

LabCollector

"Your Laboratory management solution"

User's guide

Laboratory Service Management (LSM)

Version 3.213 – December 2019



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1- INTRODUCTION

Thank you for choosing one of AgileBio's solutions for the management of your lab. The **Laboratory Service Manager** also called **LSM add-on** is a web-based application designed for laboratories, core facilities, and biotechs providing services to clients or partners by keeping track of all samples arriving for processing.

In the LSM add-on, you can create an unlimited number of jobs and projects. You can also define services featuring useful tools to produce added value:

- Lab staff and client interfaces.
- Configurable assays/tests and workflow environment.
- Result and invoice template editor, to personalize your documents.
- Invoice management interface.
- Service cost definition.
- Audit trail log.
- Worklist and scheduler.
- Result report integration.
- And much more...

The LSM add-on provided by AgileBio in combination with **LSMRemote** is suitable for technical platform service activities, Contract Research and Service Organizations (CROs and CSOs). The **LSM add-on** is fully integrated with **LabCollector**, the LIMS we developed for life science research labs, Pharma and Biotech industries. Indeed, several **LabCollector** tools, data, and features work together with the **LSM** to enhance service quality and organization e.g. an alert system for equipment maintenance, consumable stocks, and validity.

The LSM is the main portion of the software where lab level configurations are made and it is also the interface lab staff use to perform jobs. The LSMRemote is an interface for customers/partners to request jobs and to retrieve results.

Note that Chapters 1-3 are mainly concerned with setup and configuration. Chapters 4-6 are mainly concerned with regular use after the LSM is setup.

LabCollector is a proprietary product from AgileBio.

2- GETTING STARTED

You can get **LSM add-on** simply by downloading from www.labcollector.com. LabCollector has to be installed first as it contains the framework. LabCollector support documents for installation are available on our website. **LSM add-on** can be installed on any operating system (Windows, macOS X, Linux).

It is a best practice to make a backup of LabCollector prior to any installation, update or upgrade.

1/Manual mode:

Unzip and paste the **LSM add-on** folder in the extra_modules folder of your LabCollector installation.

As an example, for Windows, it would look like:

```
C:\Programs\AgileBio\LabCollector\www\lab\extra_modules\lsm
```

2/Automatic mode from LabCollector interface:

You can also use the LabCollector Menu

Admin > Setup > Upload/Add Addons > Upload Addon ZIP > Add Addon

Return to LabCollector - the **LSM add-on** module is now activated. Click on the module to finish the installation.

3/Cloud hosted:

If your instance of LabCollector is cloud-hosted with AgileBio, AgileBio staff may perform the installation and license update for you. Contact your sales rep with any questions about the process.

The add-on will remain in a 30-day free trial mode until you save the final license **Admin > Setup > License**. To obtain a valid license, you have to copy and send the activation key to AgileBio.

3- ADMIN MENU – CONFIGURATION

When starting **LSM** usage, it is essential to start with customization steps. You need to create your assays catalog, customers, results parameters and more. These items interact with each other in multiple ways; therefore the order of steps for the initial setup is important. Some portions of the LSM cannot be customized without first setting up others. Helper text appears frequently throughout the LSM. Additionally, the LSM requires records to exist within the Equipment and Reagent & Supplies modules of LabCollector.

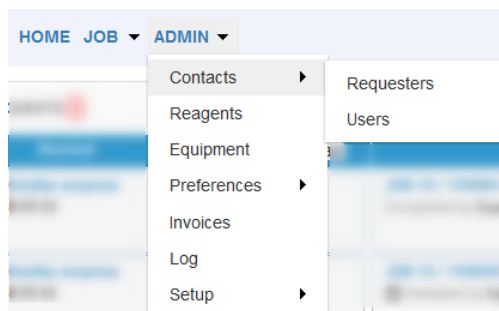
Additionally, the LabCollector [knowledge base](#) provides additional information on specific usage and setup scenarios for the LSM.

The general order for a first-time setup is the creation/modification of:

- 1) Users/requesters
- 2) Reagents and equipment
- 3) Protocols and sample types
- 4) Test parameters
- 5) Result and invoice templates
- 6) Test/Assay

3-1. Contacts – Define users and customers/requesters

New customers/requesters and users can be edited in this section. Navigate to **Admin > Contacts**. Only the administrator has full access to the Admin Menu. The other users (with lower permissions levels) have limited access to admin tools. They cannot edit user accounts.



3-1-1. Create customer/partner/requester list

Select the **Requester** tab in the **Admin > Contacts > Requester** menu.

Note: Customers may be labeled as Requester for some implementations of the LSM.

All functions related to customers and requestors are identical. Customer/partner/requester access is also available via the LSM remote.

To add a new customer/requester, click on the **Add** button. General information is followed by tabs used for billing and shipping purposes. Complete the fields and click on the **Save** button to save the customer profile. After the customer profile is active new tabs for the users, jobs and invoices will appear on the screen.

The Projects tab allows to link project codes created in LabCollector to a customer/requester. When a job is created, the selection of the customer will request the selection of one of his projects. And samples will have automatically the prefix given here. See also section **Projects and modules3-4-6** to see the impact on samples.

Requester Details

Save
Cancel

Code:*

Company/Institute name:

Notes:

Report Preferred: Mail Email Fax

Discount (%):

Name:*

Tax/Vat Number:

Prefix:

BILLING

SHIPPING

PROJECTS

Billing Information

Address:

City: State: Zip:

Country: Select Country Fax: Phone:

Email:

Contact Person:

First Name: Last Name:

All lab service customers and/or partners can be seen in the **Requester List**. Results can be filtered. Type in the filter box and select the type of filter then click *apply*.

Results can be sorted by clicking the column title (alphabetic order). Each Requester is identified with a barcode ID for data traceability.

To see details and modify profiles, double-click on the record of interest, and click on the **Edit** button. Edits to a Requester are only confirmed by clicking on **Save** after making the changes.

Requester List

Add Delete Print Mail

Filter In Code

▲Code Name

Code
Requester Name
Report Preferred

Once validated, the new profile is added to the customer list and additional tabs become available. The new tabs are USERS, JOBS, and INVOICES:

- The USERS tab displays information regarding user accounts. These are created in the next step (login and password).
- The JOBS tab displays information on services ordered by this customer.
- The INVOICES tab displays invoices created from this customer's orders.

Requester Details

< List Add Edit Delete Record 2 of 3

Code: labA Name: laboratory A

Company/institute name:

Notes:

Preferred Report: Mail Job/Var Number:

Discount (%): 0 Prefix:

BILLING SHIPPING PROJECTS USERS JOBS INVOICES

Jobs Information

Job Number	Job Date	Status	Priority level
JOB-6	2018-05-02	In Progress	Normal
JOB-8	2018-05-04	Quoted	Normal
JOB-8	2018-05-28	In Progress	Normal
JOB-9	2018-05-28	In Progress	Normal
JOB-10	2018-05-30	Pending	Normal
JOB-11	2018-05-30	Pending	Normal

3-1-2. Create New Users

A user account (login and password) is required to have access to the **LSM** platform. Access to the LSM and the LSMremote can be distinct from LabCollector access. In addition, LabCollector user logins may be directly linked to a LSM user login. A LabCollector user can be added with the same account information as a LSM user.

Select the **Users** tab in the **Admin > Contacts > Users** menu.



Lab Service Management Home Job ▾ Admin ▾

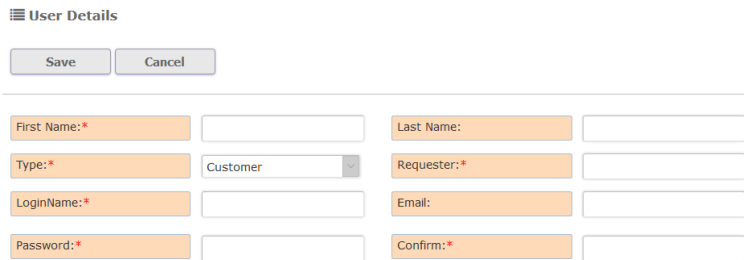
☰ User List

Add Delete Print Mail Teams Import

User accounts are of two sorts:

- The ones relative to the customers/requesters
- The ones relative to the member of your lab.

From the LSM, only customer/requester user accounts can be created. Click on the **Add** button, this will bring up the form to create a new user. The customers/requesters have limited access to viewing. They can only place job requests. Job requests may be done via the LSMRemote or the LSM. Access is limited to their own jobs and results.



☰ User Details

Save Cancel

First Name:* Last Name:

Type:* Customer Requester:*

LoginName:* Email:

Password:* Confirm:*

To create an account for the member of your laboratory, you have to import an account from LabCollector. This will allow a person to use the same username and password for both LabCollector and the LSM. Click on the **Import** button



Lab Service Management Home Job ▾ Admin ▾

☰ User List

Add Delete Print Mail Teams Import

This will bring up a menu to find LabCollector users and allow the assignment of user type in the LSM.

A permission level (**Type**) must be assigned to all users:

- **Admin**: Full access to all LSM applications and features.

- **Staff:** Access to *Preferences* menu and *Contacts* menu, except for the user account editor. He can only see the jobs assigned to him or his team (see below).
- **Finance:** Access to the invoice interface, cost management, and customer list. He can also view the job management list.

Import LabCollector users
— □ ×

Select LSM user type in fourth column for users you are importing

Login	Name	User level permissions (LC)	User type (LSM)	Requester (LSM)
<input type="text" value=""/>	<input type="text" value="full"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>
admin_fullaccess ✓	admin_fullaccess	Administrator	<div style="border: 1px solid #ccc; padding: 2px;"> <div style="background-color: #0070c0; color: white; padding: 2px;">Admin</div> <div style="padding: 2px;">Staff</div> <div style="padding: 2px;">Finance</div> <div style="padding: 2px;">Customer</div> </div>	

The columns consist of:

- Login: LabCollector username.
- Name: Real name
- User level permissions (LC): User level in LabCollector
- User type (LSM): User type in the LSM. A blank entry indicates the LabCollector user does not have a connected account for the LSM.
- Requester (LSM): Only necessary for Customer user type. A blank entry indicates the LabCollector user does not have a connected requester for the LSM.

The upper row may be clicked to toggle between unsorted, and sorting in ascending or descending order (indicated by the absence or presence of an arrow). Login, User level permissions (LC), and User type (LSM) have drop-down menus that allow filtering. The name column offers a text entry filter. These filters can be combined.

After selecting a LabCollector user to import, click in the column corresponding to the User Type (LSM) to select from a drop-down menu. The change takes effect immediately upon selecting. This choice can be changed by an admin.

Equipment categories can be associated with each laboratory user. In this way, lab managers can quickly identify user profiles to execute specific jobs. Equipment is connected to the equipment module in LabCollector. Enter the first letter of the equipment in the auto search field, and click on the **Plus** button to add each type.

The user list shows all lab users: administrators, staff, customers and financial representatives. Specific lists of users can be sorted by clicking the column title (alphabetic order). To see details and modify profiles, double-click the record of interest, and click on the **Edit** button.

☰ User List

Page Size: 10 | Page: 1 of 1

Filter: In: Last Name |

<input type="checkbox"/>	ID	Login Name	First Name	Last Name	Requester	Type	Teams	Source	Active	Locked
<input type="checkbox"/>	6	hawking	Stefen	Hawking	laboratory A	Customer		LSM	✓	🔒
<input type="checkbox"/>	7	MarineS	Marine S			Staff		LabCollector	✓	🔒
<input type="checkbox"/>	10	ElleR	Elle R			Admin		LabCollector	✓	🔒
<input type="checkbox"/>	12	staffA	Staff group A	Staff group A		Staff		LabCollector	✓	🔒
<input type="checkbox"/>	13	cuse	Marie	Cuse	laboratory B	Customer		LSM	✓	🔒
<input type="checkbox"/>	14	darwin	Charles	Darwin	laboratory B	Customer		LSM	✓	🔒
<input type="checkbox"/>	31	margaretstreat	Margaret	Streat	Margaret Streat	Customer		LSM	✓	🔒

When the account is created, the admin can set up two more parameters that will be displayed in the User List. These parameters can be changed at any time.

- Locked/unlocked account

This option is useful to manage customers' access. Instead of editing a new account each time the same customer submits a job, the administrator can use this option.

- Active/inactive profile

The administrators can also decide to identify a profile as inactive if the user is not (or will not be) in the lab for some time. This option is useful to manage laboratory staff members.



Only active & unlocked users may log in to the LSM.

A team of users may be created. This allows the assignment of jobs to an individual or to any individual on a particular team. Navigate to **Admin > Contacts > Users** and select **Teams**. The following menu to manage teams will appear:

Manage teams
— □ ×

Type * Staff ▼

Name *

Users * ▼

type login and click enter

↓ Type	Name	Users
Staff	group012	camil,jacques
Staff	Staff Solids group	Dupont,als,jacques
Staff	james test group	DouglasAdams,staff1
Staff	james test group 3	deborah,DouglasAdams

select row to edit or delete

Save

Delete

Reset

Select the type of team, the options are staff, admin, finance, and customer. Type a name for the team. Select users for the team. Save to confirm changes to the team. In a similar manner, an existing team may be selected from the list and may be altered. The buttons on the menu have these functions:

Save to save any changes to a team.

