

Agilent **Laboratory Informatics**

Maximising Laboratory Throughput with OpenLAB

2 Oktober 2012



Heiko Linde

**Produkt Spezialist Laborinformationssysteme
Life Science & Chemical Analyses**

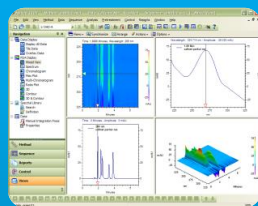
Agilent OpenLAB - *The Operating System for the Laboratory*

Scientific Data Management



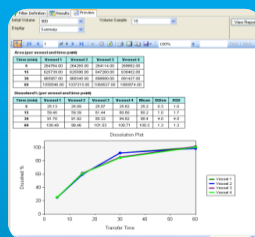
OpenLAB Enterprise Content Management (ECM)

Chromatography Data System



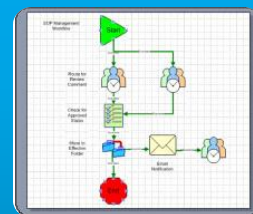
OpenLAB Chromatography Data System with Multi-Vendor Control (CDS)

Reporting



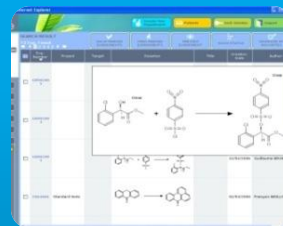
OpenLAB Intelligent Reporter

Business Process Management



OpenLAB Business Process Management (BPM)

Electronic Lab Notebook



OpenLAB Electronic Lab Notebook (ELN)

Agilent OpenLAB Manage Instruments, People, Process & Content !

Agilent OpenLAB is a fully integrated laboratory Framework that links people, processes and data, providing all information needed for accelerated decision making.

- Web-based, n-tier architecture scalable from small lab to global implementation
- Integrating framework for 3rd party applications and techniques.

The unfortunate Problem 1

Paper and Data handling

From chaos...



To a single search in seconds...

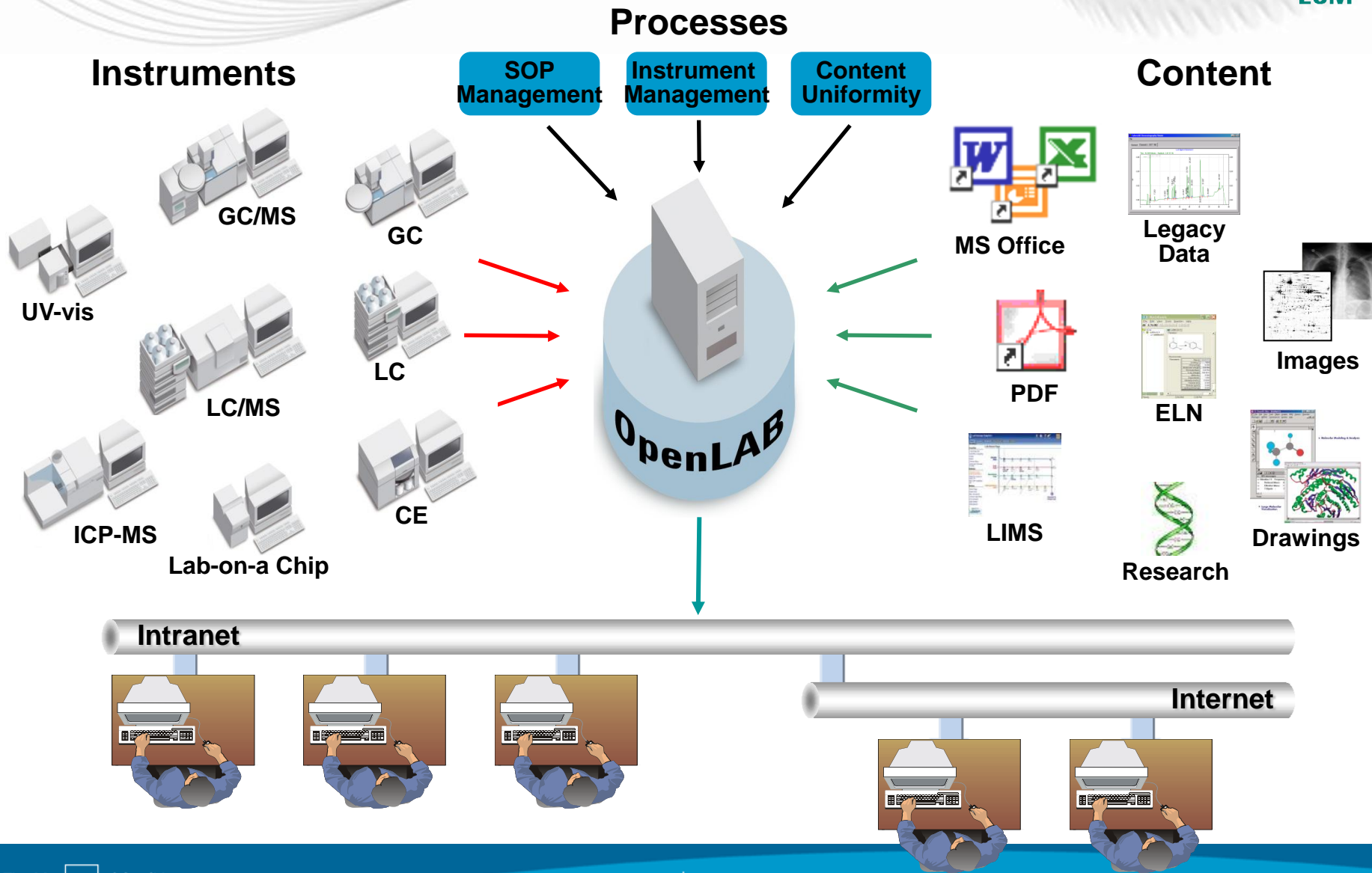




AGILENT OPENLAB ECM

SCIENTIFIC DATA MANAGEMENT

Agilent OpenLAB ECM (Enterprise Content Manager)



