Agents                 |                                                                                               |                        | AI Agents                 | Requirements and evaluation methods of artificial intelligence agents based on large scale pre-trained model | ITU-T F.748.46 2025-03     |                        | Requirements and evaluation methods of digital human platform                                                       | Under study            |
|                           |                                                                                               |                        |                           | Requirements and evaluation methods of Smart phone artificial intelligence agents                            | Pending SG/WP confirmation |                        | Requirements and evaluation methods for AI-based optical character recognition service                              | Under study            |
|                           |                                                                                               |                        |                           |                                                                                                              |                            |                        | Metrics and evaluation methods for the presentation and interactive effect of 3D digital human                      | Under study            |

## Conceptual diagram and key features



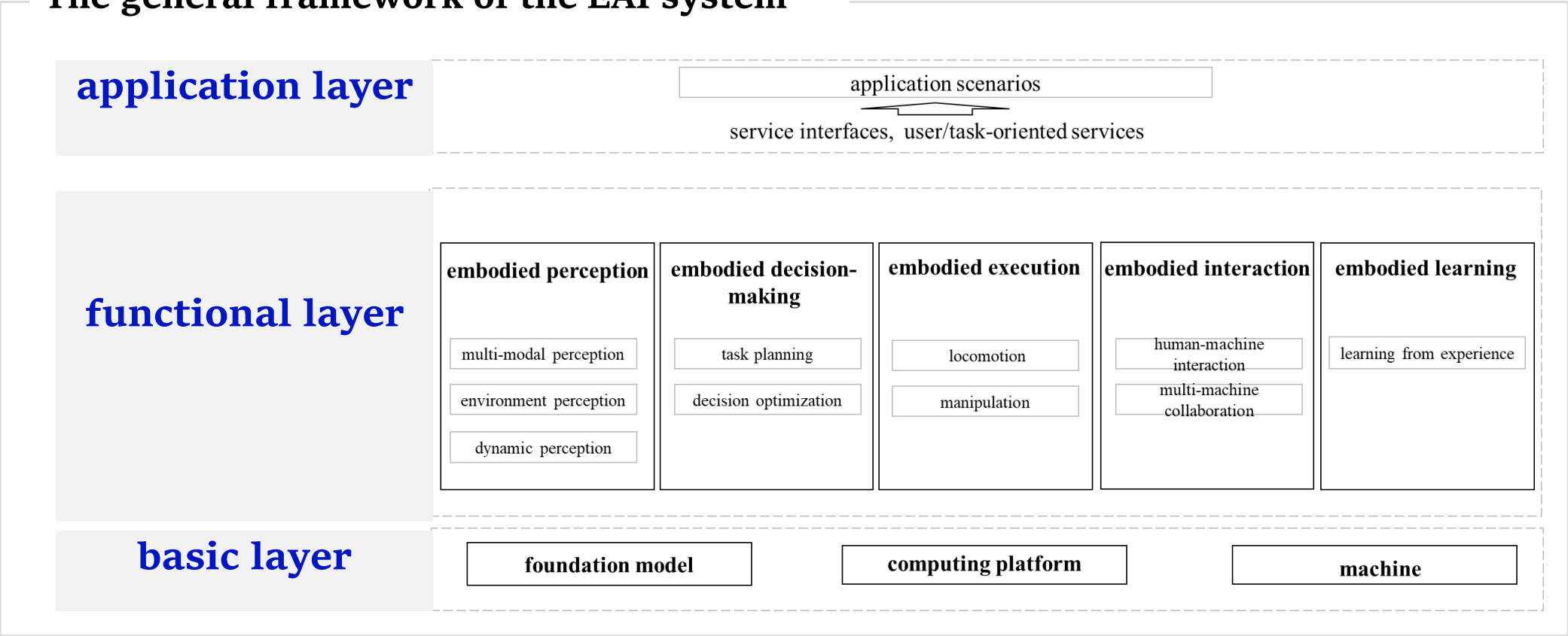
## Definition

**Embodied artificial intelligence(EAI):** Artificial intelligence integrated into physical systems that interact autonomously with and adapt to the physical world.

