SHIPWAY Project Results Template

Title

SHIPWAY: Developing Lean Best Practice (Value Stream Focused Standard Work Elements) for Naval New Construction and Ship Repair Business & Information Processes.

Executive Overview

The SHIPWAY Project was designed to streamline business and information value streams that involved multiple members of four government / industry Product Lines: Navy Surface Ship Repair, Navy New Construction (LCS Program), USCG Surface Ship Life Cycle Maintenance, and Navy Submarine Repair. Through the application of Lean methodologies, value stream focused standard work elements were developed to reduce the cost and cycle time of critical business process within each of these government / industry programs. Each Product Line selected 3-4 critical value streams and used a technical approach of assessment, analysis, design, implementation, alignment and standardization to improve each of their critical value streams. The end results are lower total costs, shorter cycle times, and higher performing business and information processes which are repeatable in nature.

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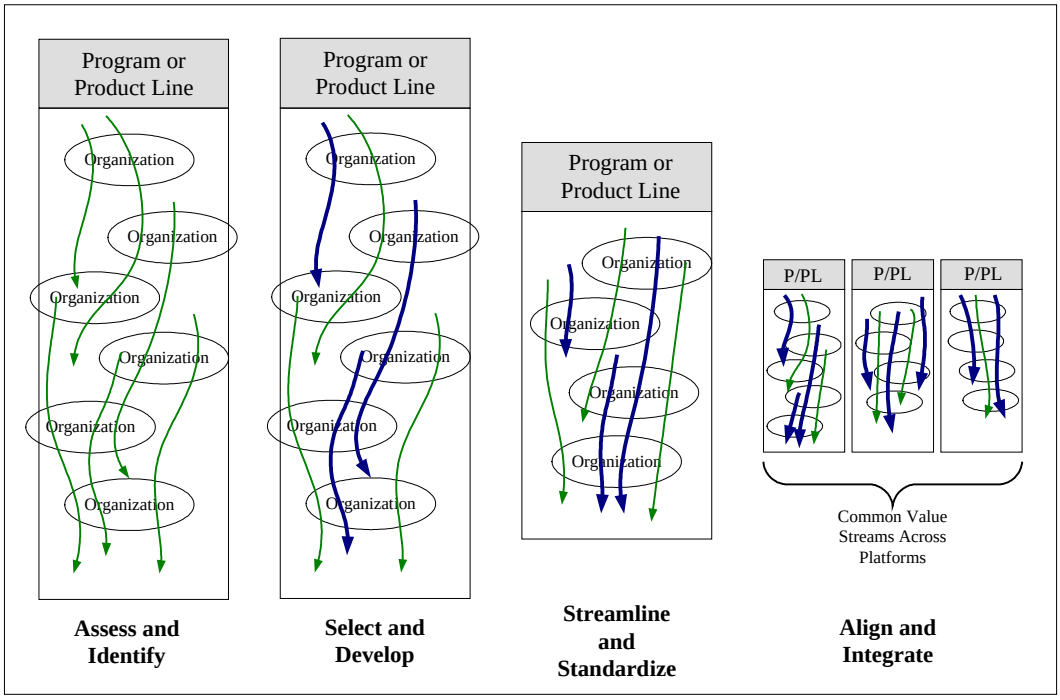
Collaborators

Official Project Team members included: Bollinger Shipyards, Todd Pacific Shipyards, Northrop Grumman Ship Systems (Ingalls), Trident Refit Facility – Kings Bay, V2R Consulting Group, and Hepinstall Consulting Group. There was also participation from Southeast Regional Maintenance Center (SERMC), USCG (Deepwater), North Florida Shipyards, Earl Industries, Integrated Coast Guard Systems (ICGS), and SupShip Gulf Coast.

Description of Methodology

The technical approach is one of assessment, analysis, design, implementation, alignment and standardization as shown below. The approach first requires the selection of high leverage business value streams within the various Value Chains. Value streams flowing

through the Value Chain are streamlined for optimal performance and then developed into elements of best practice standard work. Implementation and testing for standardization and workability is performed such that the best practice standard work elements can be validated.



Technical Approach

The approach begins with sponsorship alignment and support. After the value chain members are assembled, an initial assessment is performed so that the driver value streams can be identified within each product line. The general steps of this "Assess & Identify" phase are:

- Assure and align sponsorship
- Determine and assemble the value chain members
- Review the value chain and gather baseline data
- Determine the value streams within the chain
- Determine the driver value streams and associated processes
- Validate the proposed or anticipated value stream candidates
- Identify the opportunities and value stream candidates

After the value stream candidates have been identified, the product line teams participate in the "Select & Develop" Phase. The intent of this phase is to develop the identified value streams so that they drive product line success. Each of the selected value streams is mapped in its current state with an associated baseline state. A vision and future state map is then created. This phase ends with the construction of implementation plans for each business and information value stream. The general steps are:

- Review the selected value stream
- Perform a value stream analysis on the selected driver value stream as it relates to the value chain
- Complete / Review a current state map
- Baseline the current value stream and processes
- Identify the waste associated with this value stream
- Develop a vision and future state value stream map and process design
- Design relevant metrics and targets
- Create implementation plans for transition to the future state map

The implementation begins promptly after the Value Stream has been selected and developed, so that the test and evaluation of the new processes occurs quickly in the overall process. This "Streamline & Standardize" phase is performed as the business and information value streams are implemented and tested. The empirical embedding of determined solutions will provide a basis for documentation and model creation as well as tangible results. This task involves the execution of the implementation plans and applying the future state map to an existing program or product line. The necessary changes are made so that the end result is a simplified, streamlined, standard business value stream with associated waste-free processes. The general steps are:

- Execute the implementation plan
- Apply future state map to an existing product line
- Test the vision and future state map
- Make necessary changes and adjustments
- Formalize the process and embed the streamlined process
- Document the results

Resources Needed

All that is needed to implement this project is an understanding of Lean Principles and a commitment to continuous process improvement at all levels of the organization. Since it is primarily business and information value streams that are being addressed, senior and mid-level management support is crucial to any success. Detailed process definitions and standardization provide the capability to transform the future state of the business value stream into a value stream that can be implemented and repeated.

Evaluation and Analysis Methods

Each Product Line assessed their successes and failures on each value stream that was addressed during the project. Success was defined as implementation of the future state value stream. Metrics were developed for each Product Line to determine the impact of the future state value streams. This metrics are being tracked by each Product Line and will be reported on during the SHIPWAY Follow-on effort.

Time Estimate

This was a 1-year project. One year provided sufficient time to address 3-4 value streams per Product Line without allowing too much time between the development of the future state vision and the implementation. The Book of Standards addresses how each Standard Work Element is specific to a source, organization, or company, but can be used with minor adjustments for implementation at other organizations. The SHIPWAY Follow-on effort will take place over a 9-month period and will address two additional value streams for three of the Product Lines. The application of lean methodologies, on a larger scale, is an ongoing process, focusing on continuous process improvement. It is generally accepted among lean practitioners that an enterprise-wide lean transformation will take several years.

Limitations or Constraints

A commitment to an enterprise-wide lean transformation is necessary to implement this project. Even with the recent activity and interest within the industry in lean principles, there is little process definition work performed beyond a value stream map itself. Thinking in terms of process definitions, standard operating procedures and work instructions, and value-stream alignment in lieu of historical craft / functional alignment will greatly increase the odds of a successful lean transformation. Poor sponsorship identification and alignment can also lead to individual value stream failures. There are no limitations on the type of shipyards that could implement a lean transformation.

Major Impacts on Shipyard

Of the 15 value streams that were addressed by this project, 10 were assessed by the various project team members as having an "A" grade for implementation and success. These successful value streams have resulted in standard work elements being implemented at the shipyards, and can be used as a model for future lean implementation efforts. The value streams that were not as successfully implemented have exposed various weaknesses within the different organizations that can now be addressed and strengthened for future efforts. In all cases, failures can be attributed to poor sponsorship alignment, project leadership, accountability, team membership, or a lack of implementation discipline.

Cost Benefit Analysis/ROI

Product Line 1 was able to accommodate 25% additional work during a recent SRA due to an improved ship check process that allowed for earlier scheduling of potential growth

work. PL 1 is also forecasting a 5% cost savings due to improved connectivity between contractor and government computer systems. Product Line 2 is forecasting a 10% man-hour savings for LCS new construction, along with a 5% cycle time reduction. Product Line 3 is forecasting an 8-10% reduction in maintenance & modernization costs through their work on the Life Cycle Maintenance future state. Product Line 4 has a plan in place to achieve virtually 100% high-solids paint application for all Kings Bay SSBNs in tanks, superstructures, voids and recesses by the end of CY 08, greatly reducing the need for future structural repairs.

Lessons Learned

As highlighted in other reports, the elements of sponsorship, project leadership, accountability, team membership, and implementation discipline were common concerns for each of the value streams. It requires all of these fundamentals to be in strong working order for effective deployment and value creation. If any of these elements are not in support of the goals of the value stream, implementation is highly unlikely. Resistance from incumbent processes was strong and caused sustainability issues with the new value streams. Overt actions designed to create strong interdependence with existing functions would be recommended in every case.

Technology Transfer

The SHIPWAY Follow-on effort will ensure the project is working at the various Project Team shipyards, as well as those shipyards commitment to lean principles. Technology transfer with the rest of the industry is being accomplished via the Final Technical Report, the Book of Standards, as well as with presentations at various upcoming NSRP events such as Lean Forum 4 (September 12-14, 2006 in Jacksonville, FL).