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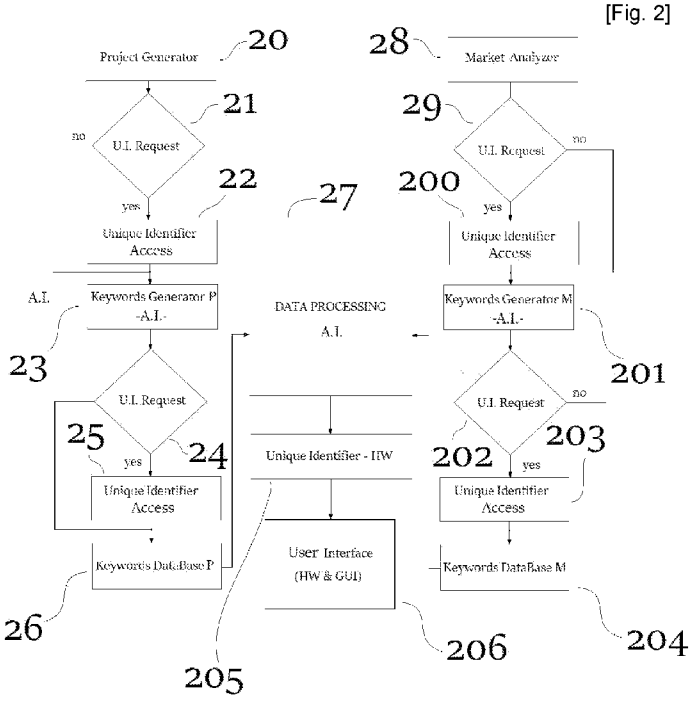
(54) Title: HARDWARE/SOFTWARE NETWORK INFRASTRUCTURE AND RELATED PROCESS FOR INNOVATION ACTIVITY ANALYSIS

[Fig. 2]




(57) Abstract: The invention encompasses a network hardware and software infrastructure, augmented by a distinctive data processing methodology. This methodology is specifically tailored for deployment in business and industrial environments. Its primary function is to formulate directives and guidelines pivotal for the advancement of innovation-driven projects. It employs artificial intelligence (AI) algorithms. Furthermore, the invention utilizes a category of hardware devices designed to monitor computational operations. This ensures that the processed information is accessible exclusively to authorized users.

[Continued on next page]

WO 2025/003872 A1

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# DESCRIPTION

## Title of invention: Hardware/software network infrastructure and related process for innovation activity analysis.

### Scope of invention

[0001] The present invention is unveiled in the field of processes, supported by hardware and software data processing infrastructure, suitable for generating indications for the management of technological innovation processes applied to the world of industry and commerce.

### Background Art

[0002] Technological innovation is the basis for all the processes of evolution that shape much of our lives. Since the scientific method has outlined the key to understanding physical phenomena, man has had in his hands a tool of exceptional scope with which to improve his state of life and adapt the world to his needs.

[0003] The results of continuous research processes have spilled over into industry, profoundly altering society, changing lifestyles, the appearance of the land, how we interact with our surroundings, and interpersonal relationships. The Internet is a prime example of this impact on social relations.

[0004] Over the past few decades, advances in technological innovation have employed specialized computational tools, establishing a new paradigm. These tools range from simple “tools” for assisting scientific inquiry to entities with great logical potential, described in special software environments.

[0005] These resources enable us to develop most of the simulations that enable us to predict, for example, the behavior that results from the manipulation of matter and energy, or abstract patterns of operation

that our intellectual abilities, taken individually, could not effectively delineate.

[0006] The world of industry has also become an actor, promoting specific fields of application in which the power of these logical entities is customized and adapted to such scenarios.

[0007] Companies can use predictive tools, such as those in finance, electronic construction technology, medicine, and building engineering, to generate projections on the progress of processes, changes in the status quo, and hypotheses of otherwise unrecognizable phenomena. These tools are based on the history of events and the nature of the individual factors being examined.

[0008] Although we are far from developing sentient machines capable of autonomous decision-making, the professionally trained Artificial Intelligence (AI) algorithms we have created become virtually irreplaceable when optimally applied within specific fields.

[0009] Humans will continue to play a predominant role in decision-making for two substantial reasons. First, AI works and generates great advantages when installed and modeled properly within a narrow and well-defined scope. AI is incapable of contextualizing reality. Second, the ability to evaluate heterogeneous, integral-type phenomena, typical of the human brain, is still unattainable for the AI algorithms.

[0010] The impact of innovation through AI is significant, and its use is growing exponentially. Companies that innovate are using innovation itself to achieve results that were unimaginable until recently.

[0011] Innovation must be normalized for it to be applied and managed in a profitable and predictable way. Companies that want to take advantage of its benefits must acquire protocols and behaviors

that are truly effective. At the same time, it must be possible to understand when the use of innovation processes is incorrect and/or not optimized. This is when a result is manifested that is not in line with the initial premises.

[0012] To this end, specific implementation standards such as those of ISO56002 provide general guidelines that enable the processes of innovation to be applied to the world of industry in a fruitful way. They educate the manufacturing world for the purpose of achieving the maximum possible benefits.

[0013] However, in the processes described in the previous paragraphs, critical issues may emerge that make the very aspects of innovation in companies far from a desired level of efficiency. This occurs when the human factor intersects with the support tools generated by innovation. For example:

a. the large number of variables dependent on factors exogenous to the company still not delegated to automatic evaluation processes. These cannot be managed in real time by a single individual or management team without adequate support,

b. the variability of human behaviors related to psychological and behavioral factors. These sometimes emerge uncontrolled in work environments without appropriate filtering and weighting,

c. the inability to handle events in which timeliness of response is vital to reap benefits or limit damage is a significant challenge,

d. the inability to quickly decipher and interpret news pertinent to a company's interests when published and disseminated by third parties in a heterogeneous manner or in bureaucratic language is another significant challenge,

e. the difficulty of keeping some strategic information secret.

[0014] While it is theoretically possible to organize more or less automated processes using AI algorithms to solve individually the points unveiled in paragraph 0013, it is clear that the current state of the art lacks an overview of mechanisms that can organically manage innovation when applied to the industrial world.

[0015] The inadequacy is clear when we consider the disbursement of R&D funding, which many government agencies promote, and companies try to profitably intercept.

