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F.771

Amendment 1

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SERIES F: NON-TELEPHONE TELECOMMUNICATION SERVICES

Audiovisual services

Service description and requirements for multimedia information access triggered by tag-based identification

Amendment 1: Supporting multiple air interfaces

Recommendation ITU-T F.771 (2008) – Amendment 1

ITU-T F-SERIES RECOMMENDATIONS

NON-TELEPHONE TELECOMMUNICATION SERVICES

TELEGRAPH SERVICE	
Operating methods for the international public telegram service	F.1–F.19
The gentex network	F.20–F.29
Message switching	F.30–F.39
The international telemessage service	F.40–F.58
The international telex service	F.59–F.89
Statistics and publications on international telegraph services	F.90–F.99
Scheduled and leased communication services	F.100–F.104
Phototelegraph service	F.105–F.109
MOBILE SERVICE	
Mobile services and multidestination satellite services	F.110–F.159
TELEMATIC SERVICES	
Public facsimile service	F.160–F.199
Teletex service	F.200–F.299
Videotex service	F.300–F.349
General provisions for telematic services	F.350–F.399
MESSAGE HANDLING SERVICES	F.400–F.499
DIRECTORY SERVICES	F.500–F.549
DOCUMENT COMMUNICATION	
Document communication	F.550–F.579
Programming communication interfaces	F.580–F.599
DATA TRANSMISSION SERVICES	F.600–F.699
AUDIOVISUAL SERVICES	**F.700–F.799**
ISDN SERVICES	F.800–F.849
UNIVERSAL PERSONAL TELECOMMUNICATION	F.850–F.899
HUMAN FACTORS	F.900–F.999

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

Recommendation ITU-T F.771

Service description and requirements for multimedia information access triggered by tag-based identification

Amendment 1

Supporting multiple air interfaces

Summary

Recommendation ITU-T F.771 specifies a high-level functional model, a service description and requirements for multimedia information access triggered by tag-based identification. The scope of this Recommendation is limited to those applications and services that have both multimedia and tag-based characteristics.

Amendment 1 to Recommendation ITU-T F.771 clarifies that an ID terminal can have and supports multiple air interfaces.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T F.771	2008-08-06	16	11.1002/1000/9465
1.1	ITU-T F.771 (2008) Amd. 1	2014-10-14	16	11.1002/1000/12230

Keywords

Multimedia information access, requirements, tag-based identification.

* 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.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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Table of Contents

Introduction

Multimedia information access triggered by tag-based identification is a class of the generic multimedia services identified in Recommendation ITU-T F.700. Following the methodology given in Recommendation ITU-T F.701, this Recommendation specifies the functional model, service description and requirements for multimedia information access triggered by tag-based identification.

When a user's device obtains an identifier from an identification (ID) tag wherever it is attached, the device tries to find the location of associated multimedia information automatically. Each identifier is stored in an ID tag such as a barcode, a passive/active radio frequency identification (RFID), or a smart card, so as to be recognized automatically by various types of tag readers. This feature enables the user to refer to the multimedia content without typing its address on a keyboard or inputting the name of objects about which relevant information is to be retrieved. This information is stored in databases somewhere in the network and provided by several service providers.

Recommendation ITU-T F.771

Service description and requirements for multimedia information access triggered by tag-based identification

Amendment 1

Supporting multiple air interfaces

Modifications introduced by this amendment are shown in revision marks. Unchanged text is replaced by ellipsis (…). Some parts of unchanged text (clause numbers, etc.) may be kept to indicate the correct insertion points.

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3.2 Terms defined in this Recommendation

This Recommendation defines the following terms.

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3.2.3 ID terminal: An ID terminal is a device with a capability to capture data from ID tags and write data into ID tags, and other capabilities such as communication capability and multimedia information presentation capability. The data capture capability may include a function to obtain an identifier from ID tags even with no communication capability such as barcodes and two-dimensional barcodes. Examples of equipment that use data capture techniques are digital cameras, optical scanners, radio frequency (RF) transponders, infrared data association (IrDA), galvanic wire-line, etc. Sometimes, an ID terminal is called a user terminal. An ID terminal can optionally have multiple capture devices. An ID terminal can optionally have a capability to communicate with multiple RF types of ID tags. An ID terminal should have a frequency band selector in case of multiple band reader/writer.

