



PERSONAL PROJECT ONE

DOMINIC LOBBAN

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INTRODUCTION

BRIEF DECONSTRUCTION

Your task is to investigate what is happening on the **cutting edge of your chosen technology**.

Who is doing what, how and why?

What **software/hardware** is currently available and what are the strengths and weaknesses of **competing products**. What developments are just around the corner?

How has technology changed your chosen area of research and the people who work within it?

You are required to **predict where your chosen technology may be going**, be able to suggest new and innovative ways that your technology could potentially be used, and **design a prototype to demonstrate your concept**.

This module will culminate in a presentation where you must convince us that your idea is **viable, useful and well conceived**.

I decided to look at the brief and base my research on it. The brief itself was so open that I really couldn't think of where to begin. I wanted to look at new, exciting technologies that are emerging before fixing to any one idea.

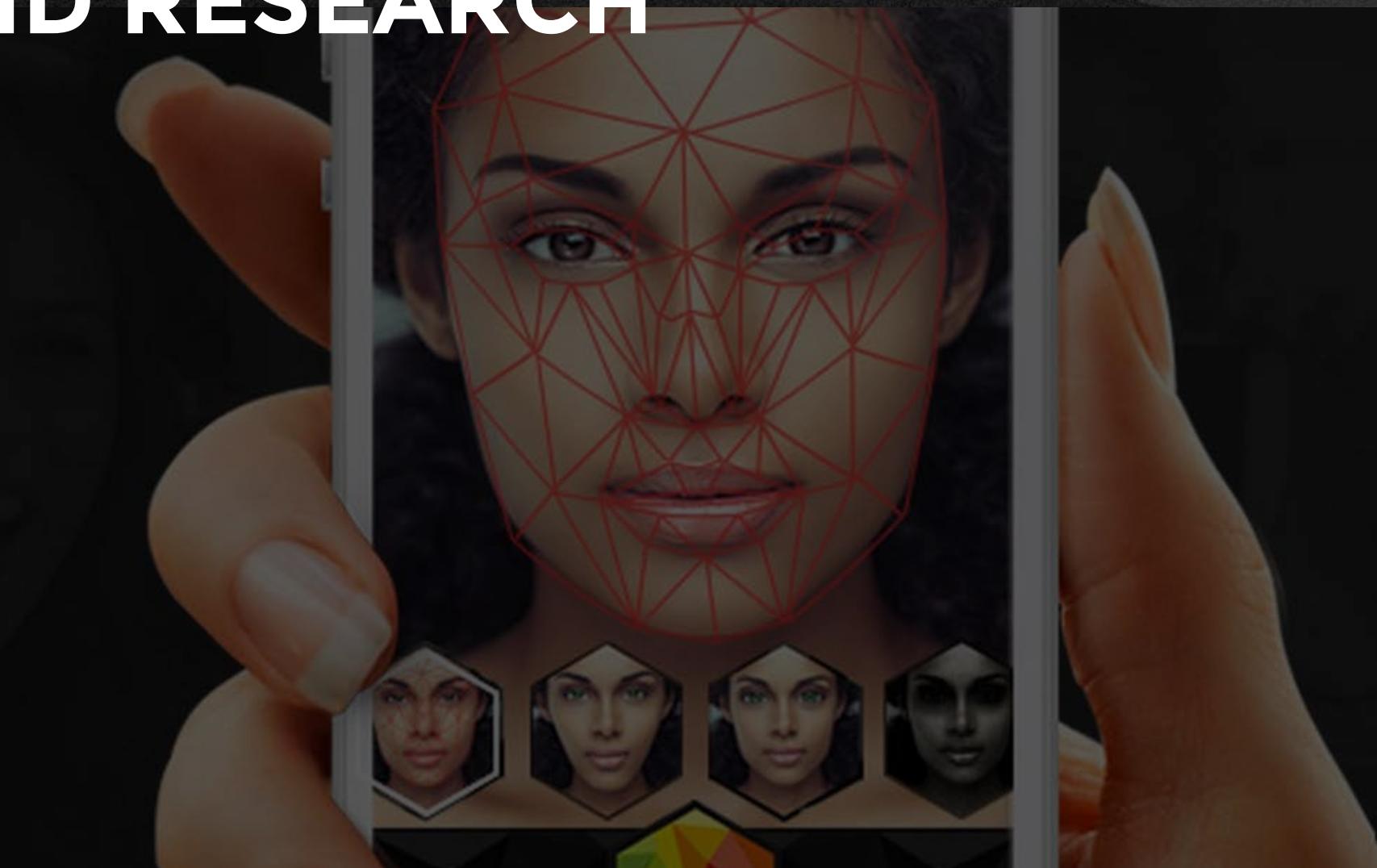
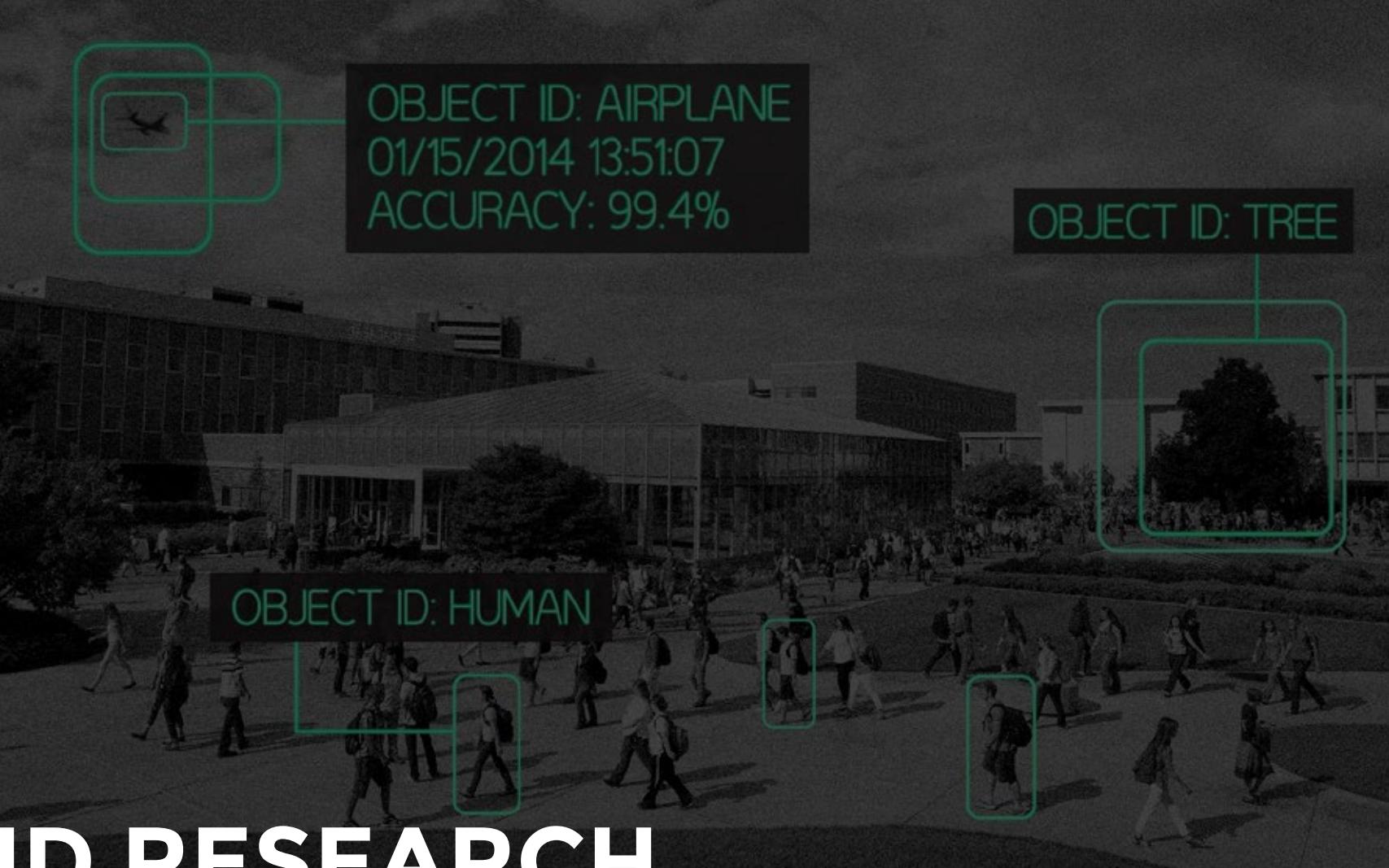
I knew I had to look at existing projects in depth, and evaluating their effectiveness, as well as learn the technology used to create them.

Prediction is a key part of this brief. I don't want my lack of knowledge on any technology to hold back my concepts and ideas. I would rather aim for a really ambitious project and not fully achieve it to the full effect, as long as the concept was solid and pushing a chosen industry forward.

I need to prove my final solution is achievable, useful and well thought out.



DIGITAL TREND RESEARCH





COMPUTER VISION & MOTION TRACKING

Computer Vision is the idea of programming machines to recognise and respond to captured imagery or video data. Essentially, to create a digital eye.

One way that this kind of vision is achieved is through Motion Capture systems. Motion Tracking & Capturing is a technological process of recognizing physical objects, people and their movements, and then applying this data somewhere else in response.

It offers a new experience and type of interaction with technology, which appears seamless and almost magical. I used this type of technology in a previous project which really sparked my interest with the possible projects you can create.

There are lots of systems available. Specialist software can be really expensive. For this reason, many designers opt for hacking projects that use open source software and hacked hardware available on the highstreet, like Xbox's Kinect camera for example.

Application of this technology is useful in film and entertainment. My initial thought is to explore the possibilities of using it as a tool in a different industry all together.



ARTIFICIAL INTELLIGENCE

My interest isn't in the deep artificial intelligence that is often presented in science fiction and movies. Often, they are embodied in glamorised cyborgs who often present an emotional or physical threat to humanity.

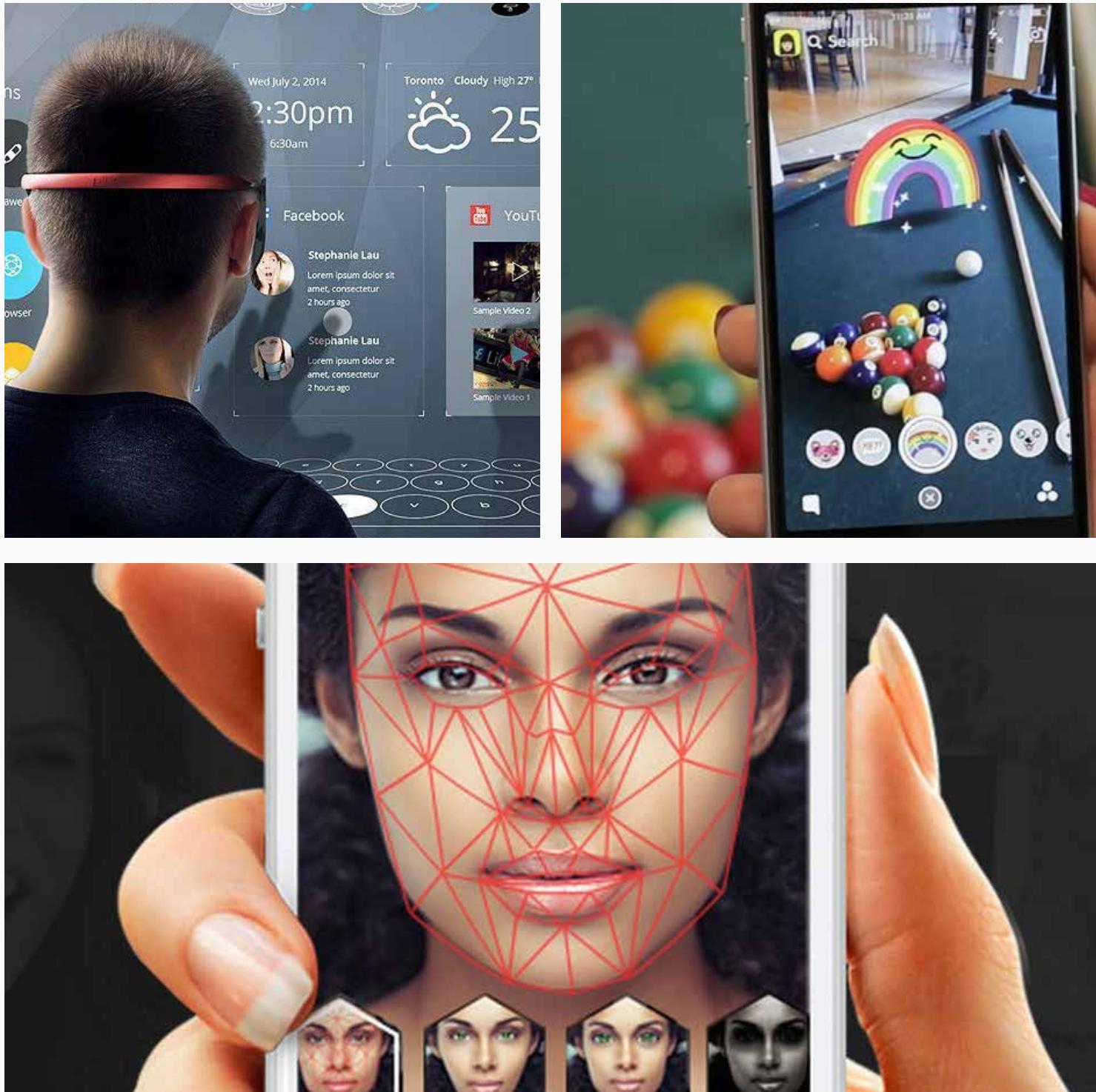
Although conceptually it can be quite scary, the current application of simple artificial intelligence is completely changing the way we interact with our mobiles, systems and technology.

We have personal assistants like Siri and Alexa, that provide information and simple services through the management of day to day tasks.

There are also smart advertisement techniques in place, and the role of 'suggested content' is huge. Analysing user activity and data, and then displaying relevant information and content based on this is again a subtle nod to a clever, learning system. Predicted content can often provide a useful and appreciated surprise.

Data-driven design is definitely something to consider, regardless of the format my project takes.





VIRTUAL & AUGMENTED REALITY

VR and AR is a huge market that has emerged within the past few years. Virtual Reality always seems to split opinion. Some believe it is destined to fail, with its obvious physical limitations and overall effect and practicality.

However, Augmented Reality is a very interesting discipline, that allows much more creativity within the real physical world. The idea of revealing added depth to a world through a device screen has provided massive marketing opportunities for companies, through applications like Snapchat.

Projects are currently attempting to revolutionise many different industries, especially gaming and advertising. However, there are predictions that non-gaming applications will surpass the game industry, for things like education and travel. Apple released its ARKit, which allows developers to use iPhone features to create these immersive augmented reality experiences.

This is a technology that not only puzzles me, but challenges you to break free from the single concept of user interface to draw users in with different interactions.



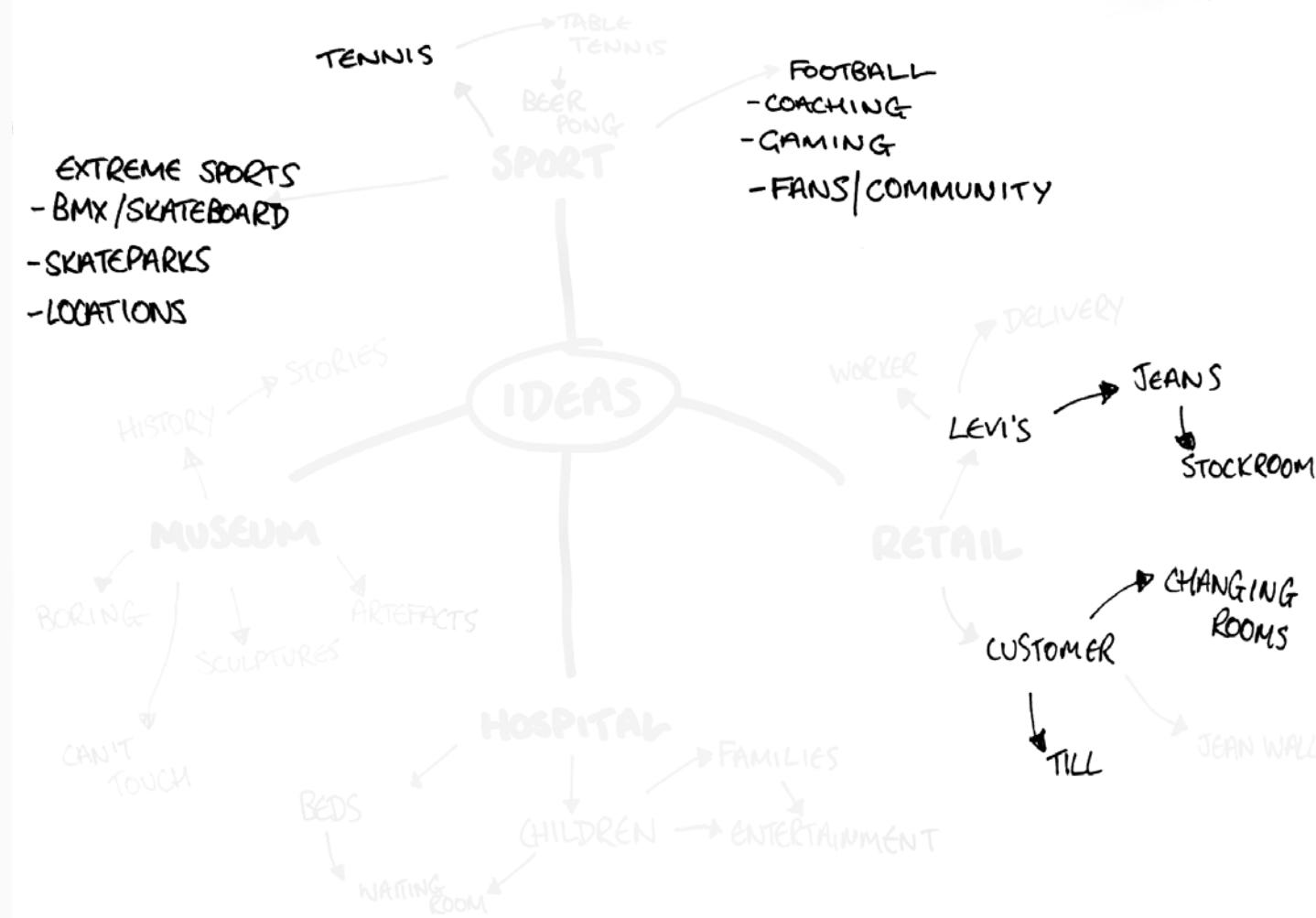
CONCEPT DEVELOPMENT

PROJECTION
COACH!

IDEA GENERATION

- LED BOARD?
- VR?

PERSONAL INTERESTS



Because of the possible longevity of this project, we were advised to really tackle an industry we were interested in.

I thought about my general interests and hobbies. However there are so many aspects to topics like Sport, Museums/Installations and my Retail job, involving different potential users and environments.

I discarded particular ideas after some simple sketching and idea generation, simply because of the limitations I set on myself. For example, a hospital based project would prove hard to build and test. Museum's were discarded simple because I feel like it's a very saturated market in terms of technology and the constant innovation within this industry.

Two aspects of my interests I'd like to consider further are Sport and Retail.

In terms of sport, I have two sides. I want to explore the football community, including referees, fans and players. With retail, there are consumers and employees. I'm conscious I designed an application for small business environments previously, so I would stay away from application based projects. Instead I would attempt to enrich the shopping or working experience.

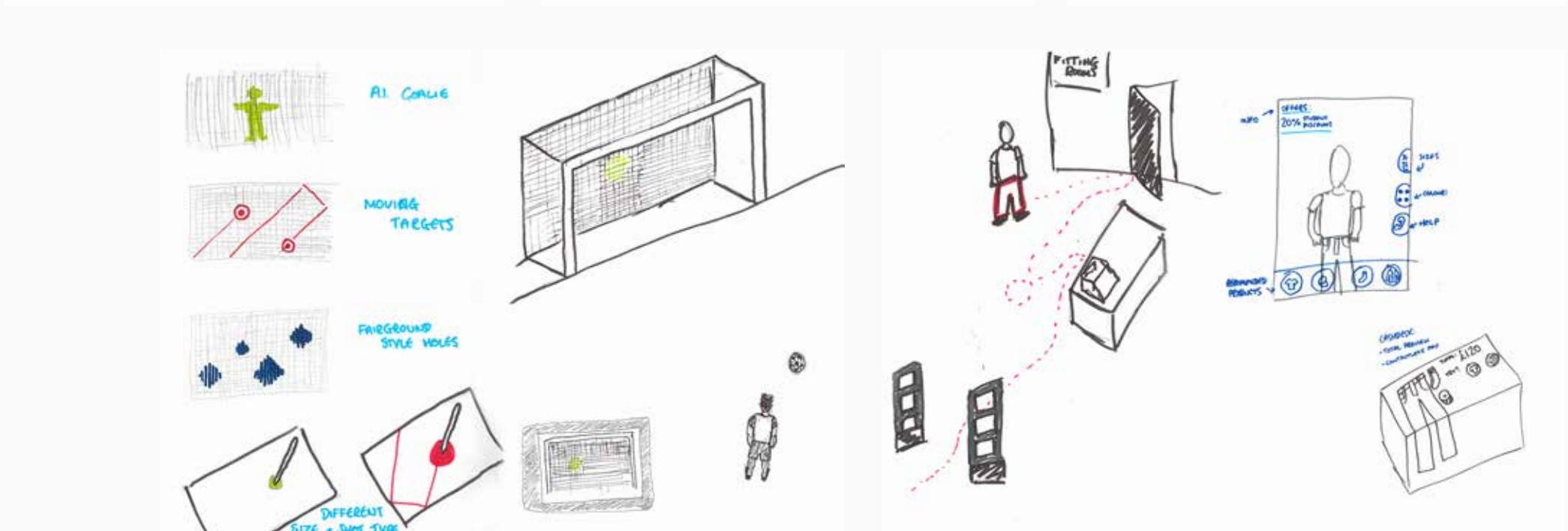
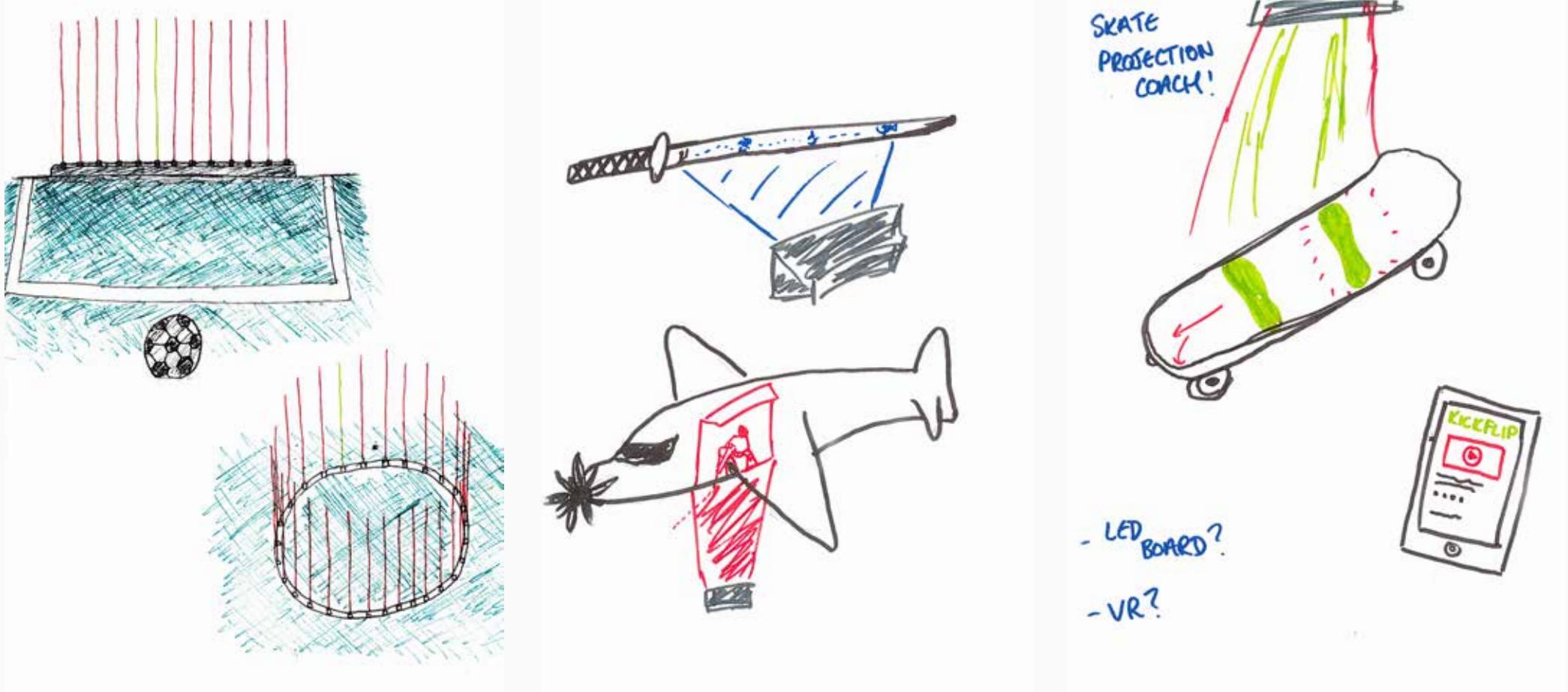
INITIAL IDEAS

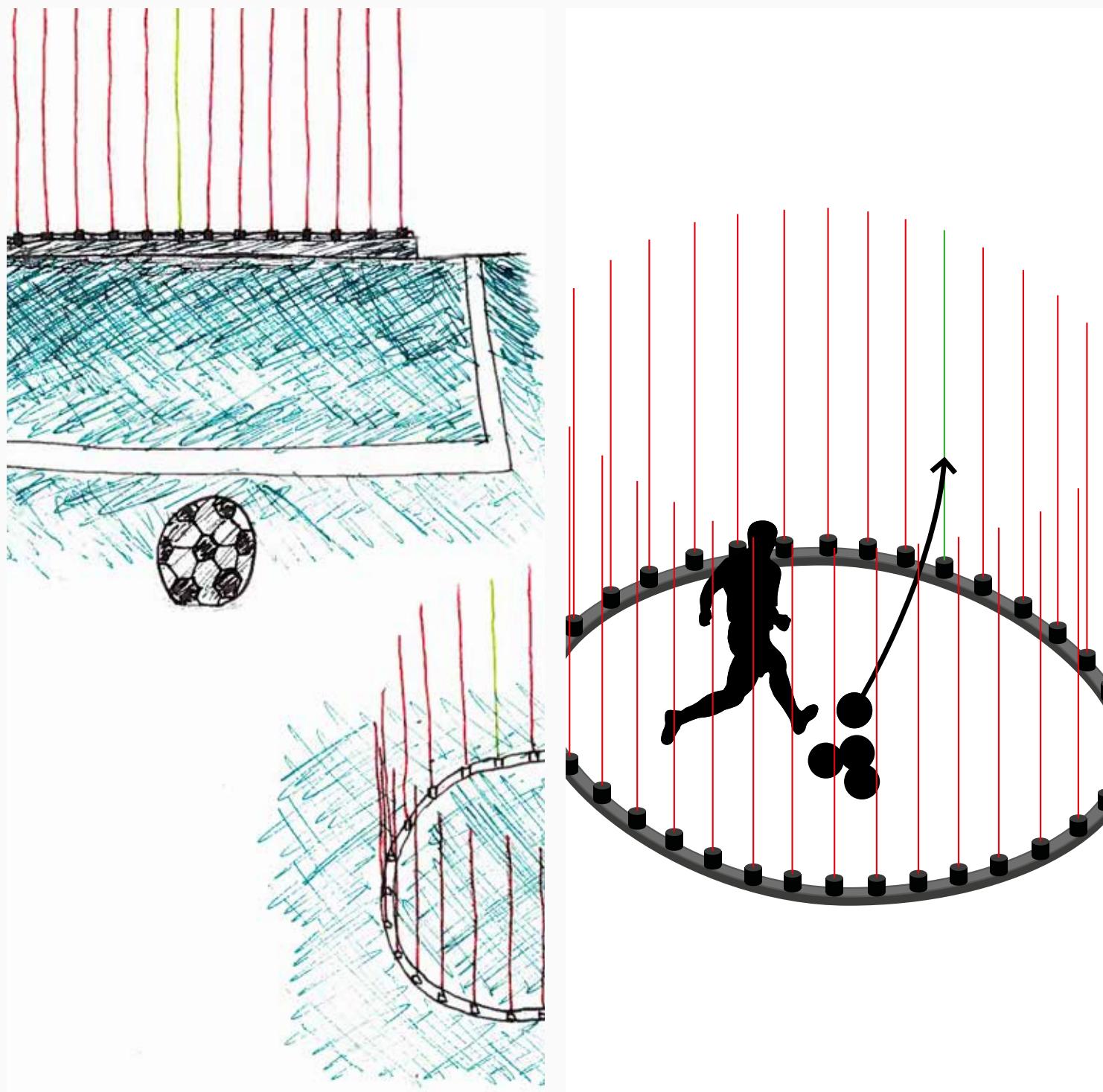
What has worked well for me previously, is blasting sketches without worrying about technical constraints.

I knew I wanted a project somewhere in between user interface and experiential. However at this stage I wasn't concerned about how the specific project would be realised.

By filling a sketchbook full of quick random ideas, I can begin to easily see ideas that will stick, and have a particular appeal in comparison to others when I display them side by side.

It was a very useful process to present this initial and rough sketches to my peers on my course. This was a good way to see where their curiosity lies, as well as giving my an indication as to which ideas need further explanation.





CONCEPT 1 LASER FOOTBALL

What is the issue?

Footballers sometimes aren't motivated or engaged enough with training and practice, even after their paycheck. This can often result in fallouts with coaching staff and managers, causing the player to be benched for games, placed on loan or released.

The proposed concept

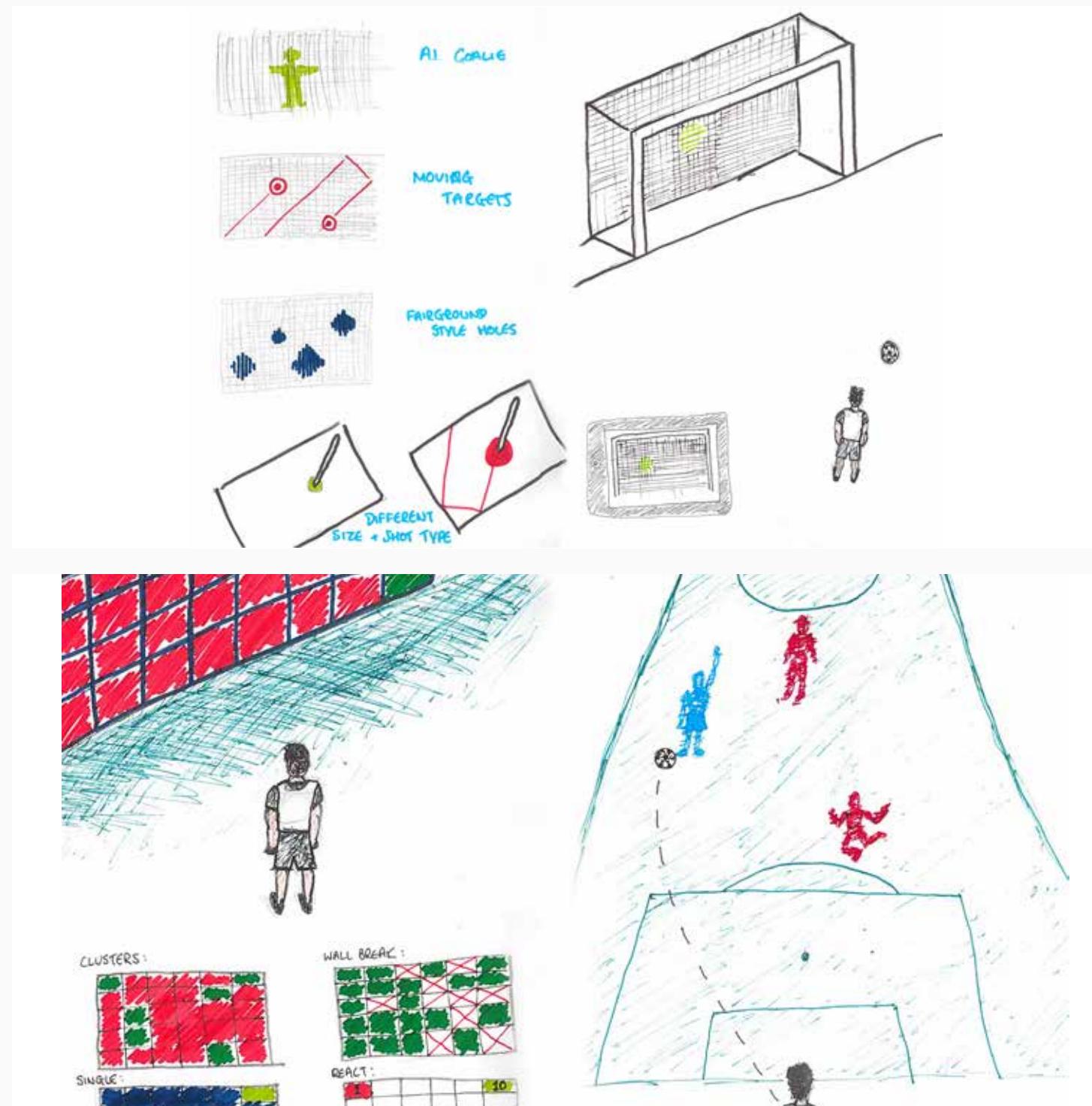
Create an exciting new digital way to train a footballer's passing ability, through arduino circuits and physical computing, that will provide added intensity and unpredictability to a training drill.

