

SYSTEMATIC BUSINESS INNOVATION: A ROADMAP

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Abstract

Since 1956, TRIZ has been gradually evolving to bridge all sorts of gaps between a systematic approach and seemingly random creative innovation: from solving specific problems to systems analysis and forecast of future generations of technical products and technologies. In the early 1990s, the first attempts were made to use the core paradigm of TRIZ to explore if a systematic approach can be used to innovate within the areas of business and management [1]. Although the overall number of such attempts have been considerably lower than within technology and engineering, the experience gained during past dozen of years of applying TRIZ to business and management helps with drawing conclusions which parts of TRIZ can be directly used in the areas of business and management; which parts still have to be adapted; and what kind of new knowledge is needed to enable a systematic approach to business and management innovation. The paper attempts to structures business innovation tasks and summarizes the author's experience.

Keywords: TRIZ, business innovation, systematic innovation.

1. Value Business Innovation

1.1. Types of Technology and Business Innovation

The first question which has to be clarified is what is business innovation? In technology, the word “innovation” means a *new* solution which has proven its feasibility and has been successfully implemented. One of the key criteria of distinguishing a technology innovation from other types of solutions is that an idea which forms a basis of an innovative solution is new and it can be confirmed by the fact that the solution was patented. Usually patentability of a solution proves its novelty, even despite the fact that the idea could have failed its successful implementation or even failed to work at all.

There are no patents in the business world; and therefore, the word “innovation” can be understood with a much a broader meaning than in technology and engineering. Nevertheless, just like in the technology and engineering, one might assume that a business innovation is a solution which has never been used within a certain specific context: either it is a new business value proposition, or a new business model, or a new way of organizing a specific business process or activity. In fact, a certain solution could have been known for years within one market niche but its adaptation to a different market niche creates innovation. For example, Coca Cola was invented as a medicine but later was introduced as an innovation for the non-alcoholic

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refreshment drinks market. Selling the same product within a different context thus became innovation.

In general, a scope of business and management innovation is broader than within the technology. Business innovation belongs to a supersystem while both technical and non-technical products are systems or subsystems. Classical TRIZ presents two main categories of technology-related innovations:

1. *Innovation of a technical product* (also known as a “technical” or “engineering” system). It can result from disruptive change of product’s quality, performance, composition, as well as from drastic cost reduction or replacement of a basic physical principle (underlying technology) which makes it possible to deliver the functionality required. Innovation of a technical product can also address adaptation of already existing product to a new market (e.g. technology diversification).
2. *Innovation of a process* which results in the development and production of a technical product: in other words, innovation of production or manufacturing. As obvious, such a process includes a range of other technical products to enable its key operations.

A more detailed classification of innovative tasks for technology and engineering is provided in [2]. In the business and management environments, innovation can apply first, to how a business is organized, and second, how the same business is managed. Although there are known attempts to classify business innovation tasks, for example in [3,4] we believe that such classifications are still non-exact and overlapping because they are not based on a system approach.

An approach to business innovation structuring and roadmapping presented below is based on over 60 practical cases performed by the author since 2003 and studies of over 1000 cases of business innovation in diverse fields. These studies resulted in a better understanding how TRIZ can be used for business innovation [5].

First, one can distinguish between the following six large areas of business and management innovation:

1. *Innovation of value proposition*. This type of innovation is the same as innovation within technology and engineering since we deal with a value proposition which always includes at least one main ingredient: a tangible (physical) or an intangible product (e.g. service), or a combination of tangible and intangible products. For example, the value proposition of an automotive company can be based on the combination of delivery of a car, its service and insurance. A value proposition of a training company can be based on the combination of delivering a training course and its follow-up support.
2. *Innovation of a business process*. A typical business process consists of a sequence of more specific actions and activities. In a modern business organization, their structure is usually rather well defined. A business process can be considered similar to a production processes in the technology domain.
3. *Innovation of a business system*. A business system consists of a number of critical components which support business processes and create value which is then brought and maintained at either B2B or B2C markets. The components of a business system include tangible and intangible assets, which belong to the system and directly contribute to the shareholder value of the system.
4. *Innovation of a value network*. Due to broad expansion of businesses to supersystem, value networks have become increasingly popular. While in the past almost any business

could be represented by a value chain (both within the organization as well as on a broader scale), where each step adds value from a supplier towards a customer within the chain-like structure, today value creation can be represented through network structures and might involve non-commercial components: customers, social and government bodies, etc.

