

# **Analytical Information Management for the IODP Riserless Drilling Vessel**

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# Project Framework

- Scientific Ocean Drilling Vessel (SODV)
  - Laboratory upgrades
  - Operational upgrades
  - Need for graphical capabilities
  - Need to replace aging application software
- Integrated Ocean Drilling Program (IODP) Initiatives
  - Common data portal for all Implementing Organizations (IO)
  - Common sample management for all IO
  - Implementation of quality control for consistent information capture

# Design Goals

- Create independent data systems to support specific purposes.
- Link these systems to each other and to applications in a loosely coupled environment
  - The linkages will not be dependent on specific database schemas.
  - Linkages follow IODP-MI plans for metadata capture.
  - Linkages can be reused to connect to external applications.
  - Applications we develop can be used on any data system that matches the linkage.
- Do not duplicate data. Use it from where it is managed.
- Acquire capabilities where they are available and meet our requirements.

# Definition of LIMS

- “LIMS” - Laboratory Information Management System
- In its simplest sense, a LIMS is a relational database with a suite of supporting applications.
- We have selected a commercial LIMS vendor which provides a toolbox for configuring a system to meet our particular needs.

# LIMS Features: User Screens

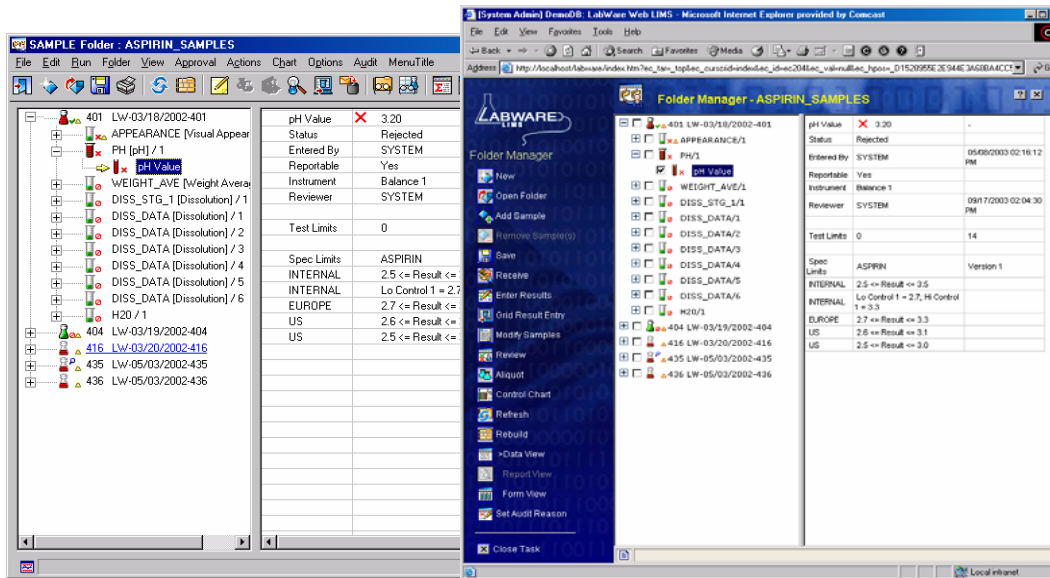
- User-configurable tools
  - Sample identification
  - Laboratory and sample workflow
  - Data capture
  - Equipment configuration and maintenance tracking
  - Quality control
  - Laboratory test and analysis definition and tracking
  - Laboratory consumables tracking

Line	Unit	Seq	Job	Phase	Activity	Job	Est. Start	Est. End	Est. Duration	Est. Status	Est. Comment
1000	300000	001	LAB_1	IN_PROCESS	WATER_WALL	EMP_WALLS	02	00	00	00	00
2000	300000	001	LAB_1	IN_PROCESS	WATER_WALL	EMP_WALLS	02	00	00	00	00
3000	300000	001	LAB_1	IN_PROCESS	WATER_WALL	EMP_WALLS	02	00	00	00	00
4000	300000	001	LAB_1	IN_PROCESS	WATER_WALL	EMP_WALLS	02	00	00	00	00

