

# The InterNational Council On Systems Engineering (INCOSE) – An Introduction

(All you wanted to know, but were afraid to ask)

Presentation to the Systems Engineering for Micro and Nano  
Technologies: A Practical Workshop

Tuesday 11th December 2007

Dr Douglas Cowper - INCOSE UK Chapter President Elect



# INCOSE Background

- The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems.
- INCOSE has grown significantly since its formation in 1990. Today, there are over six thousand members world Wide.

## **Mission**

Advance the state of the art and practice of systems engineering in industry, academia, and government by promoting interdisciplinary, scaleable approaches to produce technologically appropriate solutions that meet societal needs.

## **Vision**

The world's authoritative systems engineering professional society.



# INCOSE Background

## Goals

- To provide a focal point for dissemination of systems engineering knowledge.
- To promote international collaboration in systems engineering practice, education, and research.
- To assure the establishment of competitive, scaleable professional standards in the practice of systems engineering.
- To improve the professional status of all persons engaged in the practice of systems engineering.
- To encourage governmental and industrial support for research and educational programs that will improve the systems engineering process and its practice.



# INCOSE Organisation (and UK Contributions)

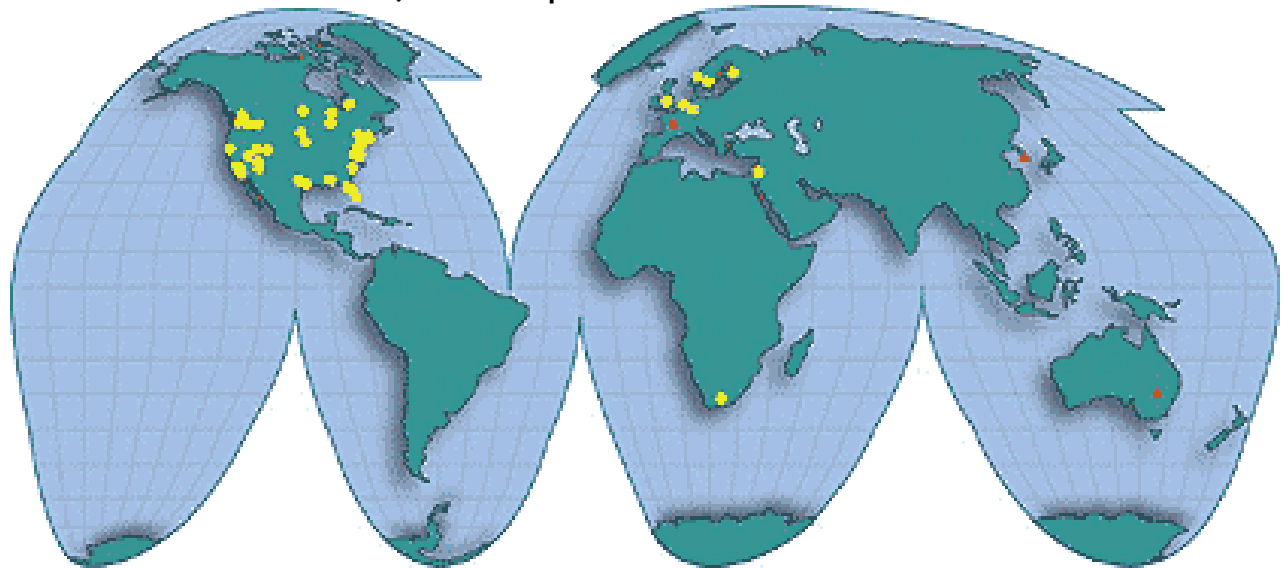
- INCOSE is managed by a Board of Directors. Highlights of the Board of Directors of INCOSE:
  - President Paul Robitaille, Lockheed Martin
  - President-Elect Pat Hale, MIT
  - Secretary William Miller, Stevens Univ
  - Treasurer David Wright, Lockheed Martin
  - Technical Director Samantha Brown, BAE Systems
  - Chair of the CAB Ayman el-Fatatry, BAE Systems (SEIC)
- plus:
  - International Growth
  - Strategic Planning
  - Strategic Presence
  - Communications
- There are also supporting administrative committees, including a Member Board, Communications, Events, Ways & Means.



