

Introduction Of Dr.Lab Software

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A. INTRODUCTION OF Dr.LAB SOFTWARE

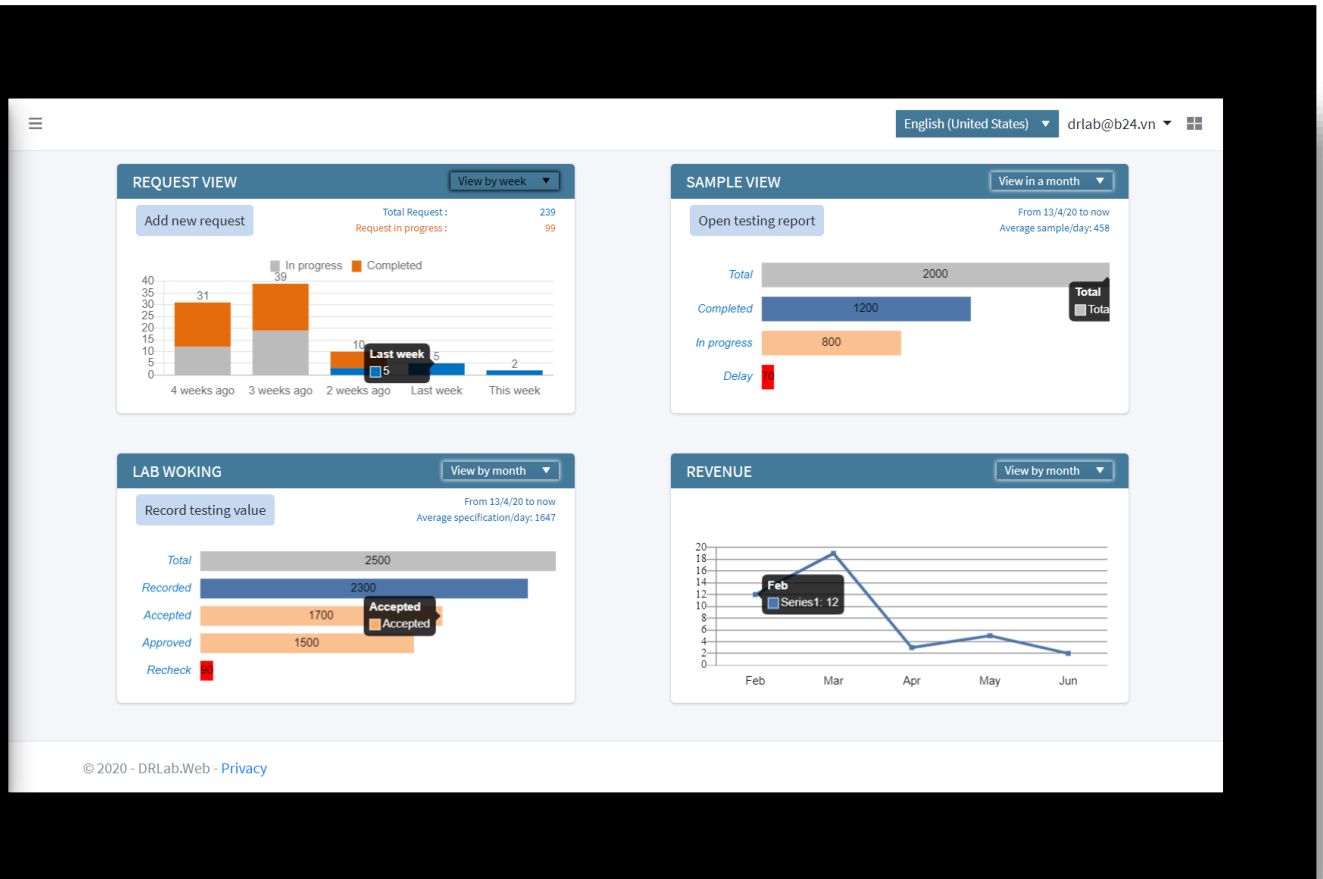
1. General introduction

The Dr.Lab program standardizes the management of the laboratory including receiving analysis requests, assigning analytical work, controlling chemical material consumption and statistics reporting.

Dr.Lab, which is programmed and based on the latest technology of Microsoft, is currently being used in large-scale labs in Vietnam such as Upciense (under GUYOMARCH), PROMIVIY (under CARGILL), TPC VINA, WARRANTEK, CJ AGRI VIETNAM and HOÀN VŨ.

