



*International TechneGroup Incorporated*

# Utilizing Product Model Intelligence for Damage Control Applications



INTEGRATION



# Outline

- International TechneGroup Incorporated (ITI) Overview
- Damage Control Data Requirements
- Standardized Product Model Requirements
- Damage Control Data Example
- Leveraging Product Model Requirements for Damage Control
- Conclusion / Recommendations

# ITI Overview

- Founded in 1983
- ITI is an International Leader in Interoperability Solutions
- Focused on
  - Interoperability Solutions
  - Technical Data Packaging (TDP) and Model Based Engineering (MBE)
  - Applied Technologies for New Product Development
  - Product Lifecycle
- Started working with Damage Control Organizations 6 years ago
- Major Clients / Partners Include:



U.S. AIR FORCE



# ITI Locations

**ITI TranscenData**  
Milford, OH

**ITI Europe**  
Cambridge UK

**ITI NPD**  
Torino, Italy  
Milford, OH  
Paris, France

**ITI iSiDentsu**  
Tokyo, Japan  
Osaka, Japan

**ITI SOLUTION**  
Shanghai, China  
Beijing, China

**ITI**  
Cincinnati HQ  
(Milford, OH)



**ITI Embedded Systems**  
Milford, OH  
Univ. of Cincinnati

**Technalysis, Inc.**  
engineering software and services  
Indianapolis, IN

**ITI Proficiency**  
Boston, MA  
Detroit, MI  
Munich, Germany  
Paris, France  
Tel Aviv, Israel

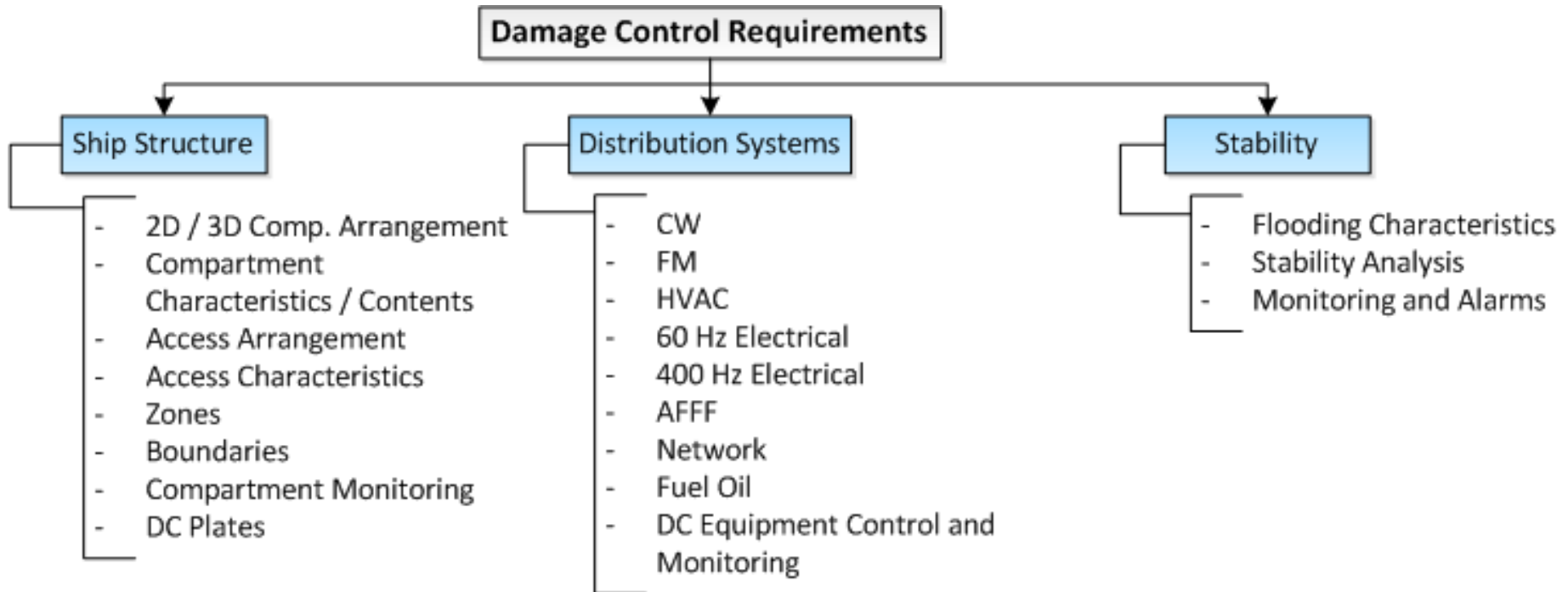
**ITI CIES**  
TOTAL SOLUTION  
Seoul, S. Korea

