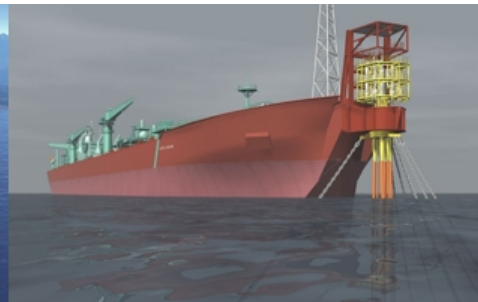


ShipConstructor®

Software

to Design, Build & Maintain





Second Tier Shipyard Design Enhancement Project III

NSRP PDMT PANEL MEETING
SEPTEMBER 25TH, 2007
NEWPORT NEWS, VA

PRESENTATION BY: PATRICK DAVID WITH
SHIPCONSTRUCTOR SOFTWARE USA, INC.

STSDEP III – Presentation Outline

- Project Overview
- Project Statement of Work
- Weld Planning & Tracking Module Status
- Education & Training Module Status
- Electrical Design Module Status
- Questions

Electrical Design & Weld Planning / Tracking Modules – Statement of Work

- Develop an integrated Electrical Design and Weld Tracking / Planning module for ShipConstructor based on the specifications developed in the 2006 STSDEP Phase II Extension project.
- Quarterly reviews will be conducted by the project team.
- The shipyard team members will provide test cases to support the development effort.
- The project team will beta test incremental releases of the software and provide feedback to the development team.

Education & Training Module – Statement of Work

- Development of technical education and training course that will incorporate training in ShipConstructor as a Continuing Education offering at the University of Wisconsin, Marinette and at the University of South Alabama.
 - Develop a Marine Design Course curriculum with detailed descriptions of the material to be covered in each element of the curriculum.
 - Establish grading criteria.
 - Develop and publish the course material including texts, handouts, presentations, and test.
 - Install software and training material in computer classrooms at both Universities.
 - Provide training to all project team members and refine course material based on feedback

Weld Planning & Tracking Module – Project Management Website

Second Tier Shipyard Design Enhancement Website

A Central Location for the Dissemination of Information

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You last visited on Fri Sep 14, 2007 3:04 pm
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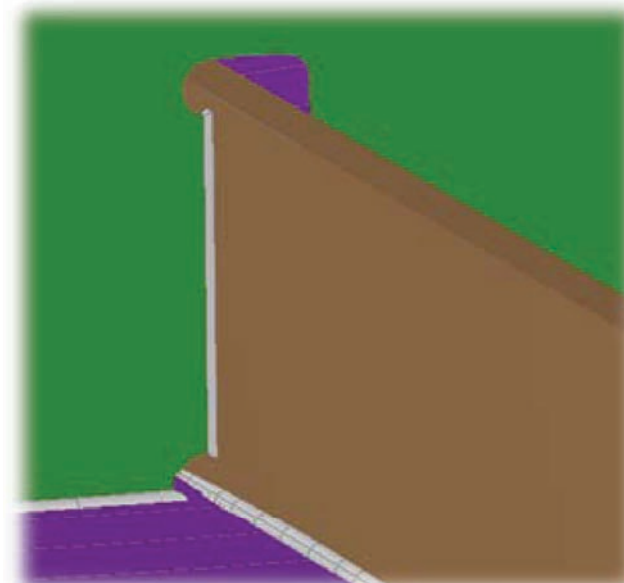
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➔ Second Tier Shipyard Design Enhancement III

	PROJECT MANAGEMENT - PHASE I For information about project meetings, project deliverables, presentations, and project management info.	25 / 20	Thu Sep 13, 2007 3:43 pm Patrick Roberts ▶
	ELECTRICAL DESIGN MODULE Phase I - All information related to the development of the Electrical Design Software Module	45 / 18	Fri Sep 07, 2007 7:48 am Shawn Wilber ▶
	WELD PLANNING & TRACKING MODULE Phase I - All information related to the development of the Weld Planning & Tracking Module.	21 / 17	Wed Sep 12, 2007 9:57 pm Denis Morais ▶
	EDUCATION & TRAINING MODULE Phase I - All information related to the development of the Education & Training Module	40 / 34	Thu Sep 13, 2007 1:53 pm Graham Chamberlain ▶
	COMPONENT MODEL LIBRARY Phase II - All information related to development of the Component Model Library.	0 / 0	No Posts
	AUTODESK INVENTOR INTEGRATION Phase II - All information related to the integration of Autodesk Inventor software with the ShipConstructor software.	0 / 0	No Posts

<http://nsrp.shipconstructor.com>



Second Tier Shipyard Design Enhancement Project III
WELD PLANNING & TRACKING MODULE

Weld Planning & Tracking Module - Quarter #1 Report

- SSI was able to visit two of the Gulf Coast Shipyards Bender & VT Halter in April 2007 to gather information about the various welding processes within a shipyard.
 - Tours covered the Design Process through Launch.
 - SSI was able to see all of the welded interim products through the entire shipbuilding process and associated documentation.
- SSI was provided various types of welding documents that were currently used in the shipyard as examples.
 - Insight on the current AS-IS weld design process & documents
 - Example packages were provided to SSI through the project management website and by direct correspondence.