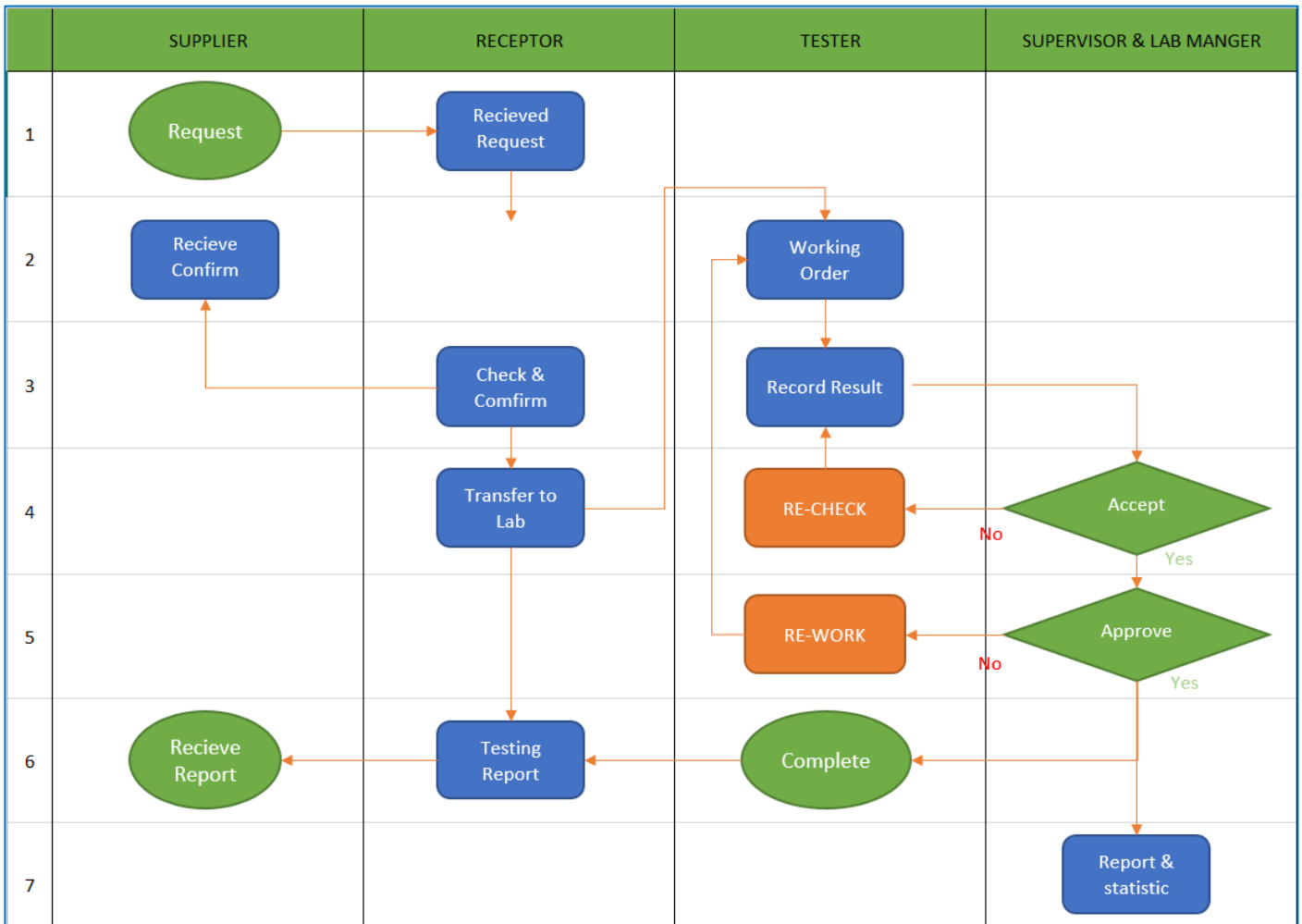
The most advanced technology

- ❖ Dr.Lab is built with the latest technology: Frontend Angular8, .NET Core, EF Core, Web-API Restful, LinkQ, Sql Server 2016
- ❖ Dr.Lab is completely a cross-platform software, serving for both sides - Client and Server, and working well on computers, smartphones and tablets.
- ❖ In addition, Dr.Lab is well integrated with the cloud computing platform to help business owners and employees work anytime and anywhere.



