



# Leaders in Data Automation



Innovation.  
Performance.  
Success.

Business Intelligence in Alignment

# EPA Quality Assurance Conference

Wednesday, Oct 21, 2015



## Five Signs that it is Time to Invest in a New LIMS



Presented by:

**Sonja Stutsman, Sales & Marketing**



# Agenda

- Introduction to LIMS
- Understanding what LIMS can and can't do
  - Technology
  - Cost/Benefit
- LIMS: The good, the bad, the ugly
- Benefits of Mobile Technology – how it works
  - Case studies
- Features of a modern LIMS
- Wrap up and Q&A

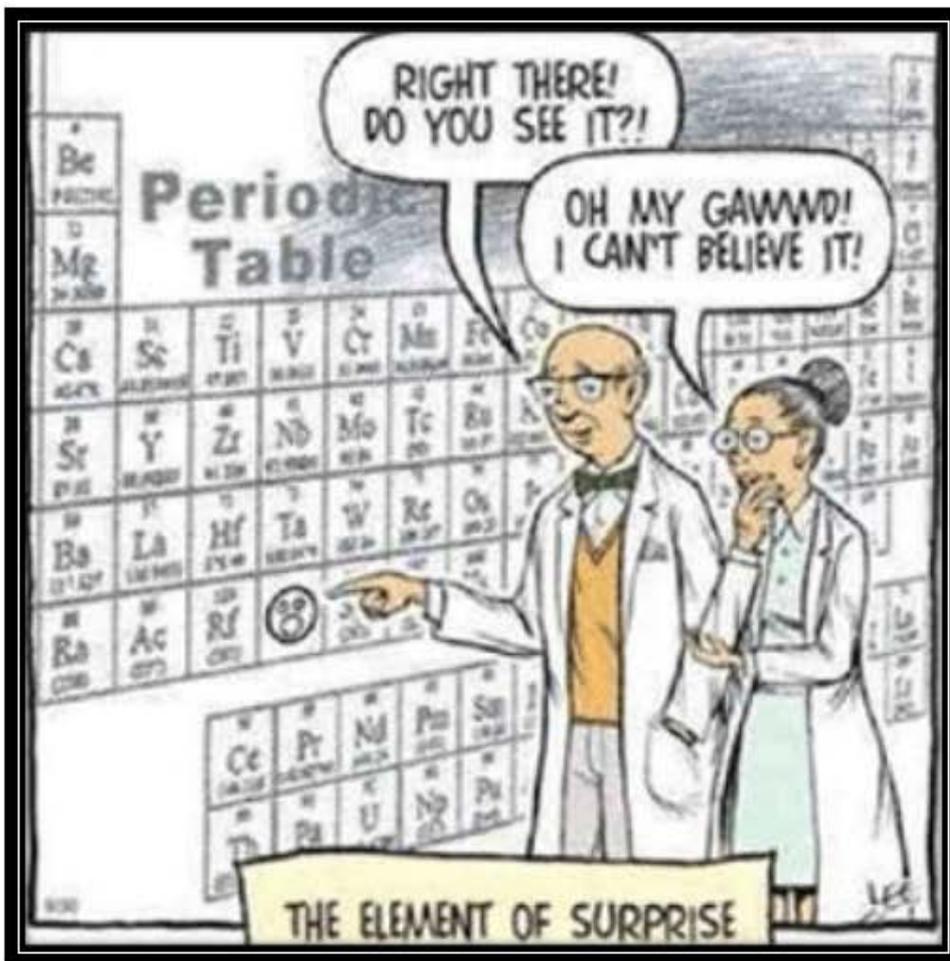
## 5 Signs it's time to Invest in a New LIMS

- Upgrade to modern technology
  - Database with Referential Integrity
  - Modern user interface
- Integrate Mobile Technology and Web portal
- Future-proof Investment by incorporating:  
Workflow designers and Report Creator
- Better business decisions with Dashboards
- Support and Training



# Why It's Important to Learn about LIMS

- An educated LIMS Consumer is our Best Customer
  - Understand the technology and the differences
  - Make a good decision for today and the future
  - So that you understand the ROI and the value proposition
  - To avoid surprises

