

Global Performance Support System (GPSS) Provides Knowledge Integration on the Dimension Vista™ Integrated System

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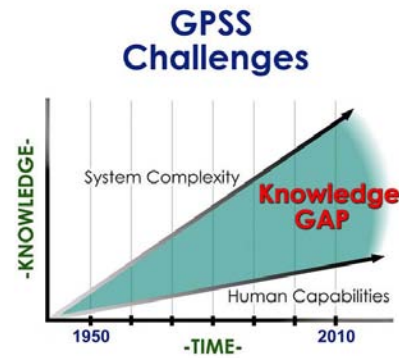
Objective

To develop an advanced online knowledge transfer tool to support training and performance of laboratory personnel based on user requirements and to implement knowledge integration to the workplace. Laboratories face increasing training challenges while dealing with increasing workloads. Electronic access via the instrument and workstations can replace traditional approaches with “just-in-time” solutions.

Background

Laboratory diagnostics are in an unprecedented transition phase. The clinical laboratory is on the threshold of an era in which diagnostic tests become increasingly critical components of the health care system. This development is due to the escalating use of technologies such as genetic, proteomic and pharmacogenetic testing. The predicted demand for laboratory services will triple by 2010, partly due to the aging population.

At a time when laboratory test volume and sophistication are increasing and becoming more vital to patient care, diagnosis and safety, the laboratory work force is aging and shrinking. Between 2002 and 2010, the industry will see an annual shortage of 8,200 professional laboratory workers. In addition, the ascendance of managed health care has led to cost reductions and increased demand for clinical laboratory efficiencies.



Diagnostic companies have responded to increased demand for laboratory services by accelerating the development of automation, workstation consolidation and user-friendly technology. As the availability of operators with the technical skills needed to run instruments declines, the need for technical knowledge to monitor instrumentation and clinical data rises, as shown in the graph above.

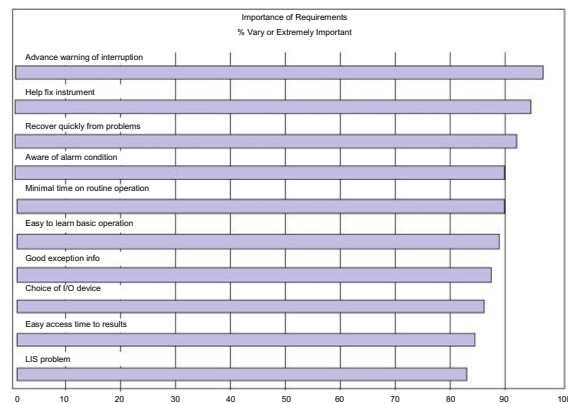
Knowledge transfer in the modern laboratory environment demands efficiency in turnaround time. With the decreasing number of qualified workers, limited opportunity exists for traditional instructor-led classes where primary operators are absent from the laboratory. Today's environment requires that all operators receive primary training. Diagnostic companies must bridge the knowledge gap with better, easy-to-use learning systems which integrate education in the workplace by providing analyzers with onboard, context-sensitive help, and online training accessible from the hospital via the World Wide Web. Repurposing education in this way allows for less time away from the workplace while maximizing “just-in-time knowledge transfer”.

*product under development - not for sale
Dimension Vista is a trademark of Dade Behring, Inc.
Adobe FrameMaker is a trademark of Adobe Systems, Inc.

Research

The team evaluated the resources and applications available for providing a more robust support process for customers. We attended numerous road shows and researched applications to fit our needs. After extensive evaluation, we looked to the application of Electronic Performance Support Systems (EPSS) and engaged the assistance of Gloria Gery, an expert in the field.

- After surveying 200 laboratorians in the United States and Europe concerning training needs, we found the top three training needs to be:
- Fixing minor problems with minimal support (97% of respondents)
 - Accessing troubleshooting help quickly (95% of respondents)
 - Determining instrument fix without external help (92% of respondents)

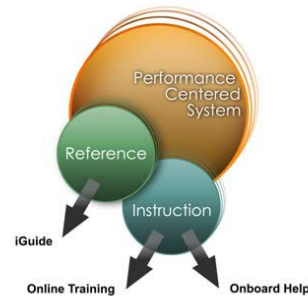


Solution

- An integrated electronic environment with these characteristics:
- available to and easily accessed by each operator
 - structured to provide immediate, individualized online access
 - offers a full range of information, guidance, advice and assistance
 - includes data, images, tools and assessment and monitoring systems
 - permits job performance with minimal support and intervention by others

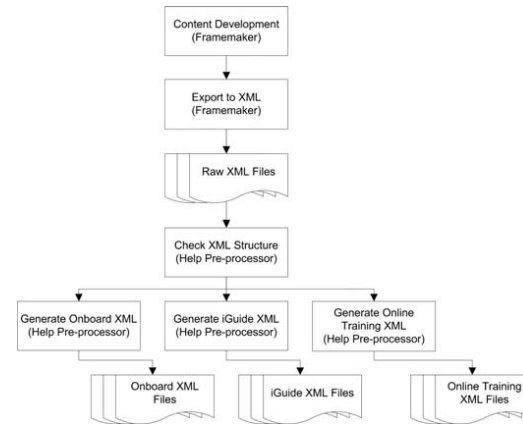
System Concept

We determined that the best support system provides information just-in-time at the workplace. Recognizing that an operator wants only the most pertinent facts in a support-seeking situation, we determined to offer three online knowledge transfer methods: Onboard Help, Online Training and electronic user's manual (iGuide). The content for these delivery systems is derived from the Operator's Guide for the instrument.



