



**Creatin**

Leonardo Da Vinci

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## SET OF MATERIALS

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## **EXECUTIVE SUMMARY**

This document contains Set of Materials and contents that will be integrated into the self learning system.

## 1 CLASSIFICATION OF CREATIVITY TECHNIQUES

In order to help SMEs in the creativity process, the Creatin project tried to categorize the techniques used by partners by classifying these techniques in terms of the factors that represent the core functionality behind each technique.

The Creatin project considers that a useful classification of the creativity techniques is represented by the combination of **three elements**:

1. the categories of application
2. the fields of application
3. the level of complexity

### 1.1 CATEGORIES OF APPLICATION

The categories of application of a creative technique can be divided into:

- A. Problem Definition
- B. Idea Generation
- C. Idea Selection
- D. Idea Implementation and Processes

#### A. Problem definition

1. Five Ws and H and Why Why Why
2. Set of questions to external mapping
3. Scenario Building
4. Stakeholder analysis
5. Vulnerability analysis
6. Attribute-value chain
7. SWOT
8. Silent group

MAP OF CREATIVITY TECHNIQUE	
Name of technique	Five Ws and H and Why Why Why

<b>Category of application</b>	<b>Problem definition</b>
<b>Field of application</b>	<ul style="list-style-type: none"> <li>• Strategic planning</li> <li>• Creative processes in general</li> <li>• New product development</li> <li>• New service development</li> </ul>
<b>Description</b>	<p>I keep six honest serving-men: (They taught me all I knew) Their names are What and Where and When And How and Why and Who.</p> <p>From "The Elephant's Child" by Rudyard Kipling</p> <ul style="list-style-type: none"> <li>• Who?</li> <li>• Why?</li> <li>• What?</li> <li>• Where?</li> <li>• When?</li> <li>• How?</li> </ul> <p>The Five W's and H, are an influential, inspirational and imaginative checklist (often used by journalists). The technique uses basic question generating prompts provided by the English language. The method is useful at any level from a formal checklist to complete informality. For example:</p> <ul style="list-style-type: none"> <li>• Informal 'back-of-an-envelope' use, is suitable as a quick-aide checklist, a private checklist to keep in mind when in an on going discussion, quick points scribbled down in a meeting, or to generate further questions.</li> <li>• To generate data-gathering questions, during the early stages of problem solving when you are gathering data, the checklist can be useful either as an informal or systematic way of generating lists of question that you can try to find answers for.</li> <li>• To generate idea-provoking questions, Whilst brainstorming, brainwriting or some other such similar technique, the checklist could be used as a source of thought provoking questions to help build on existing ideas.</li> <li>• To generate criteria, the checklist could help in generating criteria for evaluating options.</li> <li>• To check plans, the checklist is a useful tool for planning implementation strategies.</li> </ul> <p>However, the 'question words' owe their strength to their fundamental place in the English language, and can conceal some of the assets of nature that our language copes less well with. The responses to the questions in the checklist</p>

	<p>are usually facts, rather than actions or problems.</p> <ul style="list-style-type: none"> <li>• For example, the answer to 'Who does X?' could be 'Janet'. To use this answer in a problem-solving context you may have to take to another level</li> <li>• For example 'OK – if Janet does X, in what way might we make it easier for her.</li> </ul> <p>This 'in what way might' (IWWW) stage is crucial if the facts are to come alive and contribute to the creative process.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Low</b>
<b>Reference</b>	"Knowing What's What and What's Not: The Five W's (and 1 "H") of Cyberspace". <i>Media Awareness Network</i> .
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Set of questions to external mapping</b>
<b>Category of application</b>	<b>Problem definition</b>
<b>Field of application</b>	Strategic Planning, New product development
<b>Description</b>	<p>Foster and Kaplan elaborated the following set of questions to help companies to define, analyze and interpret their periphery .</p> <ol style="list-style-type: none"> <li>1. Which companies define your sector's periphery today?</li> <li>2. Which business strategies are they pursuing? In what are different these strategies in respect to those you are pursuing nowadays? What kind of approaches offer the highest potential? Which of them represent the most relevant threat?</li> <li>3. When examining the periphery from the client/customer perspective, which new benefits are provided to client/customers by the companies acting at the periphery of the sector? When it will be economically feasible to provide these benefits?</li> <li>4. When examining the periphery from the perspective of the competitors (located in the middle of the sector), who of them are more vulnerable to an attack? How will be realized the attack? When? Which will be the consequences of an attack to main clients? Which will be the consequences for prices? And for revenues, profit and value creation? And for human capital? Are there reprisal opportunities?</li> <li>5. After having examined the periphery's implications from clients and competitors points of view, which of the competitors seem to</li> </ol>

	<p>be able to have success? Which of them are more likely to loose and why?</p> <p>6. Which are the economic implications of eventual changes in the competitive landscape in terms of market shares, prices, profits, human capital compartment and value creation inside your sector?</p> <p>7. Which are the implications for your own company? Which are the options you have?</p>
<b>Suggestions</b>	To answer these questions, new additional information will be necessary. To evaluate the implications of this new collected information will require additional time resources. However, it is important to stress the successful efforts, instead of those that will be unsuccessful.
<b>Level of complexity</b>	<b>LOW</b>
<b>Reference</b>	Foster R. N., Kaplan S., <i>Creative Destruction: Why Companies That Are Built to Last Underperform the Market – and How to Successfully Transform Them</i> , Currency Doubleday, 2001
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Scenario Building</b>
<b>Category of application</b>	<ul style="list-style-type: none"> <li><b>Problem definition</b></li> </ul>
<b>Field of application</b>	<ul style="list-style-type: none"> <li>Strategic Planning</li> <li>New product/service development</li> </ul>
<b>Description</b>	<p>Scenarios are different quality models of “plausible futures”. They give a deeper understanding both of the potential environments in which a company might have to operate and of what a company might have to do today. On the basis of this information, you can make some predictions about the future and then you can apply them to possible future scenarios which are based upon the present time. Western companies often rely on single forecasts and market trend analysis. However, these are static predictions and do not provide any information about interactive cycles opportunities. On the contrary, Scenario Building helps you to identify a range of potential opportunities that can make company planning and decisions more flexible. If you are not able to formulate accurate forecasts about the future, you need to have a flexible approach to any possible situation. Scenarios address specific problems. To develop scenarios, follow these steps:</p> <ol style="list-style-type: none"> <li>State the specific decision that needs to be made.</li> <li>Identify the major environmental forces that impact on the decision.</li> </ol> <p>Example 1</p> <p>Suppose your company needs to decide how to invest R&amp;D funds in order</p>

	<p>to be positioned for opportunities that might emerge by the year 2020. The major environmental forces might include:</p> <ul style="list-style-type: none"> <li>- Social bonds;</li> <li>- Economic growth;</li> <li>- International trade access;</li> </ul> <p>3. Scenario building. Build scenarios based on the principal forces, by using the information available to you;</p> <p>4. Identify business opportunities within each scenario;</p> <p>5. Examine the opportunity links and synergies across the range of scenarios. This will help you to formulate a more realistic strategy for investment.</p> <p>This technique can be easily implemented and work group members are neither required to be experts in any specific matter, nor to cooperate too close. Scenario building can especially help you to foresee the technological developments of a given company area.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Medium</b>
<b>Reference</b>	<ul style="list-style-type: none"> <li>• Miller W.C., <i>The Creative Edge: Fostering Innovation Where You Work</i>, Reading, Mass., Addison-Wesley, 1987.</li> <li>• Andriopoulos C., Lowe A., <i>Enhancing Organizational Creativity: the Process of Perpetual Challenging</i>, <i>Management Decision</i>, Vol. 38, n. 10, 2000, pp. 734-742.</li> <li>• De Bono E., <i>Serious Creativity Using the Power Lateral Thinking to Create New Ideas</i>, The McQuaig Group, 1992.</li> <li>• Lawson B., Samson D., <i>Developing Innovation Capability in Organisations: a Dynamic Capabilities Approach</i>, <i>International Journal of Knowledge Management</i>.</li> </ul>
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Stakeholder analysis</b>
<b>Category of application</b>	<b>Problem definition</b>
<b>Field of application</b>	Strategic Planning, New product/service development
<b>Description</b>	<p>Stakeholder analysis looks at how groups of people might affect the outcomes of a proposal by the way they react. To identify stakeholders the following checklist may prove useful:</p> <ul style="list-style-type: none"> <li>• Who are the sources of reaction or discontent to what is going on?</li> <li>• Who have relevant positional responsibility?</li> </ul>

	<ul style="list-style-type: none"> <li>• Who do others regard as 'important' actors'?</li> <li>• Who participate in activities?</li> <li>• Who shape or influence opinions about the issues involved?</li> <li>• Who fall in demographic groups affected by the problem?</li> <li>• Who have clear roles in the situation (e.g. customer, friend, adviser)?</li> <li>• Who are in areas adjacent to the situation?</li> </ul> <p>Using a matrix like the one below, stakeholders can be plotted and categorised both by the chance of their affecting the situation, and by the scale of impact they would have if they did. Should any quadrant in the matrix appear empty, check that you have really included everyone, or plot the scale of the stakeholders influence (high or low) against whether they would support or oppose your project.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;"><b>Impact Unlikely</b></td> <td style="text-align: center;"><b>Impact Likely</b></td> </tr> <tr> <td style="text-align: center;"><b>Impact, if it occurred, Would be high</b></td> <td>Chairman of the Board Chief accountant</td> <td>My manager Key customer</td> </tr> <tr> <td style="text-align: center;"><b>Impact, if it occurred, Would be low</b></td> <td>Reprographics Department</td> <td>My secretary</td> </tr> </table> <p>Listing any assumptions that stakeholders are making could prove helpful e.g. using Assumption surfacing (qv), carefully assess the list, especially in relation to the stakeholder for whom they have been derived. Ask yourself does this actor have any special power in the situation, and if so are there any of his or her assumptions that could have a considerable effect on your project? How could this stakeholder be influenced to change their point or course of action.</p>		<b>Impact Unlikely</b>	<b>Impact Likely</b>	<b>Impact, if it occurred, Would be high</b>	Chairman of the Board Chief accountant	My manager Key customer	<b>Impact, if it occurred, Would be low</b>	Reprographics Department	My secretary
	<b>Impact Unlikely</b>	<b>Impact Likely</b>								
<b>Impact, if it occurred, Would be high</b>	Chairman of the Board Chief accountant	My manager Key customer								
<b>Impact, if it occurred, Would be low</b>	Reprographics Department	My secretary								
<b>Suggestions</b>										
<b>Level of complexity</b>	<b>HIGH</b>									
<b>Reference</b>	Mason and Mitroff (1981)									
<b>Available training material</b>										

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Vulnerability analysis</b>
<b>Category of application</b>	<b>Problem definition</b>
<b>Field of application</b>	Business strategy
<b>Description</b>	<p>The author of the Vulnerability Analysis technique assumes that each kind of business is based on what he calls "pillars".</p> <p>The aim of this technique is to individuate the pillars which the company is based on and to analyze the possible actions to be undertaken in</p>