2. Performance process

- ✓ Receiving an analysis request
- ✓ Assigning analytical work
- ✓ Inspecting and approving results of analysis
- ✓ Delivering test results to suppliers
- ✓ Making statistical reports on parameters



3. Features of solution

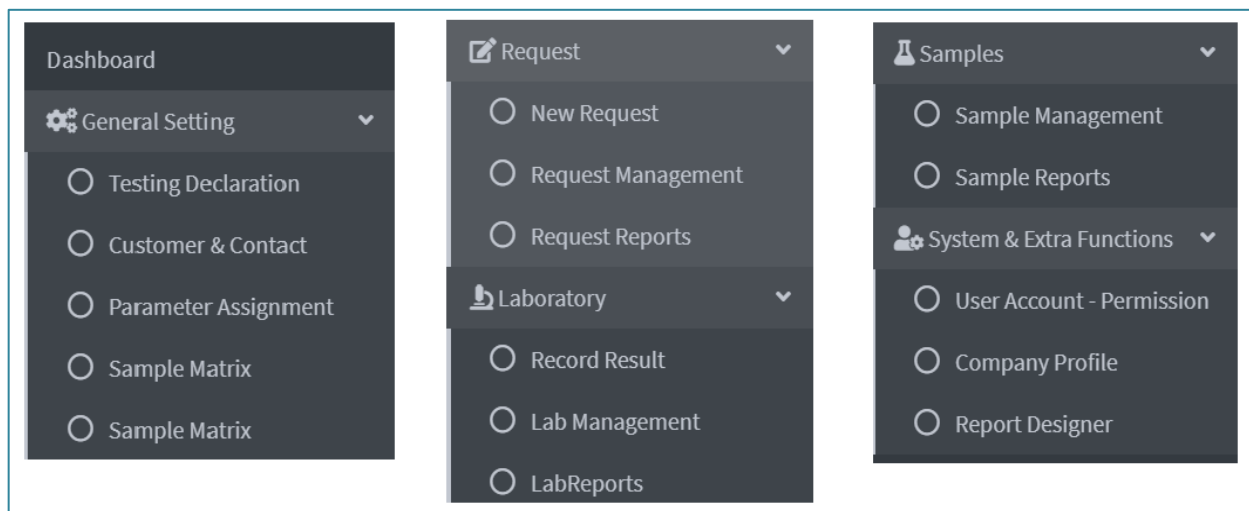
- ✓ Compliance with the international standard testing procedures (ISO 17025, AOAC, etc.)
- ✓ Providing API (web service) for third-party developers to exploit data on demand
- ✓ No limit to sample matrix and analysis criteria; recording both numeric and text results
- ✓ Users can assign parameters to each sample matrix group
- ✓ The gprogress of testing each sample can be virtually tracked at every step.
- ✓ Languages to support are both Vietnamese and English (including in printed forms)

B. FUNCTIONS AND PROCESS

1. Object declaration

Object	Definition	Description
Sample	A sample is one received from a specific supplier and its information is recorded in an analysis request by the sales department.	Many different parameters can be tested on a sample.
Sample matrix	A sample matrix is an arrangement of samples.	Samples are classified into a category with the particular properties in common.
Parameters	There is no limit to the number of parameters which belong to categories in the sample matrix.	One Parameters can be tested with many different methods in many different labs
Method	A method is a particular way of testing.	A method can be implemented in many labs.
Lab	A lab can be an internal or external laboratory of the company	The internal lab is classified into groups: Microbiological testing, physical testing and chemical testing.
Technician	A technician is a person doing tests	A technician is responsible for testing some specific parameters
Supervisor	A supervisor supervises technicians.	The supervisor reviews test results of tests carried out by technicians
Manager	A manager manages the lab	The manager validates analysis results and makes a final check.

