TECHNICAL REPORT

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Information technology — Future Network — Problem statement and requirements —

Part 7: Service composition

Technologies de l'information — Réseaux du futur — Énoncé du problème et exigences —

Partie 7: Composition des services

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide to publish a Technical Report. A Technical Report is entirely informative in nature and shall be subject to review every five years in the same manner as an International Standard.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 29181-7 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 6, *Telecommunications and information exchange between systems*.

ISO/IEC TR 29181 consists of the following parts, under the general title *Information technology — Future Network — Problem statement and requirements*:

— *Part 1: Overall aspects*

— *Part 3: Switching and routing*

— *Part 4: Mobility*

— *Part 6: Media transport*

— *Part 7: Service composition*

The following parts are under preparation:

— *Part 2: Naming and addressing*

— *Part 5: Security*

Introduction

The development of the networks during the last years has shown that it becomes harder to integrate new functionality in order to fulfill the demands of new applications and the capabilities of new transport technologies. Especially the core mechanisms are hard to change as it lies in a rigid and ossified architecture.

The current picture of the networks shows a large, heterogeneous, dynamic and complex distributed system. Lots of patches aimed to amend different issues that have arisen during last years. Current networks have to deal with new services, applications and computing paradigms such as new modes of interaction, identification, context-awareness, energy efficiency, seamless service discovery and composition, mobility, ubiquity, etc. At this point, current networks must look for clean solutions to known issues.

The development of a new network architecture has been discussed for some time now. Several proposals are considered in this sense, evolutionary (incremental) approaches and revolutionary (clean-slate). Currently, the general idea in SC6 WG7 is to standardize an architecture to solve current networks faults.

The Future Network (FN) will define a scalable, flexible and robust architecture which will aim at providing services taking into account the changing conditions of the context and thus, offering customized communication and seamless delivery of data. To achieve this, it is necessary to provide service composition capabilities by means of a specific framework that will contribute to create a scalable, modular, and service-aware FN.

The FN introduces a new architecture where the necessary functionality for establishing communications in any node connected to the network (user devices and network elements), is not fixed but dynamically composed, as appropriate to user service requirements, network transfer capabilities and surrounding context in the user and the network environments. In essence, a service-oriented paradigm is followed. Communications are accomplished by assembling appropriate atomic services, each performing a specific communication function. As such, service functionalities can be combined to create higher level communication services, which in turn can be combined with other services as well to enrich existing services or to create new composed ones, until the whole spectrum of required functionality for end-user communications is in place

Service composition is the technology that supports the composition of those activities required to reuse and combine existing services to enrich current services and to create new services. This technology provides a natural way of combining existing services including both atomic and composite services. Such kind of recursive composition of composite services is one of the most attractive and challengeable features of the service composition, allowing to rapidly and easily create new services. Thus, the service composition provides benefits on improved usability of existing services, faster time for service creation and reduced time to market for new services.

Information technology — Future Network — Problem statement and requirements —

Part 7: Service composition

1 Scope

This part of ISO/IEC TR 29181 describes the problem statement, requirements and a functional building block for the FN from the perspective of service composition. The goal of this part of ISO/IEC TR 29181 is to:

a) analyze and classify problems of the current solutions on the service composition,

b) identify requirements on the service composition for the FN,

c) describe some technical aspects of the service composition for the FN, and

d) propose a functional building block of the service composition including functional components and their reference points among them.

This part of ISO/IEC TR 29181 also introduces various on-going standardization and research activities related to service composition.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 29181-1, *Information technology — Future Network — Problem statement and requirements — Part 1: Overall aspects*