

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Western District of Texas - Austin Division on the following

☐ Trademarks or ☒ Patents. (☐ the patent action involves 35 U.S.C. § 292.);

DOCKET NO. 1:23-cv-925	DATE FILED 8/4/2023	U.S. DISTRICT COURT Western District of Texas - Austin Division
PLAINTIFF Graphite Charging Company LLC		DEFENDANT Tesla, Inc.
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 8,103,391	1/24/2012	Graphite Charging Company LLC
2 8,291,243	10/16/2012	Graphite Charging Company LLC
3		
4		
5		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK	
1			
2			
3			
4			
5			

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO: Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
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DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
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Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
 Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy



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

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
12/257,627	8291243	2111	9200



Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 22032 on 03/05/2013

- Maintenance Fee Address

The address of record for Customer Number 22032 is:

22032

Elaine Venturelli

IBM Intellectual Property Law Department

4205 S Miami Blvd

Internal Address T81/503

Durham, NC 27703-9141

PART 1 - ATTORNEY/APPLICANT COPY

page 1 of 1



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

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/257,627	10/16/2012	8291243	END920070512US1_IEN106496	7420

26502 7590 09/26/2012
IBM CORPORATION
IPLAW SHCB/40-3
1701 NORTH STREET
ENDICOTT, NY 13760

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 897 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.

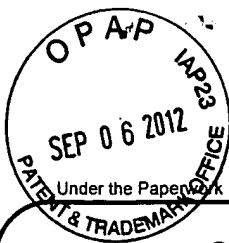
Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

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):

Vittorio Castelli, Croton on Hudson, NY;
Rick A. Hamilton II, Charlottesville, VA;
Brian M. O'Connell, Cary, NC;
Clifford A. Pickover, Yorktown Heights, NY;
Keith R. Walker, Austin, TX;

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.



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PTO/SB/122 (01-06)
Approved for use through 12/31/2008. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

CHANGE OF CORRESPONDENCE ADDRESS *Application*

Address to:
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	12/257,627
Filing Date	October 24, 2008
First Named Inventor	Vittorio Caselli
Art Unit	2111
Examiner Name	Jeremy S. Cerullo
Attorney Docket Number	END920070512US1 _IEN106496

Please change the Correspondence Address for the above-identified patent application to:

☒ The address associated with
Customer Number:

26502

OR

☐ Firm or
Individual Name

Address

City

State

Zip

Country

Telephone

Email

This form cannot be used to change the data associated with a Customer Number. To change the data associated with an existing Customer Number use "Request for Customer Number Data Change" (PTO/SB/124).

I am the:

- ☐ Applicant/Inventor
- ☐ Assignee of record of the entire interest.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96).
- ☒ Attorney or agent of record. Registration Number 41,697
- ☐ Registered practitioner named in the application transmittal letter in an application without an executed oath or declaration. See 37 CFR 1.33(a)(1). Registration Number _____

Signature /Patrick J. Daugherty/

Typed or Printed
Name Patrick J. Daugherty

Date June 7, 2012

Telephone 440-391-5100

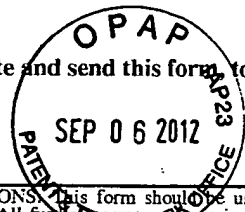
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 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.

TPW
\$



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)

26681 7590 06/07/2012
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

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.
12/257,627	10/24/2008	Vittorio Castelli	END920070512US1_IEN106496	7420

TITLE OF INVENTION: ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300		09/07/2012 090457 12257627	

EXAMINER	ART UNIT	CLASS-SUBCLASS
CERULLO, JEREMY S	2111	713-320000

01 FC:1501	1740.00 DA
02 FC:1504	300.00 DA

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☒ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "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,
(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.

1 Patrick J. Daugherty
Driggs, Hogg, Daugherty
& Del Zoppo Co., LPA
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

International Business Machines
Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Armonk, NY

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:

- ☒ Issue Fee
☒ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 090457 (enclose an extra copy of this form).

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

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature

Date

June 11, 2012

Typed or printed name

Patrick J. Daugherty

Registration No.

41697

This collection of information 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.

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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

NOTICE OF ALLOWANCE AND FEE(S) DUE

26681 7590 06/07/2012
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

EXAMINER

CERULLO, JEREMY S

ART UNIT

PAPER NUMBER

2111

DATE MAILED: 06/07/2012

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/257,627

10/24/2008

Vittorio Castelli

END920070512US1_IEN106496

7420

TITLE OF INVENTION: ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	09/07/2012

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 SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

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.

26681 7590 06/07/2012
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

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.
-----------------	-------------	----------------------	---------------------	------------------

12/257,627 10/24/2008 Vittorio Castelli END920070512US1_IEN106496 7420

TITLE OF INVENTION: ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1740	\$300	\$0	\$2040	09/07/2012

EXAMINER	ART UNIT	CLASS-SUBCLASS
CERULLO, JEREMY S	2111	713-320000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "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:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

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

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/257,627	10/24/2008	Vittorio Castelli	END920070512US1_IEN106496	7420

26681 7590 06/07/2012
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

EXAMINER

CERULLO, JEREMY S

ART UNIT PAPER NUMBER

2111

DATE MAILED: 06/07/2012

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

The Patent Term Adjustment to date is 684 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 684 day(s).

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 Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

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.	Applicant(s)	
	12/257,627	CASTELLI ET AL.	
	Examiner	Art Unit	
	Jeremy S. Cerullo	2111	

-- 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 the amendment filed on 14 September 2011.
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 1-20.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - 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. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
 - (b) ☐ 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).**
7. ☐ 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. ☒ Notice of References Cited (PTO-892) | 5. ☐ Notice of Informal Patent Application |
| 2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____. |
| 3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date ____ | 7. ☐ Examiner's Amendment/Comment |
| 4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. ☒ Examiner's Statement of Reasons for Allowance |
| | 9. ☐ Other ____. |

/J. S. C./
Examiner, Art Unit 2111

/Mark Rinehart/
Supervisory Patent Examiner, Art Unit 2111

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Independent Claims 1, 11, 15, and 18 are considered to be allowable, particularly due to the limitations that a computational device reduces its power consumption based on an indication of high demand for electricity on the power grid. Art exists that teaches reducing power consumption based on various factors such as user input (U.S. Patent No. 7,353,413), how efficiently the device is utilizing the power (U.S. Patent No. 7,349,828), and the device's workload (U.S. Patent No. 6,859,882 and U.S. Patent No. 7,533,283), and art exists that manages a power grid based on demand (U.S. Patent No. 7,171,287). However, they do not teach a device reducing its power consumption based on an indication of high demand for electricity on the power grid. This limitation, when considered with each of the claims in its entirety, renders the independent claims allowable.

Dependent Claims 2-10, 12-14, 16-17, and 19-20 inherit the allowable subject matter from their parent claims, and are likewise allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

Art Unit: 2111

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy S. Cerullo whose telephone number is (571)272-3634. The examiner can normally be reached on Monday through Friday, 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached on (571) 272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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.

/J. S. C./
Examiner, Art Unit 2111

/Mark Rinehart/
Supervisory Patent Examiner, Art Unit 2141

Notice of References Cited	Application/Control No. 12/257,627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.	
	Examiner Jeremy S. Cerullo	Art Unit 2111	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,859,882 B2	02-2005	Fung, Henry T.	713/300
*	B	US-7,171,287 B2	01-2007	Weiss, Anton	700/291
*	C	US-7,349,828 B1	03-2008	Ranganathan et al.	702/186
*	D	US-7,353,413 B2	04-2008	Dunstan, Robert A.	713/320
*	E	US-7,533,283 B2	05-2009	Fung, Henry T.	713/322
	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					
	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.

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	22780	electric\$ same availab\$ same (cost price)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2012/03/12 00:31
L2	4129	713/320.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2012/03/12 00:31
L3	39	l1 and L2	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2012/03/12 00:31
L4	333	l1 same weather	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2012/03/12 00:36
L5	4	l4 and "713".clas.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2012/03/12 00:36
L6	7895	713/320,323,324,340.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2012/03/12 00:38
S1	3587	713/320.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:09
S2	38783	power near2 feed	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:10
S3	52	S1 and S2	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:10
S4	818909	environmental\$	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:14
S5	306	S1 and S4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:14
S6	1127353	threshold	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15

S7	140	S5 and S6	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
S8	360935	conserv\$	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
S9	6314	S8 with S4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
S10	21	S9 and S1	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
S11	10	((("6785592") or ("7171287") or ("7349828") or ("7353413") or ("20080077355")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/06/13 11:20

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	2937	713/320,323,324,340.cds.	US-PGPUB; UPAD	OR	ON	2012/03/12 00:38

3/ 12/ 2012 12:42:54 AM
C:\ Users\ jcerullo\ Documents\ EAST\ Workspaces\ 12 Series\ JCerullo-12257627.wsp

<i>Issue Classification</i> 	Application/Control No. 12257627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.
	Examiner JEREMY S CERULLO	Art Unit 2111

[illegible][illegible]

/JEREMY S CERULLO/ Examiner.Art Unit 2111		03/12/2012		Total Claims Allowed:	
(Assistant Examiner)		(Date)		20	
/Mark Rinehart/ Supervisory Patent Examiner, Art Unit 2111				O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)		(Date)		1	1



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BIB DATA SHEET

CONFIRMATION NO. 7420

SERIAL NUMBER 12/257,627	FILING or 371(c) DATE 10/24/2008 RULE	CLASS 713	GROUP ART UNIT 2111 END	ATTORNEY DOCKET NO. 920070512US1_IEN105496
APPLICANTS Vittorio Castelli, Croton on Hudson, NY; Rick A. Hamilton II, Charlottesville, VA; Brian M. O'Connell, Cary, NC; Clifford A. Pickover, Yorktown Heights, NY; Keith R. Walker, Austin, TX;				
** CONTINUING DATA ***** ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **				
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and /JEREMY S CERULLO/ Acknowledged Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY NY	SHEETS DRAWINGS 3	TOTAL CLAIMS 20
INDEPENDENT CLAIMS 4				
ADDRESS Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A. 38500 CHARDON ROAD DEPT. IEN WILLOUGHBY HILLS, OH 44094 UNITED STATES				
TITLE ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS				
FILING FEE RECEIVED 1310	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:		☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit	

<i>Index of Claims</i> 	Application/Control No. 12257627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.
	Examiner JEREMY S CERULLO	Art Unit 2111

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☒ Claims renumbered in the same order as presented by applicant											☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE														
Final	Original	06/13/2011	03/12/2012													
	1	✓	=													
	2	✓	=													
	3	✓	=													
	4	✓	=													
	5	✓	=													
	6	✓	=													
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	17	✓	=													
	18	✓	=													
	19	✓	=													
	20	✓	=													

Search Notes 	Application/Control No. 12257627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.
	Examiner JEREMY S CERULLO	Art Unit 2111

SEARCHED			
Class	Subclass	Date	Examiner
713	320	6-13-2011	JSC
713	320, 323, 324, 340	3/12/2012	JSC

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search - See attached history	6-13-2011	JSC
Updated Previous Search	3/12/2012	JSC

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner
713	320, 323, 324, 340	3/12/2012	JSC

/JEREMY S CERULLO/ Examiner.Art Unit 2111	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No.: 12/257,627 Conf. No.: 7420
Inventor: Vittorio Castelli et al
Filed: October 24, 2008
TC/AU: 2111
Examiner: Jeremy S. Cerullo
Title: ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL
CONDITIONS
Docket No.: END920070512US1_IEN-10-6496
Customer No.: 26681

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

AMENDMENT / REQUEST FOR RECONSIDERATION

Dear Sir:

In response to the Office Action mailed June 16, 2011, please reconsider the above-identified application in view of the amendments and comments herein.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 11 of this paper.

