

## Valuation Discussion Factors In Early Stage Software

By Dwight Olson\*

*This article will review factors that help contribute in early stage software valuation discussions. For example, pre-investment money discussions and pre-money scenarios typically center on investors prior investment deals. For example, what equity did they get for what investment. This, in some way, establishes the value of the early stage software and company, but what factors might change this scenario for our future? History has shown that value of early stage software increases as market, technological and financial feasibility factors valorize.<sup>1</sup> As LES members, we know that intellectual property and freedom to operate factors also contribute. Monetary forecasting (probability) really begins to take shape when management has obtained the resources or investments to produce and sales of the software product begins. Some of these factors have become so established that the U.S. Federal Accounting Standards Board (FASB) adopted them. These are not monetary or earnings factors, they are factors that reveal the inherent value of early stage technology; here our focus is early stage software.*

### The Factors:

- **The technological factor**
- **The management commitment factor**
- **The market factor**
- **The financial feasibility factor**
- **The IP factors**

This is hopefully the first of many articles discussing quality factors of early stage technology valuation/evaluation issues. This article is not on patent quality,<sup>2</sup> but a discussion of the technology itself as it morphs from idea to collateral. So, we start to address early stage technology value factors with this article using software as one industry example, of hopefully many; we must ask ourselves, how does one begin to value “Early Stage Technology”? And, we will also limit our discussion to software that is bound for commercialization that is a product as an end goal.

\*Many thanks to the LESI IP Valuation Committee and other LES members for their valuable thoughts and contributions to this article.

1. The EU Leonardo programme defines “valorisation” as “... the process of disseminating and exploiting project outcomes to meet user needs.”

2. A good reference for patent beginners is “True Patent Value Defining Quality in Patents and Patent Portfolios,” 2013, by Larry M Goldstein.

Some LES members feel that if we can describe the issues for one industry, some may also be appropriate for other industries.

We start with Bill Elkington, an LES member in the automotive area, who states in his 2013 *IAM* article that software permeates everything.

*“This software-created revolution in the economic power of the individual is matched by what software is being made to do for the corporation. Companies’ competitiveness has been transformed through the use of software frameworks; software modelling, development, and test tools; business models built on providing software rather than hardware products, providing software as a service, or providing information through software applications; software systems that manage many of the enterprise’s operations processes; software collaboration tools that effectively integrate the work of global design and development teams; and so forth.*

*Marc Andreessen is right: software is eating our traditional businesses, in addition to creating whole new businesses. It is the locus of contemporary capitalism’s “Creative Destruction,” a term coined by Joseph Schumpeter, which was inspired by Schumpeter’s reading of Karl Marx. It is how the corporation is innovating how it does business and how it innovates what it is in business to do.*

*In product company after product company, the value of the product is in the software that is at its heart. In company after company, application-specific integrated circuits are being morphed into software that runs on general purpose processors. In company after company, technology trends and market forces are forcing the product software to be abstracted from the company’s product hardware. The hardware, for the most part, in embedded products is being commoditised. The differentiation is in the software. Thus, the computer has become a tool*

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*for our imagination, with software the language of our imagination.*

*The automobile industry is a good example of some of these trends. One reads that 40 percent of the value of a new car today is in its electronic systems. One reads that a typical car has 40 to 50 controllers and microprocessors, and that luxury models contain double this number. One reads that a typical new car today runs about 10 million lines of code, with projections as high as 30 times that number in about 10 years, to accommodate the greater and greater automation of the car's various systems, reaching substantially into the complete operation of the automobile itself—the “driver-less car” that Google and others are promoting.”*

In the early to mid-1980s in the United States, software vendors wanted to capitalize their development costs and expense those costs against future revenue, but first they needed to get approval from the U.S.’ Federal Accounting Standards Board (FASB) and the American Institute of Certified Public Accountants (AICPA). We know that they were successful in setting the first standard of financial accounting in “reporting for the costs of computer software to be old, leased, used, or otherwise marketed; whether internally developed and produced or purchased” and getting software considered as a financial asset.

