US 20030200136A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2003/0200136 A1**

Dewar (43) **Pub. Date: Oct. 23, 2003**

(54) **COMPUTER-IMPLEMENTED SYSTEM FOR HUMAN RESOURCES MANAGEMENT**

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(21) Appl. No.: **10/410,270**

(22) Filed: **Apr. 10, 2003**

Related U.S. Application Data

(63) Continuation of application No. 09/878,245, filed on Jun. 12, 2001.

(60) Provisional application No. 60/211,044, filed on Jun. 12, 2000.

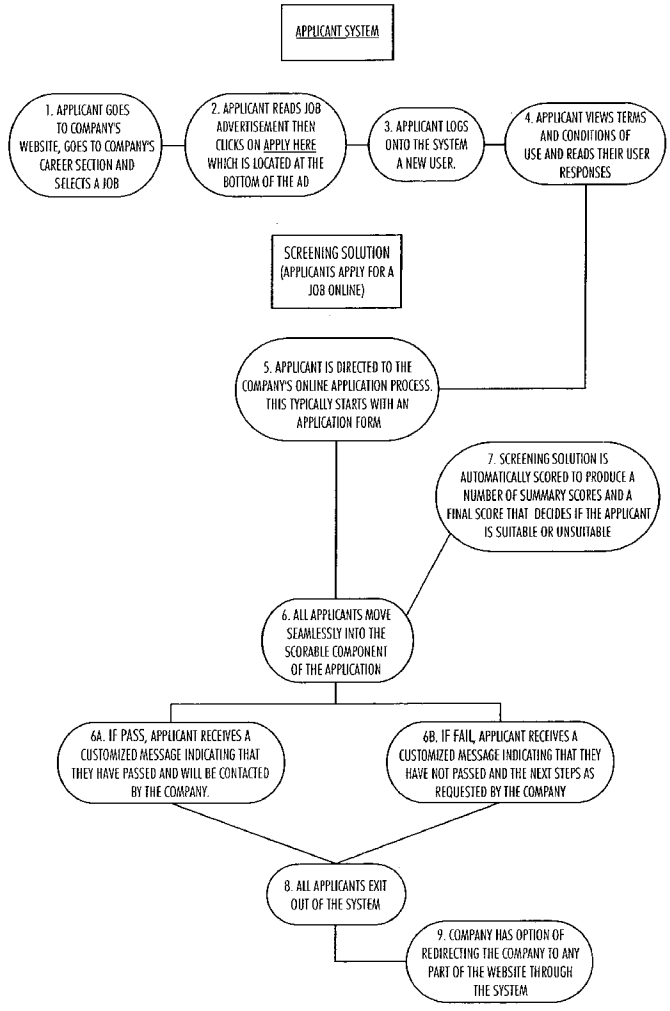
Publication Classification

(51) **Int. Cl.**[7] **G06F 17/60**

(52) **U.S. Cl.** **705/11**

(57) **ABSTRACT**

A system and method for testing and/or evaluating employees or potential employees is disclosed. A computer arranges a plurality of applicants in a stack ranked table. The table may rank or re-rank applicants against each other, from best to worst, after successive screening, selecting, and/or interviewing stages for a particular job. Performance evaluations of hired workers may be fed back to the computer for adjusting the system and method. Competencies shown to be predictive of successful performance of a given type of job are tested for at various stages in an online testing system.



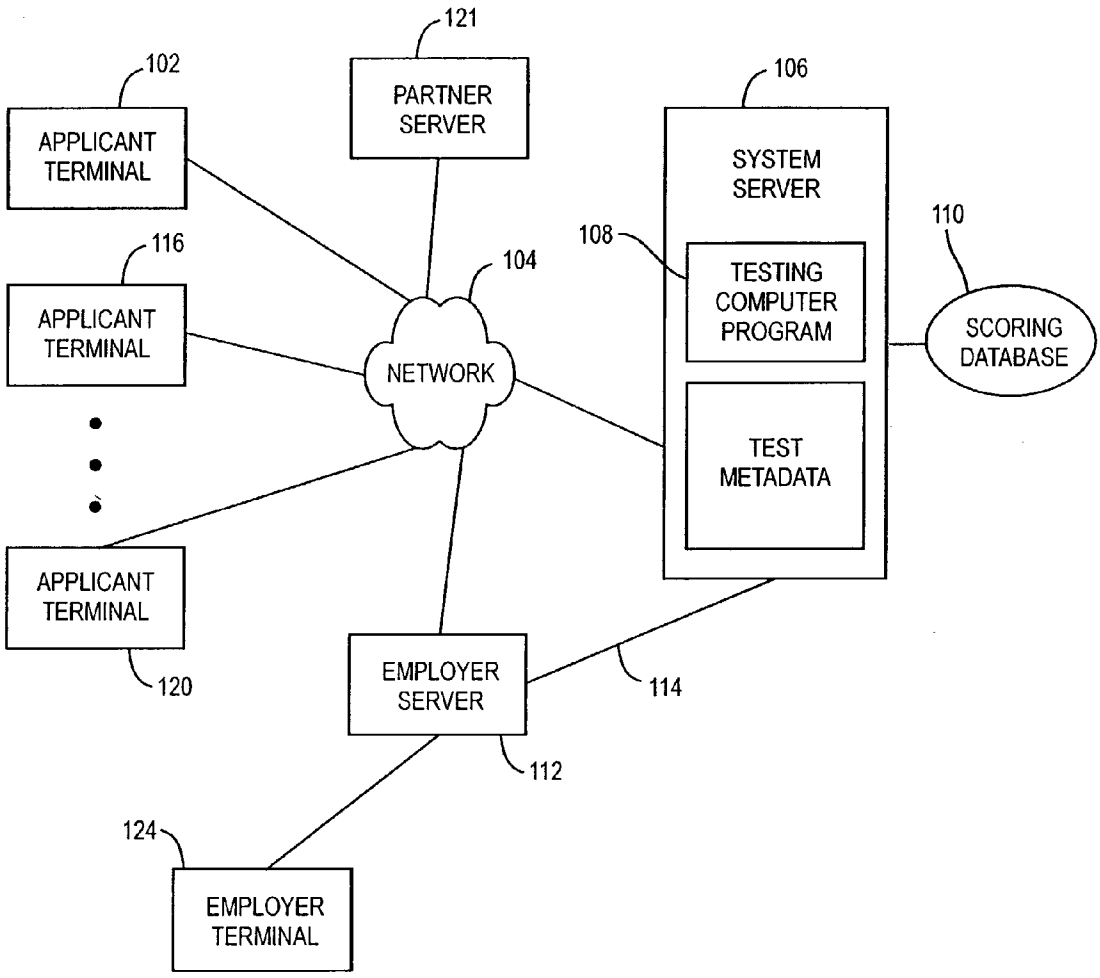

121
PARTNER SERVER
102
APPLICANT TERMINAL
106
SYSTEM SERVER
110
108
TESTING COMPUTER PROGRAM
SCORING DATABASE
116
APPLICANT TERMINAL
104
NETWORK
TEST METADATA
APPLICANT TERMINAL
120
EMPLOYER SERVER
114
112
124
EMPLOYER TERMINAL