Name	Date	Status	Action	Lab	Sample ID	Violation	Comment	Priority	Contractor	Request no
Plant internal outfall H101	None	Not Ready	Laboratory	LABORATORY	0108 0000				NP-DE 3	0108000000
Plant internal outfall H201	None	Not Ready	Laboratory	LABORATORY	0108 0000				NP-DE 3	0108000000
ADD LAB			Laboratory	LABORATORY	A0000100	A-U			PLANT A	0108000000
Fluorocarbon	Refresh		Laboratory	LABORATORY	A0001000	01/10/01 R			PLANT A	0108000000
Heavy Magnesia	Fill		Laboratory	LABORATORY	A0001070	03/10			PERFORMER	0108000000
Heavy Gas Oil	Print Labels		Laboratory	LABORATORY	A0001071	03/09/03			PLANT A	0108000000
Waste outfall H1	Collect		Laboratory	LABORATORY	A0001072	03/09/03			PERFORMER	0108000000
Waste outfall H1	Collect		Laboratory	LABORATORY	A0001073	03/09/03			PERFORMER	0108000000
Light Oil Magnesia	Collect		Laboratory	LABORATORY	A0001074	03/09/03			NP-DE 3	0108000000
Plant internal outfall H	Collect		Laboratory	LABORATORY	A0001075	03/10			PERFORMER	0108000000
Plant internal outfall H	Collect		Laboratory	LABORATORY	A0001076	03/10/03			NP-DE 3	0108000000
Plant internal outfall H	Collect		Laboratory	LABORATORY	A0001077	03/10/03			NP-DE 3	0108000000

# LIMS Deployment

- Data capture and reports are available to both client server and web deployment with no additional development.



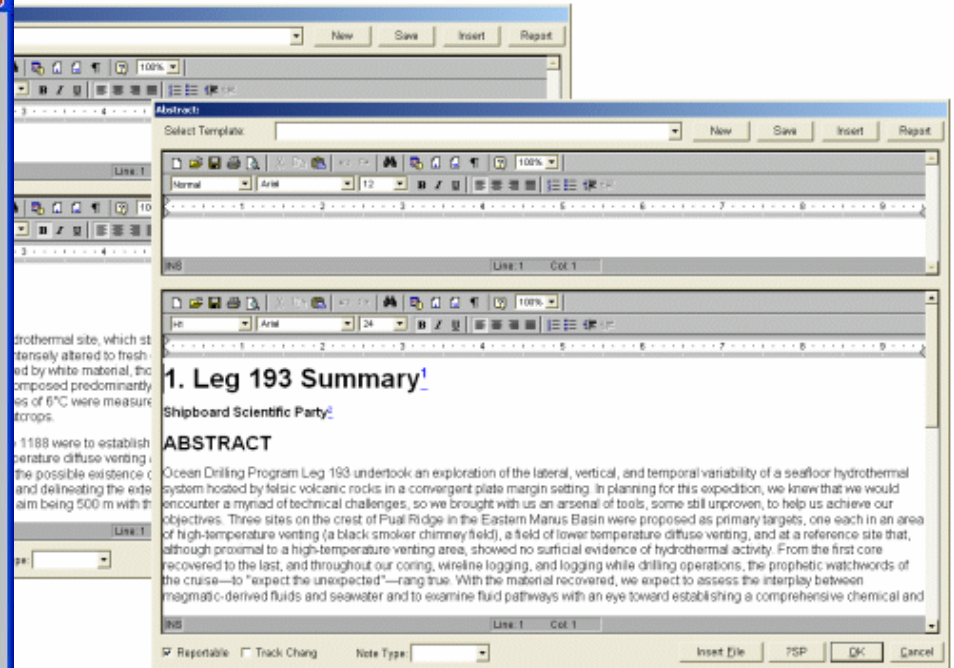
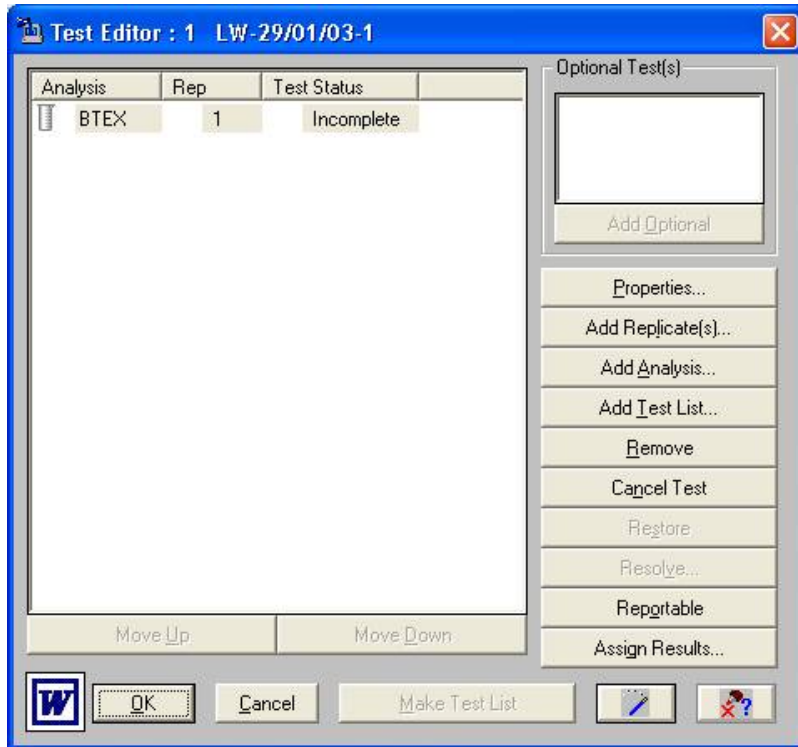
Network-based