END920070512US1_IEN-10-6496

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Presently Amended) A method for adapting the power consumption of a computational device in response to environmental conditions, comprising:
acquiring operating environmental condition data relevant to the generation of electric power in a power grid system from an operating environment feed input;
analyzing the operating ~~environment feed~~ environmental condition data to determine a ~~an~~ indication of a high demand for electric power demand indication from the power grid system;
and
a computational device automatically reducing ~~an a current~~ amount of consumption of electric power consumption from the power grid system by the computational device if the analyzing determines the high electric power demand indication.

2. (Presently Amended) The method of claim 1, ~~further comprising:~~
~~—— aggregating the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by the computational device;~~
~~—— providing the aggregate data feed to the computational device;~~
~~—— the computational device processing the aggregate data feed; and~~
~~—— wherein the computational device automatically reducing the amount of electric power consumption comprises automatically reducing the amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed through the computational device aggregate data feed processing.~~
wherein the analyzing the operating environmental condition data determines the indication of the high demand for electric power from the power grid system if the operating environmental

condition data indicates that a small size fossil fuel plant is coming on-line to provide power to the power grid system in response to a power demand on the power grid system.

3. (Presently Amended) The method of claim ~~2~~ 1, further comprising the computational device automatically increasing ~~an~~ the current amount of electric power consumption of electric power from the power grid system by the computational device from a current reduced electric power consumption level in response to ~~recognizing that the high electric power demand indicator is not present in the aggregate data feed through the aggregate data feed processing~~ not determining the indication of the high demand for electric power from the power grid system by analyzing the operating environmental condition data.

4. (Presently Amended) The method of claim ~~2~~ 1, wherein the operating environment feed is a really simple syndication feed from at least one of an electricity plant and a weather service.

5. (Presently Amended) The method of claim ~~2~~ 1, ~~the providing the aggregate data feed to the computational device further simultaneously providing the aggregate data feed to a plurality of individual computers;~~
—— ~~the computational device processing the aggregate data feed comprising each of the plurality of individual computers processing the aggregate data feed; and~~
—— ~~the computational device automatically reducing the amount of electric power consumption comprising each of the plurality of individual computers automatically reducing an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed.~~

wherein the analyzing the operating environmental condition data determines indication of the high demand for electric power if the operating environmental condition data indicates an unusual weather condition that may result in heavy demand for power from the power grid system.

6. (Presently Amended) The method of claim-2_3, further comprising:
regularly updating the ~~acquiring~~-acquired the operating environmental condition data;
if changes are found in the updated environmental condition data, updating an internal state table with new downloaded data from the operating environment feed input; and
~~invoking the analyzed operating environment feed data aggregating in response to the found changes~~ automatically reducing a present amount of consumption of electric power from the power grid system by the computational device if analyzing the updated state table data determines a high electric power demand indication, or increasing the present amount of consumption of electric power from the power grid system by the computational device if analyzing the updated state table data does not determine a high electric power demand indication.
7. (Presently Amended) The method of claim-2_1, wherein the operating environmental condition data feed comprises information describing an output capacity and a current output of each of plurality of potential energy producers of the power grid system; and
wherein the ~~aggregating the analyzed operating environment feed data comprises including the high electric power demand indicator~~ analyzing the operating environmental condition data determines the indication of the high demand for electric power from the power grid system if the operating environmental condition data feed information indicates a relatively ~~local and~~ environmentally-friendly energy producer is near its output capacity.
8. (Presently Amended) The method of claim 2-1 wherein the analyzing the operating environment feed data to determine a high electric power demand indication comprises:
applying a weighted function comprising a linear combination of values obtained from a plurality of different feeds, each of the different feeds having a weight; and
if the linear combination is above a certain threshold, including the high demand indicator in the aggregate feed.

9. (Presently Amended) The method of claim ~~2-1~~, ~~wherein the further comprising determining the indication of the high demand for electric power from the power grid system in response to data in the operating environmental condition data environment feed high demand indication or the aggregate feed high demand indicator that~~ comprises at least one of:

- ~~———— a small size fossil fuel plant coming on line in response to a peak power demand;~~
- ~~———— a spot price value of electricity; and~~
- ~~———— a rate of change of a price of electricity[[:]];~~
- ~~———— a weather condition;~~
- ~~———— a time of day;~~
- ~~———— a facility energy use value; and~~
- ~~———— census data associated with a specified energy use or demand.~~

10. (Presently Amended) The method of claim 9 wherein the step of the computational device automatically reducing an the current amount of electric power consumption of electric power from the power grid system by the computational device comprises running nonessential services only when ~~a the~~ spot price value of electricity is low.

11. (Presently Amended) A service for adapting the power consumption of a computational device in response to environmental conditions, comprising:

providing a computer infrastructure configured to:

acquire operating environmental condition data relevant to the generation of electric power in a power grid system from ~~a really simple syndication an~~ operating environment feed input;

analyze the operating ~~environment feed~~ environmental condition data to determine ~~a demand indication from the power grid system~~ an indication of a high demand for electric power; and

cause a computational device to automatically reduce ~~an a current~~ amount of consumption of electric power consumption from the power grid system by the computational device if the analyzing determines the high electric power demand indication.

12. (Presently Amended) The service of claim 11, wherein the computer infrastructure is further configured to:

~~aggregate the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by a computational device; and~~

~~—— provide the aggregate data feed to the computational device;~~

~~—— wherein the computational device is configured to process the aggregate data feed and to automatically reduce an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed or to automatically increase an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed.~~

determine the indication of the high demand for electric power from the power grid system if the operating environmental condition data indicates that a small size fossil fuel plant is coming on-line to provide power to the power grid system in response to a power demand on the power grid system.

13. (Presently Amended) The service of claim 12, wherein the computer infrastructure is further configured to ~~provide the aggregate data feed simultaneously to a plurality of individual computers, wherein each of the plurality of individual computers are configured to automatically reducing an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed;~~ determine the indication of the high demand for electric power from the power grid system if the operating environmental condition data indicates an unusual weather condition that may result in heavy demand for power from the power grid system.

14. (Presently Amended) The service of claim 12, wherein the computer infrastructure is further configured to determine the high electric power demand indication; ~~or to provide an aggregate feed high demand indicator comprising;~~ in response to data in the operating environmental condition data that comprises at least one of:

- ~~—— data indicating a small size fossil fuel plant is coming on line in response to a peak power demand;~~
- a spot price value of electricity; and
- a rate of change of a price of electricity[[:]]; a weather condition;
- ~~—— a time of day;~~
- ~~—— a facility energy use value; and~~
- ~~—— census data associated with a specified energy use or demand.~~

15. (Presently Amended) ~~A method~~ An article of manufacture for adapting the power consumption of a computational device in response to environmental conditions, comprising:

- ~~producing computer executable program code;~~
- ~~storing the code on a computer readable medium; and~~
- providing the a computer readable tangible storage medium having computer readable program code embodied therewith ~~to be deployed and executed on a computer system,~~ the computer readable program code comprising instructions which, when executed on ~~the a~~ computer system, cause the computer system to:

- acquire operating environmental condition data relevant to the generation of electric power in a power grid system ~~from a really simple syndication~~ an operating environment feed input;
- analyze the operating ~~environment feed~~ environmental condition data to determine a an indication of a high demand for electric power demand indication from the power grid system; and
- ~~—— aggregate the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing~~

~~determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by a computational device; and~~
~~provide the aggregate data feed to the computational device;~~
~~wherein the cause a computational device is configured to process the aggregate data feed and to automatically reduce an amount of consumption of electric power consumption from the power grid system by the computational device if the analyzing determines the high electric power demand indication, in response to recognizing the high electric power demand indicator in the aggregate data feed or to automatically increase an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed.~~

16. (Presently Amended) The ~~method~~article of manufacture of claim 15, the program code comprising instructions which, when executed on the computer system, causes the computer system to:

~~regularly update the acquiring~~acquired the operating environmental condition data;
if changes are found in the updated environmental condition data, update an internal state table with new downloaded data from the operating environment feed input; and
~~invoke the analyzed operating environment feed data aggregating in response to the found changes~~automatically reduce a present amount of consumption of electric power from the power grid system by the computational device if analyzing the updated state table data determines a high electric power demand indication.

17. (Presently Amended) The ~~method~~article of manufacture of claim 15, the program code comprising instructions which, when executed on the computer system, causes the computer system to analyze the operating environment feed data to determine ~~a~~the high electric power demand indication ~~by~~if the operating environmental condition data feed information indicates a relatively environmentally-friendly energy producer is near its output capacity.

~~applying a weighted function comprising a linear combination of values obtained from a plurality of different feeds, each of the different feeds having a weight; and~~

~~—— if the linear combination is above a certain threshold, including the high demand indicator in the aggregate feed.~~

18. (Presently Amended) A programmable device comprising:
a processing means;
a memory in communication with the processing means comprising a logic component;
and
a network interface in communication with the processing means and the memory;
wherein the processing means is configured to:
acquire operating environmental condition data relevant to the generation of electric power in a power grid system from ~~a really simple syndication~~ an operating environment feed input;
analyze the operating ~~environment feed~~ environmental condition data to determine a an indication of a high demand for electric power ~~demand indication from the power grid system~~; and
~~—— aggregate the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by a computational device; and~~
~~—— provide the aggregate data feed to the computational device;~~
~~wherein the cause a computational device is configured to process the aggregate data feed and to automatically reduce an a current amount of consumption of electric power consumption from the power grid system by the computational device if the analyzing determines the high electric power demand indication. in response to recognizing the high electric power demand indicator in the aggregate data feed or to automatically increase an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed.~~

19. (Presently Amended) The programmable device of claim 18, wherein processing means is configured to:

regularly update the ~~acquiring~~ acquired the operating environmental condition data;
if changes are found in the updated environmental condition data, update an internal state table with new downloaded data from the operating environment feed input; and
~~invoke the analyzed operating environment feed data aggregating in response to the found changes~~ automatically reduce a present amount of consumption of electric power from the power grid system by the computational device if analyzing the updated state table data determines a high electric power demand indication.

