Future of Software Engineering Standards

Panel Chair:
Peter T. Poon, Jet Propulsion Laboratory, California Institute of Technology

Panel Members:
Jeanie Kitson, KAMO Consultancy & SEI authorized Lead Assessor
Robert Malcolm, Ideo Ltd., United Kingdom
James W. Moore, the MITRE Corporation
Leonard L. Tripp, Boeing Commercial Airplane
Peter Voldner, Head of Canadian delegation to ISO/IEC JTC1/SC7

In the new millennium, software engineering standards are expected to continue to influence the process of producing software or software-intensive systems which are cost-effective and of high quality. These systems may range from ground and flight systems used for planetary exploration to educational support systems used in schools as well as consumer-oriented systems.

Commercial standards, including those produced by organizations such as ISO/IEC and IEEE, will continue to be important to both industry and government. For example, in the U.S.A., the government has already become a user of commercial standards, and no longer produces or maintains government standards. This trend can be traced back to a policy statement issued by the Secretary of Defense in 1994 which requires the Department of Defense (DoD) managers to use commercial standards wherever possible for acquisition of products and services and to specify the requirements in terms of performance. Furthermore DoD managers are required to obtain a waiver for any DoD or Military Standard to be specified in a solicitation.

A number of issues regarding the future of software engineering standards have been identified and will be addressed by this plenary panel. The following presents examples of topics and some of their related issues:

1.   Integration of Systems Engineering and Software Engineering

- How will System Life Cycle Management in the next century be addressed now that ISO/IEC has developed the ISO/IEC 12207 on Information technology - Software Life Cycle Processes ?

- What are the trends addressing the integration of systems engineering and software engineering?

- In what way will the relationship between systems engineering standards and software engineering standards evolve in the future?

2. Marketing Forces influencing the future of Software Engineering Standards

- How do we characterize the marketing forces?

- In what way do the marketing forces influence the future of software engineering standards? Are there other external factors?

- What are the strategies for responding to the marketing forces and the other external factors?

3. Process Improvement and Capability Determination in the New Millennium

- Currently there are a number of models and methods for process improvement and capability determination, for example, the U.S. Malcolm Baldridge National Quality Award (which is for any product-producing organization), Software Engineering Institute's Capability Maturity Model, ISO 9001, and Bell Canada's Trillium. Will the proliferation of models and methods continue in the future?

- What are the principles involved in developing a process assessment framework in that will harmonize existing methods and models?

- What are the foundations of these principles?

4. A new Concept for Compliance for Software Engineering Standards

- What are the specific strategies of the IEEE Software Engineering Standards Committee (SESC) planned for the remainder of this decade?

- What is the new concept of conformance being developed by IEEE SESC?

- How effective are strategies such as architectural coherence, and uniform process framework?

5. Requirements Engineering and Consolidation of Systems Engineering and Software Engineering Standards

- What factors influence the future of Requirements Engineering?

- What is the trend for consolidation of Systems Engineering and Software Engineering Standards for the next century?

6. Adoption of Standards by Industry

- What initiatives should be taken to remove any potential obstacles to the wide adoption of software engineering standards?

- In what way will the linkage with other quality initiatives, such as the revised ISO 9000-3, be beneficial to the adoption of standards?

- What approach should be taken to develop a conformance assessment scheme?

Biographic information on the Panelists

1. Dr. Peter T. Poon is currently the Telecommunications and Mission Services Manager for the Cassini mission to Saturn at Jet Propulsion Laboratory, California Institute of Technology. He was a Technical Manager for a mission to Mars, Mission Control Center Systems Engineer for Voyager, Ulysses, Magellan, and Galileo missions, and Task Leader for developing the JPL Software Management Standard, and NASA Software Information System. He also served as a Contract Technical Manager for the Thermal Power Systems Project. He is a Technical Expert of the ISO/IEC JTC1/SC7, a member of the U.S. Technical Advisory Group, U.S.A. Chair /Program Management Committee member for a number of International technical conferences, and Executive Committee member of the IEEE Software Engineering Standards Committee. He received the NASA Certificate of Recognition and other awards. He is listed in Marquis' Who's Who in America, and Who's Who in the World.

