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There are many possible definitions of management. For the purpose of this book, management is defined as the discipline of building mathematical models of real systems and analysis thereof for the purpose of developing justified managerial decisions. Management decisions for leveraging resources that best meet system performance objectives are based on comparative outcomes of validated mathematical models.

Although no formal definition can capture all aspects of the concept, it follows that management engineering typically includes the following elements (steps): (1) the goal that is clearly stated and measurable, (2) identification of available resources that can be leveraged (allocated) in different ways, and (3) mathematical models (analytic or numeric computer algorithms) to quantitatively test outcomes (scenarios) for different ways of using resources, and consequences (especially unintended consequences) of the different use of resources before finalizing the decisions.

As Joustra et al. (2011) note, "Currently, management lacks the proper decision support for determining the consequences of their decisions and therefore for making good choices." The underlying foundation of the management engineering