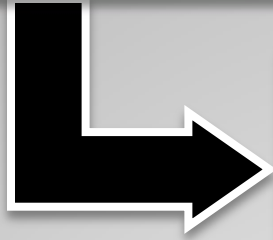


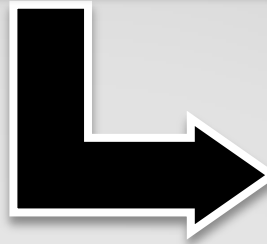
# Workshop On Design Engineering

Prof. Harshad C. Patel  
Mechanical Department  
Smt. S. R. Patel Engineering College- Dabhi  
Contact On:- [hcpatel.mech@srpec.org](mailto:hcpatel.mech@srpec.org)  
[Personal@hcpatel.com](mailto:Personal@hcpatel.com)

Design



Development



Maintain

**Engineer Means?**



# Looking

OBSERVING HUMAN EXPERIENCE



# Understanding

ANALYZING CHALLENGES & OPPORTUNITIES



# Making

ENVISIONING FUTURE POSSIBILITIES

- Just Limited Think
- Create Lot of Assumption
- Limited Literature Review
- Always use Principal and Rules Think
- Don't Waste Time Think
- Pre- Problematic Think

## **Conventional Thinking**

- No Rules.

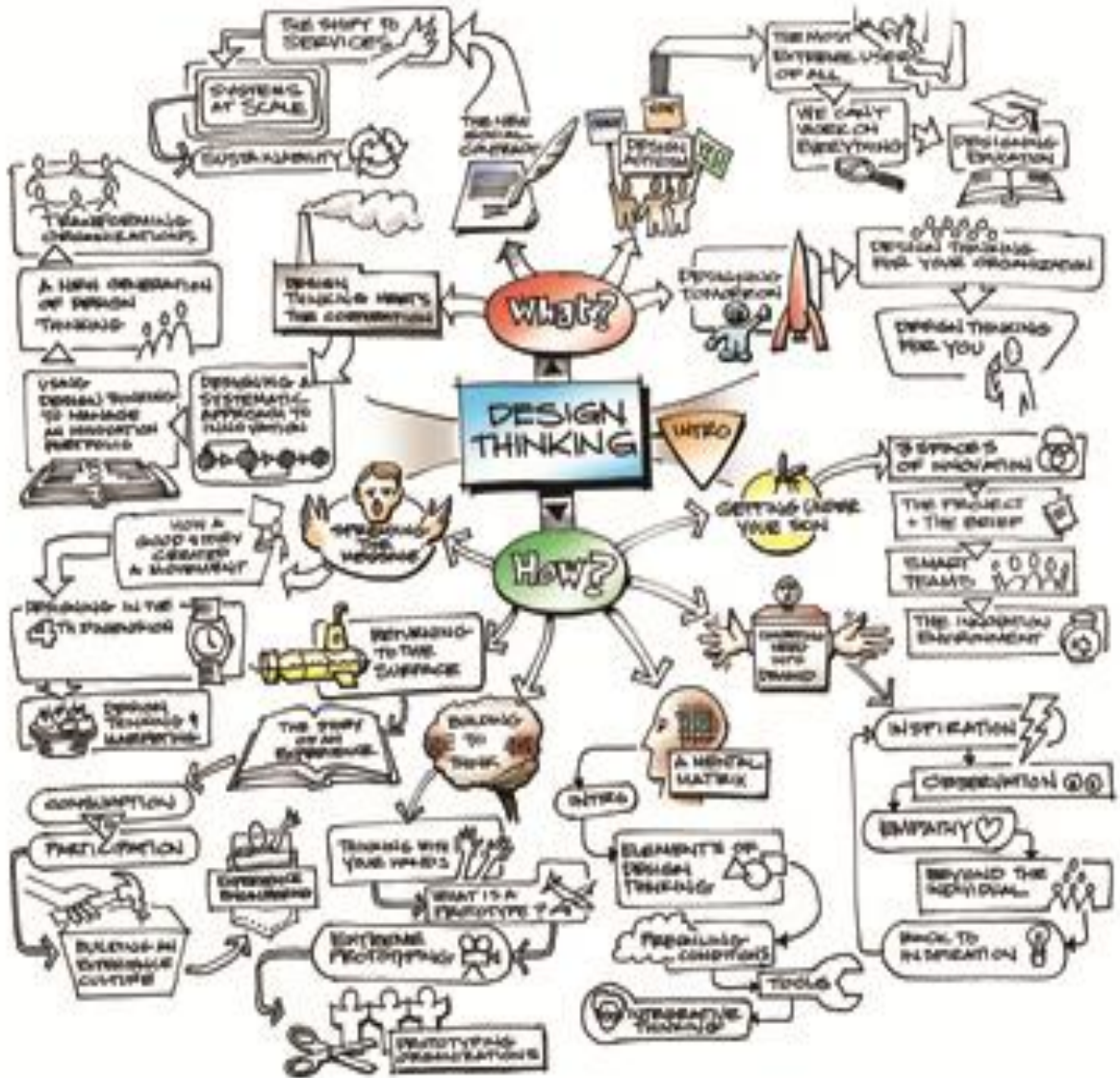
**Rules For Generate New Product**

HOW DESIGN THINKING  
TRANSFORMS ORGANIZATIONS  
AND INSPIRES INNOVATION

# CHANGE

# BY DESIGN

TIM BROWN





UNDERSTANDING INNOVATION



Christoph Meinel  
Larry Leifer  
Editors

# Design Thinking

Understand – Improve – Apply

 Springer

SENSE  
INTENT

KNOW  
CONTEXT

KNOW  
PEOPLE

FRAME  
INSIGHTS

EXPLORE  
CONCEPTS

FRAME  
SOLUTIONS

REALIZE  
OFFERINGS

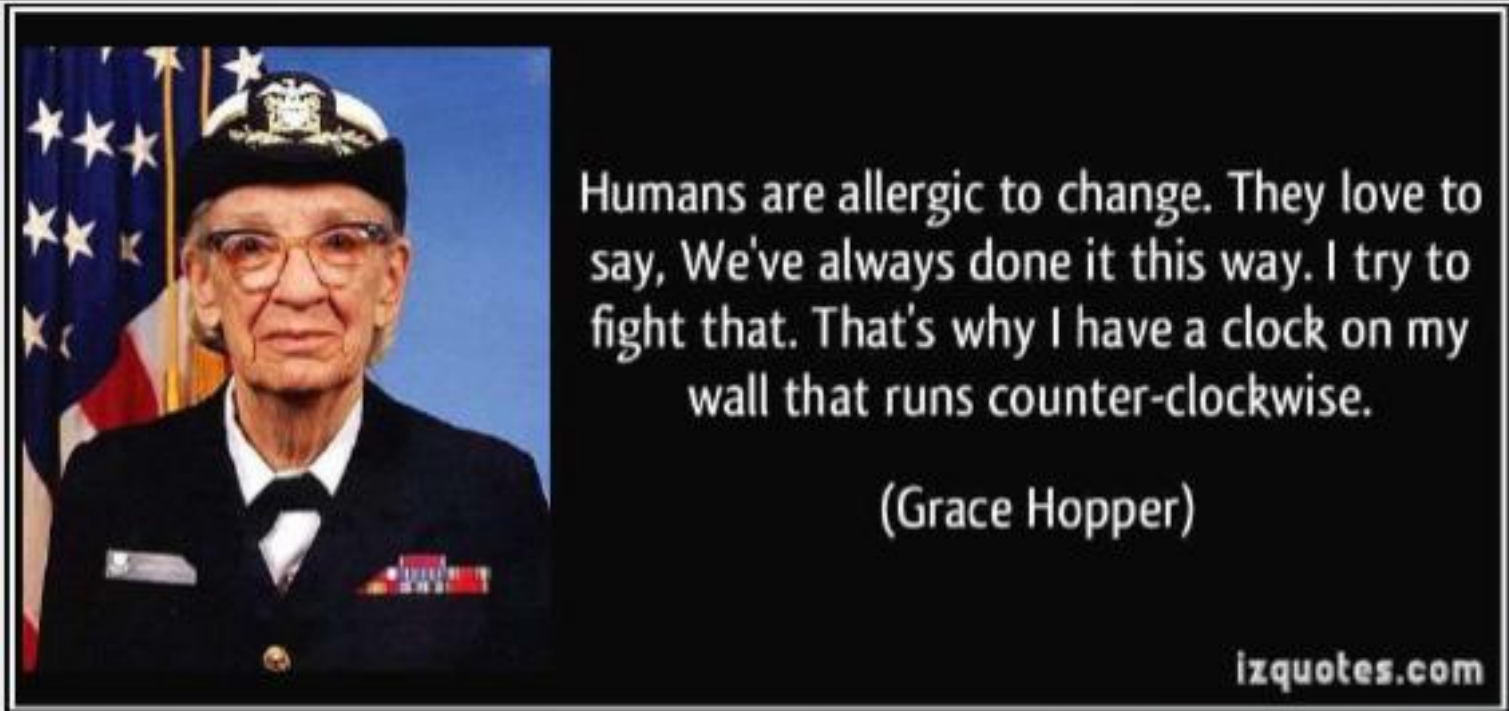
- Never accept a “NO”



