

# SUMMER INTERNSHIP AT SFO TECHNOLOGIES

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Alvin P Gopal  
Roll No: 126390009  
Mobility and Vehicle Design



**SFO TECHNOLOGIES**  
A NeST Group Company

# Declaration

I declare that this written submission represents my ideas in my own words and where other's ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Signature

Name : Alvin P Gopal

Roll Number : 126390009

Date :

# Acknowledgement

I would like to thank Mr.Chandran K Parameswaran (GM-Industrial Design at NeST R&D Cochin) for giving me a chance to do an internship at SFO Technologies, and also for the valuable feedbacks and encouragements during my tenure. This internship helped me to get an exposure to the real life design methods and approaches followed in an industry. My special thanks to the personalities like Dr. Suresh Nair(Chief technology officer), Basheer A A (Senior project manager), Jiju K (Design engineer) and other staff members who helped and encouraged me throughout the internship. I would like to thank Prof.G G Ray (HOD, IDC) and all my teachers for their valuable guidance. I would also like to thank my parents and friends who helped me a lot in finalizing this project within the limited time frame. Last but not least, I would be grateful for the blessings of almighty, which helped me to cross all the difficulties I have faced.

Name : Alvin P Gopal

Date :



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Kochi

25th June, 2013

**To Whomsoever It May Concern**

This is to certify that **Mr. Alvin P Gopal IDC, IIT Bombay** successfully completed his summer internship in our organization under the guidance of **Mr. Chandran K. Parameswaran** (General Manager Industrial design) from 10<sup>th</sup> May 2013 to 15<sup>th</sup> June 2013.

During this period he was assigned to focus on concept development of some of the products which were part of live projects. He was also exposed to the material and process related matters of the products as well as various stages involved in product development. He was found to be creative, sincere and dedicated to the task given.



Dr. Suresh Nair K.R

Chief Technology Officer

JKH Technology Center

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# About the company



The SFO Technologies, a NeST Group Company is a highly diversified business group, operating in the areas of Manufacturing Services, Industrial design, Engineering, Software and Systems Integration. The group has its presence across the globe.

SFO Technologies provides innovative product development solutions for customers worldwide in the Healthcare, communications, Process Control & instrumentation and Transportation areas.

In addition to the new product development, SFO Technologies undertake value engineering activities, where a need for redesign arises due to various reasons such as component obsolescence, value addition or cost reduction.

## Brief about the internship

I have done my internship in SFO Technologies, Cochin, Kerala. The duration of the project was from 10/05/2013 to 15/06/2013. During my tenure I got a chance to work with their few live projects and some future projects. The whole experience of internship has been good and helpful, to understand the different methods going on in the industry apart from the usual academic procedures. The people over there gave me enough freedom to explore the concepts and were keen to encourage and put their valuable feedbacks in proper time.

# Projects

## Project 1

Packaged drinking water bottle design 500 ml

## Project 2

Packaged drinking water bottle design 1 litre

## Project 3

PoS Lottery Terminal

# Project 1

## Packaged drinking water bottle design 500 ml

- Area of work – Product design
- Client – NeST Group
- Objective – To be used during marriage functions
- Material – PET ( Using pre fabricated PET preforms )
- Time period – May 2013



# **Project definition**

Mineral water bottle following the theme of Human couple embracing shape suitably abstract and design for manufacturing issues.

## **Design consideration**

The design must follow the given requirements

- Abstract shape depicting embracing couple.
- Should be suitable for blow moulding using existing pre-forms (PET).
- Should be encapsulated in a smooth contoured shape to enable easy blowing.
- The shape should not be narrower than the size of the neck.

## Some existing bottles with special themes



IR 1



IR 2



IR 3



IR 4



IR 5



IR 6

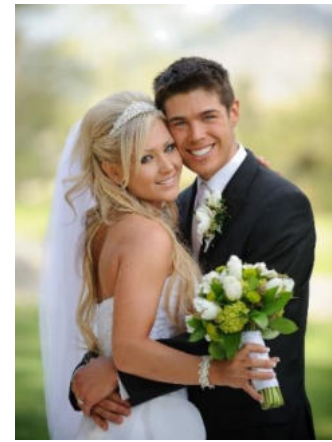
# Inspiration



IR 7



IR 8



IR 9



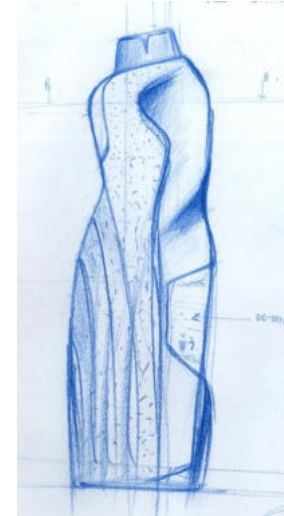
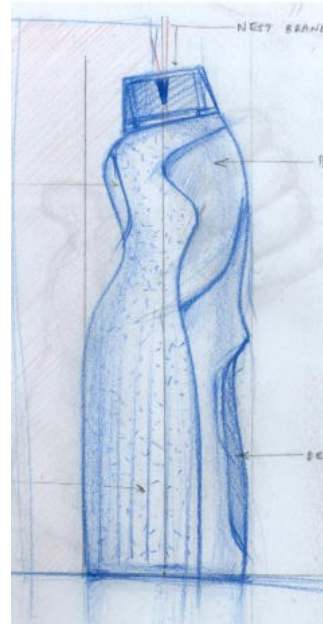
IR 10



IR 11

I got inspired by the simplicity and elegance of the married couple. The affection and happiness of the couples have also inspired me . In fact I tried to abstract the silhouette of the couple having all these emotions and features.

