

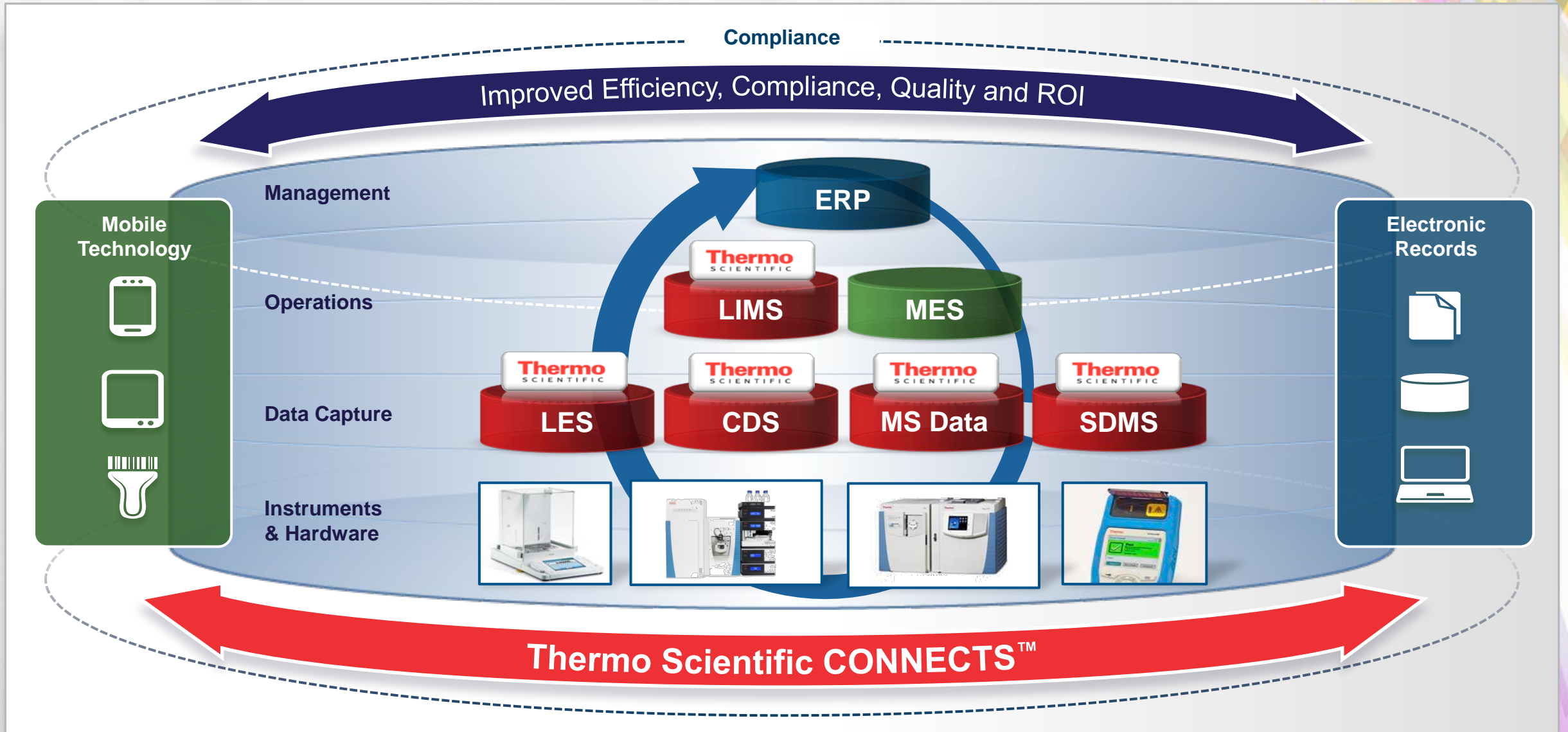


Accelerating  
**Innovation**  
& Enhancing Productivity

## Innovation Through Laboratory Informatics

Trish Meek  
Director of Product Strategy & Sr. Marketing Manager

# Today's Laboratory Environment



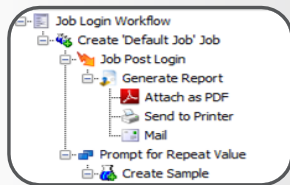
# Enabling the Paperless Lab through Enterprise Software



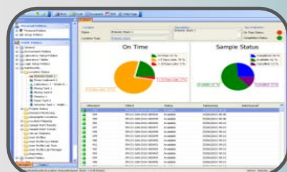
**Enterprise Integration**



**Product Release**



**Lab Workflow**



**Business Intelligence**



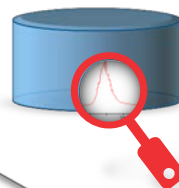
**Samples, Tests & Results**

**Integrated Informatics**

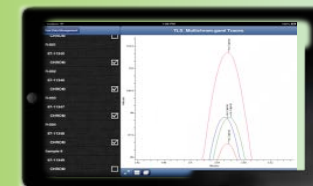
**Lab Management**



**Data Management**



**Acquisition & Processing**



**Mobile Support**

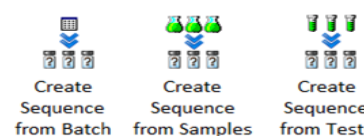


**Instruments**



**Stability Testing**

**Sequence Creation**



**Chromeleon CDS Software Integration**

**Delivering Productivity, Ease of Use and Compliance**

# The Complete Laboratory Process

## Lab Management



### Complete laboratory management

Sample, test & result management  
Management of lab personnel  
& resources  
Process optimization & standardization

## Data Visualization



### Visualize without original application

Laboratory data archival, retrieval  
and preservation  
Support for >180 instrument  
data formats  
Vendor independent XML for  
long-term storage

## Acquisition and Processing



### Simplify your lab operations

Save 5–60 min per sequence  
using smart processing tools  
Get more “right-the-first-time”  
analyses with intelligent functionality  
Network-independent data  
acquisition for 24/7 uptime

