The Efficient Method for Creating Ideas: Innovators Marketplace as Role-Based Game

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Abstract
Innovation does not mean only creating the new product or services. It is necessary to work out the strategy to lead innovations. Innovators Market Game is a method for creating new ideas by combining existent ideas. In this study, we propose the new way of creating ideas; Role-based Innovators Market Game. In the game, players take part in the role selected from the real world. For example, journalists, government, doctors and so on. Players create the ideas based on their own roles through the communications with other players. Considering the relations among other roles, players think of ideas strategically. Generally, creating new ideas is highly hard work. By introducing the factor of game, players can create ideas efficiently. The strict rules, acting roles and communication make players more creative and imaginative. Players can discover and solve the practical problems, and improve their creative and imaginative skills through this activity.

Introduction
Methodologies of Chance Discovery (Ohsawa and McBurney 2003) have been solved the problems such as marketing and designing of new/rare products. Based on this, Innovators Market Game® (Ohsawa and Nishihara 2012) was designed for creating new innovative ideas. This method encourages players to create high-value ideas for the real market and to train their creativity. In this manner, IMG gives the solution for practical problems. The game board is the miniature of our society, and specialists from broad fields can take part in the game to discuss and make solutions. Innovators Market Game is expected to be, and introduced as the method of creating ideas that can propose strategies for changing the worldwide social systems (Ohsawa and Nishihara) (CRDS). In this paper we improves Innovators Market Game (IMG hereafter) in creating feasible ideas. The name of the method is Role-based IMG. Through this work, ideas can be embodied in the real actions in real business.

Relevant Study
Innovators Market Game (IMG)
IMG is one of the methods for creating new innovative ideas. A feature of IMG is that it has a mechanism for natural selection of ideas. That is, players criticize, contradict, or evaluate the ideas, which are created in the game, at each standpoint through the communication in the game. We may be able to discuss the difference of IMG and Innovation Game (Hohmann 2007) which existed before IMG. However, a remarkable difference is that IMG introduces a game board obtained by KeyGraph® (Ohsawa and McBurney) (Ohsawa, Benson, and Yachida 1998). KeyGraph visualizes the connections and relations of existent technologies, and these connections are printed on a large piece of paper. On the game board, the relations of the cards are visualized. Players have the cards, which various existent technologies are printed on, and imaginary (toy) money in the game. Players buy the cards with their toy money, and combine these cards based on the lines connecting potentially relevant ideas on the game board, to create new ideas. Others may buy the ideas with paying money or criticize/evaluate the ideas with giving comments orally. This is the basic rule. Innovators Market Game has no strict rule, therefore, players can change rules flexibly according to their needs or purposes.

KeyGraph®
KeyGraph (Ohsawa, Benson, and Yachida 1998) is the algorithm designed by Ohsawa in 1998. Properly formed data, such as a document – words constituting the sentences – are put in KeyGraph, and the strength among
these words or frequency of appearance are calculated. Among other network-based visualizations that came into fashion after around year 2000, the features of KeyGraph are (1) it can extract and visualize the keywords which is low (including even zero) frequency but important in the document with respect to clusters of frequent events, and (2) the tool of KeyGraph evolved for assisting chance-seeking users’ metacognition (Flavell 1979) by enabling to edit (move/cut/compare/etc) the graph. These features help players find the hidden relations among words. Players read the visualized network map, and create ideas for externalizing potential connections among observable events/words/items. In IMG, KeyGraph is used for aiding the generation of innovative ideas by referring the relations among keywords.

The Difference between Other Methods
There are many other methods for creating ideas such as brainstorming (Alex 1979) and KJ method (Kawakita 1967). Innovators Market Game is different from these ways because this method does not aim at inventing many ideas divergently. Moreover, the rule of IMG encourages players to say negative comments to ideas; on the other hand brainstorming restricts negative comments. Compared with KJ method, IMG is similar at the point of using cards. However, it is different in the point that IMG is based on the concept of Chance Discovery - players connect their various experiences and scenarios for future through data-based metacognition, communications and thoughts for creating the new scenarios or ideas to be sympathized by other members.

The Rules of Innovators Market Game
IMG generally proceeds as in the following steps.

1. Players choose one of three roles, an entrepreneur, an investor or a consumer. Consumers can choose their jobs such as governmental officers, university faculty, or doctors, etc.

2. Entrepreneurs buy a preferable number of cards on which existing technologies are printed, paying the imaginary money.

3. Consumers speak out their requirements in their real lives, and request entrepreneurs to invent ideas to satisfy their needs.