Weld Planning & Tracking Module - Quarter #2 Report

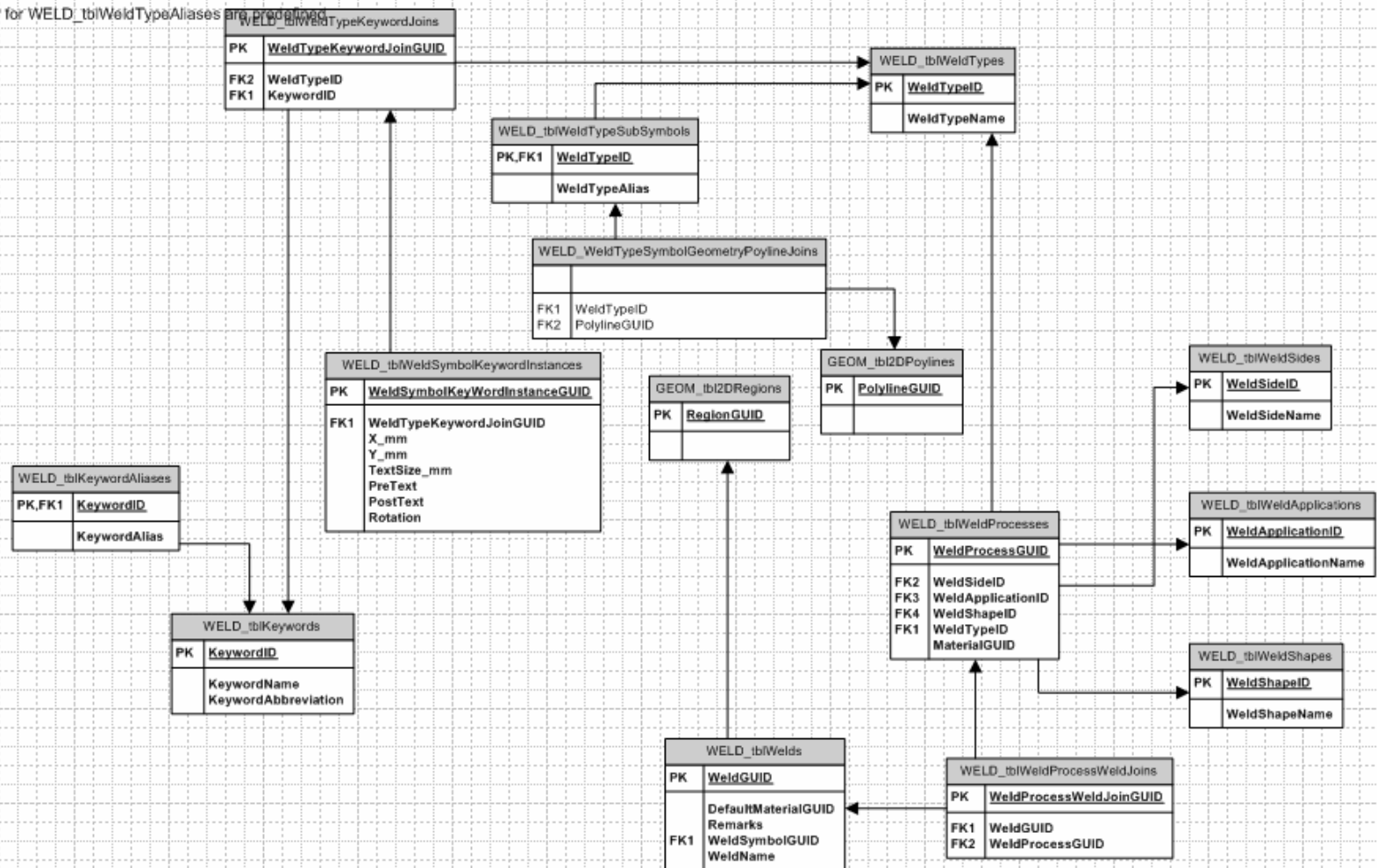
- SSI created a Weld Management document from the data and documents collected in order to communicate the process for the end user.
- SSI defined the Weld Management Database Design.
- SSI defined weld module “User Interfaces - UI” within the ShipConstructor Software.
- Weekly conference calls have been established for additional communication (outside the website).
- Interactive “GoToMeetings” have been conducted in order to validate the process of the UI’s and to further clarify expectations of the project team members.

