

Using the AnIML Data Standard to Facilitate Collaboration Across Organizational Boundaries

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BSSN Software



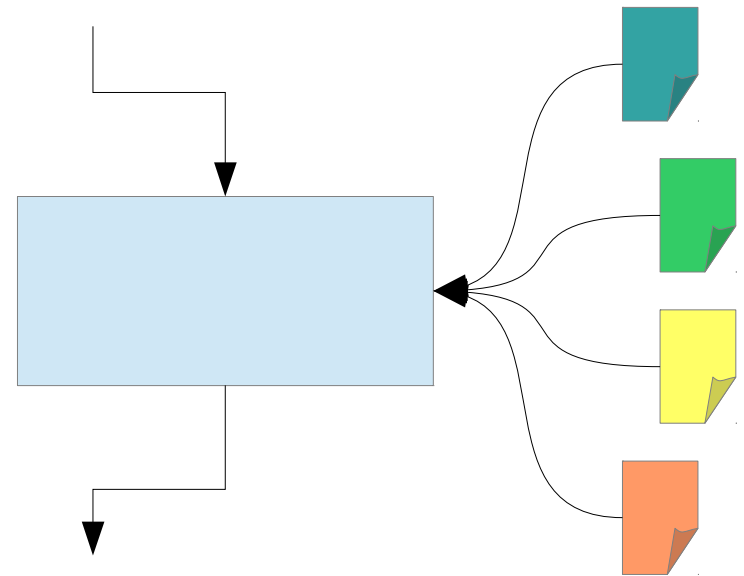
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Case Study Outline

- Process development project for a global pharmaceutical company
- Transitioning from a monolithic group into centers of excellence at multiple sites, orchestrating a network of partners
- Collaboration with internal and external partners
- Integration of ~80 instrument (~20 types)
- Data analysis to assess process quality

Project Challenges

- Holistic management and execution platform for collaborative projects with internal & external partners
- Task coordination
- Process insights:
 - Status and updates
 - Bottlenecks
- Data review, quality control
- SLA enforcement
- Result delivery and integration