4. Entrepreneurs view the game board and create the new ideas to fulfill consumers’ requirements, by combining their own cards.

5. Investors evaluate these ideas and put their imaginary money into the ideas they prefer. Consumers buy the most favorite ideas created by entrepreneurs. Investors and consumers can comment freely to entrepreneurs about their ideas to improve or change.

6. Repeat above 1 to 5 several times for about 2 hours.

7. Finally, the entrepreneur who obtained more money than others wins. Also the investor will win on the amount of money. Consumers have a speech about how their life will get better by the ideas which entrepreneurs create. Entrepreneurs and investors give their vote to consumers and decide the winner of them.

Features and Advantages of IMG
IMG has several features as follows. (1) IMG is the combinatorial thinking method for creating innovative ideas, by which players can invent high-value ideas for the real market. (2) It is recommended to present critical comments on the ideas. (3) IMG is the workshop-style serious game. (4) Created ideas are considered and evaluated from various angles by the roles which players act. (5) Ideas worthy buying are selected via strict evaluations. (6) Players can train their creative and imaginative skills. (7) The rules can be changed flexibly according to players’ purposes.

IMG is utilized for several companies and universities in Japan. Companies use this method to create new products or services, universities use it for further study and certain institute planed science policy-making by using IMG.

Problems of IMG
As mentioned, there are unique features and several advantages in IMG. However, some problems have been pointed out. First, IMG tends to be money-oriented game. Investors can get their returns when consumers buy the ideas they pay. Through the game, consumers are apt to buy ideas which are lack of realization but have some fascinations. Then investors tend to pay for low quality ideas to get imaginary money, so the quality of ideas declines. Second, the procession of IMG is real time; players can speak whenever they want. Therefore, someone who is not good at speaking has difficulties in joining the game, loses their timing to get in conversation and reduces their motivation for the game. Third, there are few clear rules about the way of conversation in this game. There is fear that players’ conversations tend to be idle talk. Fourth, the ideas created in IMG lack in feasibility - concrete possibility of realization. Players aim at creating new and unique ideas, however most of them are not feasible enough even after improvements via criticisms and selections.

Role-based IMG

The Aim of Study
We propose an improved process of thoughts and communication (we call this overall process Innovators Marketplace® because we may abandon the air of gaming
on the way), including Role-based Innovators Market Game (Role-based IMG). The aim of this study is to design IMG systems as the method for creating more innovative ideas. We set up the hypothesis about factors to create ideas through IMG. By observing the process of IMG, we search how these factors work together and make it possible for players to create high market value ideas. In this paper, we call the classic type of IMG Item-based IMG for comparisons.

Hypothesis: Five Factors in Creating Ideas

It is necessary to design IMG to work efficiently as the method for creating high market value ideas. In IMG players create ideas under its rules and process. In the rules and the process, there are factors to create ideas, which we can divide roughly into five. These five factors are chosen from the rules and the process of IMG. To generate ideas in IMG, following five factors are important; Identification, Restriction, Gaming, Communication and Information (Figure 1). In this study, we define these factors as follows and search the relations of 5 factors.

Identification: The word that contains the meaning of absorption. We define the word Identification as “a strong feeling that oneself is someone else or that one is strongly interested in something and shares the feelings.” Identification is the state of mind that one feels strongly put in the situation for creating ideas, consciously or unconsciously.

Restriction: Usually, restrictions or difficulties prevent people from generating new ideas. However, it is known that constraints can enhance creativity, as R.A. Finke says in (Finke 1996), “the likelihood of discovering a creative invention is greater if the component parts are restricted.”

Gaming: Everyone knows games are fun - we can enhance our creativity and imagination considerably by adopting the factor of games in order to solve the practical problems. Games are the parts of reality, or the things that make reality simple. Generally, gaming is known as an activity in which people compete with each other according to agreed rules. We add the factor of enjoyment to say gaming is “an activity in which people compete with each other enjoyably according to agreed rules.” Gaming means to realize simplicity, competition and enjoyment at once.

Communication: Although it is important to think deeply by oneself, we can often hit good ideas by conversation among over three people. As in studies for innovations, it is said that through the communication among over three people, people tend to generate the unique ideas in the same period of time and increase sympathetic remarks for others (Takahashi et al. 2009). Communication is the important factor for creating ideas.

Information: It is difficult to generate ideas without any knowledge or information. To create ideas, basic knowledge and information about a certain field is essential. In the combinatorial thinking, it is important to know about basic technologies. Also to solve practical problems, we should know about them.