**Biggest Obstacle**

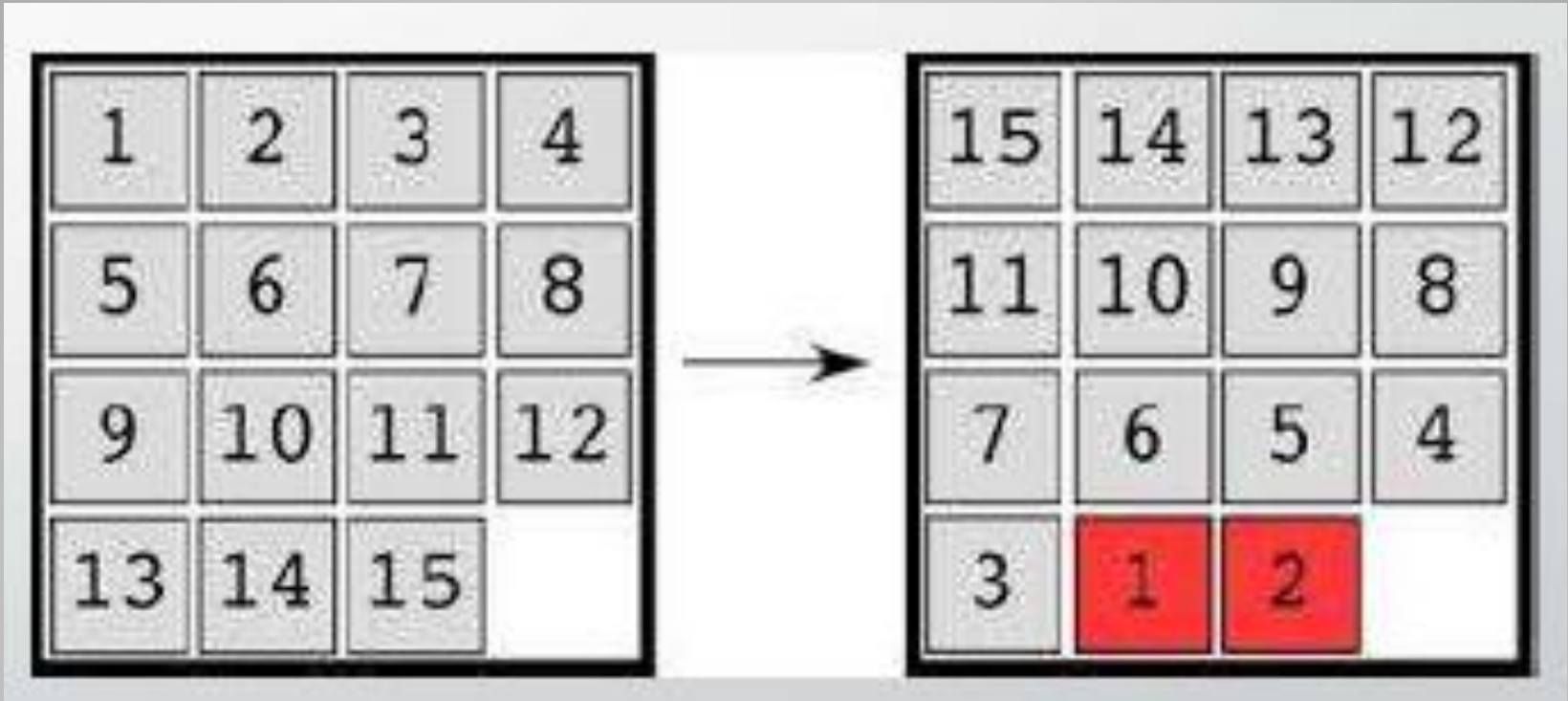


- We have ALWAYS done it THIS WAY....



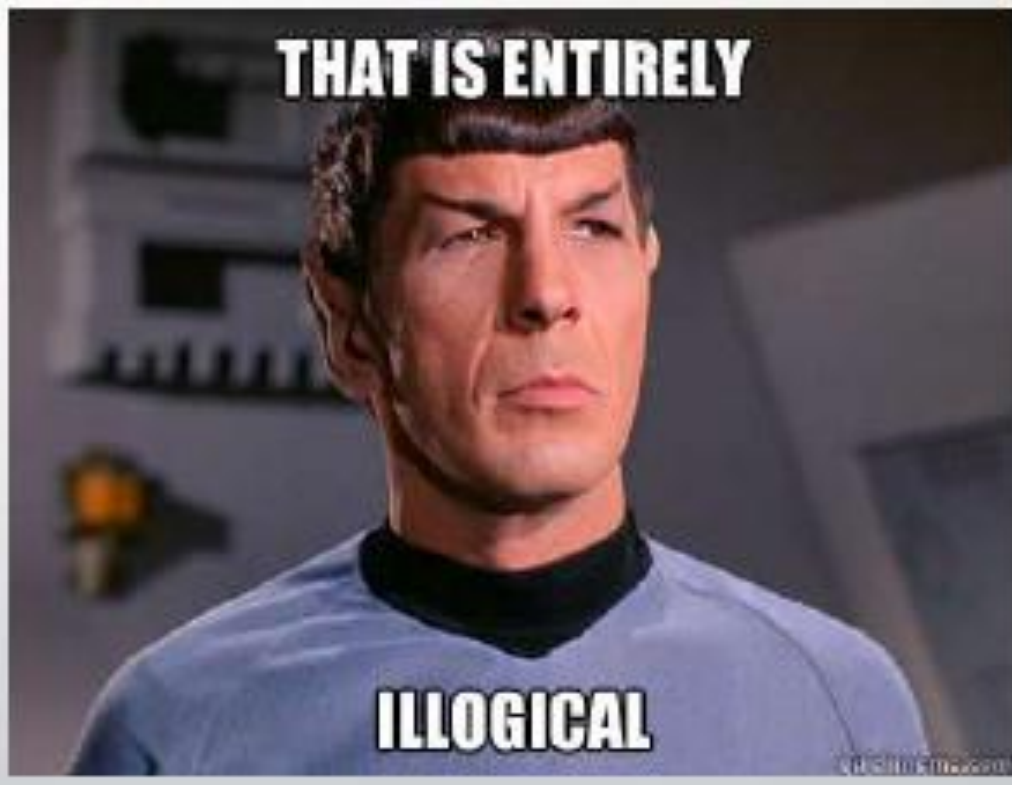
Reason 1

- No, It is not **possible**....



Reason 2

- No, It is not **Logical**....



Reason 3

- No, there is no **Budget...**



Reason 4

- No, Management won't **Agree...**



Reason 5

- No, That is too way **Risky...**



Reason 6



- No, Our Customers **won't like** it....



Reason 7

A group of scientists placed 5 monkeys in a cage and in the middle, a ladder with bananas on the top.



## Story Of Monkeys

Every time a monkey went up the ladder, the scientists soaked the rest of the monkeys with cold water.



After a while, every time a monkey went up the ladder, the others beat up the one on the ladder.



After some time, no monkey dare to go up the ladder regardless of the temptation.





