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Next Generation Networks – Frameworks and functional
architecture models

Capability framework for e-health monitoring services

Recommendation ITU-T Y.2075

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Recommendation ITU-T Y.2075

Capability framework for e-health monitoring services

Summary

Recommendation ITU-T Y.2075 specifies the capability framework for support of the requirements of e-health monitoring (EHM) services (Recommendation ITU-T Y.2065).

To facilitate the identification of the capabilities in support of EHM services, an EHM conceptual framework is provided making usage of five components (i.e., EHM terminal, EHM end point, EHM gateway, Internet of things (IoT) platform and EHM application server) and the relationships among these components.

Based on the EHM conceptual framework and the requirements specified in Recommendation ITU-T Y.2065, the EHM capability framework is provided including the per-layer and cross-layer distribution of EHM capabilities in the five EHM components.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
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Capability framework, capability requirements, e-health monitoring, EHM, Internet of Things, IoT.

* 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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Recommendation ITU-T Y.2075

Capability framework for e-health monitoring services

1 Scope

This Recommendation specifies the capability framework for support of the requirements of e-health monitoring (EHM) services [[ITU-T Y.2065](#)].

The scope of this Recommendation includes:

- EHM conceptual framework
- EHM capability framework

An overview of the EHM capabilities in the various EHM components is provided in Annex A.

Two EHM service deployment technical scenarios are described in Appendix I.

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 Y.2060](#)] Recommendation ITU-T Y.2060 (2012), *Overview of the Internet of things*.
- [[ITU-T Y.2065](#)] Recommendation ITU-T Y.2065 (2014), *Service and capability requirements for e-health monitoring services*.
- [[ITU-T Y.2067](#)] Recommendation ITU-T Y.2067 (2014), *Common requirements and capabilities of a gateway for Internet of things applications*.
- [[ITU-T Y.2068](#)] Recommendation ITU-T Y.2068 (2015), *Functional framework and capabilities of the Internet of things*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 e-health monitoring (EHM) service [[ITU-T Y.2065](#)]: A service which consists of observing and recording information based on [the collection of] a customer's physiological data, environmental data and other data, with the aim of monitoring the customer's state of health through the use of information and communication technologies.

3.1.2 EHM device [[ITU-T Y.2065](#)]: A device, as defined in [[ITU-T Y.2060](#)], which has sufficient qualification for e-health monitoring (EHM) service provisioning.

3.1.3 EHM end point [[ITU-T Y.2065](#)]: An e-health monitoring (EHM) device connected to the communication network through gateway(s).

3.1.4 EHM terminal [[ITU-T Y.2065](#)]: An e-health monitoring (EHM) device directly connected to the communication network.

3.1.5 Internet of things (IoT) [ITU-T Y.2060]: A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.

NOTE 1 – Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of things to offer services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled.

NOTE 2 – From a broader perspective, the IoT can be perceived as a vision with technological and societal implications.

3.2 Terms defined in this Recommendation

None.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

EHM	E-Health Monitoring
EHMH	E-Health Monitoring Healthcare
EHMR	E-Health Monitoring Rehabilitation
EHMT	E-Health Monitoring Treatment
ICT	Information and Communication Technology
IoT	Internet of Things
QoS	Quality of Service
SSAS	Service Support and Application Support

5 Conventions

In this Recommendation:

The keywords "is required to" indicate a requirement that must be strictly followed and from which no deviation is permitted if conformance to this document is to be claimed.

The keywords "is recommended" indicate a requirement that is recommended, but which is not absolutely required. Thus this requirement need not be present to claim conformance.

The keywords "can optionally" and "may" indicate an optional requirement that is permissible, without implying any sense of being recommended. These terms are not intended to imply that the vendor's implementation must provide the option and the feature can be optionally enabled by the network operator or service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with the specification.

6 Introduction

E-health monitoring (EHM) services include three types of services, i.e., EHM treatment (EHMT), EHM rehabilitation (EHMR) and EHM healthcare (EHMH), covering the person in healthy state, sub-healthy state and illness state respectively [ITU-T Y.2065]. It is expected that moving from one of these three types of EHM service to another is transparent from the customer's point of view, i.e., the customer can benefit from the EHM service required according to their change in state of health while minimizing the impact on the customer from the information and communication technology (ICT) point of view.

In practice, the ICT solutions adopted by EHM services vary among different scenarios and use cases. For example, as shown in Appendix I, an EHM service in community scenarios generally uses fixed devices and wired network technologies for network access, while in mobile scenarios, an EHM service uses mobile devices and wireless network technologies for network access. Actually, for real deployment scenarios, the situation is possibly even more complex than that described in Appendix I. Standardization is one way to reduce the negative impact of ICT heterogeneity on customers.

High-level standardization approaches with respect to EHM services, technical details related to specific devices, gateways, platforms and application servers used in the large variety of EHM service deployments lie outside the scope of this Recommendation. In this perspective, this Recommendation uses the concept of "component" on behalf of this large variety of specific EHM devices, gateways, platforms and application servers, and focuses on general characteristics of EHM devices, gateways, platforms and application servers.

Five types of component are identified in this Recommendation: EHM terminal, EHM end point, EHM gateway, Internet of things (IoT) platform and EHM application server.

For each component, "layers" as specified by the IoT reference model [[ITU-T Y.2060](#)] are introduced as an abstraction to illuminate the functionalities of the component.

The capabilities of a layer represent at high level the layer's functions.

NOTE – These functions are represented as functional entities at a detailed functional level.

A given component includes at least the capabilities of one of the layers as shown in Figure 1.

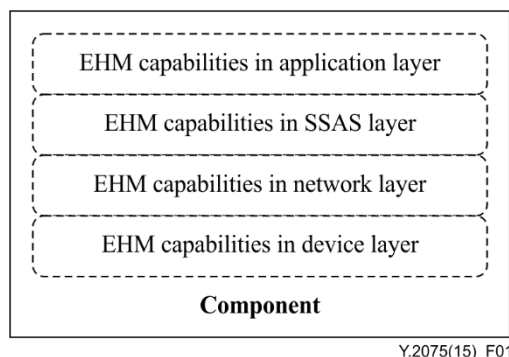


Figure 1 – Capabilities and layers in a component

Clauses 7 and 8 introduce the EHM conceptual framework and the EHM capability framework, respectively.

7 EHM conceptual framework

The EHM conceptual framework is used to identify functions and relationships of the different EHM components in order to support the EHM capability framework.

7.1 EHM conceptual framework overview

The EHM conceptual framework, shown in Figure 2, exhibits the components for the deployment of EHM services: EHM end point [[ITU-T Y.2065](#)], EHM terminal [[ITU-T Y.2065](#)], EHM gateway, IoT platform and EHM application server.

The EHM end point is an EHM device connected with the communication network through gateway(s).

The EHM terminal is an EHM device directly connected with the communication network.