

Institutional conditions for the efficient allocation of innovation potential

Abstract

The research presented here is an attempt to conceptualise and explore in greater detail some of the aspects of innovation in the field of software artifacts. Preliminary findings suggest that there is a sustainable link between the innovation potential of an artifact and its properties transparency, participation, and flexibility. Modeling innovation via these proxies allows for a better economic understanding of incentives and possible problems in the proper allocation of innovation potential as a vital means of sequential innovation. It is very likely that policy conclusions regarding institutional factors such as intellectual property rights and government funded research may be drawn from this research.

Problem

Innovation as an economic process is not understood very well. Whilst innovation is by its very nature somewhat unpredictable some favourable conditions for innovations have been identified. Yet it has proven very difficult to draw policy implications in order to aid innovations.

In the field of software the bulk of innovation is of largely sequential nature. Only rarely do innovations hit the market that bear no resemblance to previous software artifacts. While open source software has in a number of cases proven a feasible model for software development and innovation the policy implications are still unclear. Effectively, there is still no proper economic model that allows to draw suitable conclusions for policy makers.

Aim

One aspect that has only received marginal attention so far is that of existing artifacts' properties that aid or hinder sequential innovations. While humans and their incentives no doubt play a crucial role in innovation the role of existing artifacts' properties that impact upon their suitability as inputs for innovation must not be underestimated.

The aim of this research is to devise a model that duly accounts for the role of existing artifacts' properties for sequential innovation. Economic research on the internet's end-to-end characteristics as well as research on open source software has made some inroads in this direction, yet it would be useful to arrive at a more general theory regarding the conditions of sequential innovations.

The notion of innovation potential as a property of software artifacts shall receive central attention in the research, since it possibly provides a significant linkage between existing artifacts and socially beneficial innovations.

Hypotheses

Software artifacts (like other resources) carry an innovation potential that impacts upon the feasibility of innovations based upon them.

Innovation potential of software may be measured via the proxies transparency, participation, and flexibility.

All three properties transparency, participation, and flexibility are to a large degree linked and interdependent.

Innovation potential as a property of artifacts entails an economic problem of valuation by the different parties in an economic context. This affects efficient allocation of innovation potential.

Viable conclusions as to conducive institutional settings to aid innovations in the field of software may be drawn from the proposed model.

Preliminary Results

Anecdotal evidence seems to support the idea that transparency, participation, and flexibility are properties of software artifacts that vitally affect their innovation potential.

Institutional factors decisively impact upon software artifacts' transparency, participation, and flexibility.

Methodological considerations

Research existing literature on innovation and documented cases in the field.

Explore the theoretical link between innovation potential and infrastructure.

Build a model based on the notion of innovation potential

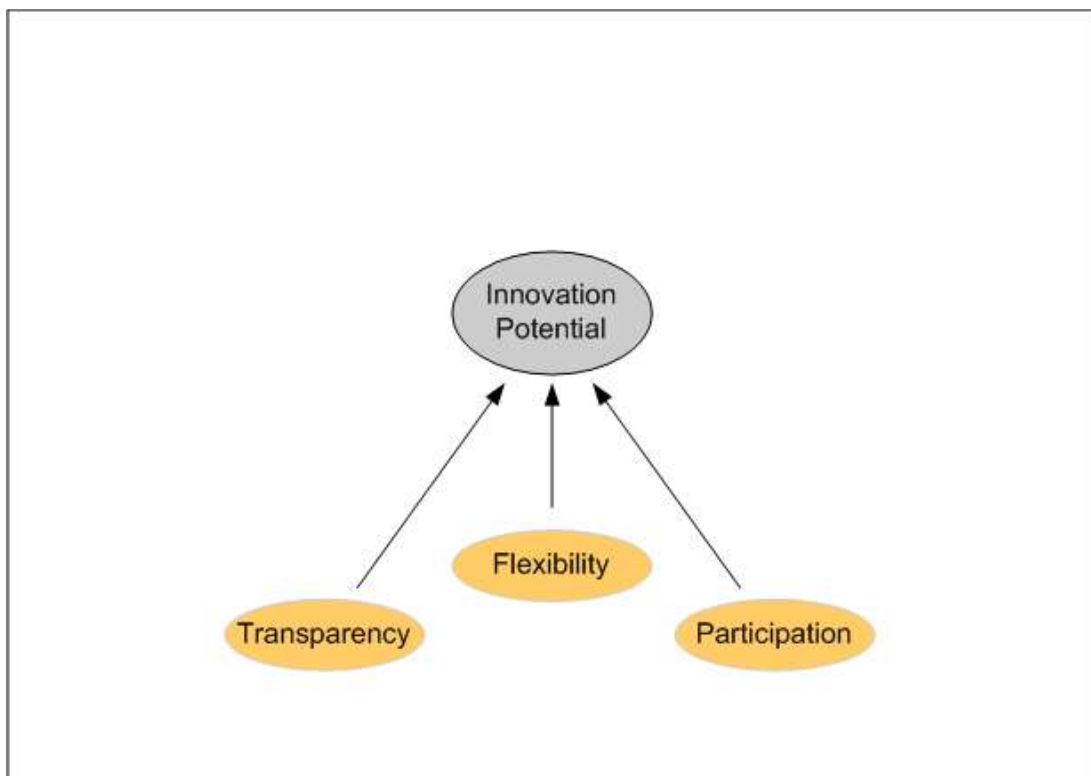
Provide proof of the proposed model by empirically exploring the proposed link between innovation potential and the properties transparency, participation, and flexibility.

Make an institutional analysis of the software market with respect to the relevant parameters for innovation (transparency, participation, and flexibility)

Draw policy implications.

Illustrations for the Poster

The basic model is illustrated in this figure:



A table may best capture some of the basic ideas I am trying to convey here.

| <i>Attribute</i> | <i>Immediate Effect</i> | <i>Ensuing Effect</i> | <i>Requisite Software Characteristic</i> |
|-------------------------------------|---|--|---|
| Transparency | Openness | Accessibility (possibly non-discriminatory) | Full specification of APIs |
| Participation | Consideration of a variety of interests of stakeholders | Maximum overall utility to a host of stakeholders | Participatory process of software development |
| Flexibility (general functionality) | Utility in a variety of contexts | Broader scope for applications (including unforeseen ones) | Full specification of APIs No legal restrictions regarding use |
| Flexibility (changeability) | Options for Amendments | Broader scope for customisation and derivatives | Availability of Source Code No legal restrictions regarding modification |

A figure may illustrate the three main properties that determine innovation potential in their basic institutional context based on Lessigs dot model.