*Enabling customer productivity and innovation*

# Thermo Scientific SampleManager LIMS

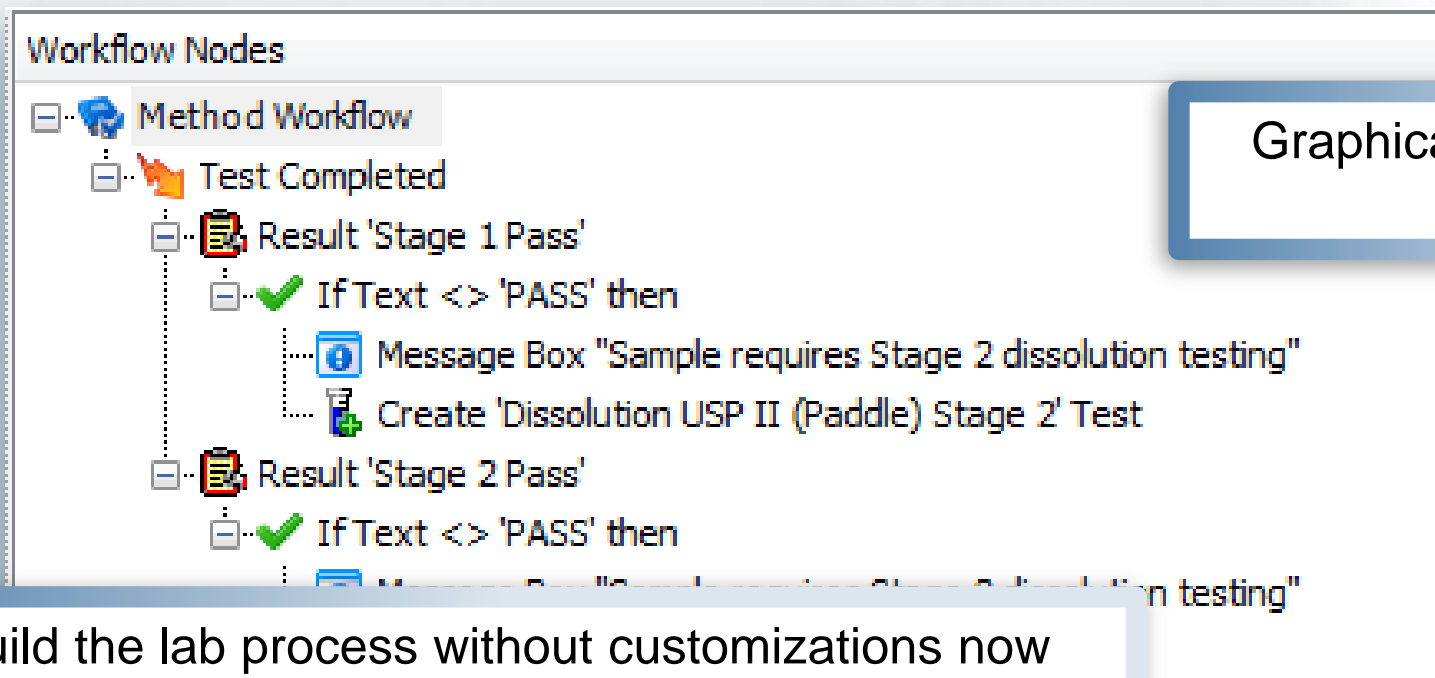
The screenshot displays the Thermo Scientific SampleManager LIMS web interface. The browser address bar shows the URL: ukalt-devdemo1:8080/#Navigate:PublicFolders\General\Jobs\Date Created\Yesterday. The interface includes a navigation menu on the left with 'My Lab' and 'Lab Resources' sections. The main area shows a breadcrumb trail: PublicFolders > General > Jobs > Date Created > Yesterday. Below this is an 'Explorer' section with file type filters (Excel, CSV, Document, PDF) and a search bar. A table lists job records with columns for Job name, Browse description, Job status, and Date received. A context menu is open over the selected job (JOB\_0000000043), showing options like Login, Workflow Login, Sample Plan Login, Process, Result Entry, Tracking, Edit Attachments, Reports, Authorise..., Cancel..., Suspend..., and Compare MLP. The status bar at the bottom indicates 'Active | local | SYSTEM'.

Job name	Browse description	Job status	Date received
JOB_0000000040	Job created on 16-NOV-2015 12:47 by SYSTEM	Completed	
JOB_0000000041	Job created on 16-NOV-2015 12:48 by SYSTEM	Completed	
JOB_0000000042	Job created on 16-NOV-2015 12:51 by SYSTEM	Completed	
JOB_0000000043	Job created on 16-NOV-2015 12:51 by SYSTEM	Completed	
JOB_0000000044	Job created on 16-NOV-2015 12:51 by SYSTEM	Available	

Page size: 50

A simplified user interface that guides your lab through their day-to-day work.

**Automate your laboratory decisions and improve your ability to respond to the needs of your business.**



Graphically define your lab process in the system.

Build the lab process without customizations now and in the future.

# Auto-Documenting Workflow

Workflow Documentation Workflow Definition Document

## 1 Workflow – simple split

This document describes the 'simple split' workflow. First, it specifies the main activities that SampleManager executes when you run the workflow. It then details any action workflows that the user can trigger, any event workflows triggered by system events, and any sub-workflows triggered by the main activity. Finally, the appendix describes in detail every node type used in this workflow

### 1.1 Main Workflow

SampleManager executes the following activities when you run the workflow

- Sample Login Workflow
  - Create 'Default Sample' Sample
    - Split Sample
      - Create 'Default Sub Sample' Sub Sample
        - Create 'pH' Test
        - Create 'Default Sub Sample' Sub Sample
          - Create 'Lod' Test
          - Create 'Bacti' Test

This following table details the security roles that can execute this workflow.

Role	Description
User	System User: Functionality that only affects current user

Page: 3 of 10 Words: 2,019 English (United Kingdom)

Workflows can be auto-documented, generating a Word document including information about the workflow definition, workflow comments and all the nodes used.

## Training is verified for instruments and lab testing before it can be executed.

General Definition Groups Roles **Training** Signature

Training Courses attended by this operator. This operator has Training Override privilege. + - ✕

Training Course	Description	Competence	Date Completed	Retest Date	Retest Grace D...
▶ Base Assay	Assay standardisation and calibr...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Base Balance	Use and maintenance of laborato...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Base Refridgeration	Use and maintenance of laborato...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Base Fume Cupboards	Use and maintenance of laborato...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Base Oven	Use and maintenance of ovens a...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Base Pipettes and Glassware	Use of pipettes and volumetric gl...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Lab Microbiological	Microbiological examination of sa...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Lab Physical Testing	Use and maintenance of laborato...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Lab Surface Tension	Theory of laboratory surface ten...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Lab Viscosity and Density	Measurement of paint density an...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
Paint Application	Application of paint films to dry s...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00
SampleManager LIMS Lab F...	Use of SampleManager for Labor...	Performed without sup...	01/04/2010 0...	01/04/2011 0...	01/05/2011 00:00

Training records are held against the operator and maintained against the analysis.

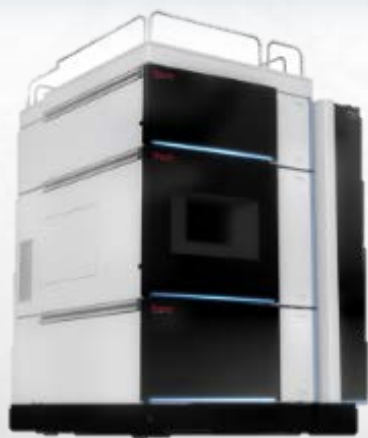


## Simplify your instrument management with instrument calibration and maintenance.

General Specification Maintenance **Parts** Parameters Details


Part types required for instruments of this type + → × ↑ ↓

Part Template	Description	Mandatory
Autosampler	Autosampler	<input type="checkbox"/>
Degasser	Degasser	<input type="checkbox"/>
Detector	Detector	<input checked="" type="checkbox"/>
▶ Instrument ...	Instrument Pump	<input checked="" type="checkbox"/>



General Specification Maintenance **Parts** Parameters Details

Calibration

 Requires Calibration


Calibration Plan DAY=(17,31) TIME=(S=8:00,F=0:00)

Sample Template

Contractor Thermo Scientific

Lead Time 0 00:00:00.00

Servicing

 Requires Servicing

Service Interval 0 00:00:00.00

Contractor Thermo Scientific

Lead Time 0 00:00:00.00

Stock levels can be monitored.  
New orders can be placed and tracked.

