

What Is Your Data Trying To Tell You?

Transforming Data into Knowledge

Your laboratory is a critical component of your business enterprise



Laboratory Execution

Instrument Calibration and Maintenance

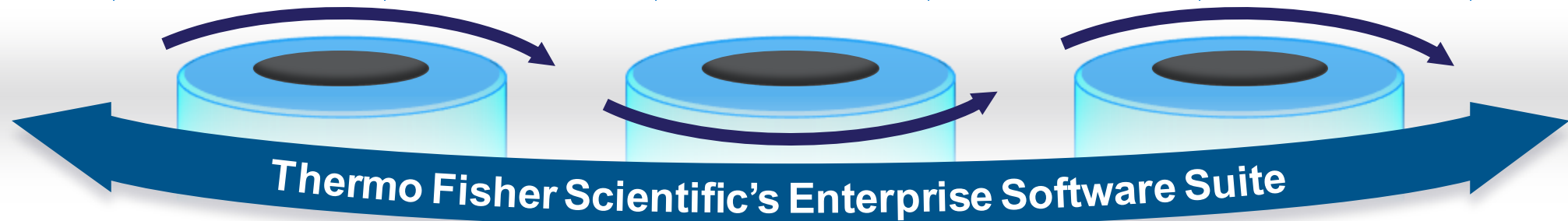
Data Acquisition and Processing

Release Testing

Product Specification

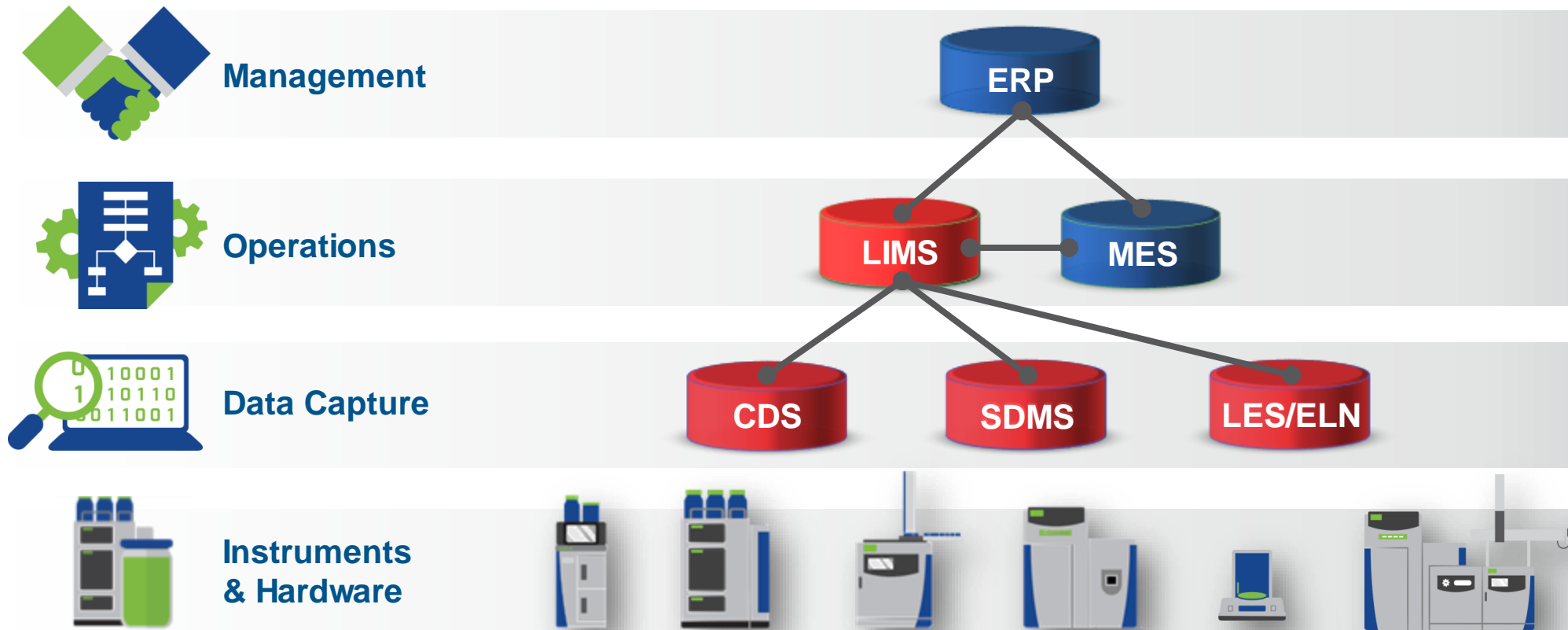
Product Release

Data Archival and Retrieval



Drive your end-to-end laboratory process and connect your lab to your enterprise.

Is your data flow delivering knowledge? ...or are your processes and technologies holding you back?



Data into Knowledge

Thermo Scientific™ SampleManager™ software
Data Management and Integration across the Enterprise



Determine/Design
Methods

Instrument Control
and Remote
Monitoring



Data Capture

Data Analysis

www.AppsLab.com

Thermo Scientific™ Chromeleon™ CDS software

Delivering Productivity, Ease of Use and Compliance

Simplify Your Laboratory Operations

CDS



Streamline Chromatography & MS Workflows

From workstation to global enterprise

Simplifies data security and compliance

Streamlines method execution with eWorkflows™

Procedural ELN/LES



Simplify Process Execution

Drives users through a stepwise process

No customizations needed to deploy methods & SOPs

Connects to the general LIMS capabilities to provide an integration solution

LIMS



Complete Laboratory Management

Sample, test & result management

Management of lab personnel & resources

Process optimization & standardization

SDMS



Visualize without Original Application

Laboratory data archival, retrieval and preservation

Support for >180 instrument data formats

Vendor independent XML for long term storage

Get a complete picture of your laboratory data from the original raw data to final results

Thermo Scientific Chromeleon 7.2 Chromatography Data System

Industry-leading!

- ✓ Compliance and data security
- ✓ Ease of use
- ✓ Network Failure Protection (24/7 operation)
- ✓ Network MS control & processing
- ✓ Instrument control (>450 from 18 vendors)

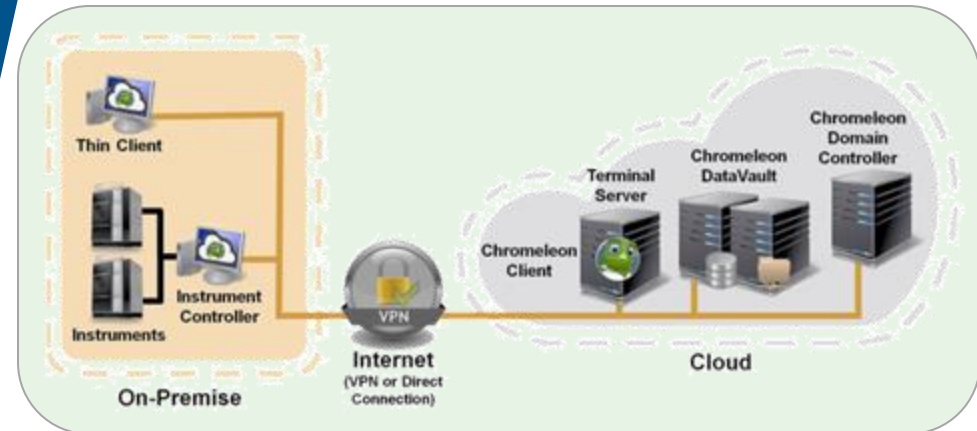


Thermo Scientific Chromeleon 7.2 CDS

- ✓ Comprehensive Audit Trails for compliance & data security
- ✓ Thermo Scientific™ MS control and processing
- ✓ Proven efficiency gains for lab productivity
- ✓ Cloud deployable
- ✓ LIMS connectivity

Scale up your expectations!

