indicating whether executing at least the first part of the selected laboratory application to process the batch was successful. If the result signal indicates that the first part of the selected batch was successful, the operations further comprise running a second part of the selected laboratory application to process the batch at a second scientific device, wherein the second scientific device is selected, by the user, from the one or more scientific devices in the first laboratory.

[0014] Other aspects include a machine-readable medium storing instructions to perform the above method and a system comprising processing circuitry and memory, the memory storing instructions which, when executed by the processing circuitry, cause the processing circuitry to perform the above method.

DETAILED DESCRIPTION

[0015] The following description and the drawings sufficiently illustrate specific embodiments to enable those skilled in the art to practice them. Other embodiments may incorporate structural, logical, electrical, process, and other changes. Portions and features of some embodiments may be included in, or substituted for, those of other embodiments. Embodiments set forth in the claims encompass all available equivalents of those claims.

[0016] As discussed above, handling liquids in a laboratory is typically an error-prone and inefficient process, as lab operators might make mistakes in implementing protocols at scientific devices. Techniques for reducing errors and increasing efficiency in performing protocol(s) at scientific device(s) (e.g., liquid-handler protocol(s)) may be desirable. Some aspects are directed to computer-implemented techniques for performing protocol(s) at scientific device(s). These techniques might, in some cases, reduce human error or increase efficiency.

[0017] FIG. 1 illustrates an example system 100 in which a liquid-handler protocol may be implemented, in accordance with some embodiments. As shown, the system 100 includes a cloud server 102 and a first laboratory 104.

[0018] The first laboratory 104 may be one of multiple laboratories that implement some embodiments described herein. As shown, the first laboratory

104 includes a lab admin (administrator) client device 106 and one or more scientific devices 108.1-n (where n is a positive integer). The scientific devices 108.1-n may include, for example, scientific or laboratory instruments. In some embodiments, any laboratory equipment that processes sample(s) or batch(es) of liquid may be a scientific device. Each scientific device 108.k (where k is a

CLAIMS

What is claimed is:

1. A system comprising:

processing circuitry of one or more servers; and

a memory in communication with the processing circuitry, the memory storing instructions which, when executed by the processing circuitry, cause the processing circuitry to perform operations comprising:

storing, in the memory, a set of laboratory applications to process batches of samples;

receiving, from a first lab administrator client device associated with a first laboratory, a selection of a first subset of the laboratory applications to process the batches of samples in the first laboratory and an admin configuration for at least one laboratory application in the first subset for use in the first laboratory;

receiving, via a web software platform, one or more configurations of one or more batches to be used for running at least a portion of the first subset of laboratory applications configured according to the admin configuration;

receiving, from a first scientific device in the first laboratory, a request to run a laboratory application from the first subset to process a batch, wherein the first scientific device is selected, by a user, from one or more scientific devices in the first laboratory;

providing, in response to the request, one or more laboratory applications from the first subset that are capable of being executed using the first scientific device;

receiving, from the first scientific device, a selected laboratory application from the one or more laboratory applications;

transmitting, to the first scientific device, a control signal for executing a first part of the selected laboratory application to process the batch in accordance with the admin configuration; and

receiving, from the first scientific device, a result signal indicating whether executing at least the first part of the selected laboratory application to process the batch was successful;

wherein the result signal indicates that the first part of the selected batch was successful, the operations further comprising:

running a second part of the selected laboratory application to process the batch at a second scientific device, wherein the second scientific device is selected, by the user, from the one or more scientific devices in the first laboratory.

2. The system of claim 1, the operations further comprising:

receiving, from a lab operator client device, an operator configuration for the selected laboratory application, wherein the control signal is for executing the at least the first part of the selected laboratory application in accordance with the admin configuration and the operator configuration.

3. The system of claim 1, wherein the second scientific device is different from the first scientific device.

4. The system of claim 1, wherein the selected laboratory application includes an indication of the first part and the second part.

5. The system of any of claims 1-4, wherein the set of laboratory applications comprises applications for multiple different laboratories, the operations further comprising:

receiving, from a second lab administrator client device associated with a second laboratory, a selection of a second subset of the selected laboratory applications a second admin configuration for at least one laboratory application in the second subset for use in the second laboratory, wherein the second subset is different from the first subset, and wherein the second admin configuration is different from the admin configuration received from the first lab administrator client device.

