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Powai, Mumbai 400076 India

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IDC/UAA/2007
June 1st, 2007

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Vienna International Centre
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Sub: Letter of Transmittal

Dear Ms. Pinjo-Dzidal,

We are glad to present 5 copies of the final report of the project No. SF/GLO/02/013- Technology Diffusion and Support Programme for Small-Scale Industries. As desired by your office, we are also including electronic version on CD along with the print copies.

Most of the toys and games are under manufacturing now and will be introduced in the market by July 2007.

Thank you for extending cooperation from UNIDO.

Yours Sincerely,

U.A.Athavankar

Encl: as above

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Final Report

Project No. SF/GLO/02/013

**Technology Diffusion and Support Programme
for**

Small Scale Industries - Contract NO. 1600130/tc

Design Support for Toy Industry in Mumbai

Author:

Prof. Uday Athavankar

Industrial Design Centre

Indian Institute of Technology, Bombay

Powai, Mumbai 400 076, India

June 1st, 2007

Synopsis

About the report

This is a final report giving an overall view of the project and the tasks accomplished during the year as a whole. It also includes references to the forth quarterly report that gives details of the activities that have been completed in the recent past.

Last one year on the project was extremely fruitful and intellectually challenging. Small scale industries work differently with low volume of production, low margins and with stringent budgets. We had to work against severe cost limitations and SME's inability to price their products higher than the current low priced toys and games. It was difficult to strike a balance, but we have not compromised the design quality of games and toys. At times we had to compromise on the quality of production.

About the forth quarter

The third quarter work which included development of prototype of the games and toys designed for each SMEs. We worked closely with the SMEs and their vendors. Part of this work spilled over in the forth quarter, where we had to make design changes to fit into the production requirements as well as investment limitations of each of the SMEs. Most of the details have been finalized and production test runs are being checked.

Packaging design was scheduled for the forth quarter. We had developed several alternatives for each game package and these were discussed with the SMEs. We have made an effort to give a family appearance to all the packs by using a common visual language. All the SMEs have accepted these ideas. Based on the graphics given, the packs are being printed and made by them now.

It must be noted that not all the SMEs are at the same stage of implementation. Some of them are developing moulds and dies and will come to packaging issues after they have mastered the manufacturing issues.

Brief background on

The work in the first quarter

We had seven SMEs to work with. Their product range, current markets addressed and wherever possible, their production facilities were reviewed. Through mutual discussions with representatives of SMEs, the design project areas were narrowed down. The Industrial Designer (staff) was hired for the project. He interacted with the industries on a regular basis. Q1 report contained the details.

The work in the second quarter

Second quarter was a creative phase and most of the projects had come to paper model stage. Some of them were tried with children as part of play testing to get a feedback. Play testing continued till they showed positive results. Interacting with children has been an interesting learning experience. The designs were then finalized. Industry-wise details of the product development are reported in the Q2 report.

The work in the third quarter

The post creative phase was the most difficult phase as the design ideas had to be productionized with technologies available to each SMEs. All the designs had to be fine-tuned to meet the technology as well as the cost requirements. Several iterations were done, ideas were tried out and meetings with SMEs were held to meet these stringent requirements. As the speed with each SME could handle these developments was different, part of this work has spilled over to the forth quarter. Q3 report described these activitiites.

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1.0 Introduction

The project goals were to develop toys and games ideas and work closely with SMEs to develop design capabilities. We have been working with seven SMEs to achieve these goals. The projects are in various stages of production and will be soon available in the market. It is hoped that the products will be launched together, so that there will be a greater impact. TAITMA is trying to organize a launch event with school children some time in near future and we may be able to launch all the products together.

We created a small design team for the project which devoted its time exclusively for this project. It was an enjoyable and intellectually challenging exercise for the team to generate creative new ideas and convert them into marketable products. The design team had to show flexibility in its approach in design and detailing, almost tailoring it to the capabilities of each SMEs. Some unhappy compromises had to be made to ensure that it meets the investments targets of the SMEs. The hard work seems to be paying off now. Most SMEs are about to complete the products and introduce them in the market.

The interaction with the SMEs was fairly intense. We got to understand how SMEs think and what constraints and limitations they work with. Similarly, the SMEs were also exposed to designerly ways of thinking. Though the exposure was limited, some of this thinking they may be able to practice later, when they get involved in original product development. Finally, those who interacted more and consistently, were able to get most from the projects that were undertaken.

The review meetings were well conducted and with regularity (every three months) and the insightful feedback from the UNIDO representative as well as the SMEs during discussions was very useful. We have benefited a lot from the reviews as we could understand the thinking of the SMEs.

We also worked with another major limitation. Even though the project is coming to an end, IIT has not yet received installments after the first quarter.

(The second quarter installment was received on May 26th) Totally 3 installments were received so far, which works out to less than 1/2 of the amount due. With little money available to us, we had been forced to divert money from other projects to keep the 'Toy Workshop' going. We are also thankful to TAITMA, who have also helped us to tie over the difficulties by assistance from their side.

1.1 Looking back: The Toy Industry and Future

As mentioned in the last report, toy industry is caught in the cycle of low market volumes and low prices of their products on one side, and low capability of investment in manufacturing and dies on the other side. In the cycle, the quality of the products seem to suffer. This leaves little freedom for the industry to invest in design and quality production. With such low cost of production, it is not easy to come out with quality products. Looking back, it appears that the SMEs need as much assistance in innovative marketing as in design.

Even in the toy industry as a whole, there are little efforts in understanding the entertainment needs of the children in their world, which is full of learning different skills through classes, TV serials and internet. Serious market research on the toys and game needs is totally missing. With the result, we continue to market toys and games for age groups which have very different interest and time for conventional board games. People buying these kinds of games are hardly an indication that the children are actually playing with it. In a different pilot project related to how children spend their leisure time, we discovered a very different scenario in metros and small towns. It seems that the toy industry must change its strategies across the regions, with very different kinds of toys and games for children above 12, particularly in Metros.

Educational games related to class room teaching rather than entertaining toys seem to be an attractive option for motivating parents to buy and get children to play. The toy industry should make a concerted effort to shift to 'Edutainment'. School education is too competitive and anything that helps children compete better is likely to sell in Metros.

Lastly, toys and games industry is largely based on continuous innovation. You need to introduce new product ideas at steady intervals. This is a pattern that is followed all over the world. Toy industry is known to employ creative brains. In India, this is not possible for SMEs as most are 'one man' shows. It is not easy for one person to manage production, look after the cash flows and also find time to innovate and come out with new products. He has to be a superhuman to do all this effectively. Nor are their businesses large enough and marketing efforts extensive to afford consultant design firms to work with them. Unless this scenario changes, the future of indigenously developed innovative toys is not very bright.

Toy workshop in a way tried to bridge this gap and was thus able to bring new ideas into industry. But the production and marketing is expected to remain an individual effort of a SME. None can afford to spend on advertising. So the numbers will always remain small to make an impact in the market. Some of the games developed in the toy workshop have export potentials, but this will largely remain untapped in the current set up.

2.0 Final Report

As per the General Time Schedule mentioned in the Terms of Reference, activities 1 through 4 had been completed in the first quarter. Activity 5, i.e., Development of Unit Specific Design Plans, which was scheduled for the second quarter, has been completed. Activity 6, i.e., Implementation of Unit Specific Design Plans, is completed. The details of actions completed and underway are as follows.

Third quarterly review meeting took place in January 14th, 2007 and the report was sent to UNIDO immediately after and subsequently been approved. We have yet to receive the payment for 3rd quarter. We also expect the payment for the 4th quarter and the final payment to be available in the near future.

Design ideas had already been finalized at the end of second quarter and play testing, finalizing rules and detailing of the toys/games has been more or less completed by the forth quarter.

Action 1

Reducing production cost was the major focus of the last quarter. Most SMEs are comfortable with a certain price range and wanted the ideas to be developed within a given manufacturing cost, so that it will meet the price requirements. This was the major challenge as the manufacturing cost had to be very low. Most of the time was spend on developing and prototyping ideas which will meet the price limit specified. As mentioned earlier, some compromises were made, which were not necessarily in the interest of the product quality.

Action 2

As the designs were getting finalized, the focus was on packaging the games and toys. In the last quarter, we had generated innovative names for each of the toys and games. The short-listed options were given to each SMEs, so that they could pick and choose. It took several discussions with

SMEs and market feedback to finalize the names and develop the packages.

We generated pack proposals based on family resemblance and these were shown to each SMEs. Package design was the topic of discussion most of the time, as it is one of the variables that influences sale. We took into account their feedback and incorporated the suggestions given by them. Final designs of the packs are shown under each SME in the later part of the report.

Finishing touches were being given to last two packages. The final artworks are being handed over to the concerned SMEs now.

Action 3

One afternoon in a week was kept free by the project team for meetings. The attendance of SME representatives at the meetings was rather irregular. (There were also toy fairs in other countries and some of the participants had planned extended visits to these events.) As closer contact was required with the design team, we made sure that the team members were also available during most of the week for discussions with SMEs. Discussions with each industry were held separately.

