



HUMAN CENTERED DESIGN COMPETITION

Stage 1: Inspiration

Submission deadline: 30th January, 2023

Project Title:

Sports Bio-Mechanical analysis using markerless motion capture (Cricwiz)

Team Leader Name and Regd. No:

Abdul-Hadi 2019-MC-05

Mechatronics Engineering Department UET Lahore and MADE Foundation USA bring you the Human Centered Design Competition. The aim for this competition is to foster innovation among the students of UET Lahore and create sustainable solutions that create real impact and generate viable business.

The human centered design consists of three main stages:



INSPIRATION

In this phase, you'll learn how to better understand people. You'll observe their lives, hear their hopes and desires, and get smart on your challenge.



IDEATION

Here you'll make sense of everything that you've heard, generate tons of ideas, identify opportunities for design, and test and refine your solutions.



IMPLEMENTATION

Now is your chance to bring your solution to life. You'll figure out how to get your idea to market and how to maximize its impact in the world.

Figure 1: The three stages of Human Centered Design

The three stages of our competition represent these three stages of the Human Centered Design. For stage 1 of the competition, the participants must submit a concept note regarding the problem they intend to solve.

Please remember that your solutions should be desirable, feasible and viable for them to have a true impact. In one sense, the three stages of the Human Centered Design tackle the conversion of your idea into a desirable, feasible and a viable solution.

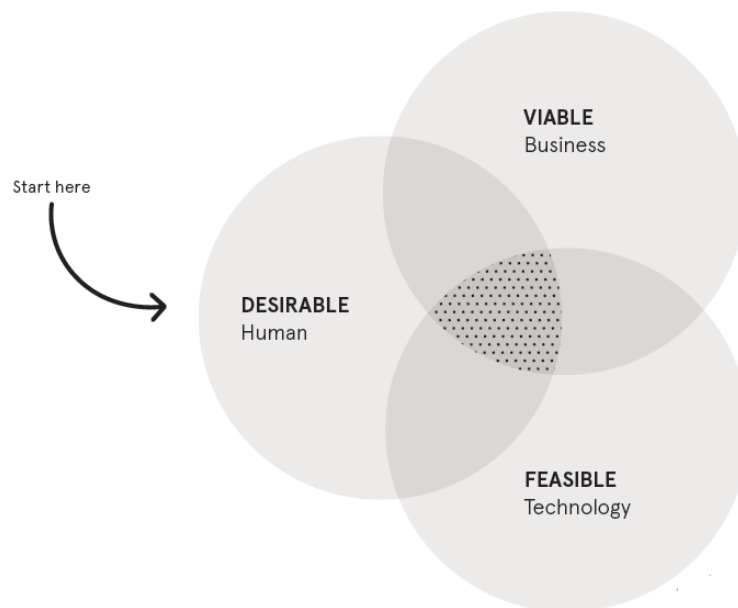


Figure 2:Ingredients of an impactful solution

INSPIRATION

The Inspiration phase is about learning on the fly, opening yourself up to creative possibilities, and trusting that if you remain grounded in desires of the communities you're engaging, your ideas will evolve into the right solutions. You'll build your team, get smart on your challenge, and talk to a staggering variety of people.

STEP 1: Frame your Design Challenge

Organize your thoughts and really think about the challenge and problem you are trying to solve. ask yourself: Does my challenge drive toward ultimate impact, allow for a variety of solutions, and consider context? Dial those in, and then refine it until it's the challenge you're excited to tackle. Don't keep it too narrow or too broad. Go through these thoughts again and again until you have reached a viable conclusion. A quick test we often run on a design challenge is to see if we can come up with five possible solutions in just a few minutes.

Answer the following questions after giving it careful thought iteratively.

What is the problem you are trying to solve?

Apart from the problem description, try answering who faces it? what is the frequency of occurrence? why the currently available (if any) solutions lacking? etc.

