



## Statistical indicators for measuring innovation in IT project management

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### Abstract

The concept of project management innovation is submitted and particular characteristics of IT project management innovation are depicted. The stages of innovative IT project development cycle are described. The characteristics that differentiate innovative IT project management from traditional IT project management are enunciated. The factors that influence the innovativeness level are studied and appropriate indicators are generated. Properties of the above mentioned indicators are analyzed. The quality of the proposed indicators is analyzed and ways for increasing the degree of innovativeness of the project are proposed. Conclusions are formulated on the topic of innovative project management.

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### 1. Innovative project management

Project management is a well-regulated field with established standards and effective practices; so innovation is certainly not the first concept that springs to mind when mentioning project management. This may be the case with most industries but software development is not one of them. The software development industry is young therefore is dynamic and volatile. In order to be successful in the software development industry you have constantly innovate. One might argue that innovative projects do not require innovative management. Before tackling this issue it is mandatory to properly define the concept of innovation.

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In [1] the concept of innovation is defined as: novelty, change, transformation. Solving a technical problem or optimizing the workflow and productivity in an organization, improving or rationalizing applied technical solutions. In [2] the concept of innovation is defined as: technical or organizational discovery which represents a novelty and is introduced in order to increase productivity; acquisition or new achievement introduced in a field of activity. In [3] the concept of innovation is defined as: change, a new entry in a system, in a practice, in an activity or in a technical process. In [4] the concept of innovation is defined as: change, modification, novelty; technical or organizational problem solving by adopting modern solutions for improvements. In [5] the concept of innovation is defined as: novelty, change, update; technical or organizational problem solving by adopting modern solutions, as well as some improvements reflected in progress and advancement over prior technical standards or the organization of production in the enterprise where applicable. In [5] the concept of technological innovation is defined as: new product or process, or significant technological update of a product or process, which was placed on the market or has been used in the production process. In [6] the concept of innovation is defined as: in technology, improving an already existing object.

By summarizing all of the above mentioned definitions we conclude that innovation is the process of improving and perfecting a product, a method, a theory or a service with the sole purpose of accomplishing, at a higher standard, the objectives they were originally designed for [7].

Innovation is characterized by the following attributes: creativity, novelty, performance, invention, technology, change, improvement and evolution. As illustrated in Figure 1 the term innovation is mentioned in the specialized literature with a certain recurrence starting from the 1800's up until 1960. In the 1960's the term innovation is rapidly gaining momentum and is mentioned with an increasing frequency. It should also be mentioned that in the 1960's electric tubes were replaced by transistors making computers smaller, cheaper and more reliable. Innovation started to become relevant with the rise of computers and with the birth of the software development industry.



Fig.1 – Innovation [8]

Innovation and invention are two different notions. In economic terms innovation is an invention that has been implemented successfully into the real market generating added value, profit or higher quality. Innovation must have a positive impact on society, economy or on the political sphere. Not all inventions have the merit to be considered innovations. From the legal point of view the distinction between innovation and invention comes from the fact that innovation is an improvement, a novelty of a product or technology, but only locally while the invention must be new worldwide [9].

As shown in Figure 2 innovation surpassed invention, in terms of references in the scientific literature, in 1972. The 1970's brought the personal computer and with the personal computer the software development industry was established.

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