[0016] In fact, the following scenarios occur with alarming frequency: companies are forced to take on internal organizational factors that are too constrained by the aforementioned funds, making them unsuitable for all the other growth opportunities that the market offers. The second consequence is that the intrinsic value of a company—its ability to produce innovation—is undermined by the need to adapt and conform to the specifications of the calls that provide access to the aforementioned funds.

[0017] This creates a paradox effect, namely a flattening of the innovation capabilities existing in a company. This is the exact opposite of what one would like to achieve with the promotion of these financing and growth tools.

[0018] The purpose of the present invention is to devise a network infrastructure—hardware and software—and a related process which, in constructive interaction with business functions, improves the process of creating new projects. This process will consider the territory, resources, and market trends. Furthermore, the present invention's infrastructure adapts to business needs through an innovative level of

communication of opportunities processed by its software layers. It uses hardware solutions that guarantee the secrecy of shared information.

## Summary of invention

[0019] The present invention is a hardware and software network infrastructure coupled with a data processing process that is intended to be implemented in a business and industry setting. This process generates directions and guidelines for the development of innovation-based projects, and it makes use of Artificial Intelligence (AI) algorithms. The present invention also makes use of a class of hardware devices to ensure that the computational operations and information thus processed and shared are monitored and made available only to enabled users.

## Benefits of invention

[0020] The advantages of this invention are listed here:

a. the process and infrastructure allow a wide range of information to be acquired in real time and processed autonomously for the purpose of improving the generative processes of business projects, the search for opportunities from the market, and the information process for enabled users,

b. processes running in the infrastructure are based on the use of Artificial Intelligence (AI) algorithms ensure extremely fast and adaptable analysis of public databases and business data,

c. The GUI (Graphic User Interface) of the enabled user connected to the network infrastructure is designed ad hoc for the purpose of indicating concisely and in real time, in a peculiar graphical

layout, a summary indication of the quantity and quality of innovation and development opportunities available,

d. the various data processing [...] The processes and certain categories of results made available to enabled users are secreted using a hardware device called a Unique Identifier,

e. this enables a user's access to the detail of the results obtained from the infrastructure's computational processes when not yet final. The user can then appropriately weight the results to prevent any errors resulting from the automated processes from affecting the final output,

f. the infrastructure and processes comply with the standards of ISO56002 (https://www.iso.org/standard/68221.html).

## Description of Drawings

[0021] The Table of Drawings is integrated into the documentation of this application for the purpose of exemplifying the features of the Finding, including highlighting variants in the application described therein. In this case, it reveals:

**Fig.1**

[0022] The network infrastructure of the present invention is unveiled in [fig.1],

**Fig.2**

[0023] The operation process of the network infrastructure of the present invention is revealed in [fig.2],

**Fig.3**

[0024] An access via unique identifier to the network infrastructure of the present invention is unveiled in [fig.3],

**Fig.4**

[0025] The peculiar appearance of the graphical interface showing the results of the data produced and processed by data processing is revealed in [fig.4],

## Description of invention

[0026] The description of the various embodiments of this invention is herein disclosed for illustrative purposes, so that all modifications of an obvious nature in its scope, when implemented by technicians in the field, do not limit the terms of protection of the license itself.

[0027] The embodiment of invention is a network infrastructure consisting of computer hardware devices called “Clients,” such as computers, smartphones, and tablets (10), and Server machines (11), capable of advanced data processing functions.

[0028] The embodiment of invention connects both Client devices and Server machines to each other by telecommunication network. Such a network can be local, e.g., LAN and/or WLAN (12), or WAN-type network (13) by means of state-of-the-art communication protocols.

[0029] According to the embodiment of the invention, servers can also be realized by means of virtual machines, residing, for example, in special clouds (15), also reachable through VPN-type tunneling connections, or other similar type of protocol. Any user belonging to the network infrastructure can interact with it by means of a computing device, including a mobile device (14) if they have the correct entitlements.

[0030] The network infrastructure is a peculiar logical configuration of interconnected machines, typically made for enterprise uses (15) in

whose buildings some of the hardware equipment and related software and firmware applications developed ad hoc come to reside.

[0031] Furthermore, a hardware device called the “Unique Identifier” (U.I.) is devised (16, 205) and connected to the network infrastructure or connected to a client device. (14) allows access to a protected data area of the network infrastructure thanks to the generation of specific technical and/or formal requirements. These requirements are modulated according to the need to keep the information and data processed by the infrastructure of the present invention strictly confidential.

[0032] Fig. 2 shows the block diagram of the process implemented by the network infrastructure of the present invention. Each individual block represents a data processing and storage process. These are carried out in a computational server machine, also of virtual type, connected to the network. The exception is blocks (206) and (205), which represent the client computing device from which the user interacts with the infrastructure and the unique identifier device.

[0033] Fig. 2 clearly shows that blocks (22, 25, 200, 203) do not represent the hardware unit of the Unique Identifier. Instead, they represent the access request procedure of a user with the above authorization device.

[0034] The unique identifier is a device equipped with a microprocessor and firmware, as described in an FPGA (field programmable gate array). It has internal and external memory, a wired and/or wireless communication interface (e.g., LAN and WLAN, Bluetooth), and firmware and software for controlling access to the network infrastructure of the present invention. The Unique Identifier is also equipped with:

a. A GPS-type position sensor,

b. One or more rechargeable batteries,

c. A DC/DC Converter block for power supply management and battery charging,

d. A graphical user display interface (optional).

[0035] When a user wants to access the protected data area of the network infrastructure of the present invention, they must connect the Unique Identifier (16) to a Client computing device (14), such as a smartphone or a PC, in which the software application for such access is installed. A client device can only fully interact with the infrastructure when the software verifies the physical connection and the authorization provided by the Unique Identifier.

[0036] Two levels of authorization are prepared for connection with the network infrastructure of this invention:

a. a first-level authorization with which a password login and access to partial information is possible, said login possible from the Client device without the Unique Identifier connection,

b. a second level authorization in which the interaction with the data processed by the Network Infrastructure Servers and total, said interaction granted to the Client device only when connected to the Unique Identifier, which generates through its own software/firmware an appropriate enablement.

[0037] The infrastructure access software application installed on the client device prompts the user to connect a unique identifier device and verifies that it is enabled for access control by comparing the MAC address and serial number with a database on the infrastructure server.