- ✓ Easy to comply
- ✓ Easy to use
- ✓ Easy to expand



Audit Trails in Thermo Scientific Chromeleon CDS



Chromeleon CDS provides centrally stored & managed industry leading audit trails

Audit Trails in Thermo Scientific Chromeleon CDS

User Management Audit Trail

- Log of changes to user management
- Captures logon, logoff and failures

Date/Time	Operator	Operation	Computer Name	Category
8/16/2017 1:35:25 PM +01:00	jsmith	Changed User	WIN10-CM7	User Management
8/16/2017 1:12:20 PM +01:00	jmaxwell	Logon	WIN10-CM7	Logon and Signature
8/16/2017 1:13:10 PM +01:00	jmaxwell	Logon	WIN10-CM7	Logon and Signature
8/16/2017 1:17:11 PM +01:00	jmaxwell	Logoff	WIN10-CM7	Logon and Signature
8/16/2017 1:21:29 PM +01:00	jsmith	Logon Failed	WIN10-CM7	Logon and Signature
8/16/2017 1:21:50 PM +01:00	jsmith	Logon	WIN10-CM7	Logon and Signature
8/16/2017 1:35:39 PM +01:00	jmaxwell	Logon	WIN10-CM7	Logon and Signature
8/16/2017 1:35:55 PM +01:00	jmaxwell	Logoff	WIN10-CM7	Logon and Signature
8/16/2017 1:42:44 PM +01:00	charlie	Logon	WIN10-CM7	Logon and Signature
8/16/2017 1:43:59 PM +01:00	charlie	Logon	WIN10-CM7	Logon and Signature
8/16/2017 1:48:40 PM +01:00	inewton	Logon	WIN-CMDC	Logon and Signature
8/16/2017 8:54:56 AM -04:00	jsmith	Logon	WIN7-CM7	Logon and Signature
8/16/2017 8:56:21 AM -04:00	jsmith	Logoff	WIN7-CM7	Logon and Signature

Audit Trails in Thermo Scientific Chromeleon CDS

Administrative Audit Trails

- Domain Resources, Data Vault Manager, eWorkflow Tags, Station, Global Policies, Organizational Units

Chromeleon Administration Console (WIN-CMDC)

Report Show Changes From 8/15/2017 To 8/17/2017 Filtering Grouping

Date/Time	Operator	Operation	Computer Name	Category
8/16/2017 1:22:37 PM +01:00	Instrument Controller	Instrument Controller Error	WIN10-CM7	Station
8/16/2017 1:22:37 PM +01:00	Instrument Controller	Instrument Controller Error	WIN10-CM7	Station
8/16/2017 1:22:38 PM +01:00	Instrument Controller	Sequence Abort	WIN10-CM7	Station
8/16/2017 1:22:38 PM +01:00	Instrument Controller	Instrument Controller Error	WIN10-CM7	Station
8/16/2017 1:22:38 PM +01:00	Instrument Controller	Instrument Controller Error	WIN10-CM7	Station
8/16/2017 1:19:34 PM +01:00		Audit Event Log	WIN10-CM7	Station
8/16/2017 1:19:34 PM +01:00		Audit Event Log	WIN10-CM7	Station
8/16/2017 1:20:56 PM +01:00		Audit Event Log	WIN10-CM7	Station
8/16/2017 1:35:51 PM +01:00	jmaxwell	License Service Error	WIN10-CM7	Station

Audit Trail charlie

Simplifying Lab Workflows - eWorkflows

eWorkflow contains:

- Instruments on which the analysis can be run
- All associated methods and files including reports and external documents like SOPs
- ✓ Ensure your SOP is followed
- ✓ Reduce errors and produce reliable results faster
- ✓ Fully customizable for any application in any laboratory
- ✓ Minimize amount of training required

The screenshot displays the 'Chromeleon Console' interface. The left sidebar shows a tree view of eWorkflows, with 'Dissolution Templates' selected. The main panel shows the configuration for this workflow, including a description, type (HPLC), and status (Approved for Use). Below this, there is a 'Launch' button and a table of instrument instances.

#	Instrument Name	Instrument Status	Sequence Status	Queue Status
1	01_ICS-5000+	Monitoring Baseline	Manual (Injection: 1 of 1)	
2	02_ICS-5000_Dual_1	Idle		Pending sequences: 1
3	03_ICS-5000_Dual_2	Idle		
4	UltiMate3000	Running	ICH Linearity 040214122838 (Injection: 1 of 15)	
5	UltiMate3000_RS	Idle		

The interface also includes a menu bar (Back, Create, File, Edit, View, Tools, Help), a filter section, and a status bar at the bottom indicating 'eWorkflow 'Dissolution Templates' selected' and 'cmadmin: Full Access'.

Simplifying Lab Workflows - eWorkflows

The screenshot shows the Chromeleon Console interface. On the left, a sidebar lists various eWorkflows under 'eWorkflows', with 'Dissolution Templates' selected. The main area displays the 'Dissolution Templates' details, including a description and a 'Launch' button. Below this, a table shows the status of five instruments.

