(54) **Title**: COMPUTERIZED SYSTEM FOR DELIVERING REASONABLY PRICED ACCESS TO CONTENT TO REMOTELY LOCATED USERS AT PRICES VARYING IN TIME PER USER BEHAVIOR AND WITH AUTOMATED ACCESS TO OUTSIDE WEBSITES MATCHING A USER'S INQUIRY OR INTEREST

(57) **Abstract**: A computer system and method that expand a user's access to content matching the user's interests, in an environment of providing dynamic, essentially real time pricing of users' access to content, which pricing varies over time with user behavior to reflect actual values that users place on access to the answers. To expand a user's access to content, the system automatically searches and analyzes content on websites that are outside the system for additional content that matches the user's search queries or other expression of interest, and offers the user access to the additional content that may be free or at prices determined by the out-side websites and/or the system.

COMPUTERIZED SYSTEM FOR DELIVERING REASONABLY PRICED ACCESS TO CONTENT TO REMOTELY LOCATED USERS AT PRICES VARYING IN TIME PER USER BEHAVIOR AND WITH AUTOMATED ACCESS TO OUTSIDE WEBSITES MATCHING A USER'S INQUIRY OR INTEREST

Reference to related applications

[0001]   This patent application is related to and claims priority of U.S. Provisional patent application No. 61/681,082 filed August 8, 2012. This patent application also is related to PCT application PCT/US12/39129 filed May 23, 2012 (which claims the benefit of U.S. provisional patent application 61/488,850 filed on May 23, 2011), and to U.S. non-provisional Patent Application Ser. No. 13/404,957 filed February 24, 2012.

Field

[0002]   This patent specification pertains to an improvement that enlarges a remote user's access to content that matches the users' interests by automatically accessing and analyzing for relevant content websites that are outside the system and delivering such content from outside websites to the user.

[0003]   The improvement is implemented in a basic computerized system that gives remote users paid or unpaid access via electronic links to content from numerous publishers, and dynamically prices access in accordance with user behavior. The

dynamic pricing scheme and the automated access to content from outside websites as well are believed to bring about benefits including affording access to content at a price and in a manner suitable to user preferences and enriching system content, benefiting publishers through increasing revenue due to resulting increase in readership, and benefiting operators of the system through increased traffic.

Background and summary of the disclosure

[0004]   The improvement regarding automated access to relevant content on websites that are outside the is implemented in a basic automated, computerized system that enables remote publishers (who may be users as well) to upload content and provides users with remote access to content from numerous publishers and with convenient search facilities.   Users in different categories may gain free access to some of the content, or paid access.   The price for access to an article can vary from one content item to another and over time for each item, based on factors and processes that can be adapted for particular goals, such as to increase revenue to publishers and the system and at the same time reduce the cost of access to users.   The dynamic pricing makes it possible for users to gain access to content at relatively low prices, or for free, and at the same time tends to increase the revenue to a publisher for a given content item because of increased numbers of users who purchase access.

[0005] One challenge in such system is to find still better ways to match users to content and to further automate the process of identifying and delivering relevant content. As described below, the system includes an articles database that typically stores a wealth of content such that a remote user can access portions that match the users query or otherwise expressed interests. However, there can still be benefits from content that is not stored in the system but may be available on other, unrelated websites. The improvement on which this patent specification focuses affords users automated access to content from such outside websites that is selected to match the users' interests. The outside websites can include sites providing free access, but for a given user also access to paid sites for which the user has a password that the user has securely provided to the system. Content from the outside websites that matches the a user's interest is automatically selected based on a search query from the user, or on a channel selected by the user, and is added to similar content from the system articles database.

Brief description of the drawings

[0006] Fig. 1 illustrates an overall arrangement of a system for receiving, pricing and distributing content according to one example of the system disclosed in the PCT application that is incorporated by reference.

[0007] Fig. 1A is a block diagram illustrating a system and method related to the improvement of automatically providing access to relevant material from websites that are outside the system illustrated in Fig. 1.

[0008]   Fig. 2 illustrates an example of a webpage that the system downloads to a screen of a pay-per-view (PPV) user.

[0009]   Fig. 3 illustrates an example of a screen with various channel groups that the system makes available to a pay-per-view (PPV) user.

[00010]   Fig. 4 illustrates an example of a screen that the system downloads to a real time user.

[00011]   Fig. 5 illustrates an example of a synopsis view for an article that opens in response to a user's interaction with the system.

[00012]   Fig. 6 illustrates a cascade of articles that a user has opened (accessed).

[00013] Fig. 7 shows in magnification article tabs that appear in the display of the open article seen in Fig. 6.

[00014] Fig. 8 illustrates an example of another magnified portion of the Fig. 6 display.

[00015] Fig. 9 illustrates an example where an article includes not only text but also images.

[00016] Figs. 10a and 10b illustrate examples of a publisher's interaction with the system.

[00017] Figs. 11a through 11f further illustrate examples of a publisher's interaction with the system.

[00018] Fig. 12 illustrates a portion of the system of Fig. 1.

[00019] Fig. 13 illustrates the same portion of the system as Fig. 10 but in a different stage of processing the pricing of the article.

[00020] Figs. 14-21 are self-explanatory examples of different stages of the process of pricing an article in the overall system of Fig. 1.

[00021] Fig. 22 is a flowchart illustrating an example of a publisher's interaction with the system.

[00022] Fig. 23 is a flowchart illustrating an example of steps in the operation of a pricing engine.

[00023] Fig. 24 is a functional block diagram illustrating a currently preferred implementation of an interactive pricing engine application cluster.

[00024] Fig. 25 lists and explains symbols used in Figs. 24-32.

[00025] Fig. 26 is a flow diagram illustrating steps in a process of pricing access to an article that takes into account user behavior and other factors.

[00026] Fig. 27 lists and explains steps illustrated in Fig. 25.

[00027] Fig. 28 illustrates a display screen used in script management.

[00028] Fig. 29 illustrates a script management window.

[00029] Fig. 30 illustrates pricing script function specification examples.

[00030] Fig. 31 illustrates a pricing script code example.

[00031] Fig. 32 illustrates an example of statistical information that can be used in pricing access to articles.

Detailed description of preferred embodiments

[00032] The description below first briefly explains in connection with Fig. 1 the basic system in which the improvement relating to automatic access to relevant content from outside websites is implemented. The improvement itself is described mainly in connection with Fig. 1A. Then, the basic system is further explained in detail connection with Figs. 2-32.

[00033] It may help to explain at the outset several terms used in this patent specification.

"Content" as used herein refers to anything that comprises or represent informational content and includes, as non-limiting examples, written material such as news reports, analysis, interviews, questions and answers to questions, etc., and audio visual information such as speech, music, video, audio, photographs, and still images, etc.

"Article" is shorthand notation for any content, including without limitation a story, a news article or a scientific article, a recorded video, a live video, a prerecorded audio, a live audio, a recorded musical performance, a live musical performance, a photograph, an interview, a question-and-answer exchange, or any other representation, in whatever form or format, that has informational content.

"Answer" refers to information that is provided in response to a question posted in the system and encompasses any content, including articles.

"Publisher" is shorthand notation for any source of content, whether a journalist working as an employee of a publication, the publication itself, a freelance journalist, an author of a scientific paper or article, a music performer, a video provider, a photographer, or any other source or provider of informational content, including answers.

"Lifetime" of an article or answer is used in this patent specification as shorthand notation for a publisher's, a journalist's or the system's expectation or estimate, at any given point in time, of the remaining time period during which users of the system would be willing to pay to read, view or download a specific article or answer.

"Script" is shorthand notation for computer-implemented rules or sets of rules that are applied to information to determine or estimate the price of access to an article or an answer at a given point in time. A script can be implemented in a specific example of the system as a computer instruction, as a program module or sub-module, or in any other manner that serves the intended purpose.

"Server" is used as shorthand notation for a computer facility comprising hardware and/or software and/or firmware that is intended to host applications and carries out the service functions described in this patent specification. When in the singular, the term as used herein encompasses the use of a single server or two or more servers, in each case in the same location or in different locations.

Conversely, when this patent specification refers to different servers, their functions may be carried out in a single physical server or in physically separate servers.

"Channel" is a live, customized search avenue that matches users with publishers, and can be based on keywords, topics, specific publications, specific topics, etc. A channel can be preset by the system or set or defined by a user or publisher.

"Granulated" designates access that applies different rules to different classes of publishers, users, or others seeking access to the system – for example granulated access by publishers can mean that some publishers may have free access to all or some answers while others do not, and that some users may have paid access to all content in the system on a subscription basis, some may have paid access to only some of the content, some may separately pay for each item of content, some content may be free to some or all users, and paid access to any article or answer can an typically will change in price over time or upon the occurrence of certain events.

[00034]   Fig. 1 illustrates in functional form the basic system in which the improvement related to automated rating of media content, authors, and publishers is incorporated. Consider the example of a publisher 14, for example a freelance journalist. The publisher is at a location remote from the system and uses a connection mechanism such as a personal computer, a tablet or some other device to establish a two-way electronic communication with a computer-implemented or computer-controlled system server 16, for example using a browser and the Internet.

The term "electronic" is used in this patent specification in a broad sense to include various computer-controlled ways of communicating such as by optical communications. In response, system server 16 downloads to the publisher's device, over an electronic communication link, a screen display through which the publisher navigates and selects actions such as signing on the system, creating an account and/or a profile, changing settings, selecting or creating an active channel or accessing an inactive channel, submitting an article and information pertaining to the article, accessing other articles (and questions or comments thereon), uploading answers to questions posted by others, commenting on articles, etc., and signing out.

[00035]   A typical input that a publisher provides when submitting an article identified by an index i (where i can be a unique number associated with the article) comprises the article content C_i, analysis information such as a genre designation G_i of the article and a synopsis of the article and keywords from or about the article, a value V_i that the publisher proposes for the article, and an initial lifetime T_i that the journalist proposes for the article. System server 16 receives this information and subjects it to initial automated, computer-implemented processing. For example, based on information stored in the system and on rules applied by the operation of computer programs in system server 16, the system server sets an initial price $P_{i,0}$ for access to the article, and may change the genre designation G_i and the keywords associated with the article, and may change the value V_i and the initial lifetime T_i that the journalist proposed to a higher or lower value and/or a shorter or longer lifetime. This process may involve automated delivery to the publisher's

screen of information about the likely interest in the article and the likely revenue

from access to the article, including information on likely current users who may be

interested, likely future users, change in the number and geographical distribution of

likely accesses to the article, likely changes in pricing access to the article over time

or in relation to other factors, etc., to thereby help the publishers in the initial pricing

and characterization of the article and possible revisions therein, and with respect to

possible future articles.

[00036]   Notably, in accordance with the improvement related to ratings, system server

also calculates an initial rating parameter $R_{i,0}$, for example as a weighted

combination of $P_{i,0}$, $BO_{i,t}$ for time $t=0$, and any previous rating of the author or

publisher of the article. As explained below in connection with Fig. 1A, the rating

calculation can involve additional factors, different weighting of factors,

recalculations so that the $R_{i,t}$ changes with time or with events, and separate ratings

for an author, a publisher, and an article.

[00037]   System server 16 electronically delivers the article and the processed

information about it to a computer-implemented or computer-controlled articles

database 18, which stores the information with the appropriate identification index i

together with many other articles and the information associated with them. Each

article can be designated as article A_i, where $i=0,1,2,\ldots,N$, and N can be a very

large positive integer.   As one example, articles database 18 initially stores the

article content C_i, the articles genre designation G_i, the article's price P_i (which at

time $t=0$ may be the initial price $P_{i,0}$ determined by system server 16 and possibly

agreed to by the publisher), and the article's lifetime T_i. In addition, articles

database 18 stores information about the state of the system, such as the current number BC_i of users who have bought access to the article A_i (this number may be zero or a selected non-zero number before any access), and the number B_o of users who are on line in the system at time $t=0$. Articles database 18 updates BC_i as users access the article, using information that is generated as discussed below in connection with the way publishers/users access articles. System server 16 can use information from article database 18 in automatically setting the initial price $P_{i,o}$ for access to the article, for example by calculating $P_{i,o}=V_i/B_o$ in a computer process, or by applying a more complex set of rules in a computer process to calculate $P_{i,o}$, which rules can take into account factors that the system stores or calculated through computer processes, such as history of the publisher, history of similar articles, the time and date of publication, the nature of the topic, etc.

[00038]   In a specific example, articles database 18 electronically supplies, for each article A_i, the information G_i, T_i, $P_{i,t}$, and $BC_{i,t}$ to a computer-implemented or computer-controlled pricing application cluster 20 that, together with script server 22, forms a pricing engine. The first time information about an article A_i is supplied from article database server 18 to pricing application cluster 20, i.e., at time $t=0$, the parameter $P_{i,t}=P_{i,o}$, and the parameter $BC_{i,t}=0$ (or some selected non-zero number), but at subsequent times t, $BC_{i,t}$ may be and typically is a growing non-zero number as more users access the article. The parameters for an article then iteratively pass in a computerized process, for each time t, from pricing application cluster 20 to articles database 18 and back to pricing application cluster 20. The time t can be periodic, e.g., every so many units of time, can be triggered by

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specified events, and/or can be reset to a new value at selected irregular intervals of time. In each iteration for time t, pricing application cluster 20 calculates through a computerized process an updated access pricing parameter $P_{i,t+1}$ (where the numeral 1 designates a time interval of 1 unit for article A_i, which time interval need not be a constant), and sends it back to articles database server 18, which will supply that price parameter as price $P_{i,t}$ back to pricing application cluster 20 for the next iteration. $P_{i,t}$ can be a single price for access, or plural different prices for respective different types of access.

[00039] Importantly, articles database 18, or another computerized system facility, stores historical information that can be useful for initial valuations of articles and/or initial selection of lifetimes of articles, and can be useful for other purposes as well such as, without limitation, system analysis and revising and improving scripts. This historical information can include, without limitation, information on the total numbers of users who have accessed articles, possibly classified by numbers of users who have accessed specific genres, topics and/or articles and are potential users of specific articles, possibly per geographical region and per language, and other historical information that has been automatically gathered in use of the system, and information that has been input by operators or administrators of the system in the belief that it may or should influence initial estimates of valuation and/or lifetime or can otherwise improve system operation and design.

[00040] Pricing application cluster 20 is a computer-implemented processing system that stores scripts S_j (where j is an index identifying a script, j=0,1,2 ..., J, and J is a positive integer). Each script S_j is essentially a rule or a set of rules applied to

information about articles that are being priced by pricing application cluster 20.

Script server 22 is a programmed computerized facility that generates the script

code via text or graphical editors, which may be under the control of system

operators or administrators, manages the scripts, and assigns scripts to articles. In

practice, one or more scripts Sj are assigned to each article Ai. Typically, plural

scripts, and even a multiplicity of scripts, are assigned to each article. A script

assigned to an article and used in pricing the article in pricing application server 20

can be updated by script server 22 so that the updated script will be used during the

remaining lifetime of the article and possibly even after the lifetime of the article,

unless further updated. Similarly, the assignment of scripts Sj to an article can be

updated, so that pricing application cluster 20 applies different sets of scripts to the

same article at different times.

[00041]   Scripts Sj apply to articles Ai respective sets of rules that use as inputs a set

or subset of factors and parameters that script server 22 has determined are useful

in pricing access to articles. System server 16 collects and processes information

regarding parameters from interactions with publishers 14 and users 10, and stores

and updates that information in articles database 18 or another system facility, from

where it can be supplied to pricing application cluster 20 and/or to script server 22 so

that it may be used for each article Ai and each iteration for a time t. As illustrated in

Fig. 1, these factors and parameters can include the following examples:

$Bp_{i,t}$ = number of potential purchasers of access to article Ai at time t;

$BO_{i,t}$ = number of potential purchasers of access to article A_i who are currently on line in the system;

$BN_{i,t}$ = number of remaining potential purchasers of access to article A_i (i.e., the potential purchasers who have not accessed the article);

$R_{i,t}$ = accumulated rating of article A_i at time t (where the rating can be calculated based on factors such as, but not limited to, the rate at which the article is accessed compared to an average article or some other metric);

$CT_{i,t}$ = number of current potential purchasers of an article in a specified territory T (which can be a country or some other region) at time t;

$PC_{i,t}$ = price charged for access to article A_i at time t in a country C (or some other region), if different prices and/or prices in different currencies are charged for access from different parts of the world or through different access pathways or through different payment arrangements; and

$BC_{i,t}$ = number of users who have purchased access to article A_i by time t from a specified country or other region, or paid in a specified currency or through a specified financial arrangement.