**ITI CONCENTRIC ASIA PACIFIC**  
Sydney, Australia

**ITI PROJECTVIEW**  
Power to the Team™  
Clemson, SC  
N. Charleston, SC  
(GOVT)

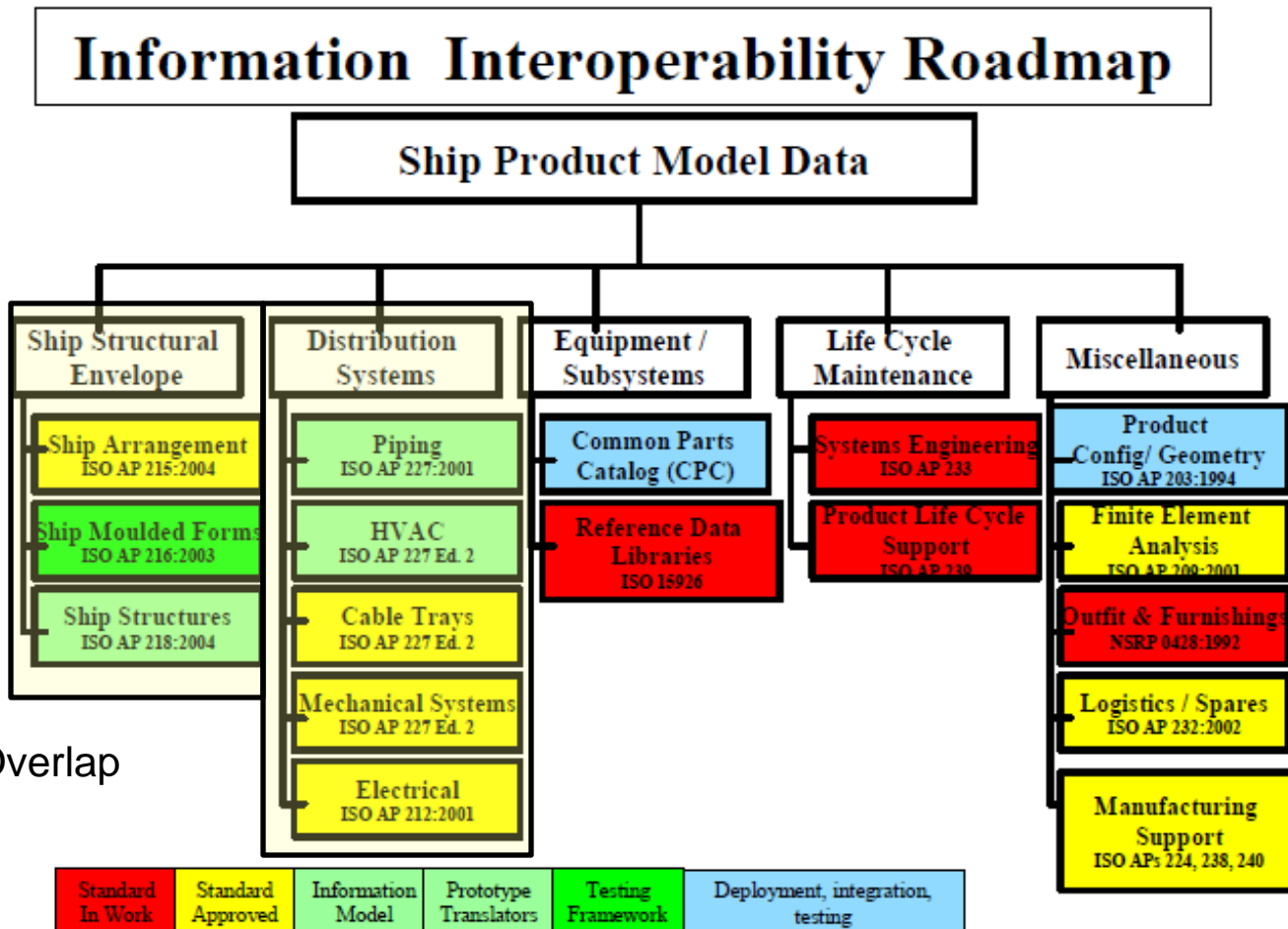
# Damage Control Ship Data Requirements

- Damage Control Data Requirements must be ship specific and accurate and are composed of one of the largest detailed data sets within the Navy after a ship is delivered
- The same information and systems are used in training and in actual casualty situations...they require intelligent models of the ship's characteristics...flat 2D drawings such as DC plates, alone, are insufficient



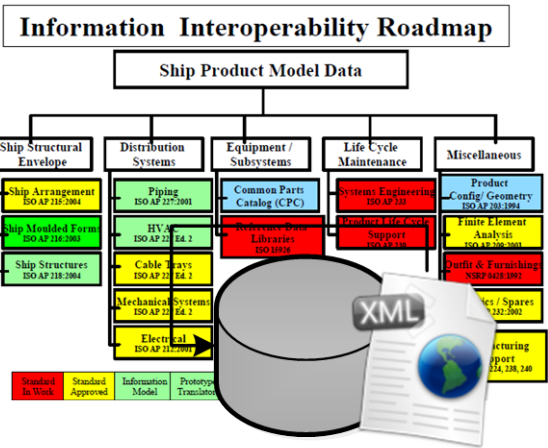
# Standardized Product Model Requirements

- Ship Application Protocols (AP), Ship Common Information Model (SCIM), PLCS, and LEAPS can be utilized and extended within Damage Control Standardized Data Models

