Chesapeake Chapter

Of the

International Council on Systems Engineering (INCOSE)

Strategic Plan
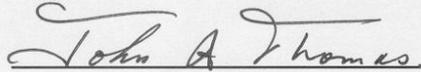
For 2005 - 2009

November 1, 2005

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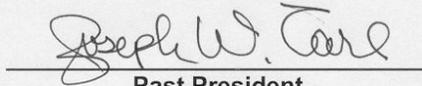
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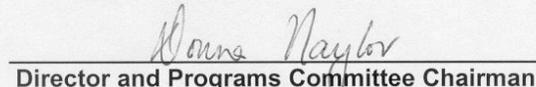
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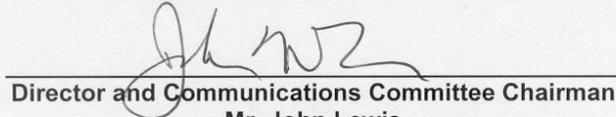
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1. Introduction

1994: The Chesapeake Chapter of the National Council on Systems Engineering (NCOSE) was chartered in January 1994. The initial year was focused on establishing the chapter and starting its membership development. The Chesapeake Chapter established all of the basic functionality required to begin its operation including the Constitution and Bylaws, Operating Plan for 1994, and the identification of all officers, chapter membership, working groups, meeting times, agendas, etc.

1995-1996: During 1995 and 1996, the chapter focused on the memberships' needs for systems engineering information, increasing working group activities, and continuing to identify new members. Membership surveys were conducted to identify briefing topics, changes to the Chapter's agenda, and other membership needs. A continuing variety of systems engineering briefings were provided, new working groups were established, the membership continued to increase to 75 members, and working group meetings were held every other month. The chapter became well known in INCOSE with highly qualified systems engineers, having several papers accepted for the INCOSE symposia and including the recognition of two symposia "best" papers.

1997-1999: The focus for 1997 through 1999 was on:

1. Increased membership active participation in Chesapeake Chapter and INCOSE activities,

2. To increase membership by actively contacting local companies, organizations, governments, and academia, and

3. Continued expansion of support to existing membership needs.

2000-2004: Entering the new millennium, the focus for the Chesapeake Chapter will continue to support the Mandate, Goals, and Objectives of INCOSE. However, it will also shift to the application of systems engineering to information technology (IT). It is apparent that IT will be the dominant technology for the foreseeable future and the chapter officers believe that IT will affect a majority of the Chesapeake Chapters members in many ways, and thus be of significant interest to both its present and future members.

2005-2009:

The Chesapeake Chapter will continue to support the Mandate, Goals, and Objectives of INCOSE as well as the application of systems engineering to information technology (IT). IT continues to be the dominant technology for the foreseeable future. The chapter officers continue to believe that IT is affecting a majority of the Chesapeake Chapters members in many ways, and thus is of significant interest to both its present and future members. In addition the chapter has begun to support the development of new systems engineers via its outreach program.

This document defines the strategic plan that the chapter will use to guide its activities and efforts beginning in January 2005 and continuing through 2009.

2. Mandate

The Chesapeake Chapter mandate states our reason for existence. We have two types of mandates: one is the formal INCOSE international mandate and the other is derived from the INCOSE mandate for the Chesapeake Chapter's Stakeholders. A stakeholder is any group or individual who is affected by or who can affect the future of the corporation (organization)--customers, employees, suppliers, owners, governments, financial institutions, critics, and other political and social actors (Freeman, 1984).

2.1 Formal Mandate from INCOSE International Strategic Plan 1997:

INCOSE was created to:

Foster the definition, understanding, and practice of world class systems engineering in industry, academia, and government.

2.1.1 INCOSE's goals are to:

1. *Provide a focal point for dissemination of systems engineering knowledge.*

2. *Promote collaboration in systems engineering education and research.*

3. *Assure the establishment of professional standards for integrity in the practice of systems engineering.*

4. *Improve the professional status of all persons engaged in the practice of systems engineering.*

5. *Encourage governmental and industrial support for research and educational programs that will improve the systems engineering process and its practice.*

2.1.2 INCOSE Vision

INCOSE is the world's leading authority on, and recognized champion of, world class systems engineering.

