

# STEP Shipbuilding Interoperability Forum



- **Panel Chairperson:**
  - **Dr. Burton Gischner**
- **Panel Vice-Chairperson and Forum Leader:**
  - **Dr. Gerald Radack**

# **STEP Shipbuilding Implementation Forum**



- **PDES, Inc. and ProSTEP (in Europe) hold CAx Implementer's Forums for STEP AP 203 implementations every six months**
- **STEP Shipbuilding Implementation Forums are based on this model**
  - **Run under auspices of NSRP Systems Technology Panel**
  - **Conducted in conjunction with Panel Meetings at same location approximately 3 times per year**
  - **Panel funds logistics and runs forum**
  - **Results are reported at ISO TC184/SC 4/WG 3/T 23 Meetings**
  - **Participation by implementers of STEP shipbuilding APs is crucial to success of this endeavor**

# Guidelines for STEP Shipbuilding Implementation Forums



- **Led by Panel Vice-Chairperson – G. Radack**
- **Assisted by Panel Chairperson – B. Gischner**
- **Primary goal is to improve translators and help enhance interoperability among shipyard CAD systems**
  - **Translators tested will be latest available, not released or production software**
- **Results will be reported as to percent of successful transfers, which test problems caused difficulties, etc.**
  - **Problems will not be assigned to particular systems or vendors**
- **Panel will fund:**
  - **Meeting room and refreshments**
  - **Any outside help needed to evaluate results or organize forums**

# Participating Systems in STEP Shipbuilding Implementation Forums



- **Preprocessors**

- *SYSTEM*

- LEAPS

- ShipConstructor

- ISDP

- COMMANDS

- COMPANY*

- NSWCCD/Product Data Services

- ShipConstructor

- Intergraph

- Electric Boat

- **Postprocessors**

- LEAPS

- NSWCCD/Product Data Services

- ShipConstructor

- ShipConstructor

- SmartMarine

- Intergraph

- COMMANDS

- Electric Boat

- Product Information Explorer

- LSC

- **Viewers**

- IDA Viewer

- LKSOFT

- Knowledge Manager

- Knowledge Systems Solutions

# Format for STEP Shipbuilding Implementation Forums



- **Proposed Format**

- **Session to compare results of tests and resolve issues with translators**
- **Will be held either immediately preceding or following Systems Technology Panel Meeting or other Event**
- **Results will be reported as to percent of successful transfers, which test problems caused difficulties, etc.**
  - Problems will not be assigned to particular systems or vendors

- **Remote Participation**

- **One can participate in the exchange and validation process without attending the meetings**
- **Any participant exchanging files and results will be kept abreast of developments and considered to be a full participant in the STEP Shipbuilding Implementation Forums**

# Website Under T 23



- <http://www.nsrp.org/t23>
- **EXPRESS schema (with corrections)**
- **HTML version of schema**
- **Implementers agreements**
- **Issues log**
- **Test cases**
  - **Document describing test case (annotated drawings and/or drawing numbers)**
  - **Reference STEP file**
  - **Vendor STEP files (after end of round, with vendor release)**
  - **Reference JPEG and VRML graphics**
  - **Vendor JPEG and VRML graphics (after end of the round, with vendor release)**
- **Link to TWR website**

# Distribution



- **Email distribution**
  - **Members exploder list restricted to active members of the Forum**
  - **General messages sent to T 23 and Systems Technology Panel lists**
- **File distribution**
  - **Via ISE Tools website and email**
- **Publicity**
  - **Web page**
    - **Links from Panel page on NSRP Web site and ISO TC184/SC4/WG3/T 23 Web site**
  - **Occasional messages to SC 4 community**



# Validating Files

- **Files will be run through validation checker before distribution to participants**
  - **Files must conform to schema and satisfy all WHERE rules except as noted in implementers agreement**
- **Recommended versions of tools – post on website**
- **Potential tools for checking**
  - **ST-Developer: STEP Tools, EB, Intergraph**
  - **EDM: EPM, NGSS, LSC**
  - **EXPRESSO: CTC**
  - **ECCO: LSC**

# Meetings and Participation



- **Non-US organizations are welcome to participate**
- **Meetings**
  - **Working session**
    - **Before or after Systems Technology Panel Meetings**
    - **Active members can attend**
    - **Translator software developers are encouraged to attend**
    - **Attendees are encouraged to bring a development system**
      - **Demonstrate and fix problems on the spot**
  - **Report results at Systems Technology Panel and T 23 Meetings**

# APs



- **ISO 10303, *Industrial automation systems and integration — Product data representation and exchange***

Designation	Title	Ed	Document available
ISO 10303-215:2004	Application protocol: Ship arrangement	1	2004-05-12
ISO 10303-216:2003	Application protocol: Ship moulded forms	1	2003-07-17
ISO 10303-218:2004	Application protocol: Ship structures	1	2004-11-25
ISO 10303-227:2005	Application protocol: Plant spatial configuration	2	2005-10-11
ISO 10303-233:—	Systems engineering data representation	1	2011
ISO 10303-239:2005	Application protocol: Product life cycle support	1	2005-10-03
ISO 10303-242	Application protocol: Specification controlled model based 3D design*	1	2012



# APs and Formats

- **Guidelines:**
  - Only one AP be tested initially
  - When all major issues are successfully resolved, we will expand to test other APs
  - No formal schedule for expansion
    - Additional AP testing will be done by consensus among participants
- **AP Options:**
  - Initial Testing: AP 216
  - Current Testing: AP 215
  - Next Planned Option: AP 227 ed.2 (Piping)
  - Future Alternatives: AP 218, AP 209, AP 214, AP 239, AP 227 ed 2 (HVAC, cableways, mechanical)
- **Format Options:**
  - Selected Format: Part 21, ARM-XML

# Evaluation of STEP Preprocessors



- **STEP files generated must be run through validation software**
  - **EPM software**
  - **ST-Developer software**
- **Files will then be provided to all participants to run through their postprocessors**

# Evaluation of STEP Postprocessors



- **Criteria should check validity of part in receiving system**
- **Typical checks include:**
  - **Y values at various X, Z locations along moulded forms for hull**
  - **Surface area of selected moulded forms**
    - especially for curved surfaces like hull
  - **Volume of hull closed by main deck or selected compartments**

# Current Status of AP 216 Models



- **Questions have recently arisen about accuracy of TWR models on various systems**
  - **Are we modeling a “knuckle” in the main deck?**
  - **Are current models in LEAPS, ISDP, and FORAN consistent?**
  - **To validate exchange, models do not have to be consistent with drawings or with as-built conditions, they only need to be consistent among the various systems being used in this Testing Forum**

# Status of AP 216 Exchanges



- **Intergraph Hull on ISDP was transferred to Intelliship via AP 216**
  - Results at all points were within .001 Millimeter
- **Intergraph Hull from ISDP was transferred into LEAPS via AP 216 and then sent back from LEAPS to Intergraph via AP 216**
  - Awaiting report on accuracy of this loop test
  - Shortly metrics will be added to LEAPS to evaluate accuracy of files imported into LEAPS

# Future Direction



- **Cooperate with PLCS-IF**