NOTE – As described in clause 6.1.2.1 of ITU-T H.621 Amd.1, the ID terminal may be composed of multiple ID tag Readers/Writers. For example, a camera for 1-dimentional and/or 2-dimentional barcode reading and an RFID reader/writer for RFID tag reading and writing may be equipped together in an ID terminal. But also, multiple RFID readers/writers may be equipped to support different frequency bands such as HF and UHF. Otherwise, a single RFID reader/writer may support HF and UHF bands and such an RFID reader/writer is called a dual band RFID reader/writer, or dual band RFID reader, for short.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

2D	Two Dimensional
3D	Three Dimensional
B2B	Business to Business
B2C	Business to Consumer
DVD	Digital Versatile Disk
G2C	Government to Consumer

HF	High Frequency
ID	Identification
IP	Internet Protocol
IR	Infrared
IrDA	Infrared Data Association
MAC	Media Access Control
NGN	Next Generation Network
PDA	Personal Digital Assistant
QoS	Quality of Service
RF	Radio Frequency
RFID	Radio Frequency Identification
URL	Uniform Resource Locator
UHF	Ultra High Frequency
Wi-Fi	Wireless Fidelity

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6.1 High-level functional model

Figure 1 shows the high-level functional model consisting of high-level functional components and the relationships between them.

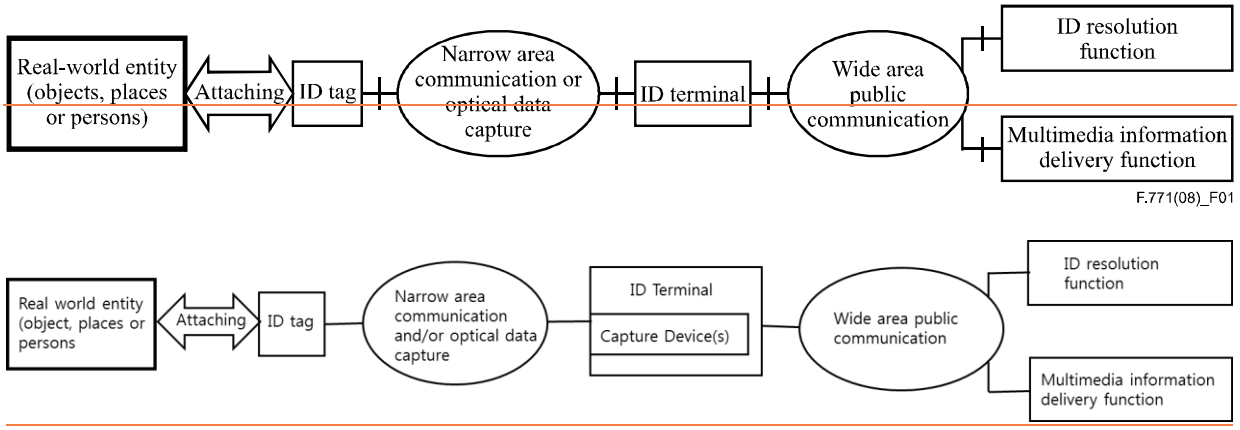

Figure 1 – High-level functional model of the multimedia information access triggered by tag-based identification

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6.2 Generic service description

The service defined in this Recommendation is to enable users to access multimedia information relating to real-world entities such as objects, places and persons. Appendix I describes eight examples of the multimedia information access service triggered by tag-based identification. This service is realized by the following three operations:

1) ~~t~~Tag-based identifier-reading process;

2) ID resolution process; and

3) ~~i~~Information presentation process.

• • •

7.5 ID terminal requirements

TRM-001: ID terminal is required to be equipped with at least one reader of ID tags, such as an RFID reader, IrDA receiver, or high resolution camera for barcode and two-dimensional barcode recognition. An ID terminal is recommended to be equipped with a writer of ID tags.

TRM-002: ID terminal is required to be equipped with a wide area public communication interface such as a mobile communication interface or an IP network interface over a Wi-Fi connection.

TRM-003: ID terminal is required to be equipped with a multimedia information input/output function such as multimedia information browsing and web input function.

TRM-004: When multiple ID tag readers are provided, ID terminal is required to provide the selection function of the ID tag readers.

TRM-005: ID terminal can optionally be equipped with a multiple band RFID reader which supports interrogation of ID tags that use different frequency bands.

TRM-006: ID terminal is required to provide a frequency band selection function if it is equipped with a multiple band RFID reader.

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Appendix I

Service description in applications

(This appendix does not form an integral part of this Recommendation.)

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I.4 Food traceability

The confidence in food wavers due to problems such as bovine spongiform encephalopathy (BSE) and pesticide residue found in vegetables. Consequently, food safety has become a global issue with a central focus of the consumer.

Traceability of the food chain enables tracing and tracking of food and the information at each stage of the food chain, including production, processing, distribution and sales. When a food accident occurs, consumers can search for information and confirm the safety of the food in their refrigerators.

