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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AP026CON3
	Application Number	
Title of Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS	
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.		

Secrecy Order 37 CFR 5.2:

Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor	1				<input type="button" value="Remove"/>
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	saac		Levanon		
Residence Information (Select One) US Residency <input type="radio"/> Non US Residency Active US Military Service					
City	Raanana	Country of Residence ⁱ		L	
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Postal Code		Country ⁱ	IL		
Inventor	2				<input type="button" value="Remove"/>
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Yonatan		Lavi		
Residence Information (Select One) US Residency <input checked="" type="radio"/> Non US Residency Active US Military Service					
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Postal Code		Country ⁱ	IL		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					
					<input type="button" value="Add"/>

Correspondence Information:

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AP026CON3
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Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

An Address is being provided for the correspondence information of this application.

Customer Number	35070		
Email Address	aw@IPLCounsel.com	Add Email	Remove Email
Email Address	sean@IPLCounsel.com	Add Email	Remove Email

Application Information:

Title of the Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS		
Attorney Docket Number	AP026CON3	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	5	Suggested Figure for Publication (if any)	2

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

Request Early Publication (Fee required at time of Request 37 CFR 1.219)

Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer number will be used for the Representative Information during processing.

Please Select One:	<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
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Customer Number	35070		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove		
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
	Continuation of		14970526	2015-12-15	
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14970526	Continuation of	14547148	2014-11-19	9253239	2016-02-02
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14547148	Continuation of	13027929	2011-02-15	8924506	2014-12-30
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
13027929	Continuation in part of	12619643	2009-11-16	7908343	2011-03-15
Prior Application Status	Patented		Remove		
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
12619643	Continuation of	10035987	2001-12-24	7644131	2010-01-05
Prior Application Status	Expired		Remove		
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
10035987	Claims benefit of provisional		60258465	2000-12-27	
Prior Application Status	Expired		Remove		
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
10035987	Claims benefit of provisional		60258466	2000-12-27	
Prior Application Status	Expired		Remove		
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
10035987	Claims benefit of provisional		60258467	2000-12-27	

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Prior Application Status	Expired	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
10035987	Claims benefit of provisional	60258468	2000-12-27
Prior Application Status	Expired	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
10035987	Claims benefit of provisional	60258488	2000-12-27
Prior Application Status	Expired	<input type="button" value="Remove"/>	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
10035987	Claims benefit of provisional	60258489	2000-12-27
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)¹ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			<input type="button" value="Remove"/>
Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

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Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	AP026CON3
	Application Number	
Title of Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	<input type="button" value="Remove"/>
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p>		
<input type="button" value="Clear"/>		
<input checked="" type="radio"/> Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
<div style="border: 1px solid black; height: 20px; width: 100%;"></div>		
Name of the Deceased or Legally Incapacitated Inventor: <input type="text"/>		
If the Applicant is an Organization check here. <input checked="" type="checkbox"/>		
Organization Name	Bradium Technologies LLC	
Mailing Address Information For Applicant:		
Address 1	75 Montebello Road	
Address 2		
City	Suffern	State/Province NY
Country	US	Postal Code 10901
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. <input type="button" value="Add"/>		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

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Assignee	1		
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.			
			<input type="button" value="Remove"/>
If the Assignee or Non-Applicant Assignee is an Organization check here.			<input checked="" type="checkbox"/>
Organization Name	Bradium Technologies LLC		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	75 Montebello Road		
Address 2			
City	Suffern	State/Province	NY
Country ⁱ	US	Postal Code	10901
Phone Number		Fax Number	
Email Address			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.			<input type="button" value="Add"/>

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is **not** checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Anatoly S. Weiser/		Date (YYYY-MM-DD)	2016-09-29	
First Name	Anatoly	Last Name	Weiser	Registration Number	43229
Additional Signature may be generated within this form by selecting the Add button.				<input type="button" value="Add"/>	

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This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION
CHANNELS

Isaac Levanon

Yonatan Lavi

Priority Claims/Related Applications

5 This application is a continuation of and claims priority to U.S. Patent Application Serial
No. 14/970,526, filed December 15, 2015, entitled OPTIMIZED IMAGE DELIVERY OVER
LIMITED BANDWIDTH COMMUNICATION CHANNELS, now allowed; which is a
continuation of and claims priority to U.S. Patent Application Serial No. 14/547,148, filed
November 19, 2014, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED
10 BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 9,253,239; which is a
continuation of and claims priority to U.S. Patent Application Serial No. 13/027,929, filed
February 15, 2011, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED
BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 8,924,506; which is a
continuation in part of and claims priority to U.S. Patent Application Serial No. 12/619,643 filed
15 on November 16, 2009, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED
BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 7,908,343; which is a
continuation of and claims priority to U.S. Patent Application Serial No. 10/035,987 filed on
December 24, 2001 and entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED
BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 7,644,131; which
20 claims the benefit under 35 U.S.C. §119(e) of U.S. Provisional Application Nos. 60/258,488,
60/258,489, 60/258,465, 60/258,468, 60/258,466, and 60/258,467, all filed December 27, 2000.
The present application is also related to application serial number 10/035,981 entitled SYSTEM
AND METHODS FOR NETWORK IMAGE DELIVERY WITH DYNAMIC VIEWING
FRUSTUM OPTIMIZED FOR LIMITED BANDWIDTH COMMUNICATION CHANNELS,
25 Levanon *et al.*, filed on December 24, 2001, now U.S. Patent No. 7,139,794, issued on
November 21, 2006, which is assigned to the Assignee of the present Application. The
disclosures of all of the foregoing patent documents are incorporated herein by reference as if
fully set forth herein, including Figures, Claims, and Tables.

Field

The disclosure is related to network based, image distribution systems and, in particular, to a system and methods for efficiently selecting and distributing image parcels through a narrowband or otherwise limited bandwidth communications channel to support presentation of high-resolution images subject to dynamic viewing frustums.

Background

The Internet and or other network systems may provide a unique opportunity to transmit for example complex images, typically large scale bit-maps, particularly those approaching photo-realistic levels, over large area and or distances. In common application, the images may be geographic, topographic, and or other highly detailed maps. The data storage requirements and often proprietary nature of such images could be such that conventional interests may be to transfer the images on an as-needed basis.

In conventional fixed-site applications, the image data may be transferred over a relatively high-bandwidth network to client computer systems that in turn, may render the image. Client systems may typically implement a local image navigation system to provide zoom and or pan functions based on user interaction. As well recognized problem with such conventional systems could be that full resolution image presentation may be subject to the inherent transfer latency of the network. Different conventional systems have been proposed to reduce the latency affect by transmitting the image in highly compressed formats that support progressive resolution build-up of the image within the current client field of view. Using a transform compressed image transfer function increases the field of the image that can be transferred over a fixed bandwidth network in unit time. Progressive image resolution transmission, typically using a differential resolution method, permits an approximate image to be quickly presented with image details being continuously added over time.

Tzou, in U.S. Pat. No. 4,698,689, describes a two-dimensional data transform system that supports transmission of differential coefficients to represent an image. Subsequent transmitted coefficient sets are progressively accumulated with prior transmitted sets to provide a

succeedingly refined image. The inverse-transform function performed by the client computer is, however, highly compute intensive. In order to simplify the transform implementation and further reduce the latency of presenting any portion of an approximate image, images are subdivided into a regular array. This enables the inverse-transform function on the client, which is
5 time-critical, to deal with substantially smaller coefficient data sets. The array size in Tzou is fixed, which leads to progressively larger coefficient data sets as the detail level of the image increases. Consequently, there is an inherently increasing latency in resolving finer levels of detail.

An image visualization system proposed by Yap et al., U.S. Pat. No. 6,182,114,
10 overcomes some of the foregoing problems. The Yap et al. system also employs a progressive encoding transform to compress the image transfer stream. The transform also operates on a subdivided image, but the division is indexed to the encoding level of the transform. The encoded transform coefficient data sets are, therefore, of constant size, which supports a modest improvement in the algorithmic performance of the inverse transform operation required on the
15 client.

Yap et al. adds utilization of client image panning or other image pointing input information to support a foveation-based operator to influence the retrieval order of the subdivided image blocks. This two-dimensional navigation information is used to identify a foveal region that is presumed to be the gaze point of a client system user. The foveation
20 operator defines the corresponding image block as the center point of an ordered retrieval of coefficient sets representing a variable resolution image. The gaze point image block represents the area of highest image resolution, with resolution reduction as a function of distance from the gaze point determined by the foveation operator. This technique thus progressively builds image resolution at the gaze point and succeedingly outward based on a relatively compute intensive
25 function. Shifts in the gaze point can be responded to with relative speed by preferentially retrieving coefficient sets at and near the new foveal region.

Significant problems remain in permitting the convenient and effective use of complex images by many different types of client systems, even with the improvements provided by the various conventional systems. In particular, the implementation of conventional image
30 visualization systems is generally unworkable for smaller, often dedicated or embedded, clients

where use of image visualization would clearly be beneficial. Conventional approaches effectively presume that client systems have an excess of computing performance, memory and storage. Small clients, however, typically have restricted performance processors with possibly no dedicated floating-point support, little general purpose memory, and extremely limited persistent storage capabilities, particularly relative to common image sizes. A mobile computing device such as mobile phone, smart phone, tablet and or personal digital assistant (PDA) is a characteristic small client. Embedded, low-cost kiosk, automobile navigation systems and or Internet enabled I connected TV are other typical examples. Such systems are not readily capable, if at all, of performing complex, compute-intensive Fourier or wavelet transforms, particularly within a highly restricted memory address space.

As a consequence of the presumption that the client is a substantial computing system, conventional image visualization systems also presume that the client is supported by a complete operating system. Indeed, many expect and require an extensive set of graphics abstraction layers to be provided by the client system to support the presentation of the delivered image data. In general, these abstraction layers are conventionally considered required to handle the mapping of the image data resolution to the display resolution capabilities of the client system. That is, resolution resolved image data provided to the client is unconstrained by any limitation in the client system to actually display the corresponding image. Consequently, substantial processor performance and memory can be conventionally devoted to handling image data that is not or cannot be displayed.

Another problem is that small clients are generally constrained to generally to very limited network bandwidths, particularly when operating under wireless conditions. Such limited bandwidth conditions may exist due to either the direct technological constraints dictated by the use of a low bandwidth data channel or indirect constraints imposed on relatively high-bandwidth channels by high concurrent user loads. Cellular connected PDAs and webphones are examples of small clients that are frequently constrained by limited bandwidth conditions. The conventionally realizable maximum network transmission bandwidth for such small devices may range from below one kilobit per second to several tens of kilobits per second. While Yap et al. states that the described system can work over low bandwidth lines, little more than utilizing wavelet-based data compression is advanced as permitting effective operation at low

communications bandwidths. While reducing the amount of data that must be carried from the server to the client is significant, Yap et al. simply relies on the data packet transfer protocols to provide for an efficient transfer of the compressed image data. Reliable transport protocols, however, merely mask packet losses and the resultant, sometimes extended recovery latencies.

5 When such covered errors occur, however, the aggregate bandwidth of the connection is reduced and the client system can stall waiting for further image data to process.

Consequently, there remains a need for an image visualization system that can support small client systems, place few requirements on the supporting client hardware and software resources, and efficiently utilize low to very low bandwidth network connections.

10 Summary

Thus, a general purpose of the present invention is to provide an efficient system and methods of optimally presenting image data on client systems with potentially limited processing performance, resources, and communications bandwidth.

This is achieved in the present invention by providing for the retrieval of large-scale
15 images over network communications channels for display on a client device by selecting an update image parcel relative to an operator controlled image viewpoint to display via the client device. A request is prepared for the update image parcel and associated with a request queue for subsequent issuance over a communications channel. The update image parcel is received from the communications channel and displayed as a discrete portion of the predetermined image. The
20 update image parcel optimally has a fixed pixel array size, is received in a single and or plurality of network data packets, and were the fixed pixel array may be constrained to a resolution less than or equal to the resolution of the client device display.

An advantage of the present invention is that both image parcel data requests and the rendering of image data are optimized to address the display based on the display resolution of
25 the client system.

Another advantage of the present invention is that the prioritization of image parcel requests is based on an adaptable parameter that minimizes the computational complexity of

determining request prioritization and, in turn, the progressive improvement in display resolution within the field of view presented on a client display.

5 A further advantage of the present invention is that the client software system requires relatively minimal client processing power and storage capacity. Compute intensive numerical calculations are minimally required and image parcel data is compactly stored in efficient data structures. The client software system is very small and easily downloaded to conventional computer systems or embedded in conventional dedicated function devices, including portable devices, such as PDAs, tablets and webphones.

10 Still another advantage of the present invention is that image parcel data requests and presentation can be readily optimized to use low to very low bandwidth network connections. The software system of the present invention provides for re-prioritization of image parcel data requests and presentation in circumstances where the rate of point-of-view navigation exceeds the data request rate.

15 Yet another advantage of the present invention is that image parcel data rendering is performed without requiring any complex underlying hardware or software display subsystem. The client software system of the present invention includes a bit-map rendering engine that draws directly to the video memory of the display, thus placing minimal requirements on any underlying embedded or disk operating system and display drivers. Complex graphics and animation abstraction layers are not required.

20 Still another advantage of the present invention is that image parcel block compression is used to obtain fixed size transmission data blocks. Image parcel data is recoverable from transmission data using a relatively simple client decompression algorithm. Using fixed size transmission data blocks enables image data parcels to be delivered to the client in bounded time frames.

25 A yet further advantage of the present invention is that multiple data forms can be transferred to the client software system for concurrent display. Array overlay data, correlated positionally to the image parcel data and generally insensitive to image parcel resolution, can be initially or progressively provided to the client for parsing and parallel presentation on a client display image view.

Brief Description of the Drawings

These and other advantages and features of the present invention will become better understood upon consideration of the following detailed description of the invention when considered in connection with the accompanying drawings, in which like reference numerals designate like parts throughout the figures thereof, and wherein:

FIG. 1 depicts a preferred system environment within which various embodiments of the present invention can be utilized;

FIG. 2 is a block diagram illustrating the preparation of image parcel and overlay data set that are to be stored by and served from a network server system in accordance with a preferred embodiment of the present invention;

FIG. 3 is a block diagram of a client system image presentation system constructed in accordance with a preferred embodiment of the present invention;

FIG. 4 provides a data block diagram illustrating an optimized client image block processing path constructed in accordance with a preferred embodiment of the present invention;

FIG. 5 is a process flow diagram showing a main processing thread implemented in a preferred embodiment of the present invention;

FIG. 6 provides a process flow diagram showing a network request thread implemented in a preferred embodiment of the present invention;

FIG. 7 provides a process flow diagram showing a display image rendering thread implemented in a preferred embodiment of the present invention;

FIG. 8 provides a process flow diagram showing the parcel map processing performed preliminary to the rendering of image data parcels in accordance with a preferred embodiment of the present invention;

FIG. 9 provides a process flow diagram detailing the rendering and progressive prioritization of image parcel data download requests in accordance with a preferred embodiment of the present invention; and

FIG. 10 provides a process flow diagram detailing the determination of an optimal detail level for image parcel presentation for a current viewing frustum in accordance with a preferred embodiment of the present invention.

Detailed Description of One or More Embodiments

5 The preferred operational environment 10 of the present invention is generally shown in FIG. 1. A network server system 12, operating as a data store and server of image data, is responsive to requests received through a communications network, such as the Internet 14 generally and various tiers of internet service providers (ISPs) including a wireless connectivity provider 16. Client systems, including conventional workstations and personal computers 18 and
10 smaller, typically dedicated function devices often linked through wireless network connections, such as PDAs, webphones 20, and automobile navigation systems, source image requests to the network server 12, provide a client display and enable image navigational input by a user of the client system. Alternately, a dedicated function client system 20 may be connected through a
15 separate or plug-in local network server 22, preferably implementing a small, embedded Web server, to a fixed or removable storage local image repository 24. Characteristically, the client system 18, 20 displays are operated at some fixed resolution generally dependent on the underlying display hardware of the client systems 18, 20.

 The image navigation capability supported by the present invention encompasses a viewing frustum placed within a three-dimensional space over the imaged displayed on the client
20 18, 20. Client user navigational inputs are supported to control the x, y lateral, rotational and z height positioning of the viewing frustum over the image as well as the camera angle of incidence relative to the plane of the image. To effect these controls, the software implemented on the client systems 18, 20 supports a three-dimensional transform of the image data provided from the server 12, 22.

25 In accordance with the preferred embodiments of the present invention, as generally illustrated in FIG. 2, a network image server system 30 stores a combination of source image data 32 and source overlay data 34. The source image data 32 is typically high-resolution bit-map raster map and or satellite imagery of geographic regions, which can be obtained from commercial suppliers. The overlay image data 34 is typically a discrete data file providing image

annotation information at defined coordinates relative to the source image data 32. In the preferred embodiments of the present invention, image annotations include, for example, street, building and landmark names, as well as representative 2 and 3D objects, graphical icons, decals, line segments, and or text and or other characters, graphics and or other media.

5 The network image server system 30 preferably pre-processes the source image data 32 and or source overlay data 34 to forms preferred for storage and serving by the network server 12, 22. The source image data 32 is preferably pre-processed to obtain a series K.sub.1-N of derivative images of progressively lower image resolution. The source image data 32, corresponding to the series image K.sub.O, is also subdivided into a regular array such that each
10 resulting image parcel of the array has for example a 64 by 64 pixel resolution where the image data has a color or bit per pixel depth of 16 bits, which represents a data parcel size of 8K bytes. The resolution of the series K.sub.1-N of derivative images is preferably related to that of the source image data 32 or predecessor image in the series by a factor of four. The array subdivision is likewise related by a factor of four such that each image parcel is of a fixed 8K byte size.

15 In the preferred embodiment of the present invention, the image parcels are further compressed and stored by the network server 12, 22. The preferred compression algorithm may implement for example a fixed 4:1 compression ratio such that each compressed and stored image parcel has a fixed 2K byte size. The image parcels are preferably stored in a file of defined configuration such that any image parcel can be located by specification of a K.sub.D, X, Y
20 value, representing the image set resolution index D and corresponding image array coordinate.

 In other implementations, the image array dimensions (which as 64 X 64 above) may be powers of two so that the image array can be used in texture mapping efficiently. To accommodate different data parcel size than the 2KByte associated with 64x64 pixel parcel dimension described above and other communication protocol and overhead requirements, to
25 accommodate transmission through other than a 3KByte per second transmission channel, the present invention may use larger compression ratios that takes, for example, a 128x128 or 256x256 pixel parcel dimension and compresses it to meet the 3KByte per second transmission channel, or other communication bandwidth used to stream the parcel.

The system may also accommodate different and larger data parcel sizes as transmission protocols, compression ratio achieved and micro-architectures of the client computers change. For purposes above, the data content was a pixel array representing image data. Where the data parcel content is vector, text or other data that may subject to different client system design factors, other parcel sizes may be used. Furthermore, the parcel sizes can be different between the server and the client. For example, the server may create parcels or hold parcels, for streaming with 256x256 pixel parcel dimension and the client may render them as 64x64. In addition, parcels sizes on different servers may vary from one server to another and from the client side rendering. In the system, each grid is treated as a sparse data array that can be progressively revised to increase the resolution of the grid and thereby the level of detail presented by the grid.

The source overlay data 34 is preferably pre-processed 36 into either an open XML format, such as the Geography Markup Language (GML), which is an XML based encoding standard for geographic information developed by the OpenGIS Consortium (OGC; www.opengis.org), or a proprietary binary representation. The XML/GML representation is preferred as permitting easier interchange between different commercial entities, while the binary representation is preferred as more compact and readily transferable to a client system 18, 20. In both cases, the source overlay data 34 is pre-processed to contain the annotation data preferably in a resolution independent form associated with a display coordinate specification relative to the source image data 32. The XML, GML or binary overlay data may be compressed prior to storage on the network server 12, 22.

The preferred architecture 40 of a client system 18, 20, for purposes of implementing the present invention, is shown in FIG. 3. The architecture 40 is preferably implemented by software plug-in or application executed by the client system 18, 20 and that utilizes basic software and hardware services provided by the client system 18, 20. A parcel request client 42 preferably implements an HTML client that supports HTML-based interactions with the server 12, 22 using the underlying network protocol stack and hardware network interface provided by the client systems 18, 20. A central parcel processing control block 44 preferably implements the client process and control algorithms. The control block 44 directs the transfer of received image parcels and XML/GML/binary overlay data to a local parcel data store 46. Local parcel data

store 46 may also act for example as local cache whether the entire data or part of it is in dynamic and/or static cache. Preferably image data parcels are stored in conventional quad-tree data structures, where tree nodes of depth D correspond to the stored image parcels of a derivative image of resolution KD. The XML/GML/binary overlay data is preferably stored as a data object that can be subsequently read by an XML/GML/binary parser implemented as part of the control block 44.

The control block 44 is also responsible for decompressing and directing the rendering of image parcels to a local display by a rendering engine 48. Preferably, the rendering engine 48 writes to the video memory of the underlying client display hardware relying on only generic graphics acceleration hardware capabilities and may take advantage of more advanced graphics acceleration hardware when available in the client system 18, 20. In general, the relied on capabilities include bit-bit and related bit-oriented functions that are readily supported by current conventional display controller hardware. The rendering engine 48 is optimized to perform image parcel texture mapping without reliance on complex floating point operations, permitting even relatively simple processors to efficiently execute the rendering engine 48. The rendering engine 48 may take advantage of floating point operations when available in the client system 18, 20.

Changes in the viewing frustum are determined from user input navigation commands by a frustum navigation block 50. In the preferred embodiments of the present invention, the input navigation controls are modeled for three-dimensional fly-over navigation of the displayed image. The navigation controls support point-of-view rotation, translation, attitude, and altitude over the displayed image. The effective change in viewing frustum as determined by the frustum navigation block 50 is provided to the control block 44.

The control block 44, based in part on changes in the viewing frustum, determines the ordered priority of image parcels to be requested from the server 12, 22 to support the progressive rendering of the displayed image. The image parcel requests are placed in a request queue 52 for issuance by the parcel request client 42. Preferably, the pending requests are issued in priority order, thereby dynamically reflecting changes in the viewing frustum with minimum latency.

In various implementations of the parcel processing, each data parcel is independently processable by the client system 18, 20, which is enabled by the selection and server-side processing used to prepare a parcel for transmission, thus providing for on-demand real-time parcel processing and creation on the server side for streaming based on the client request and not only for pre-processed parcel creation for retrieval for streaming from the server. Thus, the system can use both pre-processed parcels on the server and on-demand real-time creation of such parcels on the server side for streaming to the client.

An optimal image parcel data flow 60, as configured for use in the preferred embodiments of the present invention, is shown in FIG. 4. Preferably, the TCP/IP network protocol is used to deliver image parcels to the clients 18, 20. For the preferred embodiments, where network bandwidth is limited or very limited, entire image parcels are preferably delivered in corresponding data packets. This preference maximizes data delivery while avoiding the substantial latency and processing overhead of managing image parcel data split over multiple network packets. Thus, a 2K byte compressed image parcel 62 is delivered as the data payload of a TCP/IP packet 64. Uncompressed, the 8K byte image parcel 62 is recognized as part of the present invention as being within the nominally smallest LI data cache 66 size of conventional microprocessors 68. By ensuring that an uncompressed image parcel fits within the LI cache, the texture map rendering algorithm can execute with minimum memory management overhead, thus optimally utilizing the processing capability of the microprocessor 68. Additionally, the writing of video data as a product of the rendering algorithm is uniform, thereby improving the apparent video stability of the display to the user.