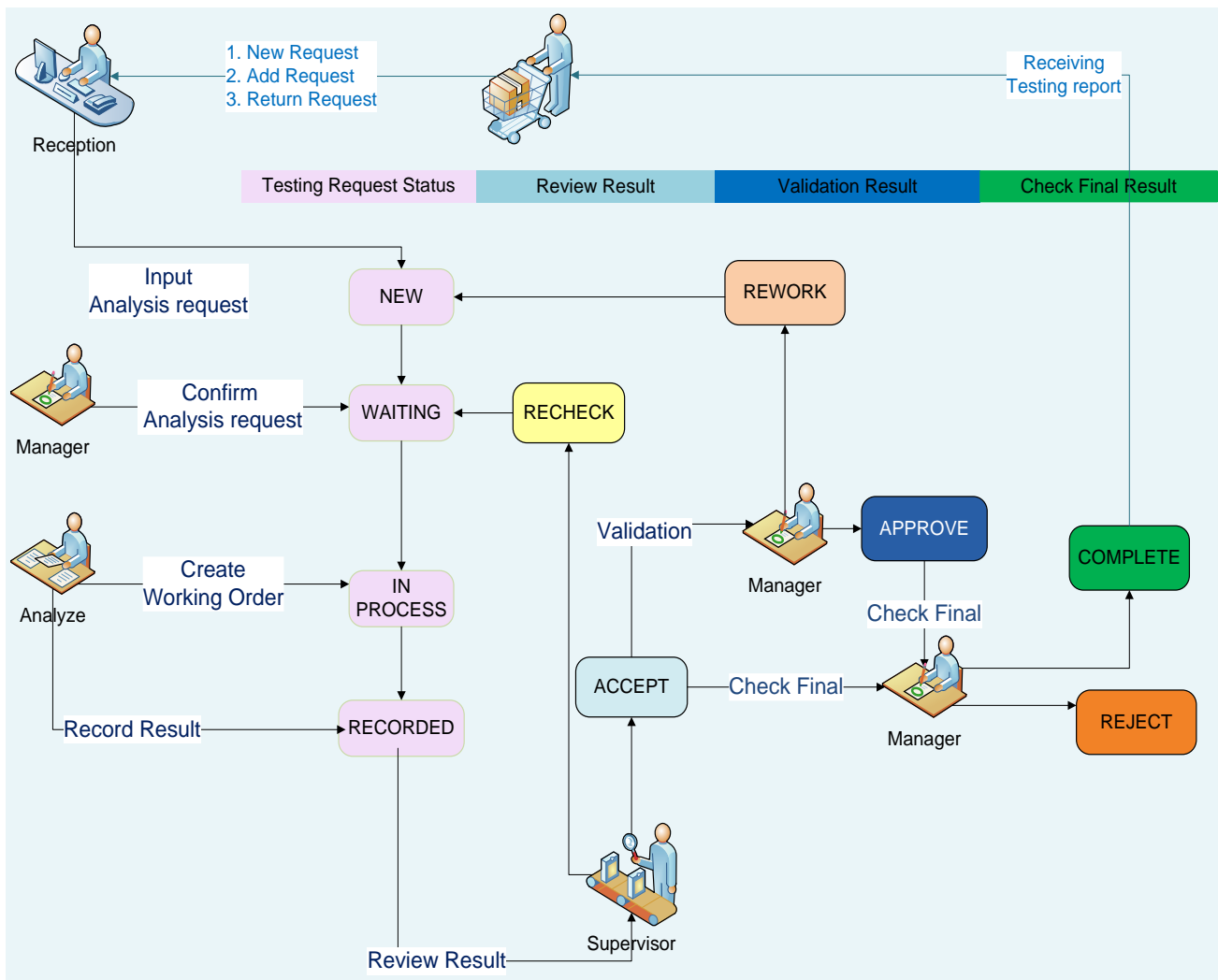
2. Functions of the software



Category of functions	Functions	Description
Receiving analysis requests	Inputting analysis requests	To input requirements of analysis from the supplier, create a request code and add detailed information of sample for testing
	Confirmation of an analysis request	The supervisor approves the request for admission to the lab
	Order confirmation	An order is printed and emailed to the supplier for confirmation
ANALYSIS	Creating working orders	Based on requests and the roster, the program automatically generates working orders for the lab
	Inputting analysis results	The technician inputs analysis results in his working orders
	Managing working orders	To manage the performance status of working orders
	Work assignment	To assign each technician each testing in a corresponding lab.

REVIEW OF RESULTS	Reviewing analysis results	The supervisor reviews test results, compares with the min-max levels, and decides to Accept or to Re-check
	Approving analysis results	The manager checks accepted test results and decides them to be approved or re-worked
	Tracking sample progress	To manage analysis progress of each sample, including the total times of testing and the total of results accepted, approved, re-checked and re-worked
DELIVERY OF TEST RESULTS	Testing report	To print testing report and email reports to the supplier
	Request management	Managing analysis progress of each request, including the total times of testing and the total of results accepted, approved, re-checked and re-worked
STATISTICAL REPORT	Statistical reports on parameters	Statistical report on parameters
	Statistical reports by sample	To print and export statistical reports to Excel
	Statistical reports by supplier	To print and export statistical reports to Excel
SYSTEM AND & OTHER FUNCTIONS	Systematic functions	<p>To create user accounts</p> <p>To assign permission to user</p> <p>To declare information of companies</p> <p>To customize printing of report</p>