General Order Details **Items**

Supplier

Stock Items ordered

Stock	Supplier Code	Supplier Description	Number Ordered	Quantity
Cyclohexane	F34-6565-891	Cyclohexane	6	30
Dimethyl carbonate	F34-6565-894	Dimethyl carbonate	6	30
▶ Maleic anhydride	F34-6565-883	Maleic anhydride	11	110

General Specification **Ordering** Suppliers Inventory Parameters Details

Current Inventory

Stock	Stock B...	Location	Initial Amount	Unit	Status
C6H12	1	WH_02	30 l		Available
C6H12	2	WH_02	5 l		Available

General Specification **Ordering** Suppliers Inventory Parameters Details

Preferred Supplier

Order Amount

Order Unit

Warn of Shelf Life expiry

Warning interval

Warn of Low Amount

Low Amount

Unit

Warn of Low Percentage

Low Percentage

# Prediction of Samples According to Schedule

General Control Sampling Points Prediction

Start 25/11/2013 00:00 End 01/12/2013 00:00 Predict

1 5 7 31

25 November		28 November	
10:00 Sample Point 001		10:00 Sample Point 001	
12:00 Sample Point 002		15:00 Sample Point 003	
15:00 Sample Point 003			

26 November		29 November	
10:00 Sample Point 001		10:00 Sample Point 001	
15:00 Sample Point 003		12:00 Sample Point 002	
		15:00 Sample Point 003	

27 November		30 November	
09:00 Sample Point 001		10:00 Sample Point 001	
10:00 Sample Point 001		12:00 Sample Point 003	
12:00 Sample Point 002			
15:00 Sample Point 003			

28 November		01 December	

November 2013

M	T	W	T	F	S	S
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

December 2013

M	T	W	T	F	S	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

January 2014

M	T	W	T	F	S	S	
			1	2	3	4	5
6	7	8	9	10	11	12	
13	14	15	16	17	18	19	
20	21	22	23	24	25	26	
27	28	29	30	31	1	2	
3	4	5	6	7	8	9	

Today

# Managing Stability Studies

Stb Study - Modify - First Study for Drug Product #00001(v1)

General | Additional Information | Configuration | Matrix | Inventory | Comments | Validation | Versions | Inspection | Attachments

Packaging / Orientation

Study

- 250 ml Bottle with plastic ...
  - Upright
  - Horizontal
  - Top Down
- Blister containing 10 Tabl...
  - Upright
  - Horizontal
  - Top Down

	1 Month	3 Months	6 Months	12 Months
25 Deg.Celsius...	Test Group for ...	Test Group for ...	Test Group for ...	Test Group for ...
	No Events	No Events	No Events	No Events
	No Links	No Links	No Links	No Links
40 Deg.Celsius...	Test Group for ...	Test Group for ...	Test Group for ...	No Pulls
	No Events	No Events	No Events	No Events
	No Links	No Links	No Links	No Links

Buttons: Edit Axis, Packaging, Copy, Edit Cells

Pull Info

Item Number: 1

Test Group: Test Group for Dru...

Test Group Version: Current

Entity Template

Optional Pull:

Required Amount

- Count [Tablets]: 5
- Containers: 1

Reserve Samples

- Count [Tablets]: 2
- Containers: 1

No. of Pull Labels: 1

Pull Type

Testing Site

Description

Created Sample: 0

Sample Login Type

Analysis List

Analysis	Version	Rep. Co...
Content	Current	1
Purity	Current	1
pH	Current	1
Visual Inspection	Current	1

Buttons: OK, Cancel, Apply

Pulls, Tests and Events (moves, etc.)  
can be planned and managed  
from a single view.

# Planning and Managing Study Inventory

Stb Study - Modify - First Study for Drug Product #00001(v1)

General | Additional Information | Configuration | Matrix | **Inventory** | Comments | Validation | Versions | Inspection | Attachments

Overage in: absolute values    Re-use opened containers:     Inventory Based On: Count  
Default Overage [%]: 0    Inventory Base Unit: Tablets

Total Inventory for Drug Product #00001(v1): 462 Tablets / 102 Container

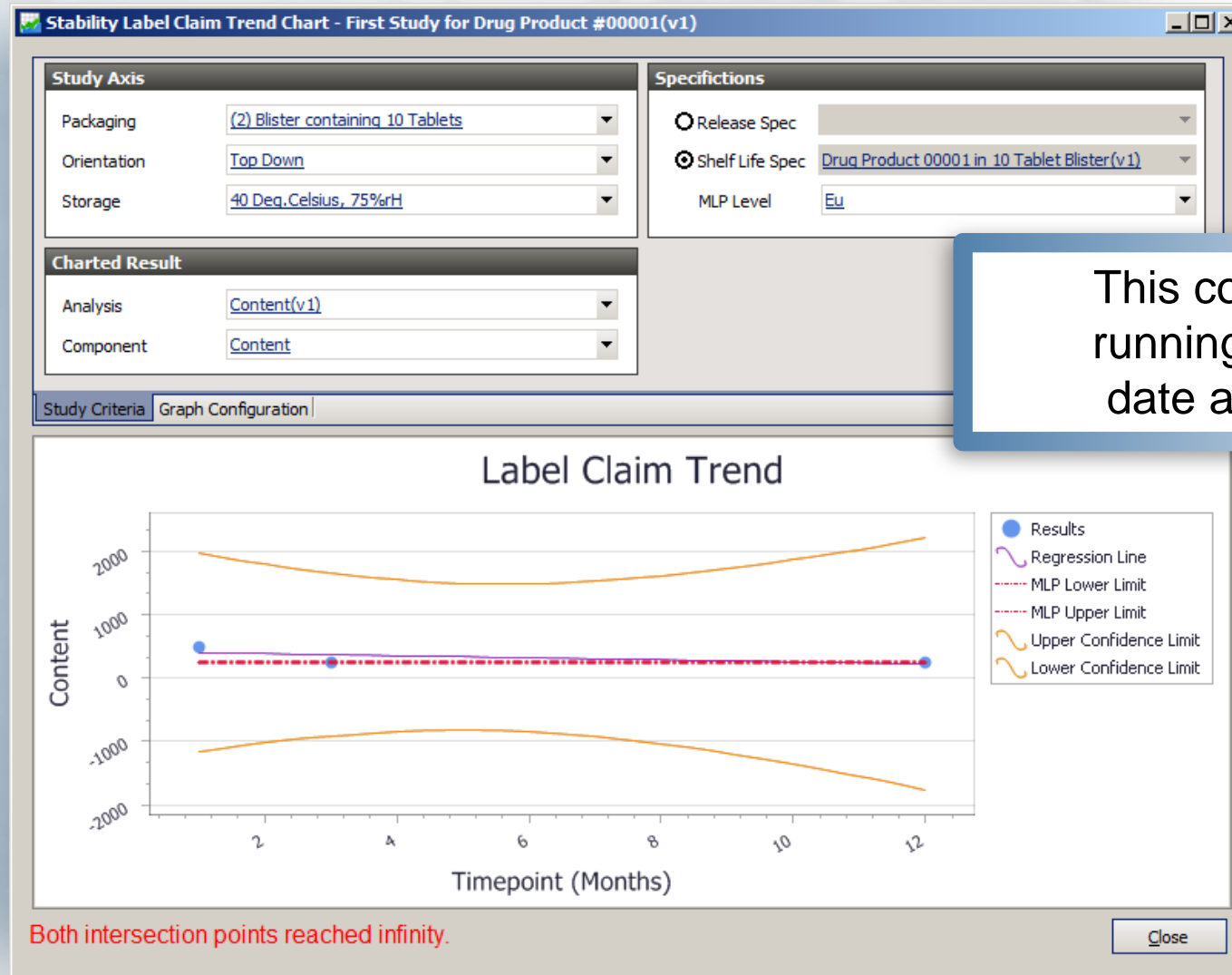
Study	Packaging	Orientation	Condition	Count planned	Containers plan...	Overage	Total Count	Total Containers
First Study for D...	(All Packagings)	(All Orientations)	(All Conditions)	294	84	168	462	102
	- 250 ml Bottle wit...	(All Orientations)	(All Conditions)	147	42	84	231	48
		- Upright	(All Conditions)	49	14	28	77	16
			25 Deg.Celsius, ...	28	8	14	42	9
			40 Deg.Celsius, ...	21	6	14	35	7
		- Horizontal	(All Conditions)	49	14	28	77	16
			25 Deg.Celsius, ...	28	8	14	42	9
			40 Deg.Celsius, ...	21	6			
		- Top Down	(All Conditions)	49	14			
			25 Deg.Celsius, ...	28	8			
			40 Deg.Celsius, ...	21	6			
	Blisters container	(All Orientations)	(All Conditions)	147	42			
				49	14	28	77	18
				28	8	14	42	10
				21	6	14	35	8
				49	14	28	77	18
				28	8	14	42	10
				21	6	14	35	8
				49	14	28	77	18
				28	8	14	42	10
				21	6	14	35	8