20. (Presently Amended) The programmable device of claim 18, wherein processing means is configured to analyze the operating environment feed data to determine a high electric power demand indication by:

~~applying a weighted function comprising a linear combination of values obtained from a plurality of different feeds, each of the different feeds having a weight; and~~
~~—— if the linear combination is above a certain threshold, including the high demand indicator in the aggregate feed.~~
determining the indication of the high demand for electric power if the operating environmental condition data indicates that a small size fossil fuel plant is coming on-line to provide power to the power grid system in response to a power demand on the power grid system.

REMARKS

The Rejection of Claims 1-20 under 35 U.S.C. 112, First Paragraph

Claims 1-20 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Each of the independent claims 1, 11, 15 and 18 has been amended to clarify the “high electric power indication” as indicative of “a high demand for electric power *from* the power grid system.” Further, the claims are also amended to clarify that the *computational devices* automatically reduce *their* amounts of consumption of electric power *from* the power grid system in response to the analyzing/determining the high electric power demand indication. The remaining claims 2-10, 12-14, 16-17 and 19-20 depend from one of claims 1, 11, 15 and 18, and each is now enabled by virtue of their respective dependencies.

The amendments are fully supported by the originally filed specification. For example, see paragraphs [0015]-[0017], [0019], [0024]-[0025]. Claims 1-20 are thus now allowable as enabled under 35 U.S.C. 112, first paragraph.

The Rejection of Claims 1-20 under 35 U.S.C. 112, Second Paragraph

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Each of the independent claims 1, 11, 15 and 18 has been amended to clarify that the “high electric power indication” indicative of “a high demand for electric power *from* the power grid system” is determined by *analyzing* operating environmental condition data from an operating environment feed input. Further, the claims are also amended to clarify that the *computational devices* and automatically reduce *their* amounts of consumption of electric power *from* the power grid system in response to said analyzing/determining the high electric power demand indication. The remaining claims 2-10, 12-14, 16-17 and 19-20 depend from one of claims 1, 11, 15 and 18, and each now also particularly points out and distinctly claims the subject matter of their respective claimed inventions by virtue of their respective dependencies.

Application No. 12/257,627
Amdt. Dated: September 14, 2011
Reply to Office Action Dated: June 16, 2011

Claims 1-20 are thus now each allowable as particularly pointing out and distinctly claiming the subject matter which applicants regard as the inventions claimed under 35 U.S.C. 112, second paragraph.

Respectfully submitted,

/Patrick J. Daugherty/
Patrick J. Daugherty, Reg. No. 41,697
CUSTOMER NO. 26681

Electronic Acknowledgement Receipt

EFS ID:	10942910
Application Number:	12257627
International Application Number:	
Confirmation Number:	7420
Title of Invention:	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS
First Named Inventor/Applicant Name:	Vittorio Castelli
Customer Number:	26681
Filer:	Patrick J. Daugherty/Carole Giacomazzo
Filer Authorized By:	Patrick J. Daugherty
Attorney Docket Number:	END920070512US1_IEN106496
Receipt Date:	14-SEP-2011
Filing Date:	24-OCT-2008
Time Stamp:	10:04:09
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		END920070512US1_Amendme ntToOfficeAction1_09_14_201 1.pdf	69758 856d855b9c9c2641e8750d2d43afec51c24 b127b	yes	12

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	10
	Applicant Arguments/Remarks Made in an Amendment	11	12
Warnings:			
Information:			
Total Files Size (in bytes):		69758	
<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 12/257,627		Filing Date 10/24/2008		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☐ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	minus 20 =	*	X \$	=	OR	X \$	=			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$	=		X \$	=			
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 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))										
			TOTAL			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)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	09/14/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 20	Minus	** 20	= 0	X \$	=	OR	X \$52=	0
	Independent (37 CFR 1.16(h))	* 4	Minus	***4	= 0	X \$	=	OR	X \$220=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	0	
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=		X \$	=		
	Independent (37 CFR 1.16(h))	*	Minus	***	=		X \$	=		
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
				TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE			
<p>* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.</p> <p>** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".</p> <p>*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".</p> <p>The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.</p>										

Legal Instrument Examiner:
/CORALIA BETANCOURT/

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.**

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/257,627	10/24/2008	Vittorio Castelli	END920070512US1_IEN106496	7420

26681 7590 06/16/2011
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

EXAMINER

CERULLO, JEREMY S

ART UNIT	PAPER NUMBER
----------	--------------

2111

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

06/16/2011

ELECTRONIC

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptocommunications@driggslaw.com
carole@driggslaw.com
alicia@driggslaw.com

Office Action Summary	Application No. 12/257,627	Applicant(s) CASTELLI ET AL.	
	Examiner Jeremy S. Cerullo	Art Unit 2111	

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

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
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)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) |
| 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) ☒ Information Disclosure Statement(s) (PTO/SB/08) | 5) ☐ Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20081024</u> . | 6) ☐ Other: _____ |

DETAILED ACTION

1. Claims 1-20 are pending in the following action.

Claim Rejections - 35 USC § 112 – 1st Paragraph

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1, 11, and 15 refer to a “high electric power indication”. However, such an indication is not sufficiently defined in the specification. As such, it is not known if this indication is meant to indicate a high demand is generated by the system or by the external power grid, and therefor the disclosure does not enable one to make and/or use the invention of Claims 1, 11, and 15 and their dependents.

Claim Rejections - 35 USC § 112 – 2nd Paragraph

Art Unit: 2111

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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.

5. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 11, and 15 refer to a “high electric power indication”. However, this language is unclear. It is not known if this indication is meant to indicate a high demand is generated by the system or by the external power grid, and therefor the subject matter of Claims 1, 11, and 15 and their dependents are indefinite.

Conclusion

6. The above-noted issues with the claims preclude a proper rejection with respect to prior art at this time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy S. Cerullo whose telephone number is (571)272-3634. The examiner can normally be reached on Tuesday - Friday, 8:00-4:00; Alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on (571) 272-3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2111

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.

/Jeremy S. Cerullo/
Examiner, Art Unit 2111

Notice of References Cited	Application/Control No. 12/257,627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.	
	Examiner Jeremy S. Cerullo	Art Unit 2111	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
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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.

Search Notes 	Application/Control No. 12257627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.
	Examiner JEREMY S CERULLO	Art Unit 2111

SEARCHED			
Class	Subclass	Date	Examiner
713	320	6-13-2011	JSC

SEARCH NOTES		
Search Notes	Date	Examiner
EAST Search - See attached history	6-13-2011	JSC

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

/JEREMY S CERULLO/ Examiner.Art Unit 2111	
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<i>Index of Claims</i> 	Application/Control No. 12257627	Applicant(s)/Patent Under Reexamination CASTELLI ET AL.
	Examiner JEREMY S CERULLO	Art Unit 2111

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant											☐ CPA											☐ T.D.											☐ R.1.47										
CLAIM		DATE																																									
Final	Original	06/13/2011																																									
	1	✓																																									
	2	✓																																									
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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3587	713/320.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:09
L2	38783	power near2 feed	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:10
L3	52	l1 and l2	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:10
L4	818909	environmental\$	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:14
L5	306	l1 and l4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:14
L6	1127353	threshold	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
L7	140	l5 and l6	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
L8	360935	conserv\$	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
L9	6314	l8 with l4	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
L10	21	l9 and l1	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/06/13 11:15
L11	10	((("6785592") or ("7171287") or ("7349828") or ("7353413") or ("20080077355")).PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	OFF	2011/06/13 11:20

6/ 13/ 11 11:41:48 AM**H:\ EAST Workspaces\ 12 Series\ JCerullo-12257627.wsp**

Receipt date: 10/24/2008

12257627 - GAU: 2111

Approved for use through 11/30/2007. OMB 0651-0031

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Castelli	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	END920070512US1-IEN106494	

U.S.PATENTS						
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
	1	6785592		2004-08-31	Smith et al.	
	2	7171287		2007-01-30	Weiss	
	3	7349828		2008-03-25	Ranganathan et al.	
	4	7353413		2008-04-01	Dunstan	

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U.S.PATENT APPLICATION PUBLICATIONS						
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
	1	20080077355		2008-03-27	Casler et al.	

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FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵

Receipt date: 10/24/2008 INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		12257627 - GAU: 2111	
	Filing Date			
	First Named Inventor	Castelli		
	Art Unit			
	Examiner Name			
	Attorney Docket Number		END920070512US1-IEN106494	

	1								☐

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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
	1		☐

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EXAMINER SIGNATURE

Examiner Signature	/Jeremy S. Cerullo/	Date Considered	06/13/2011
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*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.



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
12/257,627	10/24/2008	Vittorio Castelli	END920070512US1_IEN106496

CONFIRMATION NO. 7420

PUBLICATION NOTICE



OC000000041363813

26681
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

Title:ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

Publication No.US-2010-0106982-A1

Publication Date:04/29/2010

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 (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, 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.

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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
12/257,627	10/24/2008	2611	1310	END920070512US1_IEN106496	20	4

CONFIRMATION NO. 7420

26681

Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.
38500 CHARDON ROAD
DEPT. IEN
WILLOUGHBY HILLS, OH 44094

FILING RECEIPT



OC000000032837680

Date Mailed: 10/31/2008

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**

Applicant(s)

Vittorio Castelli, Croton on Hudson, NY;
Rick A. Hamilton II, Charlottesville, VA;
Brian M. O'Connell, Cary, NC;
Clifford A. Pickover, Yorktown Heights, NY;
Keith R. Walker, Austin, TX;

Assignment For Published Patent Application

International Business Machines Corporation, Armonk, NY

Power of Attorney: The patent practitioners associated with Customer Number 26681

Domestic Priority data as claimed by applicant

Foreign Applications

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

Projected Publication Date: 04/29/2010

Non-Publication Request: No

Early Publication Request: No

Title

ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

Preliminary Class

375

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 (1-866-999-4158).

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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).

