

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**
(PCT Rule 43*bis*.1)

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
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INV. G06F11/36 G06F8/60 G06F8/61 G06F9/455 G06F9/50 G06F11/20

Applicant
ORACLE INTERNATIONAL CORPORATION

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:



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Date of completion of this opinion

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-20</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	<u>1-20</u>
Industrial applicability (IA)	Yes: Claims	<u>1-20</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:

D1 Milco Numan: "My first experience with Oracle API Platform Cloud Service - part 1 - Syntouch",
, 6 June 2017 (2017-06-06),
Retrieved from the Internet:
URL:<https://www.syntouch.nl/my-first-experience-with-oracle-api-platform-cloud-service-part-1/>

D2 Milco Numan: "My first experience with Oracle API Platform Cloud Service - part 2 - Syntouch",
, 23 June 2017 (2017-06-23),
Retrieved from the Internet:
URL:<https://www.syntouch.nl/my-first-experience-with-oracle-api-platform-cloud-service-part-2/>

D3 Anonymous: "service-fabric-connect-and-communicate-with-services",
, 23 August 2017 (2017-08-23),
Retrieved from the Internet:
URL:<https://github.com/MicrosoftDocs/azure-docs/blob/9f71dca2fb2b95fc34c15ebda9be37199b81dd40/articles/service-fabric/service-fabric-connect-and-communicate-with-services.md>

2 The person skilled in the art is aware of documents **D1-D3** because they relate to the same technical field than the present application, namely service orchestration.

3 Document **D1** in conjunction with **D2** is regarded as closest prior art and considered to be one document because **D1** and **D2** are two parts of a single tutorial.

3.1 The skilled person would therefore consider the teaching of **D1 and D2** as a whole, as he would consider the teaching of two chapters of a book as a whole.

- 4 It is mentioned that the meaning of the claims while assessing novelty and inventive step of the present application is based on the clarity objections raised in **item VIII** below.

Inventive Step (Art. 33(3) PCT)

Independent Claims

- 5 The prior art document (**D1+D2**) discloses in the original wording of **claim 1** (reference to the closest prior art document and explanatory comments are made in square brackets; the original wording of the claim is set in *italic font*; features not explicitly disclosed in the closest prior art are set ~~striketrough~~; expressions added by the examining division for comprehension purposes are set in underline):

"A method of providing Application Programming Interface (API) functions for registered service endpoints ~~in container environments~~, the method comprising:

[Page 3; D1 describes techniques for calling a service using the Oracle API Platform Cloud Service by calling registered API endpoints of the called service: 'The specific scenario we have implemented is the invocation of key-secured, external API... the API call ...is invoking an API endpoint exposed on the API Platform Cloud Solution... Upon receiving a call, the API gateway ... invokes the service implementation'.]

- (a) receiving, at an API registry, an API definition comprising:
an endpoint of a first service ~~that is encapsulated in a container that is deployed in a container environment~~;
and one or more API functions;
creating, by the API registry, a binding between the one or more API functions and the endpoint of the service;

	<p>[Page 1; D2 discloses the creation of the API definition: 'I will describe the actual creation of the API definition'. Page 3; D2 discloses the defining of one API function that the system will be listening to and redirect to a service endpoint: 'there is an API request policy which is a purely declarative action defining the endpoint that the APIPCS will be listening for inbound requests' and discloses the defining of the endpoint of the backend outbound service called in response to an inbound API request: 'After this, the final step in the request flow is also a declarative action defining the (in out caser external) endpoint that needs to be invoked for this api'. It is clear that by saving the API definition, the system binds the inbound endpoint API function to the outbound endpoint service.]</p>
(b)	<p><i>receiving, by the API registry, a request from a second service to use the first service; and providing, by the API registry, the one or more API functions to the second service.</i></p> <p>[Page 8; D2 discloses the calling of the outbound service, the invocation of the bound API function and the returning of the JSON response of the executed outbound service.]</p> <p>"</p>

5.1 There are two **differences** between the closest prior art (D1+D2) and the above claimed subject-matter:

(i) the outbound service is a service deployed in a container;

(ii) the outbound service is called by another service.

