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Datasheet for the decision of 30 September 2014

Case Number: T 0936/11 - 3.5.07

Application Number: 98906484.5

Publication Number: 1070290

IPC: G06F17/30

Language of the proceedings: EN

Title of invention:
Network image view server using efficient client-server, tiling and caching architecture

Applicant:
E-Plus Capital Inc.

Headword:
Image view server/E-PLUS CAPITAL

Relevant legal provisions:
EPC Art. 56, 84

Keyword:
Accelerated processing - (yes)
Claims - clarity after amendment (yes)
Inventive step - (yes)

Decisions cited:

Catchword:

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It can be changed at any time and without notice.

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Case Number: T 0936/11 - 3.5.07

D E C I S I O N
of Technical Board of Appeal 3.5.07
of 30 September 2014

Appellant: (Applicant)	E-Plus Capital Inc. 400 Herndon Parkway Herndon VA 20170 (US)
Representative:	Hertz, Oliver v. Bezold & Partner Patentanwälte - PartG mbB Akademiestrasse 7 80799 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 2 December 2010 refusing European patent application No. 98906484.5 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	R. Moufang
Members:	R. de Man
	P. San-Bento Furtado

Summary of Facts and Submissions

I. The applicant (appellant) lodged an appeal against the decision of the Examining Division refusing European patent application No. 98906484.5. This was the second refusal decision after the Examining Division had rectified its first refusal decision.

II. The contested decision cited the following documents:

D1: Meyer E. et al.: "Borealis Image Server", Computer Networks and ISDN Systems, vol. 28, no. 11, pages 1123-1137, May 1996;

D3: Perry H.: "Spaces between tiled gifs", 18 March 1997, retrieved from the Internet: URL:http://groups.google.com/groups/comp.infosystems.www.authoring.images/browse_thread/thread/23b0ac047b8740e8/6cfcf0bc11b29e0b;

D4: Perry H.: "Spaces between tiled gifs", 18 March 1997, retrieved from the Internet: URL:http://groups.google.com/group/comp.infosystems.www.authoring.images/msg/c651277ebbf96807?hl=en&dmode=source;

D6: Rabinovich B. et al.: "Visualization of Large Terrains in Resource-Limited Computing Environments", Proceedings Visualization '97, 24 October 1997; and

D8: Potmesil M.: "Maps Alive: viewing geospatial information on the WWW", Computer Networks and ISDN Systems, vol. 29, pages 1327-1342, September 1997.

The Examining Division came to the conclusion that the subject-matter of claim 1 of the main request and of auxiliary requests 1 to 4, 7 and 8 lacked an inventive

step in view of various combinations of D1, D3, D6 and D8. In addition, claim 1 of the main request and of auxiliary requests 2, 3, 4, 7 and 8 was found to be unclear and the subject-matter of claim 1 of auxiliary request 1 was found to extend beyond the content of the application as filed. Auxiliary requests 5 and 6 were not admitted into the procedure.

III. In the statement setting out the grounds of appeal, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or, in the alternative, on the basis of one of auxiliary requests 1 to 8. Copies of all claim requests were filed with the statement of grounds of appeal. The appellant conditionally requested oral proceedings.

IV. With a letter dated 17 January 2014, the appellant requested acceleration of the appeal procedure.

V. Oral proceedings were appointed by the Board. In a communication accompanying the summons to oral proceedings, the Board expressed the provisional opinion that the main request and auxiliary requests 2 to 8 did not comply with Article 84 EPC and that auxiliary request 1 did not comply with Article 123(2) EPC.

VI. With a letter dated 26 March 2014, the appellant submitted a new main request and maintained the main request on file as a first auxiliary request and the auxiliary requests as further auxiliary requests.

VII. In a communication dated 21 May 2014, the Board expressed the view that the new main request did not comply with Article 84 EPC.

VIII. With a letter dated 26 May 2014, the appellant filed a new main request and new auxiliary requests 1 to 4. The requests on file were maintained as additional auxiliary requests.

IX. In a telephone conversation with the appellant's representative held on 25 June 2014, the rapporteur acting on behalf of the Board suggested amendments to auxiliary request 4 that would be likely to overcome the Board's remaining objections.

X. With a letter dated 26 June 2014, the appellant filed a new main request. The appellant assumed that the application documents were now in proper condition for grant and that the oral proceedings could therefore be cancelled. The requests on file were maintained as auxiliary requests. In response, the Board cancelled the oral proceedings.

