Standardization and the Competition Between Standard Business Software and Framework Technology - Policy Implications for the Management and the Standardization Organizations

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Abstract

From a technical point of view, frameworks appear to be a promising means to provide the industry with business management software quickly and in a cost effective manner. Nevertheless, apart from IBM’s San Francisco Framework, there are not really many initiatives by the software industry to develop application frameworks to compete with established standard business software vendors. When analyzing the economics of software development with or without frameworks, there are two particularities to be considered: the network effect and the effect of compatibility decisions. Our microeconomic model incorporates these two effects and allows to derive recommendations on the strategic positioning of a software vendor in this competition. We show how the results in the model change by introducing a standard. If it is possible to establish framework technology on the software market, social welfare will increase. Therefore we recommend the standardization organizations to support framework technology by establishing a standard.

1. Introduction

Framework-based development of information systems is one of the concepts currently being discussed to be a solution to the rapidly growing demand for flexible and extendable business applications, which have to be available in reasonable time, with reasonable costs at an adequate quality level (see [3], p. 24, [1] and [14]). The vision of this concept is to be able to adopt construction principles successfully established, e.g. in the automobile industry, for the efficient construction of software: you take a platform and put the required standardized modules together according to the customers’ needs. So that finally a fully individualized car - although consisting of standard components - leaves the assembly room. In software terms, the platform is the framework and the modules are the components which fit into the framework. The aim is to be able to develop business software which is as specific as individual software, but at the same costs as a standard software-based solution. Although framework-based industrial style development of individual business applications is a great vision, there are not really many application frameworks available or could be regarded as established in the market for enterprise resource planning (ERP) software. Still, standard software based solutions, especially SAP’s R/3 system, dominate the market for ERP systems. So what are the obstacles, preventing this vision of an efficient, industrial production of individualized software coming true? Naturally, there are still a lot of problems to solve as far as technology is concerned ([7] and [8] give a good survey of the problems arising in this area). And from the perspective of individual framework vendors, there is some empiric evidence that several framework projects have not fulfilled the expectation of an acceptable return on investment (see [13], p. 14). Therefore, in this paper we want to take the bird’s eye view onto the competition between standard software solutions and framework based solutions for enterprise resource planning systems. By analyzing the respective market positions of these two technologies by means of a microeconomic model, we want to enter into the question, whether the development of frameworks is worth being pursued: can the framework technology get the market share necessary to allow its profitable development?

We focus our analysis on the important market for enterprise resource planning systems. One major determining factor in this competition is the question of a standardization of the business processes supported by ERP-software and the corresponding standardization of interfaces of separate modules working together to provide the necessary functionality. Our analysis of the competition will focus on the influence of an existing vs. a not existing standard and the degree of standardization onto the relative market positions of these two technologies.

First, we have to substantiate the notion of frameworks we want to have a look at. A definition one can easily agree to is the description of a framework as a collection of interacting classes representing a reusable design of a specific software. A framework defines the architecture of