

**International Council on Systems  
Engineering  
INCOSE  
Hampton Roads Area Chapter**

**March 15, 2016 Presentation**

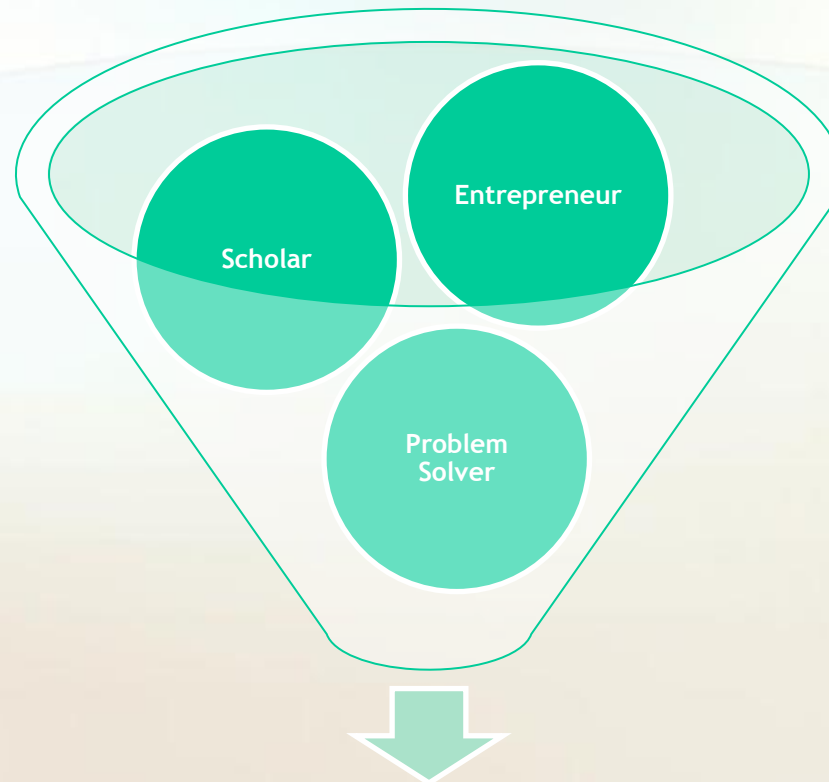
**SE Approach to Human Capital  
Management Issues in  
the Shipbuilding Industry**

**Hal M. Todd  
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Shipbuilding**

# Introduction

- What you have to offer as a Systems Engineer
  - What makes you special
  - What drives the need for Systems Engineering
  - Where can you apply Systems Engineering methodologies
- Example of “Drawing” the Line
  - Thesis Approach
  - Human Capital Management (HCM) Description
  - Stakeholder Analysis
  - Gap Analysis
  - Functional Analysis
  - Overall Measure of Effectiveness Model (OMOE)
- Your part in your career path
- Questions & Answers