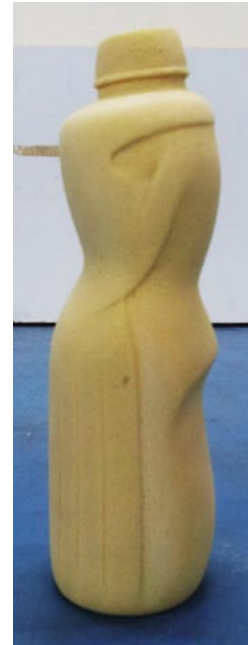
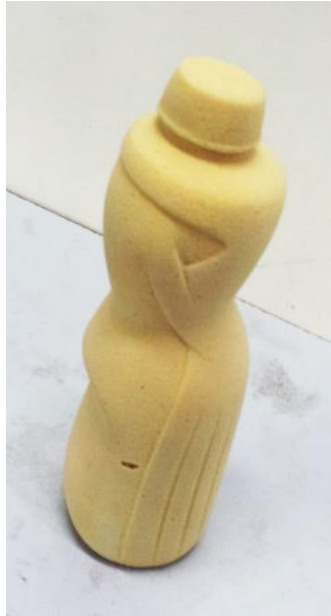
# Ideation sketches



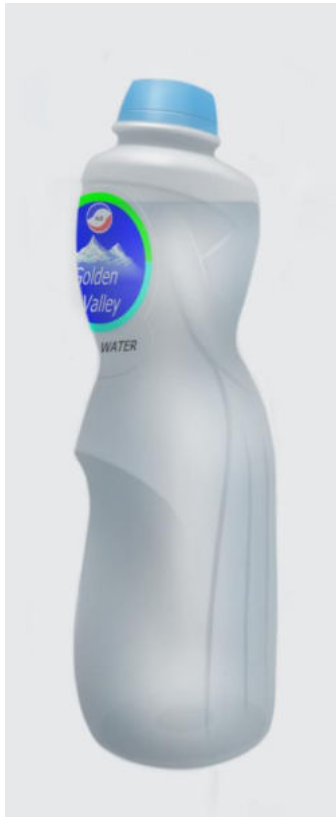
Final concept



## Mock-up model (PU)



## Final renders



Rendered using Autodesk Sketchbook Pro 2013



## Features



- Clearly abstracted, the character of embracing couple.
- smooth contoured shape enable easy blowing
- Unique and trendy form.
- The character lines and contours adds to the strength
- Easy holding is possible
- Simple but stylish graphical features
- Inclination of neck with body axis help for easy drinking



# Project 2

## **Packaged drinking water bottle design 1 Litre.**

- Area of work – Product design.
- Client – NeST Group.
- Objective – As a replacement for their existing bottles with a new face and thus to expand their market.
- Material – PET ( Using pre fabricated PET preforms )
- Time period – May 2013



## **Project definition**

Mineral water bottle design 1Litre. Design a new concept for the Golden Valley water bottle.

## **Design considerations**

- Should have a unique shape, different from designs available in the market.
- Should be suitable for holding in the hand, should be easy to stack, within minimum volume.
- Should be suitable for blow moulding using standard preforms.
- Existing Golden Valley logo should be printed. Other statutory text/graphics to be provided.

# Inspiration



IR 12



IR 13



IR 14



IR 15



IR 16

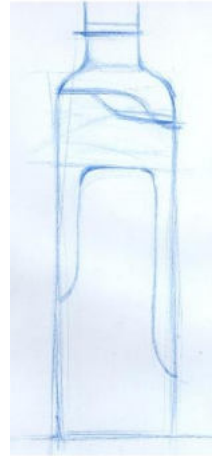
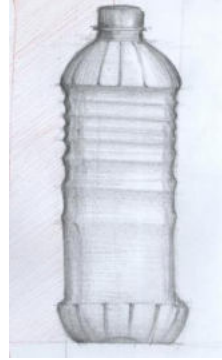
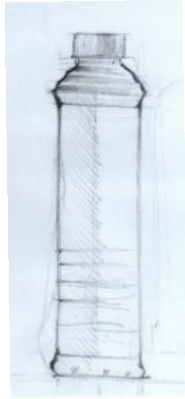


IR 17



IR 18

## Ideation sketches.....



## Final renders – Concept 1



In this concept of bottle, I tried to capture some unique form which is not there in Indian as well as in global market. The design intend was to deviate from the usual patterns of bottle design , both in form as well as in the graphical details including branding.

Rendered using Autodesk Sketchbook Pro 2013



Colour variations



# Features

- Trendy design.
- Simple and elegant looking shape .
- More stable form.
- Easy to hold.
- Fresh looking.
- More highlighting of branding.
- Easy manufacturability.



- Easy packaging is possible.
- The new cap design avoided the normal pattern, and is blending with the overall form.
- Attractive and simple graphics pattern.
- More colour options for graphics to create different moods/styles.
- More options for the customer to choose, for the same product.
- This colour option can be used for different occasions according to the nature of the event.

## Concept 2

This concept follows the same design theme as the concept 1 except the cap design. But in this concept the cap can be a flip opened one or the normal threaded one . The flip opening method will be a new approach in this segment.



### Features

Same as the first concept, but with a new cap.

- The curvy cap design is more matching to the bottle form
- The cap portion can be used to carry the bottle easily.



## Concept 3



This concept of bottle is more fluidic as like the movements of water . To get a new brand identity I experimented with a new style for " Golden Valley " which is more simple and formal both in pattern and colour scheme.



Colour variations

## Features

- Fluidic but stable form.
- Simple and elegant looking shape .
- Easy to hold.
- Easy manufacturability.
- Easy packaging is possible.
- Fresh looking.
- The new cap design avoided the normal pattern and is blending with the overall form.
- Attractive and simple graphics pattern.
- More colour options for graphics to create different moods/styles.
- More options to choose, for the same product.
- This colour option can be used for different occasions according to the nature of the event.

## Concept 4

This concept of bottle follows the same form of the concept 3 but with the actual "Golden Valley" logo.

### Features

- Simple graphical features
- More brand identity





# Project 3

## PoS Lottery terminal

- Area of work – Value engineering.
- Client – Playwin Essel Group.
- Objective – To make a new concept for their existing PoS Terminal.
- Time period - June 2013.

# Pos Terminal

POS(Point Of Sale) is the point at which the customer makes his payment for the goods or services he had taken. POS devices help to calculate the amount to be paid by the customer. Usually the retailer provides receipts for each transaction, made through the POS device. POS devices are of different types and having customised hardware and software set up according to the business. POS devices generally consists of weighing scales, scanners, barcode readers, master card readers, touch screens etc.