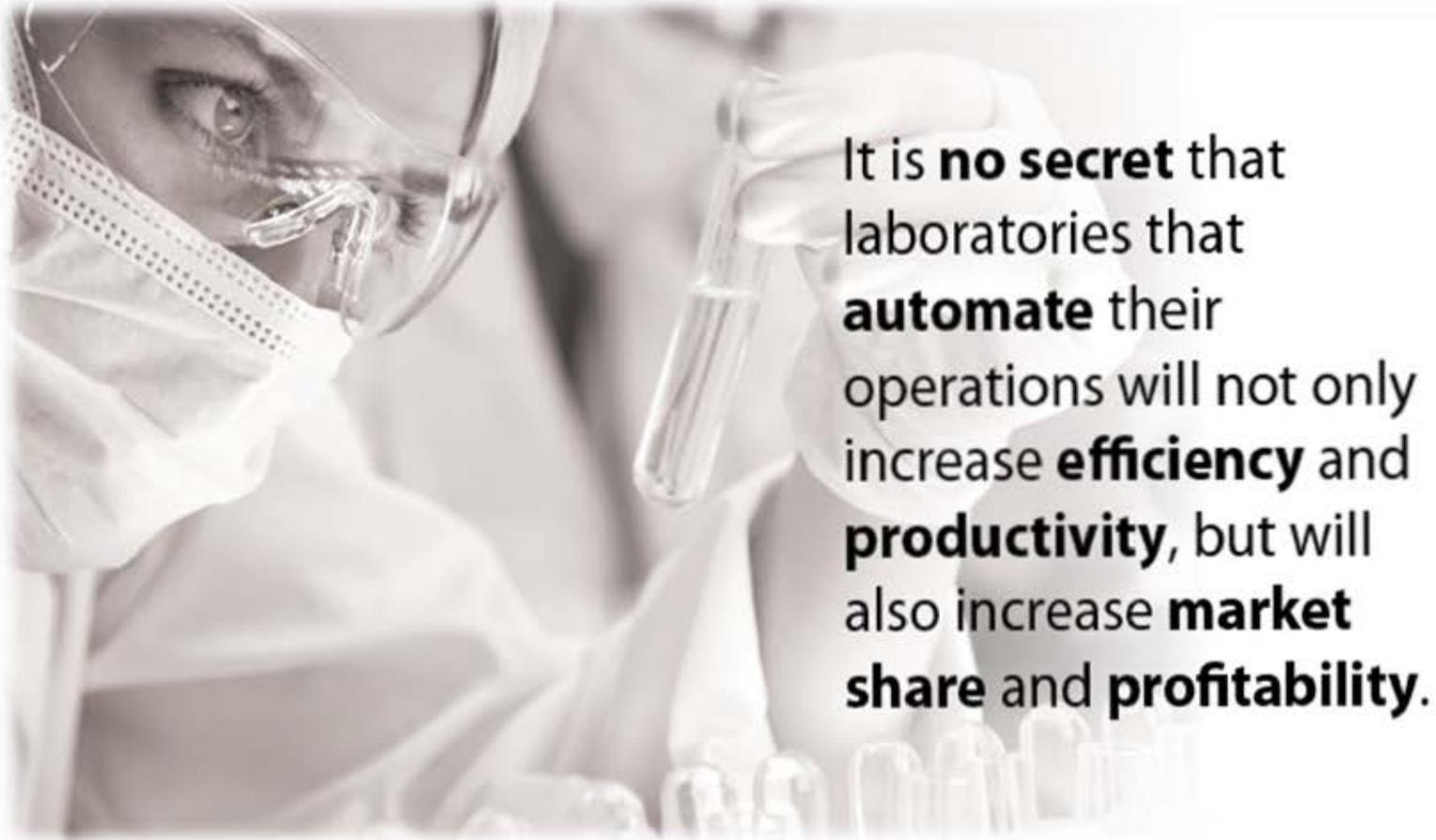


# LIMS - wiki

## Laboratory Information Management System

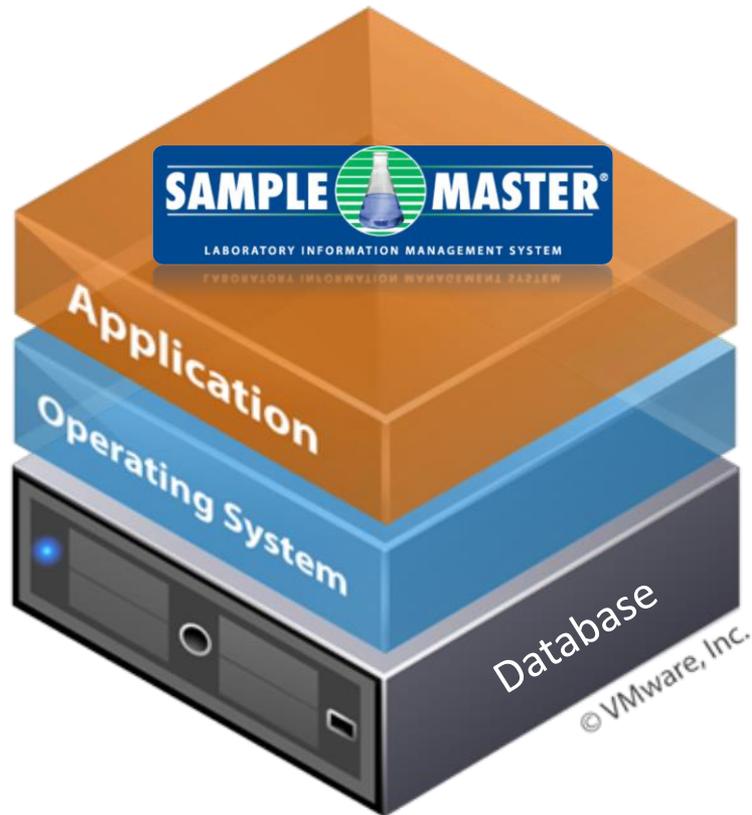
Laboratories around the world depend on a LIMS to manage data, assign rights, manage inventory, and more.

A **Laboratory Information Management System (LIMS)**, sometimes referred to as a **Laboratory Information System (LIS)** or **Laboratory Management System (LMS)**, is a [software](#)-based [laboratory](#) and [information management](#) system with features that support a modern laboratory's operations. Key features include — but are not limited to — [workflow](#) and data tracking support, flexible architecture, and data exchange interfaces, which fully "support its use in regulated environments. "The features and uses of a LIMS have evolved over the years from simple [sample](#) tracking to an [enterprise resource planning](#) tool that manages multiple aspects of [laboratory informatics](#).



It is **no secret** that laboratories that **automate** their operations will not only increase **efficiency** and **productivity**, but will also increase **market share** and **profitability**.

# What is a LIMS Database?



LIMS is at the application layer

MS Office is at the application layer

Operating System = Windows, Red Hat,  
Linux

Database software sits on the server (MS  
SQL Server, Oracle, Sybase, etc.. Free  
engines SQL Express, MySQL, others.

## TYPES OF LIMS

- Client-Server Based (VB)
  - Fat client
  - Thin client
- Web Based (.NET/C#) – good for multiple sites
  - Premise Based
  - Cloud based - Hosted
  - Simple
  - Sophisticated

## What LIMS CAN'T DO:

- Can't force your staff to follow SOPs
- Can't prevent your analysts from entering incorrect data (that is still within limits)
- Can't read your mind or know what you meant
- Can't ensure that your samples arrive with a completed COC
- Can't make your analysts arrive to work on time
- Can't or shouldn't review your data
- Can't fix training issues (other than documenting them)
- Can't control your instruments or make them run faster
- Can't make your coffee



## What LIMS can do:

- Automate your sample tracking
- Automate your reports, email notifications, etc.
- Organize your worklists, workload and data
- Remind you when you are running low on supplies
- Remind you when you certifications, training and instruments need updates, calibration, or maintenance. Alert you about hold times
- Integrate with instruments to automate the data import process
- Create your control charts and allow user to view trends
- Display data in real-time on dashboards so that you are up to date on any critical laboratory issues
- Upload field data in real-time from tablets into the LIMS
- Pre-log samples for regulatory and routine monitoring samples
- Automatically generate bar-codes for sampling kits



# LIMS: The Good, The Bad, The Ugly



## The Good – Modern LIMS

- Based on the latest technology C#, .NET – 64 bit
- Modern, Ergonomic GUI
- Drag and Drop functionality
- Report Designer (in addition to Crystal and SRS)
- Workflow Designer (future-proof)
- Mobile offerings – tablets, smart phones
  - Different screens for different functions
- Secure, encrypted web portal
- Future-proof features

## The Good

- Full regulatory compliance
  - Complete audit trail and history file
  - Fully validated
  - Barcode support
  - Integrated calculations
  - Dashboards
  - Powerful query tools

# Accelerated Technology Laboratories, Inc.

## LEADERS IN LIMS and Laboratory Automation

## The Total LIMS and Data Management Solution

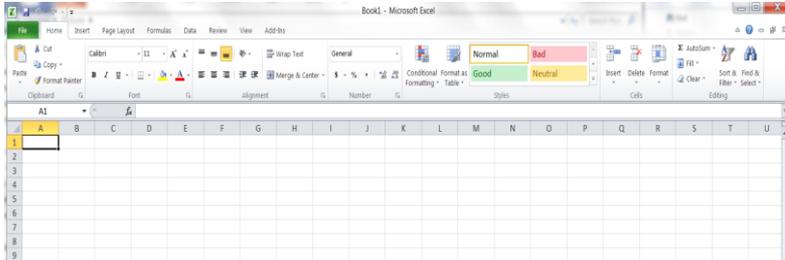


Innovation.  
Performance.  
Success.

## The Bad

- Older LIMS or Poor Quality LIMS supplemented with Excel
  - Lack modern functionality - 32 Bit
  - Lots of software bugs
  - No updates or updates that don't work or fit
  - Lack of quality support
  - Old clunky GUI
  - Cumbersome workarounds
  - No user group or community

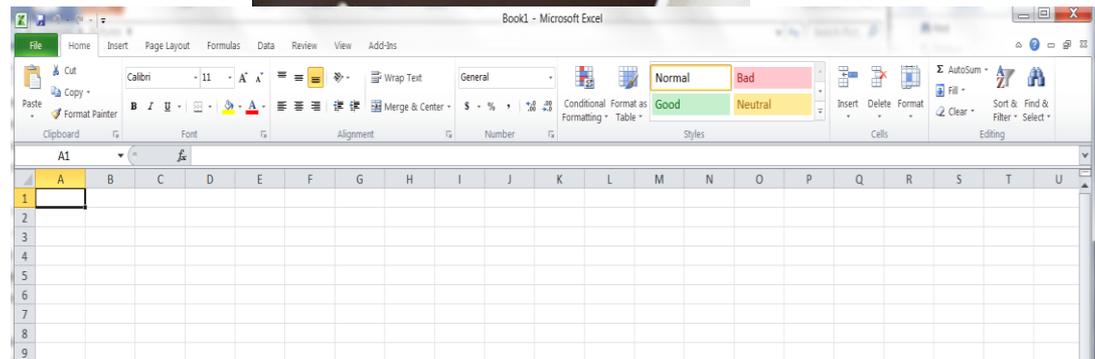
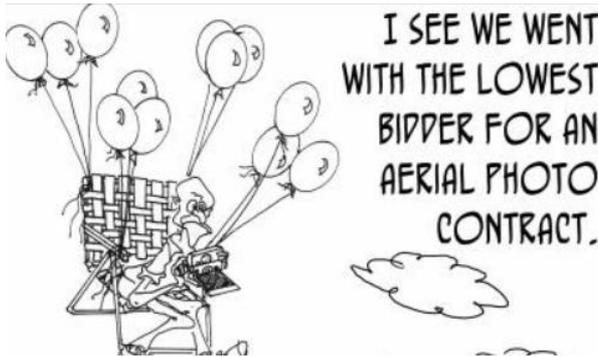
# The Bad