The client architecture 40 preferably executes in multiple process threads, with additional threads being utilized for individual network data request transactions. As shown in FIG. 5, an image parcel management process 80 implements a loop that determines image parcels subject to update 82 and creates corresponding image parcel download requests 84. Navigation events that alter the viewing frustum are considered in part to determine the current field of view. The quad tree data structures are examined 86 to identify viewable image parcels of higher resolution than currently available in the parcel data store 46.

A pool of image request threads is preferably utilized to manage the image parcel download operations. In the preferred embodiments of the present invention, a pool of four

network request threads is utilized. The number of pool threads is determined as a balance between the available system resources and the network response latency, given the available bandwidth of the network connection. Empirically, for many wireless devices, four concurrent threads are able to support a relatively continuous delivery of image data parcels to the client 20 for display processing. As image parcels are progressively identified for download, a free request thread is employed to issue 88 a corresponding network request to the server 12, 22. When a network response is received, the corresponding thread recovers 90 the image parcel data. The received image parcel is then stored 92 in a corresponding quad-tree data structure node.

For small clients 20, the available memory for the parcel data store 46 is generally quite restricted. In order to make optimal use of the available memory, only currently viewable image parcels are subject to download. Where the size of the parcel data store 46 is not so restricted, this constraint can be relaxed. In either case, a memory management process 94 runs to monitor use of the parcel data store 46 and selectively remove image parcels to free memory for newly requested image parcels. Preferably, the memory management process 94 operates to preferentially remove image parcels that are the furthest from the current viewing frustum and that have the highest data structure depth. Preferably child node image parcels are always removed before a parent node parcel is removed.

A preferred network request management process 100 is shown in FIG. 6. The process 100 waits 102 on the existence of a download request in the priority request queue 52. The process 100 then waits on a network request pool thread to become free 104. When a network request thread becomes available, the process 100 examines 106 all of the pending requests in the priority request queue 52 and selects 108 the request with the highest assigned priority. Thus, sequentially enqueued requests can be selectively issued out of order based on an independently assigned request priority. The request is then issued 110 and the request management process 100 leaves the request thread waiting on a network response.

FIG. 7 presents a preferred display management process 120. Event driven user navigation information is evaluated 122 to determine a current viewing frustum location and orientation within a three-dimensional space relative to the displayed image. An algorithmic priority selection 124 of a next image parcel to render is then performed. The selected image parcel is then rendered 126 to the display memory 70. The rendering operation preferably

performs a texture map transform of the parcel data corresponding to the current viewing frustum location and orientation. The overlay data is then parsed or is pre-parsed to determine 128 whether the image coordinates of any overlay annotation correspond to the current image parcel location. If the coordinates match, the overlay annotation is rendered 130 to the video display memory 70. The process 120 then continues with the next selection 124 of an image parcel to render, subject to any change in the viewing frustum location and orientation.

A preferred implementation of the selection 124 and rendering 126 of image parcels in accordance with the present invention is detailed in FIGS. 8 through 10. Referring first to FIG. 8, any outstanding requests in the priority request queue 52 are preferably cleared 142 in response to a change in the viewing frustum location and orientation. The effective altitude of the viewing frustum and or the resolution of the client display are then used as a basis for determining an optimal level of detail L that will be displayed. The detail level L value operates as a floor defining the maximum resolution $K_{sub.L}$ of image data that can be effectively viewed on the client display given the location and or orientation of the viewing frustum. Constraining image parcel requests to the resolution range $K_{sub.N}$ to $K_{sub.L}$, where $K_{sub.N}$ is the lowest resolution derivative image stored by the network server 12, 22, prevents the download and processing of image parcels that cannot provide any perceptible improvement in the displayed image.

As part of the recursive evaluation of the optimal level of detail L , the image display space is progressively split 146 by four to one reductions into polygons. The quad-tree data structures holding existing image parcel data in the parcel data store 46 are concurrently traced 148 to establish a correspondence with the polygon map. Where the trace of a quad-tree data structure completes 150 to a node index of L for a polygon P , the node corresponding image parcel is associated with polygon P . The polygon P will not be further subdivided and no higher resolution image parcels will be requested for any portion of the image within the area represented by polygon P . Where the trace reaches a maximum node index of D for a polygon P' 152, where $N \leq D < L$ and N is the index of the lowest resolution derivative image stored by the network server 12, 22, the image parcel associated with the node is associated with the polygon P' . This polygon P' will be subject to further subdivision and progressive requests for image parcels of higher resolution up to the detail level L .

Referring now to FIG. 9, a display image is then rendered 160 beginning with the maximum depth polygons previously found. Iterating over the set of maximum depth polygons, any polygons outside of the viewing frustum are skipped 162. Polygons that are at least partially visible are clipped to the applicable bounds of the viewing frustum 164. The polygon
5 corresponding image parcel data is then texture mapped 166 into the polygon corresponding coordinates of the video memory 70. If the node index depth of the rendered image parcel is at least equal to the prior determined optimal detail level L 168, the iteration over the polygons P continues.

Where the node index depth is less than the optimal detail level L 170, the polygon P' is
10 subdivided into four polygons and correspondingly represented by the creation of four child nodes within the associated quad-tree data structure 172. Four image parcel download requests are then created 174.

The download priority associated with each request is determined 176 by execution of a function S that operates on a 2D polygon argument P and returns a real number representing the
15 request priority. The function argument P is a list of real (x, y) coordinates of the vertices of the current polygon in screen coordinates after being clipped to fit within the current viewing frustum. That is, the function S works over general polygons in a two-dimensional space, whose vertices are specified by the series $\{(x(1),y(1)),(x(2),y(2)), \dots ,(x(n),y(n))\}$. The argument P
vertices sent to S represent the position of the vertices composing each of the polygons, after
20 being clipping to the viewing frustum, viewable within the display space having the fixed resolution [xRes, yRes]. Thus, the clipped polygons are all within the rectangle [0, xRes] x [0, yRes].

In execution of the function S, each of the P coordinates is first transformed by linear mapping of the screen coordinate space to the square [-1,1] times [-1,1] by the operation
25 $x(i):=(x(i)-xRes/2)/(xRes/2); y(i)=(y(i)-yRes/2)/(yRes/2)$. The x and y coordinate values of each vertex $(x(i),y(i))$ for $i=1$ to n are then transformed by the function $T(a)=sgn(a)*pow(.vertline.a.vertline., d)$, where the control parameter d is a constant in the range (0,1], or equivalently the interval $0<d.ltoreq.1$. The function S then returns a real value that is
30 equal to the area covered by the argument polygon P vertices subject to the applied coordinate transformation. Thus, the accumulated priority for any image parcel pending download is the

sum of the values of returned by the function S for each of the viewable polygons that require some part of the image parcel as the source data for texture map rendering of the polygon. The priority operation of the request queue 52 is such that download requests will be issued preferentially for image parcels with the largest priority value.

5 In accordance with the preferred embodiments of the present invention, the value of the control parameter d can be adjusted to ultimately affect the behavior of the function S in determining the download request priority. In general, image parcels with lower resolution levels will accumulate greater priority values due to the larger number of polygons that may use a given low resolution image parcel as a rendering data source. Such lower resolution image parcels are
10 therefore more likely to be preferentially downloaded. In accordance with the present invention, this generally assures that a complete image of at least low resolution will be available for rendering.

The control parameter d, as applied in execution of the function S, well as the area distortion produced by the projection transform also influences the value returned by the function
15 S such that relatively higher-resolution image parcels near the image view point will occasionally achieve a higher priority than relatively remote and partially viewed image parcels of lower resolution. Using values smaller than 1 for the control parameter d results in requests with a higher priority for parcels covering areas near the focal point of the viewer, which is presumed to be the center point of the display space, relative to requests for parcels further from
20 the center point in absolute terms and of the same resolution depth D. Thus, in accordance with the present invention, the priority assigned to image parcel requests effectively influences the order of requests based on the relative contribution of the image parcel data to the total display quality of the image. Empirically, a value of 0.35 for the control parameter d for small screen devices, such as PDAs and webphones has been found to produce desirable results.

25 The computed priorities of each of the four newly created image parcel requests are then assigned 178 and the requests are enqueued in the priority request queue 52. The next polygon P is then considered in the loop of the image parcel rendering process 160.

The preferred algorithm 180 for determining the detail level L value for a given viewing frustum is shown in FIG. 10. In accordance with the present invention, the optimal detail level L

is effectively the limit at which the resolution of image parcel data functionally exceeds the resolution of the client display. Preferably, to determine the optimal detail level L, the viewpoint or camera position of the viewing frustum is determined 182 relative to the displayed image. A nearest polygon P of depth D is then determined 184 from the effective altitude and attitude of the viewpoint. The nearest point A of the polygon P is then determined 186. The point A may be within the interior or an edge of the polygon P, though most likely be located at a vertex of the polygon P.

The optimum level of detail L at point A is then computed 188 as the base-4 logarithm of the number of pixels on the screen that would be covered by a single pixel from an image parcel of the lowest resolution $K \cdot \text{sub-}N$ image, which is the quad-tree root image and corresponds to an image area covering the entire image map. The point A optimal detail level L is preferably computed analytically from the local value of the Jacobian of the projective transform used to transform the three-dimensional image coordinate space to screen coordinates, evaluated at the point A.

Where the depth D of the polygon P is greater than the depth of the computed optimal level of detail L, the detail level L is taken as the optimal detail level L 190. Thus, through the process 140, an image parcel or corresponding section of the closest resolution image parcel associated with a parent node in the quad-tree data structure relative to the depth level L will be used as the texture for rendering the polygon P. Conversely, if the depth D is less than that of the optimal detail level L, the polygon P is effectively split into quadrants and the optimal level of detail is reevaluated. The process 180 thus continues iteratively until the optimal detail level L is found.

Thus, a system and methods of optimally presenting image data on client systems with potentially limited processing performance, resources, and communications bandwidth have been described. While the present invention has been described particularly with reference to the communications and display of geographic image data, the present invention is equally applicable to the efficient communications and display of other high resolution information.

In the process implemented by the system described above, data parcels may be selected for sequential transmission based on a prioritization of the importance of the data contained. The

criteria for the importance of a particular data parcel may be defined as suitable for particular applications and may directly relate to the presentation of image quality, provision of a textual overlay of a low-quality image to quickly provide a navigational orientation, or the addition of topography information at a rate or timing different from the rate of image quality improvement.

5 Thus, image data layers reflecting navigational cues, text overlays, and topography can be composed into data packets for transmission subject to prioritizations set by the server alone and not based on the client system and interactively influenced by the actions and commands provided by the user of the client system. However, this also may be influenced based on the nature and type of the client system, and interactively influenced by the actions and commands
10 provided by the user of the client system (Figure 5).

In view of the above description of the preferred embodiments of the present invention, many modifications and variations of the disclosed embodiments will be readily appreciated by those of skill in the art. It is therefore to be understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically described above.

1. A method of communicating images for display, the method comprising steps of:

processing data of a source image to obtain a series (K0, K-1 . . . K1-N) of related images of progressively lower image resolution, wherein each related image of the series (K0, K-1 . . . K1-N) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, the step of processing the source image being performed by one or more servers;

receiving a first request at the one or more servers from a wireless portable device over a network communication channel, the first request being for a first image parcel of the series, wherein the first image parcel is selected based on a first user-controlled image viewpoint on the wireless portable device relative to the source image;

sending the first image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the first request;

receiving a second request at the one or more servers from the wireless portable device over the network communication channel, the second request being for a second image parcel of the series, wherein the second image parcel is selected based on the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, the step of receiving the second request being performed after the step of receiving the first request; and

sending the second image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the second request.

2. The method of claim 1, further comprising:

providing client software to the wireless portable device;

wherein the wireless portable device renders at least a portion of the first image parcel before finishing receiving the second image parcel.

3. The method of claim 2, wherein:

the wireless portable device issues the first request and the second request according to a priority order;

priority of the second request in the priority order is not higher than priority of the first request in the priority order; and

wherein the first wireless portable device stores the first image parcel and the second image parcel in a local parcel storage.

4. The method of claim 2, wherein the wireless portable device stores the first image parcel and the second image parcel received by the wireless portable device in a local store of the wireless portable device.

5. The method of claim 4, wherein the first user-controlled image viewpoint is determined based on navigational input of the wireless portable device.

6. The method of claim 5, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

7. The method of claim 5, wherein the client software configures the local store as a server to provide access to at least some image parcels received by the wireless portable device, the at least some image parcels comprising the first image parcel and the second image parcel.

8. The method of claim 1, wherein the second image parcel is selected based on the first user-controlled image viewpoint, and number of parallel requests by the wireless portable device for image parcels of the series is determined based at least in part on network response latency and available system resources, thereby enabling efficient use of network bandwidth in conditions of network latency.

9. The method of claim 1, further comprising sending overlay data by the one or more servers to the wireless portable device over the network communication channel.

10. The method according to claim 9, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

11. The method of claim 1, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

12. The method of claim 1, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

13. A computing system comprising one or more servers, wherein the one or more servers are coupled to a wireless portable device by a network communication channel, the one or more servers being configured to:

process data of a source image to obtain a series (K0, K-1 . . . K1-N) of related images of progressively lower image resolution, wherein each related image of the series (K0, K-1 . . . K1-

N) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, resolution of each related image of the series except initial of the related images in the series being related to resolution of the immediately preceding related image in the series by a factor of four, number of image parcels into which each related image of the series except the initial of the related images is subdivided being related by a factor of four to number of image parcels into which the immediately preceding related image in the series is subdivided;

receive a first request from the wireless portable device over the network communication channel, the first request being for a first image parcel of the series, wherein the first image parcel is selected based on a first user-controlled image viewpoint on the wireless portable device relative to the source image;

send the first image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the first request;

receive a second request at the one or more servers from the wireless portable device over the network communication channel, the second request being for a second image parcel of the series, wherein the second image parcel is selected based on the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, wherein the second request is received after the first request; and

send the second image parcel to the wireless portable device over the network communication channel, in response to the second request.

14. The method of claim 13, further comprising:

providing client software to the wireless portable device;

wherein the wireless portable device renders at least a portion of the first image parcel before finishing receiving the second image parcel.

15. The method of claim 14, wherein:

the wireless portable device issues the first request and the second request according to a priority order;

priority of the second request in the priority order is not higher than priority of the first request in the priority order; and

wherein the first wireless portable device stores the first image parcel and the second image parcel in a local parcel storage.

16. The method of claim 14, wherein the wireless portable device stores at least some image parcels received by the wireless portable device in a local store of the wireless portable device.

17. The method of claim 16, wherein the first user-controlled image viewpoint is determined based on navigational input of the wireless portable device.

18. The method of claim 17, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

19. The method of claim 17, wherein the client software configures the local store as a server to provide access to the at least some image parcels received by the wireless portable device, the at least some image parcels comprising the first image parcel and the second image parcel received by the wireless portable device.

20. The method of claim 13, wherein number of parallel requests by the wireless portable device for image parcels of the series is determined based at least in part on network response

latency and available system resources, thereby enabling efficient use of network bandwidth in conditions of network latency.

21. The method of claim 13, further comprising sending overlay data by the one or more servers to the wireless portable device over the network communication channel.

22. The method according to claim 21, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

23. The method of claim 13, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

24. The method of claim 13, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

25. A method of communicating images for display, the method comprising steps of:
sending a first request from a wireless portable device to one or more servers over a network communication channel, the first request being for a first image parcel, the first image parcel being selected based on a first user-controlled image viewpoint on the wireless portable device relative to a source image;
receiving the first image parcel by the wireless portable device from the one or more servers over the network communication channel, in response to the first request;

sending a second request from the wireless portable device to the one or more servers over the network communication channel, the second request being for a second image parcel, the second image parcel being selected based on the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, the step of sending the second request being performed after the step of sending the first request; and receiving the second image parcel by the wireless portable device from the one or more servers over the network communication channel, in response to the second request;

wherein the source image is processed to obtain a series (K0, K-1 . . . K1-N) of related images of progressively lower image resolution, wherein each related image of the series (K0, K-1 . . . K1-N) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, resolution of each related image of the series except initial of the related images in the series being related to resolution of the immediately preceding related image in the series by a first predetermined factor, number of image parcels into which each related image of the series except the initial of the related images is subdivided being related by a second predetermined factor to number of image parcels into which the immediately preceding related image in the series is subdivided, the step of processing the source image being performed by one or more servers, and wherein the series comprises the first image parcel and the second image parcel.

26. The method of claim 25, further comprising rendering by the wireless portable device at least a portion of the first image parcel before finishing receiving the second image parcel.

27. The method of claim 26, wherein:

the steps of sending the first request and sending the second request are performed according to a priority order; and

priority of the second request in the priority order is not higher than priority of the first request in the priority order;

the method further comprising storing the first image parcel and the second image parcel in a local parcel storage of the wireless portable device.

28. The method of claim 26, further comprising storing the first image parcel and the second image parcel received by the wireless portable device in a local store of the wireless portable device.

29. The method of claim 28, further comprising determining the first user-controlled image viewpoint based on navigational input of the wireless portable device.

30. The method of claim 29, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

31. The method of claim 28, further comprising receiving client software by the wireless portable device from the one or more servers, wherein the step of storing comprises storing the at least some image parcels received by the wireless portable device in the local store configured by the client software as a server to provide access to the at least some image parcels, the at least some image parcels comprising the first image parcel and the second image parcel received by the wireless portable device.

32. The method of claim 25, further comprising determining number of parallel requests by the wireless portable device for image parcels of the series based at least in part on network response latency and available system resources, to enable efficient use of network bandwidth in conditions of network latency.

33. The method of claim 25, further comprising receiving by the wireless portable overlay data sent by the one or more servers to the wireless portable device over the network communication channel.

34. The method according to claim 33, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

35. The method of claim 25, wherein the steps of sending the first request and sending the second request are performed according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

36. The method of claim 25, wherein the steps of sending the first request and sending the second request are performed according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

37. A wireless portable device configured to:

send a first request to one or more servers over a network communication channel, the first request being for a first image parcel, the first image parcel being selected based on a first user-controlled image viewpoint on the wireless portable device relative to a source image;

receive the first image parcel from the one or more servers over the network communication channel, in response to the first request;

send a second request to the one or more servers over the network communication channel, the second request being for a second image parcel, the second image parcel being selected based on

the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, wherein the second request is sent after the first request is sent; and

receive the second image parcel from the one or more servers over the network communication channel, in response to the second request;

wherein the source image is processed to obtain a series (K0, K-1 . . . K1-N) of related images of progressively lower image resolution, wherein each related image of the series (K0, K-1 . . . K1-N) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, resolution of each related image of the series except initial of the related images in the series being related to resolution of the immediately preceding related image in the series by a predetermined factor, number of image parcels into which each related image of the series except the initial of the related images is subdivided being related by a factor of four to number of image parcels into which the immediately preceding related image in the series is subdivided, the step of processing the source image being performed by one or more servers, and wherein the series comprises the first image parcel and the second image parcel.

38. The wireless portable device of claim 37, further configured to render at least a portion of the first image parcel before finishing receiving the second image parcel.

39. The wireless portable device of claim 38, further configured to

send the first request and the second request according to a priority order, priority of the second request in the priority order being not higher than priority of the first request in the priority order; and

store the first image parcel and the second image parcel in a local parcel storage of the wireless portable device.

40. The wireless portable device of claim 38, further comprising a local store and further configured to store at least some image parcels received by the wireless portable device in the local store, the at least some image parcels comprising the first image parcel and the second image parcel received by the wireless portable device.

41. The wireless portable device of claim 40, further configured to determine the first user-controlled image viewpoint based on navigational input of the wireless portable device.

42. The wireless portable device of claim 41, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

43. The wireless portable device of claim 40, wherein the local store comprises a server to provide access to the at least some image parcels.

44. The wireless portable device of claim 37, further configured to determine number of parallel requests by the wireless portable device for image parcels of the series based at least in part on network response latency and available system resources.

45. The wireless portable device of claim 37, further configured to receive overlay data sent by the one or more servers to the wireless portable device over the network communication channel.

46. The wireless portable device according to claim 45, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

47. The wireless portable device of claim 37, further configured to send the first request and to send the second request according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

48. The wireless portable device of claim 37, further configured so that the first request and the second request are sent according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

49. An article of manufacture comprising one or more machine-readable storage media with program code stored in the one or more storage media in a non-transitory manner, the program code comprising instructions for:

processing data of a source image to obtain a series (K0, K-1 . . . K1-N) of related images of progressively lower image resolution, wherein each related image of the series (K0, K-1 . . . K1-N) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, resolution of each related image of the series except initial of the related images in the series being related to resolution of the immediately preceding related image in the series by a factor of four, number of image parcels into which each related image of the series except the initial of the related images is subdivided being related by a factor of four to number of image parcels into which the immediately preceding related image in the series is subdivided;

sending a first request from a wireless portable device over a network communication channel to the one or more servers, the first request being for a first image parcel of the series, wherein the

first image parcel is selected based on a first user-controlled image viewpoint on the wireless portable device relative to the source image;

receiving the first request at the one or more servers;

sending the first image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the first request;

receiving the first image parcel from the one or more servers by the wireless portable device;

sending a second request from the wireless portable device over the network communication channel to the one or more servers, the second request being for a second image parcel of the series, wherein the second image parcel is selected based on the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, the second request being sent after the first request;

receiving the second request at the one or more servers;

sending the second image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the second request; and

receiving the second image from the one or more servers by the wireless portable device.

50. The article of manufacture of claim 49, wherein the program code further comprises instructions for the wireless portable device rendering at least a portion of the first image parcel before finishing receiving the second image parcel.

51. The article of manufacture of claim 50, wherein the program code further comprises instructions for:

the wireless portable device issuing the first request and the second request according to a priority order, priority of the second request in the priority order being not higher than priority of the first request in the priority order; and

the first wireless portable device storing the first image parcel and the second image parcel in a local parcel storage.

52. The article of manufacture of claim 50, wherein the program code further comprises instructions for the wireless portable device storing at least some image parcels received by the wireless portable device in a local store of the wireless portable device, the at least some image parcels comprising the first image parcel and the second image parcel.

53. The article of manufacture of claim 52, wherein the program code further comprises instructions for causing the first user-controlled image viewpoint to be determined based on navigational input of the wireless portable device.

54. The article of manufacture of claim 53, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

55. The article of manufacture of claim 53, wherein the program code further comprises instructions for configuring the local store as a server to provide access to the at least some image parcels received by the wireless portable device.

56. The article of manufacture of claim 49, wherein the program code further comprises instructions for causing number of parallel requests by the wireless portable device for image parcels of the series to be determined based at least in part on network response latency and available system resources.

57. The article of manufacture of claim 49, wherein the program code further comprises instructions for sending overlay data by the one or more servers to the wireless portable device over the network communication channel.