AUTHORIZATION TO PERMIT ACCESS TO APPLICATION BY PARTICIPATING OFFICES

Send completed form to: Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450

COMPLETE IF KNOWN

Application Number	To be assigned
Filing Date	Herewith
First Named Inventor	Castelli
Attorney Docket Number	END920070512US1-IEN-10-6496
Title (Required)	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

The undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h).

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the application-as-filed with respect to: 1) the above-identified application, 2) any foreign application to which the above-identified application claims priority under 35 USC 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified US application, and 3) any U.S. application from which benefit is sought in the above-identified application.

This written authorization should be submitted prior to the filing of a subsequent foreign application, in which priority is claimed to the above-identified patent application, with any intellectual property office (e.g., the EPO or JPO).

No fee will be charged under 37 CFR 1.19(b)(1) for providing a participating intellectual property office with an electronic copy of the above-identified application.

This form must be signed by an authorized party in accordance with 37 CFR 1.14(c).

/Patrick J. Daugherty/

Signature

2008-10-24

Date

Patrick J. Daugherty

Printed or Typed Name

440-391-5100

Telephone Number

Patent Attorney for Applicant

Title

41697

Registration Number, if applicable

This collection of information is required by 37 CFR 1.14(h). 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 6 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.

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.

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number		
	Filing Date		
	First Named Inventor	Castelli	
	Art Unit		
	Examiner Name		
	Attorney Docket Number	END920070512US1-IEN106494	

U.S.PATENTS

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
	1	6785592		2004-08-31	Smith et al.	
	2	7171287		2007-01-30	Weiss	
	3	7349828		2008-03-25	Ranganathan et al.	
	4	7353413		2008-04-01	Dunstan	

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U.S.PATENT APPLICATION PUBLICATIONS

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
	1	20080077355		2008-03-27	Casler et al.	

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FOREIGN PATENT DOCUMENTS

Examiner Initial*	Cite No	Foreign Document Number ³	Country Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T ⁵
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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT**
(Not for submission under 37 CFR 1.99)

Application Number		
Filing Date		
First Named Inventor	Castelli	
Art Unit		
Examiner Name		
Attorney Docket Number	END920070512US1-IEN106494	

	1							☐
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If you wish to add additional Foreign Patent Document citation information please click the Add button

NON-PATENT LITERATURE DOCUMENTS

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
	1		☐

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	
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*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	
Filing Date	
First Named Inventor	Castelli
Art Unit	
Examiner Name	
Attorney Docket Number	END920070512US1-IEN106494

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.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☐ None

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	/Patrick J. Daugherty/	Date (YYYY-MM-DD)	2008-10-24
Name/Print	Patrick J. Daugherty	Registration Number	41697

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.**

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	END920070512US1_IEN106496
		Application Number	
Title of Invention	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS		
<p>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.</p> <p>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.</p>			

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.)
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Applicant Information:

Applicant 1					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	
				☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Vittorio		Castelli		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Croton on Hudson	State/Province	NY	Country of Residence i	US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		72 Cleveland Drive			
Address 2					
City	Croton on Hudson	State/Province	NY		
Postal Code	10520	Country i	US		
Applicant 2					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	
				☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Rick	A.	Hamilton	II	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Charlottesville	State/Province	VA	Country of Residence i	US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		1532 Dairy Road			
Address 2					
City	Charlottesville	State/Province	VA		
Postal Code	22903	Country i	US		
Applicant 3					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	
				☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Brian	M.	O'Connell		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Cary	State/Province	NC	Country of Residence i	US

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	END920070512US1_IEN106496
		Application Number	
Title of Invention	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS		

Citizenship under 37 CFR 1.41(b) i		US	
Mailing Address of Applicant:			
Address 1		226 Mint Hill Dr.	
Address 2			
City	Cary	State/Province	NC
Postal Code	27519	Countryⁱ	US
Applicant 4			
Applicant Authority		☒ Inventor ☐ Legal Representative under 35 U.S.C. 117 ☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name
	Clifford	A.	Pickover
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Yorktown Heights	State/Province	NY
Country of Residence i		US	
Citizenship under 37 CFR 1.41(b) i		US	
Mailing Address of Applicant:			
Address 1		37 Yorkshire Lane	
Address 2			
City	Yorktown Heights	State/Province	NY
Postal Code	10598	Countryⁱ	US
Applicant 5			
Applicant Authority		☒ Inventor ☐ Legal Representative under 35 U.S.C. 117 ☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name	Family Name
	Keith	R.	Walker
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Austin	State/Province	TX
Country of Residence i		US	
Citizenship under 37 CFR 1.41(b) i		US	
Mailing Address of Applicant:			
Address 1		13412 Kinder Pass	
Address 2			
City	Austin	State/Province	TX
Postal Code	78727	Countryⁱ	US
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. <div style="text-align: right;"> <input type="button" value="Add"/> </div>			

Correspondence Information:

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	26681

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	END920070512US1_IEN106496
		Application Number	
Title of Invention	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS		

Email Address	pdaugherty@driggslaw.com	Add Email	Remove Email
Email Address	carole@driggslaw.com	Add Email	Remove Email
Email Address	USPTOCommunications@driggslaw.com		Remove Email

Application Information:

Title of the Invention	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS		
Attorney Docket Number	END920070512US1_IEN106496	Small Entity Status Claimed	☐
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Prior Application Status		Remove	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	END920070512US1_IEN106496
		Application Number	
Title of Invention	ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS		

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If the Assignee is an Organization check here. ☒			
Organization Name	International Business Machines Corporation		
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Signature	/Patrick J. Daugherty/			Date (YYYY-MM-DD)	
First Name	Patrick	Last Name	Daugherty	Registration Number	41697

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Electronic Patent Application Fee Transmittal				
Application Number:				
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First Named Inventor/Applicant Name:		Vittorio Castelli		
Filer:		Patrick J. Daugherty		
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Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		END920070512US1_FinalAppli- cation_10_2008.pdf	114791 660b3c1de85b64a95b903020646a44f9a3a7079d	yes	33
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	22	
	Claims		23	32	
	Abstract		33	33	
Warnings:					
Information:					
2	Drawings-only black and white line drawings	END920070512US1_FormaDra- wings_10_2008.pdf	20015 13f8851d94fe6073b863354d199826bc88b39e1e	no	3
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4	Authorization to access Appl. by Trilateral Office	END920070512US1_Authorizat- ionToPermitAccess_10_2008. pdf	71488 47a00d96f02adc6201f31f4c859658b6c6efd401	no	2
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7	Fee Worksheet (PTO-06)	fee-info.pdf	36376	no	2
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ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

FIELD OF THE INVENTION

[0001] The present invention generally describes methods, systems, program products and devices for adapting the power consumption of a computational device in response to environmental conditions.

BACKGROUND OF THE INVENTION

[0002] Green computing has been defined as the study and practice of using computing resources efficiently. Typically, technological systems or computing products that incorporate green computing principles take into account economic viability, social responsibility and environmental impact. In particular, green computing includes efforts to obtain maximized energy efficiency from the computer resources being used. Green computing is also described as the science behind efficient computing and performing tasks on a smaller power budget. All computer usage consumes energy, and depending on the energy source, such usage may also increase greenhouse gas emissions. The United States Government, as well as the information technology industry, recognizes the importance of efficient computing in order to reduce greenhouse gas emissions resulting from energy or power consumption. Large government and commercial initiatives are underway to identify environmentally conscious information technology programs and the most efficient computers.

[0003] Computer systems may impose a large burden on a power grid, and some estimate that the energy cost to run a large computer system may exceed the cost of the

system hardware over its useful life. Energy is consumed by the system computational components, as well as to cool the environment and to provide illumination for operators. To reduce energy usage, manufacturers have developed numerous power-efficient technologies: for example, processor speeds and/or use can be adaptively reduced or stopped when the processor is not heavily used, monitors and peripherals can be put in a reduced power-consumption mode, etc. However, such mechanisms are configured to operate only on a localized level, in response to local considerations, for example manually triggered by a conscientious (or utility bill-paying) user or automatically by a hardware configuration or a software application running on the system (e.g., triggering a standby state after a given idle time, or in response to a heat monitor detecting a rise in an internal temperature associated with a powered computer component). Total energy or environmental savings realized by such processes may be nullified or insignificant when considered on an overall (e.g. annual) basis when energy used by the device in more-active or higher-powered uses is acquired during peak energy demand times, thus utilizing the highest-cost or most environmentally-degrading energy available to the device.

SUMMARY OF THE INVENTION

[0004] Methods are provided for adapting the power consumption of a computational device in response to environmental conditions. Operating environmental condition data relevant to the generation of electric power is acquired from an operating environment feed and analyzed to determine a high electric power demand indication. If the analyzing

determines a high electric power demand indication, then a computational device automatically reduces an amount of electric power consumption.

[0005] Service methods are also provided comprising deploying applications for adapting the power consumption of a computational device in response to environmental conditions according to the method steps described above, for example by a service provider who offers to implement, deploy, and/or perform functions for others. Still further, articles of manufacture comprising a computer usable medium having a computer readable program in said medium are provided. Such program code comprises instructions which, when executed on a computer system, cause the computer system to perform one or more method and/or process elements described above for adapting the power consumption of a computational device in response to environmental conditions. Moreover, systems, articles and programmable devices are also provided configured for performing one or more method and/or process elements of the current invention for adapting the power consumption of a computational device in response to environmental conditions, for example as described above.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] These and other features of the methods, systems and devices for carbon offsetting will be more readily understood from the following detailed description of the various aspects of the embodiments taken in conjunction with the accompanying drawings in which:

[0007] Figure 1 is a flow chart illustrating a method and system for configuring the power consumption of a computational device in response to environmental conditions according to the present invention.

[0008] Figure 2 is a block diagram of a programmable device configured to set the power consumption of a computational device in response to environmental conditions according to the present invention.

[0009] Figure 3 is a block diagram illustrating a computerized implementation of a process for configuring the power consumption of a computational device in response to environmental conditions according to the present invention.

[0010] The drawings are not necessarily to scale. The drawings are merely schematic representations, not intended to portray specific parameters of the invention. The drawings are intended to depict only typical embodiments of the invention, and therefore should not be considered as limiting the scope of the invention. In the drawings, like numbering represents like elements.