OK    Cancel    Apply

The Study Inventory maintains inventory based on count or containers. The overage can be defined as an amount or as a percentage.

The Amount is calculated based on the quantity needed per test group.

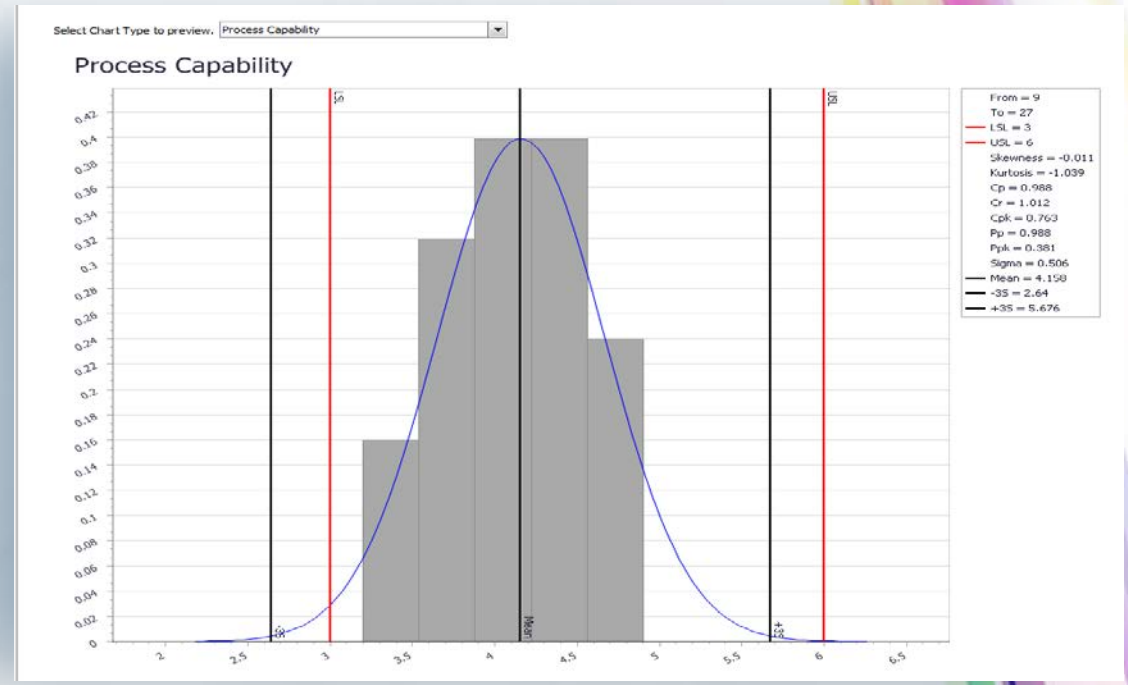
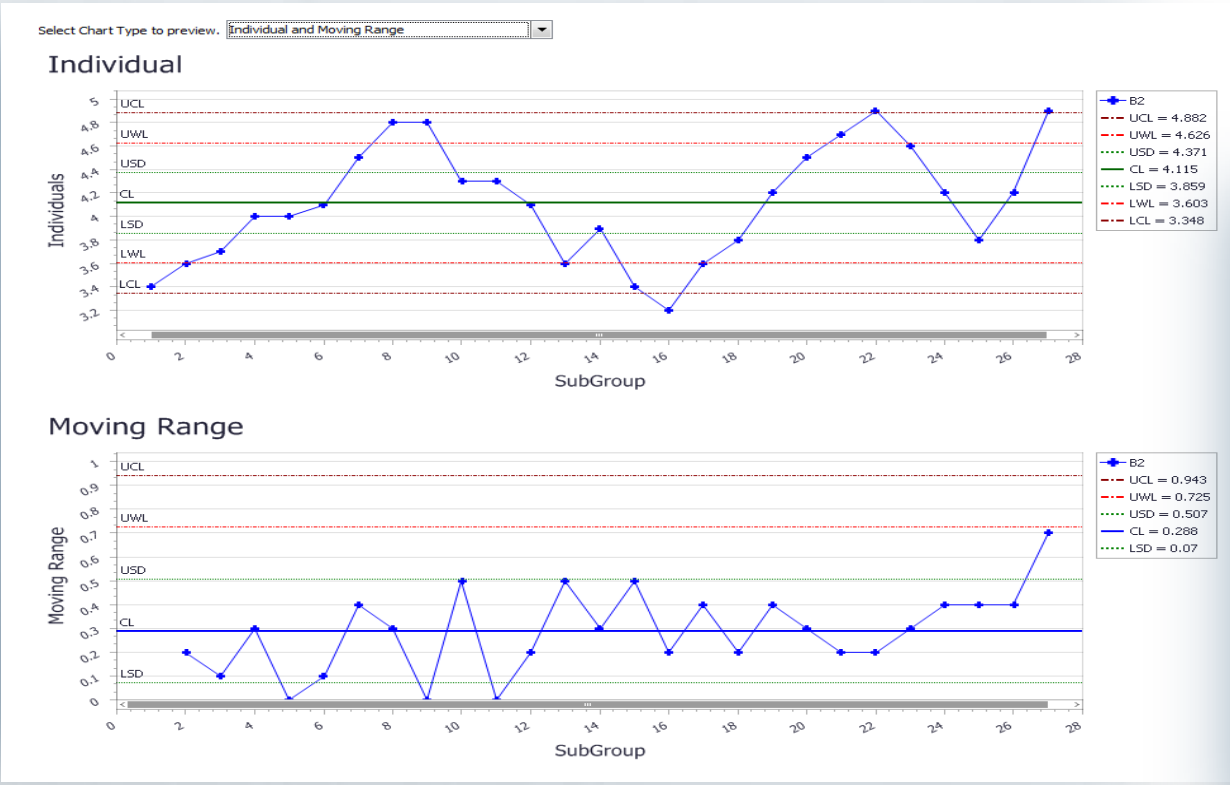
# Calculate Expiration Date Automatically