2.1.3 INCOSE Strategic Objectives

Eight objectives have been chosen. These objectives are ambitious and intentionally general.

2.1.3.1 Objective 1: INCOSE Customers

Identify, describe, and understand our customers and their systems-engineering-related needs. Seek to ensure that our membership strives to both understand the diversity of our customers and the variations in their needs.

2.1.3.2 Objective 2: Products and Services

Identify, develop, provide, and continually improve a diverse and expanding set of products and services that meet or exceed the expectations of our INCOSE customers. Strive to create new and innovative products and services.

2.1.3.3 Objective 3: Communication

Become so publicly recognized and so reliable a source of information about systems engineering development and use, that INCOSE is the primary reference for industry, academia, and government -- and the media.

2.1.3.4 Objective 4: Membership

Attract, retain, and engage individual members and corporate sponsors from all organizational levels in the engineering, manufacturing, and service sectors from industry, academia, and government throughout the industrialized world.

2.1.3.5 Objective 5: Outreach and Collaboration

Increase INCOSE's ability to raise awareness of systems engineering principles and increase their application through collaboration, partnership, and support of related efforts by other technical societies and organizations.

2.1.3.6 Objective 6: Theory, Research, And Education

Identify opportunities for, facilitate sponsorship of, and disseminate rigorous professional research in topical areas that are or could become important to systems engineering and society at large. Seek to expand both the quantity and quality of academic and industrial research that is focused on growing the body of systems engineering theory and knowledge. Promote education and training on the systems engineering discipline.

2.1.3.7 Objective 7: International, National, and Regional Involvement

Become a known and respected presence and resource in the advocacy and support of international, national, and regional initiatives that would benefit from world class systems engineering.

2.1.3.8 Objective 8: Structure and Operations

Evolve INCOSE's structure and operations to effectively and efficiently support a growing membership and constituency.

2.2 Derived Mandate

Throughout the Northern and Central Maryland area:

1. To support our Stakeholders (including system engineers, engineering organizations and systems engineering customers) in their efforts to understand, apply, and represent systems engineering in their specific industry, academic, and/or government positions and applications.

2. To provide our stakeholders information and training on the application of systems engineering to current and future technical areas of interest for improved job performance and growth opportunities.

3. Mission Statement

3.1 Chapter Mission

The Chesapeake Chapter is the Northern and Central Maryland area chapter of INCOSE, formed to support INCOSE in the expansion of systems engineering understanding, practice, definition, and evolution. In addition, the Chesapeake Chapter is responsible for the expansion of the INCOSE through increased membership both of individuals and organizations. We will further the systems engineering effort through an aggressive approach to informing the local, national, and international systems engineering community of our highly professional organization dedicated to systems engineering excellence. We will respond to our stakeholders' needs with enthusiasm and will provide them with and/or develop the information that meets their specific requirements. We will focus on understanding and disseminating the changing role of system engineering as we enter the 21st century. We will meet these needs through providing a forum and communications channel to exchange systems engineering information, questions, concepts, application to future technologies, etc. on a local level, providing a service that cannot be achieved at the national and international level.

3.2 Specific Missions

3.2.1 Technical

Develop a standard that:

a) Defines the systems engineering process, including its relationship and interaction with other organizational and programmatic functions;

b) Identifies and interprets methodologies, techniques, and tools for performing systems engineering;

c) Establishes benchmark processes and templates for each local industry and common terminology across our local industries.

d) Identifies and analyzes the application of systems engineering to future technologies that are applicable to our stakeholders' needs and interests; and

Develop and maintain relevant systems engineering databases which can be used by the membership (both individuals and organizations) for professional advancement of themselves and systems engineering.

Develop a well-structured program of technical working groups and relationships with international-level working groups. Provide and/or arrange presentations on each Chesapeake Chapter working group topic and other topics of interest to the Chesapeake Chapter membership.