## **From FASB 86 (USA)**

*In February 1984, the FASB<sup>3</sup> received an Issues Paper, “Accounting for Costs of Software for Sale or Lease,” prepared by the AICPA Accounting Standards Division’s Task Force on Accounting for the Development and Sale of Computer Software and approved by its Accounting Standards Executive Committee. The task force included members of ADAPSO—The Computer Software and Services Industry Association (formerly known as the Association of Data Processing Service Organizations) and the National Association of Accountants. That Issues Paper recommended that certain costs incurred in creating computer software for sale or lease be recorded as an asset. Subsequently, the Board expanded the scope of its project to encompass purchased software that is to be sold, leased,*

*or otherwise marketed and reached somewhat different conclusions from the recommendations in the Issues Paper. On August 31, 1984, the Board issued an Exposure Draft of a proposed Statement on the accounting for the costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process. That Exposure Draft proposed that the costs incurred internally in creating a computer software product would be charged to expense **until** cost recoverability had been established by determining **market, technological, and financial feasibility** for the product and **management had or could obtain the resources to produce and market the product** and was committed to doing so. Thereafter, the costs of the detail program design would have been charged to expense, and the costs of producing the product masters, including coding and testing, would have been capitalized. The capitalized costs would have been reviewed periodically for recoverability. All costs of planning, designing, and establishing the technological feasibility of a computer software product would have been research and development costs.*

We may take another step in adding to this list, for example, those of us who are in the IP licensing business know that the following IP factors should also be considered:

- work for hire assignments,
- freedom to commercialize,
- intellectual property protections, and
- rights considerations.

## **Technology Feasibility**

If we look at the final statement from FASB 86 on software:

*This Statement specifies that costs incurred internally in creating a computer software product shall be charged to expense when incurred as research and development until technological feasibility has been established for the product. Technological feasibility is established upon **completion of a detail program design or, in its absence, completion of a working model.***

*For purposes of this Statement, the technological feasibility of a computer software product is established when the enterprise has completed all planning, designing, coding, and testing activities that are necessary to establish that the product can be produced to meet its design specifications including functions, features, and technical performance requirements.*

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3. The Financial Accounting Standards Board (FASB) is a private, not-for-profit organization whose primary purpose is to develop generally accepted accounting principles (GAAP) within the United States in the public’s interest. The Securities and Exchange Commission (SEC) designated the FASB as the organization responsible for setting accounting standards for public companies in the U.S. Wikipedia, 2013.

As a side note, those of us as LES licensing professionals know that an important part of the patent process is the “Reduction to Practice” or just another way of saying technology feasibility. The **reduction to practice** is a concept meaning the embodiment of the concept of an invention and the embodiment of an invention can either be:

- **Actual reduction to practice**
- **Constructive reduction to practice**
- **Simultaneous conception and reduction to practice**<sup>4</sup>

This perspective on technology feasibility gives us some basis of value especially for folks who wish to “commercialize” early stage technology. We state that technology that has a working model **“has more value than technology that does not have a working model.”** This may be intuitive, but important to state. FASB listed this as the number one factor in its requirement for software.

And we would assume that a patent or patent application embodying or relating to the technology would potentially increase the commercial or desirability of the technology by an entity. That is assuming the patent is good and the claims embody the technology.

## Management Commitment

In consideration of software as a capital asset, FASB considered management commitment an important requirement. *“Exposure Draft proposed that the costs incurred internally in creating a computer software product would be charged to expense until cost recoverability had been established by determining market, technological, and financial feasibility for the product and management had or could obtain the resources to produce and market the product and was committed to doing so.”* One implementation of this management factor might be the existence or creation of a business with a “strategic plan” or “business plan” for making money with the technology. The business plan is the “rallying cry” of any start-up venture, and should be for anyone thinking of commercializing early stage technology. Sound management with a business plan not only helps raise capital, but it also helps create enduring value and guidance. The business plan acts as the operations manual for the technology commercialization and as a reference tool for investors and management of the technology. It’s therefore very crucial to think through commercialization and have a sound business plan with management committed to making money with the technology.