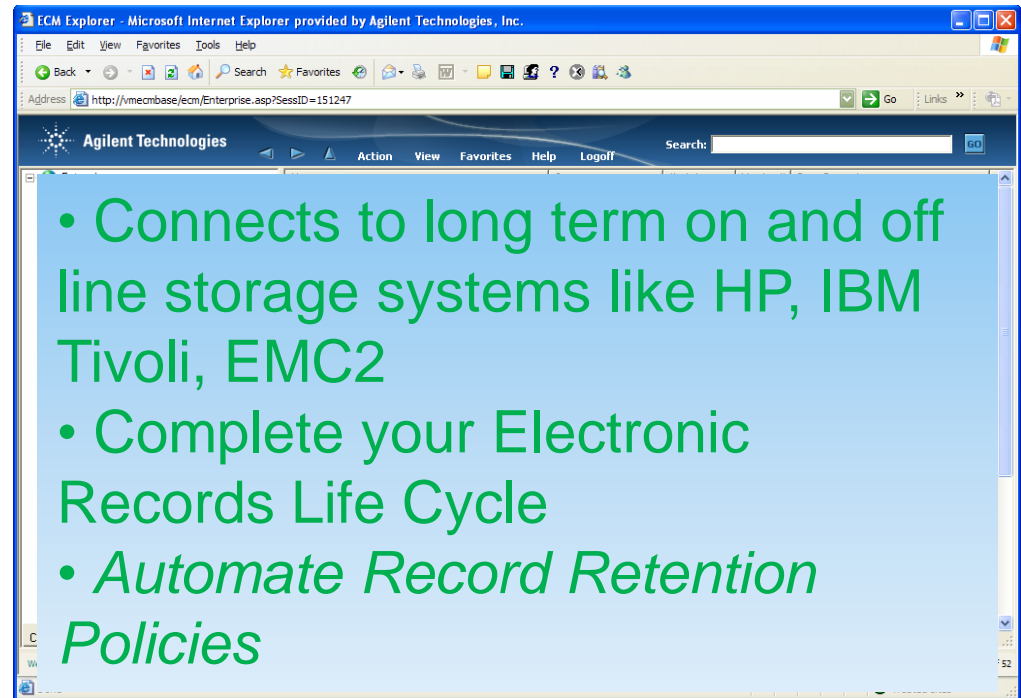


Centrally Store and Protect All Data Using OpenLAB ECM

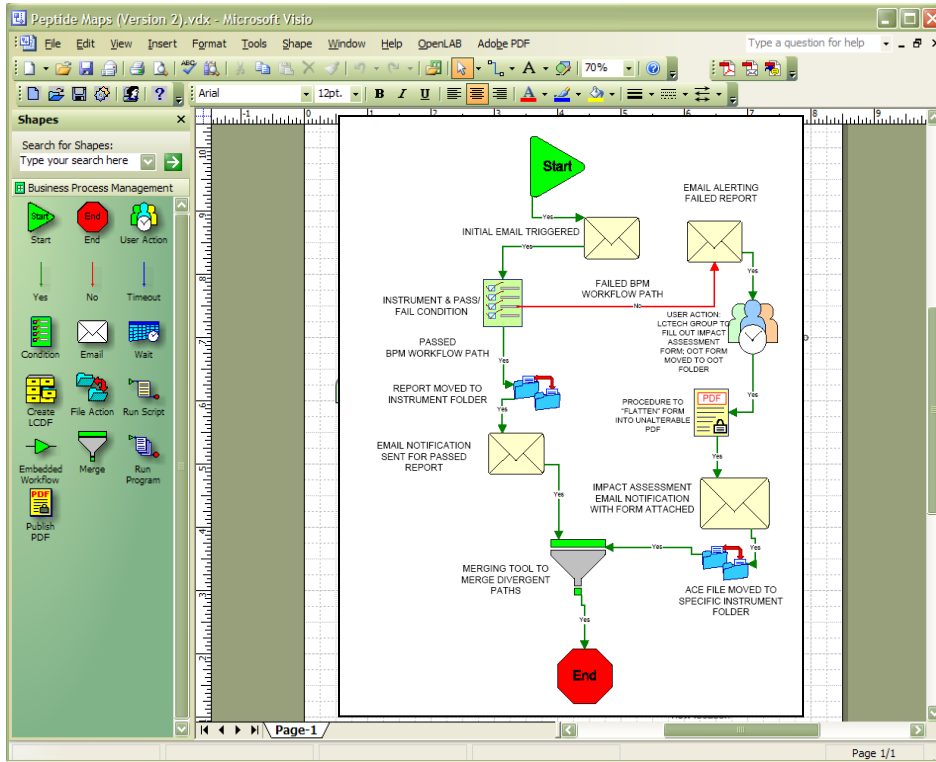
More than just a Scientific Data Management System SDMS

Manage and organize ALL electronic content regardless of source in a 21 CFR Part 11 way.

- Analytical Data
- Chromatography results
- Photographs and images
- PDF files and forms
- Scanned paper files
- Email
- Microsoft Office files
- Electronic reports
- ANY electronic content

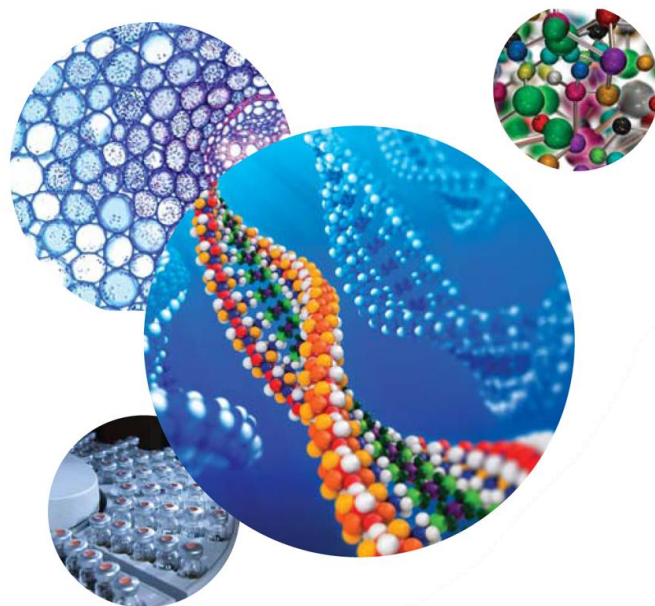


Automate the Information Flow in your Lab



- Agilent OL BPM option:
 - Automate a process in the laboratory without any programming knowledge
 - Control the flow of information for data review, electronic signoff, electronic notifications
 - Manage and schedule instrument maintenance through BPM

BPM example of a Pharma Case Study!!!!



AGILENT OPENLAB ELN

ELECTRONIC LAB NOTEBOOK

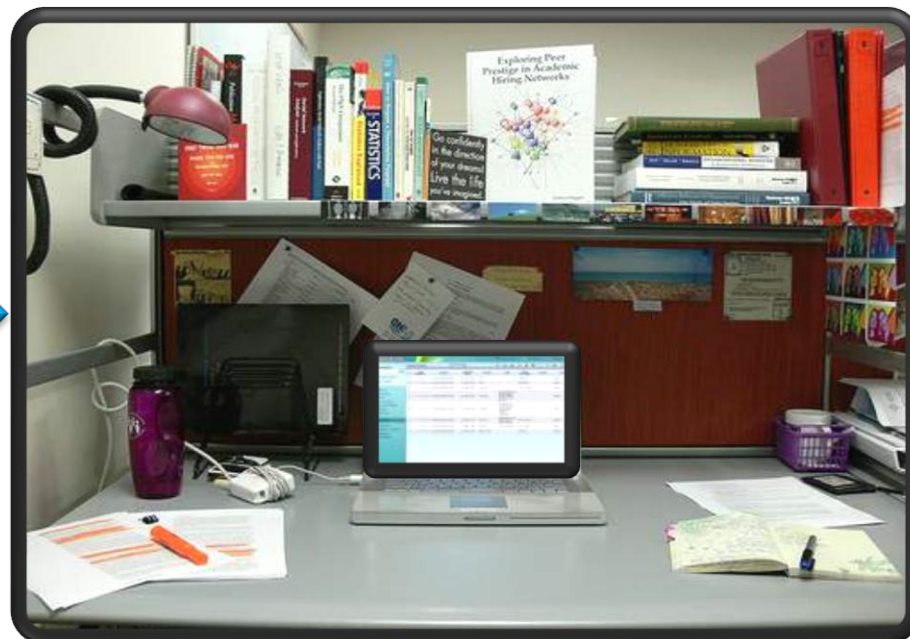
The unfortunate Problem 1 Paper and Data handling



From chaos...



To a single search in seconds...



Agilent OpenLAB ELN *(Electronic Laboratory Notebook)*

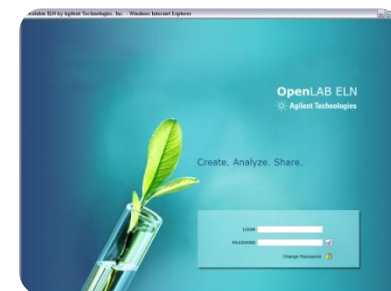
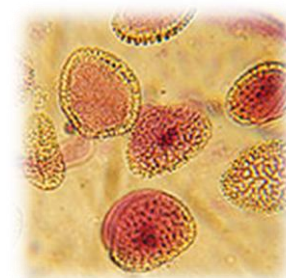
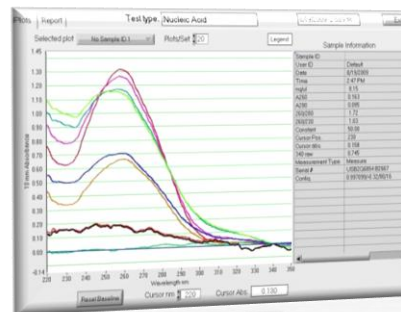
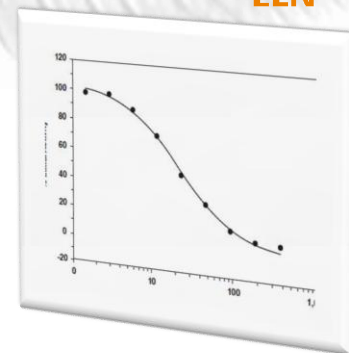
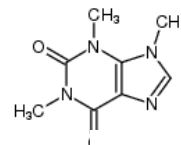


A Web-based ELN which enables you to...

- Document, manage and share across multiple disciplines with a single solution
- Search and collate disparate data sources into single experiment
- Reduce cycle times with integrated workflow processing and improve lab efficiency
- Integrate with existing information systems

Resulting in...