First difference (i)

5.2 The **first difference (i)** does not provide a technical effect because it is irrelevant for the API Platform whether the outbound service is deployed in container or not: the outbound service is only referenced using its endpoint, that does not depend on the way the service is deployed.

5.3 Therefore, the **first difference (i)** does not involve an inventive step.

Second difference (ii)

5.4 The **second difference (ii)** does not provide a technical effect because as disclosed by **D1** on **page 3**, it is irrelevant for the API Platform whether the outbound service is called by "an application running on a server within the corporate domain, ..., a web server proxying a request from an external user or application.": the call will be handled the same way. Furthermore, calling a service from a service is well-known in the art, and it would be an obvious design choice for the skilled person to implement the "application running on a server" of **D1** as a service.

5.5 Therefore, the **second difference (ii)** does not involve an inventive step.

5.6 Therefore, **claim 1** can not be considered as involving an inventive step in the sense of Art. 33(3) PCT.

Other independent claims

6 The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding independent **claims 10 and 16**, which therefore are also considered not inventive in the sense of Art. 33(3) PCT.

Dependent Claims

7 Dependent **claims 2-9, 11-15, 17-20** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT with respect to inventive step within the meaning of Art. 33(3) PCT for the following reasons:

(i) claims 2 and 4: it would be obvious and part of the skilled person's customary practice to generate a client library enabling a client application to call the exposed API functions or the outbound service directly;

(ii) claim 3: consists in common implement techniques for client libraries;

(iii) claim 5: modifying programmatically and dynamically the API definition is enabled by the Oracle's API Platform Cloud Service as disclosed by **D2, page 2:** "These definitions may also be controlled by invoking REST APIs on the APIPCS";

(iv) claim 6: generating an HTTP call, i.e., a REST call, by building a string of characters comprising parameters and the knowledge of a service endpoint is known in the art;

(vii) claim 7: chaining services for obtaining more information is known in the art and disclosed by **D2, page 3**, where a microservice is called via Groovy Scripts in order to obtain an apikey used as parameter for the outbound service;

(viii) claim 8: consists in known technique of failure recovery;

(ix) claim 9: consists in data manipulation that the skilled person would perform depending on the circumstances without involving inventive skills;

(x) claim 11: known technique for identifying a service endpoint;

(xi) claim 12: consists in known usage of containers environments;

(xii) claim 13: it would be an obvious choice for the skilled person to deploy the API registry as an encapsulated service;

(xiii) **claim 14**: consists in arbitrary environments that a skilled person would consider to use the API registry;

(xiv) **claim 15**: consists in known service discovery practice;

(xv) **claim 17–20**: consists in known features provided by a service orchestration platform;

Item VII

Certain defects in the international application

- 8 The vague and imprecise statement in the description on **paragraphs 0130 and 0135** implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Art. 6 PCT) when used to interpret them.
- 9 The claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 10 Independent **claims 1, 10 and 16** are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate.
- 11 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in documents **D1–D3** is not mentioned in the description, nor is said document identified therein.

Item VIII

Certain observations on the international application

Independent claims

- 12 **Claims 1, 10 and 16** do not meet the requirements of Art. 6 PCT for the following reasons:
- (i) the expression "API functions" is not clear, in particular because they are comprised within an "API definition" that is understood as information describing an API and not as executable code enabling functions to be called and executed;

(ii) the expression "API registry" has no commonly accepted technical meaning and in the view of the broad set of steps it can perform, it is understood as a component managing services;

(iii) the expression "providing ... the one or more API functions to the second service" is unclear because it could mean that the functions are sent (maybe in the form they were received with the API definition), that the functions are made available, that the functions are executed.

Dependent claims

- 13 **Claim 6** does not meet the requirements of Art. 6 PCT, because it is not clear how the parameters of the API functions are received.