5. *Innovation of a business model.* Business model innovation becomes very popular today and affects all other types of business innovation [6]. However, it is important to recognize the difference between a business system, value network, and a business model. Recently, a number of different approaches have emerged to identify a business model: some only focus on the ways specifying how revenue is generated and distributed but other approaches might include all the components of a business system, value proposition, and supplier/partner/customer relationships as well. In other words, when we consider business system/network innovation we focus on the components change while when we focus on business model innovation we primarily change the relationships between the components of a business system and its supersystem. Thus, there can be two situations: a) a business model is encapsulated within a particular single business system (organization) and matches the business system architecture, and b) a business model expands beyond the business system.
6. *Management innovation.* This particular category covers those innovative solutions which deal with management and control of systems and processes to create and deliver value in the most effective and efficient ways. Those can be business systems, business models, value chains and value networks.

In the rest of the paper we will focus on the first 5 categories of value business innovation since as follows from the author's experience management innovation requires separate consideration. We will identify specific tasks which can be distinguished within each category of business innovation and show how these tasks can be supported with relevant TRIZ tools.

2. Typical Tasks of Value Business Innovation

When triggering an innovation activity, a business organization usually faces two types of initial situations:

- 1) A specific challenge is known and is expressed in terms of a specific problem (challenge) which cannot be solved by known methods. For example, a company is willing to expand its products portfolio, or drastically cut costs of a specific business process but the existing methods do not help with reaching the targets desired.
- 2) A specific challenge is not defined yet, a company just wants "to innovate" to grow or to create competitive advantage. Such goals are too general and need to be decomposed to clear sub-goals.

Our experience shows is that both situations occur very regularly at all types of business organizations. While in the first case TRIZ can be directly used in a structured way to approach a clearly defined challenge and establish a process of moving from a problem to generating and evaluating solution ideas, the second situation requires definition and clarification of both final and intermediate goals. Therefore, it would be of help to any organization to have a map of all possible opportunities for business innovation.

In this chapter we will introduce typical tasks of value business innovation with respect to each category presented in the previous chapter and illustrate these tasks with the examples drawn

from business innovation within a company delivering training services. It is important to note that a) only most significant tasks from our perspective were included and b) some tasks can overlap since they might belong to several categories.

2.1. Typical tasks: Value Proposition

Value proposition is a sum of benefits a prospect is believed to obtain after purchasing a product, either tangible or intangible one or their combination. Therefore, the value proposition is based on the properties, parameters and features of a product itself. Table 1 shows typical tasks with examples which result in innovative solutions applied to a product. Note that this approach is valid for products that have functional meaning within the context of the functional use of the product. The vast majority of products are intended to be used within the context of their functional use. Exceptions are products created for a non-functional use, for example works of art.

Table 1. Typical innovative tasks for value proposition innovation

	Typical Task	Example
1	Increase quality and reliability: reduce impact of negative factors, eliminate negative and undesirable effects, decrease fragility, volatility and variability.	Eliminating misinterpretation of the course content.
2	Increase performance: increase value of key parameters.	Adding new content of a particular course without losing quality and creating demand for extra learning time.
3	Reduce “dimensions” of a product: physical volume, information volume, time taken by processes.	Making a training course considerably shorter without losing content and quality.
4	Improve user experience.	Making working with practical examples more engaging by using their own cases.
	Create new user experience.	Move training outside a class room to the real-world domain.
5	Radically change shape (for physical products) or reorganize structure (for intangible products)	Segmenting the course modules to make learning more effective.
6	Add new functions and features.	Adding “walk-through” case-based training experience.
7	Radically decrease cost: purchasing price, total cost of ownership.	Drastically cutting cost of training per person.
8	Transfer the existing product principle (technology) to a new market.	Using the existing training model for training new subjects for new markets.
9	Create a radically new product, a new product generation, or a new product line (including forecast).	Launching distant training.

2.2. Typical tasks: Business process

Table 2 identifies a set of typical tasks for innovative change of business processes.