- Improved efficiency and data quality
- More secure Intellectual Property protection

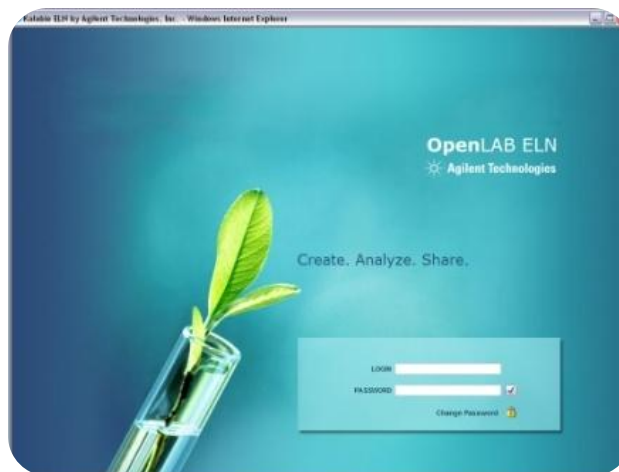


Agilent OpenLAB ELN *(Electronic Laboratory Notebook)*



OpenLAB ELN is an open architecture, highly flexible electronic lab notebook that simplifies and accelerates the documentation process and facilitates cross-team collaboration

- Integrated into the OpenLAB framework
 - Consistency with OpenLAB architectural values
 - Connectivity with OpenLAB ECM and CDS
- Multidisciplinary
 - Synthetic Chemistry
 - Biology/Genomics
 - Analytical Chemistry
 - Formulations
- Superior IP Protection
 - SAFE (user authentication) and Surety AbsoluteProof (data integrity)



An ELN Tailored to Your Working Environment



- Quickly setup an experiment and capture data.
- Mirror your workflow with experiment templates, forms and form fields
- Ability to search - review experimental data across multiple researchers
- Complete and transparent auditing activities

The screenshot displays the ELN software interface with several windows open. The main window shows a protocol for 'Micro Array DNA Labeling Protocols'. A 'Reagent Preparation' table is visible, listing reagents and their volumes:

Reagent	Volume
RNA/Primer Mix	12 µl
dNTP Mix	30mM 3 µl
First-Strand Buffer	5x 12 µl
DTT	0.1M 3 µl
DEPC H ₂ O	24 µl
SuperScript II	200 U/µl 4 µl
Total	60 µl

Below the table, there are instructions for mixing and incubating the reagents. A 'Digest RNA and Purification of cDNA' window is also open, showing a table for reagent preparation:

Sample ID	Weight	Unit	Weight 2	Unit	Reason	Approval Initials	Date approved
AD-2019-1226	50	mg					
AD-2019-1226	120	mg					

A 'Delegation choices' dialog box is open, showing options for delegation scope and chapter selection. Another window shows 'LC Conditions' for an Agilent 1260 Series binary pump. The bottom window displays a 'TOPO Clone Protocol' with a table of steps:

Completed	Step	Description	Deviation	Comment
<input type="checkbox"/>	1	Thaw tubes with samples		
<input type="checkbox"/>	2	Centrifuge 10,000 rpm for 10 minutes, discard liquid		
<input type="checkbox"/>	3	Add 0.5 mL sodium pyrophosphate, vortex for 1 minute		
<input type="checkbox"/>	4	Pour solution into bead tube from MoBio Soil Kit.		
<input type="checkbox"/>	5	Add 60 µL Solution S1		
<input type="checkbox"/>	6	Add 200 µL HB3 Solution		
<input type="checkbox"/>	7	Vortex for 5 minutes at max speed		
<input type="checkbox"/>	8	Centrifuge at 10,000g for 30 seconds		
<input type="checkbox"/>	9	Transfer supernatant to a clean microfuge tube		
<input type="checkbox"/>	10	Add 250 µL Solution S2 and vortex for 5 seconds. Incubate 4°C for 5 minutes		
<input type="checkbox"/>	11	Centrifuge for 1 minute at 10000g		
<input type="checkbox"/>	12	Transfer 450 µL supernatant to a clean tube (avoid pellet)		
<input type="checkbox"/>	13	Add 900 µL Solution S3, vortex 5 seconds		
<input type="checkbox"/>	14	Transfer supernatant to a clean microfuge tube. Centrifuge		

Analytical Chemistry Workflow



- Generate quickly reports across multiple samples and techniques
- Reduce cycle time from request to result
 - Check status, queue requests
 - Easy tracking of procedures and details
 - Reduce time for routing document approval
- Import directly from instruments
 - ChemStation, Empower, MassHunter*
 - Small devices (balances, pH meters, etc)
- Capture images, chromatograms, spectra; fully searchable annotations
- Setup experiments quickly with standard sentences and templates



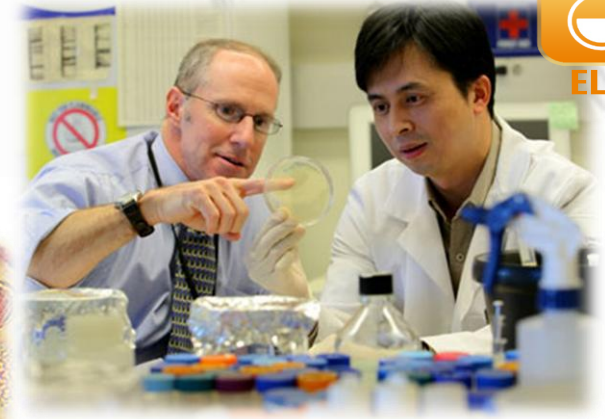
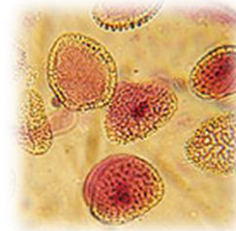
The screenshot shows the OpenLAB ELN software interface. The main window displays a table of pending analyses with columns for Exp. Number, Author, Creation Date, Expected Completion Date, Priority, Sample, Analysis Type, and Analysis Status. A dialog box titled 'Generate Analytical Experiment' is open, allowing users to create a new experiment or import one from an existing experiment. The dialog includes options for 'Into a new Analytical Exp.' and 'Import existing Experiment', and a table for selecting samples and analyses to include in the new experiment.

Exp. Number	Author	Creation Date	Expected Completion Date	Priority	Sample	Analysis Type	Analysis Status
ELN-KO-000003	ODEA Kathleen	16-JUL-2010 00:44	18-JUL-2010		ELN-KO-000002-001-02	Impurities Identification	To Be Done
ELN-KO-000003	ODEA Kathleen	16-JUL-2010 00:44	18-JUL-2010		ELN-KO-000002-001-03	Analysis Type 2	To Be Done
ELN-KO-000002	BEILLOUIN Francois				ELN-KO-000002-001-04	HPLC	Started
ELN-FB-000020	BEILLOUIN Francois				Sample456	Impurities Identification	Completed
ELN-FB-000020	BEILLOUIN Francois				Sample123	Impurities Identification	Completed
ELN-FB-000020	BEILLOUIN Francois				Sample123	Impurities Quantification	To Be Done
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-02	HPLC	Started
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-03	HPLC	Started
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-04	HPLC	Started
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-05	HPLC	Started
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-06	HPLC	Started
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-07	HPLC	To Be Done
PAR-JS-000023	SCIENTIST Jim				PAR-JS-000023-001-08	HPLC	To Be Done
ELN-FB-000009	BEILLOUIN Francois	06-JUL-2010 10:25			s123	Analysis Type1	Completed
OXF-DT-000006	TOBUREN Debra	28-JUN-2010 09:23	30-JUN-2010		OXF-DT-000006-001-01	FACS	To Be Done
OXF-DT-000006	TOBUREN Debra	28-JUN-2010 09:23	30-JUN-2010		OXF-DT-000006-002-01	FACS	To Be Done
OXF-DT-000006	TOBUREN Debra	28-JUN-2010 09:23	30-JUN-2010		OXF-DT-000006-003-01	FACS	To Be Done
OXF-DT-000006	TOBUREN Debra	28-JUN-2010 09:23	30-JUN-2010		OXF-DT-000006-001-01	HPLC	To Be Done
OXF-DT-000006	TOBUREN Debra	28-JUN-2010 09:23	30-JUN-2010		OXF-DT-000006-002-01	HPLC	To Be Done

Focus on Biology



- Cell biology
- Proteomics
- Molecular biology
- Genomics
- Toxicology



- Rich text environment for free-form data entry
- Insert images, searchable annotations
- Re-use protocols and methods
- Clone previous experiments
- Link to external sources (e.g. websites, documents)
- Import files, data and results from other applications
 - GeneSpring, MassHunter, VectorNTI...

Overall, 262 out of 921 entities represented on the array met these criteria. The microarray raw data have been deposited in the GEO database <http://www.ncbi.nlm.nih.gov/geo/> series accession number – GSE18999.

Gene Name	Gene Symbol	Fold Change
Foxo and src-45 domain protein 7 (archipelago homolog, drosophila)	FOXO7	1.5
ubiquitin-conjugating enzyme e2-1 (ubcl8 homolog, yeast)	UBC21	0.8
ubiquitin-conjugating enzyme e2b (ubcl8 homolog)	UBC28	0.7
cutlin 4a	CUL4A	1.3
ubiquitin-conjugating enzyme e2j3	UBC2L3	1.4
Foxo and src-45 domain protein 11	FOXO11	1.4
tripartite motif-containing 27	TRIM27	1.4
ubiquitin protein ligase e3a (human papilloma virus e6-associated protein, angiosarcoma)	UBE3A	1.6
suppressor of cytokine signaling 1	SOC1	1.6

A fold change of 0.8 indicates the expression level after exercise is 80% of the expression level before the exercise. A fold change of 1.3 indicates the expression level after the exercise is 130% of the expression level before the exercise.