An identifier of the food is attached to the product using RFID or a small barcode. Food chain information is associated with the identifier so that the consumer can retrieve the food information from multimedia information delivery functions via available networks.

There may be a use case of dual band communication. The food chain management is a subset of the supply chain management where UHF-type RFID tags are popularly deployed. ID tags for the food traceability may be UHF-type RFID tags. An ID terminal like a cell phone needs to be equipped with a UHF-type RFID reader to capture data from a UHF-type RFID tag attached to a food item. After a safety check of a food item, and due to security reasons, an end user may want to buy the food using his/her ID terminal as a mobile commerce terminal that deploys ~~the~~ HF communication technology. For example, NFC is an HF communication technology and an NFC-equipped ID terminal can support payment for the food. From an implementation perspective, installation of two RFID readers/writers in an ID terminal is not preferable. But a dual band RFID reader/writer that supports not only a single air interface but also multiple frequency bands (e.g., HF and UHF) solves the implementation difficulty. In this scenario, the ID terminal does a safety check of a food item using UHF, and does payment via HF, resulting in a dual band communication.

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I.8 Sightseeing information delivery

Suppose that each sightseeing spot is equipped with RFIDs, infrared tags, active RF tags, or barcodes including the identifier of the location. At the sightseeing spot, a visitor with a handheld terminal automatically reads the location identifier and receives sight-seeing video clips or speech explanation with pictures retrieved via available networks.

I.9 Visitor identification and guidance service with multimedia information

In this scenario, ID terminal is a kind of smart-phone which has four components of interest: a UHF ID tag reader/writer, an HF ID tag, an HF ID tag reader/writer and a human presence management application. In this scenario, a visitor is given a visitor ID tag and the visitor reads that tag by the HF ID tag reader/writer and writes that information to the HF ID tag in his/her smartphone. The visitor is guided by UHF ID tags and the presence management system to the final destination in the building. The security building has an HF ID reader at the entrance gate and UHF ID tags are installed on the walls of corridors. The HF ID reader identifies a visitor and the UHF ID reader/writer of the smart phone reads the UHF ID tags on walls and displays the direction and route to the final destination.

Therefore, a visitor who has a smartphone as described above can enter the security building by obtaining the admission credential by using the HF ID tag and will be guided to the final destination in the building by using the UHF ID tag reader/writer.

The visitor can open all the doors to the destination by using his/her smartphone.

Table I.1 – Applications sorted by fields

Field	Application	Business types	Function	Purpose	Tag mobility (Note)
Supply chain	Food traceability (see clause I.4)	B2B, B2C	Information retrieval, information monitoring	Increasing food safety, increasing total visibility of food chain	Mobile tag
Medical	Confirmation of drugs	B2B, B2C	Information retrieval, information monitoring	Reducing human error, anti-counterfeit	Mobile tag
Museum	u-Museum (see clause I.1)	B2C	Information retrieval	Value-added service	Mobile tag
Office	Business card with personal identifier (see clause I.5)	B2B	Information retrieval	Value-added service	Mobile tag
	Automatic telephone calling using business card with personal identifier	B2B	Bidirectional information exchange	Value-added service	Mobile tag
Family safety	Child monitoring	B2C	Information monitoring	Increasing safety	Mobile tag
Shopping	Advertisement, shopping guidance (see clause I.7)	B2C	Information retrieval	Value-added service	Fixed tag
Advertisement	Music information download from advertisement poster (see clause I.2)	B2C	Information retrieval	Effective advertisement	Fixed tag
Customer support	Operating manual download (see clause I.3)	B2C	Information retrieval	Value-added service	Mobile tag
Leisure	Sight-seeing information, navigation (see clause I.8)	B2C G2C	Information retrieval	Value-added service	Fixed tag
	Presence service of audience (see clause I.6)	B2B	Information monitoring	Saving cost for audience management	Fixed tag
Welfare	Location-aware information	G2C, B2C	Information retrieval	Value-added service, increasing safety	Fixed tag
Security and convenience	Identification and guidance	B2C	Information retrieval and monitoering	Increasing security and convenience	Fixed and mobile tag

NOTE – If the tag is attached to an object that is fixed in location, it is called a "fixed tag", otherwise it is called a "mobile tag".

Bibliography

[b-ITU-T Y.2213] Recommendation ITU-T Y.2213 (2008), *NGN service requirements and capabilities for network aspects of applications and services using tag-based identification.*

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Series A	Organization of the work of ITU-T
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Series F	**Non-telephone telecommunication services**
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
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Series N	Maintenance: international sound programme and television transmission circuits
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Series P	Terminals and subjective and objective assessment methods
Series Q	Switching and signalling
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Series S	Telegraph services terminal equipment
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