National Shipbuilding Research Program

CPC Enhancements

Final Project Review

September 19, 2012

Groton, CT

BIW

Ingalls Shipbuilding
A Division of Huntington Ingalls Industries

NSRP Research Announcement (RA)

- It's been a challenging but successful journey!
- NSRP RA 0801 issued Oct. 19, 2009
- CPC Enhancement abstract was submitted on Nov. 12
  - –Developed by the CPC participating shipyards with EB as the lead.
- Content of this abstract was;
  - –Task 1 – Network, Software and Application Changes, Task 2 – Model inclusion and exchange, Task 3 – Functionality enhancements and Task 4 – Additional participation.
- The abstract submitted on Nov. 12 received a Grade of "A"
- Based on the abstract response, the team developed an NSRP proposal – CPC Enhancements – and submitted it on Feb. 12
- Blue Ribbon Panel review March 31
- Notification of selection on April 29
- 30-Day Letter Contract executed May 3.
- Definitive Technology Investment Agreement expected May 28, 2010

CPC Enhancement Project

- CPC had been in production since 2004 and we had many requests for enhancements both internal & external
- Executive Steering Committee met at HII-Ingalls
  - CPC enhancements would require a software upgrade
  - We agreed to submit a NSRP project proposal to RA 0801 and proceed if awarded
- NSRP project consisted of four tasks:
  - Task 1 – Network, Software and Application Changes
  - Task 2 – Model inclusion and exchange
  - Task 3 – Functionality enhancements
  - Task 4 – Additional participation
- Tasks 2, 3 and 4 were dependent on the successful completion of Task 1(Upgrade)

Task 1 – Network, Software and Application Changes

- Accomplishments
  - Completed the Requirements Phase of the upgrade
    - CPC Upgrade Solution and Data Base Migration Specification was completed
    - It was estimated to take 9 – 12 months to upgrade the current Software environment
    - Implementation strategy would be to upgrade the GD environment, “clone” it and send to HII-Ingalls for installation
    - HII-Ingalls would install and then regression test basic functionality
    - Upon successful completion of testing, both sites would turnover to production
  - Decision to proceed and IT Implementation projects for the Upgrade were submitted and approved by all three shipyards

Task 1 – Network, Software and Application Changes (cont'd)

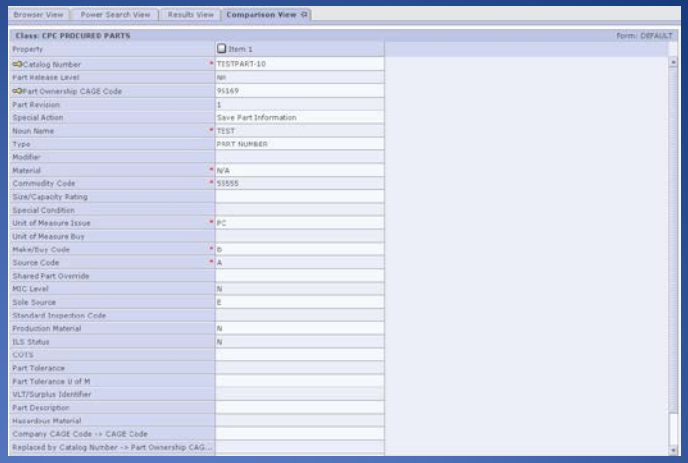
- Completed the Implementation Phase
  - Development of the DB migration scripts to update the current CPC DB to the current JDA product release
  - S/W Installed
  - Database Installed
  - Database Migrated
  - Classification Schema reduced
  - User Acceptance Testing of CSM
  - Installed Legacy Interfaces
  - User Acceptance Testing of Interfaces
  - Completed the CPC Production Turnover
- EB, BIW and HII-Ingalls are in Production
  - Production Turnover completed at EB & BIW on 6/5/2011
  - Production Turnover completed at HII-Ingalls on 1/9/2012
    - HII-Ingalls turnover impacted by the Northrop Grumman to HII change
    - Shipyards have a demonstrated process to synchronize when HII-Ingalls went into production