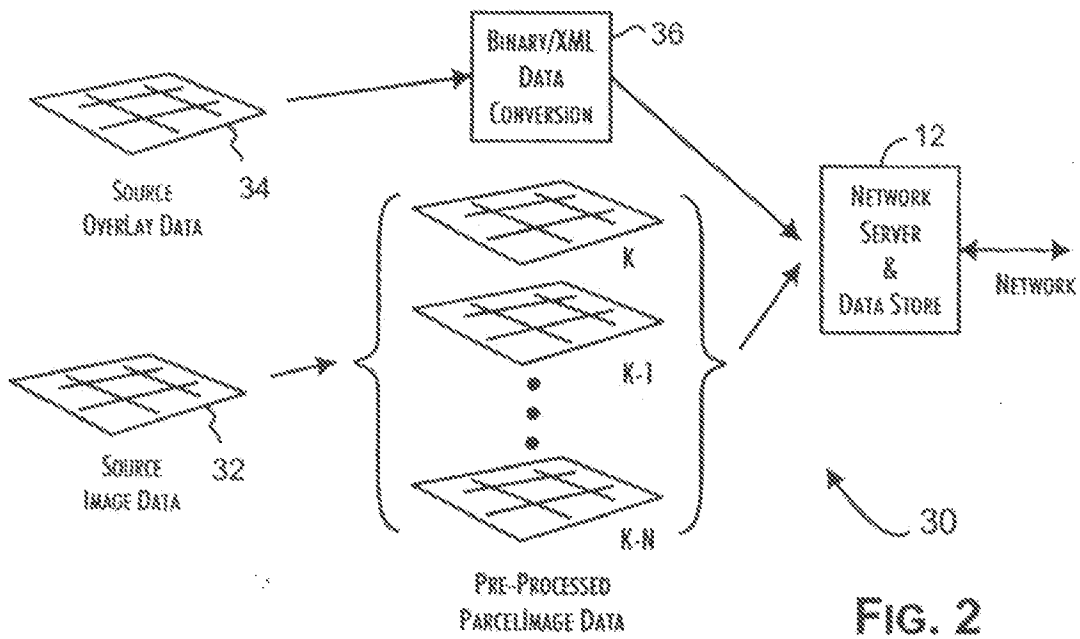
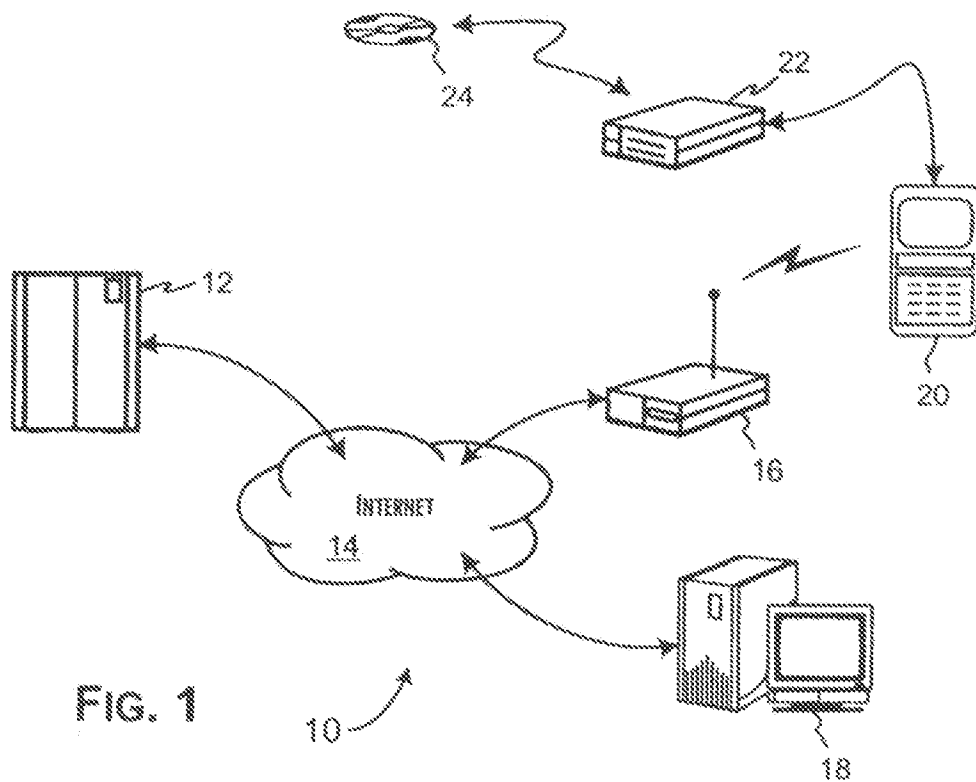
58. The article of manufacture according to claim 57, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

59. The article of manufacture of claim 49, wherein the program code further comprises instructions for the wireless portable device issuing the first request and the second request according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

60. The article of manufacture of claim 49, wherein the program code further comprises instructions for the wireless portable device issuing the first request and the second request according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

ABSTRACT OF THE DISCLOSURE

Large-scale images are retrieved over network communications channels for display on a client device by selecting an update image parcel relative to an operator controlled image viewpoint to display via the client device. A request is prepared for the update image parcel and associated with a request queue for subsequent issuance over a communications channel. The update image parcel is received from the communications channel and displayed as a discrete portion of the predetermined image. The update image parcel optimally has a fixed pixel array size, is received in a single and or plurality of network data packets, and were the fixed pixel array may be constrained to a resolution less than or equal to the resolution of the client device display.



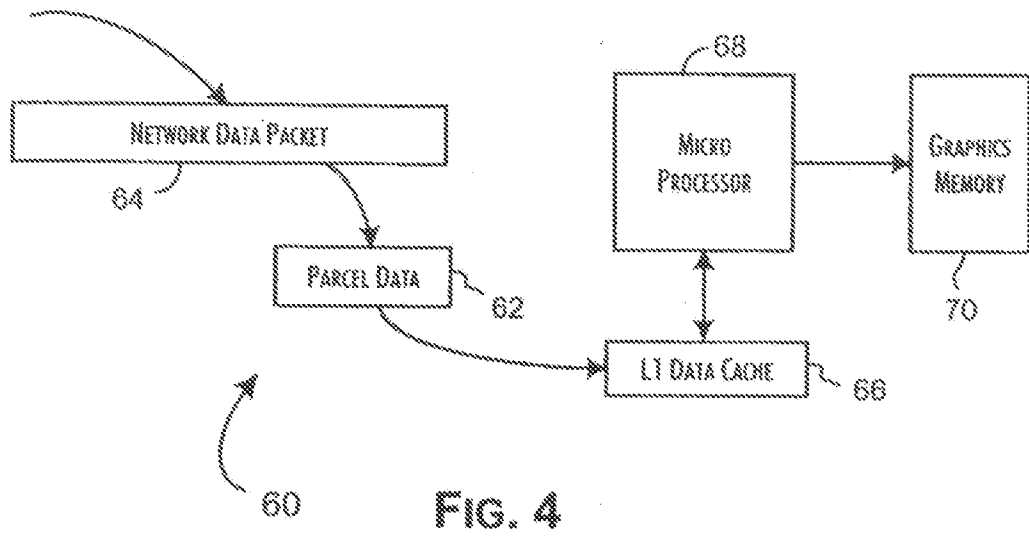
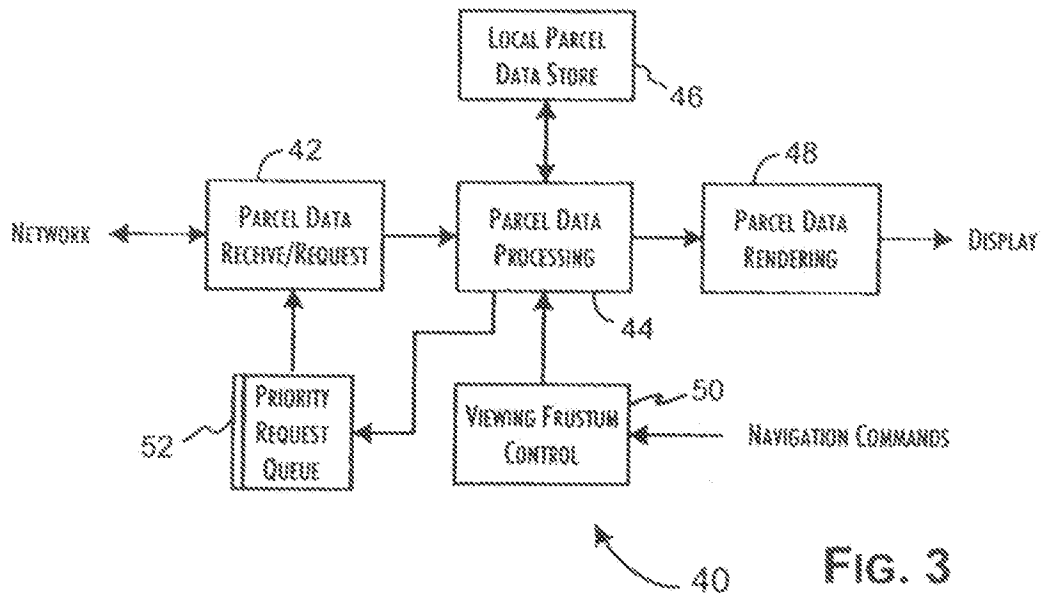


FIG. 5

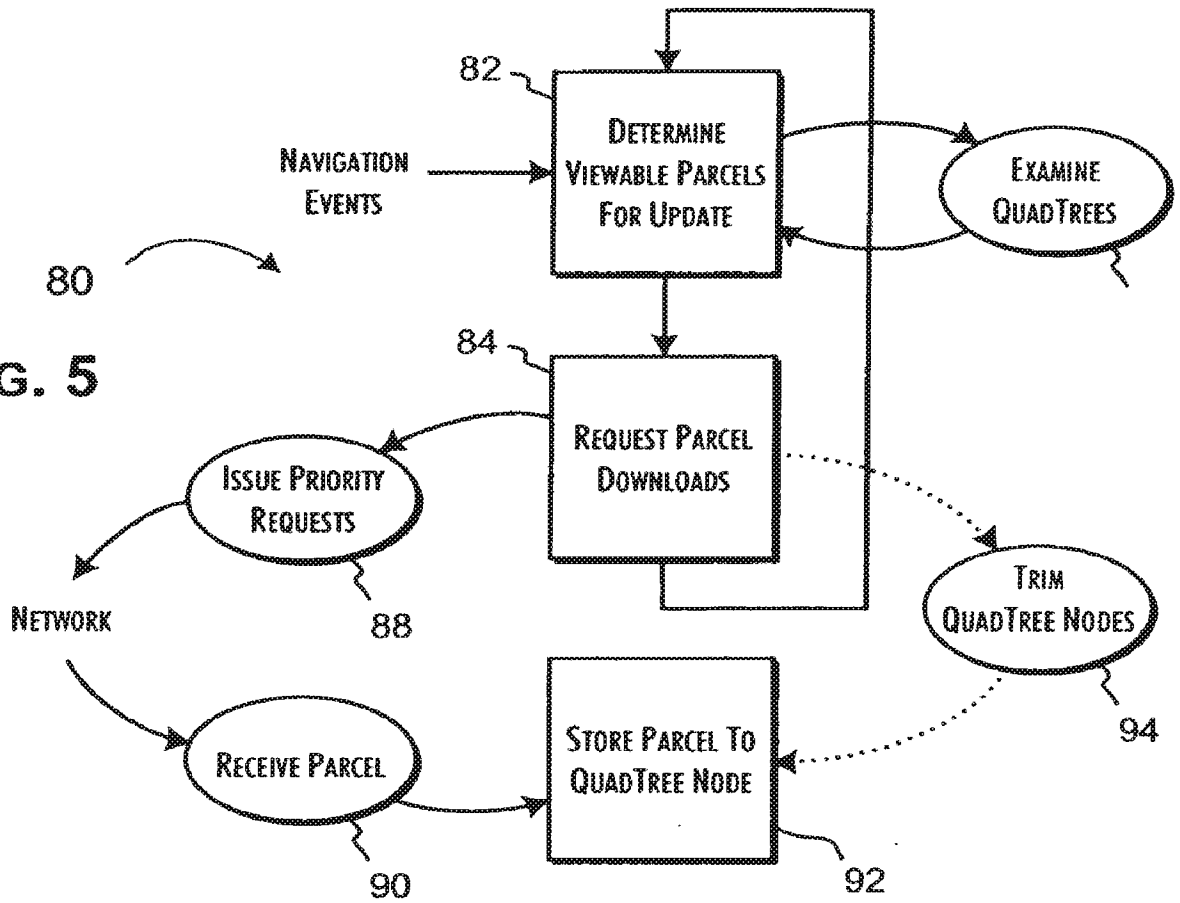
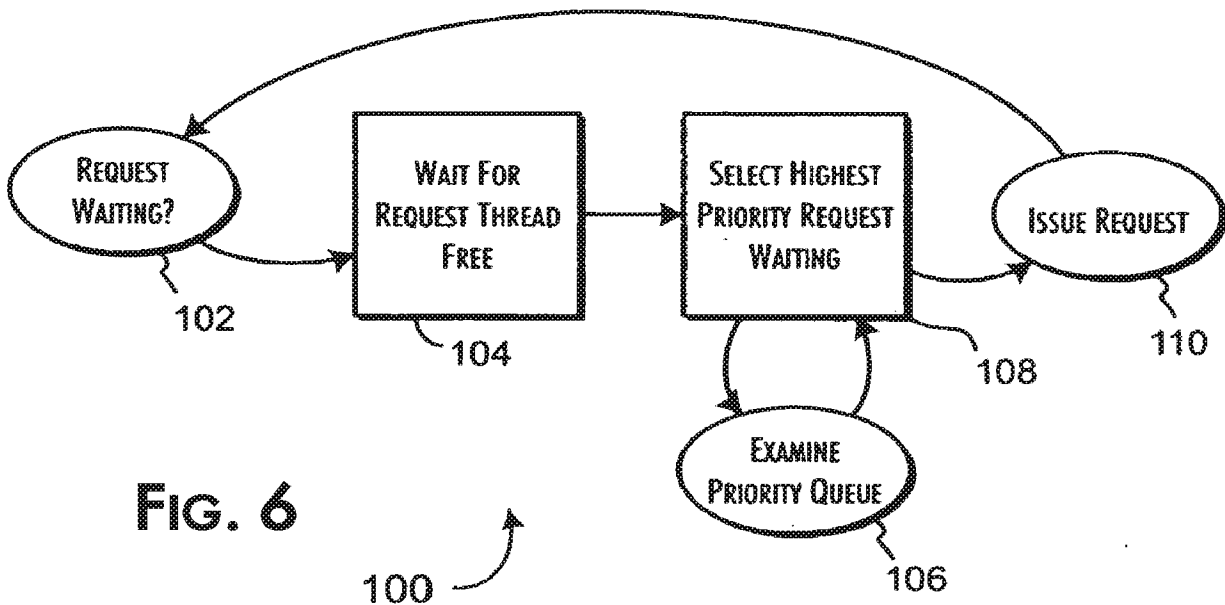


FIG. 6



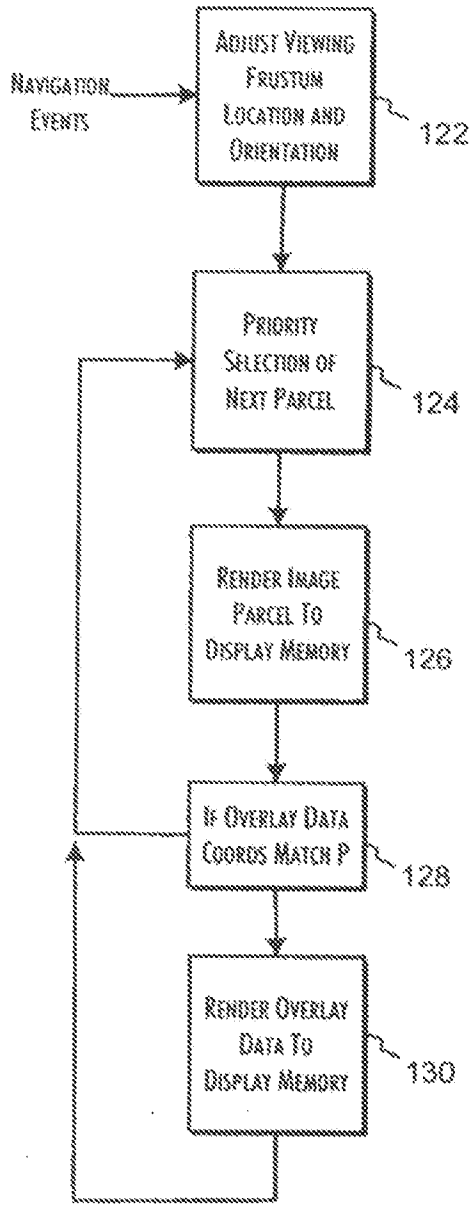


FIG. 7

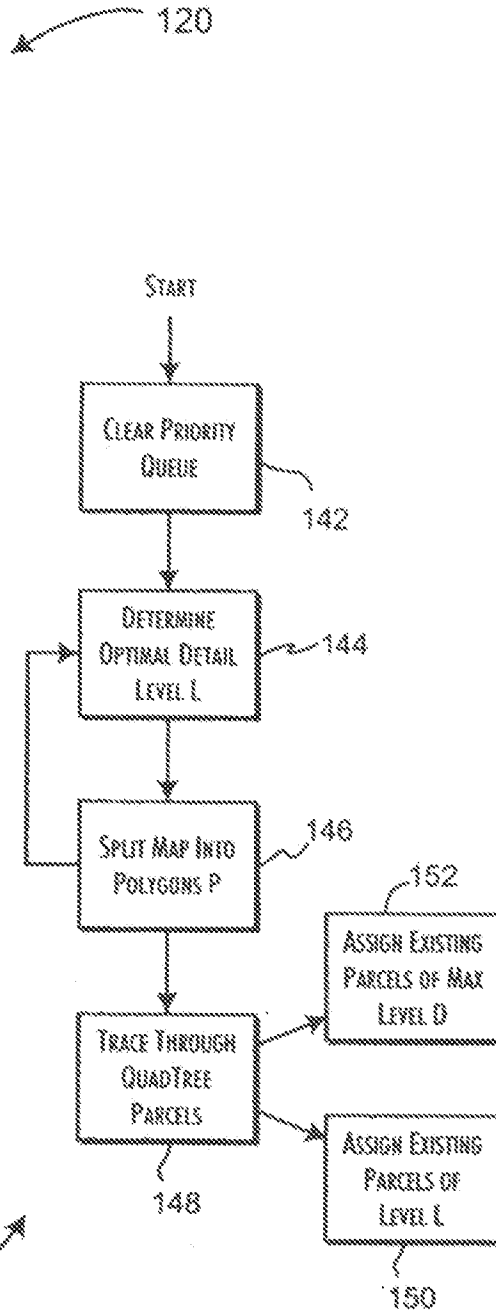


FIG. 8

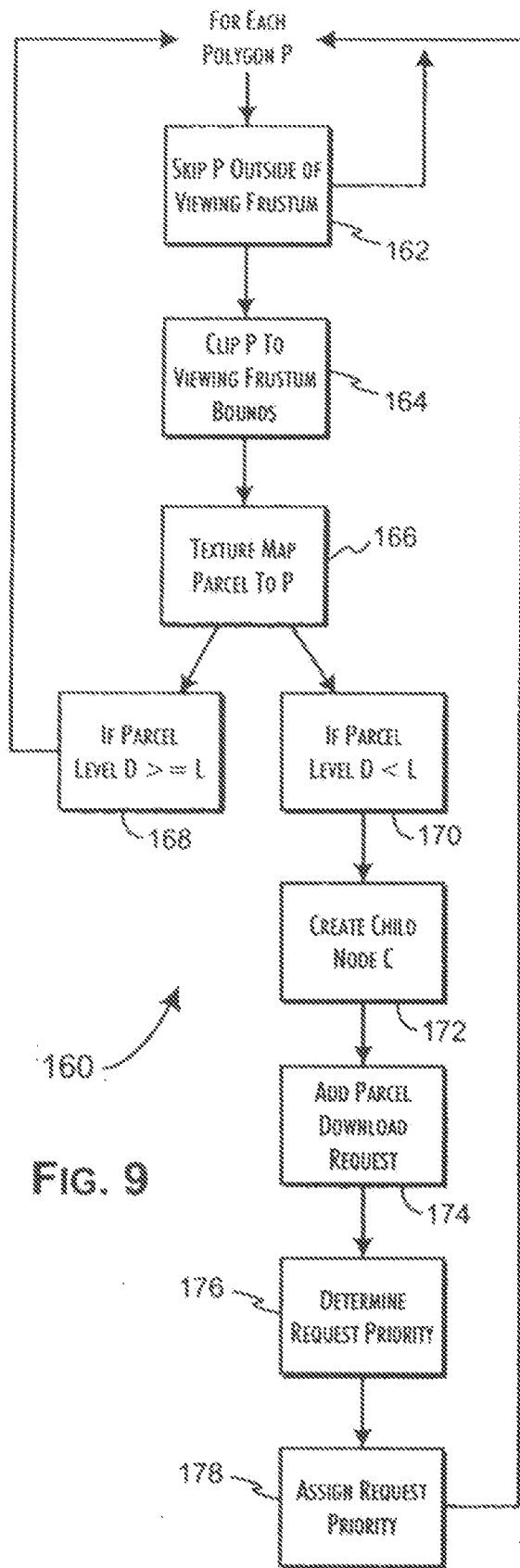


FIG. 9

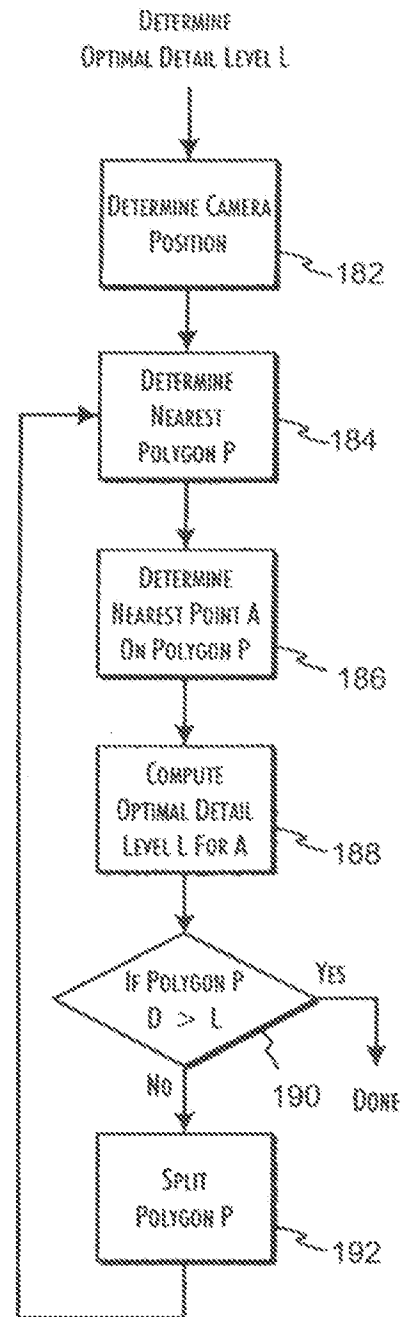


FIG. 10

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
---------------------------	--

As the below named inventor, I hereby declare that:

This declaration is directed to: The attached application, or
 United States application or PCT international application number 14/547,148
 filed on 19 November 2014

The above-identified application was made or authorized to be made by me.