$R_{i,t}$ = accumulated rating, calculated for time t (which includes t=0, and t= 1, 2, 3, …. N), for an author, a publisher, and/or an article identified by the index "i."

$RC_{i,t}$ = accumulated rating at a time=t in a country or other area "C" for an author, a publisher, and/or an article identified by the index "i."

CTi,t = the number of potential buyers of content that are online on the system at time "t" in a country or area "C" for an article identified by the index "i."

PCi,t = access price to article "i" in a country or area "C" at a time "t."

BCi,t = number of users who purchased an article "i" as of time "t" in a country or area "C."

[00042] These are only examples of factors and parameters that can be taken into account in pricing access to an article, and any one implementation of the system and method described in this patent specification can use a subset of these values or a different set of values depending on the choice of the system implementers and the goals of the system.

[00043] Scripts Sj apply rules to articles Ai in a computer-implemented process to generate a price Pi,t+1 for article Ai in each iteration through pricing application cluster 20. As a simplified example, one rule can be that access price Pi,t+1 is set to ($0.03 + Pi,t) if (i) the number BCi of users who purchased article Ai increased by 10 or more users from time t to time t+1 and also increased by 10 or more users in each time interval from t-10 to t, and (ii) the net number BNi,t of potential purchasers of access to article Ai increased by at least 5 users in each time interval from time t-20 to time t. It should be clear that any given example of implementation can include different rules depending on the designer's preferences and the goals of the implementation.

[00044]   In a specific example, the system delivers content organized in channels each

of which is a live, customized search that a user has chosen. The system matches

that channel with articles and other information. A channel can be narrow or broad;

for example, it can be based on keywords or specific publications. There can be

pre-set channels and channels created in response to keywords from a user. The

user can click on a channel and then on listings in the channel to gain access to an

article and pay for access unless access is free at the time or to that user. Also, a

user can subscribe to a publication or a collection of publications. There can be

real-time users who pay more for faster access and/or access to all or some subset

of all content, pay-per-view users who pay for access to a specified article, and free

access users.

[00045]   Referring to Fig. 1A, which illustrates an enhancement facilities added to

those illustrated in Fig. 1, user 10 communicates, through system server 16, with a

search engine 16a included in system server 16, to send a search query or to select

a channel. In response, search engine 16a searches database 18 for articles

matching the query or channel, and generates a listing 18a of base articles that

match the query. As a simple example, the search query may specify the topic of oil

discoveries in Africa in the last year and base articles 18a may include a hundred

articles on the topic of such discoveries.

[00046]   In addition, the system searches outside websites 23 for content (articles)

meeting the user's search query or channel definition. Such outside websites may

be sites that the user has designated in creating or updating a user's profile in the

system, they may be websites that the system has identified based on information

such as user's interests known to the system, and/or they may be websites that the

system has selected for use with all queries or channels for some or all categories of

users.

[00047]   Websites 23 that the user has designated may require user passwords, in

which case the user supplies and the system maintains such passwords and uses

them to access the websites on behalf of the user. To the extent that accessing

such other websites may incur charges, such charges can be paid to the outside

websites by the system and taken into account by pricing application cluster 20 (Fig.

1) when calculating charges for user access to content or charges for user

subscriptions. Or, the user may have independently arranged with the website for

paid access, in which case the user profile stores this information and center server

22 and search engine 16a make use of such pre-paid access for that user.

[00048]   The search through outside websites 23 results in a collection 23a of articles,

or listings of articles, which the system uses to generate a combined listing of

articles 18b, and supply back to user 10. This listing or article 18B can be presented

to the user in a format similar to the listing illustrated in Fig. 2. The identifications of

the base articles selected from those in articles database 18 and of the articles

selected from the outside websites can be in a single list or in separate lists.   User

10 can then access some or all of the articles in the combined listing 18b, on the

terms that the user has established with the system and as determined by pricing

application cluster 20. For example, if an article is identified as a free article, the

user can select it for download to the user's remote device without incurring a

charge. For a PPV user, a selection of a paid article will incur a charge. For a

subscription user entitled to content that includes the article, the article will be downloaded without an additional charge.

[00049]   If an outside website requires a password but provides content for free, the center server can sign on the website to obtain the necessary password and then can search the outside website and provide users with links to or downloads from the outside website that match the user's query or channel or other expression of interests. If the outside requires both a password and payment for access, the system can gain access in several different ways depending on the type of user for which it will seek access to the outside website. For example, if the user's financial arrangements with the outside website currently allow access without additional payment, the user can enter the password in the user's profile in the system, and the system can automatically search that website acting on behalf of the user. If the user's financial arrangements with the outside website require payments per access or on some other terms that related to access, the user still stores the password in the system, but also stores an authorization for some scope of searching for information in paid outside websites, in which case the system accesses outside websites on behalf of the user and arranges for payment. For example, the payment can be based on credit card information that the user has stored in the user's profile in the system, or the system will charge the user for access to content from an outside website in the same way the system charges a user for paid access to an article stored in the articles database and selected for download by the user.

[00050]   A more detailed description follows of certain aspects of the basic system improved through the incorporation therein of the facility described above relating automated rating of articles, authors, and/or publishers.

[00051]   A specific implementation of many aspects of the basic system and method can rely on any number of scripts, and the scripts of one implementation may differ from those of another. Typically a large number of scripts would be used. Illustrated below is one example of a commented script of this type, in a computer language that a person skilled in the pertinent technology would understand and can code for use in a specific computer system:

[00052]   **Lua-script code sample**

Script code	**Script**
If EQ_INIT == 1 then	Initial execution of script for article
local price = eq_get_value()/eq_get_pbuyers();	Initial price is equal to *Value* divided by *Number of potential buyers*
eq_set_price(price);	Setting of initial price
local p0 = (eq_get_purchases_delta()/eq_get_pbuyers())*100	Initial percent of users who bought article
eq_save_number("percent",p0)	Save initial percent of users who bought article
eq_next_call(0);	Scheduling of next script execution(immediately)
else	Next script executions
if eq_get_execution() == 2 then	This code will be executed after 10 seconds of article

	processing (second execution)
local lp = eq_load_number("percent");	Load percent of users who bought article on previous script execution
local p = (eq_get_purchases_delta()/eq_get_pbuyers())*100	Current percent of users who bought article (BCi,t / Bpi,t)*100%

if p – lp > 1 then
  eq_set_price(eq_get_price()*1.2)
end;
	If number of users goes UP by 1% then Increase price by 20%

eq_save_number("percent",p)	Save current percent of buyers for using on next script execution
else if eq_get_execution() == 120 then	This code will be executed after 600 seconds of article processing
else	This code will be executed all next times
	Code!
end;	
eq_next_call(5);	Scheduling of next script execution(after 5 seconds)
end;	

[00053]   **Pricing API description**

[00054]   One version of the scipt can support all functions in a table used for all

countries (currencies), but other versions can support special arguments to allow set

(get) values for specified countries.

For example:

```
eq_set_price(123, "Russia");   //Set price equal to 123 for Russia

local p = 223;
eq_set_price(n,"France");       //Set price equal to 223 for France

local list = {"USA","Germany","Japan"}
eq_set_price(149,list)    //Set price equal to 149 for three countries

local pb = eq_get_pbuyers_online("Italy") //Get number of online buyers from Italy
```

API description

Script functions	Math symbol	Description
eq_get_life_time()	Ti	Returns full article life time in pricing engine(seconds)
eq_get_execution()	it	Index of script execution
eq_get_lived_time()	t	Returns time of article which it lived in pricing engine
eq_get_value()	Vi	Return *total value*

eq_get_price()	Pi,t	Returns current article price
eq_get_trend()	Tdi,t	Returns current article trend
eq_get_genre()	Gi	Returns article genre
eq_get_pbuyers()	PBi,t	Returns total number of potential buyers for article
eq_get_pbuyers_online()	POi,t	Returns total number of online buyers
eq_get_article_rating()	Ri	Returns article rating
eq_get_purchases_total()	Bci,t	Returns total number of users who bought the article
eq_get_purchases_delta()	BCi,t	Returns number of users who bought the article since last script execution
eq_save_number(name,val)		Save some value (**val**) to database with *name*
eq_load_number(name)		Returns value from database which is saved with *name*

Implemented functions:

()
eq_get_trend()
eq_get_genre()
eq_save_number(name,val)
eq_load_number(name)

[00055]

[00056] Users 10, who are at remote user locations, access articles through a link

with the system, for example through web link 11, in a manner similar to publishers

(who can be users as well). As noted above, there can be different categories of

users. Taking the example of a free user and one example of a link, the user signs

on through a browser in a personal computer or other electronic device and through

the Internet with system server 16, which sends to the user's screen a webpage that

identifies the connection as one to a free user, and may include in the screen display

at the user's screen information that identifies the user, provides a menu through

which the use can upgrade status (e.g., to a pay-per-view user, by providing credit

card or other financial information), may state that the articles are delayed by a

specified time interval, may provide a listing of active channels (topics), may provide

a filter menu through which the user can create new active channels (e.g. by

submitting a search query), may list available articles in the channel that the user

designates and the status of each article (e.g. as free, or available for a listed price

or by subscription only), and may provide many other items of information to the

user.

[00057] Fig. 2 illustrates one example of a webpage that the system can provide on

the screen of a pay-per-view (PPV) user. There can be other examples, and

different presentations have been and are being evaluated in the course of

developing the basic system and the improvement related to automated ratings.

The upper left identifies the category of user ("PPV") and has a menu item "upgrade"

through which the user can upgrade to a different category (e.g., by specifying the

desired category and providing credit card information or making other financial

arrangements). Through clicking the left column entries, the user can select: Top

Stories, in which case the right columns will show a selection of several stories that

are the most popular ones at the time; or My Master Channel, in which case the

system will list one or more channels that the user has previously selected; Active

Channels, in which case the system will list on the left several active channels as in

the illustrated example. Each active channel shows the number of articles that user

has not yet read (in this example, the Apple channel has 2 unread articles and the

Clinton channel has 18 unread articles). The same number of unread articles shows

in upper right when the respective channel (Apple [AAPL] in this example) is

selected and when it is updated, and the color of the number is changed when the

system posts another article in that channel. To the left of the active channel names

are symbols that identify the source of the material, for example Q for the system

described in this application and AP for Associated Press (in this example, a

publisher such as AP can supply content to the system and method described in this

patent specification per financial and/or other arrangements made between AP and

the system).

[00058]   When the improvement illustrated in Fig. 1A is incorporated, a user display

similar to Fig. 2 shows additional icons indicating that a subscription user on line and

the category of subscription if desired, and also shows content to which the

subscription allows access.

[00059]   To the right of the channels are an identification of the channel that is

currently selected (Apple [AAPL] in this example) and a scrollable listing of articles in

that channel, by title and/or synopsis. The circled symbols to the left of each article

title identify the genre designation of the article (e.g., BN for breaking news) and the
source of the article (by an abbreviation such as AP for Associated Press, a picture
of the author, and/or in some other way). To the right of the article name is
information on access rights and on the trend of access. For example, access to the
first listed article in Fig. 2 costs $0.35 at the time the page of Fig. 2 is the current
version that is being displayed to a user, and the trend is up (i.e., there is increasing
interest in the article as pricing application cluster 20 has determined based on
current requests for access to the article and/or other factors related to the popularity
of the article which system server 16 has tracked). If a "Free" user decides to
access this priced article, the user may upgrade status by clicking on "Upgrade" at
upper left and proceed through the menu that would appear on the user's screen in
response. One article has an arrow that points up at an angle, to indicate a lesser
degree of increasing popularity. Comparable arrows that point down indicate
different degrees of decrease in popularity of the respective articles. Some articles
are identified as "SUB," meaning that they are available under subscription. Fig. 2
does not happen to illustrate free articles that would be identified by the notation
"Free" to the right of the article title.

[00060]   If the user clicks on an article, system server 16 obtains it from articles
database server 18 and downloads it to the user's screen. At upper right are buttons
for scrolling, enlarging, hiding, and other operations on the articles. When the
portion of the display to the right is detached from the channel listing and moved
some distance to the right of the channel listing, there are scroll bars to the right of
each portion. When the user clicks on an article, the color changes and a synopsis

of the article may be included in the area that is so colored. The titles of articles that

the user has already read may be colored differently from other article titles. The

lines for breaking news may be highlighted in yet another color.

[00061]   Fig. 3 illustrates an example of a screen with various channel groups that the

system downloads to a pay-per-view (PPV) user. It is similar in many respects to a

Free user interface, identifies the user as a PPV user, and may include the user's

picture. In addition to the illustrated active channels, it can include inactive

(sleeping) channels. The PPV user can click on the price entry for an article to open

the article, in response to which system server 16 download the article to the user

and the text of the article is displayed on the user's screen in a new window in the

same manner as discussed above or as discussed below for "real time" or

"subscription" users. System server 16, of another facility of the system, charges the

PPV user's account, or a user's credit card that the user has identified to the system

for that purpose, for this download and stores the charge information in the system,

for example in articles database server 18. As in the case of other categories of

users, the PPV user can create a new active channel by entering a search term or

query in the box labeled "filter." The PPV users are charged for access to some

articles. For example, the user can make arrangements with the system to allow

charging the user's credit card for the price of an accessed article, or the user can

make a deposit into the system through a credit card or otherwise, in which case the

card or the deposit is charged accordingly. Charging systems are known in the

pertinent technology and, for the sake of conciseness, are not discussed in detail in

this patent specification.

[00062] Fig. 4 illustrates an example of a screen that the system downloads to a real time user. Again, it is similar in many respects to a Free of PPV interface but identifies the user as a real time user and may show a picture of the user at upper left. As noted above, the real time user can have a greater number of active and/or inactive channels and, as in the case of the PPV user, can post questions and comments on the articles. Questions and comments, and answers to the questions that the publisher of the article may provide are visible to all user categories, or only to some of the categories, as determined by pricing application cluster 20. A real time user gains access to article content in a manner similar to that used for a PPV user except that a real time user has access to all articles without delay and does not pay for individual articles (including those for which a price is indicated) from a particular publisher where the real time user has previously paid for a subscription. Fig. 4 also illustrates the genre symbols and channel type symbols and meanings attached to them. Fig. 5 illustrates an example of a synopsis view of an article that opens on a user's screen in response to a user moving a cursor over the article title or clicking for a synopsis view. Again, because systems for making financial arrangements with subscription users are known in the pertinent technology, such as for web access to newspapers, magazines, and data services, a suitable method for charging subscription users need not be discussed in detail.

[00063] Fig. 6 illustrates a cascade of articles that a user has opened (accessed). If only one article is opened, then of course only one article would appear on the user's screen next to or detached from the channel listing. A horizontal middle band

or other portions of the Fig. 6 screen may be deleted in order to make the remaining text more legible.

[00064]   Fig. 7 shows in magnification article tabs that appear in the display of an open article seen in Fig. 6. In Fig. 7 the display of an open article includes a tab Q for displaying the article, a Comments tab for displaying comments about the article that PPV and real time users have posted (24 comments in this example), a Q&A tab for displaying questions about the article (6 in this example), a Live button for a function such as live chat, and an About tab for the display of details regarding the article and/or its publisher.