3.0 Development and Implementation of Unit Specific Design Plans

1

SME Name:

Name of company: Premsons International

Address: 221, A to Z IND. EST., Bombay - 400013

Telephone: 022-24942893 022-24937986 9820214136

Contact Person: Mr. Jayesh Rambhia

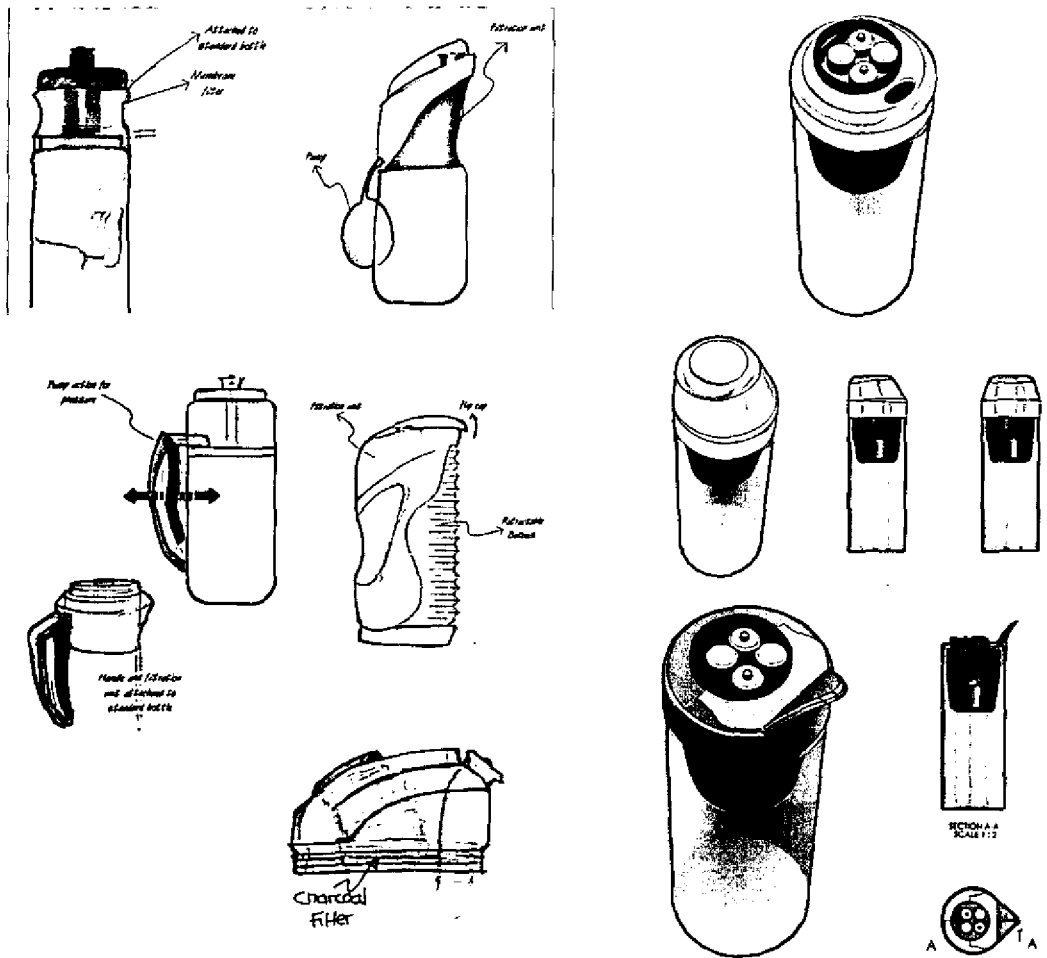
Toy workshop: Completed objective

IDC has undertaken the development of a water bottle aimed at working professionals to provide them with safe drinking water on the move. The system consists of silver ion purification via an electrode immersed in the water. The electrode is driven by a circuit and two AA size batteries. The circuit and batteries are housed in a separate container threaded to the lid of the bottle. Being removable, the lid can be washed thoroughly without any problems. The construction of the bottle is such that water is filled in an upper chamber first by inverting the bottle for a few moments. The electrode is then switched on to purify this water just before you drink it. Hence, the chances of contamination are reduced to a minimum. The lid thus requires a fairly high degree of water tightness to prevent purified water mixing with ordinary water or going into the circuit housing.

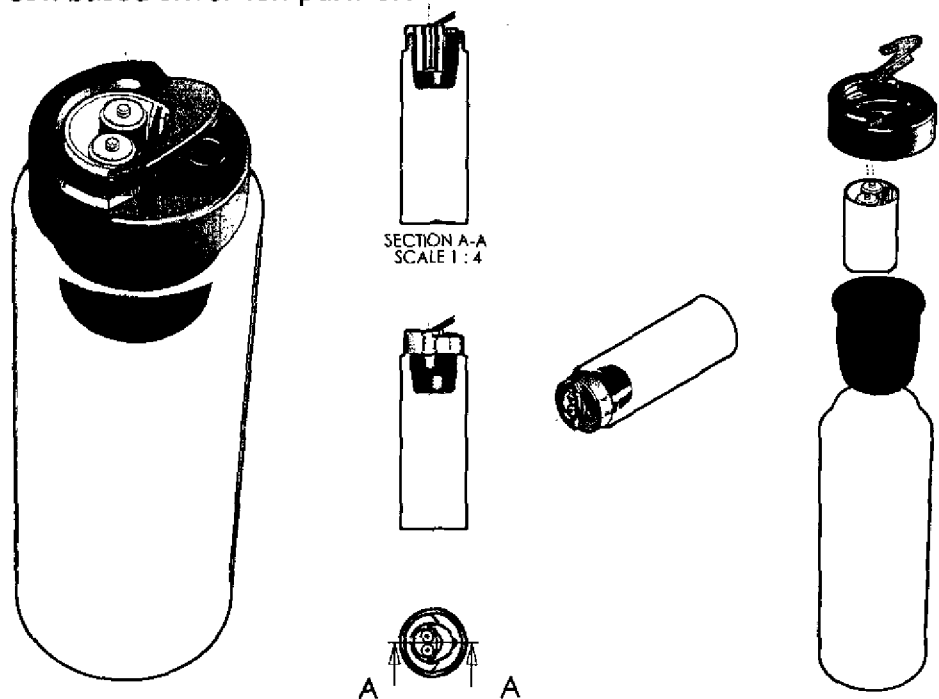
Progress of the forth quarter

The majority of the quarter was taken up by the SME in development and fine tuning of the circuit to be used and making is as small as possible. The earlier prototypes required 4 AA batteries, which were making the bottle lid fairly large and thus exceeding 75mm in diameter. The SME wished to contain the bottle diameter to 60-65mm in order that it might fit into standard holders. Further development of the circuit was carried out by the SME and a much compact 2 battery system has been finalized. After having been assured of the size of the circuit, IDC has gone ahead with the development of the lid.

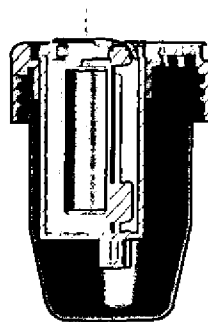
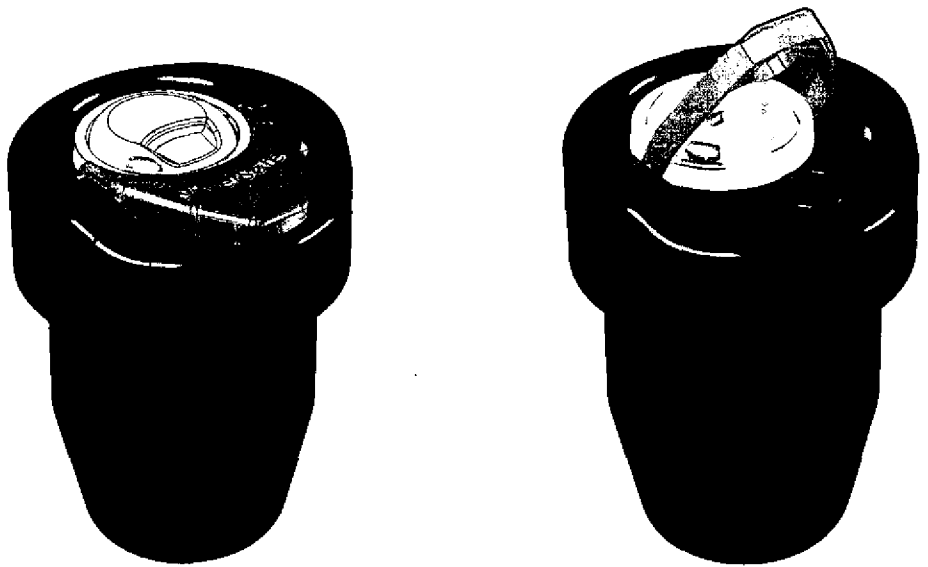
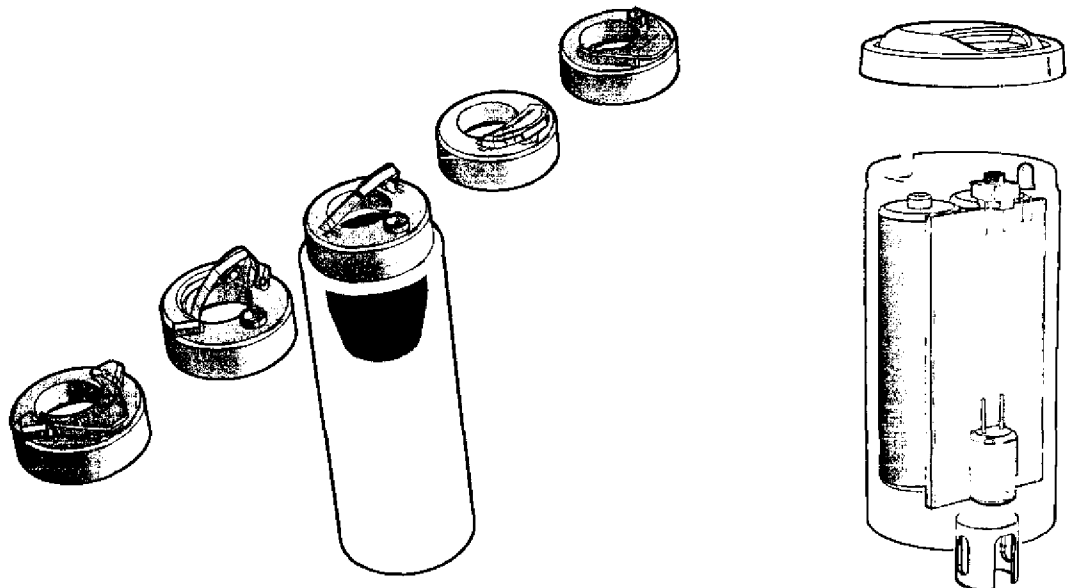
The concept has been approved by the client and formal variations are being generated.