3.2.2 Chapter Development

The mission of Chapter Development is twofold: 1) to continue the expansion of the Chesapeake Chapter membership and 2) to retain existing membership and increase the membership's active participation through continued focus on providing the membership's systems engineering needs.

The expansion of the Chapter's membership requires:

1) promoting an awareness and visibility of the Chesapeake Chapter in the engineering community (locally, nationally, and internationally);

2) developing communication between academia, industry, and government with a focus on innovative professional training courses and academic curricula; and

3) solicitation of new members at all levels of experience, including students and faculty from academic institutions.

The Chapter's development requires maintaining the existing membership's support and participation. The mission is to continue to monitor the chapter's membership needs and to provide interesting and challenging systems engineering discourse on relevant topics.

Of key importance is the continued need for effective communications within and outside the Chesapeake Chapter, both for the Chesapeake Chapter activities and for the latest advances in systems engineering.

3.2.3 Administration

Provide the infrastructure of the Chesapeake Chapter, including membership information, meeting operations, and administrative interfaces to the national and international level, in order to promote a sound and organized chapter serving the members, officers, directors, other local chapters, and the INCOSE.

4. Stakeholders

The Chesapeake Chapter stakeholders consist of people and organizations (private companies, government agencies, and educational institutions) with a common desire to more fully understand and apply systems engineering concepts/practices to their present and future work efforts. They also want to obtain recognition for a unique ability to produce highly successful systems in a cost-effective manner.

The following defines each of the categories of our Stakeholders:

4.1 People

The people that constitute the Chesapeake Chapter membership/future membership are individuals with a need for and interest in understanding systems engineering disciplines, practices, procedures, etc. and how to apply them in their present and future positions. These

people range from managers of systems, projects, and programs to engineers, technicians, contracts, personnel, and others who perform the more specific tasks related to all aspects of a system's "lust to dust" life cycle. Although systems engineering is usually performed by more experienced, younger and even undergraduate engineers and other technical disciplines (e.g., computer science and software engineering) are often interested in systems engineering concepts and applications. Many universities now provide degrees in systems engineering to undergraduates as well as graduate engineers.

4.2 Organizations

The organizations interested in systems engineering fall into three categories: private companies, government agencies or organizations, and educational institutions. Each of these organizations has unique and common requirements for systems engineering knowledge and applications.

4.2.1 Private Companies

Private companies have a strong need to be on the leading edge of systems engineering concepts and applications. They also need to apply these concepts to their specific expertise/niche in their business lines. The companies must ensure that they have the knowledge and experience to be competitive in today's dynamic and demanding market and new technologies in order to survive. They need detailed information on systems engineering concepts, applications, tools, etc. in their specific work areas.

4.2.2 Government Agencies

Government Agencies, both Federal and State, have needs similar to those of private organizations. Most government agencies are highly sensitive to the need to produce systems more effectively, efficiently, and at lower costs in today's austere funding/manpower environment. They have a dual role to develop systems and software in-house and to direct contractors in systems engineering activities and developments. Both of these efforts require a good understanding of the systems engineering disciplines to assure that both in-house developers and contractors are designing and fabricating systems in a cost-effective manner. This requires knowledgeable and experienced people in systems engineering concepts and applications, especially in the process of defining mission needs and requirements.

4.2.3 Educational and Non-Profit Institutions

Educational institutions that offer engineering and related curricula must also be aware of systems engineering concepts. In some cases these institutions may lead the development of new systems engineering concepts and provide guidance to INCOSE. In other instances, the institutions may be attempting to provide up-to-date systems engineering information to its students. These activities will provide the basis for the institutions' reputations for excellence in the systems engineering curriculum and for their students' future capabilities. Their instructors must be aware of state-of-the-art systems engineering concepts and current/future applications to maintain and improve their department's status and its curricula.