	<p>response to the events which might damage the individuated pillars. This technique is suited for the Business Strategic Areas (BSA) defined as product-market-technology combination of the company. Each BSA can be destroyed, threatened or damaged by external events on which the company has scarce or no control at all. This technique allows to analyze these pillars and to obtain useful information for the company strategic decisions (e.g. the introduction of electronic cameras led to the extinguishment of the business of the "super 8" cameras and related projectors).</p> <p>The object of the vulnerability analysis is divided in two groups:</p> <ul style="list-style-type: none"> <li>• Company external factors, which are not under the company control (e.g. resources, some inputs);</li> <li>• Restricted competitive system external factors, it is to say those elements from which the company is unable to defend itself, unless recurring to radical innovations.</li> </ul> <p>These are the phases of this technique:</p> <ol style="list-style-type: none"> <li>1. <i>Business pillars identification</i> In other words, identification of the elements from which depends the survival and lasting of a sector and of the enterprises acting in it.</li> <li>2. <i>Free and unconstrained idea generation on the events which might damage or destroy one or more than one business pillars</i> (see also Brainstorming , idea generation techniques ).</li> <li>3. <i>Evaluation of the event occurrence probability and related impact</i> (see also evaluation techniques). The attention to be paid on a given threat should be proportional not only to the event occurrence probability but to the multiplication of probability and impact. It is to be avoided the attitude of those business managership, which do not attend to evaluate the impact of an event, when this is considered not likely to occur.</li> <li>4. <i>Identification of the actions to be undertaken.</i> The actions must be distinguished in actions to be undertaken immediately and actions to be performed only as the threatening event occurs. In fact, the company can react immediately or it can simply plan some actions, waiting for an increase of the threatening event occurrence probability to actually implement their execution.</li> </ol> <p>Even though the technique is subdivided in four phases, it can be noted that the first is predominant in respect to the other ones. In fact, the discriminating part of this technique consists in the pillars analysis. The remaining phases could be implemented also recurring to the other techniques. The vulnerability analysis has been positioned among the techniques for the External Mapping properly according to the weight and relevance given to the first phase. The author individuates 8 pillars typologies and states that when one of these waves it is necessary to innovate. The identification of the pillars is not an easy issue, considering that these are not coincident with the critical success factors of the business.</p> <p>The <b>pillars</b> classification is as follows:</p> <p>1) <b>Needs or use functions</b></p>
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	<p>Each business satisfies needs that are subjected to evolve in time: often the need to be satisfied has disappeared and companies have not had the skill or the resources to innovate and survive. It is the case of the slide rule, which was used to calculate quickly. The diffusion of the pocket calculators allowed to accomplish the same function in a more effective way. The slide rules companies were forced to accept the decline of their business, since they were unable to engage the competition with the pocket calculators manufacturers.</p> <p><b>2) Uses, habits, values</b></p> <p>Bertone states that the existence of social values constitutes the pillar of a lot of businesses and therefore he suggests that the related changes analysis is very useful for the innovation of products and services.</p> <p><b>Example:</b> «If the dominant value is consumption, the individual asks himself: "Which of the goods I haven't got would I like to have?". On the other hand, when shifting from a consumer attitude to a viewpoint that gives more importance to the experience, the question becomes: "Which of the experiences I never had would I like to have?". The consumer manager will be happy to receive as gift a gold fountain pen branded Giugiaro. The experience manager would prefer a trip-coupon, a training course, the subscription to some theatrical shows.» (Bertone, 1993, p.124)</p> <p><b>3) Technologies stability</b></p> <p>A lot of businesses depend on technology, which can be embedded in the product or in the productive process. A well known example is given by the mechanic clock market. The coming of electronics caused a strong contraction in the Swiss industry market. In this case the Swiss companies of mechanic clocks found themselves "without pillar" as consequence of the introduction on the market of electronics-based products. After a decade of crisis, a consortium of Swiss manufacturers (the SMH) was able to offer an innovative answer to the electronic clocks solution: the Swatch, which lifted up again the Swiss clock industry, properly when it seemed to have been beaten by Japanese and Hong Kong manufacturers.</p> <p><b>Example:</b> «lernst Thomke, one of the Swatch inventors, declared to have aimed to win the price competition. The competitive price depends on the product-process concept. With the help of the designers Elmar Mock and Jacques Mueller, it was invented an innovative mechanism compounded by only 51 elements, it is to say almost half of those used in a traditional electronic clock with quartz mechanism. The clock case, imprinted through microinjection with a synthetic very resistant material, acts also as assembly plate on which the components are fixed by means of welding and ultrasounds. The glass – obviously made in plastic – cannot be replaced and, in addition, the welding system makes the clock waterproof till 30 meters of depth.» (Bertone, 1993, p.124)</p> <p>The low cost of manufacturing the product led Swatch to success. The marketing strategy provided a decisive contribution to the consolidation of the Swatch business idea, which detains more than 30% of its market segment, selling almost 10 millions clocks per year.»</p> <p><b>4) Inputs and resources</b> Each business requires resources, also those given as obvious, such as raw materials availability, energy, subsidiary services (mail, phone, security, ...) and one of these resources might</p>
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	<p>constitute a business pillar. However, generally the attention of the top management is focused on those resources which have an higher impact on costs structure rather than on those resources which are more critical for the survival of the business. In fact, these latter are not considered relevant, until a problem arises.</p> <p><b>5)Niche or market segment</b></p> <p>Bertone states that when customers are few the business is very vulnerable and he cites the Piaggio company, which formerly sold 80% of its motorbikes to under 18 years old teenagers. In other words, the company was dependant by a single market segment. The pillars on which the motorbikes business was based were the possibility to drive without using the helmet, without the licence plate and without the driving licence. In particular, the company believed that girls would not have appreciated the use of the helmet, which became compulsory in 1986. At the same time, however, a lot of drivers began to travel by motorbike in order to avoid the city traffic jam, this resulting in new opportunities of expansion for Piaggio.</p> <p><b>6)Existent constrains, sanctions, incentives.</b></p> <p>The constrains, sanctions and incentives imposed by law restrict the operative space where enterprises can act. It may occur that the competitive advantage of a company would be vanished by some normative modifications. To better understand the matter, two examples are provided below:</p> <p><b>Example:</b> «The pharmaceutical products cannot be sold without the official authorization by the institutions in charge of health surveillance. The authorization is subjected to experimentation periods of over 10 years. This regulation, however, is applied only to the pharmaceutical specialties and it is not extensible to the so called cosmetic products. It should be considered that a more strict regulation of the products offered by the cosmetic companies, requiring a major evidence of the product efficacy or a more rigorous experimentation aimed to ascertain the absence of dangerous "collateral effects", could seriously threaten the business structure. Leader companies, such as l'Oreal and Shiseido, will likely be able to adapt to the new context by modifying radically their present approach and structure, which are characterized by marketing expenses reaching even 40% of the revenues.</p> <p>Instead, minor companies which are characterized by a business approach that can be considered in some way "similar to that of pirates", would not be able to experiment and guarantee their products quality and therefore they would be doomed to disappear.»</p> <p><b>Example:</b> « In 1988 the European motor market absorbed almost 9 millions of carburettors. This was due to the fact that the major part of the new petrol engine cars were alimented by carburettors and only the high range cars used electronic injection systems. In the USA the electronic injection system was imposed, with a regulation of 1983, since this was able to dramatically reduce the emissions of harmful stuffs from the car drainpipe. Instead, in Europe the emissions regulation was more tolerant and the imposed limit could be kept also by a carburettor injection system. Therefore, in the USA the injection system was a must, while in Europe it was a plus aimed to the high range cars. In this context, the Italian Weber detained 65% of the European carburettors market, while the German Bosch detained almost the monopoly of the electronic injection systems. In 1988, as the signals of a reinforcement of</p>
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	<p>the CEE emissions regulations increased, at Weber there was a lot of concern. The company had the know how on electronic injection systems, since it provided this kind of systems, those of road and competition models of Ferrari included. Nevertheless, Weber top management was aware that the quick shift from a carburetors manufacturing to a planning and in large scale manufacturing of electronic injection systems would have caused an huge industrial changeover and the abandon of a product as the carburettor, which was become a cash cow.» (Bertone, 1993)</p> <p><b>7) Complementary products and services</b></p> <p>The existence of some businesses is based on the availability of complementary products or services. For instance, if tobacco would be prohibited, lighters will be sold no more and Bic, leader in throwaway lighters, could face serious troubles.</p> <p><b>8) Alternative products or services cost stability</b></p> <p>To explain this pillar the author reports the case of a North American bus service company which was able to link almost every city of USA and that was troubled by the reduction in the prices of air tariffs due to the price war among several air companies.</p>
<b>Suggestions</b>	The technique must be applied in group. This latter must be heterogeneous, free from inhibitions/restraints and it must include some experts of the topic under discussion.
<b>Level of complexity</b>	<b>Medium:</b> The technique does not need specific requirements and, in particular, the working group does not require preliminary training.
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name technique</b>	<b>of</b> <b>Attribute-value chain</b>
<b>Category application</b>	<b>of</b> <b>Problem definition</b>
<b>Field application</b>	<b>of</b> New Product Development in particular
<b>Description</b>	Attribute-value chain technique concerns the relationship between enterprise and milieu. This method gives a tool for external mapping phase of the creative process. This technique has been derived from means-end chain (Reynolds, Gutman, 1988), uses the graphic features of simplicity and effectiveness of mental maps within a new methodology that, through a direct questionnaire survey and the use of an appropriate «statistics» (the canonical correlation analysis), produces as an output a mental map which is able both to act as a check instrument (feedback), and to stimulate the next

	<p>phase of idea generation in the above-described company's creative process.</p> <p><i>Introduction to the methodology</i></p> <p>Products and services can be characterized by a set of attributes. Each brand or product is considered to have a certain level of performance on each of these attributes. The consumer ascribes an overall value to a specific product based on how the product is perceived to perform on the various attributes and based on how important these attributes are. Beside this point of view, in order to position products and brands at a higher level, we need to understand and measure the meanings that products have for consumers. A theory that provides such an understanding is the attribute-value chain theory. This theory establishes a link between the attributes of a product and the individual and social needs of consumers, that are personal values. In fact, this theory is based on the assumption that "product or service is a mean that customers use to reach an end (that is, to satisfy one or more of his/her personal values)" (De Heer and Van Houten, 2001). Therefore products and personality can be correlated. In so doing, we suppose that goods could be described by their attributes and, at the same time, that consumers make a choice according to some personal values that they want to satisfy by using the product. It is clear how important is the right comprehension of the link between attributes and values, especially for the product development. In this sense, things that people buy have also personal and social meaning. Modern goods are recognized as psychological objects that symbolize ends and aims. Therefore products are bought for what they do for consumers.</p> <p><i>Elements of the analysis</i></p> <p>According to its name, the attribute-value chain analysis looks at two fundamental aspects of external environment: attributes and values.</p> <p><b><u>Attributes</u></b></p> <p>They are inside every product or service and are defined as the physical features by which the product could be described. It is fundamental to define which attributes of a specific product are important and how they refers to consumer's personal values. Attributes are distinguished in two main classes, depending on their level of abstraction. These classes are:</p> <ul style="list-style-type: none"> <li>• <u>Concrete attributes</u>, which are the physical, tangible features of a product, such as, for example, colour, shape, weight etc.</li> <li>• <u>Abstract attributes</u> refers to intangible, subjective features of a product, which can't be directly measured by senses, such as comfort, design, line etc.</li> </ul> <p>Attributes gain their relevance because they allow the consumer to achieve certain advisable values such as, for example, happiness, security or sense-of-belonging.</p> <p><b><u>Values</u></b></p> <p>They are mental representations of important personal objectives or needs that customers want to satisfy by using or purchasing the product. Values satisfaction is a very personal and intangible experience that involve symbolic meanings. In so doing it is associated to high emotional reactions. For example, emotional system produces good feelings if one or more advisable values, such as "self esteem", are achieved. On the contrary, negative emotional response as "angry" appears when the subject can't</p>
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	<p>satisfy some of his/her personal values. In other terms, values satisfaction provides good feelings and vice-versa. In accordance with this consideration, the meaning of a product can be different depending on the values aimed by consumers.</p> <p><i>Aim of the analysis</i></p> <p>The aim of the attribute-value chain is to analyze in depth the relationships between variables that describe enterprise products (<b>attributes</b>) and variables that describe consumers (<b>personal values</b>), understanding:</p> <ul style="list-style-type: none"> <li>• how a specific enterprise is considered by its consumer target;</li> <li>• which attributes of the product are more important for consumers, that is, which features they perceive better; which are the relations between attributes and personal values, that is, which consumer's personal values are more affected by a specific feature of the product.</li> </ul> <p>The relationships between attributes and values is visualized in a map. The links in the map can be regarded as the content, structure, and emotions associated with consumer information processing. The more tightly a product or brand is linked to the various elements in consumers' attribute-value structures, the more likely it has personal relevance, and it will be preferred.</p> <p><i>Methodological steps</i></p> <p>The attribute-value technique needs several methodological steps, some of which involve directly consumers. It is possible to recognize four main phases, that are respectively:</p> <p><u>1. Definition of the survey</u></p> <p>The first step aims to point out the most important product attributes and the most important personal values for consumers. This phase could be highly time-consuming. For this reason it is better to realize a statistical survey on a pre-established sample of consumers, by using a semi-structured questionnaire. The questionnaire is organized in four sections. In the first one you have to collect personal data about consumer, in order to define an homogeneous statistical sample. In fact, personal values depend on elements such as age, sex or job. The second part of the questionnaire concerns product attributes. Depending on the complexity, product attributes can be many and many more. For this reason you have to split them in some macro-categories. The consumer interviewed chooses one of this categories, obviously the one he/she considers more important with regard to the specific product he is judging. In the following section of the questionnaire, that is the third one, the consumer is asked to evaluate only the attributes that belong to the macro-category previously selected. In so doing, consumers avoid from evaluating features that they don't consider important. Moreover each one of the attributes is clearly described to avoid any possible misunderstanding. These attributes are chosen directly by the researcher. This solution obviously limits consumers' freedom of action but it is the only practicable way using a questionnaire tool. Reasonably, data could be also collected by using direct interviews (in which all variables, attributes and values, emerge from the discussion). Actually, this approach is more time-consuming because it needs the researcher to conduct directly every interview. As we will see in the following steps of the methodology, collected data have to be statistically analyzed. This means that the dimension of the statistical sample must be considerable in order to produce</p>
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relevant results. Depending on this consideration, questionnaire approach involves more consumers rather than direct interviews, under the same time conditions. The last section concerns the evaluation of a set of personal values. Also in this case, values are chosen by researchers and belong to general aims of human being. Typical examples are "freedom", "happiness" or "self-esteem". Generally, the number of values varies from 20 to 30. Basically these values must be evaluated independently from the selected attributes. The correlation between this two kind of variables indeed will be identified lately by using the statistical methods.

