

Estimating Business Value of Software

Cosgrove Computer Systems Inc.

7411 Earldom Avenue
Playa del Rey, California 90293-8058
(310) 823-9448

8/28/2001

References:

1. Baetjer, Howard, *Software as Capital – An Economic Perspective on Software Engineering*, IEEE Computer Society Press, 1998.
2. Baetjer, Howard, *Towards Estimating Software Value*, paper presented at Los Angeles Software Process Improvement Network (LASPIN), Center for Software Engineering, University of Southern California, 10/25/2000.

Summary

The business value is derived from the following factors:

1. Change in customer revenue
2. Change in customer cost
3. Number of potential customers
4. Additions to developers' working capital – e.g., additions to organization's skills
5. Development cost

Not all of the factors apply in any given instance but all must be considered. Additionally, the following factors modify any estimate:

- Subjective nature of value – value to whom?
- Tolerance of the capital to change – how efficiently can the knowledge asset be evolved in response to change in the business environment?
- Current market valuation environment – relative favor of this type of business as judged by the markets

Background

The nature of economic value:

- Value to whom?
- Value of capital goods
- Value & profitability

The nature of capital:

- Embodied knowledge
- Knowledge is of the essence
- Varieties of knowledge embodiments
- Division of knowledge

Software is the purest form of intellectual capital because, as pure design, its value is independent of any physical matter used to represent it. In other words, it helps one to focus on the essence of value and how it may be created.

Elements of the Estimate

Capital value derives from the preservation of productive knowledge. A valuation must necessarily be an estimate because it requires that an uncertain future be predicted. The value of preserving the knowledge requires that the following elements be estimated:

- Change in customer revenue
- Change in customer cost

Estimating Business Value of Software

- Number of potential customers, both existing and additions
- Additions to developers' working capital – e.g., improved or new organization skills are particularly important in this type of knowledge
- Development cost

The estimate of additions to capital must then be modified by other factors as applicable:

- Subjective nature of value – value to whom?
- Tolerance of the capital to change – how efficiently can the knowledge asset be evolved in response to change in the business environment?
- Current market valuation environment – relative importance of this type of business or knowledge as judged by the markets

If the estimate is part of a business decision process, the development cost should be subtracted from the total additions to assess the net addition to capital in order to determine the worth of project to the enterprise.

Importance of Change Tolerance

The importance of the tolerance to change in the environment can be illustrated by an analogy to the franchise industry that derives nearly all of its economic value from the embodiment of “how-to” knowledge in a readily applicable form with a high probability of economic return. Note that the tolerance to change includes both time-sensitive and environment-sensitive factors. The value to the purchaser of a franchise is heavily impacted by the efficiency of the adaptation of the acquired business processes to a wide variety of locales, infrastructure, languages, etc., as well as evolving business conditions. Given a wide potential market for franchise purchasers, the total business value of the franchiser's enterprise is enhanced. The embodied productive knowledge in a franchise license is very close to the embodiment of productive knowledge in software. In fact, it can be argued that there is no real difference.

An example is the worldwide, enduring marketability of the McDonalds hamburger franchise. This characteristic is likely the dominant element in the franchiser's market capitalization.

John Cosgrove, P.E.
Consulting Engineer