Fig. 1

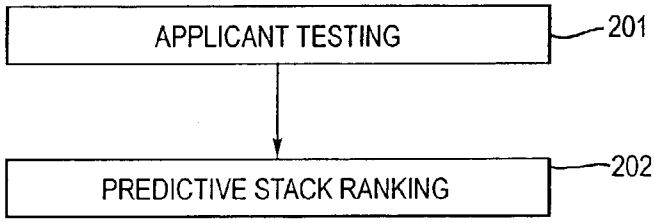


Fig. 2

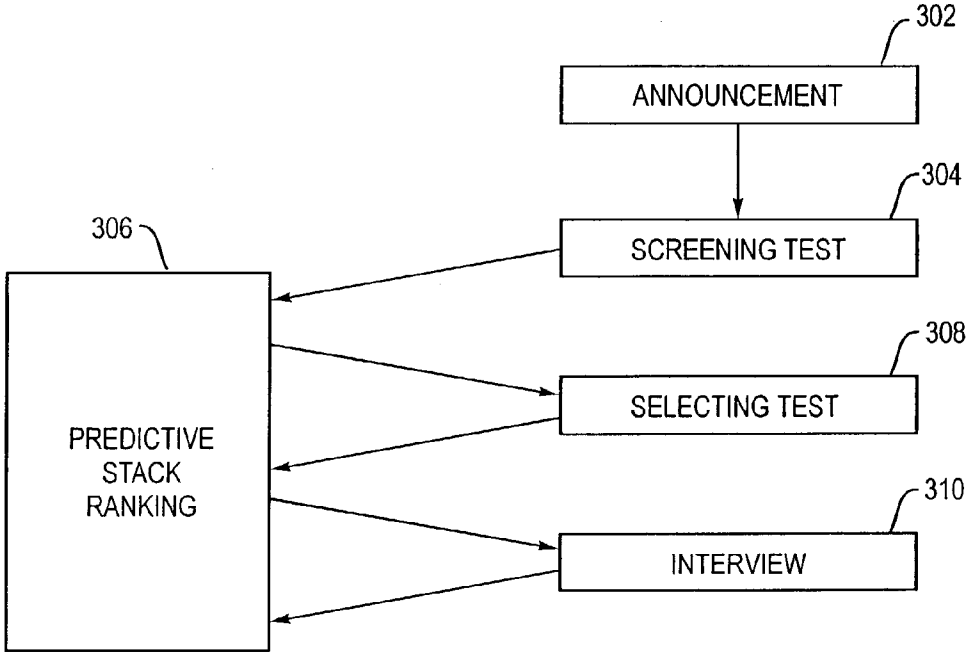


Fig. 3

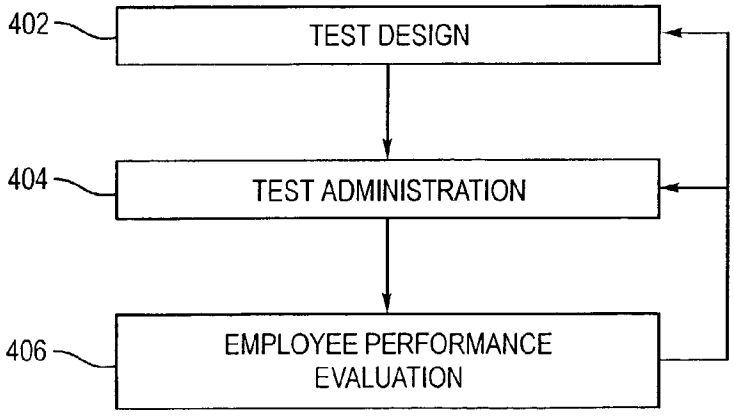


Fig. 4

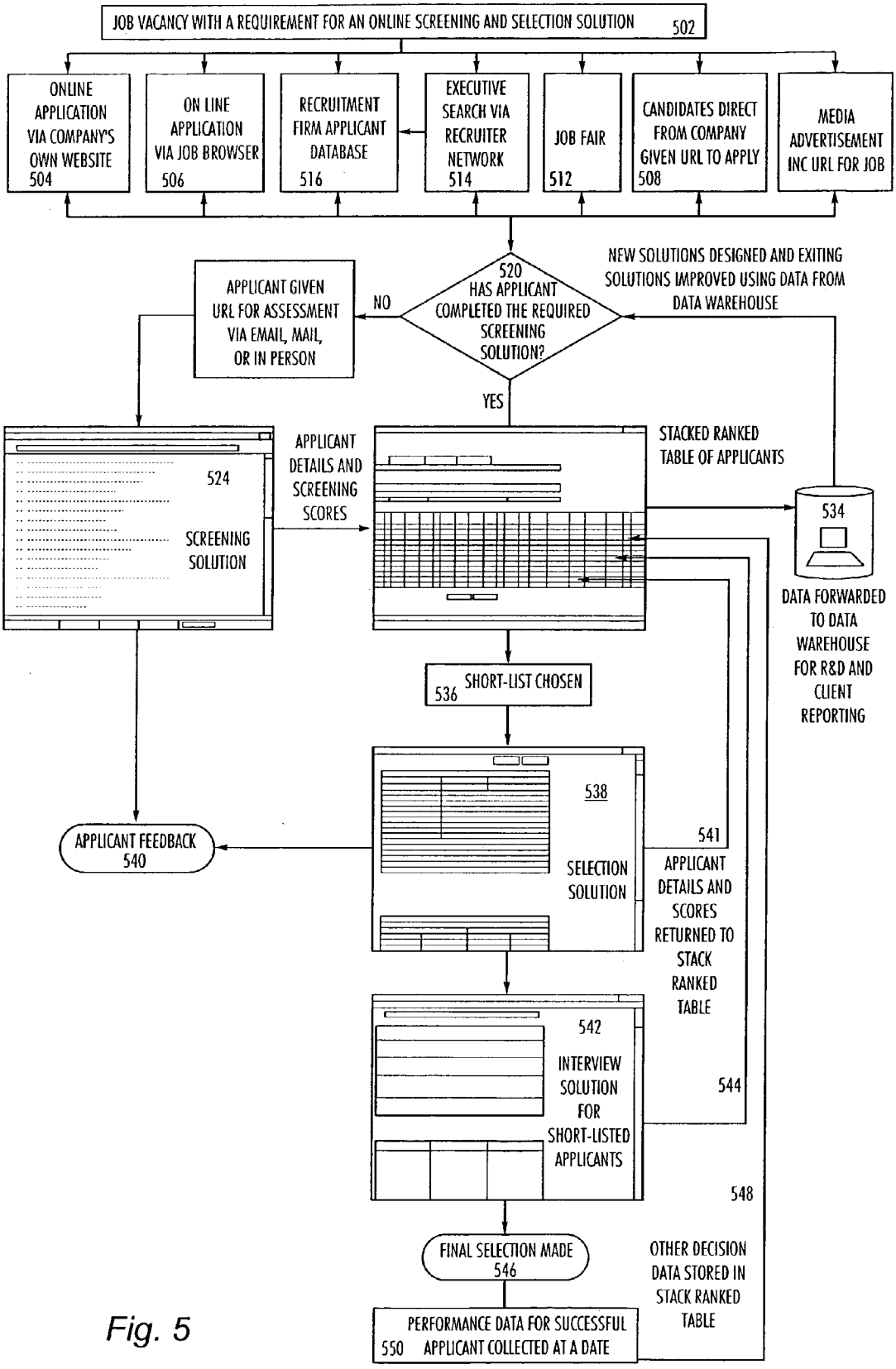
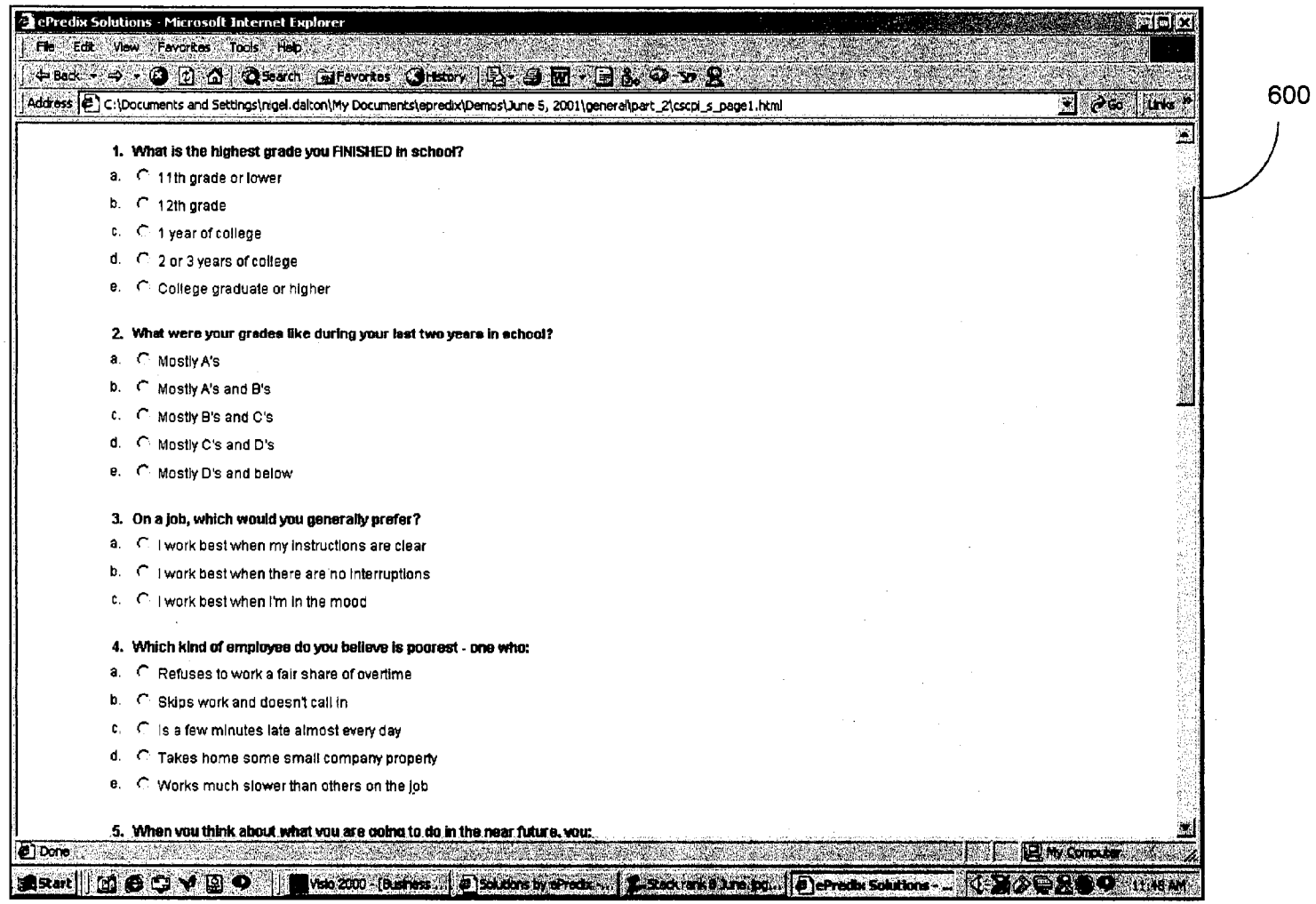

JOB VACANCY WITH A REQUIREMENT FOR AN ONLINE SCREENING AND SELECTION SOLUTION 502
ONLINE APPLICATION VIA COMPANY'S OWN WEBSITE 504
ON LINE APPLICATION VIA JOB BROWSER 506
RECRUITMENT FIRM APPLICANT DATABASE 516
EXECUTIVE SEARCH VIA RECRUITER NETWORK 514
JOB FAIR 512
CANDIDATES DIRECT FROM COMPANY GIVEN URL TO APPLY 508
MEDIA ADVERTISEMENT INC URL FOR JOB
520 HAS APPLICANT COMPLETED THE REQUIRED SCREENING SOLUTION?
NO
APPLICANT GIVEN URL FOR ASSESSMENT VIA EMAIL, MAIL, OR IN PERSON
NEW SOLUTIONS DESIGNED AND EXITING SOLUTIONS IMPROVED USING DATA FROM DATA WAREHOUSE
YES
524
SCREENING SOLUTION
APPLICANT DETAILS AND SCREENING SCORES
STACKED RANKED TABLE OF APPLICANTS
534
DATA FORWARDED TO DATA WAREHOUSE FOR R&D AND CLIENT REPORTING
536 SHORT-LIST CHOSEN
538
SELECTION SOLUTION
APPLICANT FEEDBACK 540
541
APPLICANT DETAILS AND SCORES RETURNED TO STACK RANKED TABLE
542
INTERVIEW SOLUTION FOR SHORT-LISTED APPLICANTS
544
548
FINAL SELECTION MADE 546
OTHER DECISION DATA STORED IN STACK RANKED TABLE
PERFORMANCE DATA FOR SUCCESSFUL APPLICANT COLLECTED AT A DATE 550

Fig. 5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ePredix Solutions - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address C:\Documents and Settings\nigel.dalton\My Documents\epredix\Demos\June 5, 2001\general\part_2\cscpi_s_page1.html
Go Links
1. What is the highest grade you FINISHED in school?
a. 11th grade or lower
b. 12th grade
c. 1 year of college
d. 2 or 3 years of college
e. College graduate or higher
2. What were your grades like during your last two years in school?
a. Mostly A's
b. Mostly A's and B's
c. Mostly B's and C's
d. Mostly C's and D's
e. Mostly D's and below
3. On a job, which would you generally prefer?
a. I work best when my instructions are clear
b. I work best when there are no interruptions
c. I work best when I'm in the mood
4. Which kind of employee do you believe is poorest - one who:
a. Refuses to work a fair share of overtime
b. Skips work and doesn't call in
c. Is a few minutes late almost every day
d. Takes home some small company property
e. Works much slower than others on the job
5. When you think about what you are going to do in the near future, you:
Done
My Computer
Start
Visio 2000 - [Business...
Solutions by ePredix -...
Stack rank 8 June.jpg...
ePredix Solutions - ...
11:48 AM

Fig. 6

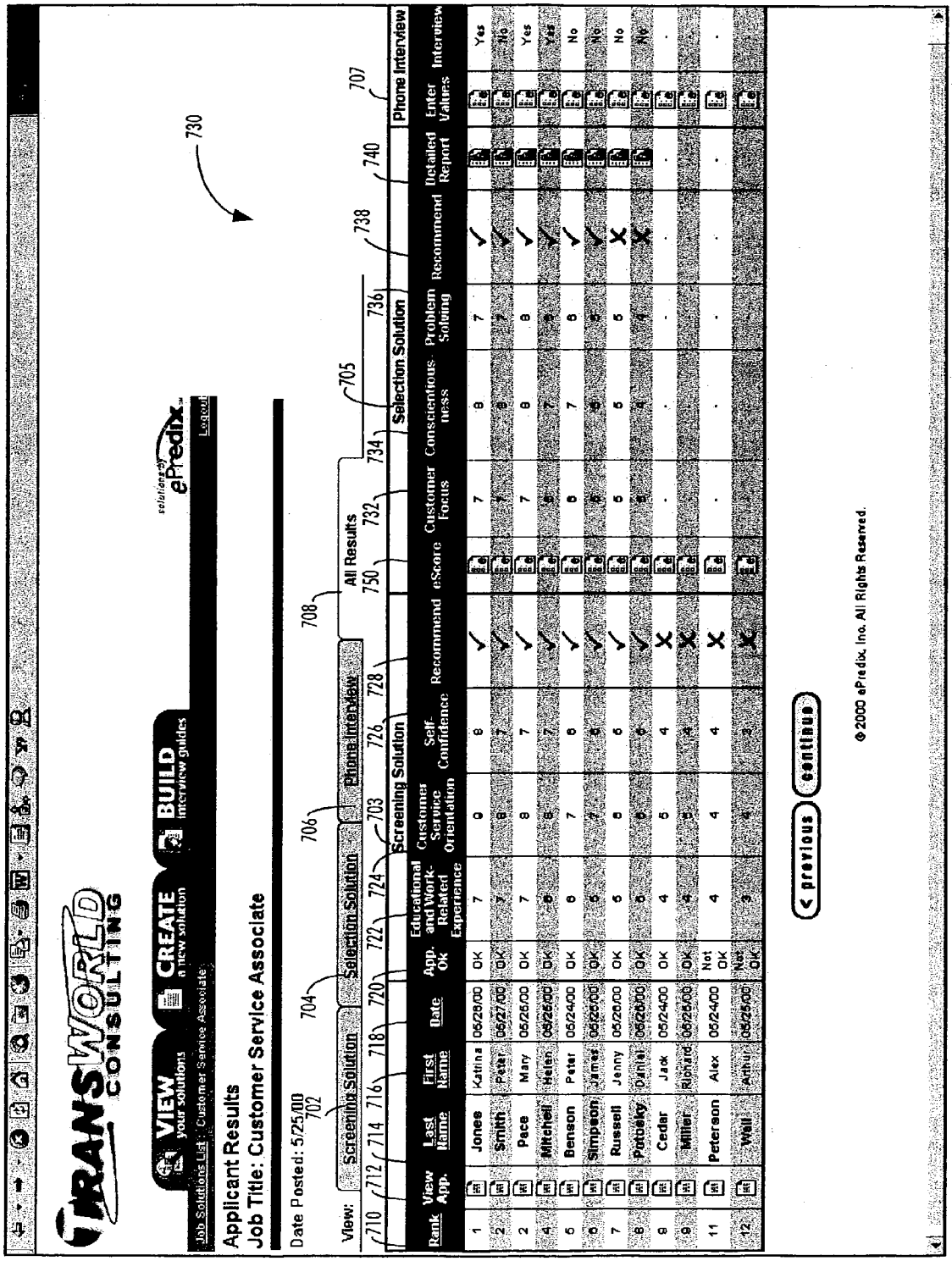
TRANSWORLD CONSULTING
VIEW your solutions
CREATE a new solution
BUILD interview guides
solutions by ePredix
Logout
Job Solutions List | Customer Service Associate
Applicant Results
Job Title: Customer Service Associate
Date Posted: 5/25/00
View: Screening Solution | Selection Solution | Phone Interview
All Results
Screening Solution
Selection Solution
Phone Interview
Rank | View App. | Last Name | First Name | Date | App. Ok | Educational and Work-Related Experience | Customer Service Orientation | Self-Confidence | Recommend | eScore | Customer Focus | Conscientiousness | Problem Solving | Recommend | Detailed Report | Enter Values | Interview
1 Jones Kathina 05/28/00 OK 7 9 8 ✓ 7 7 8 7 ✓ Yes
2 Smith Peter 05/27/00 OK 7 8 7 ✓ 7 7 8 7 ✓ No
2 Pace Mary 05/26/00 OK 7 8 7 ✓ 7 7 8 8 ✓ Yes
4 Mitchell Helen 05/25/00 OK 6 8 7 ✓ 6 7 7 8 ✓ Yes
5 Benson Peter 05/24/00 OK 6 7 6 ✓ 6 7 6 6 ✓ No
6 Simpson James 05/23/00 OK 5 7 6 ✓ 6 6 6 6 ✓ No
7 Russell Jenny 05/22/00 OK 5 6 6 ✓ 6 6 6 5 ✗ No
8 Potosky Daniel 05/21/00 OK 5 6 6 ✓ 5 6 4 4 ✗ No
8 Cedar Jack 05/24/00 OK 4 5 4 ✗ - - - - - -
9 Miller Richard 05/25/00 OK 4 5 4 ✗ - - - - - -
11 Peterson Alex 05/24/00 Not OK 4 4 4 ✗ - - - - - -
12 Wall Arthur 05/25/00 Not OK 3 4 3 ✗ - - - - - -
previous
continue
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Fig. 7

