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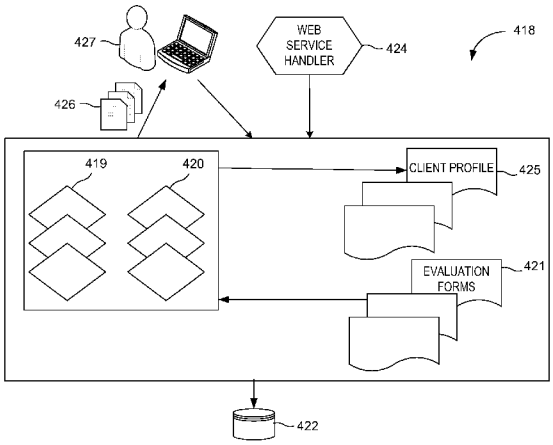

FIG. 4

(57) Abstract: A system for grading an information technology (IT) infrastructure can include an evaluation form engine to select an evaluation form from a plurality of evaluation forms for grading an IT infrastructure of an organization, wherein the plurality of evaluation forms are generated based on information gathered by a web service handler, a score determination engine to determine an overall IT score for the organization, using the selected evaluation form, wherein the overall IT score includes a vertical score, a horizontal score, and a mask score, and a grade determination engine to determine an IT grade for the organization based on the determined overall IT score.

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GRADING INFORMATION TECHNOLOGY INFRASTRUCTURES

Background

[0001] Grading systems can be used to compare particular individuals, companies, and/or industries against one another. Generally speaking, a grading system can communicate a quality of the particular individual, company, and/or industry. For instance, investors use an "investment grade" to measure the finance reliability of a country or company. Similarly, a person's financial responsibility can be measured by their credit score, or "credit rating".

Brief Description of the Drawings

[0002] Figure 1 illustrates a diagram of an example of a system for grading information technology (IT) infrastructures according to the present disclosure.

[0003] Figure 2 illustrates a diagram of an example computing device according to the present disclosure.

[0004] Figure 3 illustrates a diagram of an example environment for grading IT infrastructures according to the present disclosure.

[0005] Figure 4 illustrates a diagram of an example environment for grading IT infrastructures according to the present disclosure.

[0006] Figure 5 illustrates a diagram of an example data tree for grading IT infrastructures according to the present disclosure.

[0007] Figure 6 illustrates a diagram of an example score template for grading IT infrastructures according to the present disclosure.

[0008] Figure 7 illustrates a diagram of an example score template for grading IT infrastructures according to the present disclosure.

[0009] Figure 8 illustrates a diagram of an example score template for grading IT infrastructures according to the present disclosure

[0010] Figure 9 illustrates a diagram of a completed evaluation form for grading IT infrastructures according to the present disclosure.

[001 1] Figure 10 illustrates an example flow chart of a method for grading IT infrastructures according to the present disclosure.

Detailed Description

[0012] As global information technology (IT) environments are growing larger and increasingly complex, IT engineers are struggling with managing their IT infrastructure. Often it can be beneficial to have a system to evaluate the quality of an IT infrastructure based on various metrics. Such a system can measure and quantify all aspects of IT within an organization, and result in an IT grade that is easy to communicate and compare from one organization to another.

[0013] Some grading systems exist for credit rating and business quality measurements. However, such systems do not compare aspects of an organization's IT infrastructure against other organizations. In contrast, in accordance with examples of the present disclosure, an IT grade can be determined for an organization, or a portion of the IT infrastructure of the organization. Determining an IT grade can result in a grading system that evaluates organizations based on the business industry, business scale classification, technology trends, and assets, and allows for comparison across the industry.

[0014] Figure 1 illustrates a diagram of an example of a system 100 for grading IT infrastructures according to the present disclosure. As shown in the example of Figure 1, the system 100 can include a database 10 1 accessible by and in communication with a plurality of IT infrastructure grading engines 102. The IT infrastructure grading engines 102 can include an evaluation form engine 103, a score determination engine 104, and a grade determination engine 105.

The system 100 can include additional or fewer engines than illustrated to perform the various functions described herein, and examples are not limited to the number shown in Figure 1. The system 100 can include hardware, e.g., in the form of transistor logic and/or application specific integrated circuitry (ASICs), firmware, and software, e.g., in the form of machine readable and executable instructions (program instructions (programming) stored in a machine readable medium (MRM)) which in cooperation can form a computing device as discussed in connection with Figure 2.

[0015] The plurality of engines 102, as used herein can include a combination of hardware and software, e.g., program instructions, but at least includes hardware, that is configured to perform particular functions, tasks and/or actions. For example, the engines shown in Figure 1 can be used to select an evaluation form from a plurality of evaluation forms for grading an IT infrastructure for an organization. As used herein, an evaluation form is a program or document that can be completed by an appraiser or administrator to evaluate an IT infrastructure for an organization (e.g., determine an IT grade for the IT infrastructure for the organization).

[0016] For example, the evaluation form engine 103 can include hardware and/or a combination of hardware and program instructions to select an evaluation form from a plurality of evaluation forms for grading an IT infrastructure for an organization, wherein the plurality of evaluation forms are generated based on information gathered by a web service handler. A web service handler can also be referred to as a data transfer handler. A web service handler can include a web crawler. However, examples are not so limited, and a web service handler can be any hardware and/or a combination of hardware and program instructions to gather information for use in grading an IT infrastructure for an organization.

[0017] The score determination engine 104 can include hardware and/or a combination of hardware and program instructions to determine an overall IT score for the organization, using the selected evaluation form, wherein the overall IT score includes a vertical score, a horizontal score, and a mask score. As described further herein, a horizontal score can indicate a measurement of

balance between evaluation items in an evaluation form. Also, as described sub-score further herein, a vertical score can be an aggregate of sub-scores included in the IT infrastructure; and a mask score can be determined as a function of the vertical score, the horizontal score, the maximum possible vertical score, and the maximum possible horizontal score.

[0018] The grade determination engine 105 can include hardware and/or a combination of hardware and program instructions to determine an IT grade for the organization based on the determined overall IT score. As used herein, an IT grade is a two character rating that represents the quality of the IT infrastructure of an organization.

[0019] In some examples, the system 100 can include a client profile engine (not illustrated in Figure 1) that can include hardware and/or a combination of hardware and program instructions to generate a client profile for the organization using the information gathered by the web service handler. As described further herein, the plurality of evaluation forms can be generated based on this client profile.

[0020] The embodiments are not limited to the example engines shown in Figure 1 and one or more engines described may be combined or be a sub-engine of another engine. Further, the engines shown may be remote from one another in a distributed computing environment, cloud computing environment, etc.

[0021] Figure 2 illustrates a diagram of an example computing device 208 according to the present disclosure. The computing device 208 can utilize hardware, software (e.g., program instructions), firmware, and/or logic to perform a number of functions described herein. The computing device 208 can be any combination of hardware and program instructions configured to share information. The hardware, for example, can include a processing resource 209 and/or a memory resource 211, e.g., computer or machine readable medium (CRM/MRM), database, etc. A processing resource 209, as used herein, can include one or more processors capable of executing instructions stored by a memory resource 211. The processing resource 209 may be implemented in a single device or distributed across multiple devices. The program instructions,

e.g., computer or machine readable instructions (CRI/MRI)) can include instructions stored on the memory resource 211 and executable by the processing resource 209 to perform a particular function, task and/or action, e.g., determine an IT grade for the organization based on the determined overall IT score.

[0022] The memory resource 211 can be a non-transitory machine readable medium, including one or more memory components capable of storing instructions that can be executed by processing resource 209 and may be integrated in a single device or distributed across multiple devices. Further, memory resource 211 may be fully or partially integrated in the same device as processing resource 209 or it may be separate but accessible to that device and processing resource 209. Thus, it is noted that the computing device 208 may be implemented on a participant device, on a server device, on a collection of server devices, and/or a combination of a participant, e.g., user, device and one or more server devices as part of a distributed computing environment, cloud computing environment, etc.

[0023] The memory resource 211 can be in communication with the processing resource 209 via a communication link, e.g., a path, 210. The communication link 210 can provide a wired and/or wireless connection between the processing resource 209 and the memory resource 211.