Task 1 – Network, Software and Application Changes (cont'd)

- Issues
  - Shipyards are in production without Part Sharing enabled
  - Northrop Grumman to HII change required that a new T1 (communication) line be established between BIW and Ingalls for Part Sharing
    - Current date is TBD
  - Shipyards have a demonstrated process to synchronize when T1 line is in place
- Next Steps
  - Confirm schedule of T1 line
  - Complete the Part Sharing testing GD/HII-Ingalls
    - Configure MQ Series
    - Configure Weblogic
    - Install Part Sharing code
    - Test Part Sharing
    - Turn on Part Sharing between both environment
    - Migrate Delta Parts to GD & Ingalls

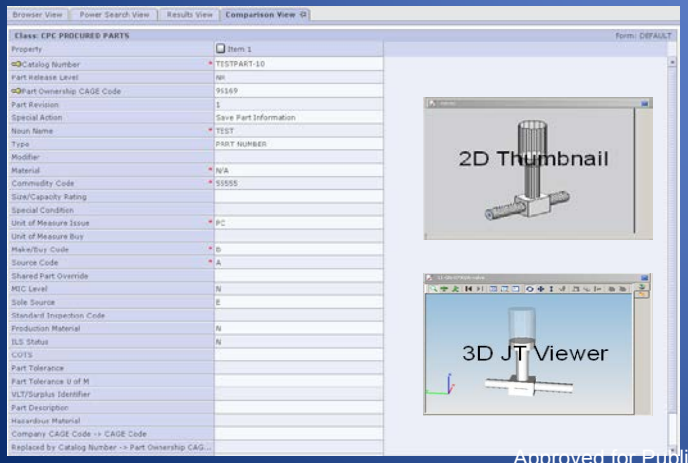
Task 2 – Model Inclusion and Exchange

Current CPC search results

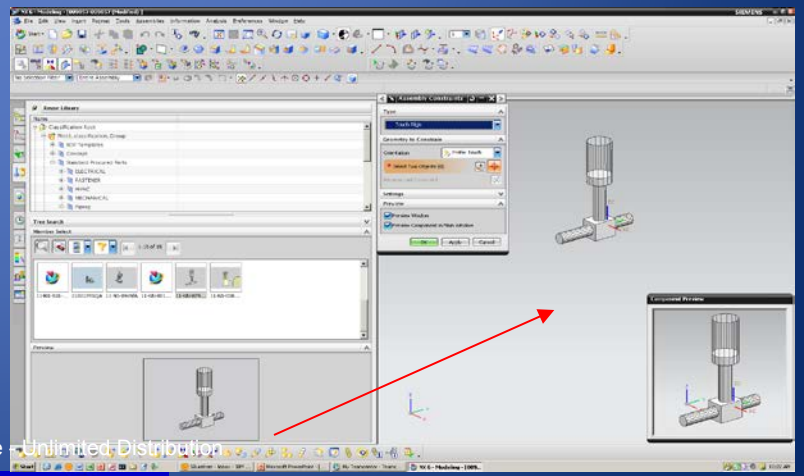


The addition of models to CPC will support more efficient part searches and promote the re-use of already established cross platform designs

CPC search results with 2D and 3D



Drag and drop into CAD session



Task 2 – Model Inclusion and Exchange (cont'd)

- Accomplishments
  - Reviewed requirements for successful model visualization or exchange
  - Analyzed potential neutral file formats to be used and selected best alternatives to be tested
  - Performed test exchanges at EB, BIW, and HII-Ingalls to evaluate various formats and tools
  - Evaluations incorporated requirements derived from VIRGINIA Data Migration, Common Missile Compartment, DDG-51, and DDG-1000 Projects
  - Considered issues related to project such as security and intellectual property
  - The final report was submitted on March 2, 2012

Task 2 – Model Inclusion and Exchange (cont'd)