[0038] The software/firmware of the Unique Identifier will check one or more of the following conditions for the second-level authorization required by the network infrastructure:

a. control of a geolocation within a set of coordinates provided by the Network Infrastructure Server and/or stored locally in the Unique Identifier,

b. the control of an authorization code provided by the Network Infrastructure Server,

c. Checking the identity of the user by accessing one of the services of unique identification of the person—e.g., digital signature, electronic identity card, CNS (National Service Card) etc.,

d. A unique code generated through Blockchain technology,

e. The verification of a family of IP addresses.

[0039] The unique identifier, when connected and functioning, enables encryption between the data exchanged between infrastructure and user, and optionally access to a two-way tunneling VPN-type communication.

[0040] The analysis process is as follows: the Project Generator block (20) is built from a dataset identifying all aspects related to an innovation project—both device and process—that a company defines as a target. The dataset consists of both purely technical and technological information and strategic/commercial information, stored in a database. In this text, the invention is referred to as “PRJ.” The PRJ data is prepared within the database in two ways:

a. manually by an enabled user through interaction with an appropriate graphical interface available on data-entry software using the Client device,

b. software-assisted mode, according to preset templates available on data-entry software via the Client device.

[0041] The PRJ-related dataset is processed by the Keyword Generator P block (23) using an Artificial Intelligence algorithm. This algorithm adds and creates new interactions in the dataset. The following factors must be considered:

a. the presence of intellectual property and/or service products like the PRJ, also parameterized to the geolocation of the PRJ project,

b. the scope and commodity sector in which the PRJ is being adopted, also parameterized to the geolocation of the PRJ project (e.g., technology field, financial field, and so on),

c. the time factor related to the development of the PRJ project,

d. The primary characteristics of the company that developed the PRJ, including financial resources, the status of internal business sectors, the history of its projects, the workload under existing contracts, and the human resource situation.

[0042] The artificial intelligence algorithm generates unique and complete keywords that identify the PRJ and are stored in the Keywords Database block P (26).

[0043] A user can interact with the Project Generator (20), the Keywords Generator (P23), and the Keywords Database (P26) via a Client computing device (10), including mobile types. (14), by means of a unique identifier authorization process (21, 22, 24, 25) which provides a second level of authorization (31) after verifying the necessary preconditions (32) as outlined in paragraphs 0036, 0037, 0038.

[0044] The invention's realization requires interaction through the unique identifier for two reasons:

a. to edit and modify entered and/or manually or automatically generated information related to PRJ, and,

b. to edit, modify and correct the results of data processing completed through its artificial intelligence algorithm by the Keywords Generator. P and the Keywords Database P.

[0045] According to the embodiment of the invention, such access of an authorized user allows for the monitoring of the situation of the process put in place by the infrastructure. Furthermore, it allows for the prediction of errors that would affect further data processing. It is not excluded that an A.I. algorithm may create a set of keywords that are not perfectly congruent with the PRJ design. Secondly, this second-level access allows for substantial changes to the AI algorithm operating in the network infrastructure when required.

[0046] The Network Infrastructure invention has three additional functional blocks: the Market Analyzer (28), its Keyword Generator M (201), and Keywords DataBase M (204).

[0047] The Market Analyzer, created by an Artificial Intelligence algorithm, generates a market dataset. This dataset is constructed from the technical and commercial information of private companies, professionals, public companies, and providers of funding and calls. The market dataset is stored in a database, which is also supplemented by information provided by an authorized user. This is a user connected to the infrastructure through a client device, linked to the unique identifier, and equipped with a second-level authorization. The market consists of:

a. public or private funding calls, including those parameterized to the geolocation of the PRJ proposing company,

b. partnership offers, in public or private projects, from public or private companies, also parameterized to the geolocation of the PRJ proposing company,

c. requests for missing products and/or services, also parameterized to the geolocation of the PRJ proposing company,

d. opportunity to file Intellectual Property related to PRJ,

e. search engine scanning within the market and regulatory bodies,

f. professional applications, also parameterized to the geolocation of the PRJ proposing company,

[0048] In addition, each parameter analyzed by the Market Analyzer is also weighted according to the time factor. For example, an opportunity for interaction with the PRJ project may be judged more or less attractive relative to the deadline, if any.

[0049] The Market Analyzer processes the dataset related to the invention in the following way. The Keyword Generator Block M (201) reprocesses the information using an AI algorithm. This generates keywords that uniquely identify an opportunity market for the PRJ project and stores them in the Keywords Database block M (204).

[0050] The embodiment of the invention allows users to interact with the Market Analyzer, Keywords Generator M, and Keywords Database M via a Client computing device (10) or mobile device (14). The identifier authorization process (29, 200, 202, 203) provides a second-level authorization type (31) after verifying the necessary preconditions (32). See paragraphs 0036, 0037, and 0038 for more information.

[0051] The invention's realization requires interaction through the unique identifier for two reasons:

a. to edit and modify information entered in automatic and/or manual mode related to the market, and,

b. to edit, modify and correct the results of data processing completed by the Market Analyzer, Keywords Generator M, and Keywords Database M through its artificial intelligence algorithm.

[0052] According to the embodiment of the invention, such access of an authorized user allows for the monitoring of the situation of the process put in place by the infrastructure. Furthermore, it allows for the prediction of errors that would be reflected in further data processing. It is not excluded that an A.I. algorithm may create a set of keywords that are not perfectly congruent with the market.

[0053] The embodiment of the invention, as revealed by Fig. 2, shows that second-level access operates as follows:

a. on the Project Generator process, in the respective Keywords Generators P and Keywords Database P blocks,

b. on the Market Analyzer process, in the respective Keywords Generator M and Keywords DataBase M blocks.

[0054] At this point in the network infrastructure, two categories of information encoded by the respective artificial intelligence algorithms are stored in their respective databases:

a. the first level of information is that of keywords (26) related to the Project Generator process (22), which characterizes and describes the technical/formal aspects of one or more projects promoted by a company,

b. the second level is that of the keywords (204) related to the Market Analyzer process (28), which characterizes all the opportunities that the market offers—both public and private—that are accessible by the PRJ proposing company.

[0055] Data Processing block (27) performs a weighted analysis of the two categories of encoded and stored information, as outlined in paragraph 0054. Data Processing block is designed to identify matches between the classifications stored in the Keywords DataBase P (26) related to the Project Generator block (22) and the classifications in the Keywords DataBase M (204) related to the Market Analyzer block (28).