## Product Overview

Major specifications shared by Essel Group are

- Intel Atom N270 1.6 GHz processor ,  
with dimension 170 mm x 170 mm
- 8"/10.4" Resistive Touch Screen
- Communication – 10/100 GB LAN,  
Wi-Fi 802.11 b/g/n, GPRS
- OMR
- Magnetic Card Reader, Smart Card Reader,  
Contactless Card Reader (Optional)
- Thermal printer
- Cutter – 2 ML cuts
- 1D & 2D Barcodes printing

## **Pos Terminal**

POS(Point Of Sale) is the point at which the customer makes his payment for the goods or services he had taken. POS devices help to calculate the amount to be paid by the customer. Usually the retailer provides receipts for each transaction, made through the POS device. POS devices are of different types and having customised hardware and software set up according to the business. POS devices generally consists of weighing scales, scanners, barcode readers, master card readers, touch screens etc.

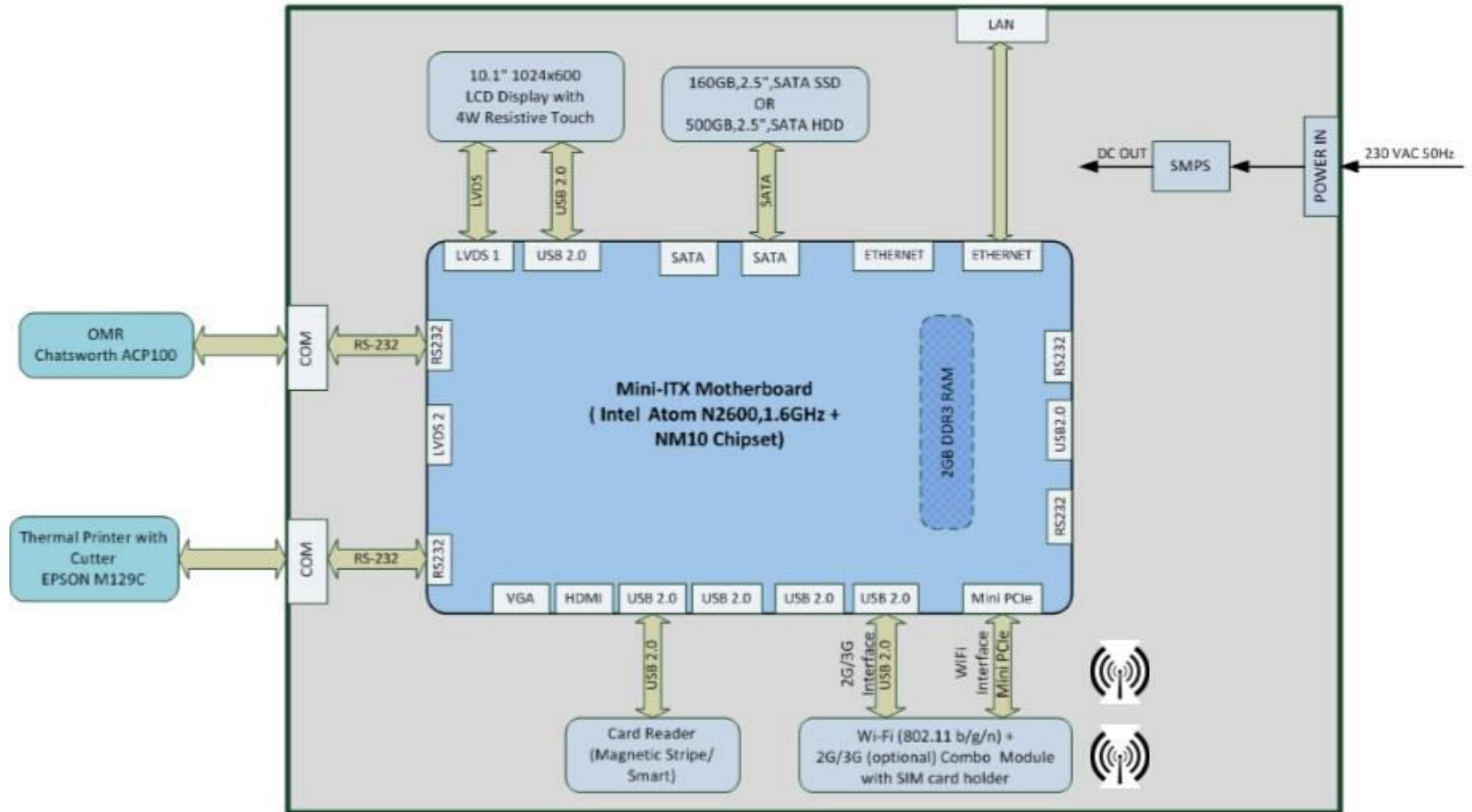
## **Project definition**

Design a new PoS – Lottery terminal as per the customer given specification as a replacement for the existing conventional box type design.

## **Design considerations**

- Should follow the specifications as per SFO Proposal.
- New design should have a unique futuristic form, should look like gaming/play equipment.
- Assume that the internal parts can be re-arranged to match the form.
- Ergonomics of UI areas to be considered.

# Block level architecture proposed by SFO Technologies



## Existing terminal and it's drawbacks



IR 19

- Conventional boxy design with dimensions 335 W x 245 H x 315 T (mm)
  - Top feeding of OMR paper reduces the visibility and is less ergonomic
  - Lack of barcode as well as Master card reader.
  - Connections are taken from the rear , making the rear side messy and visible to the customer.
  - Branding is too small to see.
- 
- Unnecessary projections make the packaging difficult
  - Out dated colour scheme.
  - Screen is too small to view the details.
  - Position of the print out point is less ergonomic.
  - No provision for holding and raising the machine.