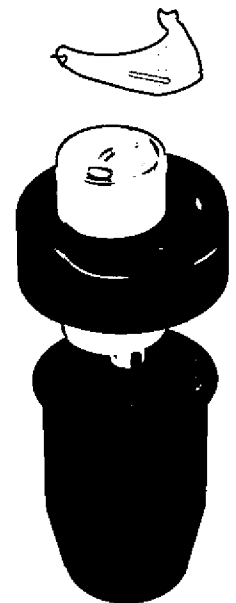
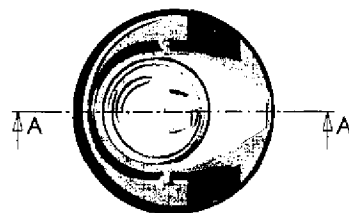
Previous quarters saw the development of the water bottle installed with a purification device. Various types of filters were tried before finalizing on a cell based silver ion purifier.



Basic assembly on the circuit and the batteries to make the bottle water tight at all the joints. This is paramount for keeping the water free from contamination.



SECTION A-A
SCALE 1:1



2

SME Name:

Name of company: Tayebally Ebrahim & Sons

Address: 2, Gabajiwala Industrial Estate. 5, Makwana Rd,
Marol, Mumbai 400059

Telephone: 022-28504395; 022-28593625; 9820996852

Contact Person: Mr. Yusuf Gabajiwala; Mr. Juzer Gabajiwala

Toy workshop: Objectives completed

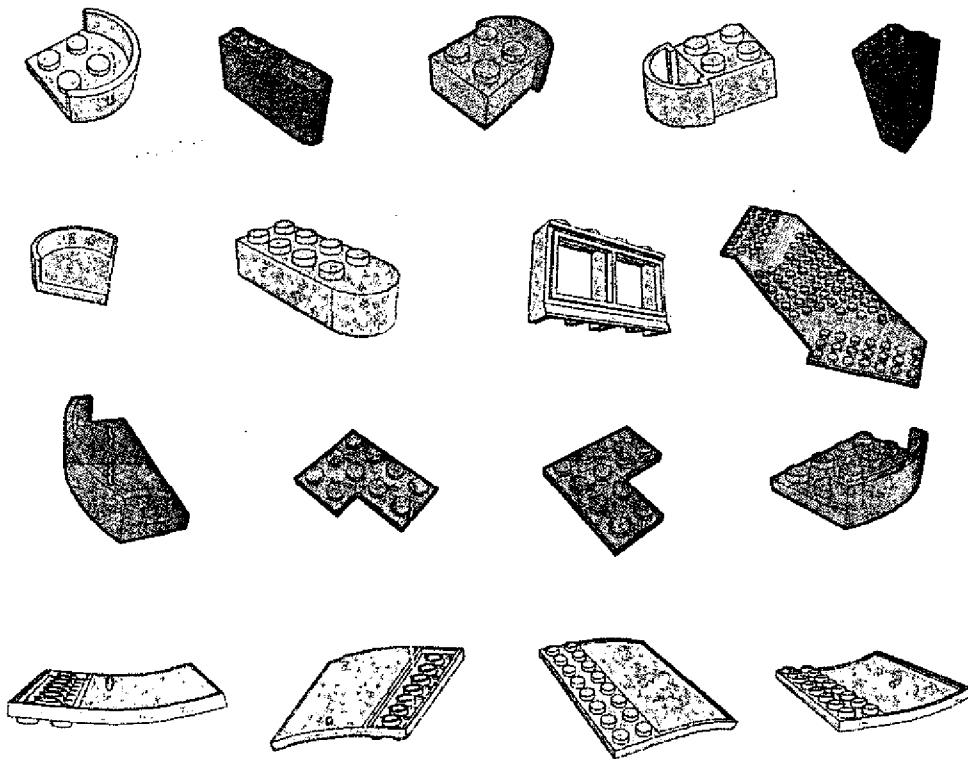
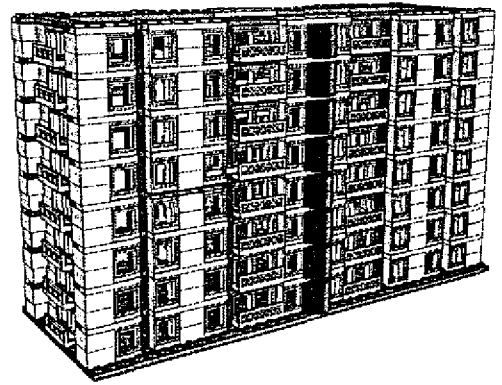
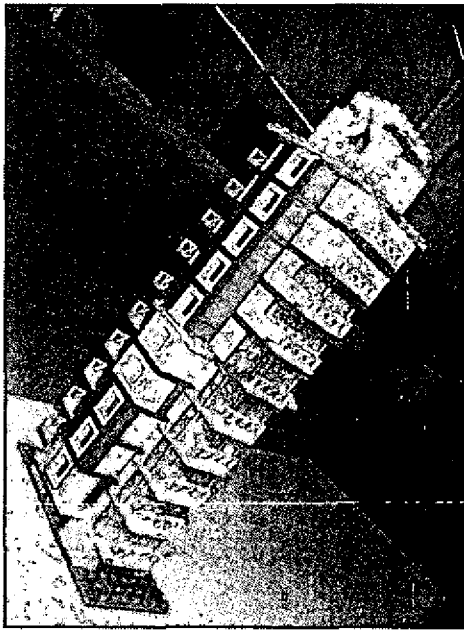
IDC was closely working with the SME to develop plastic pieces with which a child can build a skyscraper by assembling them. The SME already has some plastic pieces which can be used in small architectural assembly called 'Junior Architect'. The efforts were made to form a comprehensive set of existing and proposed plastic pieces with which a complete skyscraper can be built by a child. IDC had worked extensively in decoding the language of skyscrapers existing around, try to find peculiar architectural elements which are being used in contemporary architectural trend and interpreting the same in small pieces (blocks), which can be assembled together to make a skyscraper. With pictorial documentation and close interaction with SME; IDC has designed some pieces which can go together with existing range of pieces and developed the complete set named as 'MASTER ARCHITECT'.

Progress of the forth quarter

During the last quarter IDC had worked on the remaining plastic pieces as specified in earlier quarter report. Recently all the designs of pieces which constitute the entire set for skyscraper assembly been handed over to SME along with some corrections in the earlier one.

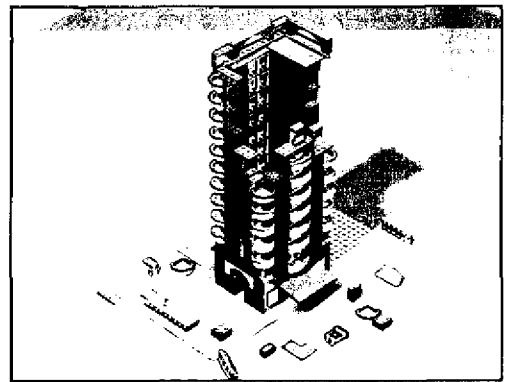
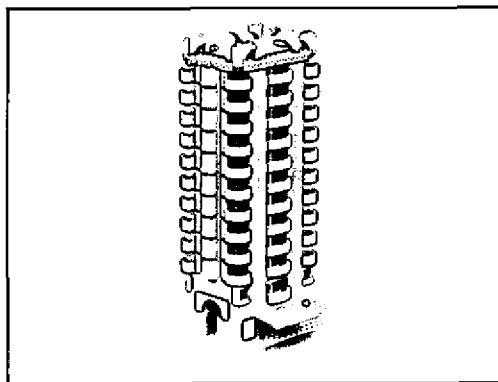
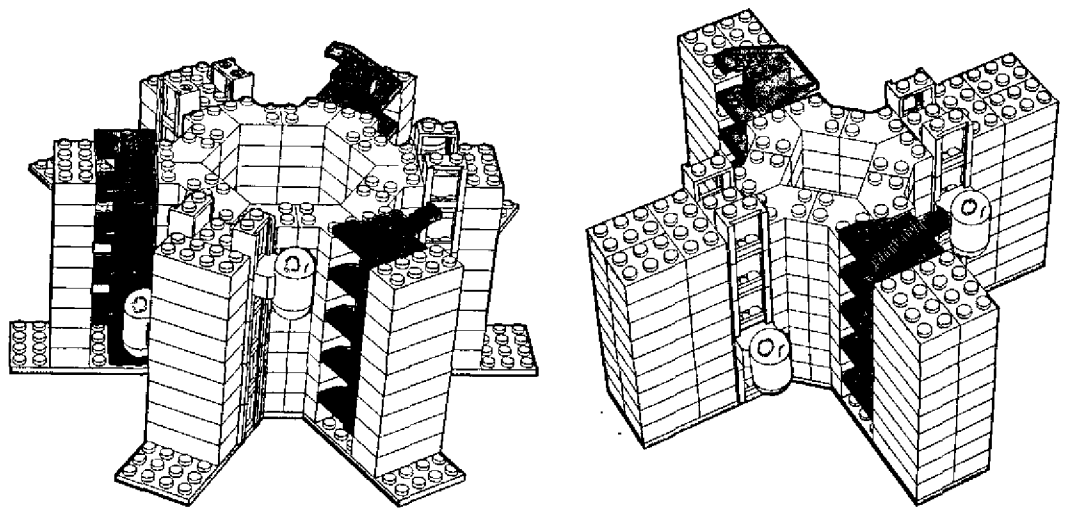
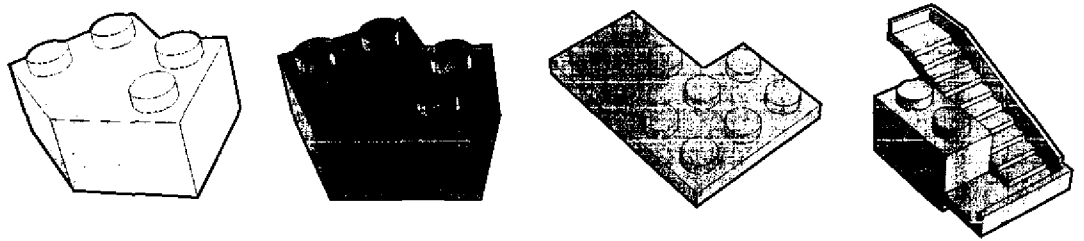
Meanwhile SME has come up with first batch of 7 pieces moulded in HDP. We found some dimension problems with some of the new pieces; these are already being discussed with SME and send back for respective correction. With help of new pieces and some of the existing pieces IDC had tried to form some real skyscraper assemblies to evaluate design input, weight constraints, total number of pieces and fixing problems with new batch of designed pieces. Along with that IDC had started to work on packing and graphic work designing for package cover with the help of skyscraper assemblies made with new blocks and image bank made during the project period.

