


13-29-00

A/Pro ✓

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
REQUEST FOR FILING A PROVISIONAL APPLICATION FOR PATENT  
UNDER 37 CFR §1.53 (c)

12/27/00  
1c952 U.S. PTO

PTO  
607258489  
12/27/00

INVENTOR(S)			
1.	Isaac	Levanon	3 Nachal Besor St., Ramat Hasharn, Israel
2.	Yoni	Lavi	21 Bar Ilan St., Raanana, Israel
TITLE OF THE INVENTION			
OPTIMIZATION OF IMAGE PARCEL DOWNLOAD SEQUENCE FOR FAST QUALITY BUILD-UP OF IMAGE DATA STREAMED OVER LIMITED AND NARROWBAND COMMUNICATION CHANNELS WITH DIFFERENT VIEWING FRUSTUM FROM A DYNAMIC THREE-DIMENSIONAL VIEWPOINT			
<input checked="" type="checkbox"/> Direct all correspondence to Customer Number <u>23488</u> .			
Gerald B. Rosenberg, Esq. (Reg No.: 30,320) NewTechLaw 285 Hamilton Avenue, Suite 520 Palo Alto, California 94301		Telephone: 650.325.2100 Facsimile: 650.325.2107	<b>23488</b> PATENT TRADEMARK OFFICE
ENCLOSED APPLICATION PARTS (check all that apply)			
<input checked="" type="checkbox"/> Specification	No. of pages: <u>10</u>	<input type="checkbox"/> Small Entity Statement	
<input checked="" type="checkbox"/> Drawings	No. of sheets: <u>5</u>	<input type="checkbox"/> Power of Attorney	
<input type="checkbox"/> Declaration		<input type="checkbox"/> Assignment and Cover Sheet	
<input checked="" type="checkbox"/> Other: <u>Return-Receipt Post Card.</u>			
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT			
Provisional Basic Filing Fee: \$ 150.00 (Small Entity: \$75.00)		Filing Fee Amount: \$ <u>150.00</u>	
<input checked="" type="checkbox"/> A check is enclosed to cover the Filing Fees.			
<input checked="" type="checkbox"/> The Commissioner is hereby authorized charge Filing Fees or credit any overpayment to: Deposit Account Number: <u>50-0890</u> .			
<input checked="" type="checkbox"/> This invention was <u>not</u> made by or under contract with a US Government agency.			
<input type="checkbox"/> US Government agency and Contract: _____			
Signature: <u>Gerald B. Rosenberg</u>		Date: <u>December 26, 2000</u>	
Gerald B. Rosenberg Reg. No.: <u>30,320</u>		Application Docket No: <u>FLVT3001</u>	
		Express Mail Label No.: <u>EL 661 534 265 US</u>	
Address To: Box Provisional Application, Assistant Commissioner for Patents, Washington, DC 20231			

607258489 12/27/00

1 OPTIMIZATION OF IMAGE PARCEL DOWNLOAD  
2 SEQUENCE FOR FAST QUALITY BUILD-UP OF  
3 IMAGE DATA STREAMED OVER LIMITED AND  
4 NARROWBAND COMMUNICATION CHANNELS  
5 WITH DIFFERENT VIEWING FRUSTUM FROM A  
6 DYNAMIC THREE-DIMENSIONAL VIEWPOINT  
7

8  
9  
10 Inventors:

11 Isaac Levanon

12 Yoni Lavi  
13  
14  
15  
16  
17

18 Background of the Invention

19 The present invention is generally related to the delivery of high-resolution  
20 highly featured graphic images over limited and narrowband communications  
21 channels.  
22

23 Summary of the Invention

24 The objective is to display a two-dimensional pixel map, a 16-Bit RGB color  
25 image in the preferred embodiments, of very large dimensions and permitting the  
26 viewing of the image from a dynamic three-dimensional viewpoint. Multiple such

1 images are remotely hosted for on-demand selection and transfer to a client  
2 system for viewing.