Weld Planning & Tracking Module - Quarter #2 Report – Weld Management Doc



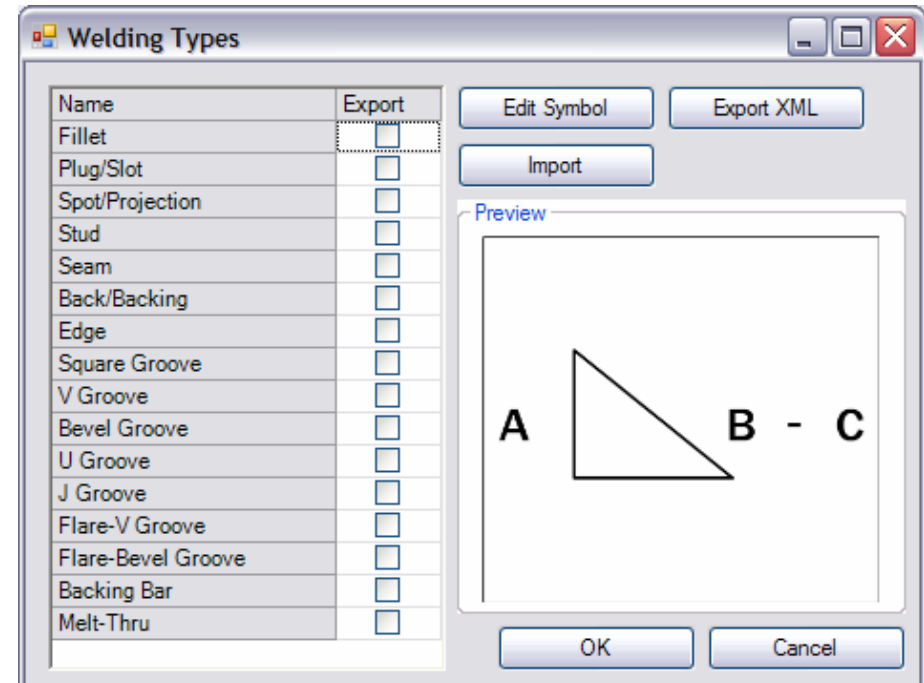
Weld Planning & Tracking Module - Quarter #2 Status - Weld Database Design

- A number for WELD_tbiWeldTypeAliases are provided



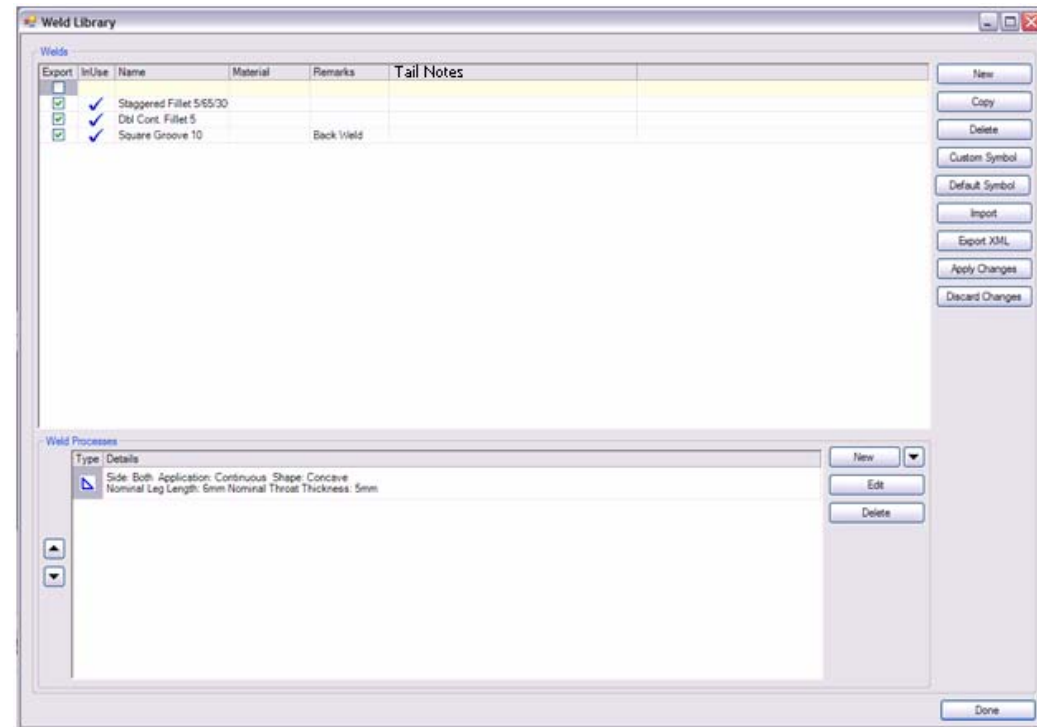
Weld Planning & Tracking Module - Quarter #2 Status - UI Welding Types

- Welding types handled by the system are fixed.
- Properties for each welding type are different for each type (symbols too).
- Names for weld types can be changed but not the property associations.
- Export/Import of symbols.
- Symbols can be edited in AutoCAD, “Edit Symbol”.



Weld Planning & Tracking Module - Quarter #2 Status - UI Weld Library

- Sort, Filter columns
- Create - new welds
- Copy – existing weld properties & processes
- Delete – selected weld
- Custom Symbol associated with the weld
- Import – XML format or from another project
- Export – XML format
- Apply & Discard Changes unapplied to the database



Weld Planning & Tracking Module - Quarter #2 Status - UI New Weld Process

- Used to define a new weld process.
- Example shown is Fillet, but UI would include weld processes and attributes for:

- Fillet
- Plug
- Slot
- Spot/Projection
- Stud
- Seam
- Back/Backing
- Edge
- Square Groove
- V Groove
- Bevel Groove
- U Groove
- J Groove
- Flare-V Groove
- Flare-Bevel Groove

Name	Value
Side	Both
Application	Staggered Intermittent
Shape	Flush
Nominal Leg Length	6 mm
Nominal Throat Thickness	5 mm
Penetration Throat Thickness	8 mm
Length of Segments	65 mm
Pitch	300 mm

Legend

OK

Cancel

Weld Planning & Tracking Module - Quarter #2 Status – UI Weld Schedule

- Create or Delete a New location or new scenario
- Specify, assign member types for use in scenarios.
- Apply or Discard changes to the database.
- Weld Schedule application is closed by the “Done” button.

