

# Chapter 1

## Architecture Leadership and Systems Thinking

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### ABSTRACT

*Gone are the days when organizations were concerned with increasing efficiency by mastering repetitive tasks. The competitive, boundary-less world of today has dramatically altered the primary challenges of an organization: fluidity, coherence, and connectedness are the hallmarks of successful organizations. Concomitant with this epochal transformation is the emergence of information systems as the backbone for conducting any business. Today, one cannot find any enterprise or government that is not permeated by information systems at all levels. That the role of information systems is so central to any organization is evident from the prescient words of management legend, Peter Drucker, that the future CEO may be the CIO. With extended enterprises so very common, how do we not lose sight at the bigger picture while making decisions? Systems thinking advocates cultivation of viewing the “whole” and seeing the parts (of the whole) in the context of dependence with other parts (of the whole) and their interactions. Architecture should help create necessary artifacts to understand and manage the complexities. Developing insights on how things work together and the influence of one part over the other is at the heart of architectural conversations. There is thus a natural connect between leadership, architecture, and systems thinking. This chapter explores the nature of evolving enterprises and the increasing relevance of systems thinking in architectural activities. The author discusses the importance of systems thinking to enterprise architecture and illustrate, with TOGAF as an example, how to apply the principles of systems thinking. A conceptual case study is presented to illustrate the application of systems thinking in architectural governance.*

### INTRODUCTION

Technology has been continuously transforming the way we live, work and recreate. The ripples of the waves of technology advancements result in profound effects transforming organizations, governments, military and production of goods and services. In the agricultural era, human and animal power was

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harnessed for living rendering labor the predominant power. In the industrial age that followed, machine power drove industries in ways unimagined by the earlier generations. Capital was the most important element that drove industrial era. The arrival of Internet heralded the advent of information age. In the information age, knowledge derived from information is the most critical asset. Competitive advantage is no longer derived from land, capital and labor but increasingly from knowledge. Thus, there arose a critical need for managing information in organizations and in personal lives.

The explosion of information is greatly aided by parallel advances in globalization, virtualization and technology (Uhl-Bien et al, 2007). In the industrial economy, organizations faced challenges in maximizing production of physical assets. This was addressed by factory mode of operation – the most often quoted example of Ford which heralded the first of industrial factory floors. This necessitated a command and control structure and organizations evolved a bureaucratic way of operation. Knowledge was in precious few hands and the mass of workers were practically treated machine like – being told what to do. Information age has totally different types of needs but unfortunately our strong roots of industrial age thinking is debilitating and constraining us.

Industrial age was characterized by factory organization of work, specialization of labor, reliance on machine power and strict organizational boundaries. Information age emphasizes on free flow of information, decentralized organizational structures and co-evolutionary ecologies of firms, institutions, and markets. While the age has progressed, have our thoughts and approaches undergone concomitant transformation to deal with the emerging ways? The central theme of this chapter is to explore this question, seek answers and suggest approaches that will better enable to harmoniously blend with the underlying forces.

Thinkers (Stewart, 1998) trace the evolution of information age to 1991 when the corporate capital spending on traditional industrial age goods like turbines, engines and mining equipment was surpassed by spending on information machines like computers and telecom. Since then, the spending on information machines has seen rapid acceleration and every passing year has further widened the gap between spends on industrial age goods and information machines.

Technological inventions particularly the transistors replacing vacuum tubes, have made computers omnipresent. Today, computers permeate business life (Latham, 2002) and form the backbone of any enterprise. Machines in factory floors are controlled by computers and robots – the steel collared workers – offering higher levels of capability and precision. Transportation machines like sophisticated trains and planes are dependent on electronic control systems. The story gets predictably repeated across industry segments reinforcing the shift of nucleus towards information systems. Truth be told, it is hard to imagine businesses without computers. Social experiment on living with just Internet as the access medium (and shutting out of all other human contacts) to outside world illustrates the pervasiveness, utility and relevance of information systems.

Computer education is no longer an esoteric science; it is taught in elementary schools. Households consider computers as infotainment devices and the market for personal, home computers show robust growth. It is not just technology innovations and affordability that ushered in information age; the coincidence of other events played no less a part in the advent of information age.

Thomas Friedman (2005) argues that the fall of the Berlin Wall allowed people to see the world differently—as “flat” or more global. For Friedman, the fall of Berlin Wall was a far more symbolic event than just a political event – it ushered in a new thinking, one that is based on viewing as seamless whole. In the cold war era, people thought of the world in either-or terms: either capitalist west or communist

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