6. The system of any of claims 1-5, the operations further comprising:

receiving, upon completion of the selected laboratory application to process the batch, a result of the selected laboratory application to process the batch;

determining whether the result falls within a predefined range; and

providing, to a lab operator client device, the result of the selected laboratory application to process the batch and an indication whether the result falls within the predefined range.

7. The system of claim 6, wherein the result is received from the user while the first scientific device is offline.

8. The system of any of claims 1-7, wherein the first scientific device is configured to:

determine, upon completing executing the first part of the selected laboratory application to process the batch, whether the first scientific device is connected to the one or more servers via a network;

if the first scientific device is connected to the one or more servers: transmit the result signal to the one or more servers; and

if the first scientific device is not connected to the one or more servers:

periodically ping the one or more servers to determine whether the first scientific device has reestablished connectivity with the one or more servers; and

upon reestablishing connectivity: transmit the result signal to the one or more servers.

9. The system of any of claims 1-8, the operations further comprising:

setting a production status of at least one laboratory application to in-production, wherein laboratory applications that are in-production are accessible to both the lab administrator and lab operators, and wherein laboratory

applications that are not in-production are accessible to the lab administrator and not accessible to lab operators.

10. The system of any of claims 1-9, wherein the request to run the laboratory application to process the batch comprises at least a scan of a container of a sample, the operations further comprising:

identifying the sample based on the scan.

11. The system of claim 10, wherein identifying the sample comprises applying optical character recognition (OCR) to at least a portion of the scan.

12. A machine-readable medium storing instructions which, when executed by processing circuitry of one or more servers, cause the processing circuitry to perform operations comprising:

storing, in a memory, a set of laboratory applications to process batches of samples;

receiving, from a first lab administrator client device associated with a first laboratory, a selection of a first subset of the laboratory applications to process the batches of samples in the first laboratory and an admin configuration for at least one laboratory application in the first subset for use in the first laboratory;

receiving, via a web software platform, one or more configurations of one or more batches to be used for running at least a portion of the first subset of laboratory applications configured according to the admin configuration;

receiving, from a first scientific device in the first laboratory, a request to run a laboratory application from the first subset to process a batch, wherein the first scientific device is selected, by a user, from one or more scientific devices in the first laboratory;

providing, in response to the request, one or more laboratory applications from the first subset that are capable of being executed using the first scientific device;

receiving, from the first scientific device, a selected laboratory application from the one or more laboratory applications;

transmitting, to the first scientific device, a control signal for executing a first part of the selected laboratory application to process the batch in accordance with the admin configuration; and

receiving, from the first scientific device, a result signal indicating whether executing at least the first part of the selected laboratory application to process the batch was successful, wherein the result signal indicates that the first part of the selected batch was successful, the operations further comprising:

running a second part of the selected laboratory application to process the batch at a second scientific device, wherein the second scientific device is selected, by the user, from the one or more scientific devices in the first laboratory.

13. The machine-readable medium of claim 12, the operations further comprising:

receiving, from a lab operator client device, an operator configuration for the selected laboratory application, wherein the control signal is for executing the at least the first part of the selected laboratory application in accordance with the admin configuration and the operator configuration.

14. A method implemented at one or more servers, the method comprising:

storing, in a memory, a set of laboratory applications to process batches of samples;

receiving, from a first lab administrator client device associated with a first laboratory, a selection of a first subset of the laboratory applications to process the batches of samples in the first laboratory and an admin configuration for at least one laboratory application in the first subset for use in the first laboratory;

receiving, via a web software platform, one or more configurations of one or more batches to be used for running at least a portion of the first subset of laboratory applications configured according to the admin configuration;

receiving, from a first scientific device in the first laboratory, a request to run a laboratory application from the first subset to process a batch, wherein the first scientific device is selected, by a user, from one or more scientific devices in the first laboratory;

providing, in response to the request, one or more laboratory applications from the first subset that are capable of being executed using the first scientific device;

receiving, from the first scientific device, a selected laboratory application from the one or more laboratory applications;

transmitting, to the first scientific device, a control signal for executing a first part of the selected laboratory application to process the batch in accordance with the admin configuration; and

receiving, from the first scientific device, a result signal indicating whether executing at least the first part of the selected laboratory application to process the batch was successful, wherein the result signal indicates that the first part of the selected batch was successful, the method further comprising:

running a second part of the selected laboratory application to process the batch at a second scientific device, wherein the second scientific device is selected, by the user, from the one or more scientific devices in the first laboratory.