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	<p style="text-align: center;">CONTRACT N° 2001/249</p> <p style="text-align: center;">UNIDO PROJECT US/IND/01/003</p> <p style="text-align: center;"><i>National Programme for the Development of the Indian Toy Industry</i></p>
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<p style="text-align: center;">Final Report</p> <p style="text-align: center;">Covering period 1.09.2001-30.09.2003</p> <p>Report Version: 1</p> <p>Report Preparation Date: 30/9/2003</p> <p>Classification:</p> <p>Contract Start Date: 1/09/2001</p>	
	<p>Project funded by UNIDO</p>

1.- Summary of project development.

The aim of this project is to provide support for the Indian Toy Association in the creation of the Toy Design and Development Institute (TDDI) in Greater Noida, India, using the widely recognised experience of the Toy Research Institute (AIJU) for issues of new product design, research and development, testing, etc. applied to the toy.

After several contacts AIJU has been selected by UNIDO as the adviser for the National Programme for the Development of the Indian Toy Industry. A contract for the fulfilment of the project was signed in September 2001. At first, the final report should have been done by December 2001, but the final draft wasn't approved until September 2002 due to some reviews and delays. Later, a final adaptation for the integration of the activities proposed for the space available in the TDDI building, already under construction, is applied for to AIJU.

Once obtained the building designs and the specifications of the different phases to build, and the additional information about the applicable requirements, it has been developed the required final adaptation. This information has been presented by an interactive CD and the assistance to the 2nd Governing Council Meeting of the Toy Design & Development Institute held on 18th July 2003 for a better understanding of this final adaptation.

2.- Summary of proposal for setting up of TDDI.

There are different activity areas well defined in the proposed centre, in the ideal situation the level of activity of each of them must be enough to be self supporting independently. Some of them are proposed to be carried out in a first stage and increment capabilities afterwards.

So the **Training Department** must have government support, as much as possible so the courses could be beyond the means of the company workers. Otherwise it would be necessary that the toy companies carry on with all the costs for developing the training programs.

With the **Testing Certification laboratory** proposed, running at 100% of its capacity, the TDDI would have enough capacity to test completely more than 500 toys per year, and the increasing capacity of this will depend on the increasing capacity of the laboratory staff.

The **Product Development Department** would have different services as product acceptance studies. Designers of the toy companies could test here all the new products, packaging, etc..

The **CAD/CAM/CAE and Rapid Prototyping Department** could be self supporting depending on the quality of its services and products to mould makers and plastic processors. With the capacities proposed, it could improve the quality and efficiency of all the plastic processors in the toy sector.

Projects and Technology Transfer Department must be specialised as technological consultant, with an open wide field of activities, managing systems, communications technology.

3. Summary of proposed activities for TDDI

The different activities proposed in the Final Project Document are summarised below:

TESTING AND CERTIFICATION LABORATORY

The certification and test laboratory must be able in a first stage to carry out physical tests and analysis in accordance with European standards on safety of toys (EN71, in its various sections, and EN 50088, for electrical toys). Also must be able to carry out tests in accordance with several international (American, ASTM F...) and national (IS 9873) regulations.

- Toy Normalisation and Standardisation
- Mechanical test laboratory.
- Chemical test laboratory.
- Electrical test laboratory.
- Flammability test laboratory.
- Acoustic test laboratory.

In the next stage, the laboratory should have the necessary equipment to carry out tests on child care articles in accordance with the international standards.

Another possibility to expand the laboratory activities is the material characterisation and quality control tests, both on raw materials and on the finished product.

Nevertheless, these tests will depend on the viability from the investigation centres that are related with the plastic, that actually the India is using.

Moreover, be able to develop investigation projects related with new materials and tests.

PRODUCT DEVELOPMENT DEPARTMENT - PEDAGOGY

The main objective of this Department is to carry out studies and research projects in order to obtain criteria designing toys very close to the needs and characteristics of the market. These studies will outline a guide for designing new products, enlarging product ranges, adapting products to different markets, etc.