[0024] In the example of Figure 2, the memory resource 211 can include an evaluation module 213, a score determination module 214, and a grade determination module 215. As used herein, a "module" can include hardware and software, e.g., program instructions, but includes at least program instructions that can be executed by a processing resource, e.g., processing resource 209, to perform a particular task, function and/or action. The plurality of modules 213, 214, 215 can be independent modules or sub-modules of other modules. As shown in Figure 2, the evaluation form module 214, the score determination module 214, and the grade determination module 215 can be individual modules located on one memory resource or can be located at separate and distinct memory resource locations, e.g., in a distributed computing environment, cloud computing environment, etc.

[0025] Each of the plurality of modules 213, 214, 215 can include instructions that when executed by the processing resource 209 can function as a corresponding engine as described in connection with Figure 1. For example, the evaluation form module 213 can include instructions that when executed by the processing resource 209 can function as the evaluation form engine 103 shown in Figure 1. Additionally, the score determination module 214 can include instructions that when executed by the processing resource 209 can function as the score determination engine 104 shown in Figure 1. Also, the grade determination module 215 can include instructions that when executed by the processing resource 209 can function as the grade determination engine 105.

[0026] In some examples, the evaluation form module 213 can generate IT infrastructure score rule metrics based on industry data gathered by a web service handler. Further, in some examples, the evaluation form module 213 can select a score template from a plurality of score templates based on the score rule metrics. As used herein, a score rule metric is a condition or set of conditions that specify which score template or score templates should be used to evaluate a particular IT infrastructure. As described further herein, the score template can be selected based on a client profile. For instance, a score template can be selected based on a list of devices used by the organization, and/or a list of documents used by the organization. In another example, the score template can be selected based on a type of industry that the organization is in. Also, the evaluation form module 213 can generate an evaluation form for grading the organization's IT infrastructure, based on the selected score template. As described further herein, a score template is logic that defines how IT scores are determined (e.g., calculated).

[0027] In some examples, the score determination module 214 can determine an overall IT score for the organization using the selected evaluation form, wherein the overall IT score includes a vertical score, a horizontal score and a mask score, as discussed further herein. In some examples, determining an overall IT score for the organization can include executing instructions to determine the overall IT score automatically based on input received from a web

service handler. For example, based on input received from a web crawler, the evaluation form can be automatically populated, and the IT infrastructure for the organization evaluated.

[0028] Additionally, as discussed further herein, the grade determination module 215 can determine an IT grade for the organization based on the overall IT score.

[0029] Embodiments are not limited to the example modules shown in Figure 2 and in some cases a number of modules can operate together to function as a particular engine. Further, the engines and/or modules of Figures 1 and 2 can be located in a single system and/or computing device or reside in separate and distinct locations in a distributed network, computing environment, cloud computing environment, etc.

[0030] Figure 3 illustrates a diagram of an example environment 318 for grading IT infrastructures according to the present disclosure. As illustrated in Figure 3, the environment 318 can include the system 300 for grading IT infrastructures, an IT administrator 323, web service handlers 324, and storage 322. As illustrated in Figure 3, the system 300 for grading IT infrastructures can include a plurality of score rule metrics 319, a plurality of score templates 320, and a plurality of IT grading evaluation forms 321, among other components. Score rule metrics 319 is logic that generate IT scores and ratings. Score templates 320 is logic that defines how IT scores are determined (e.g., calculated). For example, as discussed in relation to Figure 5, the score template 320 can specify how many components within the IT infrastructure will be analyzed, and what the maximum IT score is for that particular component. Web service handlers 324 can receive data from outside the organization pertaining to prices and trends within a particular industry. Storage 322 can be any form of data storage, including a database but not limited thereto.

[0031] Referring to Figure 3, an IT administrator 323 of the IT grading system can update the score rule metrics 319 and the score templates 320. In some examples, the IT administrator can be a user of the IT grading system. To update the score rule metrics 319 and the score templates 320, the IT administrator 323 can input data reflecting technology trends and market price

changes for IT related products. For example, the IT administrator 323 can input to the system 300, data relating to the price of antivirus software and data reflecting purchasing trends of antivirus software among organizations within a particular industry. The IT administrator 323 can input data relating to prices and trends within the industry that the IT administrator's organization (e.g., the organization with which the administrator is employed) is a part, or within a different industry. While antivirus software is given as an example of an IT related product, examples are not so limited, and an IT related product is any product which may be used, directly or indirectly, in the construction and ongoing maintenance of an organization's IT infrastructure.

[0032] In response to receiving data input from the IT administrator 323, prices and trends can be calculated for various IT related products. Prices and trends can be calculated based on the history of the data relating to a particular IT related product, and the velocity with which prices for that particular IT related product are changing can be determined.

[0033] For example, the price for a database server can be entered periodically, such as daily or monthly, and recorded for a period of time, such as one year. Based on the change in price for the database server over that one year, current prices and trends (e.g., pricing trends) can be calculated, as well as the rate with which the price is changing. As used herein, the rate with which the price of an IT related product is changing can be the velocity of the IT related product price change.

[0034] Also, a web service handler 324 can input to the system 300 data reflecting technology trends and market price changes for IT related products. Web service handlers 324 are systems that receive data such as new product lists and prices from other systems without human interaction. Web service handlers 324 can receive data from systems within an organization's IT infrastructure, as well as outside of the organization's IT infrastructure. For example, web service handlers 324 can input data from IT product suppliers, wherein the data is received using the Internet or other external communications system. The web service handlers 324 can input data periodically and at user-configurable time intervals. For instance, the web

service handlers 324 can be configured to input data daily, monthly, or every 6 months. Data input by the web service handlers 324 can be used to generate score templates 320, and the score templates can be used to generate evaluation forms 321 for use in grading the IT infrastructure for the organization.

[0035] Figure 4 illustrates a diagram of an example environment 418 for grading IT infrastructures according to the present disclosure. An appraiser 427 and/or the web service handlers 424 can input the organization's evaluation data into the system 400 to generate client profile 425. The appraiser 427 is an individual that conducts an evaluation of the IT infrastructure for the organization. The appraiser 427 can be a user of the system 400, and in some examples can be the administrator 323 illustrated in Figure 3. The organization's evaluation data is data that provides details regarding the organization, the type of industry or business line the organization is in, and/or specifying various components of the organization. For example, the organization's evaluation data can include a list of devices and documents used by the organization. In some examples, the organization's evaluation data can include a size of the organization's IT assets and type of business or industry. Using the client profile 425, the system 400 can select a score template 420 among the plurality of score templates for grading the organization's IT infrastructure. A score template 420 can be selected based on the scale of the organization and the type of business. Based on the score template 420 selected, the system 400 can generate an evaluation form, or a plurality of evaluation forms 421, for use in grading the organization's IT infrastructure. The appraiser 427 can execute the evaluation forms 421, answering questions provided therein. The evaluation data 425, the score templates 420, and the results of the evaluation can be stored in storage 422 for future reference. Additionally, reports 426 can be sent to the appraiser 427, displaying the results of the executed analysis.

[0036] Although the foregoing example describes the appraiser answering questions presented in an evaluation form 421, examples are not so limited. In some examples, the system 400 can execute the evaluation forms

421 automatically, based on input received from the web service handlers 424, and without input from an appraiser (e.g., a user).

[0037] Figure 5 illustrates a diagram of an example data tree 530 for grading IT infrastructures according to the present disclosure. As described in relation to Figures 1-4, an IT grade can be assigned to an organization based on score rule metrics and templates. In determining (e.g., calculating) the IT grade, a data tree structure can be used. The data tree 530 can have multiple levels of organization. The top level node 531 of the data tree 530 can represent the overall grade assigned to the IT organization. As discussed further herein, the IT grade can be determined based on an overall IT score. As used herein, an overall IT score can be three calculated IT scores. The three calculated IT scores can be determined based on the sub-scores of sub-nodes 532-1 , 532-2, 532-3, …, 532-N (herein referred to as sub-nodes 532). Further, the sub-score of each sub-node 532 can be determined based on additional sub-scores of additional sub-nodes 533. In other words, the top level node 531 can have a plurality of sub-nodes 532, and each of the plurality of sub-nodes 532 can again have a plurality of sub-nodes (e.g., additional sub-nodes 533) associated with it.

[0038] Each of the plurality of sub-nodes 532 in the data tree 530 can represent an evaluation item for grading the IT infrastructure. As used herein, an evaluation item is an aspect or a component of the IT infrastructure that is evaluated (e.g., assigned a score) using an evaluation form or evaluation forms in order to grade the IT infrastructure. An aspect can be any resource, hardware, software (e.g., logic), or other part of the IT infrastructure of the organization. A component can be any sub portion of the resource, hardware, software (e.g., logic) or other part of the IT infrastructure comprising the aspect. For example, sub-node 532-1 can represent a firewall system, and additional sub-nodes 533 can represent various components of the firewall system.