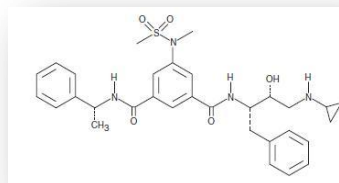
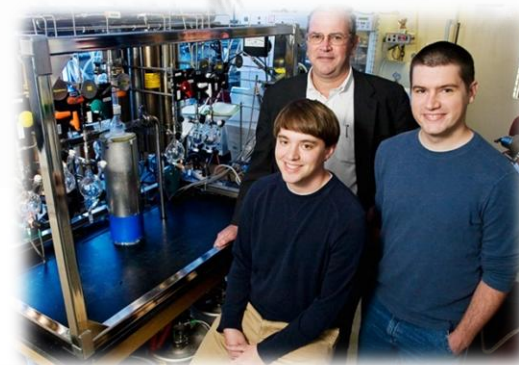
Key area to watch



Focus on Synthetic Chemistry



- Search and re-use synthesis knowledge from across the lab or organization
- Plan, search and design reactions
- Access commercial sourcing and registration systems
- Create favorites for commonly used reagents and solvents
- Manage batches, split samples and submit for analysis directly from the experiment



Standard synthesis Nicolas LOU 11-OCT-2007 17:54 CEST Draft

Project: Antibiotics Work Package: Cyclooxime Line Item: Target

220.0 g/mol 255.43 g/mol 233.39 g/mol 192.23 g/mol

0.1 M/L 1.120 g/100mL P/P/0 / 100.00 °C 1.00 g/mol

Step	Substrate/Reagents	Time	Temp	Pressure
1	CO ₂ / 100mL / 100mL	1h	50 °C	bar
2	CO ₂	h.v.	h.v.	h.v.

Role	Structure	Additive	MW	L	Eq	Qty.	Purity	Load	Amount	d	C	Volume
Reactant		220.05	1.00	eq	10.00	mmol		2.20	g			
Reactant		255.43	1.00	eq	10.00	mmol		2.55	g			
Solvent		84.09	1.20	l	12.00	mmol		1.01	g			2.41 ml
Solvent		1195.58	1.20	l	12.00	mmol		12.87	g			2.41 ml
Solvent		43.07	1.20	l	12.00	mmol		1.24	g			2.41 ml

Structure	Additive	Formula	MW	Exp. Yield	Exp. Load	Exp. Qty.	Exp. Am.	
		C ₂₃ H ₂₉ O ₅	233.39	95.00		5.50	mmol	2.22 g
		C ₁₈ H ₁₉ NO	175.23	95.00		5.50	mmol	1.64 g





CDS



ECM



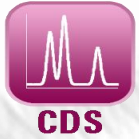
ELN



SERVICES

AGILENT OPENLAB CDS CHROMATOGRAPHY DATA SYSTEM





What is OpenLAB CDS?

OpenLAB CDS is:

- The consolidation of ChemStation and EZChrom under the new OpenLAB architecture
- The next major revision of Agilent ChemStation, EZChrom and OpenLAB ICM with significantly enhanced functionality
- ...initially available in two flavors as EZChrom Edition and as ChemStation Edition of OpenLAB CDS

The future of ChemStation and EZChrom IS IN YOUR HANDS

Introducing Agilent OpenLAB CDS

Agilent OpenLAB CDS is the evolution you've been waiting for. Not only is it 100% compatible with the raw data, methods, sequences and results of the ChemStation and EZChrom Elite you're using now, it's also a multi-vendor CDS built on our fully scalable OpenLAB architecture. Which means it's future-proofed. Plus it gives you better reporting and even lets you monitor your lab from your smart phone.

OpenLAB
CAPTURE • ANALYZE • SHARE

See it in action at www.agilent.com/chem/openlabcds

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The Measure of Confidence  **Agilent Technologies**

OpenLAB CDS: Enhanced Functionality



1. Unmatched Scalability

- From workstation to enterprise distributed data systems; adapting to the needs of YOUR laboratory via a consolidated architecture

2. A Central Control Panel

- With lab-at-a-glance functionality for better laboratory management via a new Shared Services application

3. New Custom and Advanced Reporting

- Easy setup of advanced reports for improved productivity, via OpenLAB Intelligent Reporting

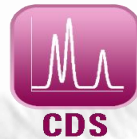
4. More intuitive and more flexible result review and reprocessing options

- Create virtual “reprocessing-only” sequence for flexible result recalculation or keep acquisition sequence setup for full data integrity

All this via a “non-disruptive upgrade”

- The next major revision of ChemStation and EZChrom/OpenLAB ICM offers backwards compatibility of data, methods and workflows; protecting your investment
- Designed with usability in mind

OpenLAB CDS: Scalable in Storage, Lab Management and Administration

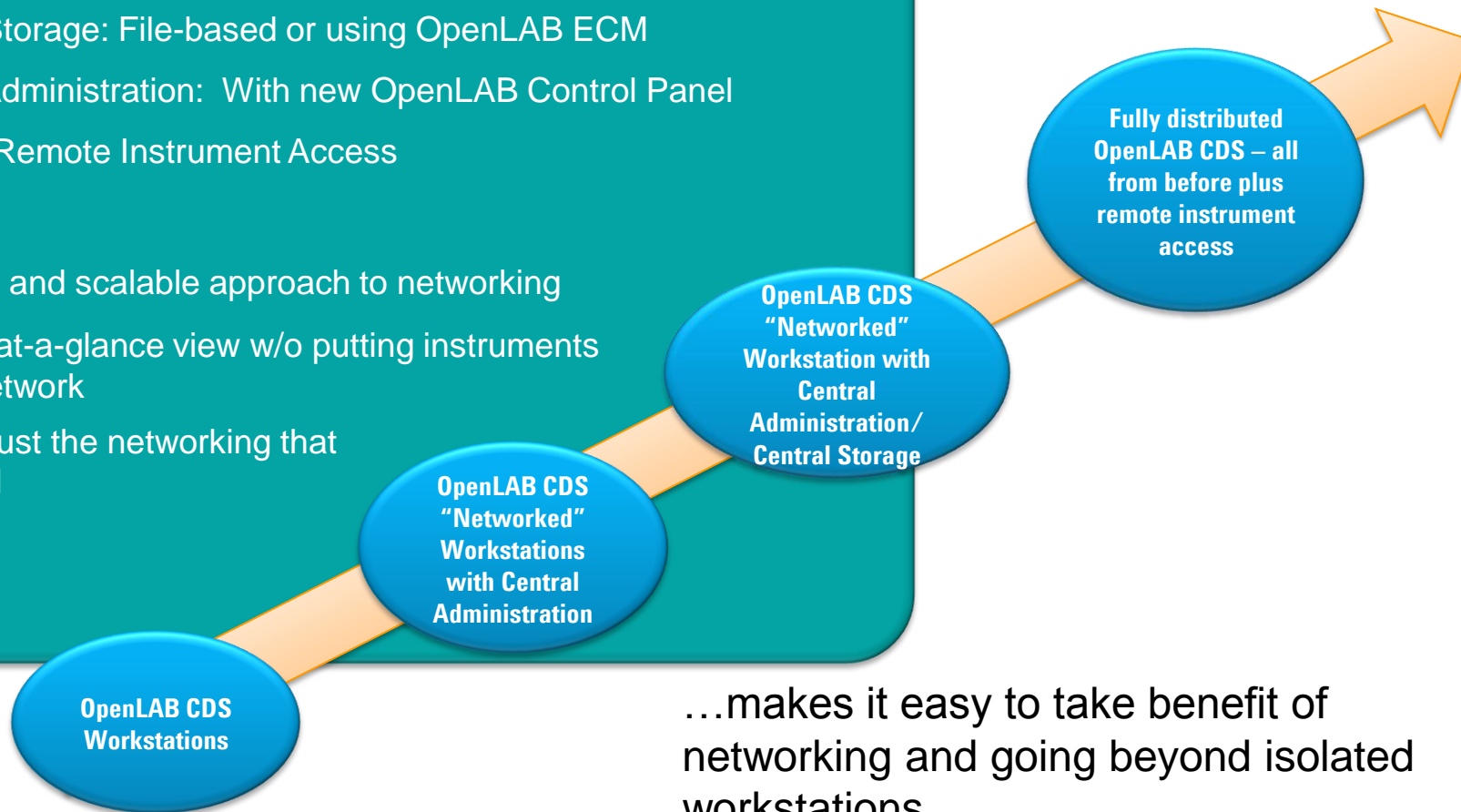


Flexible stepwise adaption of networking:

- Central Storage: File-based or using OpenLAB ECM
- Central Administration: With new OpenLAB Control Panel
- Local or Remote Instrument Access

Benefits:

- Stepwise and scalable approach to networking
- Get Lab-at-a-glance view w/o putting instruments on the network
- Choose just the networking that you need



...makes it easy to take benefit of networking and going beyond isolated workstations



OpenLAB CDS Configurations: Workstation-only

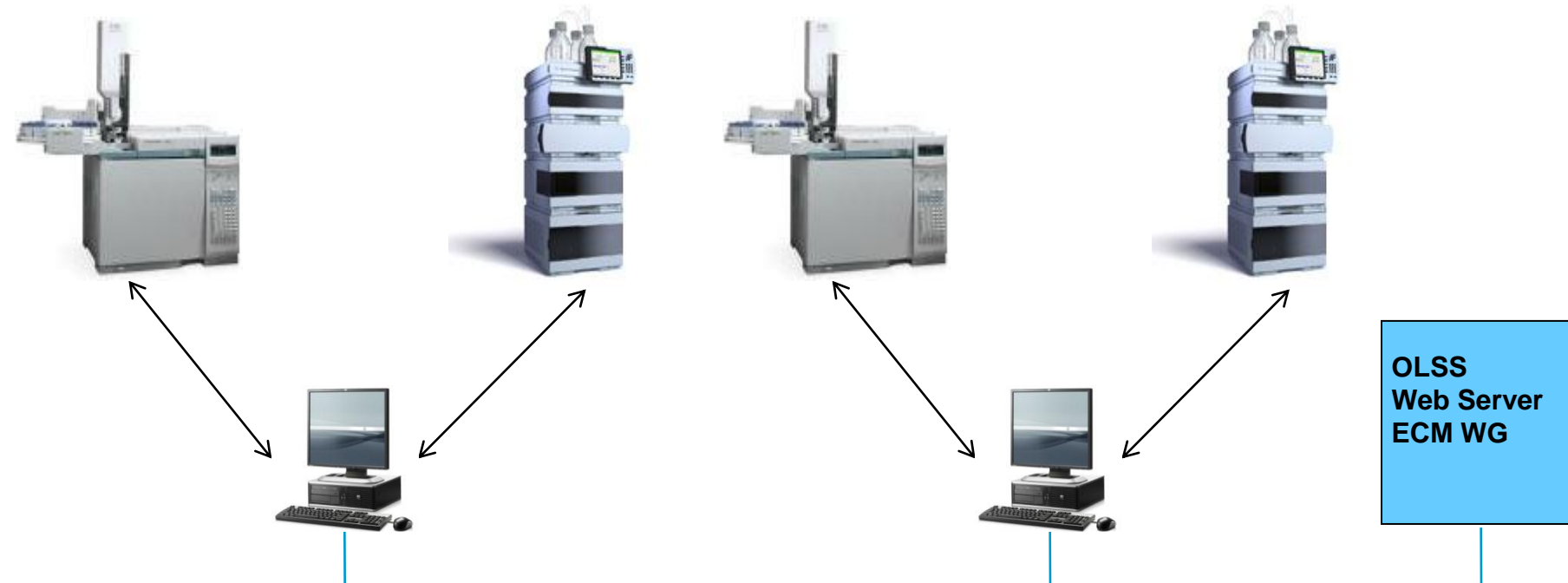


- **Instrument Control:** Local on each workstation
- **Administration:** Local OpenLAB Control Panel on each workstation
- **Storage:** Local on each workstation
- **Benefits:**
 - Simple to install/upgrade
 - Complete network-independence

Fits well with:

- Laboratories who just bought a new instrument and need software to run it
- Current ChemStation/EZChrom laboratories with limited budget wanting to benefit from new features

OpenLAB CDS: Networked Workstations compliant



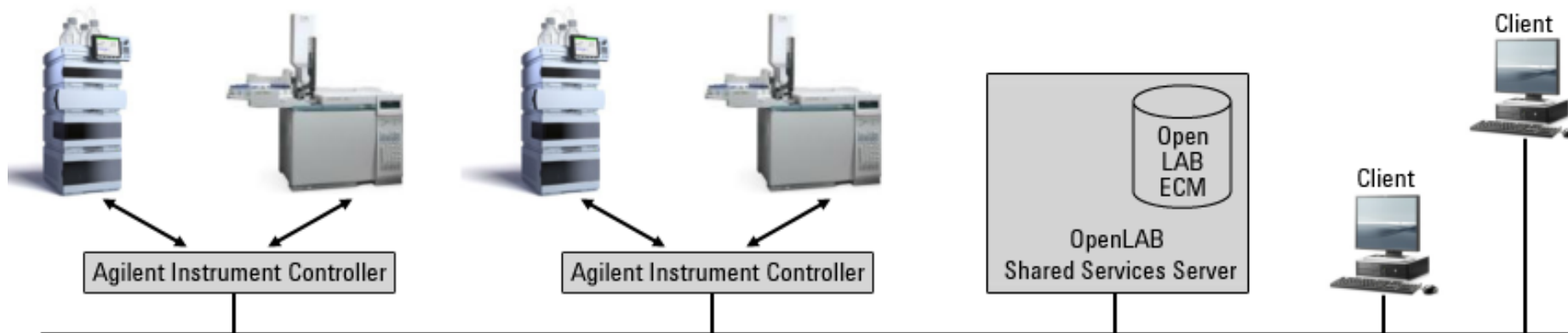
Lab at a Glance



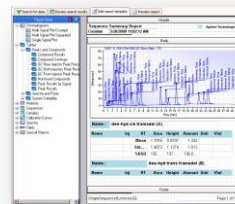
OpenLAB CDS – Fully Distributed Configuration



OpenLAB CDS Configurations: Distributed Chromatography Data Systems



- **Instrument Control:** Remote access via Agilent Instrument Controllers (AICs) from anywhere
- **Administration:** Central
- **Storage:** Central (OpenLAB ECM)
- **Benefits:**
 - Central administration (users, licenses, user privileges)
 - Instrument status information (lab-at-a-glance view)
 - Result data available from anywhere
 - Storage in central OpenLAB ECM with database storage
 - Remote instrument access from anywhere
 - Buffered data acquisition
 - Remove PCs from the laboratory – save precious benchspace



Optional Database reporting

Fits well with:

- Laboratories in need for a fully distributed CDS, who look for a database storage of their data for searching and reporting

OpenLAB CDS: The Control Panel



Central point for:

- Lab-at-a-glance view
- Administration of users, storage and instruments
- Launching ChemStation or EZChrom instruments

New look and feel:

- Intuitive
- Easy-to-use
- **Support and troubleshooting:**
- Central access to all config and log files

The screenshot displays the Agilent OpenLab LaunchPad interface. At the top, there are two sets of management buttons for 'Instruments' and 'Locations', each with 'Create', 'Edit', 'Delete', 'Edit Access', and 'Edit Notifications' options. Below this is a navigation pane on the left with 'Instruments', 'Projects', and 'Configuration' sections. The main area shows a table of instruments:

Name	Application	Type	AIC
GC 2000 Series	ChemStation	Agilent 1100 / 1200 Series	AIC Santa Clara
LC 1800 Series	EzChrom	Agilent 1100 / 1200 Series	AIC Pleasanton
Inst1	ChemStation	ChemStation Driver	AIC Pleasanton
1290_1	ChemStation	ChemStation Driver	AIC Santa Clara
1290_2	EzChrom	Agilent 1100 / 1200 Series	AIC Pleasanton
roche1	EzChrom	Agilent 7890 GC	AIC Pleasanton

Below the table, there is a 'Roles management' window showing a list of roles:

Name	Description
Administrator	Administrator Role
Global User Security Administrator	Global User Security Administrator Role
Instrument Administrator	Instrument Administrator Role
Project Administrator	Role_ProjectAdministrator_Description
Signature level 1	Signature role level 1
Signature level 2	Signature role level 2
Signature level 3	Signature role level 3
Signature level 4	Signature role level 4
Signature level 5	Signature role level 5

Blue callout boxes highlight key features: 'Lab-at-a-glance view' points to the Instruments table, 'EZChrom and ChemStation in one application' points to the top management buttons, and 'Scalability for instrument management and administration' points to the Roles management window.