- Issues
  - Multiple formats (i.e. JT and 3D PDF) meet visualization requirements and shipyards are split as to best choice
  - Transfer of actual models may not provide as much benefit as hoped unless all shipyards use identical modeling standards, level of detail, and annotation techniques
    - A standard modeling template "DED" will help define common modeling rules each shipyard will need to author into shared parts for reusability
- Next Steps
  - The team submitted and was awarded a SDMT Panel project proposal "Prototype Implementation of a Visualization System for 3D Models of CPC Parts" – Scheduled completion date is July 31,2013

Task 3 – Functionality Enhancements

- **We have three sources of enhancement requirement requests**
  - **CPC Navy Pilot**
    - ***More National Stock Numbers (NSN) in CPC***
    - ***Include shipyard inventory levels for the part numbers***
    - ***Include Carrier part numbers***
  - **CGNx/CGx *Material Standardization and Procurement Working Group***
    - ***One common set of procurement notes***
    - ***Cross-Contract Material Use and Part Identification (specification 'effective" dates)***
    - ***Consolidated procurements***
  - **Participating Shipyards**
    - ***Build part and document creation templates***
    - ***Creating an electronic part request capability***
    - ***Increase the level of Integrated Logistics Support Data***
    - ***The ability to add large amounts of text data to an attribute***

These enhancements will be managed with the existing Central Configuration Control Group Change Request Process

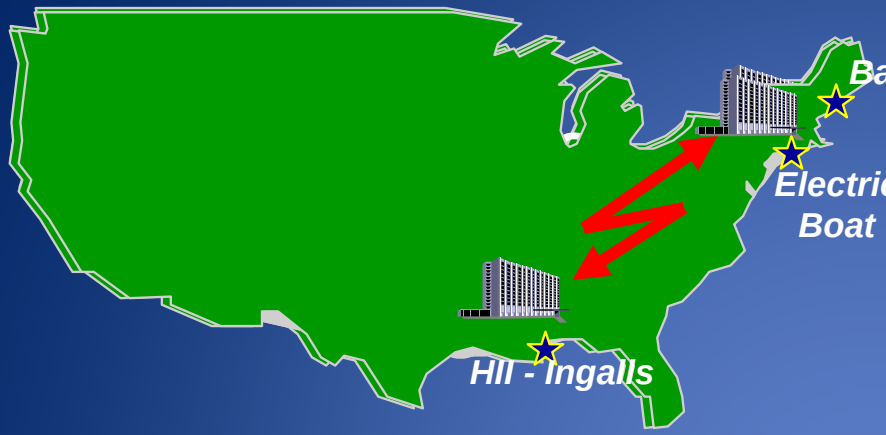
Task 3 – Functionality Enhancements (cont'd)

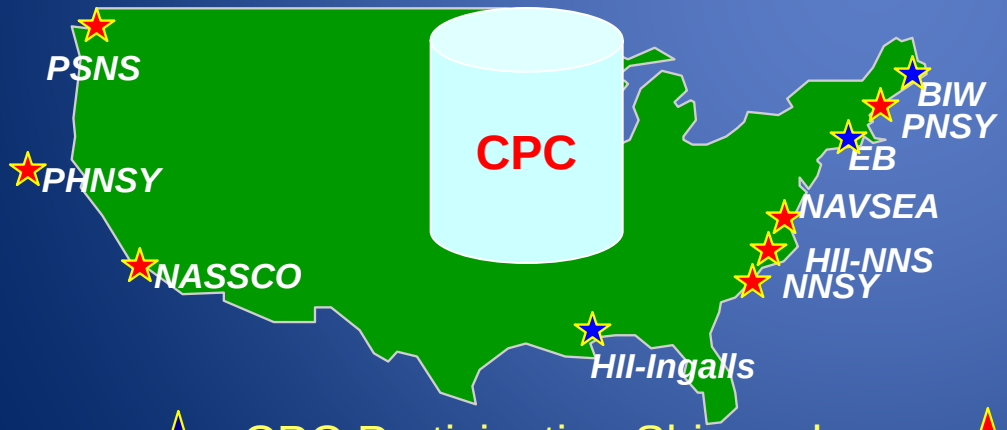
- Accomplishments
  - We worked our list of 22 enhancements
    - 2 enhancements were deployed with the upgrade
      - Reduced Classification Schema, Single Screen
    - 3 additional enhancements received IT approval and funding and were implemented
      - Inactive Part Release Level, MSDS mapping class, Shock Data
    - 2 additional enhancements that received company approval and funding were implemented at EB and BIW on June 10
      - Part Navigator – will enable users to filter through the available parts - and their attributes - to find the relevant ones (Indexed)
      - ABPP will provide a Wizard that will guide the user through the Part and Document Creation process; Provide an integrated New Part Request and approval process
      - HII-Ingalls has submitted a 2012 IT project for Part Navigator and ABPP
        - Additional functionality can be independent to each environment