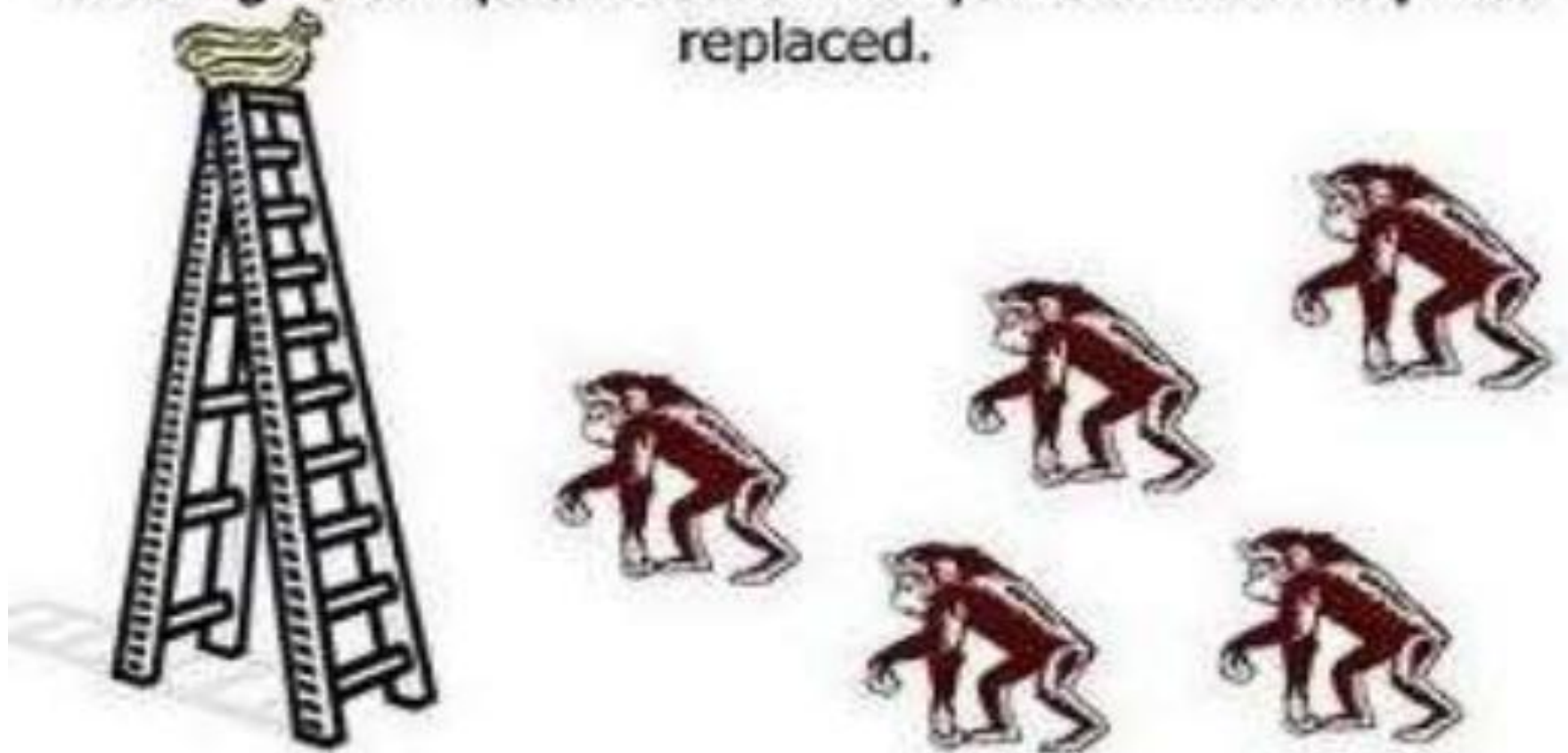
Scientists then decided to substitute one of the monkeys. The 1<sup>st</sup> thing this new monkey did was to go up the ladder. Immediately the other monkeys beat him up.

After several beatings, the new member learned not to climb the ladder even though never knew why.





A 2<sup>nd</sup> monkey was substituted and the same occurred. The 1<sup>st</sup> monkey participated on the beating for the 2<sup>nd</sup> monkey. A 3<sup>rd</sup> monkey was changed and the same was repeated (beating). The 4<sup>th</sup> was substituted and the beating was repeated and finally the 5<sup>th</sup> monkey was replaced.



What was left was a group of 5 monkeys that even though never received a cold shower, continued to beat up any monkey who attempted to climb the ladder.



If it was possible to ask the monkeys why they would beat up all those who attempted to go up the ladder.....  
I bet you the answer would be....

**"I don't know – that's how things are done around here"**

Does it sounds familiar?



- I Card
- Shirt Pocket Left Side Only

**Some...**



## Visitor Management System

### MSME Unit:

Scrum System Pvt. Ltd., Pune

### Design Consultant:

Aakruti Consultant, Pune

### Salient Features:

- Smaller foot-print.
- Desktop and wall mounted versions.
- Simple and easy to use.
- Interactive interface.
- Appointment based system.
- Instant employee badges.