*ITU-T F.748.66“Requirements and framework for embodied artificial intelligence systems”*

ITU-T F.748.66“Requirements and framework for embodied artificial intelligence systems”, provides a unified framework for system capability building.

## The general framework of the EAI system



## Industry Pain Points

### Fragmented test tasks

Mostly narrow, task-specific tests

### Difficult to scale test tasks

Simulation platform interfaces are incompatible; real-world tests depend on scenarios and tasks that are hard to scale

### Inconsistent generalization metrics

Task difficulty classification and generalization evaluation protocols are inconsistent, making fair comparison difficult

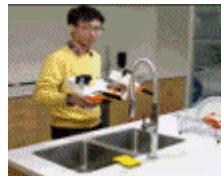
### Lack of “simulation - real-world” end-to-end analysis

Primarily “simulation” or “real-world” testing

## Building an Evaluation Framework

### ➤ ITU-T F.BA-EAI “Framework for benchmarking and assessment of embodied artificial intelligence systems”

## Industry Pain Points



Homogeneous Collection **ALOHA**



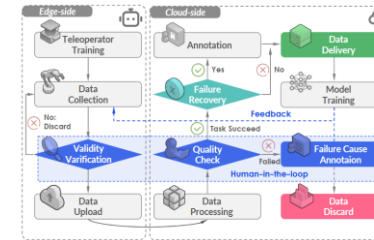
Teleoperated Platform **Astribot S1**



Open Gripper **UMI**



Motion Capture **Xsens Ti5**



**Complex processes, difficult dataset quality control:** requires “human-in-the-loop” strict data quality inspection

**Highly heterogeneous:** different sources, collection methods, and devices

## Building Collection Standards

### ➤ ITU-T F.TR-ED “Technical requirements for embodied artificial intelligence teleoperation data collection systems in real-world scenarios”

# Recommendations on Agentic AI

In ITU-T SG21, [Question 5 \(Q5/21\)](#) now carries **nine work items on AI Agents focusing on multimedia applications**. **One is already an approved Recommendation (ITU-T F.748.46, 2025)**; the other eight are under study, spanning **capability classification, platforms, interoperability, multi-agent collaboration, benchmarking and industry applications**.

Existing Q5/21 Agentic AI work items (9 work items)

Foundation

Platform & Collab.