[0039] As discussed in relation to Figures 3 and 4, score templates (e.g., score templates 320 in Figure 3, and score templates 420 in Figure 4) can be used to determine IT scores and an IT grade for the organization. The score

templates can be constructed based on the data tree 530. Example score templates are illustrated in Figures 6, 7, and 8.

[0040] Figure 6 illustrates a diagram of an example score template 635 for grading IT infrastructures according to the present disclosure. A score template can be used to generate evaluation forms, and the evaluation forms can be used to grade the IT infrastructure for the organization. For example, the score template 635 can generate an IT grade for an organization. The IT grade can be based on an overall IT score, as determined by the score template 635. In some examples, a portion of the IT infrastructure of the organization can be evaluated (e.g., assigned a grade). For instance, the grade can be calculated for security aspects of the organization's IT infrastructure instead of all aspects of the organization's IT infrastructure. In such instances, the score template can be constructed to include less than all of the evaluation items in the IT infrastructure of the organization, and the node representing security aspects in the tree structure becomes the top level node for evaluation purposes. Figure 6 illustrates a score template having less than all evaluation items.

[0041] Referring to Figure 6, the score template 635 can have seven evaluation items, illustrated as sub-nodes 633-1, 633-2, 633-3, ..., 633-7 (herein referred to as sub-nodes 633). In the score template 635, each evaluation item can have a maximum score assigned to it. For example, sub-node 633-2 can have a maximum score of 3. Further, each of the evaluation items can be evaluated based on score rule metrics (e.g., score rule metrics 319 in Figure 3, and score rule metrics 419 in Figure 4). Based on the score rule metrics and information input to the evaluation form or evaluation forms, a sub-score can be assigned to each of the evaluation items (e.g., to each of the sub-nodes 633). For instance, sub-node 633-1 can be assigned a sub-score of 1, sub-node 633-2 can be assigned a sub-score of 3, sub-node 633-3 can be assigned a sub-score of 2, and so forth.

[0042] Based on the plurality of sub-scores assigned to each of the evaluation items (e.g., illustrated as sub-nodes), a total IT score can be determined for the IT infrastructure. The total IT score can include three parts:

a vertical score, a horizontal score, and a mask score. The total IT score can be structured as three delineated numerical values, wherein the first value represents the vertical score, the second value represents the horizontal score, and the third value represents the mask score. The vertical score can be an aggregate of all sub-scores feeding into a node. For example, when the entire IT infrastructure of an organization is being evaluated, the vertical score can be an aggregate of all sub-scores included in the IT infrastructure. The horizontal score can measure the balance and relationships between evaluation items horizontally. The mask score can be used for the calculation of the parent node, and can represent a measurement of the total score as a function of the maximum possible score for a node.

[0043] The vertical score can be the composite score for the sub-nodes feeding into a node. For instance, as illustrated in Figure 6, the vertical score can be 10 (e.g., 1+1+2+1+1+3+1 = 10). The horizontal score can be a measurement of the balance among the scores of the sub-nodes included in the score template 635. For instance, the horizontal score of the score template 635 can be 3. The mask score can be determined as a function of a sum of the vertical score and horizontal score, divided by a sum of the maximum possible vertical score and the maximum possible horizontal score, and multiplied by some factor. For instance, assume that the evaluation item associated with sub-node 633-2 is assigned less than the maximum score during evaluation (e.g., 1 instead of 3) and that the maximum possible vertical score for score template 635 is 12 (e.g., 1+3+2+1+1+3+1 = 12). Further, assume that the maximum horizontal score is 3, and that a horizontal score of 2 was assigned during evaluation. The mask score can be calculated as: 7*((vertical score + horizontal score) / (maximum vertical score + maximum horizontal score)), or in this example, 7 * ((10+2) / (12+3)) = 5.6. In this example, 7 is a factor that is used to determine the mask score based on the example template provided. However, the formula used to calculate the mask score can vary by template, and can include a factor other than 7. Other example calculations can be as follows:

The Vertical Score = 40 out of 50 = 8 + 16 + 4 + 8 + 4
The Horizontal Score = 16 out of 20
The Mask Score = 56 = 70 * { (40 + 16) / (50 + 20) }

The Vertical Score = 40 out of 50 = 10 + 20 + 0 + 10 + 0
The Horizontal Score = 12 out of 20
The Mask Score = 52 = 70 * { (40 + 12) / (50 + 20) }

[0044] The IT scores for each of the sub-nodes 633 can be determined based on answers provided in evaluation forms (e.g., evaluation forms 321 in Figure 3 and evaluation forms 421 in Figure 4). Evaluation forms are generated dynamically by templates based client's organization profile data such as the size of the organization IT assets, and type of the business or industry. Once the appraiser populates all the evaluation forms with organization's data, the system calculates the score, generates various reports, and displays the grade. The score rule metrics, actors, customer evaluation data, the result artifacts are stored in the database. There are web service handlers which bridge the data transfer in and out of the system. These handlers help to feed and update new rules into the system. For example, these handlers help to fetch client data automatically from other system.

[0045] The score template 635 can be used to determine a grade for the entire IT infrastructure for an organization or a portion of the IT infrastructure. For instance, a node in a score template can be added or removed based on market trends. Examples of modified score templates are illustrated in Figures 7 and 8.

[0046] Figure 7 illustrates a diagram of an example score template 735 for grading IT infrastructures according to the present disclosure. As illustrated in Figure 7, sub-nodes 733-1 , 733-2, and 733-7 can be removed from the score template 735 based on a number of market trends. Because the maximum scores associated with the nodes 733-1 , 733-2, and 733-7 are 1, 3, and 1, (respectively), the maximum possible vertical score for score template 735 is changed from 12 to 7 (e.g., 12 - (1+3+1) = 7).

[0047] Figure 8 illustrates a diagram of an example score template 835 for grading IT infrastructures according to the present disclosure. As illustrated in Figure 8, sub-nodes 833-4, 833-6, and 833-7 can be removed from the score template 835 based on a number of market trends. Similarly, sub-nodes 833-1, 833-2, 833-3, and 833-5 can be weighted and assigned a higher level of importance in the calculation of the IT score. In such an example, the vertical score can be changed from 12 to 7 (e.g., 12 - (1+3+1) = 7), and the mask score can be changed from 7 to 10. For instance, the mask score can be calculated as: 10*((vertical score + horizontal score) / (maximum vertical score + maximum horizontal score)), or in this example, 10 * ((7+3) / (7+3)) = 10.

[0048] Figure 9 illustrates a diagram of a completed evaluation form 940 for grading IT infrastructures according to the present disclosure. As illustrated in Figure 9, a sub-score 941 can be determined for each of a plurality of evaluation items 942. Evaluation ranges 943 can be used to determine the individual sub-scores for each evaluation item. Further, the evaluation form 940 can include an evaluation description 944 and recommended actions 945 which can be populated by the appraiser during the evaluation and which can be displayed in a report generated at the end of the evaluation. The evaluation description 944 can describe the reasons and/or factors that resulted in the particular score, and recommended actions 945 can describe actions that can be taken to improve the particular score. For example, if the evaluation item is a security system, a low score relative to a range of possible scores, can be assigned because the security system for the organization is vulnerable to cyber-attacks. The evaluation description 944 can explain that the low score is assigned because the organization is vulnerable to cyber-attacks, and the recommended actions 945 can describe actions that the organization can take to improve the score.

[0049] Assigning a grade to the IT infrastructure of the organization can be based on an estimated total asset, an expected score, an actual IT score, and a p-value. An estimated total asset is the total investment and appraised asset amount of the IT infrastructure to be evaluated. This estimated total asset can be used to determine the first character of the IT grade. The estimated total

asset can be calculated based on the customer profile information and organization data such as facilities, equipment, and resources. In some examples, the estimated total assets can be calculated automatically based on input received from the web service handlers.

[0050] An expected IT score is an estimated IT score based on the organization's total investments and assets. This estimated score can be calculated based on the market data input by the web service handlers and derived from the similar range of the assets within plus and minus of 10%.

[0051] An actual IT score is the vertical score based on the system metrics as an evaluation result. The vertical score can be calculated by aggregating the score of each node in the score metrics tree.