The screenshot shows the 'Weld Schedule' window with a table of weld specifications. The table is organized into columns for different member thicknesses (5 mm, 8 mm, 10 mm, 15 mm, 20 mm) and rows for different locations and scenarios.

Location	Scenario	Member Being Attached	To Member	Minimum Thickness Member				
				5 mm	8 mm	10 mm	15 mm	20 mm
Single Bottom		Flanged Floor	All Boundaries	Dbl Cont. Fillet 5	Dbl Cont. Fillet 5	Dbl Cont. Fillet 7	Dbl Cont. Fillet 8	Dbl Cont. Fillet 10
		Flanged Floor	Shell / Long'l Girder	Dbl Cont. Fillet 5	Dbl Cont. Fillet 5	Dbl Cont. Fillet 7 Int. Fillet 8/65/300	Dbl Cont. Fillet 8	Dbl Cont. Fillet 10
		Flanged Floor	All Boundaries	Dbl Cont. Fillet 5	Dbl Cont. Fillet 5	Dbl Cont. Fillet 7	Dbl Cont. Fillet 8	Dbl Cont. Fillet 10
SeaChest		Seachest	Bottom Shell	Dbl Cont. Fillet 5 Int. Fillet 5/65/300	Dbl Cont. Fillet 5	Dbl Cont. Fillet 7	Dbl Cont. Fillet 8	Dbl Cont. Fillet 10
		Bottom Shell	Seachest Pipe	Dbl Cont. Fillet 5	Dbl Cont. Fillet 5 Int. Fillet 6/65/300	Dbl Cont. Fillet 7	Dbl Cont. Fillet 8	Dbl Cont. Fillet 10
		Seachest FB	Bottom Shell	Dbl Cont. Fillet 5	Dbl Cont. Fillet 5	Dbl Cont. Fillet 7	Dbl Cont. Fillet 8 Int. Fillet 9/65/300	Dbl Cont. Fillet 10

Buttons on the right side of the window: New Location, New Scenario, Delete, Member Types, Apply Changes, Discard Changes, Done.

Weld Planning & Tracking Module - Quarter #2 Status - Managing Welds

- Development Areas:

- Permissions
- User Interface
- Part Connections
- Exclude Welds
- Define Welds
- Welds Between Assemblies
- Weld Scheduling
- Update Weld Manager
- Out of Date Welds
- Weld Notes

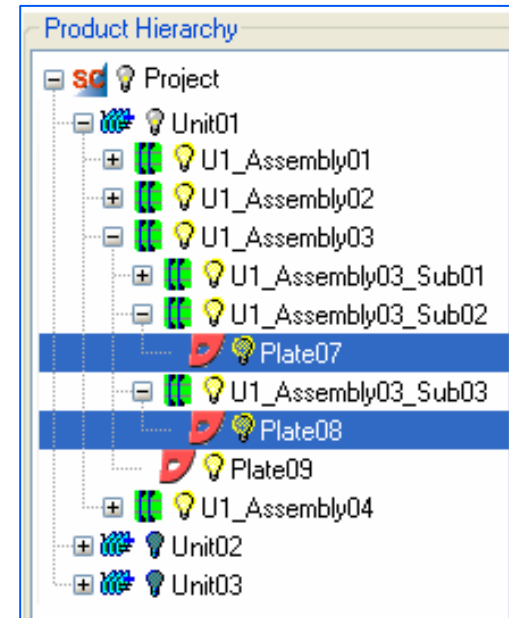
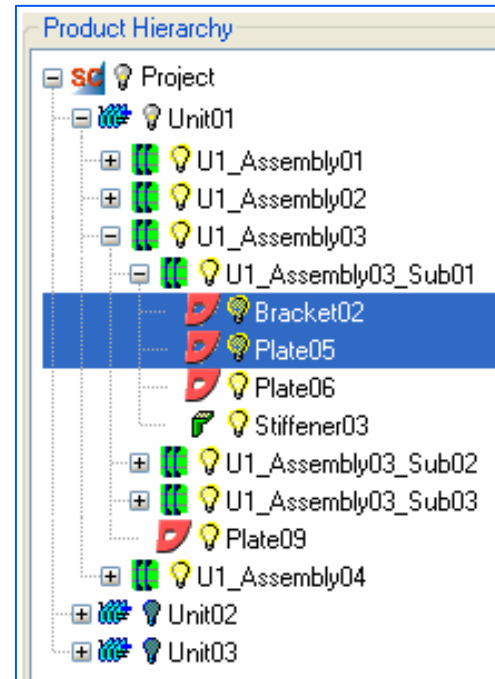
The screenshot displays the 'Weld Manager' application window. On the left is a 'Product Hierarchy' tree with 'Unit01' expanded to show 'U1_Assembly01' and its sub-components: Plate01, Plate02, Stiffener01, and Stiffener02. Below this are 'U1_Assembly02', 'U1_Assembly03', and 'U1_Assembly04', followed by 'Unit02' through 'Unit05'. The main area contains a 'Connections' table and a 'Welds' table. The 'Connections' table lists connections between parts with their ranks and the number of welds. The 'Welds' table lists individual welds with their names, first and second parts, and weld types. A 'Create' dialog box is overlaid on the bottom right, showing a smaller version of the product hierarchy and a 'Create' button.