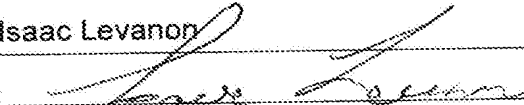
I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Isaac Levanon Date (Optional): _____
 Signature: 

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS		
This statement is directed to:			
<input type="checkbox"/> The attached application,			
OR			
<input checked="" type="checkbox"/> United States application or PCT international application number <u>14/547,148</u> filed on <u>19 November 2014</u> .			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Yonatan Lavi			
Residence (except for a deceased or legally incapacitated inventor):			
City	State	Country	IL
Raanana			
Mailing Address (except for a deceased or legally incapacitated inventor):			
21 Bar Ilan Street			
City	State	Zip	Country
Raanana			IL
I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.			
The above-identified application was made or authorized to be made by me.			
I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
Relationship to the inventor to whom this substitute statement applies:			
<input type="checkbox"/> Legal Representative (for deceased or legally incapacitated inventor only),			
<input checked="" type="checkbox"/> Assignee,			
<input type="checkbox"/> Person to whom the inventor is under an obligation to assign,			
<input type="checkbox"/> Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or			
<input type="checkbox"/> Joint Inventor.			

[Page 1 of 2]

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- Inventor is deceased,
- Inventor is under legal incapacity,
- Inventor cannot be found or reached after diligent effort, or
- Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

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PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: Alexander Poltorak

Date (Optional):

Signature: /Alexander Poltorak/

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Bradium Technologies LLC

Applicant Name:

Title of Person Executing This Substitute Statement: CEO OF GENERAL PATENT CORPORATION, MANAGER OF BRADIUM TECHNOLOGIES LLC

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City Monsey

State NY

Country USA

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

75 Montebello Road

City Suffern

State NY

Zip 10901

Country US

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS			
First Named Inventor/Applicant Name:	Isaac Levanon			
Filer:	Anatoly Weiser./Sean Taylor			
Attorney Docket Number:	AP026CON3			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	70	70
UTILITY SEARCH FEE	2111	1	300	300
UTILITY EXAMINATION FEE	2311	1	360	360
Pages:				
Claims:				
CLAIMS IN EXCESS OF 20	2202	40	40	1600
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	2	210	420
Miscellaneous-Filing:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD (\$)	2750

Electronic Acknowledgement Receipt

EFS ID:	27081186
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	35070
Filer:	Anatoly Weiser./Sean Taylor
Filer Authorized By:	Anatoly Weiser.
Attorney Docket Number:	AP026CON3
Receipt Date:	29-SEP-2016
Filing Date:	
Time Stamp:	22:27:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$2750
RAM confirmation Number	7608
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	AP026CON3_ADS_aia0014.pdf	1823708	no	9
			f87622cac2010bb5f9440181968ea2ea5c88259b		
Warnings:					
Information:					
2		AP026CON3_Specification.pdf	150590	yes	34
			7baaab1ae1103c2412b9a318104570a6520347		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	18	
	Claims		19	33	
	Abstract		34	34	
Warnings:					
Information:					
3	Drawings-only black and white line drawings	AP026CON3_Drawings.pdf	189224	no	5
			922ea27937c434245620376a0a825657072e5ecd		
Warnings:					
Information:					
4	Oath or Declaration filed	AP026CON3_Declaration_Levanon.pdf	497272	no	1
			584f0ad88ad40ca5ae954d0f20c811770a05f8ba		
Warnings:					
Information:					
5	Oath or Declaration filed	AP026CON1_SubDec_aia0002-Lavi.pdf	152353	no	2
			89d3d4562981a630e96558021fc39e3bf62e9b80		

Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	37911	no	2
			933bd291ed88b7e4162181d893bb3b9108915585		
Warnings:					
Information:					
Total Files Size (in bytes):				2851058	
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Table with 5 columns: APPLICATION NUMBER, FILING OR 371(C) DATE, FIRST NAMED APPLICANT, ATTY.DOCKET NO./TITLE, REQUEST ID. Row 1: 15/281,037, 09/29/2016, Bradium Technologies LLC, AP026CON3, 25828

Acknowledgement of Change to Small Entity Status

The entity status change request below filed through Private PAIR on 09/30/2016 has been accepted.

CERTIFICATIONS:

Change of Entity Status:
X Applicant asserting small entity status. See 37 CFR 1.27.
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Table with 2 columns: Label, Value. Row 1: Signature: /Anatoly S. Weiser/; Row 2: Name: Anatoly S. Weiser, Esq.; Row 3: Registration Number: 43229



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 7 columns: APPLICATION NUMBER, FILING or 371(c) DATE, GRP ART UNIT, FIL FEE REC'D, ATTY. DOCKET NO, TOT CLAIMS, IND CLAIMS. Row 1: 15/281,037, 09/29/2016, 2673, 2750, AP026CON3, 60, 5

CONFIRMATION NO. 2430

FILING RECEIPT

35070
ANATOLY S. WEISER
3525 DEL MAR HEIGHTS ROAD, #295
SAN DIEGO, CA 92130



Date Mailed: 10/13/2016

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections

Inventor(s)

Isaac Levanon, Raanana, ISRAEL;
Yonatan Lavi, Raanana, ISRAEL;

Applicant(s)

Bradium Technologies LLC, Suffern, NY;

Assignment For Published Patent Application

Bradium Technologies LLC, Suffern, NY

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 14/970,526 12/15/2015
which is a CON of 14/547,148 11/19/2014 PAT 9253239
which is a CON of 13/027,929 02/15/2011 PAT 8924506
which is a CIP of 12/619,643 11/16/2009 PAT 7908343
which is a CON of 10/035,987 12/24/2001 PAT 7644131
which claims benefit of 60/258,465 12/27/2000
and claims benefit of 60/258,466 12/27/2000
and claims benefit of 60/258,467 12/27/2000
and claims benefit of 60/258,468 12/27/2000
and claims benefit of 60/258,488 12/27/2000
and claims benefit of 60/258,489 12/27/2000

Foreign Applications for which priority is claimed (You may be eligible to benefit from the Patent Prosecution Highway program at the USPTO. Please see http://www.uspto.gov for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 10/12/2016

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/281,037**

Projected Publication Date: 01/19/2017

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

Preliminary Class

358

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor

community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number
15/281,037

APPLICATION AS FILED - PART I

(Column 1) (Column 2)

FOR	NUMBER FILED	NUMBER EXTRA
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A
TOTAL CLAIMS (37 CFR 1.16(j))	60 minus 20 = *	40
INDEPENDENT CLAIMS (37 CFR 1.16(h))	5 minus 3 = *	2
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))		

SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	70
N/A	300
N/A	360
x 40 =	1600
x 210 =	420
	0.00
	0.00
TOTAL	2750

OR OTHER THAN SMALL ENTITY

RATE(\$)	FEE(\$)
N/A	
N/A	
N/A	
TOTAL	

* If the difference in column 1 is less than zero, enter "0" in column 2.

APPLICATION AS AMENDED - PART II

(Column 1) (Column 2) (Column 3)

AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

(Column 1) (Column 2) (Column 3)

AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA
	Total (37 CFR 1.16(i))	*	Minus	**	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=
	Application Size Fee (37 CFR 1.16(s))				
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

OR OTHER THAN SMALL ENTITY

RATE(\$)	ADDITIONAL FEE(\$)
x =	
x =	
TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
 The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:



Practitioners associated with Customer Number:

137611

OR

Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:



The address associated with Customer Number:

137611

OR

<input type="checkbox"/>	Firm or Individual Name			
<input type="checkbox"/>	Address			
<input type="checkbox"/>	City	State	Zip	
<input type="checkbox"/>	Country			
<input type="checkbox"/>	Telephone	Email		

Assignee Name and Address: BRADIUM TECHNOLOGIES LLC
75 MONTEBELLO ROAD
SUFFERN, NY 10901**A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.****SIGNATURE of Assignee of Record**

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	/Alexander I. Poltorak/	Date	
Name	Alexander Poltorak	Telephone	
Title	agent for BRADIUM TECHNOLOGIES LLC		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Bradium Technologies LLCApplication No./Patent No.: 15/281,037 Filed/Issue Date: 29 September 2016Titled: OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELSBradium Technologies LLC, a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. The assignee of the entire right, title, and interest.
2. An assignee of less than the entire right, title, and interest (check applicable box):
- The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Inventors Isaac Levanon and Yonatan Lavi To: Inovo Limited

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: Inovo Limited To: Bradium Technologies LLC

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

Additional documents in the chain of title are listed on a supplemental sheet(s).

As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Anatoly S. Weiser/

Signature

Anatoly S. Weiser, Esq.

Printed or Typed Name

31 October 2016

Date

43,229

Title or Registration Number

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	27375362
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	35070
Filer:	Anatoly Weiser./Sean Taylor
Filer Authorized By:	Anatoly Weiser.
Attorney Docket Number:	AP026CON3
Receipt Date:	31-OCT-2016
Filing Date:	29-SEP-2016
Time Stamp:	17:37:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Oath or Declaration filed	AP026CON1_SubDec_aia0002_signed.pdf	167558 <small>70500ca712eeabb05fccafb314518d54ef4e0eaa</small>	no	2

Warnings:

Information:					
2	Power of Attorney	AP026CON3_POA_aia0080_signed.pdf	73781 c8ad419809c88770afd7c435452f0c16e4ee083b	no	1
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73	AP026CON3_Statement_aia0096.pdf	118682 2af9b363a064f2b5fad517731cf487ddcbd5c83f	no	3
Warnings:					
Information:					
Total Files Size (in bytes):				360021	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)

Title of Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS		
This statement is directed to:			
<input type="checkbox"/> The attached application,			
OR			
<input checked="" type="checkbox"/> United States application or PCT international application number <u>15/281,037</u> filed on <u>29 September 2016</u> .			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Yonatan Lavi			
Residence (except for a deceased or legally incapacitated inventor):			
City	State	Country	IL
Raanana			
Mailing Address (except for a deceased or legally incapacitated inventor):			
21 Bar Ilan Street			
City	State	Zip	Country
Raanana			IL
I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.			
The above-identified application was made or authorized to be made by me.			
I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.			
Relationship to the inventor to whom this substitute statement applies:			
<input type="checkbox"/> Legal Representative (for deceased or legally incapacitated inventor only),			
<input checked="" type="checkbox"/> Assignee,			
<input type="checkbox"/> Person to whom the inventor is under an obligation to assign,			
<input type="checkbox"/> Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or			
<input type="checkbox"/> Joint Inventor.			

[Page 1 of 2]

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

- Inventor is deceased,
- Inventor is under legal incapacity,
- Inventor cannot be found or reached after diligent effort, or
- Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been or is currently submitted.

OR

- An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor information is attached. See 37 CFR 1.64(b).

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: **Alexander Poltorak** Date (Optional):

Signature: /Alexander Poltorak/

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signer:

Bradium Technologies LLC

Applicant Name:

Title of Person Executing This Substitute Statement: **CEO OF GENERAL PATENT CORPORATION, MANAGER OF BRADIUM TECHNOLOGIES LLC**

The signer, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City **Monsey** State **NY** Country **USA**

Mailing Address of the signer (unless provided in an application data sheet, PTO/AIA/14 or equivalent)

75 Montebello Road

City **Suffern** State **NY** Zip **10901** Country **US**

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Isaac Levanon *et al.*

Serial No.: **15/281,037**

Filed: **9/29/2016**

For: **OPTIMIZED IMAGE DELIVERY
OVER LIMITED BANDWIDTH
COMMUNICATION CHANNELS**

Group Art Unit: **2447**

Examiner: **To Be Assigned**

Attorney File No.: **AP026CON3**

Confirmation No.: **2430**

**Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

PRELIMINARY AMENDMENT

Prior to examination, please amend the above-identified application (filed herewith) as set forth herein.

Amendment to the specification begins on page 2 of this paper.

Remarks begin on page 4 of this paper.

AMENDMENT OF THE SPECIFICATION

Please replace the paragraph under the "Priority Claims/Related Applications" heading on page 1 of the specification with the following amended paragraph:

-- This application is a continuation of and claims priority to U.S. Patent Application Serial No. 14/970,526, filed December 15, 2015, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS, ~~now allowed~~; which is a continuation of and claims priority to U.S. Patent Application Serial No. 14/547,148, filed November 19, 2014, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 9,253,239; which is a continuation of and claims priority to U.S. Patent Application Serial No. 13/027,929, filed February 15, 2011, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 8,924,506; which is a ~~continuation-in-part~~ continuation-in-part of and claims priority to U.S. Patent Application Serial No. ~~12/619,643~~ 12/619,643, filed on November 16, 2009, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 7,908,343; which is a continuation of and claims priority to U.S. Patent Application Serial No. ~~10/035,987~~ 10/035,987, filed on December 24, ~~2001~~ and 2001, entitled OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS, now U.S. Patent No. 7,644,131; which claims the benefit under 35 U.S.C. §119(e) of U.S. Provisional Application Nos. 60/258,488, 60/258,489, 60/258,465, 60/258,468, 60/258,466, and 60/258,467, all filed December 27, 2000. The disclosures of all of the foregoing patent documents are incorporated herein by reference as if fully set forth herein, including Figures, Claims, and Tables. The present application is also related to ~~application serial number 10/035,981~~ U.S. Patent Application Serial No. 10/035,981, filed on December 24, 2001, entitled SYSTEM AND

METHODS FOR NETWORK IMAGE DELIVERY WITH DYNAMIC VIEWING FRUSTUM
OPTIMIZED FOR LIMITED BANDWIDTH COMMUNICATION CHANNELS, Levanon *et al.*,
~~filed on December 24, 2001~~, now U.S. Patent No. 7,139,794, issued on November 21, 2006, which is
assigned to the Assignee of the present Application. ~~The disclosures of all of the foregoing patent
documents are incorporated herein by reference as if fully set forth herein, including Figures,
Claims, and Tables: --~~

REMARKS

This paper corrects cross-reference to related applications.

CONCLUSION

To discuss any matter pertaining to the instant application, Office personnel are invited to call the undersigned attorney at (858) 720-9431.

Respectfully submitted,

Dated: November 1, 2016

/Anatoly S. Weiser/
Anatoly S. Weiser, Reg. No. 43,229
TechLaw LLP
3525 Del Mar Heights Road, #295
San Diego, CA 92130
(858) 720-9431

Electronic Acknowledgement Receipt

EFS ID:	27390872
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	35070
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	01-NOV-2016
Filing Date:	29-SEP-2016
Time Stamp:	20:22:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Preliminary Amendment	Amendment1-Preliminary-Image.pdf	404375 <small>7f95c76fd7206e9a71f1c0937be9d38654af2350</small>	no	4

Warnings:

Information:	
Total Files Size (in bytes):	404375
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/281,037	09/29/2016	Isaac Levanon	AP026CON3

CONFIRMATION NO. 2430

POA ACCEPTANCE LETTER

137611
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901



Date Mailed: 11/07/2016

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 10/31/2016.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/qtran/



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Table with 4 columns: APPLICATION NUMBER (15/281,037), FILING OR 371(C) DATE (09/29/2016), FIRST NAMED APPLICANT (Isaac Levanon), ATTY. DOCKET NO./TITLE (AP026CON3)

CONFIRMATION NO. 2430

PUBLICATION NOTICE



137611
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

Title:OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

Publication No.US-2017-0019501-A1
Publication Date:01/19/2017

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



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Alexandria, Virginia 22313-1450
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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/281,037 09/29/2016 Isaac Levanon AP026CON3 2430

137611 7590 02/09/2017
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

EXAMINER

LAZARO, DAVID R

ART UNIT PAPER NUMBER

2455

MAIL DATE DELIVERY MODE

02/09/2017

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Art Unit: 2455

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

2. Claims 1-60 are pending in this office action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 37-48 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

5. Claim(s) 37 is/are directed to an apparatus claim. Under MPEP 2106 I, a machine is “a concrete thing, consisting of parts, or of certain devices and combination of devices. *Burr v. Duryee*, 68 U.S. (1 Wall.) 531, 570, 17 L. Ed. 650 (1863). This includes every mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result. *Corning v. Burden*, 56 U.S. 252, 267, 14 L. Ed. 683 (1854).”

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6. Here, Claim(s) 37-48 is/are directed to an wireless portable device, which is a machine, comprising only the initial preamble statement “device configured to” rather than claiming “parts and combination of devices.” In addition, the “device” is configured to perform all the functions of the claim rather than “devices to perform some function and produce a certain effect or result.” Thus, there is insufficient structure in Claim(s) 37-48 in view of MPEP 2106 I.

7. Applicant may amend independent Claim(s) 37 to include other devices, e.g. a memory, and corresponding functions as supported by the specification.

8. Claims 14-24 are dependent on claim 13. Claims 14-24 are directed towards a method while claim 13 is a system type claim. Please correct.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 37-48 and 49-60 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim(s) does/do not fall within at least one of the four categories of patent eligible subject matter.

11. Claim 37 can be interpreted as being directed towards a software per se embodiment. The claim attempts to establish the invention as being a device in the preamble, however, the body of the claim only states functions without positively

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claiming any devices or hardware structures. The specification describes the use of client software and software services. Accordingly, it is reasonable to interpret claim 37 as being directed to software only. Software per se does not fall within at least one of the four categories.

12. Claim 49 is directed towards "one or more machine-readable storage media" with code stored in the media in a "non-transitory manner". It is not immediately clear the exact meaning of storing code in a "non-transitory manner". The specification is silent as to this subject matter. As such, it is not sufficient in the defining the properties of the storage media to exclude non-transitory media. The properties of the media itself is of concern in relation to establishing subject matter that falls within one of the four categories of patent eligible subject matter. In this case, "storage media" is not explicitly defined in the specification as excluding non-transitory media. Thus, applying the broadest reasonable interpretation in light of the specification and taking into account the meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art (MPEP 2111), the claim as a whole covers both transitory and non-transitory media. A transitory medium does not fall into any of the 4 categories of the invention. This applies to claims 50-60 which depend on claim 49 and are similarly deficient.

13. The claim may be amended by changing "machine-readable storage media " to -- non-transitory machine-readable storage media --, thus excluding that portion of the scope covering transitory signals.

Double Patenting

14. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §§ 706.02(l)(1) - 706.02(l)(3) for applications not subject to examination under the first inventor to file

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provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

15. Claims 1-60 rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-11 of U.S. Patent No. 7,644,131. Although the claims at issue are not identical, they are not patentably distinct from each other.

16. Claims 1-11 of U.S. patent 7,644,131 contain every element of claims 1-60 of the instant application and thus anticipate the claims of the instant application. Claims 1-60 of the instant application therefore are not patently distinct from the earlier patent claims and as such are unpatentable over obvious-type double patenting. A later patent/application claim is not patentably distinct from an earlier claim if the later claim is anticipated by the earlier claim. *"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or anticipated by, the earlier claim."* In re Longi, 759 F.2d at 896, 225 USPQ at 651.

Art Unit: 2455

17. Claims 1-60 rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 7,908,343. Although the claims at issue are not identical, they are not patentably distinct from each other.

18. Claims 1-20 of U.S. patent 7,908,343 contain every element of claims 1-60 of the instant application and thus anticipate the claims of the instant application. Claims 1-60 of the instant application therefore are not patently distinct from the earlier patent claims and as such are unpatentable over obvious-type double patenting. A later patent/application claim is not patentably distinct from an earlier claim if the later claim is anticipated by the earlier claim. *"A later patent claim is not patentably distinct from an earlier patent claim if the later claim is obvious over, or anticipated by, the earlier claim."* In re Longi, 759 F.2d at 896, 225 USPQ at 651.

19. Claims 1-60 rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-21 of U.S. Patent No. 8,924,506. Although the claims at issue are not identical, they are not patentably distinct from each other.

20. Claims 1-21 of U.S. patent 8,924,506 contain every element of claims 1-60 of the instant application and thus anticipate the claims of the instant application. Claims 1-60 of the instant application therefore are not patently distinct from the earlier patent claims and as such are unpatentable over obvious-type double patenting. A later patent/application claim is not patentably distinct from an earlier claim if the later claim is anticipated by the earlier claim. *"A later patent claim is not patentably distinct from an*

Art Unit: 2455

earlier patent claim if the later claim is obvious over, or anticipated by, the earlier claim."

In re Longi, 759 F.2d at 896, 225 USPQ at 651.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID LAZARO whose telephone number is (571)272-3986. The examiner can normally be reached on 8:30-5:00 M-F.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emmanuel Moise can be reached on 571-272-3865. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2455

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DAVID LAZARO/
Primary Examiner, Art Unit 2455

Notice of References Cited	Application/Control No. 15/281,037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.	
	Examiner DAVID LAZARO	Art Unit 2455	Page 1 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-4,682,869 A	07-1987	Itoh; Masaharu	G06T9/004	358/426.12
*	B	US-4,972,319 A	11-1990	Delorme; David M.	G09B29/007	340/990
*	C	US-5,559,936 A	09-1996	Poulter; Graham G.	G06F17/30017	345/428
*	D	US-5,613,051 A	03-1997	Iodice; David M.	G06F3/14	345/428
*	E	US-5,929,860 A	07-1999	Hoppe; Hugues H.	G06T9/001	345/419
*	F	US-5,995,903 A	11-1999	Smith; Eric L.	G01C21/00	340/995.26
*	G	US-6,167,442 A	12-2000	Sutherland; Stephen B.	G06F17/3028	709/217
*	H	US-6,212,301 B1	04-2001	Warner; Scott J.	G06T9/00	382/232
*	I	US-6,246,797 B1	06-2001	Castor; Jon S.	H04N19/63	375/E7.035
*	J	US-6,285,317 B1	09-2001	Ong; Ping-Wen	G01C21/3647	340/995.2
*	K	US-6,314,452 B1	11-2001	Dekel; Shai	H04N19/647	375/E7.045
*	L	US-6,326,965 B1	12-2001	Castelli; Vittorio	G06F17/30241	345/420
*	M	US-6,346,938 B1	02-2002	Chan; Ellery Y.	G06F3/04815	345/419

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 15/281,037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.	
	Examiner DAVID LAZARO	Art Unit 2455	Page 2 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,345,279 B1	02-2002	Li; Chung-Sheng	G06F17/30905	1/1
*	B	US-6,397,259 B1	05-2002	Lincke; Scott D.	G06F17/3089	707/E17.116
*	C	US-6,449,639 B1	09-2002	Blumberg; Robert	G06F17/30905	707/E17.118
*	D	US-6,496,189 B1	12-2002	Yaron; Ronnie	G06T15/40	345/419
*	E	US-6,525,732 B1	02-2003	Gadh; Rajit	G06T15/20	345/428
*	F	US-6,608,628 B1	08-2003	Ross; Muriel D.	G06T17/20	345/619
*	G	US-6,608,933 B1	08-2003	Dowell; Craig M.	G06T9/007	382/232
*	H	US-6,625,309 B1	09-2003	Li; Chia-Hsin	G06T15/40	345/418
*	I	US-6,704,791 B1	03-2004	Harris; Scott C.	G06T15/20	709/231
*	J	US-6,704,024 B2	03-2004	Robotham; John S.	G06F3/14	345/581
*	K	US-6,711,297 B1	03-2004	Chang; Paul Joseph	G06T1/00	375/E7.065
*	L	US-6,754,365 B1	06-2004	Wen; Xin	G06T1/0078	382/100
*	M	US-6,801,665 B1	10-2004	Atsumi; Eiji	H04N19/70	375/E7.056

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Notice of References Cited	Application/Control No. 15/281,037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.	
	Examiner DAVID LAZARO	Art Unit 2455	Page 3 of 3

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-6,882,755 B2	04-2005	Silverstein; D. Amnon	H04N21/2662	375/E7.011
*	B	US-6,898,311 B2	05-2005	Whitehead; Jeffrey A.	H04N1/64	375/E7.184
*	C	US-6,970,604 B1	11-2005	Chai; Bing-Bing	H04N19/176	375/E7.056
*	D	US-7,644,131 B2	01-2010	Levanon; Isaac	G06F3/14	345/625
*	E	US-8,924,506 B2	12-2014	Levanon; Isaac	G06F3/1454	345/625
	F	US-				
	G	US-				
	H	US-				
	I	US-				
	J	US-				
	K	US-				
	L	US-				
	M	US-				

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.