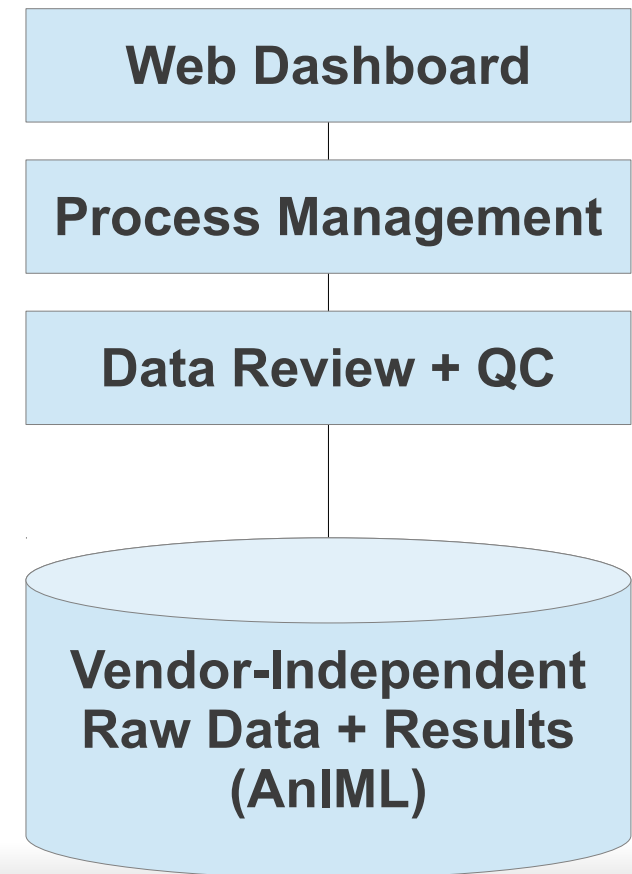


The Goal

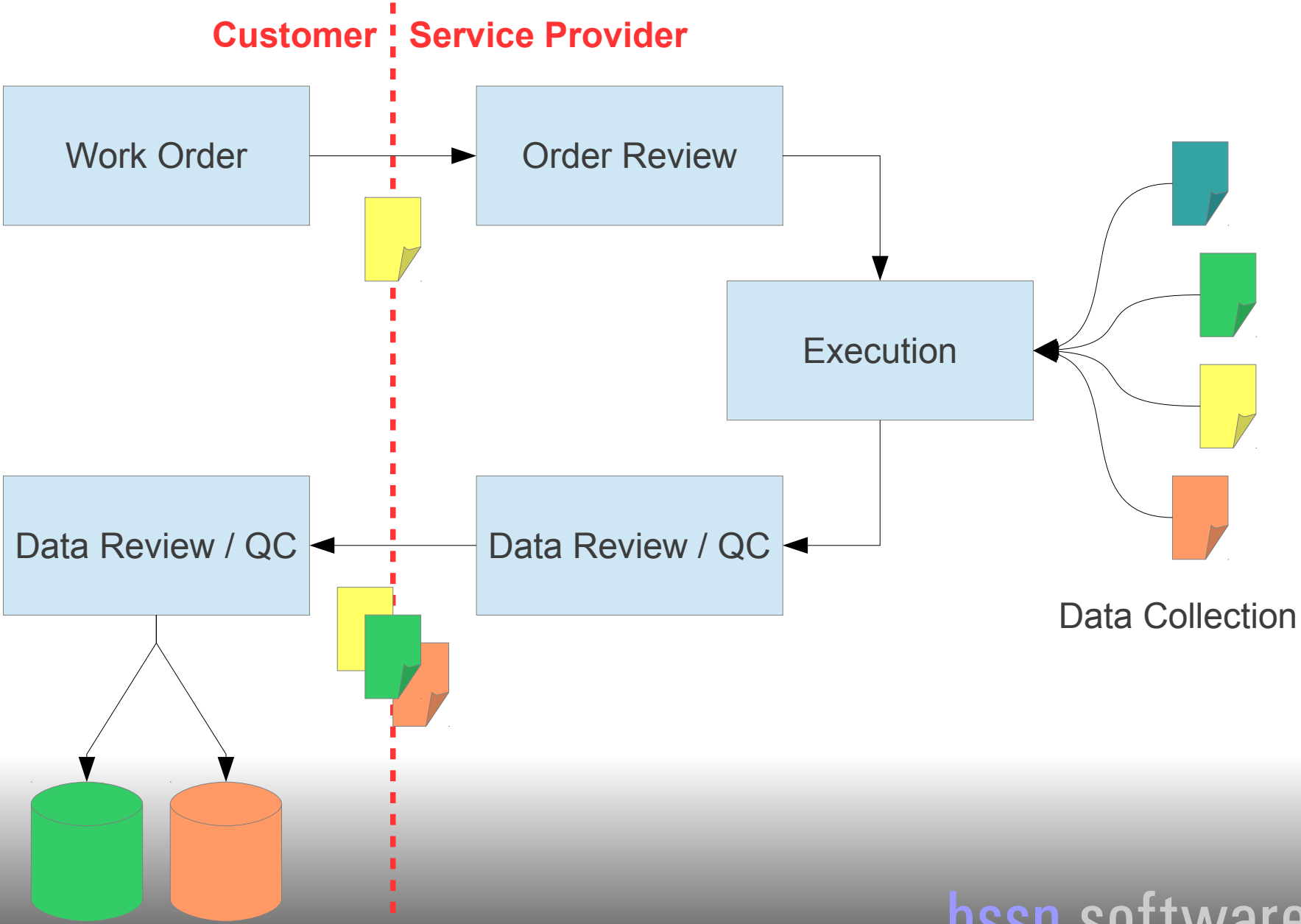
- Allow running collaborative projects efficiently
- Achieve the same “quality” as if done in-house

The Approach: Zero Footprint

- System which sits between organization and the partner
- Web dashboard
 - Process management
 - Deployed in the cloud (private or public)
- Rich client
 - Interactive data visualization
 - Delivered via Java Webstart