# What makes you special



Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. - INCOSE

# What drives the need for Systems Engineering



People

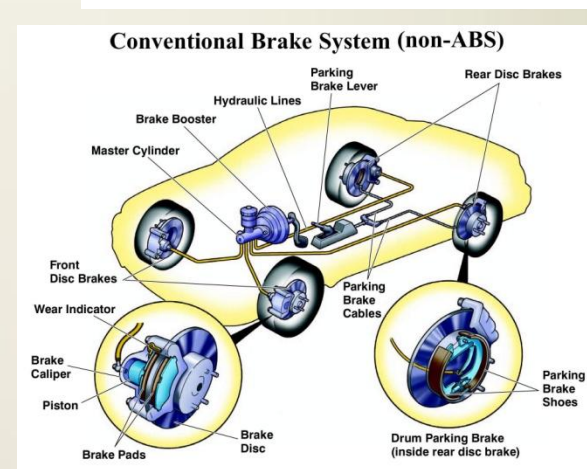
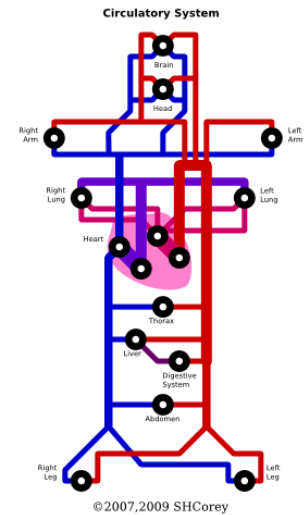
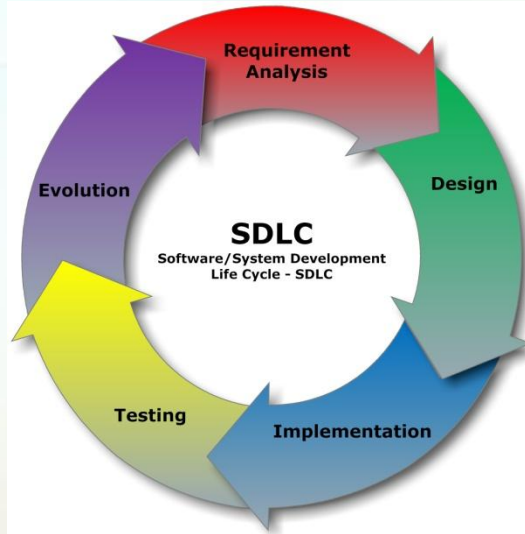
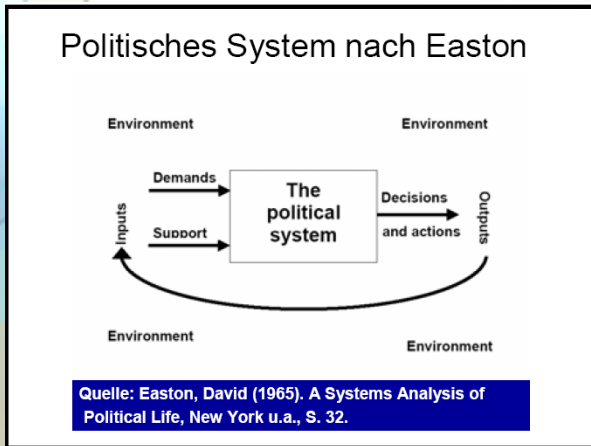


Complexity



Integration

# Where can you apply Systems Engineering methodologies - *You draw the Line*



# “Example of Drawing the Line”

## A Systems Engineering Approach to Address Human Capital Management Issues in the Shipbuilding Industry

by:

**Douglas S. Parten**  
**Hal M. Todd**

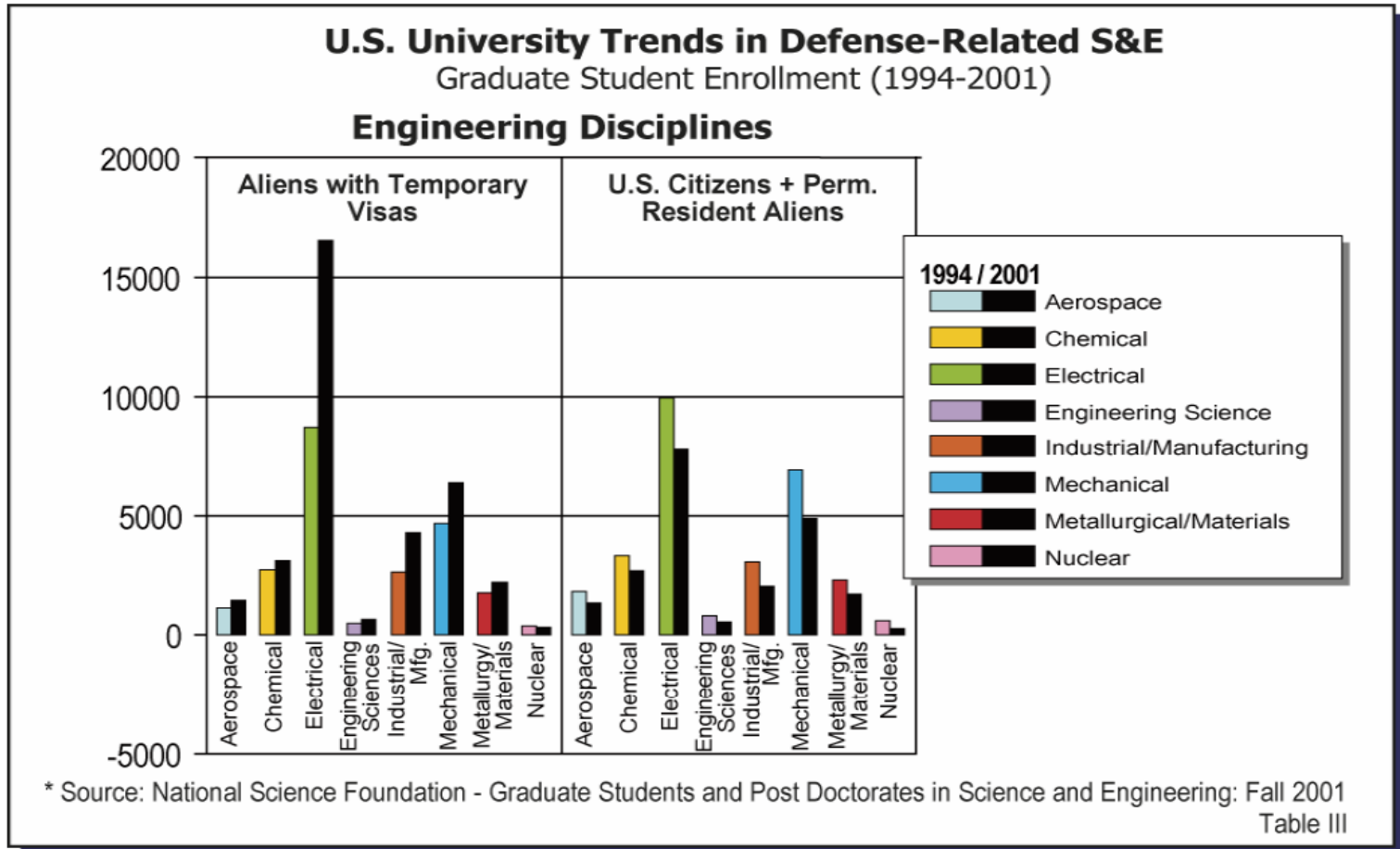
24 September 2008  
PD-21 Thesis Presentation

