Annual General Meeting

February 19, 2019

Agenda

- **Networking & Dinner**
- **Welcome & Introductions**
- **Chapter Information**
  - Chapter status
  - Proposed Bylaw revisions
  - 2019 elections
  - 2019 planning
  - Financials
- **INCOSE Information**
  - Benefits
  - INCOSE news
- **Feedback from the membership**
- **Door Prize Drawing**
- **INCOSE Systems Engineering Competency Framework**

Chapter Status

- Chapter membership has hovered at 50 +/- 5 for years
  - Welcome to newer members
  - Thank you to members who renewed for your continued involvement
- Leadership reset this past summer/fall
- Elections for 2019 were postponed pending potential Bylaw update
- 13th Annual Great Lakes Regional Conference to be held in Cleveland October 21-25, 2019, in conjunction with EnergyTech at the Cleveland IX Center. Apollo Astronaut Harrison Schmidt will be a Keynote speaker https://www.incose.org/glrc13/home
- New BoD email is accessible to all leaders: NorthOhioINCOSE@gmail.com

13th Annual INCOSE Great Lakes Regional Conference

Cleveland, OH, USA
October 21-25, 2019

Volunteer Opportunities

- Elected Position
- Communications
  - Ambassador Program Coordinator*
  - Newsletter Editor
  - Webmaster
- Outreach and Collaboration
- Membership
- Program
  - Single Meeting POC*
- GLRC Committee
- Contacts for CWRU Students
- Speaker (local or remote for other chapters)

- The BoD usually meets the first Monday of the month, meetings are open to members – verify date/location

Proposed Bylaw revisions

- Required to be reviewed every four years, but had not been since 2010 update.
- BoD performed the review and the proposed revisions were sent out.
- A vote to adopt or reject the changes will begin soon
- Substantive Changes:
  - VP/President-Elect, President, and Past President succession replaced with President, VP and At-large Director(s) elected each year
  - Process to handle a) tie votes for elected positions and b) President vacancy
  - Allowance for electronic balloting
  - Need for an Annual General Meeting, to comply with INCOSE Policy
  - Adjustments to number of votes needed/process to adopt Bylaw revisions
    - Simple 2/3 majority of those voting

2019 Elections

- Pending approval of Bylaw revisions, election of 2019 officers will begin
- Five positions will be voted upon: President, VP, Secretary, Treasurer and one At-large Director.
- Term will commence ~1 month after elections close and complete the 2019 year.

2019 Chapter Meetings

- Great Lakes Regional Conference
- Potential meetings/topics
  - At CWRU
  - Cleveland Microgrid Efforts – tentatively May 21
  - Joint meeting with the local chapter of the Project Management Institute
  - Tour of the Age of Steam Roundhouse in Sugarcreek, OH
  - Remote tie in to another chapter

  - Any suggestions?

INCOSE CLEVELAND-NORTHERN OHIO CHAPTER
Annual Budget (CY2019)

LEVELAND-
THERN OHIO

								Ending Balance CY2018		$9,971.15	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
	CY2019-Q1		CY2019-Q2		CY2019-Q3		CY2019-Q4		CY2019 Totals	
Income										
1/2 Year Shares	$600	$0	$0	$0	$800	$0	$0	$0	$1,400	$0
Grants from Tech Ops	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Surplus Sharing (GLRC PDD)	$0	$0	$0	$0	$0	$0	$350	$0	$350	$0
Meeting Receipts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sales of Items	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Income	***$600***	***$0***	***$0***	***$0***	***$800***	***$0***	***$350***	***$0***	***$1,750***	***$0***
Expenses										
Speaker Honoraria	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Wine donation	$0	$0	$0	$0	$0	$0	$100	$0	$100	$0
Grants for Conference attendance	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Office expenses	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Banking fees	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Affiliate organization fees	$0	$0	$200	$0	$200	$0	$0	$0	$400	$0
Meeting Expenses	$50	$0	$50	$0	$50	$0	$50	$0	$200	$0
Cost of Items sold	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Flat Fee for SE PDD participation	$0	$0	$0	$0	$200	$0	$0	$0	$200	$0
Chapter Outreach Expenses										
Banner and stand										
Print updated brochures	0	0	320	0	0	0	0	0	320	0
Total Expenses	***$50***	***$0***	***$570***	***$0***	***$450***	***$0***	***$150***	***$0***	***$1,220***	***$0***
Total Income over Expenses	$550	$0	-$570	$0	$350	$0	$200	$0	$530	$0