[00065]   Fig. 8 illustrates an example of another magnified portion of the Fig. 6 display. As seen in Fig. 8, the display of an open article includes a "+" button that creates an active channel for the user, which active channel is the topic of the article. Buttons labeled "-" and "+" next to the label "text size" enlarge or reduce the text size. Several buttons to the right when activated by the user export the article, such as to a Facebook account, a Twitter account, a LinkedIn account, etc. Another button saves the article in the user's computer or other device, in a desired format such as in text format or in PDF format. A print button prints the article, for example in text format or in PDF format. Another button activates an email function for emailing the article to one or more specified addresses.

[00066]   Fig. 9 illustrates an example where an article includes not only text but also images.

[00067]   Figs. 10a and 10b illustrate self-explanatory interactions of a publisher with the system, through which the publisher signs on and provides the system with an article and the information regarding the article as discussed above. As one example, in the screen at the left of Fig. 10a, which contains the heading "1.Lead," the publisher may enter initial information about the article by checking the appropriate entries, e.g., to indicate that the article is "Breaking News," its genre designation is "Opinion," and it pertains to "Finance." In the next screen, which contains the heading "2.Settings," the publisher can enter additional information such as a title of the article and the publisher's location. In the next screen which contains the heading "3.Write," the publisher writes in a synopsis of the article (if desired) and the text of the actual article, and attaches any photos, video or other material as indicated. Fig. 10b, the next screen, contains the heading "4.Analysis," where the publisher can enter further information about the article, for example, key words or tags. The middle screen contains the heading "5.Quantification," informs the publisher about the system's estimates of revenue from users' access to similar articles over a specified time interval, and prompts the publisher to assign a proposed money value to the article. The last screen that the system places on the publisher's screen display contains the heading "6. Publish" and provides the system with an authentication of the publisher and the publisher's agreement with the system's terms regarding posting and using the article. Additional facilities can be provided to allow publishers (who also may be users) to view information regarding questions and to post answers, which information may treat answers and potential answers in a way similar to the treatment of articles and potential articles.

[00068]   Figs. 11a through 11f illustrate another example of interaction between a

publisher and the system. Fig. 11a illustrates that a publisher can start the process

by (1) downloading a program called "EcQuant" from the system, (2) entering

suitable information for becoming an accredited publisher, such as identity and

perhaps credentials information and information regarding financial arrangements

with the system, and (3) writing articles for posting by the system or downloading

(accessing) articles from the system. Fig. 11b illustrates a screen that the system

may download to a publisher's screen after the publisher has submitted an article

(which in this case has an attached photo) to the system. To the right of the article,

the screen contains a stylized world map over which the system displays for the

publisher the number of potential users who may be interested in accessing the

article, by territory. For example, there are 4,237 potential users in the U.S. East.

The system generates this information about potential users by analyzing the article

and its attributes and by using historical information about past behavior of users,

through the use of scripts that act as a computer-implemented expert system

operating in the pricing engine of the system described in this patent specification. It

will be appreciated that as the system grows and adds more publishers and articles,

and gains more experience with actual usage of the articles, its estimates of

potential users are likely to become more accurate or at least more useful as the

scripts are refined based on experience and as more historical information on user

behavior is assembled. A display such as illustrated in Fig. 11b may help the

publisher make an initial decision of an initial value to place on the article. Fig. 11c

illustrates how the price for access to the article may vary over time as the system

resets it from time to time through the pricing engine. The horizontal axis is time in

the graphs in the right-hand portion of Fig. 11c. The vertical axis for the red line is

the changing access price, in this case in the range of about $0.40 to about $0.80

over a time interval of about 130 seconds after the posting of the article. The green

bars at the bottom illustrate the instantaneous number of users accessing the article.

Fig. 11d is similar but pertains to a later time – 257 seconds after the article was

posted. The graphs in this example show that the price for access to the article

peaked about 160 seconds after posting and then declined until it went down to less

than $0.20 as the number of users accessing the article declined. Fig. 11d also

shows that in this example the cumulative revenue from the article over this time

period was over $2,600. Fig. 11e illustrates similar information, in a somewhat

different format and for different access prices and a different cumulative revenue

from an article, but similarly indicating that the system described in this patent

specification changes access prices over time as a function of user behavior in a

manner that is believed to reflect the actual values that users place on access to the

article. Fig. 11f illustrates a relationship between a screen display that a publisher

may see (the left-hand portion of Fig. 11f) and a screen that a user may see. The

user's screen shows a listing of channels (topics) in the left column, a listing of

articles in the middle column, including an article for which the access price changes

every 3 seconds in this example.   If an improvement related to priced access to

answers is implemented, the system can treat answers and potential answers in the

manner explained for articles.

[00069]   Returning now to the overall operation of the system and method, Fig. 12

illustrates a portion of the system of Fig. 1 (but does not repeat the reference

numbers for identically named components of the system), and in the box on the left

identifies an example of the information that a publisher such as a journalist provides

to the system through the web page that the system downloads to the user's screen.

[00070]   Fig. 13 illustrates the same portion of the system as Fig. 10 but in a different

stage of processing the pricing of the article, and in a box on the left illustrates a

simple example of factors and parameters that go into the pricing process.

[00071]   Figs. 14-21 are self-explanatory examples of different stages of the process

of pricing access to an article in flowchart format and further illustrate examples of

process steps involved in pricing and re-pricing access to articles. Thus, Fig. 14

illustrates in more detail a lifecycle of an article in the pricing system. In this

example pricing application cluster 20 and center server 22 interact with system

server 16 and articles database server 18. As illustrated, center server 22 provides

one or more scripts Sj that are associated with an article Ai in the step labeled

"Registration of Ai-article in pricing system." System server 16 provides an

identifying index and article database server 18 provides a time Ti value. Upon

scheduling a first execution $E_{i,o}$ of the script(s) for article Ai, the step labeled "Ei,t-

execution" applies the indicated script commands to the parameters that article

database server 18 provides (GiPiBci), executes the indicated pricing algorithm

commands and set commands, and provides articles database server 18 with

updated access price values $P_{i,t+1}$ that would be provided to the step "Ei,t-

execution" for the next iteration that corresponds to time (t+1). The updated price (or

a price change) Pi,p+1 also is supplied to system server 16 as indicated so that

subsequent users will be charged accordingly for access to article Ai. The indicated

test whether the lifetime of the article has expired leads to another cycle through

pricing if the article's lifetime has not expired, or to removing the article from the

pricing system if its lifetime has expired (in which case access to the article may be

offered to users at no charge, or access to the article can end, or some other step

may be taken depending on preferences of a designer of the overall system). Fig.

15 is similar except that it shows in more detail, in two callouts, that system server

16 helps register article Ai in the pricing application cluster, and that the article is

treated in the pricing application cluster under the designations Ai=[I Ti Si TIi,t]. The

larger callout also defines the symbols used in the expression for Ai, and gives a

non-limiting example of time increments for iterations through the pricing cluster.

Fig. 16 also is similar, and includes another callout detailing how article Ai is

provided to the pricing cluster and how the first execution Ei,o is launched. Fig. 17

also is similar but includes different callouts detailing that a non-limiting example of

an executable code for a script may comprise a section for obtaining data, a section

for algorithmic pricing, and a section for setting a new price for access to the article

and a new time. In each case, the callouts point to the appropriate examples of

script commands. Fig. 18 also is similar but in this case the callout provides more

detail regarding the section for obtaining data for article Ai and includes definitions of

terms used in the section. Fig. 19 has the same background structure but the callout

provides more detail about the section for algorithmic pricing and sets out and

explains specific non-limiting examples of a function P that calculates a new price

Pi,t+1 for a user's access to an article Ai. Fig. 20 has the same background structure but the callout in this case provides more detail about the section for setting new prices and explains specific non-limiting examples. Fig. 21 also is similar in terms of the background structure but in this case the callouts specify the time value that is used for scheduling the next cycle (the next execution Ei,t+1) of the illustrated example of a script for article Ai, and explain a non-limiting example of how to price access to article Ai when its lifetime has expired. The system can treat priced access to answers in an analogous manner.

[00072] Fig. 22 is a flowchart illustrating an example of some of the steps in an interaction between a publisher and the system. Following the step labeled Start, in which some of the interactions that were described above take place, in the step labeled Write the publisher submits the article and initial information such as keywords. In the step labeled Analysis, the system carries out text analysis and other processing of the submitted article and sends back to the publisher's screen the resulting output, possibly changes keywords and other information about the article. In the test labeled Confirm With Publisher the system checks whether the publisher has confirmed these changes. If the answer is NO, the system iterates until it has received confirmation from the publisher at this stage, and the answer in the test is YES. In the step labeled Pricing Engine, the pricing engine described above applies scripts and generates pricing information, which also is sent back to the publisher's screen so that another test labeled Confirm With Publisher can be carried out, possibly with iterations until the answer in this second test is YES, and

the system can proceed with posting (publishing) the article. The principle apply to

providing an answer for priced access.

[00073]   Fig. 23 is a flowchart illustrating an example of steps in the operation of a

pricing engine, and follows the process of Fig. 22. Following preliminary operations

in the step labeled Start, in the step labeled Article + Tagged Entities the system

stores the article that the publisher has submitted as well as information about the

article, such as the initial value assigned to the article, keywords, genre, etc.

(collectively called Tagged Entities in Fig. 23). In the step labeled Query, the pricing

engine collects the information pertaining to the article to which scripts will be

applied, for example from the storage labeled User DB, and also collects information

regarding Potential Buyers (i.e., users), and supplies this information to the step

labeled Apply Rules, where scripts of the type discussed above are applied in order

to generate current prices for access to the article. This application of scripts uses

information from a source labeled Rules (which is a source of scripts) and

information labeled Price + Lifetime. At time intervals labeled Every Delta Seconds,

the system sends updated prices (or an updated single price) back to the step

labeled Article + Tagged Entities, where the updated pricing information is stored for

use in the next iteration through the process illustrated in Fig. 23. The principles

apply to priced access to answers.

[00074]   The pricing engine can be configured to calculate and direct payments to

publishers in compensation for articles and answers. The calculation can be based

on factors such as a share of the cumulative revenue that the system derives from

an article or answer provided to users, on the nature and history of a relationship

between the system and the publisher, and/or other business factors. The calculation can also account for benefits that the system provides to publishers. For example, the system can be configured to post promotional material such as advertisements from publisher and attach such promotional material to the articles or answers delivered to users and/or to other content provided by the system, in which case some or all of the compensation that the pricing engine calculates for a publisher can be based on the promotional material benefits to the publisher. As a non-limiting example, the system may allow a publisher to post advertising or other material to the system, for display to users or others, on terms that would reduce or eliminate payment in funds to a publisher.

[00075]   Figs. 24-32 illustrate an example of pricing users' access to articles, it being understood that this is only one of several possible ways of constructing and using a pricing engine consistent with the principles disclosed in this patent specification, and that the illustrated functions can be carried out in equipment that is not physically adjacent but selectively exchanges information over links such as the Internet, dedicated or shared optical and/or electrical lines, or in some other way, and that two or more of the indicated functions may be carried out by the same piece of equipment or one of the indicated functions may be carried out by two or more pieces of equipment.

[00076]   As illustrated in Fig. 24 and further explained in Fig. 25, an article database server 18 described above interacts with the pricing engine. In the example of Fig. 24, a pricing engine application cluster (PEnACle) comprises two PEnACle units 2020a and 2020b but can include additional similar units that together perform

functions similar to those of pricing application cluster 20 in Fig. 1, i.e., apply scripts

to articles to generate initial and subsequent pricing for access to the articles.

PEnACle 2020a comprises an article process master node 2020a1 that receives,

from article database server 18, articles A1 and information about the articles that

have been provided to (registered in) server 18, and distributes the received

information to article process slave nodes such as 2020a2 and 2020b2 for

processing, for example in a manner that reasonably equalizes the processing loads

of the slave nodes.   Slave node 2020b2 can also communicate directly with server

18. The article processing slave nodes apply scripts to the articles and other

information received from database 18 to calculate initial and updated prices

consistent with the pricing principles discussed above. One of the PEnACle units

contains a management master node, 2020b4 in this example, that is connected

with management slave nodes such as 202a3 and 2020b3 that can be in each

PEnACle unit, to carry out management of all nodes within the pricing cluster such

as script management, configuration management, etc., and to implement such

management via management slave nodes such as 2020a3 and 2020b3.

Management master mode 2020b4 and server 18 communicate with a server

application cloud THEX 2416 that performs functions similar to those of system

server 16 in Fig. 1. THEX 2416 comprises a Quantc node 2416a that communicates

with a workstation 2422 performing functions such as tracking and controlling node

states and providing overall management of scripts, and a pricing node 2516b that

communicates with server 18 to keep track of and receive and return information

such as articles registration information, article access prices and price trends, and

with management master node 2020b4 and Quantc node 2416a to exchange

information about node states and script management. In addition, pricing node

2416b communicates with node 2416c, which is labeled Ecqc in Fig. 24, to provide

price information and information about trends in access prices, as to which node

2416c communicates with a workstation 2424 that can track the price and trend

information. The principles apply to pricing access to answers as well.

[00077]   Fig. 26 illustrates steps in the process of pricing access to articles in the

operation of the pricing engine of Fig. 24 and according to the further explanation

that Figs. 25 and 27 provide. As illustrated in Fig. 26, in step 1 a publisher provides

(publishes) an article Ai through an interaction of a publisher 14 via a link such as

the Internet with the THEX unit in Fig. 24. In step 2 the THEX unit performs a

function similar to that of system server 16 of Fig. 1 to receive the article and

associated information from the publisher. In step 3, the THEX unit supplies (posts)

the article to database server 18 and registers the article in the PEnACle units via

database server 18. In step 4, the article process master node 2020a1 receives the

article information and the script(s) associated with the article. In a simplified

example, there can be a single default script that would be applied to each article, or

there can be respective default scripts that are applied to different groups or classes

of articles. In step 5 master node 2020a1 sends the article and related information

for processing in an article process slave node such as nodes 202a2 and 2020b2 (or

to another node if there are more than two PEnACle units, selecting a particular

slave node depending on processing load distribution factors. In step 6 the slave

node that received the information computes an initial or an updated access price for

the article using the script application principles discussed above and provides (posts) the computed price to database server 18. As discussed above, the access price for an article typically varies over time and there can be different prices for different users or classes or users or kinds of access. In step 7 the THEX unit receives the initial or updated price of access to article Ai from database server 18, and in step 8 the THEX unit provides the price and related information (such as trend and/or other statistical information) to users 10 and/or workstation 2424. The principles apply to pricing access to answers as well.

[00078] Fig. 28 illustrates an example of a display at the screen of workstation 2424 in Fig. 24 that can appear in a process of managing scripts. As indicated, the screen includes a listing of the names of the available scripts, a box to click for arranging the scripts by name or some other order, buttons to click to place a script in an editing mode, and indications whether the script has been used in the system and whether it has been found to work correctly or to contain errors.

[00079] Fig. 29 illustrates an example of a display at the screen of workstation 2424 in Fig. 24 that can appear in a process of managing scripts. In this non-limiting example, the top line shows the name of the current script (in this case a default script). The next line has a box labeled "upload" that can be checked to upload the current script under its current name for use in the pricing engine, and a box "upload as ..." that can be clicked to upload the script under a newly assigned name. The lines underneath are script code that a user may write or modify to create or edit a script.

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[00080] Fig. 30 illustrates further details about an example of script commands by

providing comments (descriptions) of the illustrated commands or functions, and Fig.

31 illustrates a commented example of a pricing script code.

[00081] Fig. 32 illustrates a screen that may be displayed at workstation 2422 of Fig.

1 to provide statistical information about the pricing engine operation. The left

column allows an administrator to select the type of statistical or other information

that should be displayed; in this example "pricing" has been selected. Boxes to the

right allow the selection of statistics (selected in this example) or scripts. In the

illustrated example, a test node has been selected, and the several parameters

about the pricing engine operation are displayed as named accordingly, and values

are given for each of the named parameter to allow a system administration to

assess performance or maintain supervision and consider design improvements.