# INCOSE Organisation - Regions

- INCOSE divides the world into 6 Regions

- Region 1 North West America, 7 Chapters
- Region 2 South West United States, 8 Chapters
- Region 3 Europe, Israel, South Africa, 11 Chapters
- Region 4 North East North America, 9 Chapters
- Region 5 South America, Central America and South Eastern United States, 15 Chapters
- Region 6 Australia, Asia, Africa, and the Middle East (excluding Israel & South Africa), 8 Chapters



# INCOSE Organisation - Chapters

- Local chapters play an essential role in the achievement of INCOSE's goals and objectives.
- Far more than local administrative units, chapters are performing units that organize a multitude of professional and social programs, conduct membership recruitment and retention drives, support technical activities striving to advance the state and art of systems engineering, and market INCOSE as the international authoritative body on systems engineering.
- INCOSE UK – a leading International Chapter, including
  - ➔ 2004 Presidents Award
  - ➔ Gold Circle Awards in 2003, 2004, 2005
  - ➔ Currently ~8-10% of total INCOSE membership



# INCOSE UK – Background

- Chapter formed in 1994 with a UK “flavour” of systems engineering
- Aim to foster the growth and recognition of Systems Engineering in the UK
- Currently about 500 – 600 members
- Represented by local groups
  - ➔ Bristol - South West
  - ➔ South - Portsmouth based
  - ➔ East Midlands - Loughborough SEIC based
  - ➔ London, Thames Valley, Stevenage and Scotland groups are currently inactive
- Two national events per annum with 150+ attendees
  - ➔ Also seeking new ways of informing, engaging, managing Systems engineering knowledge and dissemination
  - ➔ International support to conferences increasing
    - EuSEC 06 in September 06 Edinburgh
    - Forthcoming INCOSE International 08 and EuSEC08 combined in Utrecht



# INCOSE UK – Background

## Early thought leaders

- Checkland - “soft systems”
- Derek Hitchins “holistic open systems” - INCOSE fellow
- Allen Fairbairn - INCOSE founders’ award
- INCOSE UK
  - an association of **individual** professional systems engineers
  - a legal entity, a British “limited company”
- UKAB (UK Advisory Board)
  - an association of **organisations** with an interest in systems engineering (a “local” CAB)
- Not-for-profit volunteer organisation, but able to sustain events and administration



# INCOSE UK – Organisation

- Current Board and UK Advisory Board include:

→ Andrew Daw	President	BAE Systems
→ Doug Cowper	President-elect	Cleave Systems
→ Andrew Farncombe	Technical Director	JBA
→ Peter Lister	Finance Director	Harmonic
→ Ady James	Academic Liaison	UCL
→ Rick Adcock	Events Director	DA, Shrivenham

- UKAB

→ Ayman El-Fataty	Chair	BAE Systems
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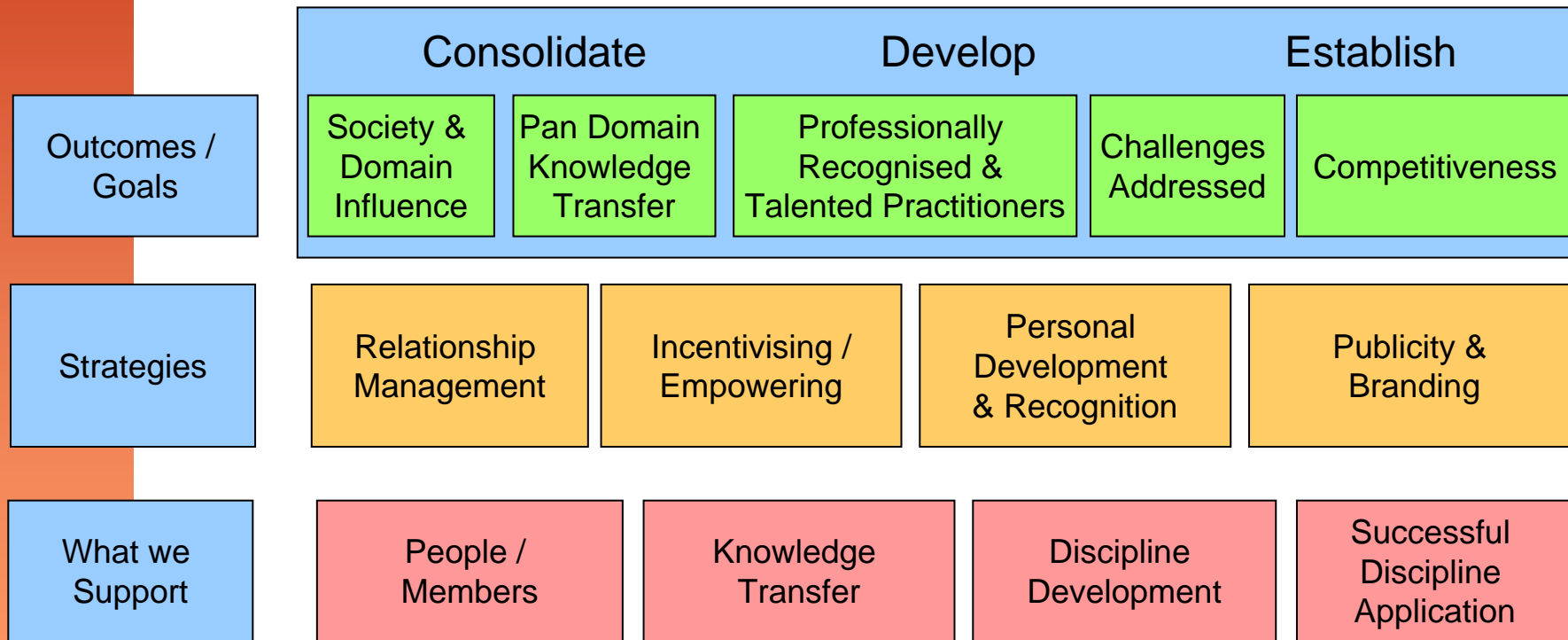
# INCOSE UK – 2007 Strategy

