Software Cost Estimating Methods

**By**

**Introduction**  
Software projects often fail because of cost overruns during the software development phase. Software cost estimation is an important part of the project management process for these types of projects. The goal of software cost estimation is to fully quantify the costs of all aspects of software development throughout the entire project lifecycle. There are several methods for estimating software costs, including algorithmic methods, top-down and bottom-up methods, expert judgement and estimation by analogy. Each method has its own peculiar strengths and weaknesses. Some of these methods can be combined to produce more accurate estimates of software costs.

**Algorithmic Method**  
The algorithmic method is one of the most widely used methods of estimating software costs. It involves using mathematical formula to manipulate inputs and produce cost estimates. Typical inputs are number of lines of source code, objects and functions. The method uses historical data to produce metrics which are applied to the inputs to come up with cost estimates. There are several formal models based on the algorithmic method. Some of the best-known ones are the COCOMO, Putnam’s SLIM and Albrecht’s function point models. A major drawback of this method is that the number of lines of source code is unknown at the beginning of a software project. The models can be recalibrated during the course of the project to increase the accuracy of the estimates.

Top-Down

The top-down method involves performing a full analysis of the project and coming up with an estimate of software costs. The global properties of the project are used as the basis for the overall project cost. This is a useful method for estimating costs at the beginning of the project, when not much detail is known.

**Bottom-Up**

In the bottom-up method, the cost of each component of the software project is estimated then the results are combined to come up with an overall cost estimate. This method is time-consuming and may produce inaccurate results if used at the beginning of the project.

Expert Judgement

In the expert judgement method, the knowledge of one or more experts is used to come up with an estimate of the overall project cost. The experts use their experience of previous software projects to make judgments of the costs of aspects of the current project. When multiple experts are used for an estimate, the weighted average of their estimates is used to estimate costs. This method is very popular, although it is considered subjective and is prone to inaccuracy.

**Key Concepts**  
Project management  
Software projects  
Cost estimation

**References**

## Bournemouth University:" Software Cost Estimation”;Dan Snell;1997

# <http://www.ecfc.u-net.com/cost/index.htm>

# University of Calgary:” The Comparison of the Software Cost Estimating Methods “;Liming Wu;1997

## <http://www.compapp.dcu.ie/~renaat/ca421/LWu1.html>

# LevelA Software:” Cost Estimation”;2005

http://www.levela.com/software\_cost\_estimating\_swdoc.htm