



US009641645B2

(12) **United States Patent**  
**Levanon et al.**

(10) **Patent No.:** **US 9,641,645 B2**  
(45) **Date of Patent:** **\*May 2, 2017**

(54) **OPTIMIZED IMAGE DELIVERY OVER LIMITED BANDWIDTH COMMUNICATION CHANNELS**

(58) **Field of Classification Search**  
CPC .... H04N 1/40068; H04N 1/4172; H04N 1/64; H04N 21/234345; H04N 21/234363; (Continued)

(71) Applicant: **Bradium Technologies LLC**, Suffern, NY (US)

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(73) Assignee: **BRADIUM TECHNOLOGIES LLC**, Suffern, NY (US)

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(Continued)

This patent is subject to a terminal disclaimer.

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

(21) Appl. No.: **15/281,037**

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(22) Filed: **Sep. 29, 2016**

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(65) **Prior Publication Data**

US 2017/0019501 A1 Jan. 19, 2017

**Related U.S. Application Data**

(63) Continuation of application No. 14/970,526, filed on Dec. 15, 2015, which is a continuation of application (Continued)

(57) **ABSTRACT**

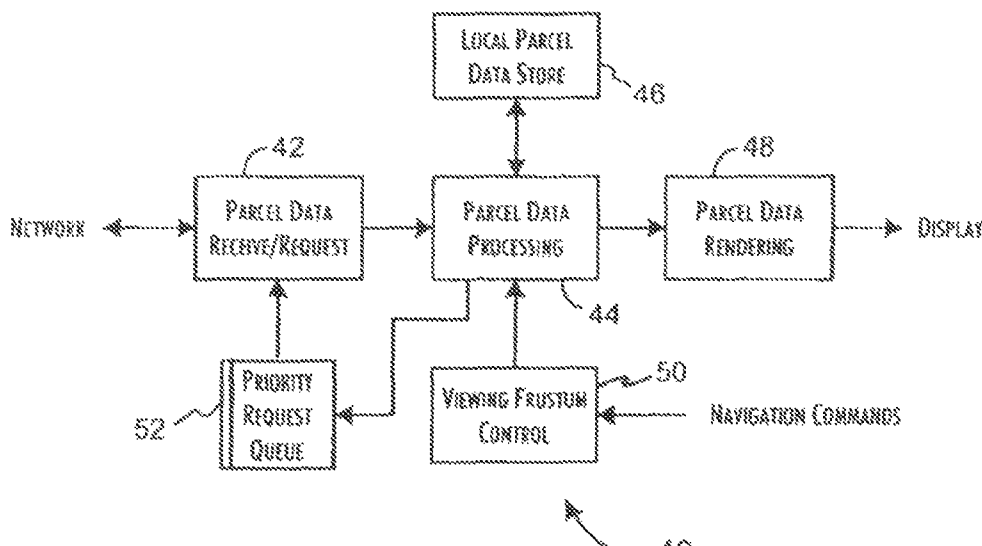
Large-scale images are retrieved over network communications channels for display on a client device by selecting an update image parcel relative to an operator controlled image viewpoint to display via the client device. A request is prepared for the update image parcel and associated with a request 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.

(51) **Int. Cl.**  
**G06F 15/16** (2006.01)  
**H04L 29/08** (2006.01)

(Continued)

(52) **U.S. Cl.**  
CPC ..... **H04L 67/327** (2013.01); **G06F 3/14** (2013.01); **G06F 3/1454** (2013.01); (Continued)

**36 Claims, 5 Drawing Sheets**



**Related U.S. Application Data**

No. 14/547,148, filed on Nov. 19, 2014, now Pat. No. 9,253,239, which is a continuation of application No. 13/027,929, filed on Feb. 15, 2011, now Pat. No. 8,924,506, which is a continuation-in-part of application No. 12/619,643, filed on Nov. 16, 2009, now Pat. No. 7,908,343, which is a continuation of application No. 10/035,987, filed on Dec. 24, 2001, now Pat. No. 7,644,131.

- (60) Provisional application No. 60/258,465, filed on Dec. 27, 2000, provisional application No. 60/258,466, filed on Dec. 27, 2000, provisional application No. 60/258,467, filed on Dec. 27, 2000, provisional application No. 60/258,468, filed on Dec. 27, 2000, provisional application No. 60/258,488, filed on Dec. 27, 2000, provisional application No. 60/258,489, filed on Dec. 27, 2000.