Rank	First Part/Assembly	Second Part/Assembly	Connection Status	Number of Welds
1	Plate01	Plate02	None	0
1	Plate01	Stiffener01	None	0
1	Plate01	Stiffener02	None	0
1	Plate02	Stiffener01	None	0
1	Plate02	Stiffener02	None	0
1	Stiffener01	Stiffener02	None	0

Weld Name	First Part	Second Part	Weld Type	Lesser T

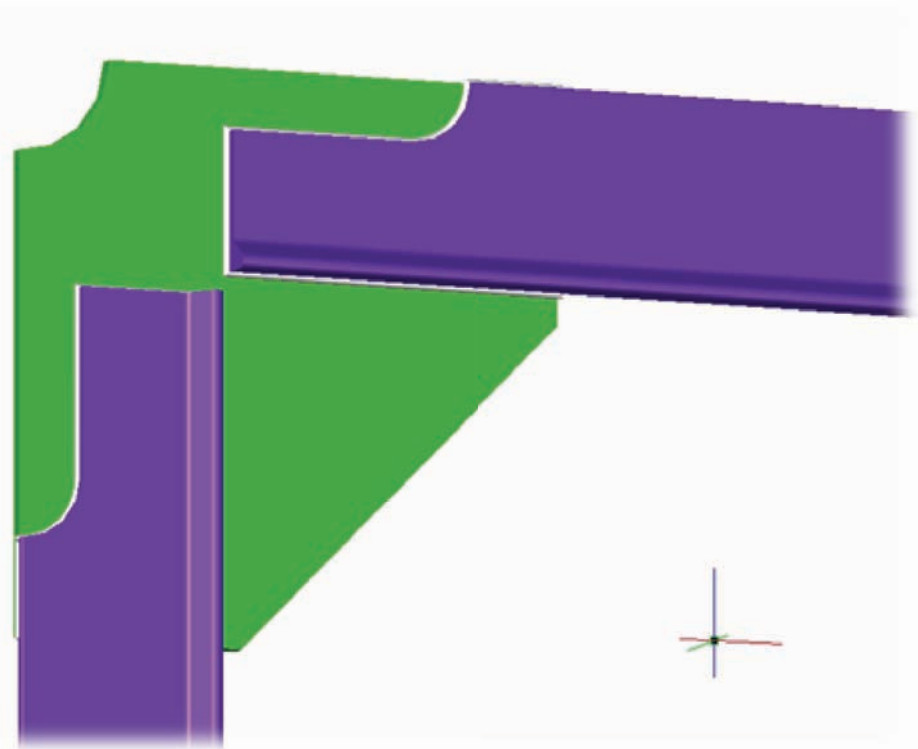
Weld Planning & Tracking Module - Quarter #2 Status - UI Weld Scheduling

- Application allows welds to be applied at another assembly stage.
- User may specify which stage they want the weld to be added by modifying the value in the Fitting Stage column of the weld in the Welds list.
- Default value will be at the common parent of both parts.

