

Modelling and Evaluating the Maturity of ICT Governance Processes in the Power Industry

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Use of Information and communication technologies (ICT) for power system operation and maintenance has a long history. It starts in the 1960s with developments within protection, automation and remote control, and continues in the 1980s and 1990s with increased communication capabilities and integration between systems and control centers. In the late 1990s, the developments were mainly complemented integration of the technical support systems (i.e. SCADA/EMS) used for power system operation and control, with business and administrative support systems. Much of this development has been fragmented and driven without a strategic agenda, leading to islands of automation and stove-piped system hierarchies suitable for a few purposes, but without optimizing the use of the system for a wider group of business processes. Each business unit has often independently developed and acquired the ICT systems needed. As a result, the enterprise-wide ICT platform is composed of a considerable number of poorly understood components, storing redundant data and implementing similar functionality. The systems interact by means of equally diverse and confusing connectors and the applications are deployed on a wide variety of platforms and utilize many different technologies. Furthermore, the need for management of ICT in the re-regulated power industry is driven by frequent changes in the business environment, such as mergers, acquisitions, new market rules, environmental policies and customer relationships. Governing the enterprise ICT through this complex and ever-changing environment is a challenging task for ICT management and requires many decisions to be made, timely and correctly.

ICT governance should therefore be an important issue on the agenda for all parties in the electric energy industry including transmission system owners, generation companies and distribution utilities. ICT governance provides mechanisms that enable ICT management to develop integrated business and ICT plans, allocate responsibilities, and prioritize ICT initiatives. There are currently few publicly available, documented best practice frameworks aiming to support ICT governance. Weill & Ross have developed an ICT governance framework based on just a few questions that can be used to assign responsibilities for high level ICT decision making, but their work gives no further guidance on how the organization responsible for ICT should actually perform their labour [1]. The ISO/IEC 20000 and its preceding IT Infrastructure Library (ITIL) might aid the creation of processes related to delivery and support but lacks support for the connection between business and ICT [2]. Control Objectives for Information and related Technology (Cobit) is the most relevant

framework for ICT governance, but it is extensive and difficult to use due to featured problems of ambiguity and vagueness [3].

In this paper, we propose a framework for modelling and evaluating the maturity of ICT governance processes at a complex enterprise, such as a transmission system owner using technical as well as administrative support systems. The evaluation and modelling is essential for good monitoring, enhancement and management of existing ICT governance processes and structures. In particular, by using a framework for assessing ICT governance maturity, it is possible to compare and rationally select between potential future scenarios. For instance, if the decision-making authority for acquisition of commodity software is moved from the power system operation department level to the enterprise ICT operations level, how would that improve the effectiveness of the affected processes? The possibility to perform trade-off analyses between potential scenarios is one of the most important benefits of having an efficient ICT governance modeling and evaluation framework in place. Another benefit is the possibility to benchmark against other organizations. Finally, a good ICT governance assessment framework can provide useful prescriptive results about what can be done to improve the governance of ICT within the organization under evaluation.

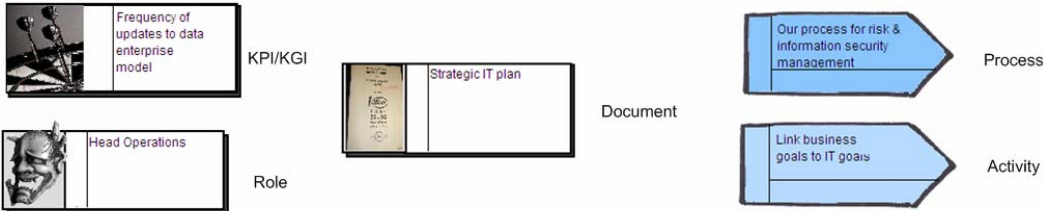


Figure 1. The entities used for ICT governance modeling include metrics (KPIs/KGIs), roles, documents, processes and activities employed in order to govern ICT within the organization under evaluation

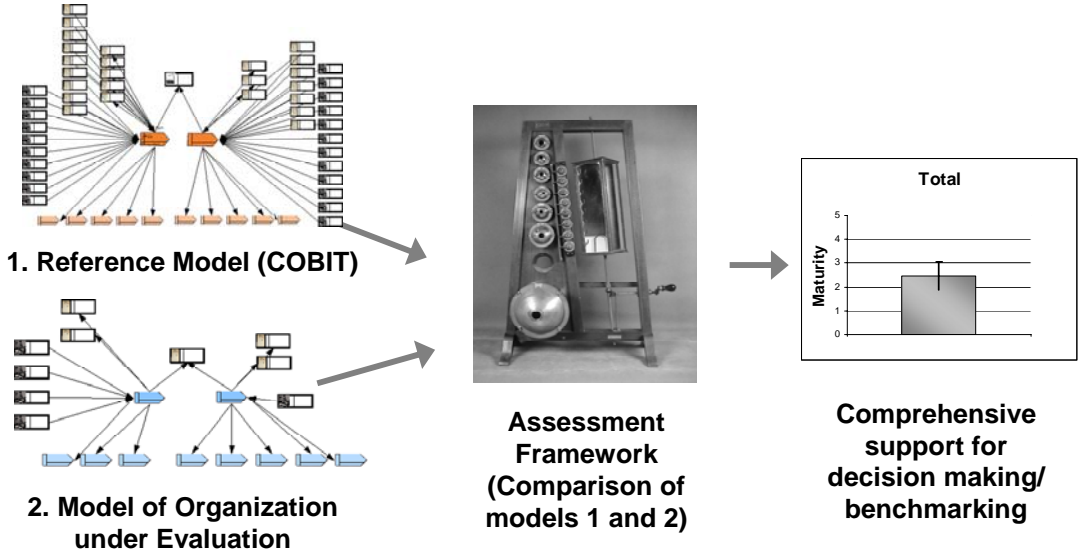


Figure 2. The general principle for evaluation of ICT governance maturity. An assessment framework compares a model of the organization under evaluation and a reference model containing best practice on ICT governance taken from Cobit. Results are presented as maturity scores apt as input for decision-making on ICT matters.

The approach to ICT governance maturity assessment presented in this paper is a Cobit-based framework designed to overcome the featured problems of existing IT governance frameworks. It comprises a modelling language for ICT governance based on Cobit, c.f. Figure 1, and a transparent analysis framework, c.f. Figure 2, which enables aggregation of

single metrics into comprehensive maturity scores. The framework has been tailored specifically towards organizations that use technical as well as administrative support systems and its background and use has previously been described in a series of papers [4], [5], [6]. In this paper, the use of the framework is discussed by presenting a case study conducted within the power industry. Results demonstrate that the framework can be used to conduct time-efficient, valid and reliable ICT governance maturity assessments without the help of an experienced analyst.

References:

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