Panel Description

40 Years of Software Engineering

Fevzi Belli  
*University of Paderborn, Germany*  
belli@upb.de

Cristina Seceleanu  
*Mälardalen University, Sweden*  
cristina.seceleanu@mdh.se

Abstract

In the fall of 1968, NATO hosted in Garmisch-Partenkirchen, close to Munich, a conference devoted to the problems of the computer industry that was having a great deal of trouble in producing large and complex programs. The term Software Engineering (SE) was not in general use at that time, its adoption for the title of this conference was deliberately provocative. As a result, the conference and its report have played a major role in gaining general acceptance of the term SE.

Part I: How far have we come?

Prof. Brian Randell (University of Newcastle upon Tyne) was one of the participants and the co-editor, with Dr. Peter Naur, of the report of the legendary NATO conference in 1968.

Since 1977, building trustworthy, secure, and dependable software is a central theme of highly successful COMPSAC conferences. Prof. Stephen Yau (Arizona State University), President of IEEE Computer Society (1974-75), and Editor-in-Chief for Computer (1981-84), is the founder of COMPSAC.

In the first part of the special session - *40 Years of Software Engineering* - we will bring together Prof. Randell and Prof. Yau with Dr. Jean-Claude Laprie (LAAS-CNRS, Toulouse). Dr. Laprie is one of the most renowned pioneers contributing to and forming the research work on dependable computing. The three scientists will be challenged to answer questions such as:

- What formed SE during the last four decades? What are the landmarks?
- Have we done enough? Do we really have an engineering discipline nowadays?
- Based on the past 40 years of achievements in SE can we develop a collective vision about the next 40 years?

Part II: How far can we go in the next 40 years?

After its birth as a promising discipline, Software Engineering has benefited from a great deal of visionary ideas. Some of these ideas have remained valid, constituting a viable foundation for an engineering discipline: analysis and design methods and notations, software architecture and reuse, security and automated support.

Over the past three decades, Prof. Virgil Gligor’s research on protecting confidential information, maintaining message integrity, and developing authentication protocols, has grown and evolved the field of information security, significantly.

The extensive and influential work of Prof. Pankaj Jalote on software process improvement and assessment frameworks has advanced an approach to which both practitioners and researchers can more easily relate.

A great amount of research effort has been recently focused on mathematical techniques for specifying and verifying complex software systems. Dr. Rustan Leino is one of the most active proponents and developers of program checkers built on the technology of program verification.

The session *40 Years of Software Engineering* is not only supposed to review historic aspects and milestones of the scientific and technical achievements that made computer systems more dependable, but also to propose a vision for the future. Hence, in the second part of the session, we will continue the visionary discussions by inviting Prof. Gligor, Prof. Jalote, and Dr. Leino to answer questions such as:

- How can we leverage on the SE research achievements accumulated in the last four decades and build a roadmap to the next 40 years?
- Where will the future advances come from?