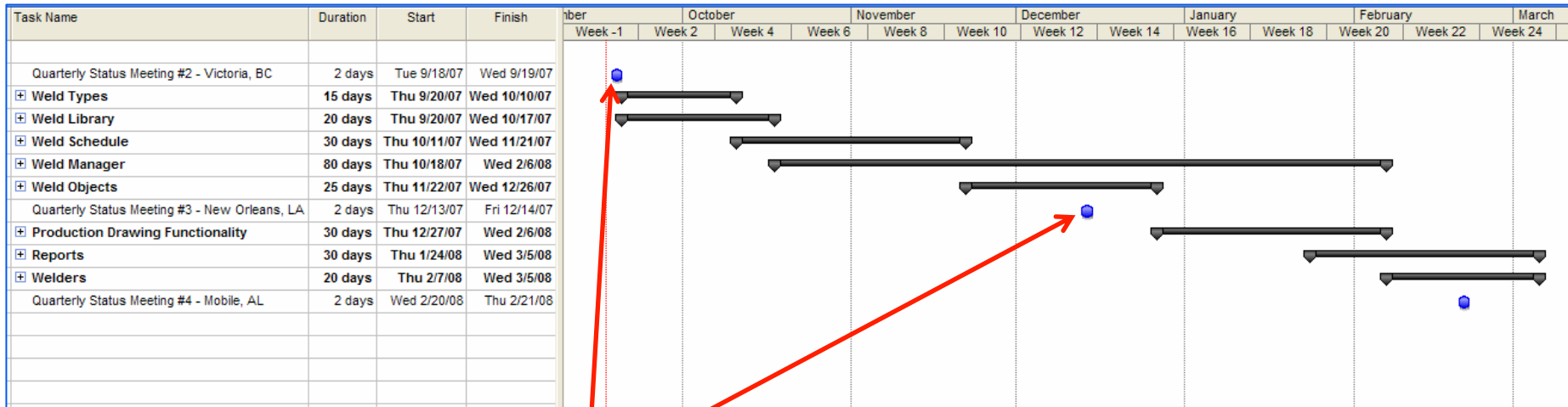


Weld Planning & Tracking Module - Quarter #2 Status – Weld Objects

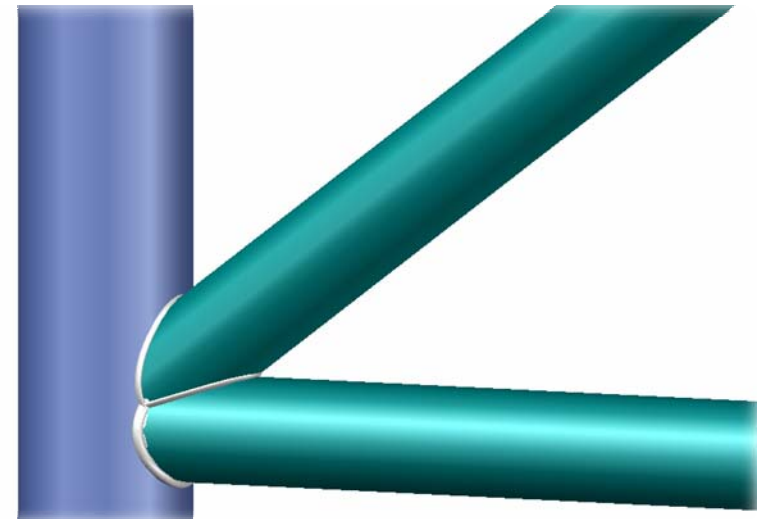
- Creation of Weld Objects
- Weld Edit Mode
- Arrow Side and Other Side
- Field Weld Symbols
- Display Options
- Stored Information
- Out-Of-Date Welds
- Re-Creation of Weld Objects
- Weld Symbol Placement
- Weld Objects in Assembly Drawings
- COM (NavisWorks)

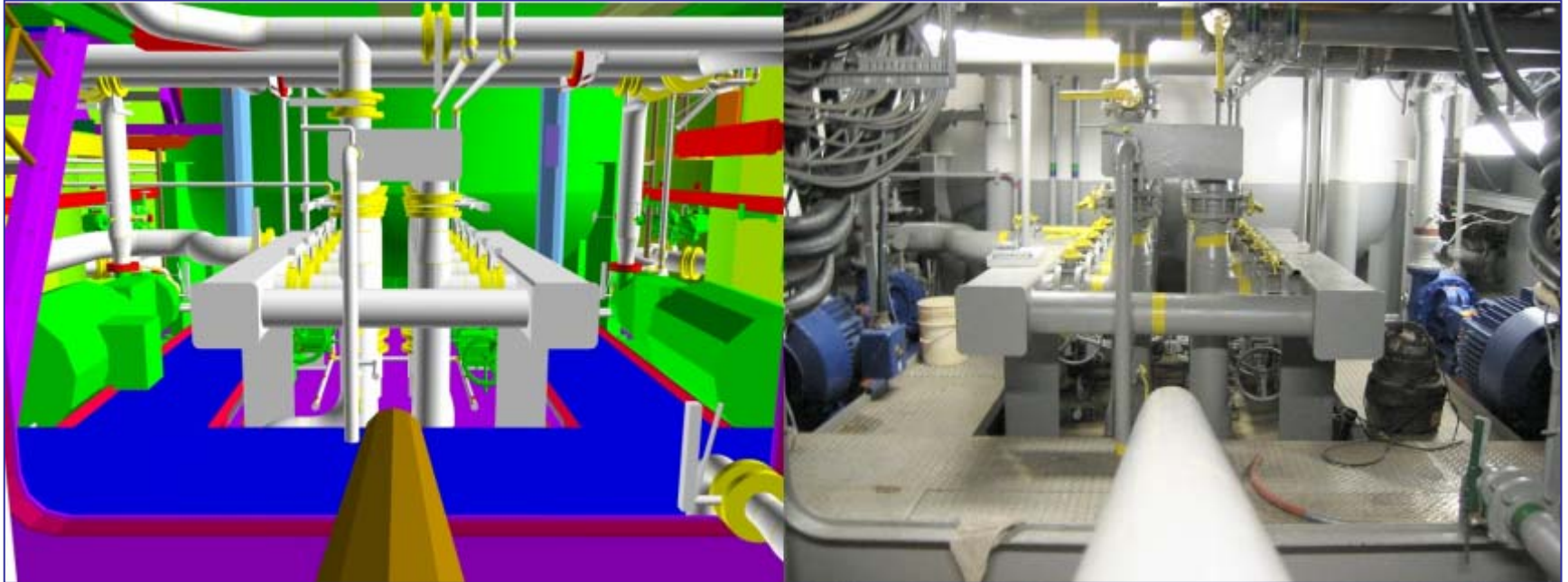


Weld Planning & Tracking Module – Quarter #3 Outlook – Development Schedule



- 3rd Quarter Development
 - Weld Types
 - Weld Library
 - Weld Schedule
 - Weld Manager
 - Weld Objects