IR 20

## Other PoS Terminals in the market



IR 21



IR 22



IR 23



IR 24

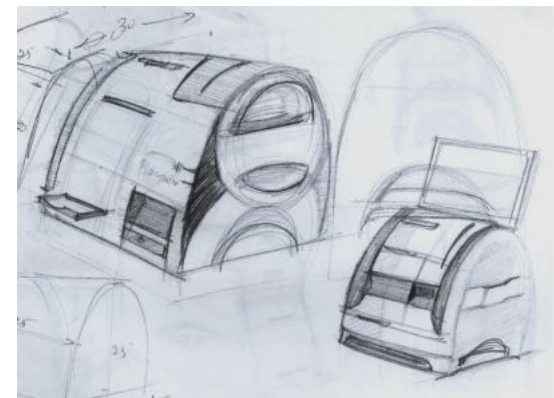
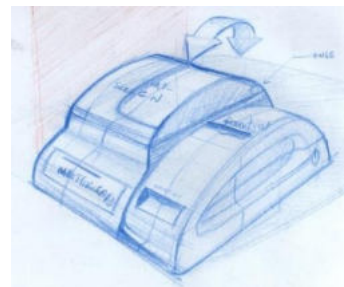
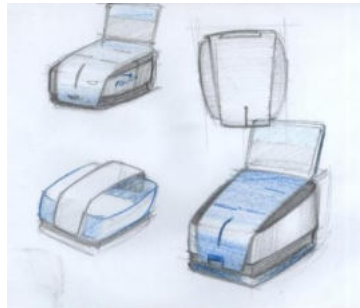
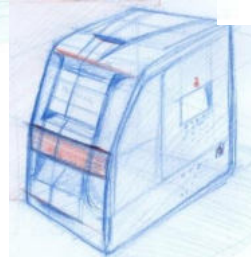
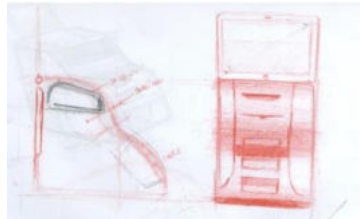
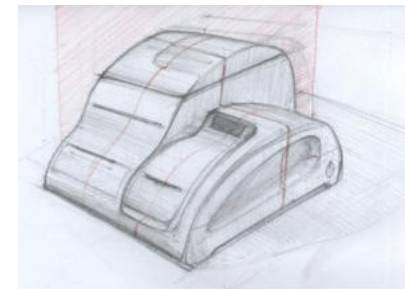
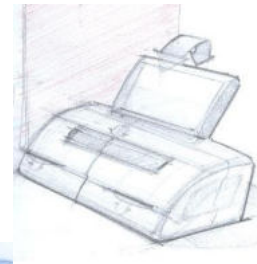
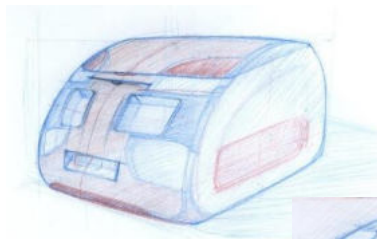
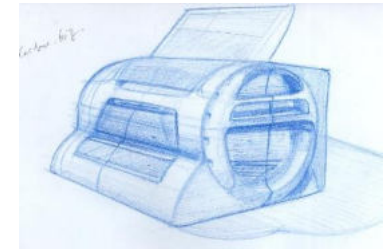
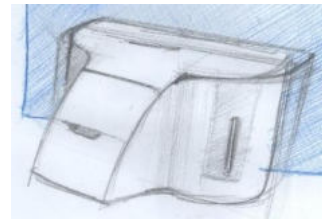
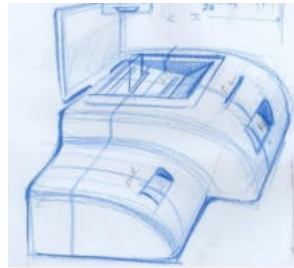
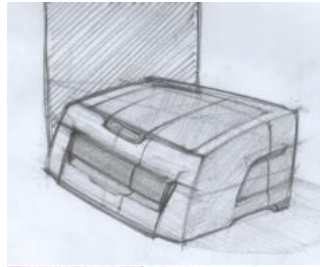