Cross-Organization Workflows



Data Formats

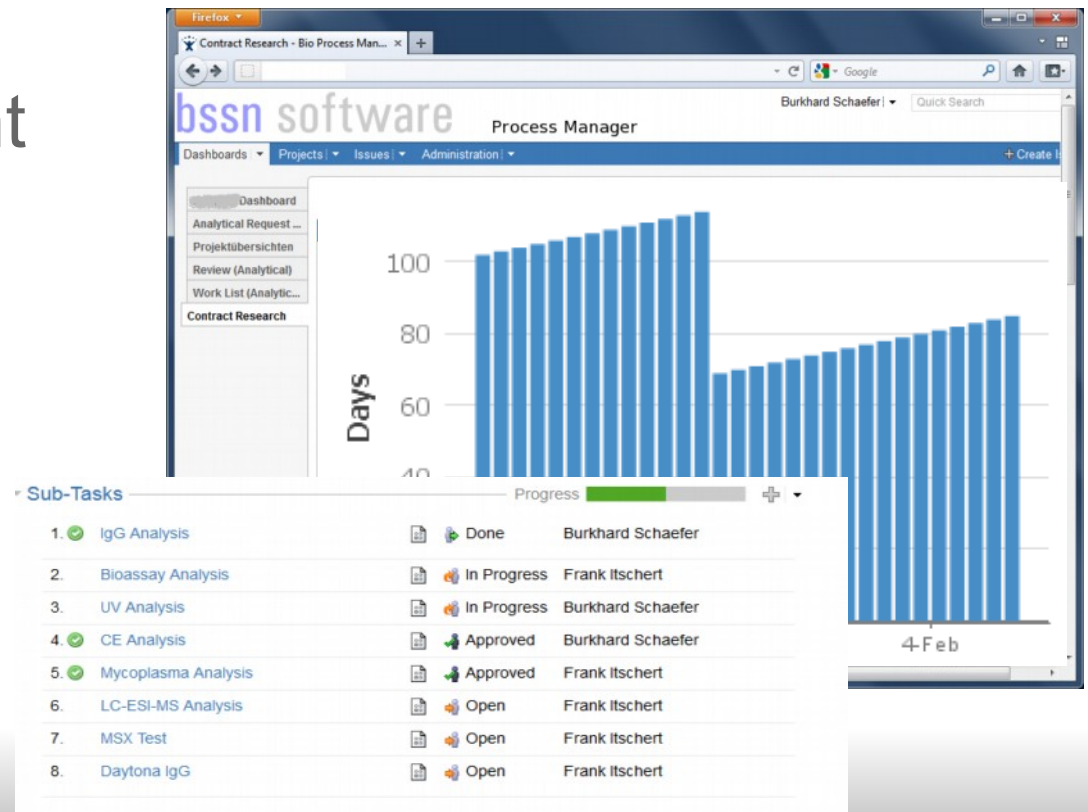
- Every allowed data format constitutes a liability
- Software to read the format needs to be preserved as long as the format is current
- Long tail impacts total cost of ownership
- Why not PDF?
 - Stores text and image output, not the underlying data
 - Can not be post-processed, aggregated and analyzed

Data Format Policy

- Original data is attached during process
- Companion file in AnIML format is generated
- Allows going back to original data for reprocessing
- Allows exchanging data with partner who may not support the original format

Process Insights

- Configurable set of dashboards
- Drill-down to
 - Individual experiment
 - Supplemental data
 - Raw data
 - Audit trails



Data Review and QC

- Separate data review cycles on partner and customer end
- Tool for data review and analysis
 - Vendor-Independent
 - Method-Independent



Data Review and QC

The screenshot displays the Seahorse Scientific Workbench interface. On the left, the BPM Navigator shows a project tree with various tasks. The central panel displays details for a specific task: "[SAR123457-6] UV Analysis". The right panel shows a visualization of the UV analysis data as a plot of Intensity (Absorbance, Arbitrary) versus Wavelength (Length, nm).