3. Analysis Workflow



Clarification:

❖ From suppliers

1. New Request: **New analysis request with a new sample**
2. Add Request: **Analysis request for more parameters with an old sample** analysed by the lab before
3. Return Request: **Request for re-analyzing with a sample which has shown results in a previous testing report**

❖ From lab supervisors

4. Accept: The technician's test results are accepted

5. Re-check: A particular Parameters is re-analyzed because the previous analysis result is abnormal and not accepted

❖ **From lab managers**

6. Re-work Request: A request for re-creating a working order to re-work testing of parameters with abnormal results
7. Approve: To approve test results and make preparations for a final check before delivering results to the supplier
8. Final check: To make a final check; if completed, test results are delivered to the supplier; if not completed, test results are cancelled

C. TYPICAL INTERFACES & FUNCTIONS

1. Samples management:

- Search for samples by supplier, by date or by status
- Demonstration of analysis progress as well as status of review and approval
- Detailed display of testing progress for each Parameters

Sample Management		03/08/2020-04/08/2020		Bulk Actions	Export	Refresh				
Request No#	Sample Code	Receive Date	Customer Name	Completed On	Lab Code	Total	Accept	Reject	Approve	Status
RQ200869	S1132	03/08/2020	Công Ty Phát Triển Công Nghệ và Môi Trường á Đông	03/08/2020	19101133	5	5	0	5	CONFIRMED
RQ200869	S1133	03/08/2020	Công Ty Phát Triển Công Nghệ và Môi Trường á Đông	03/08/2020	19101134	5	5	0	5	CONFIRMED
RQ200870	S1134	03/08/2020	Công Ty Cổ Phần Thực Phẩm Masan (Việt Tiến)	03/08/2020	19101135	8	0	0	0	CONFIRMED
RQ200871	S1135	03/08/2020	Công Ty Cổ Phần Thực Phẩm Q.V.D Đồng Tháp	03/08/2020	19101136	4	3	0	0	CONFIRMED
RQ200871	S1136	03/08/2020	Công Ty Cổ Phần Thực Phẩm Q.V.D Đồng Tháp	03/08/2020	19101137	5	4	0	0	CONFIRMED
RQ200871	S1137	03/08/2020	Công Ty Cổ Phần Thực Phẩm Q.V.D Đồng Tháp	03/08/2020	19101138	5	5	0	0	CONFIRMED
RQ200872	S1138	03/08/2020	Công ty TNHH Công Nghiệp Thực Phẩm Pataya Việt Nam	03/08/2020	19101139	5	0	0	0	CONFIRMED
RQ200872	S1139	03/08/2020	Công ty TNHH Công Nghiệp Thực Phẩm Pataya Việt Nam	03/08/2020	19101140	5	0	0	0	CONFIRMED
RQ200873	S1140	03/08/2020	Công Ty Cổ Phần Thực Phẩm Masan (Việt Tiến)	03/08/2020	19101141	6	0	0	0	CONFIRMED
RQ200874	S1141	03/08/2020	Công Ty Phát Triển Công Nghệ và Môi Trường á Đông	03/08/2020	19101142	7	0	0	0	CONFIRMED
RQ200875	S1142	03/08/2020	Công Ty Cổ Phần Vĩnh Nam	03/08/2020	19101143	6	0	0	0	CONFIRMED
RQ200876	S1143	03/08/2020	AGF-A PLUS GOURMET FOODS	03/08/2020	19101144	6	0	0	0	CONFIRMED
RQ200877	S1144	03/08/2020	Công Ty Cổ Phần Thương Mại Thái Dương	03/08/2020	19101145	7	0	0	0	CONFIRMED
RQ200878	S1145	03/08/2020	Công Ty CP Thực phẩm Hải Yến	03/08/2020	19101146	7	0	0	0	NEW

Lab Code	Total	Accept	Reject	Approve	Status
19101133	5	5	0	5	CONFIRMED
19101134	5	5	0	5	CONFIRMED
19101135	8	0	0	0	CONFIRMED
19101136	4	3	0	0	CONFIRMED
19101137	5	4	0	0	CONFIRMED
19101138	5	5	0	0	CONFIRMED

Analysis progress

2. Setting up a bank of parameters

- Parameters – Testing method – estimated test results delivery date
- Map Parameter to Sample Matrix