## Two Wheeler Medical First Aid Vehicle for India

### Institute :

M.S.Ramaiah  
School of Advanced Studies,  
MSRSAS, Bangalore

### Student Designer :

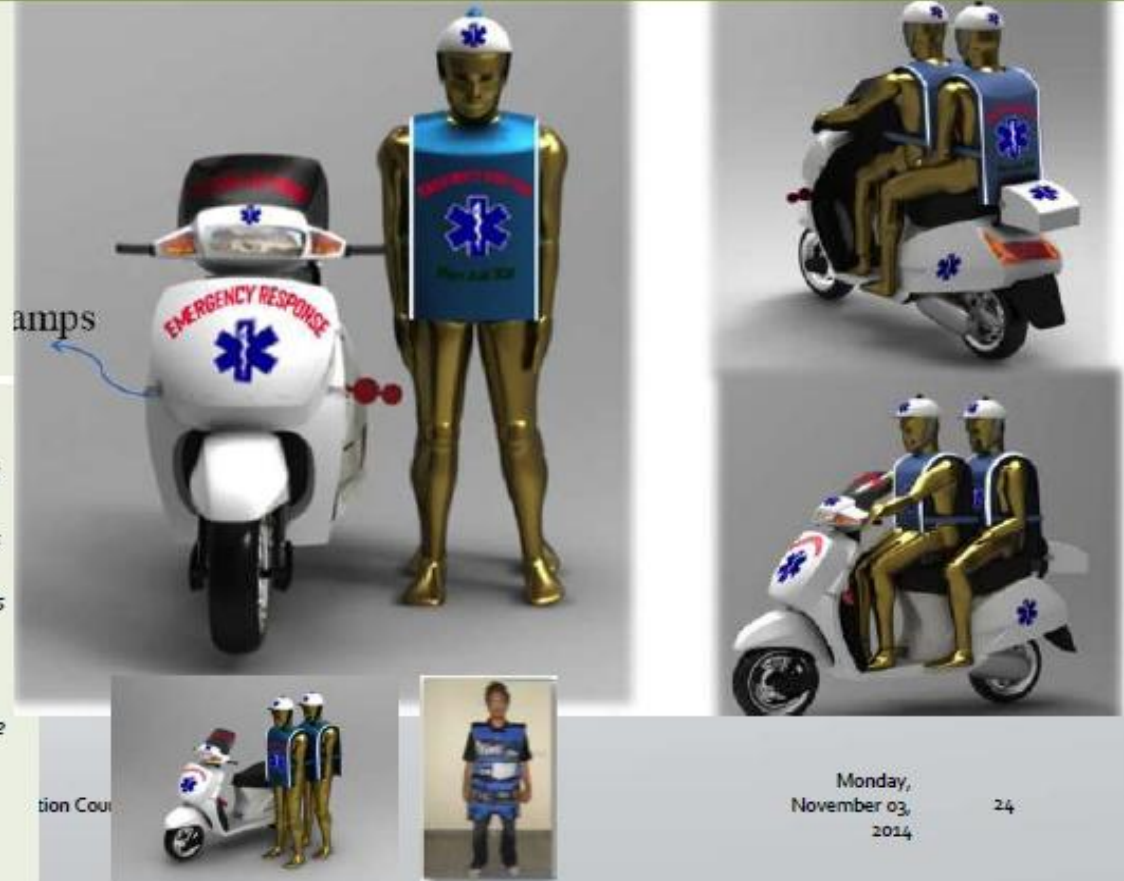
V. Sakthivel

### Project Guide :

Prof. C Gopinath  
Prof. Sudhindra Kumar

### Salient Features:

- Two wheeler ambulance with required medicines and equipment.
- Faster and smoother access to accident place.
- Can reach to difficult streets and terrains
- Portable kit for life saving equipments.
- Foldable medicine kit can be carried by hand.
- Acceptable weight to be carried on vehicle and shoulders.



Monday,  
November 03,  
2014 24



## Newspaper Vending Machine for Public Spaces

### Institute :

M.S.Ramaiah  
School of Advanced Studies,  
MSRSAS, Bangalore

### Student Designer :

Renugopal K

### Project Guide :

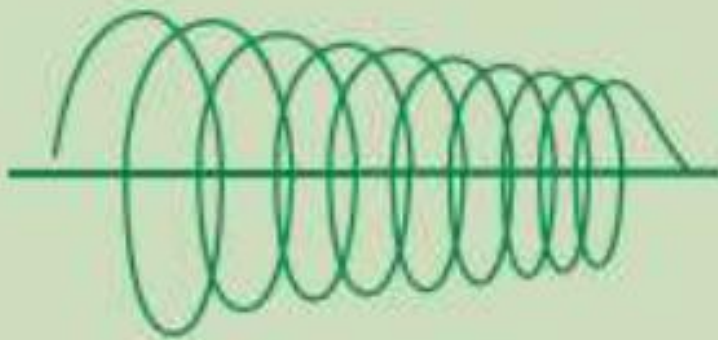
Mr. C.S. Divyadarshan,  
(Asst. Professor, DOD)  
Mr. Supradip Das,  
(Asst. Professor, DOD)

### Salient Features:

- Ergonomic design for vending of newspaper.
- No human intervention needed for dispensing.
- Ability to handle more traffic during peak hours.
- Can serve range of news papers.
- Occupies less space compared to a stall.
- Safe and secured device to install at remote places.