How would it work?

There is a component that shines lasers through an Arduino. I could have red lasers for dormant targets and green for active. When a ball is kicked and the laser is broken, it could trigger a new laser to become active. I could design an interface where the coach specifies how many attempts, or what timeframe the player has, in order to further the challenge.

What is the USP?

The added benefit to the user is a new, visually interesting way to play football, without having to smash actual targets or aim for a net. This drill would work on precision and would be beneficial for every single type of football player.



CONCEPT 2 SMART GOAL

What is the issue?

Training football teams can be long-winded and repetitive. Sometimes players can become too good at specific drills, and they therefore lose focus and don't give 100% effort when engaging. What if there was an adaptive and unpredictable solution, aimed to challenge decision making equally with technique.

The proposed concept

A application controlled interactive goal system to test the technique, improvisation and diversity of a football player's penalty shot through motion tracking technology.

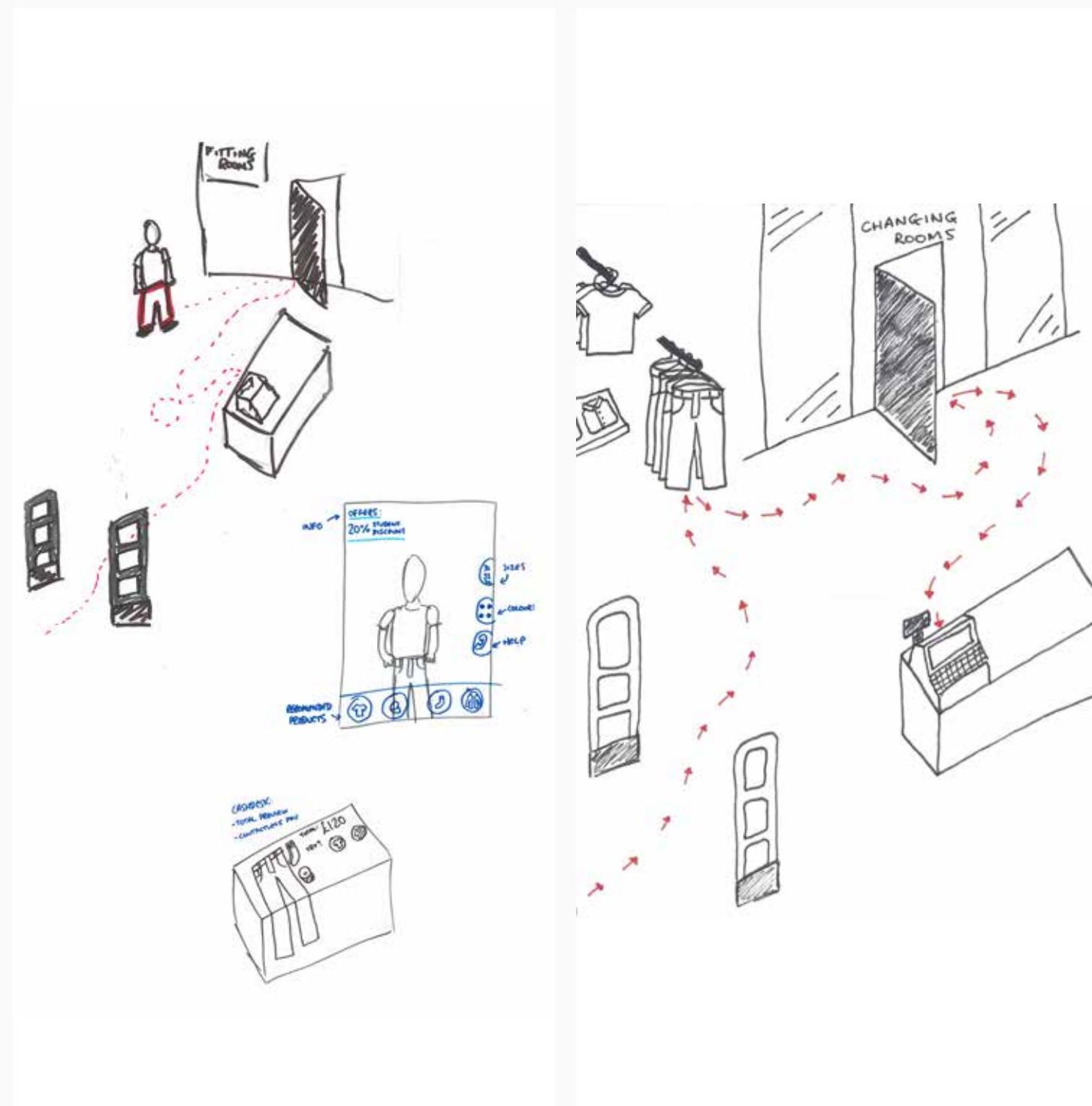
How would it work?

Using the interface, the coach can test his players in real time. He can draw targets of different size and colours differentiate the shot type they should use. This will then be projected or displayed onto the goal where the player must strike the ball at the target. A defender may receive a basic test, whereas a top striker might need to perform a driven shot directly in the top corner, towards a moving target. The tracking technology, whether cameras or inside the ball, can determine how accurate the player was, and relay this information back to the coach.

Each players stats will be updated and displayed alongside the live shot performance in a clean and comparative display. The statistic view of the application will highlight strengths and weaknesses. Players can view and self reflect on their own profile pages, displaying success rate and their habits.

What is the USP?

A versatile coaching tool, that relies on versatility, live information and instant customisation, to revolutionise the intensity and psychology behind decision making in football. This tool comes in the form of a space between the virtual and physical space, to create a realistic simulation using minimal user interaction, just the coach and a player.



CONCEPT 3 SHOP TAG

What is the issue?

Working in retail can be challenging, not to mention some stores can be quite daunting for customers. Sales may be lost if staff are too busy to give the correct customer service to every customer. This results in a loss of profit, and disheartened customers who may not return.

The proposed concept

Using RFID or NFC tags, create a new type of security tag. Not only will it provide security against shoplifters, but also communicate with various areas around the store. The changing room is a common place where customers are often shy and perhaps don't want to ask for help.

A smart mirror display could recognise products and suggest alternate outfits, sizes and colours, as well as assistance.

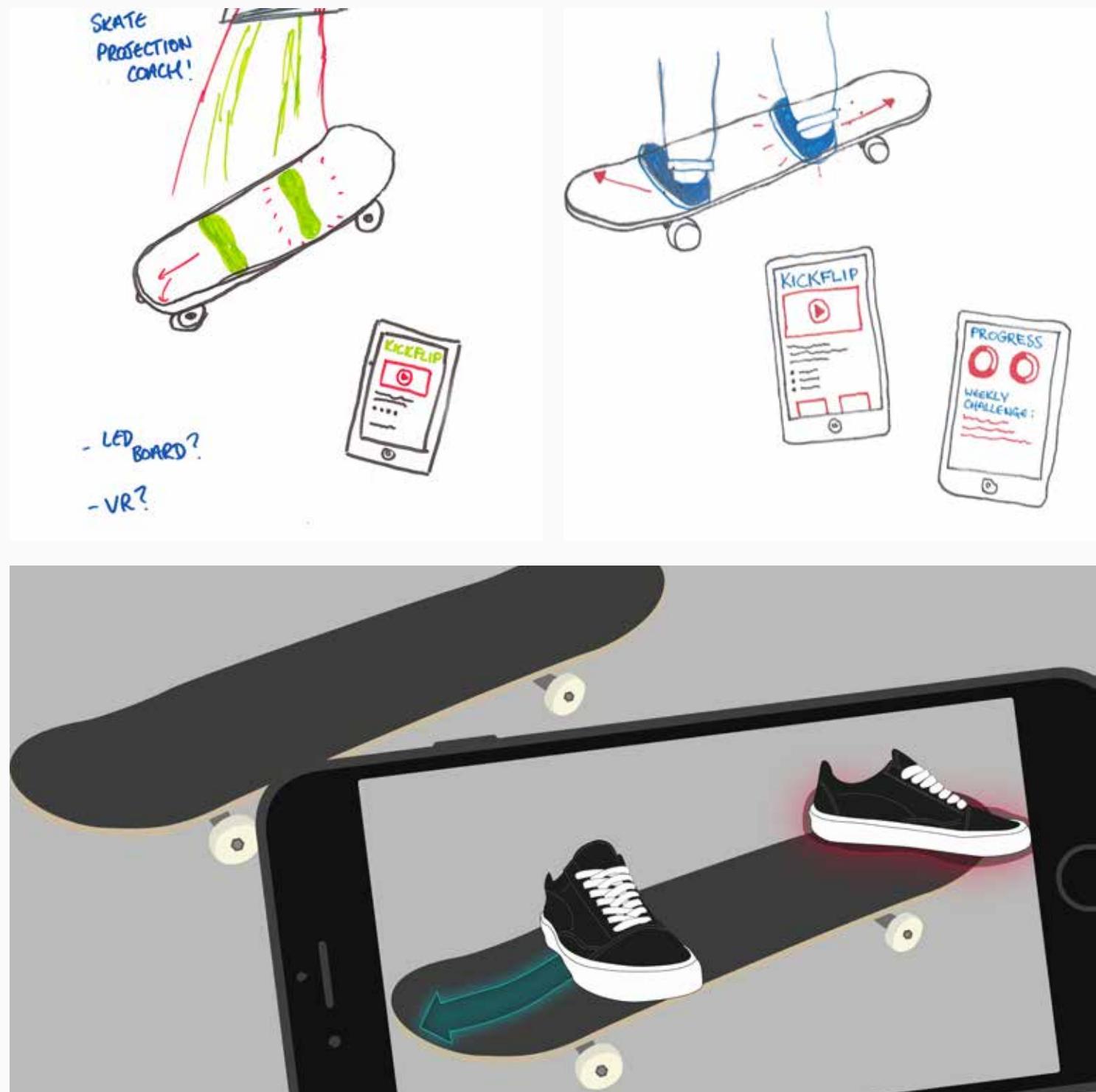
The cashdesk is another place that can be quite tedious and boring for both staff and customers. Perhaps this can be an unstaffed area, where payments are taken on the table, alongside tailored information based on products. This ensures the correct customer service is given 100% of the time, whilst freeing staff up in busy periods to help others.

How would it work?

The tag could be attached just like a security tag, or woven into the washing label with smart fabrics. RFID tags would then activate the smart mirror display in the fitting rooms, that would be a touchscreen interface. Then, once happy with a product, it can be placed on the checkout table, where options would become available, as well as deactivating the RFID.

What is the USP?

A re-imagined retail environment that takes pressure away from staff, as well as delivering an efficient way to shop in a relaxed and useful process.



CONCEPT 4 AR SKATE MATE

What is the issue?

Being an introverted sport, people often struggle learning exactly how to perform tricks on a skateboard, especially if they don't have any friends that ride. Also, they may not know where is exciting and fun to ride and practice, and what's more, even if they go, they may struggle thinking of how to interact with obstacles, ramps and rails.

The proposed concept

An augmented reality skate buddy app. Select a trick to learn, and use your phone to look at the demonstration given by your skate buddy. Each process will be broken into steps that you could rewatch, plus you could track your progress and compare your skate profile with friends.

Another potential feature of the app could be a location based skate spot service. Local skaters could tag their favourite spots to share, and record their own lines for other users to try.

How would it work?

The skate buddy would have to be made in some 3D software and potentially developed through Unity to bring him to life when looking at the skateboard. User would open up the AR application and choose a trick, this would trigger the camera to open, where they watch their digital friend complete the trick. Another potential way of doing this would be projection mapping.

What is the USP?

A visualised learning tool integrated into a community application to improve the experience and progress of skateboarders in a particular area, as well as a place to share ideas, areas and tips to help each other.

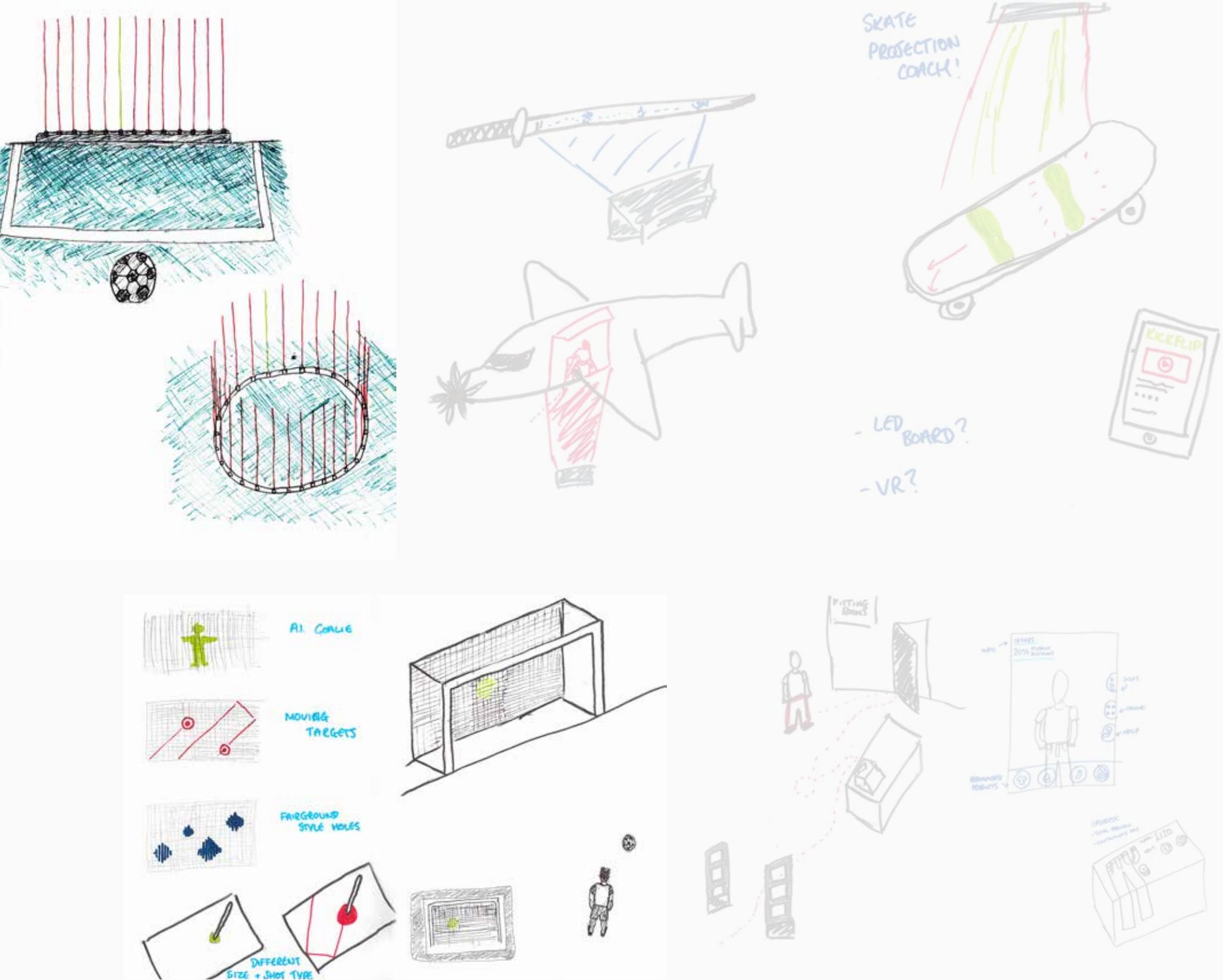
CHOSEN IDEA

I have decided to explore the Smart Goal concept, as I feel I'm most interested in the technology and industry that it is working within.

I feel like this project idea is well rounded and has lots of opportunities to further my skills in physical experiential builds, interface design and game mechanics. There is space to explore new software and media also.

However, I was unaware that a very similar project already exists by a past student of the course. I only realised this when a lecturer pointed this out.

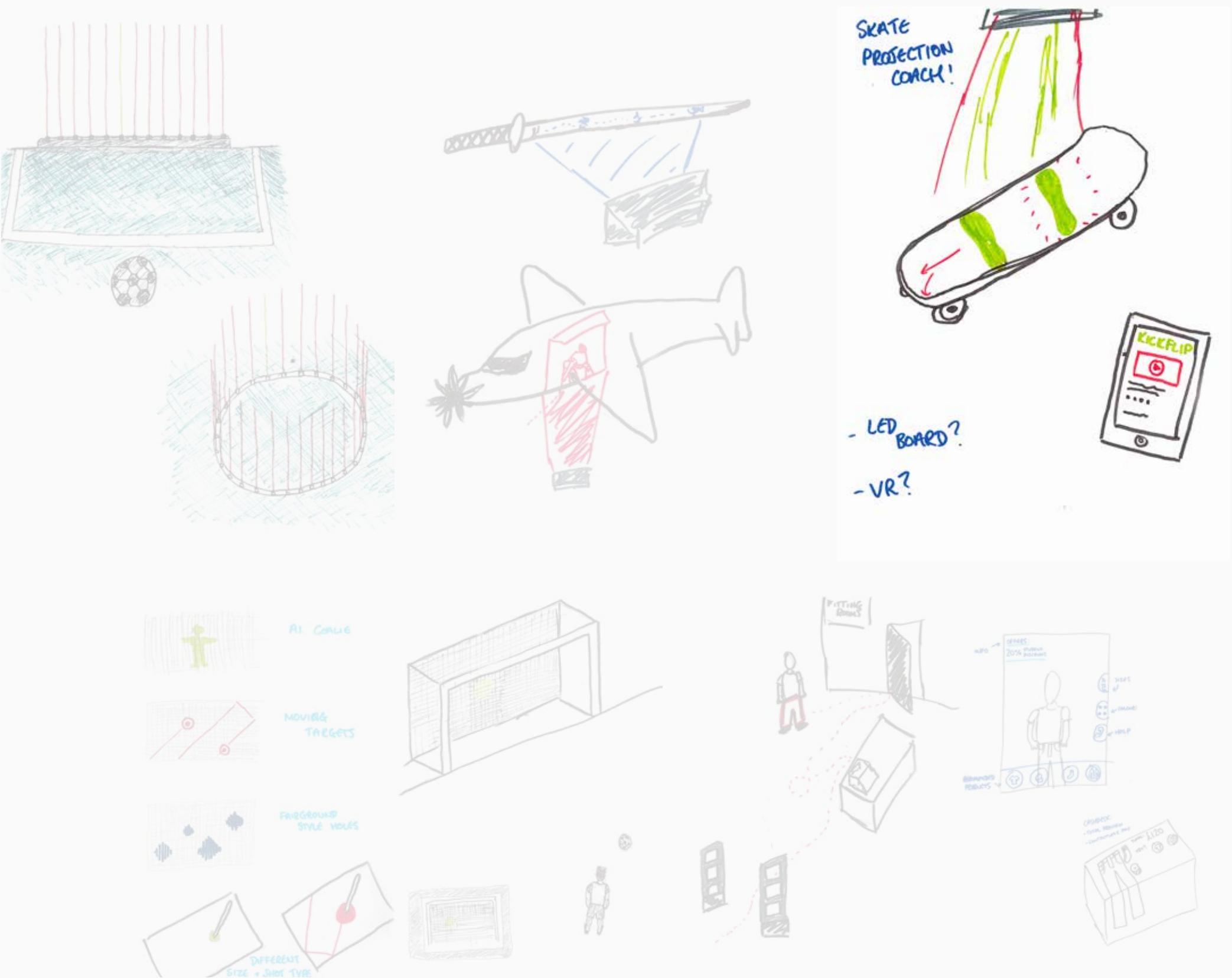
I decided to explore this past project, and see what key differences, similarities and opportunities I could learn from this.



BACKUP PROJECT

I'm aware that this project can roll over two semesters or be left after the first. I'm also conscious that I may have to abandon my goal idea if it's too similar to a past project.

Because of this, I have decided to keep my skate application in mind, for a future or backup project. It was a tough decision that simply came down to whichever project would last the longest. I know I could potentially carry my Goal idea across two semesters, whereas I think the skate application would be a great project for just one semester.





DIGITAL TRENDS IN SPORT



HAWK EYE TECHNOLOGY

Hawkeye are a company that specialise in ball tracking technology alongside other interactive sport features. They boast 'the most advanced officiating tool used in sport.' With this sort of technology, it is no wonder that Football, Tennis, Cricket have already integrated it into many competitions, with other sports following.

They provide a number of products, but the most impressive amongst point detection systems and cricket decision review systems are:

Goal Line Technology

Used initially by FIFA, the technology developed uses 14 cameras across a stadium to develop a digital view of the full pitch or playing area. There is no area of the pitch where there is no clean view of the ball. The split second that the ball crosses the line, a signal is sent to the referee's watch.

Electronic Line Calling

The most famous use of this technology is the recent introduction of challenges in Tennis competitions. The smart replays provided by the cameras can track the tennis balls trajectory and detect what area of the court it has landed on, forming an much more accurate assumption then viewing officials.



STATSPORT'S VIPER POD

Football players and data analysts can now track almost all of their data given by their performance through a product by StatSorts, called a Viper Pod. Players wear tight back vests under their jerseys that hold the small GPS device.

Just some types of data recorded include:

Distance covered

Running speed

Step Balance

Stress Load

Heart Rate

High Speed Running

Acceleration

Deceleration

Weight Distribution (in case a player is struggling with injury)

This is a very statistical and thorough way to analyse player performance, and applies pressure and intensity to the activities. However, in terms of engaging with the actual players of the sport, it is almost non-existent.





NFL BALL CHIPS

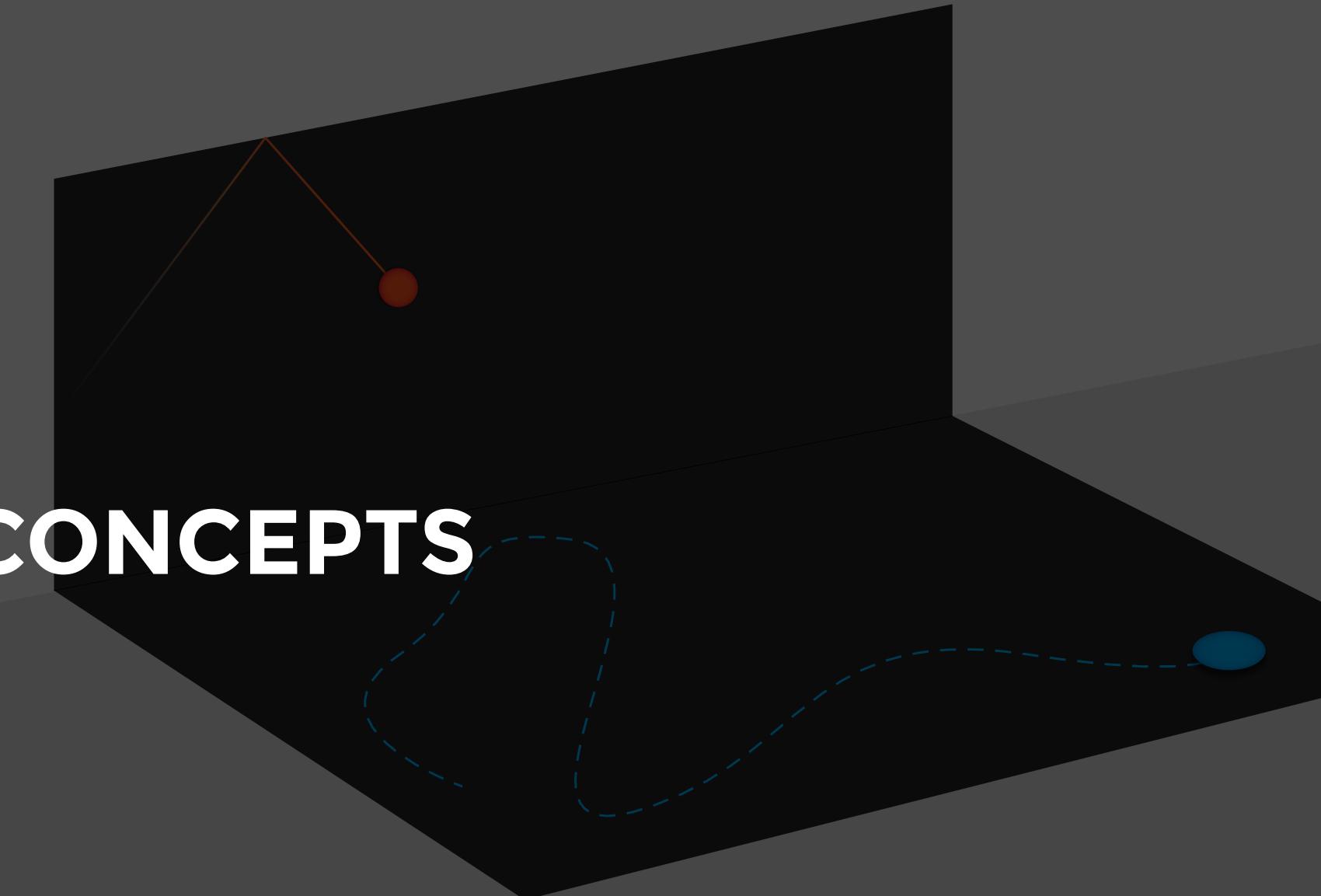
Coin sized RFID chips embedded in the actual footballs used in the NFL have strengthened how accurately stats are measured in game.

These chips can recorded all sorts of vital information, such as velocity, rotation, ball speed, and location. The benefit of this in-depth study of the balls movement is that a quarterback's '80 yard pass' may actually be made up of a 12 yard pass and a run totally 68 yards.

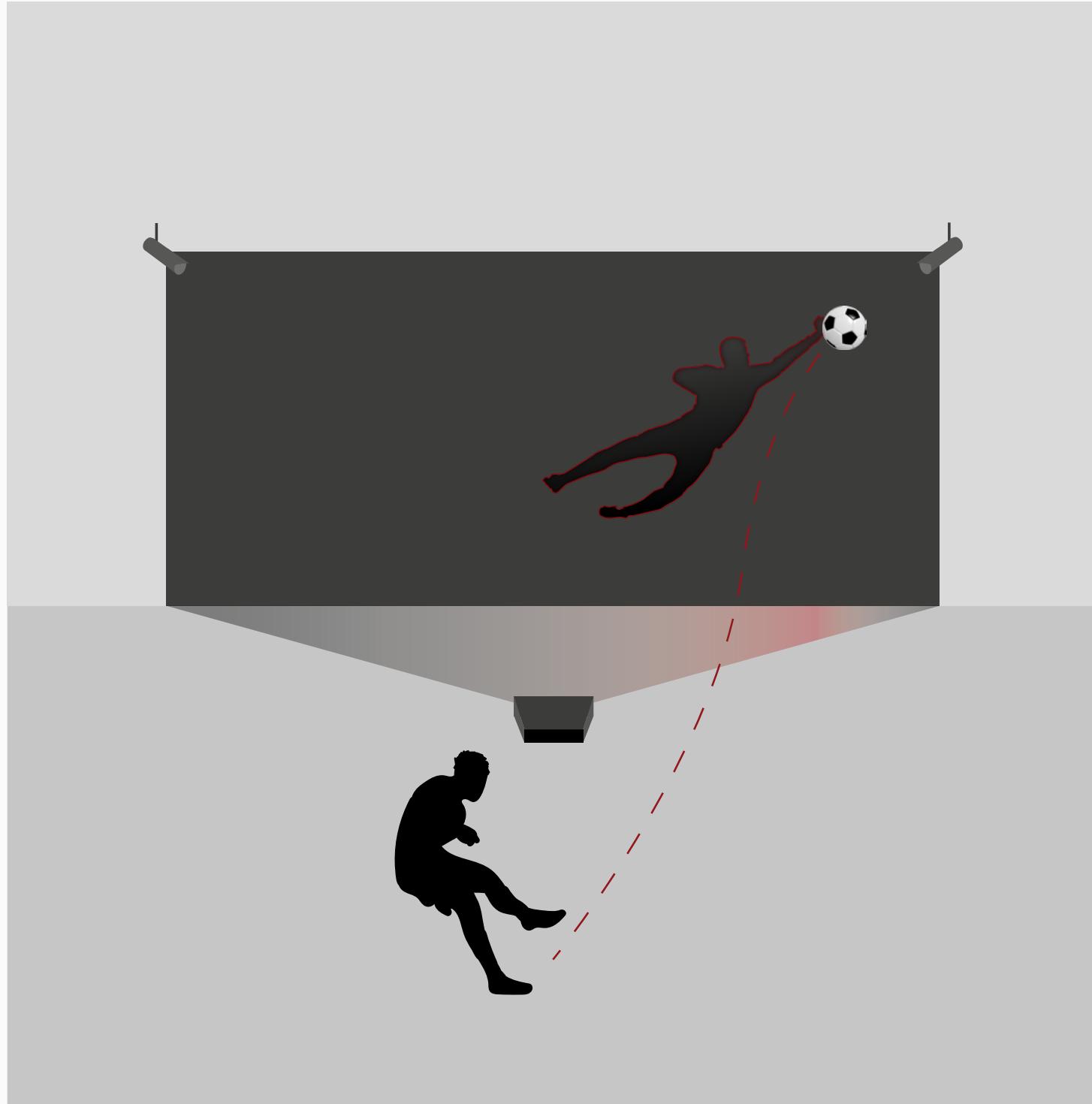
Steps were taken to ensure there was no realisation of a foreign body within the ball. The stadiums used have around 22 RFID sensors that allow the ball to be tracked in real time.

These chips, developed by Zebra technology, also feature in the player's shoulder pads. The added benefit is to the coaching teams and media around the game, that can analyse and adapt their plays, depending on player performance

REFINED CONCEPTS



AI KEEPER



What is the issue?

English football internationals aren't progressing at the rate of other national teams. One factor in this is the psychology going into high-pressure games. Many times we have seen England lose to calmer, more focused players from other countries.

The proposed concept

Bring a wall to life by projecting a digital and intelligent goalkeeper, that will adapt and attempt to save penalties based on player habits, eye contact and body language and previous performance both in game and training. Player ability can be worked on and improved, but more importantly, players become aware of the psychology behind their performance. They can begin to improve their ability to trick the digital goalkeeper and hide their true intentions of a penalty.

How would it work?