Both for attributes and values, consumers are asked to give a score to every variable. They answer to questions formulated all in the same way that is, exactly, "how much do you care for ...?". The score ranges from 0 to 5, where "0" means "no interest" while "5" suggest "maximum interest".

## 2. Collecting data from questionnaire

The aim of this step is to realize a "**collecting matrix**" (Fig.1.1.) where each row represents a consumer and every column corresponds to a specific attribute or value. Finally, there will be as columns as the sum of attributes and values in the questionnaire. In so doing, each collected questionnaire represents a single-row matrix. It is fundamental to consider each attributes' category separately, that is, to realize an independent matrix for each one of them. For example, if there are R attributes from the same category and S values, then the number of columns of the "collecting matrix" is R+S. The collective matrix has inside all the necessary information to draw the final cognitive map. In fact, crossing a column with a row, it is possible to identify a score that links the variable in column with the questionnaire in row.

	Attribute 1	...	Attribute R	Value 1	...	Value S
Consumer 1	3		5	4		2
Consumer 2	3		2	2		3
Consumer 3	3		1	5		1
Consumer 4						
...						
Consumer N	2		4	2		0

Fig 1.1. Example of a collecting matrix

## 3. Data statistical analysis

At this point collected data must be statistically analyzed to identify the elements (attributes, values and links between them) to put in the final cognitive map. The information required are the following:

- Relative importance of attributes;
- Relative importance of values;
- Most significant values;

- Relations between attributes (all) and most significant values.

The first two information are very simple to achieve. Indeed, you just need to add in column the scores in each cell of the collective matrix. Moreover, the researcher defines two independent lists, one for attributes and one for values where elements are arranged by their relative score. Now it is better to clarify the difference between the terms "importance" and "significance" of a variable. The first refers to the total score that the sample of consumers give to this element, while "significance" refers to the role of a variable in relation with the other ones, that is calculable by using a specific statistical analysis called **canonical correlation analysis**. Canonical correlation provides the relation between two sets of variables when each set is composed by at least two elements. In the attribute-value chain analysis the two sets are composed respectively one by attributes and one by values. The basic idea behind this technique is to eliminate complexity by reducing the number of variables, without losing information which were inside original data sets. Using this tool it is possible to select the most significant values from the starting list, because we need to reduce the number of values to be put into the map. In fact too much variables limits the effectiveness of the map, especially if this elements are not significant related to the features of the considered product. Moreover you can consider the whole number of attributes because they are few (five or six for each category).

The last information you need to draw up the cognitive map is the power of relations between all the attributes of a category and the selected personal values. First of all you have to construct the "**correlation matrix**" (Fig.1.2), that is a symmetric matrix where rows and columns represent the whole attributes and personal values. Then you have to select the quadrant with the correlation between the variables, that is the one with attributes on rows and values on columns.

	Attribute 1	...	Attribute R	Value 1	...	Value S
Attribute 1						
...						
Attribute R						
Value 1						
...						
Value S						

Fig 1.2. Example of correlation matrix

Now, you have to eliminate the columns that correspond to the values not previously selected. The result is the "**reduced correlation matrix**" (Fig.1.3) . Looking at the score in each cell of this matrix, you can determinate the power of the relation between the attribute and value that cross the cell. These scores are included between 0 and 1, where "0" indicates that the two elements crossing the cell aren't correlated in any way, while "1" indicates maximum correlation. For example, a score 0,7 means that the correlation between the two variables that cross the cell is 70% of the perfect correlation (perfect correspondence). A good rule may be to consider only the cells that have a score more than 0,3.

	Value 1	Value 3	Value 5	Value 11	Value 16	Value 20
Attribute 1	0,0	0,1	0,2	0,3	0,2	0,0
Attribute 2	0,2	0,4	0,1	0,4	0,2	0,4
Attribute 3	0,6	0,2	0,5	0,0	0,1	0,2
Attribute 4	0,2	0,3	0,3	0,3	0,2	0,1
Attribute 5	0,1	0,4	0,6	0,4	0,5	0,5
Attribute 6	0,3	0,3	0,4	0,3	0,6	0,4

Fig.1.3. Example of a "reduced correlation matrix"

At this point you have all the elements necessary to build the cognitive map.

*Building of the final cognitive map*

As already said, the practical result of the attribute-chain analysis is a graphical representation, in form of a cognitive map. In the latter you represent all the attributes of the chosen category (the one that consumers select), the values selected by using a criterion of significance, and the relations between them.

*Graphical representation of elements on the map*

Basically it is necessary to define three features for each element put into the map, that are shape, dimension and colour.

About attributes and values:

Shape and colour: in practical terms, variables are represented as circles. It is easier to distinguish between attributes and values, for example, using different colours.

Dimension: the surface of each variable is proportional to its relative importance (calculated as seen previously). In other terms, you have to find the most important attribute and to assign it an arbitrary surface dimension on the map. The other attributes' dimensions are calculated proportionally, using their relative scores. It is important to work individually for attributes and personal values.

About relations

They are represented as arrows with colour and dimension proportional to their score in the correspondent cell of the "reduced correlation matrix". You can use the following schema (Fig.1.4) to choose the right colour and thickness.





Type of relation	Correlation value	Arrow size
Weak	0,3	
Medium	0,4	
Strong	0,5	
Very strong	0,6	

Fig.1.4. How to choose the right arrow

#### *Layout of the map*

The variables are put in the sheet by following two simple rules (Fig.1.5):

1. Attributes are drawn on the lower part of the sheet, while personal values are put in the higher part. In so doing it is necessary also to consider the "centrality" of each variable. In fact, most important elements (fixed as previously described) must be put in the middle of the sheet.
2. Relations starts from an attribute and reach one or more values. Here below is presented an example of general cognitive map, where you can notice the features and the layout of each element such as just described.

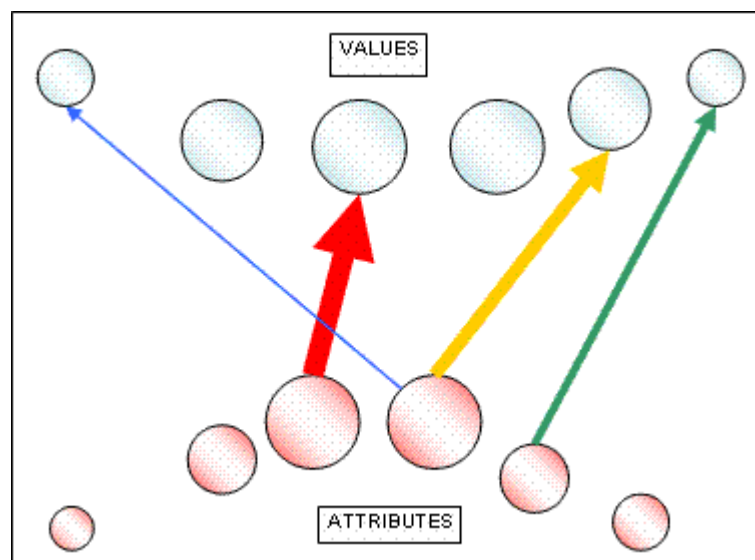


Fig. 1.5 Example of mind map

Moreover, to support the graphic representation, several reading-keys have been identified, following four main lines, that is:

- the analysis of the most important attributes and values;
- the analysis of the most important links;

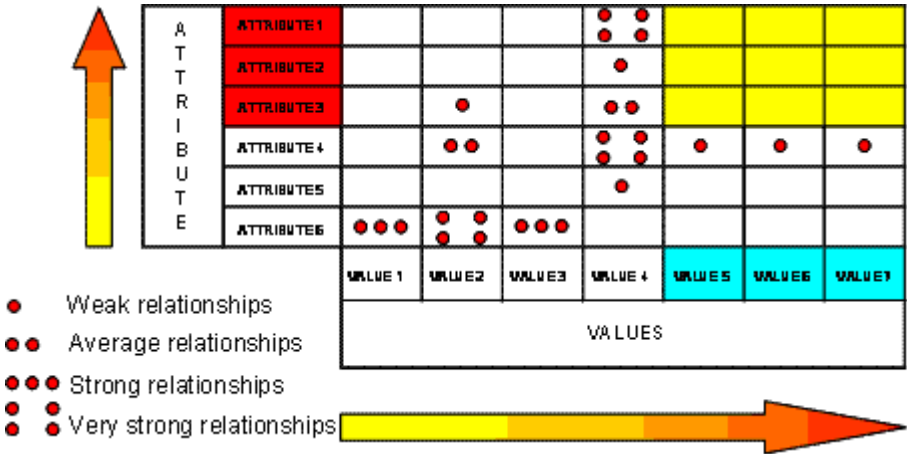
	<ul style="list-style-type: none"> <li>the analysis of the most significant levers;</li> <li>the analysis of the important but not significant levers.</li> </ul> <p>Each reading-keys could be analyzed using a schema as the following one (Fig.1.6), where attributes are put on rows and values are put on columns, as occurred in "reduced correlation matrix". These element are ordered basing on their importance. The number of spots in each cell represents the power of the linkage between the attribute and the values that cross the cell.</p>  <p> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> Weak relationships  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> Average relationships  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> Strong relationships  <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; border-radius: 50%; background-color: red; margin-right: 5px;"></span> Very strong relationships         </p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>HIGH.</b> This technique needs preliminary training. It needs a questionnaire. It needs software equipment for stastical analysis.
<b>Reference</b>	
<b>Available training material</b>	

Fig. 1.6. Example of reading-key

Outcomes gained allowed to understand what are the most important product characteristics according to the target of interviewed customers and above all to correlate them directly with the whole set of personal values that themselves want to satisfy by the purchase or use the product.