IR 25



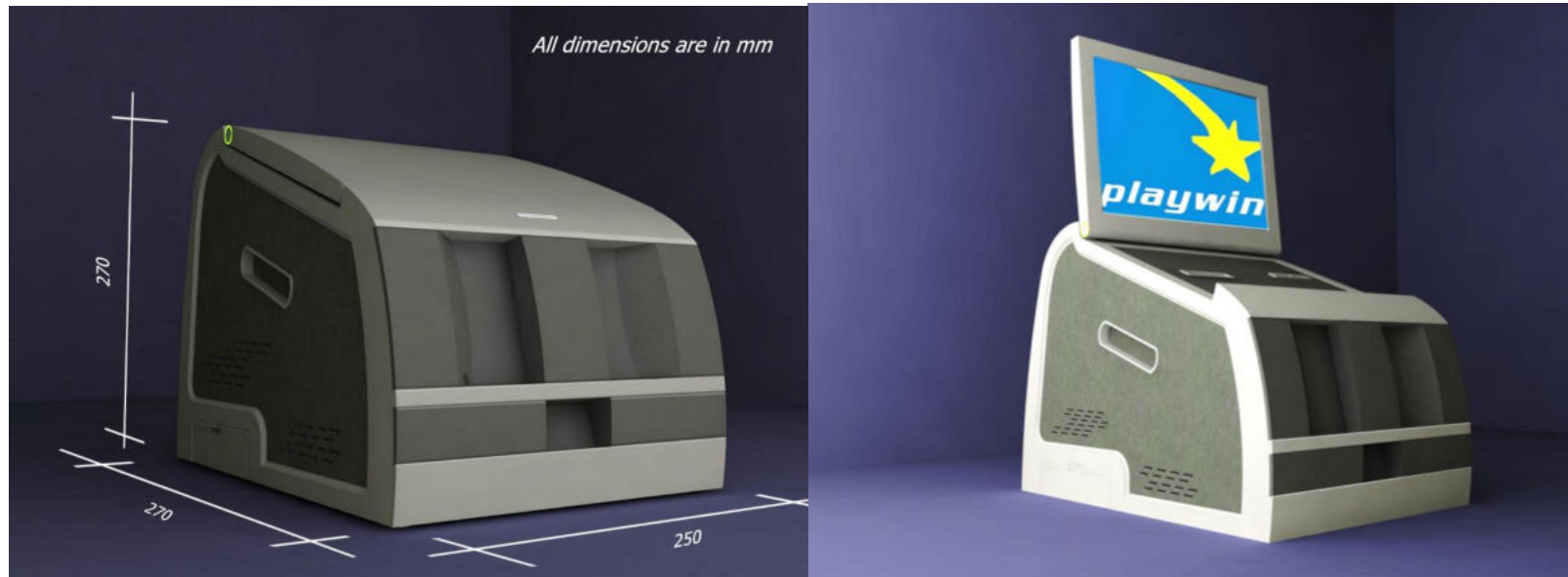
IR 26

## Ideation sketches...





# Concept 1



## Features

- Compact than the existing one.
- More flow in design.
- Integrated, foldable 10 inch screen offers more visibility and comfort.
- Give the feel of more stability.
- Dual body colour is more attractive.
- User interfaces are more ergonomic and visible

## Features continued...



Extra rear display area

Helps for showing their new offers, schemes etc.

Holding aid

Helps for easy holding and shifting

Modelled using Google Sketch Up and rendered using V Ray



Barcode reader

OMR scanner

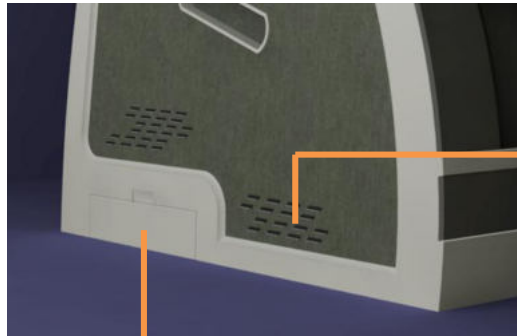
Horizontal loading one which is more ergonomic

## Continued...

Print out  
slot



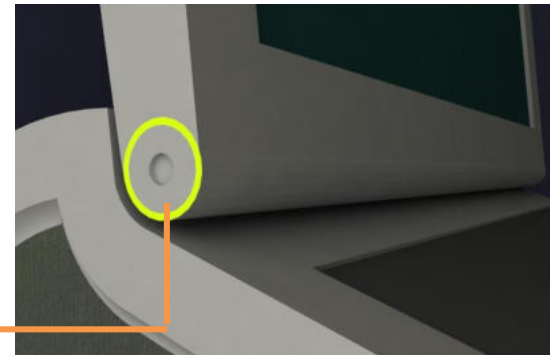
Master card  
reader



Vent holes

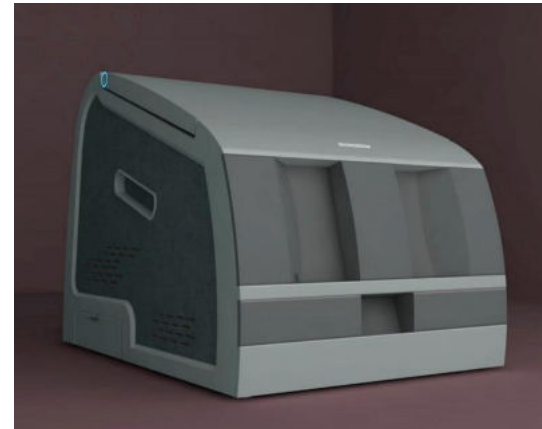
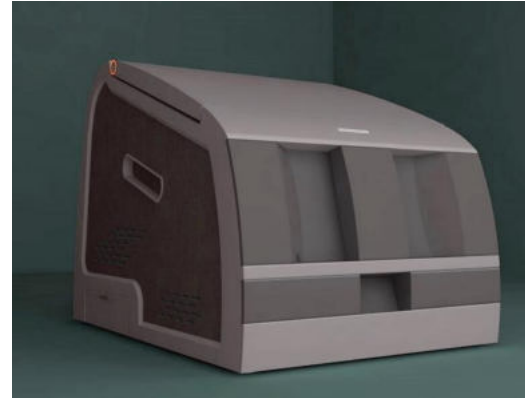
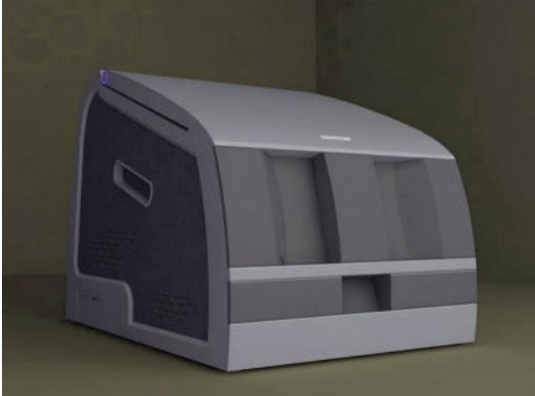
Cover of connectivity space