The Outline of Role-based IMG

Role-based IMG is the new way of IMG to create the high market value ideas based on the hypothesis; Identification, Restriction, Gaming, Communication and Information. The main purpose of this method is to offer a place where players can create more innovative ideas. To create innovative ideas, Role-based IMG has several different points from previous type of IMG (Item-based IMG). First, there are strict rules in Role-based IMG. The role of Investor is abolished, as we often did in Item-based IMG. Entrepreneurs and Consumers are unified. These are because all these 3 roles, Investors, Entrepreneurs and Consumers, have different requirements to win in the game. To enhance players’ Identification and the motivation for creating ideas, in Role-based IMG, all the players take part in the jobs whose standards of winning are equal. Second, the game board is made of the connections of jobs and keywords by KeyGraph (Figure 2). Jobs are ideally the same jobs which players act in the real society, or chosen from the society familiar to the players. Keywords are extracted from the explanations of these jobs by KeyGraph. The input information to KeyGraph is, for example, a published outline, the history, or the social function of each job. Third, Role-based IMG proceeds by the turn system, on the other hand Item-based IMG proceeds by the real-time system. In the turn system, each
player has the time to imagine ideas, to present their ideas to others, and to cultivate ideas co-creatively through communication. These strict rules are the Restriction stated in the hypothesis. In the strict rules, players can feel that their actions are evaluated all the time, and stay creative, communicative, and competitive. Gaming, Communication, Restriction advance Identification with roles and the motivation for creating new ideas.

**Figure 2.** One example of the game board, KeyGraph

### Role-based IMG in Practice

Role-based IMG proceeds as following steps.

1. Players choose roles which they want to act, from the role names appearing on KeyGraph.
2. Players have some imaginary money and 3 cards on which the existent technologies are printed.
3. From the role names on KeyGraph, each player chooses a preferable neighbor, i.e., a role linked to one’s own role’s node.
4. Each player writes down how one is satisfied/unsatisfied in the daily life/business, using the keywords on the graph to appeal the requirement to the neighbors.
5. Each player creates the ideas that satisfy the requirements addressed to oneself, by combining their technologies on cards.
6. Players present their ideas to other players in turns. Other players can state their opinions to others’ ideas.
7. Players evaluate all the ideas. They give their imaginary money to the player who created the best idea.
8. Every player gets another card at random.
9. Players choose the next neighboring role node to create ideas. Players must choose the node which is linked to their own roles, including the one they already choose.
10. Continue these processes several times and finally the player who gets imaginary money the most comes to be the winner.

### Experimental Details

#### Role-based IMG in the Experiment

The subjects are the ones who did not have any knowledge about IMG before the experiment. They are men and women around 20 years old. The Subjects experienced Item-based IMG and Role-based IMG. The main theme is “creating products or services which lead a better society.” After the experiment, they answered to a questionnaire about the difference between the two types of IMG. The result of this experiment shows whether the designs and the rules of the game are proper. The criteria for the comparison are (1) the degree of absorption in the game, (2) the degree of your communication (discussion and presentation) helped you create ideas, (3) the degree that you use cards or KeyGraph to create ideas, (4) the degree that rules of IMG help you create ideas, (5) the degree that you are competitive in the game (“you” means the subject player). These criteria are scored by the points from 1 to 5.

After the game, the one who get money the most is the winner. By following the process of the game and the evidence on the game board, we examined how players think of the ideas and the one came to be the winner.

### Result

#### Role-based IMG

The result of this experiment shows the designs and the rules of the game are proper. After the game, subject players wrote down how they concentrated in the game, how they felt tired during the game, and how they identified with their own role. Subjects wrote down the process of these three criteria from the point 0 to 5 in a line graph. As the game proceeds, players are getting tired. The concentration and Identification with roles increase until turn 2, and decrease slightly from turn 3. It can be said that 2 or 3 turns are suitable to play Role-based IMG, and players can participate in the game with high Identification with their roles.