Table 2. Typical innovative tasks for business process innovation

	Typical Task	Example
1	Increase quality and reliability: reduce impact of negative factors, eliminate negative and undesirable effects, decrease fragility, volatility and variability.	Eliminating miscommunication between a training company and a prospect within the customer acquisition process.
2	Increase performance: increase values of key performance parameters.	Serving increased number of prospects without extra cost and time.
3	Reduce a number of activities in a process.	Reducing ordering process to a “one-click” purchase of the courses.
4	Reduce a number of processes.	Merging processes of acquisition and introductory training.
5	Add new functions and features to the existing process.	Providing prospects with extra information in time on demand.
6	Radically decrease cost of a process.	Drastically decreasing cost of acquiring a new customer.

2.3. Typical tasks: Business System

Table 3 represents typical tasks for business system innovation.

Table 3. Typical innovative tasks for business system innovation

	Typical Task	Example
1	Increase quality and reliability: reduce impact of negative factors, eliminate negative and undesirable effects, decrease fragility, volatility and variability.	Decrease risks by leasing training rooms rather than purchasing new property.
2	Increase performance: increase values of key performance parameters.	Increasing rate of business development to search for new business partners.
	Radically decrease cost of a business system.	Decreasing cost of operating a specific business unit.
3	Reorganize for a new market or a new value proposition	Transformation of management structure from hierarchical to matrix
6	Merge two or more business systems.	Acquiring a company which provides complementary training.
8	Generate a spin-off business.	Starting a spin-off company to distribute products in addition to training.

2.4. Typical tasks: Value Network

If a business model focuses primarily on the functional relationships, a value network is a system of interrelated components which together create value, generate and maintain revenue streams. Often it is not easy to separate between a value network innovation and business model innovation. The primary goal of value network innovation is to identify how new value can be obtaining from the existing members of the value network or how to discover new members to produce added value.

Table 4. Typical innovative tasks for value network innovation

	Typical Task	Example
	Increase quality and reliability: reduce impact of negative factors, eliminate negative and undesirable effects, decrease fragility, volatility and variability.	Synchronizing similar types of training curricula to avoid confusion.
	Increase performance: increase values of key performance parameters.	Use trainers on different continents to handle time zone differences.
	Discover new value partners	Turning customers to licensed trainers.
	Innovatively optimize the existing network	Reducing travel costs by widely using videoconferencing.
	Reduce bottlenecks in the existing network	Lowering entering barrier for new customers through value-adding collaborations with partners
	Create a new value network	Launching a virtual aggregated training facility based on the network of independent vendors.

2.5. Typical tasks: Business Model Innovation

The table below presents only those tasks which do not directly relate to value proposition and business system itself.

Table 5. Typical innovative tasks for business model innovation

	Typical Task	Example
1	Increase quality and reliability: reduce impact of negative factors, eliminate negative and undesirable effects, decrease fragility, volatility and variability.	Asking a community to provide feedback on the training material (for bonuses)
2	Increase performance: increase values of key performance parameters.	Introducing “full immersion” training.
3	Increase scalability.	Introducing a franchising model.
4	Increasing market size/share.	Localizing the courseware and attracting local native speakers as trainers.
5	Restructure “system-supersystem” relationships	Outsourcing courseware development to a third party.
6	Introduce new revenue streams	Reselling related products from third parties

7	Introduce new offerings.	Creating and distributing new low-cost video tutorials
8	Radically decrease cost.	Licensing new material from third parties rather than developing own materials
9	Introduce a radically new business model.	Introducing a new model of payment through royalties based on from future customer’s revenue.

2.6. Evolution of business systems

By studying a process of business models evolution it becomes obvious that in general the process of evolution matches the S-curve model of technical systems evolution and the other TRIZ trends (Fig. 2). Two parallel trends have been especially observed: 1) Transition to supersystem and 2) The growth of the degree of segmentation of business systems and components.