Power switch  
of monitor

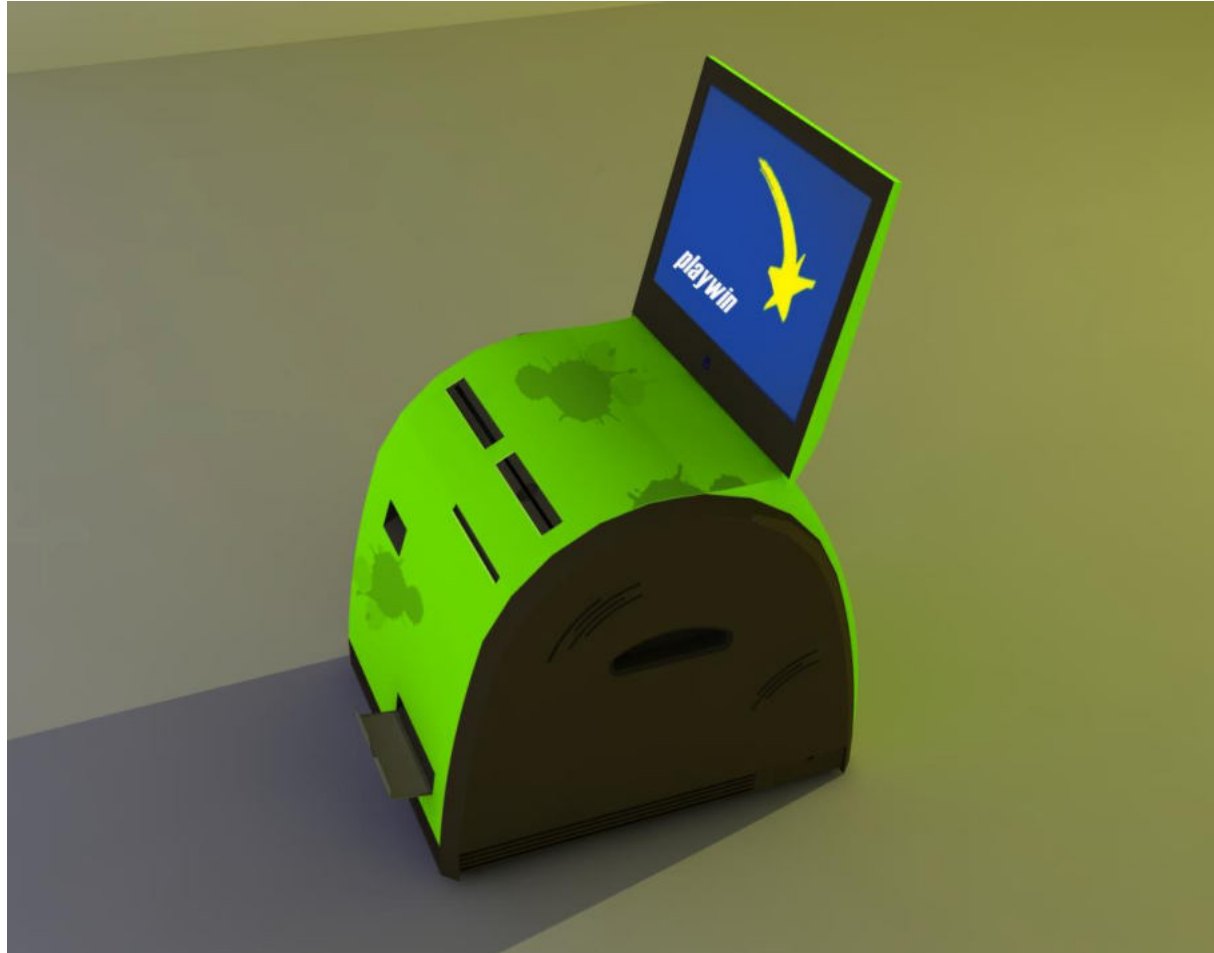


Helps to takes the connecting cables through the  
side keeping the rear side neat.