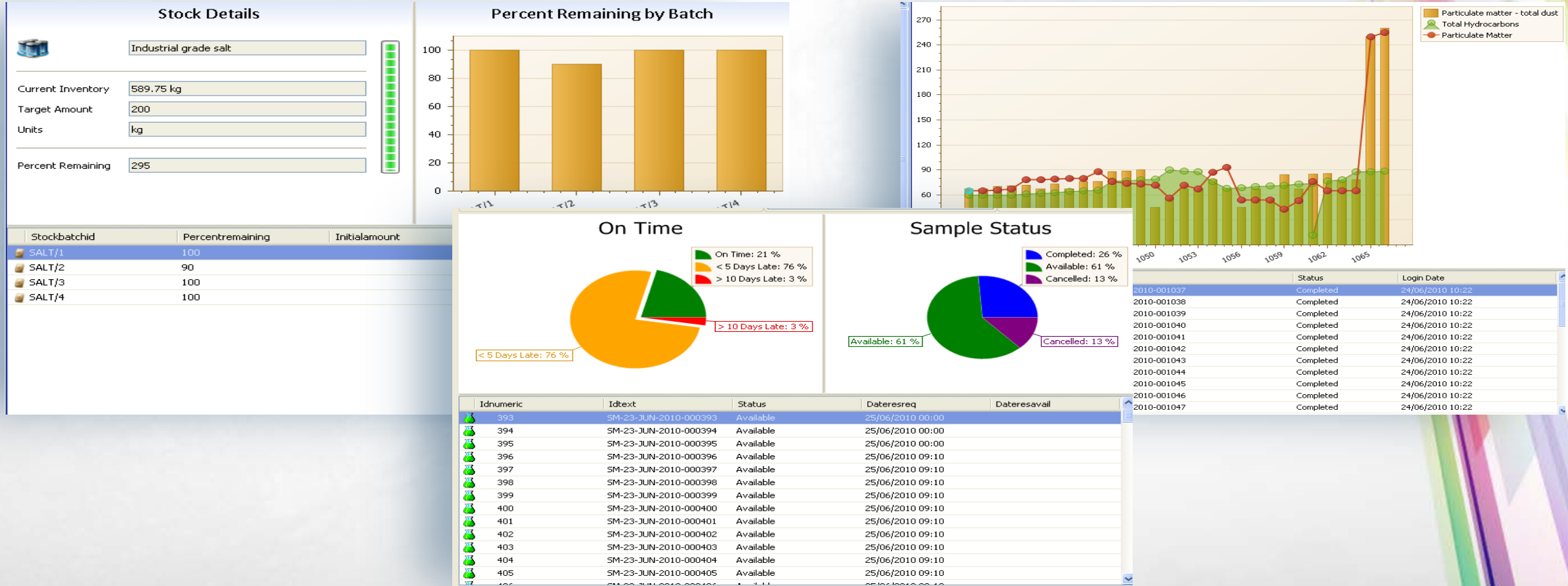
This configurable graph provides a running view the projected expiration date at any given point in the study.

# In-Built Statistical Quality Control

Get insight into your data in real time.

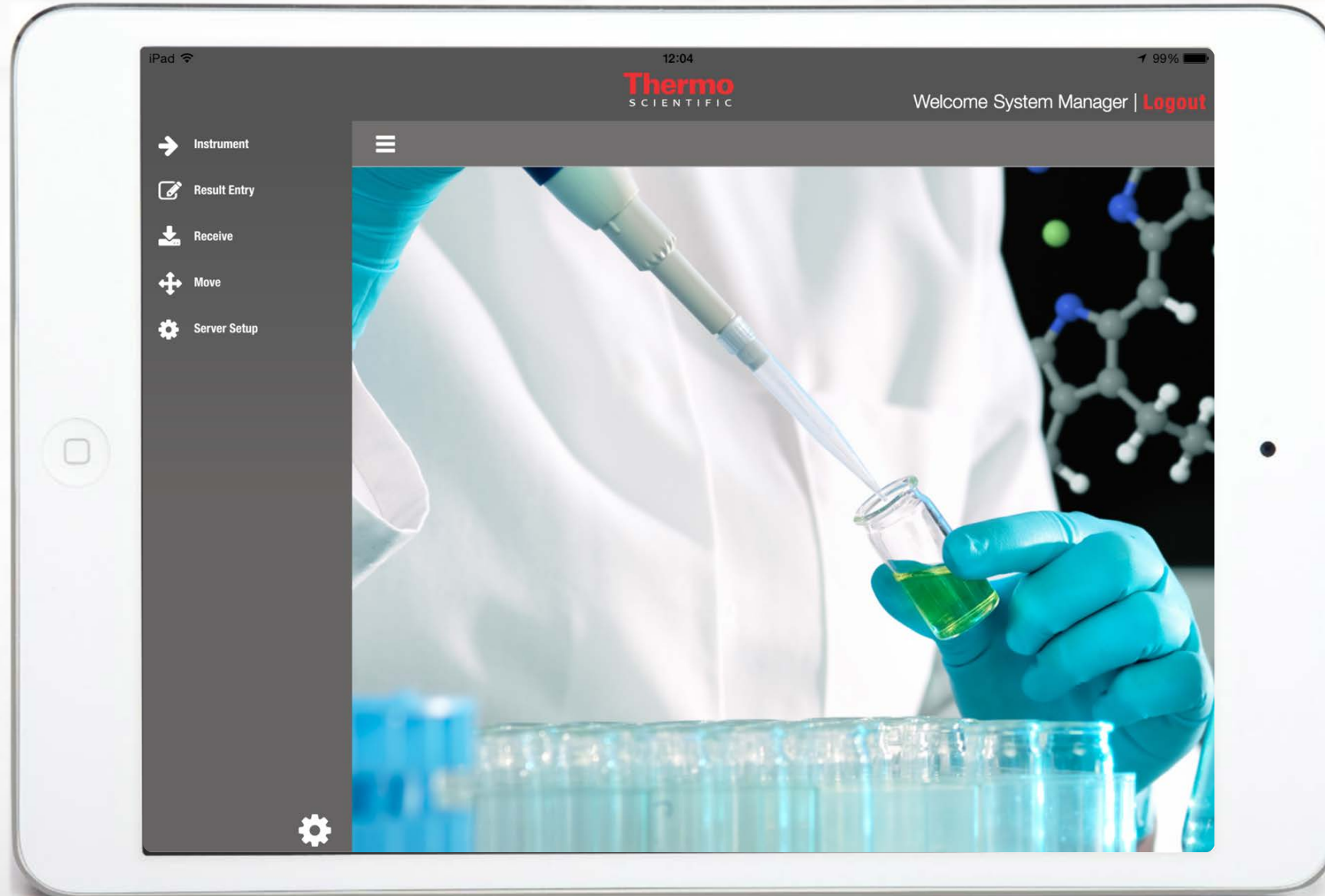


Dashboards provide a quick view of anything from stocks, to sample delivery, or trends at a particular location.