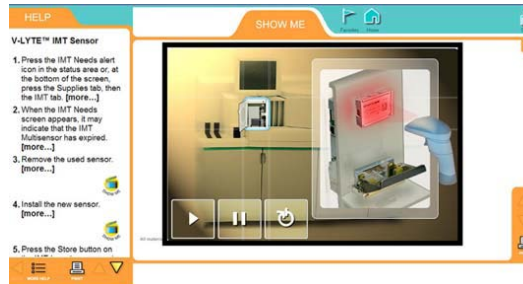
System Architecture

- Writers author an Operator's Guide using structured Adobe® FrameMaker®. The predetermined structure is required and enforced by FrameMaker®.
- Writers produce book PDF file from FrameMaker® source files. The PDF file is provided electronically to customers and is used to print hardcopies for distribution.
- Writers export FrameMaker® source files to Extensible Markup Language (XML) files using the FrameMaker® “Save as XML” feature.
- Writers use Help Preprocessor to check for tagging errors and to group XML data.
- Writers store FrameMaker® source files, PDF files, and processed XML files into Documentum content management platform.
- Processed XML content is moved to Dade Behring, Inc. server for Onboard Help and iGuide applications.
- Processed XML content and Onboard Help/iGuide updates are copied to customer workstations around the world.



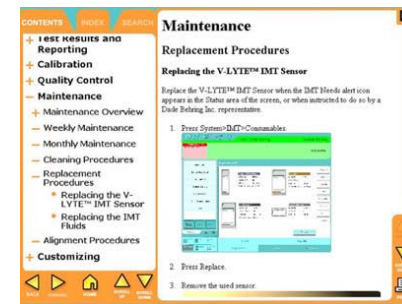
Onboard Help

The Onboard Help feature uses a touchscreen as the primary input device. Two areas of the Graphical User Interface (GUI) screen are used to display Onboard Help content. The left navigation area provides summary help and assists the operator in finding context-sensitive solutions. The content area on the right displays expanded contents, including animations and multimedia. The context-sensitive feature on Onboard Help includes response to system alert notifications. Onboard Help is invoked when the operator clicks on or presses the Help button. At that time, the application may or may not have active Alerts. The GUI passes this information to the Onboard Help system, which then determines which XML file to display. If an Alert exists, the GUI screen related to the Alert solution is displayed along with the Help information for the Alert. If no Alert exists, the Help information for the currently displayed GUI screen is provided.



iGuide

The iGuide display is a frameset displayed in a browser window or embedded in an application. The frameset has two top-level frames: top Navigation Bar and Information below. The Information frame is further divided into two side-by-side frames. The left frame displays tabs for Table of Contents, Index, and Search. The right frame displays the Operator's Guide content within the context of the tab selected in the left frame. The two frames always synchronize the context-sensitive nature of their respective content.



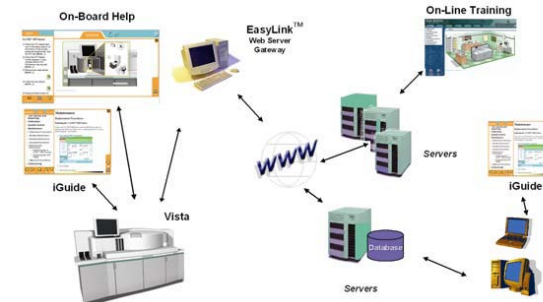
Online Training

Online training is a set of interactive, outcome-based modules, each focused on a specific area of instrument operation. The student selects the content to be learned and the courses include feedback and support activities appropriate to the tasks.



GPSS Network

The GPSS network distributes support where it is needed. The graphic below depicts how the information is distributed through the World Wide Web to the EasyLink™ system, providing up-to-date technical information to the operator.



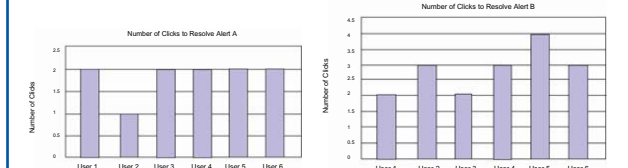
Usability Studies

Usability studies of the Onboard Help and iGuide features were conducted internally and externally to determine:

- Speed
- Time needed to learn
- Retention
- Subjective user satisfaction

The usability study elicited these findings:

- User is able to find resolution with an average of 1.8 clicks and 2.8 clicks in Alert situations.
- All users were able to successfully navigate all use cases.
- All users stated that the system is easy to learn and to navigate.
- All users stated that this system would decrease the amount of downtime in the laboratory.
- All users stated that they would use the Onboard Help and iGuide features again.



Conclusions

- We used survey results to develop a new training/support system, the Dade Behring, Inc., Global Performance Support System (GPSS). GPSS provides “just-in-time knowledge transfer” on the Dimension Vista™ Integrated System* for fast access to instrument operation. GPSS provides a context-sensitive delivery system (CSDS) that shadows real-time operation and intuitively responds when help is required.

- We plan to provide context-sensitive help on the Dimension Vista™ system with one click, 95% of the time.

- Results of survey responses and interviews show that GPSS will:
 - meet customer needs (90% of respondents)
 - reduce downtime (85% of respondents)
 - lower laboratory operating costs
 - reduce service visits
 - increase operator confidence in solving problems
 - minimize time looking a solution
 - identify and provide information to support the task at hand
 - be well-received by test user