In developing the plan one should analyze strengths, weaknesses, opportunities, and threats. An effective business plan should:

- Help focus ideas about a market opportunity and how to turn them into a realistic course of action.
- Create a path to follow in the early years for commercialization of the technology.
- Identify milestones & benchmarks that can measure progress.
- Be succinct, interesting, and sufficiently solid enough to attract prospective investors, buyers, or licensees.
- Be thoughtful and flexible enough to handle contingencies and unexpected events.

If one is looking to find an investor or buyer, then one must keep in mind what an investor or buyer is looking for:

1. A specific and realistic source of value that differentially fulfills a specific and unmet need.
2. A team that can plan and execute the plan with success.
3. Of course, a sustainable and defensible product/service position.

In some cases of research at the university level, a strategic plan for some early stage technology patents might be as simple as finding someone who wants to “monetize” the technology and license or sell them the patents. But, typically for early stage software based technology, patents may or may not exist, and you will need to find someone who wants to invest in commercialization. If such is the case, then a business plan must be in order and will provide value. The “value” of the plan will be evaluated by investors for soundness and appropriateness. They will, of course, focus on the financial feasibility, but the financial feasibility will only be as good as the plan.

## Market Feasibility

*...the major cause of failure of any innovation relates to market analysis. The truth about innovation is that most ideas or inventions never get commercialized. It has been estimated that only about 5 percent of the active patents are being commercially utilized. Some studies have also shown that only one idea is commercialized out of 1,000 new product ideas generated and that only 1 in 4 products in development get commercialized. Why are there so many failures? Robert Cooper, a pioneer in new product development processes, investigated the cause of failure of new ideas at many companies. He concluded that the major cause of failure relates to market analysis.*

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4. See Wikipedia “reduction to practice.”

*That is, the companies did not understand their target markets well enough to know how to market properly or whether they should even have been committed to the commercialization at all.*<sup>5</sup>

In FASB 86 for software capitalization, the issue of new versus update of an existing product is an important factor to consider. ***“The translation of research findings or other knowledge into a plan or design for a new product or process or for a significant improvement to an existing product or process whether intended for sale or use. It includes the conceptual formulation, design, and testing of product alternatives, construction of prototypes, and operation of pilot plants. It does not include routine or periodic alterations to existing products, production lines, manufacturing processes, and other ongoing operations even though those alterations may represent improvements and it does not include market research or market testing activities.”***

Sections of the business plan should address market feasibility, why someone would buy the product. Some factors involved in market analysis and planning take into account the market size and growth, today and in the future. It will be important to know target customers and ways in which to capitalize on them in order to bring profitability and sustainability.

If the ultimate product or service is new, market research probably will be required to put meaningful dimensions on the initial business plan and market. If the product or service represents an improvement on what is available, there may already be well-defined dimensions to the market. In market feasibility it is important to show historical data and reliable forecasts from industry, trade associations or government sources that detail:

1. Who are the customers?
2. What is the historic and predicted rate of growth for each market segment?
3. Where are the present and future markets? Are they regional, national, or international?
4. How does each market segment purchase the product?
5. What are the critical product/service characteristics?
6. Consider performance, reliability, durability, availability, price and service.

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5. Dave Braunstein and Larry Plonsker, *The Licensing Decision*, Licensing Executives Society (USA & Canada), U. S. Department of Energy, Inventions and Innovations Program.

7. What substitutes are available for this product?
8. Does the market have any special characteristics, such as seasonal factor?

Other items to consider in the market feasibility factor are:

## **The Competition**

If the technology is new, you may likely face entrenched competition from mature organizations with far greater resources. Identify competitors in the business plan and note the strengths, weaknesses and market share of each. Be realistic about the analysis and address all the negatives to show that commercialization is possible. The business plan should also indicate the market share you expect to capture in the first three to five years. Cite the principal competitive factors in the marketplace: product performance, reliability, durability, styling, delivery, service, aggressive merchandising, price, and other factors. Identify trends and explain how you plan to react to them. A prospective investor will also want to know how competitors are likely to react to entry into the market and how you plan to respond. Perhaps the greatest temptation will be to overstate the technology strengths and understate competitors' skills.