Specification	Unit	Method	TAT	Reform	Note
Esfenvalerate	g/100ml	xyz	4	<input checked="" type="checkbox"/>	TTS(khac) Alachlor
Bitertanol (sum of isomers)	g/100ml	Ref. AOAC 2007.01 (LC/MS/MS)	5	<input type="checkbox"/>	TTS(khac) Fluopicolide
Bifenthrin (sum of isomers)	g/100ml	Ref. AOAC 2007.01 (LC/MS/MS) (ii)(*)	3	<input type="checkbox"/>	TTS(khac) Sulfoxaflor
BHC	mg/L	EPA 525.2	3	<input type="checkbox"/>	8260 (1,2-Dichloropropane)
Benzyl alcohol	g/100ml	Ref EPA 8081B, 2007 (GC/MS)	3	<input checked="" type="checkbox"/>	TTS(Clo) Aldrin
Benzalkoium Chloride (BKC)	g/100ml	HD.TN.012 (GC/MS) (*)	3	<input type="checkbox"/>	TTS(Clo) Aldrin
Bentazone	g/100ml	AOAC 2007.01 (GC/MS) (*)	2	<input type="checkbox"/>	TTS(Clo) Aldrin
Benomyl	g/100ml	EPA 525.2	2	<input type="checkbox"/>	TTS(Clo) Isodrin
Diafenthiuron	g/100ml	Ref. AOAC 2007.01 (GC/MS)	2	<input checked="" type="checkbox"/>	TTS(khac) Aminopyralid
Bendiocarb	g/100ml	Ref. AOAC 2007.01 (LC/MS/MS)	2	<input type="checkbox"/>	TTS(khac) Amitraz
Benalaxyl	g/100ml	Ref. AOAC 2007.01 (LC/MS/MS)	2	<input type="checkbox"/>	TTS(khac) Diphenylamine
Cymoxanil	mg/L	Extract with diethyl ether (GC/MS)	2	<input type="checkbox"/>	Benzyl alcohol
Azoxystrobin	g/100ml	Ref. EPA 8081B	2	<input type="checkbox"/>	TTS(Clo) BHC
Azinphos-methyl	g/100ml	HD.TN.081 (AOAC 2007.01 (GC/MS)) (ii) (*)	2	<input type="checkbox"/>	TTS(Cuc) Bifenthrin
Atrazine	g/100ml	Ref. AOAC 2007.01 (LC/MS/MS)	2	<input type="checkbox"/>	TTS(khac) Bitertanol
TBHQ	mg/L	EPA 524.2	2	<input type="checkbox"/>	BTEX (Toluen+Ethylbenzene+Xylen...

Amino Acid

+ Add new record
Save Changes
Cancel Changes

Specification

Benzalkoium Chloride (BKC)

Benzyl alcohol

Bitertanol (sum of isomers)

Esfenvalerate

◀
▶

Map Parameter to Sample Matrix

3. Receiving analysis requests

- Sample codes and inner codes are automatically generated
- Regularly repeating groups of parameters are saved and retrieved with template-mark

Request No. RQ200873 Receive Day: 03/08/2020 04:46 Return Day: 03/08/2020 04:46

Sample List ◀ 1 ▶

Sample Name: Nước tương Sample Code: S1140
Description: Đen, lỏng, chai thủy tinh Inner Code: 19101141
Remark To Lab: Làm gấp cho trong ngày Weight: 200 gr
Sample Matrix: ANIMAL FEED Add Specification Select Specification TAT (+/-): 3 Done
Template Mark: M0873 Save Get

Specification	Mark	Method	LOD	Unit	Price	Urgent	TAT
Esfenvalerate		HD.TN.012 (GC/MS) (*)		g/100ml	0.00	0	0
Bifenthrin (sum of isomers)		Ref. AOAC 2007.01 (LC/MS/MS) (ii)(*)		g/100ml	0.00	0	0
Cymoxanil		Extract with diethyl ether (GC/MS)		mg/L	0.00	0	0
BHA-BHT-TBHQ		EPA 1311 (Extr.), EPA 8260C (Quant.)		g/100ml	0.00	0	0
Ametryn		AOAC 2007.01 (GC/MS) (*)		mg/L	0.00	0	0
Hàm lượng chất bay hơi		TCVN 6088:2004 (ISO 248:1991)		% m/m	0.00	0	0

Shortcut to create a new testing

Shortcut to create a new sample matrix

New Testing

Specification: Specification ▼ +

Method: Method

Unit: Unit

TAT: TAT

Reform:

Note: Note

Cancel Save

New Sample Matrix

New Sample Matrix: New Sample Matrix

Cancel Save

4. Lab management

- To track the progress of request
- To select parameters to accept or re-check

Progress of request

Lab management Bulk Actions Refresh

03/08/2020-05/08/2020

<input type="checkbox"/>	Request No#	Receive Date	Expected Date	Total Sample	Total Spec	Recorded	Accepted	Request Status
<input type="checkbox"/>	RQ200869	03/08/2020	03/08/2020	2	10	10	10	CONFIRMED
<input type="checkbox"/>	RQ200870	03/08/2020	05/08/2020	1	8	0	0	CONFIRMED
<input type="checkbox"/>	RQ200871	03/08/2020	03/08/2020	3	14	14	12	CONFIRMED
<input checked="" type="checkbox"/>	RQ200872	03/08/2020	03/08/2020	2	10	10	0	CONFIRMED
<input type="checkbox"/>	RQ200873	03/08/2020	05/10/2020	1	6	0	0	CONFIRMED
<input type="checkbox"/>	RQ200874	03/08/2020	03/08/2020	1	7	0	0	CONFIRMED
<input type="checkbox"/>	RQ200875	03/08/2020	03/08/2020	1	6	0	0	CONFIRMED
<input type="checkbox"/>	RQ200876	03/08/2020	03/08/2020	1	6	0	0	CONFIRMED
<input type="checkbox"/>	RQ200877	03/08/2020	03/08/2020	1	7	0	0	CONFIRMED
<input type="checkbox"/>	RQ200878	03/08/2020	03/08/2020	1	7	0	0	PROCESSING
<input type="checkbox"/>	RQ200879	03/08/2020	03/08/2020	1	12	0	0	PROCESSING
<input type="checkbox"/>	RQ200880	04/08/2020	04/08/2020	1	10	0	0	PROCESSING

1 - 12 of 12 items

Review testing results; select to accept or re-check

Review Result More Action Save Cancel

Request No: RQ200872 Receive Day: 03/08/2020 04:43 Retur

Chị Trâm Chị Trâm, tram@patayafoodvn.com

Sample List ◀ 1 2 ▶

Sample Name: Gạo Inner Code

Sample Matrix: AQUA FEED Remark To Lab

[Recheck](#) [Accept](#)

<input type="checkbox"/>	Specification	Mark	Method	Expectation D...	Revie...
<input type="checkbox"/>	Bitertanol (sum of isomers)		Ref. AOAC 2007.01 (LC/MS/MS)	03/08/2020	Accept
<input type="checkbox"/>	Benalaxyl		Ref. AOAC 2007.01 (LC/MS/MS)	03/08/2020	Accept
<input type="checkbox"/>	TBHQ		EPA 524.2	03/08/2020	●
<input checked="" type="checkbox"/>	Spectinomycin		Ref. AOAC 2007.01 (LC/MS/MS)(*)	03/08/2020	Recheck
<input checked="" type="checkbox"/>	Hàm lượng chất bay hơi		TCVN 6088:2004 (ISO 248:1991)	03/08/2020	Recheck

1 - 5 of 5 items

Select specifications to review

5. Sample validation

Approve Result

More Action

Save

Cancel

Request No: RQ200869
Receive Day: 03/08/2020 04:40
Returr

Bùi Mạnh Hà
Bùi Mạnh Hà,

[Sample List](#) ◀ 1 2 ▶

Sample Name:

Sample Matrix:

Remark To Lab:

Inner Code:

Remark To Lab:

Approved one or more parameters

Reject
Approve

<input type="checkbox"/>	Specification	Mark	Method	Unit	Expectation D...	Revie...	Valida...
<input type="checkbox"/>	Bitertanol (sum of isomers)		Ref. AOAC 2007.01 (LC/MS/MS)	g/100ml	03/08/2020	Accept	Approve
<input checked="" type="checkbox"/>	Bifenthrin (sum of isomers)		Ref. AOAC 2007.01 (LC/MS/MS) (ii) (*)	g/100ml	03/08/2020	Accept	Approve
<input type="checkbox"/>	BHC		EPA 525.2	mg/L	03/08/2020	Accept	●
<input type="checkbox"/>	Diafenthuron		Ref. AOAC 2007.01 (GC/MS)	g/100ml	03/08/2020	Accept	Approve
<input type="checkbox"/>	BHA		HD.TN.211 (Ref. EPA 8260C:2006 & EPA 5021A:2014) (*)	g/100ml	03/08/2020	Accept	Approve