Table 1 is the result of comparison between Role-based IMG and Item-based IMG. In all the items, Role-based IMG gets higher marks in their averages than previous IMG. Therefore, the design of Role-based IMG along with 5 factors hypothesis is found to be proper.
Table 1. The comparison between Role-based IMG and Item-based IMG

<table>
<thead>
<tr>
<th></th>
<th>Role-based IMG</th>
<th>Item-based IMG</th>
</tr>
</thead>
<tbody>
<tr>
<td>the degree of absorption in the game</td>
<td>3.8</td>
<td>3.1</td>
</tr>
<tr>
<td>the degree that communication helped you create ideas</td>
<td>3.3</td>
<td>3.1</td>
</tr>
<tr>
<td>the degree that you use cards or KeyGraph to create ideas</td>
<td>3.3</td>
<td>3.1</td>
</tr>
<tr>
<td>the degree that rules of IMG help you create ideas</td>
<td>3.8</td>
<td>3.0</td>
</tr>
<tr>
<td>the degree that you are competitive in the game</td>
<td>3.7</td>
<td>3.1</td>
</tr>
</tbody>
</table>

The Process of Creating Ideas

We can find the process of each player's thought by following the evidence on game board. Let us have a closer look at players who won the game; getting the toy money the most. We can see the reason why those players can create innovative ideas and won the highest evaluation in IMG.

Here is the finished game board of certain Role-based IMG (Figure 3). In this game, the player who chose Airline Company, getting 20 points, and the player who acted Sports Official, getting 19 points, won. Other players got toy money for evaluation of their ideas as following table (Table 2).

<table>
<thead>
<tr>
<th></th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>sum</th>
<th>number of branches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airline Company</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Sports Official</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Elder</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>14</td>
<td>1</td>
</tr>
<tr>
<td>Police</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Farmer</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Service Company</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Rescue Team</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>University</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Medical Officer</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Government</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Movie Company</td>
<td>0</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Journalist</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Energy Researcher</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Traffic Authority</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Citizen</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

As it is mentioned, at the beginning of this game, each player writes down how one is satisfied/unsatisfied in the daily life/business, using the neighboring keywords on the graph. It is the issue to solve. During this work, players strongly think of the relation between their roles and the neighboring words. At the same time, it is thought that players also consider that how to create ideas which get much toy money. Then, players notice that it is necessary to share the awareness of issues among others in order to get the high evaluation. On making solutions, players come to see objectively their demands by introducing multiple approaches, such as other roles’ point of views. Through the communication with other players, they take others opinions actively and start to find the essential issues and solutions. Finally, players arrive at practical solutions. In the presentation, they explain their outline of ideas logically, allowing for the sympathy with others/users. The ideas followed above procedure may be highly evaluated. Players earn toy money and get satisfaction. This feeling keeps players’ motivation for creating next ideas.

Looking at the game board (Figure 3), we can find the process of thinking. The player who joined as Airline Company created ideas – unifying the several IC cards and making it easy to check in to the airplane. This idea seems simple. This player stood at the viewpoint of users, propose this idea, and earned the highest points in this game. We can also find the same characteristic in the player of Sports Official. This player analyzed the dissatisfaction of sports supporters, and propose the idea: the system to get the various information of particular team or sports with the seasonal commuter’s tickets for supporters during the long tour. Those ideas were highly estimated by other players.

Moreover, it is remarkable that players who got high points tended to choose the nodes far away from their
roles. It means that they moved turn by turn in single way, and chose the unfamiliar words for creating ideas. As mentioned, KeyGraph visualizes the strength among words or frequency of appearance, so it is possible that the words far from a role are unfamiliar. However, the evaluation of ideas which are created with the words of unfamiliar nodes got high points. It is thought that it is because with the familiar keywords players can only create the ordinary ideas. Depending on the related keywords, players cannot introduce multiple points of view into their issues. Those players lose their concentration on finding the essential issues, and only create common ideas. Then the estimation will be low. Some subjects mentioned this tendency in the questionnaire after the experiment.

**Conclusion**

In this paper, we proposed the improvement of Innovators Market Game; Role-based IMG. Role-based IMG is designed by the hypothesis that 5 factors take important roles in creating ideas; Identification, Restriction, Gaming, Communication and Information. We use the game board on which relations and connections among various existent jobs or keywords are printed, introduce the turn system and set strict rules for players to identify with the roles in IMG. In the experiment, it is shown experimentally that Role-based IMG works properly by examining “the process of turn in Role-based IMG” and “the comparison between Role-based IMG and Item-based IMG”.

Moreover, by tracing the process of players’ thinking in creating ideas, we described the feature and the creating mechanism of highly evaluated ideas. Players, who not only think of their demands but also see their demands objectively, can find the essential issues to solve. The ideas followed this procedure may be estimated higher than other ideas.

Another suggestion can be led from the observation of IMG. There may be correlation between evaluations of ideas and the unfamiliarity of selected words. This tendency is found in the situation that players who chose the unfamiliar words with their roles, were relatively evaluated higher in creating ideas. Some subjects suggested it in the questionnaire. Therefore, it might be said that high market value ideas may be created when players start to think of the relations with the words which are unfamiliar to their roles.

**References**

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