## **Marketing**

Marketing is a crucial element of a business plan, and its importance is often underestimated. It defines strategy and charts the marketing direction for the staff. This section of the business plan should give prospective investors or buyers confidence that one could convert the technology into a brand and marketing position. Investors or buyers want reassurance that the technology could generate a growing profit stream. The marketing section of the business plan normally sets the stage for, or summarizes, a more detailed marketing plan. When the time is right—either at startup or at some future stage—a marketing executive will need to develop a comprehensive marketing plan to guide that critical function on both an annual and a long-term basis. Regardless of whether the company is in the research or development stage or ready to take products to market, summarize the marketing goals. These goals should be quantitative, realistic and consistent with the marketing analysis. They should also address the consistently and rapidly changing markets of the new economy.

## **Pricing Strategy**

One must decide how to price the technology's product compared to the competition. One must

also be able to support that price by identifying ways in which your venture adds to the value of the item if there are readily available substitutes for your product. Keep in mind the product's current and projected product life cycle stages, how pricing will change at different times, and how competition might react under those conditions.

## Sales

The marketing plan should address strategy for building sales and therefore revenues. These plans should be consistent with both market data and financial projections. Advertising on the Internet, email campaigns, as well as traditional media such as television commercials, must all come under consideration. The market must be aware of the brand and want to choose the product, given that there is a need for your market offering. One must also decide how much of the promotion will be handled internally and how much will be outsourced. If an advertising or public relations agency is chosen, prospective investors will want to know which one.

## Financial Feasibility

The FASB 86 Software Exposure Draft proposed that the costs incurred internally in creating a computer software product would be charged to expense **until** cost recoverability had been established by determining ... **financial feasibility** for the product. Simply put, the product will make money.

The financial feasibility study will be the most difficult for nearly anyone including University Tech Transfer professionals. In some ways this will be the gem for the technology and may be the only factor considered by an investor. The forecasting of potential revenues, expenses and profits is not the easiest of tasks. A financial plan should contain a discussion of the costs, revenue and potential earnings that might be associated with the product or service put into commercialization. It is sometimes very easy to associate a market share or royalty rate with an existing market share. For example, in pharmaceuticals there is a lot of data available about sales from the date of introduction showing how quickly a drug can be ramped up and where it peaks. So if you have a new drug in a similar category and it has an advantage, like elimination of a side effect, there is guidance for forecasting the new and better drug.

Data also can be found for blockbuster add-on products like cell phones, DVDs, and other associated products showing where there might be a rapid climb in sales. But what about some university that invents some sort of new and fantastic glue or toy helicopter

or shoe insert or nitrogen filled window panes that improve insulation? This is where the difficult path will be. Many of us do not know where to even begin. Maybe a look at what an LES member who has written about early stage valuation of IP, Raz Razgaitis, might also be helpful in just looking at the technology itself.

*The value of a technology to a buyer (licensee) depends upon how it is to be commercially employed, taking into account the cost of development, the time the technology takes to generate returns, the extent of such financial returns, and the risk involved in the process. At the time of a licensing/sale transaction of an early-stage technology many, perhaps all, of such factors need to be assessed and quantified by making judgments about how the future will unfold with respect to the technology being developed. This assessment and forecast assessment are the essence of all pro forma business models. Valuing license rights for early-stage technologies is in this sense no different than making other future business forecasts, though the details may differ because the forecast time horizon may be longer, the uncertainties may be greater as to the market size and profitability, the operating performance of the technology as it will be used in commercial operation may be less well defined, and other factors. The price paid for a technology transferred between parties is the amount of money (present and future) and/or the financial value of noncash assets given in exchange for the transfer of the technology, which can only occur if both the seller (licensor) and buyer (licensee) have by some process reached a common, present understanding of value that makes agreement possible.... The price can consist of any combination of a variety of types of consideration, including running royalties, fixed payments, common stock (equity), R&D funding, lab equipment, consulting services, grant backs, or access to other proprietary buyer resources.”<sup>6</sup>*

As Raz states, “A key consideration in valuing a technology and arriving at a price is determining what is to be provided or transferred between the parties.” In licensing software, this may include exclusive or nonexclusive rights to specified know-how, copyrights, patents, technical data, rights to future improvements, rights to sublicense, installation if needed, user documentation, support for problems and bug fixes, future updates and the like.