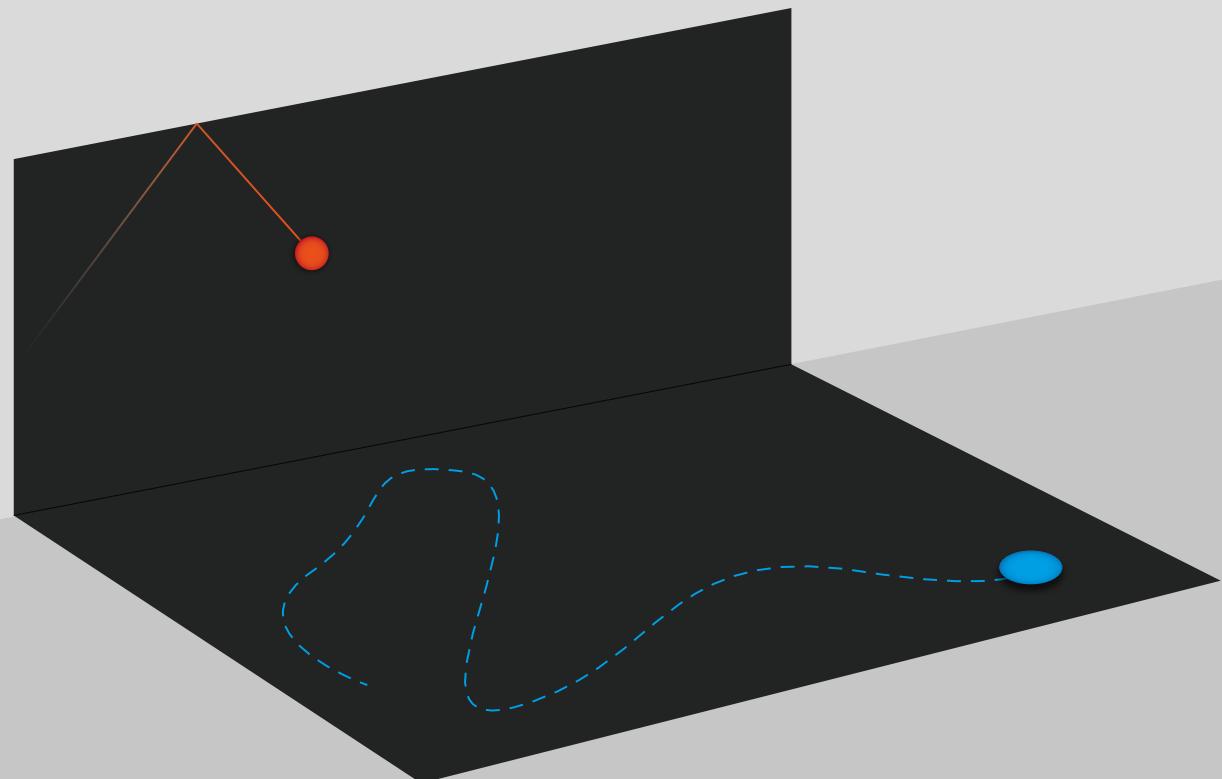
The display could be either projection or LED screens. In order to track the ball and player, there would have to be motion tracking software for both factors. This could track what area of the goal/wall the ball impacts with, but is also where the player's eyes and bodies are analysed. Some sort of processing would have to be used to send a message to the keeper to dive a particular way, based on the information gathered from previous performance and the current shot.

Also, a real time application would be useful to display player performance against the digital keeper, where both players and coaches can analyse the data.

What is the USP?

This concept is data driven. Each time the player takes a shot, it is recorded stored and processed. Over time, the A.I. keeper build up a profile on that individual, in order to improve the complexity and challenging nature of the interaction. By combining digital and physical worlds for a harder challenge, both the mind and body is trained, in a more realistic, immersive scenario.

NFL SCENARIO SIMULATION



What is the issue?

Training reschemes for large team sports (like those that compete in the NFL) requires very complex drills, that require a lot of people and physical equipment to run effectively. Only by using extra people can real-game situations be simulated. What if there was a way to replicate game play just with one user, therefore allowing other players to train other aspects of the game at the same time, improving overall effectiveness.

The proposed concept

An interactive space controlled by a coaching application, aimed to combine a movement and passing drill for a quarterback in the NFL. The coach can draw out a specific run along the floor, then identify a target area on the wall for the player to hit. The time, accuracy and any errors are recorded and displayed for the coach to analyse and provide feedback on.

How would it work?

The simulation space would be created through two projectors, or LED screens if largely produced. The application would allow coaches to draw out paths and moving targets of different sizes. The player would then have tracking technology on, alongside a tracker in the football. He must complete the running circuit as quickly as possible. When the end goal is reached, the target will appear on the wall for him to distribute.

What is the USP?

Real time coaching tool, designed to improve efficiency of a full team, by training an individual for a specific discipline, freeing up the rest of the team to improve other aspects of their performance that need addressing.

COMPETITOR RESEARCH



KICKPRO

Concept

Kick Pro is a university project that aims to teach players how to perform a successful free kick. As a learning tool, players input the type of shot they want to practice, and the distance from the goal. The mobile application then shows where to hit the ball, as well as a projector projecting onto the physical ball and highlighting an area of the goal.

Benefits

The actual lesson and experience this provides is very useful for beginners and people interested in repetitive training. Ways to improve after a shot is taken are useful for people to improve too.

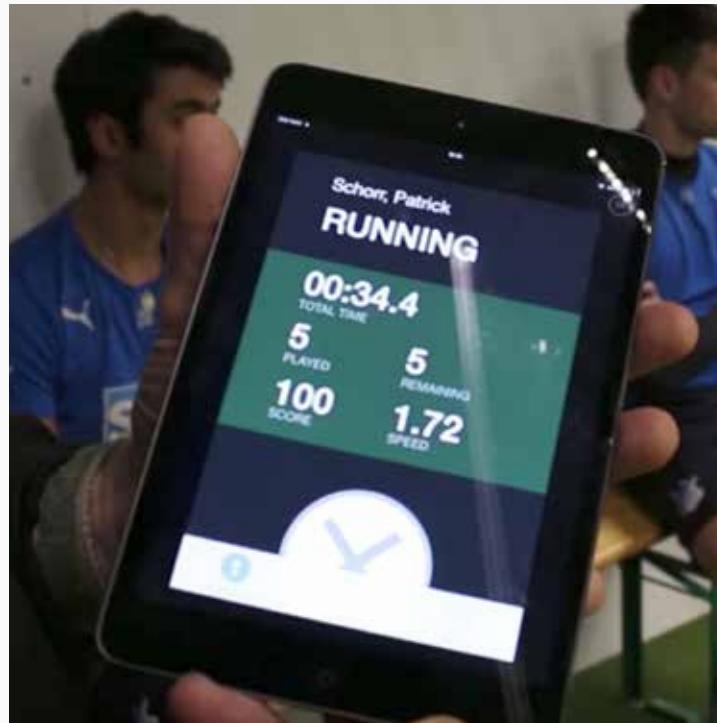
Technology Used

The technology used to track the football is not explained from the online materials I have found on this project. There are two projection aspects, alongside a mobile application.

Drawbacks

I think overall the repetition of this project would become boring. After a few shots, the players would be sick of having to set up the ball in exactly the right spot and resetting the technology. Instead, it should be more rapid.

What's more, this project replaces the coach aspect of the sport altogether. The automated system allows for no added game mechanics or challenge.



FOOTBONAUT TRAINING SPACE

Concept

The Footbonaut comes from the mind of interaction designer Christian Guttler. Described as 'The big football toy', it is a 360 interactive passing drill. Enclosed in a cage with 72 panels, the player receives a football from one of 8 machines, which lights up red prior to the pass. At the same time, another panel lights up green, and the player must distribute the ball into that area.

Benefits

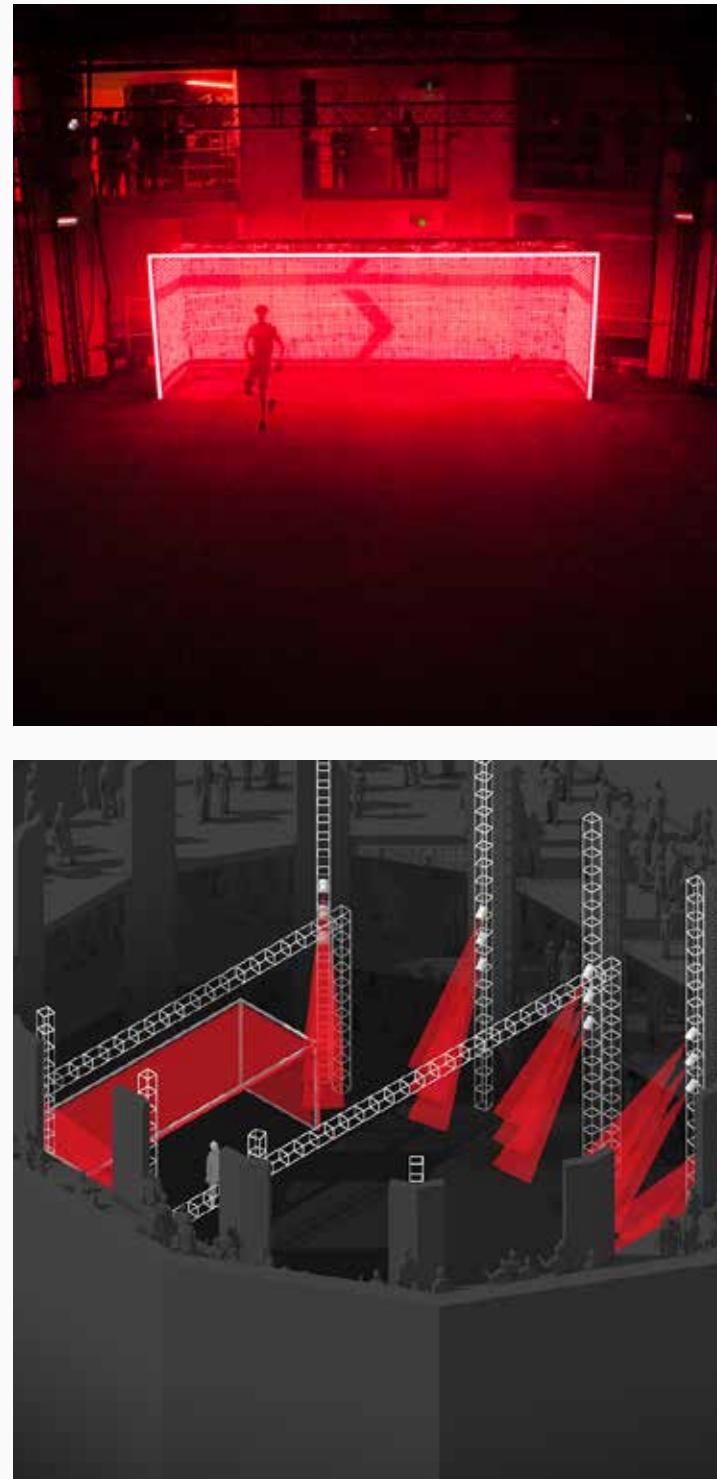
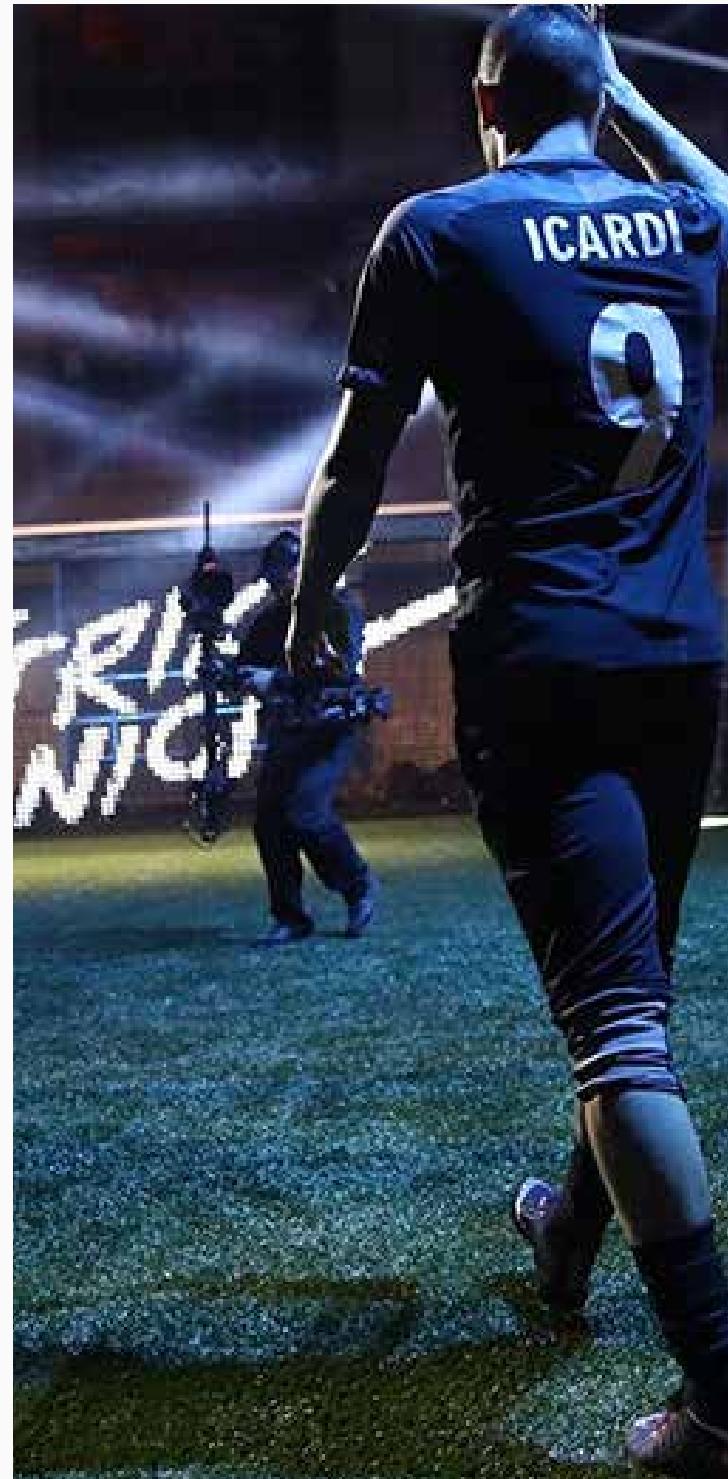
Borussia Dortmund football club aim to help improve a player's technique, spatial awareness and peripheral vision. The pre-built smart space takes little time to set up, with endless possibilities and scenarios to keep the players on their toes. You can set the space to play randomly. This is a really cool and important feature, but would be equally important to detect player's weakness and act on this. This subtle addition of simple AI could benefit players and provide more of a challenge.

Technology Used

The area can be randomly generated, or controlled with a tablet, where all performance related stats are displayed also. The technology is quite simple, but the scale is huge, making it more complex. The panels are lit with LED lights or tubes, which are accompanied by an alert sound for green, and a separate for red. This tests the players reaction to sound as well as colour. Also there are sensors within each of the 72 panels to sense whether the player has successfully completed a pass/shoot. This must be a kind of motion based sensor.

Drawbacks

Although many scenarios and possibilities, there is a level of restriction with this interactive system. You know exactly what size the target is, plus it is in a stress free environment. I could add a level of distraction and intensity to my project. The application is limited. It simply tracks the amount of shots, what speed the machines are set to, and the score based on the time taken to play. The display isn't very analytical or intuitive.



NIKE PRESENTS STRIKE NIGHT

Concept

Celebrating the release of the Hypervenom 3 football boot, Nike showcased an interactive 'smart' Goal, that reacted to shots by the top strikers in the world. It would react with sleek visuals depending on where the player scored within the goal. The main emphasis was on accuracy. The end product is stunning.

Benefits

The design and visual details are very aggressive, powerful and strong. It provides a level of intensity and competitiveness. Colours are used very well to represent emotion and success. The motion sensors were very successful, accurate and quick to relay the relevant information in real time, to provide a score and trigger the animation.

Technology Used

16 motion sensor cameras tracked the exact position of the ball within the goal, calculating a score and triggering fun and relevant animations on the LED net, for the viewers in the audience and on the livestream on Facebook. This seems more reliable than pressure sensors, which would have to be very robust to withstand the force of the shots.

Drawbacks

I believe there is a bit of a missed opportunity with this project in terms of added interaction. I think fans or members of the judging panel could have added distraction or targets to the goal, to truly test accuracy. Images of the crowd could be projected onto the cage to increase intensity, or judges could include special targets via an application to provide bonus points. The stats and performance of the players could have been displayed throughout the live stream, for the judges or players to analyse mid way through the competition.

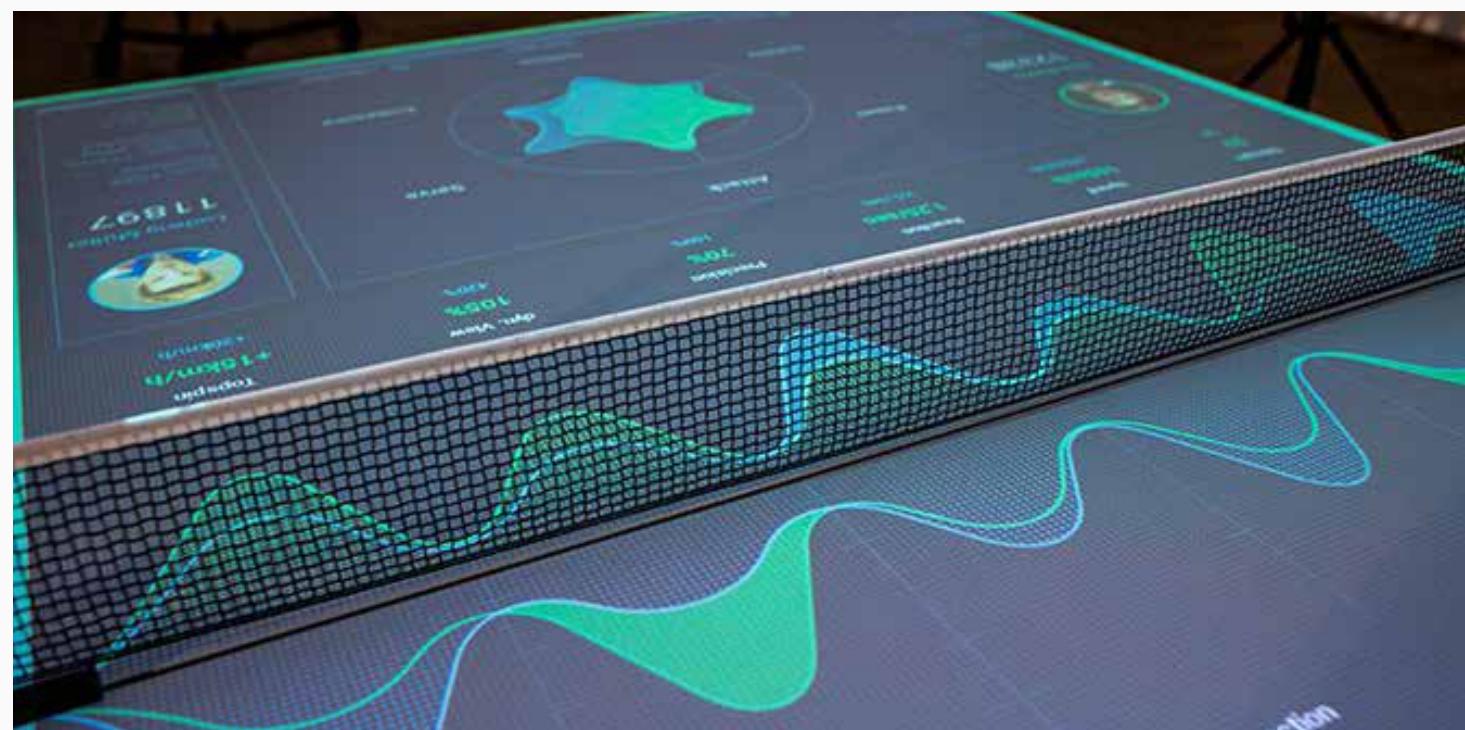
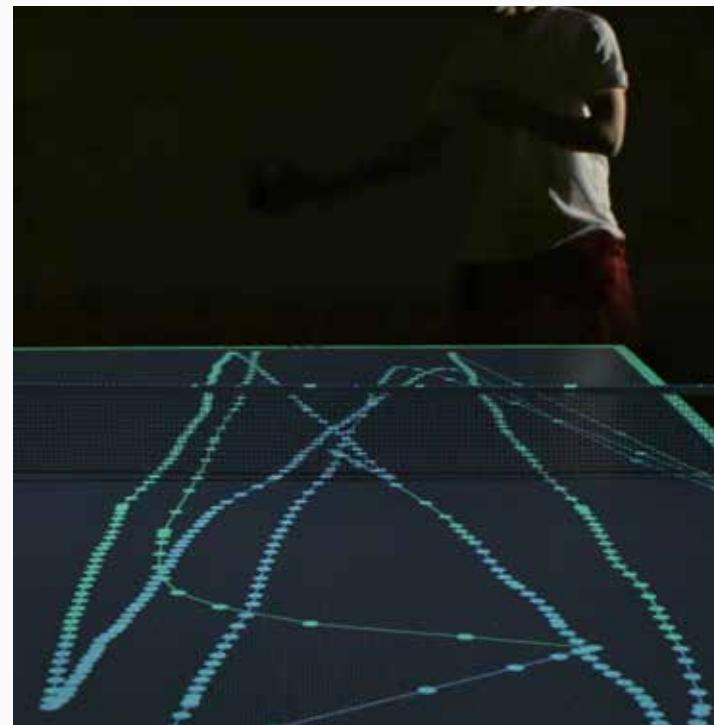


TABLE TENNIS TRAINER 3000

Concept

An assistive table tennis table that tracks the ping pong ball, and displays data for players and trainers.

Benefits

The design is very fluid. Not only is the interface very useful for tracking player performance, but different game modes create engaging ways of players. Players can learn better techniques to serve, and also challenge themselves to play the ball within certain areas. The prototype goes beyond a concept. This student managed to create his full project to a prototype standard, whilst remaining responsive and delivering a really immersive and useful experience for competitors and trainers within this sport.

Technology Used

2 Playstation CL-eye cameras are used to track the ball, with a HD projector displaying the interface from above.

Drawbacks

I really struggled to fault this project. The bright colours ensure visibility in lighter environments. The display is structured and extremely informative based on statistics. It could potentially be quite perplexing for a brand new user, in terms of the learning curve, but other than this, the project technology, game play and visual design are incredible.



NIKE RISE 2.0

Concept

AKQA and Another Space teamed up with Nike to create a fully interactive basketball court, utilizing foot-tracking technology, an LED court and smart coaching tools. The end product was a very immersive and visually engaging training program, where the coach could draw out circuits for players to complete on the court in real time.

Benefits

The coach can edit and alter drills in real time, depending on the performance of his players. This again would be a great place to have suggested improvements and recommended drills for specific weaknesses. The visuals are very strong and immersive, and the application that submits speed and performance data does so in an incredibly innovative and clear way. It allows for self improvement, and can address bad habits, as well as highlight strengths and player decisions.

Technology Used

The coach is able to have full control over digital drills through his interface on the tablet. He can create circuits, or indicate where to shoot by simply drawing drills from the birds eye view. This imagery is then played on the LED screens under the court. At the same time, IR sensors or motion tracking shows each individual players steps in relation to the drills, with the animation and game mechanics reacting appropriately.

Drawbacks

The issue with this, similar to Strike Night, is vision. With such a focus on LED technology, vision is sometimes restricted due to lighting. This may be unavoidable, but the bright colours in both projects help to ensure targets and drills are clear. Also, this particular court is specific to movement and positioning, rather than shooting and technique. It tracks the players, but after the shot is released, there is no measure of success rate. If I were to focus on my industry of Football, I could definitely ensure that my interactive system addresses technique as well as success.

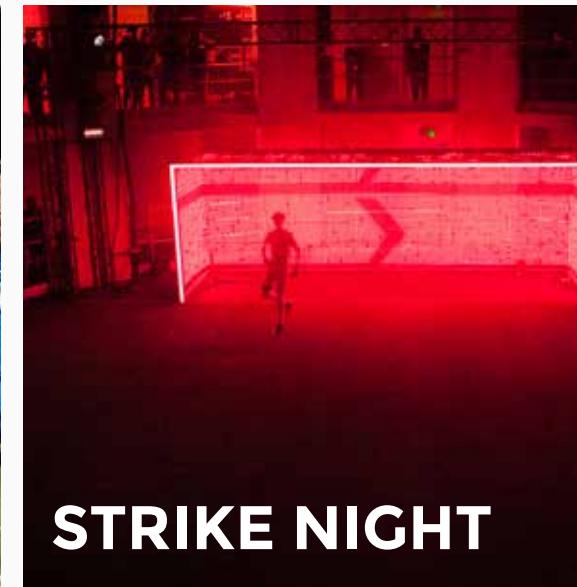
COMPETITOR SUMMARY



KICK PRO



FOOTBONAUT



STRIKE NIGHT



TTT3000



NIKE RISE

Good application of tracking technology and projection.

Replaces the coach

Limited options

Sport specific

No added challenge

Simple interaction and build

Expensive

Repetitive and limited

Poor statistic visuals

Immersive

Solid build

No added challenge

Sport specific

Responsive

Added game mechanics

No personalisation

Automated coaching drills

Coach creativity

Visually engaging

Approved by coaches

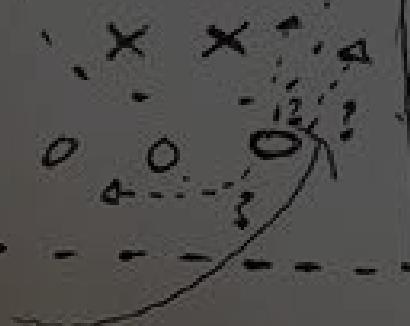
Sport specific & Group drills only

COMPETITOR INSIGHTS

1. There are a lot of projects/products aimed at the player or a sport or aimed to train and replace a coach, but few around assisting the coach.
2. The most impressive and engaging projects record performance in real time but also add further depth to gameplay.
3. Strong visuals are key, but are lost if the interaction with the player isn't simple and self evident.

COACHING TOOLS RESEARCH

Creating shooting
options!





THE SPORTS COACH

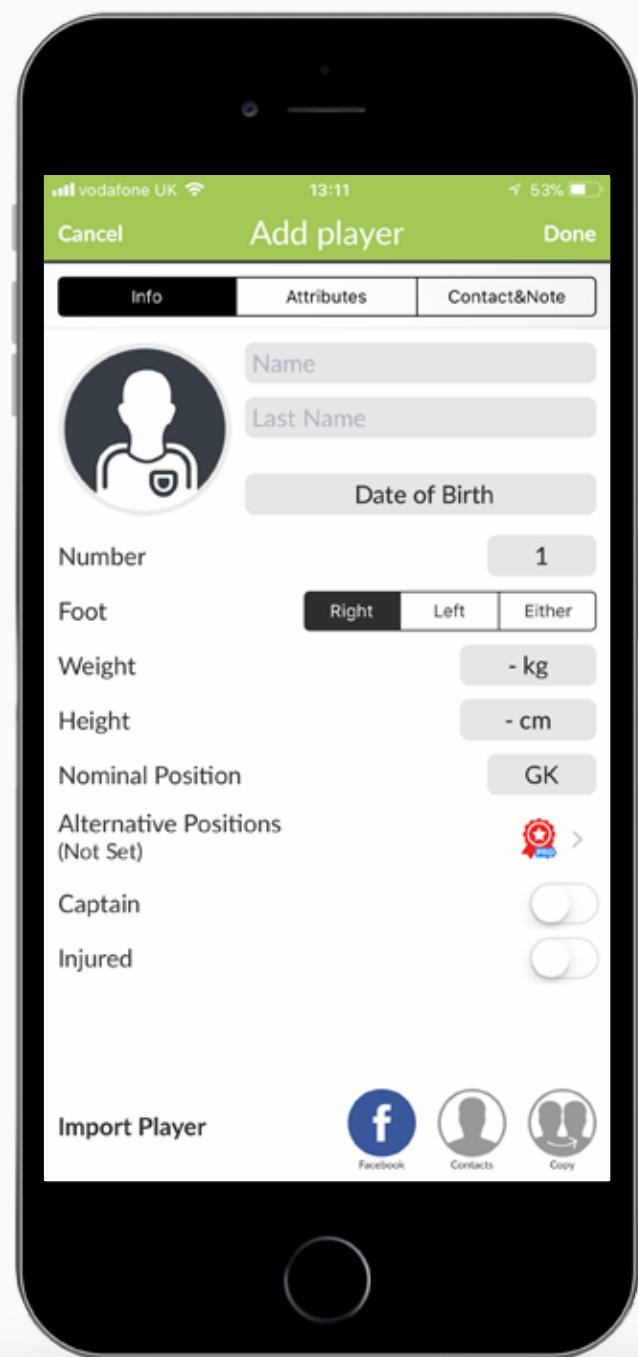
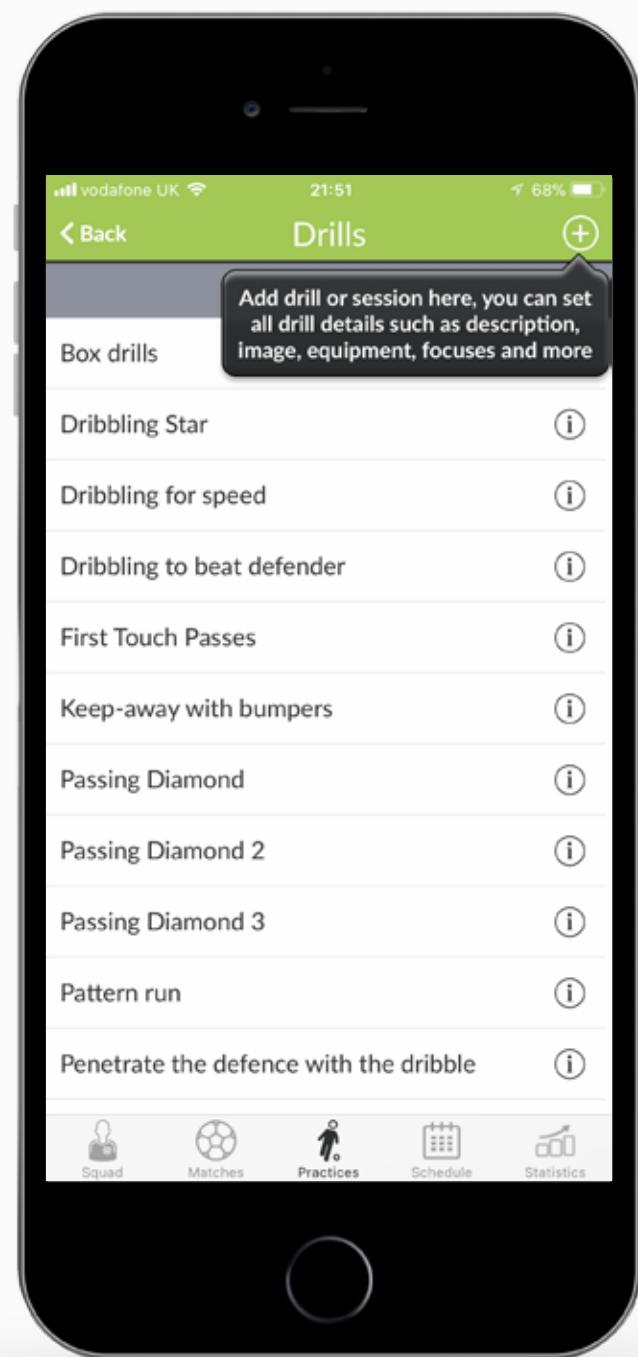
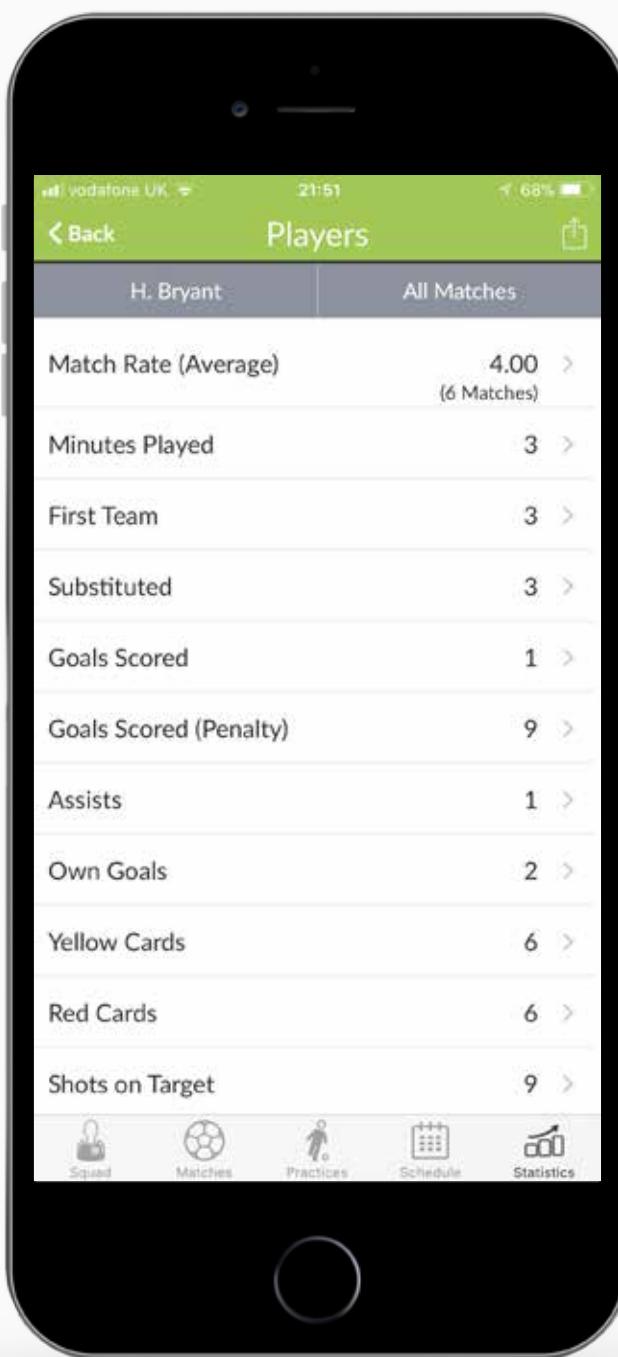
A sports coach is responsible for the development and progression of a sports player. They should observe, reflect and critique the player in order to advance their skill level.