[00082] The system can be further configured to add promotional material such as

third party advertisement to the articles, answers or other material provided to users.

In that case, the system is configured to derive revenue from the third parties related

to the volume, nature and timing of the promotional material and perhaps other

factors. Arrangements for such delivery of third party promotional material and

derivation of revenue therefrom are well known and in commercial use by entities

such as Google and others, and for the sake of conciseness need not be described

in detail in this patent specification.

[00083] It should be understood that while separate servers and processors are

illustrated related to different functions of the system, these functions can be

distributed differently among one or more servers and processors that can be at the same location or at different locations, or can all be performed in one server or server cluster or processor, consistent with the operation of the system and carrying out the functions described above. Similarly, the articles database server functionality can be in one place or distributed among different places and devices. Therefore, references to servers in this patent specification and claims should be understood to be based on functions rather than on a physical devices or locations.

[00084]   An application program that interacts with publishers and users, and with one or more servers, to carry out an example of the process described above can be incorporated in or used through an operating system such as Windows from Microsoft, or can be made accessible through browsers, or made available to publishers or users in some other way. A suitable program can be loaded on publishers' and/or users' devices to facilitate interaction with system server 16, or similar interaction can be provided solely through pre-existing facilities of the devices that publishers/users operate, or through a cloud arrangement. A specific program can be written, or a specific programmed system can be assembled, without undue experimentation, according to the description above, to implement an example of the disclosed method and system adapted for a particular setting and/or to meet particular goals. The program can be stored in a non-transitory form in computer-readable media such as magnetic or optical disc, and/or semi-conductor memory and, when loaded and executed in general purpose computer systems, can carry out the process described above.

[00085]   While several embodiments are described, it should be understood that the new subject matter described in this patent specification is not limited to any one embodiment or combination of embodiments described herein, but instead encompasses numerous alternatives, modifications, and equivalents. In addition, while numerous specific details are set forth in the following description in order to provide a thorough understanding, some embodiments can be practiced without some or all of these details. Moreover, for the purpose of clarity, certain technical material that is known in the related art has not been described in detail in order to avoid unnecessarily obscuring the new subject matter described herein. It should be clear that individual features of one or several of the specific embodiments described herein can be used in combination with features or other described embodiments. Further, like reference numbers and designations in the various drawings indicate like elements.

[00086]   The foregoing has been described in some detail for purposes of clarity but it will be apparent that certain changes and modifications may be made without departing from the principles thereof. A person skilled in the pertinent technology would understand that there are many alternative ways of implementing both the processes and apparatuses described herein. Accordingly, the present embodiments are to be considered as illustrative and not restrictive, and the body of work described herein is not to be limited to the details given herein, which may be modified within the scope and equivalents of the appended claims

[00087]   This patent specification thus describes a basic computer-implemented system configured to provide dynamic, essentially real time pricing of users' access

to content represented by articles, which pricing can vary over time with user

behavior to reflect actual values that users place on access to the articles and/or

answers. The system comprises a computer-implemented facility through which

users may access published articles, post questions, provide answers thereto, and

access answers, and a pricing application cluster configured to apply scripts to

content maintained in an articles/answers database server to thereby iteratively

generate prices for access by remotely located users to the desired content

[00088]   The patent specification further describes an improvement that further

enhances the matching of content to user's interests by automatically searching

websites that are outside the system for relevant material on behalf of a user,

combine search results from the system articles database with results from

searching such outside websites, and can delivering the combined results to the

user.

CLAIMS:

1. A computer-implemented system configured to expand a user's access to
   content matching the user's interests through automatically searching outside
   websites, in an environment of providing dynamic, essentially real time pricing of
   access to content by remotely located users, which pricing varies over time with
   user behavior to reflect actual values that users place on access to the articles,
   said system comprising:

   a computer-implemented articles database configured to store and update
      articles stored in the system and parameters related to the articles;

   a computer-implemented system server configured to electronically link the
      articles database with remotely located publishers and users and
      provide the publishers and users with selected granulated entry to
      the articles database from remote locations;

   a content expanding facility responding to a selection by a user of content
      available on the system to automatically search and analyze
      content on selected outside websites for additional content
      matching the selection by the user, and to present such additional
      content to the users to select for access;

   said content expanding facility being further configured to facilitate
      compensating such outside websites for paid access thereto;

   a pricing application cluster configured to apply, in a computer-implemented
      process, respective pricing scripts to articles to thereby iteratively

generate access prices for access to the respective articles by
remotely located users;

said pricing application cluster being further configured to generate different
prices for access to the articles at different times to thereby
generate prices that vary over time based at least in part on user
behavior; and

a facility configured to charge users for access to the respective articles
including selectively providing different access charges, schedules,
or terms for different categories of users and articles.

2. The system of claim 1 in which said system server is further configured to supply,
to the articles database, articles contributed by the publishers, and said pricing
applications cluster is further configured to calculate and post on the system
respective access prices for access by respective users to respective articles,
which prices vary in time at least with user behavior.

3. The system of claim 2 in which the pricing application server is configured to
calculate the access prices based on a respective sets of scripts assigned to
respective articles and answers.

4. The system of claim 3 in which said pricing application clusters is configured to
calculate an initial access price for an article based at least in part on a total price
for the article proposed to the system by the publisher of the article.

5. The system of claim 4 including a center server coupled with at least one of the pricing application server and the articles database and configured to store historical information regarding the articles and attributes thereof, and to calculate and provide for display to publishers or users estimates of future readership of or access to articles and answers.

6. The system of claim 1 in which the pricing application cluster is further configured to calculate different access prices for users in different geographical areas.

7. The system of claim 1 in which the pricing application cluster is further configured to calculate different access prices for users who are in different categories, including a category of pay-per-view users and a category of subscription users.

8. The system of claim 7 in which said category of subscription users comprises different categories of subscription users and said pricing application cluster is configured to calculate different access prices for the different subscription categories.

9. The system of claim 1 in which the system server and the articles database are configured to aggregate questions with follow-up questions posted on the system and with answers to the follow-up questions, and to display said aggregations to users.
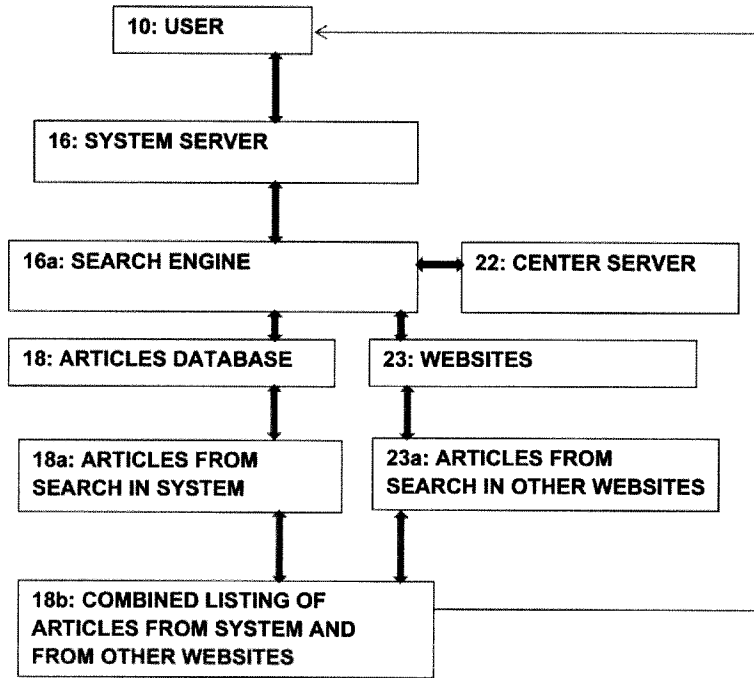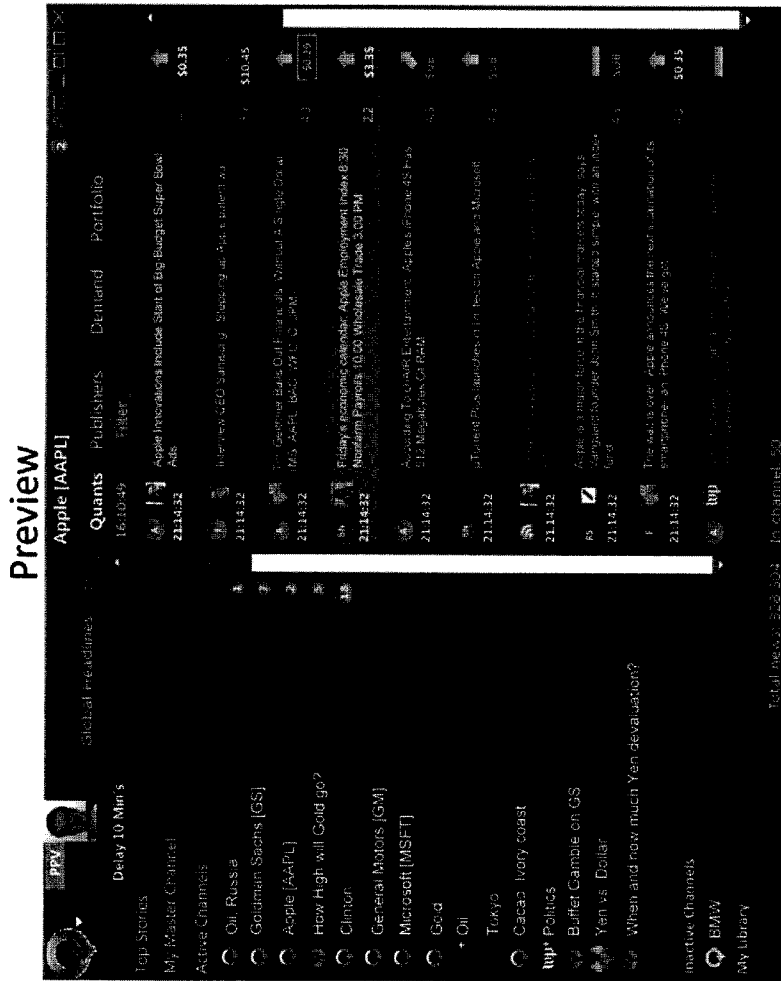
10. A computer-implemented method configured to expand a user's access to content matching the user's interests, in an environment of providing dynamic, essentially real time pricing of users' access to content, which pricing varies over

time with user behavior to reflect actual values that users place on access to the
articles, said system comprising:

storing and updating, in a computer-implemented articles database, articles
and parameters related to the articles;

electronically linking the articles database with publishers and users and
provide the publishers and users with selected granulated entry to
the articles database from remote locations;

expanding a user's access to article beyond those available on the system by
responding to a selection by a user of content available on the
system to automatically search and analyze content on selected
outside websites for additional content matching the selection by
the user, and to present such additional content to the users to
select for access;

automatically facilitating compensating such outside websites for paid access
thereto;

applying, in a computer-implemented process, respective pricing scripts to
articles to thereby iteratively generate access prices for access to
the respective articles by remotely located users;

said applying being configured to generate different prices for access to the
articles at different times to thereby generate prices that vary over
time based at least in part on user behavior; and

charging users for access to the respective articles including selectively

providing different access charges, schedules, or terms for different

categories of users and articles.

.

11. The method of claim 10 further including supplying, to the articles database,

articles contributed by the publishers, and calculating and posting on the system

respective access prices for access by respective users to respective articles,

which prices vary in time at least with user behavior.

12. The method of claim 11 including calculating the access prices based on a

respective sets of scripts assigned to respective articles and answers.

13. The method of claim 12 including calculating an initial access price for an article

based at least in part on a total price for the article proposed to the system by the

publisher of the article.

14. The method of claim 13 including storing, in computer storage, historical

information regarding the articles and answers and attributes thereof, and

calculating and providing for display to publishers or users estimates of future

readership of or access to articles and answers.

15. The method of claim 10 including calculating different access prices for users in

different geographical areas.

16. The method of claim 10 including calculating different access prices for users who are in different categories, including a category of pay-per-view users and a category of subscription users.

17. The method of claim 16 in which the category of subscription users comprises assigning different access charges to different categories of subscribing users.

18. The method of claim 10 including aggregating questions with follow-up questions posted on the system and with answers to the follow-up questions, and display said aggregations to users.

Fig. 1

General article lifecycle

10 User

11

16 System Server

14 Publisher

C_i G_i V_i T_i

C_i G_i $P_{i,0}$ T_i

18 Articles database

C_i - article content;
G_i - genre;
P_i - price; V_i
T_i - article life time;
Bc_i - current number of users who bought article;

20 Pricing Application Cluster

Scripts: S_0 ... S_j S_i

Articles: A_0 ... A_1 ... A_N

$E_{i,j}$

G_i T_i $P_{i,t}$ $Bc_{i,t}$

$P_{i,t+1}$

S_i

22 Center Server
· Generates script code via text or graphical editor
· Manages scripts
· Assigns script codes to articles

BP i,t = The number of potential buyers

BO i,t = The number of current online potential buyers

BN i,t = The number of current net online potential buyers

R i,t = accumulated Rating at any given time

RC i,t = accumulated Rating at any given time in country

CT i,t = The number of current online potential buyers in the country

PC i,t = Price per country (also different currency)

BC i,t = Number of users per country that bought the article (also different currency)

```
          ┌──────────────────┐
          │   10: USER       │◄──────────────────────┐
          └──────────────────┘                        │
                   ▲                                   │
                   │                                   │
                   ▼                                   │
     ┌──────────────────────────┐                      │
     │  16: SYSTEM SERVER        │                     │
     └──────────────────────────┘                      │
                   ▲                                   │
                   │                                   │
                   ▼                                   │
  ┌──────────────────────────┐      ┌──────────────────────────┐
  │ 16a: SEARCH ENGINE        │◄────►│ 22: CENTER SERVER        │
  └──────────────────────────┘      └──────────────────────────┘
         ▲            ▲
         │            │
         ▼            ▼
 ┌──────────────────────┐   ┌──────────────────────┐
 │ 18: ARTICLES DATABASE │   │ 23: WEBSITES         │
 └──────────────────────┘   └──────────────────────┘
         ▲                          ▲
         │                          │
         ▼                          ▼
 ┌──────────────────────┐   ┌──────────────────────────┐
 │ 18a: ARTICLES FROM    │   │ 23a: ARTICLES FROM       │
 │ SEARCH IN SYSTEM      │   │ SEARCH IN OTHER WEBSITES │
 └──────────────────────┘   └──────────────────────────┘
         ▲                          ▲
         │                          │
         ▼                          │
 ┌──────────────────────────────┐   │
 │ 18b: COMBINED LISTING OF      │───┘
 │ ARTICLES FROM SYSTEM AND      │
 │ FROM OTHER WEBSITES           │
 └──────────────────────────────┘
```

Fig. 1A

Fig. 2

Channel Groups

Top Stories – this is currently a placeholder, in the future it will contain the subset of the headlines that match any other active channel.

My Channels – aggregation of all the items in all the Active Channels.

Active Channels – list of channels that are currently active for the user.

Inactive Channels – list of channels that are currently inactive (sleeping) for the current user.

My Library – list of all the articles bought by the user.

Fig. 3

- Active Channels and Inactive Channels do Not collapse
- Both are just list of items that the user scrolls as needed.