Different subjects will be developed:

- Studies on toys about adaptation to use. These studies are carried out with consumers (parents / children).
- Marketing studies (with families, teachers, toys-sellers, competition tests, etc) in order to guarantee the success of the product.
- Pedagogical studies on toys (motivational test, test of design, test of prototype, motivation for purchase, price forecast...)
- Research projects about games and toys.

In our opinion these services are difficult to carry out in the toy sector in India, in Spain these also have a low demand from toy companies.

To implement them is your decision, perhaps could be interesting to develop a market study before deciding to implement or not at the first stage of the project, to implement in a second stage or not to implement by the moment.

In any case, it would be necessary a training period in AIJU before carrying out these activities in India.

PROJECTS AND TECHNOLOGY TRANSFER – CONSULTANTS OFFICE

This department must offer three basic services:

1. Technical advice on quality and environmental management systems:
 - Quality and Environmental Diagnosis, Environmental Assessment and Improvement plans.
 - Advice on the introduction of ISO 9000 Quality and ISO 14000 Environmental Management Systems.
 - Internal quality audits for manufacturers and suppliers.
 - Quality control plans.
 - Waste and Minimisation Studies. Minimisation Plans.
 - Environmental Impact Assessment.
 - Packaging Waste Prevention Plans.
 - Environmental Advice (Legal and Administrative).
 - Negotiation of grants and subsidies from public bodies.

2. Transfer Investigation Results-Office.

The essential objectives in this service must be:

- To promote and support the socio-economic development project and a managers modernisation.
- Collaboration with the administration and with other social and economics operators in the definition of mechanism and in the elaboration of procedures that permit the linking TDDI-INDUSTRIE

These objectives will be perceived through:

- Projects for introducing new manufacturing and management technologies.
- Technical assistance regarding the introduction of Management and Control Systems.
- Projects for Innovation and Demonstration of new technologies.
- Projects for dissemination and promotion of new technologies.

3. A Centre of Innovation Industries with three basic functions:

- To promote the creation of innovator industries through the management of financials supports. For that must be necessary to carry out studies about economical-viability and about the companies that have been proposed with the intention to evaluate and to select the most viable proposals.
- To provide juridical and technician support for the creation and implementation in new companies
- To have a building for developing all the business activities. For that must be built modular areas with the basic installations (electricity, water, telephone, etc)

TRAINING CENTER/INFORMATION

The continuing training makes up a strategic point in the process of technological economical and social change.

The training objective is to get the workers adaptation to the industrial changes and to bring near, the new technologies and new methods of management in the industrial process and industrial services.

The training centre of TDDI pretends to integrate the technological development and the professional training in the toy industrial sector and, in the India auxiliary industry, refreshing their employers, technicians and owners in the companies that have the specialisation in new technologies as an objective.

To develop this centre, all the different required courses must be imparted, adapting the proposal of needs and the petition of management organisation,...

The courses will be adapted to the industry needs but in a first moment some of them are defined in the final report (The particular objectives, contents, length of time, etc are in the appendix of the final report)

All the courses must be imparted by expert degrees in each formative area.

Apart from, in addition to the training centre, a bibliographic centre must be included in the TDDI, accessible to internal staff and for external students.

We propose an **information area** too, for an immediate advising in the industries, having a special attention in:

- Realisation and diffusion of information units than can support the decision the company has to take everyday (Technical Publications and General subjects).
- Solving doubts and necessities in an agile way, so for this reason it is necessary to have contacts with reliable sources of technical information and procure a permanent technical and scientific information.
- To establish a technical-assistance plan in the industries with the intention of making to know to make known the different services that TDDI can offer.
- To detect new industrial needs for valuing the viability that can offer from the new TDDI services.