Task Details:

Certified Batch 1 (SAR123457-4)	
[SAR123457-6] UV Analysis Created	
Status:	In Progress
Project:	SAR123457
Type:	UV
Reporter:	Burkhard Schaefer
Resolution:	Unresolved
Remaining Estimate:	Not Specified
Time Spent:	Not Specified
Original Estimate:	Not Specified
Attachments:	Sample1.Sample.sp Sample3.Sample.sp
Sample ID:	B20109

Visualization Plot:

The plot shows Intensity (Absorbance, Arbitrary) on the y-axis (ranging from 0.00 to -2.75) versus Wavelength (Length, nm) on the x-axis (ranging from 100 to 800). Two data series are overlaid: a red line and a blue line. Both lines show a sharp negative peak at approximately 190 nm and several smaller peaks between 250 nm and 450 nm. The red line generally shows higher intensity (less negative) than the blue line in the 250-450 nm range.

Data Review and QC

The screenshot displays the Seahorse Scientific Workbench software interface. The main window is titled "Seahorse Scientific Workbench" and features a menu bar (File, Edit, Window, Help) and a toolbar with icons for Open Repository, BPM, Save, Import Techniques, Report, and About. The BPM Navigator panel on the left shows a tree view of projects and tasks, with "UV - SAR123457-6 - UV Analysis" selected. The Visualization window in the center shows a line graph with "Arbitrary" on the y-axis (ranging from -1.00 to 0.00) and "Intensity" on the x-axis. The graph displays two overlapping traces, one in red and one in blue, showing a series of peaks and troughs. The microplate.anim window in the foreground shows a data table for "MTP Absorbance Read" with columns 1 through 9 and rows A through P. The table contains numerical values for each cell, with some cells highlighted in red. The table is titled "Certified Batch 1 (SAR123457-4) [SAR123457-6] UV Ana" and includes fields for Status (In Progress), Project (SAR123457), Type (UV), Reporter (Burkhard Scha), Resolution (Unresolved), Remaining Estimate (Not Specified), Time Spent (Not Specified), Original Estimate (Not Specified), and Attachments (Sample 1.S). The Sample ID is B20109.

	1	2	3	4	5	6	7	8	9	Read
A	0.214286	2.948276	5.918719	3.369458	5.231527	2.150246	2.497537	3.812808	4.536	Method
B	8.504926	8.807882	9.679803	9.26601	10.05665	8.150246	8.320197	8.541872	8.290	Samples
C	10.14532	10.293103	10.278325	10.514778	10.810345	9.509852	10.618227	10.027094	9.746	Origin
D	10.640394	10.396552	10.344828	10.544335	10.396552	9.731527	14.179803	10.049261	9.384	Workflow
E	10.788177	13.293103	10.610837	10.736453	10.522167	10.293103	10.529557	10.522167	10.37	
F	10.655172	10.374384	10.315271	10.344828	10.137931	9.938424	10.100985	9.894089	14.23	
G	10.152709	10.758621	10.610837	10.721675	10.721675	10.618227	10.58867	10.544335	10.32	
H	10.492611	10.455665	10.463054	10.507389	10.278325	9.923645	10.078818	10.174877	9.879	
I	0.837438	3.280788	9.546798	0.022167	10.226601	6.495074	9.812808	8.82266	9.938	
J	7.293103	7.972906	11.246305	8.815271	10.004926	8.187192	10.226601	9.524631	9.923	
K	8.3867	9.103448	10.780788	9.679803	10.344828	9.502463	10.706897	9.775862	10.07	
L	8.889163	9.576355	10.211823	9.628079	9.908867	9.524631	9.849754	9.687192	9.591	
M	9.783251	10.093596	10.448276	10.226601	10.285714	10.226601	10.300493	10.536946	10.13	
N	9.598522	10.049261	10.100985	9.864532	9.938424	9.79064	9.738916	9.953202	9.635	
O	10.130542	10.359606	10.374384	10.352217	10.359606	10.522167	10.448276	10.477833	10.33	
P	10.566502	10.05665	10.248768	9.982759	9.931034	9.923645	10.123153	9.849754	9.731	

Data Review and QC

Seahorse Scientific Workbench

patient.animl

Samples

- Lee, Paula id=Patient 94326

Experiments

- Blood Panel 1 id=labcode 104235
- Blood Panel 2 id=labcode 104351
- Left Knee X-Ray id=radiography 106951359
- Left Knee MRI id=radiography 106951359