Delete will delete a team – there is a warning asking if you are sure you want to delete the team.

Reset will clear the team name and list of users on the team. The effect is not confirmed until clicking the save button.

3-1-3. Registration from the LSMremote

From the LSM remote interface, your customers can also ask for an account to register in LSM.

To activate this option, in the file **config.ini** of the LSMremote directory, the *allow_register* parameter has to be activated.



AGILEBIO TEAM

Sign in

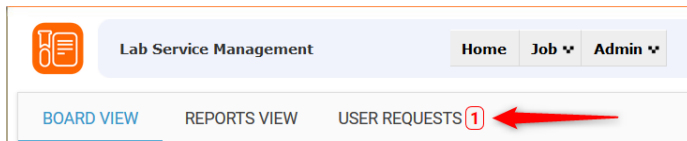
Register

[Forgot your password?](#)

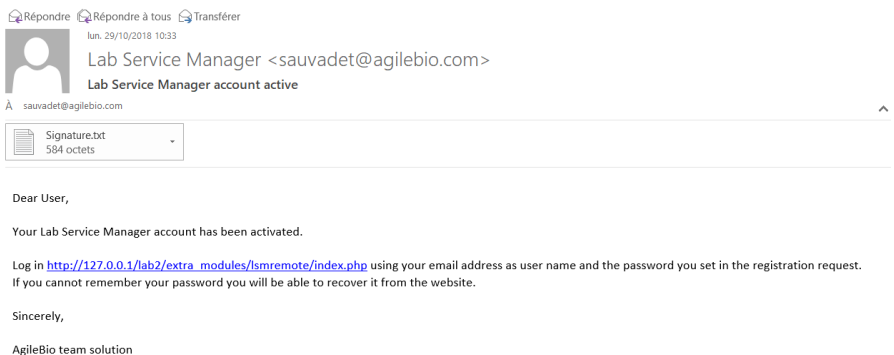
Once the new user clicks on register, a form opens. All the fields are mandatory.


Registration data <input type="text"/> First name <input type="text"/> Last name <input type="text"/> Email <input type="text"/> Company/Institute name <input type="text"/> Tax/Vat Number <input type="text"/> Password <input type="text"/> Retype new password <input type="text"/>	Billing address Address <input type="text"/> City <input type="text"/> State <input type="text"/> ZIP <input type="text"/> Country <input type="text"/> Select Country <input type="text"/> Phone <input type="text"/> Fax <input type="text"/>	Submit <input type="checkbox"/> I agree with the company data privacy policy  Copy the code of the image, to confirm you are not a robot <input type="text"/> <input type="button" value="Submit"/> <input type="button" value="Cancel"/>
--	--	--

Then, an admin has to approve the request in the LSM. On the home page, a new tab is visible showing the numbers of user requests.



Double click on one user request to be able to validate or discard the request. Once validated, the user will receive an email.



 *Email settings need to be done in LabCollector. Please refer to [this KB](#) for more information.*

The relative requester will also be created at the same time using the first and the last names of the user.

3-2. Manage Reagents and Supplies

Navigate to this feature by selecting the **Reagents** tab in the **Admin** menu. This feature uses information from the prebuilt **LabCollector** module Reagents & Supplies.

Unlike other parameters, when you click on the **Add** button, it opens **LabCollector LIMS**. Each new reagent must be created in the **LabCollector** Reagents & Supplies module before it can be accessed by the LSM. Once the new entry is saved in the **LabCollector** database, return to the **LSM** page and refresh your web browser (if the newly added entry does not appear). The new reagent will be displayed in the list. Double-clicking on a reagent record in the list opens the detailed LabCollector information page.


For reagent and supplies that are used in the LSM it is recommended that the fields displayed are set to be mandatory within LabCollector (in LabCollector **Admin > Default Fields > Reagents & Supplies**).


☰ Reagents & Supplies List Total 42 Records.

Page Size Page Of

Filter In

Name	Category	Seller	Storage Location	Quantity
Buffer 2	Buffers	Sigma		16.00
Landau's Buffer	Buffers	Sigma		0
Extraction buffer A (EBA)	Buffers	In House		999426.50

 *To add new reagents, you need a LabCollector user account (login and password). Refer to your LabCollector administrator if needed.*

 *The quantity listed only takes items with an amount defined in the lots/batches.*

3-3. Manage equipment

This section allows appropriate equipment selection to perform assays. Similar to the LSM management of Reagents & Supplies, equipment management is linked to **LabCollector LIMS**. This feature uses information from the prebuilt **LabCollector**

module. It is recommended that the fields present in the list for the LSM are set to mandatory (in LabCollector [Admin > Default Fields > Equipment](#)).


The equipment list has a sorting and filtering function to help with locating equipment records. Type in the filter and select the field to filter, then click apply. To sort a list, simply click the column header and an arrow will appear to indicate sorting in ascending or descending order. Sorting and filtering may be combined.

Select the **Equipment** tab in the **Admin** menu, click on the **Add** button and edit the new entry in the Equipment Module. The new equipment will be displayed in the list. Double-clicking on an equipment record in the list opens the detailed LabCollector record.



Equipment List

Add Print Page Size 10 Page 1 of 5

Filter In Name Apply Clear

Name	Person in Charge	Serial No.	Brand	Location
 Analyser 1		85434567	Analyzer	Equipment Room
 Analyser 2		85434567	Analyzer	Equipment Room
Analyzer 3				
Auto Test				
Bioanalyzer				

Color indicators give information on equipment status:

 In maintenance alert  Out of service

The equipment status is based on the status from the **LabCollector** Equipment module. **Only equipment with no color indicators can be selected when running a job.**

Some equipment are in maintenance


Assigned Started Completed Approved


Save & Start Cancel

Job Number #	<input type="text" value="JOB-5"/>	Mixed Sample Types	<input type="text" value="N"/>
Job Date	<input type="text" value="2018-11-15"/>	Sample No	<input type="text" value="7"/>
Requester *	<input type="text" value="Claire Requester"/>	Sample	<input type="text" value="1542299639936"/>
User	<input type="text" value="Super Administrator"/>	Test	<input type="text" value="HbA1c"/>
Priority level *	<input type="text" value="Normal"/>	Operator	<input type="text" value="Ita (Ita)"/>
Expected Date	<input type="text"/>	Range	<input type="text"/>
Status	<input type="text" value="Pending"/>		

Parameter	Default Value	Unit
Glucose		<input type="text" value="mg/ml"/>
Fasting	<input type="text" value="N"/>	<input type="text"/>

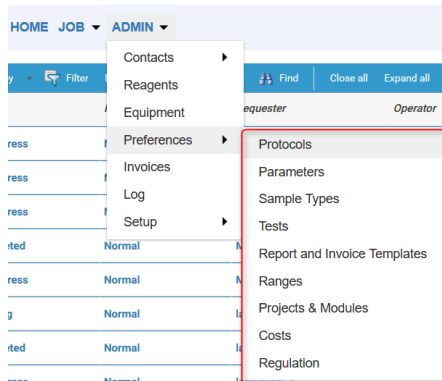
Protocol	Equipment Category	Equipment Name	File
Blood Test protocol	Centrifuge	<input type="text" value="Select"/>	Download

 *To add new equipment, you need a LabCollector user account with an appropriate permission level (login and password). Refer to your LabCollector administrator.*

 *You cannot create a new equipment category within the LSM. These must first be defined in the preferences for LabCollector Equipment Categories (requires admin-level access in LabCollector).*

3-4. Lab services definition and configuration

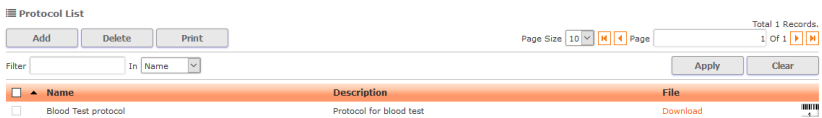
To customize the LSM according to your lab activities, go to the **Admin > Preferences** menu. This section is used to configure the laboratory service activities. On the initial setup, the order of selecting these is important as each part of the preferences relate to others.



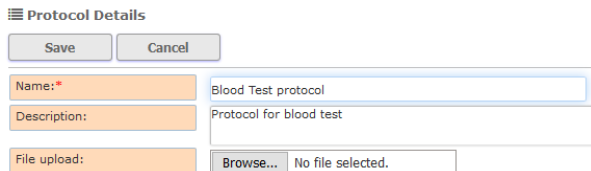
3-4-1. Create a protocol list

To perform analyses, you need to pool all the protocols needed. Within the LSM navigate to **Admin > Preferences > Protocols**. This section allows uploading protocols that will be used for tests/assays. Click on the **Add** button to add new protocols. Each protocol is associated with a unique ID allowing barcode label identification and data traceability. The protocols will be available to the person performing jobs connected to the protocol. A name for the protocol is required. A description is optional. The protocol can then be added by browsing for a file to upload.

Files may be downloaded from the protocol list or when doing a job (also see chapter 4-).



View of protocol list.



View to edit protocol details.

Protocol & Equipment			
Protocol	Equipment Category	Equipment Name	File
RT-PCR	PCR machine	PCR Machine	

View to retrieve protocol when doing a job.

Protocol names and descriptions can also be added to the final report. Please see section 3-4-4.

3-4-2. Create parameters

The parameter list pools all parameters that can be used during lab service activities.

Within the LSM navigate to **Admin > Preferences > Parameters**. Click on the **Add** button to create all needed variables (temperatures, volumes, concentrations, measurements...) that are relevant to perform assays/tests in the lab and define results.

Parameters can be INPUT or OUTPUT/RESULT values depending on whether they are needed when starting a job or to record the results of an assay or test.

Note: As of version 3.2063 it is possible to add test parameters while editing a test. See 3-4-5 for more details.

Parameter Details

Save Cancel

Label:*

Level:* -- Select level --

Data Type:* -- Select type --

Helper text:

Unit: type and press enter

Phrase: type and press enter

On Report:

On Client Form:

Mandatory:

You can define where the parameters will be used (Level/Step):

- **Job:** Will be a custom field on the Job definition form. These parameters apply to all samples and assays/tests for a job. Defined when submitting jobs via either the LSM or the LSMRemote.
- **Sample:** Will be a custom field for the sample form. These parameters apply to particular samples within each job. Defined when submitting jobs via either the LSM or the LSMRemote.

- **Assay/Test:** Will be used as an INPUT, PROCESSING or RESULT value field. These parameters are filled in only via the LSM by staff and/or admin-level LSM users. Further control is done by assay in Assay Details.

An example job submission form within the LSM showing the location of Job Level and Sample Level parameters:

The screenshot shows a job submission form with two main sections:

- Job level:** Includes fields for Job Number (with a calendar icon), Job Date (2018-11-22), Requester (dropdown), Priority level (Normal), and Expected Date (with a calendar icon). There are also radio buttons for 'Job' (selected) and 'Quote'. A 'Clinical sample' dropdown is set to 'Y'.
- Sample level:** A table with columns: Sample*, Type*, Sex, Comment, Tests. One row is shown: 1542876756846, Blood, F, HbA1c.

An example job submission form within the LSMremote showing the location of Job Level and Sample Level parameters:

The screenshot shows the LSMremote job submission form with the following sections:

- Job data (Job Level):** Contains 'Requester' and 'Priority level' dropdown menus.
- Sample data (Sample Level):** Contains 'Type*' and 'Container' dropdown menus.
- Select test:** A section with checkboxes for 'Der P1', 'Der F1 K °C', and 'Mite pp2'.

The above view is designed for jobs that will only have a single sample. The view below is for jobs that can take multiple samples. There are expandable tabs to enter job level and sample-level information. For more details on LSMremote configuration, please refer to [this KB](#).

Job data

Sample data

Type*	Sample Condition	Date Collected	Sample prep date	Comment	Tests

Assay/Test level parameter definition for an assay (below):

Test Details

Name* HbA1c

Code

Template Final results

Result Type Results Sample File

Category

Default Operator* Team1

Default Hours* 1

Description

Parameter	Default Value	Unit	Range 1	Range 2	Phrase	Low	High	Mandatory
HbA1c		%	4	5.6		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

The Assay/Test takes the parameters that are already defined (details to create parameters are described above). The parameters can be set as an input, processing or a result.

Input parameters have an option to set a unit and default value (leave blank to have the value empty initially).

Processing and result parameters can have a default value, unit, Phrase (defined by the parameter definition), and phrase selection for values inside, above or below a range of results (the phrases available are set by the parameter definition).

