Systems Thinking and its Application – An Introduction

A Two-Day Professional Development Course [SYN10551000]
March 21-22 (9 am- 5 pm)
FAA – William J. Huges Technical Center – Atlantic City, NJ

About the course

In today's public and private organizations, taking a comprehensive, or all-embracing view of complex system problems and opportunities has become a mantra. We refer to this as systems thinking. The ability to "think" as well as to "act" in terms of systems is a prerequisite to being able to structure and operate organizations and their enterprises so that they can (pro-) actively pursue their purpose, goals and missions.

Systems thinking (also called the systemic approach) evolved, through multiple contributions, into a discipline that can be applied in gaining an understanding of the broader aspects of systems including the dynamic relationships between systems in operation. Through systems and creative thinking, organizations/enterprises can learn to identify system problems and opportunities and to determine the need for, and consider the affect of, system changes. Further, via processes and life cycle models, as described in the ISO/IEC 15288 (System Life Cycle Processes) standard, organizations/enterprises can learn to act effectively in the management of system changes.

This course is organized as a journey through fundamental modules of knowledge that provide a holistic view of the systems landscape. It focuses upon the use of systems thinking and the life cycle management of systems as essential ingredients in building a learning organization that is equipped to deal with system complexity and the management of change. In order to gain deeper insight into the topic, case studies are executed in small groups.

The course is aimed at policy and decision-makers at all levels in an organization. This includes amongst others, business, engineering, scientific, and management related specialties.

Course Content

System Concepts
- Achieving Purpose, Goals and Missions
- Multiple Viewpoints of Systems
- Systems Meet Needs, Offer Services and Deliver Effect
- Decomposition of Systems
- System Elements
- Managing System Change
- System Complexities

Thinking and Acting in Terms of Systems
- Unification of Disciplines
- Systems Thinking
- System Life Cycles
- Enabling Systems
- A Paradigm for Thinking and Acting
- Revisiting the Change Model

Introducing the ISO/IEC 15288 Standard
- Systems Concepts and Terminology
- Life Cycle Models
- Processes for System Actors
- An Example of Standard Utilization
- Tailoring to Meet Needs
- Another Look at the Change Model

System Descriptions and Instances
- A Simple and a Complex System
- Descriptions, Instances and Types of Systems
- Life Cycle Changes
- Ownership of System Descriptions and Instances

Change Management
- Organizational Cybernetics
- Change Management as a Cybernetic System
- Measuring Effect
- Implementation of Change Management

Knowledge and Data
- Data, Information, Knowledge and Wisdom
- Gathering Knowledge
- Creative Thinking
- The Learning Organization

Life Cycle Management of Systems
- Management and Leadership of Systems
- Life Cycle Models Revisited
- Integrating Life Cycle Models and Processes

Organizations are Systems!
- Organizational System(s)-of-Interest
- Leading Organizational Change
- Achieving Quality in Organizations, Enterprises and Projects
- Summing it all Up

Lecturer

Dr Harold "Bud" Lawson, has been active in the computing and systems arena since 1958 with broad international experience in the public and private sectors as well as academic environments. He received the Bachelor of Science degree from Temple University (Philadelphia, Pennsylvania) and the PhD degree from the Royal Technical University, Stockholm. During his long career, he has contributed to several pioneering efforts in hardware, software and system technologies. In 2000, he received the IEEE Computer Society prestigious Computer Pioneer Charles Babbage medal for his 1964-65 invention of the pointer variable concept for programming languages.

Harold Lawson has held permanent and visiting professorial appointments at several universities in the USA, Europe and the Far East. Currently, Honorary Professor in the Swedish Graduate School of Computer Science and Academic Fellow in the Department of Systems Engineering and Engineering Management at Stevens Institute of Technology, Hoboken, NJ.

Harold Lawson is a Fellow of the Association for Computing Machinery, Fellow of the IEEE, ACM Distinguished Lecturer, IEEE European Distinguished Visitor, served on the ACM Fellows Committee (1997-2001) and is a Member of INCOSE. He has served as Head of the Swedish Delegation to ISO/IEC JTC1 SC7 WG7 and was the elected architect of the ISO/IEC 15288 System Life Cycle Processes standard. Harold Lawson is an independent consultant operating his own company Lawson Konsult AB and is, as well, a consulting partner and member of the board of directors of Syntell AB, Stockholm.

Course literature

Course participants will be provided with power point material as well as a copy of a textbook (in preparation for publication) entitled:

A Journey Through the Systems Landscape, by Harold W. Lawson

The course presentation follows the structure of this book. In addition, the instructor recommends, but does not require the following supplementary literature.

Peter Senge, et.al., *The Fifth Discipline Fieldbook*, Currency Doubleday, 1994. (ISBN 0-385-47256-0) – In particular the material on Systems Thinking (pages 87 to 190)

Robert Louis Flood, *Rethinking the Fifth Discipline, Learning within the unknowable*, Routledge, 1999. (ISBN 0-415-18530-0) – In particular Chapters 1 through 11 (pages 13 to 93)

ISO/IEC 15288, *Systems engineering – System life cycle processes*, International Standardization Organization/International Electrotechnical Commission, 2002, ISO,1, rue de Varembe, CH-1211 Geneve 20, Switzerland. Also available from National standards organizations.

Course fee and registration

Participants are to register for SYN10551000 via the website www.syntell.se (use the English version).

Course Fee:	For registration before February 21:	1200 US dollars
	For registration after February 21:	1350 US dollars

The fee includes all course material, morning and afternoon coffee breaks. Lunch is not included.

Registration deadline is March 11, 2005. Registration will be confirmed by e-mail.

Payment and conditions

Payment is to be made by bank check made payable to SYNTELL AB and must be received at Syntell by March 15, 2005.

Post address: SYNTELL AB
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SE-100 55 Stockholm, SWEDEN

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Fax: +46 8 6600965

Receipt will be delivered by e-mail or to a designated fax address upon completion of bank clearing. No refunds can be made. Participants may transfer their registration to another person if they are unable to attend. Notification of this substitution must be made to the lecturer by e-mail prior to the course start.

More Information

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