- **First Think  
Randomness**



**ENGINEER THINKING**



**DESIGN THINKING**

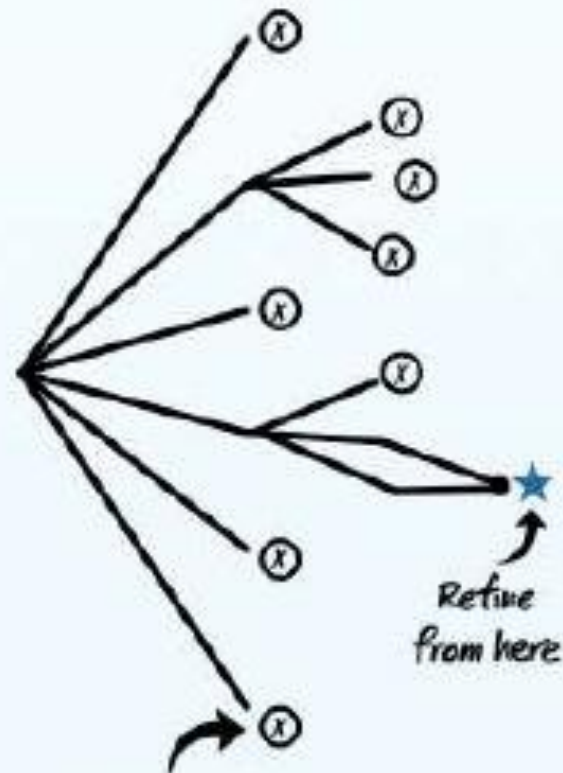
**Rules For Generate New Design**

# Refinement



Best solution  
is missed

# Exploration



Refine  
from here

Many alternate  
solutions explored

# CHALLENGE

**Understand**

Problem  
Context  
Needs  
Vision

..... Analysis

**Brainstorm**

Ideas

..... Synthesis

**Evaluate**

Direction

..... Analysis

**Design**

Prototype  
Refine

..... Synthesis

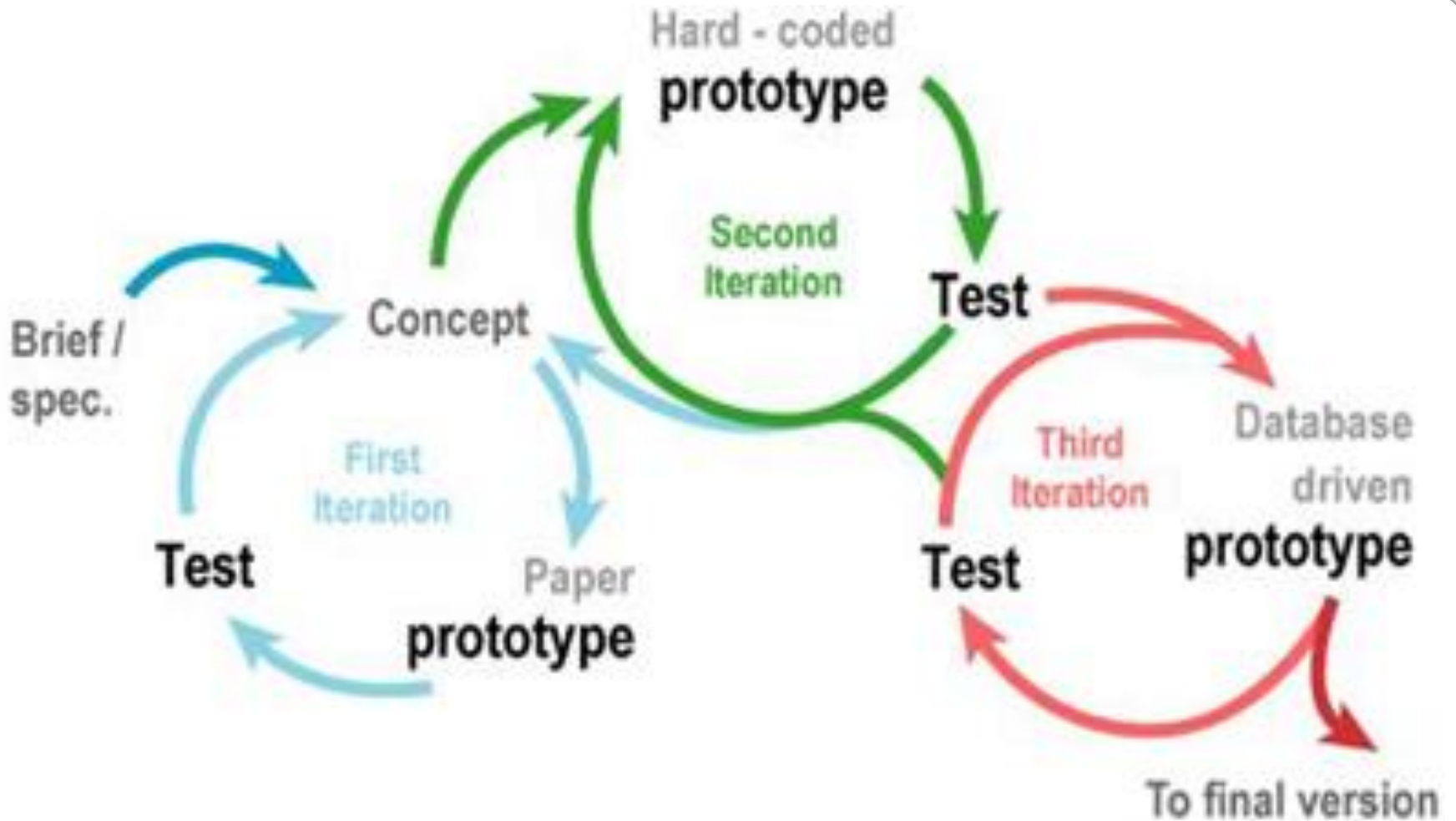
**Execute**

Plan  
Review  
Improve

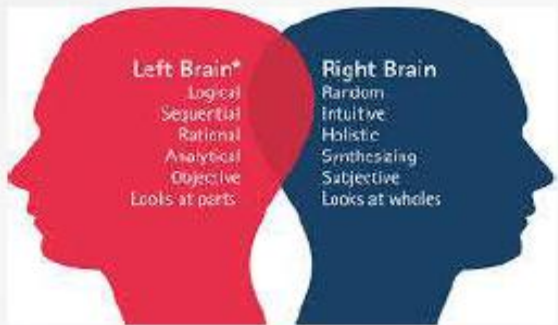
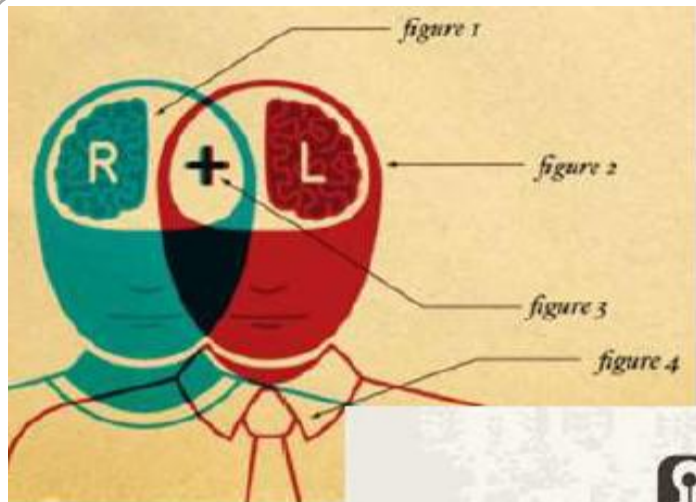
..... Analysis

**SOLUTION**









FDP - Workshop on De

# The Brain... Human Bairn





**Alarm**



**Mouse**

**Stanford - Design Thinking in  
Executive Education.flv**

SAD



SAD

HAPPY

HAPPY

How? What? When? Where?

Monday,

Empathize

# Result of Thinking...





stage  
one

**Empathy Mapping**

**Design For**

**Date**

**Design By**

**Version**

**USER**

**STAKEHOLDERS**

**ACTIVITIES**

**STORY BOARDING**  
**HAPPY**

**HAPPY**

**SAD**

**SAD**

# Design For HERITAGE PROPERTIES

Date: 28/10/2014

Design By

Version - 01

## TEAM - 03

- ZANKHANA DAVE, ACET, SANAND
- SHRUTI DAVE, SAL, A'BAD
- MITTAL SHAH, SAL, A'BAD
- BHASKER V. BHATT, SCET, SURAT

### USER

HERITAGE PROPERTY  
VALUE IN CONCERN

VILLAGERS  
CITIZENS

TOURISTS

### STAKEHOLDERS

A.S.I.