A good coach will be able to communicate well to their team, and any tools they use should be able to communicate ideas just as well. They often endeavour to visualise game play through scenarios and sketches. Often, coaches opt for whiteboards and notebooks, but often this can be quite tedious and time-consuming. What's more, this requires the coach to have a particular level of creativity. It is undeniable that a tool aiming to bring out the creative side to a sports coach would benefit all players and parties involved.

After this communication aspect, a good coach must be reflective and perceptive. They almost require a hawk's eye to spot any players that are struggling with a particular aspect of the game. However, this proves hard if it is a team drill.

Every coach will aspire to be determined and hard working. However, the higher the level of competition, the more pressure and less time a coach has to spend with each player developing skills. Unless dedicated, coaches can often struggle to remember past performance individual player issues. Also, there is often no record of previous drills and performance to use as a reflection tool to help plan further drills.

SMART FOOTBALL COACH





SMART FOOTBALL COACH

Smart Football Coach is a coaching application that allows coaches to create a full database of players in their team. They can create drills, add upcoming fixtures and view statistics based on the team.

Usability

Instantly, advertising breaks the flow of the application and annoys the user. The interaction visibility is poor. This is because there is no onboarding process, so users must experiment with different icons to find features. With this being said, the icons are nicely reflective of the content. Content is validated well and error prevention is constantly present throughout, prompting the user when necessary information is missing. However the process of adding players is very form-based and the screens are heavy with content, which can be quite disengaging. This is the same case for adding matches and practice drills to the schedule.

Custom drills for creative coaches is available but very hard to find. You have to search for a drill before being told you can add your own. This is easily one of the best selling points of the app, and should be much easier to find. Coaches can review a practice, but this is simple text entry. This is good for opinions and qualitative data, but there is no attempt to score players, or rank them.

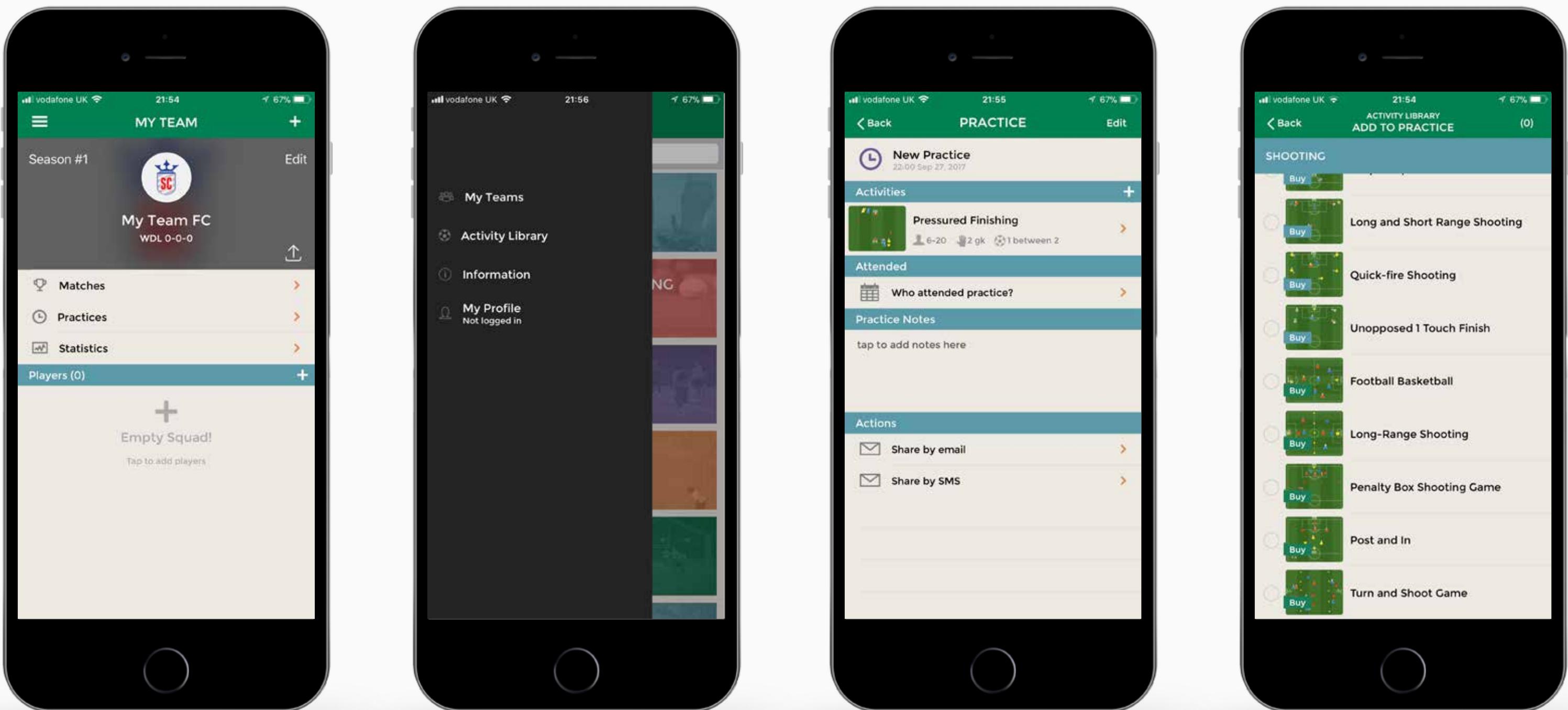
Aesthetics

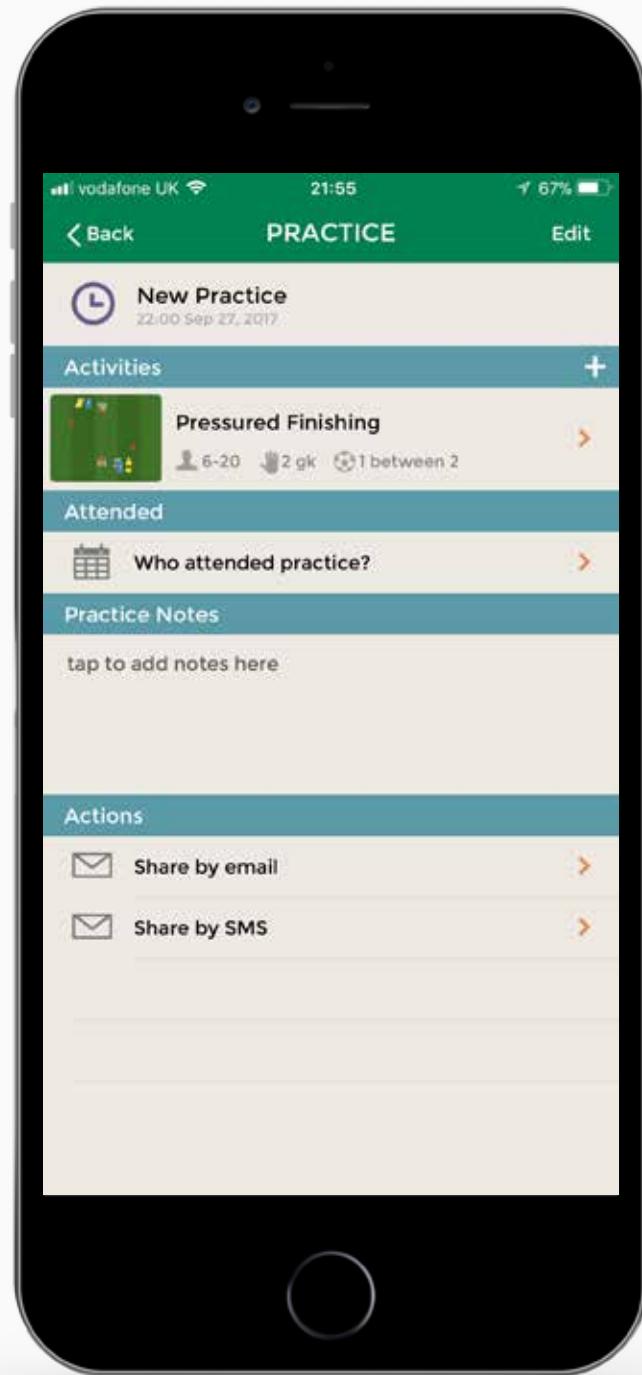
Other than the icons for each section, the visual display is quite dull. Colour is used sparingly but effectively, going alongside old iOS guidelines. There is a sense of clarity, but this comes at a price. It is only achieved through the constant use of tables, rows and chunks of text. As you explore the application, it's clear to see that the order and predictability of the interface begins to deteriorate. Buttons and icons appear all over with no particular rules regarding appearance.

Summary

This application aims to log all of the important aspects of coaching a team, but the issue is you have to manually input ALL the data. Once data is logged, it seems quite counter productive. You can't view previous player performance when planning drills, challenging you to remember the data. Plus the actual setup time is long and tiresome, which is a major issue when adding squads of 20+ players and reviewing them. The coach needs to spend less time entering data and more time being creative and training his team in a personal and unique way.

SOCCKER COACH





SOCCKER COACH

Soccer Coach is another tool designed to manage a full football team. It offers a full library of potential drills, team management and a real time game observation tool.

Usability

On-boarding poses a huge problem once again. Without any help, coaches are left with a shell of an application. Only by entering a unnecessary amount of information can you begin to even explore and realise the other tools this app offers.

There is a tool that allows a coach to take notes and mark key points of a game within the app. I think this is a brilliant and simple idea. It ensures his notes for that game are in the same place as the library of drills, so he can easily plan drills in the future. Although this library is a handy resource, there is zero attempt to allow the coach to add his own drills or put his own personal tactics into his practices.

Structure is a bit of an issue. All statistics of players are combined into a league style table that ranks them from best to worst. However, I think this is counterproductive for a team like football. A defender is never going to have the stats of a top performing striker. A player profile would ensure the information is more relevant to that specific person.

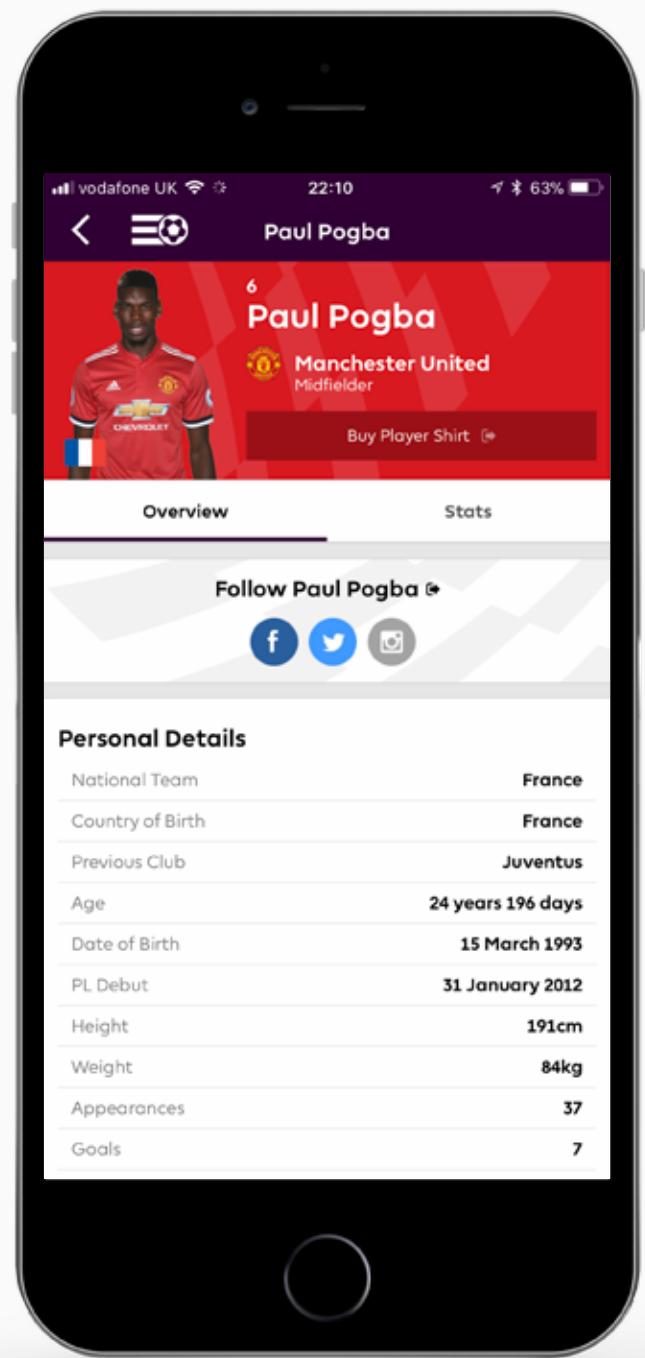
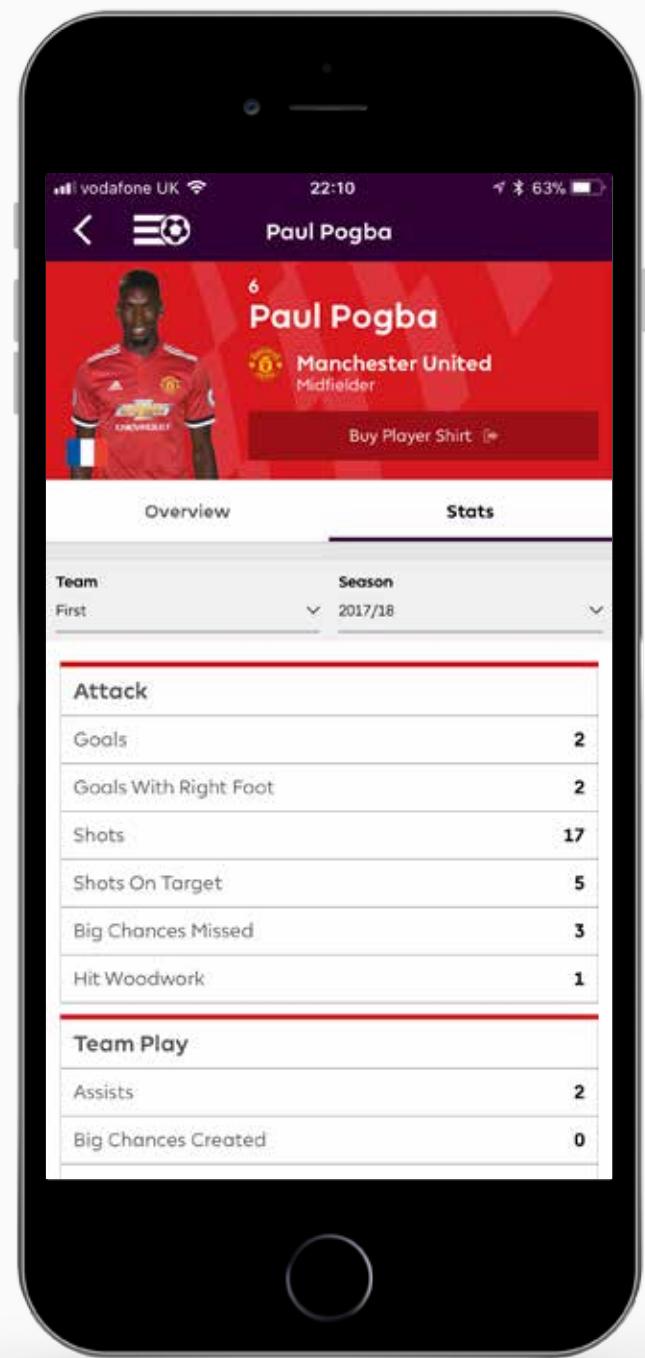
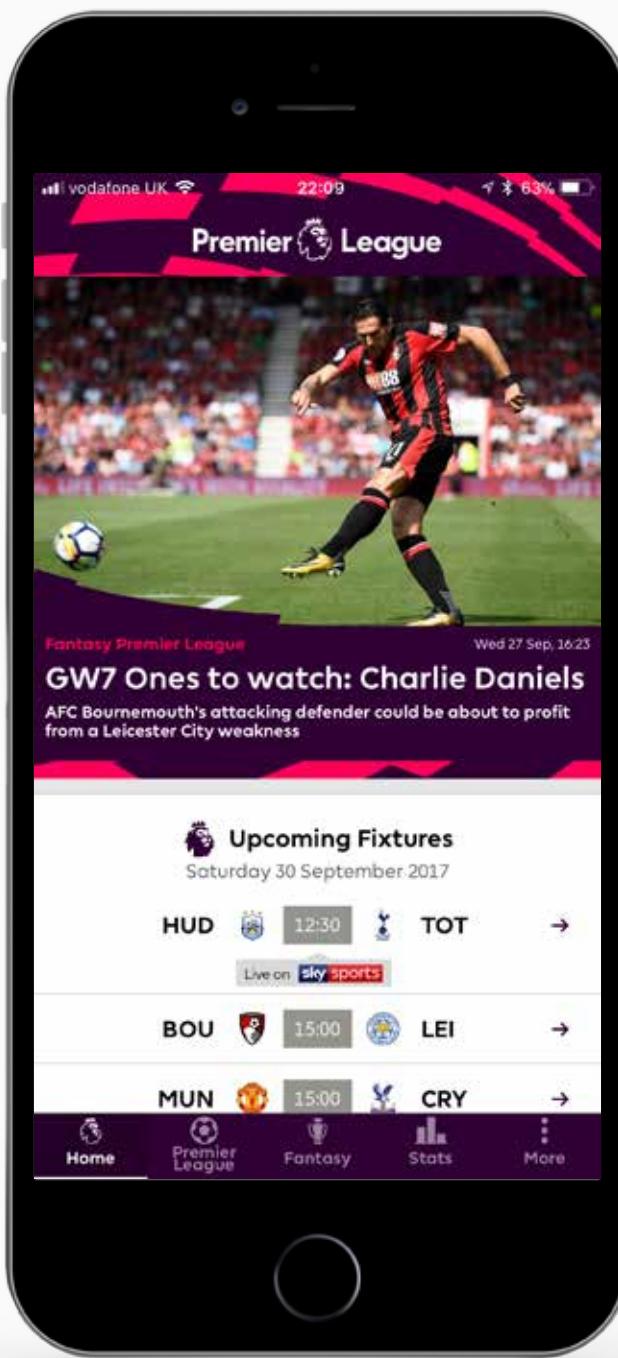
Aesthetics

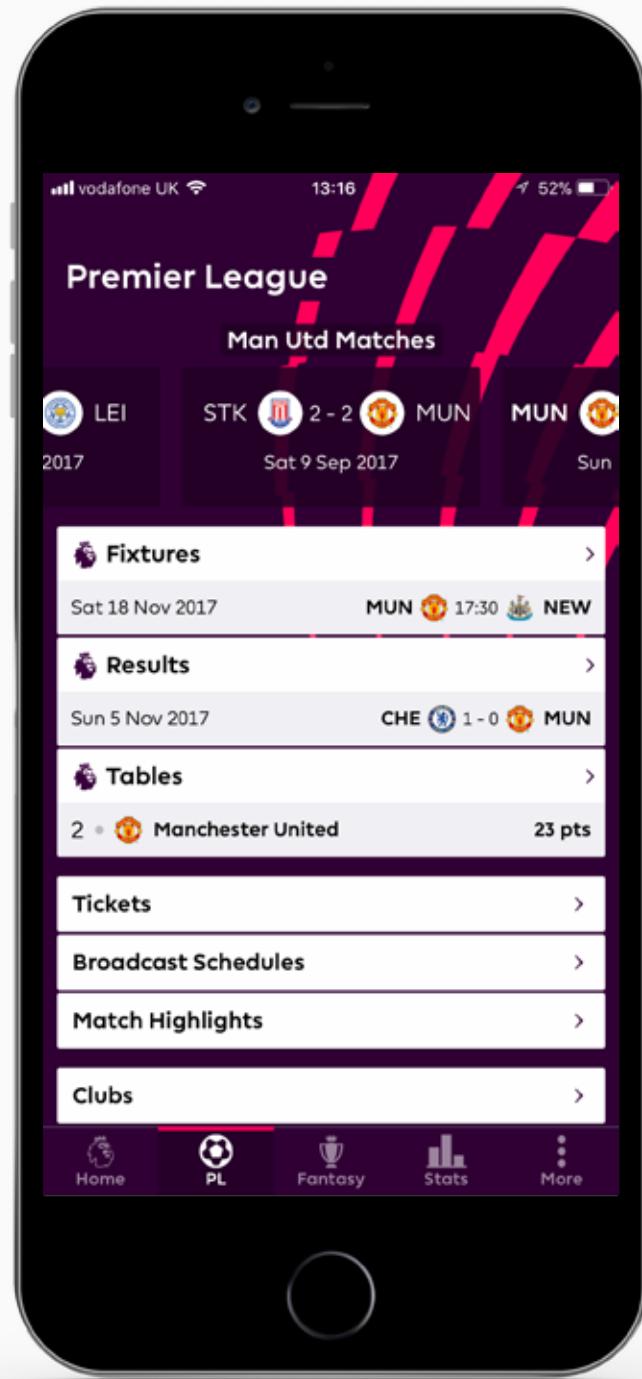
The overall style of the application is slightly more clear than the previous app. Colours are slightly more refreshing, but I think a more restrained palette would highlight key information much easier, especially since a lot of information is statistical. The hamburger menu adds a layer of structure between content like My Team and Drills. However, these specific pages are really quite complex themselves, and there is no consistent layout to help ensure familiarity with the user.

Summary

Again data entry is a massive issue. It takes too long to set up any simple part of the team, whether player, match or training. This calls for only requires and vital information to be provided when onboarding, with the option to go and add extra detail later. The idea to allow the coach to update the app whilst viewing a match or training is interesting. What if there was a interactive training area that was integrated into the application to provide the ultimate review of player performance.

PREMIER LEAGUE OFFICIAL APP





PREMIER LEAGUE OFFICIAL APP

It's important to not just look at general coaching applications. Data and statistics is a huge part of sports and especially, coaching. In my research, I couldn't find an application that came close to the clarity and simplicity of the premier league application.

Usability

Content is clear, thanks to a really powerful and well applied house style. Information is presented in a contrasting box to stand out from really bold background graphics. Personally, I feel like this is slightly too bold. Visible content is self evident by placing it out of the screen. This signifies to the user there is additional content.

Key stats are pushed forward in terms of structural hierarchy by a simple user of bright, highlighting colour. This is really useful when looking at what is essentially a page of stats.

Obviously this app covers every single statistic and bit of information about a player. For their purpose, this is really useful for fans. I would aim to practice a bit of restraint on my own product, ensuring only useful and productive information is presented.

Aesthetics

By combining iOS guidelines with a familiar and strong house style, Premier League have ensured their application is very easy to navigate through. Constant shifts in colour and motion ensure users know when they have pressed a button and progressed into a different area of the application.

There is a great use of contrast between colour and information. I think this is a clever metaphor for the different between aggression/personality and order/control. With the statistical nature of the app, the typeface has been chosen for its clarity and sized correctly.

Summary

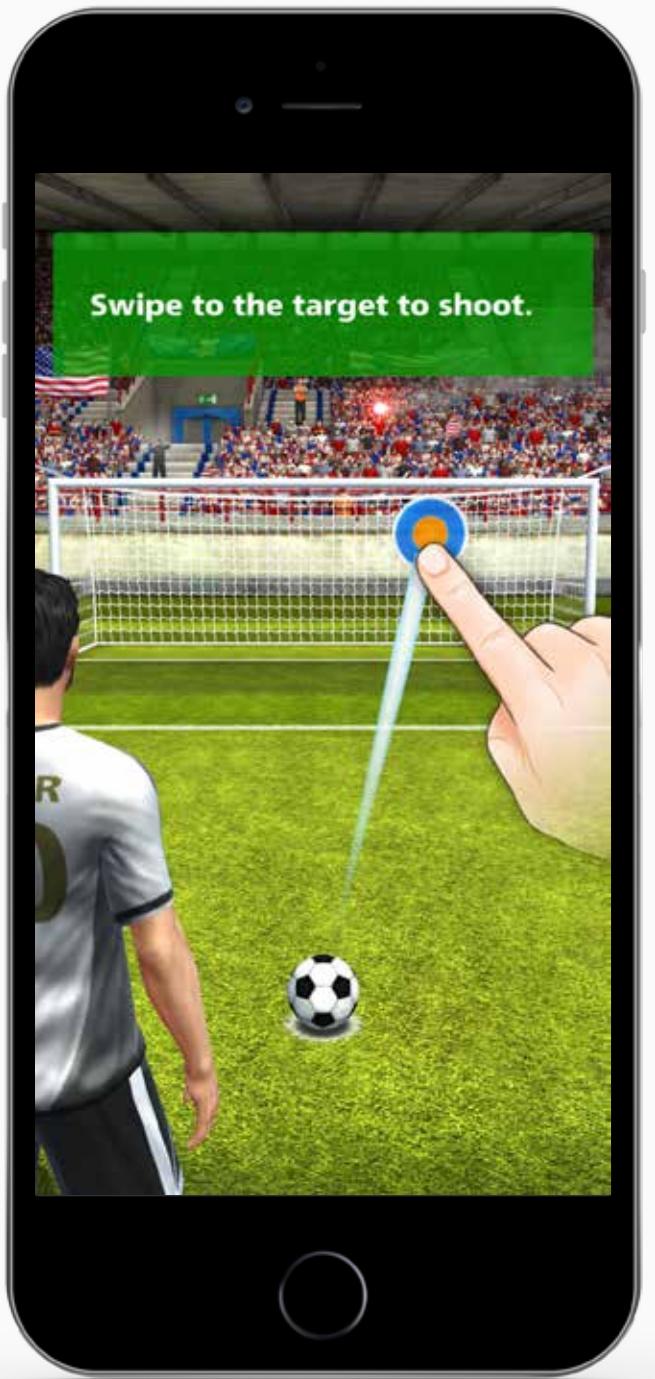
In terms of displaying statistics, this app ticks a lot of boxes. Clarity is achieved through a strict application of fun statistics.

COACHING INSIGHTS

1. With tools currently available, there is no way of efficiently capturing player performance data without a dull onboarding process. Inputting stats is also manual, which will become tedious for the user.
2. Coach creativity and individuality is overlooked in libraries of drills and players.
3. Coach tools are limited to the screen or textbook. I can push the boundary between application and environment for the benefit of a sport coach AND a player.
4. Group drills are standardised and don't explore/challenge individual weakness.

A dynamic shot of a soccer player in mid-air, performing a bicycle kick. He is wearing a white long-sleeved jersey with dark blue stripes on the shoulders and sleeves, dark blue shorts, and white socks with a blue and white striped cuff. The number 11 is visible on his shorts. The background shows a packed stadium with spectators and a banner that reads "REAL MADRID".

GAMEPLAY RESEARCH



FOOTBALL STRIKE MOBILE APP

This game presents a really simple concept. All you have to do is draw lines to guide the football into the net.

Although this is so simple, the gameplay adds depths the further you advance. There is an online race mode that adds a level of competition to the game. You can also try different disciplines like penalties and free kicks. Also, as a reward, when you reach a particular level, you can unlock a career campaign, simulating a real life footballer.

These are simple additions that add value to the user, and inspire them to return and keep player.

Similarly, the added promise of a higher level of analysis I intend to deliver should spur both coaches and managers to keep using my products.

WII SPORTS



This is a really useful example of a timeless and entertaining sports simulation. Even though it is a dated game, Wii Sports pushed the boundaries of classic sports like Tennis, Bowling and Baseball in ways that are simple impossible in real life situations.

This specific drill includes trying to smash a target to pieces by consistently hitting it even when the tennis balls are received from many different angles.

This was so simple but because of the new experience of playing tennis and interacting with a digital space, it was really engaging and challenging. Developers programmed the targets to begin to move, decrease in size, and also the environment around to break if a target was missed completely.

It's possible to advance a sport with digital technology and simulation, as we discovered with the Table Tennis Trainer 3000.



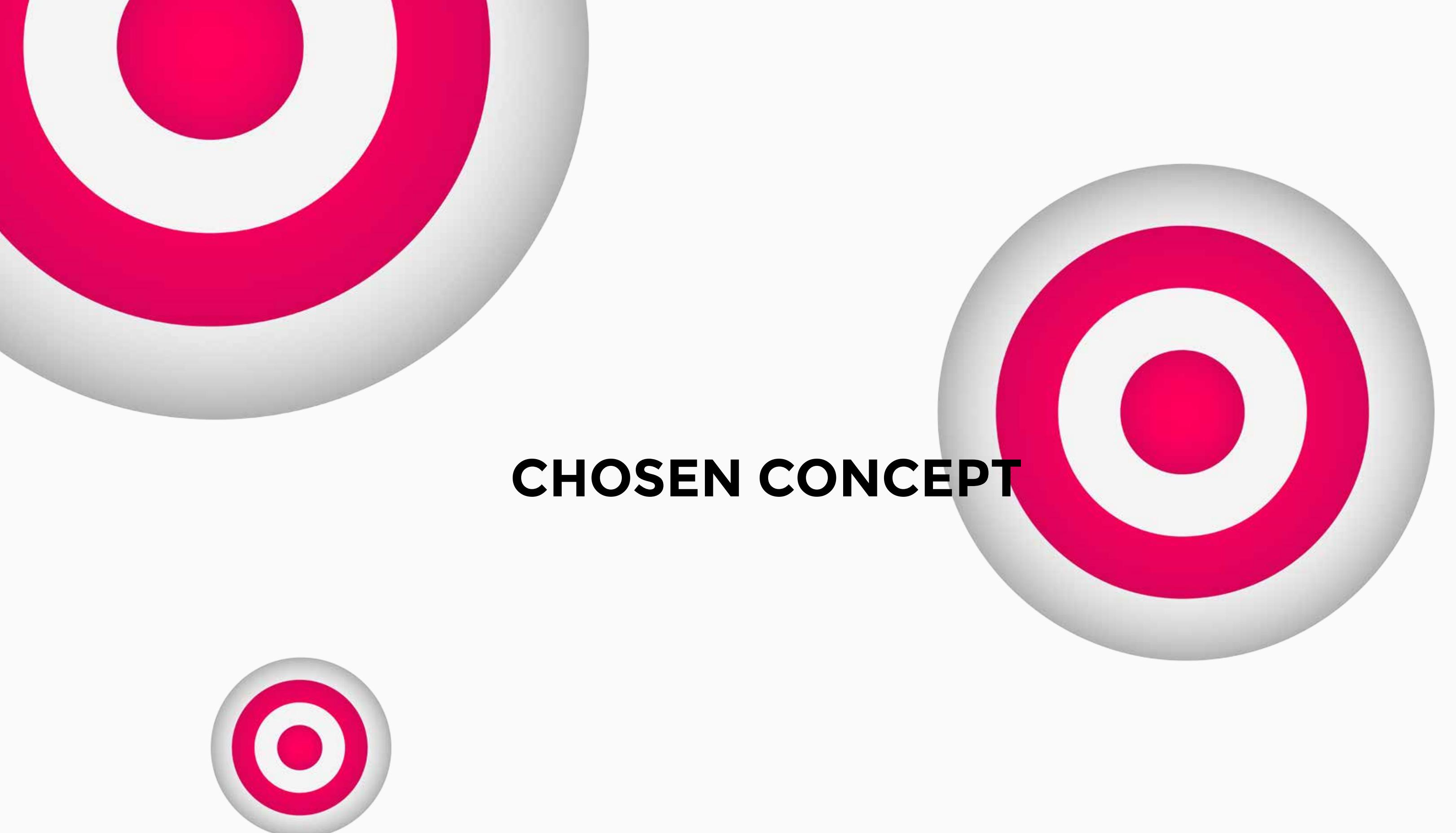
FIFA 18 SKILL GAMES

Fifa have constantly been trying to recreate new ways to challenge digital pro footballers. Their skills games are very diverse and cover almost every aspect of football training, like shooting, passing, sprinting and dribbling.