- Cumbersome GUI
- Not intuitive
- All needs not met
  - Supplemented with Excel
  - Paper notebooks
- Lack modern functionality
  - Secure web portal
  - Data encryption
  - Automated emails
  - No integration

# The Ugly- Free - Paper Based + Excel

- Low Bid



## The Ugly Issues

- Very costly
- Error prone
- Back-ups are difficult
- Require a high amount of interaction
- Data sharing is limited
- Audit trails are challenging
- Waste time and resources

## Does your LIMS have modern capabilities?

- ✓ Sample Tracking (creating collection kits) barcoding
- ✓ Leveraging mobile technology for field data collection and real time communication
- ✓ Scheduling (to ensure that compliance and routine monitoring samples are collected)
- ✓ QA/QC Data (organize control data, control charts as well as audit reports)
- ✓ Managing their SOPs for the tests/methods they use (for their audits)
- ✓ Interfacing instruments so that data doesn't have to be manually transcribed

## Does your LIMS have modern capabilities?

- ✓ Managing chemical inventory in the laboratory (lot #, expiration date, tracking usage, etc.)
- ✓ Managing instrument maintenance and calibration records
- ✓ Handling customer complaints – Managing CAPAs (Corrective and Preventative Actions)
- ✓ Tracking employee training records and expiration dates
- ✓ Real time web reporting to internal and external customers
- ✓ Reporting (Electronic – automated state reporting –SDWIS, NPDES DMR, others)



**Organization**

Laboratory Intelligence

**Automation**



**Knowledge**

Automated Reports

**Automated Alerts**

**Security**

**Power**

# Sample Tracking (creating collection kits) barcoding

- Bar coding greatly reduces transcription errors and is 20 times faster and significantly more accurate than keyboard entry.



**Oil Analyzers**  
ADVANCED OIL

**SAMPLE INFORMATION**

Receive your report by:  Email  Fax or  Mail

Company: \_\_\_\_\_ Contact Name: \_\_\_\_\_  
 Address: \_\_\_\_\_ City: \_\_\_\_\_ State/Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_ Country: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail Address: \_\_\_\_\_

Sample Point: \_\_\_\_\_ Component ID: \_\_\_\_\_ Secondary ID: \_\_\_\_\_  
 Fuel  Oil  Grease  Hydraulic  Coolant  Brake  Other

How Label Sample:  New Label  Re-label  No Label  
 Label Time: \_\_\_\_\_ Date Sampled: \_\_\_\_\_  
 10  15  20  25  30  35  40  45  50

Equipment Type: \_\_\_\_\_  
 Label Added:  Yes  No  Other  Filter Changed  No  Yes

Comments: \_\_\_\_\_

**COMPONENT REGISTRATION (Required ONLY for registering new components or for repairs/changes.)**

Engine Options (check only one)

Gasoline	Water Gas Bearing	Industrial Gas Bearing	Hydraulic
<input type="checkbox"/> Diesel (90%)	<input type="checkbox"/> Diesel (80%)	<input type="checkbox"/> Diesel (60%)	<input type="checkbox"/> Diesel (40%)
<input type="checkbox"/> Gasoline (90%)	<input type="checkbox"/> Gasoline (80%)	<input type="checkbox"/> Gasoline (60%)	<input type="checkbox"/> Gasoline (40%)
<input type="checkbox"/> Gasoline (30%)	<input type="checkbox"/> Gasoline (20%)	<input type="checkbox"/> Gasoline (10%)	<input type="checkbox"/> Gasoline (5%)
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Non-Engine Options (check only one)

Transmission	Water Gas Bearing	Industrial Gas Bearing	Hydraulic
<input type="checkbox"/> Diesel (90%)	<input type="checkbox"/> Diesel (80%)	<input type="checkbox"/> Diesel (60%)	<input type="checkbox"/> Diesel (40%)
<input type="checkbox"/> Gasoline (90%)	<input type="checkbox"/> Gasoline (80%)	<input type="checkbox"/> Gasoline (60%)	<input type="checkbox"/> Gasoline (40%)
<input type="checkbox"/> Gasoline (30%)	<input type="checkbox"/> Gasoline (20%)	<input type="checkbox"/> Gasoline (10%)	<input type="checkbox"/> Gasoline (5%)
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Engine Manufacturer: \_\_\_\_\_ Non-Engine Manufacturer: \_\_\_\_\_  
 Engine Model: \_\_\_\_\_ Non-Engine Model: \_\_\_\_\_

Application:  Automobile  Off-Highway  Marine  Industrial  Other  Other  Other  Other

Label Manufacturer: \_\_\_\_\_ Product Code: \_\_\_\_\_ Grade: \_\_\_\_\_  
 Enter  10  15  20  25  30  35  40  45  50

**APPLY TO SAMPLE JAR**

**FOR HOUR RECORDS**

OIL ANALYZERS LABORATORY  
7601 BRACKEN CIRCLE  
P.O. BOX 58843  
INDIANAPOLIS, IN 46258

OIL ANALYZERS LABORATORY  
1348 E-HUGHES BLVD, SUITE 400  
P.O. BOX 100771  
DULUTH, GA 30086

OIL ANALYZERS LABORATORY  
3140 75TH STREET  
EDMONTON, AB T6E 6W0

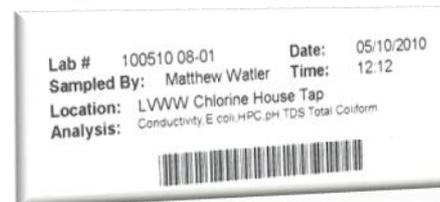
OIL ANALYZERS LABORATORY  
3840 CALIFORNIA AVE, SUITE B  
P.O. BOX 34020  
SALT LAKE CITY, UT 84104

OIL ANALYZERS LABORATORY  
SUITE 100, 8440 HOUSTON PROXY NORTH  
HOUSTON, TX 77064-8903

SMALL RETURN ADDRESS  
LABELS ARE FOR  
NON-POSTAGE PAID KITS ONLY

# Barcoding

- Choosing the right solution for your laboratory:
  - 1D
  - 2D
  - Labels? Special sizes? 2 part, etc...



# Bar-Coding

## Increase speed, accuracy and efficiency.



Analysis Batch - AB\_20120312\_011

General Aliquots QC Required Products Equipment Results All Results Data Qualifiers Files

Control Limit Set Ammonia(Jan 1, 2012 12:00AM)

Aliquots Drag a column header here to group by that column.