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

"Computer network server (100) adapted to store digital document image files,

- said computer network server (100) being programmed with Web server software
  - to receive requests from a client Web browser (10, 20) in URL code, wherein the URL code identifies the image file to be viewed, the scale of the view and the region of the image to view,
  - to compose the requested view, and
  - to transmit HTML code for the resultant view to the client Web browser (10, 20) to display;
- said computer network server (100) comprising a foreground view composer (50), which is adapted

- to interpret the view request received from the client Web browser (10, 20),
- to determine a grid of view tiles of the image according to the requested scale of the view,
- to determine an array of view tiles which are needed for the requested view, wherein the array of view tiles is selected from the grid of view tiles,
- to create the view tiles (160) needed for the requested view, wherein the foreground view composer (50) takes the needed view tiles from a cache (60) or creates the needed view tiles from the image file (90), and
- to create an HTML output file, wherein the HTML output file references the view tiles needed to display the completed view and describes the order, position and hyperlink for each view tile to be displayed."

Claims 2 to 4 are dependent claims.

The remaining application documents according to the main request are as follows:

Description:
- pages 2a, 2b, 2c and 2d filed with the letter dated 26 March 2014;
- pages 3, 14 and 15 filed with the letter dated 26 May 2014;
- pages 4, 6 to 9 and 11 to 13 as published;
- pages 5 and 10 filed with the letter dated 26 June 2014.

Drawings:
- sheets 1/11 to 11/11 as published.

The text of the auxiliary requests is not relevant to the outcome of the present appeal.

Reasons for the Decision

1. The appeal complies with the provisions referred to in Rule 101 EPC and is therefore admissible.

2. *Request for accelerated processing*

2.1 According to the Notice from the Vice-President Directorate-General 3 dated 17 March 2008 concerning accelerated processing before the boards of appeal (OJ EPO 2008, 220), parties with a legitimate interest may request accelerated processing of their appeal. Such requests should contain reasons for the urgency together with relevant documents.

2.2 With the letter of 17 January 2014, the appellant requested accelerated processing. The reason given was that the filing date of the application was 12 February 1998, so that the application would expire in 2018, i.e. within about four years. The appellant, as applicant, had a legitimate interest in obtaining a decision in the appeal procedure well before the application expired.

2.3 In view of the protracted length of the first-instance proceedings, the Board decided to accede to the appellant's request and to treat the appeal out of turn.

3. *The invention*

3.1 The invention relates to viewing large digital document images using a client-server architecture and in particular using a standard web browser as image viewer. Instead of copying a whole image file from the server to the client, the invention proposes dividing the image into tiles at the server and transmitting only those tiles that make up the portion of the image requested by the client. This is implemented by letting the web server, in reply to a request for a portion of an image, transmit to the web browser an HTML output file that describes "the order, position and hyperlink for each view tile to be displayed" (page 10, line 29, to page 11, line 1, of the application as published).

3.2 According to the description on page 2, prior-art methods for viewing images stored on a server used proprietary workstation application software to access an image file server and transferred a copy of the whole image file from the image file server to the client workstation. These methods had disadvantages such as inefficient use of the network, high software cost per workstation, high computational demand on the workstation and limited availability of the proprietary software for different workstation types. The invention made efficient use of the network, resulted in greater speed of image display and minimised the computing resources required by a client. The advantages of the invention were further increased by the use of caching mechanisms.

4. *Main request - Article 123(2) EPC*

Claim 1 of the main request corresponds to originally filed claim 21 with amendments based on dependent

claim 22 and on page 5, lines 16 to 21, page 10, lines 3 to 17, and page 10, line 29, to page 11, line 1 of the originally filed description.

Dependent claims 2 to 4 are based on originally filed dependent claims 23, 24 and 26, respectively.

The Board is therefore satisfied that the main request complies with Article 123(2) EPC.

5. *Main request - Article 84 EPC*

5.1 In view of the amendments made, the clarity objections raised in the decision under appeal are no longer applicable.

5.1.1 In particular, the feature "to compute a grid of view tiles of the image" now reads "to determine a grid of view tiles of the image according to the requested scale of the view". This clearly expresses that this step merely determines a tiling of the image into a grid of view tiles on the basis of the requested scale of the view.

