

The case study, presented in the following pages was prepared by a team of Faculty Members in a few evenings. This problem is the very first attempt made by the team. One can use this as a sample and one may be able to build his/ her design engineering problems, which may be much better.

Case: **Safety Device for an Electrician**

*Pages 2- 8*

The Case Study can also be referred through the following YouTube link:

<https://www.youtube.com/playlist?list=PLnNDkCrMqsxkfUJ0ISzT0IXAIOu3-WO65>

You can also go through the YouTube links of various projects in the YouTube channel of GTU Innovation Council.

If you succeed in making a better design problem, please send it to Hima Bhatt at [paltovc@gtu.edu.in](mailto:paltovc@gtu.edu.in) so that it may be put on the YouTube-site for the others to see.

**Example for Electrical Engineering**

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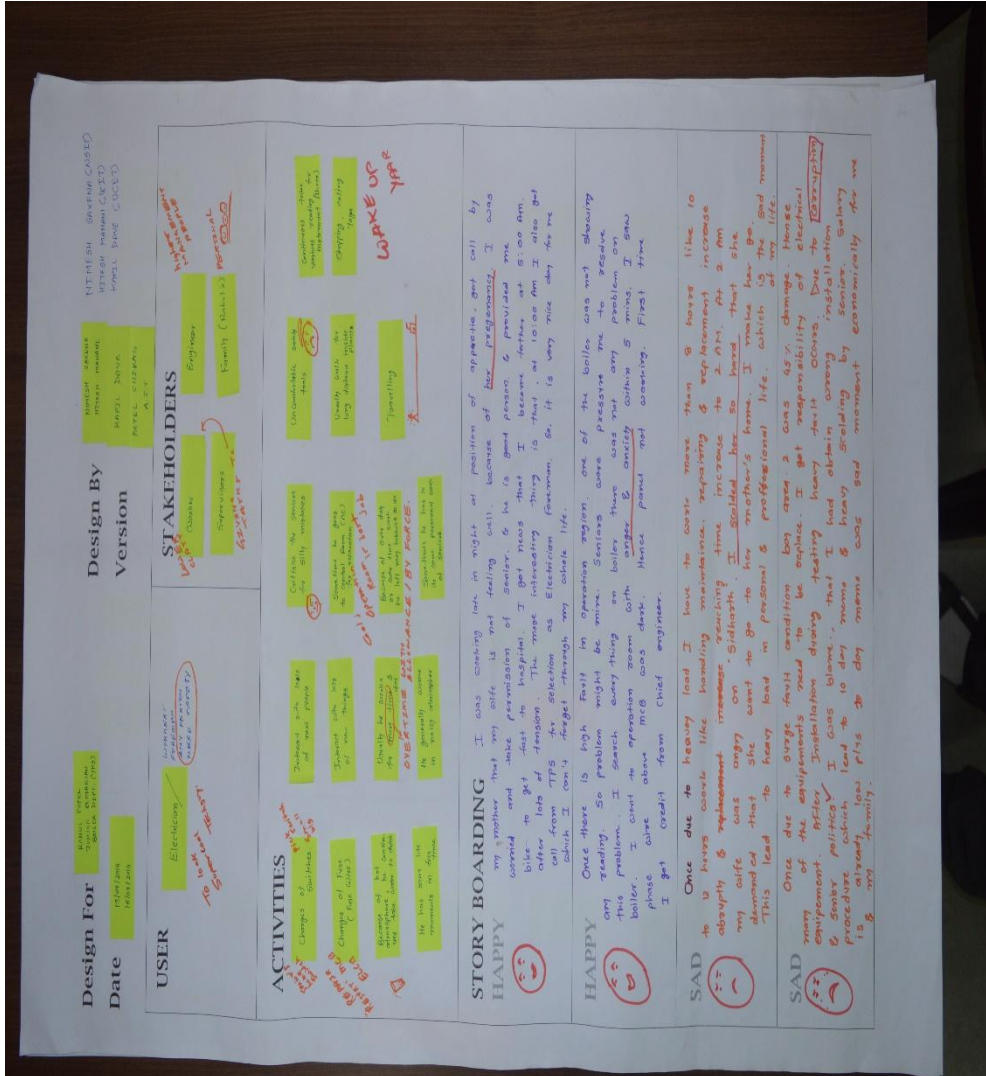
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**DATA OF SCOUTING CANVAS:**

This canvas consist of the ideology behind how the problem statement can be found out. Basically with a particular problem none of the industries are working because if they are facing a huge problem their product cannot be release in the open market. So when we were about to come for workshop of Design Engineering our basic Question that we face is “Problem statement”. None of the industries are facing problems or expressing problem in front of young students. So to exact the problem statement we found out this Canvas. This canvas actually helps in interlinking with user not only technically but also emotionally. By looking on a wide concept “Every person on

## Design Engineering at Third Semester of BE: Example for Electrical Engineering

earth have a “Problem” so obviously a “Problem Statement ” should be extracted from any person and this must not be hard enough. But an Emotional attachment is required, because when a student is emotionally attach to a user a a perfect problem which must be attend can be found out. In the Scouting Canvas main focus is given to “User” and how a normal human being that you look everyday becomes a user of our Model. So the canvas Scouting was a opportunity for us to think unusual. So we take our technical aspect secondary and start thinking emotionally that how the user can be define.



