Agenda

• Ingalls Shipbuilding Overview
• Project Team Members
• Project Background/Overview
• Project Management
• Details of Current Tasks
• Summary
• Largest Industrial Employer in Mississippi – approximately 11,500 Employees
• Building four classes of ships simultaneously—ten ships now in production
• Seven Arleigh Burke-class destroyers in firm business
• Builder of record for LPD and LHA classes of amphibious assault ships
• Builder of largest multi-mission National Security Cutter for the U.S. Coast Guard
Team Members

Ingalls Shipbuilding – Project Lead

- Anna Bourdais, Denise Jones, André Pires, Jeff Allman, Greg Carithers, John Walks, Sylvia Boltic, Doug Hudson, Milton Travis, Mike Porter, Rob Wise, Robin Decker, Lea Boudreaux

SCRA

- Frances Pearce, Project Manager

Austal USA

- Ryan Lee, Program Technical Representative
Project Goals

Problem: Current On-the-Job-Training (OJT) methods result in loss of productive time due to travel to the training facility and variability in method and means of training by individual instructors.

- Improve the current approach to OJT for the craft
- Develop an approach to retain critical corporate knowledge
- Strengthen current training for new craft managers
The Future of OJT
# Project Work Breakdown Structure (WBS)

| Task 1: Project Initiation |
| Task 2: Define the On-the-Job Training (OJT) Delivery System |
| Task 3: Develop, Demonstrate, and Evaluate a Pilot of the OJT Delivery System |
| Task 4: Corporate Knowledge Retention System (CKRS) Improvements |
| Task 5: CKRS Pilot |
| Task 6: CKRS Data Population and Evaluation |
| Task 7: Strengthen Craft Management Workforce System (SCMWS) Requirements Definition |
| Task 8: SCMWS Curriculum Development |
| Task 9: SCMWS Demonstration |
| Task 10: Final Project Workshop and Final Report |
| Task 11: Project Management and Technology Transfer |
Phase 1 Summary

• Defined Requirements for On-the-Job Training (OJT) Delivery System
  – 76 discrete requirements identified
  – Selected system
    • Panopto - video management system
    • Praeses - a software development and services vendor

• Piloted Video management system and additional process functionality
  – 2 Rounds of Testing with 35 plus device users
    • Round 1: (Nov 2, 2015 – Dec 2, 2015)
    • Round 2: (Jan 4, 2016 – Feb 10, 2016)

• Delivered 25 training videos for use by other U.S. shipyards
  – URL: http://www.nsrp.org/project-spotlight/
  – Another set of training videos will be released at the end of Phase II

• Corporate Knowledge Retention System Architecture Evaluation
OJT Delivery System: Video Process Workflow in Panopto

1. Video Content Developer
   - Develop then Submit/Resubmit Video for Review/Approval

2. Approvers
   - Review/Approve
   - Approval

3. Video Content Admin
   - Approval
   - Release for viewing

4. Conduct Training

5. Panopto Service
   - Revise/Develop Training Plans
   - Collect Training Statistics & Feedback

6. Shipyard / Deckplate
   - Evaluate Training

7. Desktop
   - Training Results & Recommendation
   - Training Results & Reports
## Milestone Schedule – Phase II

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Title</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Quarterly Report</td>
<td>3/20/2016</td>
</tr>
<tr>
<td>14</td>
<td>Phase II Kickoff Meeting Minutes</td>
<td>3/30/2016</td>
</tr>
<tr>
<td>16</td>
<td>Corporate Knowledge Retention System Pilot Evaluation</td>
<td>5/31/2016</td>
</tr>
<tr>
<td>17</td>
<td>Quarterly Meeting Minutes</td>
<td>6/15/2016</td>
</tr>
<tr>
<td>18</td>
<td>Quarterly Report</td>
<td>6/20/2016</td>
</tr>
<tr>
<td>19</td>
<td>Strengthen Craft Management Workforce System Draft Curriculum</td>
<td>8/31/2016</td>
</tr>
<tr>
<td>20</td>
<td>Quarterly Meeting Minutes</td>
<td>9/15/2016</td>
</tr>
<tr>
<td>21</td>
<td>Quarterly Report</td>
<td>9/20/2016</td>
</tr>
<tr>
<td>22</td>
<td>Quarterly Meeting Minutes</td>
<td>12/15/2016</td>
</tr>
<tr>
<td>23</td>
<td>Quarterly Report</td>
<td>12/20/2016</td>
</tr>
<tr>
<td>24</td>
<td>Strengthen Craft Management Workforce System Pilot Evaluation</td>
<td>1/15/2017</td>
</tr>
<tr>
<td>25</td>
<td>Final Set of Generic Craft Process Videos</td>
<td>2/20/2017</td>
</tr>
<tr>
<td>26</td>
<td>Final Project Report</td>
<td>2/25/2017</td>
</tr>
<tr>
<td>27</td>
<td>Final Project Workshop</td>
<td>2/25/2017</td>
</tr>
</tbody>
</table>