New Channel Types
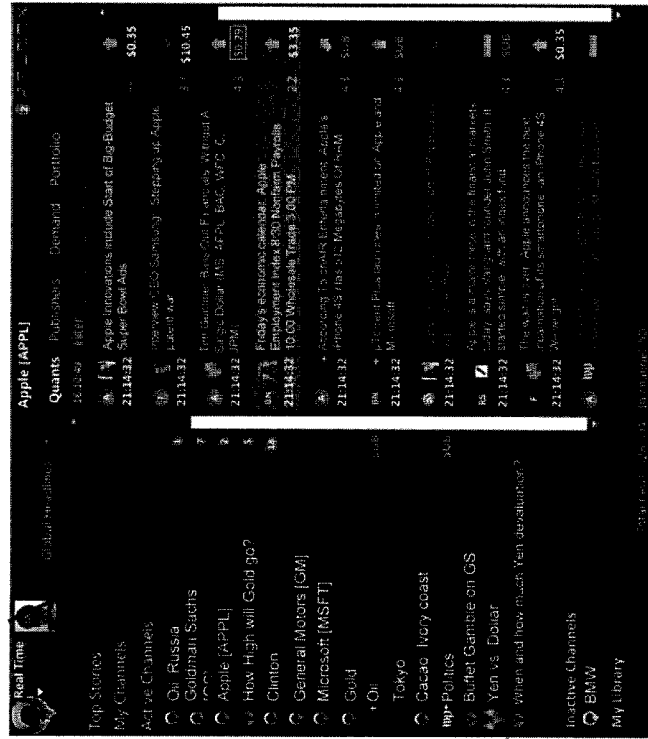
Fig. 4

Synopsis View Open
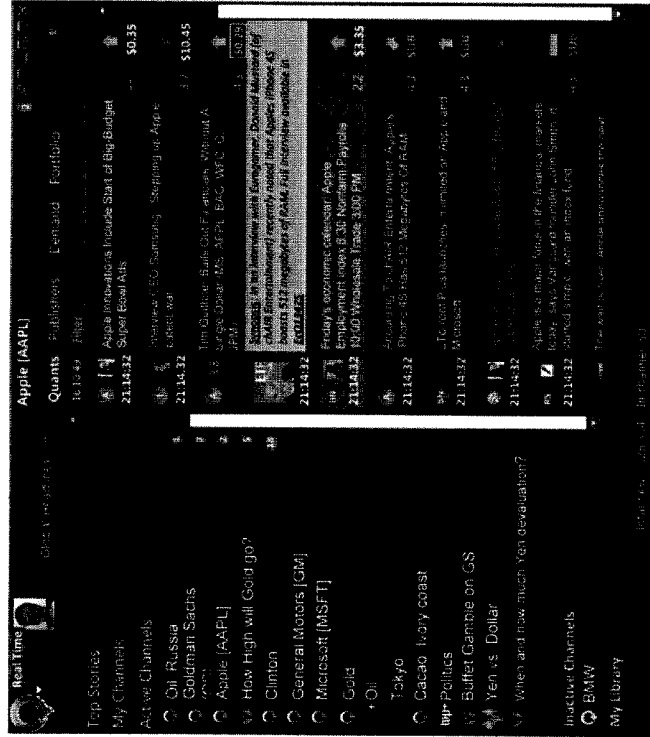
Fig. 5

Multiple Articles Open in Cascade

When Channel attached to Channel List

When Channel is detached from Channel List

Fig. 6

- Standard cascade behavior of new windows
- Cascade is always relative to the article list area (or right-top corner).
- Reopening an article that is already open just brings is forward.

Article Tabs
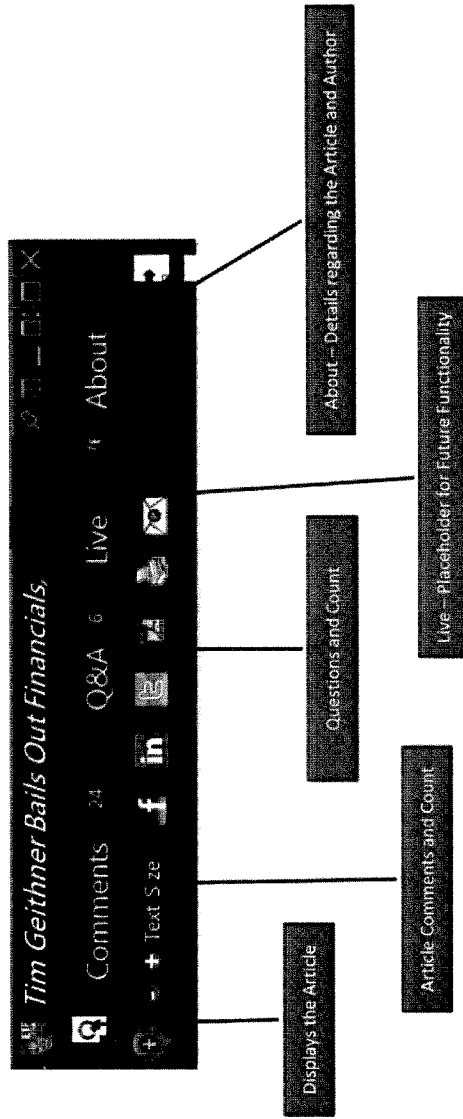
Fig. 7
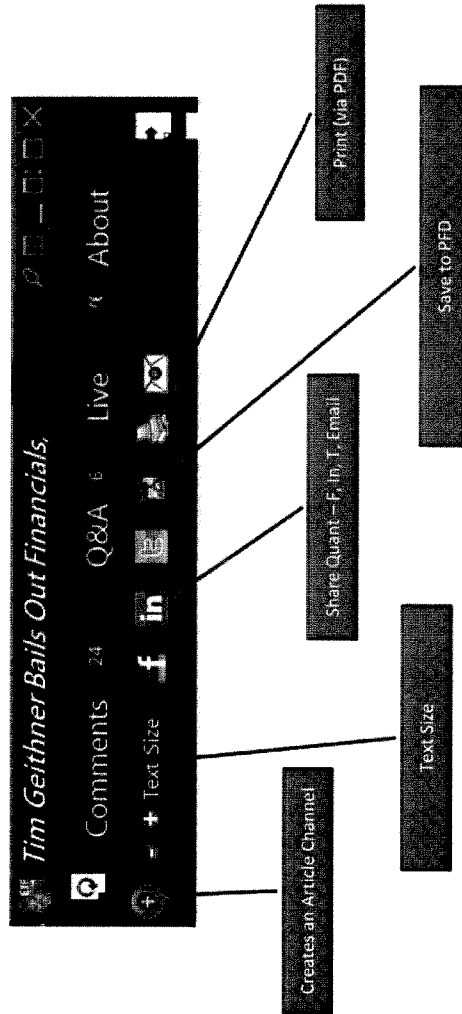
Fig. 8

Text and Images Together
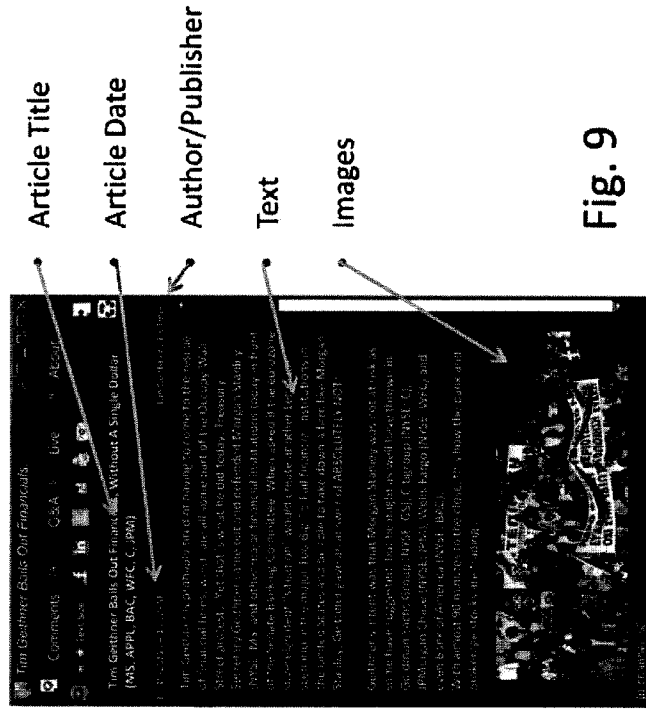
Article Title

Article Date

Author/Publisher

Text

Images

Fig. 9
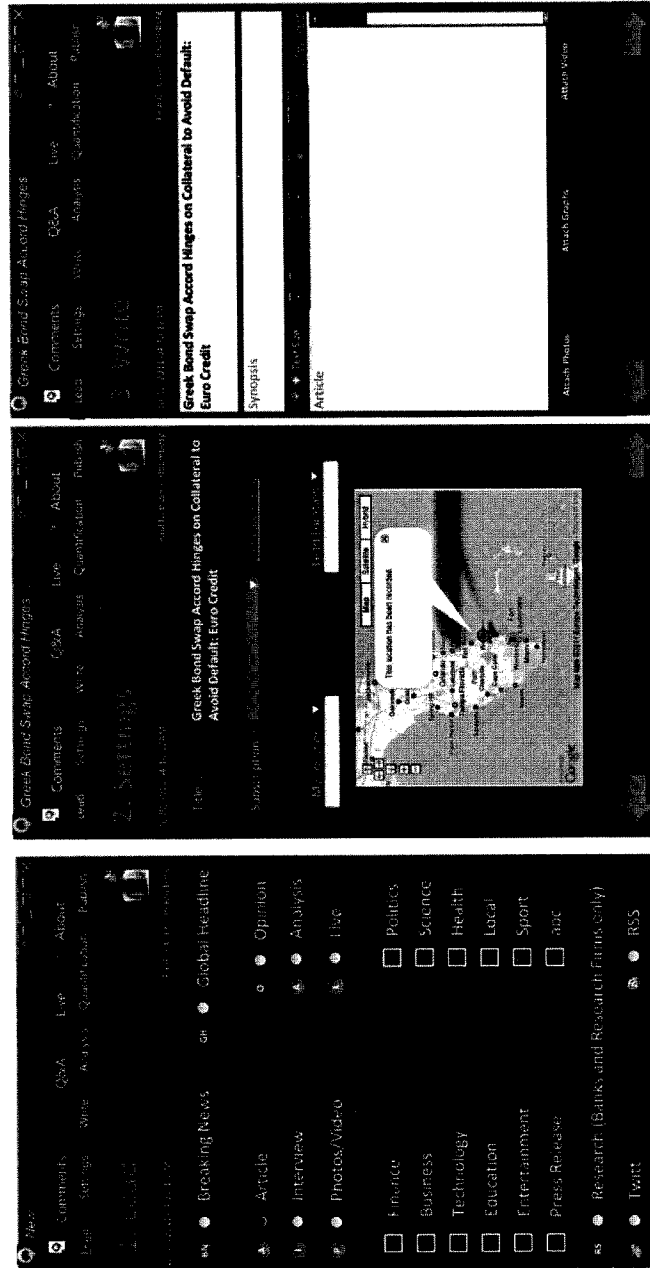
Fig. 10a

Fig. 10b
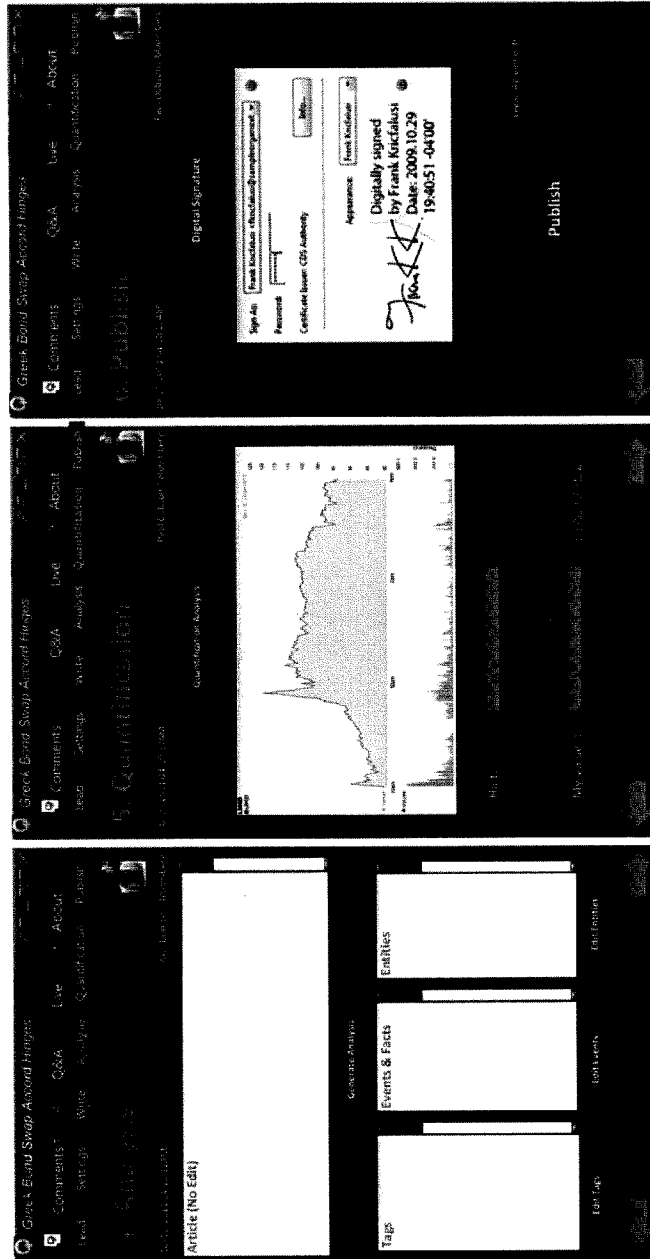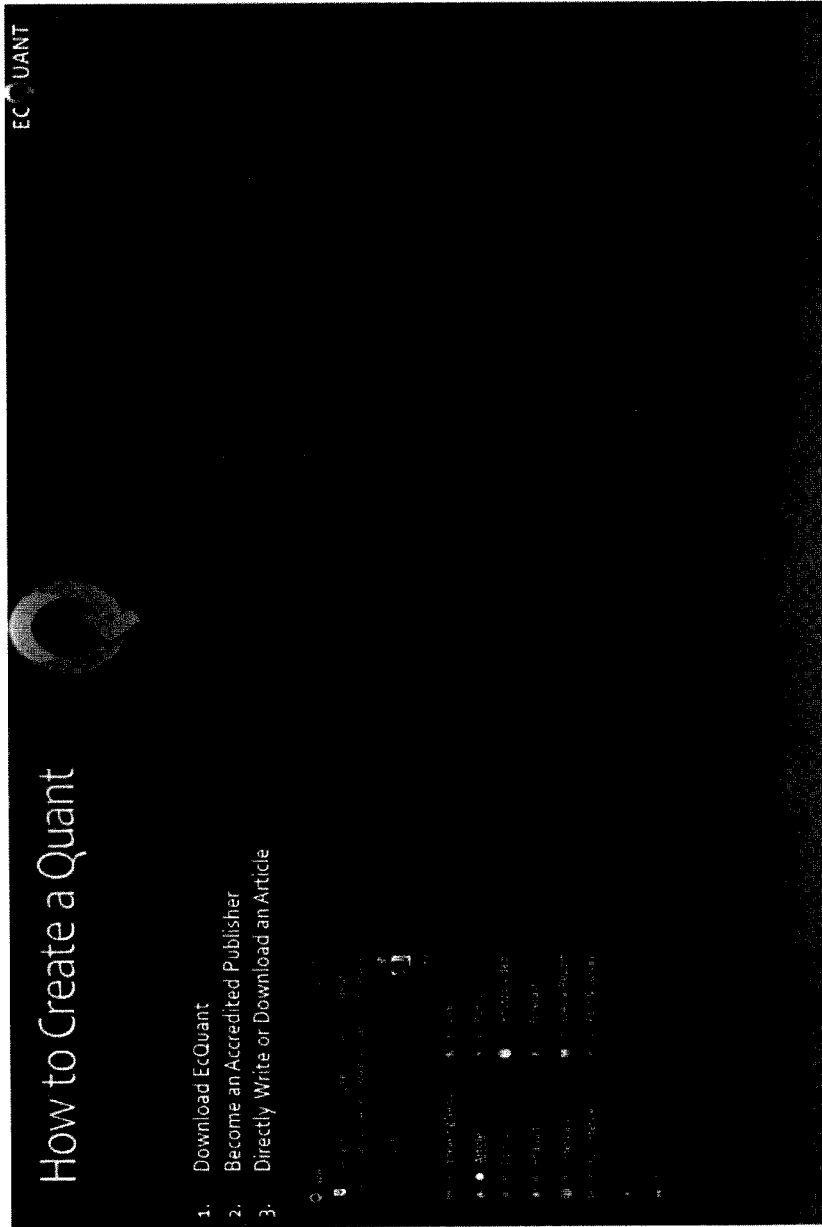
Fig. 11a
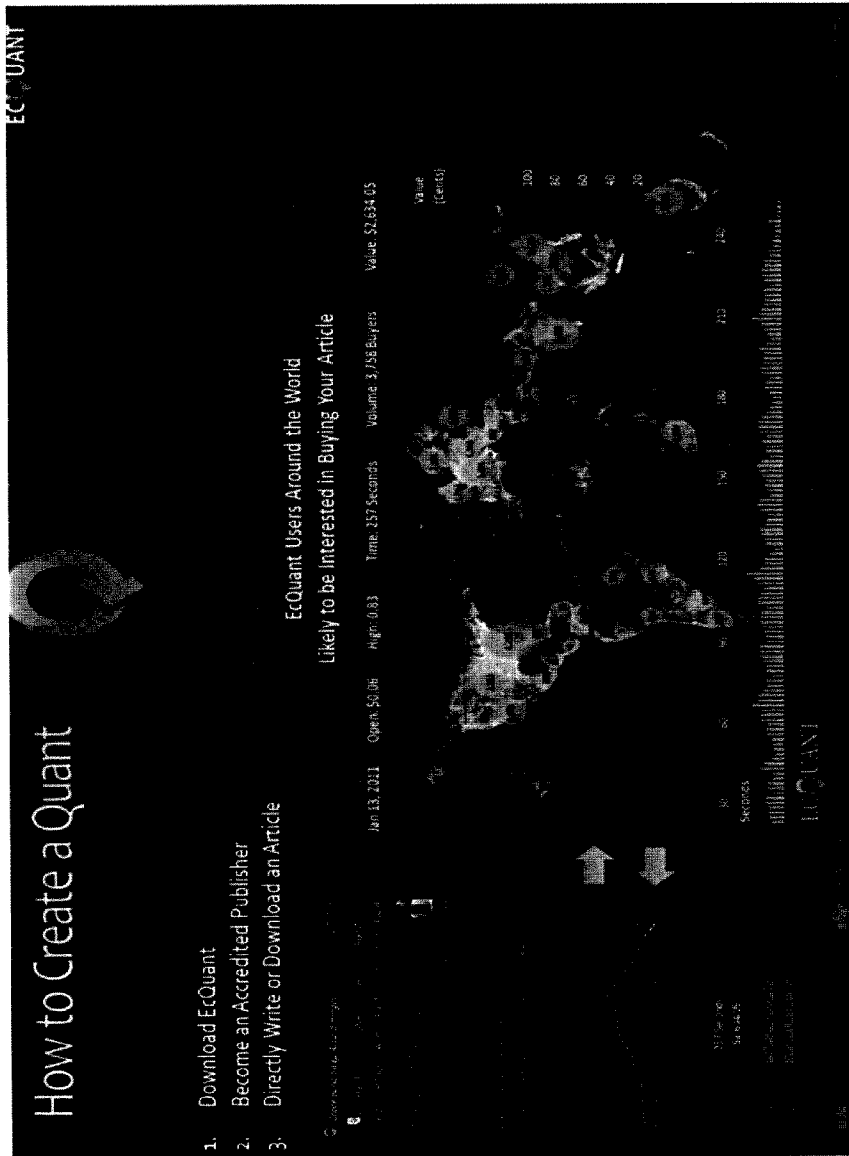
Fig. 11b