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>SWOT</b>
<b>Category of application</b>	Problem definition
<b>Field of application</b>	<ul style="list-style-type: none"> <li>Business strategy</li> </ul>

	<ul style="list-style-type: none"> <li>Product/Service Development</li> </ul>				
<p><b>Description</b></p>	<p>SWOT analysis (S-trengths W-eaknesses T-hreats O-pportunities) is a method used to analyse the competition context and product strategies in particular. It deals with the impact of the main internal factors (i.e.: organizational structure, culture, competences, partnership networks etc.) and the main external factors (i.e.: technology level in the sector, competitors' position, etc.) which define a firm's or a business unit's market position, in order to develop a competitive strategy. It is based on a matrix divided in 4 areas:</p> <div style="text-align: center; margin: 20px 0;"> <table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;"><b>Strengths</b></td> <td style="padding: 5px;"><b>Weakness</b></td> </tr> <tr> <td style="padding: 5px;"><b>Opportunities</b></td> <td style="padding: 5px;"><b>Threats</b></td> </tr> </table> </div> <p><b>SWOT analysis matrix</b></p> <p><b>Strengths:</b> resources, competences and inputs which enable an organisation to enforce strategies supporting its own <i>mission</i>.</p> <p>For instance, answers should be found for these classical questions:</p> <ul style="list-style-type: none"> <li>Which are our own advantages?</li> <li>What are we able to do quite well?</li> <li>What strategic resources can we rely upon?</li> </ul> <p>It is important to connect strength factors with competitors; for instance, if all the competitors are offering high-quality products, then high-quality production should not be considered an advantage but a necessity.</p> <p><b>Weaknesses:</b> elements that may interfere with the realization of the strategy. In order to identify weak areas these questions may be useful:</p> <ul style="list-style-type: none"> <li>What could we enhance?</li> <li>What should we avoid to do?</li> <li>What are we doing poorly?</li> </ul> <p>In this case it is very important to be realistic and not to conceal a problem, but on the contrary to let them come out and confront them as soon as possible.</p> <p><b>Opportunities:</b> areas of the external environment which may enable a company to obtain great performances, if they are correctly identified and exploited. In order to single out opportunities, you may ask:</p> <ul style="list-style-type: none"> <li>Where are future opportunities positioned?</li> <li>Which are the most interesting trends that we know?</li> </ul> <p><b>Threats:</b> areas of the external environment that may affect negatively on the performances of the firm.</p> <p>In order to identify possible and existing threats:</p> <ul style="list-style-type: none"> <li>What obstacles must we face?</li> <li>What are competitors doing?</li> </ul>	<b>Strengths</b>	<b>Weakness</b>	<b>Opportunities</b>	<b>Threats</b>
<b>Strengths</b>	<b>Weakness</b>				
<b>Opportunities</b>	<b>Threats</b>				

	<ul style="list-style-type: none"> <li>• Are the perceived needs about our products/services changing?</li> <li>• Does the technological evolution threaten our position?</li> </ul> <p>To sum up, this analysis helps the management to focus on their own strong key points, minimize weak points, obtain the most advantage from upcoming opportunities, and, if possible, change threats into new opportunities. Moreover, people are compelled to analyze a problem from 4 different and contrasting points of view.</p> <p>In order to obtain a detailed SWOT matrix, a useful tool is a detailed questionnaire given out to internal personnel.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>LOW:</b> This technique does not require any particular training. It is also already well known among companies.
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Silent group</b>
<b>Category of application</b>	Problem definition
<b>Field of application</b>	<ul style="list-style-type: none"> <li>• Product/Service Development</li> </ul>
<b>Description</b>	<p>This technique helps non-experts to present problems. This method can involve up to 80 members with no top-down roles, who are divided into groups of 5 or 6 participants. Each group is led by a coordinator who does not formally belong to the group. The major phase of this technique is kept silent by the facilitator who helps participants to talk about as many problems as possible as quickly as they can (15-30 minutes). Afterwards, each group presents the problems on a flow chart. After exchanging their ideas (thus, gathering identical concepts and stressing emerging concepts), each participant casts a vote by writing down the five most relevant problems, according to his view. Such a meeting lasts half a day in all. Votes and lists of problems are collected. Votes are kept secret. The meeting ends with a summary of the method used and an explanation of how the groups' outcomes will be managed.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>LOW:</b> This technique does not require any particular training.
<b>Reference</b>	
<b>Available training material</b>	

## B. Idea Generation

1. 4 Roles in the Creative Process: "Explorer – Artist – Judge – Warrior"
2. Brainstorm
3. SCAMPER
4. Metaplan
5. Creativity template
6. Mind map
7. Provocation and Movement

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>4 Roles in the Creative Process: "Explorer – Artist – Judge – Warrior."</b>
<b>Category of application</b>	Idea generation
<b>Field of application</b>	Business processes in general; in particular new product development.
<b>Description</b>	<p>Roger von Oech has described in several books which roles are to be carried out in the creative process by particular people and/or organisations in order to successfully generate and realize ideas. He hereby relates to the "principle of inner instances" and describes the required roles which follow from one another.</p> <div style="background-color: #fff9c4; padding: 10px;"> <p>1 – The explorer, who searches for interesting and useful details:</p> <ul style="list-style-type: none"> <li>• Analysis = role in which material is searched for in order to create new ideas</li> </ul> <p>2 – The artist, who sees connections where others do not:</p> <ul style="list-style-type: none"> <li>• Development of ideas = role of fantasy and creative tools</li> </ul> <p>3 – The judge, who discards, balances up and makes decisions</p> <ul style="list-style-type: none"> <li>• Evaluation and choice = role of assessment</li> </ul> <p>4 – The warrior, who has the temperament of a lion and who never rests</p> <ul style="list-style-type: none"> <li>• Realisation = role of the doer</li> </ul> </div> <p>All of these roles should be occupied in the innovative process. This can be done by one person or in the scope of a company's organisation by several different people.</p> <p>The decisive factor is the recognition of where personal strengths and weaknesses lie, and when the use of particular tools can be of benefit.</p>

What happens when one of the roles in your creative team is only weakly occupied?

- When the explorer buries his head in the sand, there will be no information to evaluate
- When the artist's imagination is blocked, you will only be capable of mediocre and volatile work
- When the judge's sense of discrimination is flawed, you may say "yes" to worthless ideas and "no" to potentially good ideas
- When you have a weakling as a warrior you will not be able to realize many of your ideas.

It is just as important to know when each role comes into play. Therefore, timing is very important. It can be very counterproductive to activate a role at the wrong time – for example using a judge to search for information or your artist to realize the ideas. For this reason, it is very important to pay close attention as to which role is required in which situation. The individual roles will now be examined in more detail. We will also briefly note which suggestions and tools are offered by SUPPORT regarding these roles. To conclude, several quotes regarding the individual roles are listed, in order to stimulate thought about this topic.

### The Explorer:

At the start of a creative process you will require the raw materials that ideas are made from: facts, concepts, experiences, knowledge, feelings, and anything else you may be able to find. It is important here to think laterally and beyond the well-trodden path. It is vital here to stress the importance of the TRIZ-tool "9-Windows" (talented thinking).

Which methods / tools does SUPPORT offer?:

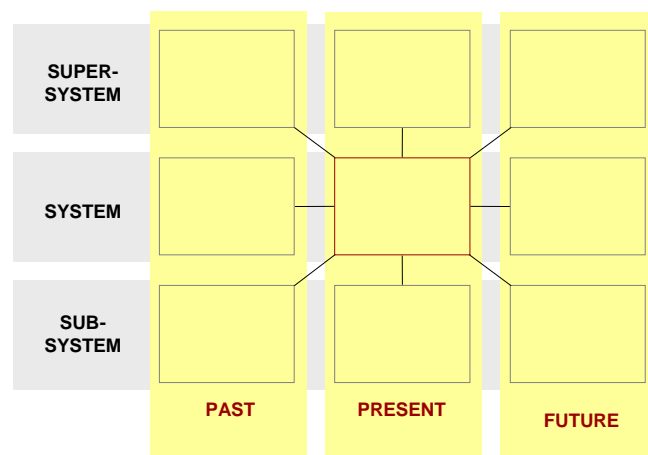
- Problem Analysis: Cleaner Production.

The principle of the 9-Windows is to start from the present window (system = question, problem, product etc., in the present), to divide the problem-time plain into 9 segments, and to consider these altogether.

3 problem levels: super-system, system, and sub-system.

3 time levels: past, present, and future

## 9-Windows (Talented Thinking)



	<p>A few quotes about the role of the “explorer”:</p> <p>“A well-described problem is half the solution.” (John Dewey, philosopher)</p> <p>“The art of being wise is the art of knowing what you can ignore.” (William James, psychologist)</p> <p>“Anyone can look for fashion in a boutique and history in a museum. The creative explorer searches for history in a hardware shop and fashion in an airport.” (Robert Wieder, journalist and impromptu comedian)</p> <p>“If you don’t expect the unexpected, then you won’t find it: it can’t be explored or hunted down.” (Heraklit, philosopher)</p> <p><b>The Artist</b></p> <p>Using the information and materials collected by the explorer, the second step involves creating new things. Abstraction and analogies are important means by which to leave behind old ways of thinking. The greatest danger hereby is becoming a prisoner of one’s own confidence. The more often you do something in a particular way or see something in a particular fashion, the more difficult it becomes to think about things in a different way.</p> <p>Which methods / tools does SUPPORT offer?:</p> <ul style="list-style-type: none"> <li>• Generating ideas using selected TRIZ-tools</li> </ul> <p>In the theory of inventive problem solving (TRIZ), two terms are of paramount importance when a (technical) system is being analysed:</p> <p style="padding-left: 40px;">the technical or physical contradiction and</p> <p style="padding-left: 40px;">the trends of evolution and evolution lines of a technical system.</p> <p>These concepts will be explained in the two modules, and the “analogy tools” from the TRIZ-methodology that build on these will be examined.</p> <p>A few quotes about the role of the artist:</p> <p>“Every child is an artist. The problem is how to remain an artist when you grow up.” (Pablo Picasso, painter).</p> <p>“Creative thinking may only be the recognition that it is of no particular merit to do something in the way one has always done it.” (Rudolph Flesch, pedagogue).</p> <p>“Holy cows that have been slaughtered make great steaks.” (Dick Nicolosi, philosopher).</p> <p><b>The Judge:</b></p> <p>In this phase it is decided what should become of an idea: will it be carried out, changed or completely given up? The aim is not to find out what is wrong with an idea, but to try to find out which aspects of the idea are worth developing. In turn, other new ideas may arise from this process. Due to his constructive attitude, a good judge knows that a disadvantage of a particular idea can sometimes be used as a stepping stone towards another useful and creative idea. The role of the judge is therefore a difficult one: he has to be critical enough to provide the warrior with an idea that is good enough to be fought for. However, he</p>
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	<p>must be open enough so as not to stifle the fantasy of the artist.</p> <p>Furthermore, it is up to the judge to choose the right moment to make a decision.</p> <p>Which methods / tools does SUPPORT offer?:</p> <ul style="list-style-type: none"> <li>• Evaluation of ideas</li> </ul> <p>Whilst evaluating ideas, particular attention is paid to the criteria for sustainable development (especially an environmentally compatible product).</p> <p>A few quotes about the role of the judge:</p> <p>“The human mind dislikes unfamiliar ideas as much as the body dislikes unfamiliar proteins and fights against them with similar strength.” (W. I. Beveridge, scientist).</p> <p>“I earn my livelihood by gambling; it only becomes work once I analyse the outcome of my gambling.” (Mac MacDougall, computer architect).</p> <p>“If you do not fail every now and again it is a sign that you do not try anything new.” (Woody Allen, comedian).</p> <p>“If you spend too much time warming up, you will miss the race. If you do not warm up at all, you might not make it to the end of the race.” (Grant Heidrich, runner).</p> <p><b>The Warrior:</b></p> <p>The chosen idea is now transferred from the world of “what if?” into the world of action. The responsibility for the realisation of the idea is determined and thereby the profit/loss of the process as a whole is calculated. The implementation of an idea always goes hand in hand with a change for someone or something. Therefore, it is often the most difficult part of the whole process. This is due to the fact that there are two basic rules in life:</p> <ol style="list-style-type: none"> <li>1) Change is inevitable</li> <li>2) Everyone avoids change</li> </ol> <p>The worst enemies in this phase are fear and a lack of trust.</p> <p>The warrior therefore has to prepare himself for battles and decide on a strategy and plan.</p> <p>Which methods / tools does SUPPORT offer?:</p> <ul style="list-style-type: none"> <li>• Project management</li> </ul> <p>The most important project management tools are classic time, organisation, and work plans. A few quotes about the role of the warrior:</p> <p>“Putting your own ideas into action is the hardest thing in the world to do.” (Johann Wolfgang von Goethe, author)</p> <p>“You can either let life pass you by and not do the things that you want to do, or you can get up and do them.” (Cary Ally)</p> <p>“Whether or not you think you can do it, you are right.” (Henry Ford, businessman)</p>
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<b>Suggestions</b>	<p>For a dynamic and creative progress of work in an innovation project, it is vital that all four roles are well occupied, or that you yourself are able to fulfil all four roles. Therefore you should ask yourself the following questions:</p> <ul style="list-style-type: none"> <li>- How adventurous is your explorer?</li> <li>- How unconventional is your artist?</li> <li>- How reliable is your judge?</li> </ul>
<b>Level of complexity</b>	<b>MEDIUM</b>
<b>Reference</b>	<ul style="list-style-type: none"> <li>• "The Explorer's Compass", Roger von Oech</li> <li>• "The Artist's Palette", Roger von Oech</li> <li>• "The Judge's Scale", Roger von Oech</li> <li>• "The Warrior's Battle Cry", Roger von Oech</li> </ul>
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Brainstorming</b>
<b>Category of application</b>	Idea generation
<b>Field of application</b>	Business processes in general; in particular new product development.
<b>Description</b>	<p>Brainstorming is a creativity technique designed to generate a large number of ideas for the solution of a problem. The method was first popularized in the late 1930s by Alex Faickney Osborn in a book called Applied Imagination. Osborn proposed that groups could double their creative output with brainstorming. The term refers to the "disconnected thought" or "creative thought". This tool asks people to leave their mind free to explore new ways, to invent new associations, to abandon old mental patterns. It is based on a group crossed discussion managed by a moderator. The brainstorming discussion provides a list of ideas, which should be used as a hint to solve a specific problem and which could be evaluated and elaborated subsequently. This technique is based on the consideration that ideas refer to other ones, if they are expressed by different people. This process is metaphorically called cross-fertilization. The process of brainstorming is very simple: when focusing on a specific problem this technique allows the group to create as many solutions as possible, as far as possible, without a pre-established order (see fig.1). The technique provides a great number of ideas and the linkages between them stimulate the generation of new proposals, in an auto-feeding process. The most important thing which must be taken into consideration during the discussion is that each idea must be respected and must not be judged a priori.</p> <p>There are four basic rules in brainstorming. These are intended to reduce social inhibitions among groups' members, stimulate idea generation, and increase overall creativity of the group.</p>