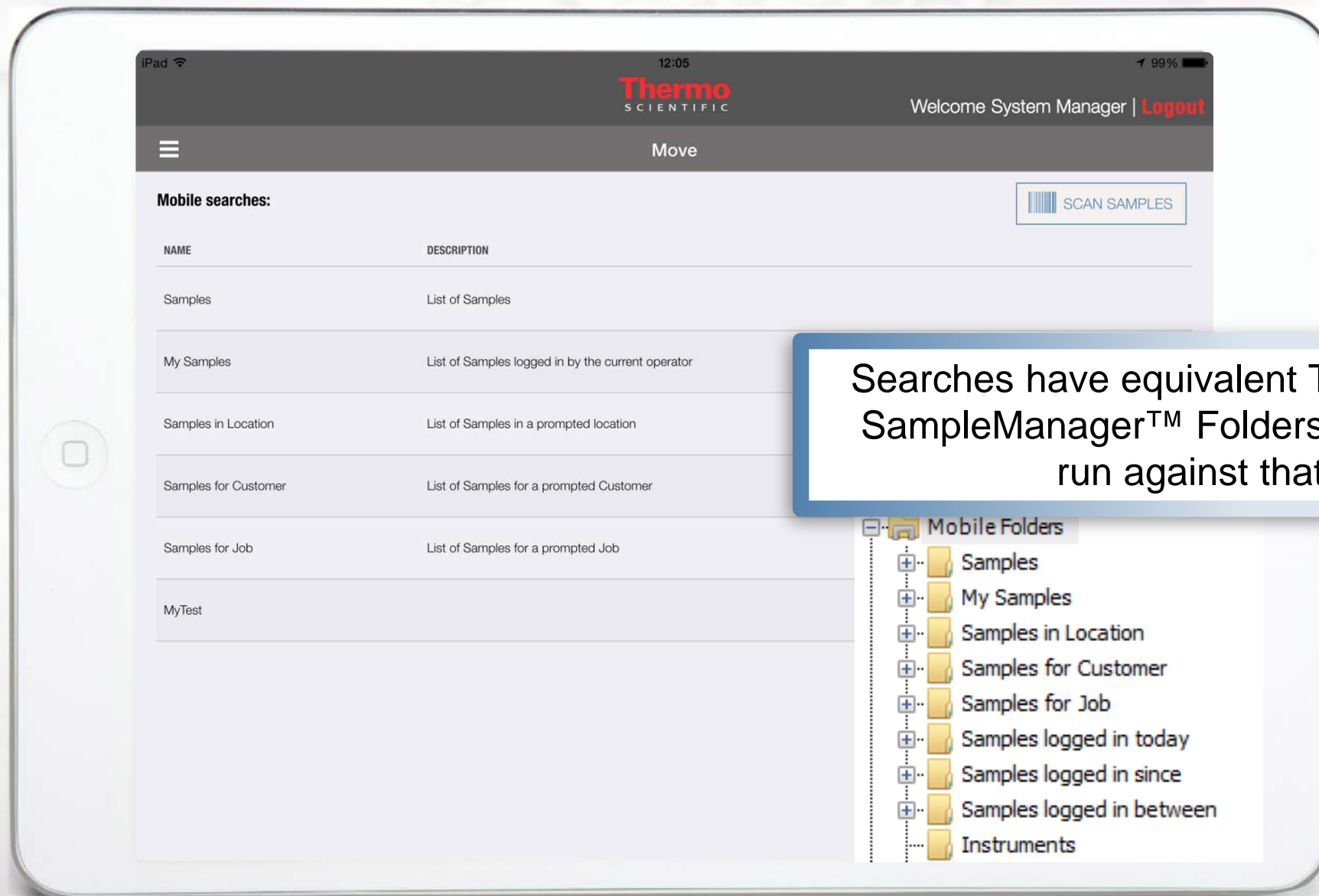




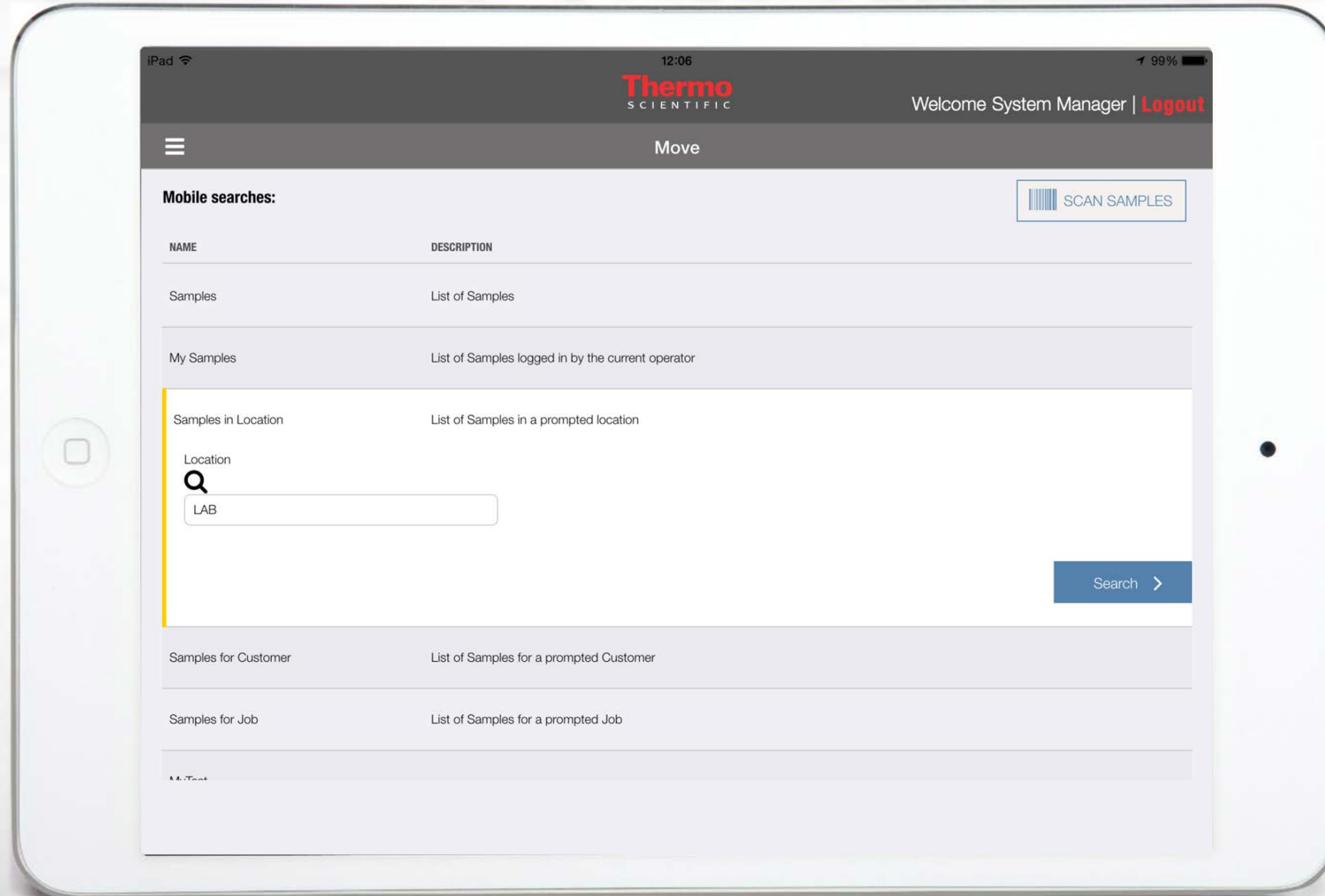
# Meeting the Needs of Today's Paperless Lab