# Thesis Approach

- **Systems Engineering Approach**
  - Define the Problem
    - Decrease in Engineering/Science Talent in Department of Defense (DoD) Shipbuilding industry
    - No means to stop the “brain drain”
  - Identify current DoD/Shipbuilding HCM strategies
  - Identify and Classify Stakeholders
  - Determine Gaps in HCM strategies
  - Close Gaps using Functional Analysis
  - Develop tool to evaluate effectiveness of proposed DoD/Shipbuilding HCM architectures



# Define the Problem



**Figure 1. U.S. University Trends in Defense-Related Science and Engineering (From OUSD AT&L, 2006)**



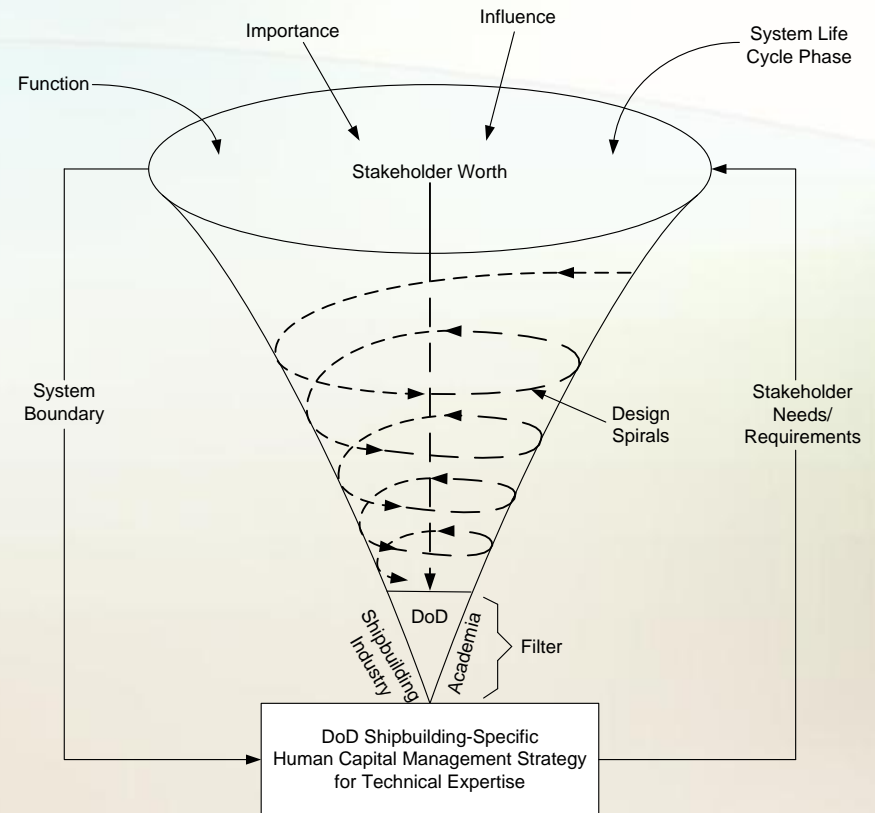
# HCM Description

- What is Human Capital?
  - Critical Knowledge, Skills, and Abilities (KSAs)
  - ROI of Investment for human capital is greater than for conventional capital
- What is Human Capital Management?
  - People are assets to develop, not costs to be minimized
  - HCM structures should be tied to strategic goals of the organization
  - Effective HCM gives organizations competitive advantage