There is no way you can forget “Who you are ?”, as we were Electrical Engineers from about 8 years we cant resist our self to concentrate on electrical parameter so we much hotchpotch was created we take a simple Electrical solution so we take ELECTRICIAN as user. By taking electrician we can easily relate our self as him because we were people who were worked with them for a long period of time. Then we define Stakeholders in which all the people (related or not related technically or Non technically emotionally or Unemotionally ) to user. Now for HAPPY and SAD story. We think of the Hindi Movies in which there are many situation from which every person become emotional with for Example:

Situation like :

First job

First Salary

## First Love

## Family get together

Friend get together

## IDEATION CANVAS

The Ideanaut: Ideation Canvas

Project: **Super Suit** *\*Quick makes sense* **MARKLINE**  
**TO-SELL-PRODUCT**

Team: **NITESH, MANISH, CHET**  
**KAPIL, RAVI, CHET**  
**PATEL, CHAKRA (AST)**

**People**

- Operator
- Electrician
- Foreman
- Group Leader
- Engineer
- Section Manager

**Activities**

**TECHNICAL**

- Safety (wired) Circuitry
- Noisy Area
- Hot Atmosphere
- Long distance walking
- Dusty & foul atmosphere

**SOCIAL**

- Over time working
- Employment Status
- Troubleshooting

**Situation/Context/Location**

- Killer at Control plant
- Fireplace/Control
- Working in the field at night
- Working atmosphere
- Seaboard Condition
- Cooking process
- Cooking & Grinding
- Turbine
- Maker
- Chemical maintenance
- Chemical plant
- Civil work
- High voltage working
- Insulation
- Mechanical Daily Reading at the location
- Emergency
- Maintenance

**Props/Possible Solutions**

- Super Conductors
- Monitor & Balist wires
- Automatic tools (cables)
- Anti smoking System
- Carbon cloths
- Plasma Shield
- Super Insulation Transducer
- Automation
- Control wire coating
- LED Lights
- Mass Machine
- Artificial Intelligence
- VLSI

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## Design Engineering at Third Semester of BE: Example for Electrical Engineering

From different activity & situation the “key problem” can be define which is most important problem than other problems vivid situations & location from key problem must be very important, critical problem from user point of view. We consider “Hot temperature” as key problem. Props must consist of technologies required or may not require / related or not related to technical / non-technical to “key problem”

Example: Nano technology  
Super conductor  
Rocket science  
Ironman suit

Now by comparing “props” & “situation” the idea of product design can be known from high to low to relevant to irrelevant technology.

### PRODUCT DEVELOPMENT CANVAS:

Here “people” again is introduced to have particular users related to same “key problem”. Features must be very vivid; many feature consist to from one function but by adding many feature & function our t – shirt product. Which can be our solution for “hot atmosphere” change in “ironman suit”. This must be the way to go because we are path typing the product so wide various varieties of technology must be use from props technologies and section of before & present & canvas by using customer revalidation & customer feedback. We come across idea of taking between path “Ironman & T-shirt” because no one need heavy suit like ironman & safety is prime focus. Many people are from urban area hence “hoody t-shirt” are recommended. May be feedback from rural area can be better intrusion & solution may have different variation. At the last canvas focus on the revalidation & customer feedback this cycle must be maximum so that the product must be perfectly related to user. A business development from product become successful to society.

Product Development Canvas

Team/Date/Version: NINETH SAKSHANVEDH / 10/11/2023 / 1.0

**Purpose**  
What is the purpose of this product and how is it developed?  
What is the problem, or a desired state, or a desired experience?  
Is it solving a need or is it trying to create a new need or a new experience?

**Product Experience**  
Define what your customer should feel when he uses your product/service. What experience, feeling, or emotion would define his experience? Feeling of control, convenience, or feeling of being alone with a beautiful landscape or feeling of power, security, safety etc.

**Product Functions**  
Functions are specific answer to user problems. They do something that user want. They are often verbs in nature. Every function is powered by three features. Following is function. Remember this is a feature that powers the functioning 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, control, convenience.

**Product Features**  
Product features are specific. They are more detailed than functions. Attributes, shapes, designs and forms that power the safety function. Remember this: Apple's home button for multitouch between apps are features powering the multitouch function. Each feature will have many components/sub-components. Remember this: Smartphone is very popular component powered by features like: Use an open system to connect components as a result of the system, expanding the use of software, function, providing entertainment as a product experience.

**People**  
Who are the customer segments who will use this product?  
Where is the end product of the product you're building?  
Where have about them, describe them in detail.

**Customer Revalidation**  
How do you validate your product with your customer? Use test with your customer. Use the features, functions and user's stories to test customer's need.