However, what separates Fifa from Wii Sports is their imagination. Wii Sports created playful new experiences, whereas Fifa successfully and accurately simulate pre-existing drills. Fifa could definitely advance football further, which is what my hybrid application/space aims to do, for a coached benefit.

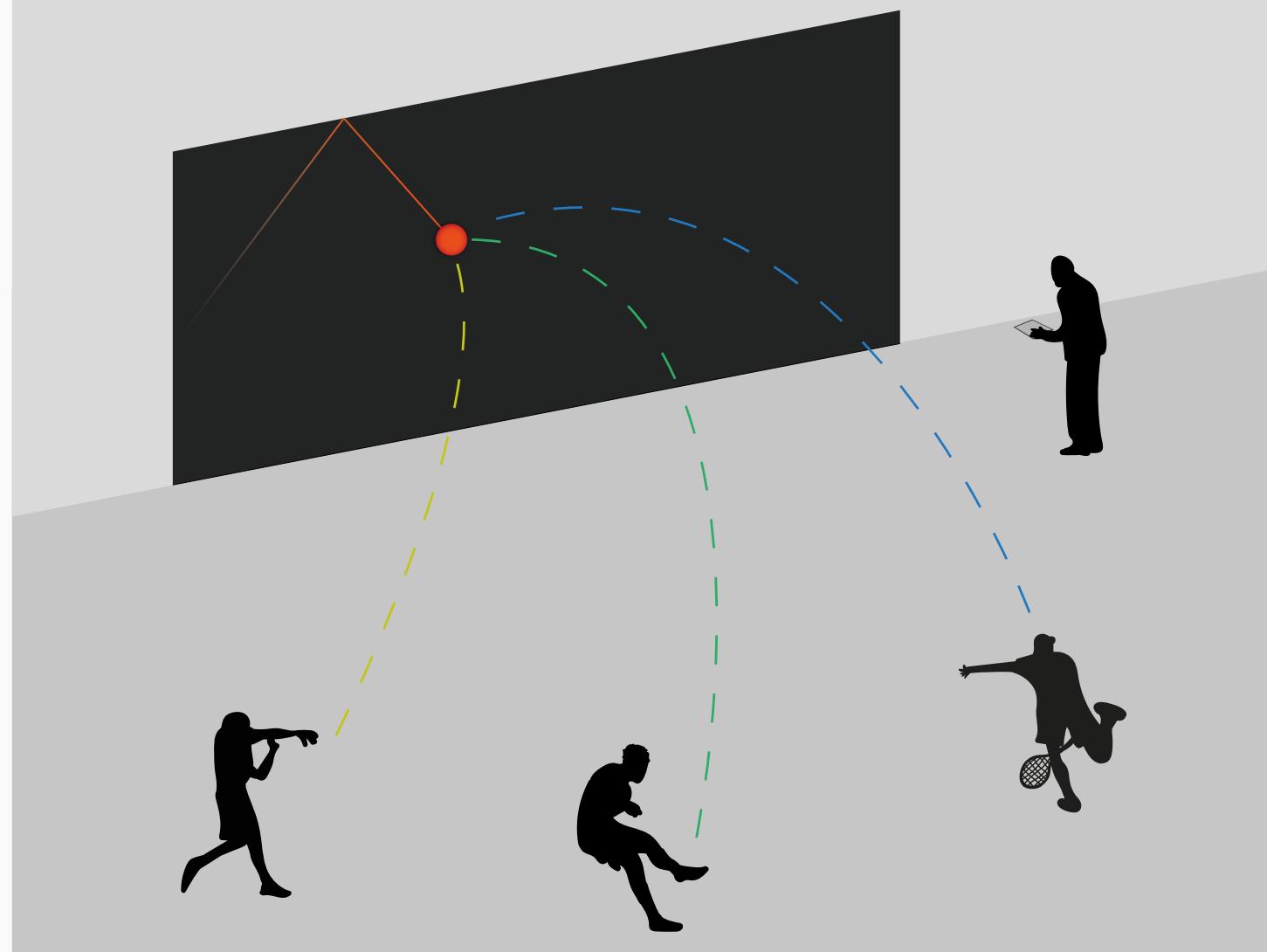
GAMEPLAY INSIGHTS

1. The most engaging training has increasing levels of challenge, and successfully mass this in a innovative and fun way.
2. If a coach could view progress as a game visualises it, then weakness and areas to look at would become much more clear.
3. Game mechanics is massively important as to how engaging a drill might be.



CHOSEN CONCEPT

LIVE COACH TRAINING HYBRID



What is the issue?

Individual progress is hard to track during group training sessions for a sport. This is usually because the coach cannot quickly test his players and be able to watch them all. This means players can potentially lose focus and stop improving at the rate they should.

The proposed concept

An interactive space controlled by a coaching application, aimed to combine a movement and passing drill for an individual in a team training session. The coach can draw out a specific target to hit. The time, accuracy and any errors are recorded and displayed for the coach to analyse and provide feedback on.

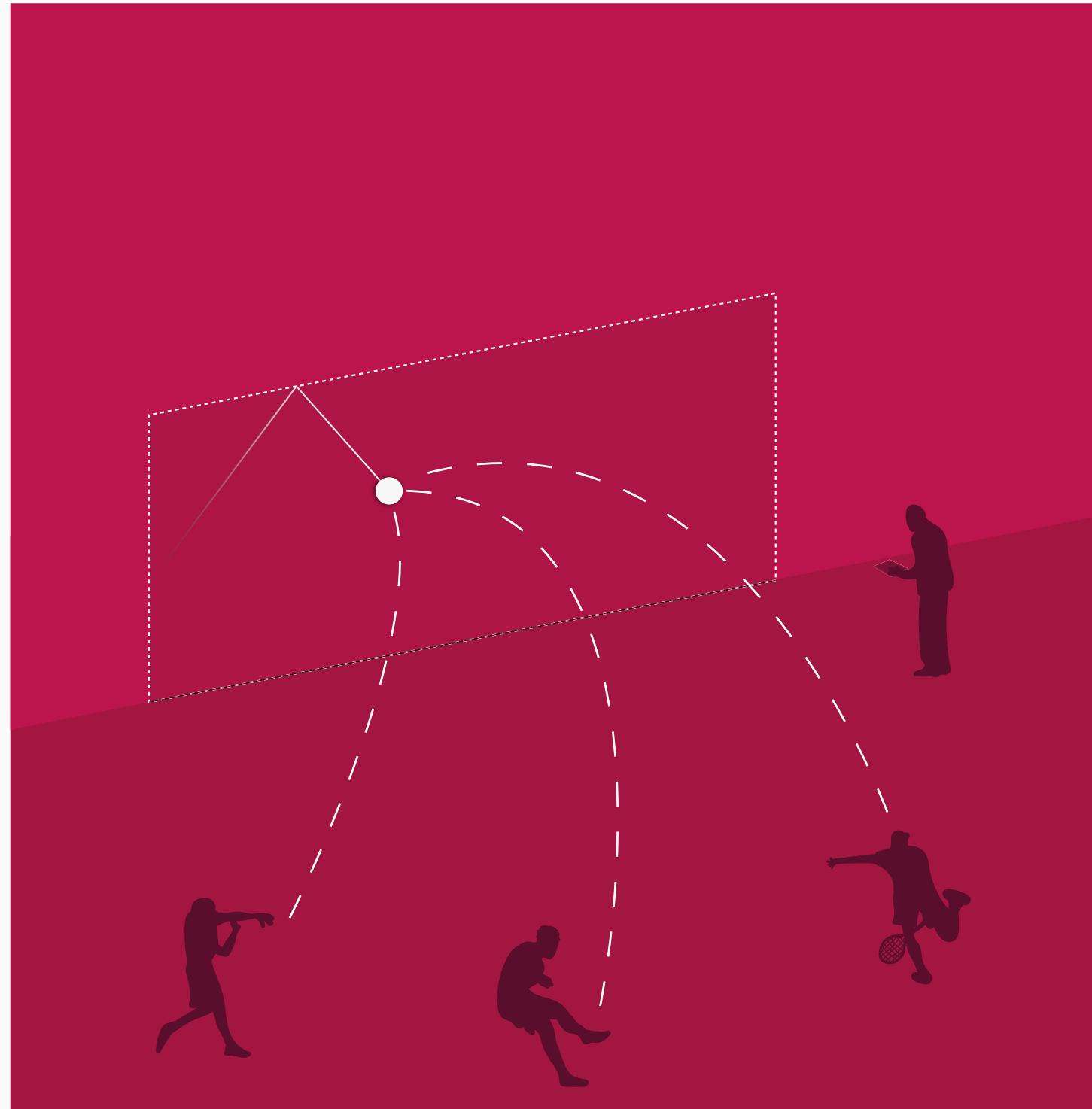
How would it work?

The simulation space would be created through two projectors, or LED screens if largely produced. The application would allow coaches to draw out paths and moving targets of different sizes. The player would then have tracking technology on, alongside a tracker in the football. He must complete the running circuit as quickly as possible. When the end goal is reached, the target will appear on the wall for him to distribute.

What is the USP?

Real time coaching tool, designed to improve efficiency of a full team, by training an individual for a specific discipline, freeing up the rest of the team to improve other aspects of their performance that need addressing.

A versatile challenge for accuracy based sports, where there is full control of tempo, precision and intensity.



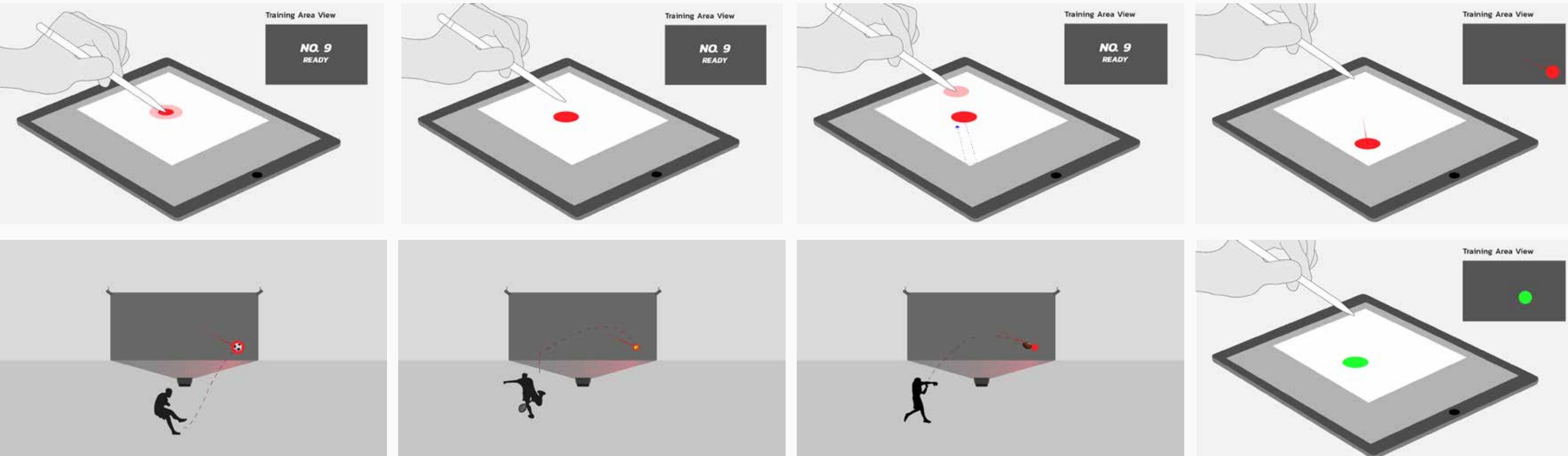
LIVE COACH TRAINING HYBRID

A real time coaching application for accuracy based team sports, to train precision creatively and track progress efficiently.

The main features would be:

- Live Target Creation Tool
- Statistic Database
- Immersive Training Area

INTERACTION STORYBOARD



This was where I was able to develop a game-like system, allowing coaches to effortlessly test accuracy of their players. I thought about the different basic gestures I could utilise, like hold, release and drag.

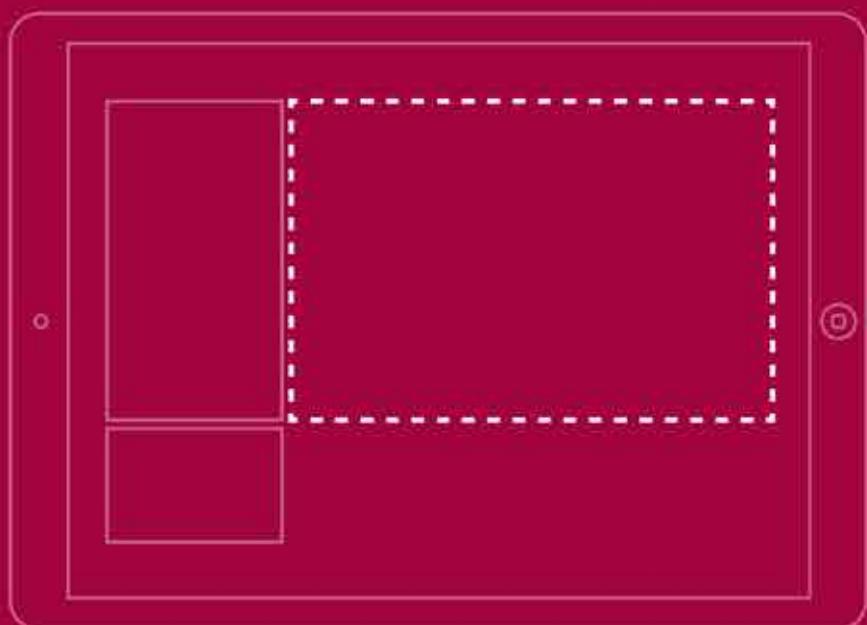
USP

APP

- A live coach controlled experience
- Seamlessly log and reflect on performance
- Smart Assistant Coach suggestions

TRAINING SPACE

- Versatility - different sports, distance, targets, speed
- Personalised training for individuals
- Fun yet increasingly difficult challenge for players.





USER RESEARCH

The screenshot shows a Google Forms survey titled "Team Sports Coach Survey". The interface includes a toolbar at the top with icons for back, forward, search, and settings, along with a "SEND" button and a response count of "0". Below the toolbar, there are tabs for "QUESTIONS" and "RESPONSES". The main content area is titled "Section 1 of 3" and contains the following sections:

- Team Sports Coach Survey**: A descriptive text block explaining the purpose of the survey, mentioning a University project to build a digital goal using motion tracking technology to measure player speed, accuracy, and form.
- Some iPad app development**: A screenshot of a mobile application interface titled "GOALS WORKING COACH" showing various performance metrics like "LIVE PERFORMANCE", "LIVE ACCURACY", "LIVE SPEED", and "LIVE TYPE".
- Just to give you an idea**: A screenshot of another mobile application interface titled "LIVE SESSION SETUP" showing a "LIVE SESSION" with "PLAYERS" and a progress bar from "10" to "12".
- The app will control the physical training space**: An illustration of a large screen mounted on a wall, with three small human figures standing in front of it, suggesting how the app will interact with the physical environment.
- Do you coach team training sessions for sports, or participate in them yourself?**: A question with two radio button options: "Yes" and "No".
- If so, what sports do you train? ***: A question with a checkbox for "Football".

TEAM SPORTS SURVEY

After so many different concepts and idea generation, I wanted to get some evidence that the coaching aspect that I intended to explore was worth while. I decided to create a general survey that could be answered by either coaches, PE teachers or players, all of who participate in team training sessions. I split the survey up into three sections.

The **General Info** section would help my identify an actual demographic and give more detailed insight into what type of person I'd be designing for.

- Do you coach team training sessions for sports, or participate in them?
- If so, what sports do you train?
- How often do these sessions occur weekly?
- What age range are the participants of the training sessions?

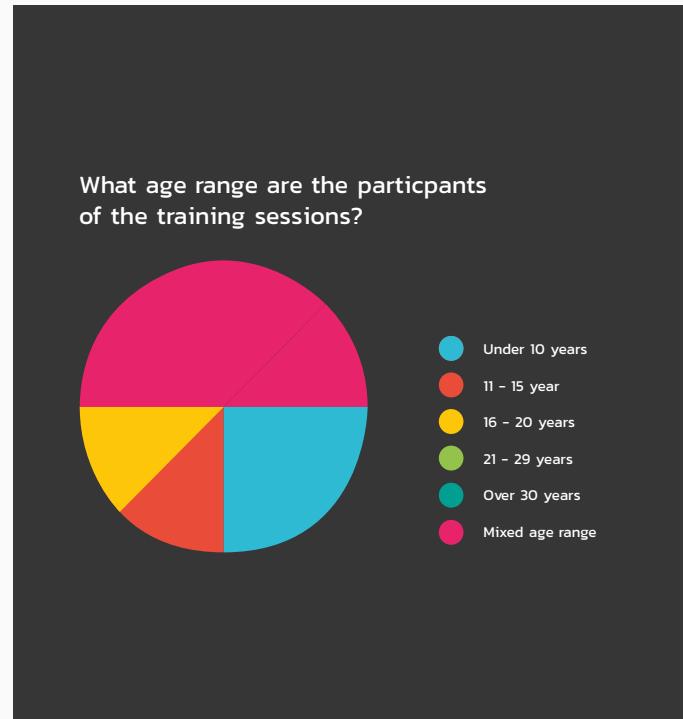
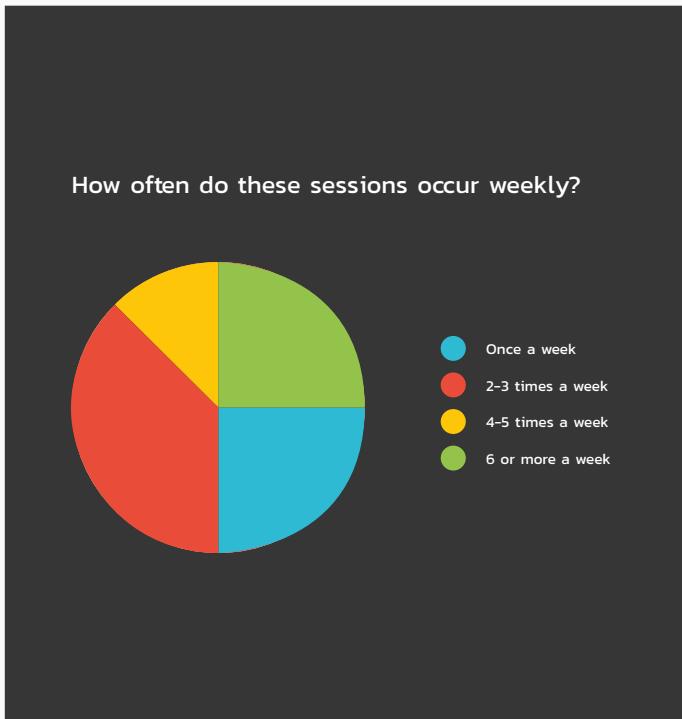
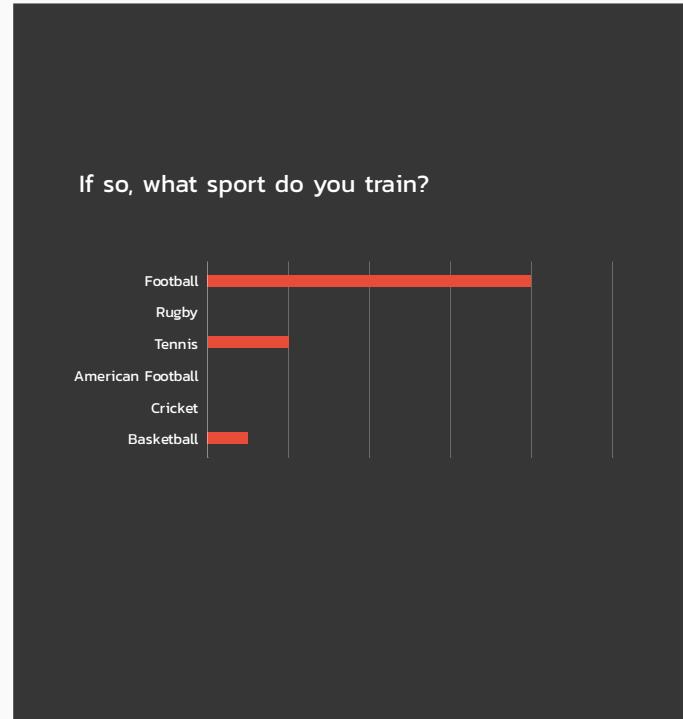
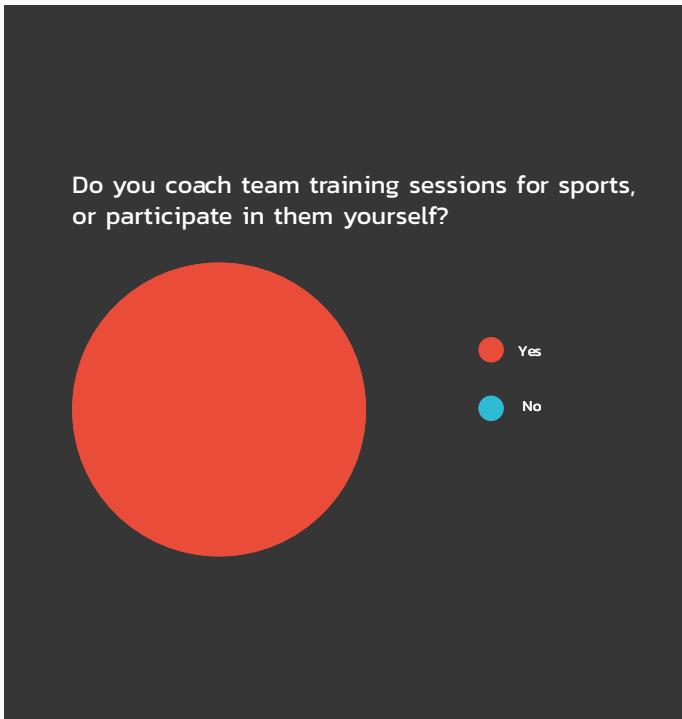
The **Training Session** section would go into detail about the types of drills coaches use, any tools that help them and what causes conflict within teams during these sessions.

- What resources does the coach use when training/managing the team?
- Does your team ever experience frustration or any issues when organising the team for training sessions/matches? Give details
- Does the coach ever struggle to focus on players on an individual level within a group training session?
- If so, do they provide additional training or advance on this further?
- How engaging do players find the drills? Are they creative? Fun?
- How effective are the drills?

The **Technology section** goes on to see how tech savvy the coach is, as well as what he and the players would welcome into their training sessions.

- How technologically advanced is the coach?
- What types of digital technology would you be willing to have available to train in your team?
- What features would you/your coach benefit from within a coaching app?

GENERAL INFO RESULTS



I discovered that the regularity of drills each week was more often than I had expected. This means I have to create a system that is easy and fast to set up and manage.

The mixed age range also took me by surprise. I had no specific age range to design the gameplay for. As long as it felt natural and easy to grasp, I should be able to showcase my project to any age range over 10 years old.



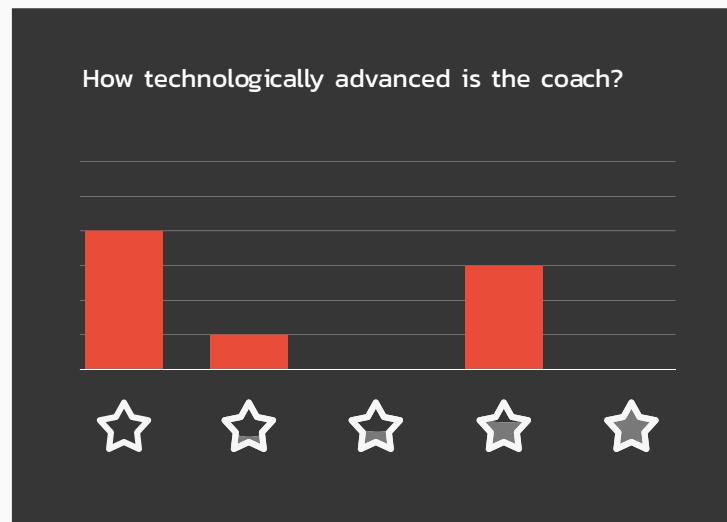
TRAINING SESSION RESULTS

Visual indications like whiteboards and demos are popular as coaching tools. This is a vital bit of information. Coaches need a way to visualise their ideas and visualise exactly what they want their players to do. I can ensure my coaches visualise exactly where they want the players to hit.

However, whiteboards aren't always clear, and players need reminding. This is where my digital space can prove to be of benefit to both coach and player.

Only around 12% of participants would say the coach never struggled to focus on individuals, showing a huge market for my chosen concept. What's more, of the other 88%, half of those people would say the coach doesn't always provide additional training. This shows that at many different levels of sport, coaches can't always give their full attention and direction to each player.

The balance between creativity and efficiency was interesting. Overall, players are simply satisfied with how fun a drill is, with some clear room for improvement. At the same time, drills aren't always efficient. My project must provide a quick, creative and reflective process.



What types of digital technology would you be willing to have available in your team?

"Anything that was easy and had a positive effect"

"Anything proven to benefit them, and is user friendly!"

"Something to help assess technique and form of players as they aren't always consistent."

"We've tried those tracker footballs, but any simulation that was quick and fun would be cool"



TECHNOLOGY RESULTS

I fully expected a more capable coach in terms of technology and understanding. Instead, the coaches technical skills are actually quite poor. This means my application design and technology must be completely simplified. The interactions should be clear and intuitive, with no expert gestures.

User friendliness was a common need for all participants.

Customisation is more important than standard features like schedules and notebooks. This puts it at the top of my feature list in terms of importance.

USER SCENARIO 1

DAVE, PROFESSIONAL FOOTBALL COACH

Dave takes his job seriously. His team are fighting relegation and needs to improve their decision making, technique and overall finishing ability.

Dave uses his notebook to make notes on all of his players in training, and also to record any ideas he is about new drills he wants to try.

Dave's interaction with my project would be using it to its full capabilities. He would be able to spot any areas his players are struggling with in the live drills, and replace his notebook with the notebook and evaluation features in the app. He will be able to view previous performance, and challenge his players accordingly. This will prove to be important in the coming few games left in the season. He hopes by keeping his players on their toes that they will be prepared for the games ahead.



USER SCENARIO 2

SAMANTHA, PE TEACHER

Samantha is a great teacher, but sometimes the children can be quiet easily distracted. She then struggles to engage them and keep them concentrating.

She is constantly making powerpoints containing ideas for new activities to train various sports and skills within each.

For Samantha, it is the customised target creation tool that has caught her eye. When she installs a smart area in her sports hall, all of the children can't wait to have a go. What's more, it is fast enough to ensure everyone can have many turns and learn how to improve, without the children even realising! She has even had requests to start after schools clubs simply based on the 'target practice' concept.



USER SCENARIO 3

DAN, STAR ATHLETE

Dan is currently becoming very well known in the tennis industry. He has qualified for Wimbledon and hopes to continue his success, regardless of how hard he has to work. He admits that it's easier to make progress when he forgets he is actually training in the first place, and it's easier to improve if the training he's doing is fun.

He often asks his coach for harder challenges, as well as googling top athlete workouts and drills to try himself, in hopes he can improve.

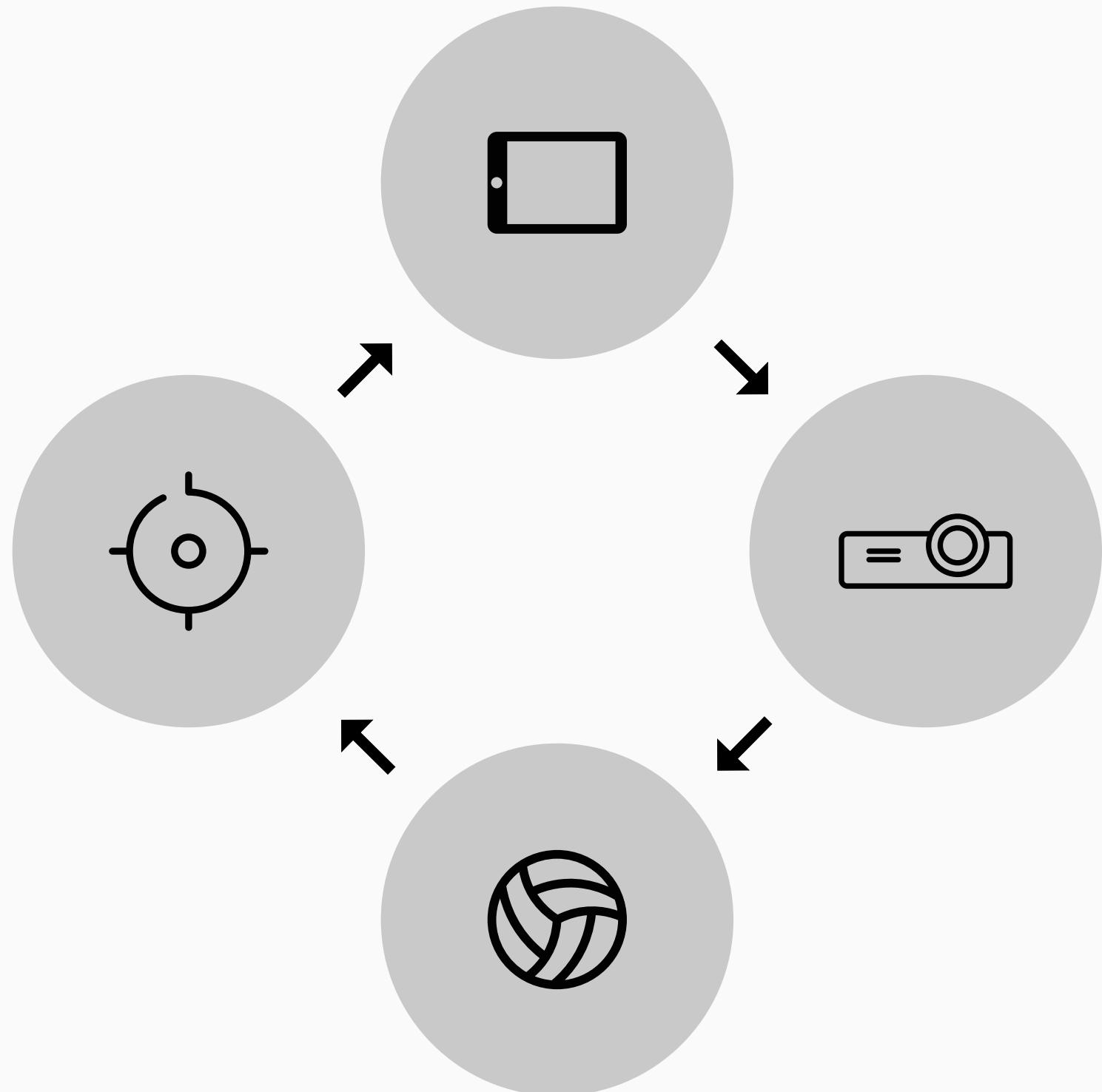
Dan uses the project daily. He loves the fact he has to think on his toes, and the increasing challenge always catches him by surprise. The progress he has made in the last four weeks of using the digital trainer is almost more than he has in the past 12 months without!





