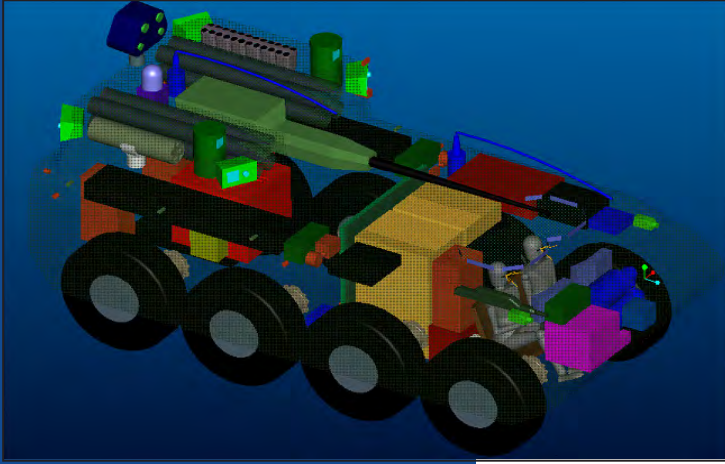


Integrated Steel Processing Environment



Enables yard-neutral work-share data exchange among shipyards

The primary activities during the initial phase were to develop the requirements for the overall Integrated Steel Processing Environment (ISPE) system and to define the future stages of the project. Defining the requirements allows the team to design and integrate the right system to support shipyard processes and to know when the system is complete. From a research perspective, the requirements products will focus effort on high-payoff extensions of emerging STEP data standards and application protocols for shipbuilding and create explicit representations of yard-specific manufacturing rules.

While only the initial phase was funded, the full ISPE concept partitions steel processing development into yard-specific and yard-neutral functions. The ISPE program goal is to develop, implement, demonstrate and transition technology for standards-based definition of steel work packages that will enable yard-neutral work-share data exchange among shipyards. ISPE technology will capture definition of steel manufacturing data and information in a digital form that is neutral with respect to:

- The design/CAD system used to develop the ship's structural design
- Yard-specific cutting and fabrication processes

ISPE-enabled yards will apply yard-specific processes, manufacturing rules and enterprise system interfaces to steel-cutting machines in order to ensure local manufacturability of ISPE work packages.

The ISPE system is envisioned to:

- **Enable efficient partnering among shipyards** – lead-follower partner and subcontractor yards will be able to exchange unit/module work packages independent of the underlying structural CAD package. ISPE will also separate physical product definition data from yard-specific manufacturing processes, enabling the outsource yard to apply its standard processes transparently.
- **Decouple CAM from CAD** – ISPE will develop a controlled and consistent application of STEP application protocols to physical product definition and implement middleware to transform from CAD-generated extractions to this controlled representation. In addition to controlling representation, the middleware will manage accuracy of transformations at every step of part/assembly definition.

The ISPE project transferred the proposed technology throughout the U.S. shipbuilding industry through demonstrations, pilots/prototypes and industry editorial coverage and symposia.

Objective

To develop technologies and integrate a pilot system that will enable CAD-neutral interchange of steel fabrication work packages among associate shipyards. The initial phase will collect and document shipyard requirements.

Performing Activities

Northrop Grumman Ship Systems, Northrop Grumman Newport News, General Dynamics Electric Boat, Northrop Grumman Information Technology/DES, STEP Tools, Sigmatek, Aero-Hydro, NIIST.

Accomplishments

- Requirements identified and documented.

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DURATION: May 2002 - April 2003

INDUSTRY INVESTMENT: \$562K

NSRP ASE INVESTMENT: \$374K