High	<p><b>Quadrant 4:</b> Alliance/Partnership Arrangements <b>Employment mode:</b> Alliance <b>Employment relationship:</b> Partnership <b>HR Configuration:</b> Collaborative</p>	<p><b>Quadrant 1:</b> Knowledge-Based Employment <b>Employment mode:</b> Internal Development <b>Employment relationship:</b> Organization Focused <b>HR Configuration:</b> Commitment</p>
Uniqueness of Human Capital	<p><b>Quadrant 3:</b> Contractual Work Arrangements <b>Employment mode:</b> Contracting <b>Employment relationship:</b> Transactional <b>HR Configuration:</b> Compliance</p>	<p><b>Quadrant 2:</b> Job-Based Employment <b>Employment mode:</b> Acquisition <b>Employment relationship:</b> Symbiotic <b>HR Configuration:</b> Market Based</p>
Low	Low	High
	Value of Human Capital	

# Stakeholder Analysis

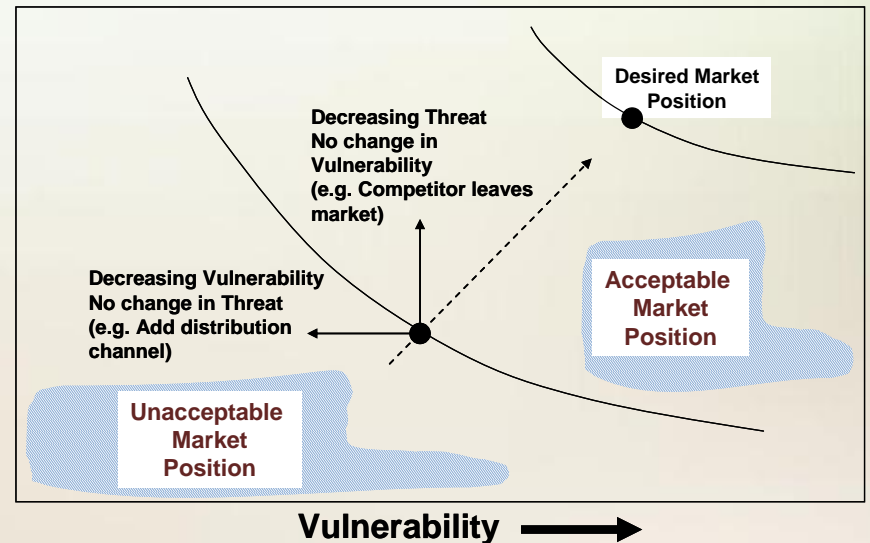
- Process steps
  - Identify Potential Stakeholders
    - Brainstorming and Scenarios
  - Classify Potential Stakeholders
    - Set boundaries
  - Determine Stakeholder Relationships
    - Worth Activation Function
  - Determine Key System Stakeholders
    - Primary, Secondary & Tertiary
  - Define Stakeholders Needs and Requirements