Task 3 – Functionality Enhancements (cont'd)

- Issues
  - Competing priorities with Key CPC resources
  - We agreed to review any new requirements with HII-NNS and NASSCO and ensure that we did not introduce any risk to their evaluation and final reports
- Next Steps
  - Continue to work the list of enhancements as part of our normal CCCG process

Task 4 – Additional Participation





Project Steps For A "Go / No Go" Recommendation

- ✓Current State
  - ➢Data
  - ➢Systems
- ✓Lessons Learned
- ✓Best Practices
- ✓Desired Future State
- ✓Develop system design and interface requirements
- ✓Business Case
- ✓Three final reports:
  - ✓ HII-NNS, NASSCO, Navy

★ CPC Participating Shipyards ★ Potential Participants

Task 4 – Additional Participation (cont'd)

- Accomplishments - NASSCO
  - Reviewed all applicable CPC documentation – no critical issues noted
  - Maintained weekly communication between Project Leads throughout
  - Held Team meetings and Project Workshops as planned
    - Defined the Current State
    - Designed an Implementation Model utilizing existing CPC data structures/system architecture
    - Identified Cost/Savings Elements
    - Defined Internal and External Benefits
    - Created project scope and actions
    - An SP 9-7 was processed and approved to allow NASSCO personnel access and write permission in the BIW/EB CPC Stage Environment
      - Direct access would have allowed NASSCO to become familiar with the CPC functionality and also allow them to run some data analysis to determine scope of data conversion effort
  - Final report submitted on July 31
- Issues
  - Connectivity – NASSCO to CPC
    - Became challenging due to other corp. projects
    - Was not able to be completed in time for a meaningful review
  - Compatibility with existing and potentially new MRP/ERP systems
  - Impact of HII-NNS evaluation

Task 4 – Additional Participation (cont'd)

- Recommendation - NASSCO
  - Due to the significant costs of implementation the recommendation is not to proceed until costs and benefits can be quantified with more certainty/accuracy
    - Costs to implement are significant when including the data conversion from existing MACPAC Parts to Common Parts Catalog
    - NASSCO team recommended a pilot to plan, research and execute a limited scope data conversion and validate the best data conversion method and refine associated labor estimates
  - The next step would be to determine funding source and coordination with any CPC Additional Participation plans

Task 4 – Additional Participation (cont'd)

