Foundations of Collaborative EA 6 CONTENT Reflections on Complexity 139 Beyond Threshing Machines 139 Structure and Behavior of Complex Phenomena 140 Principles of Managing Complexity 141 Management Capabilities of Hierarchies and Networks 146 The EA Dashboard as a Yardstick for EA Effectiveness 152 Despite the well-thought-out repertoire of frameworks and best practices set out in the previous two chapters, enterprise architecture in many organizations is far from having the sustainable and sweeping effect that it promises.Management capabilities of hierarchies and networks Ashby's Law of Requisite Variety states that "only variety can absorb variety" and thus gives us a lower bound for the complexity of a management organization in relation to the complexity of the managed system and the required accuracy of control. But this management organization can of course be much more complex than needed; it can be an exuberant entanglement of roles, communication channels, and so forth on top of an innocent tiny system. Furthermore, Ashby's law gives no indication which organizational form of the management ap- paratus deals most economically with complexity. To fill this gap, we end our reflections on complexity with a comparison of the two most prevalent organizational forms: hierarchical organizations that rely on a top-down information flow, and network organizations that exchange information in a network. The latter structure is based on an exchange of information between peers on equal terms. How can we estimate their respective capabilities, their parameters of influence, and how they com- pare? These considerations give a hint of how to position and organize an EA office and are the foun- dation for our building blocks described in Chapters 7 and 8. Since we are asking about the capability to manage complexity, we will benchmark our organiza- tional forms against a system with unlimited complexity: Only then can we examine how far they can go. In a system with limited complexity, the capability of one manager to shape and control things sometimes appears as a threat to other managers, since it diminishes their piece of the cake, their de- grees of freedom to shape and control things. Let's put this managerial jealousy aside by envisioning a system with an unlimited need for man- agement, where the capability of one manager is welcomed by other managers as an opportunity to even shape and control more things. Enterprise architects with a notoriously understaffed team will not find it difficult to envision such a system. In this happy situation, the IT landscape anyway seems Reflections on Complexity 147 FIGURE 6-4 Illustrations of the concepts manager and management capability. like a Hydra8: If you get one part nicely in shape and under control, immediately two other parts pop up that need taming. There's no end to the management capability you need. What we mean by manager here is explained in Figure 6-4. It is an entity that gives design and control directions while taking into account observations from the managed system, local or global knowledge about the environment, and directions from other managers. In this general sense, an en- terprise architect must certainly be considered a manager. The capability of a manager is her ability to constrain the current and future state of affairs. It is her power to shape the system and keep it in certain bounds, as depicted in drawing (b) of Figure 6-4. A manager's capability is proportional to the variety of her design and control activities--namely their breadth and effectiveness. With these definitions in mind, we now take a look at the first prevalent organizational form, the hierarchy. Figure 6-5 shows a simple balanced hierarchy with its major construction parameters, the height and branching. A characteristic feature of a hierarchical management organization is that the management capa- bility depends on the

level in the hierarchy––it is a function C(l) of the level. For simplicity let's assume that the capability drops proportionally from one level to the next. In formulas, this can be expressed as: Cdl th 1TH 1/4 a o CdlTH; where 0 n o C th n o dn –– 1TH o C o a 1/4 CdNTH Metcalfe's law was a hot topic during the Internet bubble because investment gamblers misinter– preted it as a "natural law" predicting quadratic revenue growth from linearly increasing investments.The feedback cycles bring all stakeholders together ..with a constant heartbeat, thereby guaranteeing collaboration