#	Instrument Name	Instrument Status	Sequence Status	Queue Status
1	01_ICS-5000+	Monitoring Baseline	Manual (Injection: 1 of 1)	
2	02_ICS-5000_Dual_1	Idle		Pending sequences: 1
3	03_ICS-5000_Dual_2	Idle		
4	UltiMate3000	Running	ICH Linearity 040214122838 (Injection: 1 of 15)	
5	UltiMate3000_RS	Idle		

1. Select eWorkflow

2. Select Instrument

3. Click Launch

Simplifying Lab Workflows - eWorkflows

Sample
Define the desired number of samples and the corresponding start position

Number of samples: 1
Completed position: RA1
 Run sequence after creation

#	Chromatog	Name	Type	Level	Replicate ID	Position	Volume [µL]	Instrument
1	None	Blank	Unknown			RA1	10.0000	
2	None	SST Standard 1	Check Standard			RA2	10.0000	
3	None	SST Standard 2	Check Standard			RA3	10.0000	
4	None	SST Standard 3	Check Standard			RA4	10.0000	
5	None	SST Standard 4	Check Standard			RA5	10.0000	

Finish

Sampler rack view

Optional

Sequence preview

4. Input number of samples

5. Input position of first sample

6. Click Finish

Simplifying Lab Workflows - eWorkflows

Sequence created in 6 clicks with correct:

- ✓ Name
- ✓ Location
- ✓ Methods
- ✓ Report
- ✓ Structure
- ✓ Custom Variables

Plus:

- ✓ SOP attached
- ✓ Can run immediately

Dissolution Experiment 21-Feb-2014 16:42

New Start UltiMate3000_RS (Idle)

Save Studio Print Up Insert Row Fill Down Lock Filtering Grouping

#	Chromatog	Name	Type	Level	Position	Volume [µl]	Instrument Method	Processing Method
1	None	Blank	Blank		R41	1.000	Dissolution_IM	Dissolution_PM
2	None	System Suitability	Check Standard		R42	1.000	Dissolution_IM	Dissolution_PM
3	None	System Suitability	Check Standard		R42	1.000	Dissolution_IM	Dissolution_PM
4	None	System Suitability	Check Standard		R42	1.000	Dissolution_IM	Dissolution_PM
5	None	System Suitability	Check Standard		R42	1.000	Dissolution_IM	Dissolution_PM
6	None	System Suitability	Check Standard		R42	1.000	Dissolution_IM	Dissolution_PM
7	None	System Suitability	Check Standard		R42	1.000	Dissolution_IM	Dissolution_PM
8	None	Calibration Standard	Calibration Standard	01	R43	1.000	Dissolution_IM	Dissolution_PM
9	None	Calibration Standard	Calibration Standard	02	R44	1.000	Dissolution_IM	Dissolution_PM
10	None	Calibration Standard	Calibration Standard	03	R45	1.000	Dissolution_IM	Dissolution_PM
11	None	Sample	Unknown		R46	1.000	Dissolution_IM	Dissolution_PM
12	None	Sample	Unknown		R47	1.000	Dissolution_IM	Dissolution_PM
13	None	Sample	Unknown		R48	1.000	Dissolution_IM	Dissolution_PM
14	None	Sample	Unknown		RB1	1.000	Dissolution_IM	Dissolution_PM
15	None	Sample	Unknown		RB2	1.000	Dissolution_IM	Dissolution_PM
16	None	Sample	Unknown		RB3	1.000	Dissolution_IM	Dissolution_PM
17	None	Calibration Standard	Calibration Standard	01	RB4	1.000	Dissolution_IM	Dissolution_PM
18	None	Calibration Standard	Calibration Standard	02	RB5	1.000	Dissolution_IM	Dissolution_PM
19	None	Calibration Standard	Calibration Standard	03	RB6	1.000	Dissolution_IM	Dissolution_PM

[Click here to add a new injection](#)

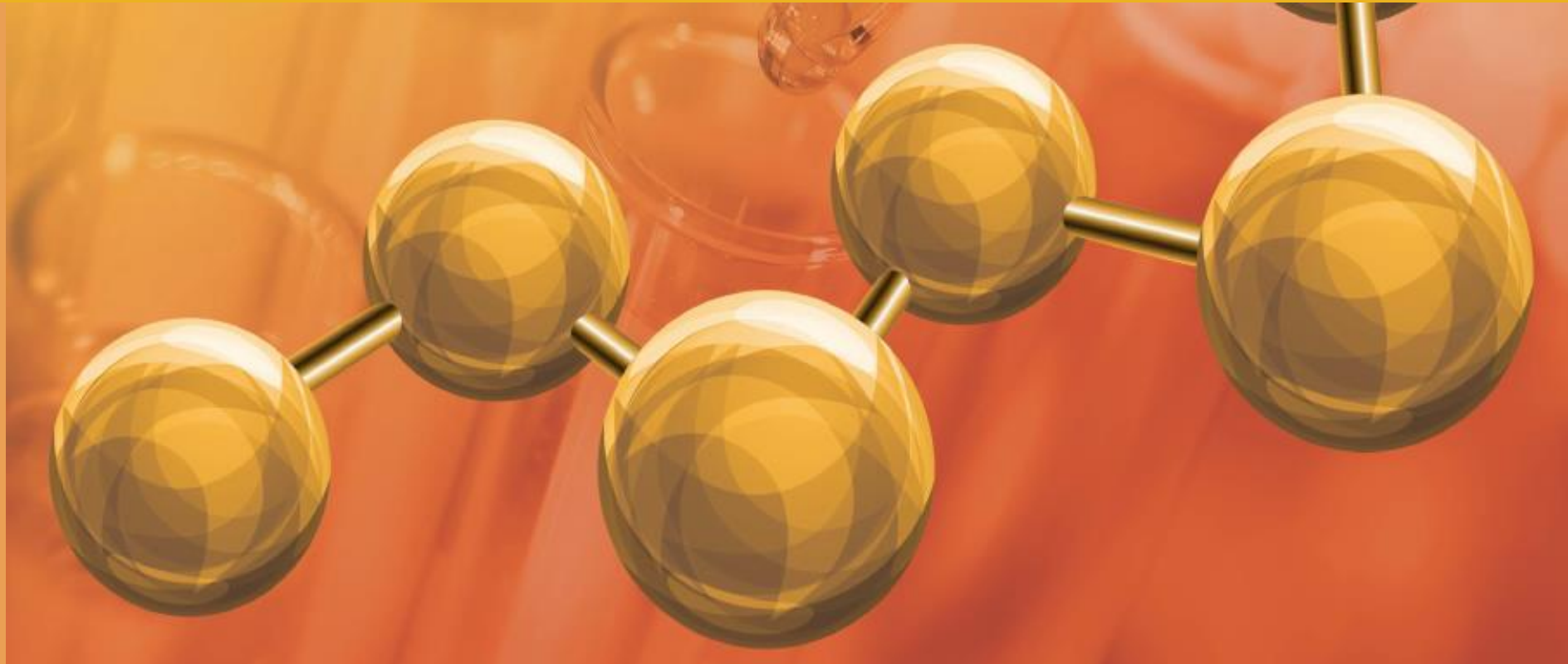
Name	Type	Date Modified	Comment
Dissolution Templates - User Ma...	Associated File	13/03/2013 06:10	
Dissolution_IM	Instrument Method	21/02/2014 16:48	Alkylphenone Linearity Test for UltiMate 3000 RSLC
Dissolution_PM	Processing Method	13/03/2013 06:10	Dissolution Method for Conventional Release Solid Dos...
Dissolution_Report	Report Template	13/03/2013 06:10	
Dissolution_VS	View Settings	13/03/2013 06:10	

