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Datasheet for the decision of 19 May 2025

Case Number: T 1156/21 - 3.5.06

Application Number: 14895814.3

Publication Number: 3144807

IPC: G06F9/44

Language of the proceedings: EN

Title of invention:
OPERATION METHOD OF ROUTING DEVICE, ROUTING DEVICE AND TERMINAL DEVICE

Applicant:
Huawei Technologies Co., Ltd.

Headword:
Converting API requests/HUAWEI

Relevant legal provisions:
EPC Art. 84, 56

Keyword:
Claims - clarity - main request and auxiliary request 1 (no) auxiliary requests 2 and 3 (yes)
Inventive step - all requests (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

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Case Number: T 1156/21 - 3.5.06

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 19 May 2025

Appellant: (Applicant)	Huawei Technologies Co., Ltd. Huawei Administration Building Bantian Longgang District Shenzhen, Guangdong 518129 (CN)
Representative:	Epping - Hermann - Fischer Patentanwaltsgesellschaft mbH Schloßschmidstraße 5 80639 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 9 March 2021 refusing European patent application No. 14895814.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Müller
Members:	G. Zucka
	A. Jimenez

Summary of Facts and Submissions

I. The appeal is against the decision by the examining division, dispatched with reasons on 9 March 2021, to refuse European patent application 14895814.3, on the basis that neither request then on file satisfied the requirement of inventive step, Article 56 EPC. The following document was cited during the examination proceedings:

D1: US 2007/260447 A1.

II. A notice of appeal was received on 5 May 2021, the appeal fee being paid on the same day. A statement of grounds of appeal was received on 7 July 2021.

III. The appellant requested that the decision under appeal be set aside and a patent granted on the basis of claims 1 to 8 of the main or auxiliary request that were the object of the refusal, both re-filed with the statement of grounds of appeal.

IV. The board issued a summons to oral proceedings. In a communication under Article 15(1) RPBA, the board set out its preliminary opinion, according to which the appealed decision should be upheld.

V. On 31 March 2025, the appellant filed claims for additional auxiliary requests 2 and 3.

VI. The appellant requests that the decision under appeal be set aside and a patent be granted on the basis of claims 1 to 8 of the main request or auxiliary request 1 (labelled "auxiliary request"), both filed with the statement of grounds of appeal, or of

auxiliary request 2 or 3 filed with its letter of 31 March 2025.

The further text on file is:

description pages
5 to 33 filed with entry into the regional phase before the EPO,
1 to 4 and 4a received on 24 November 2017;

drawing sheets
1 to 9 filed with entry into the regional phase before the EPO.

VII. Claim 1 of the main request reads as follows:

"An operating method of a routing device, characterized in that the routing device comprises a first system and a second system, wherein an operating system running in the first system comprises Android, and an operating system running in the second system comprises Linux, and the method comprises:

acquiring (S101), by the first system, a first application programming interface, API, call request, wherein the first API call request is sent by an application program running in the first system;

converting (S102), by the first system, the first API call request into a second API call request matching the second system, and sending the second API call request to the second system; and

executing (S103), by the second system, the second API call request;

wherein the converting, by the first system, the first API call request into a second API call request matching the second system comprises:

extracting, by the first system, a request parameter from the first API call request, and generating, according to the request parameter, the second API call request matching the second system."

VIII. Claim 1 of auxiliary request 1 differs from that of the main request in that

(a) it comprises the following additional steps before the step of "acquiring":

" discovering, by the first system, the second system by using Universal Plug and Play, UPnP, protocol;

performing bidirectional identity authentication of the first system and the second system;

after the first system and the second system pass the bidirectional identity authentication, establishing, between the first system and the second system, a communication connection"

and

(b) the "request parameter" is specified to include "an operation command, an API interface version number, an API type, an API call request format".

IX. Claim 1 of auxiliary requests 2 and 3 differs from that of respectively the main request and auxiliary request 1 in that "comprises Android" is replaced by "is an Android operating system" and "comprises Linux" is replaced by "is a Linux operating system".

X. The wording of the other claims of the main and auxiliary requests is not relevant for the present decision.

Reasons for the Decision

1. *The invention*

The application relates to a routing device (claim 5) and a method (claim 1) for operating such a device. The routing device comprises a first system running Android and a second system running Linux (e.g. OpenWrt; see description page 1, line 14).