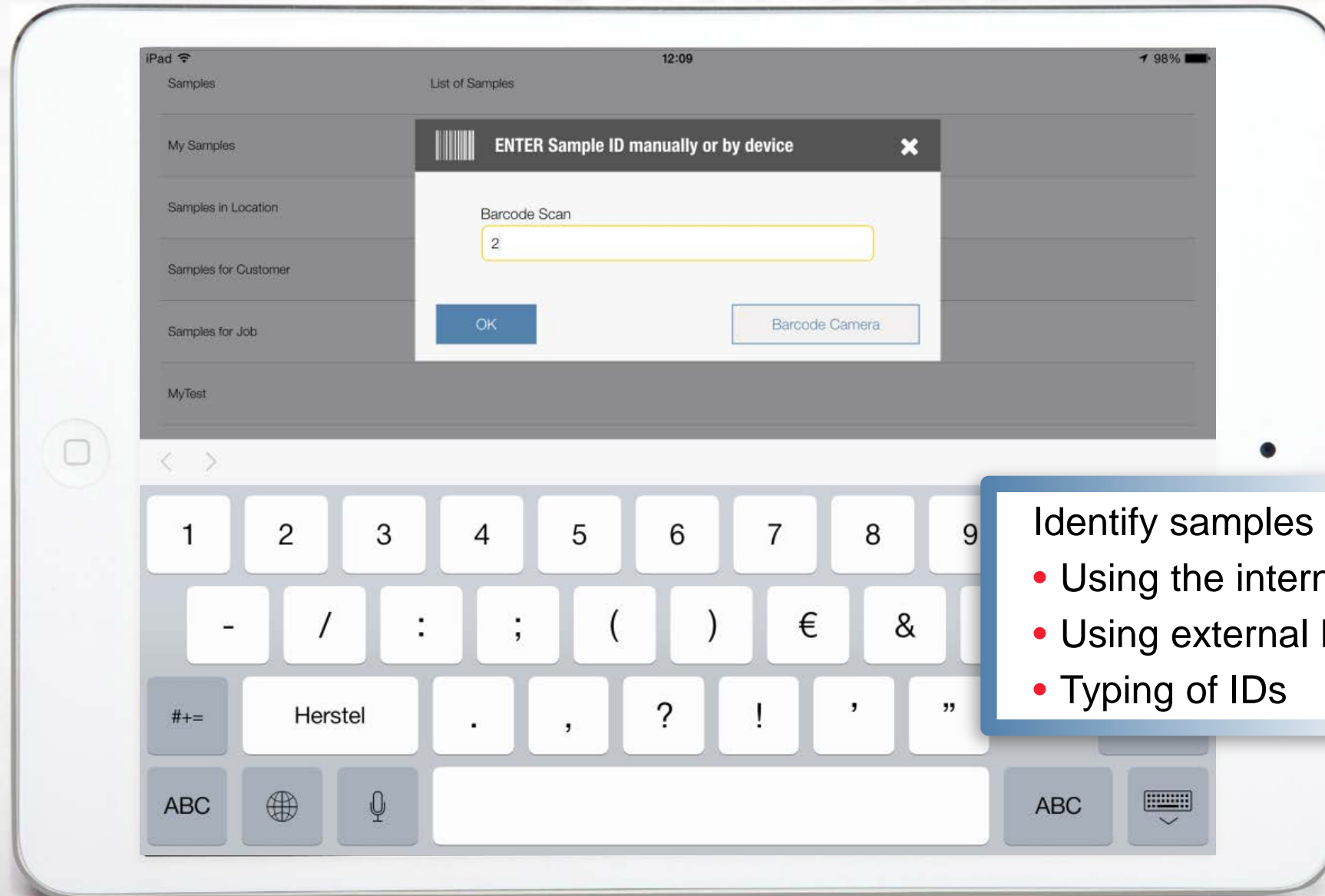
# Search and Find Your Lab Information Anywhere



# Search and Find Your Lab Information Anywhere



# Use the Tablet Camera to Scan in Barcodes



Identify samples by:

- Using the internal camera
- Using external Bluetooth camera
- Typing of IDs

# Select the Samples of Interest

12:07 98%

Thermo SCIENTIFIC Welcome System Manager | Logout

Move

Samples in Location

<input checked="" type="checkbox"/>	ID NUMERIC	ID TEXT	STATUS	LOGIN DATE
<input checked="" type="checkbox"/>	1	MOSMP42D01	Available	2015-04-08T15:45:44Z
<input type="checkbox"/>	2	MOSMP42D02	Available	2014-04-08T15:45:44Z
<input checked="" type="checkbox"/>	3	MOSMP42D03	Available	2015-05-21T15:45:44Z
<input type="checkbox"/>	4	MOSMP42D04	Available	2015-06-21T15:45:44Z

Save >

New Location id

Sample

Save changes to update selected records in the SampleManager Database.