On schedule
Milestone 15

Strengthen Craft Management Workforce System Requirements Document
Strengthen Craft Management Workforce System (SCMWS) Requirements

• Craft Management
  – Foremen
  – General Foremen

• Knowledge, skills, and abilities aligned with Company’s needs
  – HII Values: Integrity, Safety, Honesty, Engagement, Responsibility, Performance,
  – HII Commitments: Our Employees, Customers, Stockholders, Communities, Suppliers
  – HII Employee Commitments: Safety, Quality, Cost, Schedule

• Defined competency profile by level

<table>
<thead>
<tr>
<th>Competency</th>
<th>Behavior</th>
<th>Performance Expectation (Scale of 1 to 10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety - Working safely every day, in everything we do, while also looking out for our fellow employees.</td>
<td>Foremen safety behavior A</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Foremen safety behavior B</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Foremen safety behavior C</td>
<td>8</td>
</tr>
</tbody>
</table>
## SCMWS Improvements

- **Plan of Action & Outcomes for Incumbents & Potential Candidates for Incumbents**

<table>
<thead>
<tr>
<th>Target Audience</th>
<th>Plan of Action</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incumbents</td>
<td>Conduct Knowledge, Skills and Abilities analysis to determine any gaps. If gaps are identified, a plan will be developed to specify how to close the gap(s).</td>
<td>Enables customized development plans that address both short-term skill gaps and longer-term career objectives</td>
</tr>
<tr>
<td>Potential candidate for Incumbent</td>
<td>Make a competency profile available for employees not in position. Long-term development action plans to attain readiness level for position will be integrated with their career development path.</td>
<td>Promotes mobility, by mapping lateral and vertical moves in the organization</td>
</tr>
</tbody>
</table>
SCMWS Improvements (cont’d)

• Focus: supplement instructor-led training by providing a pull system of learning videos
  – When faced with a new situation in which more instruction is needed, the craft manager can find the relevant videos available on the shop floor and deck plate in real time to provide on-call refresher training.
  – Employees with a career development path for a craft management position can utilize the pull system of learning videos and increase his/her readiness level.
  – Like OJT Delivery System, the pull system of learning videos provides greater standardization in the content and consistency in the quality of training being delivered.

• The assumptions and constraints for development of OJT Delivery System and Corporate Knowledge Retention System were the basis for the development of the SCMWS
  – Panopto - video management system
  – Praeses - a software development and services vendor
Milestone 16

Corporate Knowledge Retention System Pilot Evaluation
What is corporate knowledge?
- It is known as “tribal knowledge” and has significant value
- Implicit knowledge that is a unique and vital blend of experiences, values, and applied expertise that lives within individuals and organizations
- For shipbuilders, it is the expertise on how to best apply information in a given situation while meeting the expectations of the goal at hand.

What is the goal of the pilot?
- Discover the critical knowledge
- Transform the implicit knowledge to an explicit realm
- Share knowledge with others to achieve business goals

How was the pilot performed?
- System pilot
- Methodology pilot
Transferring Tacit Knowledge

Tacit Knowledge + How Learning Occurs → Multimedia

- Visual: 65%
- Auditory: 30%
- Kinesthetic: 5%

Learning occurs through multimedia methods.
CKRS: System Pilot

- **CKRS environment**
  - An on-premise solution was selected to safeguard info
  - Server migration performed
  - New environment was constructed

- **Panopto test**
  - The core of the Panopto system was tested and functional
  - Unable to perform livestreaming test
  - Transcripts unable service directly with an on-premise deployment. Third-party vendor option not pursued and unable to perform test.