SUPERRIOR INSTRUMENT CONTROL



Right-click
for Menu

Sequence | Pause | Resume | Stop | INFINITY SW.M | Infinity Course.Method

Module	Status	Parameter 1	Parameter 2	Parameter 3	Parameter 4
HiP Sampler	Idle	0.0 µL	4 °C	0.0 µL	4 °C
Binary Pump	Idle	60.0	40.0	1.000 ml/min	208.53 bar
Column Comp.	Idle	Port 1 -> 2	35.00 °C	25.67 °C	Valve position Port 1 -> 2
DAD	Idle	WL	BW	RefWL	RefBW [mAU]

192.168.254.11 | 0.00 / 0.00 | Instrument Idle | On | Off

1290 Infinity BinPump | Idle

- Control...
- Method...
- Set Error Method
- Identify Device
- Switch Pump Off
- Switch Solvent Selection Valve A
- Switch Solvent Selection Valve B
- Bottle Fillings
- Purge On
- Prime On

Module with
Status

1290 Infinity BinPump | Idle

20.0 | 80.0

0.500 ml/min

11.93 bar

0.00 / 0.00

Multi Vender Instrument Control in the OpenLAB CDS



- ✓ Agilent 7820, 7890, 6890, 6850, 5890II, Micro GC & Headspace Systems
- ✓ Agilent 1100 / 1120 / 1200 LC and 1290LC

Plus

Shimadzu*

- ✓ Hitachi partly*
- ✓ Perkin Elmer

Thermo*

- ✓ Varian
- ✓ Waters
- ✓ Jasco
- ✓ Vici
- ✓ CTC

New drivers being continually added...
Clarus series x00 just released
Available over „DriverCentral soon
X80 will follow

*Driver currently not available from vendor due to missing Win 7 Support



OpenLAB CDS: Intelligent Reporting



Intuitive report template generation with drag & drop and interactive report preview functionality

Pre-configured report items (tables, graphics, matrices) make it easy to generate custom reports

New custom reporting application –embedded into OpenLAB CDS

Easily include graphics such as your company logo

Sample Name	Tramadol Wt	Tablet Wt	% Target	Pass/Fail
Sample 1	1007.385	1110	100.7	Pass
Sample 1	1007.929	1110	100.8	Pass
Sample 2	1005.274	1120	100.8	Pass
Sample 2	1009.424	1120	100.9	Pass
Sample 3	1011.853	1003	101.2	Fail
Sample 3	1014.773	1003	101.5	Fail
Sample 4	1010.703	1205	101.1	Fail
Sample 4	1012.401	1205	101.2	Fail
Sample 5	1008.512	1170	100.9	Pass
Sample 5	1007.758	1170	100.8	Pass
Sample 6	1012.712	1111	101.3	Fail
Sample 6	1015.278	1111	101.5	Fail

Embedded custom calculation functionality to calculate final results – here %label claim

Intelligent Reporting: Including limit checks into report Decision-based result representation (pass/fail)

All current reporting options in ChemStation and EZChrom remain available

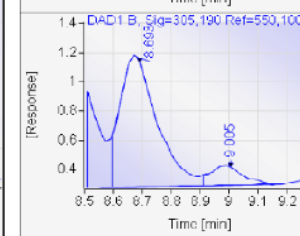
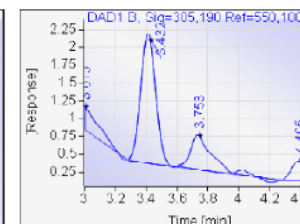
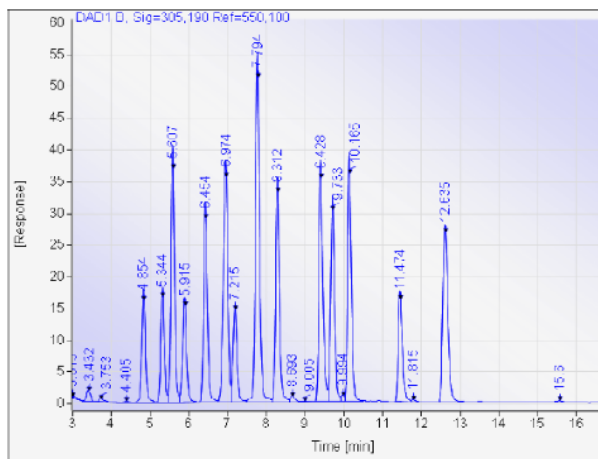
Minor component analysis



Minor Component Analysis

Creation Date: 6/9/2010 3:57:45 PM

Sample_Name PAH



Region 1 Peaks

RT	Area	Area Percent
3.432	12.4342	0.40
3.435	19.6959	0.23
3.753	4.5677	0.15

Region 2 Peaks

RT	Area	Area Percent
8.688	19.2821	0.22
8.693	8.2108	0.27
9.005	0.9892	0.03

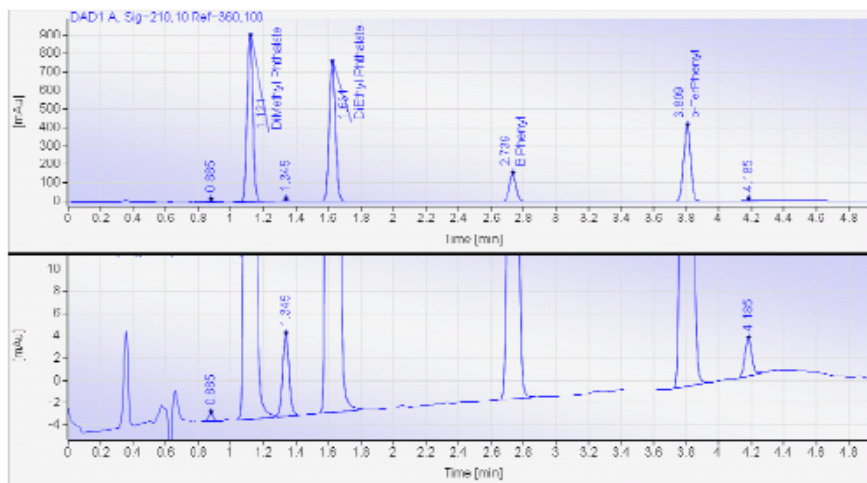
Multiple chromatograms or spectra per page

Enhanced Result Review



Instrument: AgITrnLab1412
Inj. Date/Time: 4/11/2007 9:58:20 PM **Operator:** Roy McCune
Acq. Method: CSEXAMPLE.M **Injection:** 1 of 1
Proc Method: CSEXAMPLE.M **Data file:** SIG1000019.D
Inj. Volume: 5

Enhanced Result Review:
Chromatograms in multiple
scale on one page



Sample Name: AgITrnLab1412

Name	Signal	RT	Area	Height	Amount Unit
DiMethyl Phthalate	DAD1A	1.121	2168.8835	908.1318	10.284 ng/ul
DiEthyl Phthalate	DAD1A	1.631	2015.7975	757.8688	11.801 ng/ul
BiPhenyl	DAD1A	2.739	425.5811	140.9147	9.870 ng/ul
o-TerPhenyl	DAD1A	3.809	1187.8146	405.9807	10.420 ng/ul

Intelligent: Flagging of Out-of-Spec values



- Flag outliers by pass/fail criteria using conditional formatting
- Automatically sort results, etc.

System Suitability Test

Failed tests are marked red

	Amount	RSD(RT)	RSD(Area)	HW-Resolution	PW	K'	S/N
des-hyd cis tramadol (C)	0.804	0.019	1.456	15.247	-0.041	21.547	10.076
des-hyd trans tramadol (B)	0.748	0.025	1.846	3.854	-0.135	22.639	7.584
o-desm tramadol (D)	0.816	0.059	2.648		0.281	7.088	7.813
TRAMADOL	1004.590	0.057	0.099		42.381	5.150	2094.055
trans- tramadol (A)	0.812	0.065	2.346	6.892	0.100	11.992	7.931

List of NOT found compounds is empty

Applied rules for system suitability test

- 1.1 Precision of areas must be < 2 % rsd
- 1.2 Precision of retention times must be < 0.5 % rsd
- 1.3 Resolution must be > 2 for all peaks
- 1.4 Maximum peak width must be < 0.08 min at half height.
- 1.5 k' must be 5 < k' < 25
- 1.6 Signal-to-noise ratio must be > 50 for all peaks

Calibration Test

Failed tests are marked red

Compound and Calibration lvl	Amount	% Level	RSD(RT)	RSD(Area)
des-hyd cis tramadol (C)	1	0.821	0.082	0.285
	2	0.104	0.103	0.265
des-hyd trans tramadol (B)	1	0.765	0.076	0.268
	2	0.079	0.078	0.313
o-desm tramadol (D)	1	0.815	0.081	0.773
	2	0.093	0.092	0.933
TRAMADOL	1	1000.474	100.000	0.639
	2	100.654	100.000	0.532
trans- tramadol (A)	1	0.831	0.083	0.573
	2	0.089	0.089	0.526