The description (*ibid.*, lines 17 to 19) states that it is relatively difficult to develop an application program on OpenWrt.

According to claims 1 and 5, an API call from a program on the first system is converted into an API call for the second system and executed on that system.

2. *Clarity; Article 84 EPC*

2.1 In claim 1 of the main request and auxiliary request 1, it is not clear what it means for an operating system to "comprise" Android or Linux. Both are themselves operating systems, and the board is not aware of any "larger" operating system that could comprise either of them.

According to the appellant (response to the summons, page 5, point 2, second paragraph), the skilled person will understand this wording as meaning that the first

system has an Android operating system as operating system and the second system has a Linux operating system as operating system. In effect, the skilled person would thus see the word "comprises" as synonymous to "is".

The board acknowledges that the skilled person would probably understand that this might have been the intended meaning. Nevertheless, the word "comprises" does not mean "is". Instead, it allows for the respective operating systems to include more than just Android and Linux respectively. The wording is therefore unclear (Article 84 EPC).

2.2 The board considers the corrected wording in claim 1 of auxiliary requests 2 and 3 to be clear.

3. *Inventive step; Article 56 EPC*

3.1 According to the reasons for the appealed decision (point 11.1.1.3), the feature according to which the device in claim 1 of the main request is a routing device defines a possible target platform rather than a contribution to a technical solution, and the system of D1 can operate such a device without modification if this is required.

The board agrees with the appellant that this reasoning is insufficient. Indeed, the reasoning firstly does not show that a routing device would effectively be a plausible target platform for the arrangement of D1. Secondly, no reason is given why the skilled person would envisage applying the teaching of D1 to a routing device.

3.2 As it is, the board holds that a more suitable starting point for an inventive step analysis is given by a generally known intelligent router based on Linux (e.g. using OpenWrt firmware), such as mentioned in the current description, page 1, lines 14 to 19.

3.3 Such a prior art router would comprise one system, corresponding to the "second system" in claim 1 of the main request, running a Linux operating system. Any application programs making API calls would run in that system.

3.4 The other features of the routing device operated by the method of claim 1 are not known from such general prior art.

3.5 The board is, however, of the opinion that for any problem, technical or other, that the very broad claim might be considered to solve, the claimed solution is obvious for the person skilled in the art.

According to the statement of grounds of appeal (page 9, first full paragraph), the aim is to reduce the effort for developing application programs.

If this were to be seen as the problem to be solved, it is not apparent how the distinguishing features would contribute to its solution.

Indeed, said features introduce an additional system (the "first system") with an Android operating system running application programs making API call requests some of which are converted, on the basis of a request parameter in those requests, to API calls to run on the second system. It is not clear how such a measure would in its generality reduce the effort for developing

application programs on the second system. In fact, the wording of the claim allows for the trivial case where the "request parameter" passed with the first API call request simply consists in the complete second API call request, which would mean that the programming effort remains the same.

It is further observed that Android is a Linux variant, and the claim therefore comprises embodiments where Android runs as an operating system on both the first and the second system. Apart from this, one cannot state that the programming effort in Android is smaller than in, say, OpenWrt as another Linux-based system. Rather, the relative "effort" needed to program in different environments is very much a subjective experience and depends not only on the environment but also on the programming tools which are used.

During the oral proceedings, the appellant submitted that the first system with an Android operating system allows the software developer, typically a router vendor, to avoid having to develop a program for the second system, which would not originate from the router vendor (cf. description, page 1, last full paragraph).

However, leaving aside the question in how far such an effect can be considered technical, it cannot be said to be achieved with the very general formulation of claim 1. A particular router vendor may or may not be familiar with the Android operating system. What is certainly true is that no vendor has routine experience in programming under all possible variants of Android. Also, some vendors may actually have more experience

programming under a Linux system such as OpenWrt than under Android.

The appellant further submitted that the use of the first system converting API calls on the first system to API calls matching the second system allows the development of programs with API calls in a single (familiar) system which can then be converted to API calls for any of a *variety* of possible second systems. The claimed method, however, does not contain steps to deal with such a variety of second systems.

