DEFINITION OF ESTIMATION & SOFTWARE ESTIMATION

While it is difficult to define software estimation, the term *estimation* itself is readily defined as follows:

Estimation is the intelligent anticipation of the quantum of work that needs to be performed and the resources (namely, human resources, monetary resources, equipment resources, and time resources) required to perform the work at a future date, in a defined environment, using specified methods.

The key terms and phrases in this definition are

- *Anticipation*—this indicates that estimation precedes performance and that it uses a "best guess" approach.
- At a future date—the work has not yet been performed, but it is planned.
- *In a defined environment*—the environment where the work is going to be performed is known and its characteristics specified. Any variation occurring to this environment will have an effect on the estimate.
- *Using specified methods*—the methods to perform the work are also defined. Any deviation from these methods will also have an effect on the estimate.

Estimate is the result of estimation.

Now allow me to define *software estimation*:

Software estimation is that estimation of the software size, software development effort, software development cost, and software development schedule, for a specified software project in a specified environment, using defined methods, tools, and techniques.

In this definition, the key terms are

- Estimation—defined above.
- *Software size*—the amount (quantity) of software that needs to be developed.
- Software development effort—the amount of effort, in either person-days or person-hours, necessary for developing the software product of an estimated size.
- Software development cost—the expenses necessary for developing software of a defined size, including the expense of human effort.

• *Software development schedule*—the duration, in calendar days or months, that is necessary for developing the defined amount of software.

Thus we have the following deliverables from software estimation:

- components that make up the software, as well as their sizes
- effort required to develop the software
- monetary cost of developing the software
- duration (schedule) required for developing the software

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