4.2.4 Customers of Our System Developments

Our customers, the people and organizations for whom we produce systems, are also our stakeholders. The US and State Governments, consumers of commercial products, and the local population of Maryland are the customers of the systems, products, and services that we, the systems engineers, produce. We must attempt to be in contact with these people and organizations to more fully understand their needs. As the governments down size and people become more cost and quality conscious, we must expand our application of systems engineering in the private sector. This requires our concerted efforts to identify the non-DOD customers who will buy and apply our future systems and products and use our systems engineering expertise.

5. Strengths, Weaknesses, Opportunities, and Threats

5.1 Strengths

We are fortunate to be located in one of the most diverse and rich systems engineering environments in the US and the world. Our location and the abundance of systems engineering people, organizations, systems support, and systems development activities provide an excellent supporting framework for our chapter. We must capitalize on this framework, using it to meet our mandate and support our stakeholders. The following is a list of the strengths our local area makes available that need to be applied to our opportunities and leverage against weaknesses and threats:

a. Prevalent local industry, government, and academic people cognizant of and experienced with many aspects of systems engineering appropriate to government and commercial programs and regulations.

b. Many non-defense organizations that bring a broader, diverse, and challenging perspective to chapter and systems engineering activities.

c. A broad base of local universities, both private and public, for the development of academic structures, standards, approaches, and knowledge related to systems engineering.

d. Strong desire of local systems engineers to become more knowledgeable on systems engineering and its application to their specific programs/projects.

e. INCOSE is rapidly expanding and becoming recognized as "The" world-class systems engineering organization.

f. Closeness to Washington, D.C. and many government organizations stressing the need for systems engineering.

g. A significant marketing potential for systems engineering expertise that we all can benefit from.

h. Increasing chapter membership and strong monthly meeting attendance.

5.2 Weaknesses

The identifiable weaknesses of the Chesapeake Chapter that need to be mitigated and developed into strengths are:

    a. Low representation/membership relative to the large number of systems engineering people and organizations in the local area.

    b. The unawareness of local organizations and potential members of the INCOSE and the Chesapeake Chapter and INCOSE or incomplete understanding of the benefits of belonging to INCOSE

    c. Negative connotations and the lack of understanding in some engineering organizations of "systems engineering".

The wave of new technology advancements (e.g., information technology) and its rapid evolution provide a major challenge to systems engineering concepts and applications. It is essential that systems engineering applications be streamlined to provide rapid system development without sacrificing the quality and increasing the risk of the developed systems.

5.3 Opportunities

The opportunities are extensive for the Chesapeake Chapter. With systems engineering rapidly becoming better defined by INCOSE, we are at the brink of a new wave of systems engineering applications that must provide cost-effective approaches for systems development. Our specific opportunities are:

    a. Continued expansion and retention of our membership (both people and organizations).

    b. A focused systems engineering organization for all systems engineering activities in the local area.

    c. Recognition as the organization to contact for virtually any aspect of systems engineering.

    d. Furthering the use of systems engineering in the non-DOD arenas (private and other federal, state, and local governments).

    e. Improving our stakeholders' understanding of the new technologies (e.g., information technology) and the application of systems engineering practices to these rapidly changing engineering applications.

    f. Becoming a leading organization at the International level.

    g. Increased joint meetings with other regional organizations in related fields (e.g., IEEE and INCOSE Washington D.C.)

5.4 Threats

The threats toward the Chesapeake Chapter that need to be understood and minimized are:

    a. Other organizations (e.g., IEEE) overshadowing our chapter in the systems engineering discipline.

b. Loss of enthusiasm of the Chesapeake Chapter members if they are not challenged and afforded opportunities for active involvement in systems engineering and chapter initiatives.

6. Strategic Issues

The strategic issues facing the Chesapeake Chapter are:

a. How shall we expand our membership to assure that we have the current level of local representation necessary to capture all of our local systems-engineering community's knowledge and needs?

b. How do we provide an environment that promotes expansion of our members' use and knowledge of systems engineering principles and their continued enthusiasm for the chapter and its working groups?

c. How do we establish the Chesapeake Chapter as a world-class systems engineering INCOSE Chapter?