Ending Balance CY2019	$9,971.15
Budgeted Balance CY2019	**$10,501.15**

INCOSE Membership Benefits

- **Professional Development**
  - Speakers on topics relevant to System Engineering (both locally and via webinars)
  - INCOSE Connect: content developed by chapters and working groups
    - Working groups include: Knowledge Management; Lean Systems Engineering; Life Cycle Management; MBSE Initiative; Measurement; Model-based Conceptual Design; Natural Systems; Object-Oriented SE Method; Oil and Gas; Ontology; Power & Energy Systems; etc.
  - System Engineering Certification (ASEP, CSEP, ESEP)
  - Institute for Technical Leadership
  - Access to INCOSE Technical Publications
  - Quarterly Journal & INSIGHT Magazine
  - Annual International Workshop and International Symposium

INCOSE Membership Benefits (cont.)

- **Leadership Opportunities**
  - Chapter Board of Directors
  - Chapter Committee participation
    - Micro-volunteering roles available (as small as company networking)
  - Working Group participation
  - International involvement opportunities
- **Job Search Assistance**
  - Access to INCOSE's System Engineering Job Board: http://incose.careerwebsite.com/; in addition to job postings, this website accepts resumes into a searchable employer database

INCOSE Membership Benefits (cont.)

- **Networking Opportunities**
  - 11,000+ INCOSE members worldwide
  - Networking for yourself and colleagues
    - Before and after Chapter events
    - Supporting your Chapter
    - Supporting a Working Group
    - GLRC (Great Lakes Regional Conference)
    - International Workshops/Symposiums
    - Share SE Job postings at meetings & in members-only e-mail
- **Help Others**
  - Share SE knowledge/experience with:
    - New SEs
    - Professional Societies
    - K-12, college students
  - Advance the art/profession of System Engineering
  - “Pay It Forward”

Circle Awards Program

- Incentive program to encourage chapter activities that support the objectives of INCOSE
- Chapter history: Every year since we were established in 2008

2014

2009-2013,
2015, 2016

2008, 2017

- Keep us informed of your System Engr. activities
  - GLRC (Great Lakes Regional Conference) participation
  - INCOSE Working Group participation
  - IS/IW participation, including paper reviews