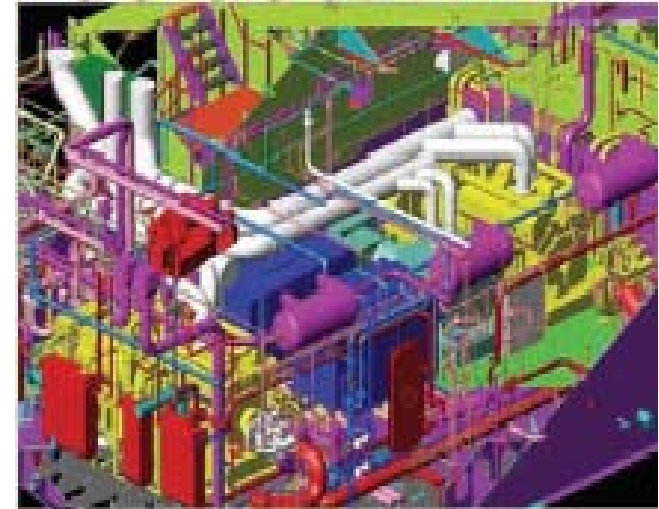




Second Tier Shipyard Design Enhancement Project III
EDUCATION & TRAINING MODULE

Education & Training Module - Background

- Focus on Marine Design
 - ShipConstructor used as a teaching tool
 - Marine Design is the curriculum focus
- Marine Education framework
 - 4 year degree programs teach engineers
 - 2 year program (University of Newfoundland Marine Institute) teaches and trains marine designers
 - Certificate programs for AutoCAD, vocational education programs



Education & Training Module - Continuing Education Framework

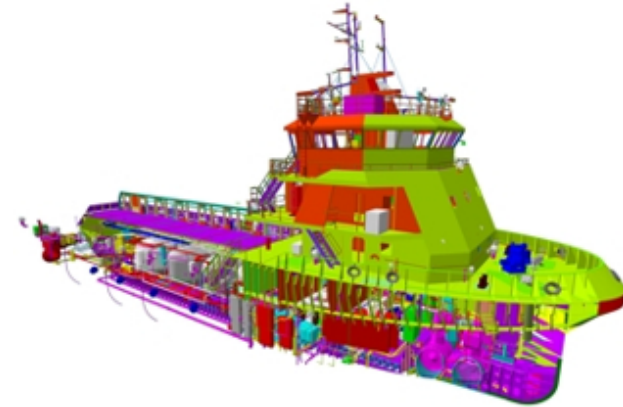
- Continuing Education program
 - Fast track training
 - ShipConstructor used as a tool
 - Flexible course structure
 - Accommodates employed people wanting to upgrade skills
- Two Universities involved in the development
 - University of South Alabama
 - University of Wisconsin, Marinette
- Worldwide Industrial Design Systems (WIDS) is helping the Two Universities with the course development.