Panel will display the configured fields from within SampleManager

# Enter Your Sample Results Anywhere

Result Entry

ANALYSIS	COMPONENT NAME	TYPE	VALUE	UNITS	STATUS
ALLCOMPS/1	Comp Numeric	N	<input type="text" value="1234664.00"/>	kg	Modified
ALLCOMPS/1	Comp Text	T	<input type="text" value="Yhn"/>		Modified
ALLCOMPS/1	Comp Option	O	<input type="text" value="Data retrieval fu..."/>		Modified
ALLCOMPS/1	Comp Boolean	B	<input type="text" value="Yes"/>		Entered
ALLCOMPS/1	Comp Character	C	<input type="text" value="C"/>		Entered
ALLCOMPS/1	Comp Date	D	<input type="text" value="30 jun. 2015 12:10"/>		Entered
ALLCOMPS/1	Comp Interval	I			Entered
ALLCOMPS/1	Comp Calculated	K	<input type="text"/>	kg	Modified
ALLCOMPS/1	Comp File	F			

Save

## Supported result types:

- Numeric
- Text
- Calculated
- DateTime
- Interval
- Character
- Option
- Boolean
- Matrix
- File (only images captured on the tablet)

# Enter Your Sample Results Anywhere

14:07 100%

Thermo SCIENTIFIC Welcome System Manager Logout

Result Entry Save

SAMPLE ID	ANALYSIS	COMPONENT N...	TYPE	VALUE	UNITS	STATUS
5	A1/1	Comp Numeric1	N	12.9	g	Entered
5	A1/1	Matrix 1 Row(Ma...	N			Entered
5	A1/1	bool1	B	no		Modified
5	A1/1	char	C	K		Modified
5	A1/1	dt1	D	1 jan. 1970 01:00		Modified
5	A1/1	fie	F	Edit/View		Modified
5	A1/1	int	I	1 0:0:0		Modified
5	A1/1	n1	N	34		Modified
5						Modified

The result value is not valid for this component

Users are alerted on success or failure of Saving results in case of a network issue.

Users are notified immediately of limit failures.

# The Complete Laboratory Process

## Lab Management



### Complete laboratory management

- Sample, test & result management
- Management of lab personnel & resources
- Process optimization & standardization

## Data Visualization



### Visualize without original application

- Laboratory data archival, retrieval and preservation
- Support for >180 instrument data formats
- Vendor independent XML for long-term storage

## Acquisition and Processing



### Simplify your lab operations

- Save 5–60 min per sequence using smart processing tools
- Get more “right-the-first-time” analyses with intelligent functionality
- Network-independent data acquisition for 24/7 uptime

***Enabling customer productivity and innovation***





- ✓ Operational Simplicity delivers ease-of-use, saving time, effort, and training costs
- ✓ Suite of intelligent tools work together ensuring more right-the-first time analyses, saving time and cost
- ✓ True 24/7 laboratory uptime with outage protection for maximum utilization of resources and faster return on investment

## SampleManager SDMS provides secure, future-proofed data archival and management.

**XML Conversion**

```
<trace> data from single detector </trace>  
<coordinates> coordinates for nData </coordinates>  
<values> data values array </values>  
<data> X axis descriptor </data>  
<values> data values array </values>  
<peaktable> peak list descriptor </peaktable>  
<peak> individual peak descriptor </peak>  
<peakXvalue> peak location </peakXvalue>  
<peakYvalue> peak intensity </peakYvalue>  
<baseline> baseline description </baseline>  
<startXvalue> baseline values </startXvalue>  
<endXvalue> baseline values </endXvalue>  
<startYvalue> baseline values </startYvalue>
```

**Data Management**

**Seamless Data Access**

# Thermo Scientific Chromeleon CDS Software Delivers Operational Simplicity

The screenshot displays the 'SampleManager - Explorer' application window. The interface includes a menu bar (File, View, Setup, Lots, Jobs, Samples, Tests, Results, Worksheets, Batches, Incidents, Chromeleon, SQC, Window, Help) and a toolbar with icons for Print, Excel, CSV, Document, PDF, and Web Page. On the left, a 'Navigator' pane shows a hierarchical tree structure under 'Public Folders', with 'Chromeleon Link' selected. The main 'Explorer' pane features a header image of a green lizard-like character in a lab coat holding a globe, with a chromatogram overlaid. Below the header is the title 'Chromeleon Link Overview'. The dashboard contains two rows of functional icons: the first row includes 'Configuration' (Chromeleon Servers, Method Mapping), 'Sequence Creation' (Create Sequence from Batch, from Samples, from Tests), and 'Management' (Instrument Status, Created Sequences); the second row includes 'Refresh Sequence', 'Retrieve Results', 'Result Display', 'Result Entry', 'Result Authorization', 'Authorize Sequence', and 'Cancel Sequence'. The status bar at the bottom shows 'PublicFolders\Chromeleon Link (3 Items)' and 'Active Local SYSTEM'.

Fully integrated SampleManager LIMS and Chromeleon CDS interface simplifies your lab operations.

# Chromeleon CDS Integration



Tracking  
Samples

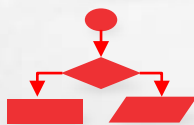
Lab  
Solutions

**Thermo**  
SCIENTIFIC

- Out-of-the-box secure & compliant interface
- Workflows to drive the laboratory process
- Comprehensive multi-vendor instrument support
- Centralized chromatography & mass spectroscopy data processing & management
- Sophisticated data visualization
- Advanced search & data mining



**Security &  
Compliance**



**Workflow**



**Instrument  
Control**

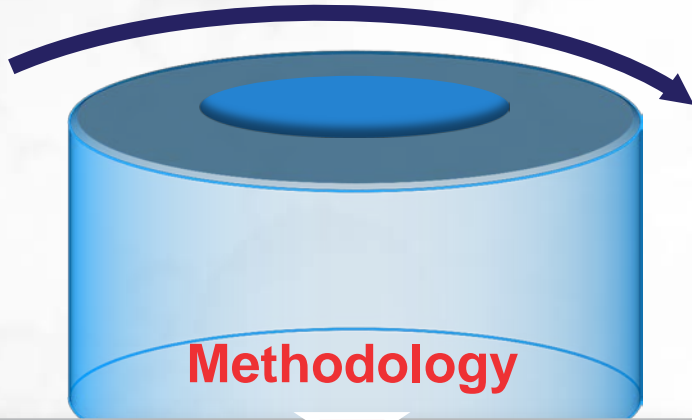


**Centralized  
Data Management**

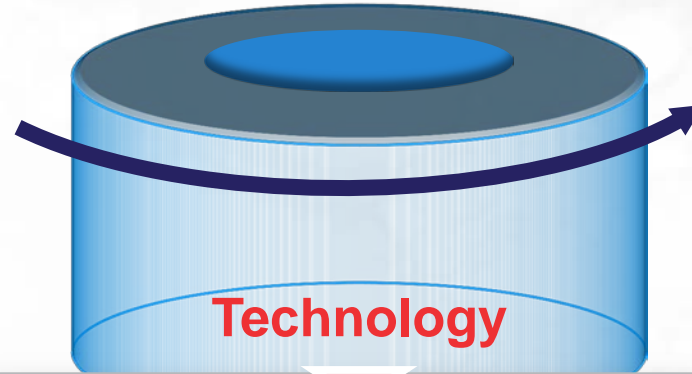


**Business  
Intelligence**

# Your Project is a Partnership



- Assess current workflow
- Identify data exchange points
- Identify inefficiencies
- Simplify the process



- A complete lab solution: CDS, SDMS, & LIMS
- Integration tools to connect with other vendor technology



- Requirements analysis
- Process harmonization
- Deliver results
- Ongoing support

Integrated CDS, LIMS & SDMS

---

Workflows to drive the lab

---

Comprehensive instrument control

---

Centralized data management

---

Advanced search & trend analysis

---

**Integrated Informatics**

Thank You

Now, please join me in the Informatics section of our booth and I will address any further comments and questions.