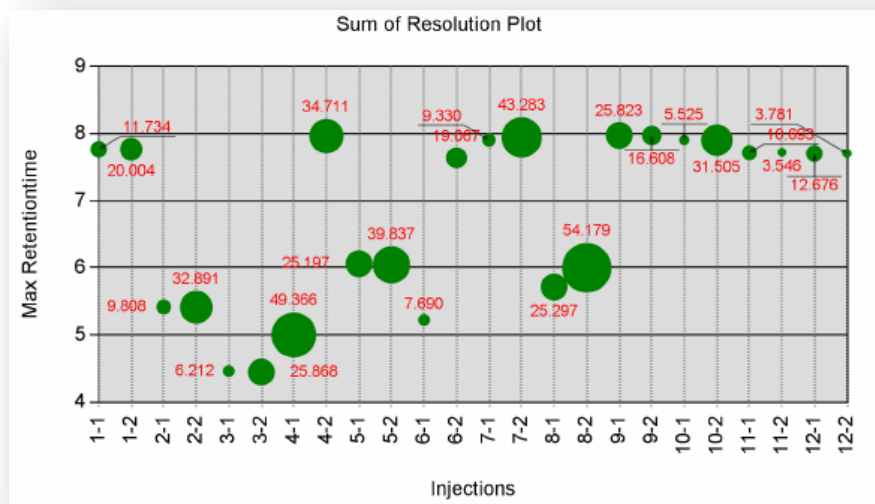
All calibrated compounds found

Powerful: Method Development Report

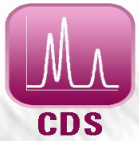


- Summary table with overview of found peaks and sum of peak resolution
- Summary bubble plot shows a graphical representation of the results

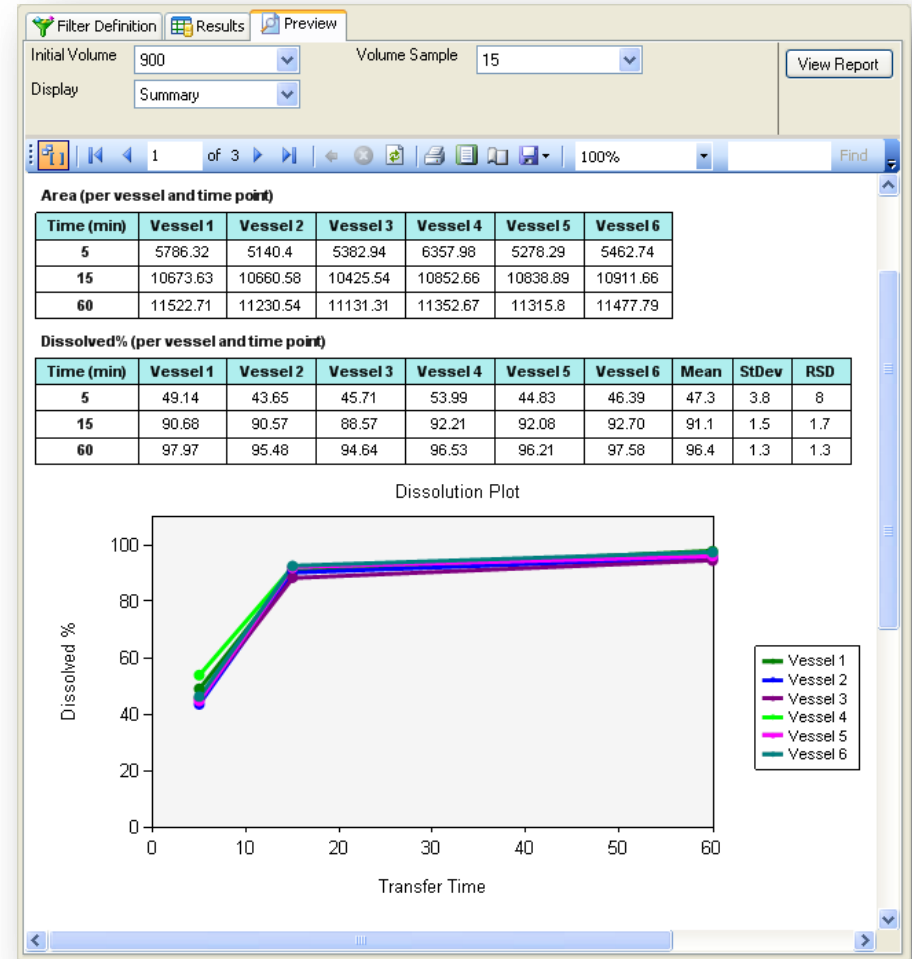
Method Development Results Summary			
Sequence :	METOPROLOL100N2008-07-30		
Signal:	DAD1 B, Sig=230,10 Ref=360,100		
Min. Area%:	0.5		
# Column / Solvent	# of peaks	Sum Resolution	Max RT
1-1 Chromatographic column: Zorbax SB C18, 2.1x50mm, 1.8µm Solvents: 95% A1: H2O (water+0.2%tfa), 5% B1: ACN (*0,16% TFA)	13	3.488	7.769
1-2 Chromatographic column: Zorbax SB C18, 2.1x50mm, 1.8µm Solvents: 95% A1: H2O (water+0.2%tfa), 5% B1: ACN (*0,16% TFA)	9	5.090	7.771
2-1 Chromatographic column: Zorbax Eclipse Plus, 2.1x50mm, 1.8µm Solvents: 95% A1: H2O (water+0.2%tfa), 5% B1: ACN (*0,16% TFA)	11	6.275	2.866



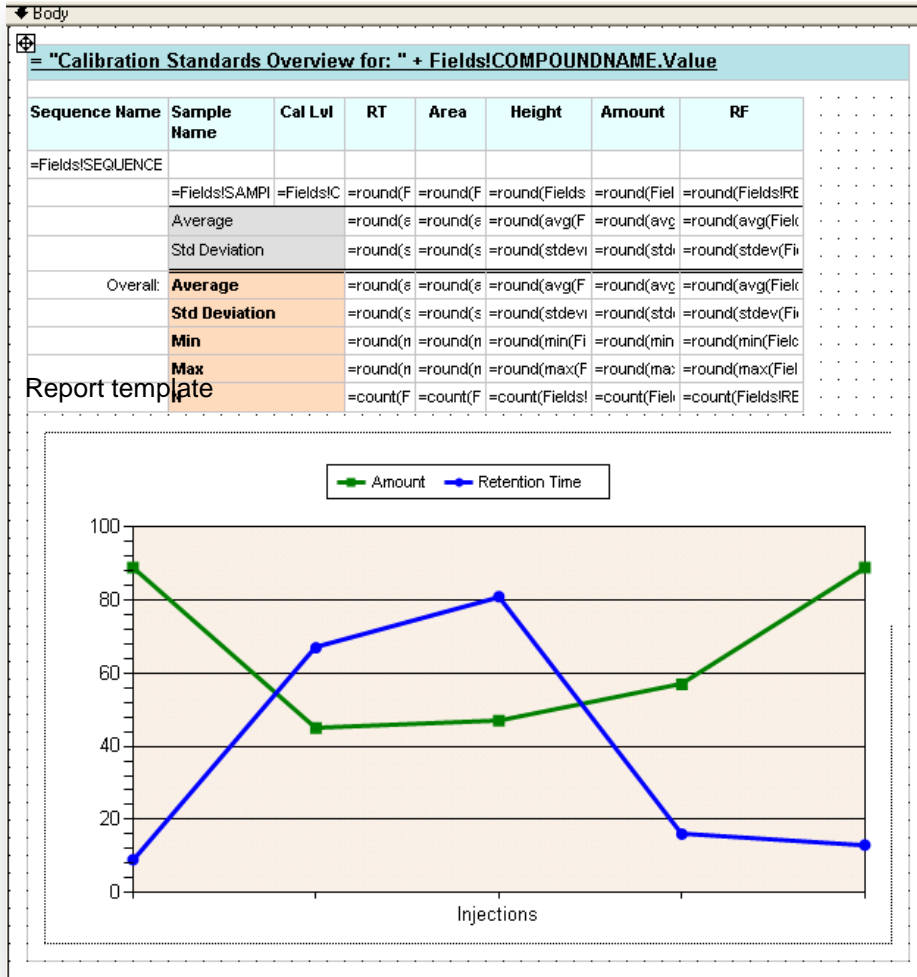
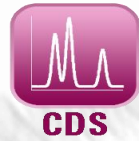
Powerful: Dissolution Testing Report