QC Results	Aliquot	QC Type	Analyte	Numeric V	Unit	QC Calculation
	AB_20120312_011 LCS 1	LCS - Laboratory Control Sample	Ammonia	100.40	%	Percent Rec
	AB_20120312_011 CCV 1	CCV - Continuing Calibration Veri	Ammonia	110.50	%	Percent Rec
	AB_20120312_011 CCV 2	CCV - Continuing Calibration Veri	Ammonia	92.50	%	Percent Rec
	AB_20120312_011 LCS 2	LCS - Laboratory Control Sample	Ammonia	92.40	%	Percent Rec
	AB_20120312_011 CCV 3	CCV - Continuing Calibration Veri	Ammonia	109.50	%	Percent Rec
	AB_20120312_011 CCV 4	CCV - Continuing Calibration Veri	Ammonia	103.00	%	Percent Rec
	AB_20120312_011 MSD 2	MSD - Matrix Spike Duplicate	Ammonia	2.02	%	Relative Per
	AB_20120312_011 MSD 1	MSD - Matrix Spike Duplicate	Ammonia	4.22	%	Relative Per



ATL TITAN

Analysis Batch Aliquots

Analysis Batch #: AB-121224-01 Analysis Method: ICP Metals

Instrument: Instrument Run:

Seq. #	Aliquot Number	Field Sample Number	Site	Collect Date Time	Aliquot Due Date
1	WO-121227-02-03-2-1	Sample Point 1	Monitoring Point 002	12/25/2012 09:00	01/04/2013 12:00
2	WO-121227-02-02-2-1	Sample Point 2	Monitoring Point 002	12/25/2012 09:10	01/04/2013 12:00
3	WO-121227-02-03-2-1	Sample Point 3	Monitoring Point 002	12/25/2012 09:25	01/04/2013 12:00
4	AB-121224-01 MS 1	81-A	Sample Point 11-13	12/22/2012 12:00	12/24/2012 12:00
5	AB-121224-01 MSD 1	81-A	Sample Point 11-13	12/22/2012 12:00	12/24/2012 12:00
6	WO-121224-03-01-1-1	81-A	Sample Point 11-13	12/22/2012 12:00	12/24/2012 12:00
7	WO-121224-03-02-1-1	82-A	Sample Point 11-84	12/24/2012 12:00	12/24/2012 12:00



# How can I use barcodes?

- Pre-login
- Chain of Custody
- Login
- Tracking
- Disposal
- Instrument integration
  - Leverage worklists
- Inventory
- Shipping labels & more ways!



**Oil Analyzers**

**ADVANCED OIL**

1 Apply barcode to bottle vertically

2 Complete this form or submit sample info online at [www.oiltestlab.com](http://www.oiltestlab.com)

3 Place form in smaller container with the sample and ship sample

4 Receive report by email, fax or mail

5 View sample progress through the lab using Track My Sample

**SAMPLE INFORMATION**

Receive your report by:  Email  Fax or  Mail INTERNAL USE ONLY

Company: \_\_\_\_\_ Contact Name: \_\_\_\_\_

Address: \_\_\_\_\_ City - State/Province - Postal Code - Country: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email Address: \_\_\_\_\_

Sample Point:  Engine  Gear  Bearing  Lube Sample  New Lube Sample  Date Sampled: \_\_\_\_\_

Differential  Front Drive  Hydraulic  Lube Time: \_\_\_\_\_

Planetary  Transmission  Component Time: \_\_\_\_\_

Other: \_\_\_\_\_

Position (if Applicable):  Drive  Left  Right  Lube Added: \_\_\_\_\_

Front  Rear  Center  Misc: \_\_\_\_\_ Filter Changed:  Yes  No

Comments: \_\_\_\_\_

**COMPONENT REGISTRATION (Required ONLY for registering new components or to request changes.)**

Engine Options (check only one)

Fuel Type:  Diesel (4K)  SP Gas (5K/6K)  Methane Gas (6A/6E)  Other: \_\_\_\_\_

Natural Gas (5A/5E)  Dual Fuel (5A/5E)  Other: \_\_\_\_\_

Non-Engine Options (check only one)

Transmission:  Manual (5B/5F)  Automatic (5B/5F)  Other: \_\_\_\_\_

Mobile Gear/Bearing:  Front Drive (5B/5F)  Rear Drive (5B/5F)  Other: \_\_\_\_\_

Industrial Gear/Bearing:  Hydraulic (5B/5F)  Gear Pump (5B/5F)  New Pump (5B/5F)  Other: \_\_\_\_\_

Engine Manufacturer: \_\_\_\_\_ Non-Engine Manufacturer: \_\_\_\_\_

Engine Model: \_\_\_\_\_ Non-Engine Model: \_\_\_\_\_

Application:  Automotive - 700  O-T-R Tractor - 110  Railroad - 800  Construction - 220  Utility - 490

Turbine - 100  Off Highway - 200  Marine/Boating/Leisure - 250  Mining - 600  Backhoe/Fork - 300

Powerboat - 400  Agricultural - 300  Quarry - 200  Marine - 600  Other: \_\_\_\_\_

Lube Manufacturer: \_\_\_\_\_ Product Code: \_\_\_\_\_ Grade:  SAE  ISO

Filter:  Full Flow - 10  By Pass - 11  Ribbon Loop - 16  None  Other: \_\_\_\_\_ Sump Capacity:  0  Gal  Ltr

**APPLY TO SAMPLE JAR**

**FOR YOUR RECORDS**

OIL ANALYZERS LABORATORY  
3080 CALIFORNIA AVE, SUITE B  
P.O. BOX 30920  
SALT LAKE CITY, UT 84104

OIL ANALYZERS LABORATORY  
1950 EVERGREEN BLVD, SUITE 400  
P.O. BOX 100071  
DULUTH, GA 30086

OIL ANALYZERS LABORATORY  
7451 WINTON DRIVE  
P.O. BOX 58863  
INDIANAPOLIS, IN 46208

OIL ANALYZERS LABORATORY  
5140 72TH STREET  
EDMONTON, AB T6E 6W2

OIL ANALYZERS LABORATORY  
10910 W. SAM HOUSTON PROXY NORTH  
SUITE 700  
HOUSTON, TX 77064-9903

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LABELS ARE FOR  
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# Leveraging mobile technology

- for field data collection and real time communication
- Ideal for emergency responders (threats, infrastructure failures, etc.)
- Accessing LIMS anytime and from anywhere
  - Secure web portal
  - 128 bit encryption
- Tablets in the laboratory for recording data
  - Should have a different GUI designed for tablets

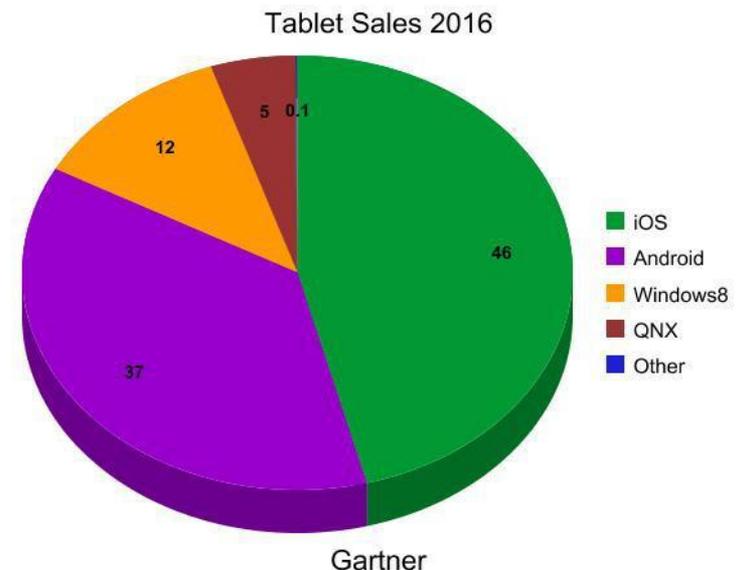


# Technology Trends

## *Two Pertinent Data Points*

IDC Predicts the “3<sup>rd</sup> Platform” Will Bring Innovation, Growth and Disruption Across All Industries in 2015

- International Data Corporation (IDC), technology research firm, recently released a report that talked about the growth of the “3<sup>rd</sup> Platform”.
  - Built on the technology pillars of mobile computing, cloud services, big data and analytics.
  - Every industry will be impacted including expansion of these technologies in state and municipal safety, public works and transportation systems.