Blood Panel 1 Name: Blood Panel 1 ID: labcode 104235

Complete Blood Count

- Red blood cells: 44628013 cells/mcL
- White blood cell: 6240 cells/mcL
- Platelets: 312706 cells/mcL
- Hemoglobin: 10.6 g/dL
- Hematocrit: 39.2 %

Lipoprotein Panel

- Total Cholesterol Level: 204 mg/dL
- LDL Cholesterol Level: 139 mg/dL
- HDL Cholesterol Level: 61 mg/dL

Left Knee MRI Name: Left Knee MRI ID: radiography 106951359

MRI Scan

Description: T1 Sag SE

Slice: 13/24

Image:

Blood Test

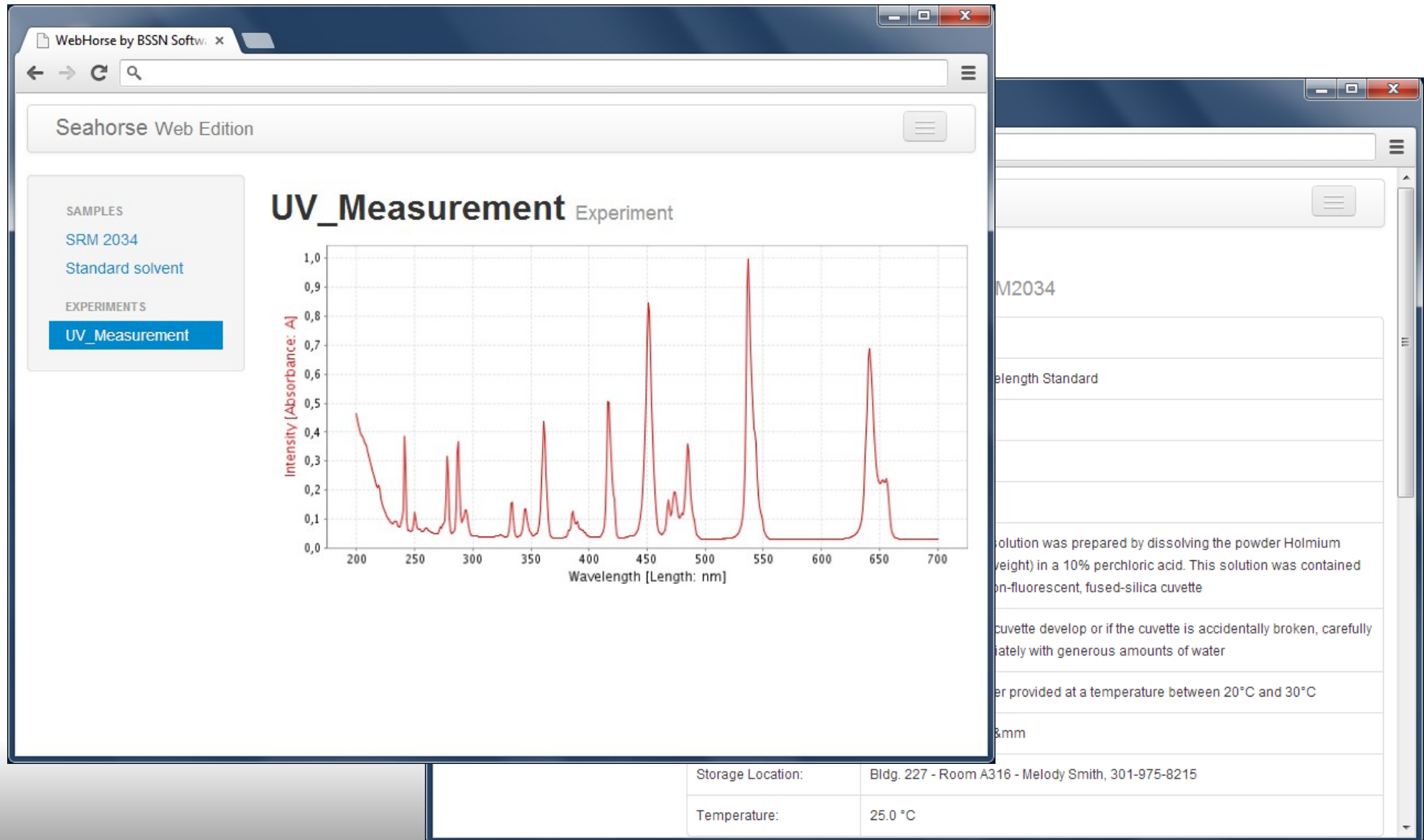
- Method
- Samples
- Origin
- Workflow

MRI Scan

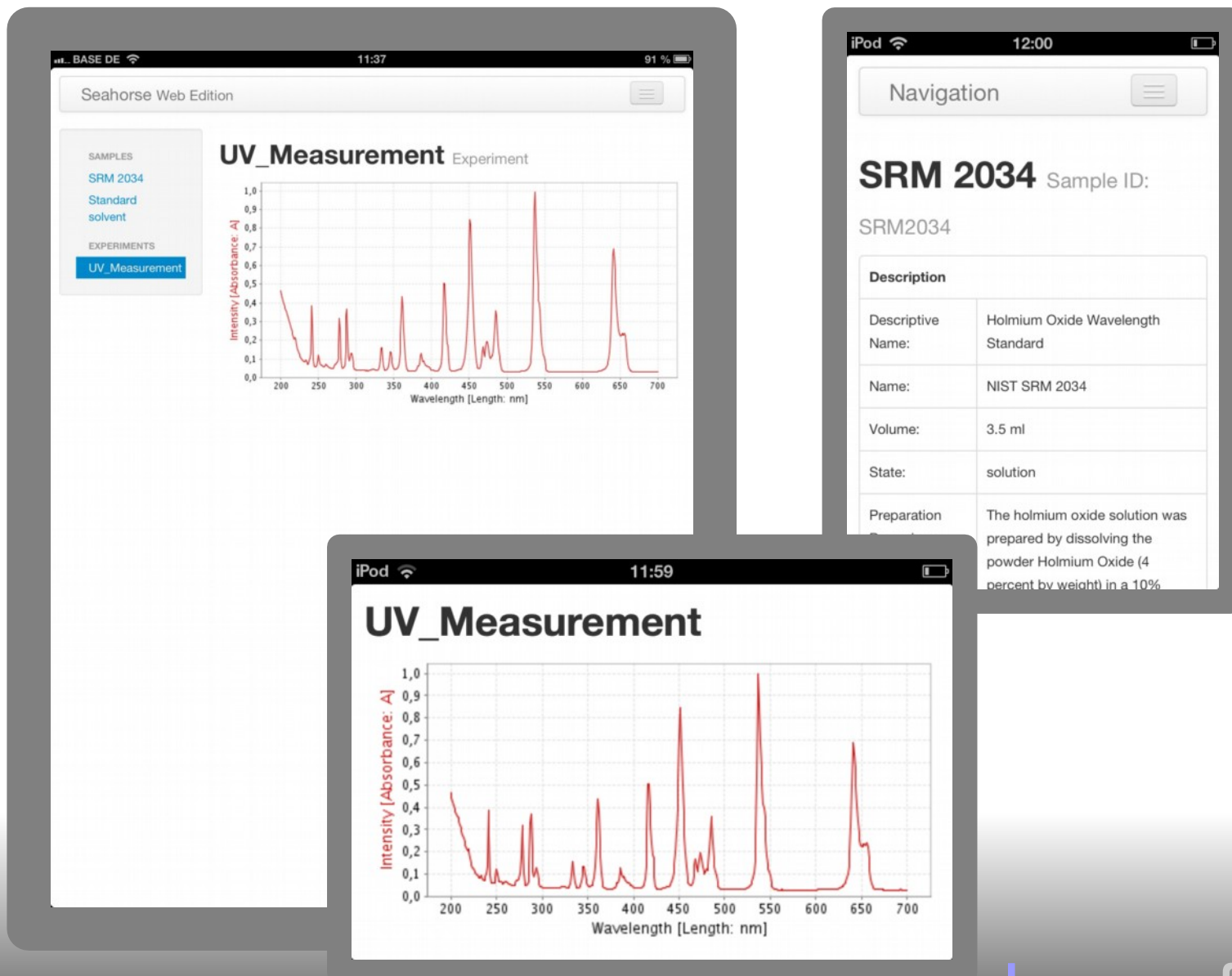
- Method
- Samples
- Origin
- Workflow

Read	Method	Samples	Origin	Workflow
9				
8	4.536			
72	8.290			
94	9.746			
61	9.384			
67	10.37			
9	14.23			
35	10.32			
77	9.879			
5	9.938			