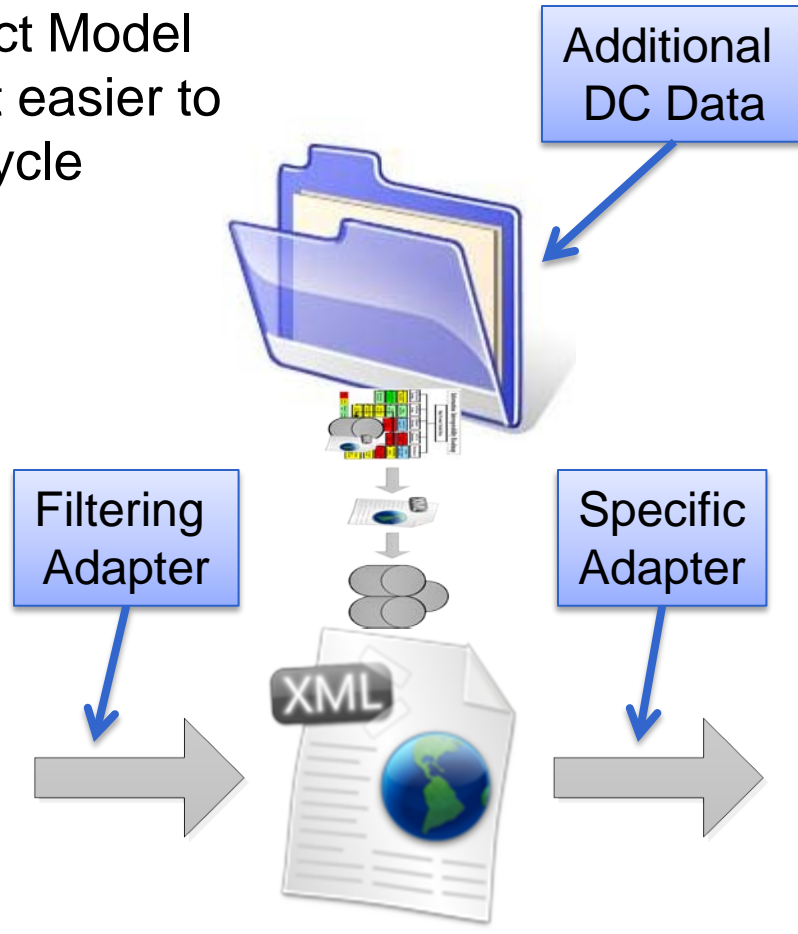


# Leveraging NSRP Initiatives for Damage Control Standardization

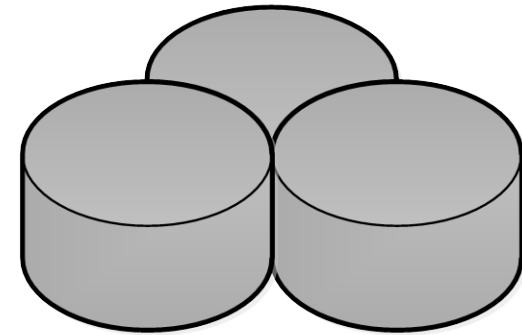
- Standardized Product Model Intelligence makes it easier to implement ship lifecycle standards