[0052] The p-value is the actual IT score divided by the expected IT score. A p-value greater than 1 can reflect higher performance in the IT infrastructure with the investment. A p-value less than 1 can reflect under performance of the IT infrastructure with the investment. A higher level of performance can refer to increased efficiency, balance, manageability, and/or agility in the IT infrastructure. However, examples are not so limited, and a higher level of performance (e.g., a p-value greater than 1) can indicate that the IT infrastructure is following technology trends. In other words, the p-value can be associated with the performance of the organization's IT infrastructure for a given budget. The p-value can be used as the second character of the IT grade.

[0053] An example determination of an IT grade is presented below. In this example, the estimated total asset for an organization can be $7 billion, which can result in an assignment of "Class B" according to the table below:

The First Character in the Grade	Organization's asset scale positioned in the market	Example, Sample Asset Amounts
Class A	Ranges 90-100%	IT Assets Ranges 10B dollars or more
Class B	Ranges 80-90%	IT Assets Ranges 1B-10B dollars
Class C	Ranges 70-80%	IT Assets Ranges 500M-1 B dollars
Class D	Ranges 60-70%	IT Assets Ranges

		300M-500M dollars
Class E	Ranges 50-60%	IT Assets Ranges 100M-300M dollars
Class F	Ranges 40-50%	IT Assets Ranges 50M-100M dollars
Class G	Ranges 30-40%	IT Assets Ranges 10M-50M dollars
Class H	Ranges 20-30%	IT Assets Ranges 5M-10M dollars
Class 1	Ranges 10-20%	IT Assets Ranges 1M-5M dollars
Class J	Ranges 0-10%	IT Assets Ranges 1M dollars or less

Similarly, the p-value for the organization can be1 .2, which can result in an assignment of "Class C" according to the table below:

The Second Character in the Grade	p-value positioned in the similar market class	Example, Sample p-value
Class A	Ranges 90-100%	p-value Ranges 1.4 and higher
Class B	Ranges 80-90%	p-value Range 1.3-1 .4
Class C	Ranges 70-80%	p-value Range 1.2-1 .3
Class D	Ranges 60-70%	p-value Range 1.1 - 1 .2
Class E	Ranges 50-60%	p-value Range 1.0-1 .1
Class F	Ranges 40-50%	p-value Range 0.9-1 .0
Class G	Ranges 30-40%	p-value Range 0.8-0.9
Class H	Ranges 20-30%	p-value Range 0.7-0.8
Class I	Ranges 10-20%	p-value Range 0.6-0.7
Class J	Ranges 0-10%	p-value Range 0.5-0.6

As such, the IT grade for the organization, using the above examples, can be "BC".

[0054] Another example is as follows:

Estimated Total Asset: 750 Million Dollars

Expected Score: 652,250

Evaluated Score: 775,290

P-value: 1.1886 = 775,290 / 652,250

IT Grade: CD

[0055] In the above example, the system can calculate the estimated total asset value based on market data derived from data input by web service

handlers and/or an IT administrator, and stored in data storage (e.g., data storage 322 in Figure 3). The system can assign a first IT grade class "C" based on the organization's assets of $750M as compared to market data. Further, the system can calculate the p-value data input by web service handlers and/or an IT administrator, and stored in data storage (e.g., data storage 322 in Figure 3). The system can assign a second IT grade class "D" based on the p-value: 1.1886 against the market data. As such, the IT grade for the example organization illustrated above, is "CD".

[0056] In some examples, the system can generate reports summarizing the evaluation of the organization's IT infrastructure. A report can consist of the IT score, the IT grade, report attributes, recommendations, comparison charts, and the statistical information from the evaluation. In some examples, the report can include an official seal to provide the credibility and authenticity of the evaluation, the IT score, and/or the IT grade. The report attributes can be information regarding the evaluation, including the client organization profile information, certified appraiser's information, evaluation dates, the organization's IT data and business type.

[0057] Comparison charts can compare the IT score and IT grade of the organization against an entire market and within the same industry and classification as the organization. Additionally, a report can include details on the evaluation for each evaluation item. Further, the appraiser's evaluation description and recommended actions can be displayed (e.g., reported) along with the details on the evaluation. Also, a report can include a "cost per point" analysis section, which can provide information on the estimated cost of increasing the IT score by one point. This cost per point analysis can be analyzed in relation to the recommended actions provided in the evaluation report. In some examples, the report can include a graph displaying trends in the p-value for the organization over time.

[0058] A trend graph can include a display of the organization's p-value over time, as well as a market average p-value, and an industry wide average p-value for the same period of time. For example, the organization can be a mid-sized law firm. The trend graph can display the p-value for the particular law

firm over a one year time period, as well as the average p-value for similarly situated mid-sized law firms (e.g., the market average p-value), and the average p-value for all law firms (e.g., the industry average p-value) over the same one year period.

[0059] Figure 10 illustrates an example flow chart of a method 1050 for grading IT infrastructures according to the present disclosure. At 1051, the method 1050 can include generating IT infrastructure score rule metrics based on industry data. For example, the IT infrastructure score rule metrics can be based on information received from the web service handler 324 illustrated in Figure 3. In some examples, generating IT infrastructure score rule metrics can be performed by the evaluation form engine 103 illustrated in Figure 1 and/or the evaluation form module 213 illustrated in Figure 2.

[0060] At 1052, the method 1050 can include selecting a score template from a plurality of score templates based on the score rule metrics. In some examples, the score template can be selected from previously generated score templates, however, examples are not so limited, and in some examples a new score template can be generated for the evaluation. Selecting a score template from a plurality of score templates can be performed by the evaluation form engine 103 illustrated in Figure 1 and/or the evaluation form module 213 illustrated in Figure 2.

[0061] At 1053, the method 1050 can include generating an evaluation form for grading the organization's IT infrastructure, based on the selected score template. The evaluation form can include questions, radio buttons, and/or fields that can be entered by an appraiser and/or by a web service handler. Generating an evaluation form for grading the organization's IT infrastructure can be performed by the evaluation form engine 103 illustrated in Figure 1 and/or the evaluation form module 213 illustrated in Figure 2.

[0062] At 1054, the method 1050 can include evaluating the IT infrastructure for the organization using a web service handler and the generated evaluation form. In some examples, evaluating the IT infrastructure for the organization can be performed by the score determination engine 104

illustrated in Figure 1 and/or the score determination module 214 illustrated in Figure 2.

[0063] At 1055, the method 1050 can include generating an overall IT score for the organization in response to the IT infrastructure evaluation, wherein the overall IT score includes a vertical score, a horizontal score and a mask score. Generating the overall IT score for the organization can be performed by the score determination engine 104 illustrated in Figure 1 and/or the score determination module 214 illustrated in Figure 2.

[0064] At 1056, the method 1050 can include determining an IT grade for the organization based on the overall IT score. In some examples, determining the IT grade for the organization can be performed by the grade determination engine 105 illustrated in Figure 1 and/or the grade determination module 215 illustrated in Figure 2.

[0065] In the present disclosure, reference is made to the accompanying drawings that form a part hereof, and in which is shown by way of illustration how a number of examples of the disclosure can be practiced. These examples are described in sufficient detail to enable those of ordinary skill in the art to practice the examples of this disclosure, and it is to be understood that other examples can be used and that process, electrical, and/or structural changes can be made without departing from the scope of the present disclosure.

[0066] The figures herein follow a numbering convention in which the first digit corresponds to the drawing figure number and the remaining digits identify an element or component in the drawing. Elements shown in the various figures herein can be added, exchanged, and/or eliminated so as to provide a number of additional examples of the present disclosure. In addition, the proportion and the relative scale of the elements provided in the figures are intended to illustrate the examples of the present disclosure, and should not be taken in a limiting sense.

[0067] As used herein, "logic" is an alternative or additional processing resource to perform a particular action and/or function, etc., described herein, which includes hardware, e.g., various forms of transistor logic, application specific integrated circuits (ASICs), etc., as opposed to computer executable

instructions, e.g., software firmware, etc., stored in memory and executable by a processor. Further, as used herein, "a" or "a number of" something can refer to one or more such things. For example, "a number of widgets" can refer to one or more widgets. Also, as used herein, "a plurality of" something can refer to more than one of such things.

