Chapter I

Software Maintenance and Organizational Health and Fitness

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This chapter sets out a foundation for the management of software maintenance. The foundation highlights a fundamental for managing software maintenance effectively—recognition of the connection between managing change in organizations and the organizations’ health and fitness. The changes arising as a consequence of software maintenance nearly always impair or improve that health and fitness. The basis for that impact lies in how business rules contribute to the performance of systems, and in how systems contribute to the performance of organizations. An understanding and application of how changes from software maintenance on business rules and systems affect the performance of organizations provides a basis for management action. With that added confidence, managers can reduce impairing their organizations’ health and fitness and can increase positive action to improve their organizations’ health and fitness via software maintenance.

INTRODUCTION

Software maintenance provides a vital path for management in preserving and building organizational health and fitness. Since software maintenance also is the usual means for implementing software evolution, that vital path takes on additional significance for management. As explained later in this chapter, that vital path provided by software maintenance is a main way of making intentional changes in how organizations work. In the contexts in which they operate, how organizations work is manifested in their organizational health and fitness.¹
To manage these intentional change processes effectively, managers need to understand eight activities and attributes of organizations and appreciate and apply their characteristics. Managers need to know the roles of systems and how the components of systems interact in getting work done in organizations. Since systems typically implement organizations’ business rules, managers can introduce and guide change in their organizations by giving emphasis to the choice and relevance of the implemented business rules.

For these reasons, this chapter starts out by giving attention in its first main section to depicting the lay of the land with respect to the activities and attributes of organizations. The second main section is devoted to the role of systems in organizations, and the third to business rules. The fourth main section delves into systems and the operational performance of organizations and relates them to organizational health and fitness. The fifth main section tells about the impact of changes and the processes of changing organizations, systems, and business rules. Those five main sections support the sixth main section, which covers ways that software maintenance and software evolution contribute to organizational health and fitness. Two sets of ten activities, one negative set and one positive set, are summarized in the seventh main section, on the potential of software maintenance for determining organizational health and fitness. After noting maintenance maturity, this chapter then ends with a conclusion section.

**THE LAY OF THE LAND**

For the purposes of discourse here, let us limit the term *organization* to entities deliberately created and operated by human beings for human-designated purposes (Drucker, 1973a). Thus, the astronomical organization commonly known as the solar system is not considered here—it was not created by people for their purposes. And the human digestive tract with its major components including salivary glands, esophagus, stomach, and intestines is not here considered as an organization—although human couples may act deliberately to create children, the digestive tract is part of the child, and cannot currently be separately created and be viable. Some examples of organizations as considered here in this chapter are: a government agency to collect value-added tax (VAT); a dictation and word-processing pool serving a group of barristers; a multinational, globally operating, vertically integrated producer-distributor of petroleum-based products; a fútbol (soccer) club; a coal mining corporation; a fishing fly (bait) provider operated by one person working part-time; a temporary emergency flood relief charity; and a public accounting service.

Figure 1 on the next page diagrams an organization in operational terms. Most organizations are composed of sub-organizations. Hence, when human beings (people or personnel) are members or components of an organization, an individual
On Temporal Summation in Chaotic Neural Network with Incremental Learning
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