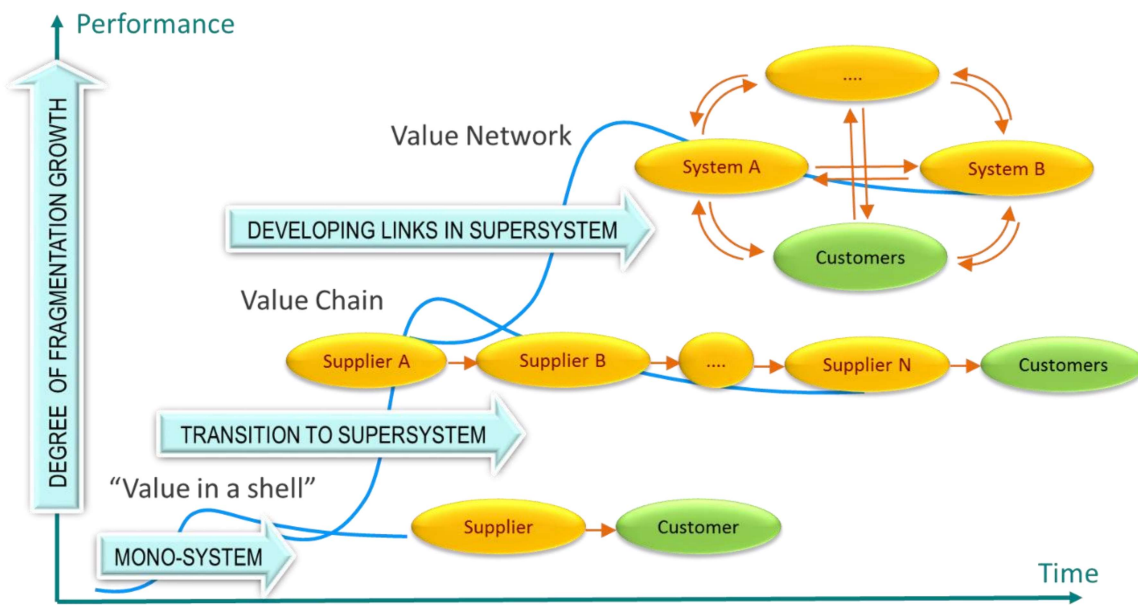


Fig. 2. Typical evolution of a business system: from a mono-system creating value and delivering it directly to customers towards network poly-systems with developed links and growing degree of segmentation

A deeper understanding of details of such an evolution model will help to make better decisions by business innovators regarding next steps of evolving their business systems.

3. A Systematic Roadmap

3.1. TRIZ Process to Support Business Innovation

As follows from an overview of typical innovative tasks shown above, there are three large conceptual groups of innovative tasks in each category:

- a) tasks dealing with solving specific innovative problems,
- b) tasks related to the overall system / value network innovative redesign, and

c) tasks related to extracting new market opportunities for innovation.

TRIZ proposes a systematic approach to deal with each group of tasks. A typical stage-gate front-end innovation process is shown in Fig. 1. This process does not depend on what conceptual group is involved.

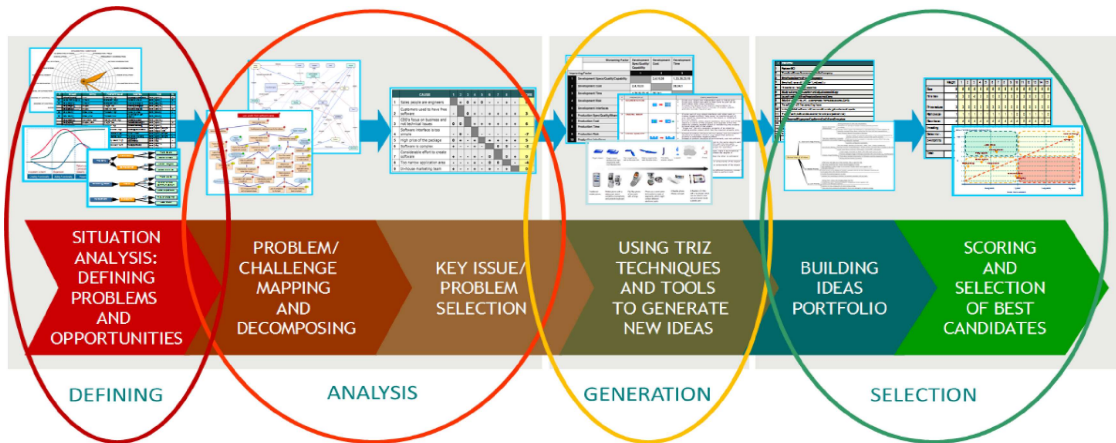


Fig. 1. A typical stage-gate process with TRIZ

A process of dealing with every type of innovation tasks includes four main steps where each step is supported with specific TRIZ tools adapted for business innovation [7, 8]:

1. Defining, where goals are identified and revision of demands and constraints is performed.
2. Analysis, where analytical tools are used to structure a situation, build its model, decompose a challenge identified and extract key problems/ specific challenges.
3. Ideas generation (including problem solving), where a list of new innovative ideas are generated.
4. Evaluation, where the most promising solution candidates are ranked and selected.