DETAILED DESCRIPTION OF THE INVENTION

[0011] For convenience purposes, the Detailed Description of the Invention has the following sections:

- I. General Description; and
- II. Computerized Implementation

I. General Description

[0012] The present invention teaches methods, systems and apparatuses for adapting the power consumption of a computer system to environmental conditions, including

local and global demands on a power grid, by monitoring environmental conditions and appropriately adjusting the power demand of the computer system and/or of a physical infrastructure that houses the computer system. More particularly, Figure 1 illustrates an example of a method or system according to the present invention for configuring the power consumption of a computational device in response to environmental conditions. At 102 operating environmental condition data relevant to the generation of electric power is acquired, the acquired data analyzed at 104 to determine whether a high demand for electric power is indicated by the data. At 106 the analyzed data is aggregated into a data feed configured for receipt and analysis by a computational device, wherein the data feed includes a high-demand indicator if the analysis at 104 determines a high-demand condition for electric power is indicated.

[0013] At 108 the data feed is provided to a computational device, which processes the data feed at 110, the processing including recognizing any high-demand indicator present within the data feed. At 112 a power consumption attribute of the computational device is set or selected in response to the data feed, and more particularly to the presence or absence of a high-demand indicator within the data feed: if the indicator is present at 112 then the computational device automatically reduces an amount of electric power consumption in response at 114; else, if the indicator is absent at 112 then the computational device operates at a normal power or other consumption level responsively at 116, one relatively higher than the reduced power consumption level invoked at 114. In some examples selecting the normal/higher power level at 116 includes automatically increasing a present amount of electric power consumption in response to recognizing

that the high electric power demand indicator is not present in a processed data feed, for example increasing a power consumption level previously reduced in response to a previous data feed which included a high-demand indicator. The process then loops back to acquiring operating environmental condition data at 102 for subsequent data feed generation and responsive power consumption setting by the computational device, in some embodiments on a repetitive or iterative basis.

[0014] It is known for electrical power supplied to computing environments to be produced by a coalition of providers that operate power plants and distribute power through a grid. Needed power may generally be transferred freely between providers within a grid, and it is also common for a plurality of different grids to transfer power from grid-to-grid, though limitations may be imposed upon the amounts of power transferred grid-to-grid. Though excess power may thus be transferred from one provider or grid to another, excess electric power cannot generally be easily stored.

[0015] To meet power demand different types of power plants generally contribute as needed to a given power grid. Relatively large and more efficient power plants, such as nuclear power plants and large fossil-fuel power plants, typically work at or near capacity all the time in supplying a given grid; such large plants are generally more efficient and cleaner sources of power than smaller options, and may not be easily shut down and restarted, and therefore are not generally suitable to meet demand peaks but are instead utilized to meet base power needs. Medium sized power plants may also be used in a grid system to provide part of the bulk of the energy provided, and may also be useful in temporally increasing grid power supplies to compensate for predictable, medium-term

variation in power demands as they may be started-up and brought on-line in a reasonable amount of time and with a reasonable efficiency in resources and environmental effects. Smaller power plants, such as hydroelectric plants and small size fossil fuel plants, can be brought on-line quickly, and are often used to meet peak power demand. However, smaller fossil fuel power plants are typically much more inefficient and less clean than larger power plants, and energy produced by smaller power plants is often sold through an auction-style process (sometimes known as the “Spot market”), which may result in energy costs a couple of orders of magnitude more expensive than the energy produced by larger power plants.

[0016] Computer systems may impose a large burden on a power grid, and some estimate that the energy cost to run a large computer system may exceed the cost of the system hardware over its useful life. Energy is consumed by the system computational components, as well as to cool the environment and to provide illumination for operators. To reduce energy usage, manufacturers have developed numerous power-efficient technologies: for example, processor speed can be adaptively reduced when the processor is not heavily used, monitors and peripherals can be put in a reduced power-consumption mode, etc. However, such mechanisms are configured to operate only on a localized level, either manually triggered by a conscientious (or utility bill-paying) user, or by an application running on the system responsive only to local system parameters (e.g., triggering a standby state after a given idle time), and thus however effective these technologies are limited in responsiveness to larger contextual conditions: no consideration is given to the present cost of power used, or to the sources of that power.

[0017] The present invention teaches methods and apparatuses for implementing green-computing management policies to enable computational devices to automatically adjust their power usage in response to operating and environmental conditions associated with energy production and provision, in one aspect minimizing an impact of a computer system on energy demand within a grid or energy provider system or network. For example, reducing demand on a power grid during a period of high demand reduces the need to bring on-line or utilize inefficient and/or expensive smaller power plants, thereby reducing pollution and lowering the cost of energy.

[0018] According to the present invention a service provider or other entity or component may acquire data (for example at 102 of Figure 1 above) in a standard data format (e.g. Extensible Markup Language, or XML) supplied via a Really Simple Syndication (RSS) feed from electricity plants, weather services, and other information providers to ascertain present power and environmental conditions. Such information providers (power plants, weather services, etc) need not continuously stream information to a service provider, and may instead update XML files using standard RSS notations. The service provider publishes or pushes an aggregated data feed (for example at 108 of Figure 1 above), including aggregating feeds or data from any individual service providers, to a computational device, wherein one or more components within the receiving computational device are configured to await instructions to cause an element in the computational device to enter a power-reduction mode in response to an indicator within the aggregate feed.

[0019] Examples of feeds, information and data appropriate to function as environmental data inputs (for example at 102 of Figure 1 above) or as power-setting indicators (for example at 108 of Figure 1 above) include a spot price of electricity, a rate of change of price of electricity, weather conditions, time of day, a facility (e.g. a household, building or company) energy use, census data associated with a specified energy use or demand, as well as other data relevant to energy costs. In another aspect the present invention may simultaneously and efficiently cascade power consumption reduction indicators or other data to a plurality of individual computers, server farms or computer systems, on a massive or even a global scale.

[0020] Figure 2 illustrates an example on one embodiment of a programmable device or module 200 and computational device 230 according to the present invention, for example as discussed above with respect to Figure 1. The module 200 is configured to acquire feeds or other power-generating contextual, environmental or operating information and data from one or more feed/data providers 280, the module 200 further configured to aggregate a feed inclusive of high-demand indicators and publish the aggregate feed through a communication means 282 to the computational device 230, which may responsively select a power-reduced or relatively higher powered configuration as discussed above. The module 200 and computational device 230 may each be incorporated into a larger system wherein other components of the system accomplish systems and methods according to the present invention, or they may be stand-alone structures configured to perform each of the processes and methods of the present invention. The present module 200 and computational device 230 embodiments

each comprise respective central processing unit (CPU) or other processing means 201/231 in communication with memories 203/233, the memories 203/233 comprising logic components that enable the CPU's 201/231 to perform processes and methods according to the present application.

[0021] Power units 205/235 are configured to provide operative power respectively to the module 200 and computational device 230; examples include batteries and power components configured to receive alternating or direct current electrical power, and other appropriate power units 205/235 will be apparent to one skilled in the art.

Communication ports or network link/nodes 207/237 are also provided and configured to enable network and other communications with the respective other of the module 200 and computational device 230, as well as with users; other devices; systems; and with monitoring, administrative and service provider entities, as well as other appropriate entities and structures.

[0022] More particularly, the memory 203 of the programmable module 200 comprises a data/feed acquirer logic component 202 configured to acquire information from a plurality of feed and/or sources 280. Information data and files received through the feed 280 may be updated regularly, for example by a timer on a provider side or updates driven by changes in data, and the data acquisition component 202 may be configured to regularly check feed files for changes, and if changes are found or occur then download the changed data, update internal state tables with the new downloaded data, then invoke a data/feed analyzer component 204 (described more fully below).

[0023] RSS generally refers to a family of internet web feed formats used to publish frequently updated content, and in the present invention feed data acquired may include energy prices or current energy use in a company. Thus an RSS energy feed or energy document acquired may contain a summary of energy information from an associated energy feed provider or other detailed information. RSS feed embodiments and configurations enable a data acquisition entity (e.g. the programmable module 200 or a service provider) to automatically track energy information providers deemed of importance (or that a customer deems of importance) selected from a larger universe of information providers.

[0024] The feeds 280 may comprise a variety of feeds and sources. An energy producer feed 280 appropriate for acquisition and analysis may contain information describing the output capacity and current output of potential energy producers. Thus analysis of an energy producer feed 280 may indicate that one or more local, more environmentally-friendly (or “green”) energy producers are near capacity, resulting in issuance of a high-demand indicator through an aggregate feed through the communication means 282 to the computation device 230 thereby triggering a reduction in computer power consumption to avoid the need to obtain energy from less green producers, such as those plants that come online when the more efficient, larger power plants reach capacity.

[0025] Weather feeds 280 may provide data or information describing weather conditions. If weather conditions are unusual they may result in heavy demand on the power infrastructure which may trigger computer power consumption reduction

according to the present invention. Household, building or company-use feeds 280 may also be considered: for example, if a building or company is utilizing excessive power units, it may be advantageous for computers to enter a power consumption reduction mode. Spot price feeds 280 may contain an indication of an expected demand on a power infrastructure for a subsequent future time period (e.g. for the following day): in response a high-demand indicator may cause the computational device 230 to trigger immediate power savings operations as well as postpone or otherwise schedule power-consuming activities as a function of preferential spot prices, for example running nonessential services only when a spot price is low (and therefore when green energy is likely to be available).

[0026] Accordingly, the memory 203 also comprises a data/feed analyzer logic component 204 configured to determine high-demand energy conditions (for example at 104 of Figure 1 above) from the feeds/data acquired; and which in some embodiments may also weight each of a plurality of different feed sources 280, in some examples according to an algorithm or other function. In one example a data/feed analyzer logic component 204 is configured with a weighted function comprising a linear combination of values obtained from a plurality of different sources or feeds 280 with appropriate weights, wherein if the linear combination is above a certain threshold power savings according to the present invention is triggered or ended. Weights and thresholds may be determined through machine learning techniques, for example as a function of historical data from feeds 280 over given time periods and with respect to corresponding data on the "greenness" of power produced during those time periods, with coefficients of linear

combinations and threshold learned by processing said information. Some embodiments may consider functions embedded in statistical classifiers, where the actual form of a function is known only implicitly and is computed automatically by a learning algorithm based on historical data; moreover, statistical classifiers are not limited to linear functions, as will be appreciated by one skilled in the art.

[0027] After analysis a feed aggregator logic component 206 within the memory 203 aggregates data from various providers 280 to create a single feed containing acquired data from all of the sources 280 (for example at 106 of Figure 1 above). The feed aggregator 206 may create a new RSS feed to contain this information, and may also categorize information from each provider 280. Categories may include "Energy Source" for information from the power providers, "Environmental" for information about weather, "Utilization" for information about building or company usage, etc. Such feed aggregation enables the computational device 230 to access information from a single source (e.g. the module 200) and in single format configured for use and consumption by a given computational device 230.