2. Jeanie Kitson is currently sole owner of KAMO Consultancy and has sixteen years of experience in software development (thirteen with IBM). As a member of the ISO/IEC SC7 U.S. Technical Advisory Group, Ms. Kitson helps to establish U.S. national body positions on existing and emerging international standards. In 1996, she was a visiting scientist at the Carnegie Mellon University Software Engineering Institute (SEI). She is an SEI authorized Lead Assessor. In 1993, she became IBM's resident affiliate at the SEI where she supported the CMM-Based Appraisal Project. During Ms. Kitson's career at IBM, she was privileged to be a member of the Onboard Software Development Organization and played a key role in the continuous improvement of its software development processes. For years this organization has delivered virtually error-free code to its NASA customer. It has been recognized as a world leader in software process and quality management, receiving SEI Level 5 in a NASA evaluation, being a two-time winner of the NASA Excellence Award for Quality and Productivity, and receiving unconditional ISO 9001 registration.

3. Bob Malcolm is Managing Director of Ideo Ltd. which provides unbiased advice on informatics strategy and management. Clients include industry, universities, the European Commission, NATO, and government, including the Department of Trade and Industry, the Ministry of Defence, and the Research Councils in the UK. In the late 1970's he was Chief

Engineer of the Airborne Software Division in GEC Avionics,. During the 1980's he became Research Manager for CAP Group, the software and systems house, and then Sema Group (UK). Bob was Project Director for the study of Software in Safety Related Systems sponsored by the UK Government Department of Trade and Industry, after which he became programme co-ordinator for the £40M Safety Critical Systems Research Programme. Bob is chairman-designate of the newly created Informatics Division of the IEE. He is also a member of the Executive Committee of the Research and Development Society. He was a member of the Communications Panel of the Technology Foresight Programme. He is a visiting industrial professor at City University, London.

4. Leonard L. Tripp is an associate technical fellow in software engineering at the Boeing Company, and is responsible for establishing standards for safety-critical airborne software. He received recognition from NASA for contributions to the computer analysis of heated composite structures. He is the 1997 First Vice President for Technical Activities of IEEE Computer Society, and serves on the Operations Committee of the TC on Software Engineering. His leadership role in standards activities include chairing the society's Standards Activities Board, Standards Coordinating Committee, and Software Engineering Standards Committee. He is a member of the IEEE Technical Activities Board., and is also the chair of the US Technical Advisory Group to ISO/IEC JTC1 SC7, Software Engineering. He was chair of the third Software Engineering Standards Workshop. He is a member of the ACM and the Mathematical Association of America. He has authored one book and 40 technical papers. He has received the Meritorious Service Certificate for his leadership in Computer Society standards activities.

5. James W. Moore is a Senior Principal Engineer at The MITRE Corporation, where he is the corporate focal point for standardization activities. He is a twenty-seven year veteran of software engineering and an eight-year veteran of software engineering standardization. He previously worked in both the defense and commercial sectors for IBM. Currently, he serves as the Convener of ISO/IEC JTC1/SC22/WG9 (Ada), the Chairman of the ACM Technical Standards Committee, a member of the Management Board of IEEE SESC, and as the Computer Society representative to the US Technical Advisory Group . He was the founder of the Reuse Library Interoperability Group and chaired the Reuse Planning Group. He served for four years as a member of the DoD's Federal Advisory Board on Ada. He is a charter member of the Computer Society's Golden Core. Lately, he spends his spare time (all of it) writing a book on software engineering standardization.

6. Peter Voldner is owner of his consulting company, and has been active in all aspects of the software engineering field for over 25 years, with both systems suppliers and with user organizations, most recently, Bell Canada. He helps companies to evaluate and improve QA procedures, and provides help in ISO 9000 related projects, guiding companies to understand and implement current best practices. He has been active in the ISO/IEC JTC1/SC7 committee since 1986, serving as International Working Group Convener until 1994, and as Head of the Canadian delegation to SC7 since 1990. Peter is Co-convener of the SC7 Strategic Planning Group, and a member of the IEEE SESC Executive Committee.