CLAIMS

What is claimed is:

1. A computing system implemented method for providing multi-dimensional human resource allocation recommendations, the method comprising:

aggregating initial employee skill set data, dynamic employee skill set data, and employee HR data to generate aggregated employee skill set data for each of the employees of a set of employees of the business;

defining employer/supervisor-imposed rules and constraints data governing the assignment of employees of the business to tasks to be performed by the employees of the business for clients of the business;

generating employer/supervisor-imposed rules and constraints data representing the defined employer/supervisor-imposed rules and constraints;

obtaining new case data representing a new task or project to be performed by employees of the business for a client of the business;

obtaining client data for a client associated with the new case data;

processing the new case data and the client data to generate new case requirements and skill set data representing required employee skills and qualifications for employees of the business that are to be assigned to the task or project represented by the new case data;

processing the new case requirements and skill set data to generate client-imposed rules and constraints data governing the assignment of employees of the business to the task or project represented by the new case data;

aggregating the employer/supervisor-imposed rules and constraints data and the client-imposed rules and constraints data to generate new case rules and constraints data representing the employer/supervisor-imposed rules and constraints and client-imposed rules and constraints governing the assignment of employees of the business to the task or project represented by the new case data;

processing the new case requirements and skill set data and the new case rules and constraints data to generate new case vector data;

processing the aggregated employee skill set data for each of the employees of the set of employees of the business and the new case requirements and skill set data to identify initial skill set matched employee data representing a set of skill set matched employees having one or more matched skills matched to the new case skills and requirements represented in the new case requirements and skill set data
for each skill set matched employee;

for each skill set matched employee, normalizing the matched skills for the skill set matched employee to generate normalized employee skill set data and for that skill set matched employee;

for each skill set matched employee, generating normalized employee skill set vector data based on the normalized employee skill set data for that skill set matched employee;

providing the normalized employee skill set vector data for each skill set matched employee and the new case vector data to a machine learning algorithm to generate raw ranked skill matched employee recommendation data representing a set of raw skill matched employees;

filtering the raw ranked skill matched employee recommendation data using the new case rules and constraints data to generate filtered skill matched employee recommendation data representing a set of filtered skill matched employees;

processing the filtered skill matched employee recommendation data using load balancing rules and constraints to generate recommended employee data for the new case representing one or more recommended employees for the new case; and

providing the recommended employee data to a decision maker for review and/or approval.

2. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein initial employee skill set data for the employees of the business includes data representing one or more initial employee skills obtained from the group of initial employee skill set data sources consisting of:

the employees themselves;

the employees' employment records;

the employees' HR records;

public records of certifications and schooling associated with the employees;

the employees' accounts with professional social media sites;

the employees' accounts with general social media sites; and

previous employers of the employees.

3. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the dynamic employee skill set data includes data selected from the group of dynamic employee skill set data consisting of:

data representing total cases closed by the employee;

data representing average resolution time for cases closed by the employee;

data representing average customer satisfaction review scores for the employee;

data representing total task, project, or case closures associated with the employees;

data representing average time to close for tasks, projects, or cases associated with the employees;

data representing average customer satisfaction review data per customer/ product/ employee ;

data representing experience and team participation associated with the employees;

data representing team leadership experience associated with the employees;

data representing product module experience associated with the employees;

data representing case priority experience associated with the employees;

data representing total cases worked in each product line/module associated with the employees;

data representing certifications associated with the employees;

data representing programming languages experience associated with the employees;

data representing human languages the employees can speak, write, or read;

data representing milestones per time period associated with the employees; and

data representing product release experience associated with the employees.

4. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the HR data for each employee of the business includes data selected from the group of HR data consisting of one or more of:

data representing the geographic location of the employees;

data representing the time zone associated with the employees;

data representing the employees' certifications and/or education data;

data representing the employees' employment type; and

data representing the employees' planned Paid Time Off (PTO) status.

5. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the employer/supervisor-imposed rules and constraints data includes one or more employer/supervisor-imposed rules and constraints selected from the group consisting of:

rules and constraints limiting the number of active tasks, projects, or cases that can be assigned to any, or particular, employees;

rules and constraints limiting the number of active deadlines or benchmarks per defined time frame that can be assigned to any, or particular, employees;

rules and constraints limiting the maximum number of active tasks, projects, or cases of a particular priority or urgency that can be assigned to any, or particular, employees;

rules and constraints regarding the use of full-time employees before assigning part-time or contract employees; and

rules and constraints regarding employee experience required for one or more employee roles with different priority tasks, projects, or cases and clients.

6. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the employer/supervisor-imposed rules and constraints are selectable by an employee of the business including ranges and thresholds that can be adjusted by an employee of the business.

7. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the new case data includes data selected from new case data consisting of:

data representing the name of the task or project of the new case;

data representing the name of the client for which the task or project of the new case is to be performed;

data representing the priority of the task or project of the new case;

data representing the priority of the client associated with the task or project of the new case;

data representing the equipment type or product line associated with the task or project of the new case;

data representing subcomponents included with the equipment type or product line associated with the task or project of the new case;

data representing the type of the task or project of the new case;

data representing the complexity of the task or project of the new case;

data representing the geographic location of the client associated with the new case;

data representing the geographic location where the task or project of the new case is to be performed; and

data representing the time zone where the task or project of the new case is to be performed.

8. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the client data for the client associated with the new case data includes data selected from client data consisting of:

data representing the priority of the client;

data representing the type of equipment or product lines associated with the client;

data representing the contractual obligations or requirements associated with the client or task, project, or case performed on behalf of the client;

data representing whether the client is an escalated or strategic client;

data representing the average of survey or review scores associated with the client;

data representing the geographic location of the client; and

data representing the time zone associated with the location of the client.

9. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the client data for the client associated with the new case data is obtained from one or more of:

client and case records maintained by the business;

social media accounts associated with the client; and

websites and advertising associated with the client.

10. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the client-imposed rules and

constraints include client-imposed rules and constraints selected from the group of client-imposed rules and constraints consisting of:

rules and constraints indicating required citizenship for employees working for the client or assigned to the new case;

rules and constraints indicating required languages spoken by employees working for the client or assigned to the new case; and

rules and constraints regarding availability of employees working for the client or assigned to the new case.

11. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the employee matched skills data of the aggregated employee skill set data matched to the new case skills and requirements represented in the new case requirements and skill set data include one or more employee matched skills data selected from the group of employee matched skills data consisting of:

data representing total cases closed by the employee related to the matched skill;

data representing average resolution time for cases closed by the employee related to the matched skill;

data representing average customer satisfaction review scores for the employee related to the matched skill;

data representing cases owned by the employee that are related to the matched skill;

data representing cases closed by the employee that are related to the matched skill;

data representing cases contributed to by the employee that are related to the matched skill;

data representing resolution time associated with cases owned and closed by the employee that are related to the matched skill;

data representing resolution time associated with cases participated in and closed by the employee that are related to the matched skill; and

data representing customer satisfaction reviews for the employee or the employee as a team member associated with the matched skill.

12. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the matched skills for the skill set matched employees are normalized using one or more machine learning algorithms.

13. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 12 wherein the matched skills for the skill set matched employees are normalized using Min-Max Normalization.

14. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the machine learning algorithm used to generate the raw ranked skill matched employee recommendation data is a weighted Least Euclidean Distance machine learning algorithm.

15. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 wherein the decision maker receiving the recommended employee data is an application.

16. The computing system implemented method for providing multi-dimensional human resource allocation recommendations of Claim 1 further comprising:

generating employee development rules and constraints data representing employee development rules and constraints governing the assignment of employees to cases where the employees can develop defined skills determined to be needed by the business and the clients of the business;

processing the filtered skill matched employee recommendation data using the employee development rules and constraints data to generate recommended employee data for the new case representing one or more recommended employees for the new case; and

providing the recommended employee data to a decision maker for review and/or approval.