ABSTRACT

This chapter develops a descriptive-conceptual overview of the main models and standards of processes formulated in the systems engineering (SE), software engineering (SwE) and information systems (IS) disciplines. Given the myriad of models and standards reported, the convergence suggested for the SE and SwE models and standards and the increasing complexity of the modern information systems, we argue that these ones become relevant in the information systems discipline. Firstly, we report the rationale for having models and standards of processes in SE, SwE and IS. Secondly, we review their main
characteristics. Thirdly, based on the identified aims and principles, we report and posit the concepts of process, system and service as conceptual building blocks for describing such models and standards. Finally, initial theoretical and practical implications for the information systems discipline of such models and standards are discussed, as well as recommendations for further research are suggested.

... in the current marketplace, there are maturity models, standards, methodologies, and guidelines that can help an organization improve the way it does business. However, most available improvement approaches focus on a specific part of the business and do not take a systemic approach to the problems that most organizations are facing (SEI, 2006, p. 3).

INTRODUCTION

The manufacturing of products and the provision of services in the modern world has increased process engineering (including manufacturing or provision) and process managerial complexity (Boehm & Lane, 2006). The engineering complexity has been raised because of the variety of design, manufacturing or provision process, machines and tools, materials and system-component designs, as well as for the high-quality, cost-efficiency relationships, and value expectations demanded from the competitive worldwide markets. The process managerial complexity has increased because of disparate business internal and external process must be coordinated. To meet the time to market, competitive prices, market sharing, distribution scope and environmental and ethical organizational objectives, among others financial and strategic organizational objectives contribute to increased organizational pressures and organizational complexity (Farr & Buede, 2003).

Such process engineering and/or managerial complexity is manifested in: (1) the critical failures of enterprises information systems implementa-

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