**Reject, Redesign, Retain**  
Post customer validation, reject, redesign or retain the product. If the customer don't like your product, then you need to redesign it. If the customer like your product, then you need to retain it. If the customer like your product, then you need to retain it. If the customer like your product, then you need to retain it.

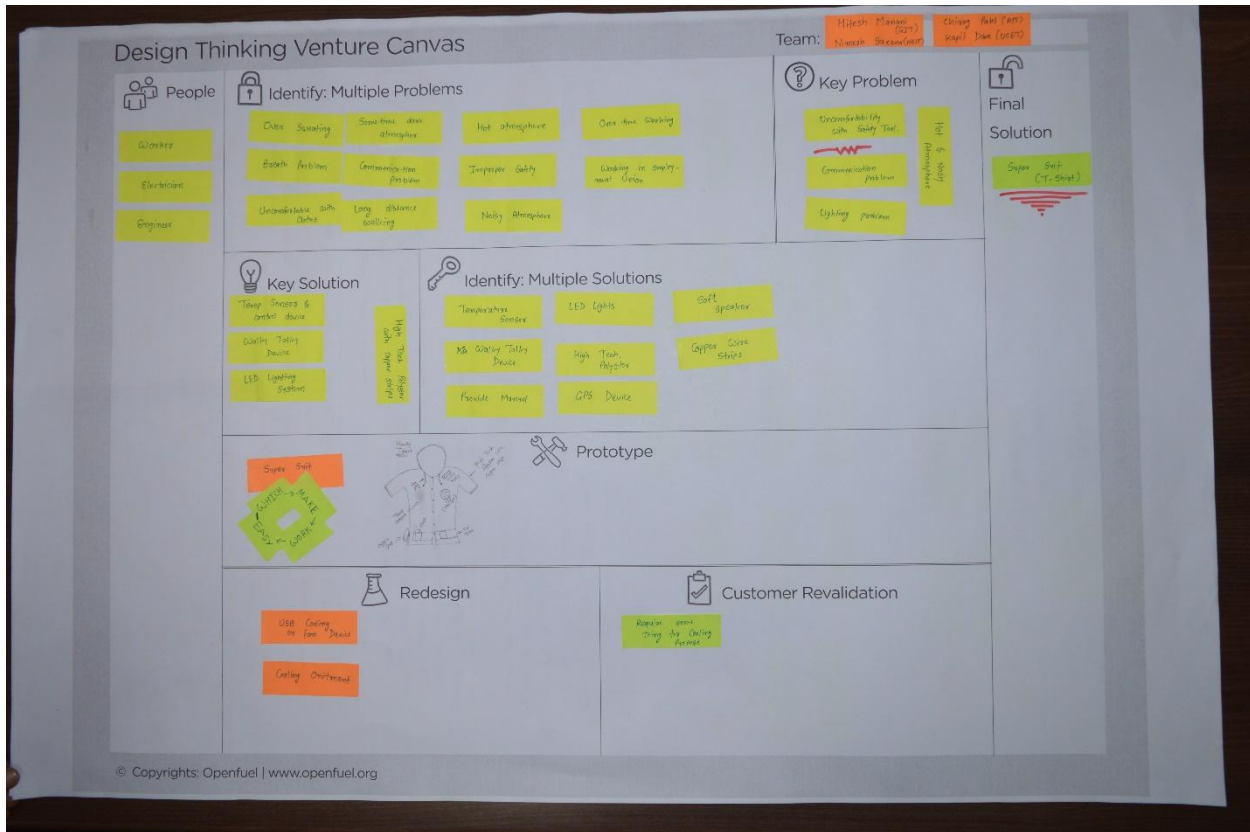
**Components**  
Components build up the features. For a feature, list all components. The components are the building blocks of the product. If a component is not working, it will compromise the entire product. Components are the building blocks of the product. If a component is not working, it will compromise the entire product. Components are the building blocks of the product. If a component is not working, it will compromise the entire product.

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### BUSINESS DEVELOPMENT CANVAS

This canvas consist of interaction from large bulk of idea to a single idea & a diamond product. Which can be done by rough situation wise, location wise & context wise user feedback maximum cycle of iterations lead to master product for revolution of society.



### FEEDBACK FORM :

**Name Of Group : Electrical Rocks**

**Participants:**

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GTU Arrangement: very good

College Arrangement: Very Good

Guidance by industry professional: Very Good

Various Topic understanding

Engineering design: Excellent

Canvas assembly: Excellent

Subject Relations with practical : Excellent

Power Point Presentation : Good

Food : Good

Experimentation with Faculty : Good

Practical implementation: Very Good

Give overall rating to GTU Workshop : Very Good

Comments/ Complains: It was very nice GTU Workshop. The theories which we usual teach in our college, must be implemented to increase the practical aspect of engineering. Engineering Design must lead to higher rate of better project models from our students. But Work division and External Marks evaluation in each semester must be required.

EXTRA GROUP PHOTOS



