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Levanon et al.

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

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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.

This patent is subject to a terminal disclaimer.

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(Continued)

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G06F 15/16 (2006.01)
H04L 29/08 (2006.01)
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(52) **U.S. Cl.**
CPC *H04L 67/327* (2013.01); *G06F 3/14* (2013.01); *G06T 3/4092* (2013.01); *G09G 5/003* (2013.01);
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(58) **Field of Classification Search**
CPC H04N 1/40068; H04N 1/4172; H04N 1/64; H04N 21/234345; H04N 21/234363;
(Continued)

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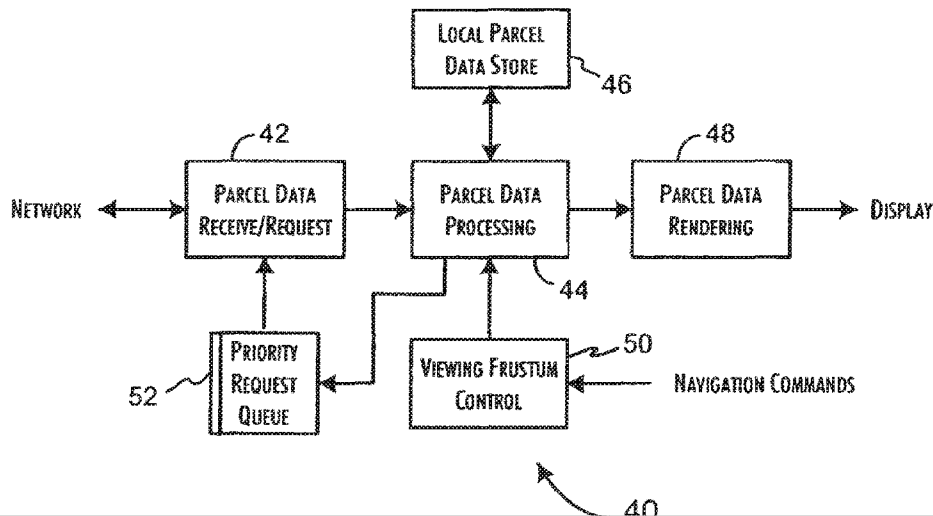
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(57) **ABSTRACT**

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.

27 Claims, 5 Drawing Sheets

Related U.S. Application Data

No. 14/970,526, filed on Dec. 15, 2015, which is a continuation of application 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.

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(51) **Int. Cl.**

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G06F 3/14	(2006.01)
G09G 5/00	(2006.01)
G06T 11/60	(2006.01)
G06T 15/04	(2011.01)
G06F 17/24	(2006.01)
G06T 19/00	(2011.01)

(52) **U.S. Cl.**
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(58) **Field of Classification Search**
CPC H04N 21/25825; G06F 17/30241; G06F 3/04815; G06T 3/4092; 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

