



LabPlus and Quality Control Laboratories

What is often the differentiation between these laboratories is their need to automatically assign the required analyses based on known frequency patterns for existing products. However this need may not only be based on existing products but on client's specific requests, quality programs, laboratory's resources, etc. Moreover, another important need for a QC Lab is to be able to optimize analysis to minimize the lab workload, as products can be reclassified or during the samples analysis of a same lot, it can be necessary to satisfy more than more client's specifications, etc.

As such, efficient and « easy to configure » tools must be provided. These tools must consider various workflows for which many decision steps can exist.

LabPlus provides these tools; Test plans and Analytical profiles can be used in conjunction to satisfy all the automatic assignment needs for method as well as the creation of samples. LabPlus also provides generic functions that support the addition of a frequency testing plan and analysis grouping.

These four (4) functions are detailed in the following article.

1. Test Plan

The Test plan entity is used to configure method groupings and sample selections based on various combinations of specific criteria such as product, nature, project, or sampling point.

When requests are created in the system, corresponding criteria will be matched with the appropriate analytical profile and automatic assignment of the right test plan and its methods, samples and even sub samples will be done.

Within LabPlus, a test plan consists of three parts:

Definition	Method	Sample
Identification is done by choosing from a scrolling list. Selection of its characteristics such as product, nature, etc. Detailed description of the test plan.	Identification of analytical methods for each test plan. More than one method in a test plan. All test plan methods are automatically assigned to samples using the test plan.	Identification of samples for each test plan. More than one sample in a test plan. All test plan methods will be assigned to samples automatically created when using a test plan.

2. Analytical Profile

LabPlus provides analytical profiles which are in fact templates that define how samples and samples-methods will be created and assigned. When an analysis is created the analytical profile management which attributes will have to be considered and which test plan will be chosen and executed.

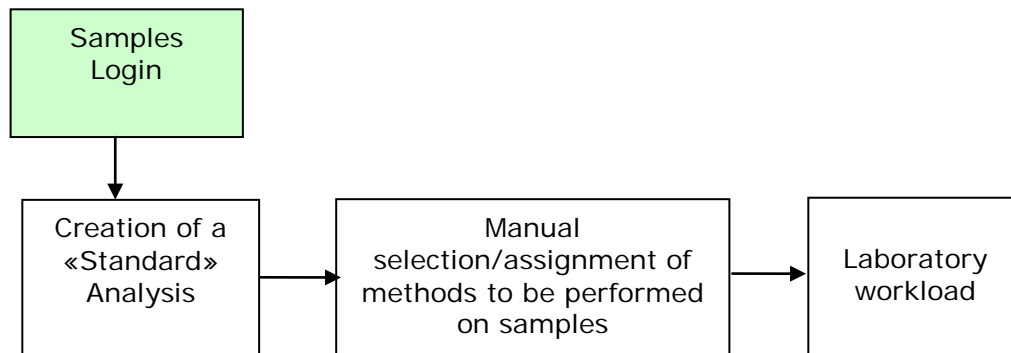
LabPlus provides 4 generic analytical profiles:

1. Standard

The Standard analytical profile is used when the sample-method assignments are done manually directly from the Analysis management screen. When this mode is chosen, there is no automatic execution of test plan.

Manual assignment

The following diagram illustrates the manual assignment cycle.