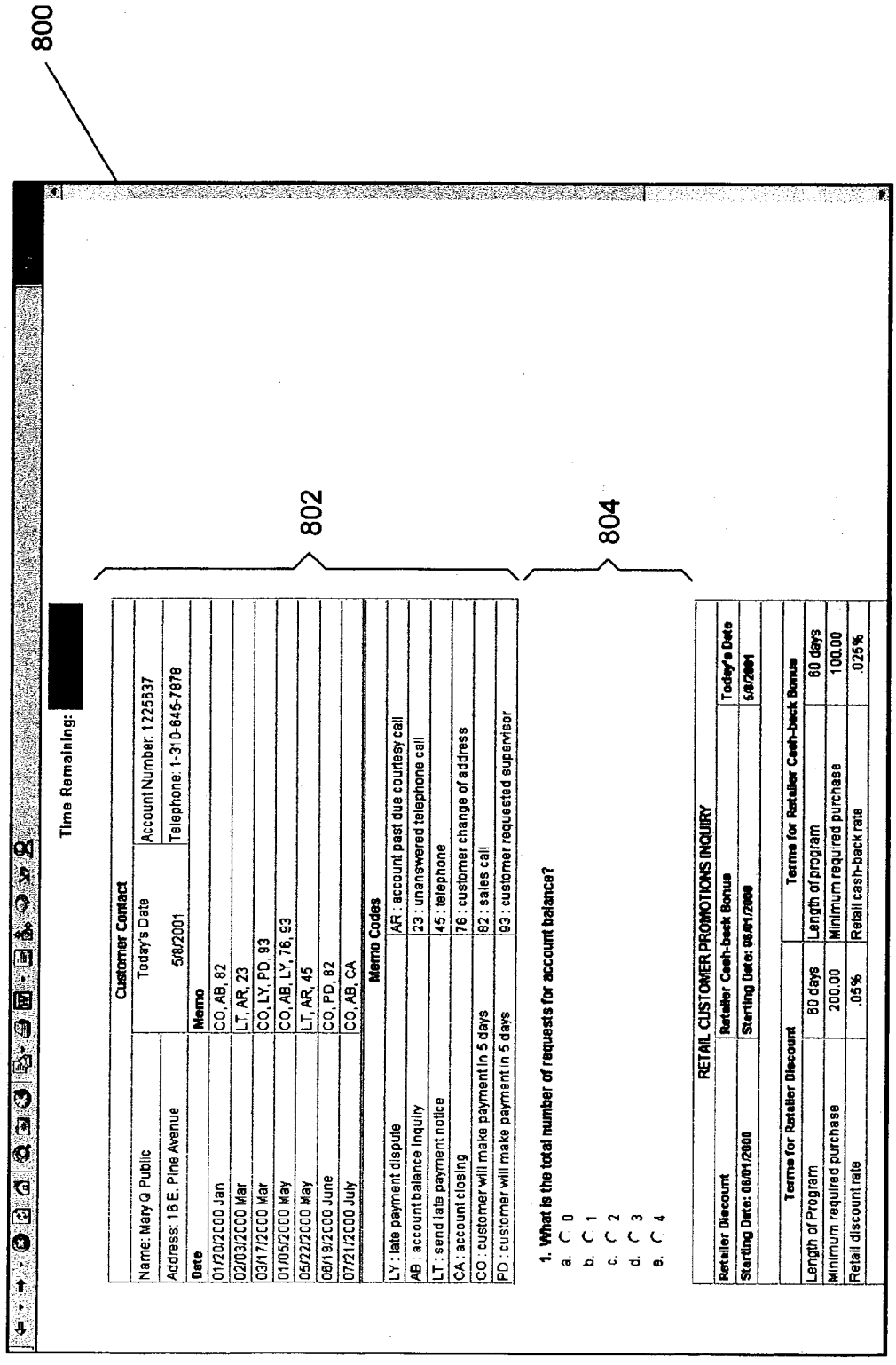
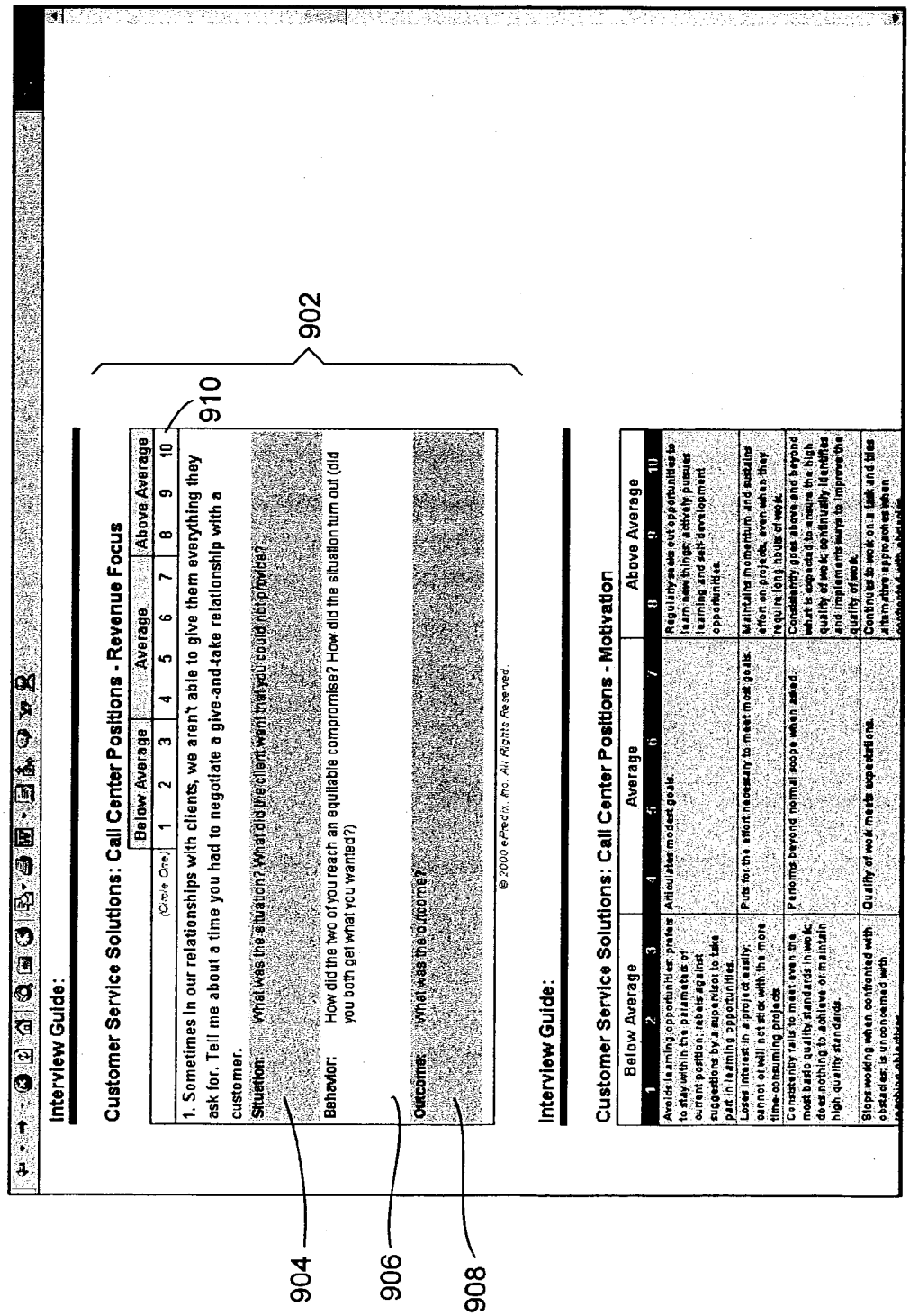

800
Time Remaining:
802
804
Customer Contact
Name: Mary Q Public
Today's Date
Account Number: 1225837
Address: 16 E. Pine Avenue
5/8/2001
Telephone: 1-310-645-7878
Date
Memo
01/20/2000 Jan
CO, AB, 82
02/03/2000 Mar
LT, AR, 23
03/17/2000 Mar
CO, LY, PD, 93
01/05/2000 May
CO, AB, LY, 76, 93
05/22/2000 May
LT, AR, 45
06/19/2000 June
CO, PD, 82
07/21/2000 July
CO, AB, CA
Memo Codes
LY : late payment dispute
AR : account past due courtesy call
AB : account balance inquiry
23 : unanswered telephone call
LT : send late payment notice
45 : telephone
CA : account closing
76 : customer change of address
CO : customer will make payment in 5 days
82 : sales call
PD : customer will make payment in 5 days
93 : customer requested supervisor
1. What is the total number of requests for account balance?
a. 0
b. 1
c. 2
d. 3
e. 4
RETAIL CUSTOMER PROMOTIONS INQUIRY
Retailer Discount
Retailer Cash-back Bonus
Today's Date
Starting Date: 06/01/2000
Starting Date: 06/01/2000
5/8/2001
Terms for Retailer Discount
Length of Program
60 days
Minimum required purchase
200.00
Retail discount rate
.05%
Terms for Retailer Cash-back Bonus
Length of program
60 days
Minimum required purchase
100.00
Retail cash-back rate
.025%

Fig. 8


Interview Guide:
Customer Service Solutions: Call Center Positions - Revenue Focus
Below Average
Average
Above Average
(Circle One)
1 2 3 4 5 6 7 8 9 10
1. Sometimes in our relationships with clients, we aren't able to give them everything they ask for. Tell me about a time you had to negotiate a give-and-take relationship with a customer.
Situation: What was the situation? What did the client want that you could not provide?
Behavior: How did the two of you reach an equitable compromise? How did the situation turn out (did you both get what you wanted?)
Outcome: What was the outcome?
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902
910
Interview Guide:
Customer Service Solutions: Call Center Positions - Motivation
Below Average
Average
Above Average
1 2 3 4 5 6 7 8 9 10
Avoids learning opportunities; prefers to stay within the parameters of current position; rebels against suggestions by a supervisor to take part in learning opportunities.
Articulates modest goals.
Regularly seeks out opportunities to learn; seeks things; actively pursues learning and self-development opportunities.
Loses interest in a project easily; cannot or will not stick with the more time-consuming projects.
Puts forth the effort necessary to meet most goals.
Maintains momentum and positive effort on projects, even when they require long hours of work.
Consistently fails to meet even the most basic quality standards in work; does nothing to achieve or maintain high quality standards.
Performs beyond normal scope when asked.
Consistently goes above and beyond what is expected to ensure the high quality of work; continually identifies and implements ways to improve the quality of work.
Stops working when confronted with obstacles; is unconcerned with
Quality of work meets expectations.
Continues to work on a task and tries alternative approaches when
904
906
908

Fig. 9

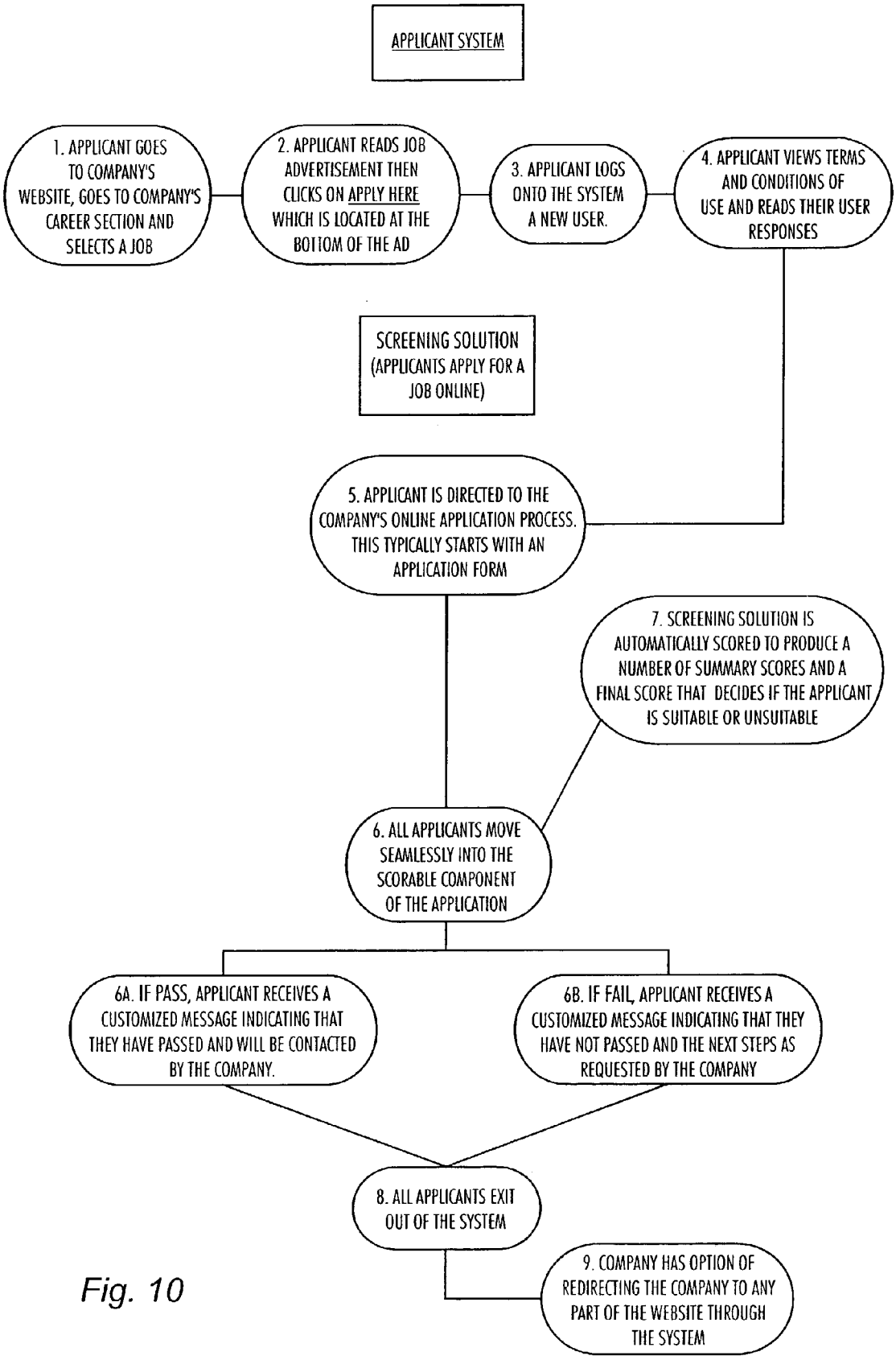
APPLICANT SYSTEM
1. APPLICANT GOES TO COMPANY'S WEBSITE, GOES TO COMPANY'S CAREER SECTION AND SELECTS A JOB
2. APPLICANT READS JOB ADVERTISEMENT THEN CLICKS ON APPLY HERE WHICH IS LOCATED AT THE BOTTOM OF THE AD
3. APPLICANT LOGS ONTO THE SYSTEM A NEW USER.
4. APPLICANT VIEWS TERMS AND CONDITIONS OF USE AND READS THEIR USER RESPONSES
SCREENING SOLUTION (APPLICANTS APPLY FOR A JOB ONLINE)
5. APPLICANT IS DIRECTED TO THE COMPANY'S ONLINE APPLICATION PROCESS. THIS TYPICALLY STARTS WITH AN APPLICATION FORM
7. SCREENING SOLUTION IS AUTOMATICALLY SCORED TO PRODUCE A NUMBER OF SUMMARY SCORES AND A FINAL SCORE THAT DECIDES IF THE APPLICANT IS SUITABLE OR UNSUITABLE
6. ALL APPLICANTS MOVE SEAMLESSLY INTO THE SCORABLE COMPONENT OF THE APPLICATION
6A. IF PASS, APPLICANT RECEIVES A CUSTOMIZED MESSAGE INDICATING THAT THEY HAVE PASSED AND WILL BE CONTACTED BY THE COMPANY.
6B. IF FAIL, APPLICANT RECEIVES A CUSTOMIZED MESSAGE INDICATING THAT THEY HAVE NOT PASSED AND THE NEXT STEPS AS REQUESTED BY THE COMPANY
8. ALL APPLICANTS EXIT OUT OF THE SYSTEM
9. COMPANY HAS OPTION OF REDIRECTING THE COMPANY TO ANY PART OF THE WEBSITE THROUGH THE SYSTEM