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CONFIRMATION NO. 2430

SERIAL NUMBER 15/281,037	FILING or 371(c) DATE 09/29/2016 RULE	CLASS 709	GROUP ART UNIT 2455	ATTORNEY DOCKET NO. AP026CON3
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APPLICANTS

Bradium Technologies LLC, Suffern, NY;

INVENTORS

Isaac Levanon, Raanana, ISRAEL;
 Yonatan Lavi, Raanana, ISRAEL;

**** CONTINUING DATA *******

This application is a CON of 14/970,526 12/15/2015
 which is a CON of 14/547,148 11/19/2014 PAT 9253239
 which is a CON of 13/027,929 02/15/2011 PAT 8924506
 which is a CIP of 12/619,643 11/16/2009 PAT 7908343
 which is a CON of 10/035,987 12/24/2001 PAT 7644131
 which claims benefit of 60/258,465 12/27/2000
 and claims benefit of 60/258,466 12/27/2000
 and claims benefit of 60/258,467 12/27/2000
 and claims benefit of 60/258,468 12/27/2000
 and claims benefit of 60/258,488 12/27/2000
 and claims benefit of 60/258,489 12/27/2000

**** FOREIGN APPLICATIONS *******

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ****
 10/12/2016

Foreign Priority claimed <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
35 USC 119(a-d) conditions met <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initials	ISRAEL	5	60	5
Verified and Acknowledged <u>/DAVID R LAZARO/</u> Examiner's Signature					

ADDRESS

Bradium Technologies LLC
 75 Montebello Road
 Suffern, NY 10901
 UNITED STATES

TITLE

OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

FILING FEE RECEIVED 2750	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:	<input type="checkbox"/> All Fees
		<input type="checkbox"/> 1.16 Fees (Filing)
		<input type="checkbox"/> 1.17 Fees (Processing Ext. of time)
		<input type="checkbox"/> 1.18 Fees (Issue)
		<input type="checkbox"/> Other _____
		<input type="checkbox"/> Credit

<i>Index of Claims</i> 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	02/06/2017							
	1	✓							
	2	✓							
	3	✓							
	4	✓							
	5	✓							
	6	✓							
	7	✓							
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	33	✓							
	34	✓							
	35	✓							
	36	✓							

Index of Claims 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

✓	Rejected
=	Allowed

-	Cancelled
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N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	02/06/2017							
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	38	✓							
	39	✓							
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	55	✓							
	56	✓							
	57	✓							
	58	✓							
	59	✓							
	60	✓							

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	("6850235").PN.	USPAT	OR	OFF	2005/07/19 15:14
S2	2	(progressive and screen and resolution).ab.	USPAT	OR	ON	2005/07/19 15:15
S3	4	(image and screen and resolution and updat\$3).ab.	USPAT	OR	ON	2005/07/19 15:16
S4	231	(image near5 transmi\$8 and resolution).ab.	USPAT	OR	ON	2005/07/19 15:17
S5	5900	(709/227-237).CCLS.	USPAT	OR	OFF	2005/07/19 15:17
S6	2	S4 and S5	USPAT	OR	ON	2005/07/19 15:18
S7	1613	image same different adj resolution	USPAT	OR	ON	2005/07/19 15:18
S8	630	S7 and network	USPAT	OR	ON	2005/07/19 15:18
S9	168	S7 same (browser or client or user)	USPAT	OR	ON	2005/07/19 15:20
S10	129492	(bandwidth or latency)	USPAT	OR	ON	2005/07/19 15:20
S11	57	S9 and S10	USPAT	OR	ON	2005/07/19 15:26
S12	627	image near5 (updat\$3) same (view or viewpoint)	USPAT	OR	ON	2005/11/21 17:46
S13	7	S5 and S12	USPAT	OR	ON	2005/07/19 15:26
S14	90	image near5 (updat\$3) same (viewpoint)	USPAT	OR	ON	2005/07/19 15:30
S15	0	image near5 (updat\$3) same (viewpoint) same request	USPAT	OR	ON	2005/07/19 15:27
S16	28	image near5 (updat\$3) same (viewpoint) and (internet or network)	USPAT	OR	ON	2005/07/19 15:29
S17	5198	image same (packet or parcel)	USPAT	OR	ON	2005/07/19 15:29
S18	3	S14 and S17	USPAT	OR	ON	2005/07/19 15:29
S19	215	S5 and S17	USPAT	OR	ON	2005/07/19 15:29
S20	6867	image near5 (updat\$3)	USPAT	OR	ON	2005/07/19 15:30
S21	24	S19 and S20	USPAT	OR	ON	2005/07/19 15:30
S22	69642	image same resolution	USPAT	OR	ON	2005/07/19 15:31

S23	4	S21 and S22	USPAT	OR	ON	2005/07/19 15:41
S24	2	image same queue same viewpoint	USPAT	OR	ON	2005/07/19 15:41
S25	60	queue same viewpoint	USPAT	OR	ON	2005/07/19 15:42
S26	3	S22 and S25	USPAT	OR	ON	2005/07/19 15:49
S27	107	single adj packet same image	USPAT	OR	ON	2005/07/19 15:49
S28	6	S5 and S27	USPAT	OR	ON	2005/07/19 15:58
S29	1	("6182144").PN.	USPAT	OR	OFF	2005/07/19 15:58
S30	1	("6182114").PN.	USPAT	OR	OFF	2005/07/19 15:58
S31	3	("6182114").URPN.	USPAT	OR	ON	2005/07/19 16:01
S32	9	("4622632" "5341466" "5481622" "5568598" "5710835" "5724070" "5861920" "5880856" "5920865").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2005/07/19 16:02
S33	32	("5880856").URPN.	USPAT	OR	ON	2005/07/19 16:25
S34	2	fixed adj dimension adj array	USPAT	OR	ON	2005/07/19 16:25
S35	3	fixed adj dimension adj array	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 16:29
S37	1098	array near5 pixel same fixed	USPAT	OR	ON	2005/07/19 16:30
S38	0	S5 and S37	USPAT	OR	ON	2005/07/19 16:30
S39	5	array near5 pixel same fixed same packet	USPAT	OR	ON	2005/07/19 16:49
S40	1	("4,698,689").PN.	USPAT	OR	OFF	2005/07/19 16:34
S41	427	array near5 pixel with fixed	USPAT	OR	ON	2005/07/19 16:37
S44	219	progressive adj transmission	USPAT	OR	ON	2005/07/19 16:49
S45	0	S41 and S44	USPAT	OR	ON	2005/07/19 16:49
S46	15	array same pixel same fixed same packet	USPAT	OR	ON	2005/07/19 16:51
S47	263	array same pixel and packet and internet	USPAT	OR	ON	2005/07/19 19:06
S48	3	S44 and S47	USPAT	OR	ON	2005/07/19 17:06
S49	91	foveat\$4	USPAT	OR	ON	2005/07/19 17:06
S50	52	S49 and array	USPAT	OR	ON	2005/07/19 17:06

S51	4	S50 and (packet or parcel)	USPAT	OR	ON	2005/07/19 17:07
S52	1122	array same pixel same (transmit\$8 or transmission or issuing or sending or sent) and network	USPAT	OR	ON	2005/07/19 19:07
S53	103	array same pixel same (transmit\$8 or transmission or issuing or sending or sent) same (internet or network)	USPAT	OR	ON	2005/07/20 10:07
S54	18359	("709").CLAS.	USPAT	OR	OFF	2005/07/19 19:07
S55	7	S53 and S54	USPAT	OR	ON	2005/07/19 19:08
S56	170	image same tree near5 data adj structure	USPAT	OR	ON	2005/07/20 10:07
S57	92	image same tree near5 data adj structure same (stor\$3)	USPAT	OR	ON	2005/07/20 10:07
S58	7	image same tree near5 data adj structure same (stor\$3) same server	USPAT	OR	ON	2005/07/20 10:35
S59	1	("6275693").PN.	USPAT	OR	OFF	2005/07/20 10:35
S60	12254	(709/202,203,217,218,230,231).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:27
S61	2415	(382/305,232).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:27
S62	1033	(345/428,581,625).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:27
S63	8830	S60 or S61 or S62	USPAT	OR	ON	2005/07/22 11:13
S64	10	(image and progressive and resolution and (deliver\$3 or transmit\$4 or transmission or retriev\$4)).ab.	USPAT	OR	ON	2005/07/22 11:58
S65	2	S63 and S64	USPAT	OR	ON	2005/07/22 11:15
S66	7	S64 and (array or dimension\$2)	USPAT	OR	ON	2005/07/22 11:22
S67	1	S64 and (array)	USPAT	OR	ON	2005/07/22 11:22
S68	653	(image and resolution and (deliver\$3 or transmit\$4 or transmission or retriev\$4)).ab.	USPAT	OR	ON	2005/07/22 11:23
S69	29	S63 and S68	USPAT	OR	ON	2005/07/22 11:23
S70	11	S69 and array	USPAT	OR	ON	2005/07/22 12:13
S71	5	("4682869" "5453788" "5543844" "5845015" "6625309").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2005/07/22 11:45
S72	2	(image and (thin or limited) near2 (client or device) and resolution and (deliver\$3 or transmit\$4 or transmission or retriev\$4)).ab.	USPAT	OR	ON	2005/07/22 11:58
S73	726	(resolution or display) same (thin or limited) near4 (client or device) and resolution same image same (deliver\$3 or transmit\$4 or transmission or retriev\$4)	US-PGPUB; USPAT	OR	ON	2005/07/22 12:24

S74	29	S63 and S73	US-PGPUB; USPAT	OR	ON	2005/07/22 11:59
S76	13	("6345279").URPN.	USPAT	OR	ON	2005/07/22 12:22
S77	13	S74 and array	US-PGPUB; USPAT	OR	ON	2005/07/22 12:23
S78	10	(resolution or display) same (thin or limited) near4 (client or device) and resolution same image same (deliver\$3 or transmit\$4 or transmission or retriev\$4)	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 12:24
S79	22	(US-6326965-\$ or US-6397259-\$ or US-6449639-\$ or US-6496189-\$ or US-6525732-\$ or US-6608628-\$ or US-6704791-\$ or US-6711297-\$ or US-6754365-\$ or US-6801665-\$ or US-6898311-\$ or US-6314452-\$ or US-6212301-\$ or US-6625309-\$ or US-4682869-\$ or US-6882755-\$ or US-5613051-\$ or US-5559936-\$ or US-6246797-\$ or US-6167442-\$ or US-6704024-\$ or US-6345279-\$).did.	USPAT	OR	ON	2005/07/22 14:16
S80	2	S79 and single adj packet	USPAT	OR	ON	2005/07/22 14:16
S81	11783	((709/203,217,232,246) or (345/428,581) or (381/232,305)).OCLS.	US-PGPUB; USPAT	OR	OFF	2005/11/21 17:44
S82	1243	((update or progressive) same (image or picture)).ab.	US-PGPUB; USPAT	OR	ON	2005/11/21 17:47
S83	30	S81 and S82	US-PGPUB; USPAT	OR	ON	2005/11/21 17:45
S84	210102	((image or picture)).ab.	US-PGPUB; USPAT	OR	ON	2005/11/21 17:46
S85	1093	S81 and S84	US-PGPUB; USPAT	OR	ON	2005/11/21 17:46
S87	1171	image near5 (updat\$3) same (view or viewpoint)	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S88	21	S85 and S87	US-PGPUB; USPAT	OR	ON	2005/11/21 17:46
S89	173405	(image or picture) with portion	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S90	480	S85 and S89	US-PGPUB; USPAT	OR	ON	2005/11/21 17:47
S91	32	S90 and (progressive)	US-PGPUB; USPAT	OR	ON	2005/11/21 17:47
S92	123	image near5 (updat\$3) same (view or viewpoint)	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:47
S93	0	image near5 (updat\$3) same (view or viewpoint) and progressive	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:47
S94	8216	(update or progressive) same (image or picture)	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:47
S95	490	(update or progressive) same (image or picture) and portion	EPO; JPO; DERWENT;	OR	ON	2005/11/21 17:47

			IBM_TDB			
S96	6	(update or progressive) same (image or picture) and portion and packet	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:48
S97	93	image near5 (updat\$3) same (view or viewpoint) and packet	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S98	922	(image or picture) with portion same packet	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S99	531	S84 and S98	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S100	7	S82 and S98	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S101	193	(coefficient or updat\$3 or wavelet) same single adj packet	US-PGPUB; USPAT	OR	ON	2006/03/22 16:06
S102	7	(coefficient or updat\$3 or wavelet) same single adj packet same (image or display\$3)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:07
S103	23	(US-6449639-\$ or US-6345279-\$ or US-6704024-\$ or US-6898311-\$ or US-4682869-\$ or US-6314452-\$ or US-6326965-\$ or US-6608628-\$ or US-6704791-\$ or US-6711297-\$ or US-6754365-\$ or US-6397259-\$ or US-5559936-\$ or US-5613051-\$ or US-6496189-\$ or US-6525732-\$ or US-6167442-\$ or US-6246797-\$ or US-6625309-\$ or US-6801665-\$ or US-6882755-\$ or US-6212301-\$ or US-6970604-\$).did.	USPAT	OR	ON	2006/03/22 16:23
S104	5	S103 and (priorit\$)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:28
S105	12	S103 and (fixed)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:23
S106	0	S103 and (fixed adj array)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:23
S107	0	S103 and (fixed adj compression)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:23
S108	4	fixed adj compression adj ratio same coefficient	US-PGPUB; USPAT	OR	ON	2006/03/22 16:29
S109	182	fixed adj compression adj ratio	US-PGPUB; USPAT	OR	ON	2006/03/22 16:29
S110	24	fixed adj compression adj ratio same image	US-PGPUB; USPAT	OR	ON	2006/03/22 16:30
S111	46	"16x16" or "16 x 16" same (image)	US-PGPUB; USPAT	OR	ON	2006/03/22 18:58
S112	44	"16x16" or "16 x 16" same (image) same (array or block or dimension or compression)	US-PGPUB; USPAT	OR	ON	2006/03/22 18:57
S113	44	"16x16" or "16 x 16" same (image) same (array or block or compression)	US-PGPUB; USPAT	OR	ON	2006/03/22 18:57
S114	9	("16x16" or "16 x 16") same (image)	US-PGPUB; USPAT	OR	ON	2006/03/22 19:14
S115	102	minimum adj coded adj unit same jpeg	US-PGPUB; USPAT	OR	ON	2006/03/22 19:14
S116	25	minimum adj coded adj unit same jpeg same "16"	US-PGPUB; USPAT	OR	ON	2006/03/23 15:33

S118	7272	((709/231,246,247) or (382/232,305) or (345/428,581)).OCLS.	US-PGPUB; USPAT	OR	OFF	2006/03/23 15:34
S119	4242	(progressive).ab.	US-PGPUB; USPAT	OR	ON	2006/03/23 15:34
S120	30	S118 and S119	US-PGPUB; USPAT	OR	ON	2006/03/23 15:34
S121	150	wavelet and viewpoint and large near3 image	US-PGPUB; USPAT	OR	ON	2006/03/23 15:35
S122	17	S118 and S121	US-PGPUB; USPAT	OR	ON	2006/03/23 15:35
S123	506	progressive and (zoom or pan or viewpoint) and (satellite or large) near3 image	US-PGPUB; USPAT	OR	ON	2006/03/23 15:36
S124	51	S118 and S123	US-PGPUB; USPAT	OR	ON	2006/03/23 15:36
S125	0	progressive and (zoom or pan or viewpoint) and (satellite or large) near3 image	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/23 15:36
S126	1	wavelet and (zoom or pan or viewpoint) and (satellite or large) near3 image	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/23 15:36
S127	19	progressive and (satellite or large) near3 image	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/23 15:36
S129	34356	(map or mapping or topographic\$5 or navigat\$6).ab.	US-PGPUB; USPAT	OR	ON	2006/09/27 12:22
S134	62392	(z adj axis)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:06
S136	18230	(topgraphic\$5 or geograph\$8) same (map or view\$3 or display\$3)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S137	440	S134 and S136	US-PGPUB; USPAT	OR	ON	2006/09/27 14:06
S138	1551294	rotat\$3	US-PGPUB; USPAT	OR	ON	2006/09/27 14:06
S139	339943	rotat\$3 same (view\$3 or display\$3)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:07
S140	168	S137 and S139	US-PGPUB; USPAT	OR	ON	2006/09/27 14:07
S141	109	S140 and network	US-PGPUB; USPAT	OR	ON	2006/09/27 14:08
S142	3	S141 and frustum	US-PGPUB; USPAT	OR	ON	2006/09/27 14:09
S143	1675	frustum same (view\$3 or display\$3)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:09
S144	74	S129 and S143	US-PGPUB; USPAT	OR	ON	2006/09/27 14:10
S145	594	S143 and (3d or 3-d or (three adj dimensional))	US-PGPUB; USPAT	OR	ON	2006/09/27 14:09
S146	383	S145 and (map or mapping or topographic\$5 or navigat\$6)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:10
S147	9	S136 and S144	US-PGPUB; USPAT	OR	ON	2006/09/27 14:10
S148	24	("20010026549" "20020005891" "20020013659" "20020047798" "20020049534" "20020070934"	US-PGPUB; USPAT; USOCR	OR	ON	2006/09/27 14:13

		"20020085041" "20020128775" "20020141655" "20020191003" "20030030546" "20030030634" "20030120823" "20030135327" "20030146869" "20030151592" "20040001059" "20040032409" "20040125103" "5995903" "6199014" "6285317" "6314370" "6552721").PN.				
S152	19724	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:28
S153	101	S129 and S136 and S152	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S154	0	S153 and frustum	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S155	38	S143 and S152	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S156	58	three adj dimensional same progressive same (network or server or download\$3)	US-PGPUB; USPAT	OR	ON	2009/05/26 07:29
S157	88	three adj dimensional same progressive\$2 same (network or server or download\$3)	US-PGPUB; USPAT	OR	ON	2009/05/26 07:37
S158	1	S157 and derivative adj image	US-PGPUB; USPAT	OR	ON	2009/05/26 07:37
S159	1	("6671424").PN.	US-PGPUB; USPAT	OR	OFF	2009/05/26 07:42
S160	9	progressive adj mesh and overlay	US-PGPUB; USPAT	OR	ON	2009/05/26 08:04
S161	29845	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/05/26 08:45
S162	10	S157 and S161	US-PGPUB; USPAT	OR	ON	2009/05/26 08:45
S163	57	(progressive and (image or picture or screen) and resolution).ab.	USPAT	OR	ON	2009/08/15 21:35
S164	24409	(709/202,203,217,218,230,231).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:35
S165	4605	(382/305,232).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:35
S166	1880	(345/428,581,625).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:35
S167	17405	S164 or S165 or S166	USPAT	OR	ON	2009/08/15 21:35
S168	6	S167 and S163	USPAT	OR	ON	2009/08/15 21:35
S169	132	(progressive and large).ab.	USPAT	OR	ON	2009/08/15 21:36
S170	7	S167 and S169	USPAT	OR	ON	2009/08/15 21:36
S171	67	((mesh or overlay)and (image or picture or screen) and resolution).ab.	USPAT	OR	ON	2009/08/15 21:40
S172	2738	((mesh or overlay)and (image or picture or screen)).ab.	USPAT	OR	ON	2009/08/15 21:40
S173	36	S167 and S172	USPAT	OR	ON	2009/08/15

						21:40
S174	15965	(progressive or mesh or overlay) and (image or picture)	FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/08/15 21:40
S175	908	(progressive or mesh or overlay) and (image or picture) and resolution	FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/08/15 21:41
S176	54	(progressive or mesh or overlay) and (image or picture) and resolution and array	FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/08/15 21:41
S184	1	("5929860").PN.	US-PGPUB; USPAT	OR	OFF	2016/12/27 14:19
S185	111	(original source orgin) adj image same (series array) with resolution same (subdivid\$3 divid\$3 portion)	US-PGPUB; USPAT	OR	ON	2016/12/27 14:25
S186	19	S185 and image with viewpoint	US-PGPUB; USPAT	OR	ON	2016/12/27 14:25
S187	20	S185 and image same viewpoint	US-PGPUB; USPAT	OR	ON	2016/12/27 14:26
S188	1	("4972319").PN.	US-PGPUB; USPAT	OR	OFF	2016/12/27 14:30
S189	3	("7644131" or ("7908343" or ("8924506")).PN.	US-PGPUB; USPAT	OR	OFF	2016/12/27 14:45
S190	20	(progressive\$2 with resolution with series) same array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:03
S191	35	(progressive\$2 with resolution same series) same array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:03
S192	25	(lower with resolution with series with image) same array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:04
S193	32	(US-6882755-\$ or US-6608628-\$ or US-6326965-\$ or US-6212301-\$ or US-6314452-\$ or US-6525732-\$ or US-6704024-\$ or US-6345279-\$ or US-5613051-\$ or US-6754365-\$ or US-6246797-\$ or US-6496189-\$ or US-6970604-\$ or US-5559936-\$ or US-6397259-\$ or US-6801665-\$ or US-4682869-\$ or US-6711297-\$ or US-6898311-\$ or US-6449639-\$ or US-6608933-\$ or US-6704791-\$ or US-6625309-\$ or US-6167442-\$ or US-6346938-\$ or US-5995903-\$).did. or (US-6285317-\$ or US-5929860-\$ or US-4972319-\$ or US-7644131-\$ or US-7908343-\$ or US-8924506-\$).did.	USPAT	OR	ON	2017/02/06 12:05
S194	1597	((H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825).CPC.)	USPAT	OR	ON	2017/02/06 12:07
S195	6802	((H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825 OR G06F17/30241 OR G06F3/04815 OR G06T3/4092 OR G06T19/00 OR G06T19/003).CPC.)	USPAT	OR	ON	2017/02/06 12:09


S196	1445	((G06F3/04815).CPC.)	USPAT	OR	ON	2017/02/06 12:09
S197	0	S194 and S196	USPAT	OR	ON	2017/02/06 12:09
S198	69	S196 and (progressive or mesh or overlay) and (image or picture) and resolution and array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:10
S199	0	S198 and request with priority	US-PGPUB; USPAT	OR	ON	2017/02/06 12:11
S200	32	S195 and request with priority same image	US-PGPUB; USPAT	OR	ON	2017/02/06 12:11
S201	636	("levanon" "lavi").in.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:12
S202	9	S201 and (image with series with resolution same array).clm.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:13
S203	6	S201 and (image with series with resolution same array and priority).clm.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:13
S204	1	S203 and local adj parcel.clm.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:21
S205	1	S204 and server same hardware	US-PGPUB; USPAT	OR	ON	2017/02/06 12:48

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S178	30813	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:36
S179	31	((image or picture or pixel) and overlay and array and resolution).clm.	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S180	1	S178 and S179	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S181	3652	((image or picture or pixel) and overlay).clm.	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S182	51	((image or picture or pixel) and overlay and (progressive or mesh)).clm.	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S183	1	S178 and S182	US-PGPUB; USPAT	OR	ON	2009/08/15 21:40

2/ 6/ 2017 5:02:14 PM

C:\Users\dlazaro\Documents\EAST\Workspaces\15281037.wsp

Search Notes 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

CPC- SEARCHED		
Symbol	Date	Examiner
H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825 OR G06F17/30241 OR G06F3/04815 OR G06T3/4092 OR G06T19/00 OR G06T19/003	2/6/2017	DRL

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
EAST: USPAT USPGPUB - subject matter and inventor search	2/6/2017	DRL

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed	PTO/SB/25 PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
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Electronic Petition Request	TERMINAL DISCLAIMER TO OBIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION AND TERMINAL DISCLAIMER TO OBIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT
Application Number	15281037
Filing Date	29-Sep-2016
First Named Inventor	Isaac Levanon
Attorney Docket Number	AP026CON3
Title of Invention	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

- Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action
- This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.

