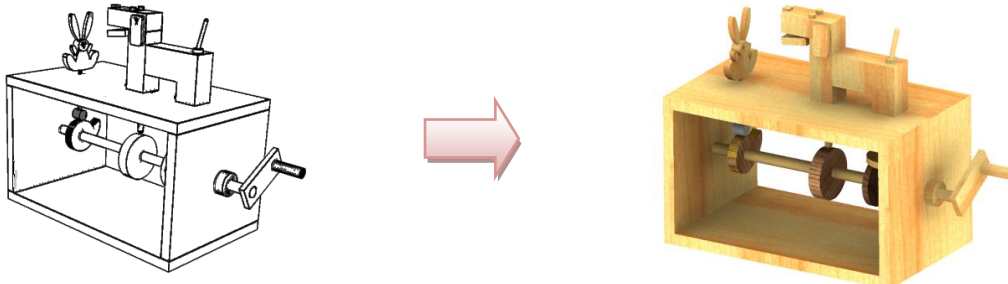


# Toy Design Competition 2011 (Autodesk® Inventor® Design Category)

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## 1. Introduction

This competition is an exciting activity that provides a platform for students to challenge their creativity and skills in designing fascinating animated mechanical toy sculptures called Automata using Autodesk Inventor software.



Automata are originated from the Cabaret Mechanical Theatre (CMT), a highly acclaimed travelling exhibition originated from the UK that combines the work of Arts, Science and Technology. Nearly all of the work in the CMT collection is humorous. These mechanical toy sculptures showcase the fine art of engineering and are valued highly in the collectors' circle. They can be brought to life by cranking a handle to move a shaft mounted with a series of machine parts such as cams, gears, linkages, belts and pulleys, ratchets, etc. which are in turn connected to the various parts of the sculptures to produce the desired movement.

This Toy Design Competition 2011 is organised by the Singapore Polytechnic's School of Mechanical and Aeronautical Engineering, sponsored by the Hewlett-Packard Singapore (Sales) Pte Ltd and Autodesk Asia Pte Ltd, and supported by the DesignSingapore Council and Play Imaginative Pte Ltd.

## 2. Competition Rules

- 2.1 The competition is open to all Secondary School students in Singapore.
- 2.2 The number of students in each team should not be more than 4.
- 2.3 Each individual or team can submit more than one entry.
- 2.4 Participants can sketch their design concept with rendering. Software may be used to produce the design concepts, posters and presentation. The design models must be created using Autodesk Inventor.
- 2.5 Only the best 10 entries selected will need to submit the physical model for the final ranking and prize award.
- 2.6 The top three winning teams should be prepared to give a short presentation on their winning entries in the next TDC official launch when called upon by the Organising Committee.

### **3. Design Guidelines**

- 3.1 The dimensions of each Automaton should not exceed 30cm (width) x 40cm (length) x 40cm (height). It should not be too complex so as to ease the fabrication process.
- 3.2 Participants should visit Automata websites such as the <http://www.cabaret.co.uk/>, <http://automata.co.uk/> and <http://www.flying-pig.co.uk/> to learn more about Automata before embarking on their design. A good way to learn about the creation of movement is to look at the various driving mechanisms in action from Design and Technology websites such as the <http://www.technologystudent.com/>.
- 3.3 Participants should generate a storyline of their Automata, for example what story is it telling, what sports or performing arts is it promoting, etc. and think of what mechanism(s) can be used to deliver/drive the story. They should also make simple sketches of their design with basic dimensions and in good proportion before coming to the Autodesk Inventor Design Workshop which will be conducted in SP from 14<sup>th</sup> to 17<sup>th</sup> of March 2011.
- 3.4 The Workshop will provide participants with basic concepts of Automata design, 3D Modelling, Assembly, Visual Enhancement, Animation and Static Rendering. Students will be guided through a walk-through example entitled “[Rabbit and the Dog](#)” (as shown in page 1) on how to use Autodesk Inventor 2010 (CAD software) to create and animate an Automaton before using the software to model their own Automaton.
- 3.5 All participants who complete the walk-through project will be awarded a Certificate of Participation.
- 3.6 Participants of the 10 shortlisted winning entries are required to build their Automata using materials such as plywood, chipboard, softwood (balsa), wood ball/cube/dowel, basswood sheet/strip, ice cream stick, perspex, high density foam, kapaline board, etc. to demonstrate the functionality of their design and for exhibition purpose.
- 3.7 Parts may be joined together by adhesive (glue), nails, self-tapping screws or dowels. Pins may be used to create joints. Strings, wires, standard gears, belts and pulleys, etc., can be used to create the movements of the Automata.
- 3.8 The participants should source for the above mentioned materials and standard parts before sizing their Automata. These materials and standard parts can be purchased from shops such as Art Friends, Daiso or Hobby Shops.