Fig. 10

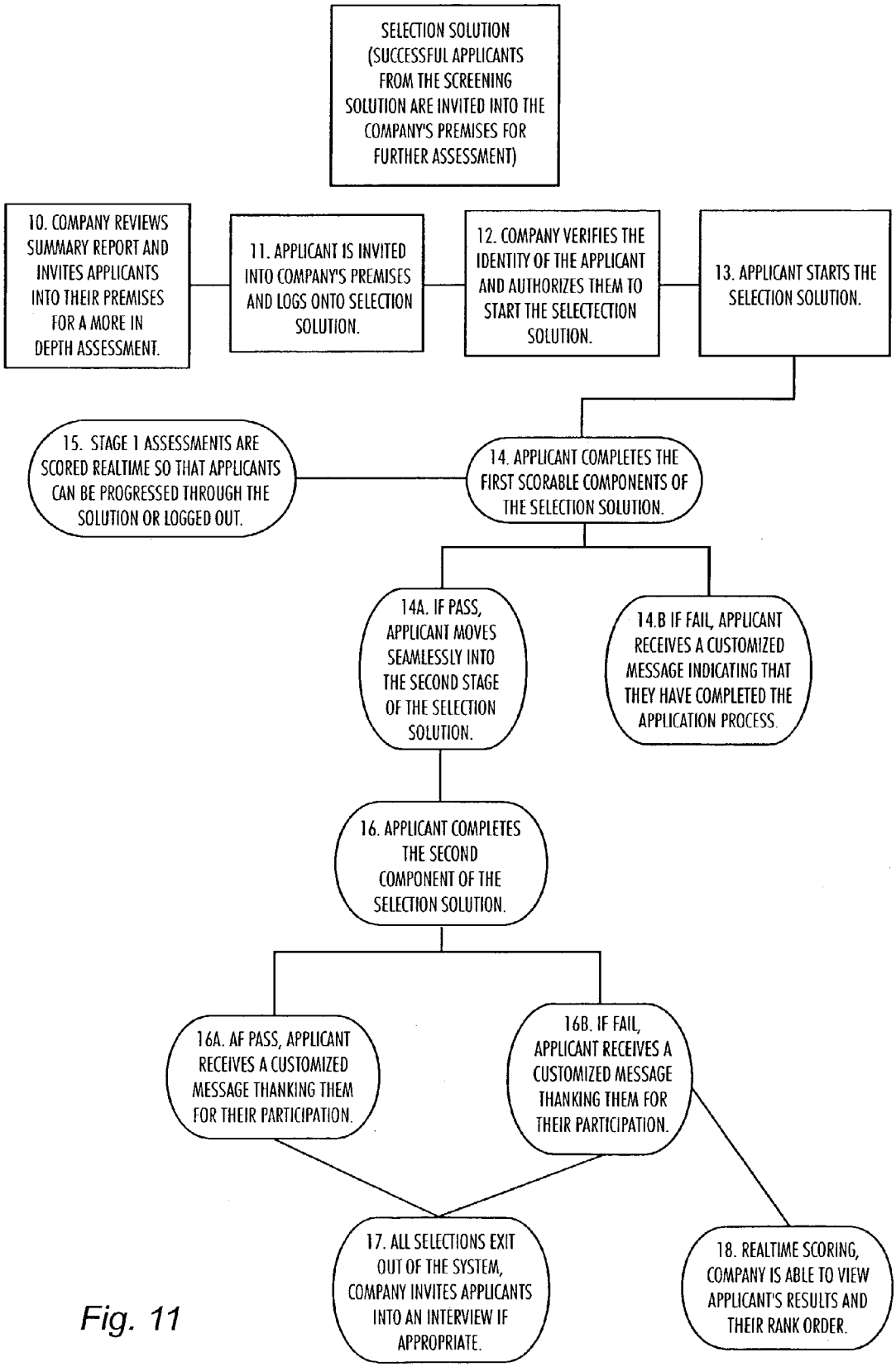
SELECTION SOLUTION (SUCCESSFUL APPLICANTS FROM THE SCREENING SOLUTION ARE INVITED INTO THE COMPANY'S PREMISES FOR FURTHER ASSESSMENT)
10. COMPANY REVIEWS SUMMARY REPORT AND INVITES APPLICANTS INTO THEIR PREMISES FOR A MORE IN DEPTH ASSESSMENT.
11. APPLICANT IS INVITED INTO COMPANY'S PREMISES AND LOGS ONTO SELECTION SOLUTION.
12. COMPANY VERIFIES THE IDENTITY OF THE APPLICANT AND AUTHORIZES THEM TO START THE SELECTECTION SOLUTION.
13. APPLICANT STARTS THE SELECTION SOLUTION.
15. STAGE 1 ASSESSMENTS ARE SCORED REALTIME SO THAT APPLICANTS CAN BE PROGRESSED THROUGH THE SOLUTION OR LOGGED OUT.
14. APPLICANT COMPLETES THE FIRST SCORABLE COMPONENTS OF THE SELECTION SOLUTION.
14A. IF PASS, APPLICANT MOVES SEAMLESSLY INTO THE SECOND STAGE OF THE SELECTION SOLUTION.
14.B IF FAIL, APPLICANT RECEIVES A CUSTOMIZED MESSAGE INDICATING THAT THEY HAVE COMPLETED THE APPLICATION PROCESS.
16. APPLICANT COMPLETES THE SECOND COMPONENT OF THE SELECTION SOLUTION.
16A. AF PASS, APPLICANT RECEIVES A CUSTOMIZED MESSAGE THANKING THEM FOR THEIR PARTICIPATION.
16B. IF FAIL, APPLICANT RECEIVES A CUSTOMIZED MESSAGE THANKING THEM FOR THEIR PARTICIPATION.
17. ALL SELECTIONS EXIT OUT OF THE SYSTEM, COMPANY INVITES APPLICANTS INTO AN INTERVIEW IF APPROPRIATE.
18. REALTIME SCORING, COMPANY IS ABLE TO VIEW APPLICANT'S RESULTS AND THEIR RANK ORDER.

Fig. 11

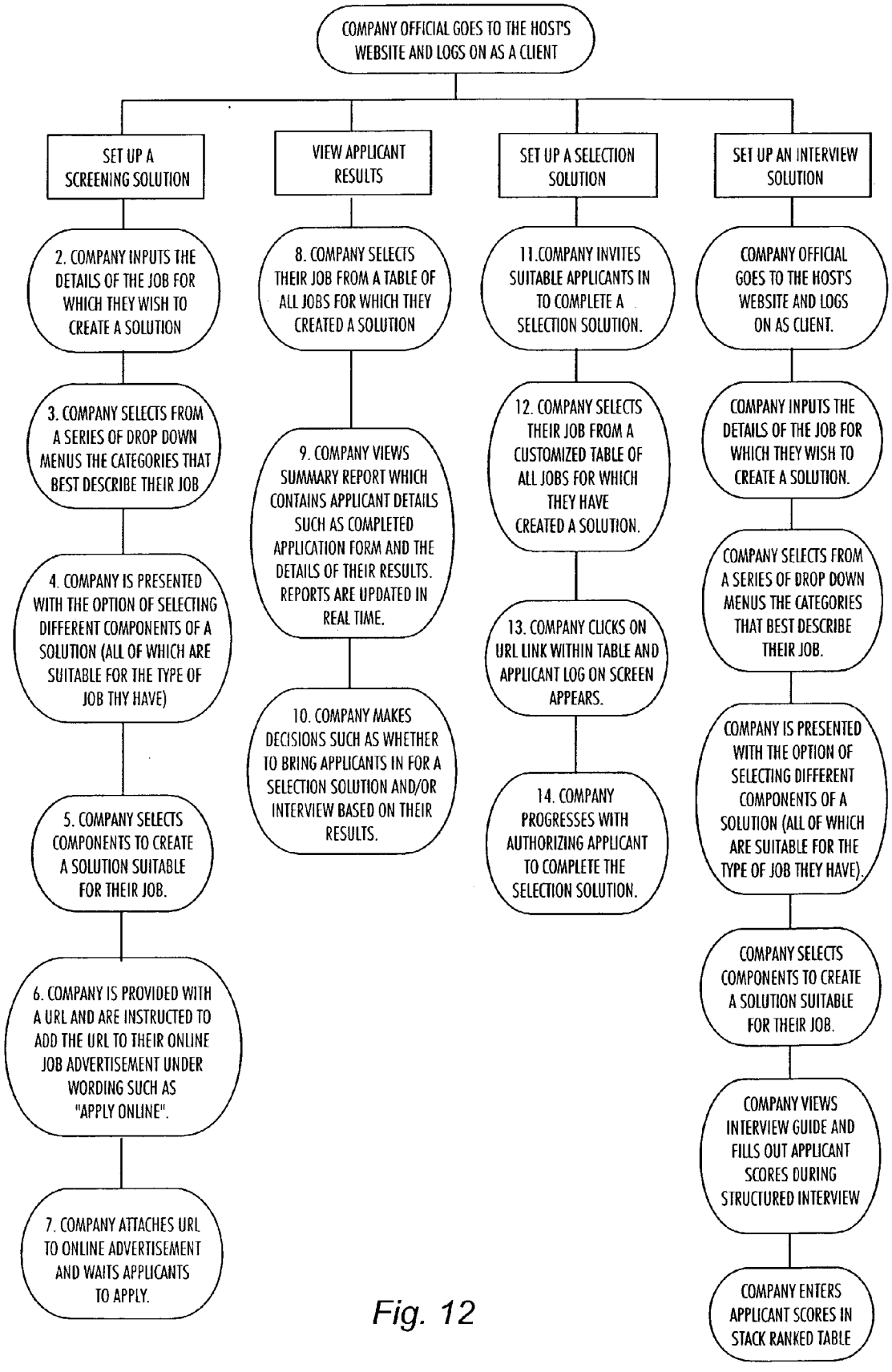
COMPANY OFFICIAL GOES TO THE HOST'S WEBSITE AND LOGS ON AS A CLIENT
SET UP A SCREENING SOLUTION
VIEW APPLICANT RESULTS
SET UP A SELECTION SOLUTION
SET UP AN INTERVIEW SOLUTION
2. COMPANY INPUTS THE DETAILS OF THE JOB FOR WHICH THEY WISH TO CREATE A SOLUTION
3. COMPANY SELECTS FROM A SERIES OF DROP DOWN MENUS THE CATEGORIES THAT BEST DESCRIBE THEIR JOB
4. COMPANY IS PRESENTED WITH THE OPTION OF SELECTING DIFFERENT COMPONENTS OF A SOLUTION (ALL OF WHICH ARE SUITABLE FOR THE TYPE OF JOB THY HAVE)
5. COMPANY SELECTS COMPONENTS TO CREATE A SOLUTION SUITABLE FOR THEIR JOB.
6. COMPANY IS PROVIDED WITH A URL AND ARE INSTRUCTED TO ADD THE URL TO THEIR ONLINE JOB ADVERTISEMENT UNDER WORDING SUCH AS "APPLY ONLINE".
7. COMPANY ATTACHES URL TO ONLINE ADVERTISEMENT AND WAITS APPLICANTS TO APPLY.
8. COMPANY SELECTS THEIR JOB FROM A TABLE OF ALL JOBS FOR WHICH THEY CREATED A SOLUTION
9. COMPANY VIEWS SUMMARY REPORT WHICH CONTAINS APPLICANT DETAILS SUCH AS COMPLETED APPLICATION FORM AND THE DETAILS OF THEIR RESULTS. REPORTS ARE UPDATED IN REAL TIME.
10. COMPANY MAKES DECISIONS SUCH AS WHETHER TO BRING APPLICANTS IN FOR A SELECTION SOLUTION AND/OR INTERVIEW BASED ON THEIR RESULTS.
11.COMPANY INVITES SUITABLE APPLICANTS IN TO COMPLETE A SELECTION SOLUTION.
12. COMPANY SELECTS THEIR JOB FROM A CUSTOMIZED TABLE OF ALL JOBS FOR WHICH THEY HAVE CREATED A SOLUTION.
13. COMPANY CLICKS ON URL LINK WITHIN TABLE AND APPLICANT LOG ON SCREEN APPEARS.
14. COMPANY PROGRESSES WITH AUTHORIZING APPLICANT TO COMPLETE THE SELECTION SOLUTION.
COMPANY OFFICIAL GOES TO THE HOST'S WEBSITE AND LOGS ON AS CLIENT.
COMPANY INPUTS THE DETAILS OF THE JOB FOR WHICH THEY WISH TO CREATE A SOLUTION.
COMPANY SELECTS FROM A SERIES OF DROP DOWN MENUS THE CATEGORIES THAT BEST DESCRIBE THEIR JOB.
COMPANY IS PRESENTED WITH THE OPTION OF SELECTING DIFFERENT COMPONENTS OF A SOLUTION (ALL OF WHICH ARE SUITABLE FOR THE TYPE OF JOB THEY HAVE).
COMPANY SELECTS COMPONENTS TO CREATE A SOLUTION SUITABLE FOR THEIR JOB.
COMPANY VIEWS INTERVIEW GUIDE AND FILLS OUT APPLICANT SCORES DURING STRUCTURED INTERVIEW
COMPANY ENTERS APPLICANT SCORES IN STACK RANKED TABLE