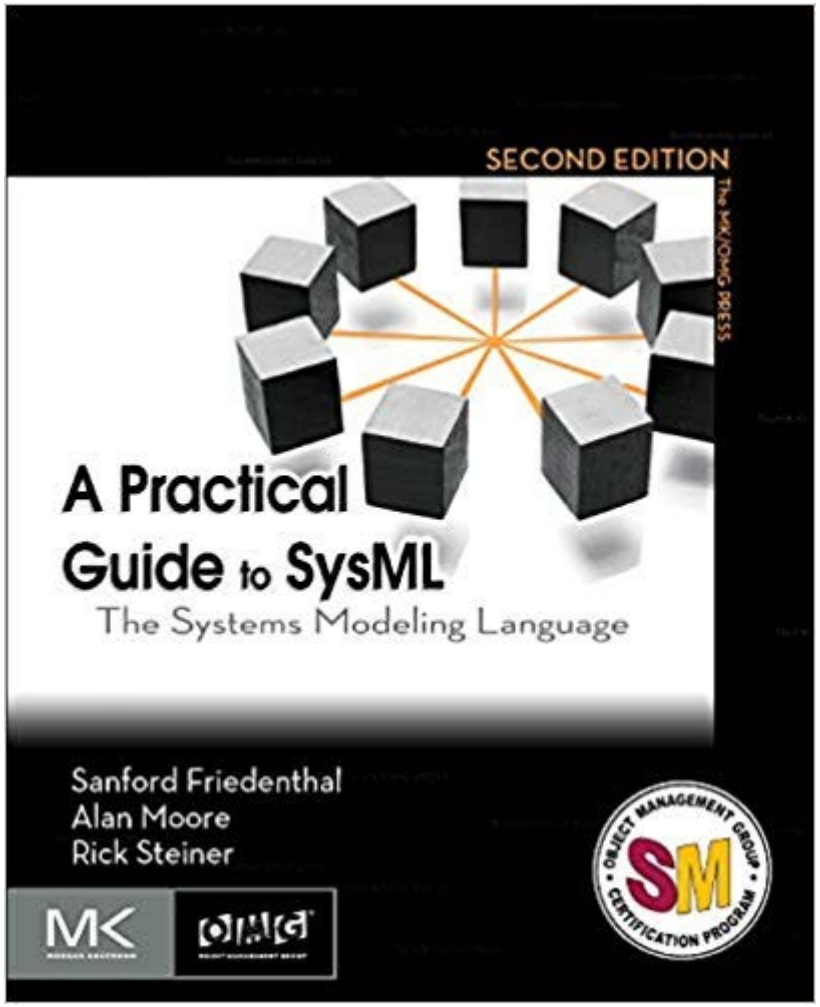
INCOSE News

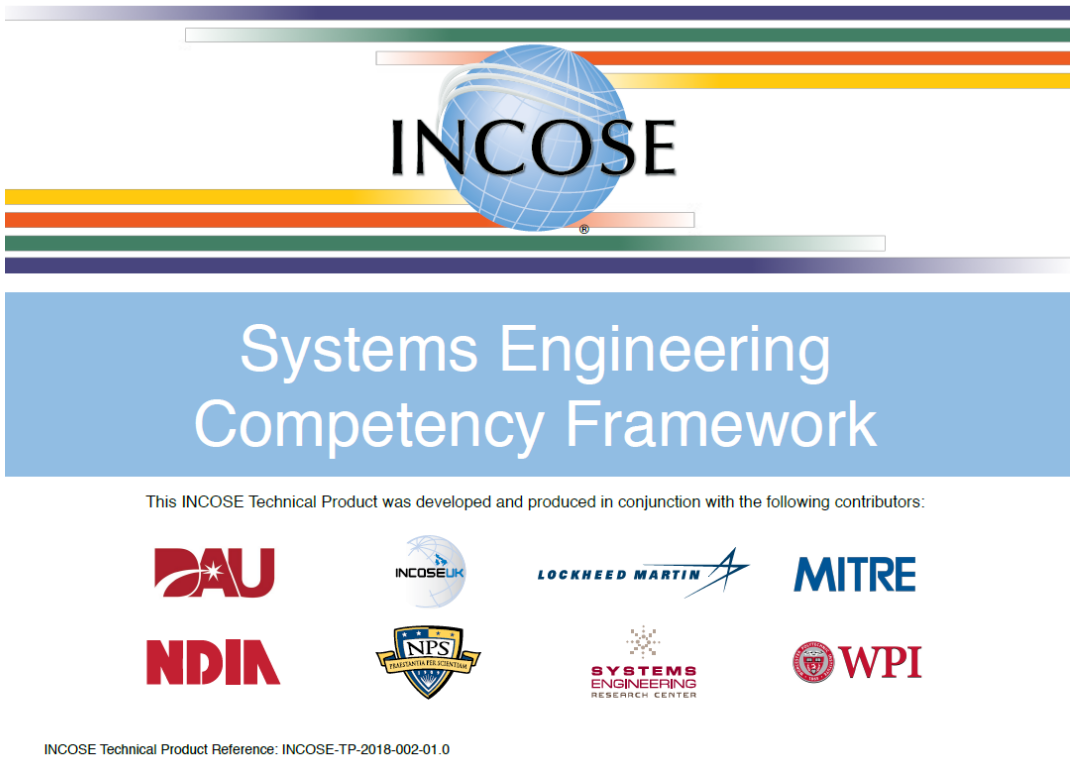
- Membership dues increasing January 1, 2020
  - Regular from $145 to $160
  - Transition for students who graduate or Associate members who opt for regular membership – 65%
- Membership demographics survey (sent Jan 17th and Feb 6th) – please complete
- Institute for Technical Leadership completed application packages are due no later than March 31, 2019
- 2019 IS to be held in Orlando, FL; hotel reservations have opened