INTERNET
14

10

BINARY/XML
DATA
CONVERSION

36

SOURCE
OVERLAY DATA

34

NETWORK
SERVER
&
DATA STORE

12

NETWORK

K

K-1

SOURCE
IMAGE DATA

32

K-N

PRE-PROCESSED
PARCEL IMAGE DATA

30

FIG. 2

FIG. 3

FIG. 4

FIG. 5

FIG. 6

DOCKET ALARM
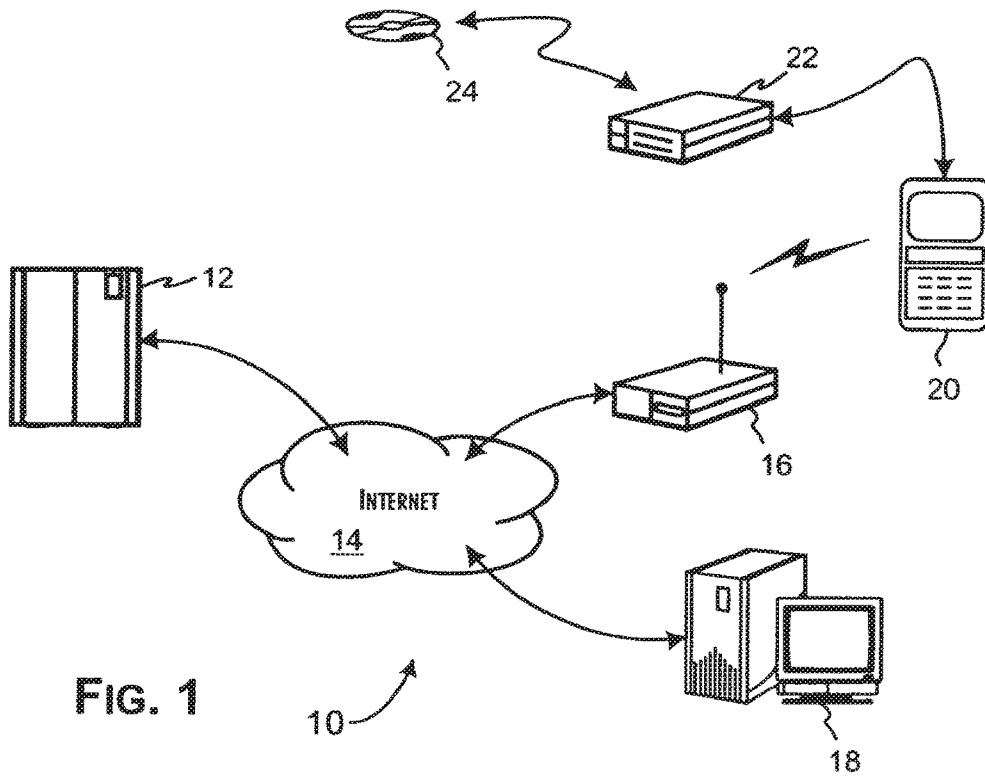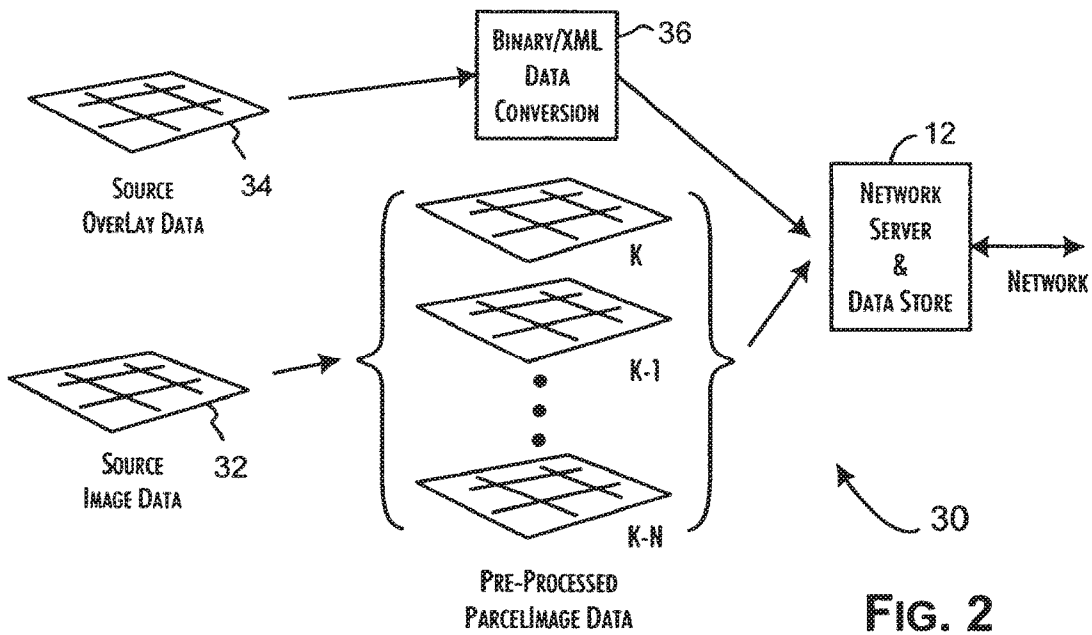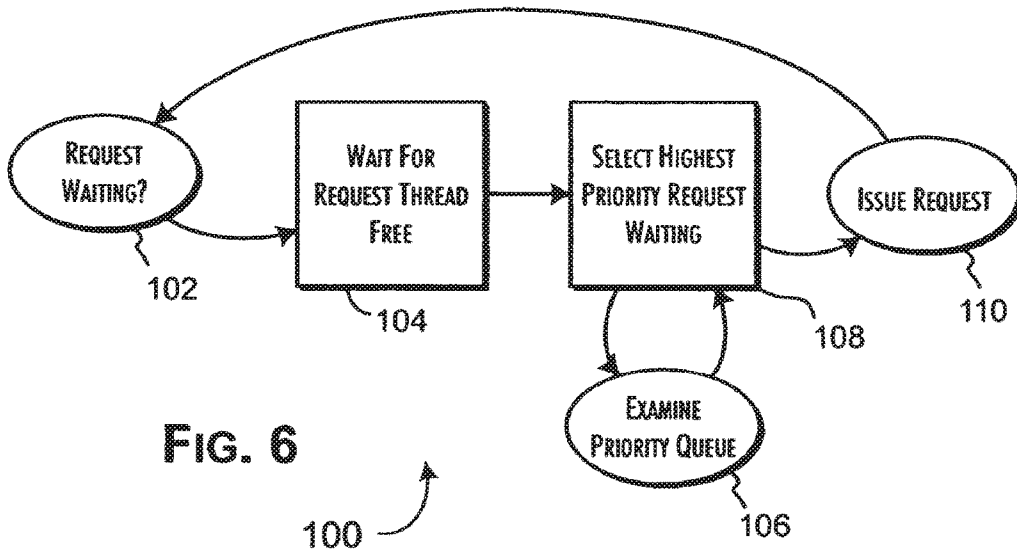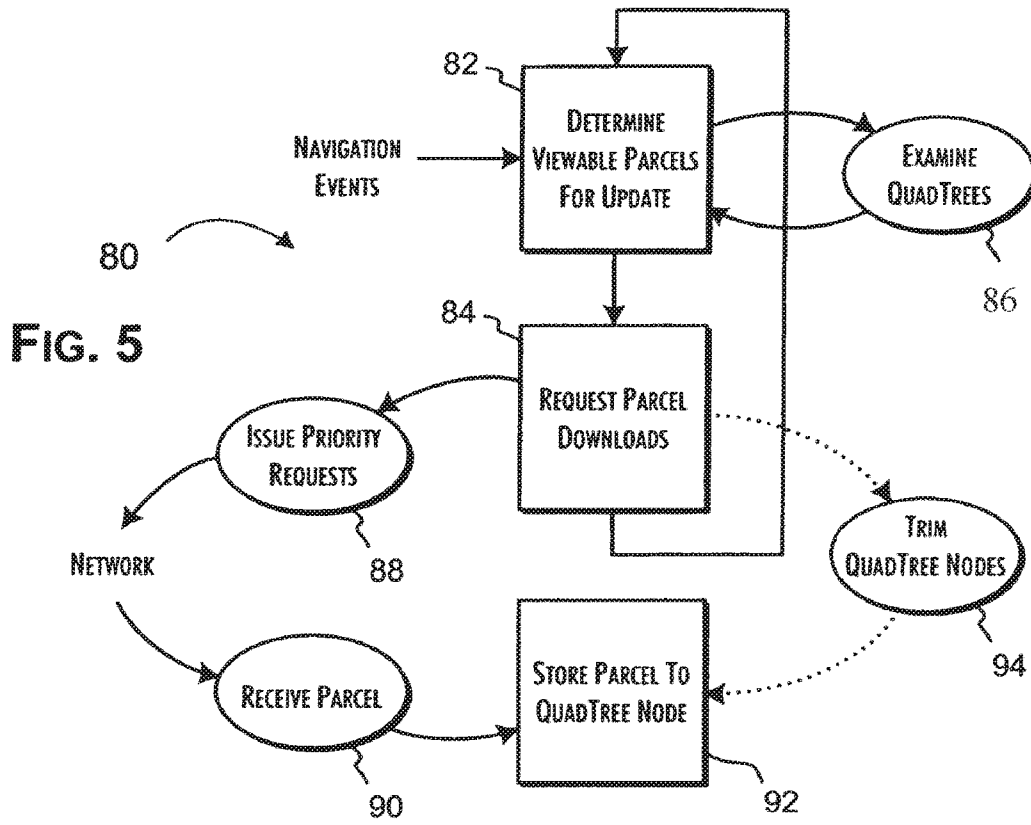
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