# Leveraging Mobile Technology to Increase Productivity and Data Quality, while Reducing Costs

## Field Data Collection



Field collectors use mobile devices with the Sample Master®/ TITAN® iMobile Application, and data is instantly uploaded to the laboratory LIMS.

Prescheduled samples appear on the mobile device to notify collectors of their daily worklist, and non-routine samples may be added as needed.

GIS coordinates can automatically be recorded and new tests can be added from a drop down list.



## LIMS & Web Servers



Web Server



LIMS Server  
Sample Master® / TITAN®  
on SQL Server

## Laboratory

Sample Accessioning



Data Analysis



Q/C & Reporting



# CASE STUDY: Fairfax Water



- Fairfax County Water Authority is the main water company in the Northern Virginia region of the United States, and one of the three major water providers in the Washington, D.C. metropolitan area.
- Nearly 1.7 million people in the Northern Virginia communities of Fairfax, Loudoun, Prince William and Alexandria depend on Fairfax Water for superior drinking water. Fairfax's state of the art water quality laboratory is constantly evaluating new technologies to enhance efficiency, increase data accuracy, and maximize resources while furthering green initiatives.
- The laboratory supports two treatment plants with a 167 MGD average production with a 345 MGD capacity. They also have two sources of raw water, the Potomac River and the Occoquan Reservoir.
- The laboratory holds multiple certifications and employs 21 full time analysts, chemists, microbiologists, field collectors and managers that analyze the water for over 350 different analytes.



# Needs Assessment

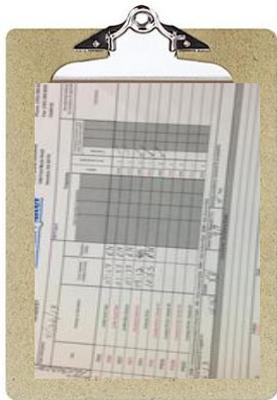
- Ease of use of the software and devices was a concern, since the collectors varied in age and technical expertise. The proposed solution had to be as simple as the paper forms that the team was familiar with.
- Other considerations:
  - Network Connectivity/Security/Access
  - Tablet functionality (what brand?)/interface
  - Cost of the software LIMS/iMobile
  - Integration with the LIMS scheduling functionality
  - Software, hardware, data plans, updates
  - Support and maintenance

# Environmental Field Collection

- Large Service Area
  - Reservoirs
  - Wells
  - Rivers & Streams
- In-Plant Faucets
- Water Main Breaks
- Hydrants
- Lakes, Ocean, Seas
- Customer Complaints



# Conventional Field Data Collection



- Paper forms are filled out in the field – legible?
- Returned to the laboratory with the sample
- The field information and test results are keyed into the LIMS (opportunity for errors to be introduced).

# Going Paperless



## Expected Benefits:

Transcription errors virtually eliminated

Data captures are date/time stamped – transmitted to lab in real time

GIS Coordinates are automatically captured

Increased data availability – faster, better data

COC automatically printed upon return to laboratory

# Unexpected Benefits

- Staff have access to SOPs in field
- GPS for navigation to sites
- Email access to send photos or video taken on tablet back to laboratory
- Video conferencing capabilities
- Access to other useful applications on the tablet (AIM, Calculator, Skype, Unit conversions)

# The list of benefits continues...



- Connected tablet with ATL's iMobile has access to other apps
- Knowing that the laboratory has instant access to the field data – in real time (disaster recovery)
- Knowing that you sampled the right site at the right time (GIS coordinates downloaded with a click)
- Saving 30 min (avg.) not having to re-key in data – eliminate transcription errors- better data quality
- Knowing that you did the best job you could and that no trees were killed in the collection of your data



Barcoded  
Sample Kits  
with COC



# Savings (ROI)

- Time (faster turnaround time) – real time
- Resource savings (human collateral) (avg. 50-60 min per day per person on data re-entry, review and approval alone)
- Automated emails to alert collectors of schedule
- Higher Data Quality (eliminate transcription errors)
- Better Data – Better Decisions
- Paperless (going green) – cost of storage
- Enhanced communication across organization

# Business impact of iMobile

**Increase efficiency.** Eliminate paper forms and the time lag in the time that it took to return the forms to the laboratory and to transcribe, store and manage them. (If there were any suspicious results or discrepancies, the original handwritten form would need to be retrieved and reviewed.)

**Accelerate TAT.** The time that it took for field data to get into the LIMS so that the analysts back in the laboratory could have all of the meta data available while they performed more sophisticated analysis on the samples. Accelerating the total turnaround time for sample analysis. Faster data, faster decisions, especially in a disaster recovery situation.

**Enhance Data Quality.** Maximize resources. Eliminate transcription errors from dual entry (transcribing the paper data into the LIMS).

**Pre-schedule samples** so that collectors know exactly what samples are required to be collected each day and also what tests need to be performed.

**Enhance communication.** Work with field collection team and share images when required of sampling sites, water main breaks, or other images of interest.

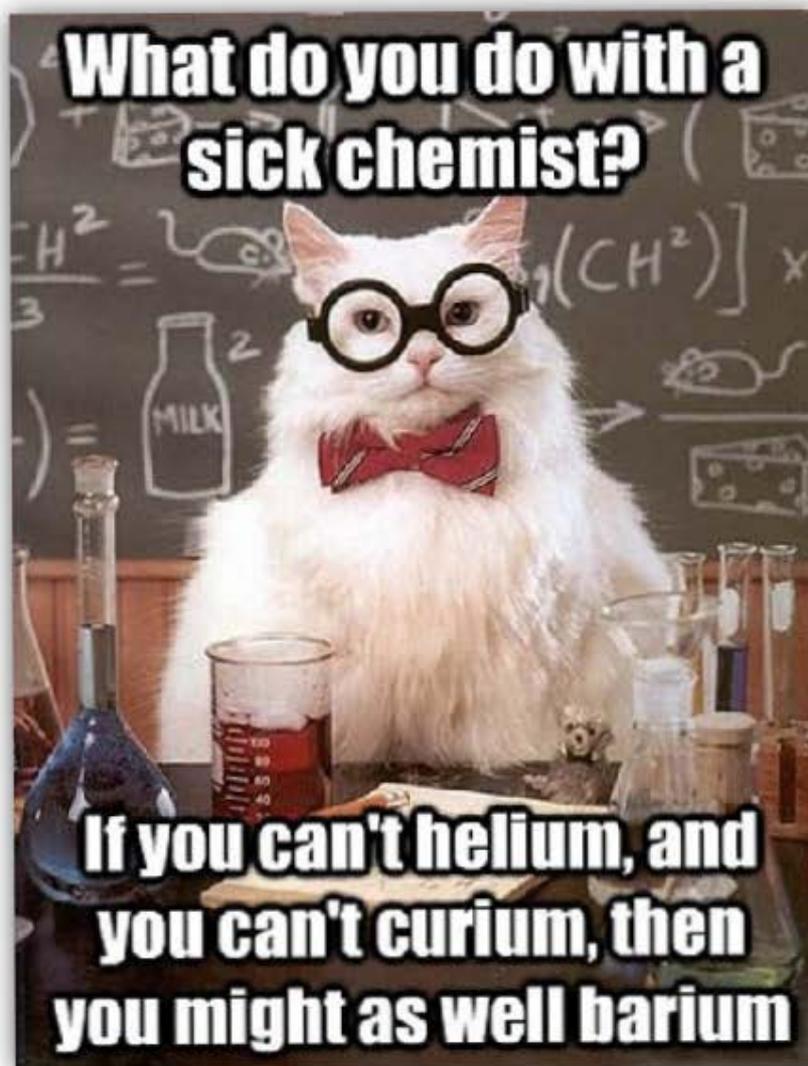
**Decrease carbon footprint** (facilitate green initiatives)