Fig. 12

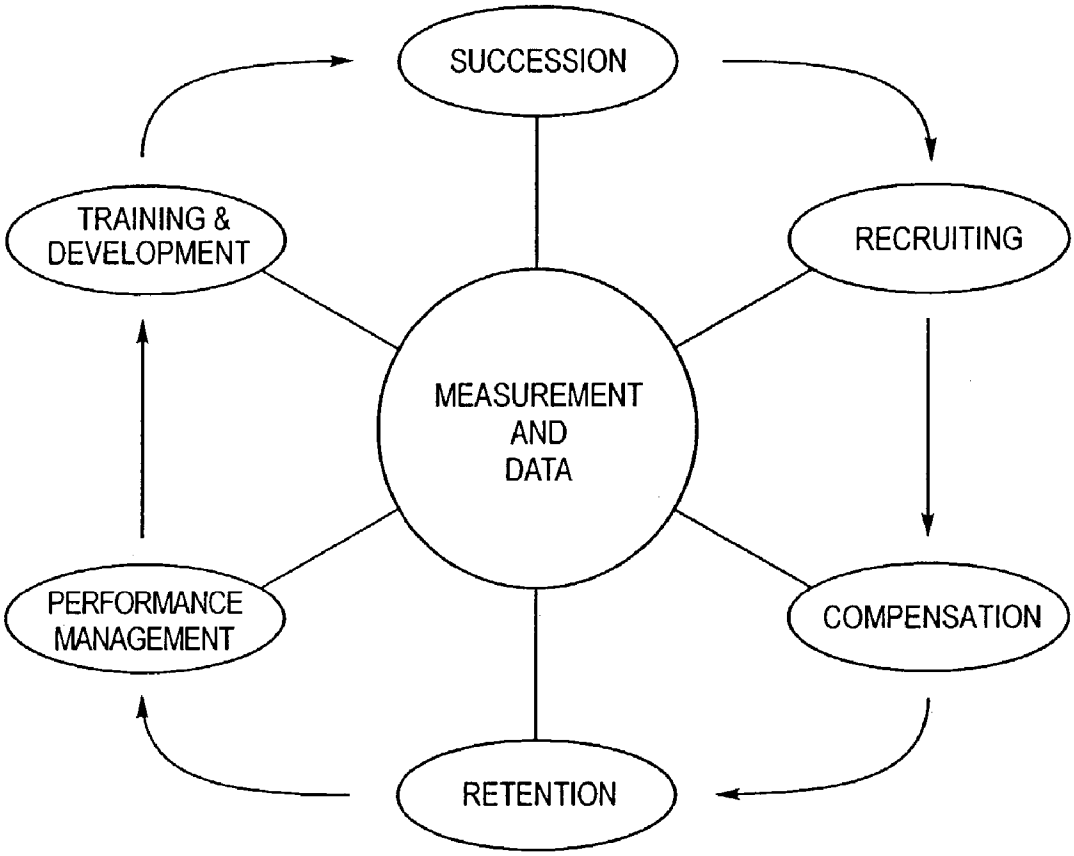
SUCCESSION
RECRUITING
COMPENSATION
RETENTION
PERFORMANCE MANAGEMENT
TRAINING & DEVELOPMENT
MEASUREMENT AND DATA

Fig. 13

COMPUTER-IMPLEMENTED SYSTEM FOR HUMAN RESOURCES MANAGEMENT

[0001] This application claims the benefit of U.S. Provisional Patent Application No. 60/211,044, filed Jun. 12, 2000.

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] **FIG. 1** provides a block diagram of an exemplary system in accordance with the present invention.

[0003] **FIG. 2** illustrates a process for testing and evaluating job applicants in accordance with an embodiment of the present invention.

[0004] **FIG. 3** depicts a hiring procedure in accordance with one embodiment of the invention.

[0005] **FIG. 4** is a block diagram of a process employing feedback.

[0006] **FIG. 5** diagrams an online system in accordance with one embodiment of the invention.

[0007] **FIG. 6** shows an example of a web-based presentation for a screening solution.

[0008] **FIG. 7** shows an example of a stack ranked table.

[0009] **FIG. 8** shows an example of a screening solution question presented to an applicant taking a screening solution test over the Internet.

[0010] **FIG. 9** shows an example of a structured interview guide for use in an interview solution.

[0011] **FIG. 10** illustrates procedural steps that may be followed in a web-based applicant system according to an embodiment of the present invention.

[0012] **FIG. 11** illustrates procedural steps that may be followed in a web-based selection solution according to an embodiment of the present invention.

[0013] **FIG. 12** illustrates procedural steps that may be followed by an employer according to an embodiment of the present invention.

[0014] **FIG. 13** illustrates a human capital management life-cycle.

DETAILED DESCRIPTION

[0015] A system for testing a job applicant provides a computerized stack ranking of multiple applicants, predictive of the comparative levels of successful job performance. The predictive stack ranking may be used as a dynamic interactive filter with a pool of applicants over the course of the evaluation or employment process. The system may utilize a communications network to communicate between an applicant terminal and a system server.

[0016] The system may be used for example for screening, selecting, retaining, assigning, or analyzing the job applicant. The job applicant can for example be a new job applicant, an employee seeking to retain a job, an employee seeking a different job in the same organization, or an employee being evaluated for retention, re-assignment, or promotion. Applicants may or may not know they are being evaluated.

[0017] Once an applicant becomes an employee, the system may collect data regarding the employee for use in a feedback loop informing the online hiring process and improving the accuracy of the predictive stack ranking. For example, the data may indicate the employer's rating of the employee's actual job performance. Such a rating can be cross-checked against the answers that the employee gave during the application process. The cross-checking can be used as feedback to refine the questions and evaluation criteria used at each stage of the hiring process. For example, the cross-checking may be analyzed to select from among many questions a small subset having high predictive value. The small subset can then be used in a quick initial screening stage. Or, the small subset can be given greater weight than other questions in a computerized stack ranking of candidates.

[0018] **FIG. 1** provides a block diagram of an exemplary system in accordance with the present invention. A job applicant can use applicant terminal **102** to communicate over network **104** with system server **106**. Applicant terminal **102** may for example be a telephone handset, a personal computer, a workstation, a handheld wireless device such as those marketed under the trademarks PALM or HANDSPRING, or a Wireless Application Protocol enabled device such as a mobile phone. Network **104** may for example be the Internet, the World Wide Web, a wide area network, a local area network, a telephone network, a wireless communication network, a combination thereof, or any other link capable of carrying communications between an applicant terminal and a server.

[0019] System server **106** employs a testing computer program **108** and has access to a scoring database **110**. System server **106** communicates with applicant terminal **102** in accordance with instructions from testing computer program **108**.

[0020] System server **106** may communicate with employer server **112** over network **104** or over direct link **114**. System server **106** is shown as a unitary server, but may be a distributed computing platform.

[0021] An applicant terminal may be remote from, or co-located with, system server **106** and/or employer server **112**. For example, applicant terminal **102** may be located at a job applicant's home, applicant terminal **116** may be located at a job fair or employment office, and applicant terminal **120** may be located at an employer's location.

[0022] Partner server **121** may be linked to network **104** and system server **106** to facilitate integration of a business partner seeking to participate in the system of **FIG. 1**.

[0023] System server **106** may pose questions to a job applicant located at an applicant terminal, receive responses from the job applicant, and score the answers in accordance with scoring database **110**. The scoring may take place in real time, i.e., while the applicant is still online, and may be reported in the form of a comparative stack ranking of multiple applicants. The stack ranking may be delivered from system server **106**, over either network **104** or direct link **114**, to employer server **112**.

[0024] Scoring of each answer by system server **106** may be instant, i.e., before the next question is answered. Thus, adaptive testing techniques may be implemented over network **104**. For example, the answers given by an applicant

at applicant terminal **102** to questions propounded early in a test may determine which questions are propounded by system server **106** to the applicant later in the same test. In addition, if an applicant at terminal **102** provides an unacceptable answer to a disqualifying "knock-out" question, server **106** may immediately terminate the test.

[**0025**] These same adaptive testing principles may be applied to a software program used to support a real time interview, either in person or over a communications network. For example, an employer conducting an oral interview in person or over a telephone can enter a candidate's oral answer into employer terminal **124**, which then communicates the answer to system server **106**, which in turn suggests via employer terminal **124** the next question for the employer to ask the interviewee.

[**0026**] The system may test an online applicant for any competency desired, in any sequence. The tested competencies may be abilities, traits, knowledge, skills, etc., that have been proven relevant to and predictive of successful job performance. By way of example and not limitation, the following competencies may be tested:

[**0027**] 1. dependability

[**0028**] 2. agreeableness

[**0029**] 3. critical thinking

[**0030**] 4. problem solving ability

[**0031**] 5. talkativeness

[**0032**] 6. assertiveness

[**0033**] 7. gregariousness

[**0034**] 8. persuasiveness

[**0035**] 9. achievement

[**0036**] 10. education

[**0037**] 11. experience

[**0038**] 12. customer service orientation

[**0039**] 13. customer focus

[**0040**] 14. conscientiousness

[**0041**] 15. self-confidence

[**0042**] 16. motivation

[**0043**] 17. revenue focus

[**0044**] 18. cognitive ability

[**0045**] 19. leadership

[**0046**] 20. decision making

[**0047**] 21. flexibility

[**0048**] 22. commitment

[**0049**] 23. learning ability

[**0050**] 24. dedication

[**0051**] 25. tenacity

[**0052**] 26. number of jobs held

[**0053**] 27. length of time in job(s)

[**0054**] 28. working with information

[**0055**] 29. supervisory potential

[**0056**] 30. judgment

[**0057**] 31. leadership

[**0058**] 32. coaching skills

[**0059**] 33. teamwork

[**0060**] 34. interpersonal skills

[**0061**] 35. business leadership

[**0062**] 36. leadership motivation

[**0063**] 37. self-leadership

[**0064**] 38. interpersonal leadership

[**0065**] 39. communication skills

[**0066**] 40. management potential

[**0067**] 41. likelihood of retention

[**0068**] 42. self-control

[**0069**] 43. energy

[**0070**] 44. executive potential

[**0071**] 45. listening orientation

[**0072**] 46. language skills (English, etc.)

[**0073**] 47. verbal reasoning

[**0074**] 48. spatial ability

[**0075**] 49. interest

[**0076**] 50. motivation

[**0077**] Typically, system server **106** tests for certain ones of the competencies that have been proven to be predictive of successful performance of the type of job for which the applicant is being considered. The results of the testing are tabulated in a stack ranked table. The stack ranked table may rank a number of applicants against each other and list them in order, from first to last. The table may also present other information for each applicant. The other information may include, by way of example and not limitation:

[**0078**] 1. Name

[**0079**] 2. Identifying number (e.g. social security number).

[**0080**] 3. Score achieved at various stages for various competencies.

[**0081**] 4. Recommendation (or not) to continue the hiring process beyond each stage

[**0082**] 5. Link to application information (e.g. address, resume details)

[**0083**] 6. Contact information (phone number, e-mail address, mailing address, etc.)

[**0084**] 7. Date of application

[**0085**] 8. Success or failure in complying with knockout requirements for the job

[**0086**] 9. Screening solution scores, presented as percentiles

[0087] 10. A calculated recommendation to proceed or not to proceed with the applicant

[0088] 11. Results (by competency) of the selection solution

[0089] 12. Link to allow manual entry of the test answers if not done on computer directly by the applicant

[0090] 13. A calculated recommendation to hire or not hire based on a weighted overall score of selection competencies (or other factors the hiring company wishes to use and that are approved as statistically valid and legally defensible)

[0091] 14. Additional columns for storage of data from a structured behavioral interview

[0092] 15. Additional columns for storage of data from other decision-making processes such as drug testing, reference checks, or medical exams.