(51) **Int. Cl.**

**G06F 3/14** (2006.01)  
**G06T 3/40** (2006.01)  
**H04L 29/06** (2006.01)  
**G09G 5/00** (2006.01)

(52) **U.S. Cl.**

CPC ..... **G06T 3/4092** (2013.01); **G09G 5/003** (2013.01); **H04L 65/602** (2013.01); **H04L 67/42** (2013.01); **G09G 2340/02** (2013.01); **G09G 2350/00** (2013.01); **G09G 2370/02** (2013.01); **G09G 2370/16** (2013.01)

(58) **Field of Classification Search**

CPC ..... H04N 21/25825; G06F 17/30241; G06F 3/04815; G06T 3/4092; G06T 19/00; G06T 19/003  
 USPC ..... 709/202, 203, 217, 218, 230, 231; 382/305, 232; 345/428, 581, 625  
 See application file for complete search history.

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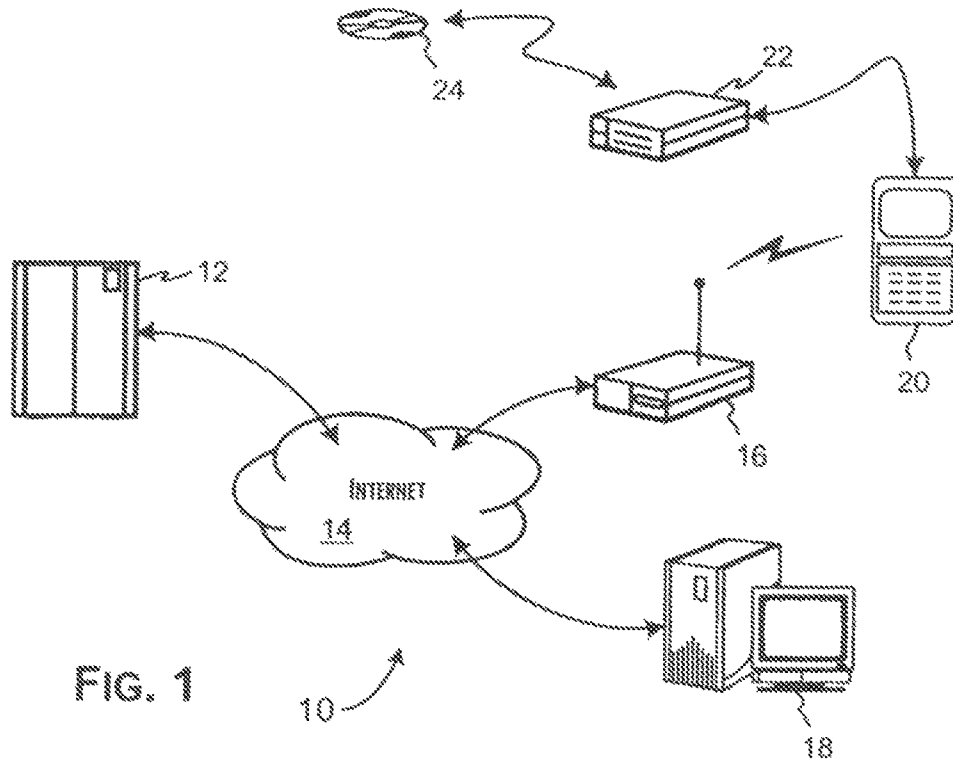