CAD / CAM / CAE AND RAPID PROTOTYPING

The following studies could be carried out during this engineering stage,

- CAD, 2D and 3D design of parts and moulds.
- CAM: CNC programs generation for milling, drilling, tapping, reaming, turning (lathe) and routing
- CAE, Computer-Aided Simulation on Plastic Injection,
 - Part-fill analysis.
 - Casting dimensions and distribution.
 - Cooling analysis.
 - Simulation of solidification phase.
 - Shrinkage analysis.
 - Warpage analysis.
 - Stress analysis.
- Structural analysis.
- Testing of moulds for plastic injection.
- Plastic processing test.
- Advice on problem-solving with regard to part quality and productivity in the injection process.
- Dimensional metrology.

- Rapid Prototyping

TDDI could offer a range of solutions for the design and development of products using rapid prototyping and rapid tooling technologies, in order to obtain functional prototypes directly from CAD files with polyamide or elastomer materials and rapid tools with stainless steel mixed with bronze or other available materials (depending on the selected or used technologies).

In order to reduce time and costs when developing the product, we will use computer aided technologies:

- Computer aided design.
- Simulation of injection
- Prototyping.

TOOLS TO BE DEVELOPED TO SUPPORT TOY INDUSTRY (in a second stage)

It is not necessary for the TDDI to have enough capacity to develop tools by itself to provide the toy sector. Counting on good technical consultants in CAD/CAM/CAE and having a good technology to produce prototypes is enough for starting. But at the same time we propose a possible outsourcing from the TDDI as a mould making company to provide the toy sector. So we will include a description of the tool and equipment needed for tool design, development and fabrication to provide the toy sector.

MOULD DESIGN

The main supporting industry for the toy sector is the mould and die /dye industry.

Mould design is a technically demanding work, which requires specialised workers for the conception of the mould in design and afterwards in metal machining the construction.

Moulds for the toy industry do not need to be so tightly tolerated as those used in other industries, such as the automobile or electronic devices.

Equipment needed for tool development/fabrication including tool design. Specifications of tool making equipment, cost and their source are described in point 7.7 of the final report.

GENERAL ADMINISTRATION

The administration department will have a double purpose: In one hand it will do one's own activities in the economical and financial management. To do so, is always going to be with the TDDI support and resources, like supervision and budgetary control about incomes and expenses in the different departments. In the same way both national and international research projects carried out annually.

On the other hand, the manufactures will be supported by advice services and in all the economical points of view that can have a repercussion in the industrial toy sector.

4. Final Presentation TDDI proposal in India by AIJU

The 18th July 2003 was held in New Delhi the "2nd Governing Council Meeting of the Toy Design & Development Institute" under the national programme for the Development of Toy Industry and the Chairmanship of Shri Suresh Chandra, Addl. Secretary & Development Commissioner (SSI).

The agenda points proposed Were:

- Presentation by AIJU on Setting up of TDDI
- Construction of the TDDI Building
- Revised Structure of TDDI and its services for Phase I and Phase II

The result of this meeting are summarised in the annexed copy of the Minutes of the "2nd Governing Council Meeting of the Toy Design & Development Institute".

5. Conclusions

The Final Project and its implementation Plan was accepted, at the same time bases for future collaboration between AIJU & TDDI were defined. So AIJU will offer support in the areas of training of trainers, test personnel, development of training modules, product development, reduction of production cost & technology transfer, and technician from the future TDDI will be trained in AIJU and different initiatives of collaboration will be studied to present them to programmes with EU funding.

TOY DESIGN & DEVELOPMENT INSTITUTE

(Registered under Societies Registration Act 1860)

Ref. No.

No. TDDI/07/GC/2001

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Date:

28.07.2003

To

As per list enclosed.

Sub: Minutes of the 2nd Governing Council Meeting of the Toy Design & Development Institute held on 18th July, 2003.


Sir,

I am directed to enclose herewith a copy of Minutes of the 2nd Governing Council Meeting of the Toy Design & Development Institute held on 18th July, 2003, under the Chairmanship of Additional Secretary & Development Commissioner (SSI) for information and necessary action.