[0093] A process for testing and evaluating job applicants may be described with reference to **FIG. 2**. Generally, applicant testing **201** includes providing a test to a job applicant and scoring the applicant's answers. The test may be administered online or it may be administered manually off-line. Scores are entered into a system for calculating a stack ranked table. Predictive stack ranking **202** generally includes ranking a job applicant against other job applicants in order from first to last or other comparative ranking. The other job applicants may be current job applicants, past job applicants, or fictional job applicants.

[0094] **FIG. 3** depicts a hiring procedure in accordance with one embodiment of the invention. Announcement **302** may be an online job announcement such as a web page with an "apply now" hyperlink icon. The web page may reside on an employer's website or an employment agency website, for example. Or, an online job announcement may be a recorded announcement on a menu-driven telephone voice processing system. Alternatively, announcement **302** may be an offline job announcement such as a newspaper advertisement.

[0095] In response to announcement **302**, an interested job applicant requests administration of screening test **304**. Screening test **304** may be remotely administered and scored online, with the scores being automatically provided to predictive stack ranking **306**. Alternatively, screening test **304** may be administered manually with paper and pencil, and then graded by hand or machine, with the scores being provided to predictive stack ranking **306**. The predictive stack ranking may for example be constructed by system server **106** or employer server **112**.

[0096] Predictive stack ranking **306** totals the graded answers according to particular competencies known to be relevant to successful job performance. Predictive stack ranking **306** may be administered by a computer processor located at system server **106**, for example. Predictive stack ranking **306** may give different weight to different questions, and may at any stage immediately disqualify an applicant providing an unacceptable answer to a "knock-out" question. Predictive stack ranking **306** may rank the applicant in order against other job applicants in a table. Predictive stack ranking **306** may be used to decide which applicants to invite for the next stage, selection test **308**.

[0097] Selection test **308** is preferably conducted under supervised conditions. For example, selection test **308** may be administered in person. An in-person test may take place at a job fair, an employer's location, a job site, or an employment agency. An in-person test may include verification of the job applicant's identity, such as by examination of a photo identification document produced by a test-taker. Selection test **308** may be administered online or manually. Supervised conditions typically include observation of the test-taker during administration of the test. The answers to selection test **308** are graded and the results are incorporated in predictive stack ranking **306**.

[0098] Predictive stack ranking **306** may then update a previously created entry for the applicant and rank or re-rank the applicant in order against other job applicants. After this is accomplished, the highest ranking applicants may be invited for interview **310**.

[0099] Interview **310** may be structured or unstructured, online or in person. If interview **310** is structured, a program leads the interviewer through the interview by suggesting questions one at a time. The program may be a list of questions written on paper or it may be a computer program resident for example in system server **106**. The program suggests questions that are predetermined to be valid, i.e., proven to be associated with successful job performance and legally permitted. The interviewer can input the answers and/or a score for the answers, either after each answer or at the conclusion of the interview. This can be done via employer terminal **124**, for example.

[0100] Interview **310** results in an interview score being provided to predictive stack ranking **306**. Predictive stack ranking **306** is revised to reflect the interview score. In particular, the relative rank of the job applicants is reassessed.

[0101] **FIG. 4** is a block diagram of a process employing feedback. Test design **402** is initially performed using industry-accepted standards. Test administration **404** tests and scores job applicants and/or incumbents. Employee performance evaluation **406** measures actual job performance of the applicant or incumbent after holding the job for a period of time. This information is fed back to test design **402** and/or test administration **404**. Test design **402** may be revised to delete questions which were not predictive of successful job performance. This can be done for example by deleting questions whose answers bore no relation to performance evaluation **406** for a statistically valid sample. Test administration **404** may be revised by adjusting the weight given to certain questions or answers that showed an especially strong correlation to employee performance evaluation **406**. For example, if test administration **404** is associated with predictive stack ranking **306**, feedback from employee performance evaluation **406** may help determine how various job applicants are comparatively ranked against each other.

[0102] **FIG. 5** diagrams an online computer based system **500** in accordance with one embodiment of the invention. Box **502** represents a job vacancy with a requirement for an online screening and selection solution. The vacancy can come to the attention of a potential job applicant in a number of ways.

[0103] For example, box **504** represents an online application via a hiring company's own website. A company

offering a job may post a vacancy announcement on the company's website and invite job seekers to apply by clicking on an icon labeled "apply here" or the like. Box **506** represents a similar posting on an online job board. Box **508** represents candidates given a Uniform Resource Locator (URL) directly by the company. This may occur when the company offering a job identifies a potential candidate. Box **510** represents a media advertisement including a URL for a job. Thus, job seekers observing the advertisement can direct their browsers to the indicated URL.

[**0104**] At job fair **512**, job seekers may be provided a URL associated with the company or the particular vacancy. Paper-and-pencil measures could also be used at job fairs and entered into the system. A computer terminal may be provided for use of job seekers at job fair **512**, enabling job seekers to participate in the online system. Box **514** represents an executive search via a recruiter network. Job seekers relevant to the search are identified in recruitment firm applicant database **516**. Database **516** can link to a URL associated with the job.

[**0105**] Preferably, no matter how a potential applicant becomes aware of or identified for a job opening in system **500**, the potential applicant is considered at decision **520**. Decision **520** asks whether applicant has completed the required screening solution **524**. If not, the applicant at box **522** is given via e-mail, mail, or in person, a URL for assessment. For example, system **500** may send an e-mail message to a potential applicant, the e-mail message inviting the potential applicant to apply for vacancy **502** by directing a browser to a screening solution URL provided in the e-mail message. Alternatively, when a potential applicant is visiting a website at which decision **520** determines that the required screening solution has not been completed, the website host can provide a link to a web page identified by the screening solution URL. Decision **520** may be based on a potential applicant's name, e-mail address, and/or other identifying information.

[**0106**] Screening solution **524** is administered via the Internet and is hosted at the screening solution URL mentioned above. Screening solution **524** asks screening questions to ascertain if the applicant has the basic qualifications to do the job. These are based on questions typically asked by recruiters but which are statistically validated over time to ensure they are legally defensible and predictive. The questions may include a combination of biodata and personality measures. They may include self-assessments of skill levels appropriate to the job requirements. Screening solution **524** requires applicants to transmit elicited information over the Internet. A possible example of a web-based presentation for screening solution **524** is illustrated in **FIG. 6**. Screen shot **600** shows a portion of the presentation.

[**0107**] Once completed, screening solution **524** provides applicant feedback **540** and conveys applicant details and screening scores to stack ranked table of applicants **530**. Applicant feedback **540** may provide a message to the online applicant indicating that the screening solution is complete, that the applicant has passed or failed the screening stage, and that the applicant may or may not be contacted in due course. Other information may also be provided to the applicant in the feedback pages, like a realistic job preview, recruiter phone number, scheduling information, etc.

[**0108**] Once an applicant has completed the screening solution, system **500** ranks the applicant in comparative order against other applicants in stack ranked table of applicants **530**. A certain number or percentage of applicants in table **530** will be chosen for further consideration. For example, the applicants ranking among the top five of all applicants ranked in table **530** may be chosen for advancement in the system at this juncture. Information identifying the chosen applicants will be included on a "short list" as indicated by box **536**.

[**0109**] The short list chosen at box **536** is transmitted to selection solution **538**, at which the advancing applicants are invited to answer selection questions. Selection solution **538** asks additional questions and requires an advancing applicant to input answers. Preferably, the applicant completes selection solution **538** while sitting at a terminal located at one of the company's locations. The terminal communicates over the Internet with a website set up to administer the selection solution.

[**0110**] At the conclusion of selection solution **538**, applicant feedback **540** is provided from the website to the applicant, and applicant details and scores **541** are incorporated in stack ranked table **530**. Feedback **540** may optionally include a sophisticated report on the applicant's strengths and weakness. The applicant may then be directed to an appropriate web page chosen by the hiring company. One page may indicated successful completion and a second page may indicate failure. The appropriate web page may suggest other openings appropriate to the applicant's test responses and may provide hyperlinks the applicant can use to initiate the application process for these other openings.

[**0111**] Once stack ranked table **530** re-ranks the applicants as a result of selection solution **538**, some applicants are invited to participate in interview solution **542**. For example, the top three applicants as ranked by table **530** after selection solution **538** may be invited for an in-person interview. Because the selection solution is preferably in instant communication with stack ranked table **530**, the interview invitation may be extended immediately at the conclusion of the selection solution.

[**0112**] Interview solution **542** is preferably a structured interview, with questions provided via the Internet to the interviewer at the company's location. The interviewer reads the provided questions and reports a score over the Internet from the company's location for incorporation in stack ranked table **530**. Benchmark performance anchors may assist the interviewer in grading the applicant's responses.

[**0113**] Interview solution **542** can be designed according two exemplary models. In a first model, an employer is provided with standard interview guides for several job types as well as the competency templates for these types so that the employer can build variations to meet specific needs. In a second model, an employer can build new interview guides and new competency templates. In the second model, the employer has access to the full array of work-related competencies and associated questions in a comprehensive question bank.

[**0114**] In ranking applicants, stack ranked table **530** may consider a combination of different biographical, personality, behavioral, and other appropriate information and competencies. In addition to the comparative ranking, table **530** may indicate for each applicant a yes/no recommendation, a percentage likelihood of successful job performance, biographical information not used for evaluative purposes, and so forth.

[0115] Stack ranked table **530** may be developed by grading the various solution stages with a computer implementing the following algorithm. First, search for disqualifying answers to "knock-out" questions. Second, give points for answers matching those of the previously hired candidates who achieved a successful performance evaluation. Third, deduct points for answers matching those of the previously hired candidates who received an unsuccessful performance rating. Fourth, multiply the added or subtracted points by any weighting assigned each question. Fifth, sum the points for all questions related to a given competency. Sixth, compare the summed points for each competency to norms of either the job-holders in the company or a wider population. Seventh, predict performance of the applicant as a worker in the job, based on the business outcomes identified by the hiring company and the competencies that contribute to those outcomes.

[0116] A final selection is made based on stack ranked table **530**. Preferably, the selection is transmitted over the Internet to the company, enabling the company to make an offer to the selected applicant(s). For example, if there is only one opening, an offer may be extended to the applicant ranked highest by stack ranked table **530**. If the applicant accepts the offer, the applicant is employed by the company. If the applicant declines, the next highest ranked applicant in stack ranked table **530** is offered the job. If a plural number of openings exist, that number of applicants may be selected off the top of stack ranked table **530** and offered the job. If one of the applicants declines, the next highest ranked applicant in stack ranked table **530** is offered the job. Data from stack ranked table **530** is forwarded to data warehouse **534**.

[0117] The performance of successful applicants is monitored during their employment. At box **550**, performance data for successful applicants are collected at a later date, and sent to data warehouse **534**.

[0118] Data collected at data warehouse **534** are used for research and development and for reporting purposes. For example, functions enabled by storing comprehensive data generated by system **500** may include:

[0119] a. Storage of question level responses from applicants for jobs. This can be used for re-checking of applicant information (auditing etc.) and for research to develop new solutions and questions.

[0120] b. Reporting on Equal Employment Opportunity Commission requirements. Data on ethnicity etc. can be stored to enable an employer to comply with reporting requirements to government agencies.

[0121] c. Source of data for designing new solutions including data on the nature of the job and the competencies that are required by the role (job analysis). This data is collected using online assessments.

[0122] d. Source of data for statistical research on correlation between the solutions and their predicted outcomes for applicants, and the actual outcomes for employees who were hired (validation studies).

[0123] e. Design of solutions other than recruitment related solutions.

[0124] f. Reporting of usage volumes for billing and financing accounting purposes.

[0125] Because system **500** preferably uses instant communications, adaptive testing techniques may be implemented online. An applicant's failure to overcome hurdles in a given solution will deliver a different path through the solution than that of a successful applicant. The degree of advancement of a given applicant through system **500** may result in different charges to the company from a solutions provider. For example, a solutions provider that hosts a website supporting screening solution **524**, selection solution **538**, and interview solution **542** may charge the hiring company the following amounts: one dollar for every applicant completing only the screening solution, five dollars for every applicant advancing only to the end of the selection solution, ten dollars for every applicant rejected after the interview solution, twenty dollars for every applicant offered a job, and fifty dollars for every applicant accepting an offer.

[0126] In practice, any of the various stages (screening solution **524**, selection solution **538**, and interview solution **542**) may be skipped, re-ordered, combined with other stages, or eliminated. Or, a short telephone interview may be structured early in the process to quickly screen applicants.

[0127] In a preferred embodiment, the questions to be asked at the various stages are selected for a particular type of job being offered in accordance with a proven relationship with desired business outcomes. Business outcomes can for example include: level of sales, customer satisfaction, quality measures such as fault rates, retention and tenure of employment, time keeping, learning ability, progression to more senior roles over time, and supervisor ratings of behavioral success. The particular type of job is defined in conjunction with the U.S. Department of Labor "O*NET" classification system. Some types of jobs might include customer service, technical, professional, or managerial. Various competencies are determined to be associated with desired business outcomes for a given type of job. These competencies are tested for at various solution stages with appropriate questions.

[0128] The appropriate competencies, questions, scoring, weighting, and ranking factors for a new job can be designed from historical tests for existing jobs, by applying statistical techniques and using the gathering of data on the Internet to ensure rapid validation of the new assessment solution. Confirmatory job analysis is used to determine the appropriateness of solutions for a particular job.

[0129] **FIG. 7** shows an example of a stack ranked table. Computer screen shot **700** illustrates a sample stack ranked table **730** for a customer service job. Various tabs permit viewing of data generated by each solution stage. Tab **702** reveals data **703** from a screening solution, tab **704** reveals data **705** from a selection solution, tab **706** reveals data **707** from an interview solution, and tab **708** reveals all results. In screen shot **700**, tab **708** is selected.