## Colour options

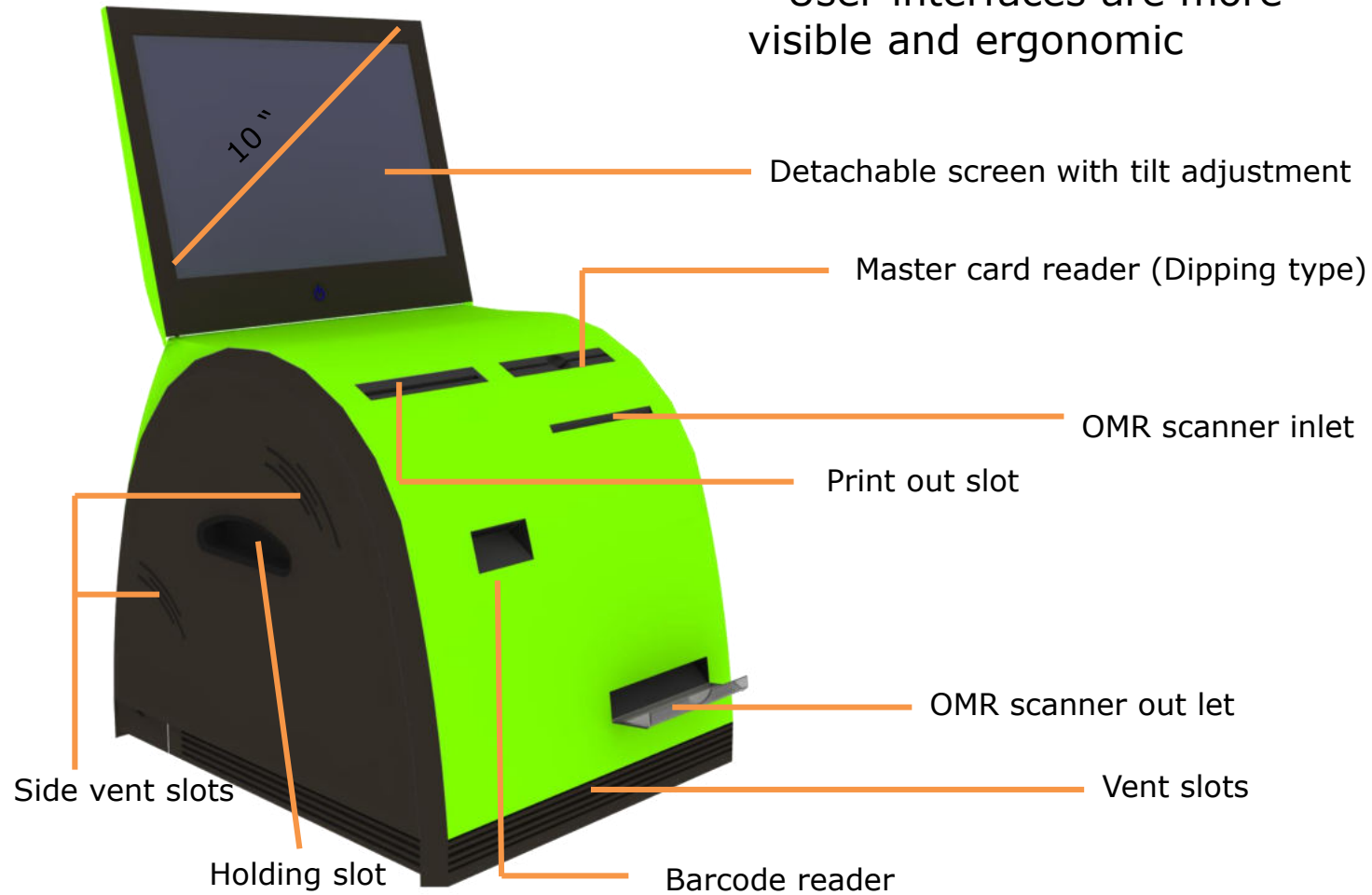


## Concept 2



## Features

\* User interfaces are more visible and ergonomic

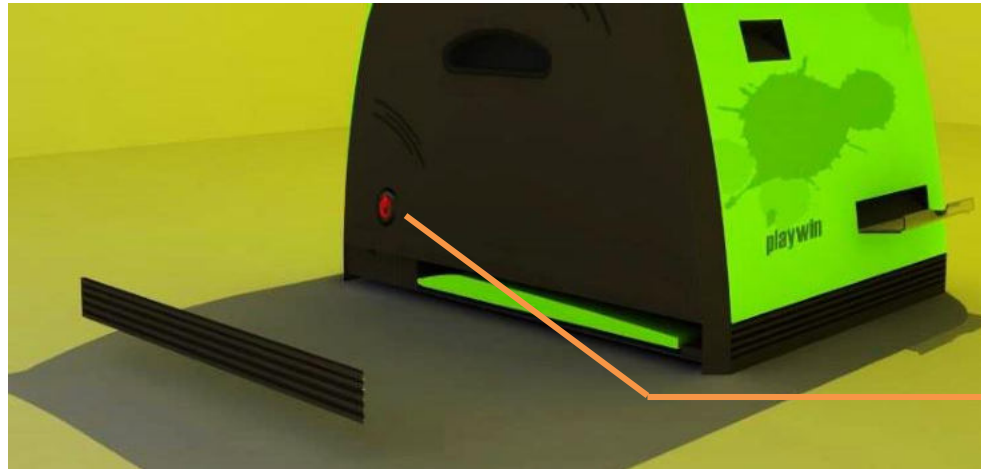


## Features continued ...

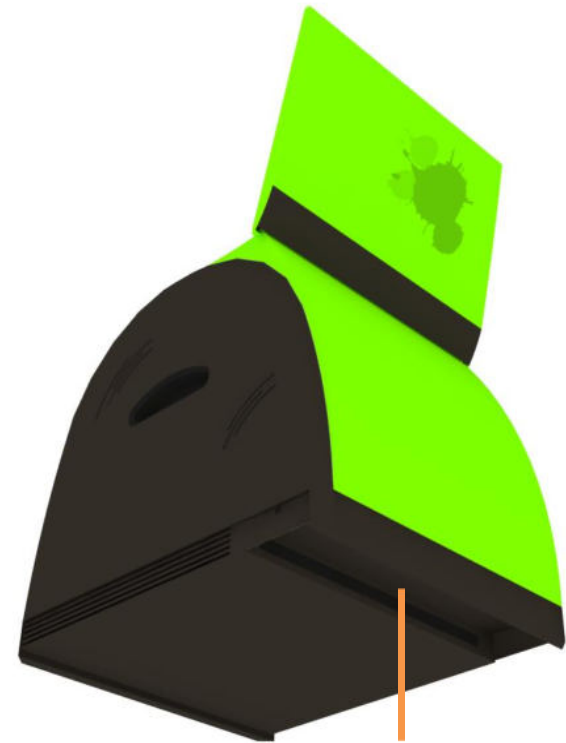


Lid

Connective ports

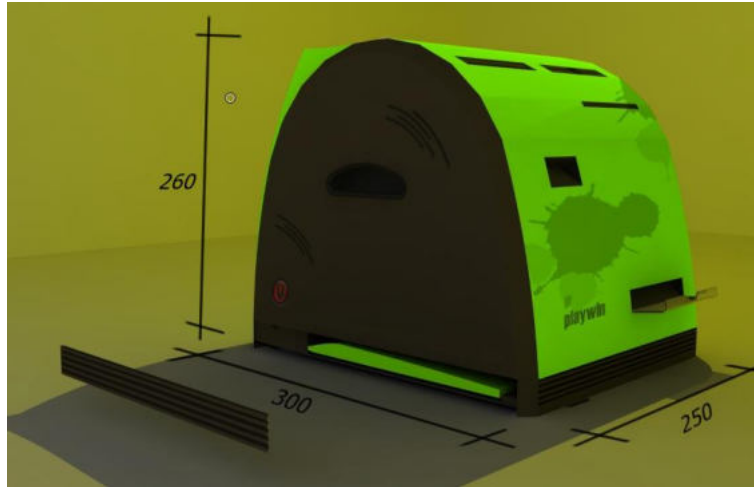


Power switch

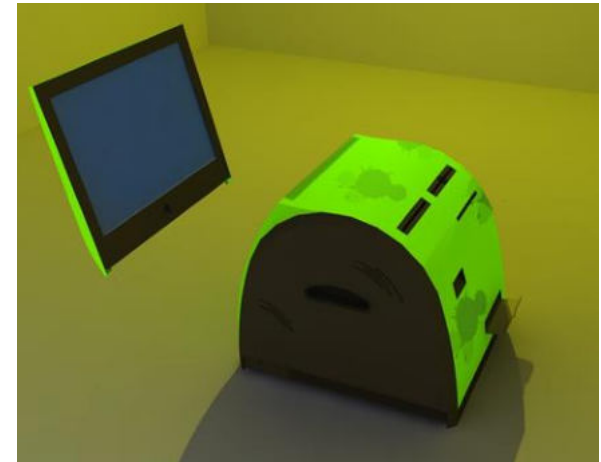


Connectivity duct

## Dimensions and features



- Compact than the existing design.
- Curvy design is more trendy and interesting than the boxy one.
- Storage space for detached screen shows effective use of spaces.
- Bright body colour impart more fun.
- Graphical pattern gives the feel of more energy and thrill.