[0028] Aggregated feed publication to the computational device (for example at 108 of Figure 1 above) is accomplished by a feed publisher logic component 208, which may publish the aggregate feed through pushing updated RSS data to registered computational devices 230, or by providing a method for the computational devices 230 to pull updated data from the feed publisher 208 or other service provider. In a push method example the feed publisher 208 maintains a list of devices and instructions, such as an IP address, of where to transmit data when an update occurs. In a pull method example the feed

publisher 208 places data in a known location, with another provider or the computational device 230 periodically checking for updates, for example through Hypertext Transfer Protocol (HTTP) requests over Transmission Control Protocol/Internet Protocol (TCP/IP).

[0029] The computational device 230 memory 233 comprises an aggregate feed acquirer logic component 232 configured to acquire the aggregated feed from the feed publisher 208 through the communication means 282 through using the push and/or pull mechanisms described above. In a push embodiment the aggregate feed acquirer 232 awaits data updates from the feed publisher 208, for example listening for incoming data through a socket communication means 282. The aggregate feed acquirer 232 may thus accept incoming data, potentially after an authorization step, and update internal state tables to reflect the newly acquired data. In a pull embodiment the aggregate feed acquirer 232 periodically checks for updates in a known location referenced by the feed publisher 208 on the module 200 (e.g. a location within the memory 203) or upon another location or service provider 284, for example using HTTP requests over TCP/IP. In one example a service provider 284 listens for incoming HTTP requests and transmits data in an HTTP response, the response then received by the aggregate feed acquirer 232. The computational device 230 memory 233 further comprises a power analyzer logic component 234 configured to parse the aggregate feed and to update internal state tables with the parsed data to reflect newly acquired data. In some embodiments the power analyzer 234 analyzes obtained feed data using an algorithm that invokes methods to reduce power consumption on the computational device 230.

[0030] Moreover, it should be noted that in other embodiments one or both of the data/feed acquirer logic component 202 and the data/feed analyzer logic component 204 may be instead located directly within the computational device 230 memory 233; more particularly, the computational device 230 may thus be configured to directly acquire feeds/data from the sources 280 and perform the functions described above according to the present invention. Additionally, in some embodiments a service provider 284 performs the required feed 280 analysis and aggregate results into an aggregate feed with indicators published to the computational device 230 according to the present invention. Further, the computational device 230 may also omit the power analyzer logic component 234 and/or associated algorithm processes, wherein the aggregate feed acquirer 232 may instead be configured to perform a power consumption level selection process according to the present invention.

[0031] In some embodiments the power analyzer 234 or the service provider 284 apply an algorithm comprising: obtaining feed data, for example from feed publisher 208 as described above; the obtained feed data is used as an input to a weighting function, which consequently produces a value; the value is compared to a threshold which denotes a high-consumption of non-green energy in a supplying power grid; and if the value exceeds the threshold, the computer system performs one or more actions to reduce power consumption.

II. Computerized Implementation

[0032] Referring now to Figure 3, an exemplary computerized implementation of a process for adapting the power consumption of a computational device in response to

environmental conditions according to the present invention is provided, including a computer system 304 deployed within a computer infrastructure 308 such as a computer or a programmable device such as a personal digital assistant (PDA) or cellular phone. This is intended to demonstrate, among other things, that the present invention could be implemented within a network environment 340 (e.g., the Internet, a wide area network (WAN), a local area network (LAN), a virtual private network (VPN), etc.) in communication with one or more additional computers 336, or on a stand-alone computer infrastructure 308. In the case of the former, communication throughout the network 340 can occur via any combination of various types of communication links. For example, the communication links can comprise addressable connections that may utilize any combination of wired and/or wireless transmission methods. Where communications occur via the Internet, connectivity could be provided by conventional TCP/IP sockets-based protocol, and an Internet service provider could be used to establish connectivity to the Internet.

[0033] As shown, the computer system 304 includes a central processing unit (CPU) 312, a memory 316, a bus 320, and input/output (I/O) interfaces 324. Further, the computer system 304 is shown in communication with external I/O devices/resources 328 and storage system 332. In general, the processing unit 312 executes computer program code, such as the code to implement various components of the process and systems, and devices as illustrated in Figures 1-2 and described above, and in the present example the memory 316 includes the data/feed acquirer logic component 202, the data/feed analyzer component 204, the feed aggregator logic component 206, the feed publisher logic

component 208, the aggregate feed acquirer logic component 232, and the power analyzer logic component 234. It is to be appreciated that two or more, including all, of these components may be implemented as a single component and that some components may be omitted (e.g. where processes are instead provided by a service provider).

[0034] While executing computer program code, the processing unit 312 can read and/or write data to/from the memory 316, the storage system 332, and/or the I/O interfaces 324. The bus 320 provides a communication link between each of the components in computer system 304. The external devices 328 can comprise any devices (e.g., keyboard, pointing device, display, etc.) that enable a user to interact with computer system 304 and/or any devices (e.g., network card, modem, etc.) that enable computer system 304 to communicate with one or more other computing devices.

[0035] Examples of power reduction actions taken by the power analyzer 234 within the computerized implementation of Figure 3 include: reducing a clock rate of the CPU 312; reducing a brightness of a monitor 328 of the computer system 304; reducing a waiting time before disks 316/332 of the computer system 304 are suspended; reducing a waiting time before the computer system 304 enters a hibernation or a standby mode; turning off one or more banks of memory 316/332 of the computer system 304; disabling one or more applications providing nonessential services (e.g., turning off the services that check for availability of software upgrades, turning off grid applications, etc.); consolidating loads from one or more computational devices 336 onto the single computer system 304 and turning off the other computational devices 336; scheduling nonessential operations at a different time (e.g., nonessential software or hardware

upgrades); and still other appropriate examples will be apparent to one skilled in the art. It should also be noted that the algorithm described may be substantially more complex, for example extended to have multiple thresholds that progressively trigger additional power saving actions.

[0036] The computer infrastructure 308 is only illustrative of various types of computer infrastructures for implementing the invention. For example, in one embodiment, computer infrastructure 308 comprises two or more computing devices (e.g., a server cluster) that communicate over a network to perform the various process steps of the invention. Moreover, computer system 304 is only representative of various possible computer systems that can include numerous combinations of hardware.

[0037] To this extent, in other embodiments, the computer system 304 can comprise any specific purpose-computing article of manufacture comprising hardware and/or computer program code for performing specific functions, any computing article of manufacture that comprises a combination of specific purpose and general-purpose hardware/software, or the like. In each case, the program code and hardware can be created using standard programming and engineering techniques, respectively. Moreover, the processing unit 312 may comprise a single processing unit, or be distributed across one or more processing units in one or more locations, e.g., on a client and server. Similarly, the memory 316 and/or the storage system 332 can comprise any combination of various types of data storage and/or transmission media that reside at one or more physical locations.

[0038] Further, I/O interfaces 324 can comprise any system for exchanging information with one or more of the external device 328. Still further, it is understood that one or more additional components (e.g., system software, math co-processing unit, etc.) not shown in Figure 3 can be included in computer system 304. However, if computer system 304 comprises a handheld device or the like, it is understood that one or more of the external devices 328 (e.g., a display) and/or the storage system 332 could be contained within computer system 304, not externally as shown.

[0039] The storage system 332 can be any type of system (e.g., a database) capable of providing storage for information under the present invention. To this extent, the storage system 332 could include one or more storage devices, such as a magnetic disk drive or an optical disk drive. In another embodiment, the storage system 332 includes data distributed across, for example, a local area network (LAN), wide area network (WAN) or a storage area network (SAN) (not shown). In addition, although not shown, additional components, such as cache memory, communication systems, system software, etc., may be incorporated into computer system 304.

[0040] While shown and described herein as a method and a system, it is understood that the invention further provides various alternative embodiments. For example, in one embodiment, the invention provides a computer-readable/useable medium that includes computer program code to enable a computer infrastructure to implement methods, systems and devices according to the present application, for example as illustrated in Figures 1 and 2 above and described otherwise herein. To this

extent, the computer-readable/useable medium includes program code that implements each of the various process steps of the present application.

[0041] It is understood that the terms computer-readable medium or computer useable medium comprise one or more of any type of physical embodiment of the program code. In particular, the computer-readable/useable medium can comprise program code embodied on one or more portable storage articles of manufacture (e.g., a compact disc, a magnetic disk, a tape, etc.), on one or more data storage portions of a computing device, such as the memory 316 and/or the storage system 332 (e.g., a fixed disk, a read-only memory, a random access memory, a cache memory, etc.), and/or as a data signal (e.g., a propagated signal) traveling over a network (e.g., during a wired/wireless electronic distribution of the program code).

[0042] Still yet, computer infrastructure 308 is intended to demonstrate that some or all of the components of implementation according to the present application could be deployed, managed, serviced, etc. by a service provider who offers to implement, deploy, and/or perform the functions of the present invention for others, for example by licensing methods and browser or application server technology to an internet service provider (ISP) or a cellular telephone provider. In one embodiment the invention may comprise a business method that performs the process steps of the invention on a subscription, advertising, and/or fee basis. Thus a service provider can create, maintain, support, etc., a computer infrastructure, such as the computer infrastructure 308 that performs the process steps of the present application for one or more customers, and in return the service provider can receive payment from the customer(s) under a subscription and/or

fee agreement and/or the service provider can receive payment from the sale of advertising content to one or more third parties.

[0043] In still another embodiment, the invention provides a computer-implemented method for enabling the processes, methods and devices according to the present application. In this case, a computer infrastructure, such as computer infrastructure 308, can be provided and one or more systems for performing the process steps of the invention can be obtained (e.g., created, purchased, used, modified, etc.) and deployed to the computer infrastructure. To this extent, the deployment of a system can comprise one or more of: (1) installing program code on a computing device, such as computer system 304, from a computer-readable medium; (2) adding one or more computing devices to the computer infrastructure; and (3) incorporating and/or modifying one or more existing systems of the computer infrastructure to enable the computer infrastructure to perform the process steps of the invention.

[0044] As used herein, it is understood that the terms “program code” and “computer program code” are synonymous and mean any expression, in any language, code or notation, of a set of instructions intended to cause a computing device having an information processing capability to perform a particular function either directly or after either or both of the following: (a) conversion to another language, code or notation; and/or (b) reproduction in a different material form. To this extent, program code can be embodied as one or more of: an application/software program, component software/a library of functions, an operating system, a basic I/O system/driver for a particular computing and/or I/O device, and the like.

[0045] The foregoing description of various aspects of the invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed, and obviously, many modifications and variations are possible. Such modifications and variations that may be apparent to a person skilled in the art are intended to be included within the scope of the invention as defined by the accompanying claims.