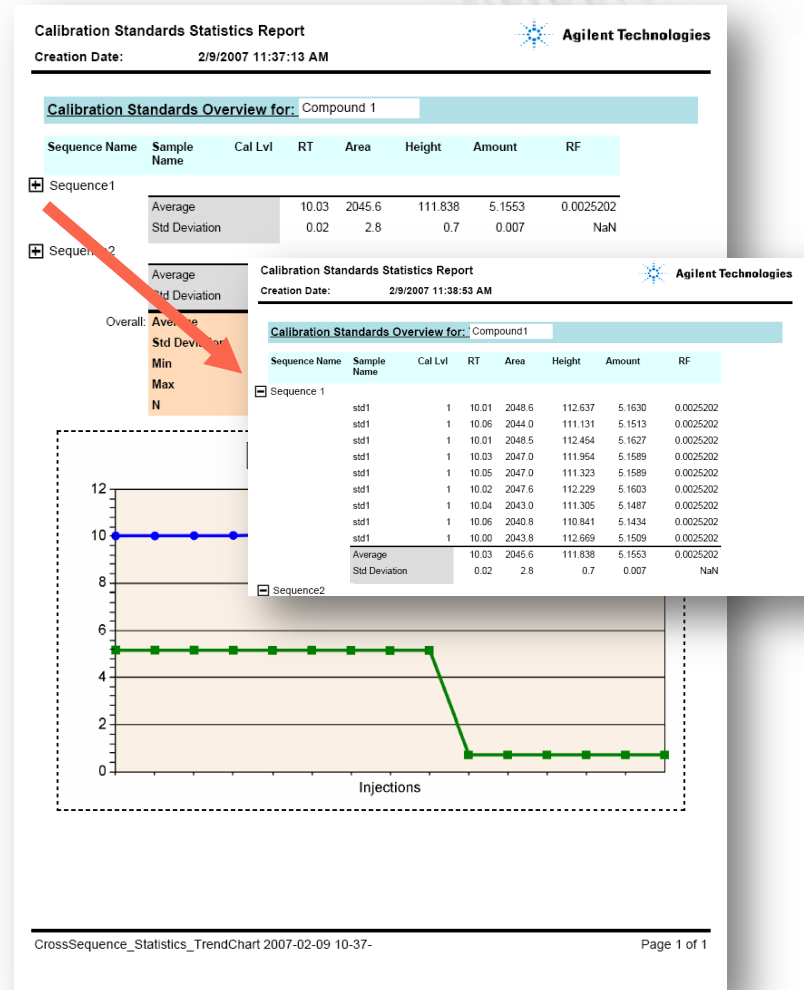
- Reports dissolution profile in table and trend chart format
- Calculates volume correction of samples based on initial volume and volume withdrawn
- Overlay of plots from different vessels



Powerful: Cross Sequence Statistics with Trend Chart *



*Requires OpenLAB ECM Intelligent Reporter



Reports with interactive elements when viewed online

Intelligent reporting HPI Example



- BTU Report Kit
- Technical note
 - Report Template
 - Data

Calorific Value Summary Report

Zone 1

Instrument: Calorific Value

Inj. Date/Time: 11/27/2001 12:22:57 PM

Proc Method: BTU Test_VBS4.met

Operator: fogadmin

Injection: 1 of 1

Data file: btu2010.dat

Zone 2

Compound Summary

Ch	Name	ESTD Conc	Norm Mole%	MW Contrib	Gross Heat Contrib	Gross SG
A	Hydrogen	22.200	22.205	0.448	71.988	0.016
A	Oxygen	0.010	0.010	0.003	0.000	0.000
A	Nitrogen	2.030	2.030	0.569	0.000	0.020
A	Methane	18.980	18.984	3.046	191.739	0.105
A	Carbon monoxide	1.990	1.990	0.558	6.379	0.019
B	Carbon dioxide	4.030	4.031	1.774	0.000	0.061
B	Ethylene	1.000	1.000	0.281	16.001	0.010
B	Ethane	1.980	1.980	0.596	35.046	0.021
B	Acetylene	1.930	1.931	0.503	28.466	0.017
B	Hydrogen Sulfide	0.480	0.480	0.164	3.059	0.008
C	n-Propane	8.025	8.026	3.639	201.952	0.122
C	Cyclopropane	0.999	0.999	0.420	22.920	0.015
C	Propylene	3.967	3.968	1.670	92.562	0.058
C	n-Butane	2.008	2.009	1.167	65.528	0.040
C	trans-2-Butene	3.960	3.961	2.222	121.519	0.077
C	1-Butene	1.000	1.000	0.561	30.806	0.019
C	iso-Butene	7.950	7.952	4.461	243.409	0.154
C	cis-2-Butene	1.990	1.990	1.117	61.150	0.039
C	iso-Pentane	1.990	1.990	1.438	79.635	0.059
C	n-Pentane	3.990	3.991	2.879	159.989	0.117
C	1,3-Butadiene	1.000	1.000	0.541	28.805	0.019
D	iso-butane	7.980	7.982	4.639	259.556	0.160
D	Hexanes plus	0.490	0.490	0.468	23.309	0.016

Specific Gravity: 1.48
Avg Mol Wt: 33.06
Gross BTU / CF:

BTU_IR_EE_VBS8.rdl [0] Created by FIT Consulting Group, LLC

Calorific Value Summary Report

Channel A

Channel B

Channel C

Channel D

More OpenLAB CDS information:

Inquire about more applied solutions:

BTU_IR_EE_VBS8.rdl [0] Created by FIT Consulting Group, LLC Page 2 of 2

OpenLAB CDS

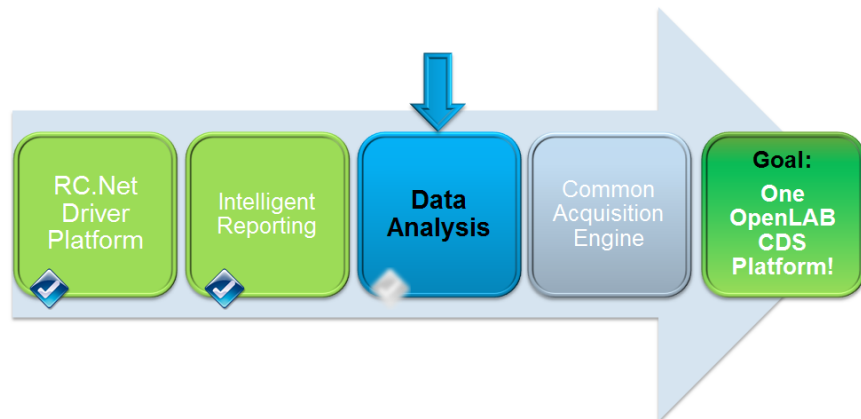
New Data Analysis platform



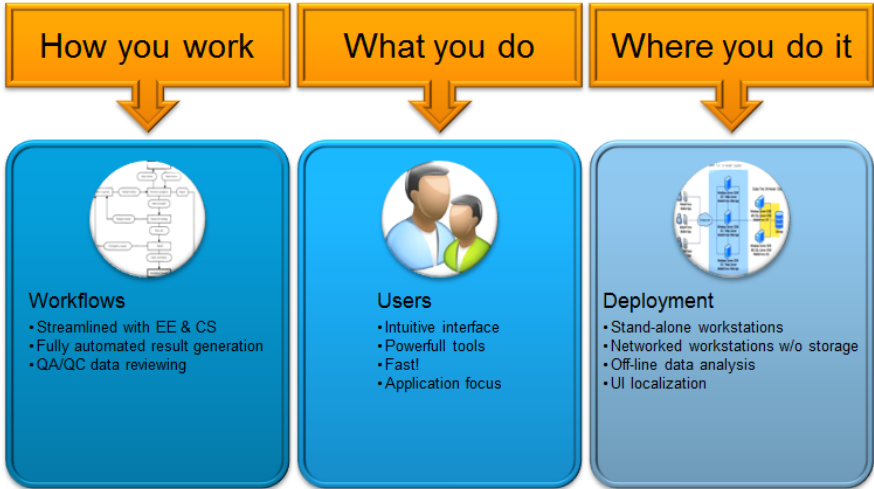
Bringing you an Unique Data Analysis Experience!

OpenLAB Data Analysis: What is it?

- ✓ Next step in OpenLAB **Consolidation** Strategy
- ✓ October Release focuses on **HPI ASTM D6584** Biodiesel
- ✓ Value Proposition:
 - Faster** from sample to result
 - Easier** results with less effort
 - Smarter** tools to improve your performance



Improve Customer Productivity in HPI



OpenLAB CDS

New OpenLAB Data Store with Lab Applications

Starting
1 Nov 2012 !!!
For small Customer
up to 15
instruments very
Limited compared
to ECM



Questions

Thank you