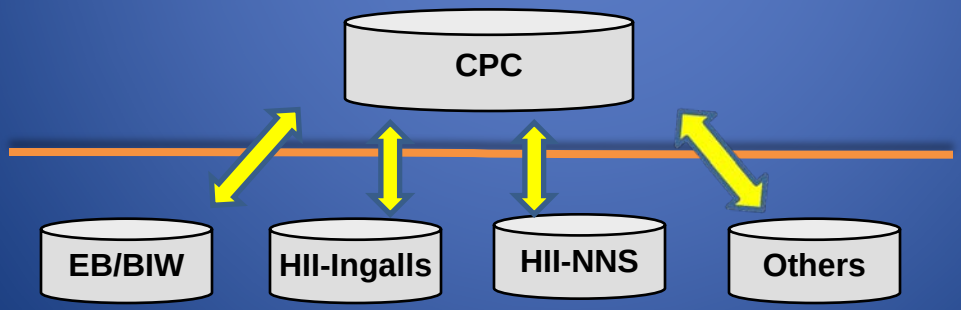
- Accomplishments – HII-NNS
  - Initial report completed and submitted to EB on 1/5/2012
- Issues
  - HII-NNS proposed a data translation solution in lieu of the direct data migration solution currently employed by the CPC participating Shipyards
  - Per the direction of PEO Carriers and the NSRP Executive Control Board (ECB), we held a meeting on 3/28 & 3/29 at NNS to discuss the issue
  - The CPC shipyards and HII-NNS agreed to conduct a data alignment pilot on currently shared date to determine the level of change required to enable the direct data exchange
    - This pilot consisted of approximated 20% of the total data fields (part attributes) contained in both the NNS and CPC catalogs

Task 4 – Additional Participation (cont'd)

- Pilot Results
  - Review identified both improvements and compromises needed to establish an agreeable CPC Compatible Structure
  - There were no insurmountable ("Show-Stopper") differences involving data element field sizes, titles and alignment of joint Enumerated Valid Values (EVVs)
  - The remaining 80% of part attributes are also considered reconcilable in order to establish unified cataloging system and continued alignment to support such cataloging features as ILS Worthiness identification, HAZMAT control, Specification Effectivity Management history, etc.
  - There are areas where there exists a significant difference in the methodologies used and the team is to establish a "Best Practice" from the combination of CPC and NNS cataloging methods
    - Reconciling and minimizing the number of Leaf Classes
    - Managing Vendor Part Numbers, Specifications, and Procurement Provisions/Standard Clauses
    - Shipyard specific data elements/attributes, including new ones from NNS, need to be evaluated/re-evaluated for possible common 'global' adaption.
    - Review of document management
    - Identification of externally driven modifications to the requirements stated within a specification document; e.g., when the Ship Specifications states exceptions to a MIL-SPEC, FED-SPEC, etc.
    - Review of NNPI requirements to identify opportunities for improvement.

Task 4 – Additional Participation (cont'd)

- Pilot Results
- Review and discussion of the CPC data sharing environment vs. *Software as a Service* (SaaS) solution
  - HII-NNS proposes to restructure the current CPC server environment structure to move to a "Centralized location" which would have a common data model and server at the CPC level and interface servers linking to the CPC server by the individual shipyards.
  - Shipyard would push qualified parts "UP" to the CPC server and "Pull" parts from the common CPC server to the Shipyard systems.
  - The proposed structure could support growth and interfaces to the Navy's "Virtual Shelf", "Preferred Part", and NSN's catalog goals.



Task 4 – Additional Participation (cont'd)

- Recommendation – HII-NNS
  - NNS will participate in the CPC Configuration Control Group (CCCG) to start to bring about simple changes and prevent additional divergence as part of normal IT maintenance efforts until a mechanism is in place to address funding and execution of the more difficult and beneficial changes needed to bring the systems into alignment
  - A formal 'Request For Quotation' (RFQ) shall be submitted by the funding agency for official use in identifying cost and schedule. This RFQ shall include all CPC participation requirements in sufficient detail to allow for costing/scheduling breakdown
    - RFQ will be for the Establishment of ***'CPC Compatible Structure'*** - In order to provide part data exchange with the participating shipyards, the plan will be to identify structural difference that inhibit exchange, reconcile these differences, then begin the process of sending data, receiving data, and using data

Task 4 – Additional Participation (cont'd)

- Accomplishments – Navy Access
  - CPC evaluation meeting held with NAVSEA, DLA and PNS reps at EB
  - NAVSEA requested an initial review on connectivity to determine if there are any roadblocks before proceeding
  - NAVSEA provided CSC the IP addresses of the sites that they want to have access to determine feasibility
- Issues
  - It has proved difficult for the Navy to work through different organizations and their respective IT departments given the hypersensitivity to IT issues they face. As suspected, it is not as simple as just providing IP addresses
  - We are currently working with a single POC at NAVSEA to focus on one specific site.
  - The Navy is in the process of approving the addition of the CPC IP address to their firewall.
- Next Steps
  - Determine connectivity feasibility