Web-based



PDA-based

# LIMS Features: Document Access



- Simple linkage to external documents

# LIMS Features: Reporting

- Crystal Reports™ - On the fly user-configurable data reporting with graphic capabilities

The screenshot displays the LabWare LIMS software interface. The main window is titled 'SAMPLE Folder : Folder of Samples Logged by Date'. The left pane shows a file explorer with folders like 'SPLS\_LOGGED\_BY\_DATE', 'SAMPLES\_TO\_RECEIVE', and 'ASSIGNED\_SPLS'. The main area shows a 'Sample Summary Report' for 'Sample #4091, LW-05/04/2005-4091'. The report includes a header with the LabWare logo and 'LabWare, Inc. Three Mill Road Wilmington, DE 19880'. Below the header, a table lists various attributes such as Status, Released, Sample Template, Assigned Operator, Description, Standard, Test List, Product, Product Version, Product Grade, Sampling Point, Stage, Spec Type, In Spec, In Control, In Calibration, and External Link. At the bottom, a table shows test results for 'FF-2345-ID' and 'FF-2345-CA'.

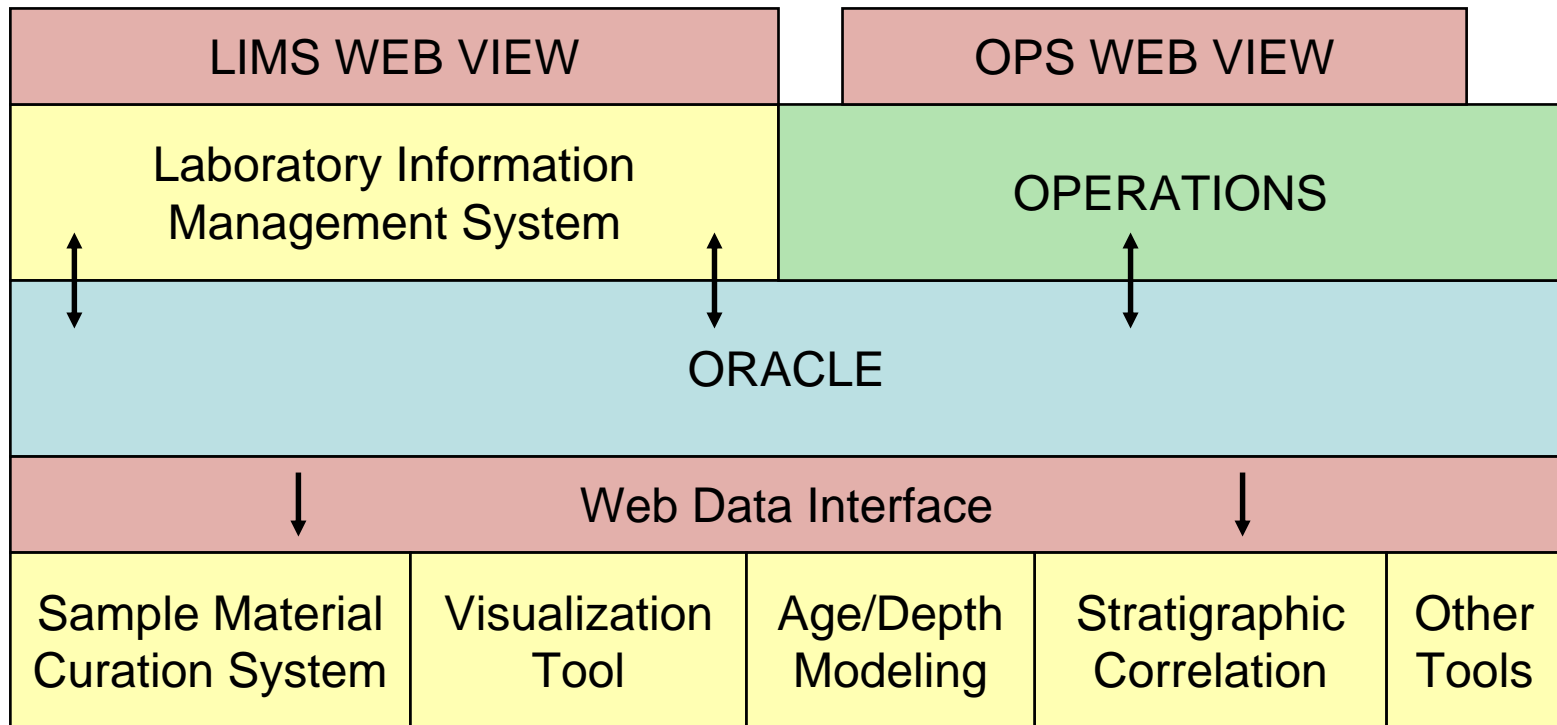
Test / Rep	Status	Component	Result Value	Analyst
FF-2345-ID	Authorized	Identity	Custom 2	SYSTEM
FF-2345-CA	Authorized	Assay/1	100.43	SYSTEM
		Assay/2	100.10	SYSTEM
		Average Assay	100.25	SYSTEM