Associated Items Custom Sequence Variables (4) Custom Formulas

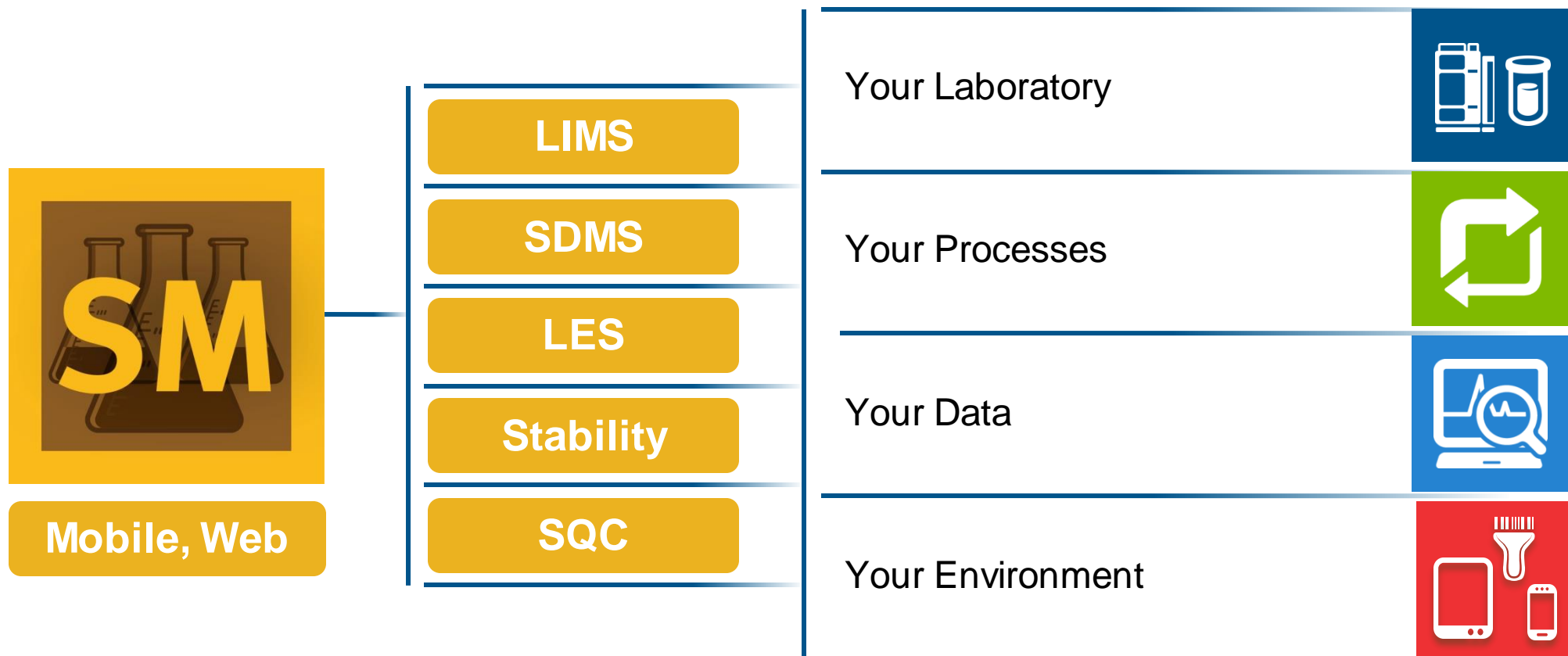
Thermo Scientific SampleManager: Laboratory Information Management System

More than a LIMS!

- ✓ Manages the entire laboratory
- ✓ Ensures adherence to processes
- ✓ Maintains data integrity
- ✓ Facilitates complete regulatory compliance



Thermo Scientific SampleManager: Unlock the Value of Your Laboratory



Manage Your Laboratory Workflow with Thermo Scientific SampleManager

The screenshot displays the Thermo Scientific SampleManager web application interface. The browser address bar shows the URL: ukalt-devdemo1:8080/#Navigate:PublicFolders\General\Samples>Status\Completed. The left sidebar shows a navigation tree under 'My Lab' with 'Completed (19 Items)' selected. The main area is an 'Explorer' view showing a table of sample records. A context menu is open over the record with ID 10, listing actions such as Login, Workflow Login, Process, Result Entry, Tracking, Edit Attachments, Reports, Properties, Move..., Change Job..., and Compare with MLP... The table columns are ID Numeric, ID Text, Status, and Login date.

ID Numeric	ID Text	Status	Login date
2	SM-14-OCT-2016-000002	Completed	14/10/2016 08:46
3	SM-26-OCT-2016-000003	Completed	26/10/2016 17:57
9	SM-1-DEC-2016-000009	Completed	01/12/2016 14:07
10	SM-1-DEC-2016-000010	Completed	01/12/2016 14:07
11	SM-1-DEC-2016-000011	Completed	01/12/2016 14:07
12	SM-1-DEC-2016-000012	Completed	01/12/2016 14:07
13	SM-1-DEC-2016-000013	Completed	01/12/2016 14:07
14	SM-1-DEC-2016-000014	Completed	01/12/2016 14:07
15	SM-1-DEC-2016-000015	Completed	01/12/2016 14:07
16	SM-1-DEC-2016-000016	Completed	01/12/2016 14:07
17	SM-1-DEC-2016-000017	Completed	01/12/2016 14:07
18	SM-1-DEC-2016-000018	Completed	01/12/2016 14:07
19	SM-13-JAN-2017-000019	Completed	13/01/2017 16:17
20	SM-30-JAN-2017-000020	Completed	30/01/2017 17:02
21	SM-30-JAN-2017-000021	Completed	30/01/2017 17:04
22	SM-30-JAN-2017-000022	Completed	30/01/2017 17:04
23	SM-30-JAN-2017-000023	Completed	30/01/2017 17:04
24	SM-20-FEB-2017-000024	Completed	20/02/2017 18:09
25	SM-20-FEB-2017-000025	Completed	20/02/2017 18:25

Page 1 of 1 (19 items) [1] Page size: 50

User training records verified for instruments and lab testing

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 for each operator and maintained against each analysis

Straightforward instrument calibration and maintenance control

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 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