Currently IDC is working on making specimen skyscraper assemblies, finalizing graphics for packaging and coordinating with SME in making final moulds.



Early development stages of the various pieces designed for skyscraper buildings.

In the fourth quarter as mentioned earlier IDC was working on developing new block assembly style and parts for the same. Here are some sample images of newly made assemblies completed with existing and newly designed building blocks.



3

SME Name:

Name of company: Darshan Toys

Address: United Industrial House, Ground Floor, Shanti Nagar, Vakola, Santacruz (E), Mumbai 400055

Telephone: 56780557 9820019758 9820633057

Contact Person: Mr. Uttam Jain

Toy workshop: Completed objective

IDC designed and developed a two player game based on the Tangram Puzzle set. The resulting game, 'TANGLE' has multiple levels of difficulty with varying degree of skill and intelligence required. There are three distinct modes of play involving a wide range of age groups. In the solo TANGLE TUTORIAL a child can learn to replicate compositions thereby understanding the geometry of the game and developing strategies for fitting the pieces. The next game, TANGLE CHALLENGE, is a two player version where the first player sets a problem for the other player to solve.

The first player arranges his pieces with the board and leaves the empty area for the second player to fit his pieces. The challenge for the second player is to do so by moving the least number of pieces already on the board and also in the shortest time.

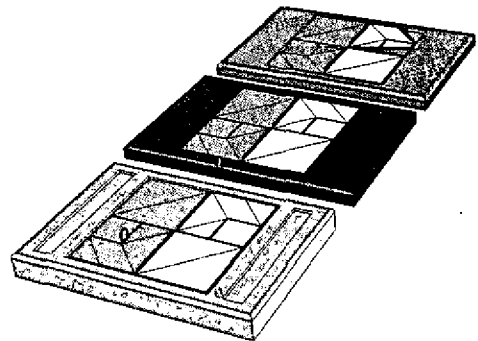
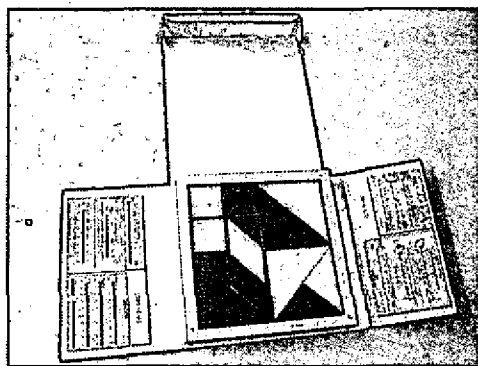
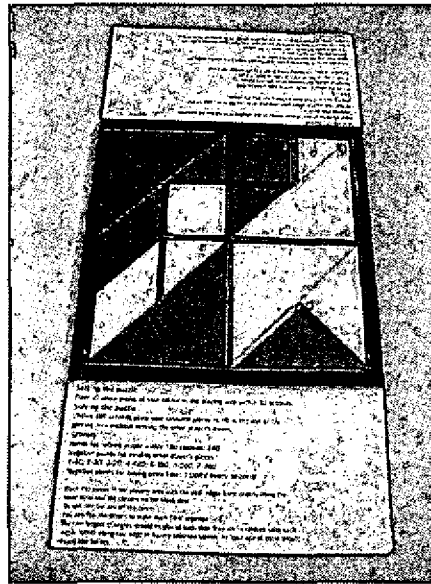
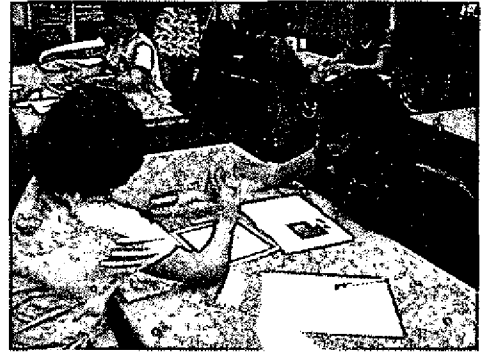
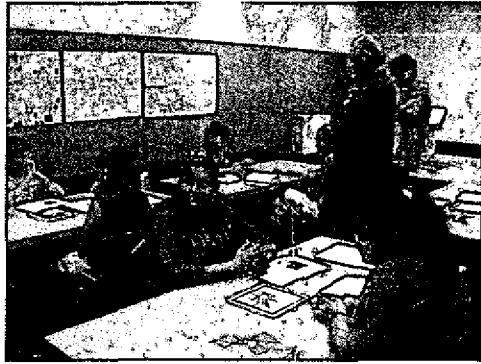
For those who have mastered the strategy of fitting pieces into a static grid, the next version, TANGLE DUEL, will provide a more challenging game play, where each player places just one piece at a time. Thus the strategy will need to constantly evolve at each move.

Progress of the forth quarter

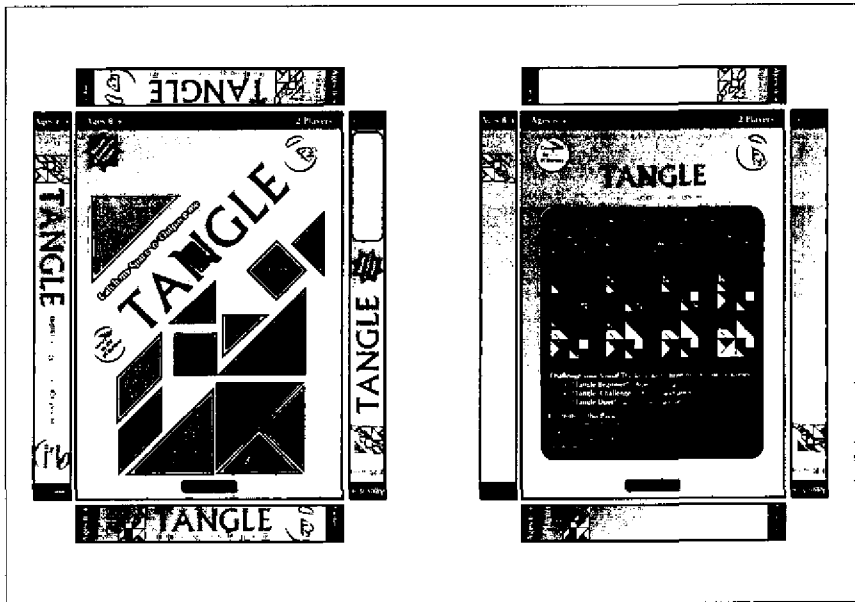
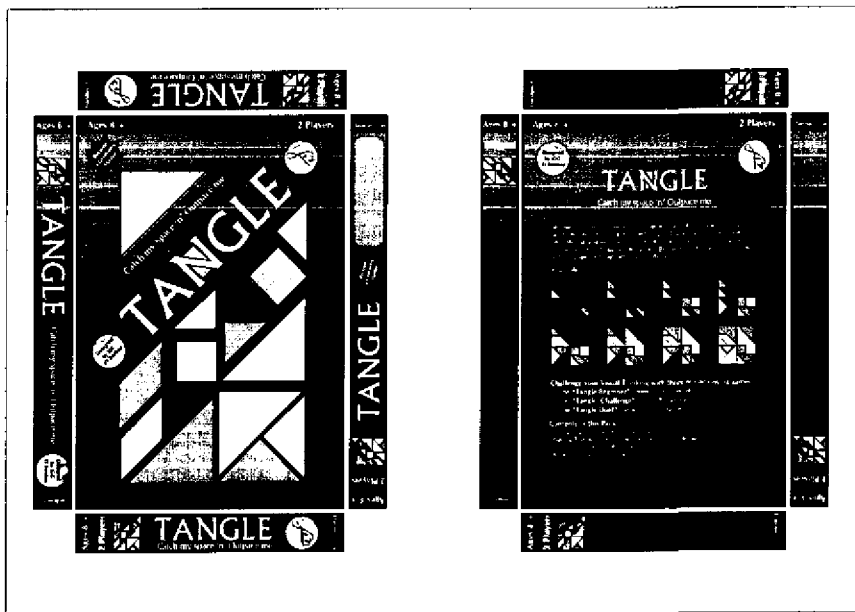
This quarter was spent in fine tuning the hardware required for the game. The moulded plastic pieces were delivered by the client and after inspection we gave the go ahead for the finishing of the die and final production. The first vacuum formed samples of the tray were also shown and found to be inaccurate in dimensions and finishing. The SME made the proper corrections and has delivered the final pieces for the tray, the plastic pieces and the score board. IDC has pointed out certain issues with the moulds and dies and we are now awaiting response from the SME.

Meanwhile, the instruction booklet was completed and the artwork was handed over to the client. As for the packaging, the client was shown a few styles of packing boxes developed, but they wished to go for the standard top and bottom package which affords a greater advantage at the sellers end. The artwork for such a box was developed with constant feedback from the SME. The final artwork in two colour options were

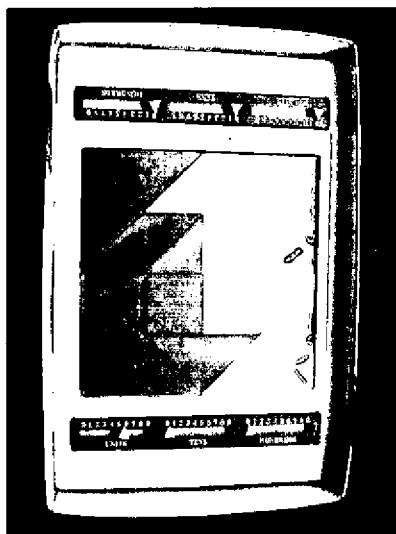
handed over to the SME and IDC is waiting for print samples or proper feedback for the same.



