## CLAIMS

1. A method, comprising:

receiving, as input data, operational data defining one or more tasks in the performance of the workflow, and equipment data defining at least one piece of automated equipment for performance of the one or more tasks in the performance of the workflow;

analyzing the input data in a plurality of data processing modules within a computing environment in which the plurality of data processing modules are executed in conjunction with at least one specifically-configured processor, the data processing modules configured to integrate the one or more tasks in the performance of the workflow and schedule a performance of the workflow, by

1) configuring the at least one piece of automated equipment and the one or more tasks in the performance of the workflow, 2) defining at least one get, handoff, and put sequence for each piece of automated equipment in the performance of a task in the one or more tasks, 3) calculating a path for performing the at least one get, handoff, and put sequence, by executing one or more path resolvers to analyze a plurality of task parameters for each task in the one or more tasks and identify one or more segments for executing the path, by assessing origin, destination, and nest characteristics of the at least one piece of automated equipment, determining a number of robots for the at least one get, handoff and put sequence, and prioritizing station-to-station transfers of items for each tasks in the one or more tasks, and 4) generating a path resolution profile defining the workflow for performing each path; and

developing a schedule for executing an automated performance of the workflow from the path resolution profile, wherein the workflow is performed based on the schedule.

2. The method of claim 1, further comprising applying the path resolution profile to a support tool configured to provide output data to a user relative to the performance of the workflow.

3. The method of claim 1, further comprising initiating the schedule to execute the performance of the workflow.

4. The method of claim 1, further comprising displaying the schedule on a user interface.

5. The method of claim 3, wherein the equipment data and the operational data are selected by a user with the user interface.

6. The method of claim 1, wherein the at least one piece of automated equipment includes a robot.

7. The method of claim 1, wherein the equipment data includes device drivers and device specifications.

8. The method of claim 1, wherein the operational data includes an identification of the one or more tasks in performing the workflow, and defines a content of the one or more tasks.

9. The method of claim 8, wherein the operational data further includes identification of placement nests, stations, and transport modes used in performing the one or more tasks, and identification of specific items used in the performance of the one or more tasks.

10. The method of claim 8, wherein the content is a biological material.

11. The method of claim 1, wherein the input data further comprises timing data that defines when the one or more tasks are performed within the workflow.

12. The method of claim 2, further comprising adjusting one or more prioritization rules to calculate the path for performing the at least one get, handoff, and put sequence, wherein the user performs the adjusting the one or more prioritization rules with the support tool.

13. A method, comprising:

within a computing environment comprised of a computer processor and at least one computer-readable storage medium operably coupled to the computer processor and having program instructions stored therein, the computer processor being operable to execute the program instructions to integrate one or more tasks using at least one piece of automated equipment in a performance of a workflow, and schedule the performance of the workflow by:

resolving one or more paths for performing get, handoff, and put sequences for each task in the one or more tasks, by prioritizing transfers of items in the performance of the workflow, the prioritizing items determined by analyzing a plurality of task parameters for each task in the one or more tasks, assessing origin, destination, and nest characteristics of the at least

one piece of automated equipment, determining a number of robots for the at least one get, handoff, and put sequence, and identifying station-to-station transfers of items for each tasks in the one or more tasks; and

generating a path resolution profile defining at least one segment for executing the one or more paths in the workflow, and developing a schedule for executing an automated performance of the workflow from the path resolution profile, wherein the workflow is performed based on the schedule.

14. The method of claim 13, further comprising applying the path resolution profile to a support tool configured to provide output data to a user relative to the performance of the workflow.

15. The method of claim 13, further comprising initiating the schedule to execute the performance of the workflow.

16. The method of claim 13, further comprising displaying the schedule on a user interface.

17. The method of claim 16, wherein the equipment data and the operational data are selected by a user with the user interface.

18. The method of claim 13, wherein the at least one piece of automated equipment includes a robot.

19. The method of claim 13, wherein the one or more tasks in the performance of the workflow are defined by operational data that identifies the one or more tasks in performing the workflow, specifies a content of the one or more tasks, identifies placement nests, stations, and transport modes used in performing the one or more tasks, and identifies specific items used in the performance of the one or more tasks.

20. The method of claim 19, wherein the content is a biological material.

21. The method of claim 14, further comprising adjusting one or more prioritization rules for resolving the one or more paths, wherein the user performs the adjusting the one or more prioritization rules with the support tool.

22. A system comprising:

a computing environment including at least one computer-readable storage medium having program instructions stored therein and a computer processor operable to execute the program instructions to integrate one or more tasks using at least one piece of automated equipment in a performance of a workflow, and schedule the performance of the workflow within a plurality of data processing modules, the plurality of data processing modules including:

a data reception and initialization component configured to obtain operational data defining one or more tasks in the performance of the workflow, and equipment data defining the at least one piece of automated equipment for performance of the one or more tasks in the performance of the workflow;

one or more components arranged to 1) configure the at least one piece of automated equipment and the one or more tasks in the performance of the workflow, 2) define at least one get, handoff, and put sequence for each piece of automated equipment in the performance of a task in the one or more tasks, 3) calculate a path for performing the at least one get, handoff, and put sequence, by executing one or more path resolvers to analyze a plurality of task parameters for each task in the one or more tasks and identify one or more segments for executing the path, by assessing origin, destination, and nest characteristics of the at least one piece of automated equipment, determining a number of robots for the at least one get, handoff, and put sequence, and prioritizing station-to-station transfers of items for each tasks in the one or more tasks, and 4) generate a path resolution profile defining the workflow for performing each path; and

a scheduling module configured to develop a schedule for executing an automated performance of the workflow from the path resolution profile, wherein the system is configured for the workflow ~~is~~ to be performed based on the schedule.

23. The system of claim 22, ~~wherein~~ configured for the path resolution profile ~~is~~ to be applied to a support tool configured to provide output data to a user relative to the performance of the workflow.

24. The system of claim 22, further comprising a workflow execution component configured to initiate the schedule to execute the performance of the workflow.

25. The system of claim 22, ~~wherein~~ configured for the schedule ~~is~~ to be displayed on a user interface.

26. The system of claim 25, ~~wherein~~ configured for the equipment data and the operational data ~~are~~ to be selected by a user with the user interface.

27. The system of claim 22, wherein the at least one piece of automated equipment includes a robot.

28. The system of claim 22, wherein the equipment data includes device drivers and device specifications.

29. The system of claim 22, wherein the operational data includes an identification of the one or more tasks in performing the workflow, and the system is configured to define~~s~~ a content of the one or more tasks.

30. The system of claim 29, wherein the operational data further includes identification of placement nests, stations, and transport modes to be used in performing the one or more tasks, and identification of specific items to be used in the performance of the one or more tasks.

31. The system of claim 29, wherein the content is a biological material.

32. The system of claim 22, ~~wherein the~~ configured to receive input data that further comprises timing data that defines when the one or more tasks are to be performed within the workflow.

33. The system of claim 22, wherein the one or more components are further arranged to enable the user to adjust one or more prioritization rules to calculate the path for performing the at least one get, handoff, and put sequence, ~~wherein~~ and configured for the user to adjust~~s~~ the one or more prioritization rules with the support tool.

34. A computer program or computer program product comprising instructions for implementing the method of any of claims 1 to 21.