5.1.2 The feature "to compute an array of view tiles, which are needed for the requested view" has similarly been amended to read "to determine an array of view tiles which are needed for the requested view, wherein the array of view tiles is selected from the grid of view tiles", which now also clearly expresses the relation between the "array" and "grid" of view tiles.

5.1.3 The feature "to compose the array of view tiles needed for the requested view" has been replaced by "to create the view tiles needed for the requested view, wherein the foreground view composer takes the needed view

tiles from a cache or creates the needed view tiles from the image file". In addition, the reference to "the view composition" has been removed from the feature "to create an HTML output file to describe the view composition to the client". It follows from the claim as currently worded that the requested view is "composed" by the array of view tiles.

5.2 The further clarity objections raised in the communications by the Board have been addressed by suitable amendments and therefore no longer apply.

5.3 The Board concludes that the main request complies with Article 84 EPC.

6. *Main request - Article 56 EPC*

6.1 *Document D1 as closest prior art*

Document D1 discloses an image server for serving watermarked images to client web browsers (see abstract). The server is programmed with web server software (page 1126, left-hand column, last paragraph). The server receives requests from a client web browser in the form of a URL encoding an image name, output style such as thumbnail or full-size, and optionally a graphic format (page 1127, left-hand column, last paragraph, to right-hand column, first paragraph). Upon receipt of a request, the server loads the file into memory, processes it (sections 5.5, 5.7 and 5.8 discuss watermarking, graphic format conversion, scaling to thumbnail format), and delivers the resulting image to the browser (page 1128, left-hand column, second paragraph).

6.2 One of the output styles supported by the image server of document D1 is the "info" output style discussed on page 1133, left-hand column, first paragraph. When an image is requested with output style "info", HTML code is returned to the browser defining a full HTML page consisting of the title of the image, an inlined thumbnail of the image which is a link to the full-sized image, and copyright and author/title information.

6.3 The Board agrees with the decision under appeal that document D1 is a suitable starting point for the assessment of inventive step. The subject-matter of claim 1 essentially differs from the image server of document D1 in that:

- the URL specifies a view of the image file in terms of a scale and a region;
- based on the view, the web server determines an array of view tiles that are needed for the requested view and creates said needed view tiles from the image file and/or retrieves said needed view tiles from a cache; and
- the web server creates an HTML output file including appropriate formatting and references to the needed view tiles.

6.4 These distinguishing features achieve an efficient loading of portions of images, which is especially important for viewing of large images, i.e. images that cannot be displayed in full. Efficiency is not only achieved by downloading only the portion of the full image data corresponding to the selected "view", but also by partitioning the image into tiles. Caching "view tiles" both at the server (as expressed by the claim) and at the client (in accordance with standard

functionality of web browsers) results in a reduction of bandwidth usage when the same client browser and/or different client browsers request overlapping "views" of the same image file.

The objective technical problem may therefore be formulated as how to adapt the image server of document D1 to allow efficient viewing of large images.

6.5 *Document D3*

6.5.1 Document D3 was retrieved from the "Google Groups" website and bears a date of 18 March 1997, which is before the priority date of the present application. The appellant has contested that document D3 belongs to the state of the art pursuant to Article 54(2) EPC.

In its communication accompanying the summons to oral proceedings the Board set out why, in its provisional opinion, document D3 was prior art within the meaning of Article 54(2) EPC. However, in view of what follows the Board does not need to decide on this point.

6.5.2 According to the decision under appeal, the skilled person would arrive at the claimed solution on the basis of the suggestion disclosed in document D3 to break up larger images into tiles in order to achieve faster loading.

6.5.3 During the oral proceedings held on 6 November 2008 before the Examining Division, and again in the statement of grounds filed on 28 May 2010 in the context of the appeal against the first refusal decision, the appellant argued that document D3 did not teach to transmit only a (requested) part of the entire image.

The decision under appeal does not attempt to refute this argument, for example by explaining why document D3 does in fact provide this teaching, or by explaining that claim 1 is not interpreted as requiring that only a subset of the tiles forming the entire image is transmitted.

6.5.4 The minutes of the oral proceedings held on 6 November 2008 show that the appellant's argument was considered during the oral proceedings. According to the Examining Division, document D3 disclosed that the image was tiled, and that loading the image was faster. The skilled person knew that tiling and transmitting all the files slowed down the download. In order to nevertheless achieve faster loading, it must have been a subset of the image that was downloaded to the client. This aspect was therefore implicitly disclosed.