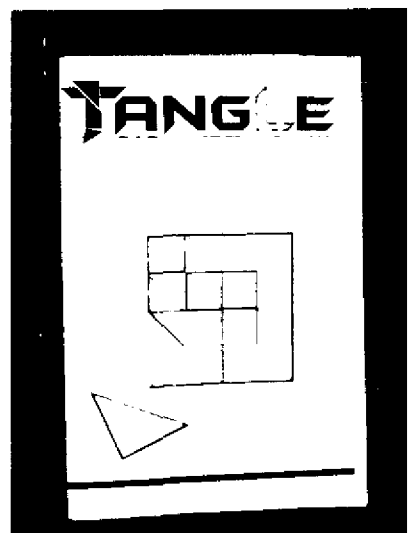
Paper prototypes being tested with school children and further development of packaging and internal layouts.



Packaging options



Box size and layout



Instruction Booklet

4

SME Name:

Name of company: Chirantan Enterprise

Address: 311 Ashirwad Industrial Estate No. 3, Ram Mandir Rd, Goregaon (W), Mumbai 400104

Telephone: 022-28722177 022-28738948 9820086890

Contact Person: Mr. Ashok Jain

Toy Workshop: Completed objectives

IDC has worked towards the development of Discover India, a game based on the knowledge of Indian geography. Built around what is taught in school, it helps children to learn more about cities across the nation and identify their locations on the map of India. A unique concept of challenging opponents lets the players compete against each other in trying to correctly locate various cities on the board. There are a set of clues accompanying each location that can be 'bought' from the bank by paying the required of money. You earn more money throughout the game by winning challenges and correctly locating cities.

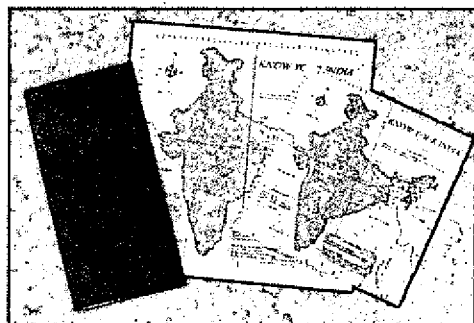
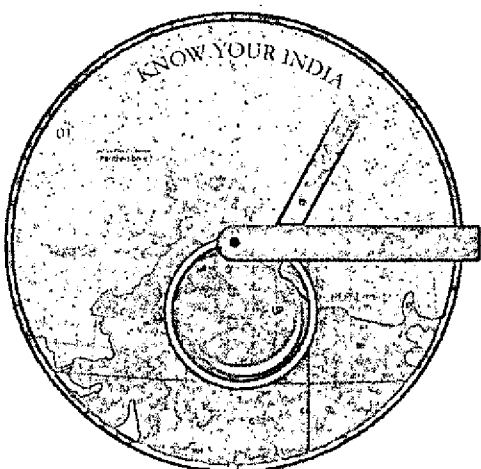
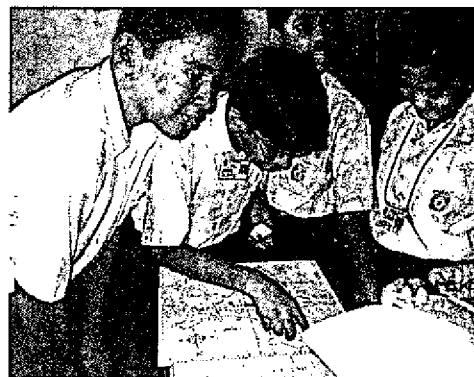
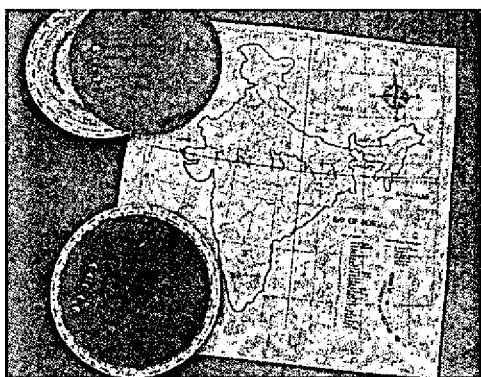
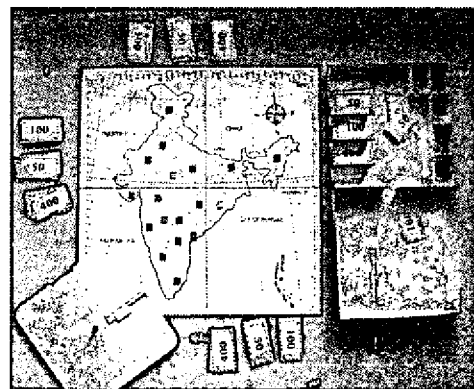
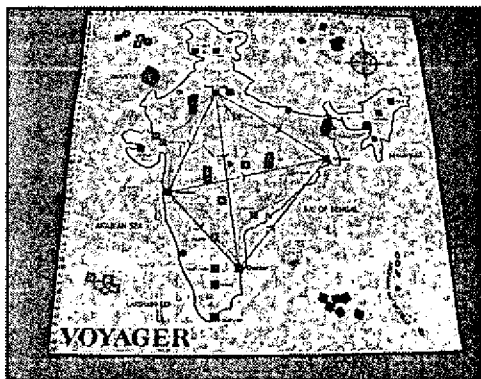
Progress of the forth quarter

As was discussed at the last meeting, the SME decided to test with a glue solution that can be used multiple times. The test results were favourable and the so was the cost. Two designs for the peg were provided to the SME and they responded by making aluminum prototypes of both. Detailed 3D CAD models were made and delivered to the client. One of the pegs has been finalized and final mould making is in progress.

The plastic strip to go on the information wheel was moulded and samples were given to IDC. Upon further inspection, modifications were proposed to give more strength to the strip in shape of few ribs and dimples. The name of the game went through a lot of iterations. IDC generated artwork for '*X'plore India*' '*Discovering India*' and finally '*Discover India*'. The SME was not satisfied with the artwork provided and suggested a few samples himself. One of them was picked for further development and after minor modifications it was incorporated in all the elements of the game.

The monogram thus developed was incorporated in the currency notes, the board, the guide map and the packaging graphics. The SME also agreed to an earlier proposal of information cards for each of the locations and thus 40 such cards were created. Various alternatives of the layouts for the cards were made and the client has finalized on one. The graphics to be printed on the box have also been created and accepted by the client. The map to be used on the various elements of the game has been approved by the Survey of India and thus all the artwork for the complete hardware of the game has been completed. Certain changes in the rules and the packaging graphics have been proposed and the same are under way.

Along with this, using the same hardware a trainer game was also developed. This is being handed over to the SME.



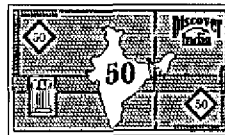
Early stages of development for a geography based game. Paper prototypes were made and tested with school children. The artwork was refined and elements were added to enhance game experience.

Discover India

Discover India

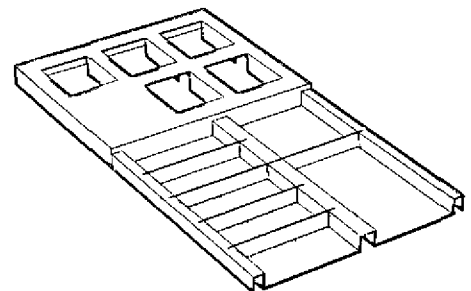
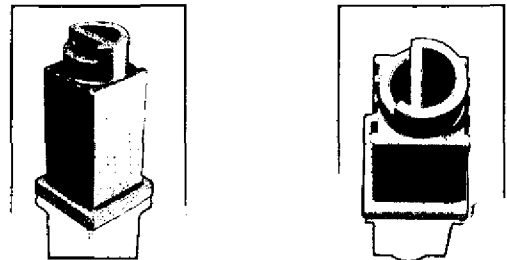
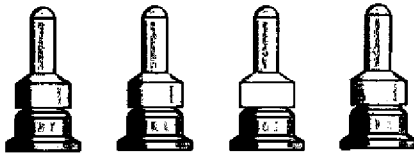
Discover India

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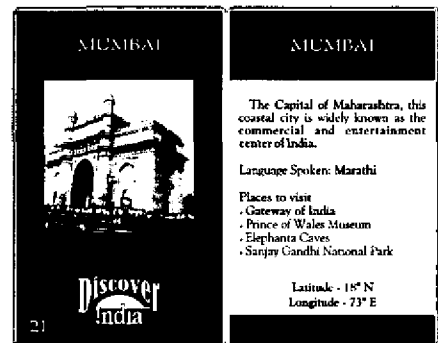
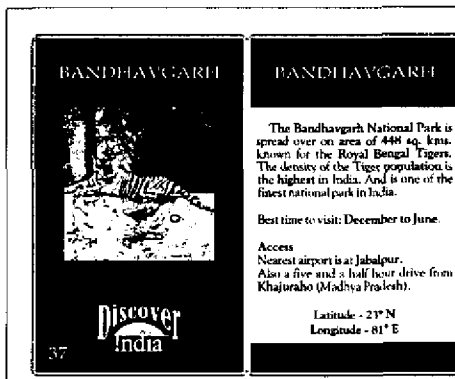
Initial typographical concepts