# How it works

- Web application that leverages WiFi, 3G/4G/LTE cellular technology to facilitate real-time collection and delivery of field test data back to the LIMS in the laboratory.
- Key features
  - Conduct sample login at point of activity
  - Collect, assess and evaluate critical information instantly
  - Generate an electronic chain of custody
  - Automatically log GIS coordinates
  - Document images
  - Collectors can easily:
    - Organize the workplan
    - Run analysis
    - Capture field data
    - Instantly transmit with comments back to lab





# Scheduling



- (to ensure that compliance and routine monitoring samples are collected on time)
- Ability to pre-log samples ensures that all the required testing is associated with the collection
- Allows laboratory to share schedule with collection team or team with the laboratory so that both can be prepared

# Graphical Scheduling



- Easy to view events
- Drag and drop to modify the schedule
- Allow others to create schedules for collection team and time to pre-assemble kits
- Enhances communication to ensure that no sampling events are missed

## QA/QC Data

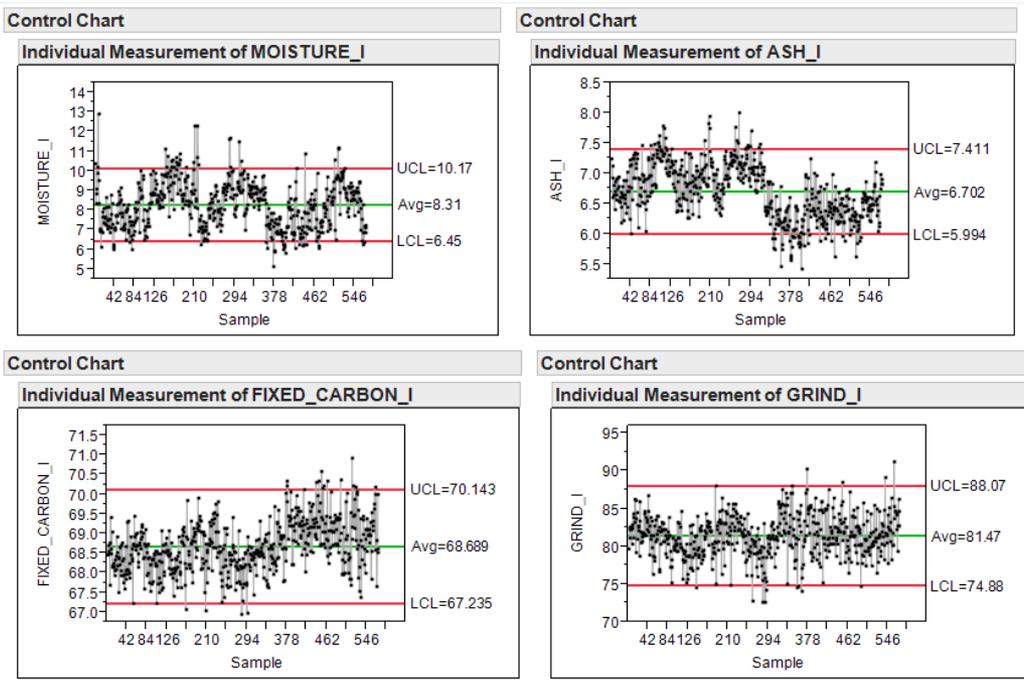
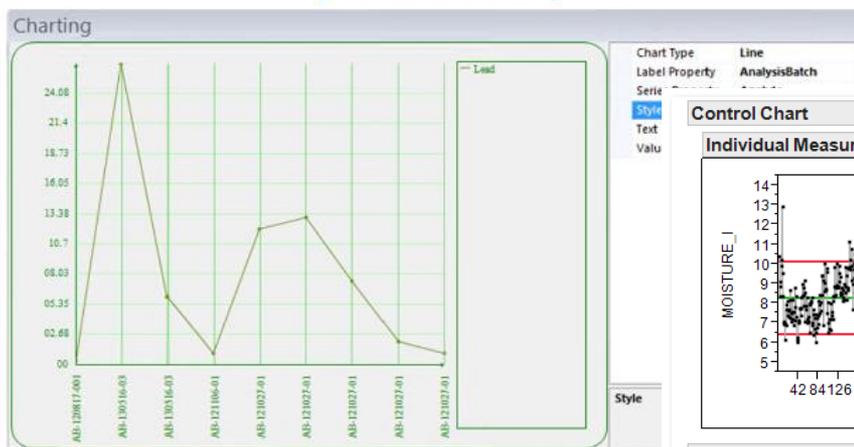
- (Organize control data, control charts as well as audit reports)
- MS, Dups, Blanks, surrogates – immediate notification
- Data Qualifiers
- Automate site specific and project specific QA/QC

# Charting, SPC & Control Charts

Analysis Batch	Analysis Date	Aliquot	Analysis	Sample Date	Control Chart Date	Control Chart Period	Analysis Method Name	Excision Factor	Measured Value	Measured Numeric Limit	Superior Value	Reporting Unit
AS-120617-001	05/18/2012	MS-121101-01-F-1.2	Lead	None	MS-120617	MS-120617	KF Method	1.0000	8.31	mg%	8.31	mg%
AS-120618-001	05/18/2012	MS-120618-01-F-1.2	Lead	None	MS-120618	MS-120618	KF Method	1.0000	1.07	mg%	26.8	mg%
AS-120619-001	05/18/2012	MS-120619-01-F-1.2	Lead	None	MS-120619	MS-120619	KF Method	1.0000	4.24	mg%	4	mg%
AS-121104-011	11/06/2012	MS-120621-01-F-1.1	Lead	None	MS-120621	MS-120621	KF Method	1.0000	1	mg%	1	mg%
AS-121027-011	10/27/2012	MS-121027-01-M01-F	Lead	None	MS-121027	MS-121027	KF Method	1.0000	12	mg%	12	mg%
AS-121027-021	10/27/2012	MS-121027-01-M01-F	Lead	None	MS-121027	MS-121027	KF Method	1.0000	13	mg%	13	mg%
AS-120621-001	05/18/2012	MS-120621-01-F-1.1	Lead	None	MS-120621	MS-120621	KF Method	1.0000	8.74	mg%	7.46	mg%
AS-121027-011	05/18/2012	MS-120621-01-F-1.1	Lead	None	MS-120621	MS-120621	KF Method	1.0000	2	mg%	2	mg%
AS-120617-001	05/18/2012	MS-120617-01-F-1.1	Lead	None	MS-120617	MS-120617	KF Method	1.0000	1	mg%	1	mg%

Figure 29 - Results Data for Charting

View trends, with integrated charting



View SPC charts with SAS JMP Integration

# Dashboards



- Laboratory Business Intelligence at your fingertips
- Easily view trends
- Monitor laboratory in real-time
- User configurable

# Managing SOPs, Documents, and Manuals

- for the tests/methods they use (for their audits)
- Link in LIMS – for ready access and document control
- Manage them and control access

## Benefits of SOP's

- Provide continual development of operations
- Improve of communication with employees
- Simplify new employee training
- Share experience knowledge and ideas



20b2  
FOLLOW YOUR



# Interfacing instruments

- Just makes sense – time – financial -resource
- so that data doesn't have to be manually transcribed
- Enhanced data quality



## Inputs:

.csv  
.xls(Excel)  
Text(ASCII)  
XML  
Web Services  
Database



# Instrument Integration

- Integrated scanning
- Increases accuracy
- Increases throughput
- Avoids duplication
- Enhances productivity
- ROI typically within one year