	<ol style="list-style-type: none"> <li>1. Focus on quantity: This rule is a means of enhancing divergent production, aiming to facilitate problem solving through the maxim, quantity breeds quality. The assumption is that the greater the number of ideas generated, the greater the chance of producing a radical and effective solution.</li> <li>2. Withhold criticism: In brainstorming, criticism of ideas generated should be put 'on hold'. Instead, participants should focus on extending or adding to ideas, reserving criticism for a later 'critical stage' of the process. By suspending judgment, participants will feel free to generate unusual ideas.</li> <li>3. Welcome unusual ideas: To get a good and long list of ideas, unusual ideas are welcomed. They can be generated by looking from new perspectives and suspending assumptions. These new ways of thinking may provide better solutions.</li> <li>4. Combine and improve ideas: Good ideas may be combined to form a single better good idea, as suggested by the slogan "1+1=3". It is believed to stimulate the building of ideas by a process of association.</li> </ol> <div style="border: 1px solid orange; padding: 10px; margin: 10px 0;"> <p>The diagram shows a process flow from left to right. It begins with 'Problem setting' (an arrow pointing right). This leads to a box labeled 'Ideas generation' (divergent phase), which is a trapezoid that widens from left to right. From the right side of this box, a vertical column of ten arrows points right towards a second box labeled 'Ideas selection' (convergent phase), which is a trapezoid that narrows from left to right. From the right side of the 'Ideas selection' box, three arrows point right towards the word 'Ideas'. Above the 'Ideas generation' box is a large arrow pointing right labeled 'Divergent phase'. Below the 'Ideas selection' box is a large arrow pointing right labeled 'Convergent phase'.</p> </div>
<p><b>Suggestions</b></p>	<p>This technique could be applied individually but it should be better applied in group. The latter must be heterogeneous and free from inhibitions/restraints.</p>
<p><b>Level of complexity</b></p>	<p><b>LOW:</b> The technique does not need specific requirements and, in particular, the working group does not require preliminary training. A single session of brainstorming produces more good ideas than a traditional discussion, requiring short time.</p>
<p><b>Reference</b></p>	<p>Osborn, A.F. (1963) Applied imagination: Principles and procedures of creative problem solving (Third Revised Edition). New York, NY: Charles Scribner's Sons.</p> <p>Bertone V., Business creativity. Methods, techniques: case studies to enhance the creative</p>

	potential of managers and entrepreneurs., Milan, Franco Angeli, 1993. Toubia, Olivier, "Idea Generation, Creativity, and Incentives," Marketing Science (2006).
<b>Available training material</b>	<a href="http://www.creatin.project.com/">www.creatin.project.com/</a> material

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>SCAMPER</b>
<b>Category of application</b>	Idea generation - Idea Implementation and Processes
<b>Field of application</b>	SCAMPER is a tool used to find ways to improve an existing product and find ideas for a new one.
<b>Description</b>	<p>The SCAMPER technique, will assist you in thinking of changes you can make to an existing product to create a new one via a checklist, these can either be used directly or as starting points for lateral thinking.</p> <p>The changes SCAMPER stands for are:</p> <p>S - <b>Substitute</b> - components, materials, people</p> <p>C - <b>Combine</b> - mix, combine with other assemblies or services, integrate</p> <p>A - <b>Adapt</b> - alter, change function, use part of another element</p> <p>M - <b>Modify</b> - increase or reduce in scale, change shape, modify attributes (e.g. colour)</p> <p>P - <b>Put</b> to another use</p> <p>E - <b>Eliminate</b> - remove elements, simplify, reduce to core functionality</p> <p>R - <b>Reverse</b> - turn inside out or upside down.</p> <p>Example</p> <p>For instance, imagine that you are a producer of computers and printers, and you are looking for new products. SCAMPER would give you:</p> <p>Substitute – use of high tech materials for specific markets – use high-speed components?</p> <p>Combine – integrate computer and printer, printer and scanner</p> <p>Adapt – put high quality ink in printer, use high quality paper</p> <p>Modify – produce different shape, size and design of printer and computer</p> <p>Put to another use – printers as photocopies or fax machines</p> <p>Eliminate – eliminate speakers, colour screens, colour ink etc...</p> <p>Reverse – make computer desks as well as computers and printers, or computer chairs etc...</p>

	By using SCAMPER in this instance we have been able to identify possible new products. Many of the ideas may be unfeasible or may not suit the equipment used by the manufacturer, but some ideas could be good starting points for discussion of new products.
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>MEDIUM:</b>
<b>Reference</b>	M. Michalko, <i>Thinkpack</i> , 1994
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>METAPLAN INFORMATION MARKET</b>
<b>Category of application</b>	Idea generation
<b>Field of application</b>	New product development, new service development
<b>Description</b>	<p>The Metaplan method, developed by a German consultancy firm uses a number of 'communication tools'. Groups are set up to focus on a problem and its possible solutions. Opinions are developed, a common understanding is essential and a formulation of objectives, recommendations and actions plans is the goal.</p> <p>Specially trained 'facilitators' administer the groups, ensuring good communication; cooperation and high levels of understanding are achieved. His objective is to provide the group with the right sort of communication tools at the right moment so that the group is able to get to the bottom of the crucial matter with greater success and efficiency.</p> <p>'Communication tools' are:</p> <ul style="list-style-type: none"> <li>• Basic physical items (standard oval, cloud-shaped and rectangular cards of various colours</li> <li>• Felt tipped pens</li> <li>• Display boards, etc.</li> <li>• A series of standard presentation get-togethers</li> <li>• Rules that produce clear and legible display</li> <li>• Rules that provide effective communication, voting, etc. in groups.</li> </ul> <p>These tools allow the 'facilitator' to administer effective, co-operation within group discussions where key issues are recorded and displayed and the participants can put forward their ideas.</p> <p>This method is also useful for large-scale meetings or 'information markets'. One possible arrangement:</p>

	<p>Organise a fairground-like set of, perhaps, 20 booths around a very large hall, each booth representing a predetermined theme or critical question and staffed by 2-3 trained 'facilitators'. Participants can choose which booths interest them most, and can move between them, joining in the discussions at each booth, and recording their votes at predetermined stages. (Business Week 1976).</p> <p>The recognition of themes and the supervision of expectations for a major 'market' necessitate several months of prior planning, initial meetings and an attempt at decision-making. Vigorous follow-up is imperative to ensure the process does not experience a lack of expectation from the participants.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>HIGH:</b>
<b>Reference</b>	<a href="http://www.metaplan.com/">http://www.metaplan.com/</a>
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Creativity template</b>
<b>Category of application</b>	Idea generation
<b>Field of application</b>	New product development, new service development, advertising
<b>Description</b>	<p>The creativity template technique challenges one of the basic tenet of marketing theory, which believes that customers represent the most valuable source for creating new ideas. The authors argue that creative thinking should be based on intrinsic sources. What is more, they argue that companies should listen the voice of their products instead of listening the voice of their customer. Products evolve in response to environmental pressures taking the form of market needs and desires. In a process resembling the survival of the fittest, products that fail to fulfill these needs and desires disappear, while products that satisfy them survive until the next change takes place. Therefore creativity template provides a tool for looking for information about a new product independent of the current market place. Information inherent in the product reflects market needs. Over time a product becomes a physical representation of the changing market needs. Creativity templates inherently carry important codes for the evaluation of successful new products and could be exploited to generate a competitive advantage based on minimal market information.</p> <p>In their research authors identified four innovation patterns that frequently occur at successful new product/service development. At this point it has to be mentioned that in HBR article authors refer to five patterns. The basic idea is that templates of creative thinking taken from the past may be used for accelerating thinking about new ideas in the present.</p> <p>Another basic principle of Creativity template is a Function Follows Form</p>

	<p>phenomenon. It is deemed that human beings are more likely successful in manipulating with the product and then deducing the potential values and benefits for the customers, than in finding a solution for specified function.</p> <p>The four identified patterns are:</p> <p>Displacement template;</p> <p>This template suggests to improve the product or service by removing the core components or attributes. There are many successful product such as diet coke, de-caff and walk man that prove the existence of this template.</p> <p>Replacement template;</p> <p>Having removed a core element of the product, developers tend to replace it with something else. To avoid drifting too far from the task at hand, they should first look for the replacement from the product environment. The closer the resource to the product is the more creative is the solution. For example, a maker of children's product, applying the replacement template, might visualize a kitchen high chair without legs. The aim would be to replace legs with something from immediate environment. This might be a table to which the chair can be attached.</p> <p>Attribute dependency template;</p> <p>This pattern in innovation involves the dependent relationships that exist between attributes of a product or service and attributes of its environment. The idea is to spur innovative thinking by trying to create new dependencies where they do not already exist and to modify or dissolve dependencies where they do. Domino Pizza case represents the innovative service, that can be explained by attribute dependency template. Its success derives from reducing price if delivery price is over half an hour. Innovative element lies in the fact the price of pizza is no longer constant, but depends on delivery time.</p> <p>The component control template;</p> <p>This template is based on the identification of negative connection between an external component and the product configuration. This connection is solved by establishment of a new link between the external and internal component. This template usually ask for some additional R&amp;D work.</p>
<b>Suggestions</b>	<ul style="list-style-type: none"> <li>• It is oriented on finding a right solution and not just a large number of potential solutions.</li> <li>• It can be used by individuals as well as in the group context.</li> <li>• The technique is not based on a random search for new ideas.</li> </ul>
<b>Level of complexity</b>	<p><b>HIGH:</b></p> <ul style="list-style-type: none"> <li>• Structured approach asks for a certain familiarity with the technique.</li> <li>• In comparison with simple technique such as brainstorming it is more difficult to use and asks for more detailed training.</li> <li>• The technique is sometimes more powerful for ex-post explanation of successful ideation than as a tool for creative</li> </ul>

	thinking.
<b>Reference</b>	<p>Goldenberg J. and Mazursky, D. (2002), Creativity in Product Innovation, Cambridge University Press.</p> <p>Goldenberg, J., Mazursky, D., Solomon, S. (1999), Creativity templates: towards identifying the fundamental schemes of quality advertisements, Marketing Science, 18, 333-351.</p> <p>Goldenberg, J., Mazursky, D., Solomon, S. (1999), Creative sparks, Science, 285(5433), 1495-1496.</p>
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Mind Map</b>
<b>Category of application</b>	Idea generation
<b>Field of application</b>	Business processes in general.
<b>Description</b>	<p>A Mind Map is a powerful graphic technique which provides a universal key to unlock the potential of the brain. It harnesses the full range of cortical skills – word, image, number, logic, rhythm, colour and spatial awareness – in a single, uniquely powerful manner. In so doing, it gives you the freedom to roam the infinite expanses of your brain. Mind Maps can be applied to every aspect of life where improved learning and clearer thinking will enhance human performance. Developed by English psychologist Tony Buzan in 1960, Mind Maps were first presented as a new method for note-taking and brainstorming. By using Mind Maps you show the structure of the subject and linkages between points, as well as the raw facts contained in normal notes. Mind Maps hold information in a format that your mind will find easy to remember and quick to review. In fact, they abandon the list format of conventional note taking, doing this in favor of a two-dimensional structure. A good Mind Map shows the 'shape' of the subject, the relative importance of individual points and the way in which one fact relates to other. Mind Maps are more compact than conventional notes, often taking up one side of paper. This helps you to make associations easily. If you find out more information after you have drawn the main Mind Map, then you can easily integrate it with little disruption. This technique was proposed to the scientific community as a tool for representing knowledge, using both logic and creativity. Buzan's studies started from two fundamental assumptions:</p> <p>Human mind can associate concepts and information in a non-linear way: the linear paradigm, which considers a logical path between the starting point and the conclusions, prevents the possibility to create effective associations. To this paradigm Mind Maps opposes a dynamic structure with a centre but without an end.</p> <p>The brain is composed by two different functional parts: left part of the brain processes information in a linear, logical, analytical, rational way. It could be stimulated by textual or verbal representation. On the contrary, right part of the brain works in non-linear, holistic, intuitive, non-verbal way. It is stimulated by hierarchical representations, symbols and images. Mind mapping approach is a technique that aims to balance both these</p>