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6. *Pricing the Intellectual Property of Early-Stage Technologies: A Primer of Basic Valuation Tools and Considerations*, Richard Razgaitis, Senior Advisor, CRA International, Inc., U.S.A.

## IP Factors to Consider

Those of us who are in the IP licensing business know that ownership, freedom to commercialize, and intellectual property rights homework needs to also be considered. These include items such as copyright and patent assignments to uncovering prior development license encumbrances. Doing IP homework also means understanding the literature in the area of the idea or invention. Before filing for patent protection, if you have made that decision, a comprehensive literature search needs to be carried out on a global basis to identify any other prior art, or published information related to your area of interest. This search will also help you out when you prepare the initial market and business plan for the commercialization and monetization process. And, in many countries, should a patent be considered, all relevant prior art must be submitted to the patent office when you apply for patent protection. Your search for both the market information, related technology and patents will reveal which companies are active in the area of your invention. This is particularly important since this identifies potential licensees and competition. It also represents companies or individuals to contact to get information about the markets of interest. A final point on doing your homework is that the telephone is still a useful and efficient way to get information. Good market information can be obtained by simply asking the right question.

Many of us at LES believe that we are at the beginning of an era that considers wealth of technology assets to be of importance to governments, organization, and the global public. If so, then accurately identifying, analyzing, valuing, and evaluating the technology and corresponding assets must be addressed as an important part of the infrastructure for early stage technology commercialization. We on the LESI IP Valuation Committee also believe that the IP Valuation Primer (available at the LESI Valuation Committee website) provides a basis for understanding and valuing IP “in the marketplace.” Maybe too, we need to expand our LES mantra of “Wealth in the 21st Century will be measured by IP” to “Global wealth in the 21st Century will be measured in the ownership, licensing, commercialization and management of intellectual assets and property including early stage technology.”

So in closing of this article, I will leave you with two thoughts: the first is in the book *Valuing Your Business For An Investor*—2002 by D.W.Berkus:

*“There is an eleventh method—but it is one I use only as a rule of thumb to size up the first ten. For*

*early stage companies, I use the “Berkus Method” approach. I give \$500,000 valuation credit for the attractiveness of the core idea upon which the company is founded (assuming that I am attracted to it). I add another \$500,000 if I believe good management is already in place to execute to the plan in the early stages of rapid growth. Then I add \$500,000 if the company has struck impressive strategic alliances with either vendors or customers, adding to barriers of entry for other businesses. Finally I add \$500,000 if the company has completed its product or prototype and demonstrated its attractiveness before an appreciative customer candidate, which all goes to further reduce the risk of investment, adding to value.”*

The last is from a book by John Ramsay, a close friend, *“There is no one “right way” to value technology. ... Whatever the purpose, the valuation will involve a risk/benefit assessment by the parties involved. Although evaluation may have objective tools available ..., they will ultimately have to subjectively assess the importance of the various objective factors to the party to the transaction performing the valuation.”*—Ramsay on *Technology Transfer*, 3d edition.

The LESI Valuation Committee has been asked to discuss early stage valuation for technology. It started when the Valuation Committee contributed to the first ever IP Valuation Primer<sup>7</sup> that was prepared for the first meeting of the Global Technology Impact Forum (GTIF) sponsored by LESI and WIPO in Geneva, Switzerland, January 2012. After the primer release at the GTIF, we received many comments from both WIPO and LESI University Tech Transfer professionals that the primer was good, but it did not address the need to “understand” the “value” principles in early stage technology. That is, the primer is useful for existing and established Intellectual Property (IP), but not for valuing in early stage technology. The comments to the primer about the valuation basics of IP were probably right. That is, the IP we discussed in the primer (patents, trademarks, and copyright) were most likely involved in achieving revenue or involved through infringing products. We believe that the primer is quite valuable for providing guidance to the global marketplace on IP valuation basics, but we need to look more closely at early stage valuation issues for the international community of LES members. ■

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7. *GTIF/WIPO IP Valuation Primer*, started in 2010 by Ocean-Tomo with help from the IP Valuation Committee and posted to the LESI website in 2013.