

# INCOSE 2001 / ARTES Travel Report

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*Abstract.* This paper reports the author's attendance of the INCOSE 2001 symposium held 1 - 5 July 2001 in Melbourne, Australia..

## BACKGROUND

INCOSE<sup>1</sup> is an international organization that strives to "foster the definition, understanding, and practice of World Class Systems Engineering in industry, academia, and government". The annual INCOSE symposia are the biggest conferences for systems engineering in the world. The number of members attending INCOSE symposia usually ranges between 800 and 900, this year's symposium attracted only around 650 people, probably due to the location of this year's symposium in Australia. INCOSE's members are mainly from the aircraft, space and defense industry, mainly from the United States. Furthermore, there meet also members from different government's departments of defense and also people from academia interested in systems engineering.

AP-233<sup>2</sup> is a current ISO standardization effort to create an international systems engineering standard enabling data exchanges between systems engineering tools. AP-233 is based on results from the SEDRES-2<sup>3</sup> project, in which the author is involved.

The author is working on the integration of object-oriented engineering methods with traditional structured methods. He was invited to present his paper "Support for Object-Orientation in AP-233" at the 11<sup>th</sup> annual international symposium of INCOSE, which was held 1 - 5 July 2001 in Melbourne, Australia.

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<sup>1</sup> INCOSE: "International Council on Systems Engineering", see [INCOSE Website 2001]

<sup>2</sup> AP-233: "Application Protocol 233", a part of the ISO 10303 standard, see [SEDRES Website 2001]

<sup>3</sup> SEDRES-2: "Systems Engineering Design Representation Exchange Standard 2", IST project 11953, see [SEDRES Website 2001]

## CONFERENCE

**Organization.** The INCOSE symposia start with board meetings and working group meetings on the weekend. On Monday, full and half-day tutorials are given, followed by presentations of technical papers and panels from Tuesday through Thursday. During the conference, meetings of the different working groups take place and a permanent exhibition presents different sponsors as well as other companies related to INCOSE.

This year's over 150 technical papers and 14 panels were organized in up to eight parallel tracks. Furthermore, the different working groups had scheduled their meetings in parallel to the paper presentations and panels.

**Tutorial.** The author chose to attend the full-day tutorial "The Systems Engineering Environment" by Leonard Karas and Lori Pajerek. The tutorial did not quite meet the author's expectations. It mainly focused on presenting a method for engineering at system level, focussing on quality improvements in early phases of system development, mainly by simplifying the concepts of early phases (such as in requirements engineering) and a more intense customer involvement. The presented method lacks automated tool support and hence also does not provide the advantages of formalized methods. The tutorial did not elaborate the environment of systems engineering in general. It was not abstract, such that one could have extracted many new ideas from it for other systems engineering environments than the one presented.

**Working Groups.** The author attended the working group meetings of the "Model Based System Development" working group. Here, the major efforts were spent on formulating requirements for a systems engineering profile for the UML<sup>4</sup>.

The interest of the systems engineering community in object-oriented methodologies is

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<sup>4</sup> UML: Unified Modeling Language, see [UML v1.3 2000]

growing, and the UML systems engineering profile would enable the use of this widely established notation (at least in software engineering) for engineering at system level.

**Technical Papers and Panels.** The author attended selected technical paper presentations and panels, mainly tackling object-oriented aspects of systems engineering, but he prioritized the parallel working group meetings.

The papers and panels have shown that object-orientation has been recognized by the systems engineering community, but is not yet used very much. Furthermore, discussions with paper authors and panelists have shown, that there is great interest but still a lot of misunderstanding when it comes to concepts and goals of object-orientation. Some delegates even see object-orientation threatening their good experiences with traditional structured methods and are strictly against the introduction of the “software-only tailored” object-oriented concepts to systems engineering.

The conference program of the INCOSE 2001 symposium as well as all paper abstracts can be found at [INCOSE Website 2001]. The author can provide detailed reviews of the following papers and panels on request:

- 6.2.2 “Shoot the Modelers & Begin Design – Focusing Analysis on Design Using a System Model”
- 6.2.4 “Investigating Risks in Systems Engineering Tool Data Exchange”
- 6.3.1 “Pilot Application of the OOSEM Using Rational Rose Real Time to the Navy Common Command and Decision”
- 6.3.2 “A Frame-Based Approach to Requirements Engineering”
- 6.3.3 “Emergence: Open Your Eyes to New Vistas”
- 6.3.4 “Threads, Reference Cases and System Models: Adapting OOA to Complex System Specification”
- Panel “Model Driven System Design: Update from the Trenches”
- Panel “Enhancing UML for Systems Engineering”
- 5.7.2 “The Data Standard AP-233: An Invigorator for Global Systems Engineering”
- 5.7.3 “Impact of Shared Data Environment – Enterprise Integration (SDE-EI) on Systems Engineering”
- 5.7.4 “Support for Object-Orientation in AP-233” (the author’s paper)

## TRAVEL AND VENUE

The flight from and to Australia was strenuous. The net time on-plane was about 24 hours each way (Stockholm – Bangkok – Sydney – Melbourne and back), which definitively is too long for a 7-day-stay in Australia.

The Carlton Crest Hotel was a convenient and nice place to stay, especially because the symposium was hosted in the same hotel.

Unfortunately, due to long meetings and discussions, the author was not able to visit many other places in Melbourne, except for some evening dinners and a short walk through the city of Melbourne.

## REFERENCES

- [INCOSE Website 2001]: INCOSE: Website of the International Council on Systems Engineering, INCOSE, at <http://www.incose.org>, updated 2001
- [SEDRES Website 2001]: SEDRES Project: Website at <http://www.sedres.com>, updated 2001
- [UML v1.3 2000]: OMG: “The Unified Modeling Language Specification v1.3”, at the OMG website at <http://www.omg.org>, 2000