CLAIMS

What is claimed is:

1. A method for adapting the power consumption of a computational device in response to environmental conditions, comprising:

acquiring operating environmental condition data relevant to the generation of electric power from an operating environment feed;

analyzing the operating environment feed data to determine a high electric power demand indication;

a computational device automatically reducing an amount of electric power consumption if the analyzing determines the high electric power demand indication.

2. The method of claim 1, further comprising:

aggregating the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by the computational device;

providing the aggregate data feed to the computational device;

the computational device processing the aggregate data feed; and

wherein the computational device automatically reducing the amount of electric power consumption comprises automatically reducing the amount of electric power

consumption in response to recognizing the high electric power demand indicator in the aggregate data feed through the computational device aggregate data feed processing.

3. The method of claim 2, further comprising the computational device automatically increasing an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed through the aggregate data feed processing.

4. The method of claim 2 wherein the operating environment feed is a really simple syndication feed from at least one of an electricity plant and a weather service.

5. The method of claim 2, the providing the aggregate data feed to the computational device further simultaneously providing the aggregate data feed to a plurality of individual computers;

the computational device processing the aggregate data feed comprising each of the plurality of individual computers processing the aggregate data feed; and

the computational device automatically reducing the amount of electric power consumption comprising each of the plurality of individual computers automatically reducing an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed.

6. The method of claim 2, further comprising:
- regularly updating the acquiring the operating environmental condition data;
 - if changes are found in the updated environmental condition data, updating an internal state table with new downloaded data; and
 - invoking the analyzed operating environment feed data aggregating in response to the found changes.
7. The method of claim 2, wherein the operating environmental condition data feed comprises information describing an output capacity and a current output of each of plurality of potential energy producers; and
- wherein the aggregating the analyzed operating environment feed data comprises including the high electric power demand indicator if the operating environmental condition data feed information indicates a relatively local and environmentally-friendly energy producer is near its output capacity.
8. The method of claim 2 wherein the analyzing the operating environment feed data to determine a high electric power demand indication comprises:
- applying a weighted function comprising a linear combination of values obtained from a plurality of different feeds, each of the different feeds having a weight;
 - and
 - if the linear combination is above a certain threshold, including the high demand indicator in the aggregate feed.

9. The method of claim 2 wherein the operating environment feed high demand indication or the aggregate feed high demand indicator comprises at least one of:

a small size fossil fuel plant coming on-line in response to a peak power demand;

a spot price value of electricity;

a rate of change of a price of electricity;

a weather condition;

a time of day;

a facility energy use value; and

census data associated with a specified energy use or demand.

10. The method of claim 9 wherein the computational device automatically reducing an amount of electric power consumption comprises running nonessential services only when a spot price is low.

11. A service for adapting the power consumption of a computational device in response to environmental conditions, comprising:

providing a computer infrastructure configured to:

acquire operating environmental condition data relevant to the generation of electric power from a really simple syndication operating environment feed;

analyze the operating environment feed data to determine a high electric power demand indication; and

cause a computational device to automatically reduce an amount of electric power consumption if the analyzing determines the high electric power demand indication.

12. The service of claim 11, the computer infrastructure configured to:

aggregate the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by a computational device; and

provide the aggregate data feed to the computational device;

wherein the computational device is configured to process the aggregate data feed and to automatically reduce an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed or to automatically increase an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed.

13. The service of claim 12, the computer infrastructure configured to provide the aggregate data feed simultaneously to a plurality of individual computers, wherein each of the plurality of individual computers are configured to automatically reducing an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed.

14. The service of claim 12, the computer infrastructure configured to determine the high electric power demand indication, or to provide an aggregate feed high demand indicator comprising, at least one of:

data indicating a small size fossil fuel plant is coming on-line in response to a peak power demand;

a spot price value of electricity;

a rate of change of a price of electricity;

a weather condition;

a time of day;

a facility energy use value; and

census data associated with a specified energy use or demand.

15. A method for adapting the power consumption of a computational device in response to environmental conditions, comprising:

producing computer executable program code;

storing the code on a computer readable medium; and

providing the program code to be deployed and executed on a computer system, the program code comprising instructions which, when executed on the computer system, cause the computer system to:

acquire operating environmental condition data relevant to the generation of

electric power from a really simple syndication operating environment feed;

analyze the operating environment feed data to determine a high electric power demand indication;

aggregate the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by a computational device; and

provide the aggregate data feed to the computational device;

wherein the computational device is configured to process the aggregate data feed and to automatically reduce an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed or to automatically increase an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed.

16. The method of claim 15, the program code comprising instructions which, when executed on the computer system, causes the computer system to:

regularly update the acquiring the operating environmental condition data;

if changes are found in the updated environmental condition data, update an internal state table with new downloaded data; and

invoke the analyzed operating environment feed data aggregating in response to the found changes.

17. The method of claim 15, the program code comprising instructions which, when executed on the computer system, causes the computer system to analyze the operating environment feed data to determine a high electric power demand indication by:

applying a weighted function comprising a linear combination of values obtained from a plurality of different feeds, each of the different feeds having a weight; and

if the linear combination is above a certain threshold, including the high demand indicator in the aggregate feed.

18. A programmable device comprising:

a processing means;

a memory in communication with the processing means comprising a logic component; and

a network interface in communication with the processing means and the memory;

wherein the processing means is configured to:

acquire operating environmental condition data relevant to the generation of electric power from a really simple syndication operating environment feed;

analyze the operating environment feed data to determine a high electric power demand indication;

aggregate the analyzed operating environment feed data into an aggregate data feed, the aggregate data feed including a high electric power demand indicator if

the analyzing determines the high electric power demand indication, the aggregate data feed configured for receipt and analysis by a computational device; and

provide the aggregate data feed to the computational device;

wherein the computational device is configured to process the aggregate data feed and to automatically reduce an amount of electric power consumption in response to recognizing the high electric power demand indicator in the aggregate data feed or to automatically increase an amount of electric power consumption from a reduced electric power consumption level in response to recognizing that the high electric power demand indicator is not present in the aggregate data feed.

19. The programmable device of claim 18, wherein processing means is configured to:

regularly update the acquiring the operating environmental condition data;

if changes are found in the updated environmental condition data, update an internal state table with new downloaded data; and

invoke the analyzed operating environment feed data aggregating in response to the found changes.

20. The programmable device of claim 18, wherein processing means is configured to analyze the operating environment feed data to determine a high electric power demand indication by:

applying a weighted function comprising a linear combination of values obtained from a plurality of different feeds, each of the different feeds having a weight; and

if the linear combination is above a certain threshold, including the high demand indicator in the aggregate feed.

ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

ABSTRACT OF THE DISCLOSURE

Methods, including service methods, articles of manufacture, systems, articles and programmable devices are provided for adapting the power consumption of a computational device in response to environmental conditions. Operating environmental condition data relevant to the generation of electric power is acquired from an operating environment feed and analyzed to determine a high electric power demand indication. If the analyzing determines a high electric power demand indication, then a computational device automatically reduces an amount of electric power consumption.

