

# **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 APs 203 and 214 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 three times per year**
  - **Panel funds logistics and runs forum**
  - **Results are reported at ISO TC 184/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 Forum**

- **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 Forum

- **Preprocessors**

<b><u>SYSTEM</u></b>	<b><u>COMPANY</u></b>
<b>LEAPS</b>	<b>NSWCCD/Product Data Services</b>
<b>ShipConstructor</b>	<b>ShipConstructor</b>
<b>ISDP</b>	<b>Intergraph</b>
<b>COMMANDS</b>	<b>Electric Boat</b>

- **Postprocessors**

<b>LEAPS</b>	<b>NSWCCD/Product Data Services</b>
<b>ShipConstructor</b>	<b>ShipConstructor</b>
<b>SmartMarine</b>	<b>Intergraph</b>
<b>COMMANDS</b>	<b>Electric Boat</b>
<b>Product Information Explorer</b>	<b>LSC Group</b>

- **Viewers**

<b>IDA Viewer</b>	<b>LKSOFT</b>
<b>Knowledge Manager</b>	<b>Knowledge Systems Solutions</b>

# **Format for STEP Shipbuilding Implementation Forum**

- **Reporting Format**
  - **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**
  - **Non-US organizations are welcome to participate**
  - **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 Forum**

# 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: ????**

# Meetings

- **Working session**
  - ❖ **Session to compare results of tests and resolve issues with translators**
  - ❖ **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	E d	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	2010*
ISO 10303-239:2005	Application protocol: Product life cycle support	1	2005-10-03

\*In preparation

# 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:**
  - **Prior Testing: AP 203, AP 209, AP 215, AP 216**
  - **Current Testing: AP 214**
  - **Next Planned Testing: SCIM molded forms model**
  - **Future Alternatives: AP 215, AP 218, AP 209, AP 227 ed 2 (piping, HVAC, cableways, mechanical), AP 239 (PLCS), SCIM parts**
- **Format Options:**
  - **Selected Formats: Part 21, ARM-XML**

# **Evaluation of AP 216**

## **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 AP 216**

## **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 whether the STEP files accurately model the current condition of the TWR 841**
  - **A “knuckle” in mid-ship was not included in early test files. Recent files developed by NSWC for the National Archives include the knuckle**
  - **LEAPS, ISDP, and FORAN models are not consistent. This is helpful for the test.**
  - **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.**