Owner	Percent Interest
BRADIUM TECHNOLOGIES LLC	100 %

The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)

14970526 filed on 12/15/2015

as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)

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as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicants claims the following fee status:

Small Entity

Micro Entity

Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 43229

A sole inventor

A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application

A joint inventor; all of whom are signing this request

Signature	/Anatoly S. Weiser/
Name	Anatoly S. Weiser

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal

Application Number:	15281037			
Filing Date:	29-Sep-2016			
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS			
First Named Inventor/Applicant Name:	Isaac Levanon			
Filer:	Anatoly Weiser.			
Attorney Docket Number:	AP026CON3			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	2814	1	160	160
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				160

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 15281037

Filing Date: 29-Sep-2016

Applicant/Patent under Reexamination: Levanon

Electronic Terminal Disclaimer filed on February 13, 2017

APPROVED

This patent is subject to a terminal disclaimer

DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt

EFS ID:	28344825
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	137611
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	13-FEB-2017
Filing Date:	29-SEP-2016
Time Stamp:	22:35:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$160
RAM confirmation Number	021417INTEFSW00007275503196
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	37295	no	3
			c3b3cbb6191cc2902da7d783178602b66309614c		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30595	no	2
			8ac67347b945b1eb62a14771c8d4fc5bf7bd970		

Warnings:

Information:

Total Files Size (in bytes):	67890
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Isaac Levanon et al.Serial No.: **15/281,037**Filed: **September 29, 2016**For: **OPTIMIZED IMAGE DELIVERY
OVER LIMITED BANDWIDTH
COMMUNICATION CHANNELS**Group Art Unit: **2455**Examiner: **David R. Lazaro**Attorney File No.: **AP026CON3**Confirmation No.: **2430**Office Action Mailed On: **2/9/2017**

**Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

REPLY TO OFFICE ACTION

This paper is a reply (the "Reply") to the outstanding Office action mailed on the date shown above (the "Office Action"). The Office Action set a shortened statutory period of three months for reply. The Reply is being filed within the set period and therefore is timely. If the undersigned attorney is mistaken regarding the timeliness of the Reply, Applicant conditionally petitions for a necessary extension of time, and authorization is hereby granted to charge the small entity time extension fee required under 37 CFR § 1.17 for filing the Reply to Deposit Account Number 50-3196.

Authorization is also granted to charge to the same Deposit Account additional claim fees (if any) applicable to small entities, and all other small entity fees necessary to file this Reply and papers (if any) described as being filed together with the Reply.

Amendments to the claims are reflected in the listing of claims that begins on page 3 of this paper.

Remarks begin on page 14 of this paper.

CLAIM AMENDMENT

Please amend the claims in accordance with the following listing, which will replace all previous listings and versions of claims in this application.

Listing of Claims

1. (Currently Amended) A method of communicating images for display, the method comprising steps of:

processing data of a source image to obtain a series ($K_0, K_1 \dots K_{1-N}$) of related images of progressively lower image resolution, wherein each related image of the series ($K_0, K_1 \dots K_{1-N}$) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, the step of processing ~~the source image~~ being performed by one or more servers;

receiving a first request at the one or more servers from a wireless portable device over a network communication channel, the first request being for a first image parcel of the series, wherein the first image parcel is selected based on a first user-controlled image viewpoint on the wireless portable device relative to the source image;

sending the first image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the first request;

receiving a second request at the one or more servers from the wireless portable device over the network communication channel, the second request being for a second image parcel of the series, wherein the second image parcel is selected based on the first user-controlled image

viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, the step of receiving the second request being performed after the step of receiving the first request; and

 sending the second image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the second request.

2. (Original) The method of claim 1, further comprising:

 providing client software to the wireless portable device;

 wherein the wireless portable device renders at least a portion of the first image parcel before finishing receiving the second image parcel.

3. (Currently Amended) The method of claim 2, wherein:

 the wireless portable device issues the first request and the second request according to a priority order;

 priority of the second request in the priority order is not higher than priority of the first request in the priority order; and

 wherein the ~~first~~ wireless portable device stores the first image parcel and the second image parcel in a local parcel storage.

4. (Original) The method of claim 2, wherein the wireless portable device stores the first image parcel and the second image parcel received by the wireless portable device in a local store of the wireless portable device.

5. (Original) The method of claim 4, wherein the first user-controlled image viewpoint is determined based on navigational input of the wireless portable device.
6. (Original) The method of claim 5, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.
7. (Original) The method of claim 5, wherein the client software configures the local store as a server to provide access to at least some image parcels received by the wireless portable device, the at least some image parcels comprising the first image parcel and the second image parcel.
8. (Original) The method of claim 1, wherein the second image parcel is selected based on the first user-controlled image viewpoint, and number of parallel requests by the wireless portable device for image parcels of the series is determined based at least in part on network response latency and available system resources, thereby enabling efficient use of network bandwidth in conditions of network latency.
9. (Original) The method of claim 1, further comprising sending overlay data by the one or more servers to the wireless portable device over the network communication channel.
10. (Original) The method according to claim 9, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

11. (Original) The method of claim 1, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

12. (Original) The method of claim 1, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

13. (Original) A computing system comprising one or more servers, wherein the one or more servers are coupled to a wireless portable device by a network communication channel, the one or more servers being configured to:

process data of a source image to obtain a series $(K_0, K_1 \dots K_{1-N})$ of related images of progressively lower image resolution, wherein each related image of the series $(K_0, K_1 \dots K_{1-N})$ comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, resolution of each related image of the series except initial of the related images in the series being related to resolution of the immediately preceding related image in the series by a factor of four, number of image parcels into which each related image of the series except the initial of the related images is subdivided being related by a factor of four to number of image parcels into which the immediately preceding related image in the series is subdivided;

receive a first request from the wireless portable device over the network communication channel, the first request being for a first image parcel of the series, wherein the first image parcel is

selected based on a first user-controlled image viewpoint on the wireless portable device relative to the source image;

send the first image parcel from the one or more servers to the wireless portable device over the network communication channel, in response to the first request;

receive a second request at the one or more servers from the wireless portable device over the network communication channel, the second request being for a second image parcel of the series, wherein the second image parcel is selected based on the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, wherein the second request is received after the first request; and

send the second image parcel to the wireless portable device over the network communication channel, in response to the second request.

14. (Currently Amended) The ~~method~~ computing system of claim 13, wherein the one or more servers are further comprising: configured to

provide providing client software to the wireless portable device; and

wherein the wireless portable device renders at least a portion of the first image parcel before finishing receiving the second image parcel.

15. (Currently Amended) The ~~method~~ computing system of claim 14, wherein:

the wireless portable device issues the first request and the second request according to a priority order;

priority of the second request in the priority order is not higher than priority of the first request in the priority order; and

wherein the ~~first~~ wireless portable device stores the first image parcel and the second image parcel in a local parcel storage.

16. (Currently Amended) The ~~method~~ computing system of claim 14, wherein the wireless portable device stores at least some image parcels received by the wireless portable device in a local store of the wireless portable device.

17. (Currently Amended) The ~~method~~ computing system of claim 16, wherein the first user-controlled image viewpoint is determined based on navigational input of the wireless portable device.

18. (Currently Amended) The ~~method~~ computing system of claim 17, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

19. (Currently Amended) The ~~method~~ computing system of claim 17, wherein the client software configures the local store as a server to provide access to the at least some image parcels received by the wireless portable device, the at least some image parcels comprising the first image parcel and the second image parcel received by the wireless portable device.

20. (Currently Amended) The ~~method~~ computing system of claim 13, wherein number of parallel requests by the wireless portable device for image parcels of the series is determined based

at least in part on network response latency and available system resources, thereby enabling efficient use of network bandwidth in conditions of network latency.

21. (Currently Amended) The ~~method~~ computing system of claim 13, wherein the one or more servers are further configured to send ~~comprising sending~~ overlay data ~~by the one or more servers~~ to the wireless portable device over the network communication channel.

22. (Currently Amended) The ~~method~~ computing system according to claim 21, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

23. (Currently Amended) The ~~method~~ computing system of claim 13, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

24. (Currently Amended) The ~~method~~ computing system of claim 13, wherein the wireless portable device issues the first request and the second request according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

25. (Currently Amended) A method of communicating images for display, the method comprising steps of:

sending a first request from a wireless portable device to one or more servers over a network communication channel, the first request being for a first image parcel, the first image parcel being

selected based on a first user-controlled image viewpoint on the wireless portable device relative to a source image;

receiving the first image parcel by the wireless portable device from the one or more servers over the network communication channel, in response to the first request;

sending a second request from the wireless portable device to the one or more servers over the network communication channel, the second request being for a second image parcel, the second image parcel being selected based on the first user-controlled image viewpoint or on a second user-controlled image viewpoint on the wireless portable device relative to the source image, the step of sending the second request being performed after the step of sending the first request; and

receiving the second image parcel by the wireless portable device from the one or more servers over the network communication channel, in response to the second request;

wherein the source image is processed by one or more servers to obtain a series ($K_0, K_1 \dots K_{1,N}$) of related images of progressively lower image resolution, wherein each related image of the series ($K_0, K_1 \dots K_{1,N}$) comprises image data and is subdivided into a regular array of image parcels, each image parcel of each regular array of the image parcels forming a discrete portion of the source image and having same predetermined pixel number and same predetermined color or bit per pixel depth, resolution of each related image of the series except initial of the related images in the series being related to resolution of the immediately preceding related image in the series by a first predetermined factor, number of image parcels into which each related image of the series except the initial of the related images is subdivided being related by a second predetermined factor to number of image parcels into which the immediately preceding related image in the series is subdivided, ~~the step of processing the source image being performed by one or more servers~~, and wherein the series comprises the first image parcel and the second image parcel.

26. (Original) The method of claim 25, further comprising rendering by the wireless portable device at least a portion of the first image parcel before finishing receiving the second image parcel.

27. (Original) The method of claim 26, wherein:
the steps of sending the first request and sending the second request are performed according to a priority order; and
priority of the second request in the priority order is not higher than priority of the first request in the priority order;
the method further comprising storing the first image parcel and the second image parcel in a local parcel storage of the wireless portable device.

28. (Original) The method of claim 26, further comprising storing the first image parcel and the second image parcel received by the wireless portable device in a local store of the wireless portable device.

29. (Original) The method of claim 28, further comprising determining the first user-controlled image viewpoint based on navigational input of the wireless portable device.

30. (Original) The method of claim 29, wherein the navigational input comprises three-dimensional positional coordinate data and rotational positional data.

31. (Currently Amended) The method of claim 28, further comprising receiving client software by the wireless portable device from the one or more servers, wherein the step of storing comprises storing ~~the~~ at least some image parcels received by the wireless portable device in the local store configured by the client software as a server to provide access to the at least some image parcels, the at least some image parcels comprising the first image parcel and the second image parcel received by the wireless portable device.

32. (Original) The method of claim 25, further comprising determining number of parallel requests by the wireless portable device for image parcels of the series based at least in part on network response latency and available system resources, to enable efficient use of network bandwidth in conditions of network latency.

33. (Original) The method of claim 25, further comprising receiving by the wireless portable overlay data sent by the one or more servers to the wireless portable device over the network communication channel.

34. (Original) The method according to claim 33, wherein the overlay data comprises text annotations relating to at least one item selected from the group consisting of: one or more street names, one or more building names, and one or more landmarks.

35. (Original) The method of claim 25, wherein the steps of sending the first request and sending the second request are performed according to a priority order based at least in part on viewable areas corresponding to the first user-controlled image viewpoint.

36. (Original) The method of claim 25, wherein the steps of sending the first request and sending the second request are performed according to a priority order based at least in part on resolutions of the first image parcel and the second image parcel.

Claims 37-60 (Cancelled)

REMARKS

Claim Status

Claims 1-36 will be pending in the application after entry of the above claim amendments. This paper does not add new claims; amends claims 1, 3, 14-25, and 31; and cancels claims 37-60. The amendments and cancellations are made without acquiescence to the rejections, without intent to dedicate to the public or to disclaim, and without prejudice. Claims 1, 13, and 25 will be the independent claims of the application.

Summary of the Office Action

In the Office Action, the Examiner (1) rejected claims 37-48 under 35 U.S.C. § 112 as being indefinite; (2) rejected claims 37-60 under 35 U.S.C. § 101 as directed to non-statutory subject matter; (3) rejected claims 1-60 on the ground of non-statutory double patenting, as being unpatentable over certain claims of U.S. Patent No. 7,644,131, U.S. Patent No. 7,908,343, and U.S. Patent No. 8,924,506; and (4) noted certain informalities in claims 13-24.

Applicant respectfully responds to the Office Action.

Double Patenting Rejections

A Terminal Disclaimer (eTD) has been filed. Applicant respectfully submits that the Terminal Disclaimer obviates the Double Patenting rejections.

Cancellation of Claims 37-60

Cancellation of these claims is made without prejudice to pursue these claims or substantially the same claims in a continuation application. The cancellation obviates the section 112 and section

101 rejections.

Claim Amendments

Amendments of claims 14-24 should overcome the informalities the Examiner noted in these claims. Amendments of claims 1, 3, 25, and 31 are intended to clarify the claims and do not introduce new matter.

CONCLUSION

For the foregoing reasons, Applicant submits that all pending claims are allowable. To discuss any matter pertaining to the instant application, the Examiner is invited to call the undersigned attorney at (858) 720-9431.

Having made an effort to bring the application in condition for allowance, a notice to this effect is earnestly solicited.

Respectfully submitted,

Dated: February 15, 2017

/Anatoly S. Weiser/
Anatoly S. Weiser, Reg. No. 43,229
Customer No. 137,611
TechLaw LLP
3525 Del Mar Heights Road, #295
San Diego, CA 92130
(858) 720-9431

Electronic Acknowledgement Receipt

EFS ID:	28364400
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	137611
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	15-FEB-2017
Filing Date:	29-SEP-2016
Time Stamp:	14:36:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	Amendment2-Image.pdf	2005874 <small>9a60cefb0ef9550a229203c3330d66bb0fbb1af2</small>	no	16

Warnings:

Information:	
Total Files Size (in bytes):	2005874
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 15/281,037	Filing Date 09/29/2016	<input type="checkbox"/> To be Mailed
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ENTITY: LARGE SMALL MICRO

APPLICATION AS FILED – PART I

FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)
<input type="checkbox"/> BASIC FEE <small>(37 CFR 1.16(a), (b), or (c))</small>	N/A	N/A	N/A	
<input type="checkbox"/> SEARCH FEE <small>(37 CFR 1.16(k), (l), or (m))</small>	N/A	N/A	N/A	
<input type="checkbox"/> EXAMINATION FEE <small>(37 CFR 1.16(o), (p), or (q))</small>	N/A	N/A	N/A	
TOTAL CLAIMS <small>(37 CFR 1.16(i))</small>	minus 20 =	*	X \$ =	
INDEPENDENT CLAIMS <small>(37 CFR 1.16(h))</small>	minus 3 =	*	X \$ =	
<input type="checkbox"/> APPLICATION SIZE FEE <small>(37 CFR 1.16(s))</small>	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT <small>(37 CFR 1.16(j))</small>				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT	02/15/2017	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	* 36	Minus	** 60	= 0	X \$40 = 0
	Independent <small>(37 CFR 1.16(h))</small>	* 3	Minus	***5	= 0	X \$210 = 0
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	0

	(Column 1)	(Column 2)	(Column 3)	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR			
	Total <small>(37 CFR 1.16(i))</small>	*	Minus	**	=	X \$ =
	Independent <small>(37 CFR 1.16(h))</small>	*	Minus	***	=	X \$ =
	<input type="checkbox"/> Application Size Fee <small>(37 CFR 1.16(s))</small>					
<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM <small>(37 CFR 1.16(j))</small>						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
 ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
 *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
VANESSA HODGES

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15281037
	Filing Date	2016-09-29
	First Named Inventor	Isaac Levanon
	Art Unit	2455
	Examiner Name	DAVID R. LAZARO
	Attorney Docket Number	AP026CON3

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
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Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
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NON-PATENT LITERATURE DOCUMENTS				Remove
Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.		T ⁵

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15281037
	Filing Date	2016-09-29
	First Named Inventor	Isaac Levanon
	Art Unit	2455
	Examiner Name	DAVID R. LAZARO
	Attorney Docket Number	AP026CON3

1	Declaration of Yonatan Lavi, Exhibit 1017 with exhibits (attachments) A-E filed in PTAB Case No. IPR2016-00448, all pages.
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If you wish to add additional non-patent literature document citation information please click the Add button

EXAMINER SIGNATURE

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	15281037
Filing Date	2016-09-29
First Named Inventor	Isaac Levanon
Art Unit	2455
Examiner Name	DAVID R. LAZARO
Attorney Docket Number	AP026CON3

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anatoly S. Weiser/	Date (YYYY-MM-DD)	2017-02-24
Name/Print	Anatoly S. Weiser	Registration Number	43229

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	28461092
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	137611
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	24-FEB-2017
Filing Date:	29-SEP-2016
Time Stamp:	20:13:15
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Non Patent Literature	IPR2016-00448Exhibit1017Lavi Declaration-Image.pdf	11313279 <small>fc79195c2e89ab36818d59cd76b62db24b90b31a</small>	no	72

Warnings:

Information:					
2	Transmittal Letter	IDS_Transmittal-Image.pdf	425058	no	3
			03b7e41273718737134ae543e9333ea764d05415		
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	1034683	no	4
			b493eeaff511550ae2bed67c72afe13881920e7f		
Warnings:					
Information:					
<p>A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.</p>					
			Total Files Size (in bytes):	12773020	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Isaac Levanon *et al.*

Serial No.: **15/281,037**

Filed: **September 29, 2016**

For: **OPTIMIZED IMAGE DELIVERY
OVER LIMITED BANDWIDTH
COMMUNICATION CHANNELS**

Group Art Unit: **2455**

Examiner: **David R. Lazaro**

Attorney File No.: **AP026CON3**

Confirmation No.: **2430**

**Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

INFORMATION DISCLOSURE STATEMENT TRANSMITTAL

Sir:

Transmitted herewith is IDS form (SB008) listing document considered relevant to the above-referenced Application. Applicant respectfully requests that the document be considered by the Examiner and an initialed copy of each page of the IDS be returned to the undersigned attorney.

The present disclosure statement should not be construed as a representation that a search has been made or that no other material information as defined in 37 C.F.R. § 1.56(a) exists.

If specific pages of the document are not indicated in the IDS forms filed together with this paper, we intend to indicate "all pages" for the document.

A copy of the document has been filed, is being filed together with this paper, or will be filed shortly.

The document may have markings thereon. No significance should be attached to the markings, if they in fact exist.

The document is not necessarily analogous art.

Applicant herein does not comment regarding the effective dates of the document, its status as art, or its authenticity (except as discussed below).

By way of explanation and further disclosure, the cited document is Exhibit 1017 filed in PTAB Case No. IPR2016-00448 (U.S. Pat. No. 7,908,343). The patent application that has issued as the U.S. Patent 7,908,343 (which is the subject of the IPR proceeding) is in the chain of priority of the present Application. Exhibit 1017 is Declaration of Yonatan Lavi, an inventor in the present Application. The Declaration has “exhibits” A-E attached to it. (To avoid confusion inherent in having “exhibits A-E to Exhibit 1017,” we refer below to these “exhibits” A-E as “attachments” A-E.) Mr. Lavi’s Declaration itself was not cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned attorney after making reasonable inquiry, Mr. Lavi’s Declaration was not known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of the information disclosure statement (see 37 C.F.R. § 1.97(e)(2)). In fact, Mr. Lavi’s Declaration is dated January 31, 2017. The undersigned attorney hereby makes the statement under 37 C.F.R. § 1.97(e)(2) regarding Mr. Lavi’s Declaration proper, but not regarding attachments A-E to Mr. Lavi’s Declaration.

This paper and the IDS are filed before the mailing date of any of a final action under 37 C.F.R. § 1.113, a notice of allowance under 37 C.F.R. § 1.311, or an action that otherwise closes prosecution in the application, and is accompanied by the statement under 37 C.F.R. § 1.97(e)(2) made in the immediately preceding paragraph. The undersigned attorney believes that the IDS therefore should be considered. 37 C.F.R. § 1.97(c). If, however, the undersigned attorney is mistaken and the IDS fee under 37 C.F.R. § 1.17(p) is required, the undersigned attorney authorizes the fee as it applies to small entities to be charged to Deposit Account Number 50-3196.

Applicant and the undersigned attorney believe that this disclosure complies with the requirements of 37 C.F.R. §§ 1.56, 1.97, and 1.98, and the Manual of Patent Examining Procedure § 609. If the Examiner and/or other Office personnel consider(s) otherwise, we respectfully request that the undersigned attorney be informed promptly so that any deficiencies can be remedied.

To discuss any matter pertaining to the above-referenced Application, the Examiner and other Office personnel are invited to call the undersigned attorney at (858) 720-9431.

Respectfully submitted,

Dated: 2/24/2017

/Anatoly S. Weiser/
Anatoly S. Weiser
TechLaw LLP
3525 Del Mar Heights Road, #295
San Diego, CA 92130
(858) 720-9431
Reg. No. 43,229



NOTICE OF ALLOWANCE AND FEE(S) DUE

137611 7590 03/09/2017
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

EXAMINER

LAZARO, DAVID R

ART UNIT PAPER NUMBER

2455

DATE MAILED: 03/09/2017

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.