[0068] The above specification, examples and data provide a description of the method and applications, and use of the system and method of the present disclosure. Since many examples can be made without departing from the spirit and scope of the system and method of the present disclosure, this specification merely sets forth some of the many possible embodiment configurations and implementations.

What is claimed is:

1. A system for grading an information technology (IT) infrastructure, comprising:

an evaluation form engine to select an evaluation form from a plurality of evaluation forms for grading an IT infrastructure for an organization, wherein the plurality of evaluation forms are generated based on information gathered by a web service handler;

a score determination engine to determine an overall IT score for the organization, using the selected evaluation form, wherein the overall IT score includes a vertical score, a horizontal score, and a mask score; and

a grade determination engine to determine an IT grade for the organization based on the determined overall IT score.

2. The system of claim 1, wherein the horizontal score indicates a measurement of balance between evaluation items in the evaluation form.

3. The system of claim 1, wherein the vertical score is an aggregate of sub-scores included in the IT infrastructure.

4. The system of claim 1, wherein the score determination engine determines the mask score as a function of the vertical score, the horizontal score, the maximum possible vertical score, and the maximum possible horizontal score.

5. The system of claim 1, further comprising a client profile engine to generate a client profile for the organization using the information gathered by the web service handler.

6. The system of claim 5, wherein the client profile engine generates the plurality of evaluation forms based on the client profile.

7. A non-transitory machine readable medium storing instructions executable by a processing resource to cause a computer to:

generate IT infrastructure score rule metrics based on industry data gathered by a web service handler;

select a score template from a plurality of score templates using the score rule metrics;

generate an evaluation form for grading an organization's IT infrastructure, using the selected score template;

determine an overall IT score for the organization using the selected evaluation form, wherein the overall IT score includes a vertical score, a horizontal score and a mask score; and

determine an IT grade for the organization based on the overall IT score.

8. The medium of claim 7, wherein the score template is selected based on a client profile.

9. The medium of claim 8, wherein the client profile includes at least one of a list of devices used by the organization and a list of documents used by the organization.

10. The medium of claim 8, wherein the client profile includes a type of industry the organization is in.

11. The medium of claim 7, wherein the instructions executable to determine the overall IT score for the organization using the selected evaluation form includes instructions to determine the overall IT score automatically based on input received from the web service handler.

12. A method for grading information technology (IT) infrastructures, comprising:

generating IT infrastructure score rule metrics based on industry data;

selecting a score template from a plurality of score templates using the score rule metrics;

generating an evaluation form for grading the organization's IT infrastructure using the selected score template;

evaluating the IT infrastructure for the organization using a web service handler and the generated evaluation form;

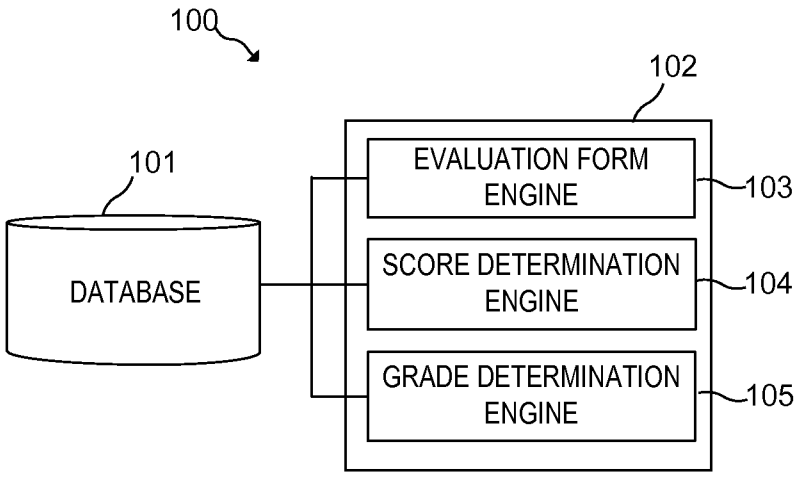
generating an overall IT score for the organization in response to the IT infrastructure evaluation, wherein the overall IT score includes a vertical score, a horizontal score and a mask score; and

determining an IT grade for the organization based on the overall IT score.

13. The method of claim 12, wherein determining the IT grade includes assigning a first character representing estimated total assets of the IT infrastructure of the organization, and a second character representing a p-value for the IT infrastructure.

14. The method of claim 13, including determining the p-value as a function of the vertical score divided by an expected IT score.

15. The method of claim 13, including determining the estimated total assets of the IT infrastructure automatically based on input received from the web service handler.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102
101
EVALUATION FORM ENGINE
103
DATABASE
SCORE DETERMINATION ENGINE
104
GRADE DETERMINATION ENGINE
105

FIG. 1

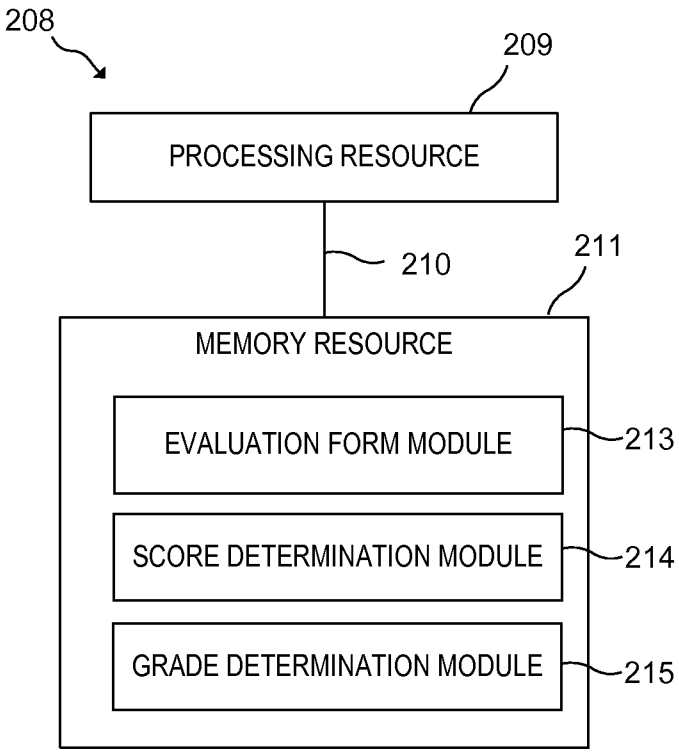
208
209
PROCESSING RESOURCE
210
211
MEMORY RESOURCE
EVALUATION FORM MODULE
213
SCORE DETERMINATION MODULE
214
GRADE DETERMINATION MODULE
215