- May 2006 Workshop debating a way ahead, to update previous strategy views and to align with the International 2020 Vision.
- Primary INCOSE vision upheld: *to advance the state of the art and practice of systems engineering in industry, academia, and government by promoting interdisciplinary, scaleable approaches to produce technologically appropriate solutions that meet societal needs*
- supported in UK by
  - ➔ To **Consolidate** INCOSE UK as the premier SE community in the UK.
  - ➔ To **Develop** INCOSE UK as a progressive, dynamic body of influence in the UK environment.
  - ➔ To **Establish** INCOSE UK as the organisation of choice for professional recognition, reward and influence in SE.with each activity developed and actioned for the benefit of the INCOSE UK membership.



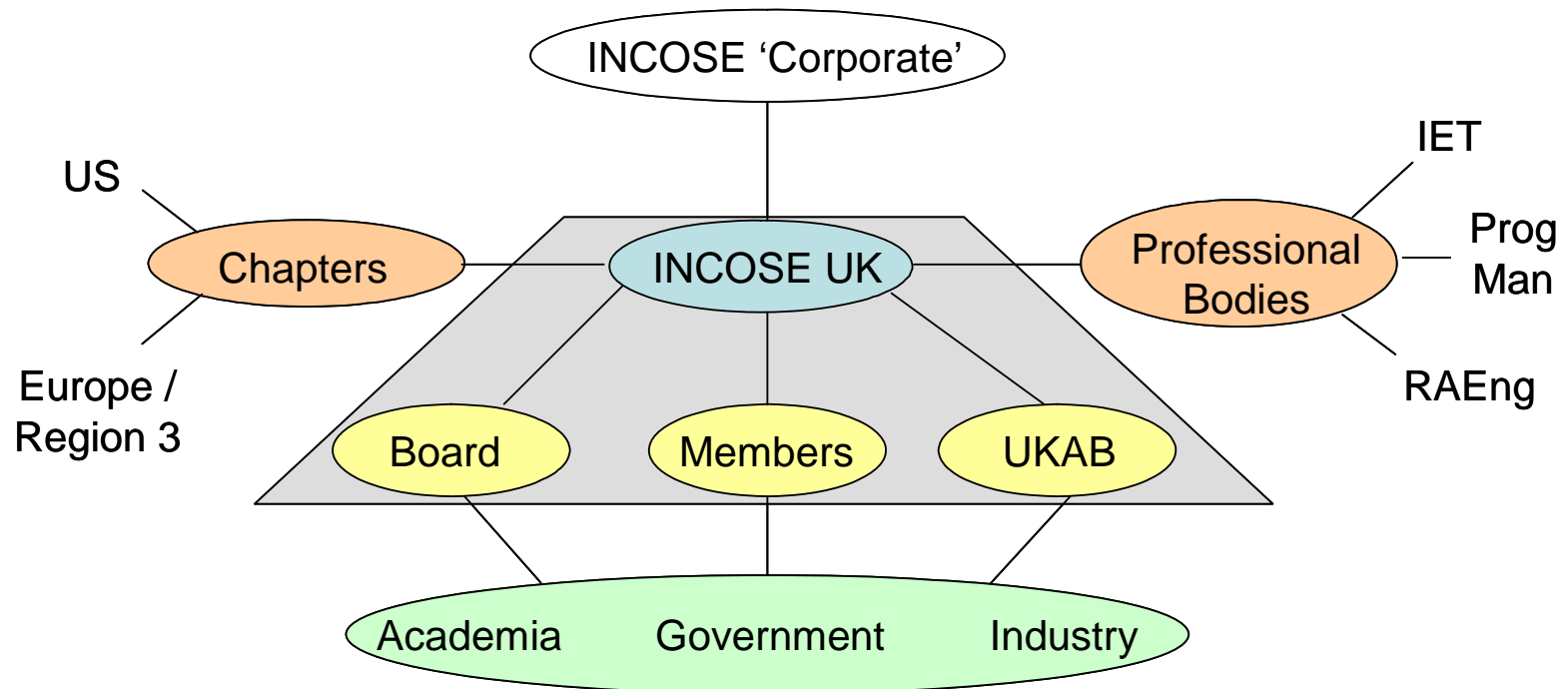
# INCOSE UK – Strategy

- What we do and are doing (from Strategy statement)



# INCOSE UK – Strategy

- Overall framework has a set of strategy themes:
  - ➔ Relationship Management
  - ➔ Incentivising / Empowering
  - ➔ Personal Development and Recognition
  - ➔ Publicity and Branding



# INCOSE – Looking Forward

- Additional UK event styles to reflect
  - ➔ More focus
  - ➔ Implementation of Strategy, commencing with System Dynamic Modelling of the organisation
  - ➔ Increased collaboration with other professional societies
  - ➔ Increased activity aimed at professional recognition
    - e.g. affiliation with the Engineering Council
    - Increased interest in CSEP accreditation
  - ➔ Different / diverse locations and increased support to local groups
- International 08 in Utrecht, including EuSEC08, culmination of Sys Eng Value experiment
- Turning the strategy into long term action plans for delivery.



# UK Working Groups

- Sponsored by UKAB members
- Address issues of concern to UKAB companies:
  - ➔ Teaching of SE at Undergraduate level
  - ➔ Identification and definition of SE “Competencies”
  - ➔ Future route to Chartered / Certified status
  - ➔ Metrics for Cost-Effectiveness of SE
  - ➔ Improving MoD ‘Smart Acquisition’
  - ➔ Architectures (new 2006 / 07)
- Contribution to international WG for improvements to INCOSE SE Handbook:
  - ➔ Architecture
  - ➔ Requirements Engineering
  - ➔ Validation and Verification (pan-European)
  - ➔ Systems Science (2005)
  - ➔ Network Centric Operations (2005)



# INCOSE UKAB

- Brief history of the UKAB