TECHNICAL RESEARCH

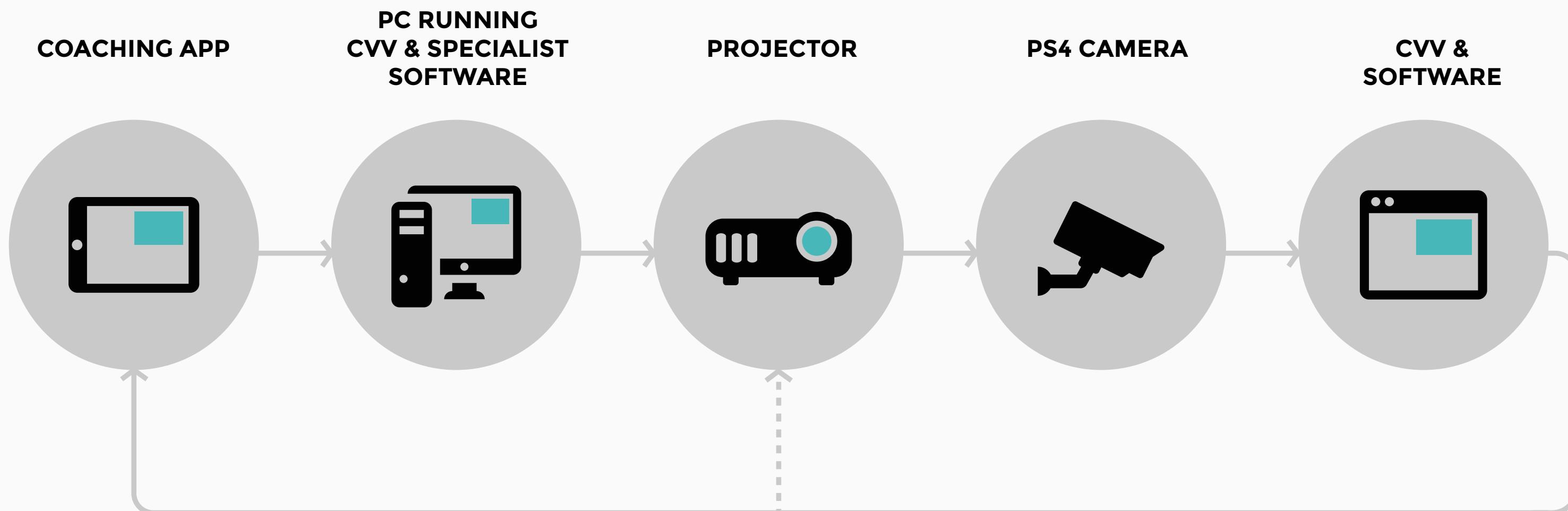
INITIAL PROCESS



I initially thought my technology process would be quite simple. I thought of it as a cycle with four steps. The tablet would transfer the data to the projector. From here, the player would strike the ball and the cameras would track its movement. This would then be relayed back to the tablet.

Essentially this is how the system would work, but there are stages in between that I hadn't initially considered.

REFINED PROCESS



My application would have to be designed especially for this set up. The interactive area of the app would be cropped and displayed as the full screen on the computer.

The tablet would connect to the PC that is simultaneously running CVV, the colour detection software, alongside back end specialist software to take the data and translate it to the projector.

The projector takes the live area of the app and projects it into a physical space.

The hacked Playstation camera would track the colours of the football against the playable area.

The computer program would analyse the football's position and work out whether there was an overlap between the digital target and ball area. This would then send an animation to the projection, and update the statistics in the application.

POTENTIAL TRACKERS

IR SYSTEM FOR MOTION TRACKING



Used in previous projects, the Gesture and Motion Tracking centre downstairs is a possible way to track the ball in my system. Using IR Cameras and IR Sensors, I could track the elevation, X and Y of a football.



However, there are issues with this that I cannot overcome. For example, the IR sensors are fragile, and strapping them to a ball to be struck wouldn't last long at all. Also, although the tracking would be accurate, it would prove very difficult to relay this data to an application, as well as the display.

XBOX KINECT



Within days of its release, hackers managed to allow the Xbox Kinect camera to work on a Windows PC. Since that, there has been an explosion of projects using this camera for gesture and motion based projects. I would be able to use open source frameworks and code to create my system allowing this camera to input information into my application.

POTENTIAL TRACKERS

OPTITRACK



OptiTrack are a company that specialise in Motion Tracking & Detection technology. You can build up a physical build that is specific to your needs. Whether this is Virtual Reality, Movement, Robotics or Animation, you can specify exactly how many cameras you need.

What's more, they provide specialist software to capture and use the data that the cameras record.

The only issue with this is the price. It simply isn't affordable, with minimum builds costing way over \$7,000.

PLAYSTATION 3 CAMERA



The Playstation 3 Camera is very similar to the Xbox Kinect. There are a huge amount of coders and developers that have cracked this piece of hardware to ensure it works on system other than just a game console. This, along with the Kinect, is a much cheaper alternative to huge professional suites like Optitrack, especially when you can pick this camera up for around £5-£10.

CHOSEN TRACKER



Using hacked hardware such as the PS3 camera or Xbox Kinect gives me the most freedom when creating my application from scratch. It also saves me the most money at the cheapest option. Admittedly, the achievable resolution aren't the most amazing quality, however if this was rolled out to large scale manufacturing, this would be something to consider.

SOFTWARE

Getting Started with Kinect and Processing

The Microsoft Kinect sensor is a peripheral device (designed for Xbox and windows PCs) that functions much like a webcam. However, in addition to providing an RGB image, it also provides a depth map. Meaning for every pixel seen by the sensor, the Kinect measures distance from the

OPENKINECT Main Page

Welcome to the OpenKinect project

Kinect for Windows SDK 2.0

Registration Suggested

Registration takes only a few moments and allows Microsoft to provide you with the latest resources relevant to your interests, including service packs, security notices, and training. Please click the Continue button.

Kinect and Processing

The Microsoft Kinect sensor is a peripheral device (designed for Xbox and windows PCs) that functions much like a webcam. However, in addition to providing an RGB image, it also provides a depth map. Meaning for every pixel seen by the sensor, the Kinect measures distance from the

reactTIVision 1.5.1

Trick Out Your PS3 Eye Webcam, Best Cam for Vision, Augmented Reality

Hacking Sony PS3 Eye Camera

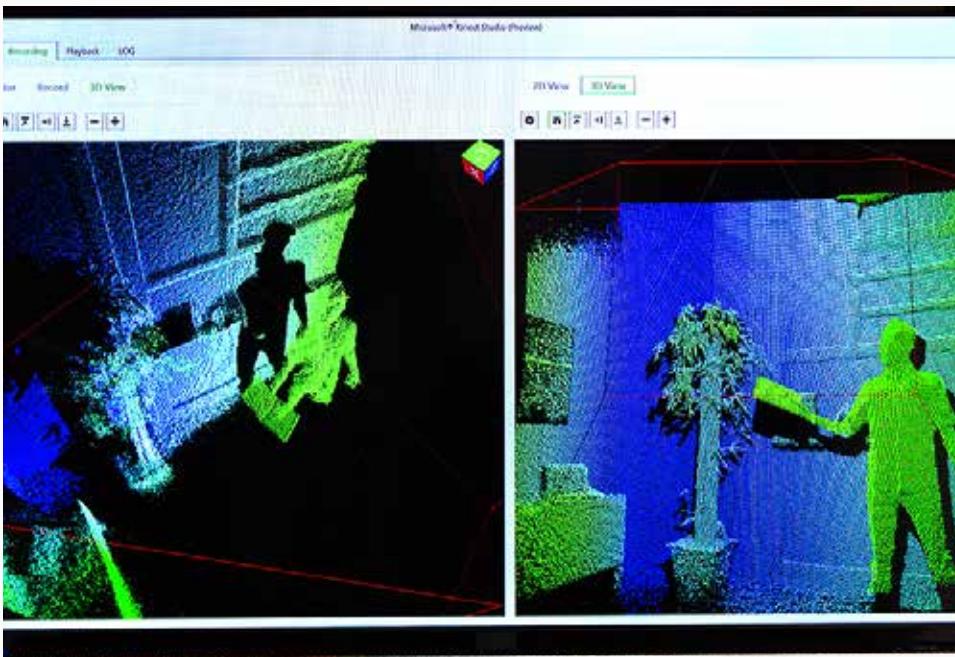
There are hundreds of projects, hacks, frameworks and program servers to allow you to run the hacked hardware on a computer. The only struggle would be splitting an application into an input area, as well as an output. This would require specialist coding which I cannot achieve in the given time frame. What's more, I would require some detailed guidance around the code from some professional app developers.

SOFTWARE EXAMPLES

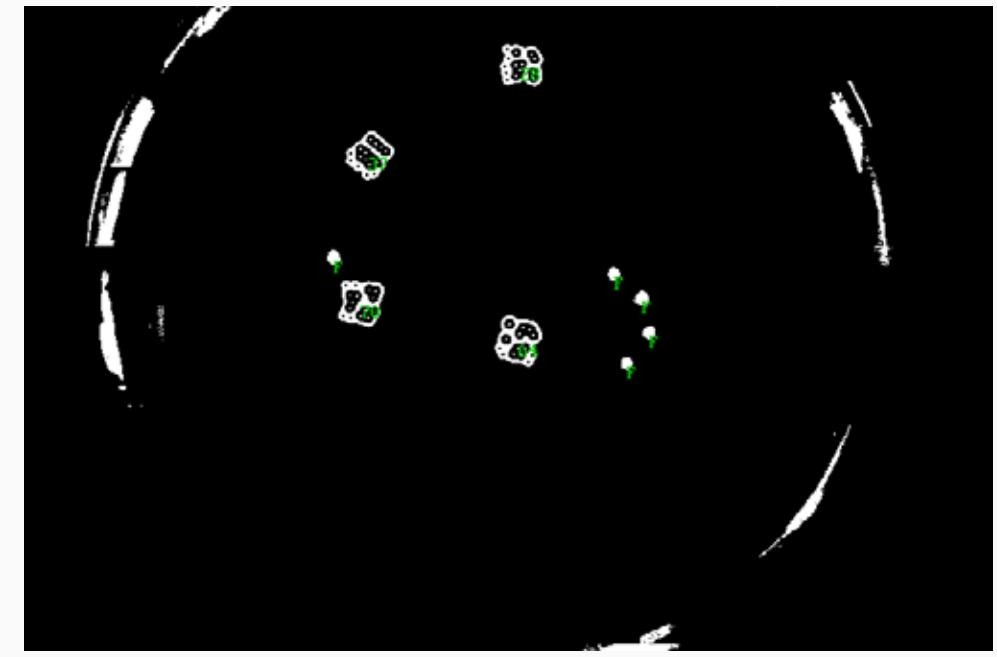
CVV



KINECT FOR WINDOWS SDK 2.0



REACTIVISION



All of the projects do a similar thing. What I cannot achieve in my concept and prototyping phase of this project is the communication between the hardware, software and iPad application. For this reason, the project will end with a conceptual video demonstration showing how the fully working technology in the system would work, if fully developed as a specialist software.

DISPLAY DECISION

PROJECTOR



A projection project offers a larger overall display, not to mention a more diverse set up in terms of walls, ceilings and floors. Also, the display wouldn't be damaged by balls striking against the surface, whereas an LED might.

The drawbacks of projection are the light consideration. The training area would have to be low light, however this could easily be solved by spotlights lighting up the player area.

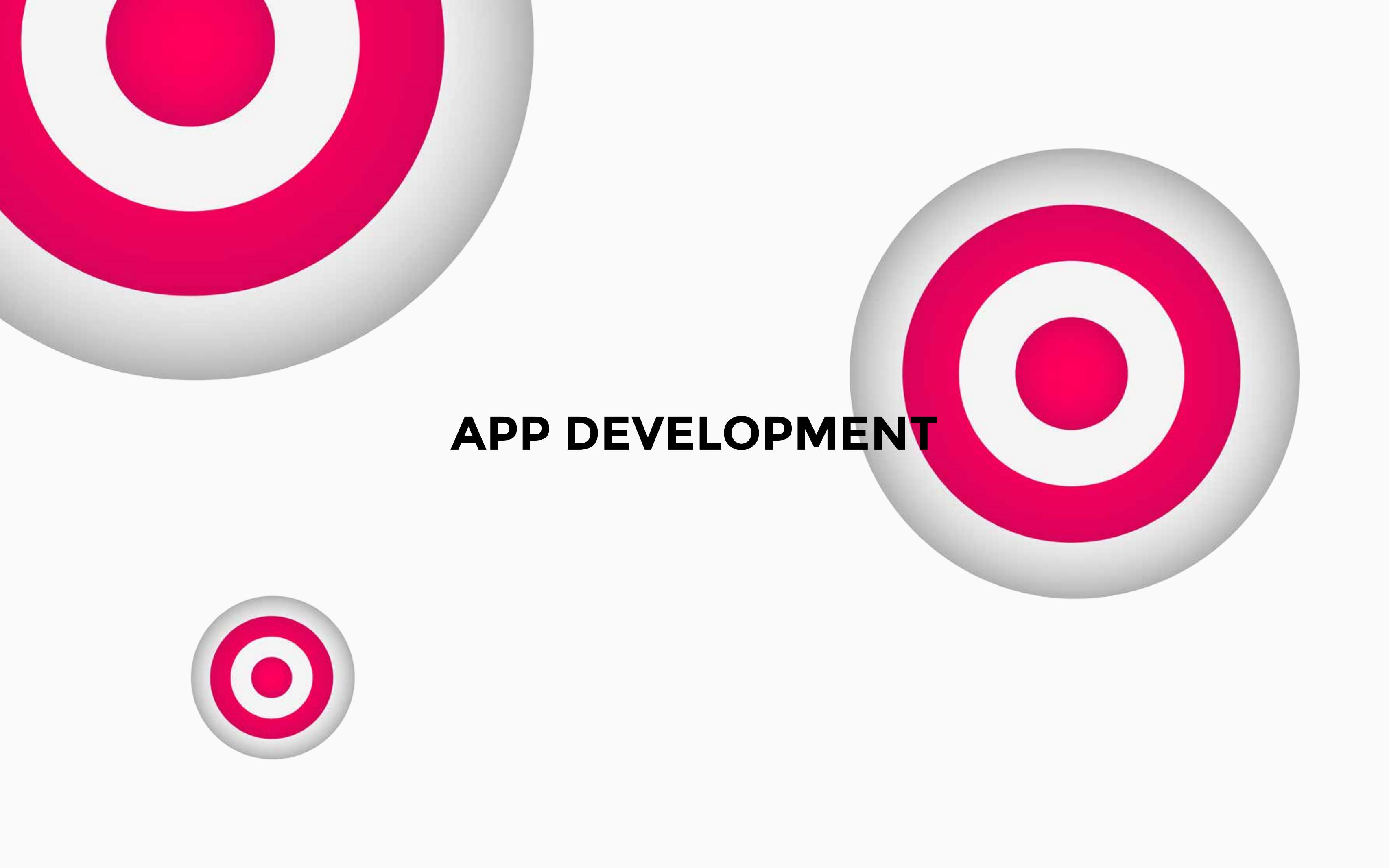
LED DISPLAY



LED screens are, on the other hand, more expensive for larger sizes, as well as being heavier, physical builds. This makes it harder to transfer onto different surfaces.

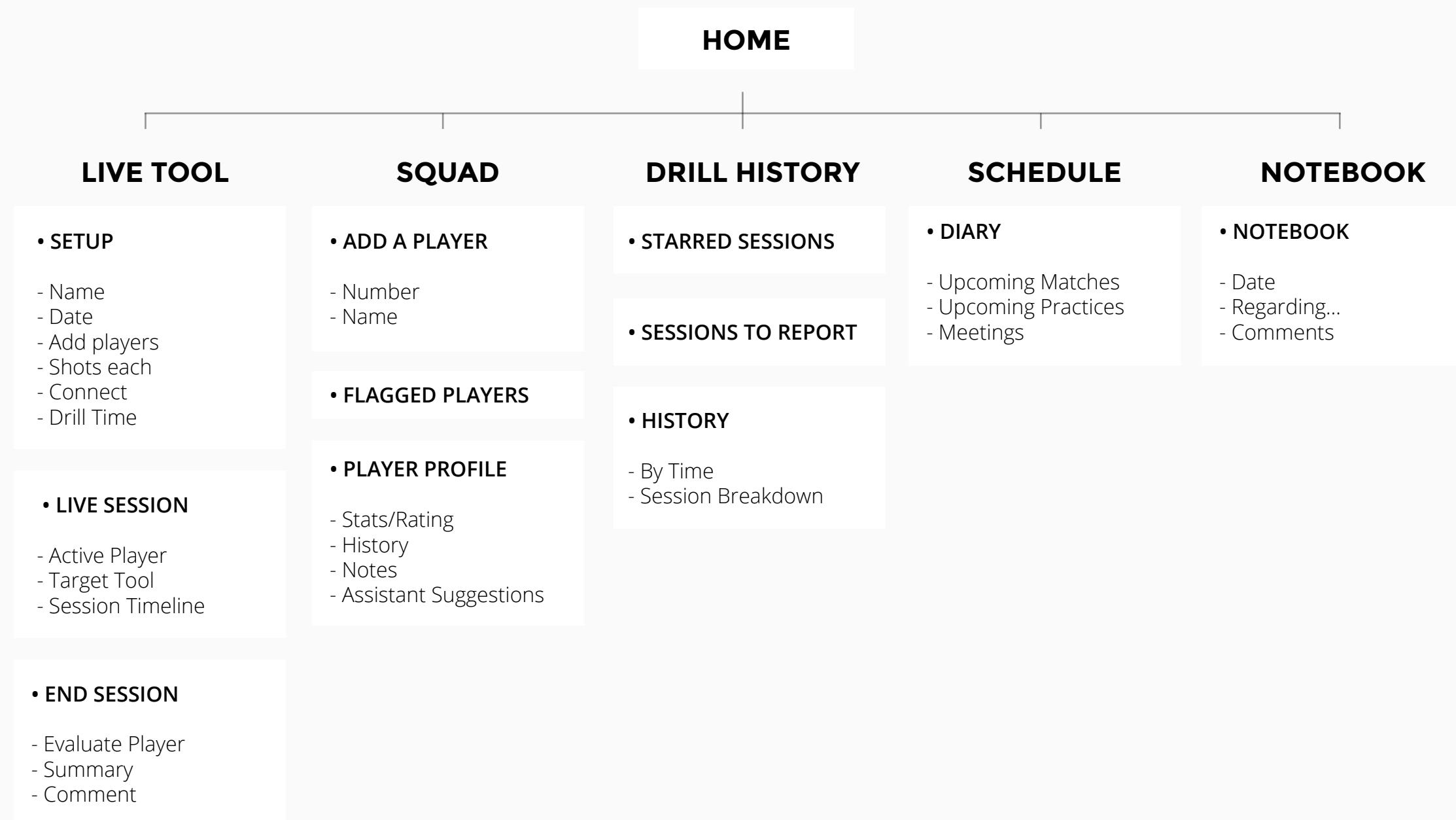
Also, you would have to consider ensuring the screen is resistant to the pressure of the ball that will connect with it.

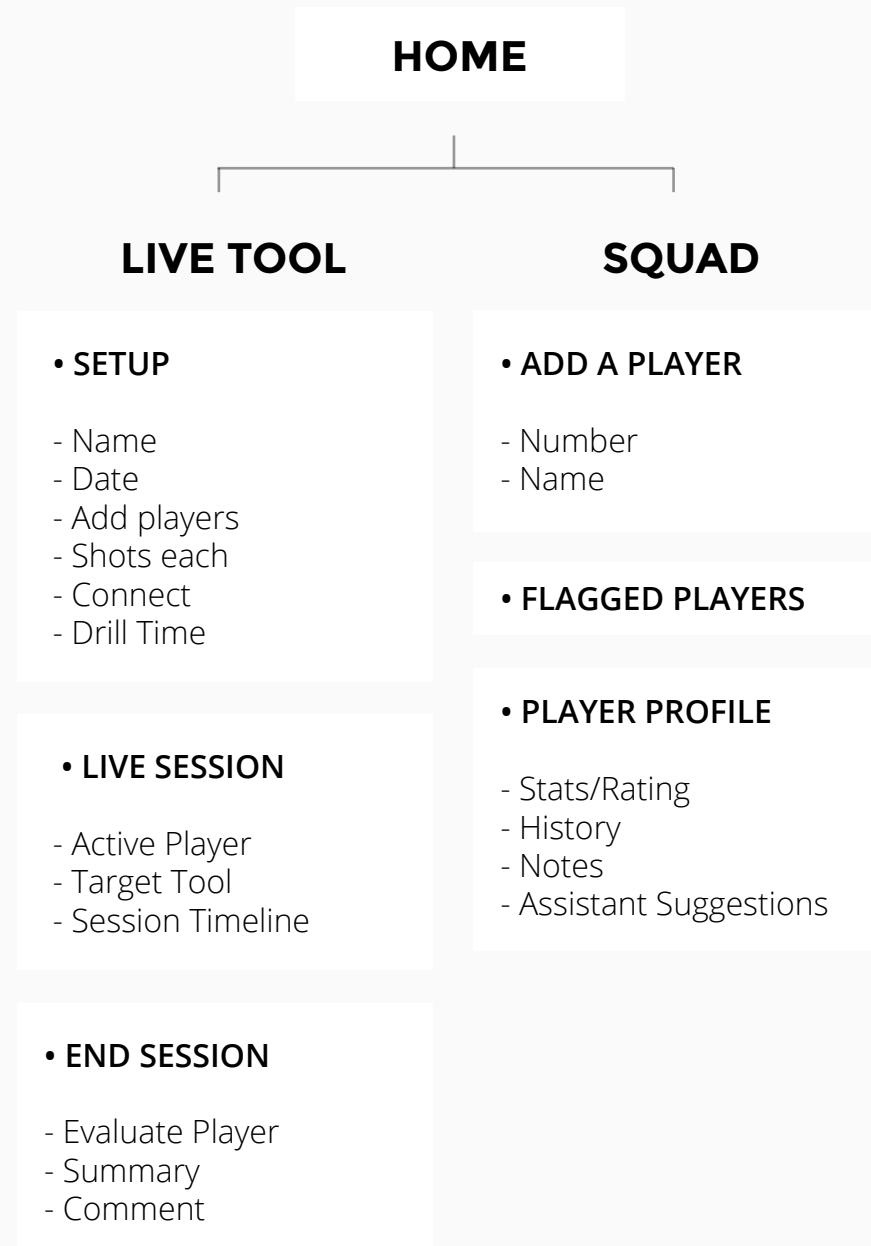
For these reasons, I would opt towards the projection display for this project.



APP DEVELOPMENT

SITE MAP



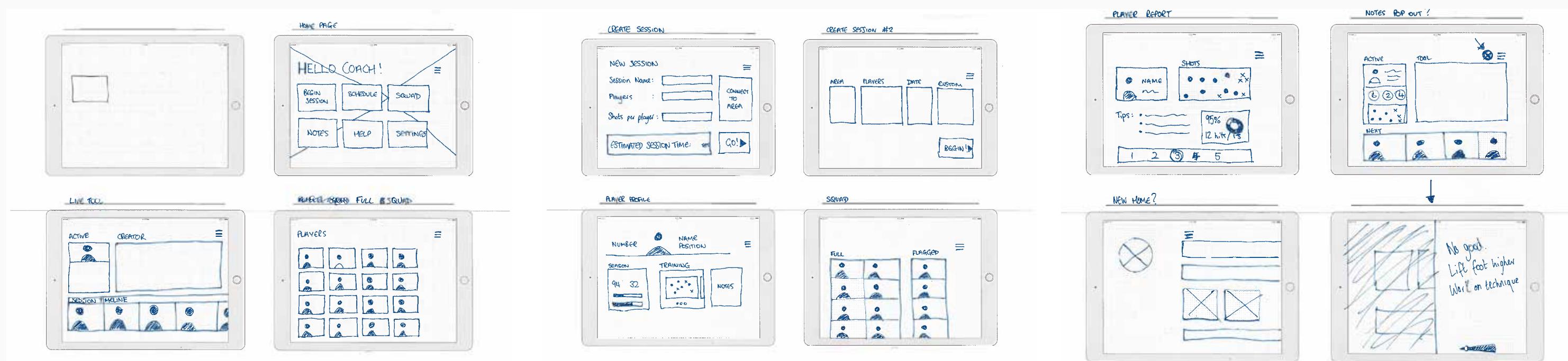


ACHIEVABLE SITE MAP

All of the content from the previous slide was based on my own ideas about new features, as well as suggested content from my user research. However, this amount of work is too much to handle in this timeframe.

I refined the large site map into parts that I actually intended to develop in this project. I did this so I could focus on making just these pages of the mobile app, since there isn't a huge amount of time left, and I wanted to ensure the main aspects of features of my app would be given the correct amount of attention.

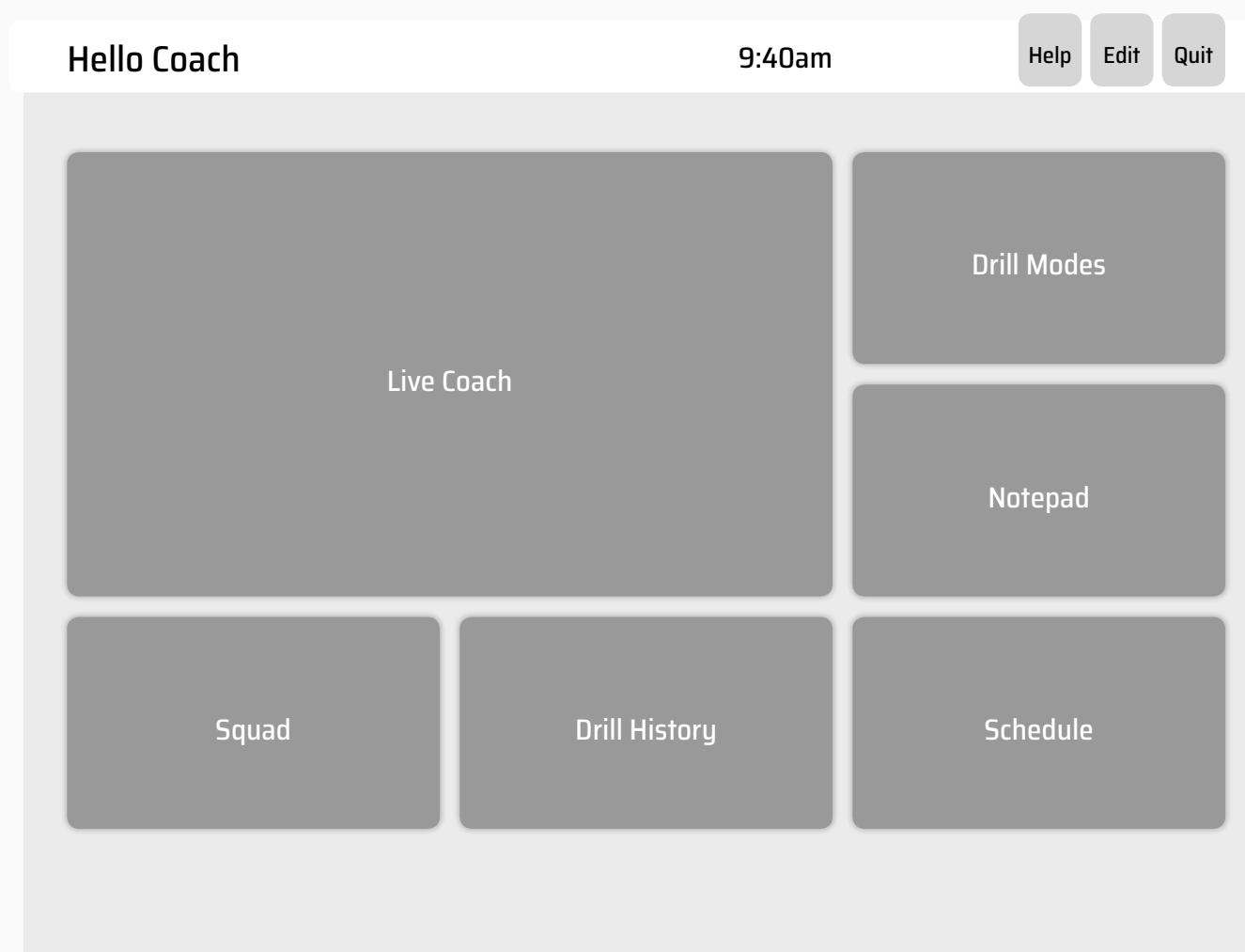
WIREFRAMING



I began with rough, rapid wireframe sketches. I was just using my sitemap as a guide, and any ideas I had would be scribbled down so I had them on paper. From here, I would then continue to tweak and refine the more successful pages until I had a full, logical structure to my system.

DIGITAL WIREFRAMES

HOME PAGE



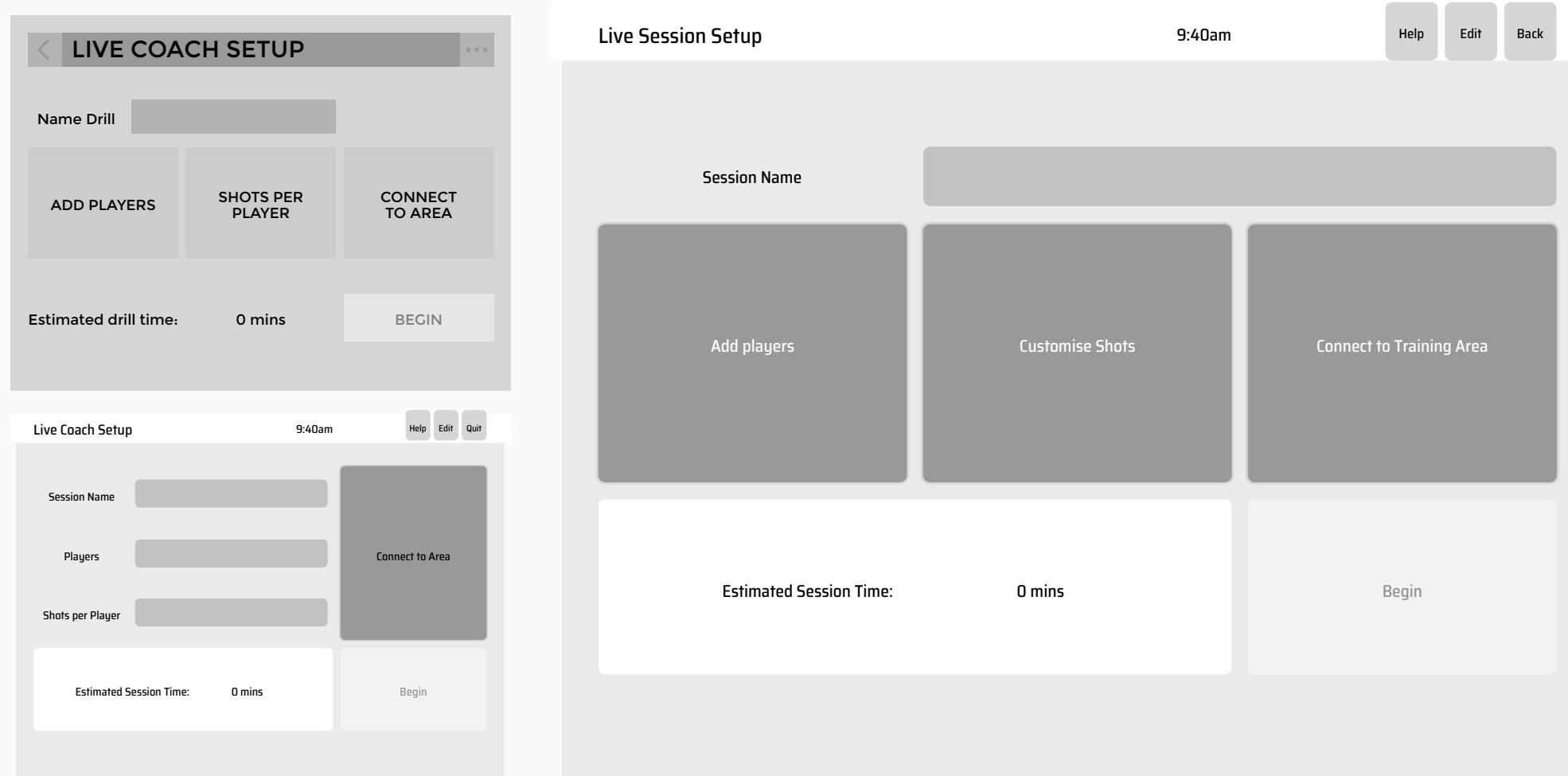
I drifted away from a split screen type interface to a grid layout system. I was conscious that the buttons should be large, based on the user and fast paced environment that this application would be used in.

I also developed the nav bar, as it would provide essential information and extra tools that a hamburger menu simply wouldn't at first glance.

I also stayed away from decorative imagery, as I intended to bring the buttons to life with their own imagery.

DIGITAL WIREFRAMES

LIVE SESSION SETUP



The setup wireframes took a little bit of time to develop.