[0130] Section **709** of screen shot **700** shows general information about each applicant, including current rank **710**, a link **712** to application information (not shown), last name **714**, first name **716**, and application date **718**.

[0131] Screening solution data **703** includes an indication **720** of whether each applicant successfully passed the knockout requirements for the job. Data **703** also includes scores on certain competencies such as educational and work related experience **722**, customer service orientation **724**, and self-confidence **726**. Column **728** indicates whether each applicant is recommended to advance beyond the screening stage.

[0132] Selection solution data **705** includes scores on certain competencies such as customer focus **732**, conscientiousness **734**, and problem solving **736**. Column **738** indicates whether each applicant is recommended to advance beyond the selection stage.

[0133] Additional information (not shown) may include columns for storage of data from other decision-making processes such as drug testing, reference checks, or medical exams.

[0134] **FIG. 8** shows an example of a screening solution question presented to an applicant taking a screening solution test over the Internet. In screen shot **800**, simulated customer contact record **802** is presented to the applicant. The applicant is asked question **804**, and is required to click on a circle next to one of the answers. Question **804** may test for a competency in working with information, for example.

[0135] **FIG. 9** shows an example of a structured interview guide for use in an interview solution. As illustrated, the interview guide is being presented online on a computer screen to an interviewer conducting an interview with an applicant. Screen shot **900** shows interview item **902** for a sample customer service job. The customer service job opening is for a call center position, and revenue focus has been identified as a relevant and predictive competency. Item **902** elicits from the applicant a situation **904**, the applicant's behavior **906** in the situation, and the outcome **908** reported by the applicant. The interviewer can grade the applicant's responses to item **902** by marking a score **910** from 1 to 10.

[0136] **FIG. 10** illustrates procedural steps that may be followed in a web-based applicant system according to an embodiment of the present invention.

[0137] **FIG. 11** illustrates procedural steps that may be followed in a web-based selection solution according to an embodiment of the present invention. For example, these steps may follow those illustrated in **FIG. 10**.

[0138] **FIG. 12** illustrates procedural steps that may be followed by an employer according to an embodiment of the present invention.

[0139] The following tables provide examples of screening solutions and selection solutions designed for different types of jobs. The tables show components (competencies) shown to be relevant to successful performance of each job type. In the tables, some components are considered required, and others are considered optional.

[0140] Table One may be used for entry level and general skill jobs:

TABLE ONE

Entry/General Skilled Solutions

	Solution Component	Definition	Items
		Screening 7–10 Minutes	
Required	Educational and Work-Related Experience	Measures potential for success in entry-level jobs across industry type and functional area. Scores on Education and Work-Related Experience are derived from candidates' responses to questions regarding developmental influences, self-esteem, work history and work-related values and attitudes.	15
	Self-Confidence	This component references: belief in one's own abilities and skills and a tendency to feel competent in several areas.	7
Optional	Decision Making/ Flexibility	Measures potential for success in entry level positions. Scores on Decision Making and Flexibility are derived from candidates' responses to questions regarding developmental influences, self-esteem, work history and work-related values and attitudes.	8
		Selection 23–35 Minutes	
Required	Conscientiousness	This component is designed to predict the likelihood that candidates will follow company policies exactly, work in an organized manner, return from meals and breaks in the allotted time, and keep working, even when coworkers are not working.	65
	Retention Predictor	Measures commitment, impulsiveness, responsibility, and motivation. It predicts the likelihood that a new hire will remain on the job for at least three months.	44
Optional	Learning Ability	This component measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to learn work-related tasks, processes, and policies.	54 (12 minute timer)

[0141] Table Two may be used for customer service jobs:

TABLE TWO

Customer Service Solution

	Solution Component	Definition	Items
		Screening 8–10 Minutes	
Required	Educational and Work-Related Experience	Measures potential for success in customer service jobs. Scores on Education and Work-Related Experience are derived from candidates responses to questions regarding develop-	15

TABLE TWO-continued

	Customer Service Solution		
	Solution Component	Definition	Items
		mental influences, self-esteem, work history and work-related values and attitudes.	
	Customer Service Orientation	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	20
Optional	Self-Confidence	This component references: belief in one's own abilities and skills and a tendency to feel competent in several areas.	7
	Selection 17–29–37 Minutes		
Required	Customer Focus	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	32
	Conscientiousness	This component is designed to predict the likelihood that candidates will follow company policies exactly, work in an organized manner, return from meals and breaks in the allotted time, and keep working, even when coworkers are not working.	65
Optional	Learning Ability	This component measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to learn work-related tasks, processes, and policies.	54 (12 minute timer)
Optional	Retention Predictor	Measures commitment, impulsiveness, responsibility, and motivation. It predicts the likelihood that a new hire will remain on the job for at least three months.	44

[0142] Table Three may be used for customer service jobs involving sales:

TABLE THREE

	Customer Service Solution: Sales Positions		
	Solution Component	Definition	Items
	Screening 9–15 Minutes		
Required	Educational and Work-Related Experience	Measures potential for success in customer service jobs. Scores on Education and Work-Related Experience are derived from candidates responses to questions regarding developmental influences, self-esteem, work history and work-related values and attitudes.	15
	Customer Service Orientation	This component is designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	20
Optional	Sales Potential	Designed to predict the likelihood that candidates will suggest or show alternative solutions based on customer needs, direct conversation toward a commitment/order/sale, show confidence even after a hard refusal/rejection, and strive to close a transaction every time.	23
	Selection 15–27 Minutes		
Required	Sales Potential	Designed to predict the likelihood that candidates will suggest or show alternative solutions based on customer needs, direct conversation toward a commitment/order/sale, show confidence even after a hard refusal/rejection, and strive to close a transaction every time.	60
	Customer Focus	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	32
Optional	Learning Ability	This component measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to learn work-related tasks, processes, and policies.	54 (12 minute timer)

[0143] Table Four may be used for customer service jobs in a call center:

TABLE FOUR

	Customer Service Solution: Call Center Positions		
	Solution Component	Definition	Items
	Screening 9–11 minutes		
Required	Educational and Work-Related Experience	Measures potential for success in customer service jobs. Scores on Education and Work-Related	15

TABLE FOUR-continued

	Customer Service Solution: Call Center Positions		
	Solution Component	Definition	Items
		Experience are derived from candidates responses to questions regarding developmental influences, self-esteem, work history and work-related values and attitudes.	
	Customer Service Orientation	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	20
Optional	Self-Confidence	This component references: belief in one's own abilities and skills and a tendency to feel competent in several areas.	7
	Selection 16–31–39 Minutes		
Required	Customer Focus	This component is designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	32
	Conscientiousness	This component is designed to predict the likelihood that candidates will follow company policies exactly, work in an organized manner, return from meals and breaks in the allotted time, and keep working, even when coworkers are not working.	65
	Working with Information	This component is designed to predict success in customer service call-center jobs by assessing a candidate's ability to retrieve information and use it in order to solve problems.	30 (15 minute timer)
Optional	Retention Predictor	Measures commitment, impulsiveness, responsibility, and motivation. It predicts the likelihood that a new hire will remain on the job for at least three months.	44

[0144] Table Five may be used for customer service jobs in a call center involving sales:

TABLE FIVE

	Customer Service Solution: Call Center Sales Positions		
	Solution Component	Definition	Items
	Screening 9–15 Minutes		
Required	Educational and Work-Related	Measures potential for success in customer service jobs. Scores on	15

TABLE FIVE-continued

	Customer Service Solution: Call Center Sales Positions		
	Solution Component	Definition	Items
	Experience	Education and Work-Related Experience are derived from candidates' responses to questions regarding developmental influences, self-esteem, work history and work-related values and attitudes.	
	Customer Service Orientation	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	20
Optional	Sales Potential	Designed to predict the likelihood that candidates will suggest or show alternative solutions based on customer needs, direct conversation toward a commitment/order/sale, show confidence even after a hard refusal/rejection, and strive to close a transaction every time.	23
	Selection 30 Minutes		
Required	Sales Focus	Designed to predict the likelihood that candidates will suggest or show alternative solutions based on customer needs, direct conversation toward a commitment/order/sale, show confidence even after a hard refusal/rejection, and strive to close a transaction every time.	60
	Customer Focus	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	32
	Working with Information	This component is designed to predict success in customer service call-center jobs by assessing a candidate's ability to retrieve information and use it in order to solve problems.	30 (15 minute timer)

[0145] Table Six may be used for jobs in sales:

TABLE SIX

	Sales Solutions		
	Solution Component	Definition	Items
	Screening 10–14 minutes		
Required	Educational and Work-Related Experience	Measures potential for success in customer service jobs. Scores on Education and Work-Related	15

TABLE SIX-continued

Sales Solutions

	Solution Component	Definition	Items
		Experience are derived from candidates responses to questions regarding developmental influences, self-esteem, work history and work-related values and attitudes.	
	Sales Potential	Designed to predict the likelihood that candidates will suggest or show alternative solutions based on customer needs, direct conversation toward a commitment/order/sale, show confidence even after a hard refusal/rejection, and strive to close a transaction every time.	23
Optional	Customer Service Orientation	Designed to predict the likelihood that candidates will show persistent enthusiasm in customer interaction, apologize sincerely for inconveniences to customers, be patient with customers, tolerate rude customers calmly, and search for information or products for customers.	20
		Selection 10–25–40 Minutes	
Required	Sales Focus	Designed to predict the likelihood that candidates will suggest or show alternative solutions based on customer needs, direct conversation toward a commitment/order/sale, show confidence even after a hard refusal/rejection, and strive to close a transaction every time.	60
Optional	Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to solve complex problems, and make reasoned decisions.	10
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

[0146] Table Seven may be used for supervisory jobs:

TABLE SEVEN

Supervisory Solutions

	Solution Component	Definition	Items
		Screening 10–20 Minutes	
Required	Supervisory Potential	Measures potential for supervisory success across industry type and functional area. Scores on Supervisory Potential are derived from candidates' responses to questions regarding academic and social background, and aspirations concerning work.	10

TABLE SEVEN-continued

Supervisory Solutions

	Solution Component	Definition	Items
	Judgment	Measures potential for making good judgments about how to effectively respond to work situations. Scores on Judgment are derived from candidates' responses to questions regarding situations one would likely encounter as a manager/supervisor.	10
Optional	Leadership/ Coaching Teamwork/ Interpersonal Skills	Measures potential for success as a supervisor. This is done by having applicants' make judgments about the most effective teamwork and leadership behaviors in specific work situations. Scores are determined by comparing their response profiles to the profiles of supervisors who are known to be successful.	19
		Selection 22–37–52 Mins	
Required	Business Leadership	Measures the candidate's thinking styles. High scorers are likely to have or learn good planning and organizing skills, be innovative, consider issues from multiple perspectives, and create strategies to build their business.	28
Required	Leadership Motivation	Measures the candidate's desire for achievement, drive, initiative, energy level, willingness to take charge, and persistence. High scorers are likely to be highly motivated to succeed and to set challenging goals for themselves and others.	23
	Self-Leadership	Measures the candidate's ability to control emotions, act with integrity, take responsibility for actions, and tolerate stress. High scorers are also likely to have a positive attitude, be optimistic about the future, and demonstrate high levels of professionalism.	32
	Interpersonal Leadership	Measures the candidate's interpersonal characteristics. High scorers are likely to persuade and influence others, gain commitment, and build effective interpersonal relationships. They also have potential to develop skills in the areas of employee relations, coaching, motivating, and leading a team.	30
Optional	Decision Making/Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to solve complex problems, and make reasoned decisions.	10

TABLE SEVEN-continued

	Supervisory Solutions		
	Solution Component	Definition	Items
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

[0147] Table Eight may be used for professional jobs:

TABLE EIGHT

	Professional Solutions		
	Solution Component	Definition	Items
		Screening 7-Minutes	
Required	Dependability	This competency is characterized by: a willingness to behave in expected and agree upon ways; following through on assignments and commitments; keep promises; and accept the consequences of one's own actions.	40
	Interpersonal Skills	This competency is indexed by a tendency to be pleasant, cooperative, and helpful when working with others, as well as flexible in conflict resolution situations.	
	Self-Control	This competency is characterized by the ability to: stay calm and collected when confronted with adversity, frustration, or other difficult situations; and avoid defensive reactions or hurt feelings as a result of others' comments.	
	Energy	This competency is characterized by a preference to stay busy, active, and avoid inactive events or situations.	
		Selection 35–50 Minutes	
Required	Business Leadership	Measures the candidate's thinking styles. High scorers are likely to have or learn good planning and organizing skills, be innovative, consider issues from multiple perspectives, and create strategies to build their business.	32
	Leadership Motivation	Measures the candidate's desire for achievement, drive, initiative, energy level, willingness to take charge, and persistence. High scorers are likely to be highly motivated to succeed and to set challenging goals for themselves and others.	35
	Self-Leadership	Measures the candidate's ability to control emotions, act with integrity, take responsibility for actions, and tolerate stress. High scorers are also likely to have a positive attitude, be optimistic about the future, and demonstrate high levels of professionalism.	34
	Interpersonal Leadership	Measures the candidate's interpersonal characteristics. High scorers are likely to persuade and influence others, gain commitment, and build effective interpersonal relationships. They also have potential to develop skills in the areas of employee relations, coaching, motivating, and leading a team.	41
	Decision Making/Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to solve complex problems, and make reasoned decisions.	10
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

TABLE EIGHT-continued

	Professional Solutions		
	Solution Component	Definition	Items

[0148] Table Nine may be used for managerial jobs:

TABLE NINE

	Managerial Solutions		
	Solution Component	Definition	Items
		Screening 10–20 Minutes	
Required	Management Potential	Measures potential for managerial success across industry type and functional area. Scores on Management Potential are derived from candidates' responses to questions regarding academic and social background, and aspirations concerning work.	10
	Judgment	Measures potential for making good judgments about how to effectively respond to work situations. Scores on Judgment are derived from candidates' responses to questions regarding situations one would likely encounter as a manager/supervisor.	10
Optional	Self-Confidence	This component references: belief in one's own abilities and skills and a tendency to feel competent in several areas.	10
	Decision Making	Measures potential for success as a manager. This is done by having applicants' make judgments about the most effective decisions in specific work situations. Their potential is determined by comparing their response profiles to the profiles of successful managers.	