# Integrated Calculations



incubator temp in:	19.4	Meter CAL D.O. in:	9.45	at temp:	21				
incubator temp out:	19	Meter CAL D.O. out:	9.46	at temp:	22				
Seed Correction:	1.19								
pH	Initial DO mg/L	In Temp. C	Final DO mg/L	Final Temp. C	DO Depletion mg/L	Correction Factor Applied	Corrected for seed mg/L	BOD mg/L	Reported BOD mg/L
6.98	9.15	20.20	9.09	19.00	0.06				
6.98	9.15	20.20	4.56	19.00	4.59			137.70	
6.98	9.16	20.30	3.45	19.00	5.71			114.20	
6.98	9.16	20.30	2.14	19.00	7.02			105.30	119.07
N/A	9.14	20.30	3.99	19.00	5.15	1.19	3.96	198.00	198.00
7.48	9.15	20.20	5.64	19.00	3.51	1.19	2.32	46.40	
7.48	9.15	20.20	6.62	19.00	2.53	1.19	1.34	40.20	43.30
7.48	9.16	20.20	8.95	19.00	0.21	1.19	-0.98	0.00	
8.10	9.13	20.20	0.45	19.00	8.68	1.19	7.49	149.80	
8.10	9.15	20.20	2.47	19.00	6.68	1.19	5.49	164.70	
8.10	9.16	20.10	5.36	19.00	3.80	1.19	2.61	156.60	160.65

- Saves time
- Increases accuracy
- Reduces errors
- Accelerates time to result
- Better data

# Managing chemical inventory

- in the laboratory (lot #, expiration date, tracking usage, etc.)
- Alerts when supplies are running low
- Links to tests that used each supply
- Ability to track and trace back and defective supplies
- Ease of re-ordering



# Managing instrument maintenance

Asset - Cryoscope 4C3

General Maintenance History Rental Order Assets Documents Resources

Asset #	102-478	Notes	
Name	Cryoscope 4C3		
Description	The Advanced 4C3 multi-sample cryoscope uses the preferred freezing-point method to precisely determine the amount of extraneous water in milk, offering unique continuous throughput for maximum efficiency in large volume testing. The capacity of the 4C3 allows your lab to efficiently test and manage		
Value	12000.00	Manufacturer	Cryoscope
Purchase Date	09/28/2012	Model #	4C3
Commission Date	09/28/2012	Decommission Date	
Custodian	Bellazer, Enedina	Serial #	5156488
Facility	Main Lab	Purchase Price	10248.00
Department	Physical Laboratory	<input checked="" type="checkbox"/> Available	
		<input type="checkbox"/> Can Be Rented	

Refresh Delete Save Save & Close

## Managing CAPAs (Corrective and Preventative Actions)

- Handling customer complaints –
- Supports ISO 17025 Compliance & NELAC
- Provides a control system to manage anomalies
- Better customer satisfaction
- Assigns ownership and responsibility

# CAPAs

CAPA - CAPA-130823-01

CAPA #  Name

Description

Date Created  Created By

Due Date  Owner

State  Resolution Status

Assignment: Action Plan Resolution Files

Customer

Contact

Assigned Employee

Analysis Batch

Vendor

Ordered Product

Work Order

Sample

CAPAs

	Month	Week	Work Week	Day	
	<div style="display: flex; justify-content: space-between;"> <span>&lt; August 2013 &gt;</span> </div>				
	Sunday	Monday	Tuesday	Wednesday	Thursday
	Jul 28	29	30	31	Aug 1
					2
7/28					Process no ↻
	4	5	6	7	8
8/4					
	11	12	13	14	15
8/11					
	18	19	20	21	22
8/18					
	25	26	27	28	29
8/25					
					30
					Wrong lte ↻
					3

Refresh Create Delete

# Tracking employee training records

- And expiration dates
- Providing professional development and training opportunities for LIMS team
- ISO 17025 & NELAC



# Real time web reporting to internal and external customers



Result Point™ Home Not Logged In

Welcome to  
**Accelerated Technology Laboratories, Inc.**  
 Please Login with your **Result Point™** Username and Password



**User Login**

Username:

Password:

[Forgot your password?](#)

## Order ID Preview

**Order ID :13022701**

**College of Ag.**

**Project ID:**

**Date/Time Recv'd :** 2/27/2013

**Available Files**

-  [13022701 COA.pdf](#)
-  [13022701 Invoice.pdf](#)
-  [EDD format 13022701.xls](#)

### Sample ID List

Sample ID	Cust. Samp ID	Date Collected	Site	Matrix	Analysis Requested
13022701-01	133-02	2/27/2013		Waste Water	Alkalinity
13022701-02	13N-02	2/27/2013		Waste Water	NO2+NO3

Select a live on-screen web report...

### Analytical Report

A complete listing of all samples in the specified order along with result information for all requested analyses. Results are compared against applicable parameter upper and lower limit information if available.

# 24/7 Data Access

Analytical Report									
<b>Order ID</b>	12121901			<b>Matrix</b>	Drinking Water		<b>Sample ID</b>	<b>Cust. Samp ID</b>	
<b>Customer Name</b>	Public Works						12121901-01	A	
<b>Project ID</b>							12121901-02	B	
<b>Date/Time Rec'd</b>	12/19/2012						12121901-03	C	
							12121901-04	D	
							12121901-05	E	
							12121901-06	F	
							12121901-07	G	
							12121901-08	H	
<b>Sample ID</b>	12121901-01			<b>Site</b>					
<b>Cust. Samp ID</b>	A			<b>Matrix</b>	Drinking Water				
<b>Date Collected</b>	12/19/2012			<b>Collector</b>					
<b>Test Method</b>									
<b>Param</b>	<b>CAS</b>	<b>Status Desc.</b>	<b>Num. Result</b>	<b>Result</b>	<b>Reporting Units</b>	<b>Rep. Limit</b>	<b>Lower Limit</b>	<b>Upper Limit</b>	
<b>Bromide In House</b>									
Bromate (BrO3)		Approved	6	6	mg/L	2			
Bromide (Br)	24559-67-9	Approved	4	4	mg/L	2			
<b>Free Cl Field In House</b>									
Free Cl Field		Approved	0.11	0.11	Units		0.3	2	
<b>Total Cl Field In House</b>									
Total Cl Field		Pending Entry			Units		0.2	2	
<b>Sample ID</b>	12121901-02			<b>Site</b>					
<b>Cust. Samp ID</b>	B			<b>Matrix</b>	Drinking Water				
<b>Date Collected</b>	12/19/2012			<b>Collector</b>					
<b>Test Method</b>									
<b>Param</b>	<b>CAS</b>	<b>Status Desc.</b>	<b>Num. Result</b>	<b>Result</b>	<b>Reporting Units</b>	<b>Rep. Limit</b>	<b>Lower Limit</b>	<b>Upper Limit</b>	
<b>Bromide In House</b>									

EDDS (Electronic – automated state reporting –SDWIS, NPDES DMR, others)

# Automated DMR Creation

- Huge time saver
- Configured to automatically email
- Easy to create, only a few mouse clicks and fields are auto populated from data that is already in the LIMS



PARAMETER		UNIT	AVG	MAX	MIN	STDEV	COEFF	NO. OF SAMPLES	TYPE
0001	5 DAY BOD5 (20 DEGR C)	(MG/L)	112.53	138.91				2	19
0010	1 D O EFFLUENT	MG/L	204	308	95			30	19
0040	1 D O EFFLUENT	MG/L	0	0	0			30	19
0050	1 D O EFFLUENT	MG/L	204	308	95			30	19
0070	1 D O EFFLUENT	MG/L	0	0	0			30	19
0075	1 D O EFFLUENT	MG/L	0.64	1.1				7	19
0085	1 D O EFFLUENT	MG/L	3.81	5.8				30	19
0090	1 D O EFFLUENT	MG/L	6.584	5583.702258				264	19
0095	1 D O EFFLUENT	MG/L						REPORT	19
0100	1 D O EFFLUENT	MG/L	0	0				30	19
0105	1 D O EFFLUENT	MG/L	0.1	0.2				30	19

# Making Reports – Major Tools Used



These are all very powerful reporting tools, but all require users with IT backgrounds.