[0056] When a match occurs between one or more keywords stored in the respective databases, as previously outlined, it is clear that PRJ interaction with the market has been achieved. This opens the door to developing the PRJ project within the market itself. For example:

a. access economic funds, both in the public and private sectors,
b. collaborate with third parties. In the public and private sectors, the following can be done:
c. secure or change a monopoly regime through intellectual property regarding the PRJ project,
d. enter with the PRJ into a new market sector or a new geographical area,
e. industrialize and distribute PRJ in the market,
f. develop from scratch products and/or services or update existing ones according to market trends and/or regulatory and legislative compulsory novelties.

[0057] The data processing block and the remaining processes from the project generator and market analyzer are always active in

asynchronous mode. New data is processed promptly whenever a new parameter changes the status quo of each block.

[0058] Data Processing block makes all users aware of the presence of a matching and/or no-matching factor of the keywords in the Keywords Database P and Keywords Database M. This is evidence of interaction between market and PRJ. Such an indication is manifested in two ways:

a. at the boot of the entire network infrastructure process when the minimum information needed to generate stable output from Data Processing is available, and,

b. to the modification of a previously processed data item such that it affects the output of Data Processing,

[0059] According to the embodiment of the invention, the data processing details of the above processes are provided only to users who can obtain second-level authorization through a client data processing device connected to the unique identifier device. This is in accordance with the processes already described in paragraphs 0035, 0036, 0037, and 0038.

[0060] Accordingly, Data Processing will communicate to users with second-level authorization all relevant information about the status of the PRJ project in relation to the market status quo. A unique graphical user interface (GUI) is developed to manage and view the data on the client computing device connected to the network infrastructure via the unique identifier. This identifier synthesizes the aforementioned data. The software that deals with the GUI and the interaction with the data can be resident either in the computing device that connects to the network infrastructure of the present invention—that is, the client—or

in the server machines of the same, which establish a temporary viewing session of the software on the same clients.

[0061] The GUI is organized as follows:

a. The data provided by the data processing is converted into a numerical range with a score ranging from 0 to 100 (40). This numerical range of the score is called OL, or opportunity level. OL indicates the amount of matching of the information in the Keywords Database P and Keywords Database M. The value is equal to “0” when no. The keywords generated by the Project Generator process collide with the keywords generated by the Market Analyzer process. This value is equal to “100” when all keywords generated by the Project Generator process collide with the keywords generated by the Market Analyzer process,

b. Other OL values between “0” and “100” are suitable for determining an intermediate numerical display proportional to the amount of matching of information in the Keywords DataBase P and the Keywords DataBase M.

c. The OL is displayed inside a first circular graphic element (41) whose position varies inside and outside a second circular graphic element of larger diameter (42). When the OL score is “0” (43), the first circular graphic element is completely outside the second circular graphic element. When the OL score is “100” (44), the first circular graphic element is completely concentric to the second circular graphic element. All other values of the OL between “0” and “100” determine the position of the first circular graphic element at the intersection with the second circular graphic element. The more the score rises, the more the position of the

first circular graphic element tends to coincide with that of the second circular graphic element. When the score is “100” (44),

d. all other values of the OL between “0” and “100” are suitable for determining a position of the first circular graph element at the intersection with the second circular graph element. The more the score rises, the more its position tends to coincide with that of the second circular graph element (45, 46).

[0062] The graphical interface greatly simplifies the communication of the level of matching obtained from the keyword comparison enacted by data processing. When the two graphical elements are concentric, i.e., when the OL is “100,” it is clear that the PRJ has achieved its market objectives. Conversely, when the two elements are separated, i.e., when the OL is “0,” it is evident that no PRJ element is compatible with the market.

[0063] The invention's embodiment ensures that notifications of states resulting from data processing's analysis of keywords occur on user request or on interrupts by the data processing itself to enabled users upon the occurrence of a change in its output. This is in accordance with the information revealed in paragraph 0058. However, a data processing activity monitoring service can be set up based on a user-programmable time cyclicity to prevent software, hardware, or firmware malfunctions from preventing timely communication of the status quo of the network infrastructure as described by the present invention.

[0064] The embodiment of the invention allows the user to access the details of the process that generates the OL if a second-level authorization takes place through the use of the Unique Identifier connected to a Client. However, the only way to notify users of a

change in the state of the same OL and its numeric value is to send a message to all users who have a first-level authorization. This authorization does not require the Unique Identifier device to be connected.

[0065] Data Processing, which is conducted by means of its own Artificial Intelligence (AI) algorithm based on the evidence of the PRJ's interaction with the market, can draw up at this point pre-filled models. These pre-filled models contain a set of instructions to put the PRJ in contact with the market.

[0066] The precompiled models are drafted by the AI based on the PRJ dataset stored in the respective database and the market dataset processed by the Market Analyzer stored in the respective database. They can also generate an interrupt to client devices when connected to the Unique Identifier device, equipped with second-level access. Such signaling is for enabled users to view the precompiled models, which are subsequently sent to clients.

[0067] The pre-filled models are drafted according to the time factors of the PRJ project and the geolocation of the same project. They are optionally ranked by the OL score, which expresses a summary of the chances of success of the PRJ when placed in the market.

[0068] The Data Analyzer identifies, proposes, and drafts instructions for the PRJ project to exploit the market's potential and interact with it. This is true even when the market is represented by public or private calls for entries or direct requests to industrial and/or commercial realities in the relevant territory.

## Examples of invention

[0069] The following example illustrates the process performed by the network infrastructure of the present invention. After the default data processing performed by the same infrastructure, an event generates an opportunity for company “Y” to propose a PRJ project in the market:

a. company Y provides the infrastructure with the dataset that makes up the database created by the Project Generator regarding the PRJ project,

b. the Keyword Generator P generates a set of keywords through its AI algorithm, stored in the Keywords Database P. These keywords are weighted by technical, geographic, and commercial factors inherent to PRJ and company Y,

c. the Market Generator operates a market analysis, including information about company Y and the PRJ project. It generates keywords using an AI algorithm residing in the Keywords Generator M, then stores them in the Keywords Database M. The keywords are then stored in the Keywords Database M,

d. the Data Processing examines the keywords in the two databases Keywords Database P and Keywords Database M and generates a score of the obtained OL opportunity level, e.g., 50. It then communicates this score by interrupt to a Client device with a top-level authorization,

e. a new event is recorded by the Market Analyzer, such as the opening of a call for public funding congruent with the PRJ designed by company Y,

f. a new set of keywords is generated from the Keywords Generator M, which are then stored in the Keywords DataBase M database,

g. process a new OL opportunity level score, e.g., 85, and generate an interrupt to a Client device with a top-level authorization to update it,

h. update the Client device with a second-level authorization connects to the network infrastructure and verifies the real presence of the announcement intercepted by the Market Analyzer in the market. If necessary, it changes its parameters,

i. Data Processing automatically writes a pre-filled template for a PRJ application by generating an interrupt to a Client device with a second-level authorization,

j. the Data Analyzer transmits the pre-filled template to the Client device enabled by the second-level authorization.