Example job form showing location of test and job level parameters:

The screenshot displays a job form with the following sections:

- Job Level Parameters:** A form with fields for Job Number (JOB-1), Sample No (1), Job Date (2019-03-14), Requester (ABC), User (Super Administrator), Priority level (Normal), Expected Date, Status (In Progress), Sample (1552578599093), Test (Hba1c), Operator (Team1), Hours (1), and Range (Range 1). A red label "Job level parameters" points to this section.
- Input Parameter:** A table with columns: Parameter, Default Value, Unit. Row: Volume of blood *, 50, mL.
- Protocol & Equipment:** A table with columns: Protocol, Equipment Category, Equipment Name, File. Row: Hemoglobin a1c Analyzer, Analyzer, Hemoglobin a1c Analyzer, Download.
- Processing Parameter:** A table with columns: Parameter, Value, Unit, Phrase, Range. Row: Deionised water *, [], uL.
- Result Parameter:** A table with columns: Parameter, Value, Unit, Phrase, Range. Row: HbA1c *, [], %, 4 - 5.6.
- General comment:** A text area for additional notes.

A red label "Test level parameters" points to the Processing Parameter and Result Parameter sections.

The lab can choose between several types of variables (Data Types):

- **Checkbox:** Binary answers Yes/No, True/False as a checkbox.
- **Date:** Reported as yyyy-mm-dd, entered using a calendar.
- **Datetime:** Reported as yyyy-mm-dd-hh-mm, entered using a calendar
- **Value list:** Provide values for a dropdown menu for a single choice.
- **Numeric:** Numeric user typed input. A range may be assigned to numeric parameters when defining assay details.
- **String:** Alphanumeric user typed input.
- **Longtext:** Field text with CKeditor (size = 1000 characters).
- **Image:** Field to upload images.
- **File:** Field to upload files.
- **AVG:** Allows you to get the average/mean value from a list of numeric parameters. There is also the option to show the standard deviation (Include SD).

- **SD:** Allows you to get the standard deviation value from a list of numeric parameters, in a specific field.
- **Calculated:** Allows you to use formula using numeric, AVG and SD fields.



Press ENTER to validate a unit or a value list before saving your new parameter

Lab Service Management Home Job ▾ Admin ▾

Parameter Details

Save Cancel

Label:* Glucose

Level:* Test ▾

Data Type:* Numeric ▾

Helper text:

Unit: mg/mL x type and press enter

Phrase: Normal x High x Low x type and press enter

On Report:

On Form:

Mandatory:

For each parameter, you can define an associated phrase (or phrases) that will be used in result reports. Phrases are added in the same manner as values for a value list. Type in the box and click enter. This confirms the phrase indicated by a bubble around the text. Clicking the 'x' in the bubble will remove the phrase. A phrase has the option to be linked to a min-max range *if* the parameter has the data type numeric *and* is an assay level output. Note that multiple ranges are possible. For more information on ranges refer to the chapters describing tests/assays.

If you don't want to have this parameter of the final report, untick the box "On Report".

If you want to remove the parameter from the client form (using LSM remote or LSM), untick the box "On Client form". This parameter will be only visible by the staff.

If this parameter has to be filled in during the process, tick the box "Mandatory".

For job and sample levels, you can order the parameters by simply dragging and dropping them **from the top to the bottom** of the list. Just click on the **Order** button on the parameter list. No need to save.

Job custom fields	Order	Sample custom fields	Order
drag and drop parameters to change order		Depth	2
		Sample code	1
		Location	3
		drag and drop parameters to change order	

Locking/unlocking editing of parameters:

Once you're happy with the configuration of your parameter there is the option to lock it and prevent further editing by clicking on the **Lock editing** button.

Parameter Details

< List Add Edit Delete **Lock editing**

Label: 25-hydroxy vitamin D

To edit a parameter you need to click on **Unlock editing** and provide a reason for changing the parameter.

Parameter Details

< List Add **Unlock editing**

Label: Reason for unlock

Level: [Text Area]

Data: [Text Area]

Help: [Text Area]

Confirm

3-4-3. Manage sample types

The lab has to manage sample types according to the lab. Within the LSM, navigate to **Admin > Preferences > Sample Types**. The sample type is required to be included for all samples in all jobs. At least, one definition of sample type must be created.

To add a new sample type click **Add** and complete the form. This section allows sample types definition (blood, DNA, protein extraction, tissue...). The name is mandatory and the description, storage information and handling conditions are optional.

To delete a sample type, click the checkbox next to the sample type name and then click delete.

Note that deleting a sample type that is currently being used is prohibited. The sample type list may be printed.

There are sorting and filtering options to help with managing long lists of sample types. Click a column header to sort in ascending or descending order (indicated by an arrow **▼ Name**). There is also a filter that may be applied to either the name or description, click apply for the filter to take effect. The number of records per page may also be adjusted.



Entering a sample type is required when submitting a job that includes samples. You may not submit a job with sample(s) unless at least one sample type has been created. These sample types are distinct from the sample types created in LabCollector.

Sample Type List

Total 3 Records.

Add **Delete** **Print** Page Size 10 **◀** **▶** Page 1 Of 1 **▶** **▶**

Filter In Name **▼** **Apply** **Clear**

<input type="checkbox"/> ▲ Name	Description
<input type="checkbox"/> Blood	Sampling 2/3/4 hours after treatment
<input type="checkbox"/> Saliva	Swab containing saliva
<input type="checkbox"/> Urine	Taken in morning only

From the sample type list, the information may be edited by clicking on the desired sample type in the list and then clicking on edit. After making changes, click save to confirm changes or click cancel to avoid making changes.

Sample Type Details

< List **Add** **Edit** **Delete**

Name:

Description:

Storage Information:

Handling Conditions:

The sample type is selected when submitting a job via a dropdown menu from the LSM or the LSMremote.

Job Number [Ⓜ]	<input type="text"/>	Clinical sample	<input type="text" value="Select value"/>
Job Date	<input type="text" value="2018-11-22"/>	Clinic Name	<input type="text"/>
Requester *	<input type="text"/>	Serial Number	<input type="text"/>
Priority level *	<input type="text" value="Normal"/>		
Expected Date	<input type="text"/>		
Order	<input checked="" type="radio"/> Job <input type="radio"/> Quote		

Add row Select all Remove selected Import CSV Export CSV Memorized records Rename samples Chain of Custody (CDC) Assign tests

SAMPLES				
Sample*	Type*	Sex	Comment	Tests
1542897782378				

Lang

Job data Requester <input type="text"/> Priority level <input type="text" value="Normal"/> Expected Date <input type="text"/>	Sample data <div style="border: 2px solid red; padding: 2px; margin-bottom: 5px;"> Type* <input type="text" value="Room"/> </div> Container <input type="text"/> insert size <input type="text"/>	Select test Tests <input type="checkbox"/> Cat_A <input type="checkbox"/> Cat_B <input type="checkbox"/> Cat_D <input type="checkbox"/> Drinking water <input type="button" value="Save"/> <input type="button" value="Cancel"/>
---	---	--

3-4-4. Report and invoice templates

In this section, you can create templates for result reports, a chain of custody list, a batch list and invoices to personalize documents that you will deliver to your customers and your staff.

Each template is assigned a name and a short description.

The editor offers numerous options to customize templates. There are paste special buttons in the editor for images and for common programs such as MS-Word. HTML can be used to create templates. In many cases copying and pasting from existing forms, such as your existing documents or websites can be used to speed up the design or editing of templates.

This system is designed to enhance quality and save time. Manual entry is minimized.

Default tags are detailed below depending on the template. Individual tags corresponding to the parameters you created in section 3-4-2 can also be used, just copy **##name_of_parameter##** in the template.

Result and processing report templates can be chosen when you create a test (section 3-4-5) and can also be defined in the Templates options. Through **ADMIN > Preferences > Report**, on the top right, you have a button **Options**. Here you can define a template for tests, COC reports, and Batch reports. You can also select the job report mode: by default, results are separated by test; or integrated, results of all tests in a job are merged in the same design, or merged by template if different templates are designed for different tests in a same job. Selections are saved automatically.

Templates options
⌵

COC report template (?) General ⌵

Batch report template (?) ⌵

Job report mode (?) Integrated (merge results of all tests) ⌵

Test	Results template	Processing template
Cardiac enzymes	template_results	General
cb_1	General	processing_template
Cholesterol LDL	General	processing_template
CRP	template_results	processing_template
Glicémie	client 1 template	processing_template
HbA1c	Client 1 template	processing_template
	CI1 2019-02-07	processing_template
HbA1c	template_results	processing_template
HHV	General	General

Note: Just click in the cell where you want to select a new template. The update is automatic.

3.4.4.1 Results and Processing report templates

A template is related to an assay/test. For multiple tests/assays in a project, different templates can be applied.

To create templates that will include job-specific details, you need to use specific HTML tags that will be replaced by the corresponding values in the final result document.

Specific HTML tags for results and processing reports:

<code>##results##</code>	Will be replaced by results narrow table
<code>##results_extended##</code>	Will be replaced by results wide table
<code>##results_merged##</code>	Will be replaced by results wide table, without break by sample
<code>##process_extended##</code>	Will be replaced by processing parameters table
<code>##details##</code>	Will be replaced by results detailed table
<code>##matrix##</code>	Will be replaced by results matrix
<code>##samples##</code>	Will be replaced by samples list
<code>##requester_name##</code>	Will be replaced by requester name
<code>##requester_address##</code>	Will be replaced by requester address
<code>##job_number##</code>	Will be replaced by job number
<code>##job_date##</code>	Will be replaced by job date
<code>##job_param##</code>	Will be replaced by job custom parameters
<code>##job_submitter##</code>	Will be replaced by the job submitter's name
<code>##operator_name##</code>	Will be replaced by operator name
<code>##validator_name##</code>	Will be replaced by validator name
<code>##protocols##</code>	Will be replaced by protocols list
<code>##protocol_name##</code>	Will be replaced by protocol name
<code>##protocol_description##</code>	Will be replaced by protocol description
<code>##report_number##</code>	Will be replaced by report unique identifier
<code>##labname##</code>	Will be replaced by lab name
<code>##reagents##</code>	Will be replaced by reagents list
<code>##equipments##</code>	Will be replaced by equipment list

3.4.4.2 Invoice templates

A template can be related to an invoice/quote.

To create templates that will include job-specific details, you need to use specific HTML tags that will be replaced by the corresponding values in the final invoice document.

Specific HTML tags for invoices:

<code>##details##</code>	will be replaced by invoice details.
<code>## requester_name##</code>	will be replaced by requester/customer name.
<code>## requester_address##</code>	will be replaced by requester/customer address.
<code>##requester_email##</code>	Will be replaced by requester email
<code>##job_number##</code>	will be replaced by the job number.

##job_date##	will be replaced by the job date.
## job_submitter ##	will be replaced by name of the person with an active account who requested the job
##invoice_number##	will be replaced by the invoice number.
##invoice_date##	will be replaced by the invoice date.
##tax_number##	will be replaced by customer tax number.
##purchase_order##	will be replaced by job purchase order number

3.4.4.3 Chain of custody/shipment templates

A template can be related to a CoC.

To create templates that will include job-specific details, you need to use specific HTML tags that will be replaced by the corresponding values in the CoC document.

Specific HTML tags for CoC reports:

##details##	Will be replaced by Chain of Custody (CoC) list
##requester_name##	will be replaced by requester/customer name
##requester_address##	will be replaced by requester/customer address
##requester_email##	Will be replaced by requester email
##job_number##	will be replaced by job number
##job_date##	will be replaced by job date
## job_submitter ##	will be replaced by name of the person with an active account who requested the job

3.4.4.4 Batch report templates

A template can be related to a batch report.

To create templates that will include batch-specific details, you need to use specific HTML tags that will be replaced by the corresponding values in the Batch report.

Specific HTML tags for Batch reports:

##details##	will be replaced by a detailed result table
##batch##	will be replaced by batch name/number

3-4-5. Define Tests/Assays

Labs can offer a panel of services/jobs which can be defined by one or more assays. From the LSM, navigate to **Admin > Preferences > Tests** (in some versions this is **Admin > Preferences > Assays**). Each assay/test is identified by its own ID allowing lab information traceability.

Assays/tests are the last item within the LSM that should be defined as it requires several options to be configured before starting.

The screenshot shows the 'Lab Service Management' interface. At the top, there is a navigation bar with 'Home', 'Job', and 'Admin' menus. Below this is a 'Test List' section with buttons for 'Add', 'Delete', 'Print', and 'Categories'. A search bar and a 'Total 10 Records' indicator are also present. A table lists the tests with columns for ID, Name, Code, Category, Description, Report type, and Locked. The table contains three entries: 'Test1', 'Glicémie', and 'Cholesterol LDL'.

ID	Name	Code	Category	Description	Report type	Locked
1	Test1	T1	test_cat_01		Results	<input type="checkbox"/>
2	Glicémie	GLI			Results	<input type="checkbox"/>
3	Cholesterol LDL				Results	<input type="checkbox"/>

The LSM admins can define tests. To add a new assay/test, click on the **Add** button.

An assay/test is defined by:

Name: The name of the test/assay.

Code: Code for the test/assay.