Final artwork

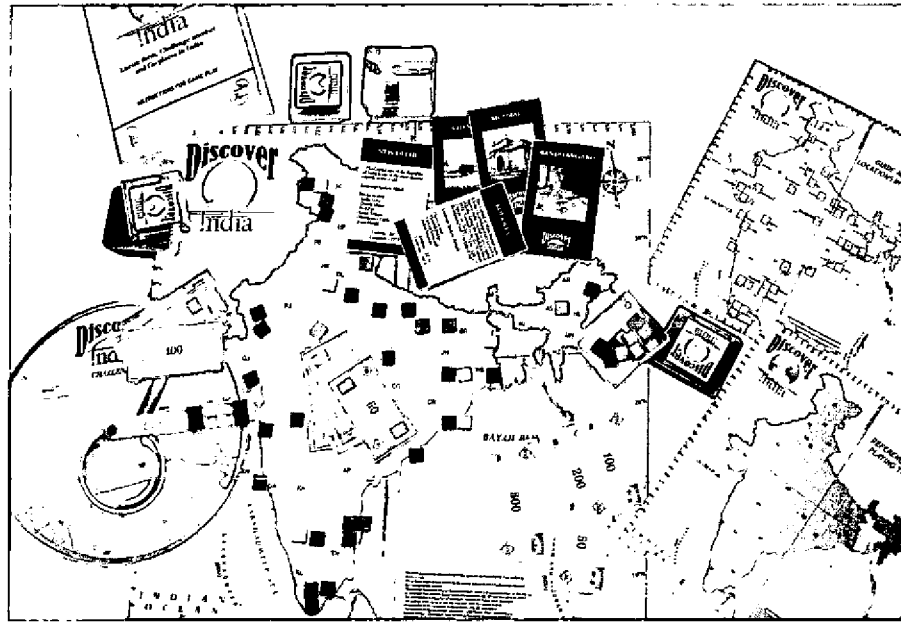


Box Graphics

Internal Layout for packaging



Site Cards



Final game with all playing accessories



Final layout for the box

5

SME Name:

Name of company: Satya Plastics

Address: Plot No. 360/5 & 362/5, Shree Ganesh Ind. Estate, Kachigaum Rd, Nani Daman, Daman - 396210

Telephone: 022 0260-2243711

Contact Person: Mr. Vijay Jain

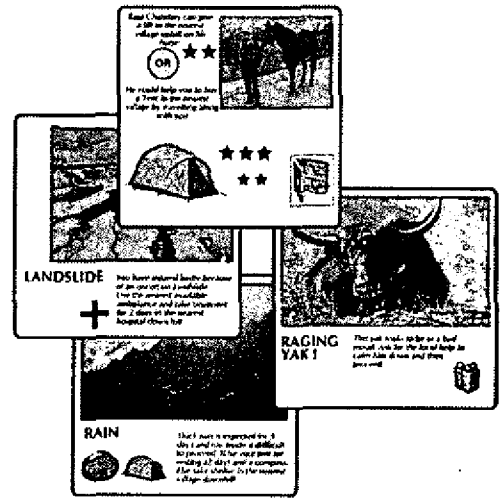
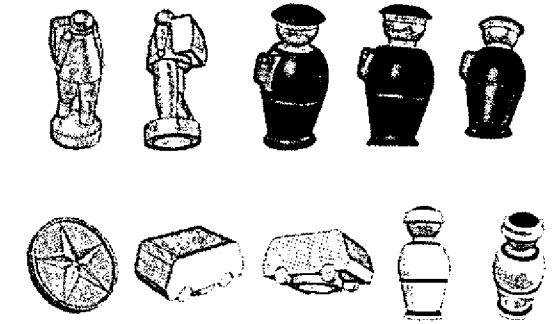
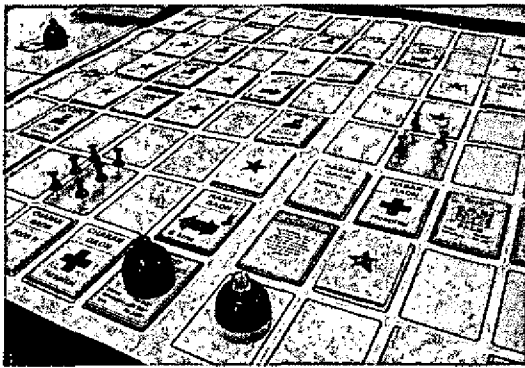
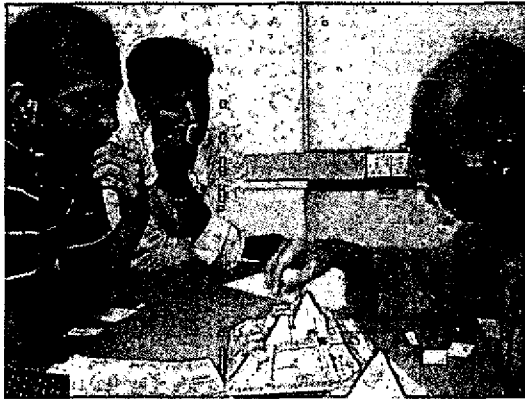
Toy Workshop: Objectives completed

The Aim of the game is to get real fun of climbing a hill and understand the issues and problems that one may encounter while climbing. The game is played with die where depending on peg condition player may need to take decisions as per the card demand during the game progress. In a way the game is part luck and part strategy based. Decision cards are designed in a manner to boost decision making power, cautious trade mind and helping nature amongst children. To add on to real game experience SME and IDC had worked on game board and made it three dimensional to get the terrain similar to actual hill conditions. Game accessories are made optimum and designed in a manner so that child should feel belonging value while trading with those and made it more informative as add on value.

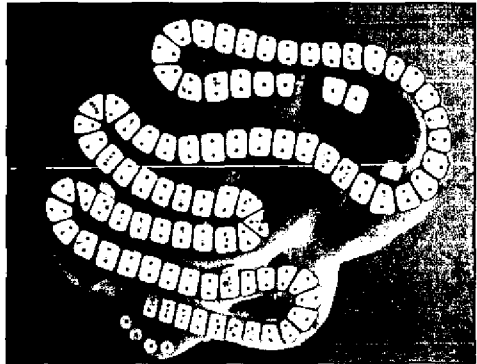
Progress of the forth quarter

As discussed earlier IDC had made wax mould with the in house expertise and accounted for final changes by interacting with client before dispatched. Currently SME is working on the final roto-moulded piece with wax mould. The first piece was brought to IDC for checking and suggestions will be communicated to the SME immediately.

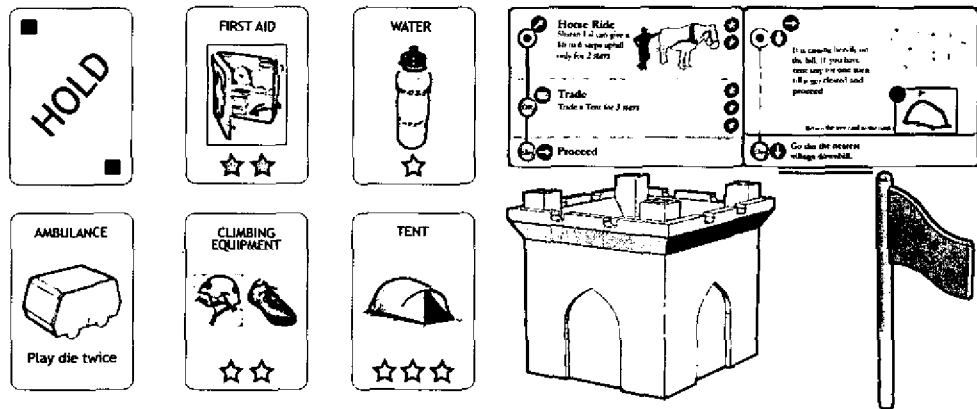
Meanwhile IDC is working on finalizing drawings for other game accessories like pegs, ambulance and village also on the art work for the game play card and resource cards. With the help of information IDC had gathered, feedback it got from expert climbers and playing several times with children, IDC has now developed the final rulebook for the game, so also the art work for the same. All this is being handed over to the SME.



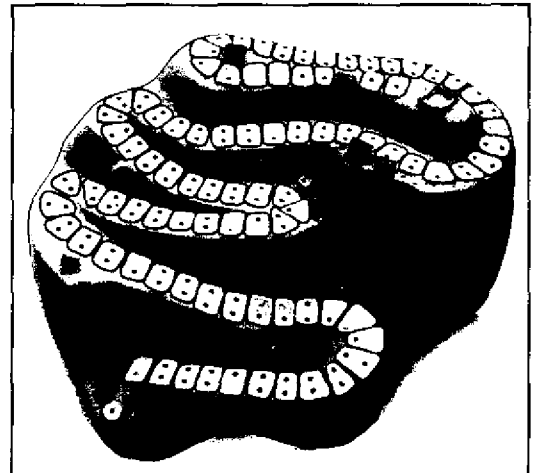
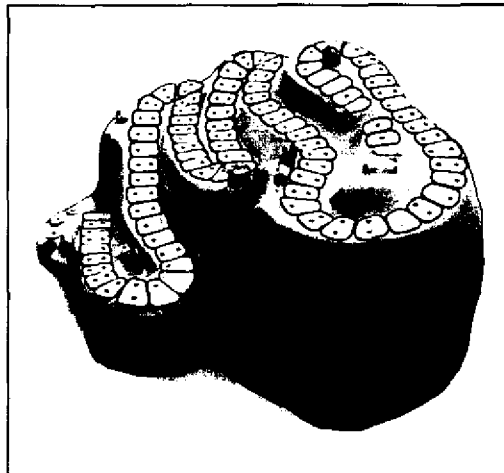
The design team started the development of a game based on the activity of mountain climbing with elements of luck and decision making built into the game play. The theme and detailed play was worked out with constant testing with children and rock climbers alike. Till the last report the basic game had been finalized and the game elements were being developed.



Detailed development of the mould. A thermocol model was used to create a plaster cast in which wax was moulded. The wax mould was then detailed with plastic elements to mark out the path and game features including villages and shops.



Other accessories for the game including resource cards and play cards were designed.