Feedback

- What can we do to make the Chapter more meaningful?
- What type of topics/content would you like to see at Chapter meetings?
- Is there an area where you would like to help?

Door Prize Drawing





INCOSE Technical Product Reference: INCOSE-TP-2018-002-01.0

INCOSE SYSTEMS ENGINEERING COMPETENCY FRAMEWORK

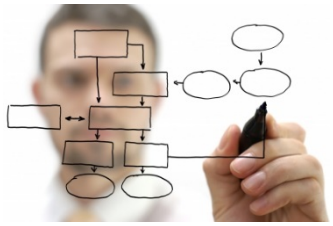
The majority of the information on the following slides is drawn from this INCOSE Product.

Competency Overview

- The terms '**competency**' and 'competencies' focus on the personal attributes or inputs of an individual. They can be defined as the technical attributes and behaviors that individuals must have, or must acquire, to perform effectively at work.
- '**Competence**' and 'competences' are broader concepts that encompass demonstrable performance outputs as well as behavior inputs, and may relate to a system or set of minimum standards required for effective performance at work. (Chartered Institute of Personnel Development (CIPD) 2018).
  - How competent are you in a competency?
- A '**Competency Framework**' is a structure that sets out and defines each individual competency required by individuals working in an organization or part of an organization. (Chartered Institute of Personnel Development (CIPD) 2018). This document defines a framework of competencies for the Systems Engineering discipline.

An Effective Systems Engineer requires…

- **Competencies** (the focus of this discussion)
- **Supporting Skills and Techniques**
  - Supporting skills and techniques help an individual perform a task effectively within a context. They may be organization, project or role specific. For instance, the ability to use a company-standard "Requirements Management" tool may be central to performing a given role effectively within one organization.



- **Domain Knowledge**
  - In a similar way, "domain knowledge" exists within an industrial context (e.g. automotive, healthcare, space). This requires specialization appropriate to the domain addressing areas such as the commercial or organizational environment, the supply chain and domain-specific technical standards/protocols.

Five Competency Groupings

- **Core**
  - Core competencies underpin engineering as well as systems engineering.
- **Professional**
  - Behavioral competencies well-established within the Human Resources (HR) domain.
- **Management**
  - The ability to perform tasks associated with controlling and managing Systems Engineering activities.
- **Technical**
  - The ability to perform tasks associated primarily with the suite of Technical Processes identified in the INCOSE SE Handbook.
- **Integrating**
  - This competency group recognizes Systems Engineering as an integrating discipline, joining activities and thinking from specialists in other disciplines to create a coherent whole.

Core Competencies

Systems Thinking	The application of the fundamental concepts of systems thinking to systems engineering;
Lifecycles	Selection of the appropriate lifecycles in the realization of a system;
Capability Engineering	An appreciation of the role the system of interest plays in the system of which it is a part;
General Engineering	Foundational concepts in mathematics, science and engineering and their application;
Critical Thinking	The objective analysis and evaluation of a topic in order to form a judgement;
Systems Modeling and Analysis	Provision of rigorous data and information including the use of modeling to support technical understanding and decision making.

Professional Competencies

Communications	The dynamic process of transmitting or exchanging information;
Ethics and Professionalism	The personal, organizational, and corporate standards of behavior expected of systems engineers;
Technical Leadership	The application of technical knowledge and experience in systems engineering together with appropriate professional competencies;
Negotiation	Dialogue between two or more parties intended to reach a beneficial outcome where difference exist between them;
Team Dynamics	The unconscious, psychological forces that influence the direction of a team's behavior and performance;
Facilitation	The act of helping others to deal with a process, solve a problem, or reach a goal without getting directly getting involved;
Emotional Intelligence	The ability to monitor one's own and others' feelings and use this information to guide thinking and action;
Coaching and Mentoring	Development approaches based on the use of one-to-one conversations to enhance an individual's skills, knowledge or work performance.