### **4. Seminar and Workshop for Students**

- 4.1 The Design Thinking Workshop will be held for all participants at the Singapore Polytechnic on 14 March 2011 from 9.00am to 11.00am.
- 4.2 All participants are encouraged to attend a 1½ day workshop on the use of Autodesk Inventor 2010 software and learn how to design Automata.

## 5. Competition Details & Prizes

- 5.1 There are two rounds in this competition – the Preliminary and Final Rounds.
- 5.2 The submitted entries will be judged and ranked by a panel of judges formed by the Organising Committee and Autodesk Asia Pte Ltd.
- 5.3 The prizes are:
- |              |                                 |
|--------------|---------------------------------|
| 1st Prize    | Cash \$1000 + Trophy for School |
| 2nd Prize    | Cash \$600 + Trophy for School  |
| 3rd Prize    | Cash \$350+ Trophy for School   |
| Merit Awards | Cash \$150 x 7                  |
- 5.4 All participating and winning students will be presented with certificates.

## 6. Judging Criteria

All submission will be judged based on:

- Product Description and Design Sketches 10%
- Design Posters 15%
- Originality, Creativity and Appearance 25%
- Design Process Skills and Functionality 25%
- Automaton Fabrication (For Top 10 entries only) 25%

## 7. Registration & Final Submission

- 7.1 Participants are to register using the forms available in the TDC.11 website at <http://www.sp.edu.sg/schools/mae/> and submit a hardcopy to their teacher I/C. The teacher shall then collate and email or fax all the forms to the Organising Committee by **28 February 2011**.
- 7.2 All participants should submit their entries through their teacher I/C to the Organising Committee by **29 April 2011** for the preliminary round judging.
- 7.3 Each submitted entry must include:
- Two A3-size posters mounted on cardboard.
    - pictorial sketches of the design
    - rendered/coloured illustration of the design with the name of Automaton, an overview which should include a short description of the Automaton, how its mechanism works and the participants' learning experience
  - Softcopy of the following in a CD.
    - An official entry submission form
    - A write-up and design sketches
    - Images of the above posters in jpg, png or tiff format
    - All the files in the project folder must be submitted. (ipt, iam, bmp, avi)

- 7.4 The Automaton Title, Name of Student(s) and Name of School must be clearly written on the CD using black permanent marker.
- 7.5 The best 10 entries will submit their physical model through their teacher I/C to the Organising Committee by [10 June 2011](#) for Final Ranking.
- 7.6 All submitted items will not be returned and will be the property of the Organising Committee.
- 7.7 All works submitted should be original and should not have been awarded by the organiser of another similar competition before.
- 7.8 All participants are responsible in ensuring their submission will not infringe existing copyright/patent law.
- 7.9 The Organising Committee or sponsor is not liable for infringement or abuse of any design as a result of entry in this competition or as a result of subsequent publicity.
- 7.10 Entries that do not meet the competition rules will be disqualified.

## **8. Announcement of Results**

- 8.1 The winners and their ranking will be announced during the Toy Design Competition 2011 Prize Presentation Ceremony to be held in Singapore Polytechnic Auditorium on [27 July 2011](#).
- 8.2 In the event of a tie, the organising committee reserves the right to redistribute the prizes.
- 8.3 All decisions made by the judging panel are final.

If you have any query, please contact:

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**or**

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