3 Images, as stored by the server, may individually range from gigabytes to  
4 multiple terabyte in total size. A correspondingly large server storage and  
5 processing system is contemplated. Conversely, client systems are contemplated  
6 to be conventional personal computer systems and, in particular, mobile, cellular,  
7 embedded, and handheld computer systems, such as personal digital assistants  
8 (PDAs) and internet-capable digital phones, with relatively limited to highly  
9 constrained network communications capabilities. For most wireless applications,  
10 conventional narrowband communications links have a bandwidth of less than  
11 approximately three kilobytes of data per second. Consequently, transmittal of  
12 entire images to a client system in reasonable time is infeasible as a practical  
13 matter.

14  
15 Description of the Invention

16 Overview:

17 For purposes of the present invention, each image (Figure 1) is at least  
18 logically defined in terms of multiple grids of image parcels with various levels of  
19 resolutions (Figure 2) that are created through composition of information from  
20 all level of resolutions, and stored by the server to provide an image for transfer  
21 to a client system (Figure 3). Composed and separate static and dynamically  
22 created layers are transferred to client system in parcels in a program selectable  
23 order to optimize for fast quality build-up of the image presented to a user of the  
24 client system, particularly when the parcels are streamed over a narrowband  
25 communication link.

1           The multiple layers of an image allow the selectivity to incorporate  
2 topographical, geographical, orientational, and other terrain and mapping  
3 related information into the image delivered. Other layers, such as geographic  
4 grids, graphical text overlays, and hyperlink selection areas, separately provided  
5 or composed, aid in the useful presentation and navigation of the image as  
6 presented by the client system and viewed by the user.

7           Compositing of layers on the server enables the data transfer burden to be  
8 reduced, particularly in analysis of the requirements and capabilities of the client  
9 system and the connecting communications link. Separate transfer of layers to the  
10 client system allows the client system selectivity in managing and presentation of  
11 the data to the user.

12           The system and methods of the present invention are designed to, on  
13 demand, select, process and immediately transfer data parcels to the client  
14 system, which immediately processes and displays a low-detail representation of  
15 the image requested by the client system. The system and methods immediately  
16 continue to select, process and sequentially transfer data parcels that, in turn, are  
17 processed and displayed by the client system to augment the presented image  
18 and thereby provide a continuously improving image to the user.

19           Selection of the sequentially transferred data is, in part, dependent on the  
20 progressive translation of the three-dimensional viewpoint as dynamically  
21 modified on the client system during the transfer process. This achieves the  
22 above-stated objective while concurrently achieving a good rendering quality for  
23 continuous fly-over of the image as fast as possible, yet continuously building the  
24 image quality to the highest resolution of the image as stored by the server.

1 To optimize image quality build-up over limited and narrowband  
2 communication links, the target image, as requested by the client system, is  
3 represented by multiple grids of 64x64 image pixels (Figure 4) with each grid  
4 having some corresponding level of detail. That is, each grid is treated as a  
5 sparse data array that can be progressively revised to increase the resolution of  
6 the grid and thereby the level of detail presented by the grid. The reason for  
7 choosing the 64x64 pixel dimension is that, using current image compression  
8 algorithms, a 16-bit 64x64 pixel array image can be presented as a 2KByte data  
9 parcel. In turn, this 2KByte parcel is the optimal size, subject to conventional  
10 protocol and overhead requirements, to be transmitted through a 3KByte per  
11 second narrowband transmission channel. Using a smaller image array, such as  
12 32x32, would create a 0.5KByte parcel, hence causing inefficiencies due to packet  
13 transmission overhead, given the nature of current wireless communications  
14 protocols.

15 Image array dimensions are preferably powers of two so that they can be  
16 used in texture mapping efficiently. Each parcel, as received by the client system,  
17 is preferably immediately processed and incorporated into the presented image.  
18 To do so efficiently, according to the present invention, each data parcel is  
19 independently processable by the client system, which is enabled by the selection  
20 and server-side processing used to prepare a parcel for transmission. In addition,  
21 each data parcel is sized appropriate to fit within the level-1 cache, or equivalent,  
22 of the client system processor, thereby enable the data processing intensive  
23 operations needed to process the data parcel to be performed without extended  
24 memory access delays. In the preferred embodiment of the present invention,

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.