FIG. 2

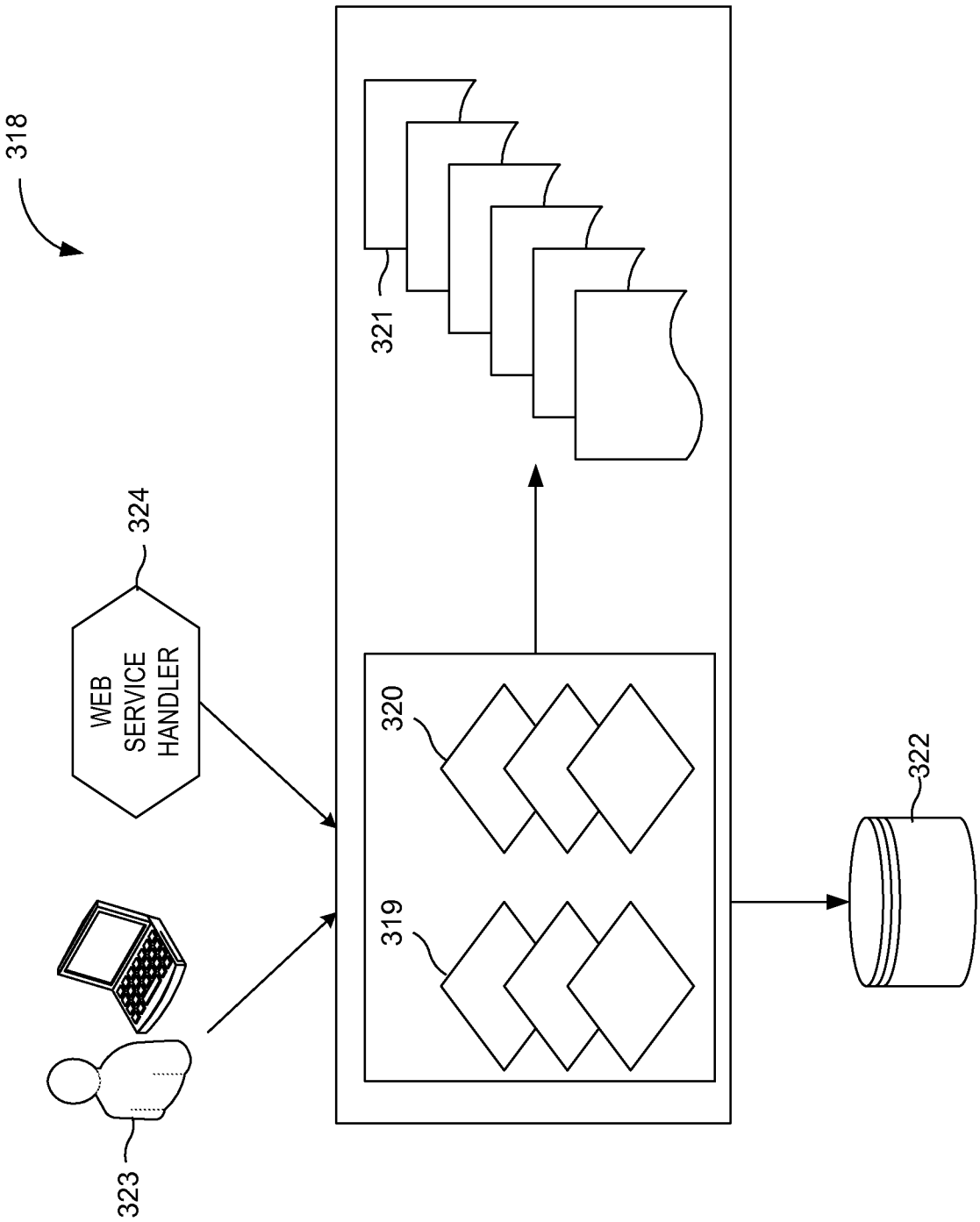

FIG. 3

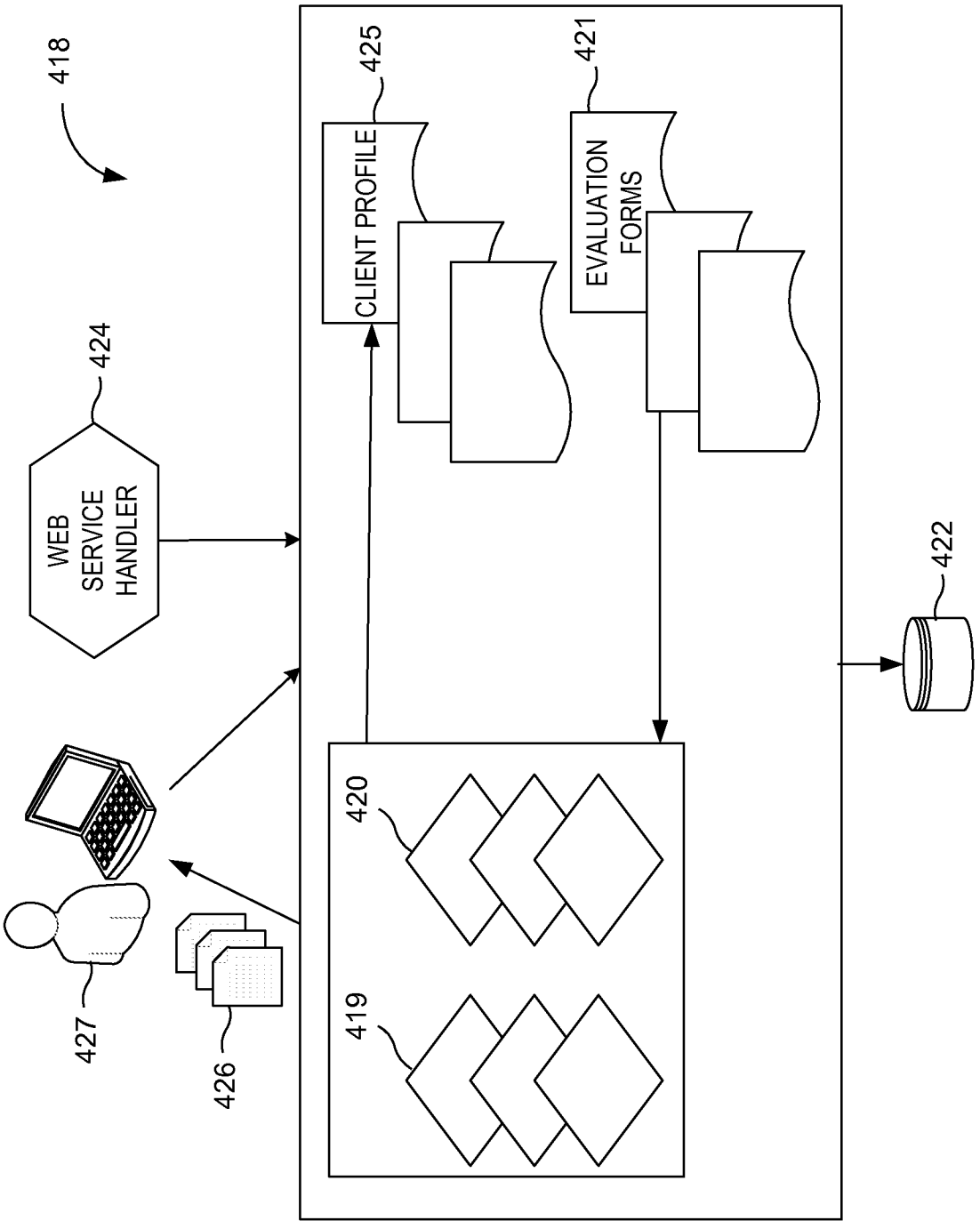
418
424
WEB SERVICE HANDLER
425
CLIENT PROFILE
421
EVALUATION FORMS
422
420
419
427
426

FIG. 4

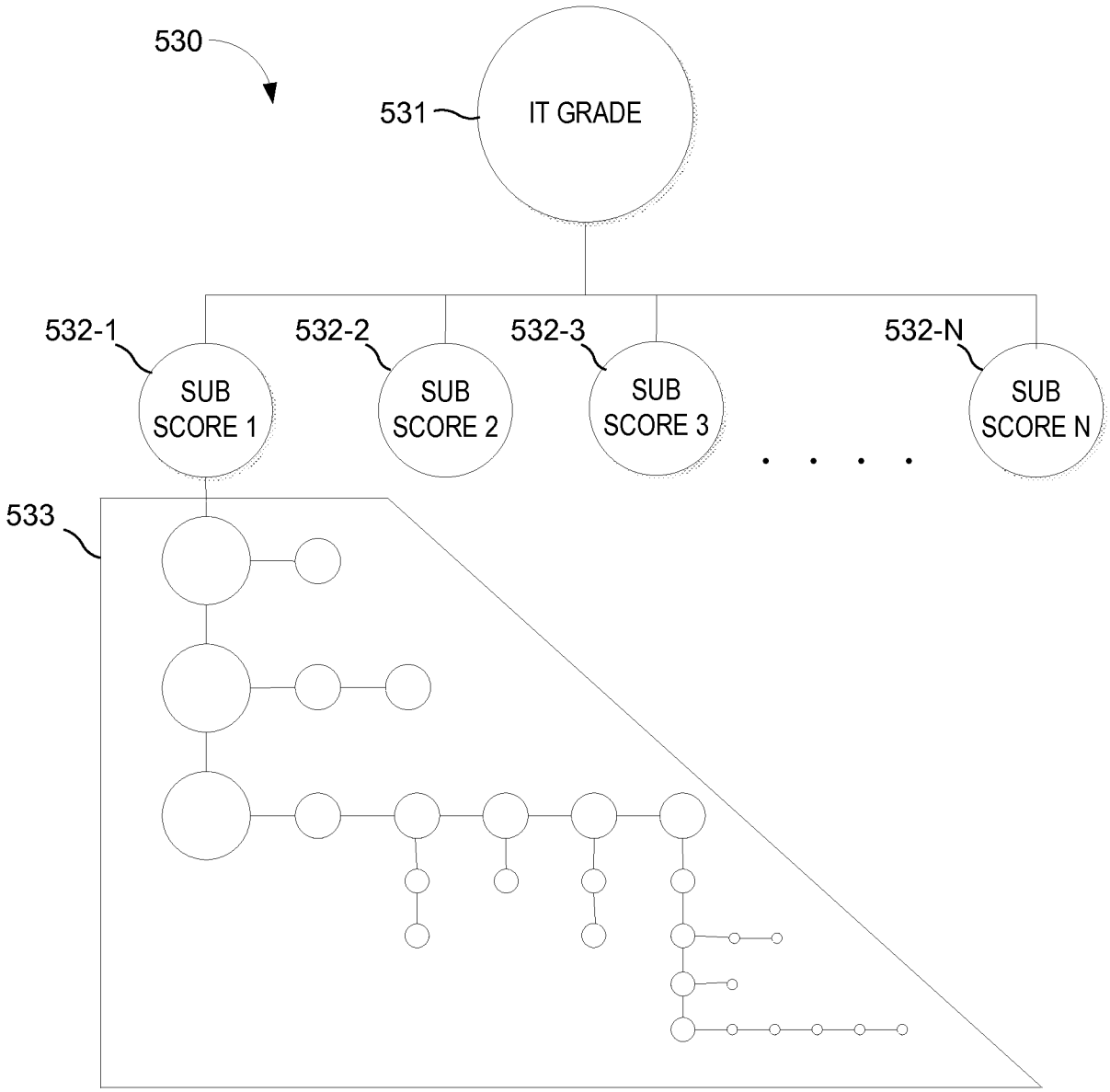
530
531
IT GRADE
532-1
SUB SCORE 1
532-2
SUB SCORE 2
532-3
SUB SCORE 3
532-N
SUB SCORE N
533