The Board notes that what a document implicitly discloses, i.e. what can be directly and unambiguously derived by the skilled person using only his common general knowledge, is not the same as what can be speculatively deduced as a possible explanation for an apparent technical inaccuracy identified in the document. The Board considers that document D3 does not disclose transmitting only a subset of the set of tiles that make up the entire image.

6.5.5 The Board further notes that transmitting only a subset of the set of tiles is also not, as might be argued, an inevitable consequence of the fact that a sufficiently large image cannot be fully displayed in a limited display area. The normal way of dealing with this problem, especially in the context of web browsers, is to display the entire image in a scrollable area.

6.5.6 The Board is therefore of the view that claim 1 is not rendered obvious by a combination of documents D1 and D3.

6.6 *Document D6*

6.6.1 With respect to the then auxiliary request 4, the Examining Division based its decision on a combination of documents D1 and D6. Document D6 describes a software system supporting interactive visualisation of large terrains in an environment comprising a low-end client computer accessing a large terrain database server through a low-bandwidth network (see abstract). Document D6, section 2, discloses that the large terrain scene is stored on the server disk in the form of geometry and texture tiles of fixed size. Document D6 further discloses in section 4 that a low-end client computer loads only those texture tiles of the appropriate resolution which intersect the view footprint (see also section 3.2) if they are not yet loaded.

6.6.2 The Board has some doubts whether the skilled person looking to overcome a problem of the image server of document D1 would seek a solution in the area of terrain visualisation. However, even if the skilled person were to consider document D6, he would be taught that the client needs to determine and request the tiles needed for a particular view (see section 3.2). Whether or not the skilled person would succeed in applying this approach to document D1, he would not arrive at the distinguishing features identified in point 6.3 above.

6.7 *Document D8*

6.7.1 The Examining Division also concluded that claim 1 lacked an inventive step in view of document D8.

Document D8 discloses a web-based system for viewing geospatial information (see abstract). The system comprises a 2D map browser capable of continuous scroll and zoom of an arbitrarily large sheet. This browser downloads and caches geographical information, geometrical models and URL anchors in small regions called tiles.

6.7.2 According to the decision under appeal, document D8, section 3.3.1, disclosed that the server, upon request of a client web browser, divided an image into tiles and determined which tiles were needed for the requested view.

However, document D8 discloses in section 3.3.1 that a Java applet running in the web browser (referred to as "mapplet", see section 3.3) obtains tile data from the server and converts the data into images. It is therefore the client, not the server, that determines which tiles need to be transmitted to the client. This is confirmed by section 2.1, which discloses that tile servers accept two types of request, namely requests for a description of the tile index and requests for the contents of a tile.

The analysis of document D8 presented in the decision under appeal is hence incorrect.

6.7.3 In addition, the Board is not convinced that it would have been obvious, as the Examining Division has argued, to replace the applet of document D8 with an implementation based on HTML in order to provide an

alternative, but still tile-based, implementation. Nothing in the available prior art suggests that it was common general knowledge at the priority date of the present application to display an image in a browser using an HTML page comprising references to tiles stored at the server. While admittedly document D3 does appear to disclose such an HTML page, this document is not evidence of common general knowledge.

6.7.4 From the above it follows that claim 1 is not rendered obvious by document D8. The system of document D8 being similar in structure to that of document D6, the same applies to a combination of documents D1 and D8 (see point 6.6.2).

6.8 The Board therefore concludes that the subject-matter of claim 1 involves an inventive step. By virtue of their dependency on claim 1, the subject-matter of claims 2 to 4 involves an inventive step as well. The main request hence meets the requirements of Articles 52(1) and 56 EPC.

7. Since the main request complies with the provisions of the EPC, the appeal succeeds.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent on the basis of the following documents:

Claims:
- claims 1 to 4 filed with the letter dated 26 June 2014.

Description:
- pages 2a, 2b, 2c and 2d filed with the letter dated 26 March 2014;
- pages 3, 14 and 15 filed with the letter dated 26 May 2014;
- pages 4, 6 to 9 and 11 to 13 as published;
- pages 5 and 10 filed with the letter dated 26 June 2014.

Drawings:
- sheets 1/11 to 11/11 as published.

The Registrar: The Chairman:

P. Martorana R. Moufang

Decision electronically authenticated