6

SME Name:

Name of company:

Lovely Toys

Address:

310, Mahim Industrial Estate, Off Mori Road, Mahim (W), Mumbai

Telephone:
9819703432

022-24442668; 022-26474191;

Contact Person:

Mrs. Nina Pangaonkar

Toy Workshop: Objectives completed

It was decided with the SME that IDC will work on the development of features that can be used across a range of soft toys, rather than work on a particular new toy. Three separate concepts were worked on for the duration of the project. The first idea that was developed was that of retractable limbs for animal based soft toys. After extensive experimentation by the client as well as IDC, it was found to be suitable for certain type of soft toys with limited movements, owing to the constraints put by available elastic materials. The same idea was extended to dolls with limited success.

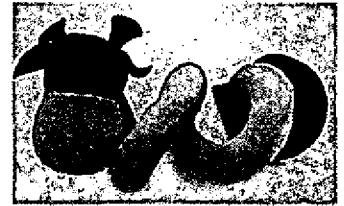
The second invention was based on the use of a stiff 'Trapador' wire as the core of limbs, tails or neck for various types of soft toy animals. This enabled children to bend it in any shape without the limbs springing back to their original position. The SME developed an innovative method of stitching to keep the wire centered within the stuffing. The third developmental activity dealt with embossing and welding of synthetic material using a hot stamping tool. This is expected to save labour and speed up production of some soft toy components. Though this was beyond the scope of the project, looking at the interest of the SME we took it up. SME purchased a hot stamping machine and experiments were carried out to achieve embossing effects on various kinds of cloths. Other processes that were tested were welding (or fusing) of two pieces of cloth and transfer of a patch of one cloth onto another.

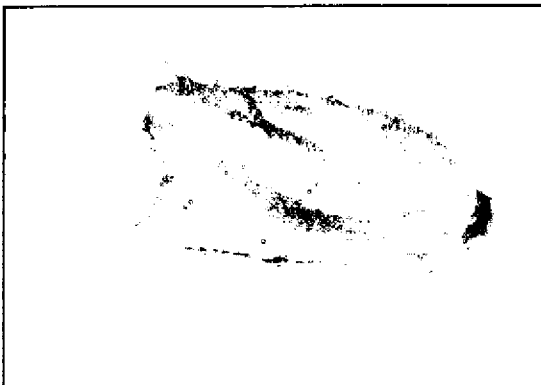
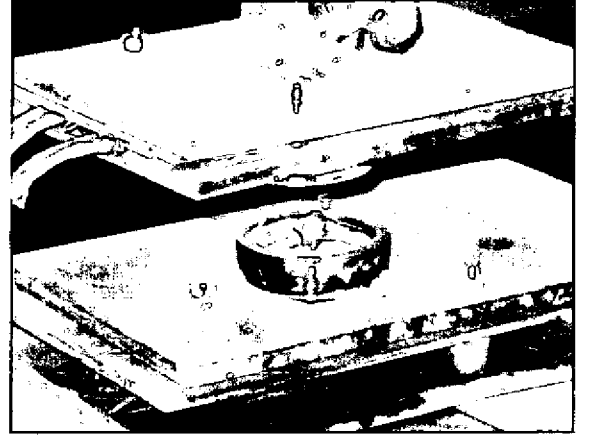
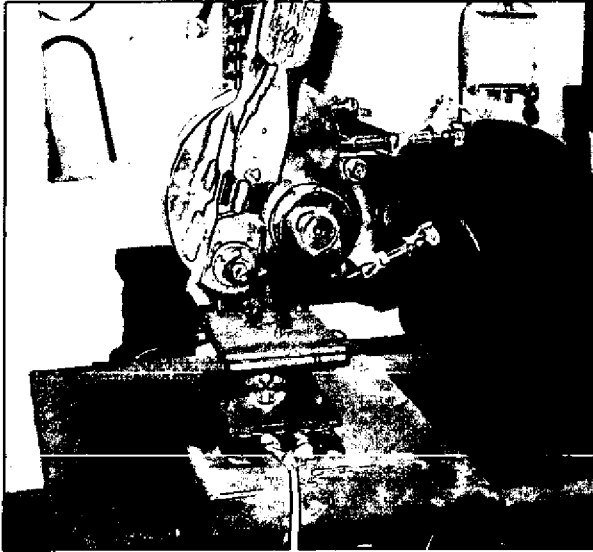
Three processes as tried were,

1. To patch a cloth on to other cloth. Results: only certain types of thin cloth were patchable.
2. To weld. It was possible with thin synthetic cloth as originally thought.
3. To emboss. This gives decorations with very little labour. This was possible on all textured synthetics but was better in thicker synthetics.

Progress of the forth quarter

This quarter was marked by the procurement of a hot stamping machine by the SME which was installed at the IDC workshop for trials. We have been experimenting with various types of heaters and cloths to achieve embossing as well as welding. Embossing on various types of cloths used in soft toys has been very satisfactory as they are synthetic. Welding has proved to be achievable on certain thinner cloths with little or no natural fiber content. The thicker cloths posed a bigger challenge and the time consumed might make it unviable for production. Moreover, certain cloth samples contain too much natural fibers which tend to burn off thus making fusing impossible. The basis of the machine has been tested and the SME is urged to carry on experiments at their own end to adjust its use for various types of cloths. The detailed development of such a machine is beyond the scope of the current project.





Experimentation with different cloths with varying success.

7

SME Name:

Name of company: Z S International

Address: Oberoi Garden Estate, D-Wing, 2nd Floor,
2146/2147, Chandivali Farm Rd, Andheri (E),
Mumbai 400072

Telephone: 022-28577917; 022-28577916

Contact Person: Mr. Zaheer A. Gabajiwala

Toy workshop: Completed Objectives

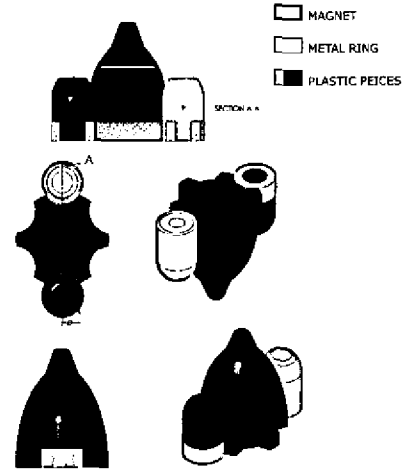
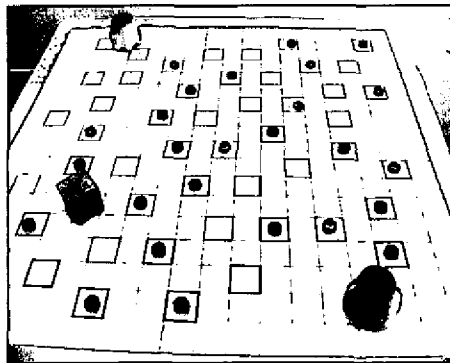
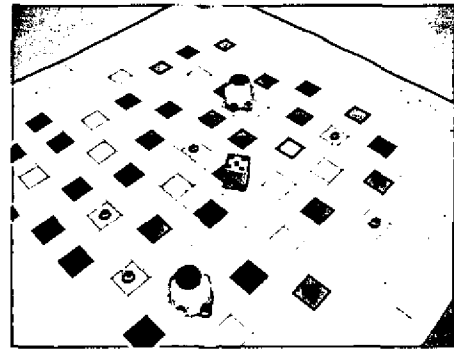
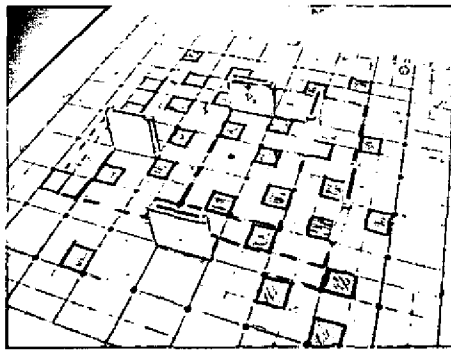
The design and development of a two player board game was undertaken where the players have to strategically plot a route through the grid and capture as many points as they can before exiting the board. Each player controls a robot which has a magnet attached to its base. The points are counted by capturing three kinds of human armed forces represented by three different coloured bullet shaped plastic tokens with metal rings attached to their bases. These forces are arranged on the board by the players themselves at the allotted spaces and carry different points each. Of course there are more of these allotted spaces on the board than available army units, so they have to be smartly distributed.

The catch is that the capture has to happen in a particular order. One kind of coloured army units have to be finished before you can move on to the next coloured army unit. Adding to the challenge is a rule that forces a player to move to the periphery of the board once he has collected four tokens to unload his booty. The players have to move through the board carefully as they can easily get blocked. The aim is to plot your route so as to capture units in minimum time thus beating your opponent to it. Once all the army units have been captured, both players have to exit the board using either one of the two exits marked on two opposite corners. The first player to exit gets a bonus of points. At the end, each player counts the points they have gathered by counting the number of various coloured army units that have been captured. The player with the highest points wins!

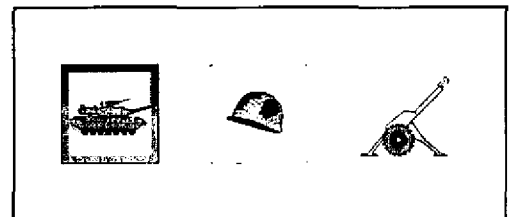
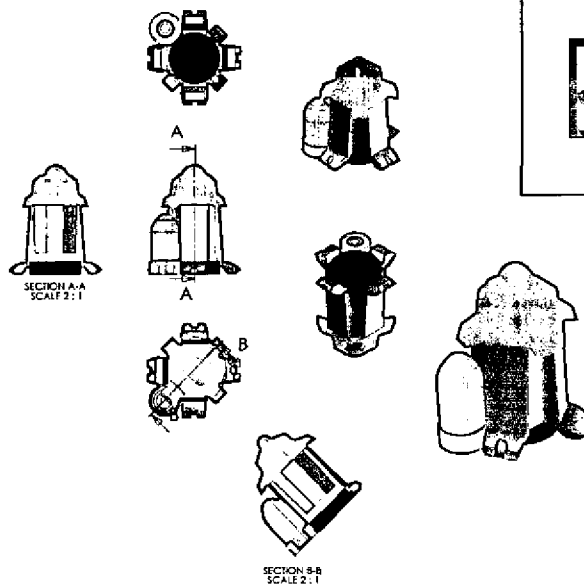
Progress of the forth quarter

This quarter focused on the development of the theme of the game and the related artwork. The theme revolves around an invasion of Earth by two robots who grab human armed forces with the help of magnets. The game was tested extensively and changes in the rules were brought in accordingly. The detailed 3D model of the coloured tokens and the player robots were developed and handed over to the SME.

