



# Imagination workshops: An empirical exploration of SFP for technology-based business innovation



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## ABSTRACT

This article explores the potential use of Science Fiction Prototypes (SFPs) as a vehicle to promote creative thinking and innovation in the business and technology development process. In particular, the paper describes a tool, “The Imagination Workshop”, which business people can use to drive near and far term product innovation, futuristic business and entrepreneurship. A key contribution of this article is the use of a modified evolutionary model of the Science Fiction Prototyping creation process (cyclic SFP), which, instead of being linear process (as in earlier approaches), is based around a set of feedback loops in the form of an iterative evolutionary co-creative process. In addition, the paper describes how the SFP methodology has been applied to business innovation and entrepreneurship in two small UK companies. Finally, it reflects on the strengths and weaknesses of these methods from a business perspective.

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## 1. Introduction

A Chinese proverb states, “*Heavenly secrets must not be leaked*”. However, it is natural for people to be curious about the future, satisfying this need by a variety of means such as consulting fortune-tellers, guessing, dreaming, imagining, predicting, or forecasting. Envisioning the future motivates and gives hopes to our lives. Because the future is beyond the present, we need to construct a bridge to reach the future and to explore the possibilities that it holds; that bridge is imagination.

Johnson, Intel’s Futurist, proposed a methodology *Science Fiction Prototyping* (SFP) for use by scientists and engineers to support product innovation in Intel Labs [1]. This method was released to the public in 2010 via a workshop labelled Creative Science [1] and published as a book in 2011 [2]. SFP has the potential to play a strategic role in promoting creative thinking and innovation by enabling people from different areas of business and society to co-create their visions of the future. The deliverables arising from SFP are future scenarios, and the associated R&D and business model specifications.

In ‘future studies’, researchers try to establish methods to predict and forecast the future. In the book *Long-Range Forecasting* [3], Armstrong (1985, p. 440) provides a guide to forecasting methods. It identifies and discusses several research areas for long-range forecasting including implementation, judgement, extrapolation, econometric, segmentation, bootstrapping and combined forecasting. An interesting finding of the book was that more emphasis should be given to the assessment of uncertainty. In the work by Saaty and Vargas, “*Prediction, Projection and Forecasting*” [4], they identify four general types of approach to prediction; (1) systematic generation of alternative paths to the future, (2) extrapolative trend examination, (3) historical analysis and analogy, and (4) collective opinion techniques. More broadly, researchers have

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attempted to find ways of reducing errors in long-range forecasting, but, given it is largely based on decisions of people, who are essentially non-deterministic operating in environments with some degrees of uncertainty, it is inevitable that it might still be possible to lead to an erroneous result. Regarding the time-windows that these processes operate over, extrapolation is used for short to medium-term needs whereas scenario development is more commonly used for longer-term work [5]. Johnson's SFP can be described as a methodology for driving "visionary scientific innovation" by combining extrapolation and scenarios [2]. In Saaty and Vargas's definition, a visionary forecast is "a prophecy that uses personal insights, judgement, and when possible, facts about different scenarios of the future. It is characterized by subjective guesswork and imagination; in general, the methods used are non-scientific". One difference between SFP and forecasting is that the SFP approach is based on scientific fact or theory. Barel offers a useful view by breaking forecasting into two functions; an analytic function (for modelling, decision support, assessment of past and present, and gaming); ideological functions such as visions, creating ideologies, and entering a debate to get resources [6]. Some commentators have argued that all such methods are not enough on their own [7] and that the core engine behind innovation is imagination. Thus the question arises, where does imagination come from? Are there systematic ways of being inspired? How does a person start to imagine? According to Oxford Dictionary, creativity is "the use of imagination or original ideas to create something; inventiveness" and imagination is "the faculty or action of forming new ideas, or images or concepts of external objects not present to the senses". Legrenzi (2007, p. 42) [8] stated:

*Whereas for psychologists concerned with insight, what is crucial is the demonstration that the imagination is something other than creativity. Creativity is imagination but it is also rigour, method, reflection, pondering, and application of the intellectual mind. Only if we free ourselves of our fixations, can we trigger the necessary insight for problem solving.*

Thus, from the above, it is clear that innovation is a complex and somewhat nebulous process and there is a need to employ some tangible methodologies to create a practical process for applying imagination to product and business innovation. One of the most popular tools is scenario development in which a developer writes a story that incorporates the technology being investigated, into a lifestyle. Much has been written on this topic with examples of useful literature being Van Notten et al. [9] who presents a scenario typology, Börjesona et al. [10] who provides a comprehensive overview of scenario types and techniques and Varum and Melo [11] who provide a thorough analysis of literature from 1945 to 2006 including setting up a future research agenda. In Börjesona's review, workshops were identified as being the key creative vehicle:

*Workshops can facilitate broadening of the perspectives, since decision-makers, stakeholders and experts can be included in the process. Moreover, workshops can increase the acceptance of decisions or scenarios among the participants. In the workshop process, it is also possible to include techniques that liberate the creativity of the human mind.*

Despite this wealth of research the question remains of where and how we get the sources and motivate us to imagine. In this article a solution is proposed that uses the SFP process, but mediated by a collection of mechanisms that is collectively labelled as an "Imagination Workshop". The aim in creating this workshop was to provide the means to induce technology-based innovation, entrepreneurship, or new ventures, by drawing on technologies, imagination, and creativity for building the vision of future business. Fig. 1 depicts how an SFP is formed by motivating technology, imagination, and creativity to achieve innovation, which stimulates entrepreneurship to create new ventures. The various combinations of technology, imagination and creativity can lead to different types of innovation. Technology plus imagination can create far-term projections of new technologies. Imagination plus creativity can create new designs. Creativity plus technology can bring creative applications. These three components create an 'innovation triangle' which has the potential to lead to technology innovation and, ultimately, new entrepreneurial ventures. The triangle of innovation framework is illustrated in Fig. 1 and underpins the fundamental ideology of this paper.

Finally, the Science Fiction Prototyping and Imagination Workshop process introduced above can be regarded as a visionary forecasting method. However, perhaps the most important facet of the Imagination Workshop is that also it provides a mechanism to invigorate innovative thinking. The following section introduces SFP and a variant termed "Cyclic SFP", which forms the core mechanism of an Imagination Workshop, which aims to improve the effectiveness of the SFP process, especially for people that are new to the SFPs methodology.

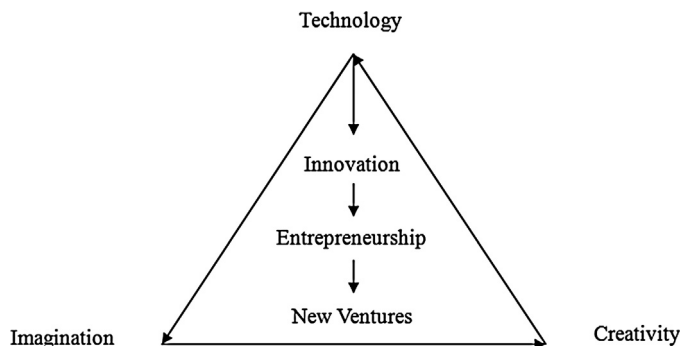


Fig. 1. The innovation triangle: three components of technology-based innovation and entrepreneurship are creativity, imagination and technology.

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