Education & Training Development

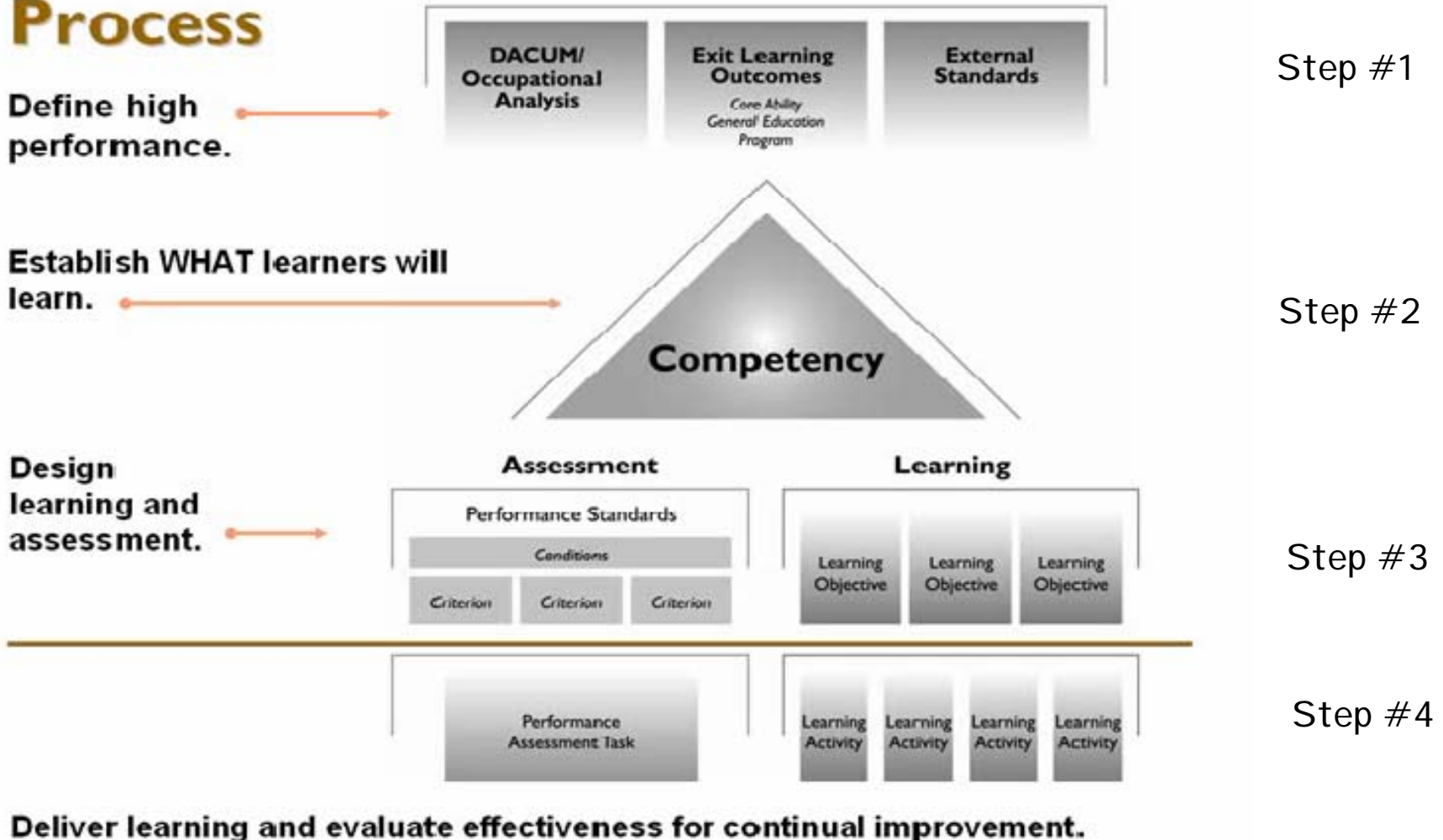
Major Tasks

- Develop a Marine Design Course curriculum with detailed descriptions of the material to be covered in each element of the curriculum.
- Establish grading criteria.
- Develop and publish the course material including texts, handouts, presentations, and test.
- Install software and training material in computer classrooms at both Universities.
- Provide training to all project team members and refine course material based on feedback



Education & Training Module – Development Process

Process



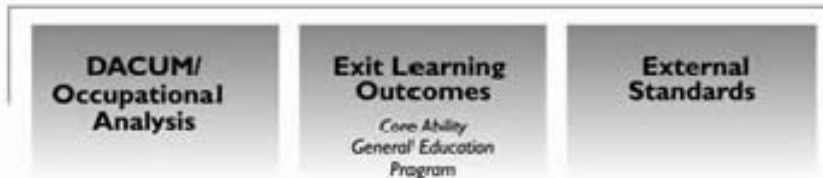
Education & Training Module – Status

- Workshop held on March 12th, 2007, on USA's Brookley Campus
- A Marine Design Competency Survey was developed. Critical to Never Use competencies were valued at 5 through 1.
- 25 NSRP team members completed the survey at the 1st Quarterly Mtg in Wisconsin.
- Results from the survey generated an initial short list of critical, need to know, maybe list of competencies.
- Selected WIDS (Worldwide Industrial Design Systems) to capture, build, and edit the curriculum as it was developed.
- These competencies were refined, categorized, and scrutinized over meetings that were held with the project team members. (Onsite, Webinars, Tele-Conference).
- Each team member's outcome summary report was used to build the initial course curriculum that was then consolidated into a Competence Validation Form.
- Each team member completed the Competency Validation Form and the first cut of the curriculum was provided to the group at the 2nd Quarterly Status Review Meeting in Victoria, BC on 9/18/07.

Education & Training Module – Development Status using WIDS

Process

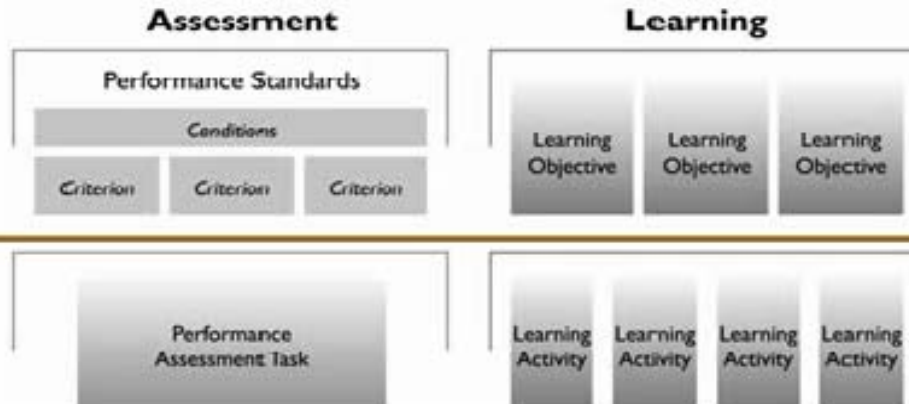
Define high performance.



Establish WHAT learners will learn.



Design learning and assessment.



Quarter #1

Quarter #2

Quarter #3

Deliver learning and evaluate effectiveness for continual improvement.

Education & Training Module – Continuing Education Marine Design Courses

Prerequisites:

- AutoCAD Knowledge (2D & some 3D)
- General Math Skills – Geometry, Trigonometry, Algebra
- Drafting Skills (a plus)

Continuing Education Program:

- 40 hour courses
- Certificate Program
- Not a 4 or 2 year degree program
- Day / Night / Distant Learning

Introduction to
Shipbuilding

Basic Drafting

Build Strategy

Disciplines

Disciplines –
Advanced

Target Learner:

- High School Diploma or Technical College Graduate
- Existing Shipyard Employee w/no Engineering
- Potential employee outside the shipbuilding industry
- Title Junior Designer, Apprentice
- Mentoring by a Senior Designer still required