Fig. 11c

Fig. 11d

Fig. 11e

Fig. 11f

Fig. 12

General article lifecycle.

Articles database Server

C_i - article content;
G_i - genre;
P_i - price;
T_i - article life time;
Bc_i - current number of users who bought article;

Center Server

.Generates script code via text or graphical editor
.Manages scripts
.Assigns script codes to articles

WEB 11

System Server

Pricing Application Cluster

Articles:

A_0 ... A_i ... A_N

$E_{i, t}$

Scripts:

S_0 ... S_i ... S_j

$C_i G_i V_i T_i$

$C, G, P_{i,0}, T_i$

$G_i T_i P_{i,t} Bc_{i,t}$

$P_{i,t+1}$

S_i

i

Fig. 13

"Pricing Application Cluster" contains sets of scripts (S0...Sn) and set of registered articles (A0..Am).

"Pricing Application Cluster" cyclically generates the script Si for the article i as long as the life cycle of the article in "Pricing Application Cluster" will reach Ti.

Each run (Ei,t) script creates a new price Pi(t+1) of the article Pi(t+1) based on values G,T,P,t,Bci,t obtained from the database, where t is an iteration of script execution.

The new price value P(t+1) is passed into the database of web sites...

constant
(Pi t=const or Pi t=0)

Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19

Fig. 20

Fig. 21

Publisher steps

Fig. 22

Pricing Engine at run Time
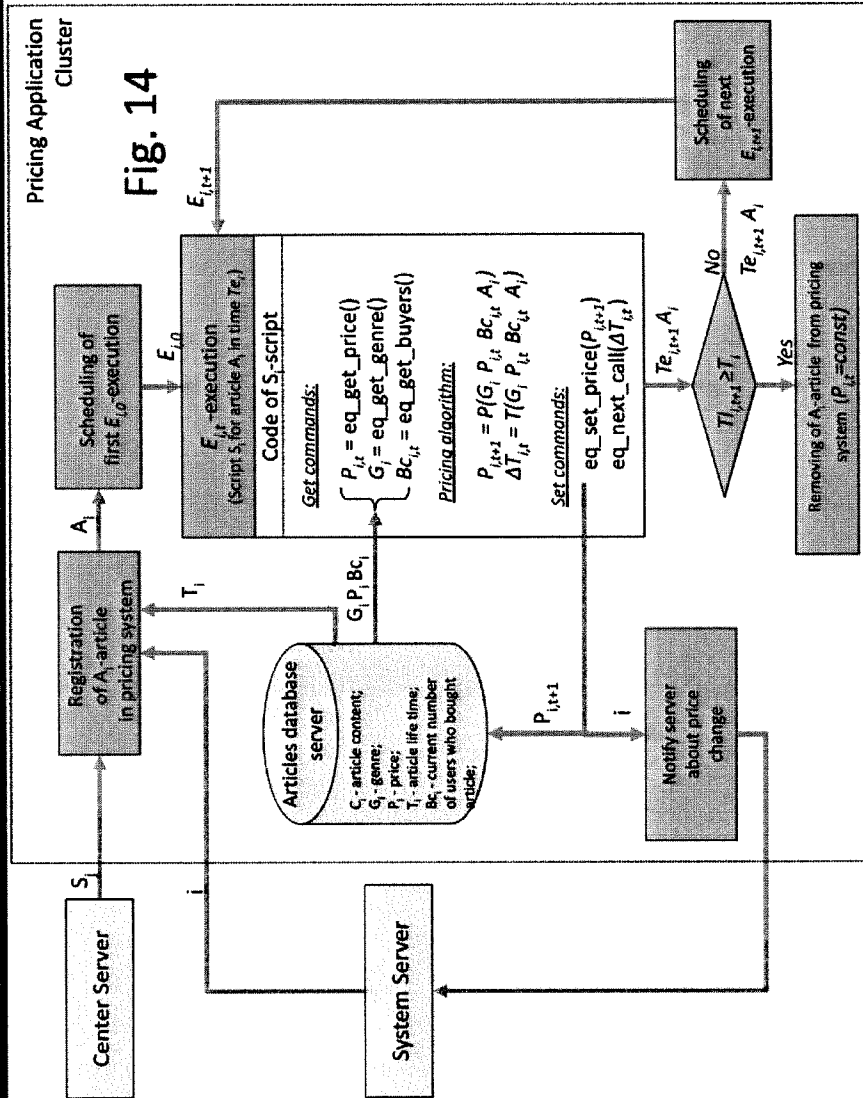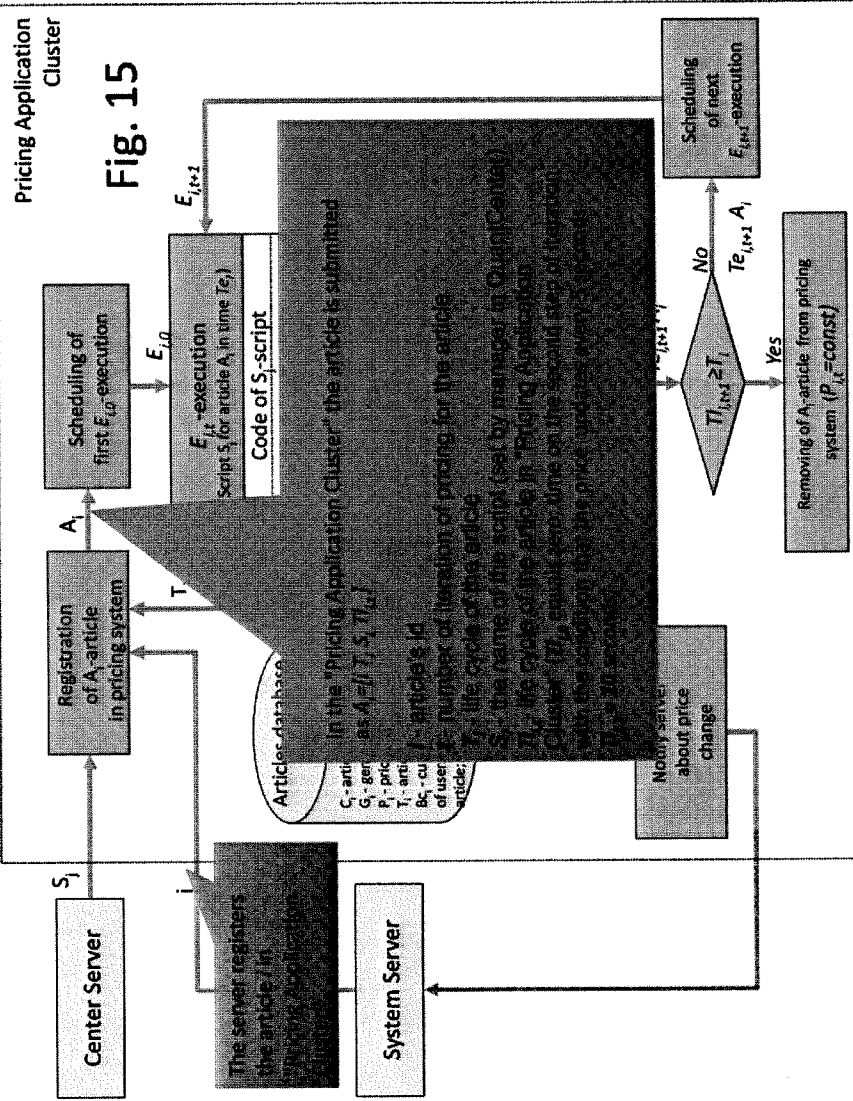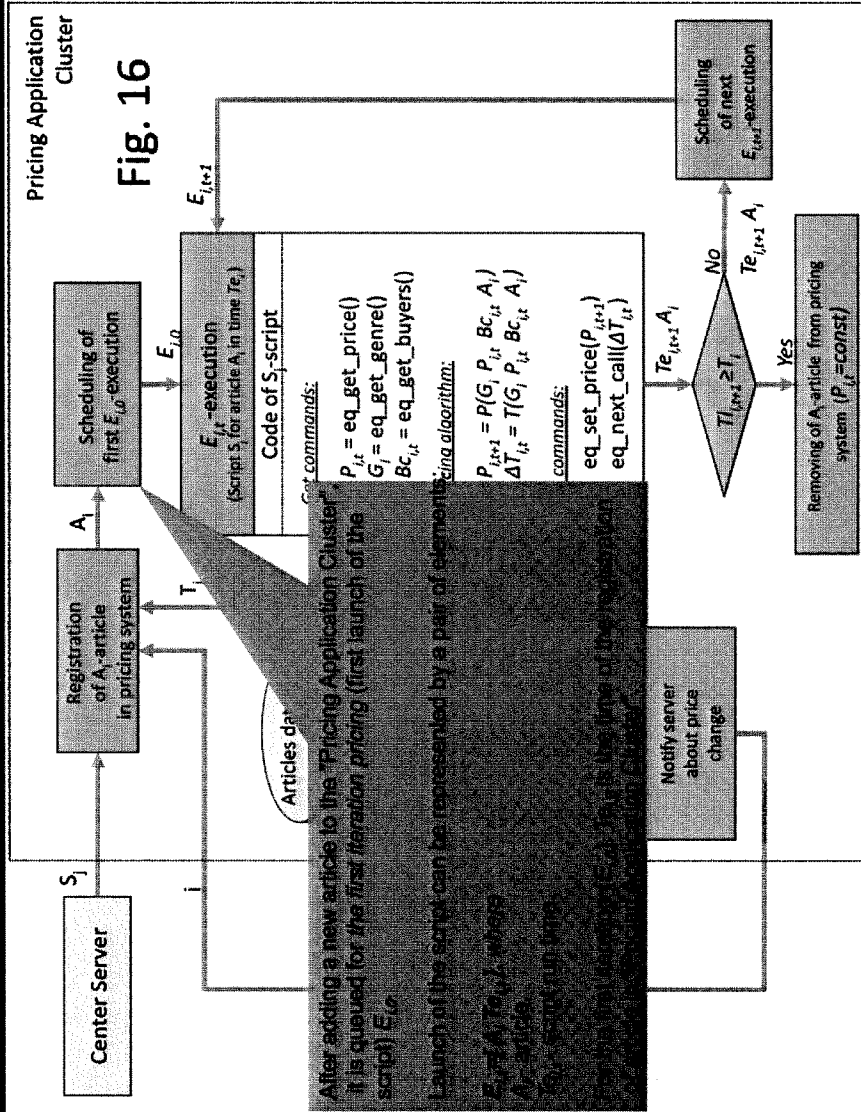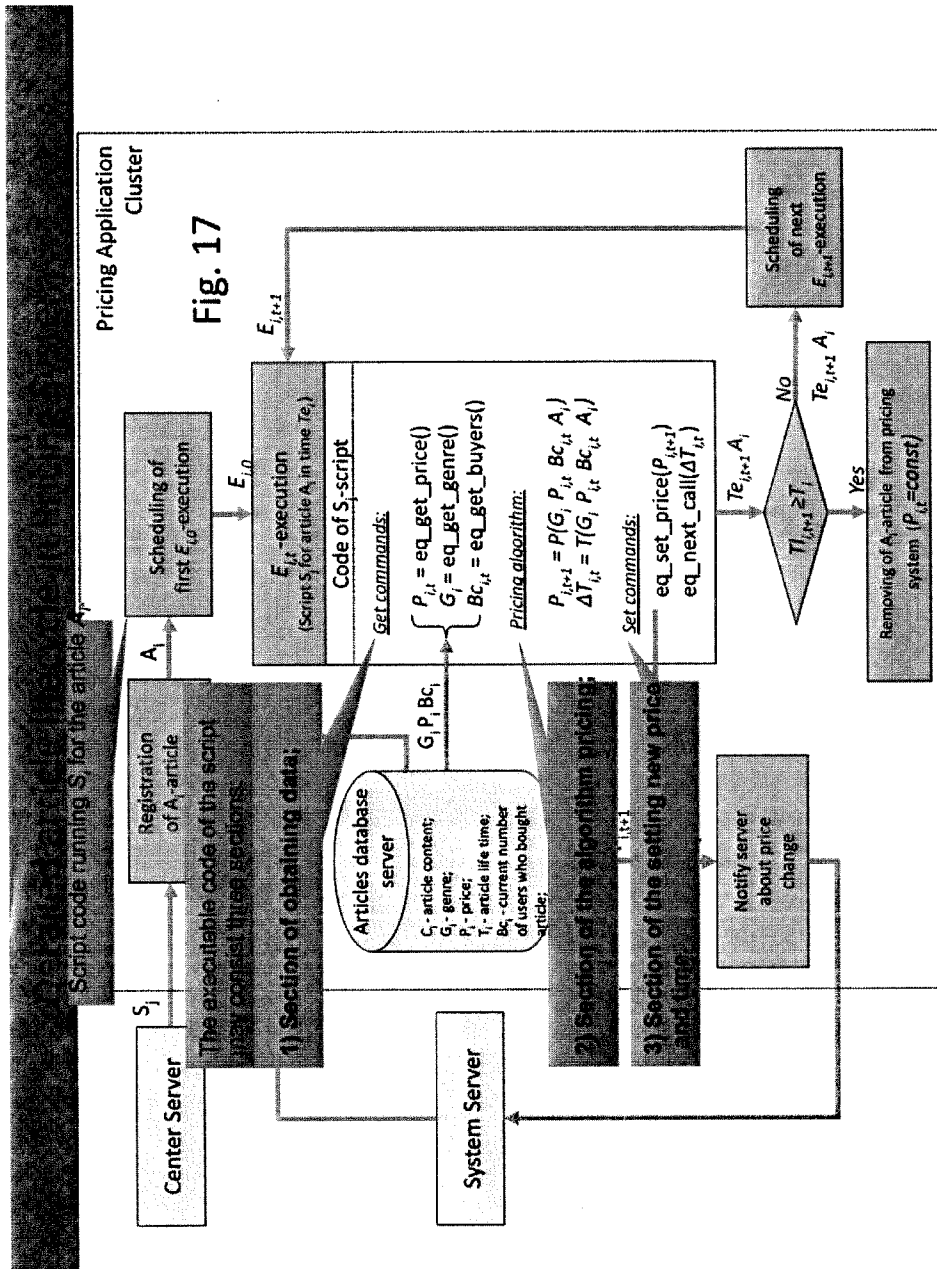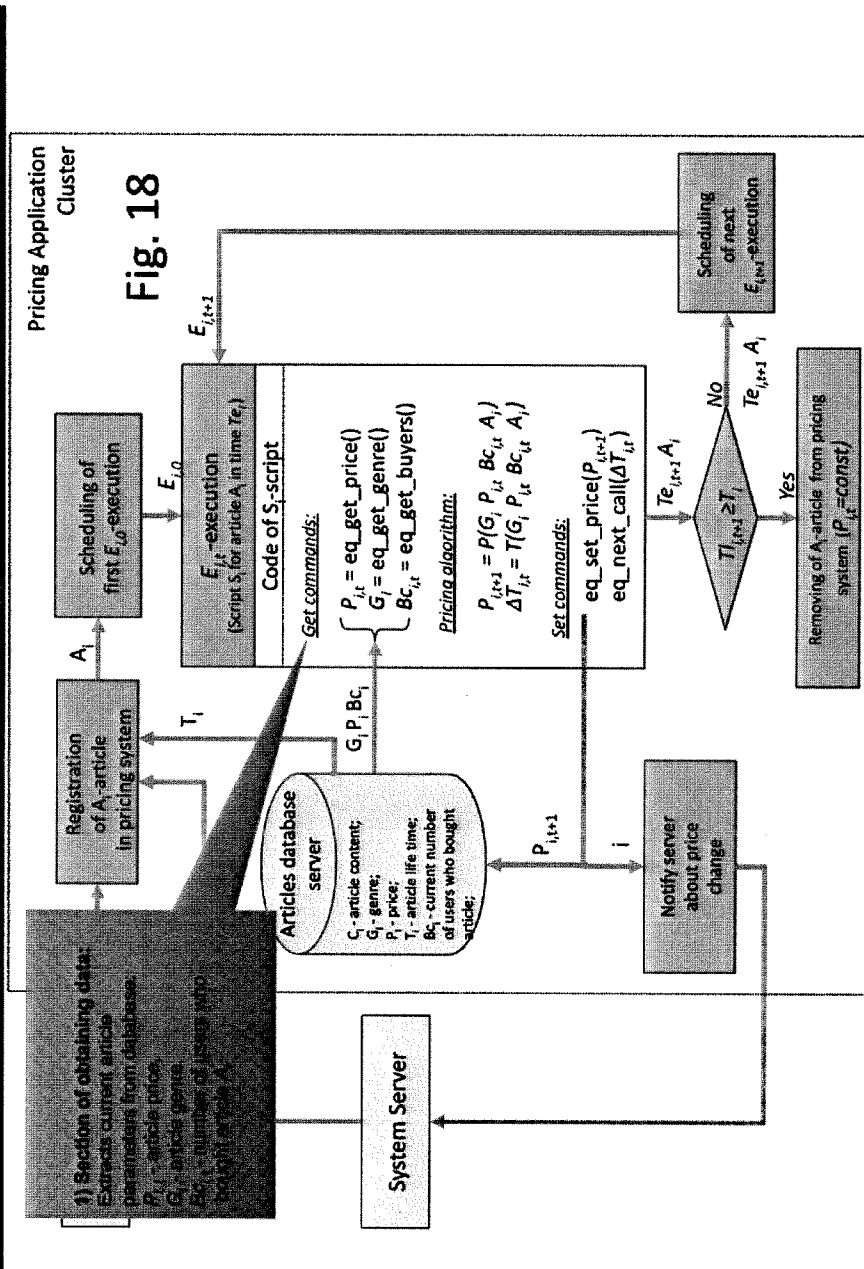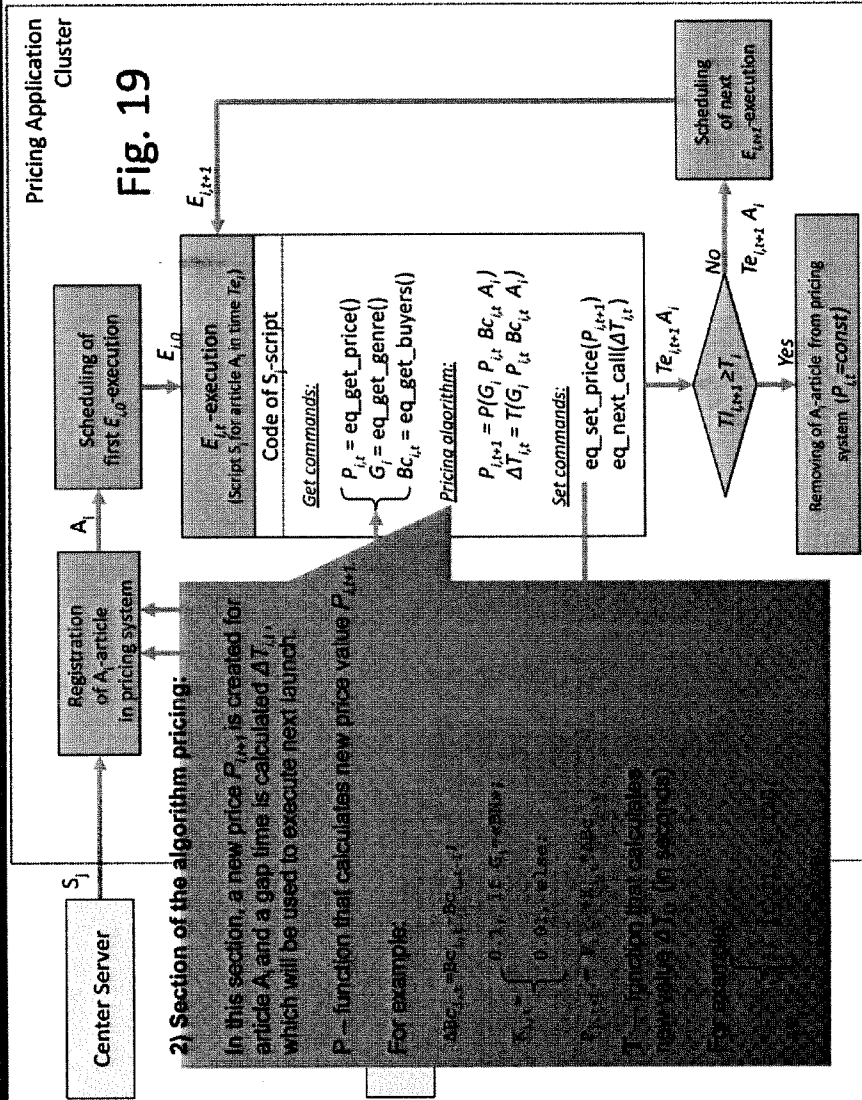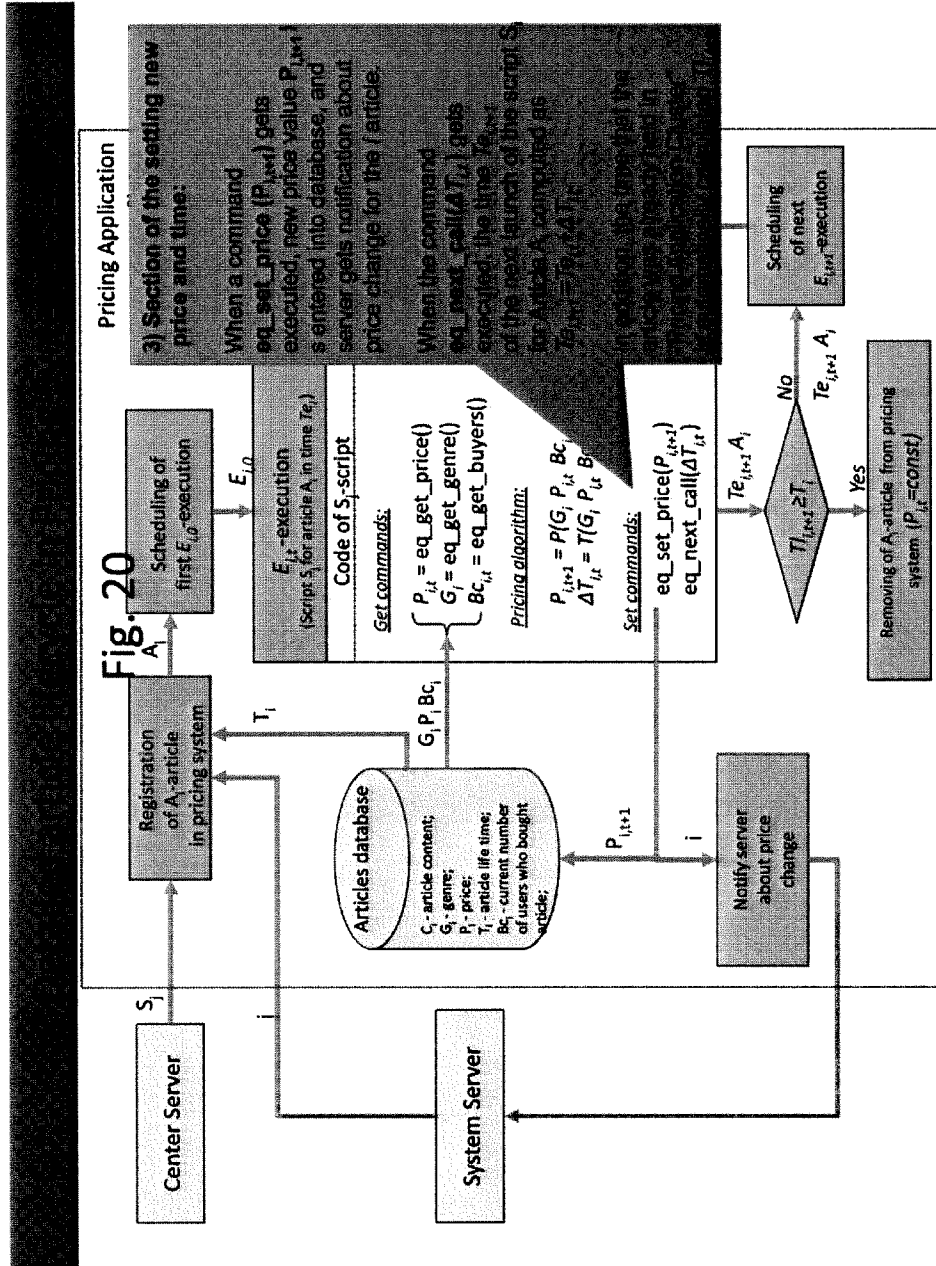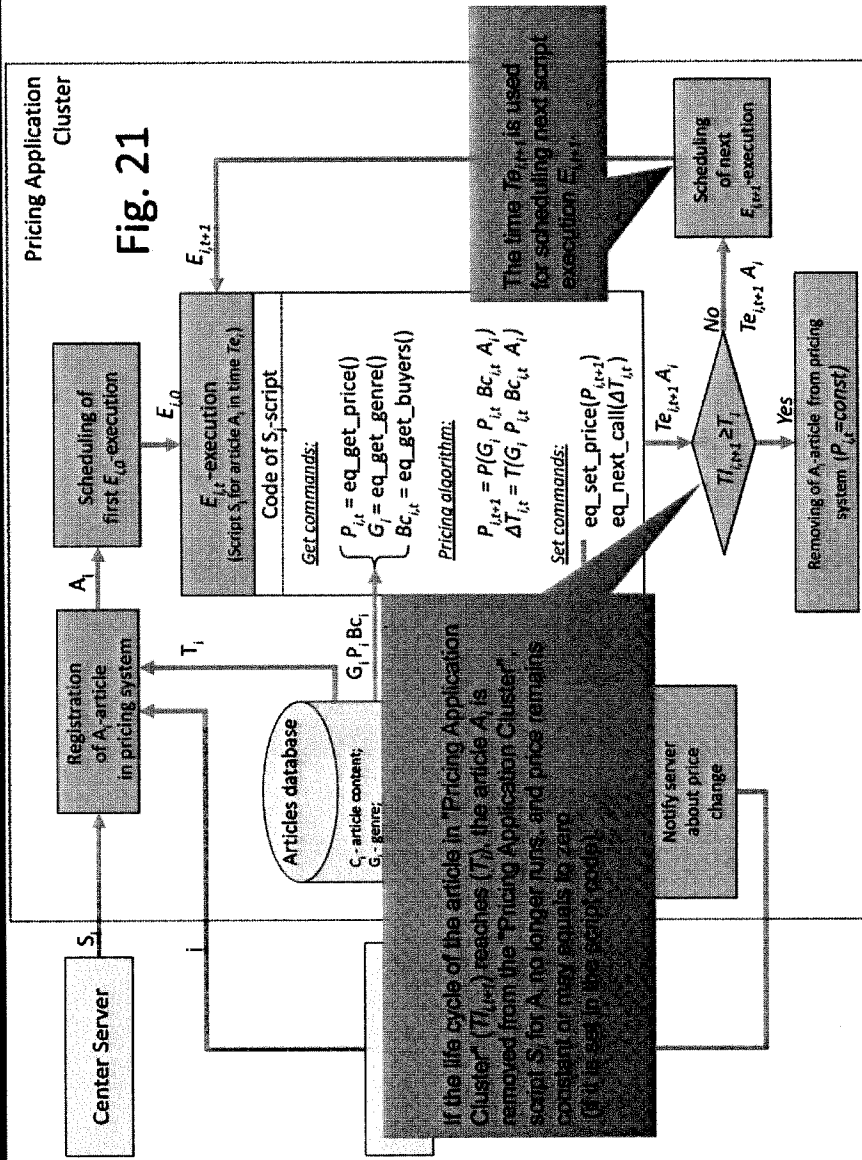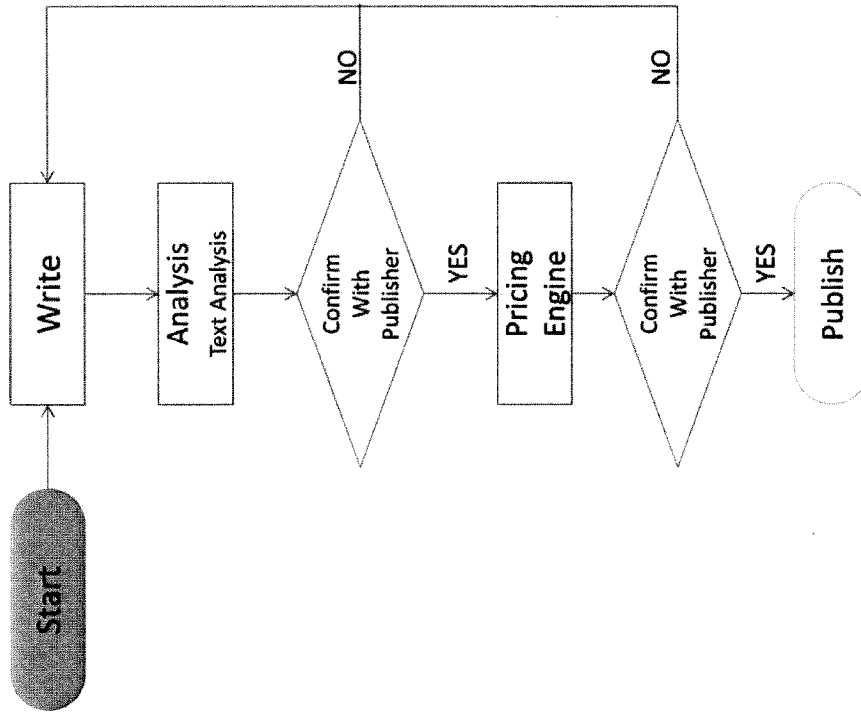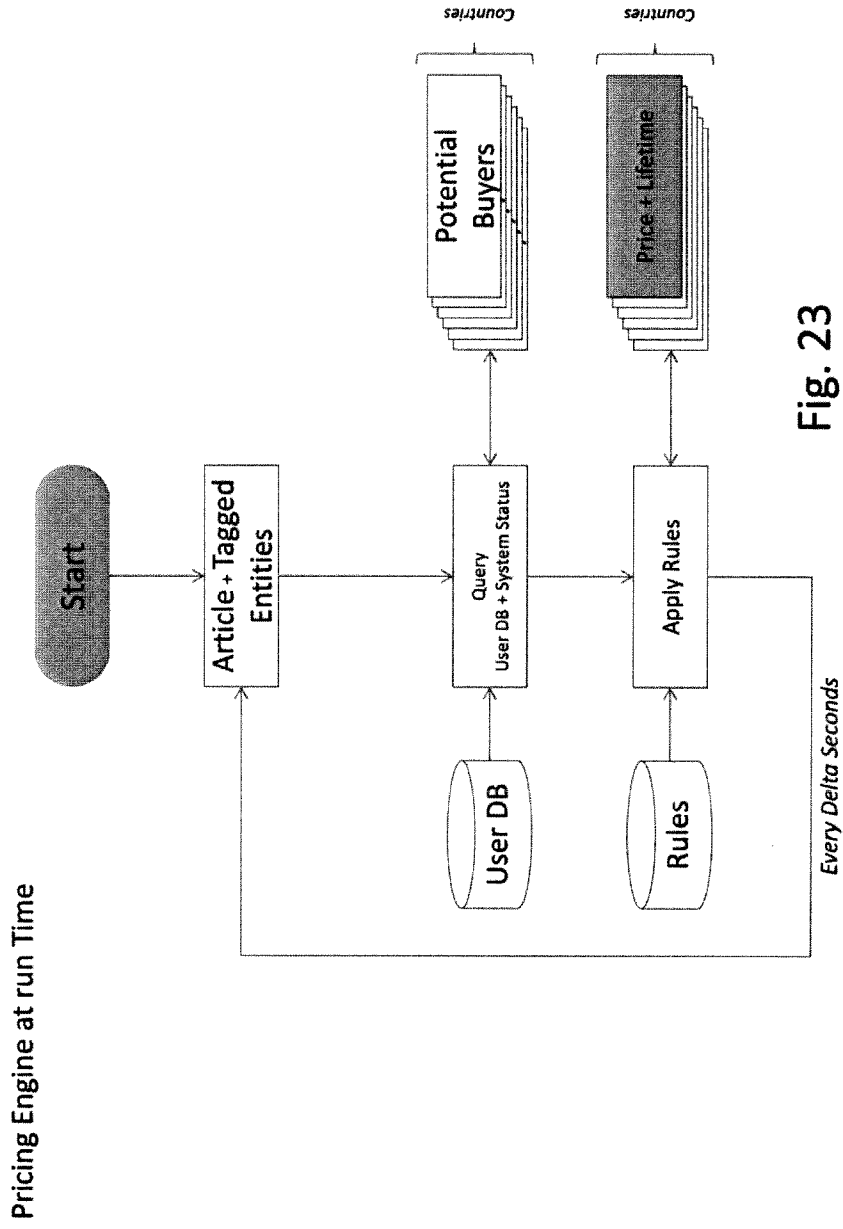
Fig. 23