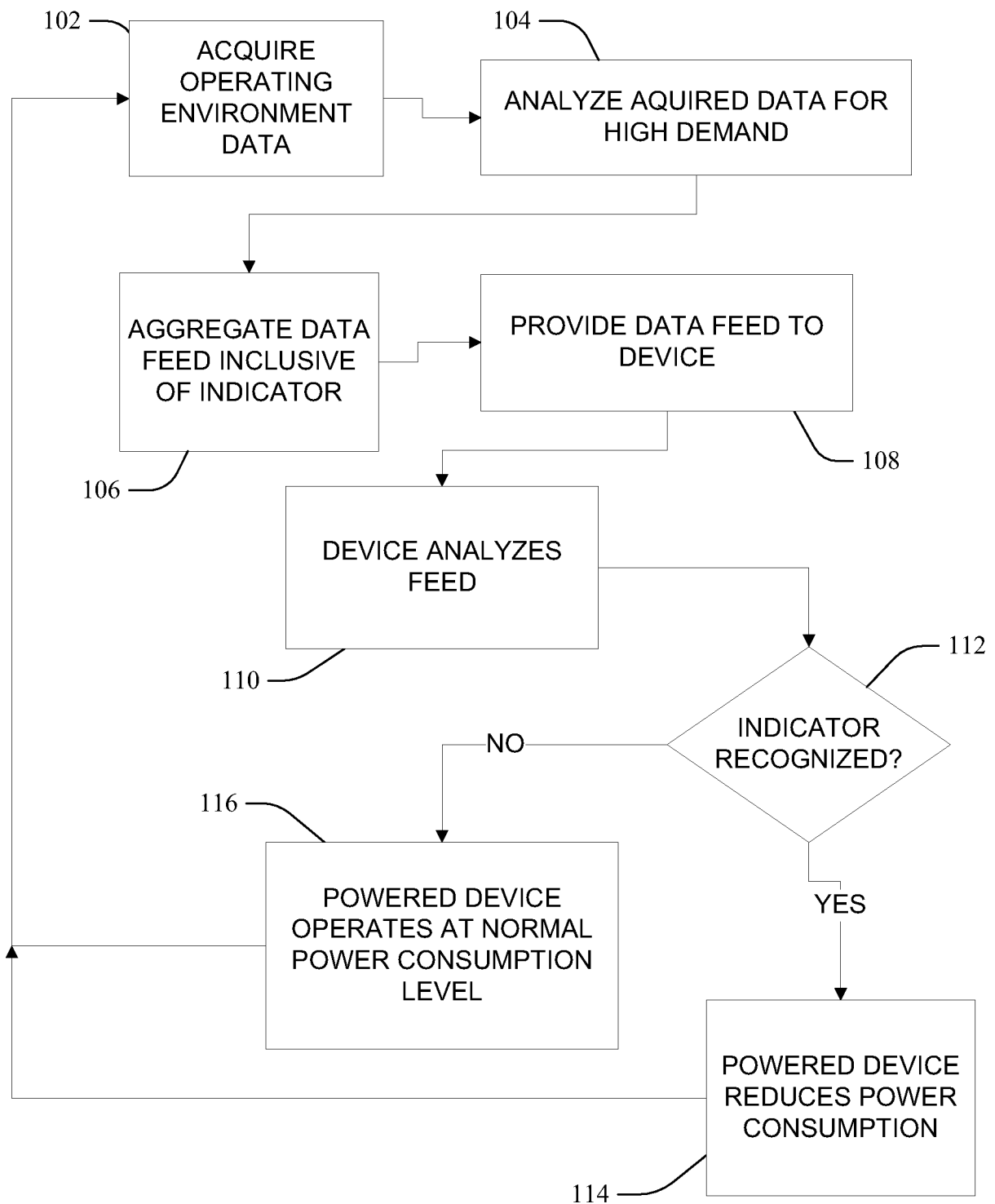


FIG 1

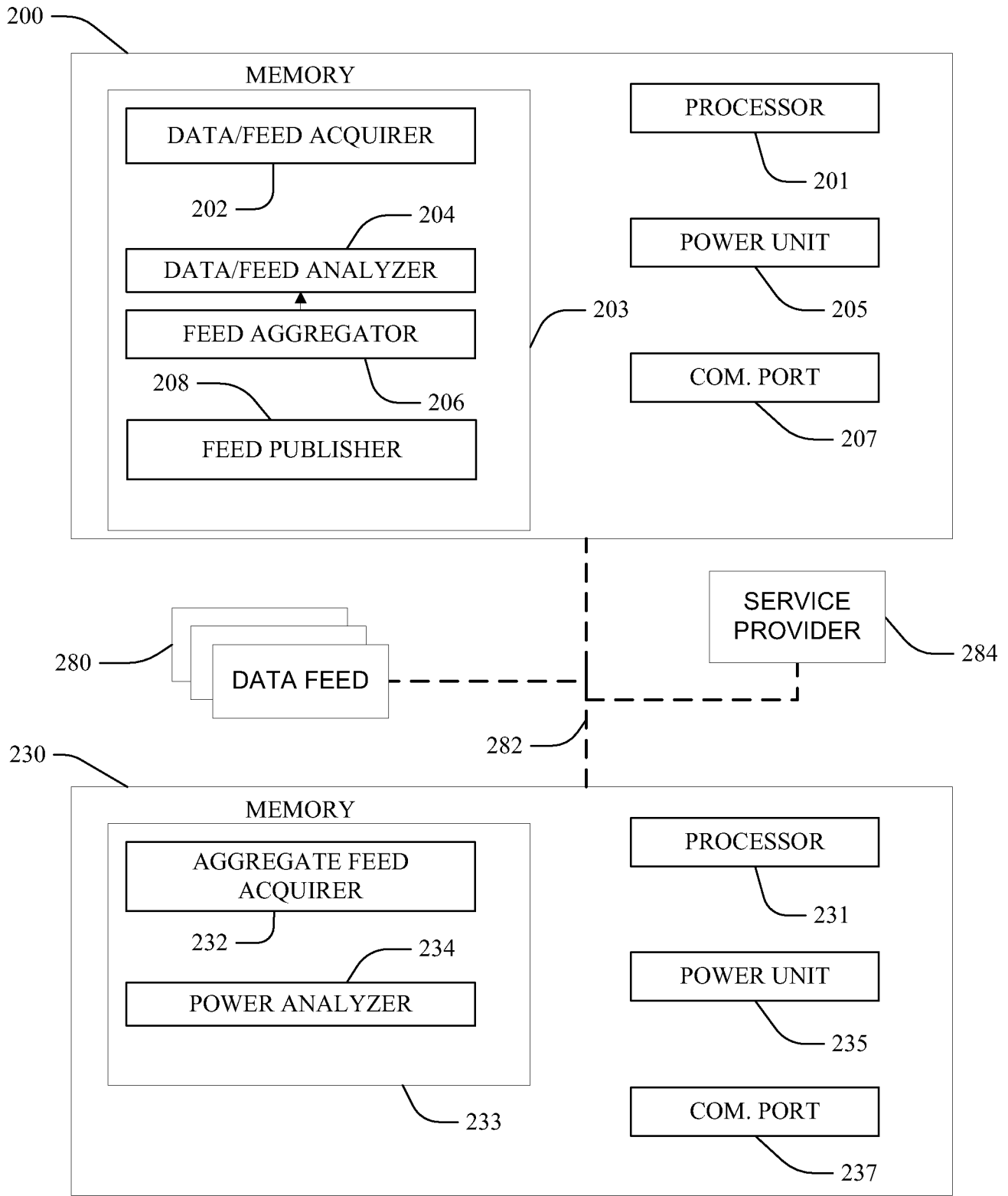


FIG 2

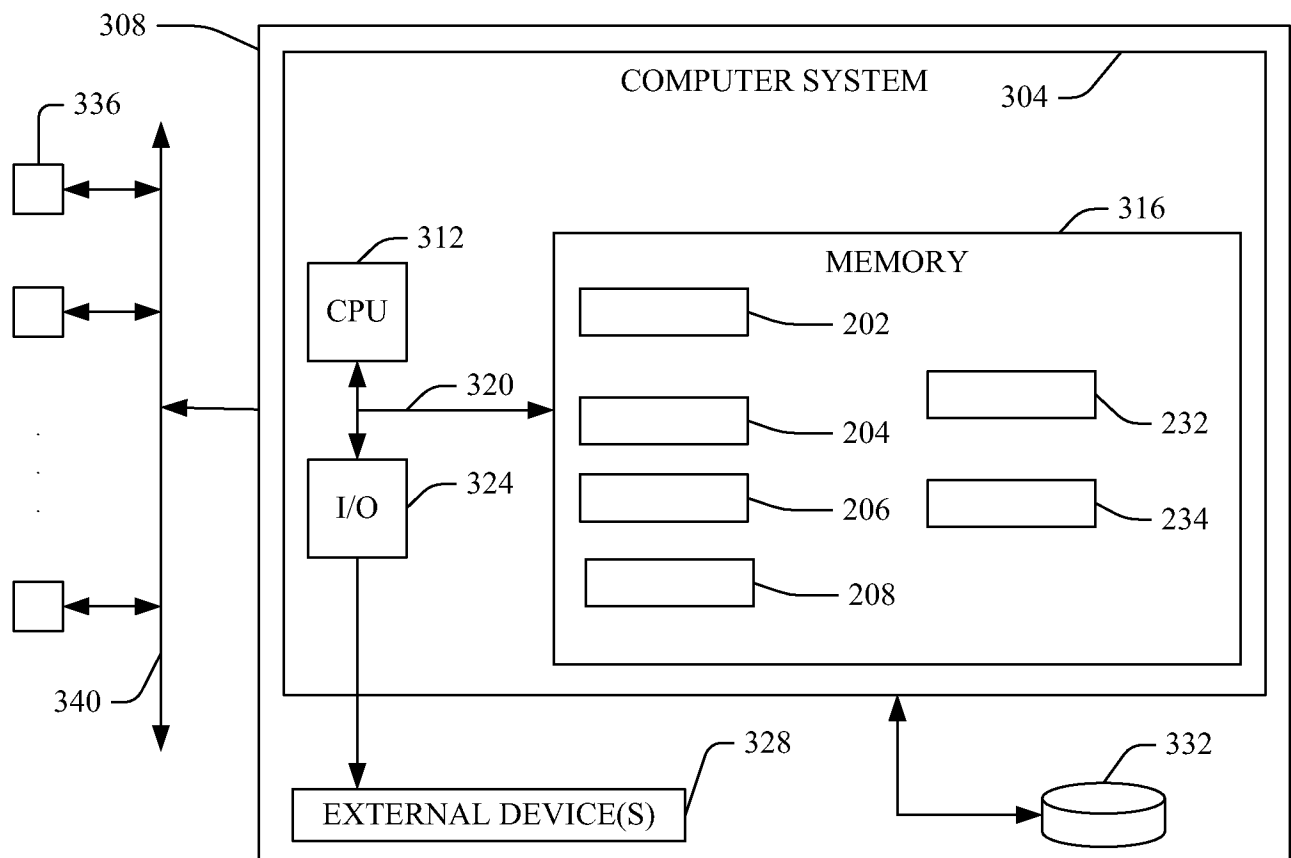


FIG 3

PATENT

DOCKET NUMBER: END920070512US1-IEN-10-6496

**DECLARATION AND POWER OF ATTORNEY FOR
PATENT APPLICATION**

As a below named inventor, we hereby declare that:

Our residence, post office address and citizenship are as stated below next to our names;

I believe I am the original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled:

ADAPTIVE COMPUTING RESPONSIVE TO ENVIRONMENTAL CONDITIONS

the specification of which: (check one)

XX is attached hereto.

was filed on _____
under Attorney's Docket Number _____
as Application Serial No. _____
and was amended on _____ (if applicable).

We hereby state that we have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

We acknowledge the duty to disclose information which is material to the patentability of this application in accordance with 37 CFR 1.56.

We hereby claim the benefit of foreign priority under 35 USC 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

Priority Claimed

_____ (Number)	_____ (Country)	_____ (Day/Month/Year)	____ Yes ____ No
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We hereby claim the benefit of United States priority under 35 USC 120 of any United States application(s) listed bellow and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of 35 USC 112, we acknowledge the duty to disclose information material to the patentability of this application as defined in 37 CFR 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

_____ (Application Serial #)	_____ (Filing Date)	_____ (Status)
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We hereby declare that all statements made herein of our 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 18 USC 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) listed on the below representative customer number to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

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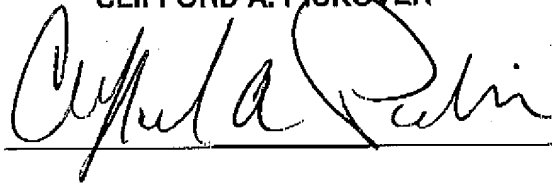
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Filing Date: 10/24/08

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 12/257,627	
APPLICATION AS FILED – PART I						
(Column 1)		(Column 2)		SMALL ENTITY		OR
OTHER THAN SMALL ENTITY						
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	RATE (\$)	FEE (\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A		N/A	330
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A		N/A	540
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A		N/A	220
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 =	x\$26		x\$52	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	4	minus 3 =	x\$110		x\$220	220
APPLICATION SIZE FEE (37 CFR 1.16(s)) <small>If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR</small>						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			195		390	
			TOTAL		TOTAL	1310
* 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	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)
	Total (37 CFR 1.16(i))	Minus **	=	X =		X =
	Independent (37 CFR 1.16(h))	Minus ***	=	X =		X =
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			N/A		N/A
				TOTAL ADD'T FEE		TOTAL ADD'T FEE
(Column 1)		(Column 2)		(Column 3)		
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	RATE (\$)
	Total (37 CFR 1.16(i))	Minus **	=	X =		X =
	Independent (37 CFR 1.16(h))	Minus ***	=	X =		X =
	Application Size Fee (37 CFR 1.16(s))					
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))			N/A		N/A
				TOTAL ADD'T FEE		TOTAL ADD'T 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.						

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.

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