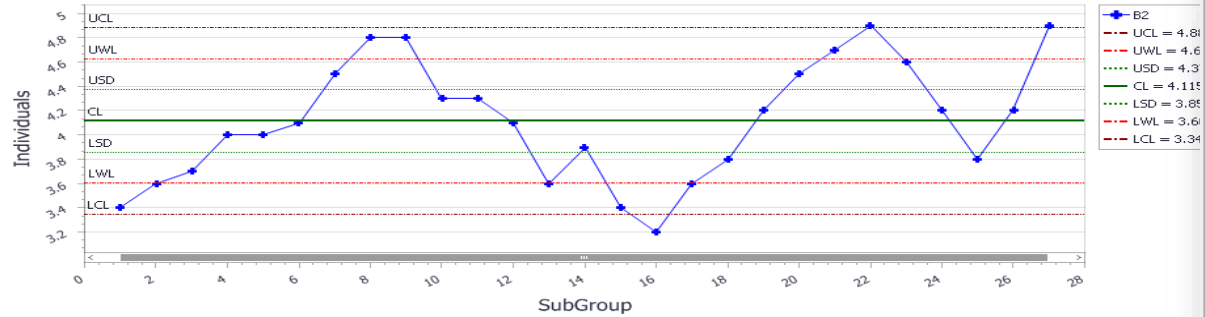
Warn of Low Percentage

Low Percentage

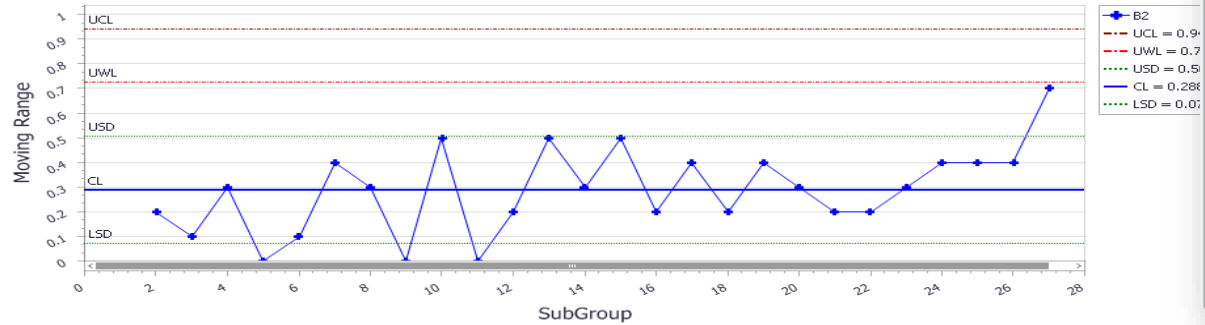
Get insight into your data in real time

Select Chart Type to preview. Individual and Moving Range

Individual

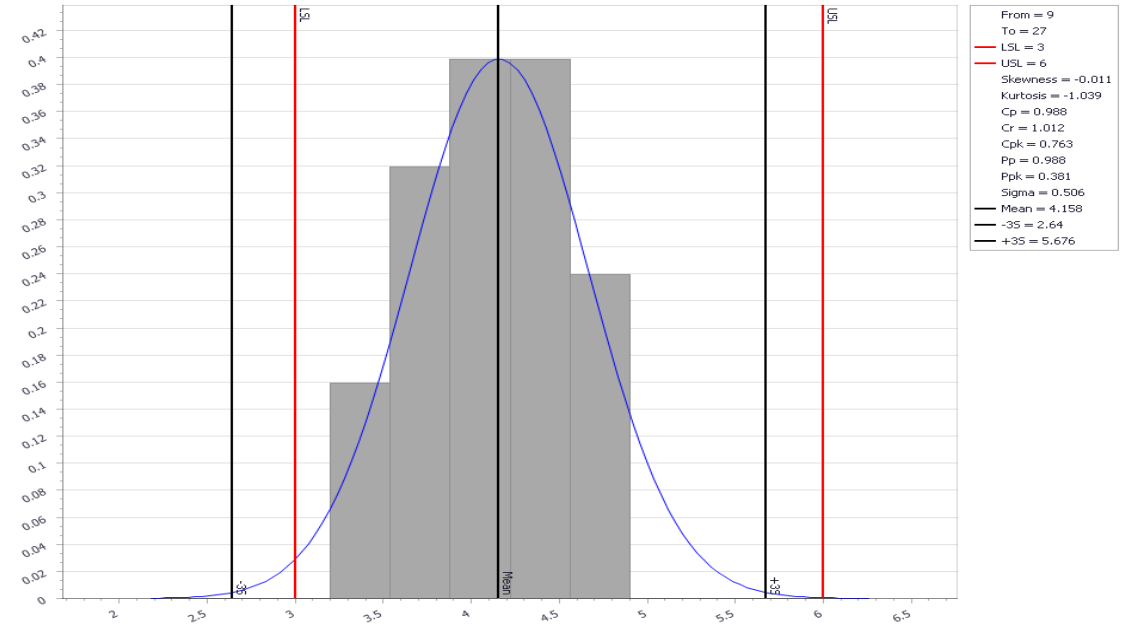


Moving Range

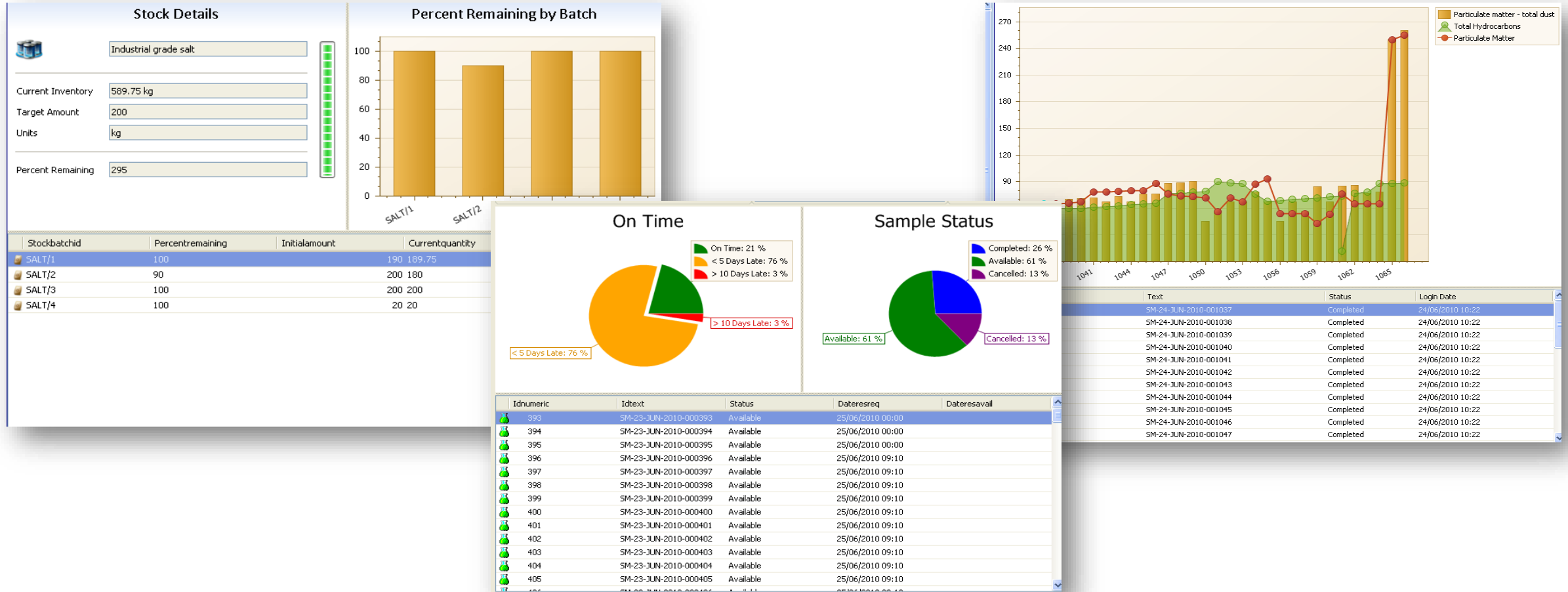


Select Chart Type to preview. Process Capability

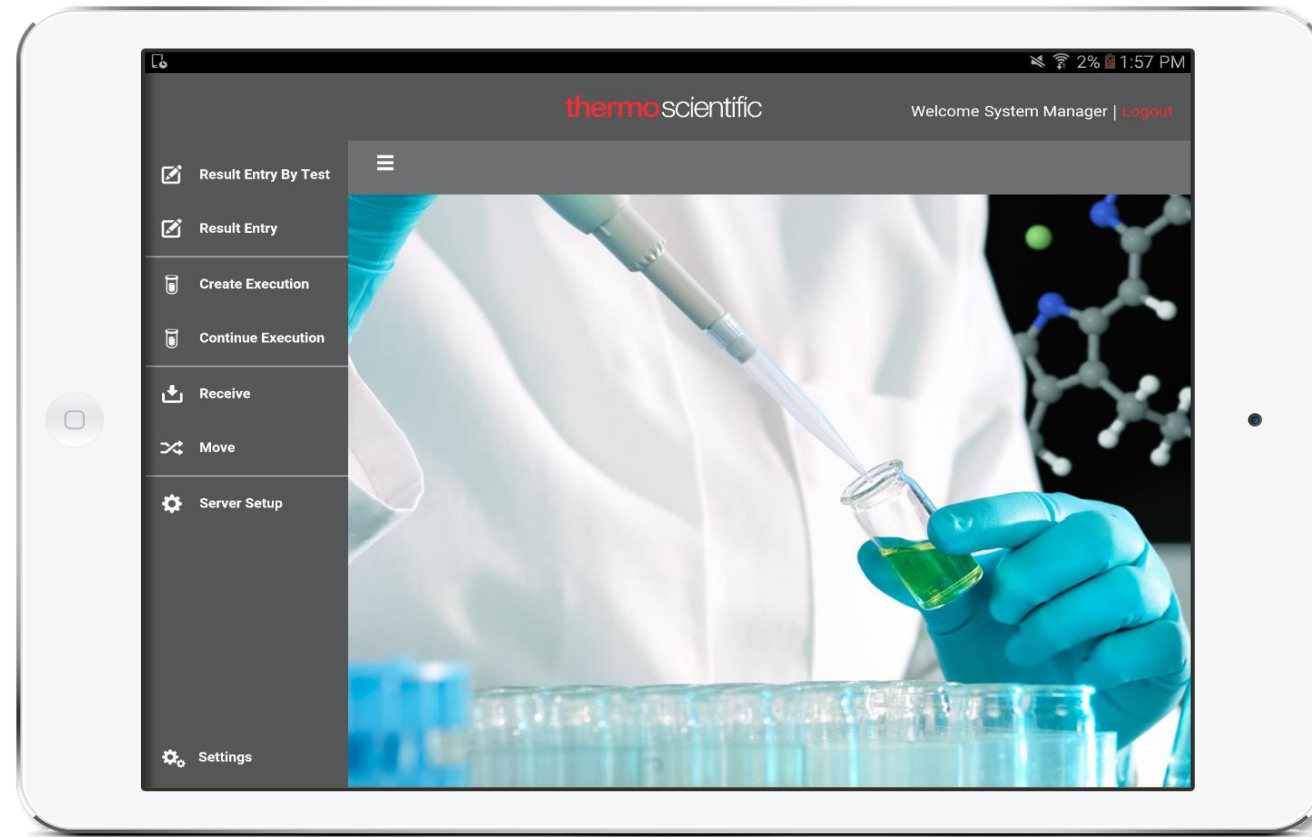
Process Capability



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



Execute lab work anytime, anywhere



The screenshot shows the mobile application interface for a 'Weighing' procedure. At the top, the Thermo Scientific logo is displayed, along with the user's name 'Welcome James | Logout' and the time '10:16'. The page title is 'Weighing (060)'. Below the title, there is an 'Introduction:' section with the heading 'Weighing' and a description: 'This Lab Method is used in a Task oriented execution. It can repeat weighing for a certain amount of Samples'. An image of a laboratory balance is shown. Below this, the 'Prerequisites:' section lists '- Balance' and '- Samples', accompanied by an image of a person using a pipette. At the bottom, there is a table with columns for 'LAB EXECUTION NAME', 'ASSIGNED TO', and 'DESCRIPTION'. The table contains one row with 'Weighing (060)', 'SYSTEM', and an empty description field. Below the table are 'Assign' and 'Start >' buttons.

Method execution starts by presenting an introductory summary and prerequisites

LAB EXECUTION NAME	ASSIGNED TO	DESCRIPTION
Weighing (060)	SYSTEM	

Thermo Scientific SampleManager LES – Procedural ELN

thermo scientific

Welcome James | Logout

Weighing (060) - Weight Sample

Weight Sample

- Execute the weighing

DESCRIPTION	VALUE	UNITS
Enter value for Weight (mg)	249,45	mg
Next Sample?	<input checked="" type="checkbox"/>	

Value entered '249.45' for parameter 'Weight' is not within Minimum (100.00) and Maximum (200.00) range