## Industrial Applicability

[0070] The present invention is applicable to all industrial, research, trade, craft, and service activities that make innovation their core business.

## Invention Quotes

[0071] Citation List follows: no citation.

## Patent Literature

[0072] PTL1: no patent literature.

## Non-Patent Literature

[0073] NPL1: https://www.iso.org/standard/68221.html

# CLAIMS

[Claim 1] Data elaboration process in an network infrastructure consisting of Server-type computer machines (11), of “n” data elaboration devices connected to it called “Client” (10, 14), also of portable type as smartphones and tablets, and of “n” hardware devices called “Unique Identifier” (16) designed to create an authorization for the use of processes processed by the network infrastructure, said Servers resident in local LAN and WAN networks, said Servers even realized by the use of virtual machines organized in Cloud, said Client devices connected to the network infrastructure also via VPN-type encrypted connections (Virtual Private Network), in which:

a. access to the network infrastructure is governed by two authorization level,

   i. a first level confirmed by the mere presence of a Client elaboration data device authorised by a password login,

   ii. a second level generated by the software and by the firmware of the Unique Identifier hardware device when connected to the Client elaboration data device,

b. a process, resident in one or more Servers of the network infrastructure called “Project Generator” (20), acquires, via data entry by an authorized user, a dataset relating to a project called “PRJ” and stores it in a database in one or more Servers of the network infrastructure,

c. an Artificial Intelligence algorithm, resident in one or more Servers of the network infrastructure, called “Keywords Generator P” (23), elaborates the datasets of the Project

Generator database and creates some keywords characterizing the project, said keywords weighted by:

i. the presence of intellectual propriety and/or products/services that are the same or similar to the PRJ, even parametrized to the geolocation of the PRJ,

ii. the field of application and the product sector of the PRJ, also parametrized to the geolocation of PRJ,

iii. the time factor related to the development of the PRJ project,

iv. the financial/technical/commercial aspects of the PRJ project promoter,

d. the keywords are memorized in a database resident in one or more Servers of the network infrastructure called “keywords DataBase P” (26),

e. a process, residing in one or more Servers of the network infrastructure called Market Analyzer (28) automatically acquires, through an Artificial Intelligence algorithm, a dataset called “market”, said dataset consisting of technical/commercial information of private companies, professionals, public companies and providers of finance and procurement, said market dataset memorised in a database, said database even supplemented by information provided by an user authorised to access the network infrastructure, said dataset market consisting of:

i. public and private funding calls parametrized to the geolocation of PRJ,

ii. partnership offers in public and private projects parametrized to the geolocation of PRJ,

iii. market demands for products and/or services parametrized to the geolocation of the PRJ,

iv. possibility to deposit Intellectual Property rights relating to the PRJ,

v. scanning of network search engines and databases of regulatory bodies,

vi. job applications, also parametrized to the geolocation of the PRJ,

f. an Artificial Intelligence algorithm, resident in one or more Servers of the network infrastructure called Keywords Generator M (201) processes the dataset of the Market Analyser and creates keywords characterizing the Market Analyser dataset, storing them in a database in one or more Servers of the network infrastructure called Keywords Database M (204),

g. a process, resident in one or more Servers of the network infrastructure, called Data Processing (27), through an Artificial Intelligence algorithm, executes a matching between the keywords stored in the Keywords Database P and in the Keywords Database M in which:

i. the matching of one or more keywords of Database P with one or more keywords of Keywords Database M represents one or more evidences of the interaction of PJR with the market,

ii. the Data Processing, by means of its Artificial Intelligence algorithm drafts, from the interaction evidences, pre-filled forms, said pre-filled forms containing a set of instructions to put the PJR in contact with the market,

h. the Data Processing generates a score between 0 and 100 which is proportional to the amount of identities obtained by the matching between the keywords stored in the Keywords Database M and those stored in the Keywords Database P; said score called OL “Opportunity Level”,

i. the Data Processing makes the OL score available to Client data processing devices with authorizations of first and second level, this score displayed within a graphical element of a GUI (Graphic User Interface) in which:

i. the OL is displayed within a first circular graphic element (41) whose relative position varies inside and outside a second circular graphic element with a larger diameter (42), said position of the first circular graphic element is completely external to the second circular graphic element when the OL score is “0” (43), said first circular graphic element position is completely concentric to the second graphic element when the OL score is “100” (44),

ii. all the other score values of OL between “0” and “100” are used to determine a position of the first circular graphic element in intersection with the second circular graphic element,

j. Keywords Generator P, Keywords Generator M processes and Keywords Database P and Keywords Database M

databases are editable by a user connected to the network infrastructure by means of a Client data processing device equipped with a second level authorization (21, 22, 24, 25, 29, 200, 202, 203) connected with the Unique Identifier device (205),

[Claim 2] Unique Identifier device used in the process of Claim 1 that can be connected to the Client data processing device arranged with:

a. a microprocessor, also described by a firmware code in a FPGA (Field Programmable Gate Array), equipped with internal and external memory,

b. a bidirectional data communication interface wired type, preferably LAN/WAN, and a bidirectional data communication interface wireless type, preferably WLAN and Bluetooth,

c. a GPS sensor,

d. a DC/DC Converter,

e. one or more inner batteries,

f. an optional graphical interface for the user,

g. a firmware/software for the creation of network infrastructure second level accesses when connected to a Client data processing device by checking one or more of the following factors:

i. a specific geolocation within a set of coordinates provided by the network infrastructure Server and/or stored locally in the Unique Identifier,

ii. an authorization code provided by the network infrastructure Servers according to a security protocols,

iii. the verification of the user's identity by accessing one of the unique person identification services, preferably digital signature, electronic identity card, CNS (National Service Charter),

iv. an unique code generated by Block Chain technology,

v. an IP address family,

[Claim 3] Process of Claim 1 in which the Data Processing generates an interrupt towards the Client data processing device for the communication of a variation of the OL score.

