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| **Source:** | | | ITU-T Study Group 20 | | | |
| **Title:** | | | LS/i on the establishment of a new Question under ITU-T Study Group 20 [from ITU-T SG20] | | | |
| **LIAISON STATEMENT** | | | | | | |
| **For action to:** | | | | TSAG | | |
| **For information to:** | | | | All ITU-T Study Groups | | |
| **Approval:** | | | | ITU-T Study Group 20 meeting (Geneva, 25 September 2025) | | |
| **Deadline:** | | | | – | | |
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| **Abstract:** | This liaison statement informs TSAG and all ITU-T Study Groups on the establishment of new Question 11/20 “Digital agriculture: from smart farm and production to safe and secure consumption”under ITU-T Study Group 20. TSAG is requested to review the text of the new Question in Annex 1 and consider approving it. |

ITU-T Study Group 20 (SG20) wishes to inform TSAG and all ITU-T Study Groups that, in line with Resolution 1 (Rev. Geneva, 2022) – *Rules of Procedure of the ITU Telecommunication Standardization Sector*, ITU-T SG20 has reached consensus to establish a new Question titled *“Digital agriculture: from smart farm and production to safe and secure consumption”*. The default process for new Question 11/20 is AAP. This decision was made during its meeting held from 15 to 25 September 2025, in Geneva, Switzerland.

The Terms of Reference for the draft new Question are provided in Annex 1.

ITU-T Study Group 20 looks forward to receiving TSAG’s valuable guidance on this matter and kindly requests TSAG to review the ToR and approve the text of the new Question (WTSA Res.1 §s 7.2.2, 7.3.3, 7.3.5, 8.2).

Annex 1  
ToR of the new Question on “Digital agriculture: from smart farm and production to safe and secure consumption”

## Q11/20 – Digital agriculture: from smart farm and production to safe and secure consumption

### 1 Motivation

Digital agriculture, its products, supply chain, safety and security (i.e., from farm to consumption) are being reshaped by the convergence of Internet of things (IoT), artificial intelligence (AI), robotics, digital twins, immersive environments and other emerging digital technologies. These innovations are unlocking new capabilities in precision and smart farming, agricultural production risk information sharing, low-carbon ecological agriculture, food traceability, intelligent automation, and real-time analytics across the full value chain – from production and processing to distribution, as well as sustainable agricultural development.

In this context, interest is growing in the application of emerging digital technologies including IoT, digital twins and immersive and intelligent virtual environments, in the agricultural domain. By incorporating IoT, AI and other emerging digital technologies in digital agriculture, as well as equipping these systems with digital twins and immersive experience capabilities, these systems aim to meet the needs of agricultural producers to share relevant information and knowledge on risks (including pests and crop diseases, environmental and climate threats), enhance security, safety and resilience of agriculture production, optimizing productivity and enhancing sustainable quality production and processing of food and agro-products respectively. The use of IoT, AI, digital twins, virtual worlds and immersive technologies, can be used as effective tools to support simulation, decision-making, training, and collaboration across diverse stakeholders. As global supply chains become increasingly complex and sustainability and security challenges intensify, these developments may offer new avenues to improve production, safety, security, resilience, operational efficiency, and innovation.

Despite progress in digitalization, current deployments in digital agriculture face limitations due to a lack of shared frameworks, technical interoperability, secure data exchange protocols, and scalable architecture models, to address the needs of the digital agriculture ecosystem. To close these gaps, there is a clear need for international standardization efforts that support the deployment of secure, interoperable and future-ready digital agriculture systems.

Recommendations and Supplements under responsibility of this Question include:

‒ ITU-T Recommendations Y.4218, Y.4482

‒ ITU-T Y-series Supplements 76, 82, 83, 85

‒ ITU-T YSTR.DataModelling-Agri

### 2 Question

Study items include, but are not limited to:

– What are the requirements, capabilities, use cases, and architecture models for digital agriculture (i.e. from Farm to Consumption) leveraging IoT, AI, collaborative robotics, digital twins, virtual worlds and immersive environments and other emerging digital technologies?

– What are the functional requirements, data models, and interface specifications for digital agriculture devices, platforms, and applications across the value chain in order to enhance its products, supply chain, safety and security?

– What are the requirements, capabilities, use cases and architecture of interoperability and interworking of digital agriculture?

– Which standardization gaps exist in the deployment of future-ready digital agriculture, and how can they be addressed through ITU-T Recommendations?

– With which other standards development organizations (SDOs), UN agencies, and industry forums should collaboration be conducted to ensure harmonized and interoperable solutions?

### 3 Tasks

Tasks include, but are not limited to:

– Developing Recommendations, reports, supplements and guidelines as appropriate for digital agriculture, covering:

• use cases, best practices and deployment models for digital agriculture, smart value chains, and immersive agricultural environments;

• frameworks and architecture models for incorporating emerging digital technologies such as IoT, AI, robotics, and digital twin technologies in agriculture and smart value chains;

• functional requirements, data models, and interface specifications for digital agriculture devices, platforms, and applications;

• mechanisms to enable end-to-end traceability, real-time monitoring, and secure data exchange across agricultural and food supply chains;

• methodology of constructing a knowledge representation for digital agriculture, exploring the analysis, mining, and comprehensive application of agricultural big data;

• technical requirements and protocols for virtual worlds and immersive systems, including remote training, virtual collaboration, and simulation environments;

• system-level requirements for interoperability;

• evaluation of cost and benefits of digital agriculture;

• collaboration and harmonization with other standardization bodies, UN entities, forums and consortia, contributing to global efforts aimed at modernizing digital infrastructure, and increasing resilience.

– Maintaining and enhancing the Recommendations and non-normative texts under the responsibility of the Question, including:

‒ ITU-T Recommendations Y.4218, Y.4482

‒ ITU-T Y-series Supplements 76, 82, 83, 85

‒ ITU-T YSTR.DataModelling-Agri

– Providing the necessary collaboration for joint activities in this field within ITU and between ITU-T and SDOs, UN entities, consortia and forums.

– Studying other related topics as appropriate, based on contributions.

– Undertaking in the field of artificial intelligence shall be aligned with the established provision, including Resolution 214.

An up-to-date status of work under this Question is contained in the SG20 work programme (<https://www.itu.int/ITU-T/workprog/wp_search.aspx?sp=18&q=11/20>).

### 4 Relationships

Recommendations:

– Y.4000-series including Y.4218, Y.4482

Questions:

– All ITU-T SG20 Questions

Study groups:

– ITU-T SG5

– ITU-T SG11

– ITU-T SG13

– ITU-T SG17

– ITU-T SG21

Other bodies:

– ISO/TC 23

– ISO/TC 34

– ISO/TC347

– ISO/IEC JTC1/SC42

– ISO/IEC JTC1/SC41

– JCA-IoT, DT and SSC&C

– JCA-MV

– FAO

– WFP

– IFAD

WSIS action lines:

– C2, C3, C6, C7, C11

Sustainable Development Goals:

– 2, 9, 11, 13, 14, 15

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