MUNICIPALITY

T.C.G.L.  
STRUCTURAL  
ENGINEER

FINE ART  
STUDENTS

HISTORIANS  
CIVIL  
ENGINEER

ARTISTS

CONTRACTORS

MOVIE  
PRODUCERS  
SHOPKEEPERS

ELECTRICIAN

POLICE

NEIGHBOURS

LOCAL AREA  
GUIDE

SOCIAL WORK  
NGOs

LANDSCAPE  
DESIGNER

IT SOLUTION  
Cos.

# ACTIVITIES

UTILITIES

CORRIDORS  
PASSAGES

WATER  
HUTS

PARKING  
SPACE

FOOD  
STALLS

ACCESSIBILITY  
& MOBILITY

GARDENS

STRUCTURAL  
INSPECTION

CLEANLINESS

HAZARD  
PROTECTION

CONSTRUCTION  
MODIFICATION

PHOTOGRAPHY

VISIT/TOUR

MAINTENANCE

SOUND/LIGHT  
SHOW  
ATTRACTION

CULTURAL  
PROGRAMS

DANCING  
SINGING

HORTICULTURE

SECURITY

ADVERTISEMENT

RESIDENCE  
USE

DOCUMENTATION

MOVIE MAKING

GUIDANCE

HUMAN  
TRAFFICKING

RENTAL  
USE

STAYING O.N.  
FACILITY

MAP ON  
MOBILE

LIVELIHOOD

ECONOMIC  
ACTIVITIES

DEVELOPMENT  
OF SURROUND

BALANCING  
NATURE

HANDICRAFT  
HANDLOOM  
EDUCATION

SCHEDULED  
ACTIVITIES (M/A)



# STORY BOARDING (1) WISDOM IS SAVIOR

HAPPY

That was a beautiful temple around 1000 years old. Village people used to worship God everyday. Once a saint came there, and gathered all people and guided them to maintain cleanliness in the temple. For Laxmi always dwells at clean place. Saint also guided that people should educate themselves as knowledge is "Narayana" and in our heritage, Laxmi needs Narayana only. People were religiously following saint's guidance. They had developed a beautiful garden around the temple. Milkmen and shepherds used to keep their cattle near to temple. They had also built a beautiful Shalghala. People used to gather at temple during morning and evening aarti time and used to sing beautiful devotional songs. Everyday practice of singing made them perfected singers. Little girls also performed on an occasion because gods. Everything was so beautifully harmonized and fused. The total economy of village was depending upon the temple and the other activities related to temple. Many tourists used to visit the place because of the tranquility of the place was uncomparable. The gods and goddesses were very well decorated with gold and diamond ornaments. Once a team of thieves decided to make a theft at the temple. They had planned during mid night when entire village people were in deep sleep, they entered in the temple. They went near to gods' statues

HAPPY

and suddenly listened the sound "Laxmi-Narayan". "Laxmi Narayan". They were so terrified with the sound, and started running away, but due to clean washed smooth marble flooring, they fell down due to loss of balance, and they got caught by village people. The reason was, the boy pujari's boy was chanting the shloka during deep sleep because of the saint's guidance. Also, the clean, smooth floor helped in catching them. The temple also became so famous across the coastal countries. Also, renewable energy generation was emphasized at Shalghala, that increased income of the village and also goddess Aditi of environment was very happy and always scattered upon their blessings.

SAD :

She was such a beautiful and kind hearted queen. Always she used to take care of the people of her kingdom. She was a pious wife of the powerful king. Both of them used to live a judicious and religious life as suggested by holy sages. All directions were totally happy with their wisdom and compassionate approach towards the people. There was some energy crisis in circumstances, that may be due to some sinful acts of some ignorant persons, and the stars suffered from a severe drought. People were literally starving for a grain of food and a drop of water. They pledged to the queen for solution, so they never lessen to her. The queen worshipped goddess Saraswati. In dream, she got solution from goddess, and she star guided the means to solve the problem. She started the particular patch of land. Finally, water began emerged from the bottom, a beautiful articular structure. Monday







So... Let's Begin...!