Cricketing talent in Pakistan faces the problem of ineffective, substandard and expensive coaching. Especially the batters (Men and Women) are unable to train themselves since there is no such facility. Self-Analysis and self-training are big factors in modern day cricket. As per experts and analysts one cannot survive the competition if he/she just relies on standard mentoring and pays no attention on self-training. Currently there is no such app or solution that helps the cricketers, even worldwide, to get in the nets and have an analysis run on him/her.

- Take a stab at framing it as a design question, in one line.

How might we design a mobile app or platform that enables cricketers to improve their skills through self net training and performance analysis.

- Now state the ultimate impact you're trying to have.

The ultimate impact of this solution is to empower cricketers to reach their full potential through self-training and analysis, regardless of access to standard coaching facilities, and ultimately contribute to the improvement of the cricketing community?

- What are some possible solutions to your problem?

Think broadly. It's fine to start a project with a hunch or two, but make sure you allow for surprising outcomes

To make an app capable of analyzing the training session of a player, and guiding him/her for further improvement.

- Finally, write down some of the context and constraints that you're facing.

They could be geographic, technological, time-based, or have to do with the population you're trying to reach.

Major Constraints are:

- Limited Data set (Quantitatively).
 - We need standard videos of professional players for accurate results.
 - Complete info of the shot from single camera.
- Does your original question need a tweak? Try it again.

How can we design a solution that enables cricketers to self-train and analyze their performance, leading to the improvement of their skills and the overall growth of the cricketing community?

STEP 2: Create a Project Plan

- Decide on your budget and staff. Do you have everything you need to complete the challenge? Being a software solution, there are little budget constraints, except the image high quality capturing system we need for standardized data collection. Moreover as the project grows we may be in need of a proper subscription of video and image editing softwares. We feel that we may be short of a person or 2 in technical domain since it's a full time project
- Identify who will to visit to understand the problem better. How will the visits be arranged? It would be advantageous to pay visits to and speak with the following groups of people:
Current and former cricketers: to gather their personal experiences and insights on the training and analysis challenges they face.
Coaches and trainers: to gain a better understanding of their perspectives on the current coaching system and the need for alternative solutions.
Cricket fans and analysts were polled on the importance of self-training and analysis in modern-day cricket.
The visits can be arranged by reaching out to relevant organizations, clubs, and individuals in the cricketing community, either through personal connections or online platforms. It may also be helpful to conduct surveys or focus groups to gather additional information and feedback. The goal of these visits is to gather a comprehensive understanding of the problem and the needs of the target audience.
- Look at the core members of your team and determine what they're good at and what they're not so good at. List their core capabilities here:

Overall, it's a well-balanced team, with some members good in technical aspects, some in understanding the technicalities of cricket and others effective communicating. Weakness of one is somewhat compensated by the other.

STEP 3: Secondary Research

Along with the interviews and surveys, there will be moments where you'll need more context, history, or data than a man-on-the-street style Interview can afford. It's time to start learning about the broader context.

- List recent innovations in your particular area. They could be technological, behavioral, or cultural.

Innovations in cricket coaching and training include wearable tech, AI, VR/AR, online coaching platforms, and gamified training. These aim to improve access and effectiveness of training.
- What alternate solutions are available in your area? Are there any that feel similar to what you might design?

In the area of cricket coaching and training, some alternate solutions include:

Online coaching platforms: These offer virtual coaching sessions with experienced coaches, access to training resources, and performance analytics.

Wearable technology: These devices track player performance, such as motion sensors to analyze bowling action and heart rate monitors to track fitness levels.

- What is your value addition in the existing solution, your unique selling point?

No such other app exists in the field of cricket. It's a first in its area.

STEP 4: Interviews

There's no better way to understand the hopes, desires, and aspirations of those you're designing for than by talking with them directly. Interviews really are the crux of the Inspiration phase. Whenever possible, conduct your Interviews in the person's space. You must categorize your extreme audience, and your main target audience and get samples from both in your interviews. It is also necessary to interview field experts who can guide you about the deeper context of the problem.

For a detailed guide on interviews, please refer to the "Field guide to the Human Centered Design" by IDEO. <https://www.designkit.org/>

Fill in the following interview guide:

Open General

What are some broad questions you can ask to open the conversation and warm people up?