Product As Built Standard



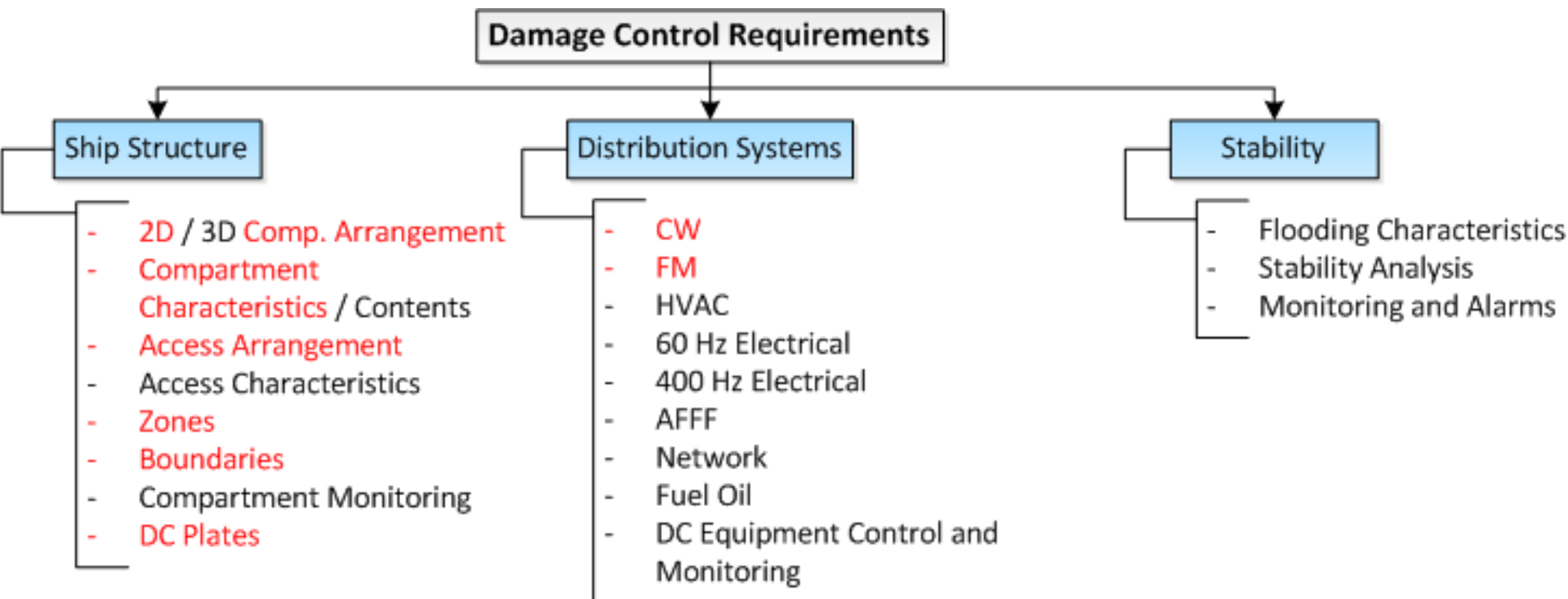
Damage Control Standard



Specific Damage Control Application Data

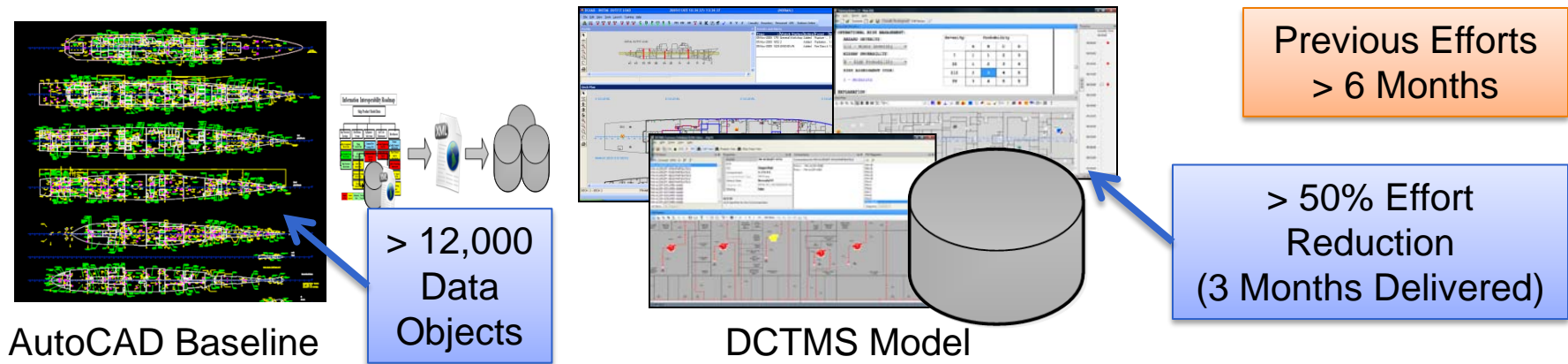
# Damage Control and Tactical Management System (DCTMS) Example

- DCTMS provides training, analysis, modeling, and tactical damage control for ship's force command and control operations
- Currently installed on DDG, CG, LHD, LPD, LCS, CVN, and WMSL (USCG) classes, 107 ships
- Planned installments for 27 ships next year
- Current Requirements Modeled (Additional Planned)