◀ ▶
1 - 5 of 5 items

Delivering testing results to the supplier (in testing reports): Selecting parameters to print is accepted

Print Request

✕

Request No# ▼ Công ty TNHH

Sample Code ▼ Khí thải ống thoát khí




<input type="checkbox"/>	Specification	Method	Unit	Result	ResultText
<input checked="" type="checkbox"/>	NO2(b)	TCVN 6137 : 2009	mg/m3	3	
<input checked="" type="checkbox"/>	SO2(b)	TCVN 5971 : 1995	mg/m3	2	
<input checked="" type="checkbox"/>	CO(b)	QT-PTKCO-29	mg/m3	2	
<input type="checkbox"/>	Bụi tổng (b)	US.EPA Method 05	mg/N...	3	
<input type="checkbox"/>	Xylen	HD.TN.012 (GC/MS) (*)	mg/m3	3	
<input checked="" type="checkbox"/>	Toluen	HD.TN.012 (GC/MS) (*)	mg/m3	1	
<input type="checkbox"/>	Hơi axit HCL	HD.TN.012 (GC/MS) (*)	mg/m3	1	

◀ ▶

Cancel

Print

6. A printout for reference

	TEST REPORT		
Mr. Phong		Client Code: CL001	
Nexsoft Ltd.		Order ref: 487CL00113	
Ấp 1B, An Phú, Thuận An, Bình Dương		LAB ID: LVN1308357	
Tel: 0650 3710225 - Fax:			
SAMPLE DESCRIPTION			
Sample name: 13B250086 ECO 3P		Date of reception: Jun 24, 2013	
Sample description: SAMPLE IN PLASTIC BAG		Analysis on: Jun 24, 2013	
Quantity (gr): 200.00		Completed on: Jul 01, 2013	
TEST RESULTS			
Specification	Method	Unit	Result
Calcium (Ca)	AAS08-Based on 73/46/EEC(v)	%	2.17
Salmonella spp	ISO 6579:2007(v)	CFU/25g	NEG
Mold count	NF ISO 7954:1988	CFU/g	<10
Aflatoxins	Inhouse method(v)	ppb (mcg/kg)	Not detected
Aflatoxins	Aflatoxin B1	ppb (mcg/kg)	Not detected
Aflatoxins	Aflatoxin B2	ppb (mcg/kg)	Not detected
Aflatoxins	Aflatoxin G1	ppb (mcg/kg)	Not detected
Aflatoxins	Aflatoxin G2	ppb (mcg/kg)	Not detected
Ash ins HCl	EC 152/2009(v)	%	0.51
NaCl	AOAC 969.10(v)	%	1.28
Hydrolysed fat	ISO 6492:1999(v)	%	7.87

D. BENEFITS OF DR.LAB SOFTWARE

1. Data input is at least 3 times faster

- The data of parameters, testing methods, suppliers, etc. are declared only once. Afterwards, they can be selected when necessary, no need to input repeatedly.
- The information of a sample is input only once on receiving and the result is also input only once in a monitoring form.
- Samples similar to previous ones need to be copied without re-declaration
- All statistical reports are automatically issued, no need to re-input data for them

2. Ensuring reliability of data

- Assign permission to each functions
- The approved data is not allowed to be edited or deleted; The person who enters testing results is not allowed to approve them; The person who approves testing results is not allowed to enter them.
- The printed forms and reports which are calculated based on approved data must not be arbitrarily adjusted

3. Ensuring safety and security of data

- Data stored in SQL Server, unlimited capacity
- No one can access or change data files except the SQL Server manager
- Speed of processing and accessing data as fast as hundreds of GB
- Data backup is automatically implemented everyday

4. Standardizing processes for each department

Department of receiving and analyzing

- To control information from suppliers
 - Sample receiver >> declare; enter information >> track testing
 - Analyst >> input data
- To assign analysis tasks
 - Work sheets are automatically generated for each analyst

Department of reviewing test results

- Approval analysis results (according to 2 levels)
 - Group leader accepts test results
 - Lab manager approves test results
- Processing disapproved test results
 - Test results out of range are shown in red (for easy distinction)
 - Disapproved test results are automatically returned to analysts

Department of delivering testing results

- Test result delivery date for suppliers is automatically estimated
- Performance of analysis is controlled on a general management screen with full information

- Test results are exported in many ways such as Excel files, PDF files or printing
- Internally exporting testing reports
- Allowing related partners to exploit approved data