7. Vision of Success

7.1 Growth and Recognition

a. Becoming recognized locally, nationally, and internationally as a world-class system engineering organization.

b. Providing a forum for industry, government, and academic organizations to meet and discuss systems engineering technology, the systems engineering process, its application to present and future technologies, and the management of systems engineering activities.

7.2 Specific Criteria for Success:

7.2.1 Technical

a. Active membership representation on International working groups: two in 2000, three in 2001, and 1 additional each year thereafter.

b. Increase the number and improve the quality of our members' papers presented at the annual symposium.

c. Increase our membership participation in our Chesapeake Chapter working groups each year: 5% per year.

d. Maintain at least two active working groups in the Chesapeake Chapter.

e. Revive the Chapter newsletter.

7.2.2 Chapter Development

a. An increase in individual memberships by at least 10% each year.

b. An increase in the number of private companies, government agencies, and colleges and universities represented by the membership by at least 5 % each year.

c. Achievement of a high membership satisfaction rating (over 80%) of the Chesapeake Chapter's support to each individual's needs.

d. An increase in student enthusiasm and participation in chapter activities through the development of programs by which students can obtain better exposure to systems engineering practices and potential career opportunities.

7.2.3 Administration

a. Membership - Maintain a membership that spans the domain of systems engineering in all sectors of industry, academia, and government in our region; and that provides a balanced cross section of these areas.

b. Meetings - Prepare meeting logistics for the membership that provides a dynamic forum for the exchange of ideas and information about chapter activities, national endeavors, and the broader range of systems engineering issues. Continue monthly meetings.

c. Infrastructure - Provide a sound and professional organization in order to allow the Chesapeake Chapter to operate in an effective and efficient manner. This includes establishing logistics responsibilities for officer and director meetings, holding elections, maintaining databases on membership, and organizing postal operations.

d. International Alliance - Provide an effective and efficient avenue for the transfer of business information between the local chapter and the national level.

8. Strategy

The Chesapeake Chapter's General Strategy for meeting our challenges and vision of success is to:

1. Develop a team approach, involving both officers and members at large.

2. Become organized through well-defined officer responsibilities and a comprehensive operating plan based on our Strategic Plan Vision of Success.

3. Aggressively identify all of our stakeholders and their expectations and needs.

4. Aggressively distribute Chesapeake Chapter and INCOSE information to present and potential members (people and organizations).

5. Change to activities/procedures as necessary to meet the membership needs.

6. Develop a communications network that rapidly and easily disseminates systems engineering information to our membership.

7. Focus on the application of systems engineering to new technologies (e.g., information technology) and identify other technical areas of interest from our stakeholders.

9. Plan

9.1 Near Term

1. Establish a highly interesting speaker and subject program with continued focus on stakeholder areas of interest.

2. Continue arranging presentations by vendors of systems engineering tools.

3. Complete year-end reports by their due dates.

4. Expand the chapter development efforts through contacting visitors and potential new members directly, contacting new organizations, and establishing educational chapters in local universities.

5. Provide an updated and better-quality Chesapeake Chapter Information Pamphlet and purchase Chapter handout products.

6. Continue to monitor our membership for their needs and ideas.

7. Submit our calendar of events to INCOSE "Insight".

9.2 Long Term

1. Complete the Operating Plan for each year in a timely fashion.

2. Obtain new Points of Contact (engineers and organizations) from the membership as recipients of letters and information packages.

3. On a continuing basis, distribute letters and information packages to potential members and organizations.

4. Use the Newsletter's "President's Corner" to keep members aware of Chesapeake Chapter Executive Board activities and trends in the Systems Engineering community.

5. Increase member representation (articles, activities in the areas, etc.) in the Chesapeake Chapter's Newsletter.

6. Pursue new working groups and interactions with international working groups.

7. Attract leading local and international systems engineers and organizations for briefings, working group sessions, and for the membership to exchange pertinent systems engineering information.

8. Continue to identify and arrange presentations/tasks on future technology applications for systems engineering.

9. Focus on our stakeholders and specifically our members, providing whatever is required to meet their varied needs.

10. Focus membership interest and participation in regional conferences.