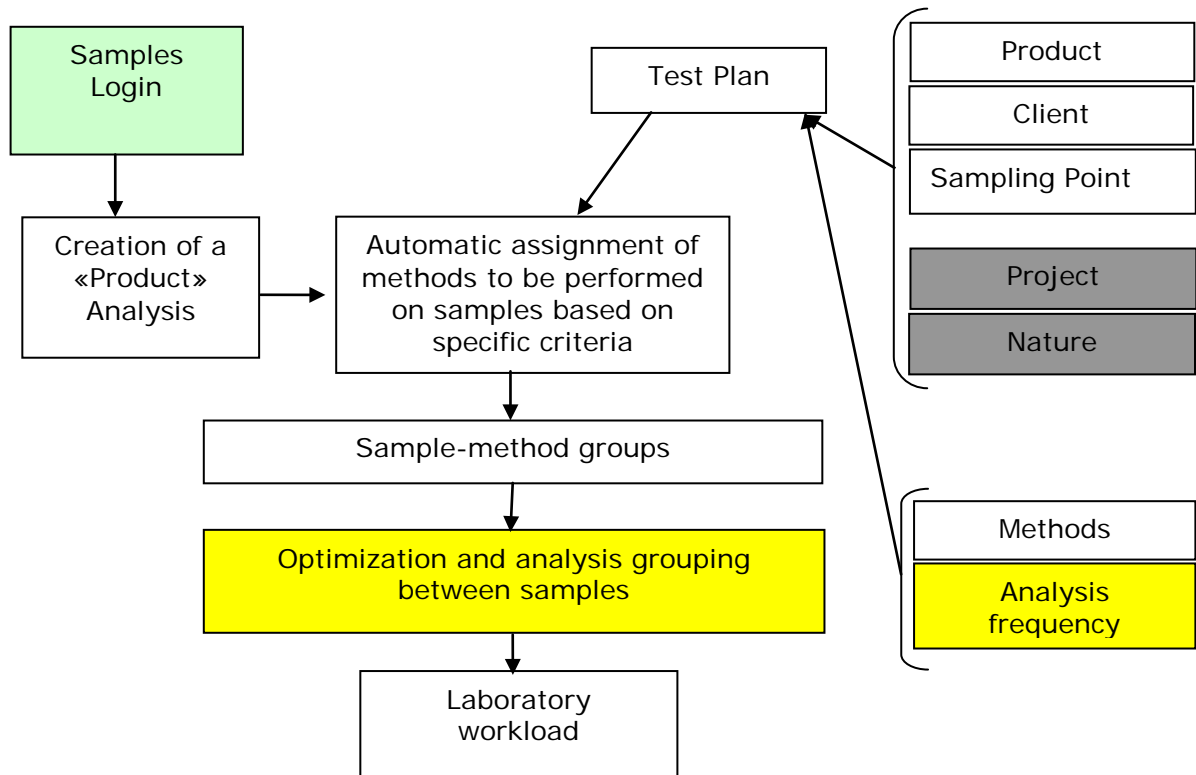
2. Product

The Product analytical profile is mostly used in a production/QC lab environment, an environment where methods to be assigned to samples are known based on each product, client, sampling point or other entity.

The Product analytical profile automatically assigns methods as specified in the test plan method configuration table, to all samples from a same request and for which sample attributes correspond to the test plan criteria.

Automatic assignment

The following diagram illustrates the automatic assignment cycle. The automatic assignment simplifies and fastens the management of production samples.



3. Sampling Plan

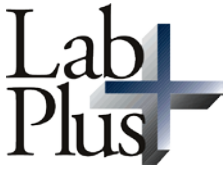
The Sampling Plan analytical profile can be used in an environment where routine samples from a sampling point, client, etc. must be analyzed and the methods to be performed are already known.

This analytical profile creates samples as defined in the test plan sample table and automatically assigns methods that have been configured in the test plan method table.

4. Study Sampling Plan

The Study Sampling Plan analytical profile is used to automatically create sub samples and to assign all the required methods following the execution of a specific method.

As an example if based on the status of a sample-method result sub samples have to be created and more than one method assigned to these new sub samples, the study sampling plan will create all sub samples from the parent sample, will copy all the sample attributes to identify the sub samples, and will automatically assign methods as specified in the test plan method table. These new samples-methods will be created in a new Analysis.



3. Testing Frequency

LabPlus provides the ability to define a testing frequency for each method of a test plan method. Thus a method can be assign at each X samples, X being the frequency.

This testing frequency concept is applicable with the « PRODUCT » and « STUDY SAMPLING » analytical profiles.

Testing Frequency for « Product » analytical profile

Testing frequency will be defined by method in the test plan. Samples-methods will be created by the test plan by considering the value of the testing frequency attribute.

Two modes of frequency management:

- MODE 1 – BY PRODUCT: basic mode of the system. The meter is incremented by product only no matter what the lot, client, and any other entity value are set.
- MODE 2 – BY PRODUCT/LOT: for this mode, the meter is reset for each lot of the same product. This allows the configuration of more logic or if specific methods should be performed on an appropriate sample position in a lot. This mode is mainly used for specific needs during a lot production.

Testing Frequency for « Study Sampling » analytical profile

Testing frequency will still be defined by method in the test plan. Samples will be created by the test plan only if the testing frequency requires a method to be done on a sample.

Two modes of frequency management:

- MODE 1 – BY PRODUCT (product, method and sampling point): the meter will be incremented based on the value of these three entities. The lot and client attributes will not be taken into account.
- MODE 2 – BY PRODUCT/LOT (product, method, sampling point, and lot): the meter will be incremented based on the value of these four entities. The client attribute will not be taken into account.

4. Optimization and analysis grouping between samples

One of the main objectives of the system is to prevent performing the same analysis twice on a sample. With this goal in mind, a first level of optimization is provided when the same analyses are required for different product specifications and prepared from a same lot.

- Method results for these different lots prepared from the same « parent lot » will not be automatically copied because these lots could have been each produced in a different way.



- All comparison evaluations will be done by method and not by test so a complete method (including all method-tests) will be considered.
- The grouping consists in adding an identifier that will automatically copy results and will keep a link to the parent sample-method. This will avoid repeating many times the same method in the backlog.
- For a given method, it is possible to specify if sampling points and products should be excluded from the analysis optimization by checking the « Grouping excluded » attribute box in the test plan method.
- The analysis grouping concept is applicable to the « PRODUCT » and «STUDY SAMPLING » analytical profiles only.
- The actions when applying the grouping rules will vary between the « PRODUCT » or the « STUDY SAMPLING » analytical profiles:
 - By « PRODUCT » :
Results will be copied from existing sample results based on lot number, product, sampling point and lab profile.
 - By « STUDY SAMPLING » :
Results will be searched using the same criteria as « PRODUCT» however a new « position » concept is introduced. This position is an additional criterion that allows giving a relative position to each of the sub samples created by the study sampling plan. This new attribute allows then the identification, when grouping by study sampling plan, of all results to be kept based on a specific sample position.

In conclusion, these new functions provide unequalled flexibility and are part of the LabPlus development team's mission to innovate in order to offer the LIMS solution that Quality demands.