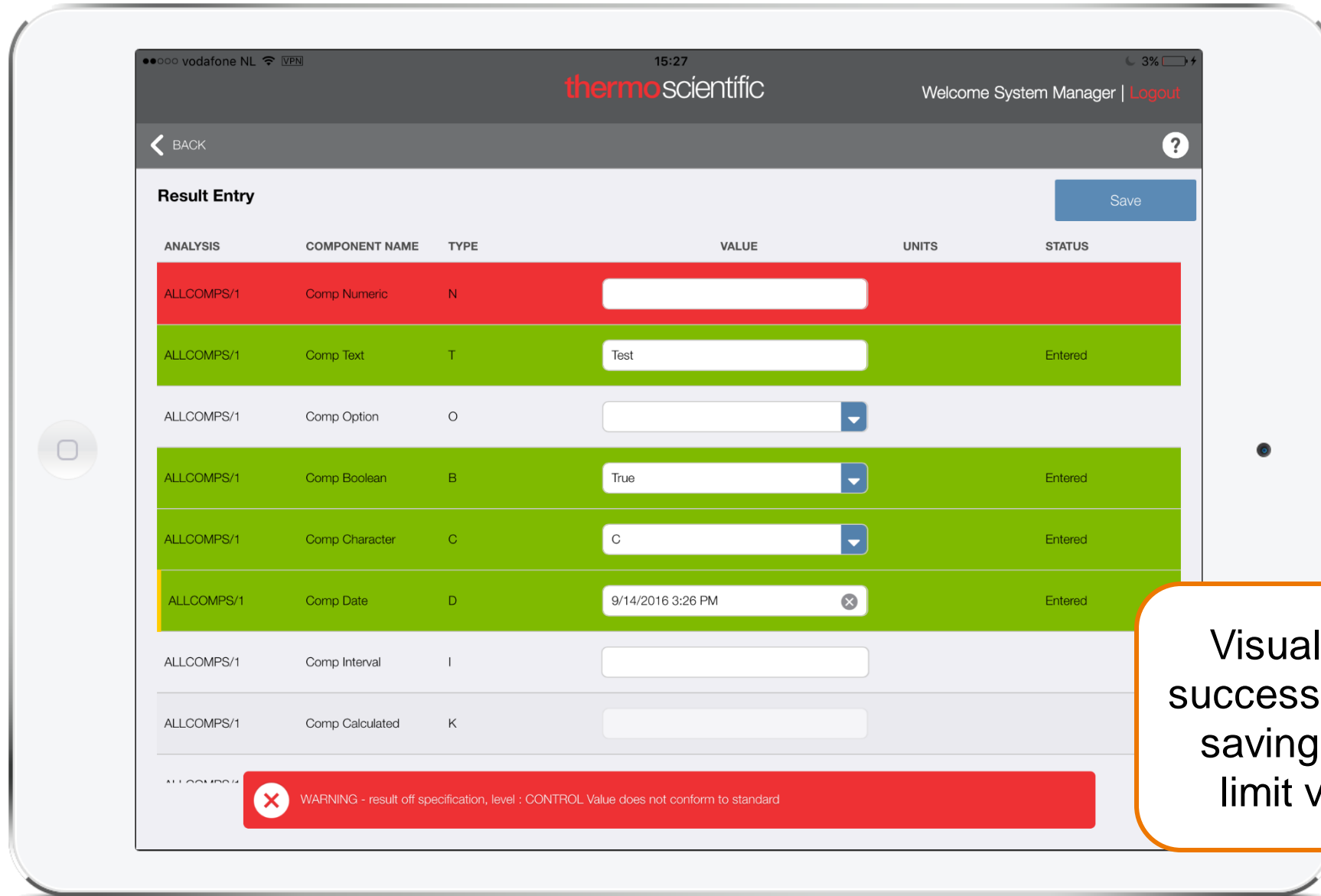
Read

Continue >

During execution, for each step instructions are shown, along with prompts to capture data