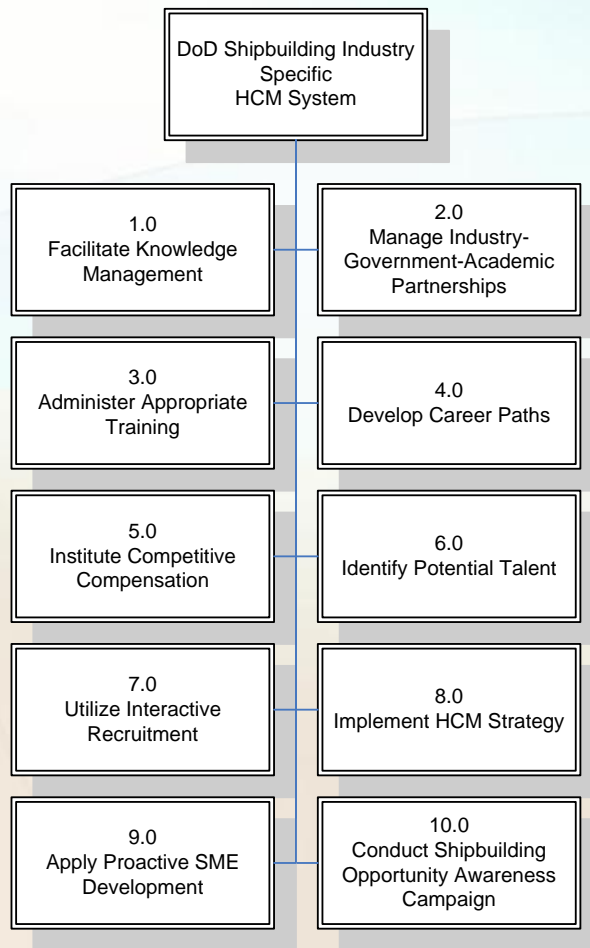
# Gap Analysis

- Gaps are a perception of the difference between what we have and what we desire
- Gap Analysis is viewed through an Enterprise Framework
  - Defines gaps in terms of threats, vulnerabilities, risk, and worth
  - Changes in threat, vulnerability, and worth determine difference between states, and thus the gap
- Shipbuilding Industry Threats
  - Military Transformation
  - Inconsistent Work Flow
- Shipbuilding Industry Vulnerabilities
  - Difficulty attracting talent
  - Developing/Retaining Critical Skills

↑  
Threat<sup>-1</sup>



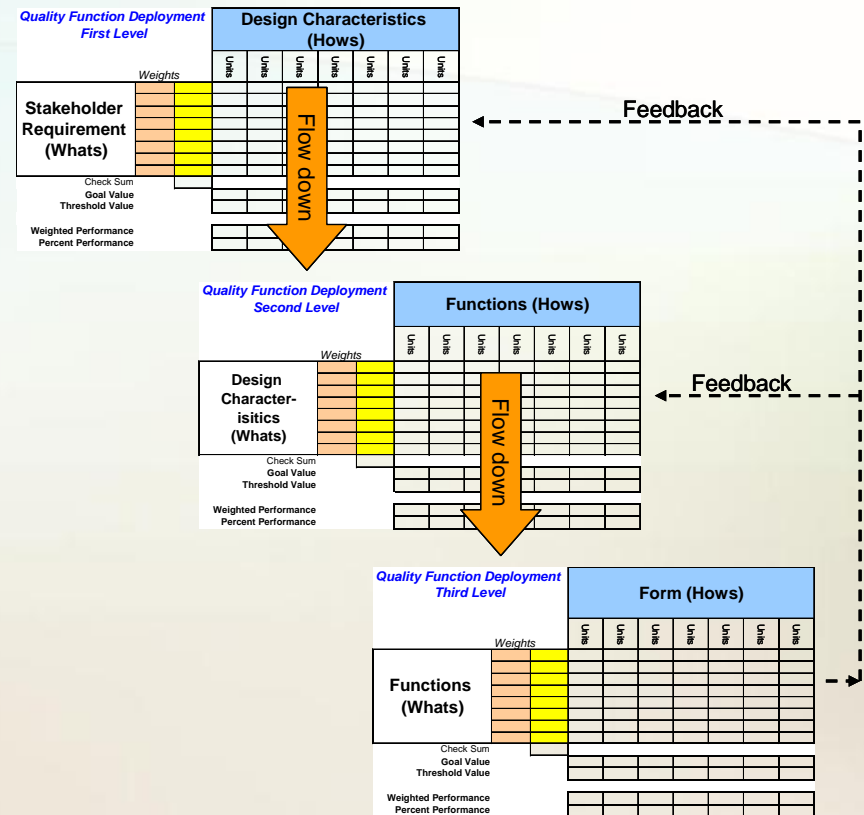
# Functional Analysis



- Notional architecture based on input from:
  - Stakeholder Analysis
  - Gap Analysis
- Defined global functions
  - Close Gaps
  - Meets Stakeholder Needs and Requirements
- Can be used as a baseline to develop organization specific functions

# Overall Measure of Effectiveness (OMOE) Model

- Used to determine effectiveness of proposed system configuration based on stakeholder preferences
  - Value Hierarchy
  - Analytic Hierarchy Process
  - Quality Function Deployment
- Created notional model as tool for assessment of alternate tailored HCM architectures



# Your part in your career path

- Follow your Passion
- Home your “Brand”
- Build Trust

**Questions?**