Category: The test/assay may be assigned to a category – useful if panels are regularly performed together. This will appear as an option in both the LSM and LSMremote.

Sample type: The test will be restricted to a specific sample type. The selection during the creation of a job will be simplified.

Description: Description of the test.

Result Type: Choose from Results, Sample and File (see below).

Default operator: Preferred person to conduct the assay. It can be a single person or a team. This operator or team will see their jobs on the job board, dashboard, and calendar.

Default Hours: Default time expected to conduct the test/assay. Connects to dashboards and reporting.

Results template: Template for reporting a result. Select the name from a dropdown.

Processing template: Template for reporting the processing parameters. Select the name from a dropdown.

Three types of results are available:

- **Results:** Insert selected result fields defined in the dictionary ([see below](#)). The results from parameters selected as assay level will appear as results in the report.
- **Sample:** The result when doing the job is the creation of a new sample for another analysis. This can iteratively create samples for the same assay from which the sample was created.
- **File:** Import a result file made as a result of doing the job multiple files may be combined in a zipped file. The file will be available for download via the LSM and the LSMremote when the job is completed.

Test Details

Save Cancel

Name* Physical Water analysis

Code Wa

Category Water analysis

Sample Type Water

Description

Result Type Results Sample File

Default Operator* Marine S (Marines)

Default Hours* 2

Results template result complete

Processing template Select

INPUT PARAMETER REAGENTS & SUPPLIES PROTOCOL PROCESSING PARAMETER RESULT PARAMETER

+ Begin typing to search for a parameter

ID	Parameter	Default Value	Unit	Range 1
1	pH	7		
11	Turbidity		NTN	
13	Conductivity		µS/cm	

Below the assay information, five tabs are displayed to set up the test/assay. The tabs include input parameters, protocols, reagents, processing parameters, and result parameters:

- **Input parameters:**

All variables required to design the test and to prepare samples for analysis can be added from this tab. Parameters must be defined with the assignment as Test/Assay level to be available for selection. Input parameters can be marked as mandatory and can have a default value and unit specified.

INPUT PARAMETER REAGENTS & SUPPLIES PROTOCOL & EQUIPMENT PROCESSING PARAMETER RESULT PARAMETER

Parameter	Default Value	Unit	Mandatory
Fasting?			✓
Glucose		mg/ml	✓

Note: For **Input, Processing and Result parameters** it's possible to create a new parameter directly in the test by clicking on the plus symbol to the left of where you type the name of a parameter.

Also, if you have changed the name of a parameter while creating a test you can click on the Refresh button on the right-hand side and you should be able to find your newly modified parameter when you type its name in the parameter search.

Parameter	Default Value	Unit	Mandatory	
parameter2	0		<input type="checkbox"/>	<input type="checkbox"/>
size	0		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Note: If you want to reorder parameters just drag and drop them into the required position.

- Reagents & supplies:

This tab allows the lab to associate reagents (and their quantity) that will be used to perform the test/assay. The operator will be able to adjust the default amount to reflect actual usage when doing a job. Reagents and Supplies are connected to the LabCollector module Reagents & Supplies to provide details on available lots including information about amounts and dates of validity.

Reagent	Default Quantity
Hemo One HbA1c Reagent Kit	1

- **Protocols:**

Several protocols can be added for the same test if required. Equipment categories are also applied to the test from this tab.

INPUT PARAMETER	REAGENTS & SUPPLIES	PROTOCOL	RESULT PARAMETER														
<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/>		<table border="1"> <thead> <tr> <th>Protocol</th> <th>Equipment Category</th> <th><input type="checkbox"/></th> </tr> </thead> <tbody> <tr> <td>Dried Blood</td> <td>NMR</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Blood analysis</td> <td>NMR</td> <td><input type="checkbox"/></td> </tr> <tr> <td>DNA extraction</td> <td>PCR Machines</td> <td><input type="checkbox"/></td> </tr> <tr> <td>RNA extraction</td> <td>PCR Machines</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Protocol	Equipment Category	<input type="checkbox"/>	Dried Blood	NMR	<input type="checkbox"/>	Blood analysis	NMR	<input type="checkbox"/>	DNA extraction	PCR Machines	<input type="checkbox"/>	RNA extraction	PCR Machines	<input type="checkbox"/>
Protocol	Equipment Category	<input type="checkbox"/>															
Dried Blood	NMR	<input type="checkbox"/>															
Blood analysis	NMR	<input type="checkbox"/>															
DNA extraction	PCR Machines	<input type="checkbox"/>															
RNA extraction	PCR Machines	<input type="checkbox"/>															

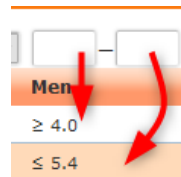
- **Processing and Results parameters:**

Processing parameters are ideal for all of those intermediate results whereas Result parameters are the final results that you wish to display in the report for the client. If “Results” was selected as **Result Type**, you must choose the ones that are relevant for this assay from the list of parameters. There are additional aspects of the results parameter to define including the default value, unit, the range, default phrase, default phrase if the result is lower than the range, default phrase if the result is higher than the range and whether or not to make the parameter mandatory.

INPUT PARAMETER	REAGENTS & SUPPLIES	PROTOCOL	PROCESSING PARAMETER	RESULT PARAMETER																				
<input type="text"/> <input type="button" value="+"/> <input type="button" value="-"/>				<table border="1"> <thead> <tr> <th>Parameter</th> <th>Default Value</th> <th>Unit</th> <th>Men</th> <th>Women</th> <th>Phrase</th> <th>Low</th> <th>High</th> <th>Mandatory</th> <th><input type="checkbox"/></th> </tr> </thead> <tbody> <tr> <td>Final results</td> <td></td> <td>%</td> <td>5.6 – 6.5</td> <td>5.6 – 6.5</td> <td>Moderate</td> <td>Normal</td> <td></td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Parameter	Default Value	Unit	Men	Women	Phrase	Low	High	Mandatory	<input type="checkbox"/>	Final results		%	5.6 – 6.5	5.6 – 6.5	Moderate	Normal		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parameter	Default Value	Unit	Men	Women	Phrase	Low	High	Mandatory	<input type="checkbox"/>															
Final results		%	5.6 – 6.5	5.6 – 6.5	Moderate	Normal		<input checked="" type="checkbox"/>	<input type="checkbox"/>															

Ranges for parameters are defined by [Admin > Preferences > Ranges](#). Up to 6 different ranges can be available when defining the assay details. The ranges require a name (the default names are Range 1, Range 2....). To make a range available to use, at least one of the range selector sliders must be switched to on.

While adding a parameter to the Processing or Result parameter tabs you can add a range with both the lower and upper bound filled in or just one of the two. Filling in just the lower bound will result in the \geq symbol showing before the value and filling in just the upper bound results in the \leq symbol showing before the value.



Ranges

#1	Women	ON
#2	Men	ON
#3	Children (<12y)	ON
#4	Range 4	OFF
#5	Range 5	OFF
#6	Range 6	OFF

Save

CLOSE ✕

An individual test (and all of the associated samples) will only have a single range applied. The range is selected when starting the job.

Assigned Started Completed Approved

Save & Start Cancel

Job Number #1	JOB-6	Clinical sample	Select value
Job Date	2018-11-15	Sample No	8
Requester *	CD Requester	Sample	1542300051008
User	Super Administrator	Test	RT-PCR
Priority level *	Normal	Operator	Ita (Ita)
Expected Date		Range	
Status	Pending		

Once the configuration of a test is complete the test can be locked/validated to prevent further editing.

Test Details

< List Add Edit Delete Categories Lock editing

Name	Cardiac enzymes
Code	T1-Card
Template	template_results

To unlock editing you must provide a reason.

Test Details

< List Add Categories **Unlock editing**

Name Reason for unlock

Code

Template

Result Type

Category

Confirm

To be more efficient in the setup of the LSM, you can also duplicate the test with the button **Duplicate**. All the information from the “parent” test is kept, and (*copy*) is added to the name.

The last option is to let you archive a test after given a reason. An archived test will be not in the list of tests anymore in LSM and LSMremote. This archived test is always visible in the tests list but with the status Archived = YES. An archived test can be duplicated.

Test Details

< List Add Edit Delete Lock editing **Duplicate** **Archive**

Name Physical Water analysis (copy) Reason for archive

Code Wa

Category Water analysis

Sample Type

Confirm

Tests may be assigned to a category. This menu allows the assignment of assays to a category (also known as Panels). When submitting a job either individual tests may be selected or categories of tests may be selected.

Manage categories

Name * Blood panel

Tests * HbA1c x CBC x

click on arrow to add tests

Save Delete Reset

Name	Tests
Blood panel	HbA1c

select row to edit or delete

The selection appears by the sample when submitting a job from the LSM.

The screenshot shows the 'Lab Service Management' interface. At the top, there are navigation links for 'Home', 'Job', and 'Admin'. Below this is a form with fields for 'Job Number #', 'Job Date' (2018-11-22), 'Requester', 'Priority level' (Normal), and 'Expected Date'. There are also dropdowns for 'Clinical sample' and 'Serial Number'. A red arrow points to the 'Assign tests' dropdown menu, which is open and shows options: 'Default mode (test search)', 'Categories grid mode', and 'Tests grid mode'.

When submitting from LSMRemote there are two choices. One is a tickbox on the right-hand side. The other is a spreadsheet-style with an option to upload a CSV file.

This screenshot shows the 'Select test' dropdown menu. The 'Tests' tab is selected and highlighted with a red box. It contains a list of test categories with checkboxes: 'Cat_A', 'Cat_B', 'Cat_D', and 'Drinking water'. Below the list are 'Save' and 'Cancel' buttons. The background shows the 'Job data' and 'Sample data' sections of the form.

In Workflow Manager add-on version 4.38, a link to the LSM can be designed in order to send samples to a test lab for example.

The workflow template needs to have a link node containing a link URL such as:

[https://\[YOUR_URL\]/extra_modules/lsmremote/addfromlc.php?testIDs=X](https://[YOUR_URL]/extra_modules/lsmremote/addfromlc.php?testIDs=X), where X corresponds to the test ID in the LSM. For more detail, please refer to the Workflow manual.

3-4-6. Projects and modules

By default, all the samples added to a job in LSM can be added to the LabCollector inventory in the Samples module. By opening a job, click on the icon to the right to open the inventory form.

ID	Name	Type	consent	Depth	Sample code	Location	Comment	Tests	Received Date
62	Dunsh15752266566	Sediment						Microbiological water analysis	2019-12-13 11:24:35

Navigate to **Admin > Preferences > Projects and modules** and switch the option to ON to select the LabCollector module to create the LSM samples. The selection is done per project.

3-4-7. Cost definitions

This menu allows general cost parameters definition and attribution to each test/service. Navigate to **Admin > Preferences > Costs**.



Your LSM license must include the billing option to have access to this feature.

You can edit currency, invoice prefix, tax rate, invoice template, invoice number start, tax default, and payment mode.

Note that these values can be connected via the API for situations where you use an existing form or portal on your website.

Manage Costs

Edit

Currency:	Euros	Invoice template:	General	View
Invoice prefix:	INV-	Invoice number start:	1	
Tax/Vat List:	0 7.5 10 20 30	Tax/Vat Default:	20	
Note: (Enter multiple values separated by " ")				
Payment Mode:	Purchase Order			

Note: Enter multiple values separated by the bar "|".

Finally, you can configure the costs applied for each assay/test or category of tests. You can choose between hourly or fixed costs.

TESTS		CATEGORIES	
Test Name	Mode	Fix Price	Hourly Price
Der P1	Fix	500	0
Der F1 K 9C	Fix	200	0
Mite gp2	Hourly	0	50

NOTE: Hourly price can also be used as a price per UNIT. For example, you have a test on slides, and you set up the price for 1 slide (/hour). Instead of enter the samples 10 times, you can set up a cost per hour and when the staff does the test, they can indicate the number of slides they worked on.

3-4-8. Regulations compliance & validation

If you need security or regulation compliance, you can activate this function. By default, the value is OFF.

Regulatory options

Compliance ON

- User must confirm password to enter results
- Admin must confirm password to validate results
- One-step review (one validator)
- Two-step review (two distinct validators)
- Limit the test list only to validated tests
- Activate barcode verification

Select barcode field
Default (Sample Name) ▾

Deviation module

- Select a custom module to enable the option to add deviation records to jobs, samples and tests

None ▾

Reagent lots

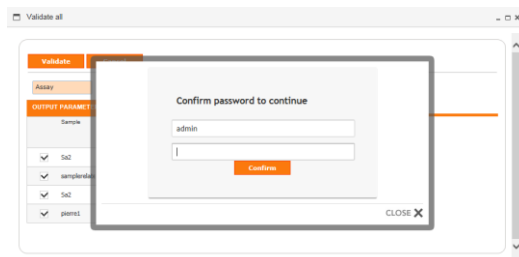
- Block the start of tests using reagents without active lots

PDF options

- PDF/A

Save

If this function is activated, when users perform validation actions (single sample or batch), the system asks the user to confirm their password. Only the super-administrator or users defined with the Administrator role within the LSM can validate results. The validator and timestamp of validation will be automatically added to reports. The number of validators needed can also be configured (one or two).