Interaction Pricing Engine Application Cluster with THEX
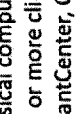
Fig. 24
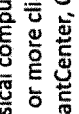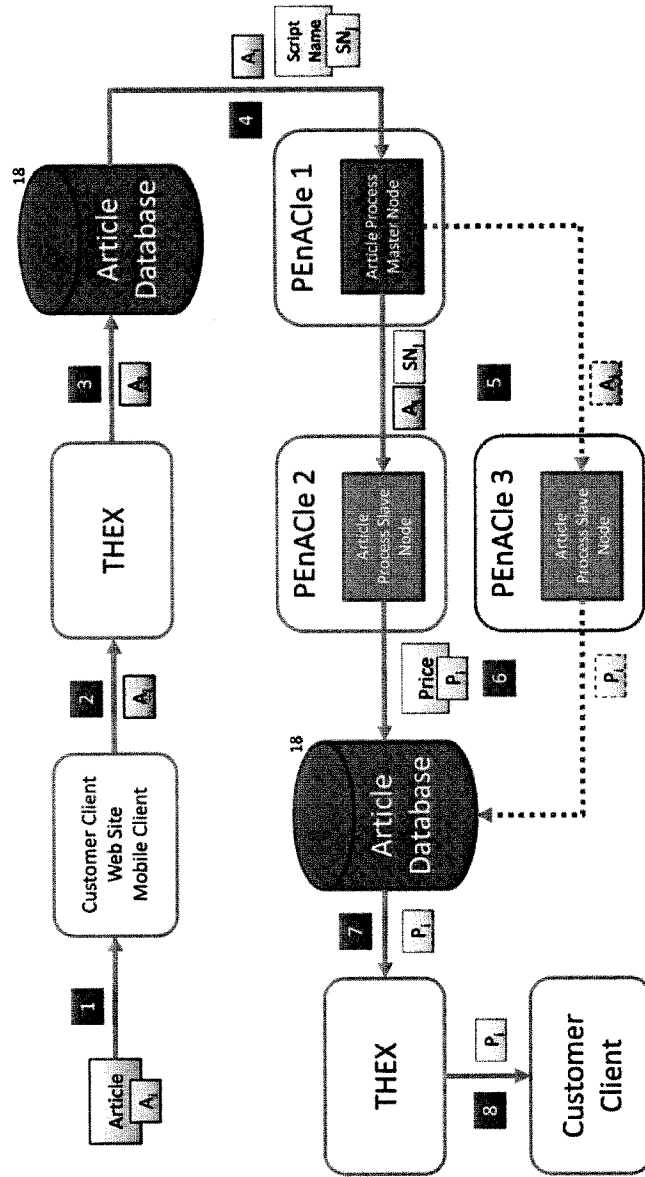
Legend Fig. 25

| PEnACle		THEX		Ecquant
	Pricing Engine Application Cluster – set of applications dedicated to compute prices. They should be executed on a separate server stations.			Ecquant server applications cloud.
(rounded rectangle)	Application or application set which should be executed on a server stations or work stations.	Server Station	Physical computer dedicated to running one or more server application (THEX, PEnACle, etc.).	
Article Process Slave Node	Module of PEnACle which collects statistical data from database and computes prices and trends for specified articles via pricing scripts execution.	Work Station	Physical computer dedicated to running one or more client application (QuantCenter, CustomerClient, etc.).	
Article Process Master Node	Module of PEnACle for balancing loading among Process Slave Nodes. It receives registered articles from database and distribute them among slave nodes.	(icon)	Separate THEX modules.	
Management Slave Node	Module of PEnACle which manages another nodes within application.			
Management Master Node	Module of PEnACle for management of all nodes within pricing cluster (scripts management, configuration data, etc.). It implements management of specified application via Management Slave Nodes.			

Article lifecycle   Fig. 26

Article Lifecycle Steps   Fig. 27

1	User publishes article Ai using one of provided tool
2	THEX node (EcQuant server module) receives article data from publishing tool
3	THEX node posts article data to database and registers article in PEnACle via database
4	PEnACle Process Master Node reads registered article data with name of pricing script (strategy) which is assigned to article. One or more specific scripts can be assigned to an article, or all articles are assigned to "default" script]
5	PEnACle Process Master Node sends article for processing to one of working Process Slave Nodes in cluster (choosing of specific slave node depends on slaves loading level).
6	Process Slave Node computes new price (or initial) of article (using different data about users and articles from database) and posts it to database.
7	THEX Node retrieves new price for specific article from database.
8	THEX Node sends new price for specific article to CustomerClient. CustomerClient displays price via UI.

Script Management   Fig. 28

QuantCenter allows you to manage pricing scripts.
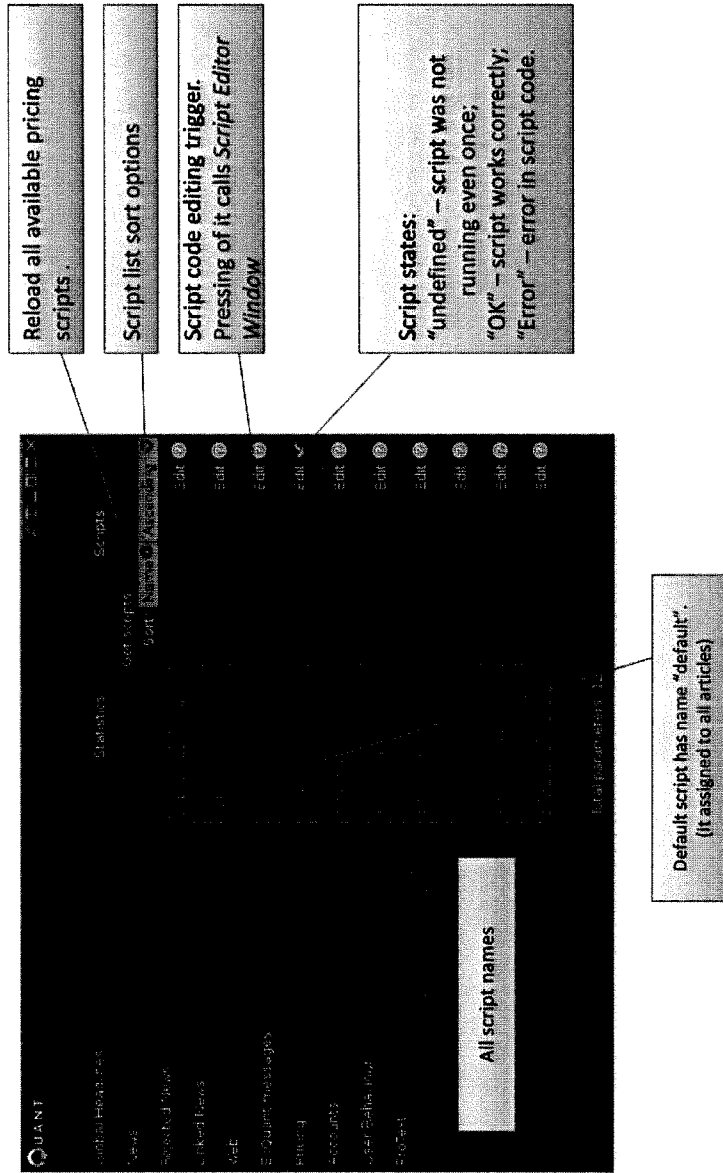
Reload all available pricing scripts .

Script list sort options

Script code editing trigger. Pressing of it calls *Script Editor Window*

Script states:
"undefined" – script was not running even once;
"OK" – script works correctly;
"Error" – error in script code.

All script names

Default script has name "default". (It is assigned to all articles)

Script Management: Script Editor Window   Fig. 29

Script Editor Window allows to edit pricing script codes and upload scripts to PEnACle with specified names.

Pricing Scripts functions specification Fig. 30

Pricing supported functions	Description
eq_get_past_time()	Returns time of article which it lived in pricing engine
eq_get_price([country])	Returns current article price for specified country. Argument "country" is optional string ('RU', 'US', etc.). If country is not specified function will return "common" price (Current THEX version support only "common" prices).
eq_get_trend([country])	Returns current article trend for specified country.
eq_set_price(value, [country])	Set price "value" for country "country". Argument "value" – float number (3.4, 0.001, etc.); Argument "country" – optional string argument, specifies country for which price is set. If country is not specified price will be set as "common" (Current THEX version supports only "common" price).
eq_set_trend(value, [country])	Set trend "value" for country "country". Argument "value" – number in range from 0 to N (N is depends on the THEX version), defines kind of icon near price in Customer Desktop Client.
eq_next_call([delta_time])	Schedules next script execution time for current article. "delta_time" argument specifies interval in seconds from now to next script execution.
eq_unregister()	Immediately removes article from pricing engine (makes it free)
eq_get_owners()	Returns number of users who bought article
eq_get_rating()	Returns article average rating
eq_get_genre()	Returns article genre
eq_past_life_time()	Returns time in seconds which article lived in pricing engine.
eq_potential_buyers()	Returns number of potential buyers for current article.
eq_save_number(name, value)	Saves number "value" with name "name" for current article. Used to passing some data from previous script execution to next one.
eq_load_number()	Loads number "value" which has name "name" for current article. Used to passing some data from previous script execution to next one.

Pricing Script Code Example Fig. 31

Initial pricing algorithm

Saving of potential buyers number on first step

Initial price computation:
$P_0 = 1000 / PB_0$
PB – potential buyers

cyclical pricing algorithm

Loading potential buyers number from previous step (PB_{t-1})

Compute $\Delta PB_t = PB_t - PB_{t-1}$

Pricing algorithm:
If $\Delta PB_t > 0$ → increase price by $\Delta PB_t * 2.5$
If $\Delta PB_t = 0$ → decrease price by 0.01
If $\Delta PB_t < 0$ → decrease price by $\Delta PB_t * 0.5$

Limit lower price value

Post new price

```
if EQ_INIT==1 then
    eq_next_call(15);
    local pb = eq_potential_buyers();
    eq_save_number('potb', pb);
    local init_price = 0.1;
    if pb > 0 then
        init_price = 1000 / pb;
    end;
    eq_set_price(init_price);
    eq_set_trend(0);
else
    eq_next_call(5);
    local oldpb = eq_load_number('potb');
    local price = eq_get_price();
    local pb = eq_potential_buyers();
    eq_save_number('potb', pb);
    local new_price = 0;
    local delta_pb = pb - oldpb;

    if delta_pb >= 0 then
        if delta_pb > 0 then
            new_price = price + delta_pb * 2.5;
            eq_set_trend(1);
        else
            new_price = price - 0.01;
            eq_set_trend(0);
        end;
    else
        new_price = price + delta_pb * 0.5;
        eq_set_trend(3);
    end;

    if new_price < 0.01 then
        new_price = 0.01;
    end;
    eq_set_price(new_price);
end;
```

Technical Statistics Fig. 32

Statistics Window displays different technical information about PEnACle nodes.

Example: Number of currently processed articles on each node