FIG. 5

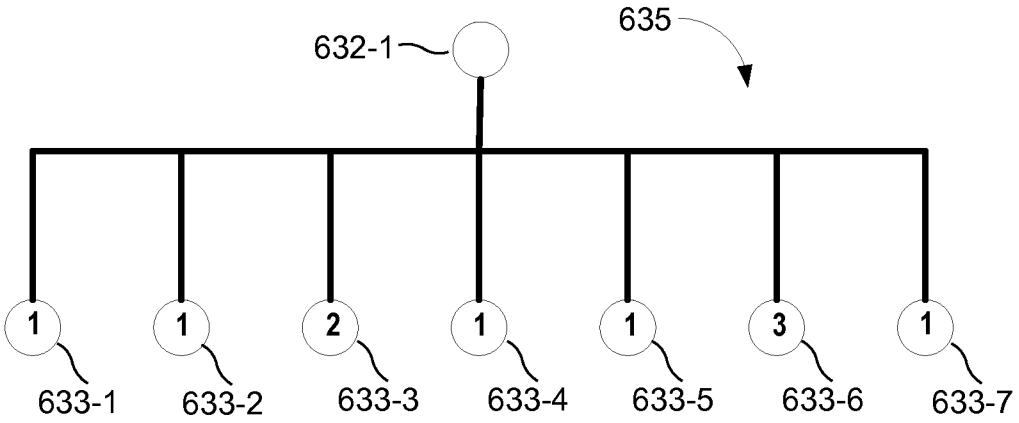

FIG. 6

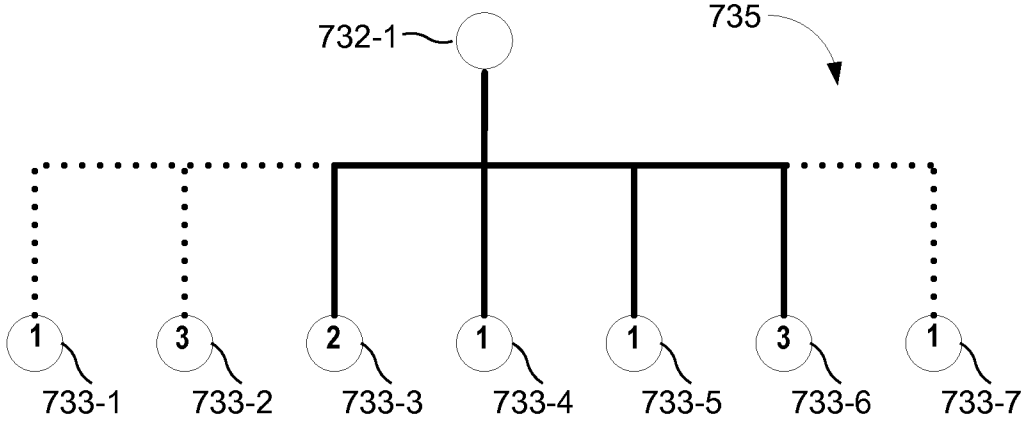

FIG. 7

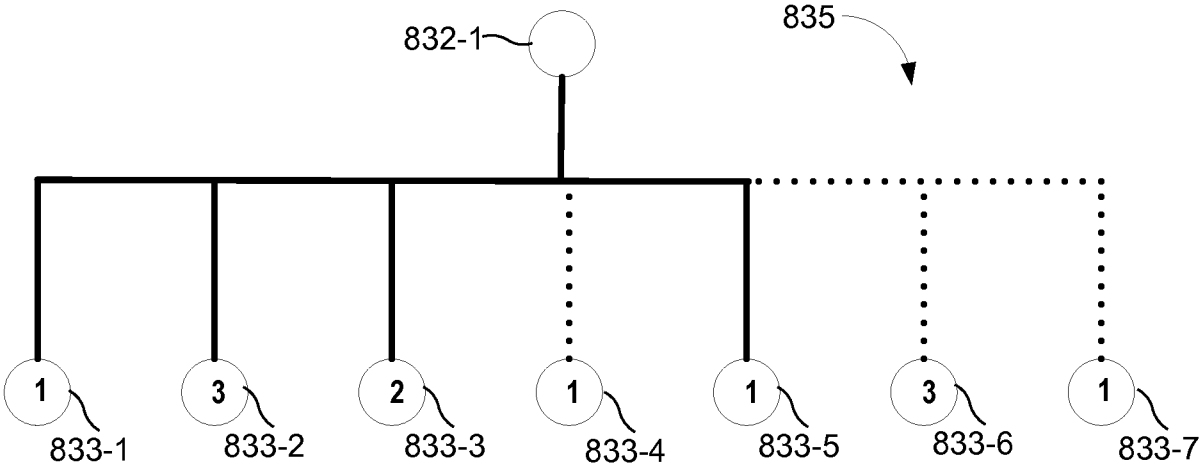

FIG. 8

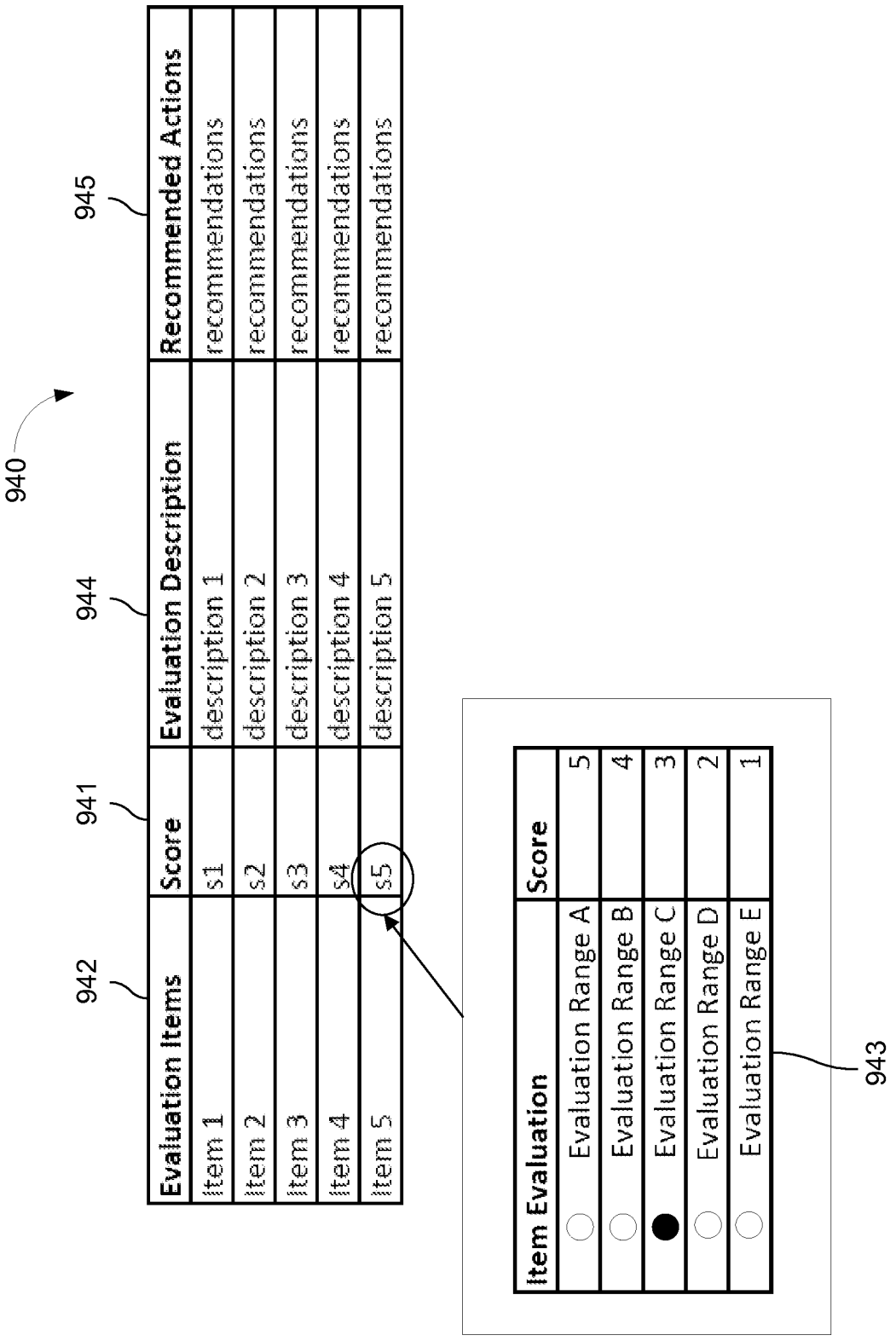
940
941
942
943
944
945
Evaluation Items
Score
Evaluation Description
Recommended Actions
item 1
s1
description 1
recommendations
item 2
s2
description 2
recommendations
item 3
s3
description 3
recommendations
item 4
s4
description 4
recommendations
item 5
s5
description 5
recommendations
Item Evaluation
Score
Evaluation Range A
5
Evaluation Range B
4
Evaluation Range C
3
Evaluation Range D
2
Evaluation Range E
1

FIG. 9

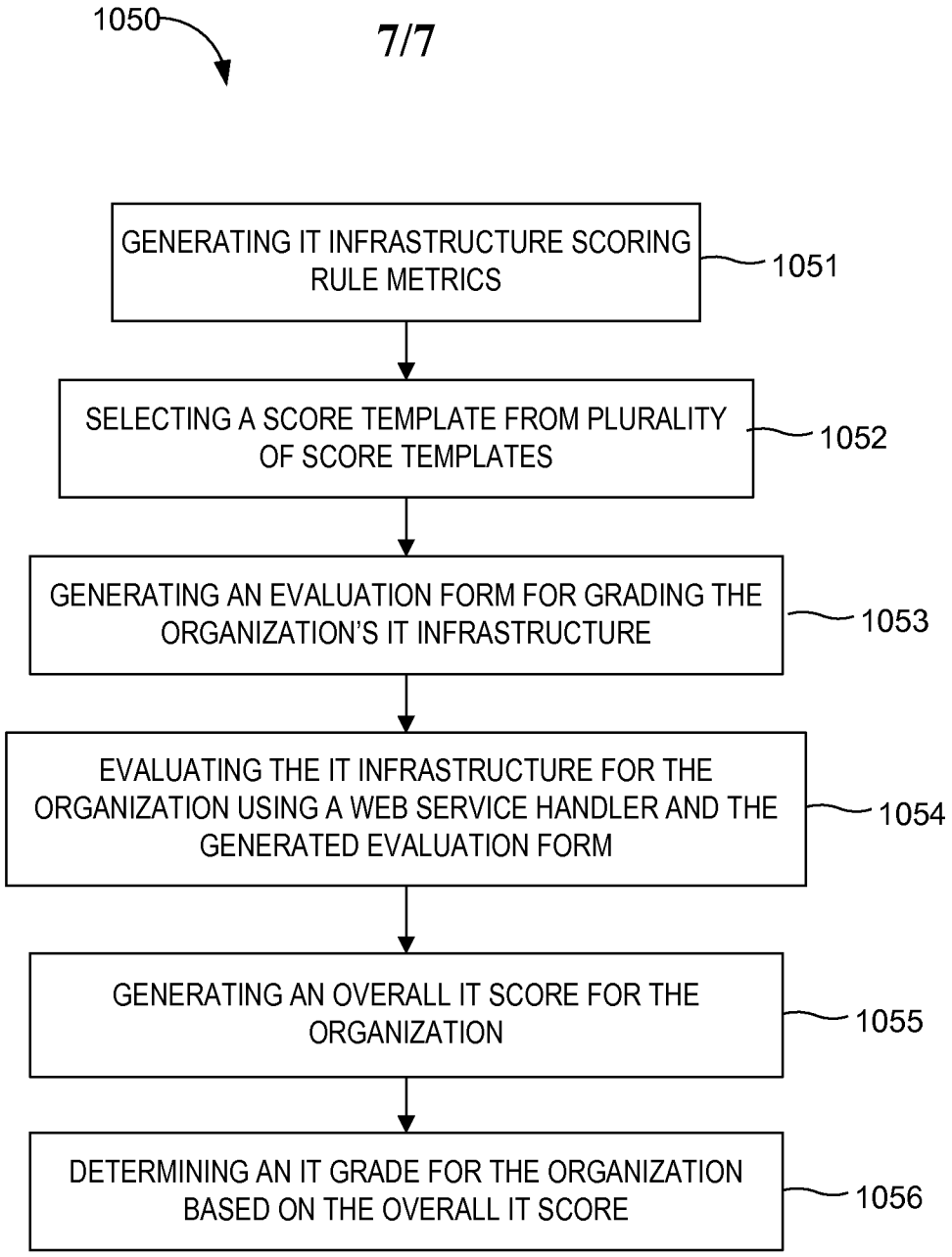
1050
GENERATING IT INFRASTRUCTURE SCORING RULE METRICS
1051
SELECTING A SCORE TEMPLATE FROM PLURALITY OF SCORE TEMPLATES
1052
GENERATING AN EVALUATION FORM FOR GRADING THE ORGANIZATION'S IT INFRASTRUCTURE
1053
EVALUATING THE IT INFRASTRUCTURE FOR THE ORGANIZATION USING A WEB SERVICE HANDLER AND THE GENERATED EVALUATION FORM
1054
GENERATING AN OVERALL IT SCORE FOR THE ORGANIZATION
1055
DETERMINING AN IT GRADE FOR THE ORGANIZATION BASED ON THE OVERALL IT SCORE
1056

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/047584

A. CLASSIFICATION OF SUBJECT MATTER

G06F 17/00(2006.01)i

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)
G06F 17/00; G06F 15/00; G06Q 40/00; G06Q 10/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean utility models and applications for utility models
Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: IT infrastructure, grading system, web service handler, and similar terms.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2011-0313949 Al (FRED BISHOP et al.) 22 December 2011 See paragraphs [0017] and [0030] ; claim 22; and figure 2B.	1-15
A	US 2007-0174168 Al (ROBERT C. PITTENGER) 26 July 2007 See paragraph [0011] and claim 1.	1-15
A	US 2010-0125474 Al (J. SCOTT HARMON et al.) 20 May 2010 See paragraphs [0004] and [0063]- [0064] ; and figure 10.	1-15
A	US 2009-0327024 Al (STEVEN E. NIELSEN et al.) 31 December 2009 See paragraphs [0018] and **[0199H0217]** ; and figure 18.	1-15
A	US 2013-0166250 Al (NAGARAJAN VIJAYKUMAR et al.) 27 June 2013 See paragraphs [0006] and [0026]- [0036] ; and figure 2.	1-15

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"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 applicationbut cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"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
28 February 2015 (28.02.2015)	**02 March 2015 (02.03.2015)**

Name and mailing address of the ISA/KR
International Application Division
Korean Intellectual Property Office
189 **Cheongsa-ro, Seo-gu, Daejeon Metropolitan City, 302-701,**
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Facsimile No. ++82 42 472 7140

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Telephone No. +82-42-481-8528

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		CA 2710189 C	08/05/2012
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		us 2009-0204625 Al	13/08/2009
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2014/047584

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