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Part 3: Networking of everything

Télécommunications et échange d'informations entre systèmes — Architecture du réseau du futur —

Partie 3: Réseautique universelle

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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A list of all parts in the ISO 21558 series can be found on the ISO website.

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Introduction

This document specifies the Future Network – Networking of everything (FN-NoE) architecture, which is designed to provide further advanced NoE services identified in ISO/IEC TR 29181-9.

ISO/IEC TR 29181-9 is part of the ISO/IEC TR 29181 series of standards on Future Network (FN). ISO/IEC TR 29181-9, which addresses networking issues raised in ISO/IEC TR 29181-1, covers networking of everything.

The scope of this document focuses on the FN-NoE architecture, consisting of access and core networks, thing social networks, and proximity defined networks, in which smart devices participate.

This document provides the general characteristics of NoE which can be applied to future networks such as RINA as shown in Annex B, especially from an Internet of Things (IoT) perspective, through a conceptual model of NoE.

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Telecommunications and information exchange between systems — Future network architecture —

Part 3: Networking of everything

1 Scope

This document focuses on networking issues for integrating various networking technologies for integrating various networking techniques to provide the thing-user centric communication service.

This document specifies:

— the architectural model of the Future Network – Networking of Everything (FN-NoE);

— the functional procedure for providing advanced FN-NoE services that integrate various networks.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC/TR 29181-9:2017, *Information technology — Future Network — Problem statement and requirements — Part 9: Networking of everything*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC TR 29181-9 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
object
intrinsic representation of an entity that is described at an appropriate level of abstraction in terms of its attributes and functions

[SOURCE: ISO/IEC TR 29181-9:2017, 3.12]

3.2
context
information that can be used to characterize the environment of a user

[SOURCE: ISO/IEC TR 29181-9:2017, 3.4]

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3.3
thing
object of the physical world (physical things) or of the information world (virtual thing), which is capable of being identified and integrated into communication networks.

Note 1 to entry: Physical things are capable of being sensed, actuated, and connected to things such as robots, goods, and electrical equipment. Virtual things are capable of being stored, processed, and accessed by things such as multimedia content and application software.

[SOURCE: ISO/IEC TR 29181-9:2017, 3.16]

3.4
Internet of Things
IoT
global infrastructure for the information society enabling advanced services by interconnecting (physical and virtual) things based on existing or evolving interoperable information and communication technologies

[SOURCE: ISO/IEC TR 29181-9:2017, 3.8]

3.5
collaborative work group
group of thing users that can perform job planning, thing user recruitment, and coordination without human intervention

[SOURCE: ISO/IEC TR 29181-9:2017, 3.2]

3.6
proximity defined network
PDN
network configured among devices in close proximity, using conventional LAN or WAN technologies: which are in not only physically close proximity, but also closely related, or logically close proximity

Note 1 to entry: PDN is an instantaneous network that is formed during the networking of everything.

[SOURCE: ISO/IEC TR 29181-9:2017, 3.13, modified — Note 1 to entry added.]

3.7
identifier
series of digits, characters, and symbols or any other form of data used to identify a subscriber(s), a user(s), a network element(s), function(s), a network entity(es) providing services/applications, or other entities, e.g. physical or logical objects

Note 1 to entry: An identifier can also be a string of bits bound to an object that may be used to locate an object in a given context.

3.8
Future Network for Networking of Everything
FN-NoE
network that is capable of providing thing-user social networking and thing-user centric communication service to the thing-users

3.9
profile
all or some of the information statements about a thing-user, including (1) basic statements including Name, Identity, Address, URI, Account, Contract, Security; (2) motivation statements describing why the thing-user joins the social network; (3) mission statements describing what the thing-user plans to accomplish; or (4) its capacity statements which describe its predications, knowledge, resources

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3.10
thing-user
thing that uses the Future Network for Networking of Everything (FN-NoE) network service or the FN-NoE services provided by other things

3.11
everything
equipment that is capable of performing Networking of Everything (NoE)

Note 1 to entry: "Everything" can be regarded as anything which can perform NoE in Future Network (FN).

3.12
Networking of Everything
NoE
process that is capable of providing Future Network for Networking of Everything (FN-NoE) services

3.13
Network of Everything (NoE) terminal
thing that can perform the process in the network capable of providing thing-user social networking and thing-user centric communication service to the thing-users

3.14
thing-user social network
social network among thing-users which automatically shares its capabilities, context, communicative motivation, experiences, and intentions of collaboration for delivering the intelligent super-realistic service

Note 1 to entry: As the thing-user expands the social network, it may expand its knowledge.

Note 2 to entry: Thing-user social networking service can be a web application that thing-users use to build a social network provided by Networking of Everything (NoE).

3.15
thing-user centric communication
process of conveying intended meanings from one thing-user to another thing-user or thing-user group through the use of mutually understood language

3.16
thing-user centric network
network that allows a thing-user to discover another thing-user or thing-user group who understands its intention conveyed from the thing-user and supports the thing-user in achieving its mission

4 Abbreviated terms

FN	Future Network
FN-NoE	Future Network for Networking of Everything
ID	IDentifier
IoT	Internet of Things
NoE	Networking of Everything
PDN	Proximity Defined Networks
SAP	Service Access Point
TSN	Thing-user Social Network

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