The appellant also submitted that, by arranging that programs are developed in the first instead of in the second system, the second system is shielded from possible attacks, thereby enhancing security.

The board, however, fails to see why this would be true, in particular because no steps are taken in the claimed method to ensure that access to the second system can only take place via the first system and that programs cannot be developed directly on the second system. And even if that were guaranteed, it would appear to depend on the particular attacks, the particular API requests, and the particular conversion whether the attack would or could survive the claimed conversion. The claim is too broad to conclude that its subject-matter enhances security, and the description does not discuss system security at all, let alone provide examples that might clarify the matter.

3.6 As the board noted in its preliminary opinion, the term "routing device" in claim 1 of the main request covers any device which provides routing functionality. In addition, the claim language does not require that the first and second systems are comprised in a joint

housing like a conventional "router". Instead, for instance a device comprising a host computer (first system) and a router (second system) constitute a system which, as a whole, provides routing functionality. In this regard, the board notes that claim 1 of auxiliary request 1 refers to the first system "discovering" the second system by using Universal Plug and Play, which is a set of protocols normally used to establish communication between two separate devices. Claim 1 of the main request must be construed as covering the subject-matter of auxiliary request 1.

Claim 1 of the main request does not define which API call request is converted and which ones might not, let alone what function the claimed "application program" is meant to execute. Therefore, all that can be derived from the claim is that there is an (undefined) application program which calls an (also undefined) API function which in turn shall be executed by the second system. It can only be speculated that the API call request in question relates to the mentioned routing functionality, but the claim does not imply that.

There are many circumstances in the context of program development which require or suggest conversions between program instructions of any kind. One of them might be that a program developed for one version of Android shall be executed on a system running a more recent version of Android. It is imaginable that the version difference shows in a format difference between the version of a particular API call in question. A conversion as claimed would then be an obvious way of allowing the old program as is to run on the upgraded operating system. The format of at least the first API call request could obviously be "extracted" from that first API call request and is (in the assumed scenario)

a "request parameter [...] according to" which the second API call request is to be generated.

Other scenarios also come to mind, but in view of the breadth of the claim the board refrains from elaborating them any further. However, the board notes that a scenario as sketched or a similar one must be assumed given, i.e. part of the problem rather than the solution, for otherwise the claim cannot be understood as solving any (technical) problem.

3.7 The board concludes that the subject-matter of claim 1 does not solve, over its full breadth, any of the problems proposed by the appellant, and to the extent it can be guessed from the claim language and the description what problem *is* solved, the claimed subject-matter is considered to be an obvious solution to a given conversion requirement.

Therefore, the subject-matter of claim 1 of the main request cannot be considered inventive and does not satisfy the requirements of Article 56 EPC. The same holds for claim 1 of auxiliary request 2.

3.8 Compared to the main request, claim 1 of auxiliary request 1 contains the following additional features:

(a) discovering, by the first system, the second system by using Universal Plug and Play, UPnP, protocol; performing bidirectional identity authentication of the first system and the second system; and after the first system and the second system pass the bidirectional identity authentication, establishing, between the first system and the second system, a communication connection, and

(b) the "request parameter" is specified to include "an operation command, an API interface version number, an API type, an API call request format".

3.9 The board holds that, since the API calls converted in the first system are sent to the second system, a communication connection must be established between both systems. A standard manner to establish such a connection, which does not produce any additional benefits, is by using the well known Universal Plug and Play protocol and performing bidirectional identity authentication, i.e. additional feature (a).

3.10 As already discussed above with regard to the main request, it is evident that at least some of the specifically claimed "request parameters [...] according to which" the second API call request is to be generated can be "extracted" from the "first API call request". This applies in particular to the API call request format. For other parameters on which the conversion might depend, such as the API interface version number, the board considers it at least an obvious matter of convenience that an API call request to be converted should contain such information itself. The board therefore considers that additional feature (b) serves the obvious purpose of simplifying the claimed conversion.

3.11 Claim 1 of auxiliary request 1, therefore, contains no additional features which render its subject-matter inventive. For that reason, the board holds that auxiliary request 1 and for the same reasons auxiliary request 3 also do not satisfy the requirements of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Stridde M. Müller

Decision electronically authenticated