CLAIMS

1. A computer system for instrumenting a bio-manufacturing process, comprising:

A) a data store in computer memory and holding information regarding one or more bio-manufacturing processes, for each process, the information including:

(i) a sequence of steps forming workflow of the bio-manufacturing process, and

(ii) per step indications of equipment and services supporting the step;

B) one or more processors coupled to access the data store and an image database, the image database storing digital images of certain bio-manufacturing equipment, for each of the certain pieces of bio-manufacturing equipment, the image database having digital images of different views of the piece of bio-manufacturing equipment, and the processors associating equipment indicated in the data store with corresponding images of the bio-manufacturing equipment in the image database; and

C) a video-graphic user-interface executed by a computer in communication with the one or more processors and enabling user interactive input regarding a subject bio-manufacturing process from the data store, the user-interface displaying a model representation of a hypothetical bio-manufacturing facility deploying the subject bio-manufacturing process, the displayed model representation being navigated under user-control, and the user-interface interactively displaying various views of the model representation in a manner that provides to a user:

(i) an overview of candidate pieces of equipment and corresponding services for the subject bio-manufacturing process, the candidate pieces of equipment being from the image database,

(ii) a layout of equipment from the image database and corresponding services required to execute a given step in the subject bio-manufacturing process according to best practice as determined by the processors executing logic rules to process the data store information, and

(iii) a sense of scale, relationship, and physical connections between pieces of equipment used in the subject bio-manufacturing process,

the user input to determine various factors required to produce the amount of product specified or entered by the user resulting in a best practice and/or right fit set of user-selected equipment from the image database for carrying out the subject bio-manufacturing process.

2. A computer system as claimed in Claim 1 wherein the one or more bio-manufacturing processes include bio-pharmaceutical processes that produce: vaccines, plasma, blood

products, monoclonal antibodies, antibody fragments, stem cells, antibody drug conjugates, allergenics, gene therapeutics, and bio-similar drugs.

3. A computer system as claimed in Claim 1 wherein:

the one or more processors determine, from the data store information, right fit equipment recommendations and bio-manufacturing process step recommendations according to best practices; and

at each of the process steps for the subject bio-manufacturing process in the displayed model representation, the user interface highlights step appropriate equipment, pertinent collateral and corresponding services enabling the user to efficiently make appropriate selection of the certain pieces of equipment for the subject bio-manufacturing process.

4. A computer system as claimed in Claim 3 wherein the highlights include user-interactive pulsating beacons and user-interactive color-coded icons.

5. A computer system as claimed in Claim 1 wherein the user interface enables the user to specify each step of the subject bio-manufacturing process as having disposable equipment or multi-use equipment, optionally resulting in the subject bio-manufacturing process being of a hybrid process format.

6. A computer system as claimed in Claim 5 wherein the one or more processors execute logic rules that ensure: cross equipment compatibility, and resulting workflow configuration viability.

7. A computer system as claimed in Claim 1 wherein the one or more processors adjust sizing of the candidate equipment as a function of user-specified scale of the subject bio-manufacturing process.

8. A computer system as claimed in Claim 7 wherein sizing of the candidate equipment is based on approximate volume to be handled by the subject bio-manufacturing process.

9. A computer system as claimed in Claim 1 wherein the user interface as supported by the image database displays individual views of the candidate pieces of equipment, and

enables the user to selectively telescope (zoom) in and out of displayed views of the candidate pieces of equipment.

10. A computer system as claimed in Claim 9 wherein the views of the candidate pieces of equipment include 3D views or renderings.

11. A computer system as claimed in Claim 1 wherein the user interface highlights related pieces of equipment in the subject bio-manufacturing process and displays how the related pieces of equipment interact and connect to each other.

12. A computer system as claimed in Claim 11 wherein the highlighted related pieces of equipment are color coded.

13. A computer-based method of modeling a bio-manufacturing process, comprising:

storing in computer memory information regarding one or more bio-manufacturing processes, for each process, the information including:

(i) a sequence of steps forming workflow of the bio-manufacturing process, and

(ii) per step indications of equipment and services supporting the step according to best practice and/or experts;

accessing with one or more processors the computer memory information and an image database, the image database holding digital images of certain bio-manufacturing equipment, for each of the certain pieces of bio-manufacturing equipment, the image database having digital images of different views of the piece of bio-manufacturing equipment, and the processors associating equipment indicated in the computer memory information with corresponding images of the biomanufacturing equipment in the image database; and

providing a video-graphic user-interface executed by a computer in communication with the one or more processors and enabling user interactive input regarding a subject one of the bio-manufacturing processes, the user-interface displaying a model representation of a hypothetical bio-manufacturing facility deploying the subject bio-manufacturing process, the displayed model representation being navigated under user-control, and the user-interface interactively displaying various views of the model representation in a manner that provides to a user:

(i) an overview of candidate pieces of equipment and corresponding services for the subject bio-manufacturing process, the candidate pieces of equipment being from the image database,

(ii) a layout of equipment from the image database and corresponding services required to execute a given step in the subject bio-manufacturing process according to best practice and/or expert technical experience as determined by the one or more processors executing logic rules to process the computer memory information, and

(iii) a sense of scale, relationship, and physical connections between pieces of equipment used in the subject bio-manufacturing process,

the user input to determine various factors required to produce the amount of product specified or entered by the user resulting in a set of user-selected equipment from the image database for carrying out the subject bio-manufacturing process according to best practice as determined by the one or more processors executing logic rules to process the computer memory information.

14. A computer-based method as claimed in Claim 13 wherein the one or more bio-manufacturing processes include bio-pharmaceutical processes that produce: vaccines, plasma, blood products, monoclonal antibodies, antibody fragments, stem cells, antibody drug conjugates, allergenics, gene therapeutics, and bio-similar drugs.

15. A computer-based method as claimed in Claim 13 further comprising: at each of the process steps for the subject bio-manufacturing process in the displayed model representation, highlighting in the user interface step appropriate equipment and corresponding services enabling the user to efficiently make appropriate selection of the certain pieces of equipment for the subject bio-manufacturing process.

16. A computer-based method as claimed in Claim 15 wherein said highlighting includes employing user-interactive pulsating beacons and user-interactive color-coded icons.

17. A computer-based method as claimed in Claim 13 wherein the user interface enables the user to specify each step of the subject bio-manufacturing process as having disposable equipment or multi-use equipment, optionally resulting in the subject bio-manufacturing process being of a hybrid process format.

18. A computer-based method as claimed in Claim 17 wherein the one or more processors execute logic rules that ensure: cross equipment compatibility, and resulting workflow configuration viability.

19. A computer-based method as claimed in Claim 13 wherein the one or more processors adjust sizing of the candidate equipment as a function of user-specified scale of the subject bio-manufacturing process.

20. A computer-based method as claimed in Claim 19 wherein sizing of the candidate equipment is based on a volume to be handled by the subject bio-manufacturing process.

21. A computer-based method as claimed in Claim 13 wherein the user interface as supported by the image database displays individual views of the candidate pieces of equipment, and enables the user to selectively telescope (zoom) in and out of displayed views of the candidate pieces of equipment.

22. A computer-based method as claimed in Claim 21 wherein the views of the candidate pieces of equipment include 3D views or renderings.

23. A computer-based method as claimed in Claim 13 wherein the user interface visually highlights related pieces of equipment in the subject bio-manufacturing process and displays how the related pieces of equipment interact and connect to each other.