[Claim 4] Process of Claim 1 in which the Data Processing generates an interrupt towards the Client data processing device of cyclic type for the communication of the OL score.

[Claim 5] Process of Claim 1 in which the generation of keywords in the respective databases keywords Database P and Keywords Database M are asynchronous process.

[Claim 6] Process of Claim 1 in which:

a. the Data Processing, by its Artificial Intelligence algorithm, executes a match between the keywords of Keywords Database P and those of Keywords Database M,

b. the match between the keywords generates one or more evidences of interaction of the PRJ with the market,

c. the interaction of the PRJ with the market evidences are parametrized to the geolocation of PRJ,

d. the interaction of the PRJ with the market evidences are communicated, through an interrupt indication generated by the Data Processing, to the Client devices enabled by a second-level authorization via the Unique Identifier.

[Claim 7] Process of Claim 1 and 6 in which:

a. the Data Processing, by its Artificial Intelligence algorithm, executes a match between the keywords of Keywords Database P and those of Keywords Database M,

b. the match between the keywords generates one or more evidences of the interaction of the PRJ with the market,

c. the interaction of the PRJ with the market evidences are parametrized to the geolocation of PRJ,

d. the interaction of the PRJ with the market evidences are classified according to the OL score,

e. the interaction of the PRJ with the market evidences and the OL score are communicated, through an interrupt indication generated by the Data Processing, to the Client devices enabled by a second level authorization via the Unique Identifier.

[Claim 8] Process of Claim 1, 6 and 7 in which:

a. the Data Processing, by its Artificial Intelligence algorithm, executes a match between the keywords of Keywords Database P and those of Keywords Database M,

b. the match between the keywords generates one or more evidences of the interaction of the PRJ with the market,

c. the Data Processing, by its Artificial Intelligence algorithm drafts, from the interaction of the PRJ with the market evidences, pre-filled forms, said pre-filled forms built on the basis of the information obtained in the PJR dataset database and the market dataset database processed by the Market Analyzer,

d. the pre-filled forms are parametrized to the PRJ geolocation,

e. the pre-filled forms are sent, through an interrupt indication generated by the Data Processing, to Client devices enabled by a second-level code via the Unique Identifier.

[Claim 9] Process of Claim 1, 6, 7 and 8 in which:

a. the Data Processing, by its Artificial Intelligence algorithm, executes a match between the keywords of Keywords Database P and those of Keywords Database M,

b. the match between the keywords generates one or more evidences of the interaction of the PRJ with the market,

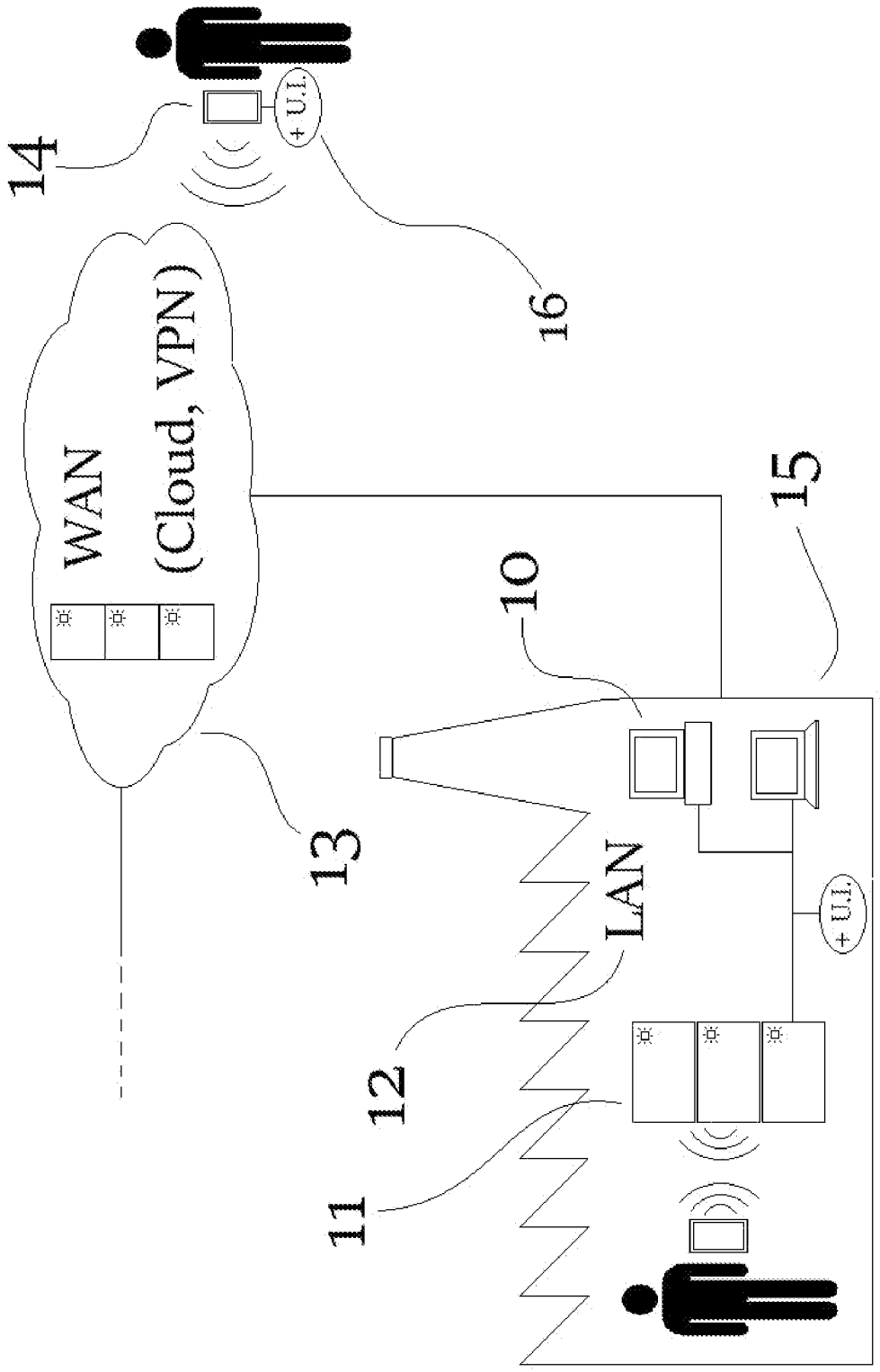
c. the Data Processing, by its A. I. algorithm drafts, from the interaction of the PRJ with the market evidences, pre-filled forms, said pre-filled forms built on the basis of the PRJ dataset and the market dataset, processed by the Market Analyzer,