31	9.923			
2	10.07			
2	9.591			
46	10.13			
2	9.635			
33	10.33			
4	9.731			

Seahorse Web Edition

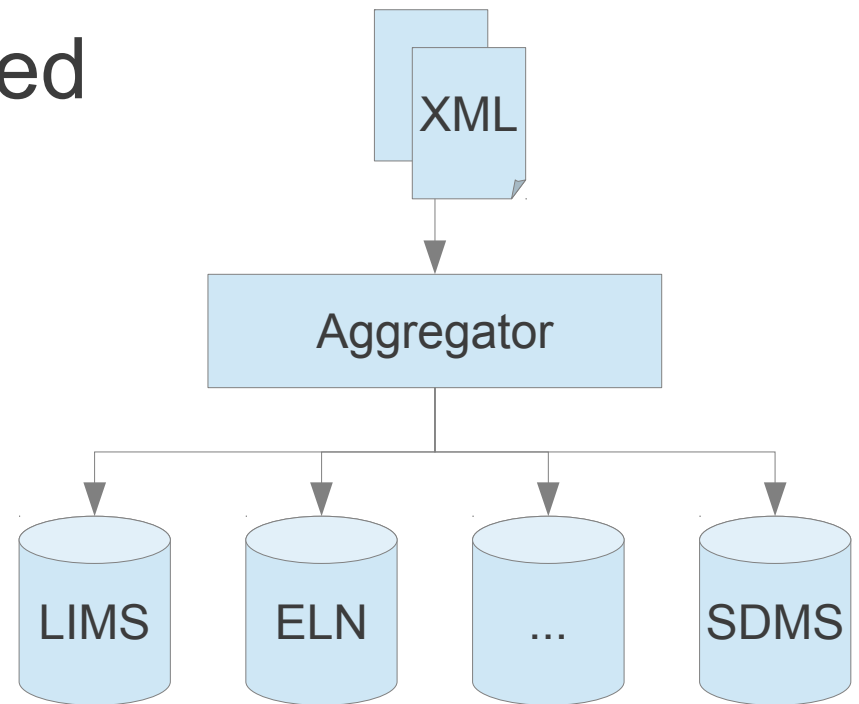


Preview: Mobile Edition



Data Transfer

- After data review, data is transferred to organizational data repository
- Specific fields are extracted and propagated to target data systems
- AnIML XML document is submitted to archive



Process Metrics

- Collection of process and quality metrics
 - Turn-around time
 - Throughput
 - Rejection rate
 - Cost
- Assessment of the quality of interaction with a specific partner



Cost and Billing

- Tracking of purchase orders, contract terms, SLAs
- Fee-for-service, FTE and partnership cost models
- Work orders and experiments viewed in context of contractual framework
- Cost of every study and experiment is tracked
- On-the-spot analysis of budget and billing data using pivot spreadsheets

Deployment Scenarios

Local Installation

- Data resides in-house
- Managed by IS
- Zero client footprint
- Remote access through VPN
- Network exposure

Cloud Hosting

- Non-invasive to IS
- Zero client footprint
- Tight security and access control
- No network exposure
- Quick provisioning

Intermediate Results

- Data bridge between groups for seamless integration
- Process insights and accountability (SLAs)
- Well-defined QA and data transfer
- Vendor-independent data review (includes raw data)
- Goal: Just as good as if done in-house
- Cloud technology can be a useful building block

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Expo Booth #2009



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