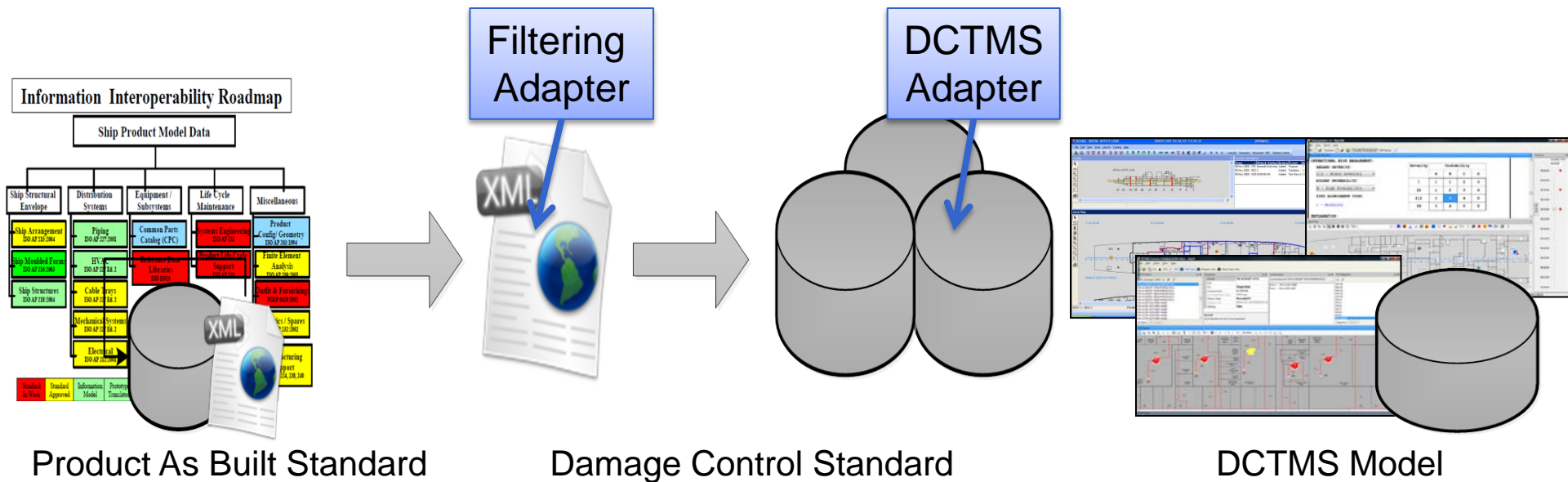
# DCTMS Case Study (CG Development)

- ITI was tasked during the DCTMS project to develop a baseline database for the CG 47 class ships
- ITI acquired most detailed drawings available – deck plan views developed within AutoCAD
- Through using ITI interoperability solutions, all compartment and access data was automated into the DCTMS data model
- Fire Main (FM) and Chilled Water (CW) systems were remodeled within Visio for extraction using various sources
- Additional time and costs were required to make ship specific



# Standardized Product Data for DCTMS

- CG 47 class case shows that a major reduction in effort and errors can be accomplished by utilizing product data.
- CG 47 source data was not fully intelligent such that full reduction could be made and would be difficult to duplicate without a common data format
- Case was baseline and not ship specific
- Standardized As Built Product Data would result in a repeatable process for ship specific data for all requirements



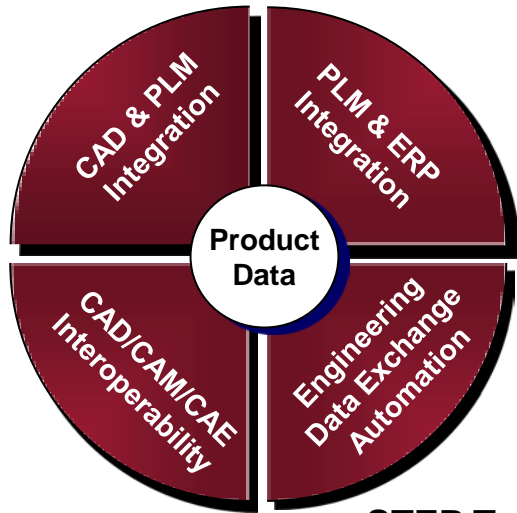
## Conclusion / Recommendation

- A long term solution to a repeatable process utilizing as built product model data would result in millions of dollars saved to rebuild ship data for damage control application models as well as give damage control an opportunity to enhance the capabilities to the Navy with more intelligent ship feature information reducing the overall total ownership cost.
- ITI and NSWC recommend that the subcommittees support a proof of concept to understand the current specifications and data models built to that specification and how it can be leveraged for damage control.
- This pilot approach will provide a working example of how the specification enhances damage control's ability to reuse product model data to feed DCTMS and other ship models.