An example of such a process with the use of modern TRIZ tools to help with systematic business model innovation based on the Business Model Canvas approach [9] can be found in [10].

3.2. Tasks, Stages, and Tools

The size of this paper is too limited to present a process for each task mentioned in section 2, therefore some types of tasks were grouped. Table 6 shows a summary of the tools which are most relevant for different groups of tasks. This classification is based on the experience of the author and his network being engaged to assisting customer business innovation since 2003. The table only includes analytical and ideas generation stages, since evaluation stage uses almost the same tools to select most promising candidate solutions and roadmap them: Multi-Criteria Decision Matrix, Ideality Criteria, Ideas Landscape Chart.

Table 6. Summary of the TRIZ and Systematic Innovation tools supporting analytical and creative stages of different tasks of business innovation.

Generic task	Where to apply	Analytical Stage	Ideas Generation
Increase quality and reliability (reduce negative effects).	Value Proposition; Business System; Business Process; Business Model; Value Network	Problem perception network mapping; Root-Conflict Analysis (RCA+); Function Product /Process Analysis	40 Inventive Principles; ARIZ (+Knowledge bank); Trends of Business Systems Evolution
Increase performance (improve positive effects).	Value Proposition; Business System; Business Process; Business Model; Value Network	Problem perception network mapping; Root-Conflict Analysis (RCA+); Function Product /Process Analysis	40 Inventive Principles; ARIZ (+Knowledge bank); Trends of Business Systems Evolution
Radically decrease cost.	Value Proposition; Business System; Business Process; Business Model; Value Network	Function Product /Process Analysis	Trimming; Trends of Business Systems Evolution.
Reduce “dimensions”: (physical volume, information volume, time).	Value Proposition; Business System; Business Process; Business Model	Function Product /Process Analysis	Trimming; Trends of Business Systems Evolution.
Transfer the existing principle to a new area.	Value Proposition; Business Model	“ZIRT”: inverse TRIZ	Inverse Function-Oriented Search; Catalogue of business models
Reduce bottlenecks	Business Process; Business System; Business Model	Flow Analysis	40 Inventive Principles; ARIZ (+Knowledge bank);
Increase scalability.	Business Model		Trends of Business Systems Evolution; Catalogue of business models
Create a radically new system.	Value Proposition; Business System; Business Process; Business Model;	Value-Conflict Mapping; Multi-Screen Analysis;	Trends of Business Systems Evolution; Catalogue of business models

	Value Network	Technology and Business Roadmapping; Main Parameters of Value	ARIZ (+Knowledge bank)
Improve or create user experience	Value Proposition; Business Model.	Functional Needs Assessment; Value-Conflict Mapping; Main Parameters of Value	Trends of Needs and Demands Evolution
Introduce new revenue streams	Business Model.	Value-Conflict Mapping;	Trends of Business Systems Evolution
Reorganize for a new market or a new value proposition	Business System; Business Process; Value Network.	Value-Conflict Mapping;	Trends of Business Systems Evolution

Conclusions

At this moment, applications of TRIZ in the areas of business and management are rather limited. Partly it is due to the fact that TRIZ and Systematic Innovation have been developed within an engineering community and their applications outside technology are not very well known. On the other hand, direct application of TRIZ tools developed for technology innovation is not always well received by the business audience due to a different language, and therefore adaptations are needed.

Nevertheless, there is already some positive experience with adapting TRIZ tools to business needs (such as reformulation of inventive principles, inventive standards, ARIZ), structuring innovative business tasks, and using the tools of TRIZ to support the process of business innovation. Still, a broader research and development activities are needed to bridge the gaps between various innovative tasks mentioned above and supporting systematic tools.

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