15/281,037 09/29/2016 Isaac Levanon AP026CON3 2430

TITLE OF INVENTION: OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

Table with 7 columns: APPLN. TYPE, ENTITY STATUS, ISSUE FEE DUE, PUBLICATION FEE DUE, PREV. PAID ISSUE FEE, TOTAL FEE(S) DUE, DATE DUE

nonprovisional SMALL \$480 \$0 \$0 \$480 06/09/2017

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

137611 7590 03/09/2017
Bradium Technologies LLC
 75 Montebello Road
 Suffern, NY 10901

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/281,037	09/29/2016	Isaac Levanon	AP026CON3	2430

TITLE OF INVENTION: OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	06/09/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
LAZARO, DAVID R	2455	709-246000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). <input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. <input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.	2. For printing on the patent front page, list (1) The names of up to 3 registered patent attorneys or agents OR, alternatively, _____ 1 (2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. _____ 2 _____ 3
--	--

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE _____ (B) RESIDENCE: (CITY and STATE OR COUNTRY) _____

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

4a. The following fee(s) are submitted: <input type="checkbox"/> Issue Fee <input type="checkbox"/> Publication Fee (No small entity discount permitted) <input type="checkbox"/> Advance Order - # of Copies _____	4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above) <input type="checkbox"/> A check is enclosed. <input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached. <input type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).
--	---

5. **Change in Entity Status** (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____
 Typed or printed name _____ Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/281,037 09/29/2016 Isaac Levanon AP026CON3 2430

137611 7590 03/09/2017
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

EXAMINER

LAZARO, DAVID R

ART UNIT PAPER NUMBER

2455

DATE MAILED: 03/09/2017

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/281,037	Applicant(s) LEVANON ET AL.	
	Examiner DAVID LAZARO	Art Unit 2455	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. This communication is responsive to amendment filed 02/15/17.
 A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.
2. An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. The allowed claim(s) is/are 1-36. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) All b) Some *c) None of the:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.


THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Examiner's Amendment/Comment |
| 2. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date <u>2/24/17</u> | 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 7. <input type="checkbox"/> Other _____. |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/DAVID LAZARO/
Primary Examiner, Art Unit 2455

Search Notes 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

CPC- SEARCHED

Symbol	Date	Examiner
H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825 OR G06F17/30241 OR G06F3/04815 OR G06T3/4092 OR G06T19/00 OR G06T19/003	2/6/2017	DRL
H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825 OR G06F17/30241 OR G06F3/04815 OR G06T3/4092 OR G06T19/00 OR G06T19/003	3/6/2017	DRL

CPC COMBINATION SETS - SEARCHED

Symbol	Date	Examiner

US CLASSIFICATION SEARCHED

Class	Subclass	Date	Examiner
709	202,203,217,218,230,231	3/6/2017	DRL
382	305,232	3/6/2017	DRL
345	428,581,625	3/6/2017	DRL

SEARCH NOTES

Search Notes	Date	Examiner
EAST: USPAT USPGPUB - subject matter and inventor search	2/6/2017	DRL
EAST UPDATE	3/6/2017	DRL

INTERFERENCE SEARCH

US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
709	202,203,217,218,230,231	3/6/2017	DRL
382	305,232	3/6/2017	DRL
345	428,581,625	3/6/2017	DRL

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	("6850235").PN.	USPAT	OR	OFF	2005/07/19 15:14
S2	2	(progressive and screen and resolution).ab.	USPAT	OR	ON	2005/07/19 15:15
S3	4	(image and screen and resolution and updat\$3).ab.	USPAT	OR	ON	2005/07/19 15:16
S4	231	(image near5 transmi\$8 and resolution).ab.	USPAT	OR	ON	2005/07/19 15:17
S5	5900	(709/227-237).CCLS.	USPAT	OR	OFF	2005/07/19 15:17
S6	2	S4 and S5	USPAT	OR	ON	2005/07/19 15:18
S7	1613	image same different adj resolution	USPAT	OR	ON	2005/07/19 15:18
S8	630	S7 and network	USPAT	OR	ON	2005/07/19 15:18
S9	168	S7 same (browser or client or user)	USPAT	OR	ON	2005/07/19 15:20
S10	129492	(bandwidth or latency)	USPAT	OR	ON	2005/07/19 15:20
S11	57	S9 and S10	USPAT	OR	ON	2005/07/19 15:26
S12	627	image near5 (updat\$3) same (view or viewpoint)	USPAT	OR	ON	2005/11/21 17:46
S13	7	S5 and S12	USPAT	OR	ON	2005/07/19 15:26
S14	90	image near5 (updat\$3) same (viewpoint)	USPAT	OR	ON	2005/07/19 15:30
S15	0	image near5 (updat\$3) same (viewpoint) same request	USPAT	OR	ON	2005/07/19 15:27
S16	28	image near5 (updat\$3) same (viewpoint) and (internet or network)	USPAT	OR	ON	2005/07/19 15:29
S17	5198	image same (packet or parcel)	USPAT	OR	ON	2005/07/19 15:29
S18	3	S14 and S17	USPAT	OR	ON	2005/07/19 15:29
S19	215	S5 and S17	USPAT	OR	ON	2005/07/19 15:29
S20	6867	image near5 (updat\$3)	USPAT	OR	ON	2005/07/19 15:30
S21	24	S19 and S20	USPAT	OR	ON	2005/07/19 15:30
S22	69642	image same resolution	USPAT	OR	ON	2005/07/19 15:31

S23	4	S21 and S22	USPAT	OR	ON	2005/07/19 15:41
S24	2	image same queue same viewpoint	USPAT	OR	ON	2005/07/19 15:41
S25	60	queue same viewpoint	USPAT	OR	ON	2005/07/19 15:42
S26	3	S22 and S25	USPAT	OR	ON	2005/07/19 15:49
S27	107	single adj packet same image	USPAT	OR	ON	2005/07/19 15:49
S28	6	S5 and S27	USPAT	OR	ON	2005/07/19 15:58
S29	1	("6182144").PN.	USPAT	OR	OFF	2005/07/19 15:58
S30	1	("6182114").PN.	USPAT	OR	OFF	2005/07/19 15:58
S31	3	("6182114").URPN.	USPAT	OR	ON	2005/07/19 16:01
S32	9	("4622632" "5341466" "5481622" "5568598" "5710835" "5724070" "5861920" "5880856" "5920865").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2005/07/19 16:02
S33	32	("5880856").URPN.	USPAT	OR	ON	2005/07/19 16:25
S34	2	fixed adj dimension adj array	USPAT	OR	ON	2005/07/19 16:25
S35	3	fixed adj dimension adj array	US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/19 16:29
S37	1098	array near5 pixel same fixed	USPAT	OR	ON	2005/07/19 16:30
S38	0	S5 and S37	USPAT	OR	ON	2005/07/19 16:30
S39	5	array near5 pixel same fixed same packet	USPAT	OR	ON	2005/07/19 16:49
S40	1	("4,698,689").PN.	USPAT	OR	OFF	2005/07/19 16:34
S41	427	array near5 pixel with fixed	USPAT	OR	ON	2005/07/19 16:37
S44	219	progressive adj transmission	USPAT	OR	ON	2005/07/19 16:49
S45	0	S41 and S44	USPAT	OR	ON	2005/07/19 16:49
S46	15	array same pixel same fixed same packet	USPAT	OR	ON	2005/07/19 16:51
S47	263	array same pixel and packet and internet	USPAT	OR	ON	2005/07/19 19:06
S48	3	S44 and S47	USPAT	OR	ON	2005/07/19 17:06
S49	91	foveat\$4	USPAT	OR	ON	2005/07/19 17:06
S50	52	S49 and array	USPAT	OR	ON	2005/07/19 17:06

S51	4	S50 and (packet or parcel)	USPAT	OR	ON	2005/07/19 17:07
S52	1122	array same pixel same (transmit\$8 or transmission or issuing or sending or sent) and network	USPAT	OR	ON	2005/07/19 19:07
S53	103	array same pixel same (transmit\$8 or transmission or issuing or sending or sent) same (internet or network)	USPAT	OR	ON	2005/07/20 10:07
S54	18359	("709").CLAS.	USPAT	OR	OFF	2005/07/19 19:07
S55	7	S53 and S54	USPAT	OR	ON	2005/07/19 19:08
S56	170	image same tree near5 data adj structure	USPAT	OR	ON	2005/07/20 10:07
S57	92	image same tree near5 data adj structure same (stor\$3)	USPAT	OR	ON	2005/07/20 10:07
S58	7	image same tree near5 data adj structure same (stor\$3) same server	USPAT	OR	ON	2005/07/20 10:35
S59	1	("6275693").PN.	USPAT	OR	OFF	2005/07/20 10:35
S60	12254	(709/202,203,217,218,230,231).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:27
S61	2415	(382/305,232).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:27
S62	1033	(345/428,581,625).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:27
S63	8830	S60 or S61 or S62	USPAT	OR	ON	2005/07/22 11:13
S64	10	(image and progressive and resolution and (deliver\$3 or transmit\$4 or transmission or retriev\$4)).ab.	USPAT	OR	ON	2005/07/22 11:58
S65	2	S63 and S64	USPAT	OR	ON	2005/07/22 11:15
S66	7	S64 and (array or dimension\$2)	USPAT	OR	ON	2005/07/22 11:22
S67	1	S64 and (array)	USPAT	OR	ON	2005/07/22 11:22
S68	653	(image and resolution and (deliver\$3 or transmit\$4 or transmission or retriev\$4)).ab.	USPAT	OR	ON	2005/07/22 11:23
S69	29	S63 and S68	USPAT	OR	ON	2005/07/22 11:23
S70	11	S69 and array	USPAT	OR	ON	2005/07/22 12:13
S71	5	("4682869" "5453788" "5543844" "5845015" "6625309").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2005/07/22 11:45
S72	2	(image and (thin or limited) near2 (client or device) and resolution and (deliver\$3 or transmit\$4 or transmission or retriev\$4)).ab.	USPAT	OR	ON	2005/07/22 11:58
S73	726	(resolution or display) same (thin or limited) near4 (client or device) and resolution same image same (deliver\$3 or transmit\$4 or transmission or retriev\$4)	US-PGPUB; USPAT	OR	ON	2005/07/22 12:24

S74	29	S63 and S73	US-PGPUB; USPAT	OR	ON	2005/07/22 11:59
S76	13	("6345279").URPN.	USPAT	OR	ON	2005/07/22 12:22
S77	13	S74 and array	US-PGPUB; USPAT	OR	ON	2005/07/22 12:23
S78	10	(resolution or display) same (thin or limited) near4 (client or device) and resolution same image same (deliver\$3 or transmit\$4 or transmission or retriev\$4)	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/07/22 12:24
S79	22	(US-6326965-\$ or US-6397259-\$ or US-6449639-\$ or US-6496189-\$ or US-6525732-\$ or US-6608628-\$ or US-6704791-\$ or US-6711297-\$ or US-6754365-\$ or US-6801665-\$ or US-6898311-\$ or US-6314452-\$ or US-6212301-\$ or US-6625309-\$ or US-4682869-\$ or US-6882755-\$ or US-5613051-\$ or US-5559936-\$ or US-6246797-\$ or US-6167442-\$ or US-6704024-\$ or US-6345279-\$).did.	USPAT	OR	ON	2005/07/22 14:16
S80	2	S79 and single adj packet	USPAT	OR	ON	2005/07/22 14:16
S81	11783	((709/203,217,232,246) or (345/428,581) or (381/232,305)).OCLS.	US-PGPUB; USPAT	OR	OFF	2005/11/21 17:44
S82	1243	((update or progressive) same (image or picture)).ab.	US-PGPUB; USPAT	OR	ON	2005/11/21 17:47
S83	30	S81 and S82	US-PGPUB; USPAT	OR	ON	2005/11/21 17:45
S84	210102	((image or picture)).ab.	US-PGPUB; USPAT	OR	ON	2005/11/21 17:46
S85	1093	S81 and S84	US-PGPUB; USPAT	OR	ON	2005/11/21 17:46
S87	1171	image near5 (updat\$3) same (view or viewpoint)	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S88	21	S85 and S87	US-PGPUB; USPAT	OR	ON	2005/11/21 17:46
S89	173405	(image or picture) with portion	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S90	480	S85 and S89	US-PGPUB; USPAT	OR	ON	2005/11/21 17:47
S91	32	S90 and (progressive)	US-PGPUB; USPAT	OR	ON	2005/11/21 17:47
S92	123	image near5 (updat\$3) same (view or viewpoint)	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:47
S93	0	image near5 (updat\$3) same (view or viewpoint) and progressive	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:47
S94	8216	(update or progressive) same (image or picture)	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:47
S95	490	(update or progressive) same (image or picture) and portion	EPO; JPO; DERWENT;	OR	ON	2005/11/21 17:47

			IBM_TDB			
S96	6	(update or progressive) same (image or picture) and portion and packet	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/11/21 17:48
S97	93	image near5 (updat\$3) same (view or viewpoint) and packet	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S98	922	(image or picture) with portion same packet	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S99	531	S84 and S98	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S100	7	S82 and S98	US-PGPUB; USPAT	OR	ON	2005/11/21 17:48
S101	193	(coefficient or updat\$3 or wavelet) same single adj packet	US-PGPUB; USPAT	OR	ON	2006/03/22 16:06
S102	7	(coefficient or updat\$3 or wavelet) same single adj packet same (image or display\$3)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:07
S103	23	(US-6449639-\$ or US-6345279-\$ or US-6704024-\$ or US-6898311-\$ or US-4682869-\$ or US-6314452-\$ or US-6326965-\$ or US-6608628-\$ or US-6704791-\$ or US-6711297-\$ or US-6754365-\$ or US-6397259-\$ or US-5559936-\$ or US-5613051-\$ or US-6496189-\$ or US-6525732-\$ or US-6167442-\$ or US-6246797-\$ or US-6625309-\$ or US-6801665-\$ or US-6882755-\$ or US-6212301-\$ or US-6970604-\$).did.	USPAT	OR	ON	2006/03/22 16:23
S104	5	S103 and (priorit\$)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:28
S105	12	S103 and (fixed)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:23
S106	0	S103 and (fixed adj array)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:23
S107	0	S103 and (fixed adj compression)	US-PGPUB; USPAT	OR	ON	2006/03/22 16:23
S108	4	fixed adj compression adj ratio same coefficient	US-PGPUB; USPAT	OR	ON	2006/03/22 16:29
S109	182	fixed adj compression adj ratio	US-PGPUB; USPAT	OR	ON	2006/03/22 16:29
S110	24	fixed adj compression adj ratio same image	US-PGPUB; USPAT	OR	ON	2006/03/22 16:30
S111	46	"16x16" or "16 x 16" same (image)	US-PGPUB; USPAT	OR	ON	2006/03/22 18:58
S112	44	"16x16" or "16 x 16" same (image) same (array or block or dimension or compression)	US-PGPUB; USPAT	OR	ON	2006/03/22 18:57
S113	44	"16x16" or "16 x 16" same (image) same (array or block or compression)	US-PGPUB; USPAT	OR	ON	2006/03/22 18:57
S114	9	("16x16" or "16 x 16") same (image)	US-PGPUB; USPAT	OR	ON	2006/03/22 19:14
S115	102	minimum adj coded adj unit same jpeg	US-PGPUB; USPAT	OR	ON	2006/03/22 19:14
S116	25	minimum adj coded adj unit same jpeg same "16"	US-PGPUB; USPAT	OR	ON	2006/03/23 15:33

S118	7272	((709/231,246,247) or (382/232,305) or (345/428,581)).OCLS.	US-PGPUB; USPAT	OR	OFF	2006/03/23 15:34
S119	4242	(progressive).ab.	US-PGPUB; USPAT	OR	ON	2006/03/23 15:34
S120	30	S118 and S119	US-PGPUB; USPAT	OR	ON	2006/03/23 15:34
S121	150	wavelet and viewpoint and large near3 image	US-PGPUB; USPAT	OR	ON	2006/03/23 15:35
S122	17	S118 and S121	US-PGPUB; USPAT	OR	ON	2006/03/23 15:35
S123	506	progressive and (zoom or pan or viewpoint) and (satellite or large) near3 image	US-PGPUB; USPAT	OR	ON	2006/03/23 15:36
S124	51	S118 and S123	US-PGPUB; USPAT	OR	ON	2006/03/23 15:36
S125	0	progressive and (zoom or pan or viewpoint) and (satellite or large) near3 image	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/23 15:36
S126	1	wavelet and (zoom or pan or viewpoint) and (satellite or large) near3 image	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/23 15:36
S127	19	progressive and (satellite or large) near3 image	EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/03/23 15:36
S129	34356	(map or mapping or topographic\$5 or navigat\$6).ab.	US-PGPUB; USPAT	OR	ON	2006/09/27 12:22
S134	62392	(z adj axis)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:06
S136	18230	(topgraphic\$5 or geograph\$8) same (map or view\$3 or display\$3)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S137	440	S134 and S136	US-PGPUB; USPAT	OR	ON	2006/09/27 14:06
S138	1551294	rotat\$3	US-PGPUB; USPAT	OR	ON	2006/09/27 14:06
S139	339943	rotat\$3 same (view\$3 or display\$3)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:07
S140	168	S137 and S139	US-PGPUB; USPAT	OR	ON	2006/09/27 14:07
S141	109	S140 and network	US-PGPUB; USPAT	OR	ON	2006/09/27 14:08
S142	3	S141 and frustum	US-PGPUB; USPAT	OR	ON	2006/09/27 14:09
S143	1675	frustum same (view\$3 or display\$3)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:09
S144	74	S129 and S143	US-PGPUB; USPAT	OR	ON	2006/09/27 14:10
S145	594	S143 and (3d or 3-d or (three adj dimensional))	US-PGPUB; USPAT	OR	ON	2006/09/27 14:09
S146	383	S145 and (map or mapping or topographic\$5 or navigat\$6)	US-PGPUB; USPAT	OR	ON	2006/09/27 14:10
S147	9	S136 and S144	US-PGPUB; USPAT	OR	ON	2006/09/27 14:10
S148	24	("20010026549" "20020005891" "20020013659" "20020047798" "20020049534" "20020070934"	US-PGPUB; USPAT; USOCR	OR	ON	2006/09/27 14:13

		"20020085041" "20020128775" "20020141655" "20020191003" "20030030546" "20030030634" "20030120823" "20030135327" "20030146869" "20030151592" "20040001059" "20040032409" "20040125103" "5995903" "6199014" "6285317" "6314370" "6552721").PN.				
S152	19724	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2006/09/27 14:28
S153	101	S129 and S136 and S152	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S154	0	S153 and frustum	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S155	38	S143 and S152	US-PGPUB; USPAT	OR	ON	2006/09/27 14:28
S156	58	three adj dimensional same progressive same (network or server or download\$3)	US-PGPUB; USPAT	OR	ON	2009/05/26 07:29
S157	88	three adj dimensional same progressive\$2 same (network or server or download\$3)	US-PGPUB; USPAT	OR	ON	2009/05/26 07:37
S158	1	S157 and derivative adj image	US-PGPUB; USPAT	OR	ON	2009/05/26 07:37
S159	1	("6671424").PN.	US-PGPUB; USPAT	OR	OFF	2009/05/26 07:42
S160	9	progressive adj mesh and overlay	US-PGPUB; USPAT	OR	ON	2009/05/26 08:04
S161	29845	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/05/26 08:45
S162	10	S157 and S161	US-PGPUB; USPAT	OR	ON	2009/05/26 08:45
S163	57	(progressive and (image or picture or screen) and resolution).ab.	USPAT	OR	ON	2009/08/15 21:35
S164	24409	(709/202,203,217,218,230,231).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:35
S165	4605	(382/305,232).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:35
S166	1880	(345/428,581,625).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:35
S167	17405	S164 or S165 or S166	USPAT	OR	ON	2009/08/15 21:35
S168	6	S167 and S163	USPAT	OR	ON	2009/08/15 21:35
S169	132	(progressive and large).ab.	USPAT	OR	ON	2009/08/15 21:36
S170	7	S167 and S169	USPAT	OR	ON	2009/08/15 21:36
S171	67	((mesh or overlay)and (image or picture or screen) and resolution).ab.	USPAT	OR	ON	2009/08/15 21:40
S172	2738	((mesh or overlay)and (image or picture or screen)).ab.	USPAT	OR	ON	2009/08/15 21:40
S173	36	S167 and S172	USPAT	OR	ON	2009/08/15

						21:40
S174	15965	(progressive or mesh or overlay) and (image or picture)	FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/08/15 21:40
S175	908	(progressive or mesh or overlay) and (image or picture) and resolution	FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/08/15 21:41
S176	54	(progressive or mesh or overlay) and (image or picture) and resolution and array	FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2009/08/15 21:41
S184	1	("5929860").PN.	US-PGPUB; USPAT	OR	OFF	2016/12/27 14:19
S185	111	(original source orgin) adj image same (series array) with resolution same (subdivid\$3 divid\$3 portion)	US-PGPUB; USPAT	OR	ON	2016/12/27 14:25
S186	19	S185 and image with viewpoint	US-PGPUB; USPAT	OR	ON	2016/12/27 14:25
S187	20	S185 and image same viewpoint	US-PGPUB; USPAT	OR	ON	2016/12/27 14:26
S188	1	("4972319").PN.	US-PGPUB; USPAT	OR	OFF	2016/12/27 14:30
S189	3	("7644131" or ("7908343" or ("8924506")).PN.	US-PGPUB; USPAT	OR	OFF	2016/12/27 14:45
S190	20	(progressive\$2 with resolution with series) same array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:03
S191	35	(progressive\$2 with resolution same series) same array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:03
S192	25	(lower with resolution with series with image) same array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:04
S193	32	(US-6882755-\$ or US-6608628-\$ or US-6326965-\$ or US-6212301-\$ or US-6314452-\$ or US-6525732-\$ or US-6704024-\$ or US-6345279-\$ or US-5613051-\$ or US-6754365-\$ or US-6246797-\$ or US-6496189-\$ or US-6970604-\$ or US-5559936-\$ or US-6397259-\$ or US-6801665-\$ or US-4682869-\$ or US-6711297-\$ or US-6898311-\$ or US-6449639-\$ or US-6608933-\$ or US-6704791-\$ or US-6625309-\$ or US-6167442-\$ or US-6346938-\$ or US-5995903-\$).did. or (US-6285317-\$ or US-5929860-\$ or US-4972319-\$ or US-7644131-\$ or US-7908343-\$ or US-8924506-\$).did.	USPAT	OR	ON	2017/02/06 12:05
S194	1597	((H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825).CPC.)	USPAT	OR	ON	2017/02/06 12:07
S195	6802	((H04N1/40068 OR H04N1/4172 OR H04N1/64 OR H04N21/234345 OR H04N21/234363 OR H04N21/25825 OR G06F17/30241 OR G06F3/04815 OR G06T3/4092 OR G06T19/00 OR G06T19/003).CPC.)	USPAT	OR	ON	2017/02/06 12:09

S196	1445	((G06F3/04815).CPC.)	USPAT	OR	ON	2017/02/06 12:09
S197	0	S194 and S196	USPAT	OR	ON	2017/02/06 12:09
S198	69	S196 and (progressive or mesh or overlay) and (image or picture) and resolution and array	US-PGPUB; USPAT	OR	ON	2017/02/06 12:10
S199	0	S198 and request with priority	US-PGPUB; USPAT	OR	ON	2017/02/06 12:11
S200	32	S195 and request with priority same image	US-PGPUB; USPAT	OR	ON	2017/02/06 12:11
S201	636	("levanon" "lavi").in.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:12
S202	9	S201 and (image with series with resolution same array).clm.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:13
S203	6	S201 and (image with series with resolution same array and priority).clm.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:13
S204	1	S203 and local adj parcel.clm.	US-PGPUB; USPAT	OR	ON	2017/02/06 12:21
S205	1	S204 and server same hardware	US-PGPUB; USPAT	OR	ON	2017/02/06 12:48