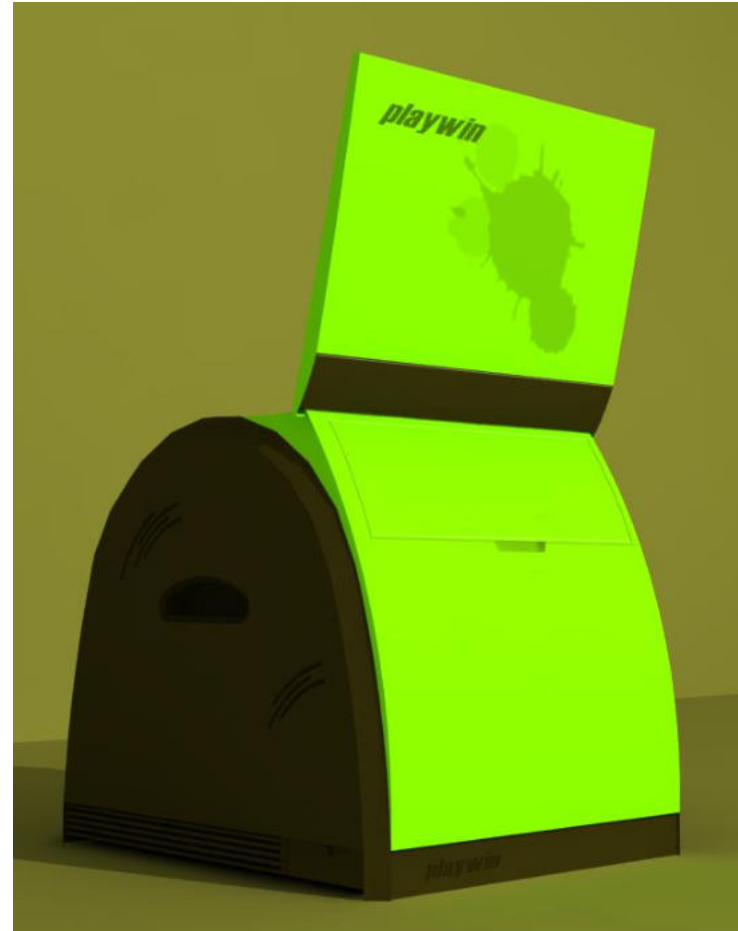




## Other views...



Modelled in Google Sketch Up  
Rendered using V-Ray and Autodesk  
Sketchbook Pro 2013



## Colour options



## References

- <http://www.wikipedia.org/>, as on 15/05/2013
- <http://www.nestgroup.net/>, as on 25/05/2013
- <http://www.myplaywin.com>, as on 30/05/2013

## Image reference

- IR 1: <http://payload8.cargocollective.com/1/5/175501/2470509/4.jpg>
- IR 2: <http://media-cacheak0.pinimg.com/originals/15/4e/11/154e11f1740b6a747da7059053665be8.jpg>
- IR 3: <http://www.agua-mineral.net/wp-content/uploads/2010/07/vichy-catalan-nuevo-e nvase.jpg>
- IR 4: [http://www.manageronline.it/img/galleries/uluvka-vodka/gall\\_img\\_ae439e2fbecb97e29d7c.jpg](http://www.manageronline.it/img/galleries/uluvka-vodka/gall_img_ae439e2fbecb97e29d7c.jpg)
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- IR 6: <http://designmuseum.org/media/item/71854/767/Ty-big.jpg>
- IR 7: <http://us.cdn291.fansshare.com/photo/wedding/dunbar-house-wedding-photos-pp-2040311349.jpg>
- IR 8: [http://37.media.tumblr.com/bf6d68103b30b0b4dd240560381c2466/tumblr\\_mlxrhc90YG1s4no4co1\\_1280.jpg](http://37.media.tumblr.com/bf6d68103b30b0b4dd240560381c2466/tumblr_mlxrhc90YG1s4no4co1_1280.jpg)
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- IR 10: <http://cdn.polkadotbride.com/wp-content/uploads/2013/05/summer-vineyard-wedding20.jpg>

## Image reference

- IR 11: <http://extraordinary-sa.com/images/images/Large/e031e588-32dd-43ae-8ed6-c890a513e87e.jpg>
- IR 12: <https://m1.behance.net/rendition/modules/668571/disp/929001233088770.jp>
- IR 13: <http://media-cache-ak0.pinimg.com/736x/7d/4a/01/7d4a011d8353b15dcf9c52646e7ac0ab.jpg>
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- IR 17: [http://3.bp.blogspot.com/\\_EnaQHsaLJMY/TOUQrm0jl-I/AAAAAAAAAKA/NU41g-P P 5 FU/s1600/Kildev%25C3%25A6ld+50+cl.jpg](http://3.bp.blogspot.com/_EnaQHsaLJMY/TOUQrm0jl-I/AAAAAAAAAKA/NU41g-P P 5 FU/s1600/Kildev%25C3%25A6ld+50+cl.jpg)
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- IR 19: <http://www.thehindubusinessline.in/catalyst/2002/05/02/images/2002050200040101.jpg>
- IR 20: [http://simerini.com.cy/files/imagecache/new\\_headline/files/node\\_images/0/9/9/75099/bet.jpg](http://simerini.com.cy/files/imagecache/new_headline/files/node_images/0/9/9/75099/bet.jpg)

## **Image reference**

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IR 22: <http://www.cn-gysj.org/UploadFiles/2012102316454615.jpg>

IR 23: [http://www.keba.com/fileadmin/user\\_upload/KeWinmicro\\_01.jpg](http://www.keba.com/fileadmin/user_upload/KeWinmicro_01.jpg)

IR 24: [http://www.ilts.com/images/FLX\\_1s.jpg](http://www.ilts.com/images/FLX_1s.jpg)

IR 26: [http://www.world-lotteries.org/cms/images/stories/news/flairterminal\\_250px.jpg](http://www.world-lotteries.org/cms/images/stories/news/flairterminal_250px.jpg)