

# Recommendation

## **ITU-T Y.2248 (01/2023)**

SERIES Y: Global information infrastructure, Internet protocol aspects, next-generation networks, Internet of Things and smart cities

Next Generation Networks – Service aspects: Service capabilities and service architecture

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### **Service model for entry-level smart farms**

# ITU-T Y-SERIES RECOMMENDATIONS

## GLOBAL INFORMATION INFRASTRUCTURE, INTERNET PROTOCOL ASPECTS, NEXT-GENERATION NETWORKS, INTERNET OF THINGS AND SMART CITIES

### GLOBAL INFORMATION INFRASTRUCTURE

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For further details, please refer to the list of ITU-T Recommendations.

# Recommendation ITU-T Y.2248

## Service model for entry-level smart farms

### Summary

Entry-level smart farms can provide convenience of use and increased economic profits to agricultural producers previously unfamiliar with high-level information and communication technologies. Recommendation ITU-T Y.2248 describes the service model for the entry-level smart farm. The scope of this Recommendation covers reference architecture, service requirements and service scenarios for the entry-level smart farm.

### History

| Edition | Recommendation | Approval   | Study Group | Unique ID*                                                                |
|---------|----------------|------------|-------------|---------------------------------------------------------------------------|
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### Keywords

Entry-level smart farm, farm management system.

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\* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

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# Recommendation ITU-T Y.2248

## Service model for entry-level smart farms

### 1 Scope

This Recommendation describes the service model for entry-level smart farms. The scope of this Recommendation covers:

- Reference architecture for the entry-level smart farm;
- Service requirements for the entry-level smart farm;
- Service scenarios for the entry-level smart farm.

### 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 T.135] Recommendation ITU-T T.135 (2007), *User-to-reservation system transactions within T.120 conferences*.
- [ITU-T Y.2701] Recommendation ITU-T Y.2701 (2007), *Security requirements for NGN release 1*.
- [ITU-T Y.4105] Recommendation ITU-T Y.4105/Y.2221 (2010), *Requirements for support of ubiquitous sensor network (USN) applications and services in the NGN environment*.
- [ITU-T Y.4109] Recommendation ITU-T Y.4109/Y.2061 (2012), *Requirements for the support of machine-oriented communication applications in the next generation network environment*.
- [ITU-T Y.4401] Recommendation ITU-T Y.4401/Y.2068 (2015), *Functional framework and capabilities of the Internet of things*.
- [ITU-T Y.4450] Recommendation ITU-T Y.4450/Y.2238 (2015), *Overview of smart farming based on networks*.
- [ITU-T Y.4466] Recommendation ITU-T Y.4466 (2020), *Framework of smart greenhouse service*.
- [ITU-T Y.4806] Recommendation ITU-T Y.4806 (2017), *Security capabilities supporting safety of the Internet of things*.

### 3 Definitions

#### 3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

- 3.1.1 actuator** [ITU-T Y.4109]: A device performing physical actions caused by an input signal.

**3.1.2 agricultural producer** [ITU-T Y.4450]: The service role that actually produces agricultural products to be supplied to distributors or consumers.

**3.1.3 greenhouse** [ITU-T Y.4466]: A facility that can control a crop-growth environment (i.e., light, temperature, humidity, etc.).

**3.1.4 sensor** [ITU-T Y.4105]: An electronic device that senses a physical condition or chemical compound and delivers an electronic signal proportional to the observed characteristic.

**3.1.5 service user** [ITU-T T.135]: A person, an organization or any intermediate entity using the services provided by a service provider.

**3.1.6 smart farming based on networks** [ITU-T Y.4450]: A service that uses networks to actualize a convergence service in the agricultural field to attain more efficiency and quality improvement and to cope with various problems.

**3.1.7 smart farming service provider** [ITU-T Y.4450]: The service role that provides the requested Smart Farming services, such as providing a portal or consulting based on data gathered from agricultural fields, to requesting users.

NOTE – This Recommendation uses 'service provider' with the same meaning as that of 'smart farming service provider'.

## 3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

**3.2.1 active device interface function:** A function that controls actuators in the entry-level smart farm on service users' command or manipulation.

**3.2.2 administrative management function:** A function that allows service registration, operation management and fault analysis to support the continuous operation of the farm management system.

**3.2.3 entry-level smart farm:** A smart farm that can provide convenience of use and increased economic profits to agricultural producers previously unfamiliar with high-level information and communication technologies (ICTs).

**3.2.4 farm management system:** A system that controls active devices with all related data from sensor devices according to the intention of agricultural producers in the entry-level smart farm.

**3.2.5 network interface function:** A function that connects the functions in the farm management system with the network.

**3.2.6 sensor device interface function:** A function that gathers all related data from sensors distributed in the entry-level smart farm.

## 4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

|      |                                           |
|------|-------------------------------------------|
| AAA  | Authentication, Authorization, Accounting |
| FMS  | Farm Management System                    |
| ICT  | Information and Communication Technology  |
| IoT  | Internet of Things                        |
| MTBF | Mean Time Between Failures                |
| MTTR | Mean Time To Repair                       |
| TVWS | Television White Space                    |