TABLE NINE-continued

Managerial Solutions

	Solution Component	Definition	Items
		Selection 20–35–50 Mins	
Required	Business Leadership	Measures the candidate's thinking styles. High scorers are likely to have or learn good planning and organizing skills, be innovative, consider issues from multiple perspectives, and create strategies to build their business.	32
	Leadership Motivation	Measures the candidate's desire for achievement, drive, initiative, energy level, willingness to take charge, and persistence. High scorers are likely to be highly motivated to succeed and to set challenging goals for themselves and others.	35
	Self-Leadership	Measures the candidate's ability to control emotions, act with integrity, take responsibility for actions, and tolerate stress. High scorers are also likely to have a positive attitude, be optimistic about the future, and demonstrate high levels of professionalism.	34
	Interpersonal Leadership	Measures the candidate's interpersonal characteristics. High scorers are likely to persuade and influence others, gain commitment, and build effective interpersonal relationships. They also have potential to develop skills in the areas of employee relations, coaching, motivating, and leading a team.	41
Optional	Decision Making/Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to solve complex problems, and make reasoned decisions.	10
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

[0149] Table Ten may be used for technical/professional jobs:

TABLE TEN

Technical-Professional Solutions

	Solution Component	Definition	Items
		Screening 8 Minutes	
Required	Dependability	This competency is characterized by: a willingness to behave in expected and agree upon ways; following through on assignments and commitments; keeping promises; and accepting the consequences of one's own actions.	40
	Interpersonal Skills	This competency is indexed by a tendency to be pleasant, cooperative, and helpful when working with others, as well as flexible in conflict resolution situations.	
	Self-Control	This competency is characterized by the ability to: stay calm and collected when confronted with adversity, frustration, or other difficult situations; and avoid defensive reactions or hurt feelings as a result of others' comments.	
	Energy	This competency is characterized by a preference to stay busy, active, and avoid inactive events or situations.	

TABLE TEN-continued

Technical-Professional Solutions

	Solution Component	Definition	Items
		Selection 35–50 Minutes	
Required	Business Leadership	Measures the candidate's thinking styles. High scorers are likely to have or learn good planning and organizing skills, be innovative, consider issues from multiple perspectives, and create strategies to build their business.	32
	Leadership Motivation	Measures the candidate's desire for achievement, drive, initiative, energy level, willingness to take charge, and persistence. High scorers are likely to be highly motivated to succeed and to set challenging goals for themselves and others.	35
	Self-Leadership	Measures the candidate's ability to control emotions, act with integrity, take responsibility for actions, and tolerate stress. High scorers are also likely to have a positive attitude, be optimistic about the future, and demonstrate high levels of professionalism,	34
	Interpersonal Leadership	Measures the candidate's interpersonal characteristics. High scorers are likely to persuade and influence others, gain commitment, and build effective interpersonal relationships. They also have potential to develop skills in the areas of employee relations, coaching, motivating, and leading a team.	41
	Decision Making/Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to solve complex problems, and make reasoned decisions.	10
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

[0150] Table Eleven may be used for executive positions:

TABLE ELEVEN

	Executive Solutions		
	Solution Component	Definition	Items
		Screening 20 Minutes	
Required	Executive Potential	Measures potential for success in high-level organizational positions across industry type and functional area. Scores on Executive Potential are derived from candidates' responses to questions regarding work background, accomplishments, and career aspirations.	53
		Selection 35–50 Minutes	
Required	Business Leadership	Measures the candidate's thinking styles. High scorers are likely to have or learn good planning and organizing skills, be innovative, consider issues from multiple perspectives, and create strategies to build their business.	32
	Leadership Motivation	Measures the candidate's desire for achievement, drive, initiative, energy level, willingness to take charge, and persistence. High scorers are likely to be highly motivated to succeed and to set challenging goals for themselves and others.	35
	Self-Leadership	Measures the candidate's ability to control emotions, act with integrity, take responsibility for actions, and tolerate stress. High scorers are also likely to have a positive attitude, be optimistic about the future, and demonstrate high levels of professionalism.	34
	Interpersonal Leadership	Measures the candidate's interpersonal characteristics. High scorers are likely to persuade and influence others, gain commitment, and build effective interpersonal relationships. They also have potential to develop skills in the areas of employee relations, coaching, motivating, and leading a team.	41
	Decision Making/Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is characterized by the ability to solve complex problems, and make reasoned decisions.	10
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

[0151] Table Twelve may be used for jobs involving campus recruiting:

TABLE TWELVE

	Campus Recruiting Solutions		
	Solution Component	Definition	Items
		Screening 12 Minutes	
Required	Supervisory Potential	Measures potential for supervisory success across industry type and functional area. Scores on Supervisory Potential are derived from candidates' responses to questions regarding academic and social background, and aspirations concerning work.	26
	Judgment	Measures potential for making good judgments about how to effectively respond to work situations. Scores on Judgment are derived from candidates' responses to questions regarding situations one would likely encounter as a manager/supervisor.	
	Management Potential	Measures potential for managerial success across industry type and functional area. Scores on Management Potential are derived from candidates' responses to questions regarding academic and social background, and aspirations concerning work.	
		Selection 20–35–50 Mins	
Required	Business Leadership	Measures the candidate's thinking styles. High scorers are likely to have or learn good planning and organizing skills, be innovative, consider issues from multiple perspectives, and create strategies to build their business.	32
	Leadership Motivation	Measures the candidate's desire for achievement, drive, initiative, energy level, willingness to take charge, and persistence. High scorers are likely to be highly motivated to succeed and to set challenging goals for themselves and others.	35
	Self-Leadership	Measures the candidate's ability to control emotions, act with integrity, take responsibility for actions, and tolerate stress. High scorers are also likely to have a positive attitude, be optimistic about the future, and demonstrate high levels of professionalism.	34
	Interpersonal Leadership	Measures the candidate's interpersonal characteristics. High scorers are likely to persuade and influence others, gain commitment, and build effective interpersonal relationships. They also have potential to develop skills in the areas of employee relations, coaching, motivating, and leading a team.	41
Optional	Decision Making/Problem Solving	Measures the tendency to efficiently and effectively use numerical and analytical reasoning. This competency is charac-	10

TABLE TWELVE-continued

Campus Recruiting Solutions			
	Solution Component	Definition	Items
		terized by the ability to solve complex problems, and make reasoned decisions.	
Optional	Communication	Measures the tendency to efficiently and effectively use verbal reasoning. This competency is characterized by the ability to verbally explain complex information to others.	10

[0152] Table Thirteen may be used for a selection solution for a job involving communication:

TABLE THIRTEEN

Communication Solution			
	Solution Component	Definition	Items
	Selection 37 Minutes		
Required	Listening Orientation	Measure of the tendency to listen to and understand others' perspectives, to care for others, to accept and respect the individual differences of people, and to be open both to multiple ideas and to using alternative modes of thinking.	73
	English Language Skills	Measures usage of verb tense and sentence construction. Scores on English Language Skills are derived from candidates responses to grammar questions.	
	Verbal Reasoning/ Critical Thinking	Measures verbal reasoning skills and critical thinking/reasoning skills. Scores on Verbal Reasoning Ability are derived from candidates' responses to analogies and questions about information provided in brief reading passages.	

[0153] Table Fourteen may be used for a selection solution for a job involving financial services jobs referred to series six/seven:

TABLE FOURTEEN

Series Six/Seven Success Solution			
	Solution Component	Definition	Items
	Selection 36 Minutes		
Required	Problem Solving	Measures the ability to analyze and evaluate information. Scores on Problem Solving are derived from candidates' responses to mathematical and analytical reasoning items, requiring candidates to respond to facts and figures presented in various formats.	20

TABLE FOURTEEN-continued

Series Six/Seven Success Solution			
	Solution Component	Definition	Items
	Verbal Reasoning/ Critical Thinking	Measures verbal reasoning skills and critical thinking/reasoning skills. Scores on Verbal Reasoning Ability are derived from candidates' responses to analogies and involves making inferences from information provided in the form of brief passages	

[0154] Table Fifteen may be used for a selection solution for a job requiring information technology aptitude:

TABLE FIFTEEN

Information Technology Aptitude Solution			
	Solution Component	Definition	Items
	Selection 18 Minutes		
Required	Critical Thinking	Measure reasoning and critical thinking skills. Scores on Critical Thinking are derived from candidates' responses to information provided in the form of brief passages.	58
	Problem Solving	Measures the ability to analyze and evaluate information. Scores on Problem Solving are derived from candidates' responses to mathematical and analytical reasoning items, requiring candidates to respond to facts and figures presented in various scenarios.	
	Communication	Measures the ability to efficiently use verbal information. Scores on Communication are derived from candidates' ability to identify synonyms.	
	Spatial Ability	Measure the ability to visually manipulate objects. Scores on Spatial Ability are derived from candidates' ability to correctly identify the number of blocks in progressively difficult figures.	

[0155] Although the above disclosure has focused on recruiting applications, the generated data may be used in other human capital applications. **FIG. 13** illustrates a human capital management life-cycle. Measurement and data **1301** is initially used in the context of recruiting **1302**. For recruiting **1302**, screening, selection, and interview solutions measure applicants' competencies and predict on-the-job performance and thus contribution to business outcomes.

[0156] For compensation **1303**, data about potential can be weighed against performance data to ensure that high potential employees who are on difficult assignments where they are structurally constrained from succeeding are not underpaid by pure focus on performance. For example, structural constraints may include business environment, poor staff, unreliable equipment, etc.

[0157] For retention **1304**, business with jobs that have high turnover use the system to ensure that applicants have qualities that contribute to longer tenure in roles.

[0158] For performance management **1305**, the system can be used to enhance the validity of employee performance evaluation.

[0159] For training and development **1306**, a company may test current employees in order to design executive training programs addressing each individual's strengths and weaknesses. Or, for employees that took a test and were hired despite weaknesses, the data can be used to structure appropriate training.

[0160] For succession **1307**, data on employees may be collected in the process of organization mergers to assist planning for retrenchment or change. Also, by measuring competencies and mapping them between roles, it is possible to assess the potential that an individual may have for a role other than the job they are currently holding, such as for a promotion or a transfer to another area.

[0161] The foregoing description is to be considered as illustrative only. The skilled artisan will recognize many variations and permutations within the spirit of the disclosure.

146. A method of constructing a model generating one or more job performance criteria predictors based on input pre-hire information collected over the Internet, the method comprising:

from a plurality of applicants, collecting pre-hire information from the applicants, the collecting comprising administering application questions to the applicants, the application questions comprising:

validated questions designed to minimize adverse impact on minority groups and validated by correlating job performance ratings of a plurality of hired workers with previous responses given by the workers to the application questions before the workers were hired; and

requirements questions eliciting information on whether the applicants meet employment requirements;

collecting post-hire information for the applicants based on job performance ratings of the applicants after hire; and

from the pre-hire information and the post-hire information, generating a computer-based predictive model operable to generate one or more job performance criteria predictors and a turnover predictor based on newly input pre-hire information from new applicants, the newly input pre-hire information comprising:

responses from the new applicants to a short subset of the validated questions, the short subset being selected to serve as a fast job-related pre-screen; and

later responses collected from the new applicants at the employer's premises after the applicants have come to the employer's premises and logged on, the later responses collected in response to a more in-depth assessment;

wherein the computer-based predictive model is operable in real time to generate from the job performance criteria predictors, the turnover predictor, and responses of the new applicants to the requirements questions a rank order of all the new applicants.

147. A method of constructing a model generating one or more job performance criteria predictors based on input pre-hire information collected electronically, the method comprising:

from a plurality of applicants, collecting pre-hire information from the applicants, the collecting comprising administering validated questions to the applicants, the validated questions designed to minimize adverse impact on minority groups and validated by correlating job performance ratings of a plurality of hired workers with previous responses given by the workers to the application questions before the workers were hired;

collecting post-hire information for the applicants based on performance of the applicants after hire; and

from the pre-hire information and the post-hire information, generating a computer-based predictive model operable to generate one or more job performance criteria predictors based on newly input pre-hire information from new applicants, the newly input pre-hire information comprising responses from the new applicants to a short subset of a large assessment, the short subset being selected to serve as a fast job-related pre-screen;

wherein the computer-based predictive model is operable to generate a rank order of the new applicants.

148. The method of claim 147 wherein the input pre-hire information is collected over the Internet.

149. The method of claim 147 wherein the input pre-hire information is collected over a telephone.

150. A method of constructing a model generating one or more job performance criteria predictors based on input pre-hire information collected electronically, the method comprising:

from a plurality of applicants, collecting pre-hire information from the applicants;

collecting post-hire information for the applicants based on job performance of the applicants after hire; and

from the pre-hire information and the post-hire information, generating an artificial intelligence-based predictive model operable to generate one or more job performance criteria predictors based on newly input pre-hire information from new applicants, the newly input pre-hire information comprising responses from the new applicants to a short set of validated questions numbering less than about sixty;

wherein the artificial intelligence-based predictive model is operable in real time and generates a rank order of the new applicants.

* * * * *