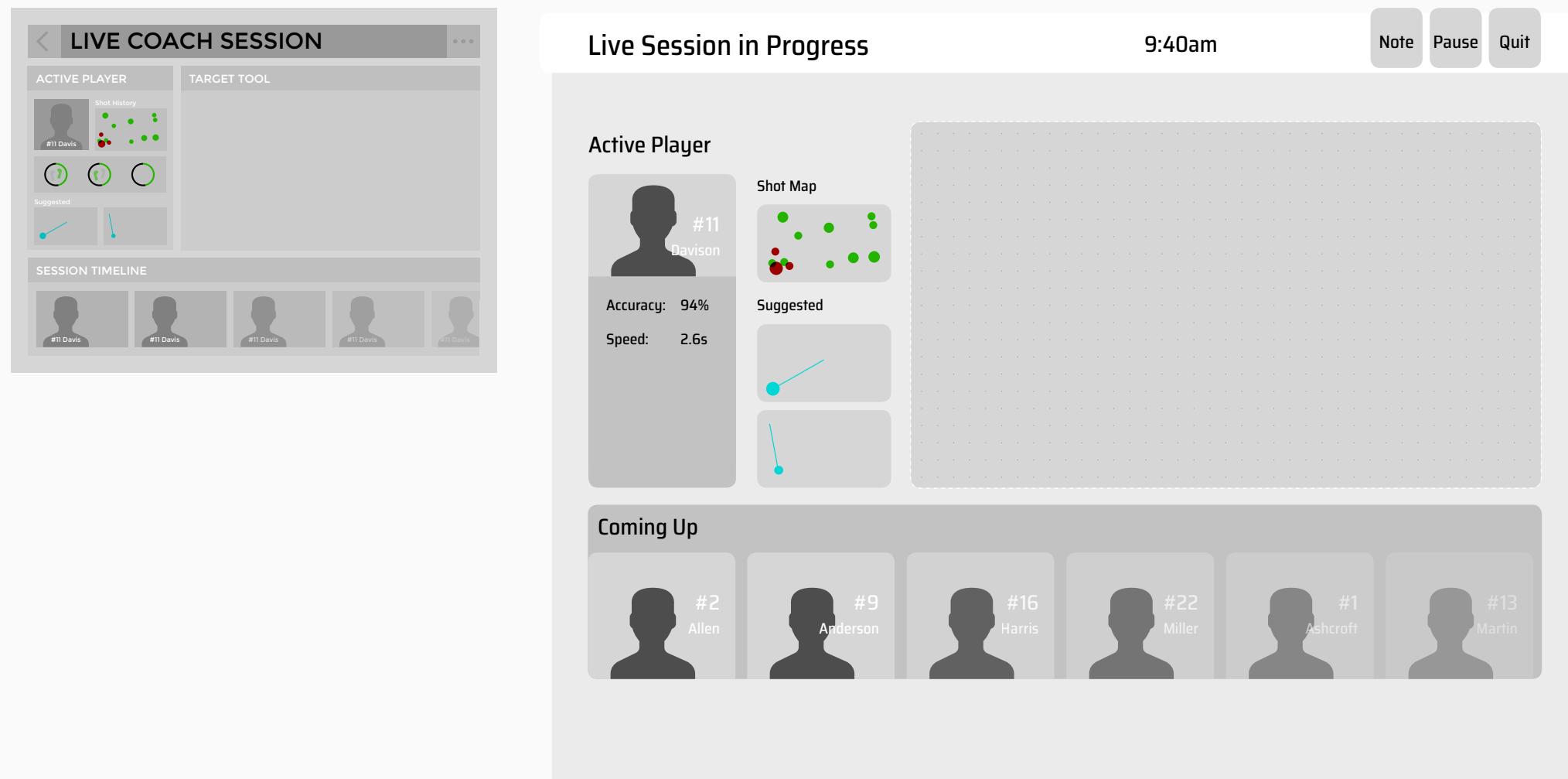
The feedback was that they were too 'all over the place' and form based. This is exactly what I wanted to stay away from, based on my interface research that had horrible forms.

Even after I sectioned the form into the familiar layout of my home page, it was still tedious and form-based.

Instead, I aimed to restrict the setup to simple tap selections only. I wanted no text entry whatsoever, which I eventually arrived at. The buttons and selection tested way better than the other forms of data entry.

DIGITAL WIREFRAMES

LIVE SESSION



This was the first page I actually designed, because the concept came from this page. I wanted to split the live interface into three sections.

The Active player section would display current form, previous shots and recommended targets to draw.

The Target creation tool would feature decorative dots, to convey the idea that there is a unique area here to visualise and draw your targets.

Statistic design was tricky, with many iterations of how to display stats. I dropped the useless infographics for simple, relevant and restrained statistics instead.

The Up Next section was aimed to be like a queue

DIGITAL WIREFRAMES

SESSION EVALUATION

Live Session Complete!

9:40am

[Skip](#) [Skip All](#)

Evaluate Squad

#11 Davison

All-time	This session

Accuracy: 94% Accuracy: 88%

Speed: 3.6s Speed: 2.6s

Comments / Notes:

Submit

SQUAD

Squad

9:40am

[Edit](#) [Back](#)

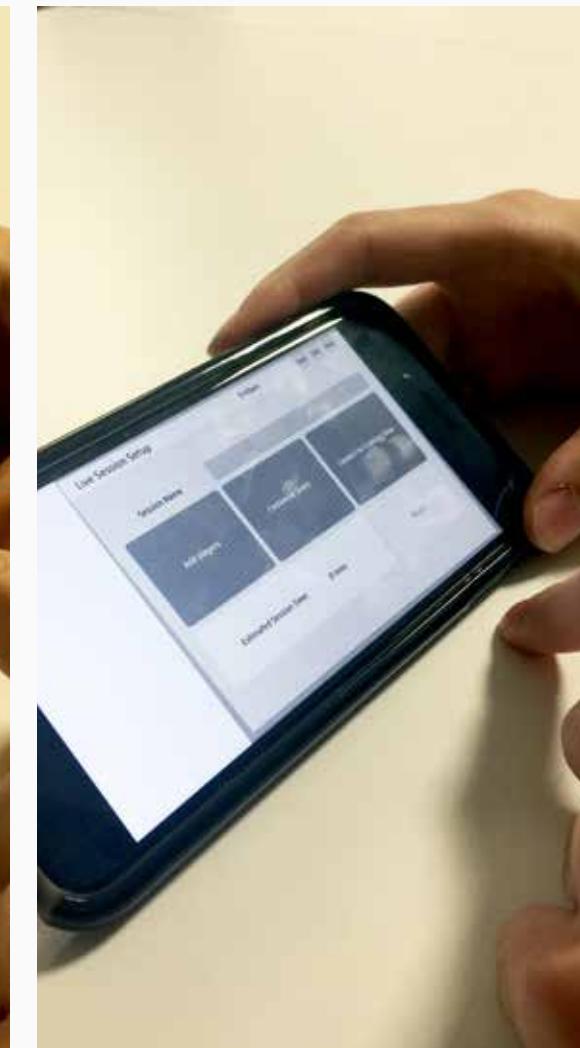
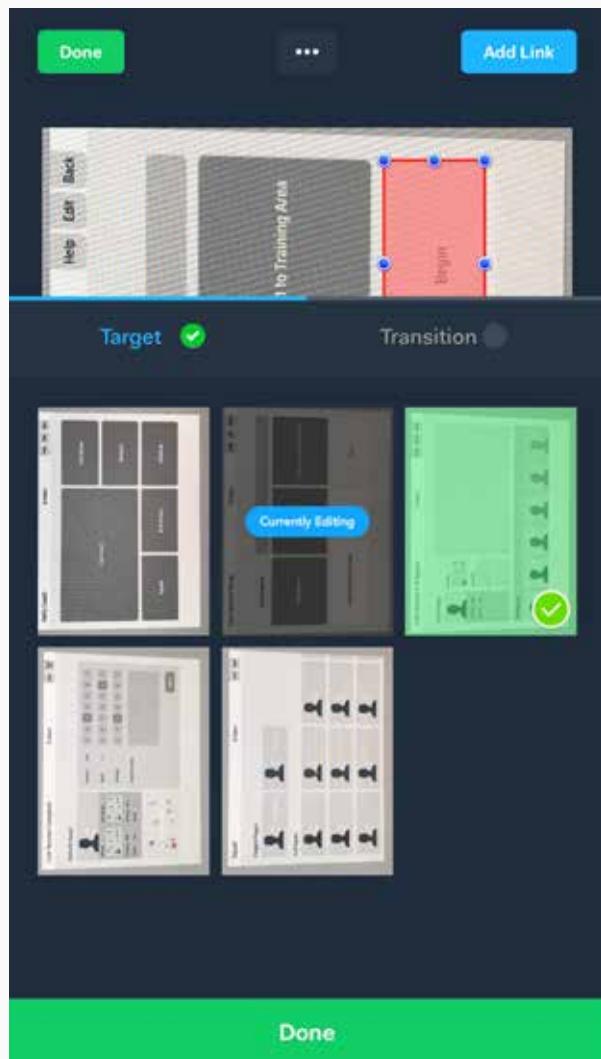
Flagged Players

#11 Davison Poor Form	#2 Allen Poor Form
------------------------------	---------------------------

Full Squad

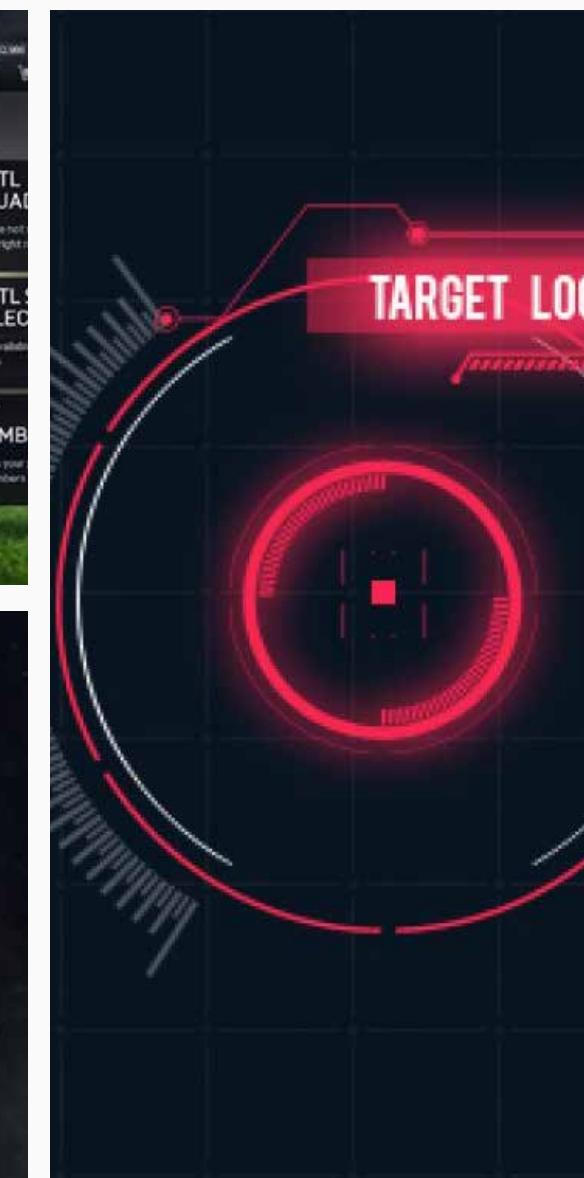
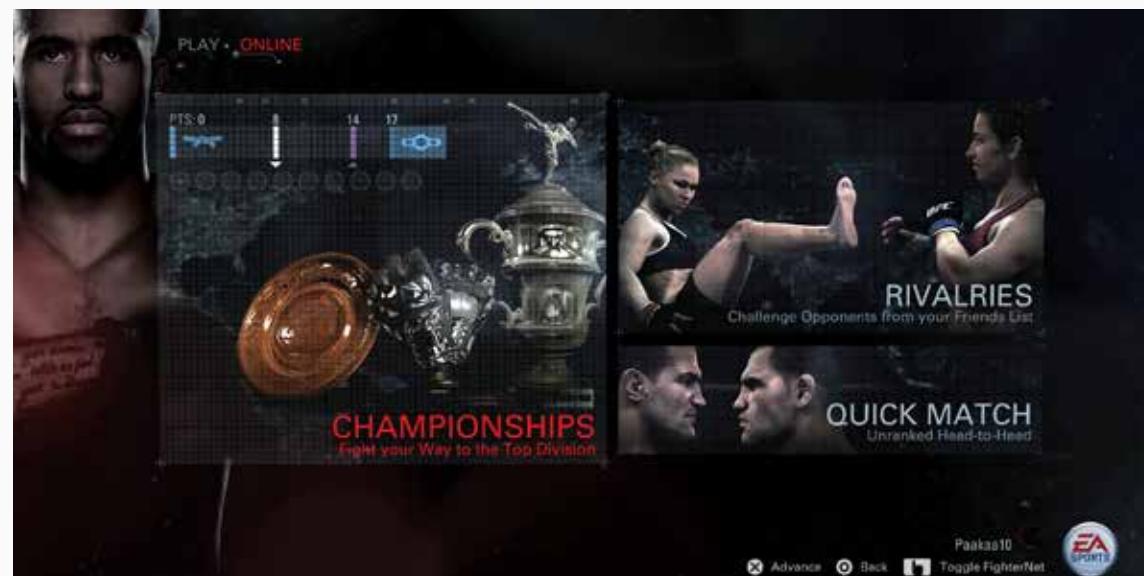
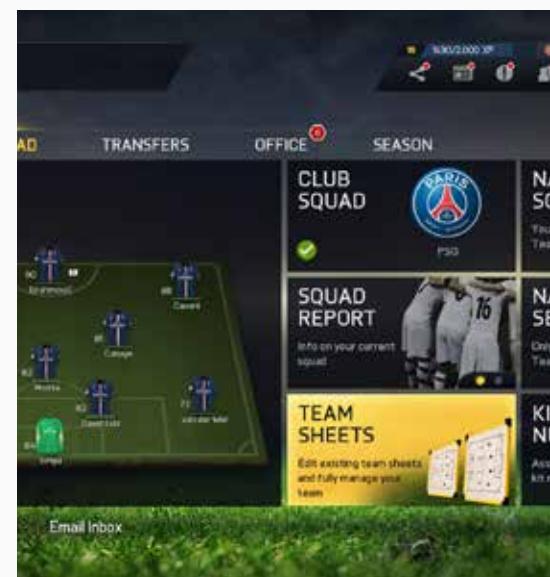
#1 Henry	#2 Sanderson	#3 Smith
#4 Miller	#5 Ashcroft	#6 Martin
#7 Anderson	#8 Parker	#9 Mulligan

TESTING



I wanted to test how well structured and intuitive my initial digitised wireframes were. I decided to use the rapid prototyping tool Pop! I was able to quickly take pictures of my wireframes and hotspot them together to perform very simplified versions of tasks. I was able to test how clear even the basic framework of my app was. I actually found that the buttons were all a bit too overpowering in terms of size. I did this initially for the older coach I was designing for, but perhaps got carried away. I knew that a slight tweak and restructure was in order, especially for my menu pages. I decided to wait until the visualisation and high fidelity stage of the project to alter these things.

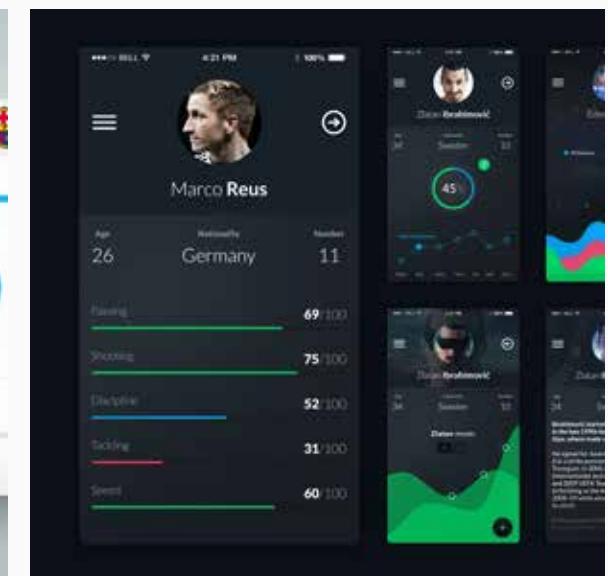
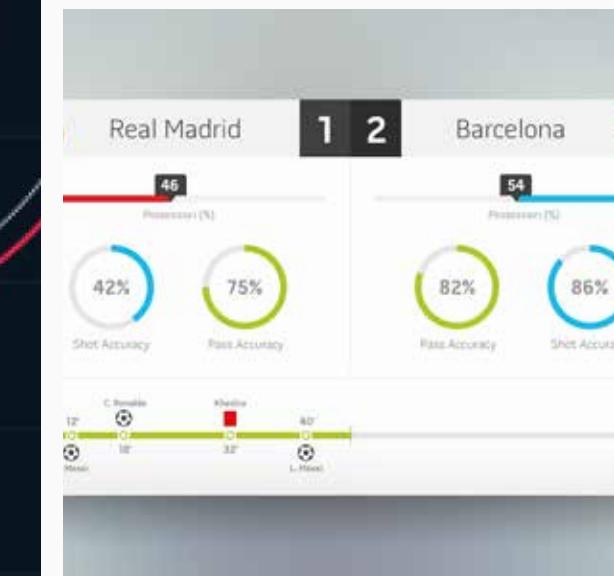
VISUAL INSPIRATION



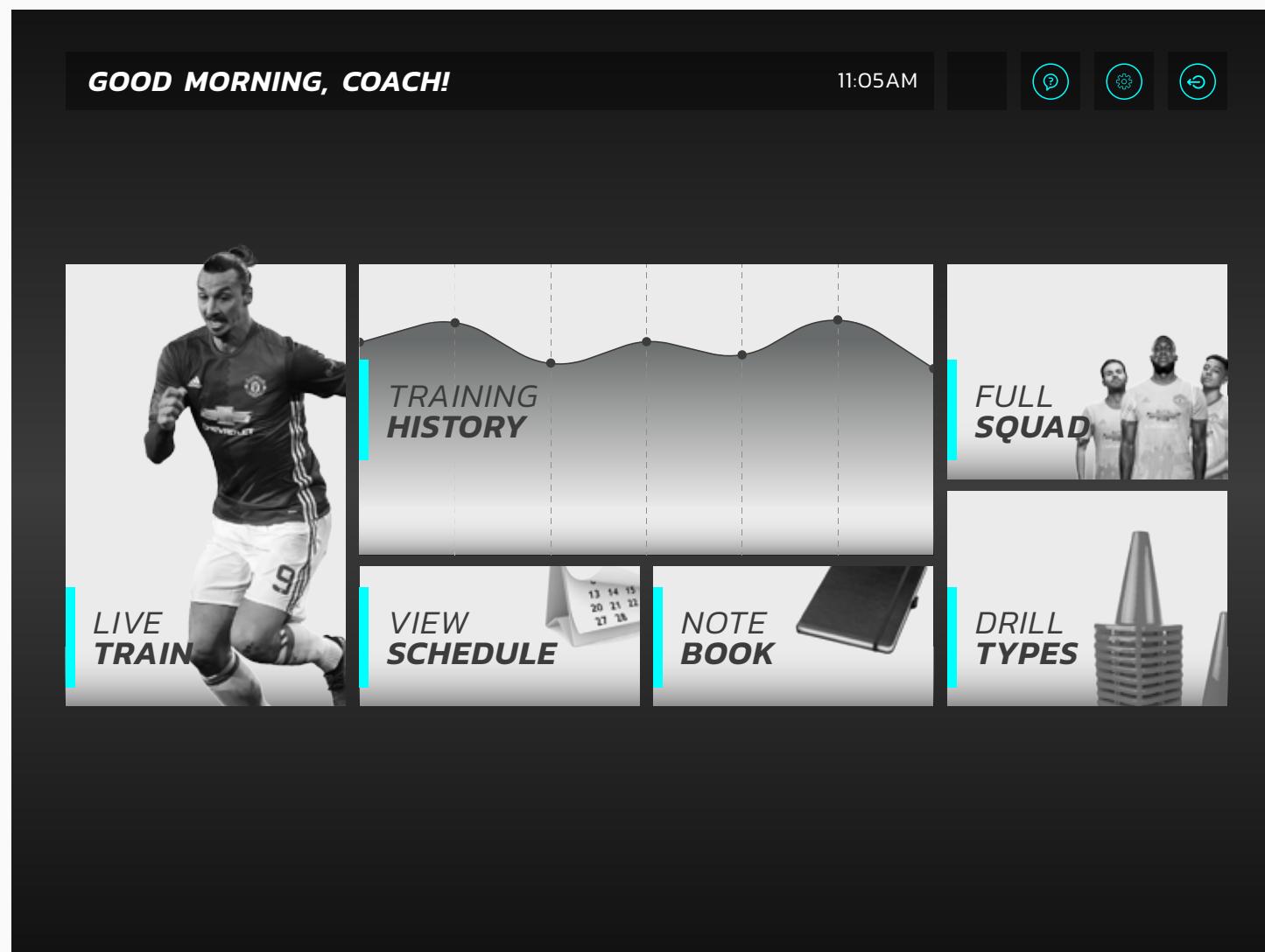
For my visual inspiration for this application, I was heavily inspired by sports video game menus. I feel like they were the perfect balance between a visually stunning design and relevant statistical displays.

I like the larger buttons, and I also thought these were very suitable for my older, less technologically advanced users.

I love the idea of using bars, charts and different visual indicators to display statistics when possible, but I want to ensure each time I do so is for a specific reason, rather than just to make it 'look nice'.



HI FI MOCK UPS

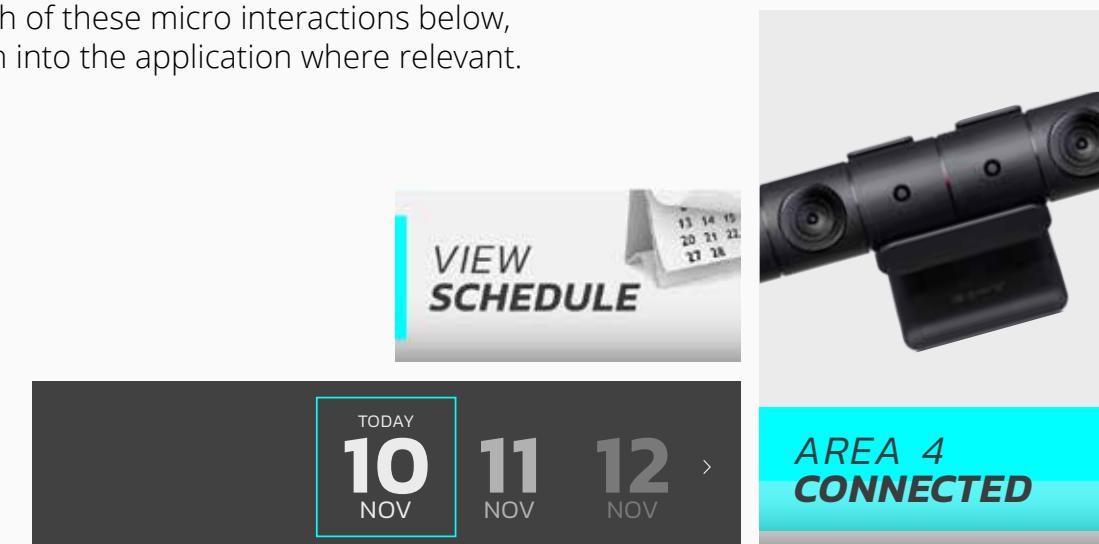


When creating the high fidelity mockups ready for the prototype stage of the project, I wanted to ensure I kept everything very consistent and familiar for my user.

Because of this, I created this fixed menu area, featuring a grid layout with large block white buttons. Every screen moving forward was designed based on this layout, to keep everything as structured as possible. The size is dependent on the importance and detail within each feature and should be reflective of how useful of a tool it is, based on my user feedback.

The navigation bar is designed to change depending on which screen the user is on. The left side will always display a title and the time, with the right side featuring different tool buttons depending on which task the user is performing.

I always wanted consistency in terms of buttons, confirmation displays and scrolling interactions. I created a house style for each of these micro interactions below, and embedded them into the application where relevant.



HI FI MOCK UPS

I wanted to create a slick and professional experience through the visual design, strict layout and clean cards. I kept to a grey scale theme with only highlights of colour. This was because I wanted the feature of choosing your own colour scheme, potentially based on team colours.

The image displays a 5x3 grid of 15 mock-up screenshots from a sports training application, arranged in three rows. The top row shows the main interface, session setup, and color selection. The middle row shows the live session setup process. The bottom row shows the session progress, complete session review, and player profile details.

- Row 1:**
 - Welcome to Live Coach:** A dark-themed dashboard with a text input field for 'ENTER TEAM NAME HERE...'.
 - Which Sport Are You Training For?**: A grid of 10 sports icons: Football, Tennis, Rugby, American Football, Cricket, Basketball, Archery, and Golf.
 - Fill Your Squad:** A table to add players to a 'FULL SQUAD' with columns for NUMBER, FORENAME, and SURNAME, listing entries for David de Gea, Victor Nilsson, Eric Bailly, and Phil Jones.
 - Choose a Theme Colour:** A grid of 12 color swatches in a 3x4 layout.
 - Good Morning, Coach!**: A dashboard with sections for 'TRAINING HISTORY', 'VIEW SCHEDULE', 'NOTE BOOK', and 'DRILL TYPES'.
- Row 2:**
 - LIVE SESSION: SETUP**: Step 1, showing 'CONNECT TO AREA' and a camera icon.
 - LIVE SESSION: SETUP**: Step 2, showing 'SELECT PLAYERS' and a date range (10 Nov - 12 Nov).
 - LIVE SESSION: SETUP**: Step 3, showing 'CUSTOMISE DRILL' and a date range (10 Nov - 12 Nov).
 - LIVE SESSION: SETUP**: Step 4, showing 'CONFIRM AREA' and a note to connect to a local training setup.
 - LIVE SESSION: SETUP**: Step 5, showing 'CONFIRM PLAYERS' with a grid of player profiles.
- Row 3:**
 - LIVE SESSION: SETUP**: Step 6, showing 'CONFIRM DRILL' with target colors and a shot count of 0.
 - LIVE SESSION: IN PROGRESS**: Shows an active player (Henrikh Mkhitaryan) and target creation.
 - LIVE SESSION: COMPLETE**: Shows a player review for Henrikh Mkhitaryan, ratings for Speed, Accuracy, and Technique, and a 'FLAG PLAYER' button.
 - FULL SQUAD**: A list of flagged players: Henrikh Mkhitaryan (Speed), Romelu Lukaku (Accuracy), and Jesse Lingard (Technique). It also lists all players: David de Gea, Victor Nilsson, Eric Bailly, Phil Jones, Marcus Rojo, Paul Pogba, Juan Mata, Zlatan Ibrahimovic, Anthony Martial, Chris Smalling, Jesse Lingard, Andreas Pereira, Michael Carrick, and Daley Blind.
 - PLAYER PROFILE**: Detailed stats for Zlatan Ibrahimovic, including Season Overview (Goals: 42, Assists: 10, Points: 5), Training Stats (Curl: 94%, Power: 92%, Weak Foot: 89%), and Potential Weakness (Position: CF / ST / CAM, Preferred Foot: Right).



BRANDING





DIVERSE ASPECTS & BRAND VALUES

My project is quite different. I want to create effective and creative tools for sports coaches. However, I also want to achieve all of these ideas, and therefore my branding should reflect as much of this as possible.

I began by thinking of the main values I wanted to convey through a visual style.

TARGET TRAIN
LIVE TRAIN
CUSTOM COACH
LIVE COACH
DIGICOACH
SPORT SMASH
SMASH
YOUR COACH
ACCUCOACH
DRILL
121

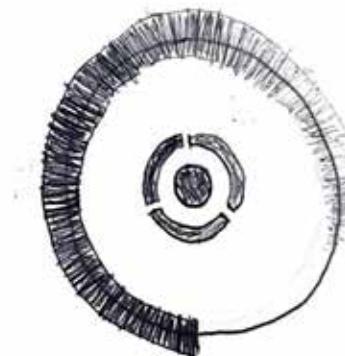
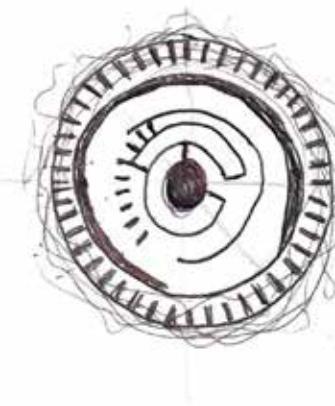
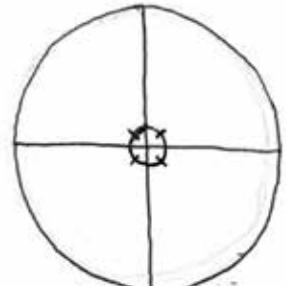
NAME

I began with names. Instantly I was drawn to quirky ideas like 121. I thought this was a funky way of explaining the idea of one to one training with teams. I also thought about the targets, and the idea of smashing them, both physically and metaphorically.

However, these ideas didn't really explain the project at all. As I mentioned, I have diverse features and brand values, so I thought it would be best to keep the name simple and relevant, exactly as a tool should be.

For this reason, I settled on Live Coach. Alongside the name, I designed the punchy slogan of 'One to One, with everyone' explained a little bit more about my project.

LOGO SKETCHING

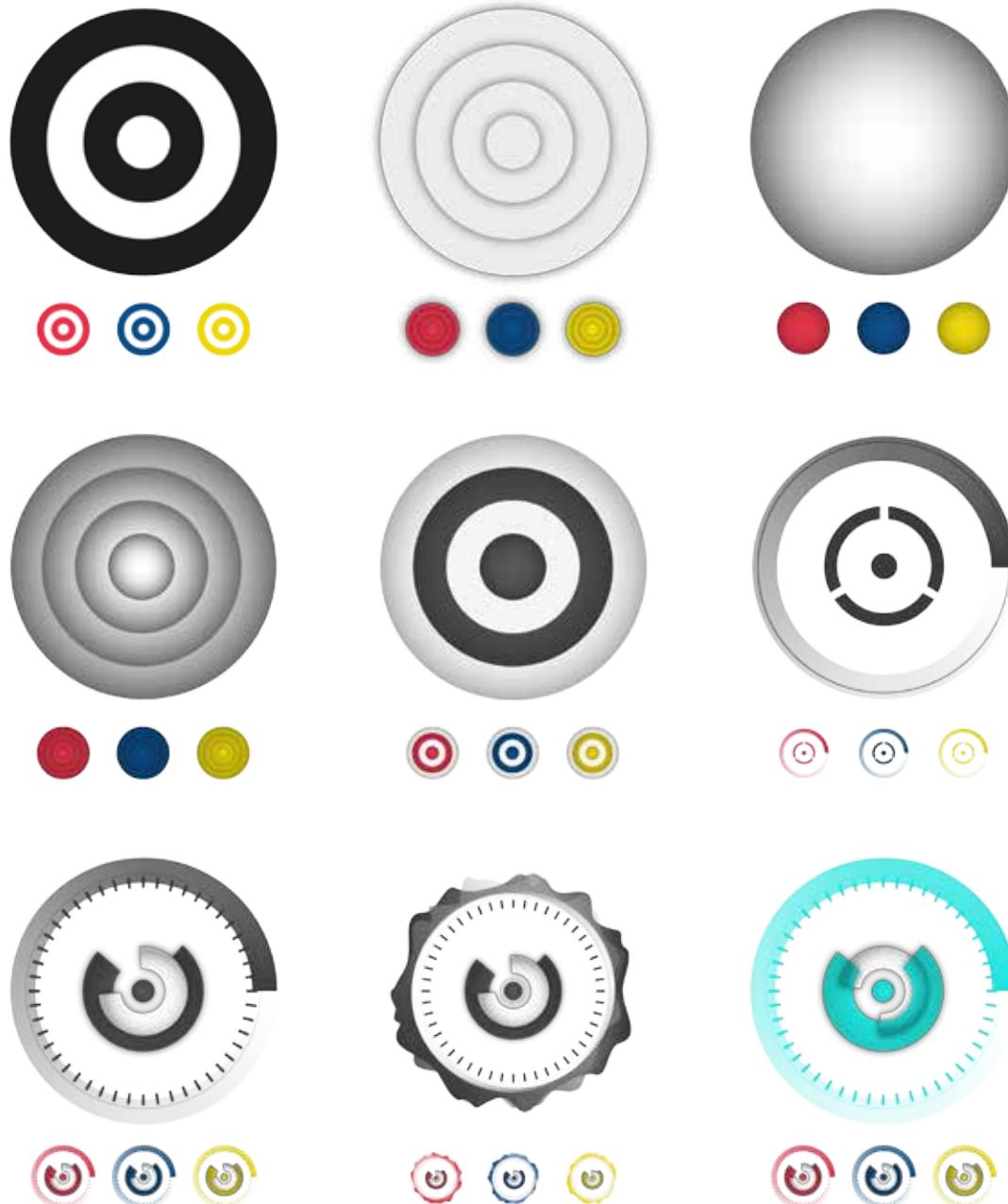


I wanted to create a logo that could also feature as the projected target in my project.