# LIMS - Summary

- Large application set and tool box for providing analytical information capture and management.
- Supports web delivery of capabilities
- Does not provide:
  - Data analysis
  - Borehole visualization
  - Instrument control

# Information System Context



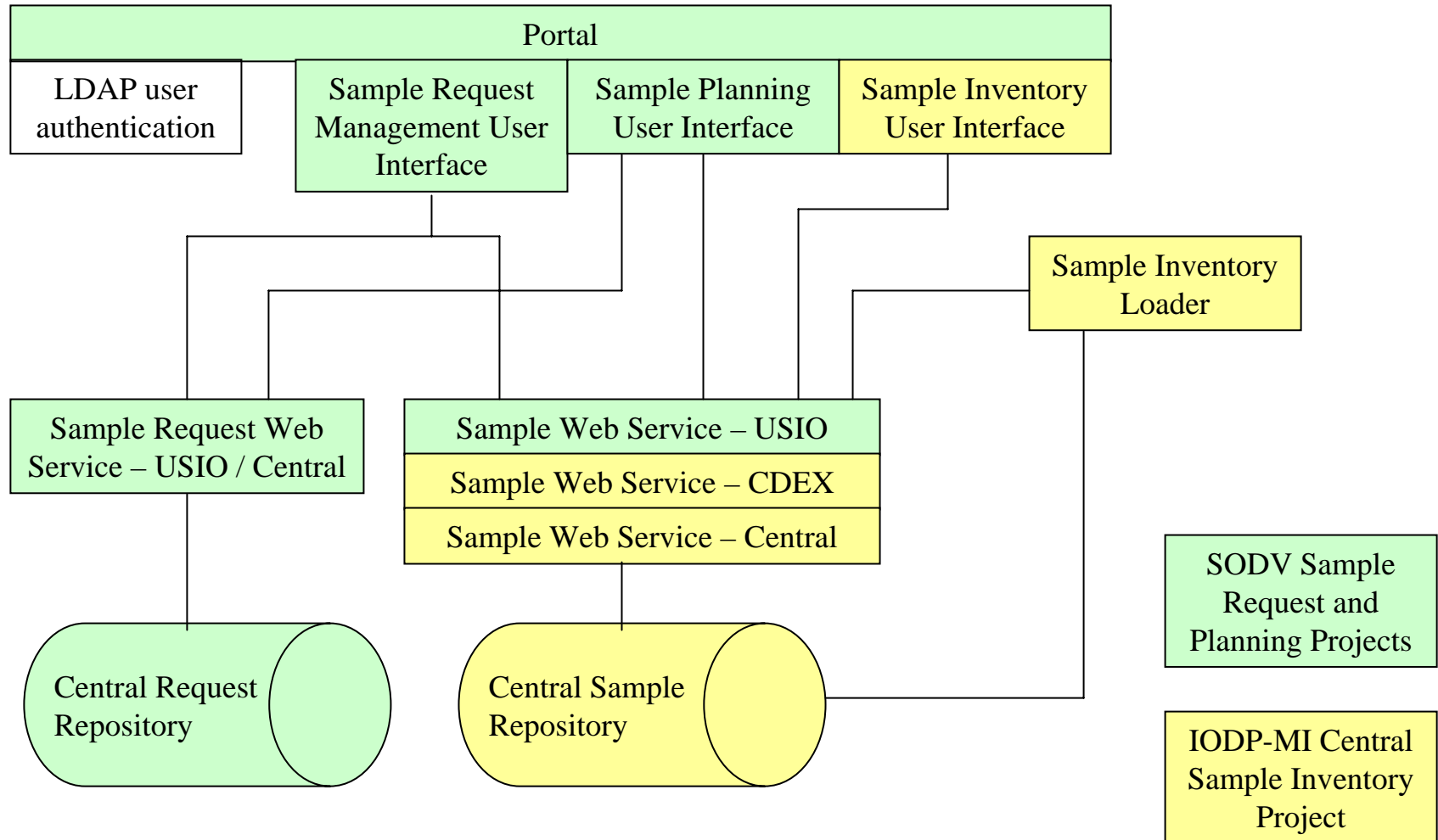
# SMCS

## Sample Material Curation System

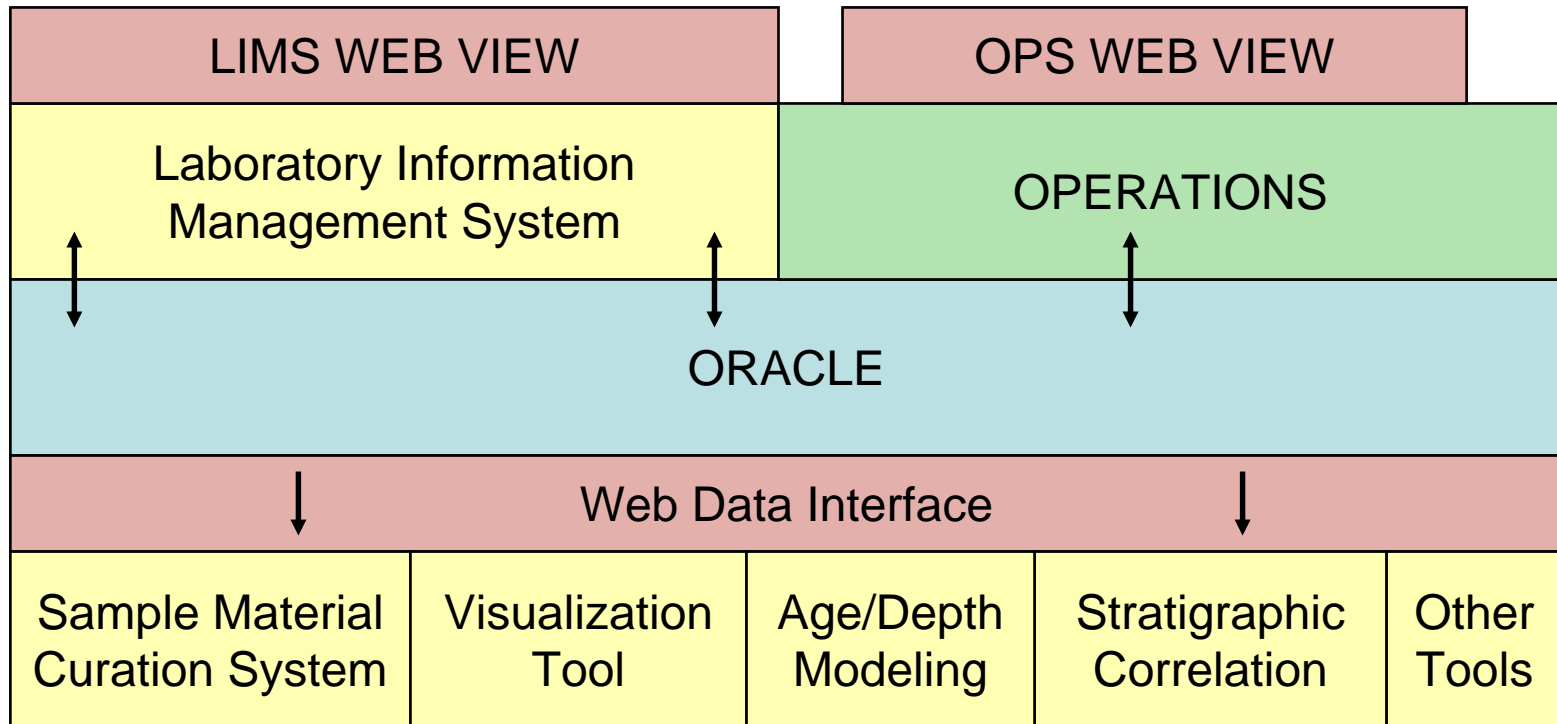
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- Sample Request Management
- Sample Planning – requirements under development
  - Provide a tool for planning how to take requested samples from existing or planned source material
- Central Sample Inventory
  - Consolidated inventory of samples from all IO.
  - Maintained by the IO through data exchange

# SMCS - OVERVIEW



# Information System Context



# Questions ?

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