The Product Development Framework
A Successful Technology Partnership

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Overview

- About TASC
- Government, University, Industry Partnerships
- Simulation Based Acquisition
- The Product Development Framework
- CoSim Demonstration
A growing, robust leader in systems engineering, systems integration and other information technology solutions for government and commercial clients.

- **Founded:** 1966
- **Revenues:** $440 million
- **Operating Income:** $42.3 million
- **Backlog:** > $525 million
- **Employees:** 2,700+
- **Offices:** 28 throughout U.S. and U.K.
  Headquarters in Reading, MA
- **Subsidiaries:** WSI, The Weather Dept. Ltd., The Computer Dept. Ltd.
Roles in Technology Development and Insertion

- **Government**
  - Set national priorities
  - Provide funding to meet priorities
  - Provide guidance and oversight

- **Universities**
  - Technology creation
  - Catalyst for pre-commercial technologies
  - Technology disciples

- **Industry**
  - R&D Contracts: practical use of technology for new applications
  - Dual Use Programs: support transition of technology into commercial market offerings
  - Leverages relationships with academic institutions
Partnerships in Simulation Technology

- Virginia Modeling, Analysis and Simulation Center, Norfolk, VA
  - Old Dominion University
- Training and Simulation Technology Consortium, Orlando, FL
  - Institute for Simulation and Training
  - University of Central Florida
- State University of New York (SUNY), Binghampton, NY
  - Annual Simulation Technology Symposium
- University of Washington
  - Human Interface Technology Lab
TASC is a leader of moving new technology into practice

- Executes both R&D and dual use contracts
- University relationships include the University of Michigan, University of Alaska, Clemson, MIT, University of Iowa, ...
- The Product Development Framework is a prime example of government, university, and industry partnership
The SBA Vision: robust, collaborative use of simulation integration across acquisition phases and programs...

An Iterative IPPD Process

1. Program Definition
2. Concept Exploration
3. Data Continuity
4. Engineering and Manufacturing
5. Production, Fielding and Operational Support
6. Collaborative Design & Dev
7. Virtual Prototyping

R&D Analysis

- Dynamics/Mobility
- Survivability
- Systems
- Vetronics

Data Exchange

- Rqmts
- Risks
- Models
- Config Mgt

Increase Quality, Utility and Supportability

Reduce Time, Resources and Risk

T&E

Warfighter Eval

The SBA Vision: robust, collaborative use of simulation integration across acquisition phases and programs...
SBA OPERATIONS NOTIONAL CONCEPT

Capture System Information Once in Common Interoperable Format and Apply Distributed Tools for Collaborative Assessment and Optimization
Not Just Technology

Process

- Iterative Acquisition Process
  - Electronic Exchange of System Models
  - Rapid Evaluation of Multiple Options

Culture

- Evolved Acquisition Culture
  - Enabled Integrated Process Teams
  - Changing Roles and Responsibilities

Environment

- Collaborative Distributed Engineering
- Seamless Integration of Engineering Disciplines
- Info Repository
- User Transparent Web Style Access
- Integrated Design Data Schema

Integrated Advanced Engineering and Management Enterprise

Common Project Data Repository Integrated Product Process Model Format

Consensus: Cultural changes could be the hardest to realize.
Leveraging Commercial Technologies as an Implementation Strategy

**Leverage**

- Telecommunications Infrastructure
- Internet/OO Standards & Technologies
- Software / Hardware Products

**Object Request Brokers (ORBs)**
- E-Commerce Work Flow
- Telecommunications
- FEA CFD PDM
- Groupware Security
- CAD / CAM / CAE

**Keeping Pace With Emerging Technologies**

- Iona
- JavaSoft
- ISI
- TASC
- IBM
- USCAR
- Ford
- Netscape
- GM
- Chrysler
- UDLP
- Boeing
- PTC
- SDRC
- GDLS

**Partnership With Industry**

- Billions of $s Investment by Industry
- Purveyors of Standards
- Built on Top of Industry Successes
- Leverages Key Technology Innovations
- Technology Support for DoD Supplier Base

**Why This Approach is a Good Idea**
The Product Development Framework (PDF)

- A unified set of tools and services that enables modern collaborative engineering process
- Supported by NAC
- A Dual-Use program with partners Motorola and Parametric Technologies

The framework includes:
- Concept Design
- Rough Design
- Performance Estimates
- Collaborative Design
- Space Definition
- Systems Engineering
- Tools Simulations
- Performance Estimates
- Requirements Allocation
- Dependency System
- Proposed Change
- Impacts, Issues
- Structures Design Tools Simulations
- Drive Train Design Tools Simulations
- Survivability Design Tools Simulations
- Crew Station Design Tools Simulations
- COSIM
- Refined & Validated Design
PDF Addresses both DoD and Commercial Needs

- PDF addresses DoD concerns.
  - Fielding right system in timely manner
  - More control of lifecycle costs
- PDF addresses the commercial challenges of
  - Shorter time to market of increasingly complex products
  - Improved supply chain integration

Better Designs Sooner
University Research Adopted by PDF

- Large Scale Dependency System Decomposition (U. Michigan)
  - Break-up vehicle system design into a number of smaller, more manageable sub-designs and their interfaces
  - Guide formation of Integrated Product Teams (IPTs)
  - Manage information flow
- Simulation-based Design Under Uncertainty (Clemson)
  - Prediction confidence metrics
  - Rational design tradeoffs and conflict resolutions under prediction uncertainty
- Collaborative access to modeling, simulation, and analysis resources (U. of Alaska)
  - COSIM
CoSim

A truly distributed, collaborative environment
- Users collaboratively view and control the interactions
  - Remote and local objects appear the same to the user
- DITools™ is the core engine providing distributed component interconnectivity