

Socio-Technical Systems: Transforming Theory into Practice

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Abstract : This paper critically examines the evolution of socio-technical systems theory, its practices, and challenges in system design and development. It examines concepts put forward by researchers focusing on the application of the theory in software engineering. There are various methods developed that use socio-technical concepts based on systems engineering without remarkable success. The main constraint is the large amount of data and inefficient techniques used in the application of the concepts in system engineering for developing time-bound systems and within a limited/controlled budget. This paper critically examines each of the methods, highlight bottlenecks and suggest the way forward. Since socio-technical systems theory only explains what to do, but not how doing it, hence engineers are not using the concept to save time, costs and reduce risks associated with new frameworks. Hence, a new framework, which can be considered as a practical approach is proposed that borrows concepts from soft systems method, agile systems development and object-oriented analysis and design to bridge the gap between theory and practice. The approach will enable the development of systems using socio-technical systems theory to attract/enable the system engineers/software developers to use socio-technical systems theory in building worthwhile information systems to avoid fragilities and hostilities in the work environment.

Keywords : socio-technical systems, human centered design, software engineering, cognitive engineering, soft systems, systems engineering

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