This chapter presents a generic Design for X (DFX) development framework, or DFX shell in short, which can be easily tailored or extended to develop a variety of DFX tools quickly and consistently. A set of formal but pragmatic “commonsense” constructs such as Bills of Materials and Process Charts are provided to convert the conceptual PARIx model, which has been outlined in the introductory chapter as a basic DFX pattern, into the DFX shell. Following are basic questions that must be addressed in this conversion:

1. How to represent decisions in designing products, processes and resources?
2. How to relate these decisions?
3. How to measure decisions and their interactions?
4. How to collect and display data necessary for above tasks?

Figure 5.1 shows a seven-steps procedure for developing a DFX tool using the DFX shell. The above question will be addressed at appropriate steps of this systematic procedure. Each step will be discussed separately in a section. Major issues are highlighted, approaches are explored, advantages are outlined so that they can be extracted for incorporation, and pitfalls and traps are flagged so that they can be avoided.

This chapter is prepared for those who are involved in developing DFX tools. Those who are involved in implementing DFX tools and those who generally want to know more about the subject may also find it highly relevant. One early warning is necessary that the DFX shell and the DFX/BPR shell to be discussed in the next chapter have not been fully prototyped, though intended, on computer systems. Sample screens are for illustrative purposes only.
Figure 5.1 Procedure for developing DFX tools using the DFX shell.