Customer Service Model for Waste Tracking at Los Alamos National Laboratory—11329

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[Los Alamos National Laboratory release number LA-UR 10-07610]

ABSTRACT

Waste tracking systems can enhance the processing of waste in production facilities when the system is developed with a focus on customer service throughout the project life cycle. A new waste tracking system was needed at the Plutonium Processing Facility at Los Alamos National Laboratory (LANL) where waste processing must be integrated to handle Special Nuclear Materials tracking requirements. The waste tracking development team had to work side-by-side with program, rad protection, security and shipping customers to understand and develop a system to meet all operational and regulatory requirements. Transitioning to the new system with no interruption to waste processing capability was among the most crucial of customer requirements. Beyond the successful deployment of the Waste Compliance and Tracking System (WCATS) system, the development team strove to make waste processing in the facility more efficient by providing onsite support to the user base. State-of-the-art technology, coupled with customer knowledge, and a value-added service model has made the WCATS system a welcome improvement into the Plutonium Processing Facility.

INTRODUCTION

The deployment of any new software system in a production facility will always face multiple hurdles in reaching successful acceptance. Recently, a new waste tracking system was required at the Plutonium Processing Facility at Los Alamos National Laboratory (LANL) where waste processing must be integrated to comply with Special Nuclear Materials tracking requirements.

Waste tracking systems can enhance the processing of waste in production facilities when the system is developed with a focus on customer service throughout the project life cycle. In March 2010, Los Alamos National Laboratory's Waste & Environmental Services (WES) organization replaced the aging systems and infrastructure that were being used to support the Plutonium Processing Facility. The WES Waste Compliance and Tracking System (WCATS) Project Team, using the following customer service model, succeeded in its goal to meet all operational and regulatory requirements, making waste processing in the facility more efficient while partnering with the customer.

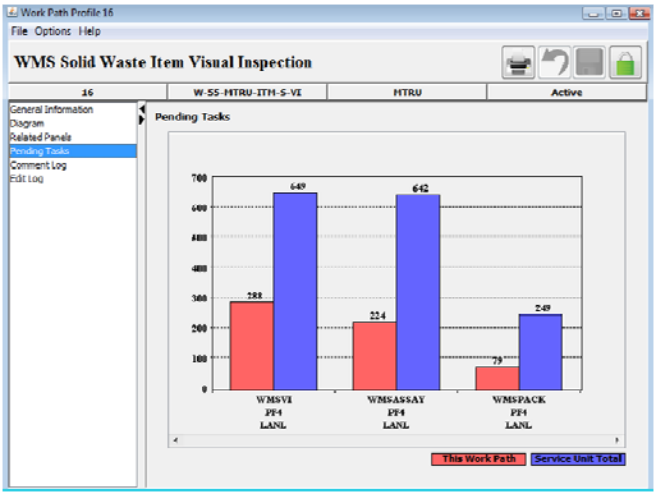
BUSINESS DRIVERS

The five current legacy systems currently in place have been in operation for 12-plus years. Many of these systems are rapidly approaching end-of-life and no longer meet business rules or the customer's requirements.

Due to an aging architecture and the number of databases being supported, these systems pose a greater security risk of cyber attacks, as well as inherently higher total cost of ownership.

CUSTOMER INTERFACE

The new system acceptability could only be accomplished if the development involved the end-users and stakeholders of the application.



The system was designed from the point of view of the generator rather than from a facility aspect. The new system has tools to help track waste items from cradle to grave, and fits the business cost recharge model used at Los Alamos. The project team and the user community collaborated to build a leaner system with better-defined processes while reducing the level of effort needed to manage the waste streams.

THE NEW SYSTEM—WCATS

The Waste Compliance and Tracking System (WCATS) is a single integrated system designed to support the generation, characterization, processing, and shipment of radioactive, hazardous, and industrial waste. The system's regulatory drivers include the Resource Conservation and Recovery Act for hazardous waste; Department of Transportation for shipping; National Nuclear Security Administration nuclear material control and accountability; Department of Energy (DOE) nuclear safety requirements, Treatment, Storage, and Disposal facility permits; and Waste Isolation Pilot Plant certification requirements. The system utilizes a task-based architecture supporting the

wcats
WASTE COMPLIANCE & TRACKING SYSTEM

spectrum of treatment, storage, disposal, and administrative and characterization-based unit operations necessary to manage waste from cradle to grave.

