Foreword

„The mere formulation of a problem is far more often essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle requires creative imagination and marks real advances in science.“

(Albert Einstein)

Most people beginning a career after a technical education will experience a certain “culture shock“. The value of exceptional knowledge becomes relativized by its application to job-specific ability. The newly encountered evaluation system is largely based on the above quote. During our education, we are normally presented with tasks. We are then evaluated primarily on the correctness and effectiveness of our solutions to these tasks.

In the work environment, the measure of success and ability is the degree to which we are able to recognize problems and formulate them so that we can begin solving them. Effective and efficient answers to these problems are then expected as a matter of course. It is important that the way in which we formulate the problems is understandable to the team in which we work and motivates people to strive towards their solution. Of course, this includes new points of view and the posing of new questions. However, it also requires understanding for the role of others who must contribute the solution of a problem. This is especially important, because the solution of typically complicated interrelated problems will always also be a sort of compromise.

Tasks in the work environment also differ from those during education in other ways. When studying, the greatest value is placed on arriving at the correct solution via the “proper“ steps, while that which is desired in a company is a final result with understandable practical application and consequences. In this process, we are free to find our own methods of solving the problem. Realizing the importance of ones own contribution in a larger task promotes creative and intuitive skills and is an important motivator. For example, it is possible to seek for a solution in either an analytical or trial-and-error process, depending on ones preference. In this task, experience is extremely useful, since it can greatly reduce the amount of time and resources necessary, while at the same time increase safety.

Insufficient willingness to take risks in ones own contribution reduces the chances of success of the whole team. Experience can help with risk assessment, provide decisive information leading to a solution, eliminate attempted solutions that have already failed in the past, and allow “showstoppers“ (i.e. technologically or scientifically impossible hurdles) to be recognized sufficiently early.

Like the preceding two volumes, Volume 3 is intended to impart experience that can aid in the recognition of problems and formulation of tasks, as well as their successful solutions.

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Contents