When a job is finished (last level), if an administrator needs to change result parameters, a reason for change needs to be added. This reason is added to the log.

Assigned → Started → Completed → **Approved**

Save **Cancel**

Reason To Change *

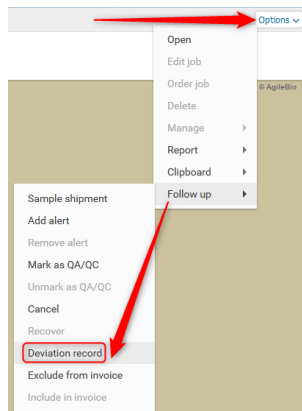
Date	Action	Comment	Username	IP
2018-07-19 18:37:02	Validated sample changed	wrong Ch4 results	admin	undefined

You can also limit the list of tests to the validated tests, the one LOCK in editing (see section 3-4-5).

When a job is started, you can ask that the staff has to scan a barcode relative to the sample name by default or a field previously populated in the input parameter for example.

If an issue is encountered during a test/assay, you may want to create a deviation record to record the issue. To set up this function, you have to choose a module to save the deviation records in **Regulatory Options**.

On the test/assay level, right-click on the name then go to **Manage > Deviation record**. A new window opens to fill in the form of the deviation record.



The sample will have a yellow triangle icon on the right allowing you to open the deviated module record.

3-5. Invoice Management (quotes and invoices)

Invoice management is only for the administrators and finance staff.

Go to the **Admin** menu and choose the **Invoices** tab.

In this section, you can find quotes, pending invoices, issued invoices, and paid invoices. There are options to search and filter the quotes and invoices.

Invoices List

Export IIF

Filter: In JobNumber Status Pending From 2018-12-01 To 2018-12-10 Apply Clear

Job Number	Purchase Order	Requester	Total	Invoice Number	Status	Date Issued	Date Paid
JOB-19		CD Requester	0 Euros	INV-11	Pending		
JOB-22		CD Requester	0 Euros	INV-14	Pending		
JOB-14		CD4 Requester	0 Euros	INV-8	Pending		
JOB-18		CD4 Requester	0 Euros	INV-10	Pending		

When a job is finished and approved, an invoice is automatically created regarding cost parameters (previously defined via costs and assay details). The financial administrator can retrieve this menu of all invoices created.



*Quotes are listed by default, select in the filter tab, **Pending** status*

Invoices can be exported as .csv or .iif (quickbooks) file types.

Double-clicking on a line will provide more detailed information on a particular job invoice:

Invoices List

< List Edit PDF CSV

Job Number: JOB-19 Requester: CD Requester

Invoice Number: INV-11 Date Issued:

Status: Pending Date Paid:

Tax/Vat Rate: 20 % Discount: 0

Purchase Order:

Sample Name	Test Name	Hours	Fix Price	Hourly Price	Line Total
1544174656652	CBC	1	0	0	0 Euros
1544174656652	HbA1c	1	100	0	100 Euros
1544174656653	HbA1c	1	100	0	100 Euros

Subtotal: 200 Euros

Tax: 40 Euros

Total: 240 Euros

The sample list and costs per sample/test will be available in the lower portion of the screen. The upper portion allows finance staff (or admins) to edit the status of the order (quote/pending/issued/paid), provide details on when invoices were issued and paid. Additionally, the tax rate and discount can be edited.

This information is also possible to edit using the API.

The invoice can then be generated as either a PDF or CSV file.

Quote, pending and issued invoices can now be edited in terms of prices and not only administrative data.

3-6. Audit Trail Log

The audit function allows administrators to follow up on user activities in the **LSM**. Go to the **Admin** Menu and choose the **Log** tab.

The application displays all modifications. Each one is dated and identified by an action, user login, and IP address. Specific actions or time periods can be reviewed using the search engine.

Audit Logs List

Export Archive Print

Page Size 10 Page 1 of 26

Filter In Date

Date	Action	Comment	Username	IP
2018-12-10 16:49:01	Job 23 Sample 34 Assay completed		Ita	undefined
2018-12-10 16:48:30	Job 23 Sample 34 Assay started		Ita	undefined
2018-12-10 16:47:30	New Job-JOB-22 inserted		Gareth	undefined
2018-12-07 17:33:48	Job JOB-21 updated		admin	undefined
2018-12-07 17:32:50	New Job-JOB-21 inserted		admin	undefined
2018-12-07 17:31:57	Job JOB-20 updated		admin	undefined

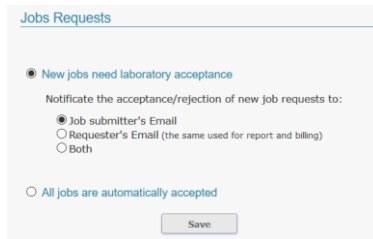
The results can also be exported.

AuditlogID	Username	DTS	Action	Comment	IP
1730	admin	9/23/2017 6:23	New Assay-Test 2 Cat 1 inserted		
1729	admin	9/23/2017 6:22	New Assay-Test 1 Cat 1 inserted		
1728	admin	9/23/2017 5:57	Job 306 Sample 1861 Assay completed		

3-7. Setup

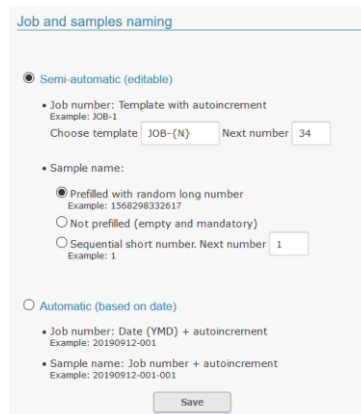
In this setup section, the functions are general to all the LSM add-on.

1. License page where you find the activation key to generate a license and the license by itself.
2. Job request options can be set up here. By default, new jobs are requested and you can select who will receive the notification: job submitter, requester or both. You can also disable the default status REQUEST for the new job (**All jobs are automatically accepted**).



The screenshot shows the 'Jobs Requests' configuration page. It features a title 'Jobs Requests' at the top. Below the title, there are two main radio button options. The first option, 'New jobs need laboratory acceptance', is selected. Under this option, there is a sub-section 'Notify the acceptance/rejection of new job requests to:' with three radio button choices: 'Job submitter's Email' (selected), 'Requester's Email (the same used for report and billing)', and 'Both'. The second main radio button option is 'All jobs are automatically accepted'. At the bottom of the form is a 'Save' button.

3. Job and sample naming can be set up in this section.

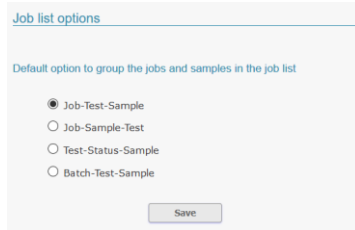


The screenshot shows the 'Job and samples naming' configuration page. It features a title 'Job and samples naming' at the top. Below the title, there are two main radio button options. The first option, 'Semi-automatic (editable)', is selected. Under this option, there are two sub-sections. The first is 'Job number: Template with autoincrement' with an example 'JOB-1' and a 'Choose template' field containing 'JOB-{N}' and a 'Next number' field containing '34'. The second is 'Sample name:' with three radio button choices: 'Prefilled with random long number' (selected, example '156829832617'), 'Not prefilled (empty and mandatory)', and 'Sequential short number. Next number' (example '1', with a field containing '1'). The second main radio button option is 'Automatic (based on date)'. Under this option, there are two sub-sections: 'Job number: Date (YMD) + autoincrement' (example '20190912-001') and 'Sample name: Job number + autoincrement' (example '20190912-001-001'). At the bottom of the form is a 'Save' button.

By default, the semi-automatic mode is selected. In this mode, the job number is based on the prefix **JOB-** and an autoincrement. Here, you can select another prefix and modify the next number. You can also modify the sample name logic. By default, it's a prefilled random long number, but you can select an empty and mandatory field name or a sequential short number.

The automatic mode is based on the server date. If you select it, the job number will be the date (yyyymmdd) followed by an autoincrement and the sample name will be the job number followed by an autoincrement.

4. The job list option allows you to define the default option to group the jobs and samples in the job list.



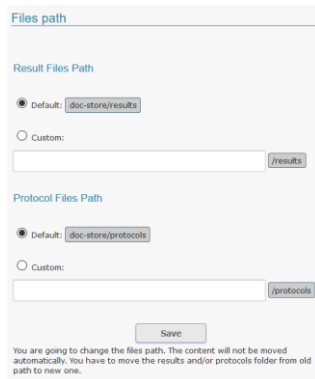
Job list options

Default option to group the jobs and samples in the job list

Job-Test-Sample
 Job-Sample-Test
 Test-Status-Sample
 Batch-Test-Sample

Save

5. By default result files and protocols are stored on the server in the directory extra_modules/lsm/doc-store. You can choose here to modify this default setup and give your own path.



Files path

Result Files Path

Default:
 Custom:

Protocol Files Path

Default:
 Custom:

Save

You are going to change the files path. The content will not be moved automatically. You have to move the results and/or protocols folder from old path to new one.

6. Remote API with the connection parameters to [PWNHealth](#). To know more about API in LSM please refer to [this KB](#).

4- OVERVIEW – Regular Use

This overview is more relevant for daily use.

4-1. Homepage

The LSM's main interface is composed of several parts (see next picture):

- A menu bar (Home/Job/Admin).
- A search engine by keywords.
- A job summary by board or report views.

The home page allows users to quickly get information about the lab activity. Some tools have restricted access according to the users' status (admin, staff, guest...).

For customers, partners or requesters who only need to submit jobs and retrieve results the home page will be the LSMRemote. The LSMRemote has a minimal interface to allow 1) viewing of the status of jobs, 2) retrieval of results, 3) submission of jobs. The exact views will vary as they correspond to the way each lab configures their LSM.

The **Board View** gives a summary of users ongoing tasks:

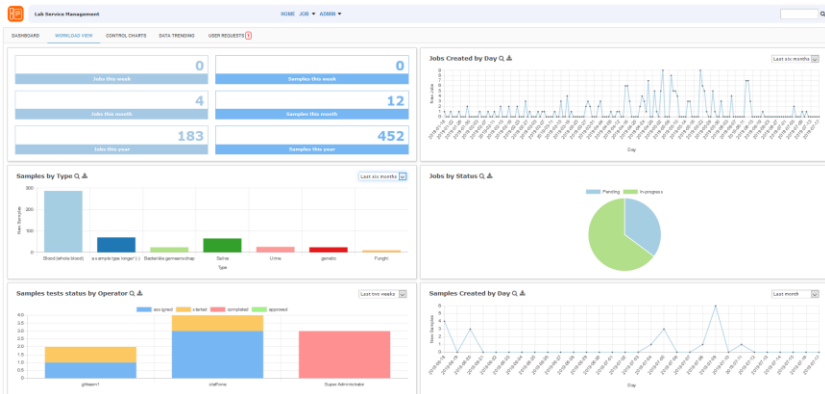
The screenshot shows the 'Lab Service Management' interface. At the top, there is a navigation bar with 'HOME', 'JOB', and 'ADMIN' menus. Below this is a search bar and a set of tabs: 'DASHBOARD', 'WORKLOAD VIEW', 'CONTROL CHARTS', and 'DATA TRENDING'. The main content area displays a grid of job cards. Each card has a header with a status (Assigned, Started, Completed, or Approved) and a count. The cards list job details such as job ID, description, assigned to, started/completed by, and date.

