

**Keynote:** A Refinement Calculus for Requirements Engineering

**Keynote Speaker:** John Mylopoulos, University of Ottawa

**Abstract:** The requirements problem consists of transforming stakeholder requirements - however informal, ambiguous, conflicting, unattainable, imprecise and incomplete - into a consistent, complete and realizable specification through a systematic process. We propose a refinement calculus for requirements engineering (CaRE) for solving this problem, which takes into account the typically dialectical nature of requirements analysis. The calculus casts the requirements problem as an iterative argument between stakeholders (including requirements engineers), where posited requirements are attacked for being ambiguous, incomplete, etc. and refined into new requirements that address the defect pointed out by the attack. Refinements are carried out by operators provided by CaRE that refine (e.g., strengthen, weaken, decompose) existing requirements, to build a refinement graph. The semantics of the operators is provided by means of argumentation theory. This is joint work with Yehia ElRakaiby and Alessio Ferrari.

**Short bio:** John Mylopoulos received his BEng degree from Brown University in 1966 and his PhD degree from Princeton in 1970, the year he joined the faculty of the University of Toronto. His research interests include information modelling techniques, covering notations, implementation techniques and applications, knowledge based systems, semantic data models, information system design and requirements engineering.

Mylopoulos is the recipient of the first Outstanding Services Award given by the Canadian AI Society (CSCSI), a co-recipient of the best-paper award of the 1994 International Conference on Software Engineering, a fellow of the American Association for AI (AAAI) and the elected president of the VLDB Endowment (1998-01, re-elected for the period 2002-05). He is co-editor of the Requirements Engineering Journal, published by Springer-Verlag. He has also contributed to the organization of major international conferences. He has served on the editorial board of several international journals. He is currently leading a number of research projects and is principal investigator of both a national and a provincial Centre of Excellence.