d. the pre-filled forms are parametrized to the geolocation of the PRJ,

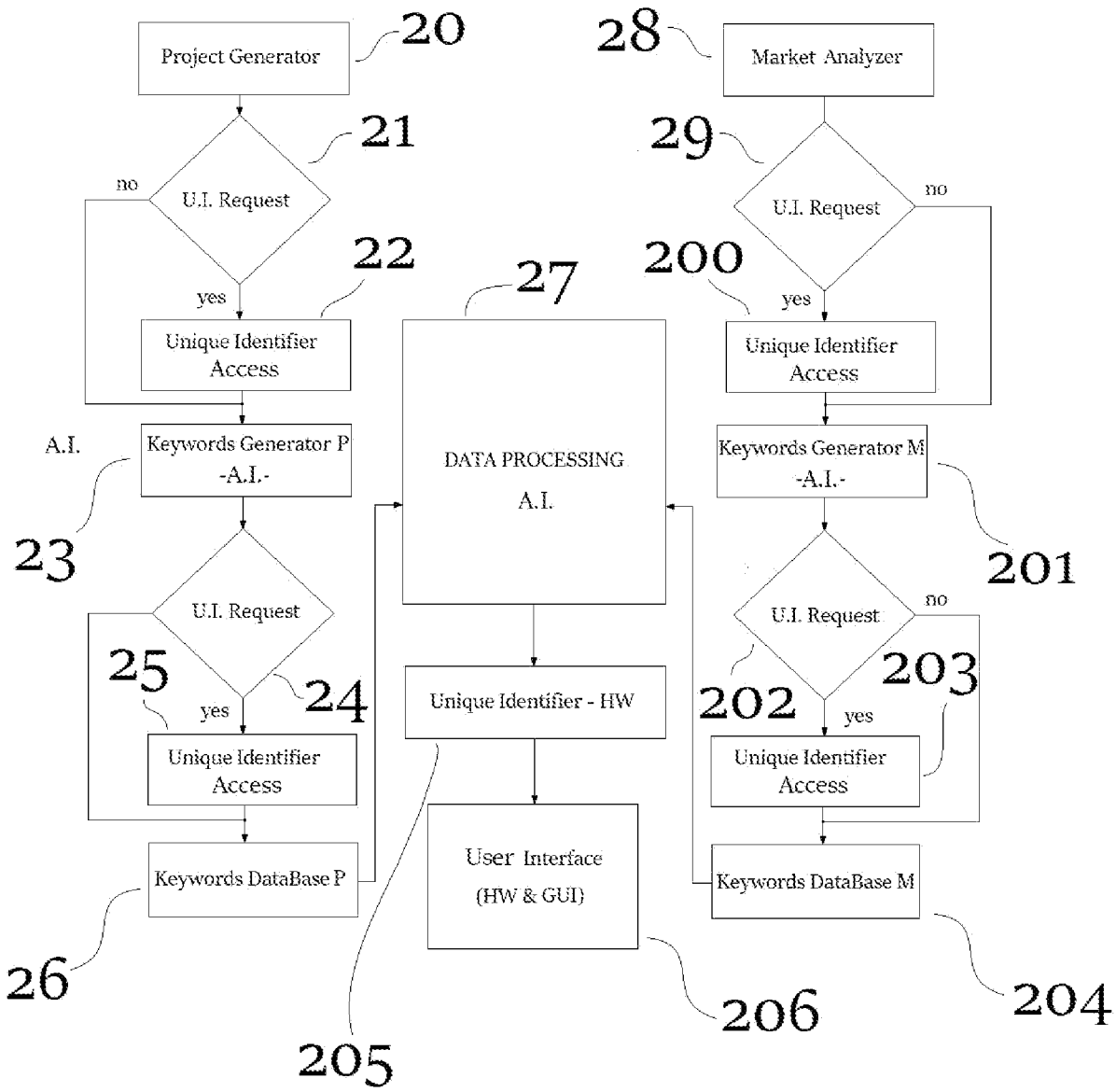
e. the pre-filled forms are classified according to the OL score,

f. the pre-filled forms are sent, through an interrupt indication generated by the Data Processing, to the Client devices enabled by a second level code via the Unique Identifier.

[Fig. 1]



[Fig. 2]