Assigned	Started	Completed	Approved
JOB-15 / 1528450041216 / Microbiological water analysis Assigned to: Staff group A Staff group A on 2018-06-08	/ 1528274937234 / Physical Water analysis Started by Super Administrator on 2019-12-10	JOB-16 / 1528450546372 / Microbiological water analysis Completed by Super Administrator on 2019-06-08	
JOB-15 / 1528450041217 / Microbiological water analysis Assigned to: Staff group A Staff group A on 2018-06-08	JOB-8 / 1527613467695 / Physical Water analysis Started by Super Administrator on 2019-12-10	JOB-24 / 1544820162354 / Microbiological water analysis Completed by Super Administrator on 2018-12-05	
/ Durh157623295666 / Microbiological water analysis Assigned to: Staff group A Staff group A on 2019-12-13	JOB-15 / 1528450041215 / Physical Water analysis Started by Super Administrator on 2019-12-10	JOB-28 / 1569340718305 / Physical Water analysis Completed by Super Administrator on 2019-10-16	
/ Durh1576232762085 / Microbiological water analysis Assigned to: Staff group A Staff group A on 2019-12-13	JOB-15 / 1528450041216 / Physical Water analysis Started by Super Administrator on 2019-12-10	JOB-7 / 1569162 / chemical analysis Completed by Marine S on 2018-05-28	
JOB-6 / PI AH-D-Scm / chemical analysis Assigned to: on 2018-05-04	JOB-16 / 1528450546372 / Physical Water analysis Started by Super Administrator on 2019-12-10		

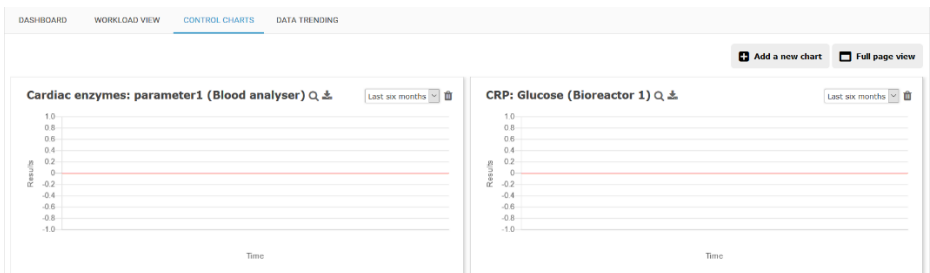
Below the grid are navigation controls (back, forward, search) and a 'LAST NEW JOBS' section with a table:

Job Number	Requester	Job Date	Status
	laboratory A	2019-12-13	Pending
	laboratory A	2019-12-13	Pending

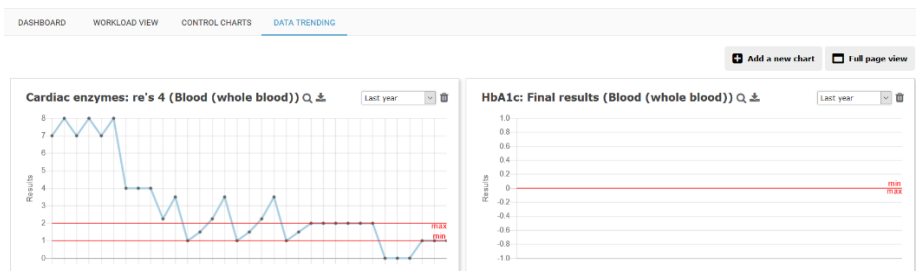
The **Workload View** gives some statistics on service workload:




The **Control Charts** tab allows you to monitor QA/QC samples associated with equipment over time.



The **Data trending** tab allows you to follow data from one parameter assigned to a specific test over time.



View of LSMRemote job list showing the status of jobs and links to retrieve results. Note that output can be sent as a .csv file to another program if needed (contact AgileBio for details).


Get results Submit order Lang+ Super Administrator +

Show entries
Search:

ID	Job Number	Received	Status	Released	Results
419	JOB-262	2018-04-12	Finished	2018-04-12	Report PDF
418	JOB-261	2018-04-06	Finished	2018-04-06	Report PDF
417	JOB-260	2018-04-06	Finished	2018-04-06	Report PDF
416	JOB-259	2018-04-06	Finished	2018-04-20	Report PDF
415	JOB-258	2018-04-05	Finished	2018-04-16	Report PDF
414	JOB-257	2018-04-05	In progress		
413	JOB-256	2018-04-04	In progress	2018-04-20	
412	JOB-255	2018-04-04	In progress		
411	JOB-254	2018-04-03	In progress	2018-04-03	
410	JOB-253	2018-03-30	Quoted		Quote

Showing 11 to 20 of 315 entries

Previous
1
2
3
4
5
...
32
Next

View of LSMRemote order submission form. Note that the appearance will vary slightly depending on the lab-specific configuration. The form may be connected to an existing website if desired. For more information, please read [this KB](#).

Get results Submit order Lang+ Logout

Job data

Requester

Priority level

Expected Date

Acquisition Date

Job Type

Sample data

Type*

Container

insert size

vector

Date

Select test

Tests Categories

- Cat_A
- Cat_B
- Cat_D
- Drinking water

Get results Submit order Lang ▾ Logout

Job data

Sample data

4-2. Navigation

A tree view, search engine, and page navigator are integrated into the **LSM** to make it quick to navigate to any part of the LSM at any time. The tree view for jobs is available at any time via navigation in the menu at the top of all LSM pages (**Job > Job List**).

The screenshot shows the Lab Service Management (LSM) interface. At the top, there is a navigation bar with the LSM logo, the text "Lab Service Management", and buttons for "Home", "Job" (with a dropdown arrow), and "Admin" (with a dropdown arrow). Below the navigation bar, there are two tabs: "BOARD VIEW" (selected) and "REPORTS VIEW". The main content area displays a table of jobs. The table has a header row with "Assigned" and a count of "10". The table contains two rows of job data:

Assigned	10
JOB-20 - 46479 - CBC Assigned to: Gareth Smith on 2018-12-07	JOB-3 - 154 Started by S
JOB-21 - 89854 - CBC Assigned to: Gareth Smith on 2018-12-07	JOB-12 - 65 Started by S

To the right of the table, a dropdown menu is open, showing the following options: "Add Job", "Job List", "Batch List", "New Samples List", "Pending Samples List", "Canceled Samples List", and "Calendar".

4-2-1. Tree view display

The tree view is displayed when users manage jobs, worklists, tests, results and it allows a better overview of projects/jobs. Users can navigate between jobs and see all tests.

Various colored icons are added to help job status identification:

● Quoted or Requested / ■ Pending / ▶ In progress / ■ Completed / ✓ Finished

The same icons are added to help tests status identification:

🔑 Quoted or Requested / 🔑 Assigned / 🔑 Started / 🔑 Completed / 🔑 Approved / 🔑 Cancelled

Sample statuses are symbolized by:

🧪 Quoted or Requested / 🧪 Assigned / 🧪 Started / 🧪 Completed / 🧪 Approved / 🧪 Cancelled

▼ ▶ 13: JOB-12 (2018-11-27)
 ▼ 🔧 HbA1c
 🧪 14: 6545645

▼ ● 12: JOB-11 (2018-11-27)
 ▼ 🔧 HbA1c
 🧪 13: 123456789

▼ 📄 11: JOB-10 (2018-11-27)
 ▼ 🔧 CBC
 🧪 12: 1543309522912

▼ 📄 10: JOB-9 (2018-11-26)
 ▼ 🔧 HbA1c
 🧪 11: 1543227430705

▼ ✔️ 9: JOB-8 (2018-11-22)
 ▼ 🔧 CBC
 🧪 10: 1542893739030

4-2-2. Search engine – filtering and sorting

The **LSM** search engine allows information filtering on the job list. It searches by keyword in fields. The search engine field list depends on the page in which you are looking for information (jobs, worklists, results, suppliers, customers...).

Different filters can be used for advanced searches or to simplify views according to staff needs.

The screenshot shows the search engine interface with the following numbered callouts:

- 1: Assign batch
- 2: Shipment status
- 3: Printable
- 4: Export
- 5: Group by
- 6: Limit
- 7: Filter
- 8: Close all
- 9: Job ID
- 10: Job Status
- 11: From
- 12: Sample ID
- 13: Shipment
- 14: Test
- 15: Batch
- 16: Priority
- 17: Requester
- 18: Operator
- 19: Test Status
- 20: Overdue

1. Assign batch. For more information please refer to the section **Batch**
2. Shipment status. Select the rows on the left and modify the shipment status (from Submitted to Return). Status can be modified automatically during the job or through other add-ons (e.g. Sample receiving add-on).
3. Printable – outputs the job list in HTML format ready for printing.
Export – generates a CSV file of the job list

4. Group by. Please see section 5-3-1.
5. Filter – opens the Filter bar explained from point 9 onwards
6. Limit – limits the number of jobs shown per page
7. Find text/numbers in the job list.
8. The **Close all** button will close all jobs on the screen so that only the job level information is visible. Selecting **Expand all** will expand all to show the assay and sample information within each.
9. and 12. The Job and Sample search boxes allow you to search for multiple jobs/samples at once.
10. Job-status – filter by “All”, “All not finished”, “Finished”, “Completed”, “In Progress”, “Pending”, “Quoted” or “Requested”.
11. Date filters
13. Shipment – filter by shipment status
14. Test – filter by test
15. Test status – filter by test status
16. Priority – Normal, Rush or Slow
17. Requester
18. Operator
19. Batch – filter by Batch number
20. Overdue – filters all the tests with a negative **time left**

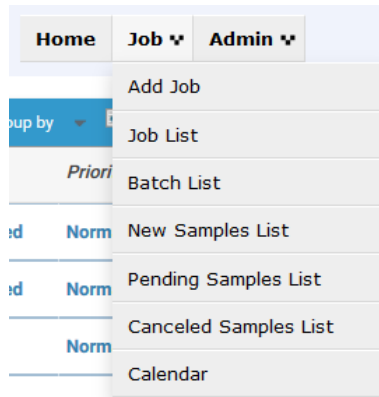
The column headers in the job list can be clicked to sort in ascending or descending order.

Assign batch	Printable	Export	Group by	Filter	Limit	Find	Close
<input type="checkbox"/>	<i>Job</i>						<i>Status</i>
<input type="checkbox"/>	▼ ▶ 31: JOB-27 (2018-11-14 by Super Administrator)						In Progress
<input type="checkbox"/>	▼ 🔧 Test2						Started
<input type="checkbox"/>	🧪 464: 001						Started
<input type="checkbox"/>	▼ ● 15: JOB-12 (2018-10-23 by Claire Requester)						Quoted
<input type="checkbox"/>	▼ 📄 Glicémie						Quoted
<input type="checkbox"/>	🧪 32: test E						Quoted
<input type="checkbox"/>	▼ ■ 64: JOB-59 (2019-02-18 by test access)						Completed
							Priority



5- JOB MANAGEMENT

The job menu has several sections allowing job management and activity follow-up.



5-1. Add jobs

There are three (3) ways to add jobs in the lab services manager:

- A customer can add a job through a dedicated interface, LSM Remote - in this case, the customer can only see limited information for their own jobs.
- Lab staff can add a job through their dedicated interface (in this case, lab staff can see all the LSM jobs). More details about **all** jobs are available when using the LSM with admin, staff or finance access.
- A form can be used on another system or website. Information is then transmitted to the LSM via the API.

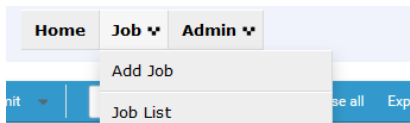
When first accessing the LSM the homepage provides some information about the latest jobs added, as well as dashboards to show information about a complete load of jobs.

The Job list section displays all jobs in the lab. By default, the application shows all jobs that are not finished. Using the filter tab you can filter and sort any and all jobs.

The job status is indicated for each job, in the main tab, and in the tree view. Jobs are identified by an ID for lab data traceability and barcoding. The job list displays job status, priority, requester, operator, sample shipment status and batch, allowing users to prioritize their tasks.

Assign batch	Printable	Export	Group by	Filter	Limit	Find	Close all	Expand all
Job	Status	Priority	Requester	Operator	SampleShipment	Batch		
<input type="checkbox"/> > 8: JOB-8 (2019-02-21 by Super Admin)	Pending	Normal	Clinic1					Options ▾
<input type="checkbox"/> > 7: JOB-7 (2019-02-04 by Super Admin)	In Progress	Normal	Clinic1					Options ▾
<input type="checkbox"/> > 6: JOB-6 (2019-02-04 by Super Admin)	Completed	Normal	Clinic1					Options ▾
<input type="checkbox"/> > 5: JOB-5 (2019-02-04 by Super Admin)	In Progress	Normal	Clinic1					Options ▾
<input type="checkbox"/> > 4: JOB-4 (2019-01-31 by Super Admin)	In Progress	Rush !	Clinic1					Options ▾
<input type="checkbox"/> > 3: JOB-3 (2019-01-31 by Super Admin)	In Progress	Slow	QA					Options ▾

To create a new job, click on the **Add Job** button from the Job menu.



First, in the **Order** field, by default, the job will be **REQUESTED** (see section Setup). You can choose also between creating a new **JOB** directly or a **QUOTE**.

Save
Cancel

Job Number [?]:

Job Date: 2019-12-17

Requester *:

Priority level *: Normal

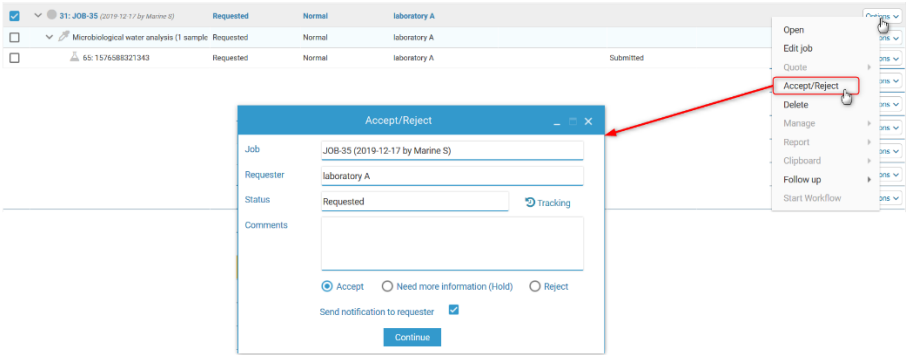
Expected Date:

Purchase Order:

Order: Quote Request Job

Samples received?: No Yes

A requested job is represented by a icon in the job list. When you choose this option, an administrator of your lab needs to accept or reject this new request before to have it available for the staff team.