Deliverables

MILESTONE NUMBER	TASK	DATE	PAYABLE MILESTONES and ASSOCIATED DELIVERABLES	Incremental % Complete	Cumulative % Complete
1	5 - Program Management	05/15/10	Kick-off Meeting	0	100
2	5 - Program Management	06/15/10	Program Management Plan	0	100
3	5 - Program Management	06/15/10	Technology Transfer Plan	0	100
4	1 - Network, Software and Application Changes	06/30/10	Efforts described in the First Quarter Technical Status Report	0	100
5	5 - Program Management	06/30/10	First Quarter Business and Technical Status Reports	0	100
6	1 - Network, Software and Application Changes	09/30/10	Efforts described in the Second Quarter Technical Status Report	0	100
7	3 - Functionality enhancements	09/30/10	Efforts described in the Second Quarter Technical Status Report	0	100
8	5 - Program Management	09/30/10	Second Quarter Business and Technical Status Reports	0	100
9	1 - Network, Software and Application Changes	12/31/10	CCCG procedures, Data Element Dictionary, Classification Schema, Data Model Architecture revisions with Task 1 impacts	0	100
10	2 - Model inclusion and exchange	12/31/10	Efforts described in the Third Quarter Technical Status Report	0	100
11	3 - Functionality enhancements	12/31/10	Efforts described in the Third Quarter Technical Status Report	0	100
12	5 - Program Management	12/31/10	Third Quarter Business and Technical Status Reports	0	100
13	1 - Network, Software and Application Changes	03/31/11	Final Report Task 1	0	100
14	2 - Model inclusion and exchange	03/31/11	Efforts described in the Fourth Quarter Technical Status Report	0	100
15	3 - Functionality enhancements	03/31/11	Efforts described in the Fourth Quarter Technical Status Report	0	100
16	4 - Additional participation	03/31/11	Efforts described in the Fourth Quarter Technical Status Report	0	100
17	5 - Program Management	03/31/11	Fourth Quarter Business and Technical Status Reports	0	100
18	2 - Model inclusion and exchange	01/13/12	CCCG procedures, Data Element Dictionary, Classification Schema, Data Model Architecture revisions with Task 2 impacts	0	100
19	3 - Functionality enhancements	06/30/11	Efforts described in the Fifth Quarter Technical Status Report	0	100
20	4 - Additional participation	06/30/11	Efforts described in the Fifth Quarter Technical Status Report	0	100
21	5 - Program Management	06/30/11	Fifth Quarter Business and Technical Status Reports	0	100
22	2 - Model inclusion and exchange	02/29/12	Final Report Task 2	0	100
23	3 - Functionality enhancements	09/30/11	Efforts described in the Sixth Quarter Technical Status Report	0	100
24	4 - Additional participation	09/30/11	Efforts described in the Sixth Quarter Technical Status Report	0	100
25	5 - Program Management	09/30/11	Sixth Quarter Business and Technical Status Reports	0	100
26	3 - Functionality enhancements	09/30/12	CCCG procedures, Data Element Dictionary, Classification Schema, Data Model Architecture revisions with Task 3 impacts	0	95
27	4 - Additional participation	12/31/11	Efforts described in the Seventh Quarter Technical Status Report	0	100
28	5 - Program Management	12/31/11	Seventh Quarter Business and Technical Status Reports	0	100
29	3 - Functionality enhancements	09/30/12	Final Report Task 3	5	95
30	4 - Additional participation	09/30/12	Final Report Task 4	10	95
31	5 - Program Management	09/30/12	Eighth Quarter Business and Technical Status Reports		
32	5 - Program Management	09/30/12	Final Business and Technical Status Reports		
Grand Total					

Wrap Up / Questions?