- **Praeses functionality**
  - The functionality was tested and functional

- **Business Requirements**
  - Safeguarding proprietary or business sensitive info
  - Auto-login
  - New CKRS methodology

- **New Usability & End-User Requirements**
  - Livestreaming
  - Up to 5hrs of video

- **New Delivery System Requirements**
  - Provide video description
  - Produce transcript
Subject Matter Expert (SME) identified via Ingalls human capital strategy

Pilot conducted with one SME in the field of Welding Engineering: Lee Kvidahl
- Master Shipbuilder
- Highly regarded for technical expertise across the shipbuilding industry

Discovery and capture of critical knowledge conducted via 360 interview process
- Provide insight from the different perspectives who work with the SME, including the SME himself

Knowledge transformed to video (implicit to explicit)

Video shared with others and the knowledge was transferred
## Results: User Test

<table>
<thead>
<tr>
<th><strong>Test Objectives:</strong></th>
<th>Administrative set up, folder structure with access, adding users, video uploading, approval, users able to access, metadata search, video playback</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Situation:</strong></td>
<td>User in a working environment receives USER TEST via email, captures responses, replies back to email for results capture</td>
</tr>
<tr>
<td><strong>Date:</strong></td>
<td>5/3/16 – 5/9/16</td>
</tr>
<tr>
<td><strong>Total Responses:</strong></td>
<td>16</td>
</tr>
<tr>
<td><strong>Findings:</strong></td>
<td>Administration was able to set up users with correct access, video uploaded and approved, users able to access and video playback</td>
</tr>
<tr>
<td><strong>Recommendations:</strong></td>
<td>Pass</td>
</tr>
</tbody>
</table>
## User Survey Results

### Test Objectives:
Obtain video feedback. Determine knowledge transfer from end-user perspective

### Test Situation:
User in a working environment receives USER SURVEY via email, captures responses, replies back to email for results capture

### Date:
5/3/16 – 5/9/16

### Total Responses:
15

### Findings:
Response on a scale of 1 to 5: 5 = Strongly Agree, 4 = Agree, 3 = Neither, 2 = Disagree, 1 = Strongly Disagree

1. **The content presented in the video was interesting and thought-provoking.**  
   Average: 4.6
2. **I gained knowledge as a result of viewing this video.**  
   Average: 4.1
3. **The video has increased my understanding concerning the subject matter.**  
   Average: 3.8
4. **I can apply some elements covered in the video to my work.**  
   Average: 3.8

### Recommendations:
Maintain the use of User Survey to determine knowledge transfer from end-user perspective
**Ratings Results**

### Results: Ratings

<table>
<thead>
<tr>
<th><strong>Test Objectives:</strong></th>
<th>Assign a desired rating on a scale of 1 to 5 stars. This tallies user choice with the other ratings.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Situation:</strong></td>
<td>User in a working environment receives access to video, plays video, and rates it on a 5 star rating system</td>
</tr>
<tr>
<td><strong>Date:</strong></td>
<td>5/3/16 – 5/9/16</td>
</tr>
<tr>
<td><strong>Total Responses:</strong></td>
<td>16</td>
</tr>
<tr>
<td><strong>Findings:</strong></td>
<td>4.1</td>
</tr>
<tr>
<td><strong>Recommendations:</strong></td>
<td>Maintain the use of Ratings to obtain instant and aggregate feedback from the end-users perspective. Establish a quality standard and determine a rating level where a video review process begins.</td>
</tr>
</tbody>
</table>

**Lee Kvidahl**

5/2/2016 in Welding Engineering

Lee Kvidahl is the Manager of Welding Engineering. In this video, Lee shares aspects of what has helped to make him an expert in the area of welding engineering.

11:59 | [Settings] | [Share] | [Edit] | [Stats] | [Delete]

Average of 16 ratings: 4.1
Pilot Evaluation: Methodology & User Survey Results

• Methodology was reviewed, evaluated, and found to be effective.
  – Alignment with the Ingalls Shipbuilding human capital strategy
  – Ensures the “who” and “what” regarding the knowledge that is critical to retain
  – For shipbuilders, this exemplifies the expertise on how to best apply information in a given situation while meeting the expectations of the goal at hand.