Management Competencies

Planning	Producing, coordinating and maintaining effective and workable plans across multiple disciplines;
Monitoring and Control	Assessment of an ongoing project to see if the current plans are aligned and feasible;
Decision Management	The structured, analytical framework for objectively identifying, characterizing and evaluating a set of alternatives;
Concurrent Engineering	A work methodology based on the parallelization of tasks;
Business and Enterprise Integration	The consideration of needs and requirements of other internal stakeholders as part of the system development;
Acquisition and Supply	Obtaining or providing a product or service in accordance with requirements;
Information Management	Addresses activities associated with all aspects of information, to provide designated stakeholders with appropriate levels of timeliness, accuracy and security;
Configuration Management	Ensuring the overall coherence of system functional, performance and physical characteristics throughout its lifecycle;
Risk and Opportunity Management	The identification and reduction in the probability of uncertain events, or maximizing the potential of opportunities provided by them.

Technical Competencies

Requirements Definition	To analyze the stakeholder needs and expectations to establish the requirements for a system;
System Architecting	The definition of the system structure, interfaces and associated derived requirements to produce a solution that can be implemented;
Design for…	Ensuring that the requirements of all lifecycle stages are addressed at the correct point in the system design;
Integration	The logical process for assembling a set of system elements and aggregates into the realized system, product or service;
Interfaces	The identification, definition and control of interactions across system or system element boundaries;
Verification	A formal process of obtaining objective evidence that a system fulfils its specified requirements and characteristics;
Validation	A formal process of obtaining objective evidence that the system achieves its intended use in its intended operational environment;
Transition	Integration of a verified system into its operational environment including the wider system of which it forms a part;
Operation and Support	When the system is used to deliver its capabilities, and is sustained over its lifetime.

Integrating Competencies

Project Management	Identification, planning and coordinating activities to deliver a satisfactory system, product, service of appropriate quality;
Finance	Estimating and tracking costs associated with the project;
Logistics	The support and sustainment of a product once it is transitioned to the end user;
Quality	Achieving customer satisfaction through the control of key product characteristics.

Five Levels of Competence

Awareness

The person displays knowledge of key ideas associated with the competency area and understands key issues and their implications. They ask relevant and constructive questions on the subject. This level characterizes engineers new to the competency area. It could also characterize an individual outside Systems Engineering who requires an understanding of the competency area to perform their role.

Supervised Practitioner

The person displays an understanding of the competency area and has some limited experience. They require regular guidance and supervision. This level defines those engineers who are “in-training” or are inexperienced in that competency area.

Practitioner

The person displays both knowledge and practical experience of the competency area and can function without supervision on a day-to-day basis. They are also capable of providing guidance and advice to less experienced practitioners.

Lead Practitioner

The person displays extensive and substantial practical knowledge and experience of the competency area and provides guidance to others including practitioners encountering unusual situations. Typically, this level is associated with an individual who is the “go-to” person for advice and to determine best practice within the competency area within an organization or business unit.