  - ➔ Originally set up to bridge the gap between INCOSE UK and the employers of its membership.
  - ➔ The aim is to allow UK SE Enterprises (Ind. Gov. & Academia) to have their say in influencing the practice of SE and to see directly the benefits of INCOSE UK.
  - ➔ To stimulate the support of INCOSE UK working groups – this was seen as an executive arm for things like the RAEng and the DTI SE NAC.
  - ➔ A secondary benefit is to prevent the piecemeal support for the UK events. By providing funds through membership, providing input to event themes (of interest to UKAB organisations), providing promotion internally & allowing employees to attend.

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**Detica**  
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**de&s**

**ADVANTAGE**  
technical consulting

**GENERAL DYNAMICS**  
United Kingdom Limited

**UCL**

**Loughborough University**

**HMGCC**  
Her Majesty's Government Communications Centre

**THALES**

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**SELEX**  
Sensors and Airborne Systems

**Salamander**  
solutions for the agile enterprise

**EADS ASTRIUM**

**harmonic**  
delivering excellence

INCOSE UK Presentation To CEMMNT

# INCOSE UKAB – Benefits

- UKAB Members:
  - ➔ Employers have always encouraged professional involvement with institutions etc.
  - ➔ Professional societies aim to advance the state of the art and the recognition of their discipline.
  - ➔ Seat on advisory board.
  - ➔ Recognition of organisation's commitment in all INCOSE UK materials and events.
  - ➔ Free copying and distribution rights to all INCOSE UK event proceedings and WG products.
  - ➔ Opportunity to share best practice and to tackle common issues collectively.
- UK Chapter:
  - ➔ Bridges the gap to the employers of our members.
  - ➔ Point of contact for dissemination of SE material within the organisation.
  - ➔ Participation of the organisation's systems engineers in INCOSE UK events.
  - ➔ Provision of time and effort from organisation's systems engineers to achieve WG goals.
  - ➔ Provide input to event themes.
  - ➔ Provide advice and issues to UK chapter board.
  - ➔ Financial support.



# Conclusions

- Provided an overview of INCOSE & its organisation.
- Provided an overview of INCOSE UK & its organisation.
- Outlined INCOSE UK's strategy.
- Provided a brief of its current activities.
  
- Any Questions?