EAST Search History (I nterference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	69384	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2017/03/06 15:17
L2	68	((image or picture or pixel) and overlay and array and resolution).clm.	US-PGPUB; USPAT	OR	ON	2017/03/06 15:17
L3	7	1 and 2	US-PGPUB; USPAT	OR	ON	2017/03/06 15:17
S178	30813	((709/202,203,217,218,230,231) or (382/305,232) or (345/428,581,625)).CCLS.	US-PGPUB; USPAT	OR	OFF	2009/08/15 21:36
S179	31	((image or picture or pixel) and overlay and array and resolution).clm.	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S180	1	S178 and S179	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S181	3652	((image or picture or pixel) and overlay).clm.	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S182	51	((image or picture or pixel) and overlay and (progressive or mesh)).clm.	US-PGPUB; USPAT	OR	ON	2009/08/15 21:39
S183	1	S178 and S182	US-PGPUB; USPAT	OR	ON	2009/08/15 21:40

3/ 6/ 2017 3:17:44 PM

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Doc code: IDS
 Doc description: Information Disclosure Statement (IDS) Filed

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15281037
	Filing Date	2016-09-29
	First Named Inventor	Isaac Levanon
	Art Unit	2455
	Examiner Name	DAVID R. LAZARO
	Attorney Docket Number	AP026CON3

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		15281037
Filing Date		2016-09-29
First Named Inventor	Isaac Levanon	
Art Unit		2455
Examiner Name	DAVID R. LAZARO	
Attorney Docket Number	AP026CON3	

1	Declaration of Yonatan Lavi, Exhibit 1017 with exhibits (attachments) A-E filed in PTAB Case No. IPR2016-00448, all pages.
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EXAMINER SIGNATURE

Examiner Signature	/DAVID R LAZARO/	Date Considered	03/06/2017
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¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number	15281037		
Filing Date	2016-09-29		
First Named Inventor	Isaac Levanon		
Art Unit	2455		
Examiner Name	DAVID R. LAZARO		
Attorney Docket Number	AP026CON3		

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Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Anatoly S. Weiser/	Date (YYYY-MM-DD)	2017-02-24
Name/Print	Anatoly S. Weiser	Registration Number	43229


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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Issue Classification 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.	
	Examiner DAVID LAZARO	Art Unit 2455	

CPC						
Symbol					Type	Version
H04L		67		327	F	2013-01-01
G06F		3		1454	I	2013-01-01
G06T		3		4092	I	2013-01-01
G09G		2340		02	A	2013-01-01
G09G		2350		00	A	2013-01-01
H04L		65		602	I	2013-01-01
H04L		67		42	I	2013-01-01
G06F		3		14	I	2013-01-01
G09G		5		003	I	2013-01-01
G09G		2370		02	A	2013-01-01
G09G		2370		16	A	2013-01-01


CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	36	
/DAVID LAZARO/ Primary Examiner. Art Unit 2455	03/06/2017	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	3

Issue Classification 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant																<input type="checkbox"/> CPA		<input checked="" type="checkbox"/> T.D.		<input type="checkbox"/> R.1.47	
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original						
1	1	17	17	33	33		49														
2	2	18	18	34	34		50														
3	3	19	19	35	35		51														
4	4	20	20	36	36		52														
5	5	21	21		37		53														
6	6	22	22		38		54														
7	7	23	23		39		55														
8	8	24	24		40		56														
9	9	25	25		41		57														
10	10	26	26		42		58														
11	11	27	27		43		59														
12	12	28	28		44		60														
13	13	29	29		45																
14	14	30	30		46																
15	15	31	31		47																
16	16	32	32		48																

NONE		Total Claims Allowed:	
		36	
(Assistant Examiner)	(Date)	O.G. Print Claim(s)	O.G. Print Figure
/DAVID LAZARO/ Primary Examiner. Art Unit 2455	03/06/2017	1	3
(Primary Examiner)	(Date)		

Index of Claims 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

✓	Rejected
=	Allowed

-	Cancelled
÷	Restricted

N	Non-Elected
I	Interference

A	Appeal
O	Objected

Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	02/06/2017	03/06/2017						
1	1	✓	=						
2	2	✓	=						
3	3	✓	=						
4	4	✓	=						
5	5	✓	=						
6	6	✓	=						
7	7	✓	=						
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32	32	✓	=						
33	33	✓	=						
34	34	✓	=						
35	35	✓	=						
36	36	✓	=						

Index of Claims 	Application/Control No. 15281037	Applicant(s)/Patent Under Reexamination LEVANON ET AL.
	Examiner DAVID LAZARO	Art Unit 2455

✓	Rejected
=	Allowed

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Claims renumbered in the same order as presented by applicant
 CPA
 T.D.
 R.1.47

CLAIM		DATE							
Final	Original	02/06/2017	03/06/2017						
	37	✓	-						
	38	✓	-						
	39	✓	-						
	40	✓	-						
	41	✓	-						
	42	✓	-						
	43	✓	-						
	44	✓	-						
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	56	✓	-						
	57	✓	-						
	58	✓	-						
	59	✓	-						
	60	✓	-						

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

137611 7590 03/09/2017
Bradium Technologies LLC
 75 Montebello Road
 Suffern, NY 10901

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/281,037	09/29/2016	Isaac Levanon	AP026CON3	2430

TITLE OF INVENTION: OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$480	\$0	\$0	\$480	06/09/2017

EXAMINER	ART UNIT	CLASS-SUBCLASS
LAZARO, DAVID R	2455	709-246000

<p>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</p> <p><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.</p> <p><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.</p>	<p>2. For printing on the patent front page, list</p> <p>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,</p> <p>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.</p> <p>1 <u>ANATOLY S. WEISER, ESQ.</u></p> <p>2 <u>TECHLAW LLP.</u></p> <p>3 <u>--</u></p>
---	--

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE **BRADIUM TECHNOLOGIES LLC**

(B) RESIDENCE: (CITY and STATE OR COUNTRY) **SUFFERN, NY**

Please check the appropriate assignee category or categories (will not be printed on the patent) : Individual Corporation or other private group entity Government

<p>4a. The following fee(s) are submitted:</p> <p><input checked="" type="checkbox"/> Issue Fee</p> <p><input type="checkbox"/> Publication Fee (No small entity discount permitted)</p> <p><input type="checkbox"/> Advance Order - # of Copies _____</p>	<p>4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)</p> <p><input type="checkbox"/> A check is enclosed.</p> <p><input checked="" type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.</p> <p><input checked="" type="checkbox"/> The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number <u>50-3196</u> (enclose an extra copy of this form).</p>
--	---

50-3196

5. **Change in Entity Status** (from status indicated above)

Applicant certifying micro entity status. See 37 CFR 1.29

Applicant asserting small entity status. See 37 CFR 1.27

Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Anatoly S. Weiser/ Date March 10, 2017

Typed or printed name Anatoly S. Weiser Registration No. 43,229

Electronic Patent Application Fee Transmittal

Application Number:	15281037			
Filing Date:	29-Sep-2016			
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS			
First Named Inventor/Applicant Name:	Isaac Levanon			
Filer:	Anatoly Weiser.			
Attorney Docket Number:	AP026CON3			
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	480	480

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt

EFS ID:	28600954
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	137611
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	10-MAR-2017
Filing Date:	29-SEP-2016
Time Stamp:	17:54:58
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$480
RAM confirmation Number	031317INTEFSW17592200
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IssueFeePayment-PartB.pdf	106003	no	1
			d28aa84452c7ca9776f9ec6078aa3e566151bb93		

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30684	no	2
			a86f4086c7f96f29601d5fc663cfe90ae7005ec9		

Warnings:

Information:

Total Files Size (in bytes):	136687
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/281,037 09/29/2016 Isaac Levanon AP026CON3 2430

137611 7590 03/28/2017
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

EXAMINER

LAZARO, DAVID R

ART UNIT PAPER NUMBER

2455

MAIL DATE DELIVERY MODE

03/28/2017

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 15281037
Applicant : Levanon
Filing Date : 09/29/2016
Date Mailed : 03/28/2017

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
"Mail Stop Issue Fee, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450".*

/Quang Nguyen/
Publication Branch
Office of Data Management
(571) 272-4200

IDENTIFICATION OF DRAWING DEFICIENCIES

- There is a hole or the image thereof within the illustration. FIG(s)
- The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- Figure numbers are duplicated or missing. FIG(s)
- Drawing sheet or figure is missing. FIG(s)
- Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- The character of the lines, numbers, and letters is poor. FIG(s)
- The drawing's background shows that the original drawing was made on graph paper or other paper with a pattern or decoration. FIG(s)
- The FIG. number label is placed in a location that causes the drawing to be read upside down. FIG(s)
- Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s) 5
- The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- OTHER:
- COMMENTS:

SCORE Placeholder Sheet for IFW Content

Application Number: 15281037

Document Date: 03/31/2017

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

At the time of document entry (noted above):

- USPTO employees may access SCORE content via eDAN using the Supplemental Content tab, or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Isaac Levanon *et al.*Serial No.: **15/281,037**Filed: **September 29, 2016**For: **OPTIMIZED IMAGE DELIVERY
OVER LIMITED BANDWIDTH
COMMUNICATION CHANNELS**Group Art Unit: **2455**Examiner: **David R. Lazaro**Attorney File No.: **AP026CON3**Confirmation No.: **2430**Notice Mailed On: **3/28/2017**

**Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450**

REPLY TO NOTICE

This paper is a reply (the "Reply") to the outstanding Office notice mailed on the date shown above (the "Notice"). The Notice set a shortened statutory period of two months for reply. The Reply is being filed within the set period and therefore is timely. If the undersigned attorney is mistaken regarding the timeliness of the Reply, Applicant conditionally petitions for a necessary extension of time, and authorization is hereby granted to charge the small entity time extension fee required under 37 CFR § 1.17 for filing the Reply to Deposit Account Number 50-3196.

Authorization is also granted to charge to the same Deposit Account all other fees necessary to file this Reply and papers (if any) described as being filed together with the Reply, as the fees apply to a small entity.

Remarks begin on page 2 of this paper.

REMARKS

The Notice identified deficiency in Figure 5. Amended Figure 5 is filed on a replacement drawing sheet, the sheet including all of the Figures appearing on the immediate prior version of the sheet, and the sheet marked "Replacement Sheet" in the top margin, in compliance with 37 C.F.R. § 1.121(d).

Figure 5 is amended by inserting a reference numeral "86" at the end of lead line originating at the "Examine Quad Trees" oval. This change is supported by the specification, see, for example, last full paragraph on page 12 of the specification as-filed. Applicant believes this Reply completely responds to the Notice.

CONCLUSION

To discuss any matter pertaining to the instant application, the Examiner and other Office personnel are invited to call the undersigned attorney at (858) 720-9431.

Respectfully submitted,

Dated: March 31, 2017

/Anatoly S. Weiser/
Anatoly S. Weiser, Reg. No. 43,229
Customer No. 137,611
TechLaw LLP
3525 Del Mar Heights Road, #295
San Diego, CA 92130
(858) 720-9431



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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15/281,037 09/29/2016 Isaac Levanon AP026CON3 2430

137611 7590 03/28/2017
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

EXAMINER

LAZARO, DAVID R

ART UNIT PAPER NUMBER

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MAIL DATE DELIVERY MODE

03/28/2017 PAPER

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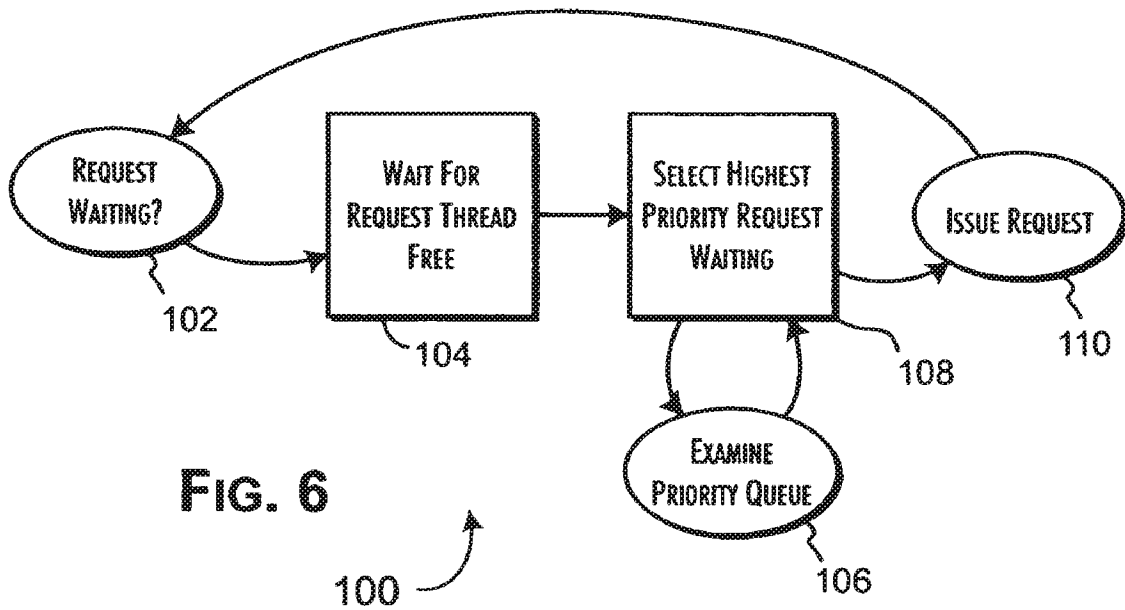
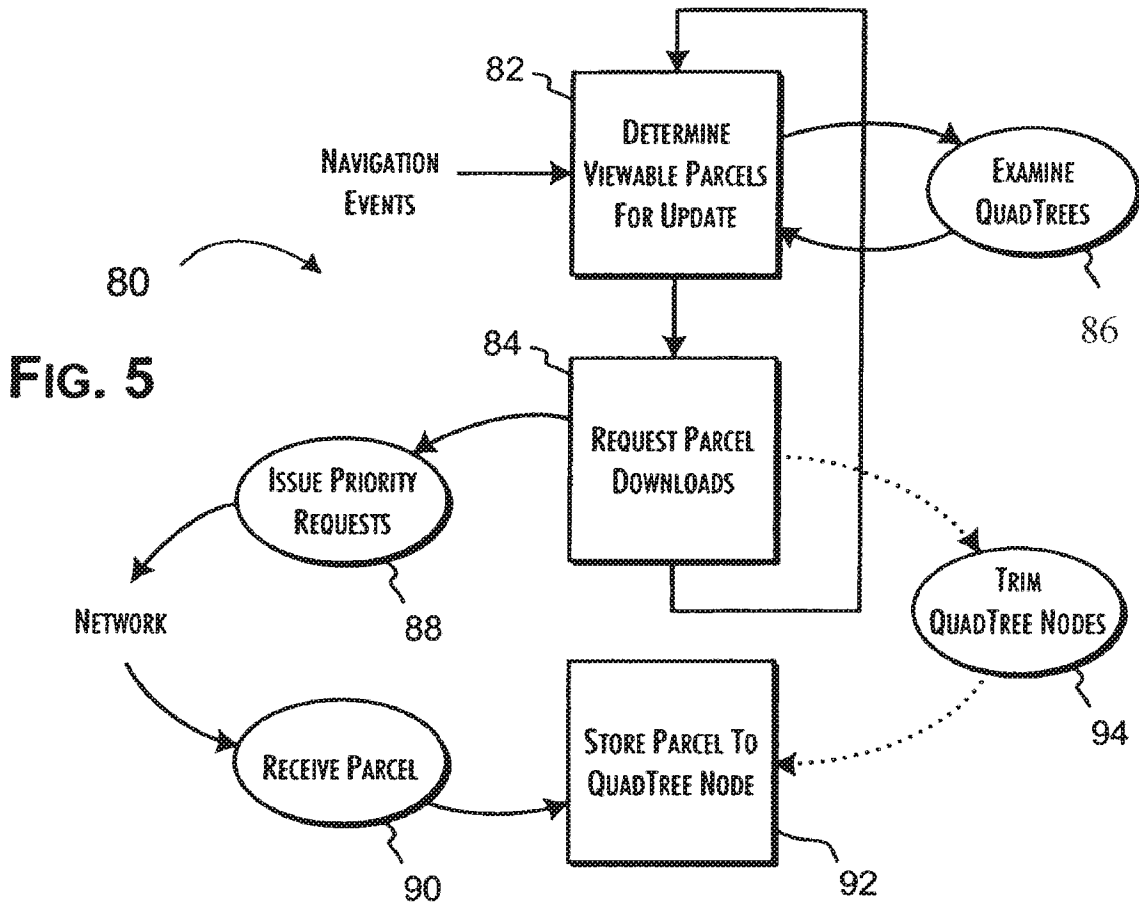
See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
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P.O. Box 1450, Alexandria, VA 22313-1450".*

/Quang Nguyen/
Publication Branch
Office of Data Management
(571) 272-4200

IDENTIFICATION OF DRAWING DEFICIENCIES

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- The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- Figure numbers are duplicated or missing. FIG(s)
- Drawing sheet or figure is missing. FIG(s)
- Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- The character of the lines, numbers, and letters is poor. FIG(s)
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- Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s) 5
- The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- OTHER:
- COMMENTS:



Electronic Acknowledgement Receipt

EFS ID:	28804878
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	137611
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	31-MAR-2017
Filing Date:	29-SEP-2016
Time Stamp:	17:03:23
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Arguments/Remarks Made in an Amendment	ReplyToFormalities2017March31-Image-WithNoticeAttached.pdf	370697 9ccd15d8b08e1a981f7f0386fe3ac4b65514abb3	no	6

Warnings:

Information:					
2	Drawings-other than black and white line drawings	DrawingsReplacementSheets.pdf	53705	no	1
			6857672b4766b7cc85769110b3b7166a4546cd47		
Warnings:					
Information:					
Total Files Size (in bytes):				424402	
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/281,037	05/02/2017	9641645	AP026CON3	2430

137611 7590 04/12/2017
 Bradium Technologies LLC
 75 Montebello Road
 Suffern, NY 10901

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Isaac Levanon, Raanana, ISRAEL;
 Bradium Technologies LLC, Suffern, NY;
 Yonatan Lavi, Raanana, ISRAEL;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 9,641,645
 APPLICATION NO.: 15/261,037
 ISSUE DATE : May 2, 2017
 INVENTOR(S) : Isaac Levanon, Yonatan Lavi

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims

Column 12, line 53, cancel "K₁" and replace the cancelled text with -- K₁--;

Column 12, line 55, cancel "K₁" and replace the cancelled text with -- K₁--;

Column 14, line 12, cancel "K₁" and replace the cancelled text with -- K₁--;

Column 14, line 14, cancel "K₁" and replace the cancelled text with -- K₁--;

Column 15, line 66, cancel "by one" and replace the cancelled text with --by the one--;

Column 15, line 67, cancel "K₁" and replace the cancelled text with -- K₁--;

Column 16, line 2, cancel "K₁" and replace the cancelled text with -- K₁--;

Column 16, line 60, cancel "portable overlay" and replace the cancelled text with --portable device overlay--.

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Anatoly S. Weiser
 3525 Del Mar Heights Rd., #295
 San Diego, CA 92130

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
)	Group Art Unit: 2455
Levanon et al.)	
)	Examiner: David R. Lazaro
)	
Appl. Ser. No.: 15/281,037)	Attorney File No.: AP026CON3
)	
Appl. Filed: September 29, 2016)	Office Action Mailed On: N/A
)	
Pat. No.: 9,641,645)	Confirmation No.: 2430
)	
Pat. Issued: May 2, 2017)	
)	
For: OPTIMIZED IMAGE DELIVERY)	
OVER LIMITED BANDWIDTH)	
COMMUNICATION CHANNELS)	
.....)	

**Commissioner for Patents
Office of Patent Publications
ATTN: Certificate of Correction Branch
P.O. Box 1450
Alexandria, VA 22313-1450**

REQUEST FOR CERTIFICATE OF CORRECTION

Dear Commissioner:

Patentee herein requests issuance of a Certificate of Correction in the above-referenced patent.

Form PTO/SB/44, a proposed Certificate of Correction, is filed herewith.

There are mistakes in the Claims. See particularly the Listing of Claims in the Amendment filed on or about February 15, 2017.

Please note that the line numbering in the attached Form PTO/SB/44 is as counted from the top of the respective column, and may deviate from the line numbering printed between the columns of the patent. In particular, the corrections in column 12 should be made on line 53 counting from the top, which is the 13th line counting from the bottom; and on line 55 counting from the top, which is the 11th line from the bottom.

If fee is necessary for this request, the undersigned authorizes such fee as it applies to a small entity to be charged to Deposit Account No. 50-3196.

Respectfully submitted,

Dated: May 26, 2017

/Anatoly S. Weiser/
Anatoly S. Weiser, Reg. No. 43,229
TechLaw LLP
3525 Del Mar Heights Road, #295
San Diego, CA 92130

Electronic Acknowledgement Receipt

EFS ID:	29331791
Application Number:	15281037
International Application Number:	
Confirmation Number:	2430
Title of Invention:	OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS
First Named Inventor/Applicant Name:	Isaac Levanon
Customer Number:	137611
Filer:	Anatoly Weiser.
Filer Authorized By:	
Attorney Docket Number:	AP026CON3
Receipt Date:	26-MAY-2017
Filing Date:	29-SEP-2016
Time Stamp:	22:20:08
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Certificate of Correction	CertificateOfCorrectionAsRequested-Image.pdf	220264 <small>66f758d21dee92ee18bbc00c843f8a7d017a65f3</small>	no	1

Warnings:

Information:					
2	Transmittal Letter	RequestForCoC-Image.pdf	197190	no	2
			d9b72380c6023b05fc5015969189e5b229b41817		
Warnings:					
Information:					
Total Files Size (in bytes):			417454		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					



UNITED STATES PATENT AND TRADEMARK OFFICE

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www.uspto.gov

Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO.
15/281,037 09/29/2016 Isaac Levanon AP026CON3 2430

137611 7590 06/20/2017
Bradium Technologies LLC
75 Montebello Road
Suffern, NY 10901

EXAMINER

LAZARO, DAVID R

ART UNIT PAPER NUMBER

2455

MAIL DATE DELIVERY MODE

06/20/2017

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Patent No. 9641645
Issued Date: 02 May, 2017
Appl. No: 15/281,037
Filed.: 29 September 2016

PART (A) RESPONSE FOR CERTIFICATES OF CORRECTION

This is a decision on the Certificate of Correction request filed 26 May 2017.

The request for issuance of Certificate of Correction for the above-identified correction(s) under the provisions of 37 CFR 1.322 and/or 1.323 is hereby:

(Check one)

- Approved Approved in Part Denied

Comments:

PART (B) PETITION UNDER 37 CFR 1.324 OR 37 CFR 1.48

This is a decision on the petition filed _____ to correct inventorship under 37 CFR 1.324.

This is a decision on the request under 37 CFR 1.48, petition filed _____. In view of the fact that the patent has already issued, the request under 37 CFR 1.48 has been treated as a petition to correct inventorship under 37 CFR 1.324.

The petition is hereby: Granted Dismissed

Comment:

The patented filed is being forwarded to Certificate of Corrections Branch for issuance of a certificate naming only the actual inventor or inventors.

/EMMANUEL L. MOISE/
Supervisory Patent Examiner, Art Unit 2455
Technology Center 2400
Phone: (571)272-3865

Certificates of Correction Branch email: CustomerServiceCoC@uspto.gov CoC Central Phone Number: (703) 756-1814