• User Survey Results

<table>
<thead>
<tr>
<th>Level of Evaluation</th>
<th>Question</th>
<th>Results</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: Reaction - how well the learners liked the learning process</td>
<td>1. The content presented in the video was interesting and thought-provoking.</td>
<td>Average: 4.6</td>
<td>Learners liked the learning process.</td>
</tr>
<tr>
<td>Level 2: Learning – the outcome as a result of the training</td>
<td>2. I gained knowledge as a result of viewing this video.</td>
<td>Average: 4.1</td>
<td>Learners gained knowledge from the video.</td>
</tr>
<tr>
<td></td>
<td>3. The video has increased my understanding concerning the subject matter.</td>
<td>Average: 3.8</td>
<td>Learners gained understanding from the video.</td>
</tr>
<tr>
<td>Possible Level 3: Behavior - changes in job performance resulting from the learning process</td>
<td>4. I can apply some elements covered in the video to my work.</td>
<td>Average: 3.8</td>
<td>Learners believe behavior change is possible.</td>
</tr>
</tbody>
</table>
## Pilot Evaluation: Initial SME Interview Questions

<table>
<thead>
<tr>
<th>Initial SME Interview Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Function</strong></td>
</tr>
<tr>
<td>- What are some of the roles you’ve had in your shipbuilding career?</td>
</tr>
<tr>
<td>- How many years have you been in your current role?</td>
</tr>
<tr>
<td>- What are your major job functions? What’s the relative order of importance of these functions?</td>
</tr>
<tr>
<td><strong>Applied Expertise</strong></td>
</tr>
<tr>
<td>- At what point in your career did you notice people begin to come to you for advice?</td>
</tr>
<tr>
<td>- In your current role, what stands out as your most satisfying achievement to date?</td>
</tr>
<tr>
<td>- Was there an event in previous roles over the span of your career that you believe set you up for that successful outcome?</td>
</tr>
<tr>
<td><strong>Best Practices</strong></td>
</tr>
<tr>
<td>- What are the steps that you personally go through to resolve technical or operational problems?</td>
</tr>
<tr>
<td>- Are there steps that matter more than others?</td>
</tr>
<tr>
<td>- How do you know if the task/activity is completed and if it has been completed satisfactorily?</td>
</tr>
<tr>
<td>- What is the single most important principle in your area?</td>
</tr>
<tr>
<td><strong>Lessons Learned</strong></td>
</tr>
<tr>
<td>- What are the most common mistakes you or others have made?</td>
</tr>
<tr>
<td>- How do you know when you’re over your head?</td>
</tr>
<tr>
<td>- How do you know when to ask for help? What’s the appropriate way to ask for help?</td>
</tr>
<tr>
<td><strong>Network</strong></td>
</tr>
<tr>
<td>- Who are the contacts or groups you have worked with in order to complete an activity or get help?</td>
</tr>
<tr>
<td><strong>Values</strong></td>
</tr>
<tr>
<td>- What do you possess that you feel is the crucial difference, pertaining to critical knowledge?</td>
</tr>
<tr>
<td>- What can you share about your expertise to help our current and future shipbuilders?</td>
</tr>
</tbody>
</table>
Pilot Evaluation: 360 Interview Questions

- What knowledge do you think the SME possesses that is critical to performance?

- Imagine 10 years from now, what knowledge do you wish you would have captured from the SME that you didn’t?

- What kind of information do you find that you keep going back to the SME about time and time again? How often does it happen and why do you suppose that is?

- Please share an example when the SME’s input made the difference on the outcome of a job task/function.

- In your words, what is it that the SME possesses that makes him/her valuable?
• Ingalls approach to corporate knowledge is two-fold: system & methodology

• Other shipyards’ approach could be scalable:
  – Video system is optional to deployment
  – First step is to leverage the roadmap of the methodology
  – Start with a business imperative:
    • Any impending demand of talent but current shortage of critical knowledge?
    • Is there a flight of talent with critical knowledge near retirement eligibility?
    • Are there certain operational or business processes that are inherently more at risk because based in tribal knowledge?
    • What best practice do you want to cultivate in your organization?
    • What lessons learned should be captured and shared with others?
Summary

• Phase I of the project is complete
  – System selection complete
  – Piloted Video management system and additional process functionality
  – Delivered 25 training videos for use by other U.S. shipyards
    • http://www.nsrp.org/project-spotlight/

• Phase II is underway
  – Developed Strengthen Craft Management Workforce System Requirements document
  – Piloted Corporate Knowledge Retention System
  – Additional videos are being filmed and reviewed for use by other U.S. shipyards