The artwork for the board and the rules were developed and modified after feedback from the client and subsequently delivered to them.



Testing of prototypes to refine the rules and board layout.



Symbols used on the board to denote different types of army units.

Detail CAD model of the players peg.

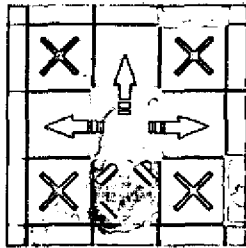


Figure 2

Capture units horizontally or vertically. Diagonal capture is not allowed.

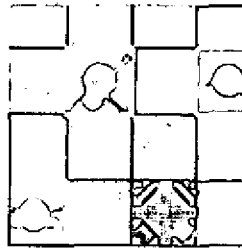


Figure 3

If there is a yellow unit left, you cannot grab red or blue units. So, you are not allowed to move on the dark grey squares as you might accidentally grab the wrong coloured units.

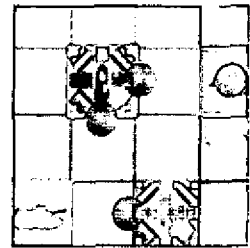
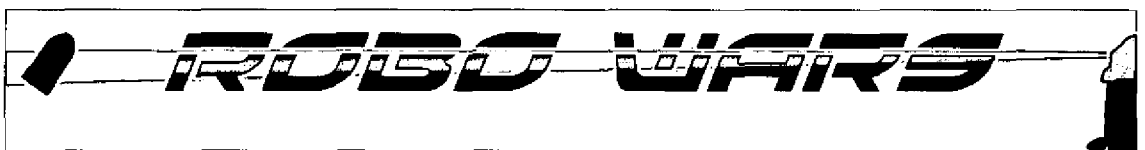
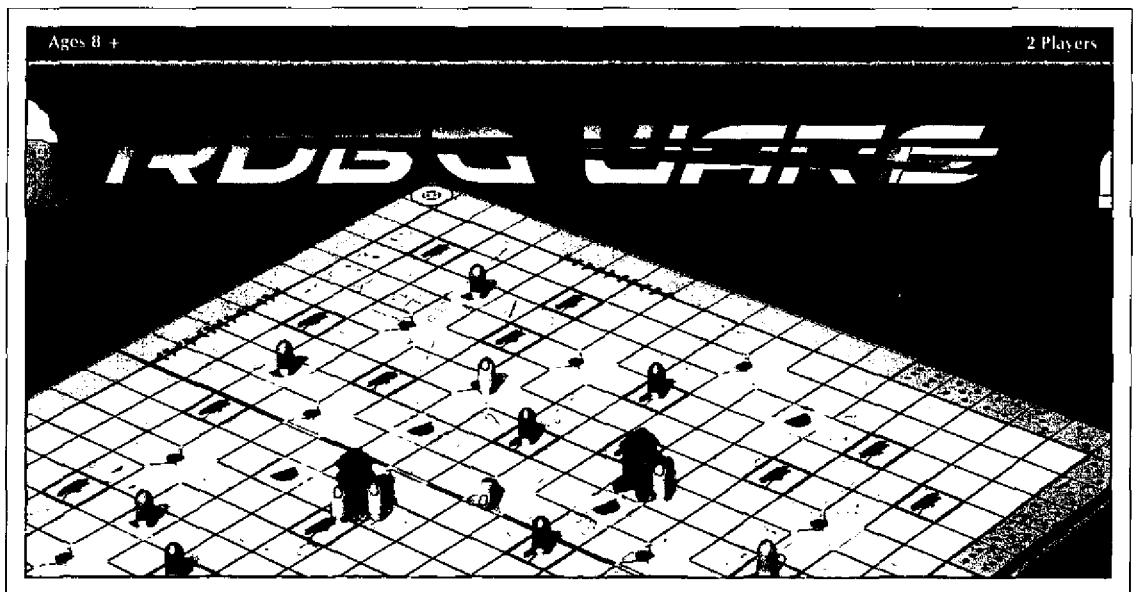


Figure 4

Dark grey squares are out of bounds for the green robot.

Illustrations explaining the rules of the game.



Concepts for packaging and typography.

4.0 Conclusions

For us, the idea of 'Toy workshop' as conceived was successful. We have gained in our interaction with SMEs and I assume that they also have gained equally. All the SMEs have not kept the pace with the progress of the project. So the benefits are little uneven.

The small size of the units and almost one man show way of operating will be a major hindrance in making the idea work. We sincerely feel that marketing and management inputs also need to be integrated with such workshops in future.

Plan for closing the project

There was a suggestion in the last review meeting to launch the designs together in a large play workshop for children. Children from different schools in the vicinity will be invited to attend the play session and will be given free access to the toys and games. They will be encouraged to play, build and have fun.

The workshop will not only give children feedback on the efforts, but will also help giving some publicity to the SMEs and the new toys and games. TAITMA as a neutral body had agreed to organize the event.

TAITMA is planning three day event for school children where the games will be launched together by all the SMEs. As the games are largely educational, such a launch is likely to invite press publicity, thus giving the SMEs a marketing mileage.

The event is being planned after the closing of the formal project. However, we have promised our cooperation in organizing the event.

The final report is being sent for UNIDO so that the closing can be completed at the earliest.

Suggestions

One feels that there is a need to build a research component in the workshop. SMEs are not aware of the changing motivations to buy, patterns of buying (who, why and when?), children preferences as they grow. This is vital to build a sound base for the toy industry.

In future workshops if planned, it is important to include visits of the designers to the toy exhibitions. This will keep them abreast with the latest in the international scene.

Acknowledgement

On behalf of my colleagues Prof. Bapat and Prof. Kulkarni, I would like to thank all the participating SMEs who have spend their time and efforts to work with us to develop new ideas. I would also like to thank UNIDO officials for their cooperation. Thanks to Mr. Kinra for his support, encouragement and guidance in running the project. Special thanks to Mr. Ashok Jain and TAITMA, who helped us tie over the financial difficulties in maintaining the team.

Finally, I would also like to thank the wonderful design team assembled for this project. We have not been able to remunerate them commensurate with the efforts that they put in. In spite of this, they have stuck around as a team and gave their utmost to the project. Design Team is being dissolved. It was enjoyable to work with the team and brainstorm with them to come out with ideas.

APPENDIX 1

Feedback taken from the participating companies
in 4th Quarterly Presentation held on 18th April 2007.

Feedback Form

Design Support for Toy Industry in Mumbai, IDC, IIT Bombay

Name of the Industry: Lovely Toys

Comments for the outcome of project undertaken by IDC for the industry

Initially I was designing the products whatever I liked/and as per the demand.
Now I do think about the basic principles, value addition and some kind of activity.

Learning: IDC has changed my thinking process & to take lot of efforts even on small concepts and what seems to be impossible.

Suggestions, for future collaboration of IDC with the industry:

Now with the one year experience IDC has been aware of the market and the available toys.
So they themselves should suggest us what to develop depending on our interest.

N. P. Pangaonkar

Feedback Form

Design Support for Toy Industry in Mumbai, IDC, IIT Bombay

Name of the Industry: Chirantan Enterprise

Comments for the outcome of project undertaken by IDC for the industry

I am totally satisfied with the ideas, design and finally artworks provided. Varun has been excellent along with Hrishi and Shrikant. I look forward to more association with them in future.

Learning: Go systematic in designing and final prototype.

Take help from professionals to guide you in coming out with something new.

Suggestions, for future collaboration of IDC with the industry:

I wish same team of Varun, Hrishi and Shrikant is there next time.

IDC needs exposure to market both national and international.

Wishing Toy Team best of luck for the time to come.

Thanks

Ashok Jain

Feedback Form

Design Support for Toy Industry in Mumbai, IDC, IIT Bombay

Name of the Industry: Darshan Toys

Comments for the outcome of project undertaken by IDC for the industry
Outcome is good and satisfying. Hope to continue the same project further.

Learning: We learned good things on how to improve our products and the package system.

Suggestions, for future collaboration of IDC with the industry:

Feedback Form

Design Support for Toy Industry in Mumbai, IDC, IIT Bombay

Name of the Industry: Premsons Plastics Pvt. Ltd.

Comments for the outcome of project undertaken by IDC for the industry

Its reached nearly prototyping stage.

After doing actual trials we would launch this product.

Learning: Now I know core strength of IDC is in designing forms (shapes). So my next project will have that main area.

Suggestions, for future collaboration of IDC with the industry:

Request: Logo, graphics and packing should be designed for my product as done for other companies in the project.

Thanks

Feedback Form

Design Support for Toy Industry in Mumbai, IDC, IIT Bombay

Name of the Industry: Satya Plastics / Speedage Corporation

Comments for the outcome of project undertaken by IDC for the industry

Product (Expedition Mount Nova) is a new type [of game]. Product is yet to be completed. Product seems to be good but bulky in size.

Learning: Interaction with qualified persons like Prof. U. A. Athavankar, Prof. V.P. Bapat and Kiran is very satisfactory.

Suggestions, for future collaboration of IDC with the industry:

As we have learnt the capability of IDC and their men, I feel coming new product will have better design and right product from market point of view.

Feedback Form

Design Support for Toy Industry in Mumbai, IDC, IIT Bombay

Name of the Industry: Tayebally Ebrahim & Sons

Comments for the outcome of project undertaken by IDC for the industry

It was excellent, also time required was too much, but after all I am very happy. And now I know how to work with IDC in future. I am also thankful to all the students & professors for helping me and making my project successful.

Learning:

Suggestions, for future collaboration of IDC with the industry:

I will work in future step by step and I will be more accurate to have the work done.