Evaluation

Application

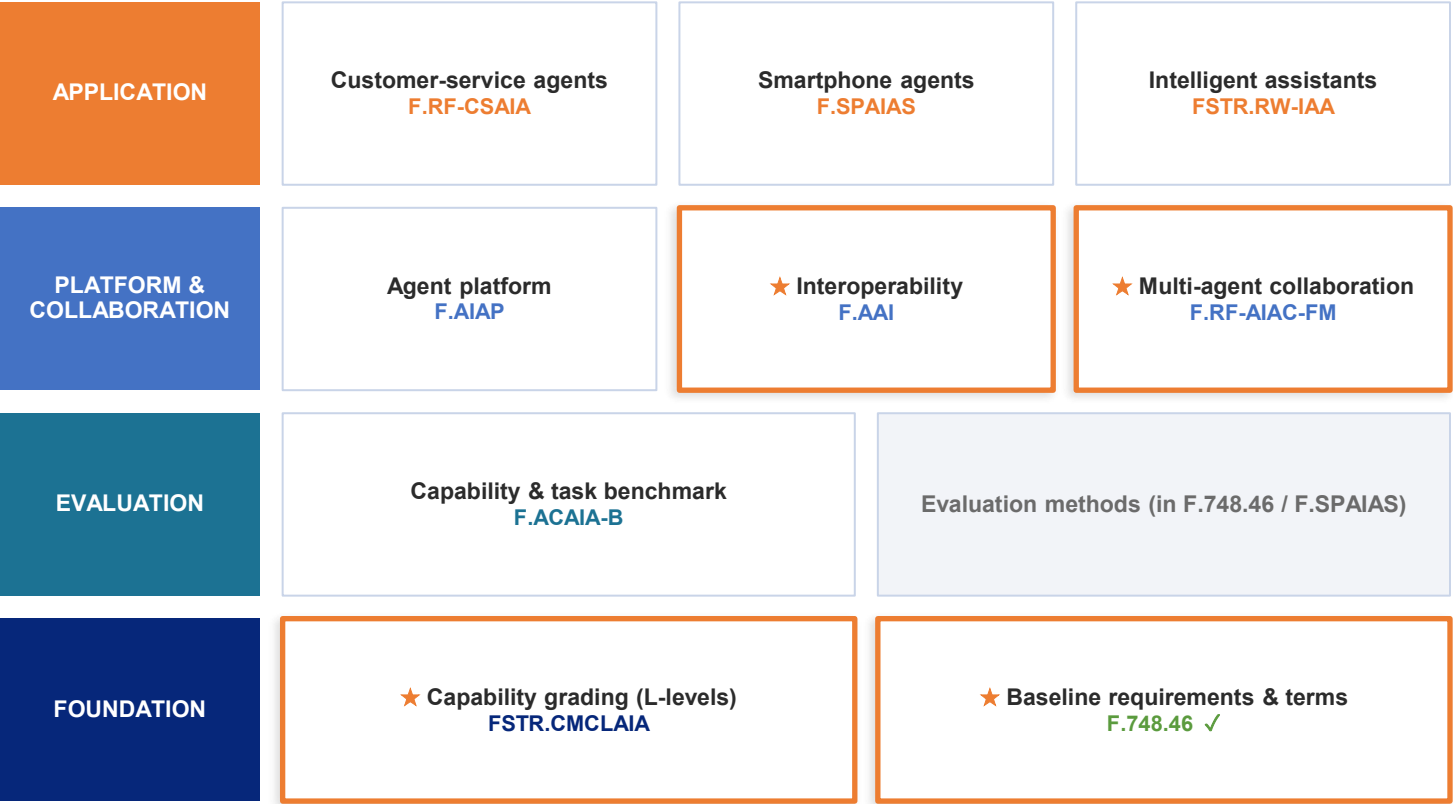
| Work Item    | Subject / Title                                                                        | Theme              | Status      | Target |
|--------------|----------------------------------------------------------------------------------------|--------------------|-------------|--------|
| F.748.46     | Requirements & evaluation methods of AI agents based on large-scale pre-trained models | Foundation         | Approved    | 2025   |
| FSTR.CMCLAIA | Classification methods & capability-level requirements for AI agents                   | Foundation         | Under study | 2028   |
| F.AIAP       | Framework & requirements for AI agents platform                                        | Platform & Collab. | Under study | 2027   |
| F.AAI        | Technical requirements for AI Agent interoperability                                   | Platform & Collab. | Under study | 2027   |
| F.RF-AIAC-FM | Requirements & framework for AI agent collaboration for foundation models              | Platform & Collab. | Under study | 2027   |
| F.ACAIA-B    | Assessment criteria for AI agents: Benchmark                                           | Evaluation         | Under study | 2028   |
| F.RF-CSAIA   | Requirements & framework for customer-service AI agents                                | Application        | Under study | 2027   |
| F.SPAIAS     | Requirements & evaluation methods of smartphone AI agents                              | Application        | Under study | 2027   |
| FSTR.RW-IAA  | Requirements & workflow for intelligent-assistant AI agents                            | Application        | Under study | 2027   |

Source: ITU-T SG21 Q5/21 Work Programme report, extracted 27 May 2026. F-series = ITU-T F Recommendations; FSTR = Q5 Technical Report (under study).

# Q5/21 - A Four-Layer System, Four Anchor Standards, and a Roadmap to 2028

The nine items form a **four-layer system** — foundation, platform & collaboration, evaluation, and application. **Four basic documents** carry the backbone: **F.748.46** sets the approved baseline; **FSTR.CMCLAIA** classifies the agent capabilities similarly to the SAE levels (L0–L5) for autonomous driving; **F.AAI** fixes cross-vendor interoperability; and **F.RF-AIAC-FM** governs multi-agent collaboration. The eight pending work items are planned for approval across **2027 and 2028**.

## Agentic AI Standards System — Q5/21



★ = anchor / representative standard    ✓ = approved

## Future Work Plan / Roadmap



**Thank you!**