	<p>two aspects of human's nature: rationality and feeling. Indeed, unlike a computer, human brain works not only in linear way but also in associative manner. In fact, on one hand we are able to make comparisons, to integrate or to synthesize information. On the other hand, associations are fundamental in nearly all our mental functions. Indeed every word and each idea relates to a lot of other concepts. It seems as all collected information are subsequently organized in an interconnected net. In this sense, Mind Maps are a tool for keeping note about ideas linkages, helping individuals to generate new ideas thanks to associative thinking. Mind Maps are also very quick to review, as it is easy to refresh information in your mind just by glancing at one. They can also be effective mnemonics. Remembering the shape and structure of a Mind Map can provide the cues necessary to remember the information within it. They engage much more of the brain in the process of assimilating and connecting facts than conventional notes.</p> <p><b>Building a mind map</b></p> <p>A mind map is composed by two elements: concepts and relations between them. As Buzan says (1989):</p> <p>"... a mind map starts from a word (or principal idea); this central word is associated with 5-10 other principal ideas, related with this first one. Again, each of these words is associated to other 5-10 principal words related with every one of these terms, and so on."</p> <p>Therefore a mind map is a diagram in which concepts are graphically represented according to a radial structure. A complete Mind Map may have main topic lines radiating in all directions from the center. Sub-topics and facts will branch off these, like branches and twigs from the trunk of a tree. You do not need to worry about the structure produced, as this will evolve of its own accord. The map provides an effective overall vision which helps individuals to process thoughts and ideas, starting from pre-existent elements.</p> <p>As affirmed by Buzan (1989), radial structure has many positive aspects:</p> <ul style="list-style-type: none"> <li>• the main idea is immediately perceived;</li> <li>• the significance of each idea is clearly understood, because more important ones are located near the core concept while the less important ideas are far from it;</li> <li>• the nature of the structure allows the mind to create new linkages.</li> </ul> <p>Thanks to the great quantity of possible associations, mind mapping approach is a very creative process and provides the opportunity to generate new ideas and associations previously unexpected. Moreover, a linear presentation such as a list neutralizes creativity because of its static structure pervaded with a "beginning" and an "end". The latter inhibits the brain from making new associations while, on the contrary, the dynamic structure of a mind map supports better idea generation process. At this point, it is clear that the most important characteristics of the mind mapping approach are the emphasis on:</p> <ul style="list-style-type: none"> <li>• hierarchical-associative informational structure;</li> <li>• large use of perceptive elements as colours and images, which stimulate the creativity of the map-maker and the curiosity of the reader.</li> </ul> <p>In this sense it is possible to affirm that Mind Maps help individuals to organize their ideas, to find key-words, to develop associations between different ideas and the relationship between similar ideas. They stimulate their visual memory using colours, symbols, icons, arrows, text highlights.</p> <p><b>Effectiveness of a Mind Map</b></p> <p>The effectiveness of a mind map depends mostly on the quality of graphic representation. Therefore elements of the map should be</p>
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	<p>opportunely chosen. Indeed each element should evoke new ideas or new concepts to link up. For this reason, it is important to use some clever devices, as for example to:</p> <ul style="list-style-type: none"> <li>• use single words or simple phrases for information.</li> </ul> <p>Most words in normal writing are padding, as they ensure that facts are conveyed in the correct context, and in a format that is pleasant to read. Single strong words and meaningful phrases can convey the same meaning more potently. Excess words just clutter the Mind Map.</p> <ul style="list-style-type: none"> <li>• start with a painted image put in the centre of the sheet. This image represents the main concept of the scheme;</li> <li>• use key-words in each branch, while the branch's dimension should be proportioned to the context's significance;</li> <li>• use evocative images to have more impact on the reader;</li> <li>• put different concepts on different branches in order to allow future changes on the map;</li> <li>• use colours to separate different ideas in order to be able to distinguish them;</li> <li>• use colours for branches and terms, because this colours stimulate creativity and memorization;</li> <li>• use cross-linkage. Information in one part of the Mind Map may relate to another part. Here it is possible to draw in lines to show the cross-linkages. This helps to see how one part of the subject affects another.</li> </ul> <p>According to this simple rules everyone will be able to:</p> <ul style="list-style-type: none"> <li>• let the ideas spring out freely and quickly;</li> <li>• produce maps that are closer with his/her own way of thinking.</li> </ul> <p>Reading a Mind Map</p> <p>The power of a mind map refers to its possibility to combine information using different expressive tools, as graphics, colours, icons and so on. Mind maps uses hierarchical-associative structure that allows the author to insert and classify data, but also to visualize the links between them. In particular, it is possible to represent generalization/particularization processes applied to concepts, activities data etc.</p> <p>There are different ways to interpret a mind map, according to five main reading keys:</p> <ul style="list-style-type: none"> <li>• from centre to periphery, the map gives information with growing detail;</li> <li>• from periphery to centre, the map gives information with growing generalization;</li> <li>• in a single part of it, the map allows to focus on a particular content;</li> <li>• as a whole, the map gives an overall point of view of the related topic;</li> <li>• in the associative links, the map allows readers to find out relations not previously related to any hierarchical linkage.</li> </ul>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>LOW:</b> The technique does not need specific requirements.
<b>Reference</b>	<p>Osborn, A.F. (1963) Applied imagination: Principles and procedures of creative problem solving (Third Revised Edition). New York, NY: Charles Scribner's Sons.</p> <p>Buzan T. Use Your Head, BBC Consumer Publishing, London,1989.</p> <p>Buzan T., Use Both Sides of your Brain, Plume, 1989.</p> <p>Buzan T., The Mind Map Book – How to Use Radiant Thinking to Maximize Your Brain's Untapped Potential, Plume, 2003.</p> <p>Jaoui H., Creativity: How to Use It, Paris, ESF éditeur-Enterprise Moderne d'Edition et Libraires Techniques, 1990.</p>

	Original title: Jaoui H., La créativité mode d'emploi, Paris, ESF éditeur- Entreprise Moderne d'Édition et Libraires Techniques, 1990.
<b>Available training material</b>	<a href="http://www.creatin.project.com/">www.creatin.project.com/</a> material

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Provocation and movment</b>
<b>Category of application</b>	Idea generation
<b>Field of application</b>	Business development, Product development, Service development
<b>Description</b>	<p>“Provocation and Movement” is an important lateral thinking technique. It works by moving your thinking out of the established patterns that you use to solve problems.</p> <p>We think by recognizing patterns and reacting to them. These reactions come from our past experiences and logical extensions to those experiences. Often we do not think outside these patterns. While we may know the answer as part of a different type of problem, the structure of our brains makes it difficult for us to link this in.</p> <p>“Provocation and Movement” is one of the tools we use to make links between these patterns.</p> <p>We use it by making deliberately stupid or unusual statements (Provocations), in which something we take for granted about the situation is not true. Statements need to be stupid to shock our minds out of existing ways of thinking. Once we have made a provocative statement, we then suspend judgment and use that statement to generate ideas. This is the Movement part of the technique. Provocations give us original starting points for creative thinking (Movement).</p> <p>As an example, we could make a statement that 'Houses should not have roofs'. Normally this would not be a good idea! However this leads one to think of houses with opening roofs, or houses with glass roofs. These would allow you to explore positive and useful sides of the basic concept that has been challenged by the provocation. E.g. in houses with opening roofs you could lie in bed and look up at the stars.</p> <p>Once you have made the Provocation, you can continue to the Movement phase using the provocation in a number of different ways, by examining:</p> <ul style="list-style-type: none"> <li>• The consequences of the statement</li> <li>• What the benefits would be</li> <li>• What special circumstances would make it a sensible solution</li> <li>• The principles needed to support it and make it work</li> <li>• How it would work moment-to-moment</li> <li>• What would happen if a sequence of events was changed</li> </ul>

	<ul style="list-style-type: none"> <li>• Etc.</li> </ul> <p>You can use this list as a checklist.</p> <p>Edward de Bono has developed and popularized use of Provocation and Movement by using the word 'Po'. 'Po' stands for 'Provocative operation'. As well as laying out how to use Provocation effectively, he suggests that when we make a Provocative statement in public, then we label it as such with 'Po' (e.g. 'Po: the earth is flat'). This does rely on all members of your audience knowing about Provocation!</p> <p>As with other lateral thinking techniques, Provocation and Movement does not always produce good or relevant ideas. Often, though, it does. Ideas generated using Provocation and Movement are likely to be fresh and original</p> <p>Example:</p> <p>The owner of a video-hire shop is looking at new ideas for business to compete with the Internet. She starts with the provocation 'Customers should not pay to borrow videos'.</p> <p>She then examines the provocation:</p> <ul style="list-style-type: none"> <li>• Consequences: The shop would get no rental revenue and therefore would need alternative sources of cash. It would be cheaper to borrow the video from the shop than to download the film or order it from a catalogue.</li> <li>• Benefits: Many more people would come to borrow videos. More people would pass through the shop. The shop would spoil the market for other video shops in the area.</li> <li>• Circumstances: The shop would need other revenue. Perhaps the owner could sell advertising in the shop, or sell popcorn, sweets, bottles of wine or pizzas to people borrowing films. This would make her shop a one-stop 'Night at home' shop. Perhaps it would only lend videos to people who had absorbed a 30-second commercial, or completed a market research questionnaire.</li> </ul> <p>After using the Provocation, the owner of the video shop decides to run an experiment for several months. She will allow customers to borrow the top ten videos free (but naturally will fine them for late returns). She puts the videos at the back of the shop. In front of them she places displays of bottles of wine, soft drinks, popcorn and sweets so that customers have to walk past them to get to the videos. Next to the film return counter she sells merchandise from the top ten films being hired.</p> <p>If the approach is a success she will open a pizza stand inside the shop.</p>
<b>Suggestions</b>	When using the technique all members of the group/audience should know about how the Provocation is supposed to work and accept it! It might be difficult to give up on established thinking patterns.
<b>Level of complexity</b>	<b>LOW:</b> The technique requires the users to be open to dialog and willing to share information. The technique works best in cohesive groups that know each other.
<b>Reference</b>	De Bono; <i>Serious Creativity Using the Power Lateral thinking to Create New Ideas</i> , The McQuaig Group, 1992
<b>Available training material</b>	



## C. Idea Selection

1. Anonymous voting
2. Sticking Dots
3. Consensus Mapping
4. Angel's advocate
5. Random selection
6. NAF

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Anonymous voting</b>
<b>Category of application</b>	Idea selection
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>The reason for using anonymity in a creativity method is to encourage participants to feel safe enough to take creative risks. It is useful for groups that have significant pressures or anxieties between participants. It is a basic feature of all nominal group methods and is an excellent way of protecting people against accidental or unintentional inter-personal pressures, in climates where there is basic goodwill towards differences of viewpoint, and a commitment to respecting them.</p> <p>Methods such as Anonymous Voting cannot offer a particularly robust form of anonymity, and in climates where there is a serious risk of 'bullying' or significant levels of paranoid anxiety, this method could lead naive participants to exposing themselves to unacceptable risks, particularly when they return to the 'outside world'. Facilitators need to be clear that the levels of risk they are asking participants to take are realistic. (There are software systems such as "Group Works" which offer much better anonymity.)</p> <p>The method assumes that you start with a publicly visible list of perhaps 30-100 serially numbered ideas from some idea generation process.</p> <ol style="list-style-type: none"> <li>1. The leader indicates the length of short-list each member is to produce (usually ca. 5-9 items – 10-15% of the number of ideas on the list), and the ranking convention (e.g. 'A' is most preferred, followed by 'B', 'C', etc.).</li> <li>2. Members privately select their own short-list of ideas. They write each idea they select on a card with its serial list number.</li> <li>3. They decide how they want to order the ideas on their short list, and write the appropriate rank letter ('A', 'B', 'C', ... etc.) on each card.</li> <li>4. The cards are handed in face down to the leader, who gathers</li> </ol>