# Appendix



# ITI Interoperability History



## Feature Based CAD Translation

- Acquired Proficiency

## Automation & Verification

- DEXcenter
- CADIQ Compare

## PLM Systems Integration

- Vendor/OEM Programs (Matrix, UGS PLM, etc.)
- PDM/CAD & PDM/ERP

## CAD Interoperability

- Acquired FECS Ltd. (CADfix)
- CAD Model Quality (CADIQ)

## STEP Translator Development

- ISO STEP Development Effort
- Vendor/OEM Programs (PTC, SDRC, Autodesk, etc.)
- IGESworks and STEPworks

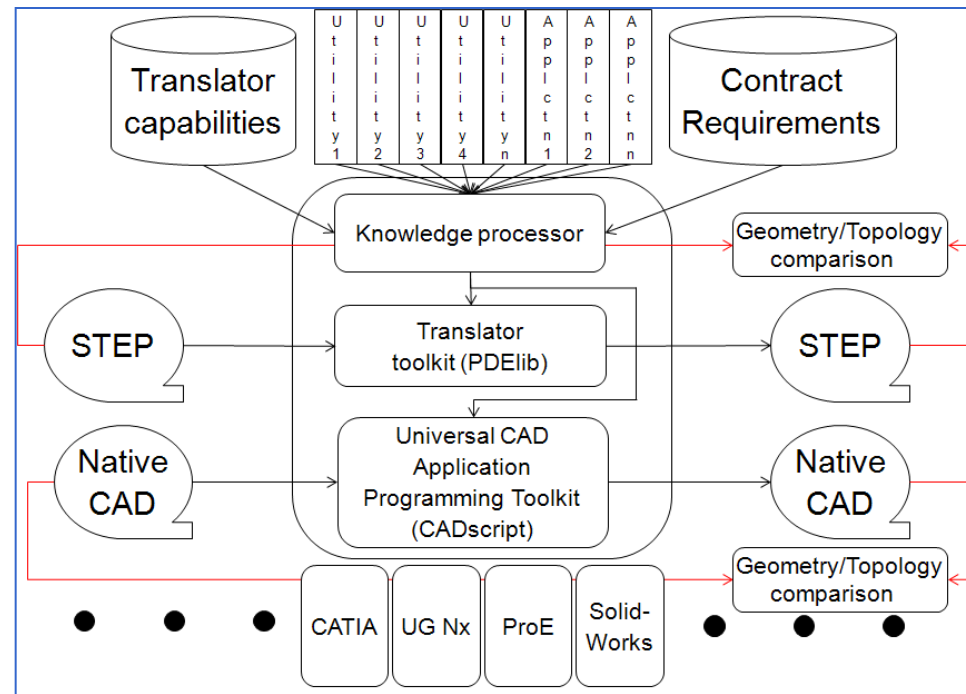
## IGES Translator Development

- IGES Standard Development Effort
- Major Industrial IGES Translators (Chrysler, Ford, etc.)
- Vendor/OEM Programs (CV, Mentor Graphics, etc.)