Since when have you been playing cricket?

Who is your favorite batter?

What shot do you like the most? And whose shot do you idealize?

Then Go Deep

What are some questions that can help you start to understand this person's hopes, fears, and ambitions?

What difficulties do you encounter during training?

Are you satisfied with the quality of coaching?

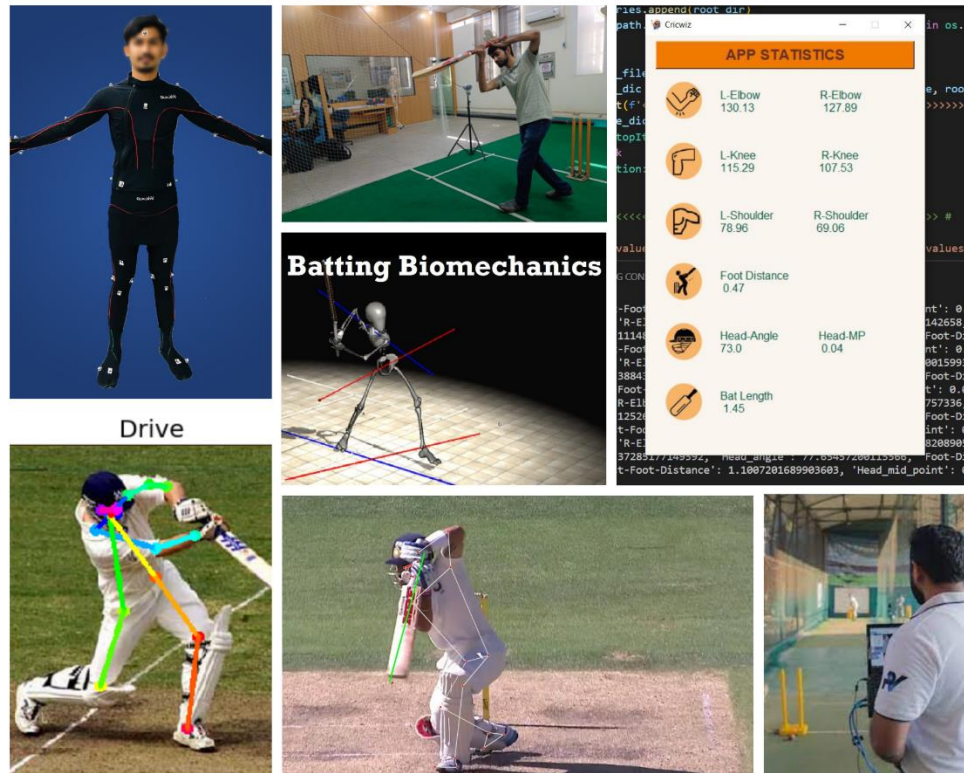
Do you feel the coaches you get are sincere to you and are not just slackers?

Would you use our solution?

How do you see our solution improving the overall quality of coaching.

STEP 5: A pictorial collage

To showcase your efforts towards the human centered design, add a pictorial collage here that may showcase the problem, the people facing them, the interview process, design sketches, the work environment, etc.



STEP 6: Summarize

Summarize your initial findings here. Discuss about the following after reflecting on your efforts:

1. Problem:

Players don't get standardized coaching in Pakistan and those who can avail are limited by the price of it.

2. Target audience:

Young emerging players who are in learning and improving phase.

3. Indented Solution with initial design sketches:

An app for analyzing and generating an index of each shot, played by the players according to a standardized shot.

4. Impact of the solution:

Those who can't afford or are unable to properly train themselves due to quality of coaching can improve themselves at their convenience which in turn will help to nourish the batting

talent of Pakistan. This will help Pakistan in the international level just as PSL helped to improve the overall cricket quality.

5. Your intended roadmap for the implementation of the solution:

We are on our way of increasing the data set for better training of the application. Currently, we haven't packaged the app but are testing the algorithm on our PCs. Furthermore, we are working on cover drive for now and will shift to other shots once this one reaches a satisfactory level