	<p>everybody's cards, shuffles them, and tallies the votes on a flip-chart by idea number. In this way, the vote remains anonymous.</p> <p>5. Notice that using numbers for serial list position and letters for rank order avoids the risk of confusing a list position with a rank, as might happen if numbers were used for the rank. If you prefer to use numbers for the rank order, you could avoid confusion by using different number ranges. For instance, if you use 1-9 for ranks and start your serial numbering from 10, there can be no confusion.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>LOW</b>
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Sticking Dots</b>
<b>Category of application</b>	Idea selection
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>A popular, quick method for determining priorities by voting.</p> <ul style="list-style-type: none"> <li>• Ideas are itemised clearly on a flip chart (or similar aid).</li> <li>• Nameless voting tends to work best.</li> <li>• Give each group a different coloured set of dots, i.e. group A have red dots.</li> <li>• Give each individual or group a number of dots (say 10 each)</li> <li>• Allow the group time to deliberate over the ideas they wish to vote for.</li> <li>• Once all the groups are ready, one person from the group sticks their dots by their preferred top ideas.</li> <li>• In some variations, there is no maximum number of votes an individual / group can give to one idea.</li> <li>• Once all the dots are placed, all the groups enter into a discussion on any patterns, and general observations.</li> <li>• A short-list of the top 5 is made</li> </ul> <p>This is not a deeply analytic method, but a short, sharp measure of the current thinking of the task in hand</p>
<b>Suggestions</b>	

<b>Level of complexity</b>	<b>Low:</b> it's a useful method for a small group of individuals to employ.
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Consensus Mapping</b>
<b>Category of application</b>	Idea Selection
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>The consensus mapping technique (Hart et al., 1985) helps a facilitator and group reach consensus about how best to arrange a network of up to maybe 20 – 30 activities that have to be sequenced over time into a useable plan of action (e.g. outlining a 10-year network of sequentially linked activities to deal with a complex environmental pollution issue). These will usually be activities that could be done in a range of orders – i.e. the order has to be approved – it is not given by the internal logic of the activities themselves.</p> <p>The technique has parallels to many of the usual project planning methods (and could if necessary feed into them) but operates at a purely qualitative, outline, level.</p> <p>It merges elements of standard clustering techniques such as KJ-method and Snowball Technique with elements of sequential mapping Causal Mapping incorporated into a wider consensus-seeking procedure that has associates with Eden's SODA method. Here is the suggested procedure:</p> <ol style="list-style-type: none"> <li>1. Present the ideas: Devise a master list, via any suitable means, detailing all the ideas to be used in the single coherent action plan required, e.g. brainstorm the activities needed to implement some idea or project. Everyone copies the master list onto Post-its, or equivalent, one idea per slip.</li> <li>2. Form groups: The facilitator form 2 – 4 task groups, each of 5 – 9 individuals in each.</li> <li>3. Private clustering: Individuals in groups makes their own private attempt to group the ideas into related clusters or categories.</li> <li>4. Sharing in triads: Join together in pairs or triads within each task group to describe one another's clusters.</li> <li>5. Group clustering: Individual task groups combine to try merging their private clustering into a shared clustering they can all accept.</li> <li>6. Group review: following group clustering, clarification of the original ideas, and re-evaluation of them takes place.</li> <li>7. Facilitators create and present a 'Strawman' integrated map: each</li> </ol>

	<p>task group delivers their group clusters to the facilitator they then take a break. During the break, staff members consolidate the group cluster maps into a single overall cluster map, containing all the ideas, categories, and relationships generated by the groups. This 'Strawman map' is presented to the group as a whole when they come back together.</p> <p>8. Map reconfiguration: The whole group splits itself again into the respective task groups, and each one uses the 'Strawman Map' for motivation and stimuli for developing its own map in which cluster of activities are linked sequentially. Links made of ribbon or yarns are better than pen lines at this stage, because they can be changed.</p> <p>9. Plenary presentation: Each task group exhibits its map of sequentially linked clusters to the others.</p> <p>10. Map consolidation: Representatives from each task group meet to construct a single final map that combines the features of all the maps.</p> <p>The complete procedure works best with a trained group, but the mapping element could easily be adapted to informal solo use.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Medium</b>
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Angel's advocate</b>
<b>Category of application</b>	Idea selection
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>The author subdivides the selection of new ideas into two steps:</p> <ul style="list-style-type: none"> <li>• Divergent step: here is where the Angel's Advocate technique is used in order not to exclude the idea "a priori".</li> <li>• Convergent step: then it is necessary to go on with the evaluation with some different criteria. The author suggests a score system method.</li> </ul> <p>The author claims that new ideas selection and evaluation are very different because there are difficulties in understanding it completely, in depth and in its different dimensions, and this leads to the necessity of the above-mentioned division.</p> <p>The Angel's Advocate technique analyses the new idea considering it from</p>

	<p>a different view.</p> <p>This technique consists of three steps:</p> <ol style="list-style-type: none"> <li>1. idea reformulation, in order to verify its comprehension and to show respect to the proponent;</li> <li>2. indication of positive relation through the formula "What I like of your idea is...". Here is better to not give a hasty judgement like this: "I like your idea because...";</li> <li>3. ask questions about unclear aspects in order to understand better the idea and also to help the proponent describe it in depth.</li> </ol> <p>Example:</p> <p>«Let's suppose a friend comes to me and submits his idea about free workshops on creativity for people looking for a job. This idea would be useful for Gimca notoriety and image. [Gimca is a group of 3 consultant firms that work in Europe and other continents; Jaoui is the president and some of their customers are important firms and public administrations]. My first reaction would be to shrug my shoulders and tell him I have other fish to fry. But I decide I am the Angel's Advocate and start saying to my friend: "If I understand correctly, you are suggesting to give all the unemployed free courses on creativity". He replies: "I didn't say 'unemployed', I just said 'people looking for a job'. There is a subtle difference. On the other hand you are right to point it out: I wasn't suggesting to offer free seminars all over France, but to do a few of them around Paris".</p> <p>Then I say: "OK. What I like about your idea is that:</p> <ul style="list-style-type: none"> <li>• you believe in the good qualities of creativity;</li> <li>• our techniques would be really useful, both for people looking for a job and for people in charge of finding jobs for the others;</li> <li>• you call upon my own generosity.. without forgetting my economic responsibilities as a president of a company...</li> <li>• our notoriety would be spread wide and far for sure".</li> </ul> <p>I go on with a series of questions:</p> <ul style="list-style-type: none"> <li>• "Do you know someone who could organize such seminars?"</li> <li>• "Have you got any idea about the programme, the methods, the place?"</li> <li>• "How do you think we may advertise this initiative without seeming demagogical or disappointing?"</li> <li>• "Which papers or organizations may support us?"</li> <li>• "Did you think about other ways to help the unemployed?"</li> <li>• "Any other idea about promoting creativity and public relations in Gimca?"</li> </ul> <p>After each question, of course, I give my friend some time to answer and I listen carefully to what he says, avoiding usual "Yes, but...".</p>
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	At the end of the discussion, even if I decide not to support my friend's proposal, he wouldn't be discouraged from coming to me again and submit some other idea, while at the same time I would have gained something useful from this dialogue anyway. When coming to important matters, leaving some 'pregnancy' time between divergent and convergent steps is recommended: familiarization with new ideas is definitely favourable to the objectivity of their evaluation».
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Medium:</b> Angel's Advocate has to be supported by another evaluation technique; the use of Angel's Advocate alone does not give a complete evaluation of ideas.
<b>Reference</b>	Jaoui H., <i>Créatifs au quotidien. Outils et méthodes</i> , Paris, Editions «Hommes et Perspectives», 1991
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Random selection</b>
<b>Category of application</b>	Idea selection
<b>Field of application</b>	New products, new services.
<b>Description</b>	Referring to the evaluation phase, Robert I. Sutton (2002) states that companies will need to rely more and more on casual processes to generate new opportunities, since forecasts are less and less precise - given a changing competitive climate – and companies must therefore focus on one precise idea. In this uncertain climate, idea and opportunity selection can be therefore conducted through Random Selection; according to the author, it is the best technique to allow the even most recent suggestions to be successful. Indeed, these hints are always risking being put down too early; this risk is triggered by the hesitation in uncertain situations, which is generated by the fear to fail, especially when a company is confronted to its past success and settled practices.
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Low</b>
<b>Reference</b>	Sutton R.I., <i>Weird Ideas that Work. 111/2 Practices for Promoting, Managing, and Sustaining Innovation</i> , New York, The Free Press, 2002
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>NAF</b>

<b>Category of application</b>	Idea selection
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>NAF (New, Appeal, Feasibility) is a simple way of scoring / assessing beginning ideas following brainstorming and potential solutions to a problem after they have been explored and developed. Give a score out of 10 for each of the three items, New, Appeal, Feasibility. It is not scientific. It is gut feel which, in the context of creativity is important.</p> <p>When the creators of the technique originally developed these NAF ratings it was to try and understand the probability of the person who had responsibility for implementing the idea of taking action. They called it clientship, which revolved around your "power to act". The amount of Novelty was not as important as how new the idea was to him/her. It did not even have to be novel. The key point was it something the problem owner had never thought of. Appeal is a gut level reaction more emotional than attractiveness which always seems to me to be more of a cerebral consideration.</p> <p>The reason for these NAF ratings was to identify the probability of implementation because if something is not very new, not very appealing, but very feasible the probability of implementation is very low. Where as if something is very new (to the problem owner), has a lot of appeal and low feasibility it is worth further exploration to see if more feasibility can be invented.</p> <p>After developing a range of ideas through brainstorming, it is important for the problem owner to choose something that is very new, very appealing and not to worry about feasibility. Low feasibility means there is further opportunity for invention, build in feasibility by developing ideas to overcome the shortfalls..</p> <p>NAF was developed because their creators found that while suspending judgement worked to help generate ideas, the problem was in the "either or thinking" that people would use to select promising ideas for further exploration. They found most often they would slip into "that is a good idea and that is not". This mental attitude got in the way of idea development and removed the possibility of getting a seed of an idea and developing it to something more useful.</p> <p>When NAF ratings are used with a group, when what seems to be a satisfactory solution is reached, they can be used to quickly identify different participants' opinion about a specific outcome. For example, if somebody finds an answer very feasible and another does not, we will have identified a further issue that needs to be resolved. This is of particular importance if you need commitment to a solution in order to get real implementation.</p> <p>Newness: (to the problem holder) How new is the idea to you. It may not be new to the world, you may just not have thought of it.</p> <p>Appeal: How much do you like it at a gut level. This has to be high. If it is not, it means you do not really like the idea, for what ever reason. However, if it has 50/50 sort of appeal it is worth exploring because some of the things you do not like about may be possible to deal with or change and thereby increase your level of interest in the idea</p>

	<p>Feasibility: How feasibly is it to put this into practice? on a scale of 1-10 it has to be 80% plus in order to be worthwhile trying. If it is 80% it means that while the idea is not perfect you can see how to do it and the problems, the remaining 20% are to do with implementation. Things like getting others involved, agreement, funding, time, etc. If it is less than 50% feasible, but you like it and it has high newness, then it is worth being specific about what it is that bothers you about it and turn those into new wishes or problem definitions in order to build in more feasibility.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>MEDIUM</b>
<b>Reference</b>	Reference: Syntectics Creative Problem Solving, skills, process and techniques, Practice Of Creativity by George Prince. Founder Syntectics Inc.
<b>Available training material</b>	

**D. Idea Implementation and Processes**

1. **Implementation Checklist**
2. **Productive Thinking Model**
3. **Smart goals**
4. **Set of questions to evaluate the strategic planning**
5. **SCAMPER**
6. **Criteria list**
7. **Scenario Building**