Kindly acknowledge receipt.

Encl: As above.

Yours faithfully,


(ANIL KUMAR)
O.S.D.(TDDI) 28/7

LIST OF MEMBERS & SPECIAL INVITEES WHO ATTENDED THE MEETING

1. Shri Suresh Chandra
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**MINUTES OF THE 2ND MEETING OF THE GOVERNING COUNCIL OF
TOY DESIGN & DEVELOPMENT INSTITUTE (TDDI)
HELD ON 18TH JULY 2003 AT NEW DELHI**

The 2nd meeting of the Governing Council of Toy Design & Development Institute (TDDI) was held on 18th July 2003 at 1100 hrs in the Office of DC (SSI), Nirman Bhawan, New Delhi under the Chairmanship of Addl. Secretary & Development Commissioner (Small Scale Industries), Ministry of Small Scale Industries. The list of members and special invites who attended the meeting is Annexed.

1. In his opening remarks, Chairman emphasized the need to speed up setting up of TDDI under NPDTI. The Agenda, as circulated earlier, was taken up for deliberations thereafter.

Agenda Item No. 2 Ratification of 1st Governing Council minutes

2. The Minutes of the 1st Governing Council meeting held on 2nd March 2001 were confirmed.

Agenda Item No. 3 Action Taken Report

3. The progress of actions taken on the decisions of the 1st Governing Council meeting held on 2nd March 2001 was noted.

Agenda Item No. 4 Setting up of TDDI at Toy City, Greater NOIDA

4. Construction of building in a phased manner, with 1500 sq. meters at an estimated cost of Rs. 1.25 crores, in the 1st phase and building plan, as approved by the NPDTI Steering Committee, was noted.
5. Boundary wall may be constructed around the entire land, as per approved design, in the first phase itself to avoid encroachment on the TDDI land.
6. Sanction of Rs. 1.25 crores for the 1st Phase of TDDI building by the Ministry of Commerce was noted. It was also noted that the TDDI building is to be constructed within three years from the date of possession of the land (4th March 2002).
7. Funds for the construction of the proposed TDDI building may be received and managed by TDDI.

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8. To facilitate early and quality of construction of the TDDI building, it was decided:-
 - a. To set up a Construction Committee, headed by President TAI with representatives of TDDI, ICAMT and o/o DCSSI as members to oversee and finalise matters concerning construction of the building. Expert(s) may be co-opted as members as per needs.
 - b. To Invite open tenders for selection of a suitable contractor (for construction of building).
 - c. That detailed tender document and technical specifications may be obtained from the architect and examined, with expert opinion if necessary.
 - d. That completion of construction may be ensured on time bound basis. Pert chart system may be followed for implementation.

Agenda Item No. 5 AIJU Spain report for setting up of TDDI

9. While all the recommendations on the services proposed to be rendered are relevant for the development and upgradation of toy industry, the Governing Council advised to implement the report in a phased manner as per needs of the industry.
10. The initiatives taken to partially implement the AIJU recommendations on design and testing of toys through SISIs and RTCs respectively to cater to the needs of the two major toy clusters in Delhi and Mumbai regions were noted.
11. To improve utilization of the toy testing facilities set up at RTC Delhi and Mumbai, a special drive to create awareness on the use of safe toys may be initiated by TDDI jointly with RTCs. Publicity material in the form of brochures and videos may be produced to promote testing of toys.
12. Free television time available with Ministry of SSI under Business Mantra may also be utilized to promote production and use of safe toys. The market pressures will enable toy industry in ensuring production of safe toys and inevitably lead to greater utilization of the testing facilities.
13. It was decided to depute one officer each from RTC Mumbai and Delhi to AIJU Spain for training on toy testing. Similarly, one officer each from SISI Delhi and Mumbai may be sent to AIJU Spain for training on design of toys.

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