In the **Options** menu at the job level, the Accept/Reject option opens a new form that will allow accepting, rejecting or requesting more information from your client. For this last case, the job/test/sample will have the ON HOLD status, no actions will be possible on the samples. In the form, you can save comments or send them by email to the requester if you check the box “**Send notification to requester**”.

A quoted job is represented by a ● icon in the job list. When you choose this option, you create an invoice entry that is managed in the invoices list (**Admin > Invoices** also see below). In the **Options** menu at the job level, you can generate the PDF and order the job. After ordering the job, the job switches automatically on the REQUEST status previously seen.



If you select Job, the job will be created immediately.

Below the entries for Job identification (default fields plus any parameter with the job level selected), there is a **Samples** tab to add all samples for the job. Multiple samples can be added for the same assay or for different ones. You can also assign the same sample to multiple assays/tests.

If samples already exist in LabCollector, they can be memorized and then added to a job using the **Memorized records** button. This will allow a selection from the memorized list to be used for the new job.

The sample addition can also be done by batch importing of a CSV list. Each row will be a sample for a single job. Each sample can be assigned to one or several assays.

Note: The CSV format can be checked by using the **Export CSV** button. The format will vary depending on the way you set up the parameters in the LSM. This gives you an empty Excel file that you can then fill and reload or provide for clients and partners. Not all the fields are mandatory.

The screenshot shows a web form for job management. At the top, there are 'Save' and 'Cancel' buttons. The form contains several input fields: 'Job Number #' and 'Clinic name' (text boxes), 'Job Date' (calendar icon, value: 2018-12-10), 'Requester *' (dropdown), 'Priority level *' (dropdown, value: Normal), 'Expected Date' (calendar icon), 'Order' (radio buttons for 'Job' and 'Quote', 'Job' is selected), and 'Purchase Order' (text box). Below the form is a navigation bar with buttons: 'Add new', 'Select all', 'Remove selected', 'Import CSV', 'Export CSV', 'Memorized records', 'Rename samples', 'Chain of Custody (COC)', and 'Assign tests'. Underneath is a table titled 'SAMPLES' with columns: 'Sample*', 'Type*', 'Sex', 'Comment', and 'Tests'. The table contains one row with the value '1544455593773' in the 'Sample*' column.

If, when the job is created, the samples are already received, click on YES and the received date-time will automatically be populated.

The screenshot shows a form with the question 'Samples received?'. There are two radio buttons: 'No' and 'Yes'. The 'Yes' radio button is selected. Below this is a 'Received Date *' field with a calendar icon and the value '2019-12-13 13:11:56'.

If you received the samples later, when you start the job, the timestamp can be applied when you click on Save & Start.

The screenshot shows a confirmation dialog box. At the top, there is a 'Save & Start' button. The dialog text reads: 'Sample is not marked received. Would you like to mark it received?'. There are two radio buttons: 'No' and 'Yes'. The 'No' radio button is selected. At the bottom right of the dialog is a 'Continue' button. Below the dialog, the text 'Submitter Super Administrator' is visible.

As soon as the received date is saved, it will create the estimated start date and linked to the estimated end date (calculated automatically with test default hours and taking into account working hours and weekends), the **time left** will be calculated automatically (Estimated End Date - Current Date) and display in all the sample lists and in sample/test popup.

Save Save & Complete

Sample	1576588321343	Number	65
Type	Water	consent	
Depth		Sample code	
Location		Comment	
Submitter	Marine S	Date	2019-12-17 14:12:15
Received Date	2019-12-17 14:32:49	Test	Microbiological water analysis
Estimated Start Date	2019-12-17 14:32:49	Estimated End Date	2019-12-20 14:32:49
Time Left	+2d 23h	Operator *	Staff group A Staff group A (staffA)
Hours *	24	Range *	Range 1

Assays/tests can be selected on a sample-by-sample basis. The method of selecting assays can be chosen by clicking on *Assign tests* and making a selection:

Save Cancel

Job Number #		Clinic name	
Job Date	2018-12-10		
Requester *			
Priority level *	Normal		
Expected Date			
Order	<input checked="" type="radio"/> Job <input type="radio"/> Quote		
Purchase Order			

Add row Select all Remove selected Import CSV Export CSV Memorized records Rename samples Chain of Custody (COC) Assign tests

- Default mode (test search)
- Categories grid mode
- Tests grid mode

Sample*	Type*	Sex	Comment	Tests
154445593773				

The Default mode (test search) will have the selection of tests via a pop-up menu when clicking the assay/test cell for the sample:

Grid mode can be by assay/test or category and uses checkboxes to select which assays/tests are to be done for each sample:

The **Chain of Custody/Shipping list** is generated as a PDF with the list of samples and checkboxes of assays/tests. You can choose the template for this list - please read chapter 3-4-4.

Print this shipping list and include it with the samples

#	Sample	Type	Sample Condition	Sample Description	Sample Layer	longtext sample	Date Collected	Sample prep date	Comment	Tests	Received
793	1524591067842	Type1	4	3	2	1324355iutrhfgmvgfcbv terfhgng	2018-04-11 10:31:00			Report all parameters	
794	1524591067845	Type1	4	3	2	1324355iutrhfgmvgfcbv terfhgng	2018-04-11 10:31:00			Report all parameters	
795	1524591067846	Type1	4	3	2	1324355iutrhfgmvgfcbv terfhgng	2018-04-11 10:31:00			Report all parameters	
796	1524591067847	Type1	4	3	2	1324355iutrhfgmvgfcbv terfhgng	2018-04-11 10:31:00			Report all parameters	

Generated on 2018-04-27 11:33:12

Once the job is created, it is displayed in the job list and the initial status is **pending**.

5-2. Job management

The OPTIONS button on the right side, depending on the level (job, test, sample) will give different possibilities of management.

<input type="checkbox"/>	21: JOB-25 (2019-08-02 by Super Administrator)	Pending	Normal	laboratory A				Options ▾
<input type="checkbox"/>	chemical analysis (1 sample)	Assigned	Normal	laboratory A				Options ▾
<input type="checkbox"/>	44: 1564752765672	Assigned	Normal	laboratory A	Submitted	20191210-1		Options ▾

A job can be deleted when it is pending then it can be archived.
 On the job or test level, you can create a deviation record in the follow-up option.

By default, the job is assigned to the operator that you selected in the test configuration. Before entering results, you can assign the job/samples to another operator. You can do it sample-by-sample or in batch with multiple assignments. Click on the **Options** button of your job/test, go to **Manage > Assignments**. Select the samples of interest, click on Multiple assignment and choose the new operator in the popup.

The screenshot shows the 'Assignments' window with a 'Multiple assignment' section. A table lists samples with checkboxes, sample IDs, operators, and hours. A 'Select operator' popup is open, showing a list of operators with 'John Smith (jsmith)' selected. A red arrow points from the 'Options' button in the previous screenshot to the 'Multiple assignment' section. Another red arrow points from the 'Assign operator' button in the popup to the 'John Smith (jsmith)' selection in the list.

Sample	Hba1c	Operator	Hours
<input checked="" type="checkbox"/>	1552578599093	Team1	1
<input checked="" type="checkbox"/>	1552579886140	Team1	1

Select	John Smith (jsmith)	Assign operator
	admin_all groups (admin_allgr...	Staff users
	Team1	Staff teams
	admin_fullaccess (admin_full...	Administrators
	John Smith (jsmith)	Administrators
	Super Administrator	Administrators

To start a job, expand it in the Job List and select your *sample* of interest by going to **Options > Open**. Details are displayed in a new pop-up; select an operator and complete any other required/optional job fields, then click on the **Save & Start** button to begin work on the sample.

Assigned Started Completed Approved

Save & Start Cancel

Job Number [¶] JOB-8 Patient name John Doe

Job Date 2019-02-21 Sample No 11

Requester * Clinic1 Sample 1550764911353

User Super Administrator Test Glucose test

Priority level * Normal Operator * Ana (Ana)

Expected Date 2019-02-28 Range * Range 1

Status Pending

Input Parameter

Parameter	Value	Unit
Patient has confirmed diabetes *	<input type="checkbox"/>	

In the lower portion of the popup there are several items that are often useful to complete when starting some jobs if required:

- **Input parameters:** Lab designated parameters as input for a job. *These can only be input at the time of starting a job.*
- **Reagents & Supplies:** Lab designated reagents and supplies associated with the job/test/assay. *These can only be input at the time of starting a job.*
- **Protocol:** list of protocols and equipment categories for the job. The equipment may be selected and the protocol can be downloaded and/or viewed. *These can only be input at the time of starting a job*

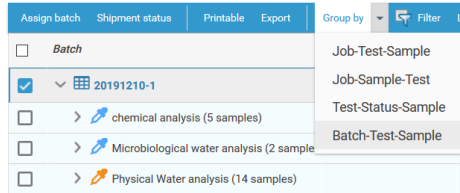
Mandatory fields are marked with an asterisk.

5-3. Job filtering

Note that some information on the LSM search engine is relevant to this section and a selection of information also appears in the section on general search and filtering.

5-3-1. Group by function

Users can see and process samples for a particular assay or a particular batch using the item **Group by** in the toolbar.

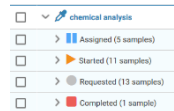


From the Job List (**Job > Job List**) **Group by** offers several options. This makes it possible to find, filter and sort any group of samples, jobs or tests to work on.

Job-Test-Sample: this is the default choice. This provides a tree view with the job at the top level, test as a middle level and sample as the next level.

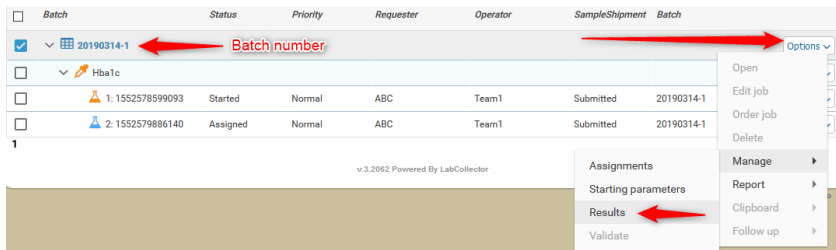
Job-Sample-test: This provides a tree view with the job at the top level, sample as a middle level and assay as the next level.

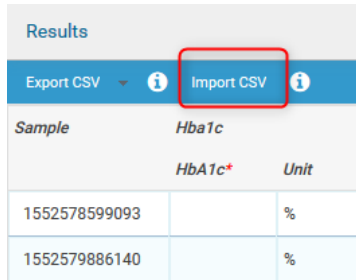
Test-Status-Sample: Test is the top-level, each test has the next level in the tree organized by status, with sample as the next level of the tree.



Batch-Test-Sample: Batch is the top level of the tree, Test is the next level, followed by sample. Jobs and samples that have not been assigned a batch are grouped together in a blank batch.

Using this last filter, you can then import results in batch using the CSV file.





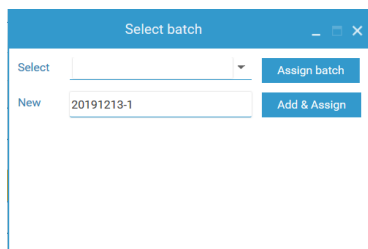
Results		
Export CSV ⌵ i Import CSV i		
Sample	HbA1c	
	HbA1c*	Unit
1552578599093		%
1552579886140		%

You can export a CSV file choosing the field separator, update it, and then import results in batch.

To import results, the first line of the file must contain the name of the columns to import, and the names have to match with the column names (case insensitive). If the column does not match the header, it will be ignored. It's not necessary that the file contains all the columns of the grid.

If you use the phrase option, if the phrase is blank, it will be updated based on the result value from the imported file.

The field **Batch** is visible in the tree. To add jobs, tests or samples to a batch tick the relevant checkboxes to the left of the entries on the job list and select Assign Batch from the Menu. Grouping by batch-assay, users can perform actions on all samples with the same batch code.