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Implementation Checklist</b>
<b>Category of application</b>	Idea Implementation and Processes
<b>Field of application</b>	New products, new services.
<b>Description</b>	Resources are the resources (time, personnel, equipment, money, information) sufficient for executing this idea? Motivation, are there others with equal motivation and commitment required for successful implementation? Resistance, is the idea likely to come across any 'closed thinking' and/or resistance to change in general? Procedures, are there any procedural complications to get over Structures, are there any structural obstacles to surmount (e.g. bad communication channels)? Policies, What official/unofficial policies need to be overcome? Risk, will risk taking be tolerated by those responsible for implementation and if so to what level? Power, do any power struggles exist relating to the idea that might obstruct implementation? Clashes, are there any clashes of personalities that may hinder advancement in the implementation? Climate, is the organisational environment one of teamwork and co-operation or suspicion and distrust?
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Low</b>
<b>Reference</b>	VanGundy, A. B., Jr. (1988), <i>Techniques of structured problem solving</i> , New York: Van Nostrand Reinhold Co.
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Productive Thinking Model</b>
<b>Category of application</b>	Idea Implementation and Processes
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>Productive Thinking Model has six steps. They are:</p> <p>Step 1: "What's Going On?"</p> <p>Establishes a context for the problems or opportunities being addressed, exploring different ways of stating the so-called "itch", exploring what factors, circumstances, and entities are involved, and what a solution might look like.</p> <p>There are actually five sub-steps to this phase:</p> <ul style="list-style-type: none"> <li>• "What's the Itch?", generating a long list of perceived problems or opportunities, often re-stating similar ones in several different ways, and then looking for patterns and clusters with the mass in order to select one key "problem" to address</li> <li>• "What's the Impact?", digging deeper into the issue and identifying how it affects the world</li> <li>• "What's the Information?", describing various aspects of the problem in detail</li> <li>• "Who's Involved?", identifying other stakeholders in the issue</li> <li>• "What's the Vision?", identifying what would be different if the issue were resolved, in the form of a "wish" statement (e.g., "If only my dog didn't run away when I let him outside.")</li> </ul> <p>Step 2: "What's Success?"</p> <p>The second step establishes a vision for a future with the problem solved or the opportunity exploited. In this stage often active imagination is used to imagine, explore, and describe how things would be if the issue were resolved. This vision then informs a process of creating a clearly articulated view of the future, using a tool called "DRIVE", short for:</p> <ul style="list-style-type: none"> <li>• Do - what do you want the solution to do?</li> <li>• Restrictions - what must the solution NOT do?</li> <li>• Investment - what resources can be invested?</li> <li>• Values - what values must you live by? (e.g. environmentally friendly, etc.)</li> <li>• Essential outcomes - what are the essential outcomes?</li> </ul> <p>Step 3: "What's the Question?"</p>

	<p>The third step frames the challenge by turning it into a question. This is accomplished through brainstorm-like techniques eliciting as many questions as possible, and then clustering, combining, and choosing the question or questions that seem most stimulating.</p> <p>Step 4: "Generate Answers"</p> <p>Through the use of brainstorming and other idea-generating techniques, the fourth step is designed to create a long list of possible solutions problem question. One of those solutions (or several, combined) is selected for further development.</p> <p>Step 5: "Forge the Solution"</p> <p>Uses a specific tool called "POWER" to develop the selected solution into something more robust. POWER is short for:</p> <ul style="list-style-type: none"> <li>• Positives - what's good about the idea?</li> <li>• Objections - what's bad about it?</li> <li>• What else? - what does it remind you of?</li> <li>• Enhancements - how can what's good about it be made better?</li> <li>• Remedies - how can the things that are bad about it be corrected?</li> </ul> <p>Step 6: "Align Resources"</p> <p>The final step translates the selected, developed solution into an action plan that may include, among other things:</p> <ul style="list-style-type: none"> <li>• to do lists</li> <li>• timelines and milestones</li> <li>• lists of people who need to get involved</li> <li>• lists of issues that need further work</li> </ul>
<b>Suggestions</b>	
<b>Level of complexity</b>	Low
<b>Reference</b>	Hurson, Tim (2007). <i>Think Better: An Innovator's Guide to Productive Thinking</i> . New York, New York
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	Smart goals
<b>Category of application</b>	Idea Implementation and Processes

<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>Once you have planned your project, turn your attention to developing several goals that will enable you to be successful. Goals should be SMART - specific, measurable, agreed upon, realistic and time-based.</p> <p>A goal might be to hold a weekly project meeting with the key members of your team or to organise and run a continuous test programme throughout the project.</p> <p>The acronym SMART has a number of slightly different variations, which can be used to provide a more comprehensive definition for goal setting:</p> <p>S - specific, significant, stretching</p> <p>M - measurable, meaningful, motivational</p> <p>A - agreed upon, attainable, achievable, acceptable, action-oriented</p> <p>R - realistic, relevant, reasonable, rewarding, results-oriented</p> <p>T - time-based, timely, tangible, trackable</p> <p>This provides a broader definition that will help you to be successful in both your business and personal life.</p> <p>When you next run a project take a moment to consider whether your goals are SMART goals.</p> <p>Specific</p> <ul style="list-style-type: none"> <li>• Well defined</li> <li>• Clear to anyone that has a basic knowledge of the project</li> </ul> <p>Measurable</p> <ul style="list-style-type: none"> <li>• Know if the goal is obtainable and how far away completion is</li> <li>• Know when it has been achieved</li> </ul> <p>Agreed Upon</p> <ul style="list-style-type: none"> <li>• Agreement with all the stakeholders what the goals should be</li> </ul> <p>Realistic</p> <ul style="list-style-type: none"> <li>• Within the availability of resources, knowledge and time</li> </ul> <p>Time Based</p> <ul style="list-style-type: none"> <li>• Enough time to achieve the goal</li> <li>• Not too much time, which can affect project performance</li> </ul>
<b>Suggestions</b>	
<b>Level of complexity</b>	Medium
<b>Reference</b>	

<b>Available training material</b>	
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<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Set of questions to evaluate the strategic planning</b>
<b>Category of application</b>	New products, new services.
<b>Field of application</b>	Idea Implementation and Processes
<b>Description</b>	<p>The two authors developed the following set of questions to assess the quality of the company strategic planning:</p> <ol style="list-style-type: none"> <li>1. are you satisfied with your strategic planning efforts?</li> <li>2. do you think that your strategic planning can generate a relevant number of ideas?</li> <li>3. did you miss any business chance and regretted them later?</li> <li>4. do you feel your strategic planning process has become too bureaucratic?</li> <li>5. are there two parallel processes in your organization, i.e. a "corporate" planning approach and a real planning process related to the operative business?</li> <li>6. has your annual planning process become daily routine? Do you just update your last year plan through the word processor?</li> <li>7. are your strategic plans more tactical than really strategic?</li> <li>8. do you tend to be more reactive than proactive when you face your major business challenges?</li> <li>9. are you satisfied with the quality of your strategic planning feedback?</li> <li>10. are your budget, allocation of capitals, compensation and inheritance plans regulated by your strategic plan?</li> <li>11. does your strategic planning process combine strategies with an accurate prediction about the future of a given company area?</li> </ol>
<b>Suggestions</b>	
<b>Level of complexity</b>	Low
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>SCAMPER</b>
<b>Category of application</b>	Idea generation - Idea Implementation and Processes

<b>Field of application</b>	SCAMPER is a tool used to find ways to improve an existing product and find ideas for a new one.
<b>Description</b>	<p>The SCAMPER technique, will assist you in thinking of changes you can make to an existing product to create a new one via a checklist, these can either be used directly or as starting points for lateral thinking.</p> <p>The changes SCAMPER stands for are:</p> <p>S - <b>Substitute</b> - components, materials, people</p> <p>C - <b>Combine</b> - mix, combine with other assemblies or services, integrate</p> <p>A - <b>Adapt</b> - alter, change function, use part of another element</p> <p>M - <b>Modify</b> - increase or reduce in scale, change shape, modify attributes (e.g. colour)</p> <p>P - <b>Put</b> to another use</p> <p>E - <b>Eliminate</b> - remove elements, simplify, reduce to core functionality</p> <p>R - <b>Reverse</b> - turn inside out or upside down.</p> <p>Example</p> <p>For instance, imagine that you are a producer of computers and printers, and you are looking for new products. SCAMPER would give you:</p> <p>Substitute – use of high tech materials for specific markets – use high-speed components?</p> <p>Combine – integrate computer and printer, printer and scanner</p> <p>Adapt – put high quality ink in printer, use high quality paper</p> <p>Modify – produce different shape, size and design of printer and computer</p> <p>Put to another use – printers as photocopies or fax machines</p> <p>Eliminate – eliminate speakers, colour screens, colour ink etc...</p> <p>Reverse – make computer desks as well as computers and printers, or computer chairs etc...</p> <p>By using SCAMPER in this instance we have been able to identify possible new products. Many of the ideas may be unfeasible or may not suit the equipment used by the manufacturer, but some ideas could be good starting points for discussion of new products.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>MEDIUM:</b>
<b>Reference</b>	M. Michalko, <i>Thinkpack</i> , 1994
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Criteria List</b>
<b>Category of application</b>	Idea Implementation and Processes
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>To facilitate the idea evaluation process, Osborn (1992) suggests to use a Criteria List.</p> <p>This list includes a set of questions, such as:</p> <ol style="list-style-type: none"> <li>1. Is it simple enough?</li> </ol>

	<ol style="list-style-type: none"> <li>2. Is it in accordance with human nature?</li> <li>3. Is it relevant?</li> <li>4. Is it practical?</li> <li>5. Will it improve production or quality?</li> <li>6. Will it help to make a more efficient use of workforce?</li> <li>7. Will it improve functioning, maintenance or building processes?</li> <li>8. Is it more advanced than existing tools or machines?</li> <li>9. Is it safer?</li> <li>10. Will it help to avoid waste? Will it help to use materials for a long time?</li> <li>11. Will it help to avoid unnecessary work?</li> <li>12. Will it cut costs?</li> <li>13. Will it improve existing methods?</li> <li>14. Will it improve working conditions?</li> </ol>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>Low</b>
<b>Reference</b>	
<b>Available training material</b>	

<b>MAP OF CREATIVITY TECHNIQUE</b>	
<b>Name of technique</b>	<b>Scenario Building</b>
<b>Category of application</b>	Idea Implementation and Processes
<b>Field of application</b>	New products, new services.
<b>Description</b>	<p>Scenarios are different quality models of “plausible futures”. They give a deeper understanding both of the potential environments in which a company might have to operate and of what a company might have to do today. On the basis of this information, you can make some predictions about the future and then you can apply them to possible future scenarios which are based upon the present time. Western companies often rely on single forecasts and market trend analysis. However, these are static predictions and do not provide any information about interactive cycles opportunities.</p> <p>On the contrary, Scenario Building helps you to identify a range of potential opportunities that can make company planning and decisions more flexible. If you are not able to formulate accurate forecasts about the future, you need to have a flexible approach to any possible situation.</p> <p>Scenarios address specific problems. To develop scenarios, follow these steps:</p> <ol style="list-style-type: none"> <li>1. State the specific decision that needs to be made.</li> <li>2. Identify the major environmental forces that impact on the decision.</li> </ol>

	<p>Example 1</p> <p>Suppose your company needs to decide how to invest R&amp;D funds in order to be positioned for opportunities that might emerge by the year 2020. The major environmental forces might include:</p> <ul style="list-style-type: none"> <li>- Social bonds;</li> <li>- Economic growth;</li> <li>- International trade access;</li> </ul> <p>3. Scenario building. Build scenarios based on the principal forces, by using the information available to you;</p> <p>4. Identify business opportunities within each scenario;</p> <p>5. Examine the opportunity links and synergies across the range of scenarios. This will help you to formulate a more realistic strategy for investment.</p> <p>This technique can be easily implemented and work group members are neither required to be experts in any specific matter, nor to cooperate too close. Scenario building can especially help you to foresee the technological developments of a given company area.</p>
<b>Suggestions</b>	
<b>Level of complexity</b>	<b>HIGH</b>
<b>Reference</b>	<p>Miller W.C., <i>The Creative Edge: Fostering Innovation Where You Work</i>, Reading, Mass., Addison-Wesley, 1987.</p> <p>Andriopoulos C., Lowe A., <i>Enhancing Organizational Creativity: the Process of Perpetual Challenging</i>, <i>Management Decision</i>, Vol. 38, n. 10, 2000, pp. 734-742.</p>
<b>Available training material</b>	