Often used for more sophisticated reporting needs



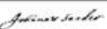
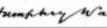
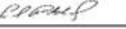
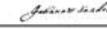
# Report Designer

## CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

	Accelerated Technology Laboratories, Inc. 496 Hony Grove School Rd West End, NC 27376	Phone: (800) 565-LMS Fax: (910) 673-8166
	Customer: DustyBuffalo Work Order #: 12-182738 Requester: Toby, Rachel Project: WS - Weekly Sampling	

LIMS Sample #	Sample #	Date	Time	Collector	Analysis Methods
WO-121227-02-01	 Sample Point 1	12/26/2012	09:00	Carter, Rob	Mercury Ammonia (NH3) ICP Metals Phosphorus
WO-121227-02-02	 Sample Point 2	12/26/2012	09:10	Carter, Rob	Mercury Ammonia (NH3) ICP Metals Phosphorus
WO-121227-02-03	 Sample Point 3	12/26/2012	09:25	Carter, Rob	Mercury Ammonia (NH3) ICP Metals Phosphorus

Customer to sign & date below

Retrieved By: 	Date/Time: 12/27/2012 08:25	Accepted By: 	Date/Time: 12/27/2012
Retrieved By: 	Date/Time: 12/27/2012 08:55	Accepted By: 	Date/Time: 12/27/2012
Retrieved By: 	Date/Time: 12/27/2012 10:15	Accepted By: 	Date/Time: 12/27/2012
Retrieved By: 	Date/Time: 12/27/2012 13:10	Accepted By: 	Date/Time: 12/27/2012
Seal/Locked By: 	Date/Time: 12/27/2012 05:45	Seal/Lock Opened By: 	Date/Time: 12/27/2012
Seal/Locked By: 	Date/Time: 12/27/2012 08:35	Seal/Lock Opened By: 	Date/Time: 12/27/2012
Comments			

	<b>MICROBIOLOGICAL ANALYSIS REPORT</b>	Report ID #: WO-130709-14 Supersedes: None Report Date: 07/11/2013								
	<b>JMC LABORATORIES</b> 805 E. Kemper Rd. Springfield, OH 45246 Tel. 513-346-3571   Lab 513-346-6542	<b>Customer Information:</b> John Morrell & Co. 805 E. Kemper Cincinnati, OH 45246	<b>Results To:</b> ATTN: Sandy Moore 513-346-3571							
Date Received: 07/09/2013      Condition Upon Receipt: Normal      Date Analyzed: 07/11/2013										
Analysis Details: Sample Type: Environmental Sample Reference Method: AOAC 91.881202 (Environmental Specimens)		Analyte: Listeria spp.								
<b>Sample Number</b>	<b>Sample Description</b>	<b>Description 2</b>	<b>Description 3</b>	<b>Line</b>	<b>Type</b>	<b>Contact-Non-Contact</b>	<b>Date</b>	<b>Time</b>	<b>By</b>	<b>Results*</b>
Blank	Blank Control			Not Specified	Control	Non-Contact	07/09/13	10:11	AK	NEGATIVE
Positive	Positive Control			Not Specified	Control	Non-Contact	07/09/13	10:11	AK	POSITIVE
Approved By:  Sandra Moore      Corporate Lab Manager										
* All "Positive" results are considered presumptive, unless otherwise stated as "Confirmed." * Results contained in this report pertain only to samples as provided by the client. Thursday, July 11, 2013      Notice: This report may not be distributed or reproduced except in full.										



# Choosing a Partner:

## Company history and experience

- Company/Products
- Technology
- Barcoding Basics
- Key Markets served
- Support & Services, User groups
- Instrument integration & Enterprise Integration (SCADA, SAP, ERP, etc)
- Strategic Partnerships



# Company history and experience

- How long have they been in business
- Are they ISO Certified? Do they care about quality?
- How do they operate? Chemistry?
- What technology are they based on?
- What do their customers say?
- Do they offer any training programs?
- What type of support is offered?
- Which certifications do they hold?
- Have they placed their software in Escrow?
- Have they recently been sold?
- Are they involved in any law suits?

# Support and Training offerings

- Toll-free support, free product upgrades, and free quarterly Webinars for GOLD Clients
- LIMS Boot Camp (regularly) + report writing courses
- Training videos + tutorials
- Web guided and custom training offerings



# RISK



- If you take a RISK and win, you will be Happy, if you take a RISK and lose, you will be Wise.

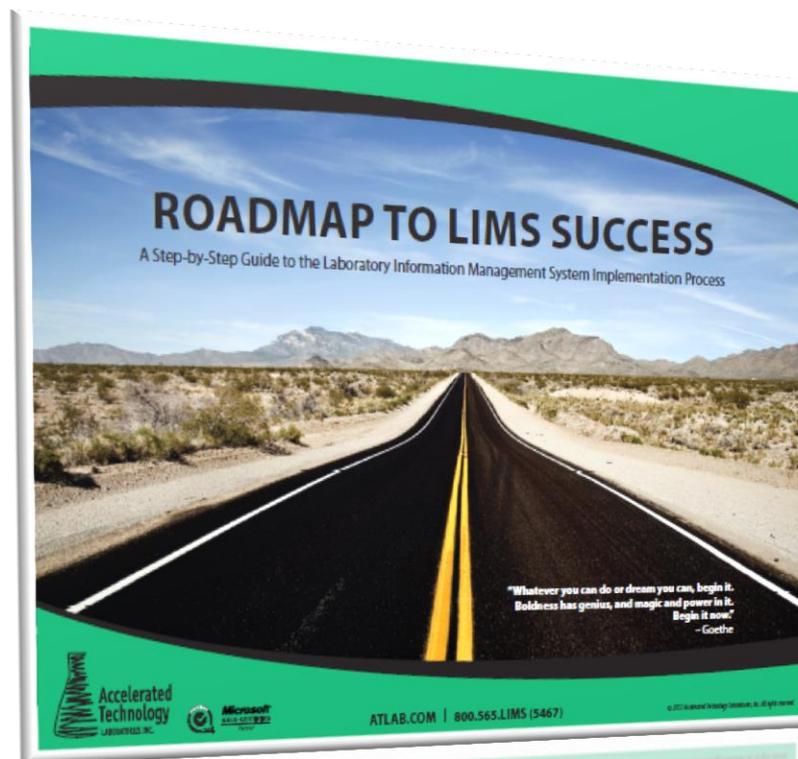
## 5 Signs it's time to Invest in a New LIMS

- Upgrade to modern technology
  - Database with Referential Integrity
  - Modern user interface
- Integrate Mobile Technology and Web portal
- Future-proof Investment by incorporating:  
Workflow designers and Report Creator
- Better business decisions with Dashboards
- Support and Training

## Summary

- In LIMS, as in life you get what you pay for
- Understand the teams needs/wants
- Prioritize and document these requirements
- Learn about the underlying technology
- Work with LIMS vendors that understand your needs and goals
- Understand the value proposition, not just costs

# Free ATL LIMS Guide





# THANK YOU!

To learn more email [info@atlab.com](mailto:info@atlab.com) or call 800.565.LIMS (5467)