People



Activities



Situation/Context/Location



Props

The Ideanaut: Ideation Canvas

Project: PROPERTY IN CONCERN + HERITAGE VALUE


Team: TEAM-03

NEIGHBOUR MALE  
CIVIL ENGINEER  
HISTORIAN  
GOVT. TC&L OFFICER

TOURIST MALE  
VILLAGER  
NEIGHBOUR FEMALE  
FINE ART STUDENT

TOURIST FEMALE  
STRUCTURAL ENGINEER  
SHOP-KEEPERS  
MOVIE PRODUCER

ASI OFFICER  
ELECTRICIAN  
POLICE FEMALE  
MUNICIPAL OFFICER

 People  
ENTREPRENURE  
STONE WORKER

POLICE MALE  
ARTIST  
CIVIL CONTRACTOR  
TOUR OPERATOR

LOCAL AREA GUIDE  
IT ENGINEER  
HOTEL OWNER  
HOTEL COOK

LABOUR  
SOCIAL NGO WORKER  
LANDSCAPE DESIGNER  
VILLAGER OWNER

TAXI DRIVER  
CITIZEN OWNER  
FOREIGN TOURIST  
POLITICIAN

LAWYER  
C.A.  
PHYSICALLY CHALLENGED  
ENVIRONMENTALIST



RENEWABLE ENERGY PROD.  
PUBLIC ADDRESSING-  
DRAINING

RITUAL CEREMONY

Activities  
EXERCISING

SELLING SHOPPING

STAYING OVERNIGHT

TRADITIONAL DRESS PHOTO

CULTURAL SHOW/DANCE

RESIDING

W/C  $\begin{matrix} \diagup M \\ \diagdown F \end{matrix}$

BOATING

AMUSEMENT RIDING

SOUND/LIGHT SHOW

FEE COLLECTION

FARMING

CLOTH CHANGING

HORSE RIDING

CLEANING

SINGING SHOW

ADVERTISE-  
MENT

SMALL FARMING

PIREY FARMING

MOVEMENT WALKING

TREACKING

REPAIRING

WESTERN SHOW

GUIDANCE

DRINKING WATER

PHOTOGRAPHY

PROTECTING

SKIT/PLAY

HUMAN TRAFICING  
ENVIRONMENT  
SAVING

VEHICLE PARKING

STRUCTURAL INSPECTION

RESTRICTING

MAP BROWSING

FOOD EATING

GARDENING

VIDEOGRAPHY

RENTING OF PROPERTY

EXHIBITION

JOBBING

CHILDREN

TOUR WATER

SECURITY SERVICE

DOCUMENTATION

FISHING

FUNDING

RECYCLING

PRODUCT DISPLAY

PRAYERS

PARKING



SIGN  
DISPLAY

ELECTION

PLAINS

HELIPAD

BIO-GAS  
PLANT

SEATING

GOODIES  
STORE

FESTIVALS

FOSSILS

TSUNAMI

EARTH  
QUAKE

FARM FIELDS

PRINT  
MEDIA

SEASONS

UTILITIES  
AREA

LAND  
SLIDING

SOLAR  
PANELS

GARBAGE/  
LITTERING

LOCKER  
ROOM

HOTELS

MUSEUM

CYCLONE

WIND-MILL

WATER  
HUT

LAKE/RIVER

ROOMS

DAMAGE

FAULTING  
FOLDING

DESALINATION  
PLANT

GARDENS

FOUNTAIN

RESTROOMS

AGEING

STAGE  
AMPHI THE.

FLOODING

RITUAL  
HUTS

PLAY AREA

KIOSKS

PATHWAYS

HILL/RIDGE WEATHERING  
VALLEY

OFFICE

SECURITY  
SURVEILLANCE

FOOD STALL

TICKET  
WINDOW

SEA/COASTAL  
SULPHUR  
ATTACK

CONTROL  
ROOM

MEDICAL  
SUPPORT

CYBER  
CAFE

PARKING  
BAY

FORT

DENUATION

POWER  
OUTLETS

POLICE  
CHOWKI

INFORMATION  
CENTER

POLLUTION

FOREST

SAND  
DUNES

FOOD  
STORAGE

FUELING  
PUMP

FISHING

CLEANERS  
SURFACE  
LIFTING  
DEVICES  
SURVEYING  
INSTRUMENTS  
REBOUND  
HAMMER  
SYMOGRAM

SOUND  
SENSOR  
ENGG.  
INSTRUMENTS

WI-FI  
ENABILITY

CO-GEN  
MECHANISM  
PEGION/BIRD  
TRAP

E.W. System

MATERIAL  
RECYCLING  
LIGHT WT.  
MATERIAL

DESALINATION  
PLANTS

SILICOSIS  
SAFETY  
WORKER  
SAFETY  
CARVING  
TOOLS

LOW COST  
MATERIALS

WATER  
TANKS

PARKING  
MAP

COLORED  
GLASS

BASE  
ISOLATION  
CRACK  
WIDTH  
GROUTING

GUNNITING

WATER  
HYCINTH



Props/Possible Solutions

SHALE  
[SED. ROCK]  
BACK  
FILLING  
MECHANI-  
CAL DEVICE

E-ASSAS-  
-MENT

QUICK  
HARDENING  
SENSORS  
[INSPECTION]  
ONLINE  
INSPECTION

SOFT  
WARE

FOUNDATION  
STONES LEFT

STONE  
ADHESIVES

SAND  
STONE

BINDERS

FROST  
CONTROL

CHEMICAL

PROTE-  
-CTION

DAMAGE  
IDENTIFICAT-  
-ION

MOIST-  
-URE

REPLACE-  
-MENT

FUELING  
PUMP

CARVING  
[NEW]

SCAFFOLDI-  
-NG

COLOR  
PIGMENTS

RICE  
HUSK

IRON  
ORES





## Purpose

What is the purpose of this concept you're developing?  
Does it solve a problem, or it enhances a certain experience?

Is it serving a need or it is trying to create a new need or tap an untapped need?



## Product Experience

Define what your customer should feel like when he uses your product/service? What emotions, feelings would define his experience? Feeling of comfort, convenience, or feeling of buying more with less(cost conscious) or feeling of greater security/safety etc.



## Product Functions

Functions are a products answer to user problems/need. They do something that user wants. They are often verbs in nature. Every function is powered by many features. Multitasking is a function. Browser tabs is a feature that powers the multitasking feature. A function can have one or more features powering it. Functions are very generic in nature, features are often more specific. Functions can be similar to product experience. Safety (product function ) provides a feeling of safety (product experience)



## Product Features

Product features are specific. One or more features will power a function. Antilock Brakes, Airbags are fetures that power the safety function. Browser tabs, Apple's home button to multitask between apps are features powering the multitasking function.Each feature will have many components/sub components powering it. Sometimes a very popular component becomes a featurein itself. Like car stereo is a major components and a feature at the sametime powering the in car entertainment function powering entertainment as a product experience.



## People

Who is the key customer segment who will use this product /service or the end product of the concept you're pusuing?

Write here about them, describe them a little.



## Components

Components build up the features. For a airbag it will comprise a list of component like bags, triggers etc. that go into making it. For a tabbed browser it will comprise of various churks of code that will make the tabs work. In cases where the feature is a major component, you could list here the auxillary components that are required to make the major component work.You can also list new adjustments and innovations you're planning here at the component level.



## Customer Revalidation

Once you're finished with your feature set, test with the customer /user if the features, functions are useful. Speak to the customer/user.



## Reject, Redesign, Retain

Post customer validation, reject, those functions or features that the customers didnt find useful. Redesign those that were partially useful and retain those met the bar. Iterate with this until all functions/features ar eaccepted.