FIG. 1

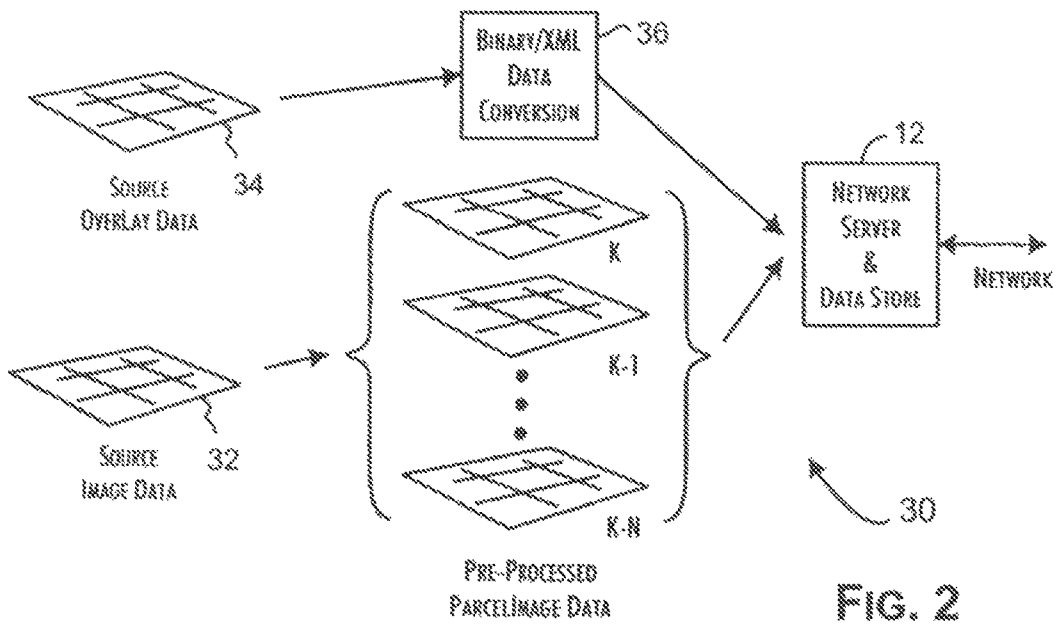


FIG. 2

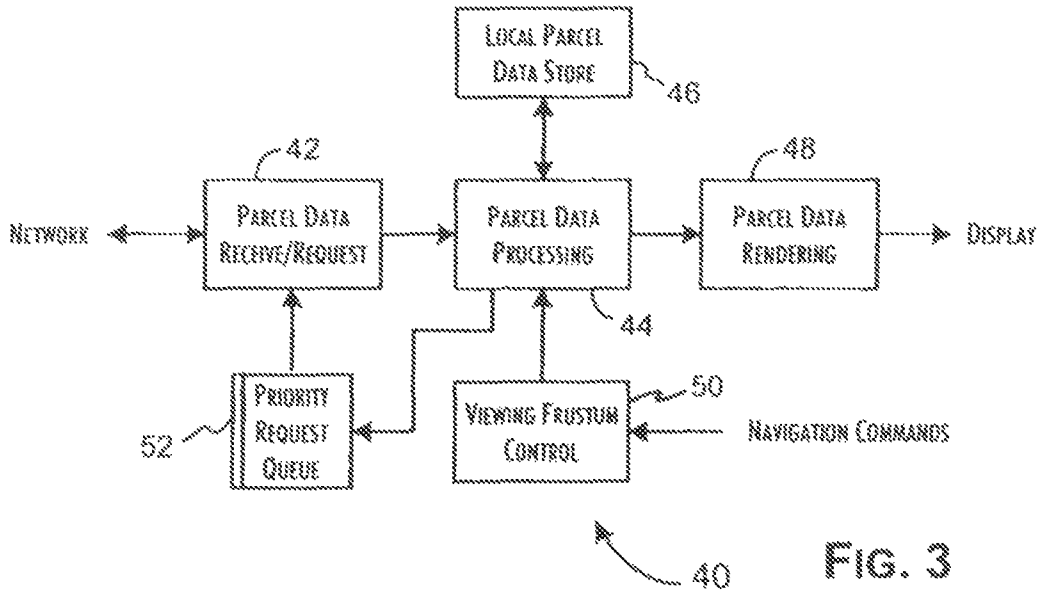


FIG. 3

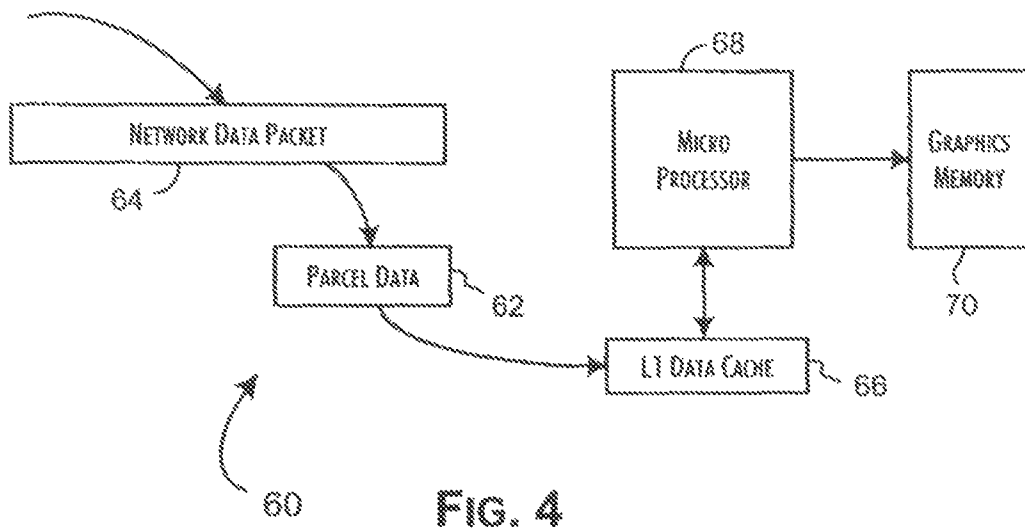


FIG. 4



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