Project Generator
20
U.I. Request
21
no
yes
Unique Identifier Access
22
A.I.
Keywords Generator P -A.I.-
23
U.I. Request
25
24
yes
Unique Identifier Access
Keywords DataBase P
26
27
DATA PROCESSING A.I.
Unique Identifier - HW
User Interface (HW & GUI)
205
206
28
Market Analyzer
29
U.I. Request
no
200
yes
Unique Identifier Access
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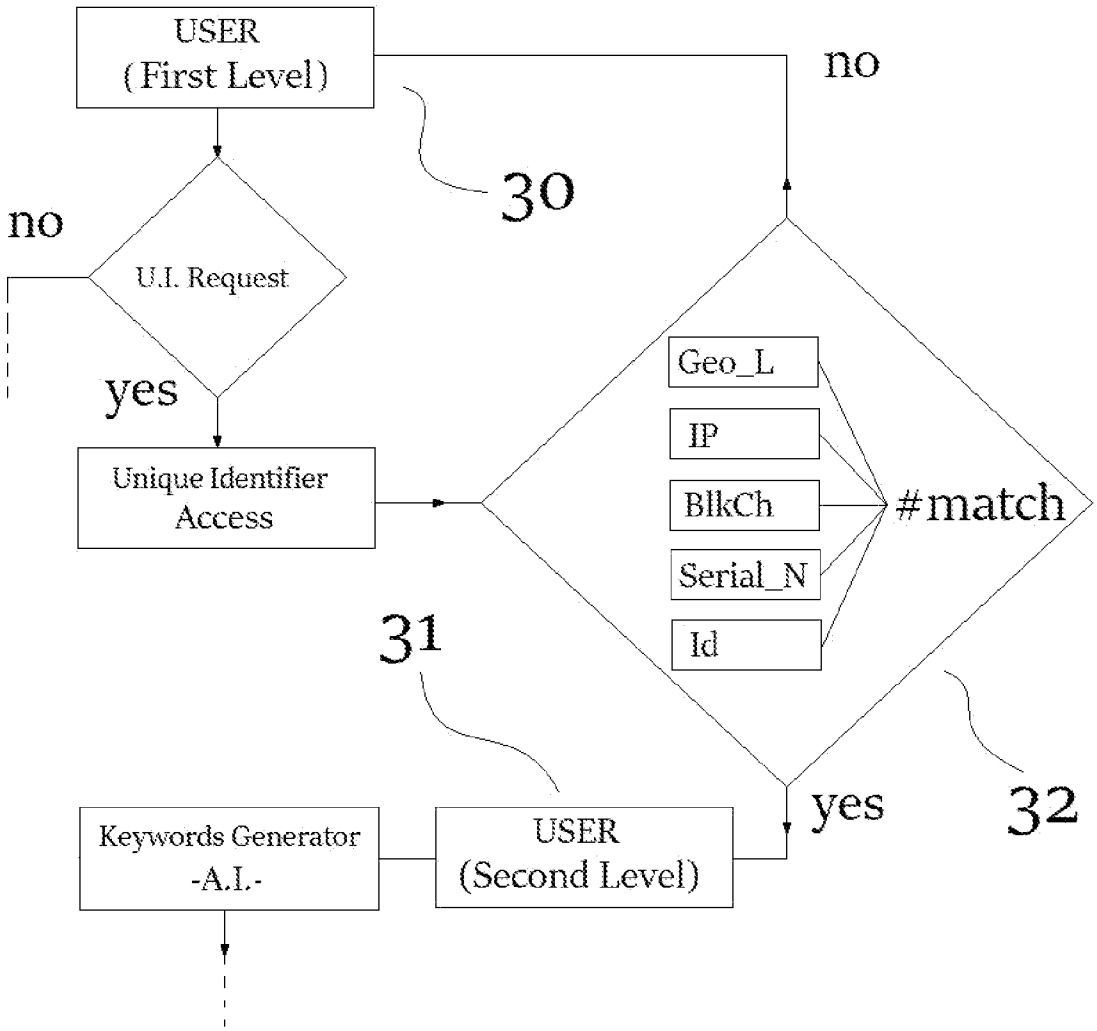
201
U.I. Request
no
202
203
yes
Unique Identifier Access
Keywords DataBase M
204

[Fig. 3]


USER
(First Level)
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30
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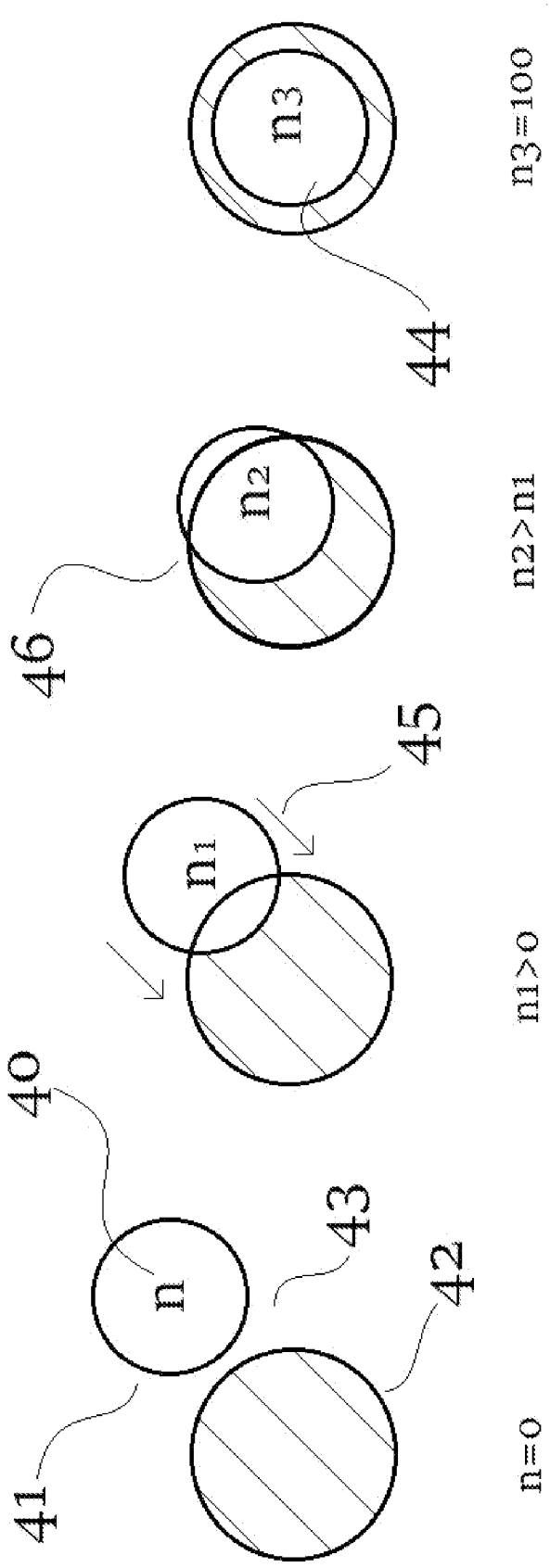
U.I. Request
yes
Unique Identifier
Access
Geo_L
IP
BlkCh
Serial_N
Id
#match
31
yes
32
Keywords Generator
-A.I.-
USER
(Second Level)

[Fig. 4]



# INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2024/056149

**A. CLASSIFICATION OF SUBJECT MATTER**

INV. G06F21/31 G06F21/62 G06Q50/18 H04W12/08
ADD. H04W12/06

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)
G06Q G06F H04L H04W

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 10 September 2024 | 10/10/2024 |

| Name and mailing address of the ISA/ | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL - 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040,<br>Fax: (+31-70) 340-3016 | Murgan, Tudor A. |



Form PCT/ISA/210 (second sheet) (April 2005)

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**Information on patent family members**

**International application No**
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