The application can readily accommodate the creation of new facilities, processes, workflow, signature requirements, etc., using metadata established by the end-users.

The WCATS system uses a modern 3-tier Java Enterprise platform, on Oracle Corporation's database application server, and application developer's framework (ADF). Field operations are conducted on a mobile computer (Windows Mobile-based personal data assistant) using Sybase's UltraLite embedded database and bi-directional synchronization technology. The embedded database, a "Smart Client" approach, allows the introduction of mobile devices in secure facilities where previous solutions prohibited wireless technologies.

In addition, the application supports the characterization and management of the entire range of hazardous, radioactive, and industrial wastes (transuranic [TRU], mixed transuranic, low-level waste [LLW], mixed LLW, and hazardous waste) that might be co-located or processed at a permitted facility. Some unique capabilities not found in traditional management systems include user-defined tank systems for liquid waste, user-defined work paths (i.e., sequence of operations), and an equipment subsystem for tracking the calibration, maintenance, and inspection of tools used to process waste, such as torque wrenches, scales, pH probes, etc.

CUSTOMER SERVICE MODEL

WCATS is being developed and deployed in phases with functionality for cradle to grave management of TRU waste streams at LANL delivered first. Customization for other waste types (i.e. hazardous, low level radioactive, industrial) are added in additional phases. The project team was committed to wide-ranging and focused customer and stakeholder involvement throughout the process which was critical to success. Early in the process key stakeholders were briefed on the project plan and asked to participate on the software change board (SCB) to monitor the project and provide change control. In addition, stakeholders helped recruit subject matter experts (SME) on the Plutonium Facility process and established key approval stages to work directly with the project team, including programmers, to assure the final application met operational requirements.

The SME team worked with the project team in an iterative process to verify and refine the system requirements. They then participated in workshops to preview and comment on user interfaces and system outputs. As various modules were finalized SME participated in user testing under the guidance of the project's test engineers with revisions made prior to submission to formal unit and integrated testing.

In preparation for deployment, user interface responsibilities were assigned to select members of the project team. They developed user training for delivery just prior to deployment and planned a post-production support model that included user support in the process areas for both desktop and mobile interfaces. The team worked with the technical writer to develop tri-fold user guides with tips and tricks on key field applications. They also prepared plutonium facility technical staff for the transition with announcements and posters and most significantly with their presence in the facility through all pre-production phases. The WTS help desk staff participated in development when possible, participated in user training, and was briefed on potential user issues as deployment approached.

The deployment of WCATS in the plutonium facility coincided with a significant increase in TRU waste generation to meet DOE Performance Based Incentive (PBI) goals and the deployment of a new special nuclear materials accountability software application. To sustain production level amid these challenges the user interface team participated in weekly meetings with facility operations managers for timely identification of data and software change requests.

Because of the close partnership between the user community and the WCATS project team, the deployment of the TRU waste management module occurred with little disruption to waste management activities. All PBI goals were achieved by the end of the fiscal year and a record number of payloads were assembled and shipped out of the facility in the six months after the initial deployment. The most significant issues in that period were related to reconciliation of data between WCATS on the administrative network and the secure network Special Nuclear Material accountability database and the difficulty of performing rework required for more complex payload assemblies. The latter issues have been elevated to a six sigma process improvement team consisting mainly of waste management technicians led by a member of the WCATS project team.

Additional deployment phases benefit from a formal lessons learned process, inclusion of central training staff in development, and word of mouth praise of the initial deployment by technical staff and management at the plutonium facility.

CONCLUSION

WES is working to become a customer-centric organization that focuses on a cost effective delivery of services that satisfy our waste customers. The service model that was put into place for the WCATS deployment was organized around services, rather than technologies, platforms or Information Technology disciplines. Our teams focused on understanding the customer's business outputs rather than acquiring and implementing technology alone. Using this model, our organization has become more responsive to customer needs. This includes anticipating those needs, as well as being agile enough to modify or enhance services to meet new and changing expectations. This agility requires new competencies, attributes and skills. The use of this

customer service model was a critical success factor in making the implementation of the new waste compliance and tracking system successful at Los Alamos.