# ITI Examples

- Customer / Supplier Interoperability during Collaborative Design (CSI) for Technical Data Packaging (TDP)
  - A flexible, configurable, standards based system which can automate common tasks associated with Customer Supplier Interoperability
  - Easily / quickly configurable to handle different contract requirements
  - Leverages existing ITI technologies (DEXcenter, PDELib, CADscript, Proficiency)

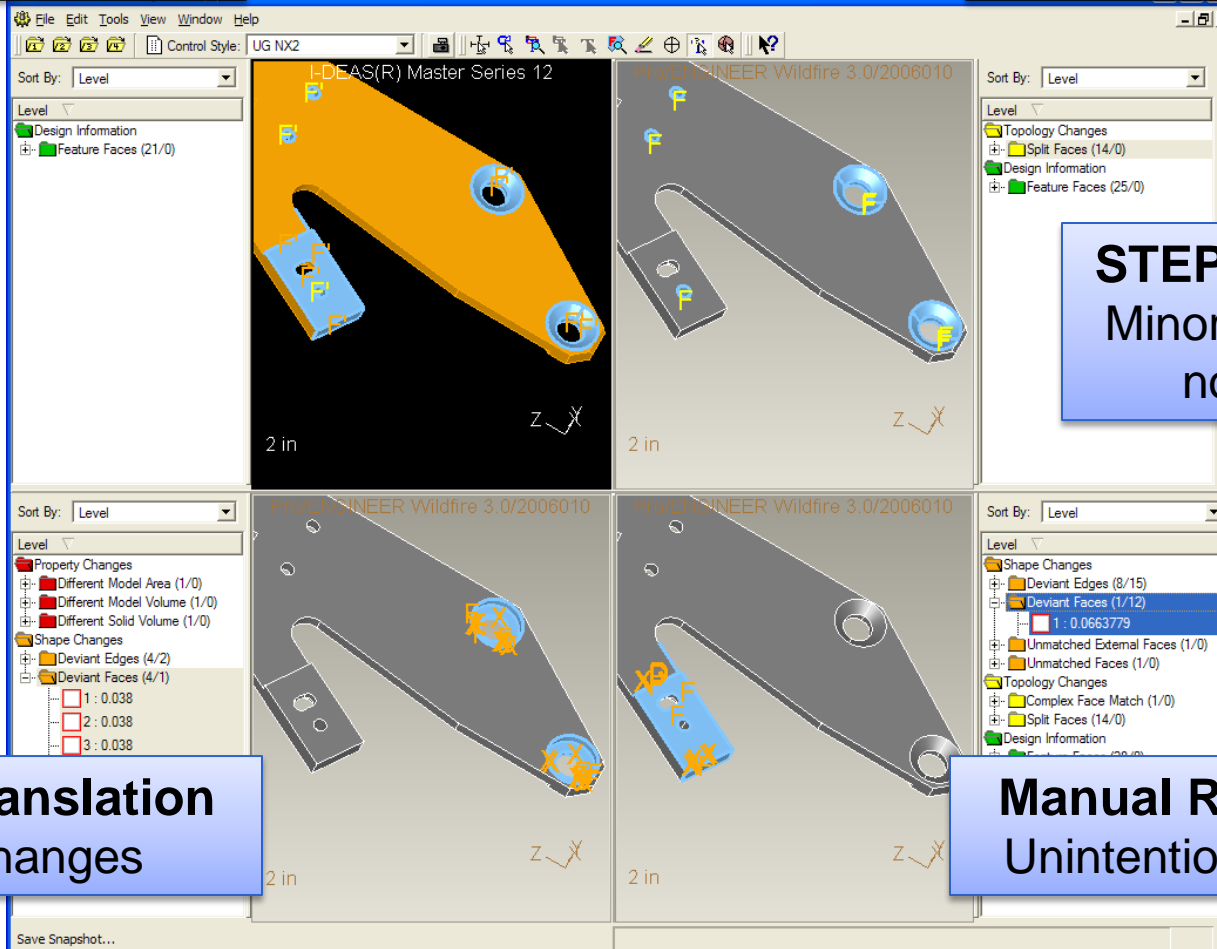


# ITI Examples

- Validation to Support MBE and TDP for DoD

Source / Legacy

Target / TDP



**STEP Translation**  
Minor changes but  
no features

**Feature Translation**  
Major Changes

**Manual Remastering**  
Unintentional Changes

**NIST**