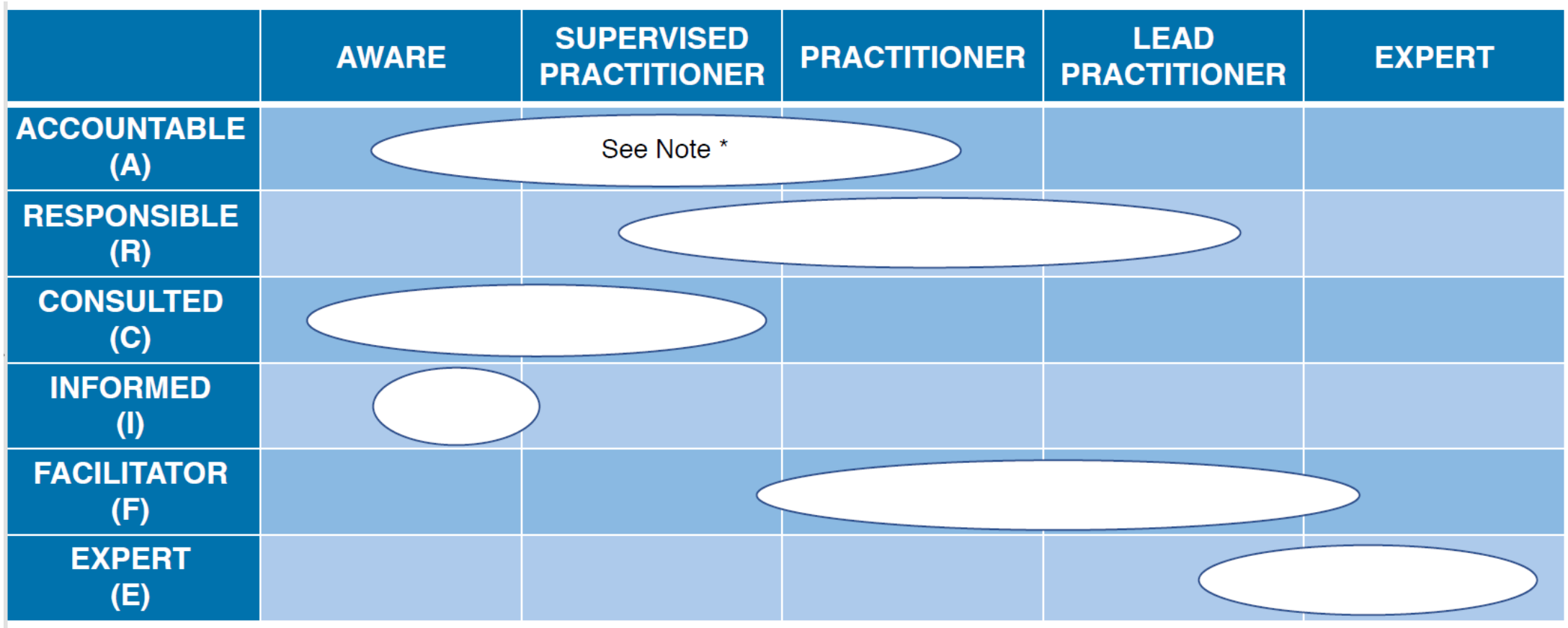
Expert

In addition to extensive and substantial practical experience and applied knowledge of the competency area, this individual contributes to and is recognized beyond the organizational or business boundary. Typically, this level is associated with an individual contributing to and defining regional or international best practices within the competency area.

Potential Roles – Someone who is….

- **Accountable** - Leadership, making sure the activity is done, and done right. Often the accountable person delegates the actual doing.
- **Responsible** - People that do the activity. Responsibility can be shared in a team.
- **Consulted** - Engaged in the work; may provide input, apply specific technical / domain knowledge to assist with the activity, or use / act on the outcome of the process and influence it.
- **Informed** - Needs to know either that the work product is produced, or the outcome.
- **Facilitator** / **Coach** - Lead workshops or discussions applying Systems Approach (with people from other skills) and build consolidated and agreed models. This aspect includes sufficient expertise and knowledge in Systems Approach (process and techniques) to select the most appropriate for the situation, considering both the nature of the system of interest, and for the “systems” competence and experience of the team they are working with.
- **Expert** - Develops / explains or teaches methods and process in this area, and advances the state of the art. Considered a specialist in the competency.

Competence Level Versus Role



COMPETENCY AREA – TECHNICAL: REQUIREMENTS DEFINITION

Description:

To analyze the stakeholder needs and expectations to establish the requirements for a system.