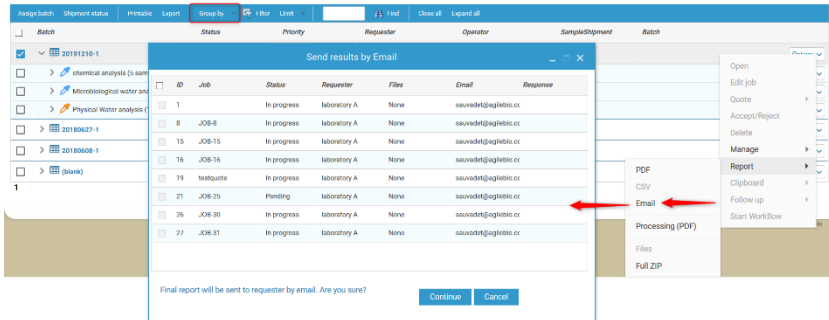


Select batch

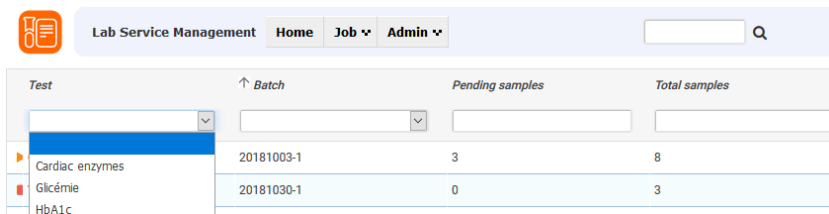
Select ⌵ Assign batch

New Add & Assign

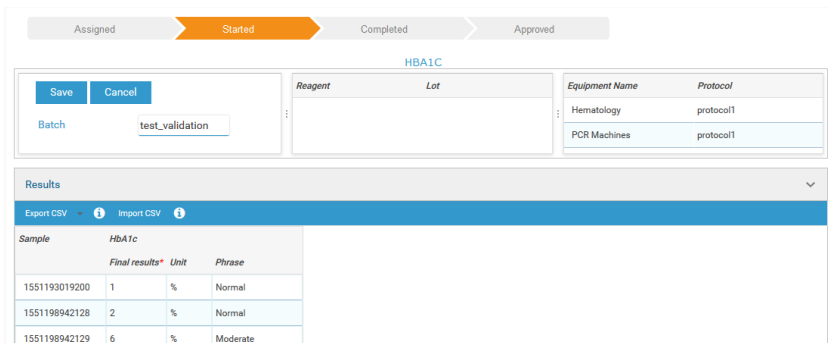
On the job list grouped by batch, you can also send the final result report by email to the requesters for the full batch.



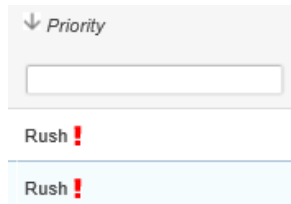
The **Batch List** found from **Job > Batch List** provides a list of assays/batches/samples that have been assigned to a batch. This view provides a list that can be filtered and sorted by assay, batch, number of pending samples and total samples. You may filter and sort based on multiple columns.



Clicking on a row brings up a popup that allows the editing of information for the batch.



The **Samples Lists** found from **Job menu (New, Pending or Canceled)** provide a list that includes columns that may be searched, filtered, or sorted for Job, Sample, Test, Priority, Expected (date), Customer, Operator, Batch, and flagged samples. Sorting by ascending or descending order is done by clicking on the column header, after which an arrow will indicate the sorting preference:



The new samples list allows having all the new samples independently of the job or the test. You can start the process one by one by clicking the sample or assign a batch, modify the status and do multiple assignments on multiple samples.


The pending samples list allows you to have in one list all the samples from which the test is started and in progress.

The canceled samples list allows you to export the entire list of canceled samples.


5-3-2. Sample follow up

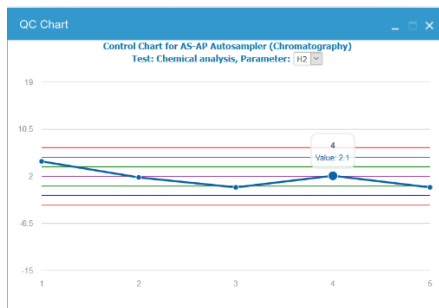
The screenshot shows the Lab Service Management interface. At the top, there are navigation tabs: 'Lab Service Management', 'Home', 'Job', and 'Admin'. Below this is a search bar and a toolbar with options like 'Assign batch', 'Printable', 'Export', 'Group by', 'Filter', 'Limit', 'Find', 'Close all', and 'Expand all'. The main area is a table with columns: Job, Status, Priority, Requester, Operator, and SampleShipmen Batch. The table contains several rows of sample data. A context menu is open over one of the rows, listing actions such as 'Sample shipment', 'Add alert', 'Remove alert', 'Mark as QA/QC', 'Unmark as QA/QC', 'Cancel', 'Recover', 'Deviation record', 'Exclude from invoice', and 'Include in invoice'. A red arrow points to the 'Follow up' option in the right-hand menu.

- **Alert status**

Users can mark samples as an alert to follow them more easily. Samples with alert status are colored in yellow. This status can be coupled to the priority parameter (Slow, Normal, and Rush). The status to mark for QA/QC follow-up, denoted by , can additionally be combined with the general alert.

- **QA/QC status**

Users can mark samples for QA/QC follow-up, denoted by . To have a QC chart, the operator needs to select a piece of equipment and enter results.



- **Cancel status**

Selecting *Cancel* changes the status of the sample/test to Canceled. When you *Cancel* a sample the mark as the free option is activated, so it shouldn't appear in the final invoice.

- **Free status**

Mark as *Exclude from invoice* or Unmark as *Include from invoice*. If a sample is marked it shouldn't appear in the invoice.

<input type="checkbox"/>	Thyroid function	Canceled	Normal	Cristina Amil				Options
<input type="checkbox"/>	563: 1551369129477 FREE	Canceled	Normal	Cristina Amil	ITTeam	Submitted		Options
<input type="checkbox"/>	Vitamin B12	Assigned	Normal	Cristina Amil				Options
<input type="checkbox"/>	563: 1551369129477 FREE	Assigned	Normal	Cristina Amil	ITTeam	Submitted		Options

5-4. Manage results

Once the job is started, users can add results. To add results, expand the related job and go to the **Options** button on the sample of interest and select **Open**. Then, you can fill in the result fields and click on **Save** to save all changes. When all result fields are completed, you can click on the **Complete** button to close the analysis. Be aware that, providing not all of your result fields are mandatory, you can select **Complete** before all results are entered – this will block further changes. This can be useful if some results cannot be completed.

Sample results can be validated in a similar way: **Options > Open > Validate/Reject**.

Job and test levels can also be validated – **Options > Manage > Validate> Validate/Reject**. On the Assay and Job levels, you can choose samples to be updated using the checkbox column in the grid of the four **Manage** actions: Assignments, Input data, Results and Validate.

<input type="checkbox"/>	Job	Status	Priority	Requester	Operator	Sample/Item/ Batch	Options
<input checked="" type="checkbox"/>	60: JOB-55 (2019-02-11 by Super Ad	Completed	Normal	Claire Requester			Options
<input type="checkbox"/>	Glicémie	Completed	Normal	Claire Requester			Options
<input checked="" type="checkbox"/>	541: 1549872784542	Completed	Normal	Claire Requester	Super Administrator	Submitted	Options
<input type="checkbox"/>	> 53: JOB-49 (2019-01-18 by Super Ad	Completed	Normal	Cristina Amil			Options
<input type="checkbox"/>	> 39: JOB-35 (2018-11-29 by Super Ad	Completed	Normal	Cristina Amil			Options
<input type="checkbox"/>	> 38: JOB-34 (2018-11-22 by Super Ad	Completed	Normal	Cristina Amil			Options
<input type="checkbox"/>	> 34: JOB-30 (2018-11-19 by Super Ad	Completed	Normal	Cristina Amil			Options

- Open
- Edit job
- Order job
- Delete
- Manage
- Report
- Clipboard
- Follow up

- Assignments
- Starting parameters
- Results
- Validate

Validate all

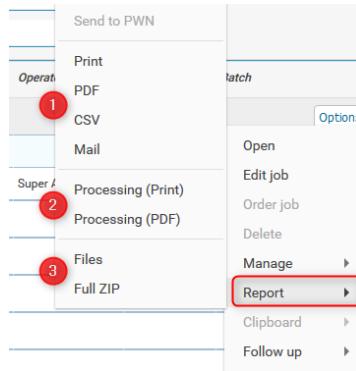
Save
Cancel

Job Number ^[?]	Job Date	Requester *	Priority level *
JOB-90	2016-12-22	Douglas Adams ▼	Normal
Patient Name	Serial Number	RP1 PMT	Extraction data
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Pg/E2 Ratio	estradiol	clinic name	Status
<input type="text"/>	<input type="text"/>	Select value ▼	In Progress

SAMPLES	DOCUMENT		
Sample	YFP value	Unit	Phrase
<input checked="" type="checkbox"/> 1482362157	3	RFU	a value of at least 5 RFU is necessary

Users can also obtain result reports through this menu by selecting the **Report** option.

1. Selecting any of the options in Section 1 produces a report according to the template chosen for individual tests in **Admin > Preferences > Report and Invoice Templates > Options**.
2. Selecting a Processing report type in Section 2 produces a report whose template is specified in the **Processing report template of Admin > Preferences > Report and Invoice Templates > Options**.
3. Section 3 the **Files** option allows the user to download the files associated with the job/test/sample while the **Full ZIP** includes all the files along with the Processing report and the final results report from sections 1 and 2.



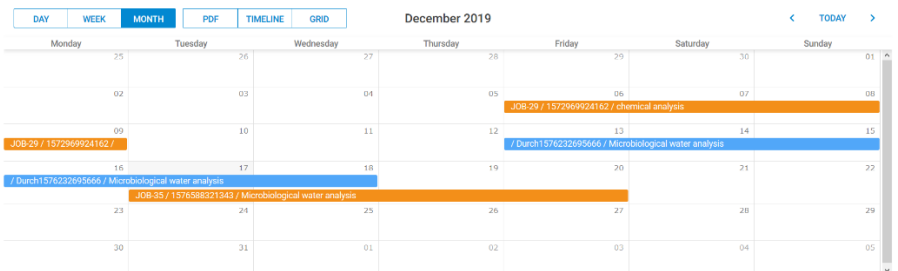
Through this menu, users can also edit/delete jobs (job level) and copy (at the sample level) and paste samples (at the test level) via **Options > Clipboard**.

⚠ A locking system is in place when editing jobs, during single sample editing (input parameters and results) and when editing samples in bulk (assignments, input data, results & validate).

A window opened in normal mode (editable) by user 1 makes blocks access to the sample by user 2. Locked samples are checked every 2 minutes. A window opened in read-only mode, becomes editable when samples are unlocked.

5-5. Scheduler/Calendar

This menu displays a timeline calendar with all jobs requested by day, week or month.



Items can be moved in the calendar and the relative dates will automatically be updated.

A PDF can be generated by clicking on the button *PDF* on the calendar page in month, week or day view. When using this button in the day view, a worklist is generated.

DAY WEEK MONTH PDF TIMELINE GRID		17 Dec 2019 - 18 Dec 2019		< TODAY >	
Operator	Test	From	To		
Staff group A Staff group A	J0B-35 / 1576588321343 / Microbiological water analysis	17 Dec 2019 14:35	20 Dec 2019 14:35		
Staff group A Staff group A	/ Durch1576232695666 / Microbiological water analysis	13 Dec 2019 11:24	18 Dec 2019 11:24		

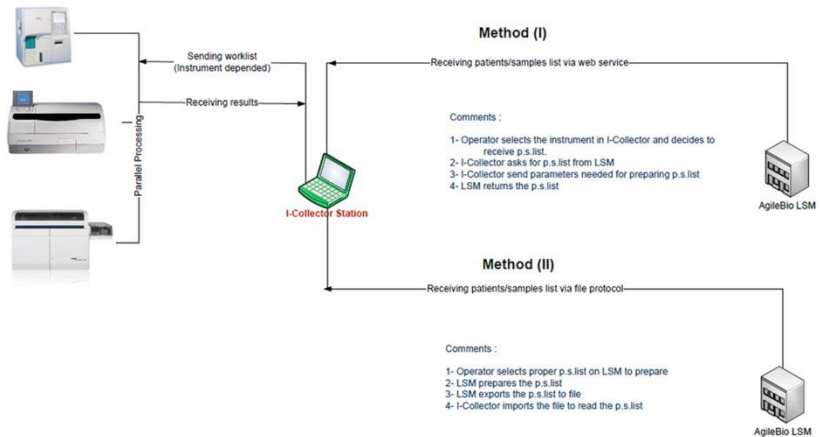
The timeline and the grid are given by the operator. And on each view, a click on a selected item opens the sample.

6- I-COLLECTOR AND LSM COMMUNICATION PROTOCOLS

The LabCollector **LSM** add-on can be associated with i-collector for direct communication with lab equipment.

This will allow a selection of some or all information from a test to be entered automatically with minimal manual data entry.

Here is an example:



Some equipment is already compatible with LabCollector. Most equipment from common suppliers can be readily connected. Contact us for details about your needs.

The LabCollector API contains many features that allow connections to websites or other systems.

7- UPGRADING AND UPDATING

To update or upgrade the **LSM Add-on** module, just download it from our website (www.labcollector.com). Then, unzip the folder and paste files in the following folder:

```
Programs\AgileBio\LabCollector\www\lab*\extra_modules\lsm
```

*The name of this folder is the laboratory nickname chosen during LabCollector installation.

As a best practice, we recommend making a LabCollector backup prior to performing an update or upgrade. Note that instances hosted with AgileBio are backed up regularly.



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