Instrument data can be read directly into the App

Thermo Scientific SampleManager LES – Procedural ELN

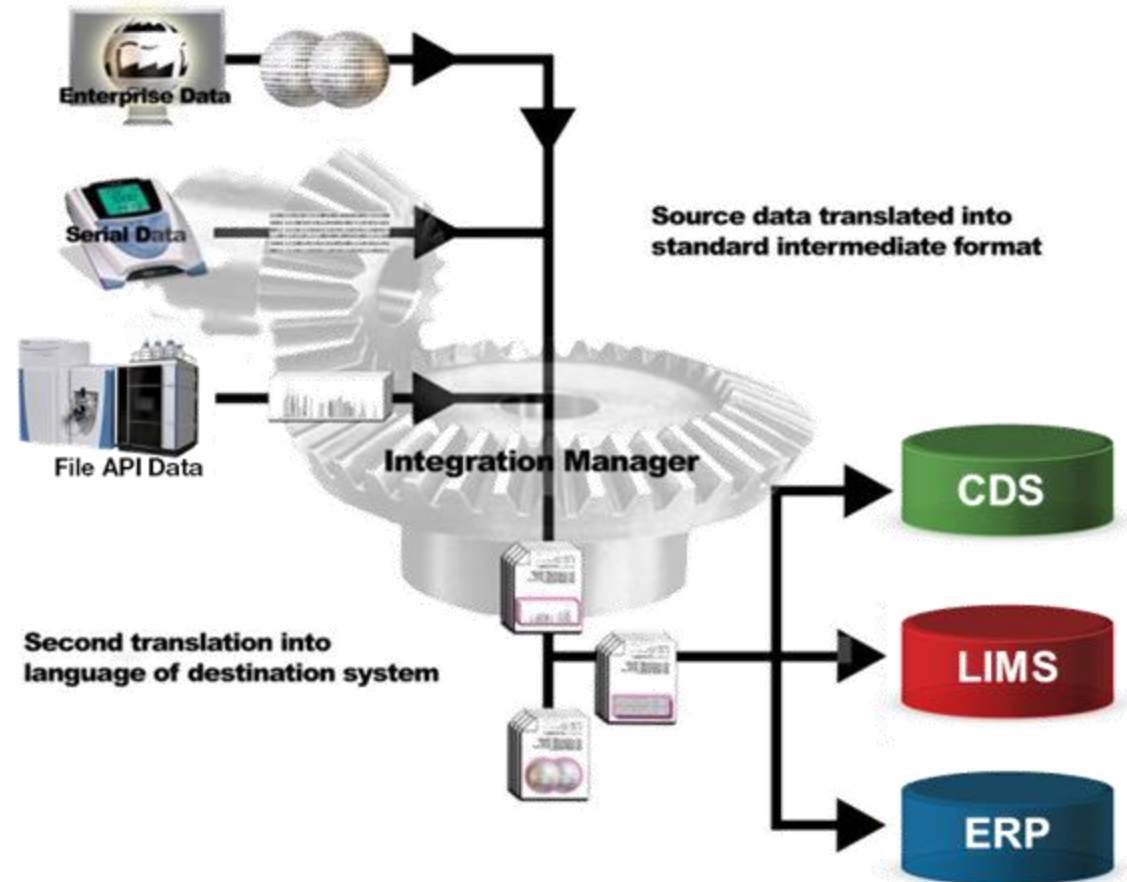


Provides secure, future-proofed data archival and management

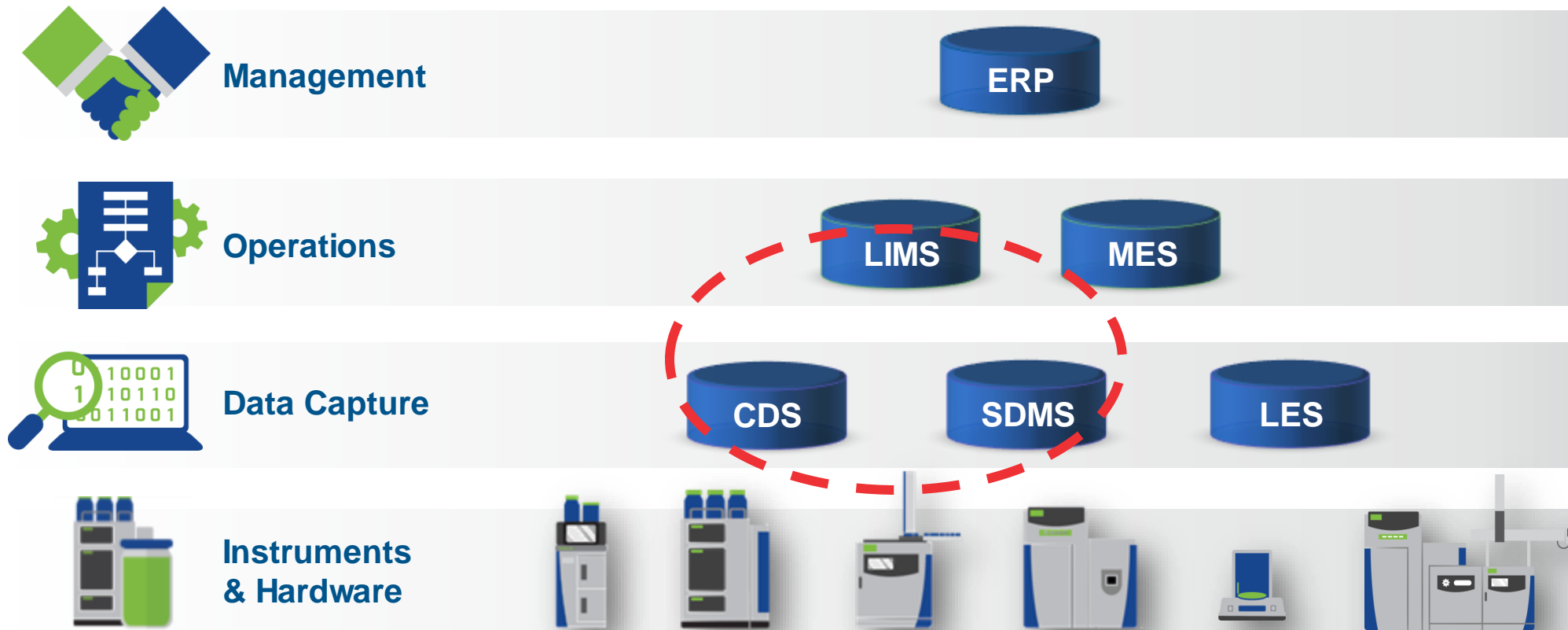


A composite image illustrating the software's capabilities. At the top, there are images of laboratory equipment: a large white and black cabinet, a smaller white instrument, and a multi-tiered blue and white rack. Below these, a hand is shown holding a white card with binary code (0s and 1s) on it. The central focus is a screenshot of the software interface. A magnifying glass is positioned over a context menu that includes options like 'New', 'Save As...', 'DM2', 'Link To - By Identifier', 'Link To - By Filter', 'Extensions', 'Report', and 'Notes...'. To the right of the magnifying glass, there is a snippet of XML code. Below the magnifying glass, another window shows a chromatogram plot with a peak and a table of data points. The text 'XML Conversion', 'Data Management', and 'Seamless Data Access' is overlaid on the right side of the image in a bold, black font.

Provides bi-directional interfaces between CDS, LIMS, instruments and Enterprise systems



What if you don't have all this infrastructure but still need more than a CDS?



Thermo Scientific Chromeleon XTR: Laboratory Management System

Chromeleon Just Got Smarter!

- ✓ Management and tracking of all samples in the lab
- ✓ Secure, compliant control of all analytical data including SDMS
- ✓ Calibration and service records for all instruments
- ✓ Training record management for all users
- ✓ Built on superior compliance capabilities of Chromeleon 7.2 CDS

NEW!



Thermo Scientific Chromeleon XTR

✓ Perform basic activities from a single dashboard:

- Login & track samples
- Create labels
- View sample details
- Check instrument status
- Create sequences
- Enter & view results
- Create & view reports

✓ Chromatographic column management and tracking

✓ Designed for 24/7 continuous uptime

Complete compliance with data integrity for all samples, all users, and all instruments

The image shows a screenshot of the Chromeleon XTR software interface. The interface includes a menu bar (File, View, Setup, Lots, Jobs, Samples, Tests, Results, Worksheets, Batches, Incidents, Chromeleon, Data Manager, Window, Help) and a toolbar with icons for Login Samples, Label Samples, Create Sequence, Enter Results, Check Instrument Status, Acquire Data, Sample Details, Display Results, Move Sample, and Archive Data. A central dashboard area displays a list of samples and instrument details. A red starburst in the top right corner contains the word "NEW!".

Overlaid on the screenshot is a circular workflow diagram with six steps: **MANAGE SAMPLES** (red circle), **ACQUIRE DATA** (green circle), **REVIEW RESULTS** (blue circle), **GENERATE REPORTS** (orange circle), **ARCHIVE DATA** (purple circle), and **DEMONSTRATE COMPLIANCE** (yellow circle). A green lizard mascot in a white lab coat is positioned at the bottom center of the diagram, holding a clipboard with a checklist.

Chromeleon CDS



Chromatography & Mass Spectroscopy

Designed for 24/7 operations
Advanced automation for better quality results
Multi-vendor, multi-technique
Support MS for development & QA/QC workflows

NEW!

Chromeleon XTR



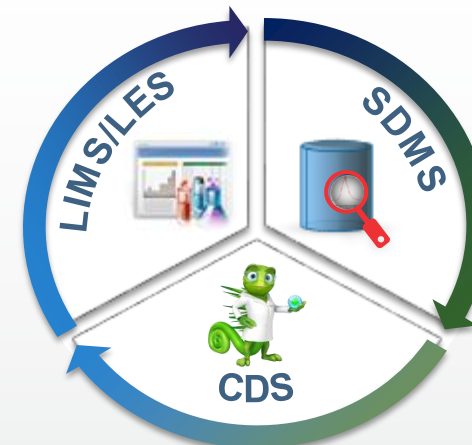
Chromeleon + Basic Lab Management + SDMS

Basic sample management and tracking

Analyses can only be performed by authorized, trained individuals on calibrated instruments

Long-term data storage and archival of data regardless of instrument type

Chromeleon CDS & SampleManager LIMS



Complete Laboratory Management

Comprehensive sample, test & result management
Management of lab personnel & resources
Specification management and ERP integration
Laboratory Execution System
Configurable to meet your end to end business process

Thank you



**Make Compliance
A Competitive
Advantage**

Join the Fun! *Cache a Chromeleon* Game

- Use your mobile device to complete challenges and earn a Charlie Chromeleon plush toy!
- If you are playing, you have earned points for attending this seminar. Be sure to scan the barcode on the desk outside the door.
- Ask booth staff for more details on how to play.



Please join me in the
Informatics and Chromatography Software
section of our booth where I'll
address additional comments and questions.