Why it matters:

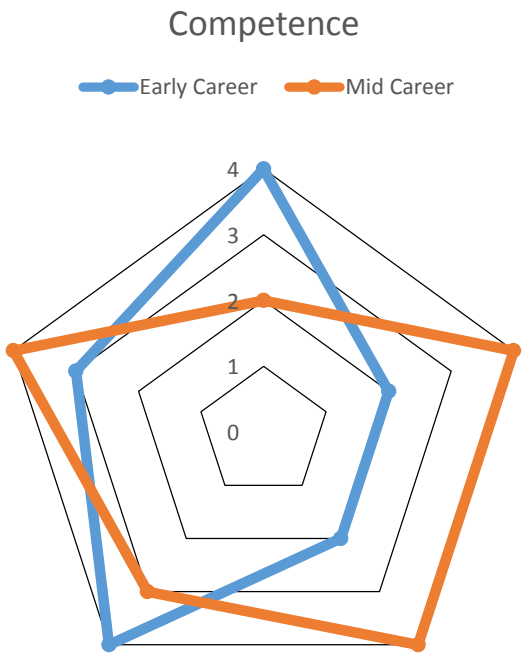
The requirements of a system describe the problem to be solved (its purpose, how it performs, how it is to be used, maintained and disposed of and what the expectations of the stakeholders are).

EFFECTIVE INDICATORS OF KNOWLEDGE AND EXPERIENCE

AWARENESS	SUPERVISED PRACTITIONER	PRACTITIONER	LEAD PRACTITIONER	EXPERT
Describes different types of requirements (e.g. functional, non-functional, business etc.). Explains why there is a need for good quality requirements. Identifies major stakeholders and their needs. Explains why managing requirements throughout the lifecycle is important. Explains why there is a need to manage all types of requirements. Describes the relationship between requirements and acceptance.	Identifies all stakeholders and their sphere of influence. Assists with the elicitation of requirements from stakeholders. Describes the characteristics of good quality requirements and provides examples. Describes different mechanisms used to gather requirements. Explains why there is a need for traceability in the requirements process. Assists with establishment of acceptance criteria for requirements. Identifies potential requirement conflicts within the requirement set. Explains how requirements affect design and vice versa and provides examples. Assists with the establishment and maintenance of requirements traceability information.	Defines governing requirements elicitation and management plans, processes and appropriate tools and uses these to control and monitor requirements elicitation and management activities. Elicits and validates stakeholder requirements. Writes good quality, consistent requirements. Derives requirements by analyzing beyond the boundary of the system of interest. Establishes acceptance criteria for requirements. Resolves and negotiates requirement conflicts in order to establish a complete and consistent requirement set for the system of interest. Assesses the impact of changes to requirements on the solution and program.	Recognized, within the enterprise, as an authority in requirements elicitation and management techniques, contributing to best practice. Defines and documents enterprise-level policies, procedures, guidance and best practice for requirements elicitation and management, including associated tools. Reviews and judges the tailoring of enterprise-level requirements elicitation and management processes to meet the needs of a project. Challenges appropriateness of requirements in a rational way. Reviews and judges the suitability and completeness of the requirements set. Influences key stakeholders to address identified enterprise-level requirements elicitation and management issues. Coaches new and experienced practitioners in requirements elicitation and management.	Recognized, beyond the enterprise boundary, as an authority in requirements elicitation and management techniques. Contributes to requirements elicitation and management best practice. Influences key stakeholders beyond the enterprise boundary in support of requirements elicitation and management. Advises on the suitability of the approach to elicitation and management of requirements. Advises and arbitrates on complex or sensitive requirements-related issues. Champions the introduction of novel techniques and ideas in requirements elicitation and management, producing measurable improvements. Coaches lead practitioners in requirements elicitation and management.

Some Initial Thoughts

- Not all competencies are needed for every job.
- The required level of competence will vary between jobs
- Over a career, the level of competence will increase for some competencies and decrease for others.



Discussion

- Are there any competencies missing in this list that you needed?
- Which competencies have been most critical to you?
- How did you develop your competencies?
- Are there competencies the Chapter can help develop? How?
- Are you an expert in any competencies and able to mentor other Chapter members in them?