I began sketching different target concepts, both classical and abstract, and seeing which shapes worked better at conveying this idea of accuracy.

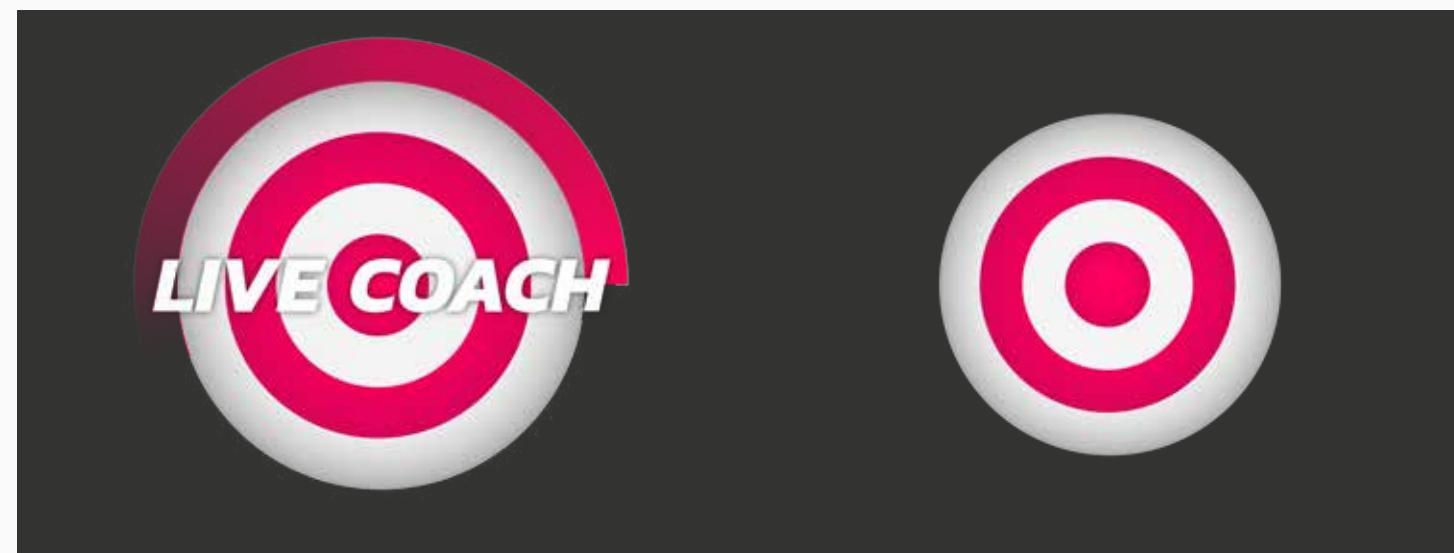
I disliked the cross-hair concept, as it had connotations of the military and conflict. I was interested by the sci-fi inspired targets also.

LOGO DIGITIZATION



I began to digitise my sketches, which allowed me to be more creative in terms of shadow and spacing. It was also a good chance for me to see exactly which shapes worked better in various colours, which I knew would be essential for added levels of gameplay.

I wanted to find the balance between accuracy and style. However I think I got carried away with adding useless details which caused confusion.



LOGO CONCEPTS

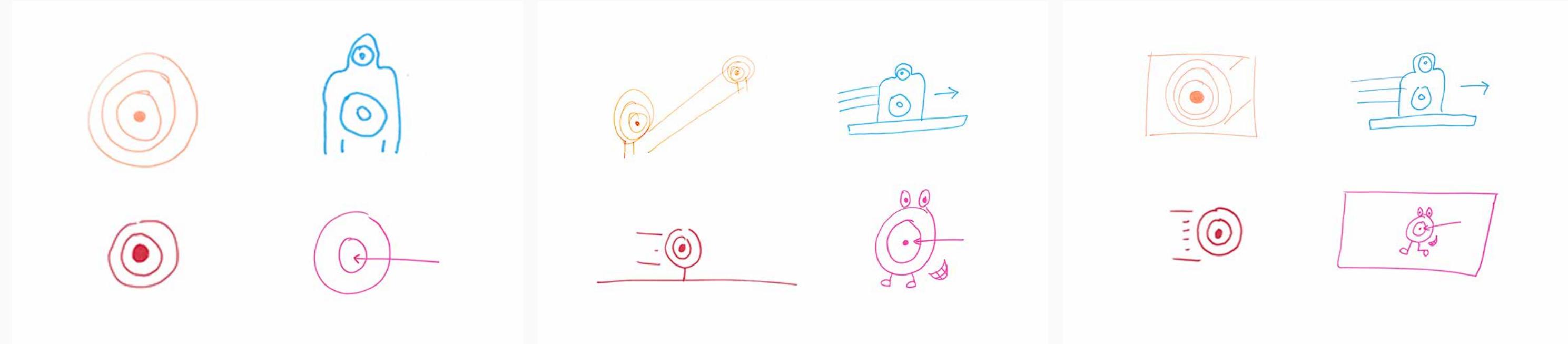
I finalised two concepts for my target logo.

The first would transform my project into a cutting edge, futuristic brand. I intended to have the parts of the target all move around the circumference of the circles. However, I was also concerned that there would be too many intricate elements to the logo. That could prove fatal when downsizing, and also I wasn't sure if people would even recognise the target influence anymore.

To be safe, I finalised a classic version, using a vivid bullseye red colour, and a much more iconic target shape.

Both logos feature the same italic typography.

TARGET DESIGN TEST



I was hesitant to just decide on a logo based of my own personal preference, or even that of others. I needed to ensure that the concept I chose would make sense to users.

Because of this, a developed a small experiment in class to see what perceptions of targets people had.

In the first image, participants were asked to draw a target. Next, a moving target. Finally, the task was to draw a digital render of a target (to see if there was any difference).

I looked for similarities and differences. Everyone featured the smaller circles within circles, whether this appeared on a target or not. I knew that the classic red target concept would instantly be much more suitable.

At this stage I knew I wanted to animate the outer band to move around, conveying this idea of motion and progression.

FINAL LOGO

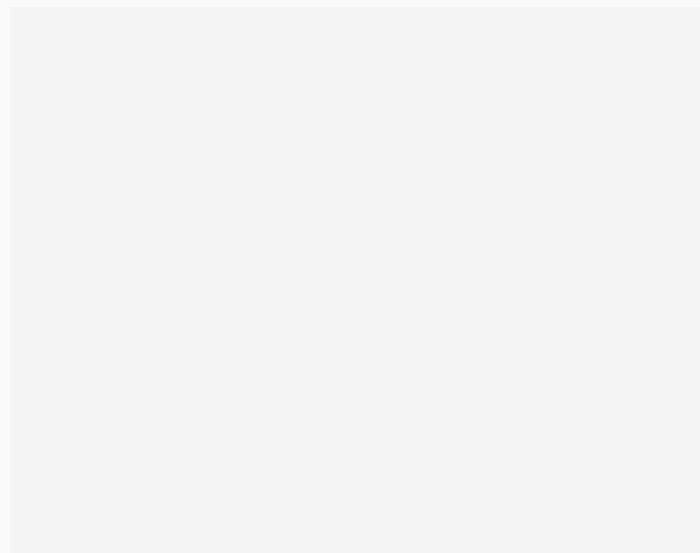
The 'bullseye' red is an iconic way to convey accuracy.

The italic typography represents efficiency and real time data.

The faded outer band is designed to move swiftly around the target. This is so I can emphasise a fast paced experience.



COLOUR & TYPOGRAPHY



KANIT

SEMIBOLD ITALIC

LIGHT ITALIC

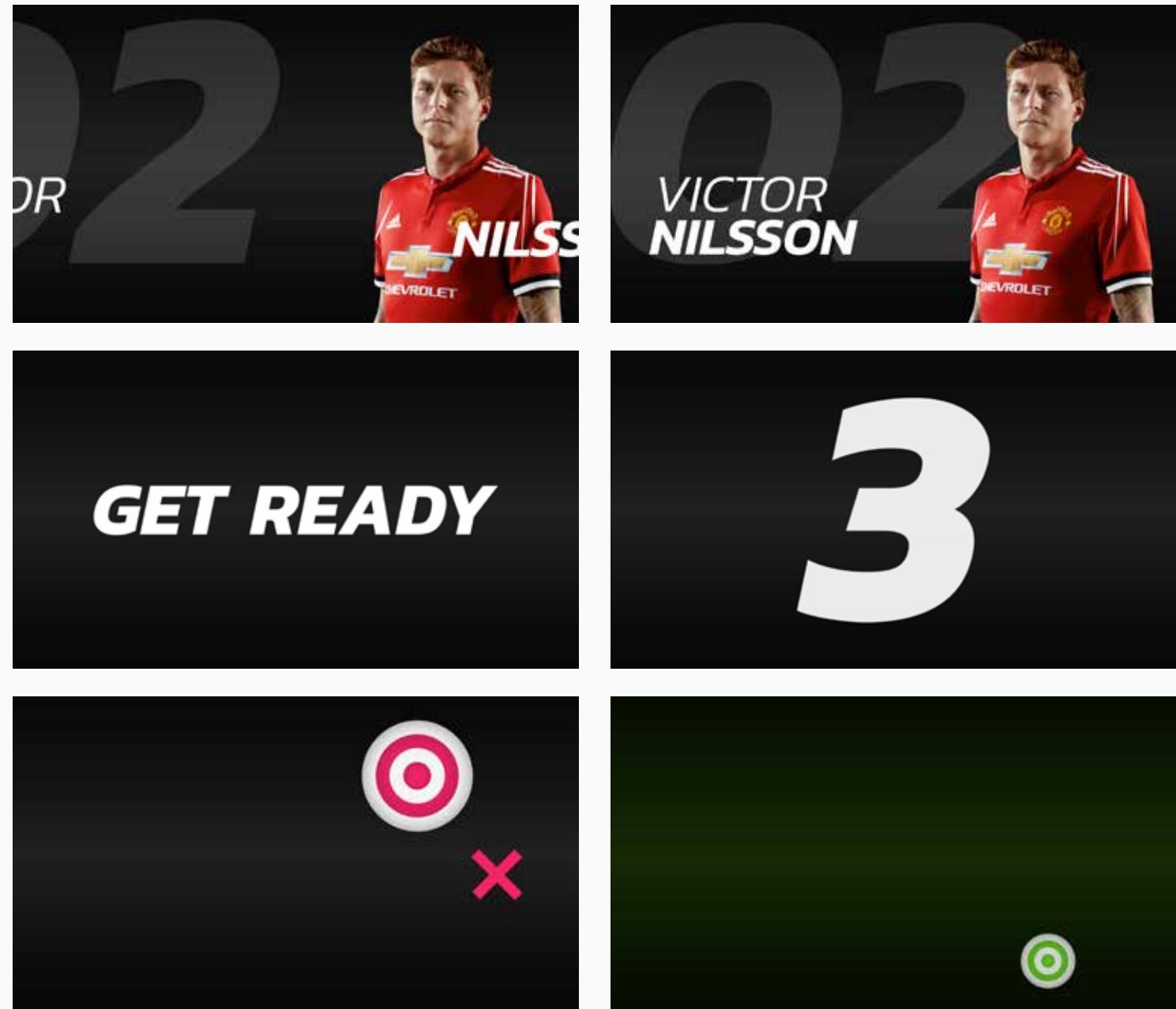
SEMIBOLD

LIGHT

GOOD MORNING, COACH



LIVE AREA DEVELOPMENT



HI FI MOCKUPS

The live area projections are to act as a display for players, ensuring they know exactly what is happening, as well as being the platform for the actual training to happen.

Keeping true to the already developed style of the app, I created a sequence of screens that would call up a player, inform them of the drill, as well as testing their skills.

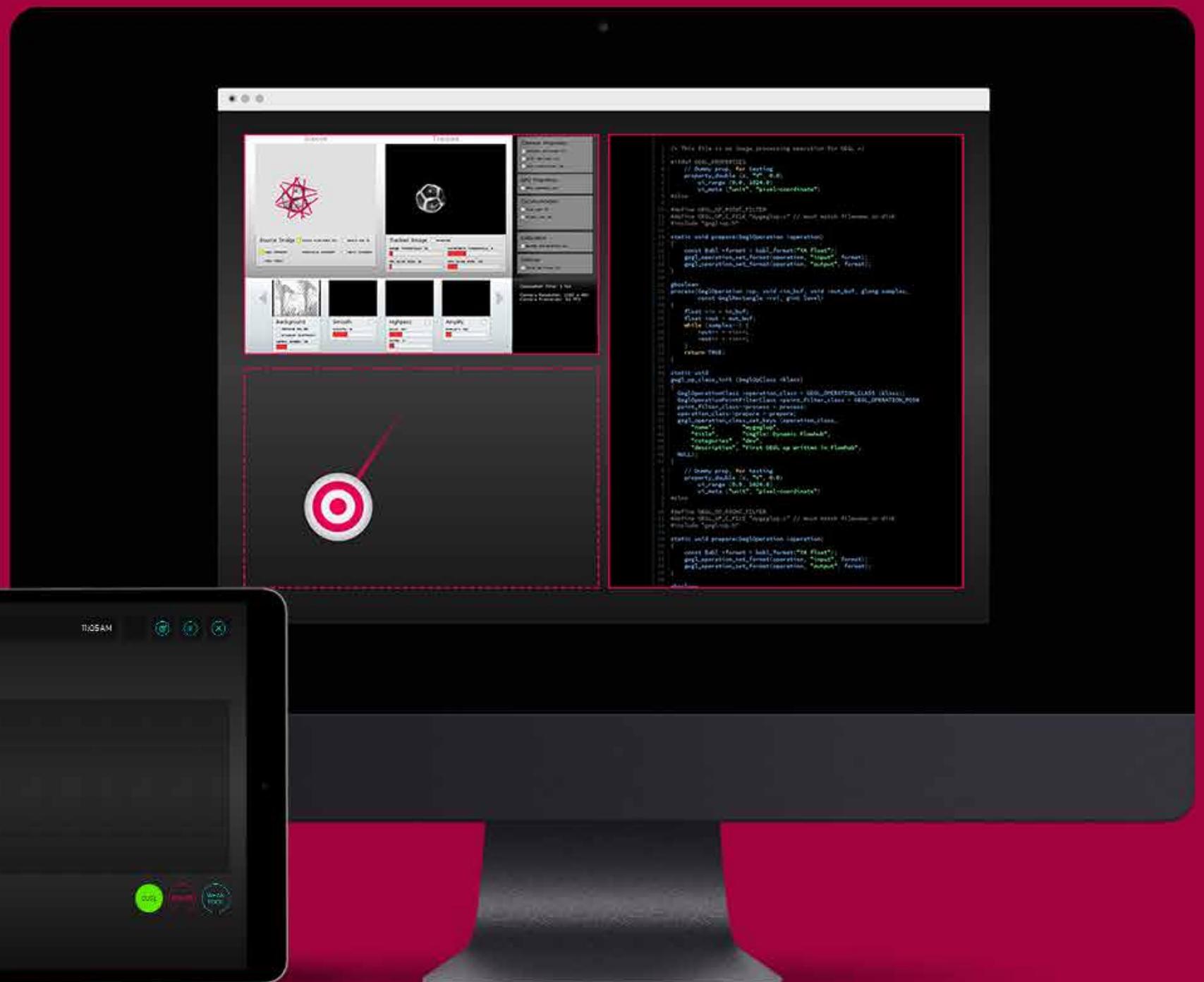
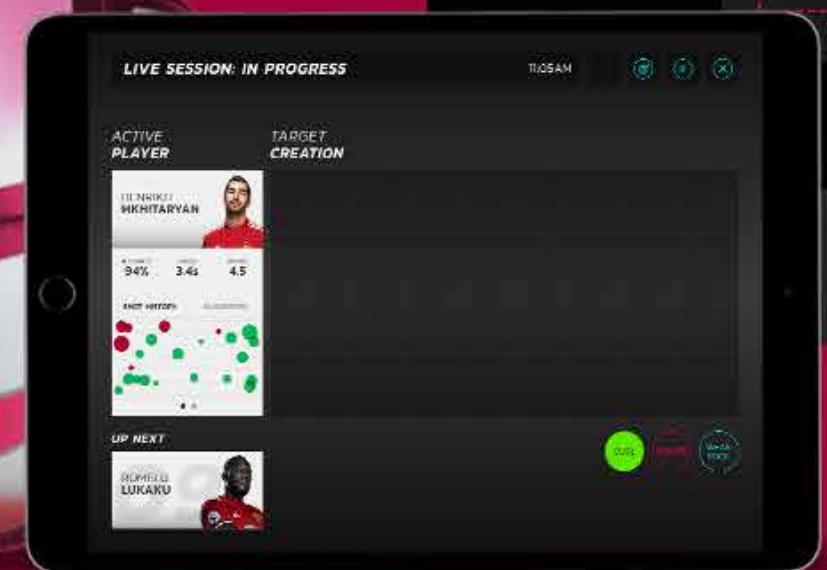
LIVE AREA REFINEMENTS



I refined these designs when I was mocking up the project. This was for two reasons. I wanted the projection to work on any coloured wall, so I took away the background. This also provide a more realistic experience for players. I also added a moving dotted outline, so players still knew exactly where the full area was.

BUNDLE MOCK UP

I wanted to create these mock ups to illustrate the full package I have developed. It breaks down all aspects of my system, including the projection, physical sports equipment, motion tracking and applications.



BRANDED EQUIPMENT

I think a subtle but effective idea would be to release training equipment to match the brand for the live area. This would help the technology pick up the unique colour, as well as boosting sales and experience.





DEMO DEVELOPMENT

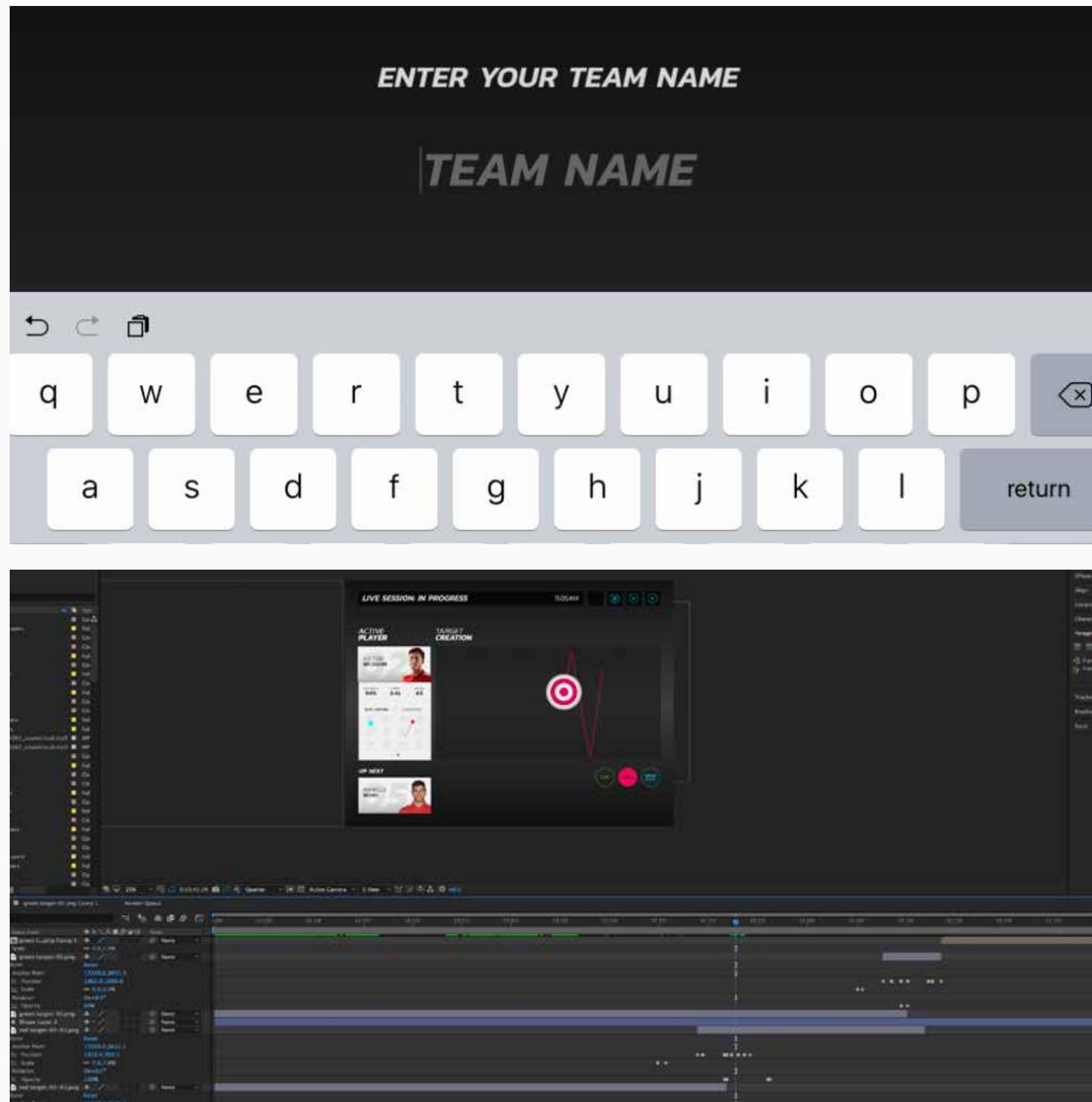
VIDEO BREAKDOWN

1. **Describe identified issue** through real pro footage, and acted coaching session
2. **Introduce Concept**
Application combined with an immersive and challenging digital training space
3. **Application Animation**
 - Onboarding (Quick Restrained Start Up)
 - Player Profile
 - Evaluation Tool
4. **Digital Training Space**
 - Describe tech and build.
 - How is it controlled?
 - Live Target Tool full walkthrough with physical preview

I plan to film footage for my demo over the course of a few hours. I find this easier, as I can work out which shots look good when I'm there.

In terms of footage to get, I want a full walkthrough of a coach using the Live Coach tool on my application.

This can be broken up with shots of players kicking a football off of the wall, where I intend to edit the projection interface into the footage.



APP ANIMATION

To record my app, I began creating a prototype in Flinto. It was recommended for its ability to create rapid prototypes with clear animation and motion. Unfortunately, the learning curve was quite harsh, and I spent longer than I thought just creating the onboarding process.

Because of this, I moved over to After Effects. I felt more confident with this software, however I could only therefore make a video, not a working prototype. I knew it would be difficult to guess when buttons are pressed, so I decided to time each interaction with the screen to the beat of one of my favourite songs.

This completely solved the timing issue, because after a few revision sessions, I was able to remember exactly when and where to touch the screen.



LOCATION SCOUT

I considered shooting in the university space, because of the technology available, however this wasn't appropriate or realistic. I needed a sport environment, so I checked out the local 5-a-side pitches at Gateshead. Again, I thought this would be impractical to shoot at, because of the general public and lighting constantly changing.

I decided to visit my old secondary school to view their new sports hall. It was ideal in terms of the environment. The lighting would remain the same throughout shots, and there would be no interruptions.



This footage checklist helped me organise and I knew exactly what shots I needed:

- A full application walkthrough of the Live Coach tool
- A successful shot
- A failed shot
- General filler footage of playing football/sports



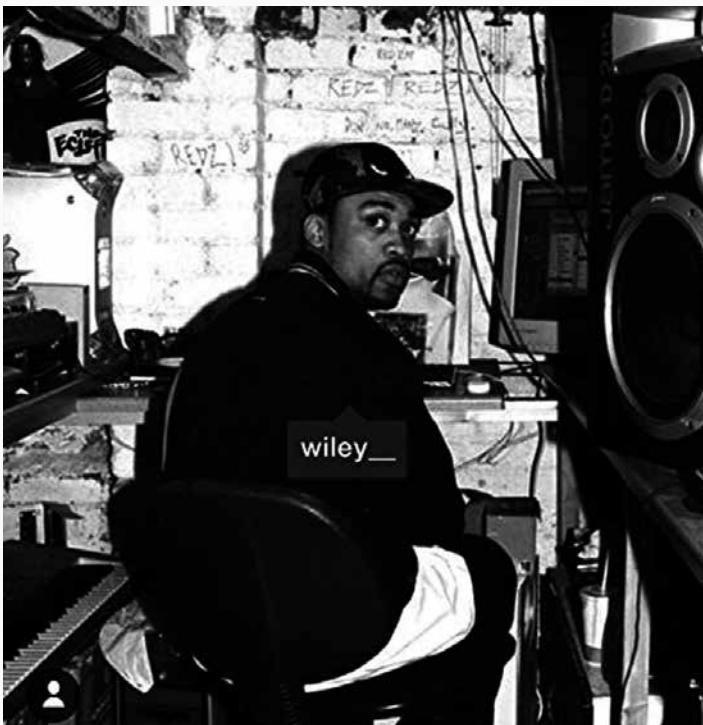
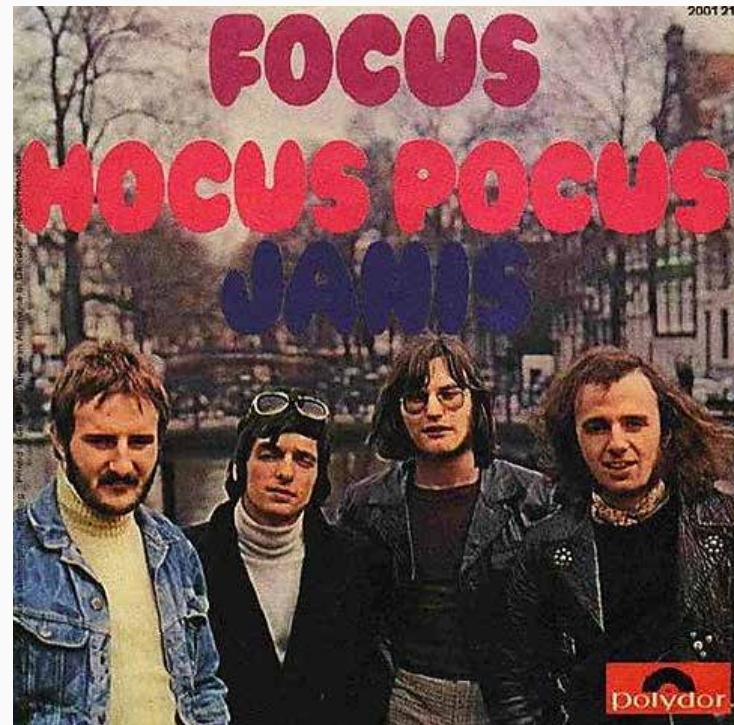
EQUIPMENT NEEDED

I need an iPad Pro to display my app. The intention would be to use the Apple Pen as more of a professional approach to the app.

I need a Canon 6D and tripod to get steady, clear shots.

I also need a few other objects to help. After I took note of the colour of the sports hall walls, I purchased some stickers the same colour. This means I knew exactly where to aim for on the wall, so that my project would look as real as possible.

I would also need a football.



SOUNDTRACK

I think a well chosen soundtrack can really help engage audiences and drive my project forward. If I had longer in this project I would have created my own music in Ableton. Instead, I took time to consider different genres and what instrumentals worked well.

I initially wanted to use Hocus Pocus by Focus, for its aggressive and punchy guitar riffs and fast tempo. I decided against this because of the heavy guitar solo and yodelling that featured about one minute in. I attempted to cut them out but it completely broke up the momentum.

I thought that a slick and sporty app deserved a track that was influenced by sport culture. I looks at Hip Hop and Grime as they provide hard drum patterns with fiery melodies.

I decided to use an instrumental of Run the Jewels - Panther like a Panther. It offered bass drops, a fast tempo and I knew that editing to this song would be fun and effective.

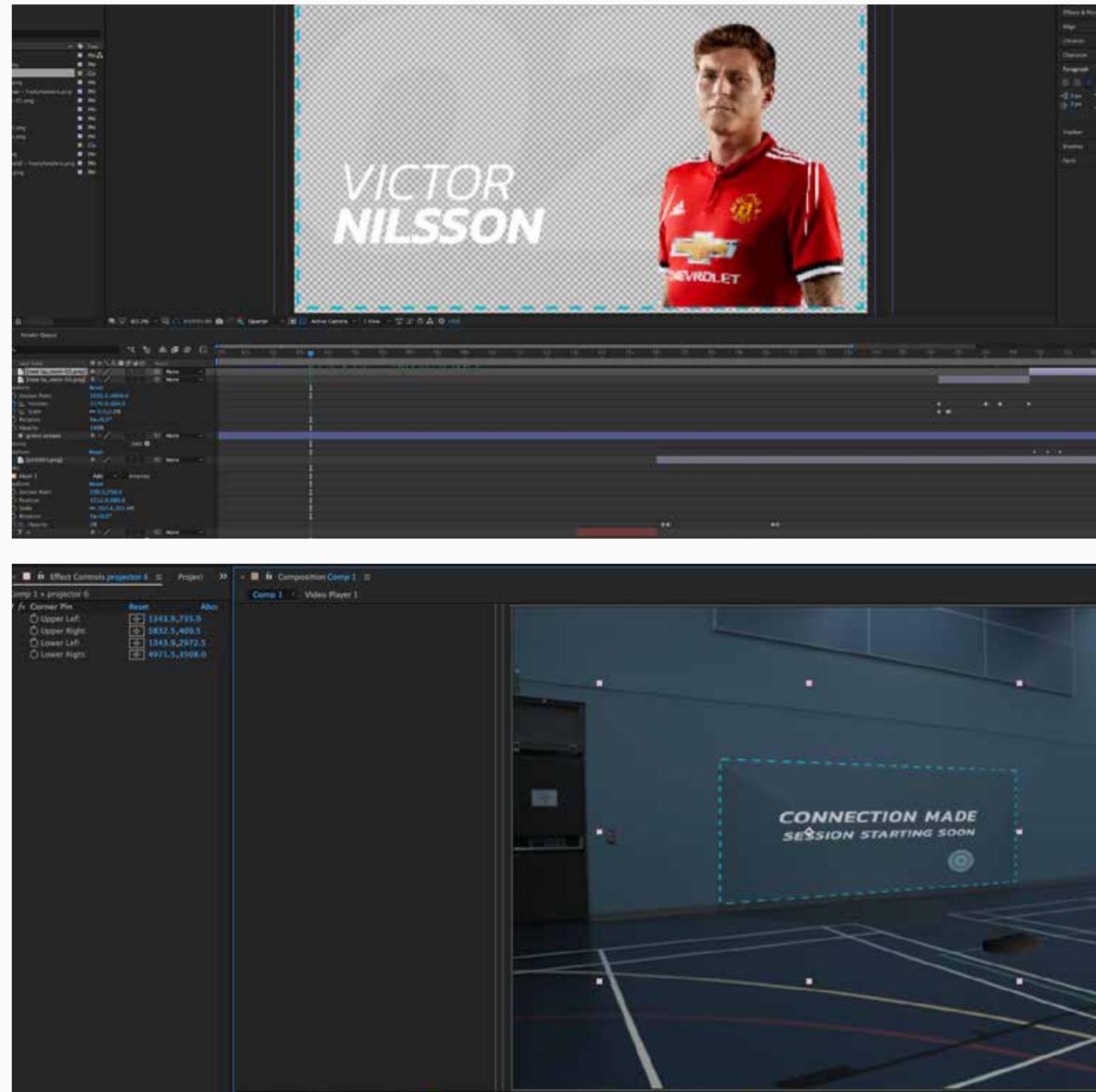


VOICEOVER

Initially I didn't want a voice over. The issue with that was the on screen text distracted audiences from my busy animation. I decided that I could communicate my project much easier with a voice talking.

I hate the sound of my own voice, so I used my flatmate's, Nathan. This worked out great, because I was able to hear my script through another voice. I could give him tips on how to express certain phrases and emphasise certain words. I wouldn't have been able to tweak my own voice very well, with no second opinion. Nathan was also confident to tell me when he didn't feel he'd done a good recording, and asked if we could redo a few. This made me feel like we ended with a confident, natural voiceover.

In terms of editing the voice, I simply dropped the soundtrack volume down slightly, and added a Generic compressor to his voice in Ableton. It sounded more clear and stood over the music as it was more important. I then just added his voice to the relevant parts of the video.



LIVE AREA ANIMATION

After I acquired my footage, I was able to create my animation for the projection side of Live Coach. Based on the hi-fi mockups, I was able to quickly create exactly what I wanted.

Before this animation was created, I researched how to make my project realistic, and found a Corner Pin tool on After Effects. This allowed to resize and position each corner of the exported animation video in the final Demo cut. This created the realistic perspective I was after.

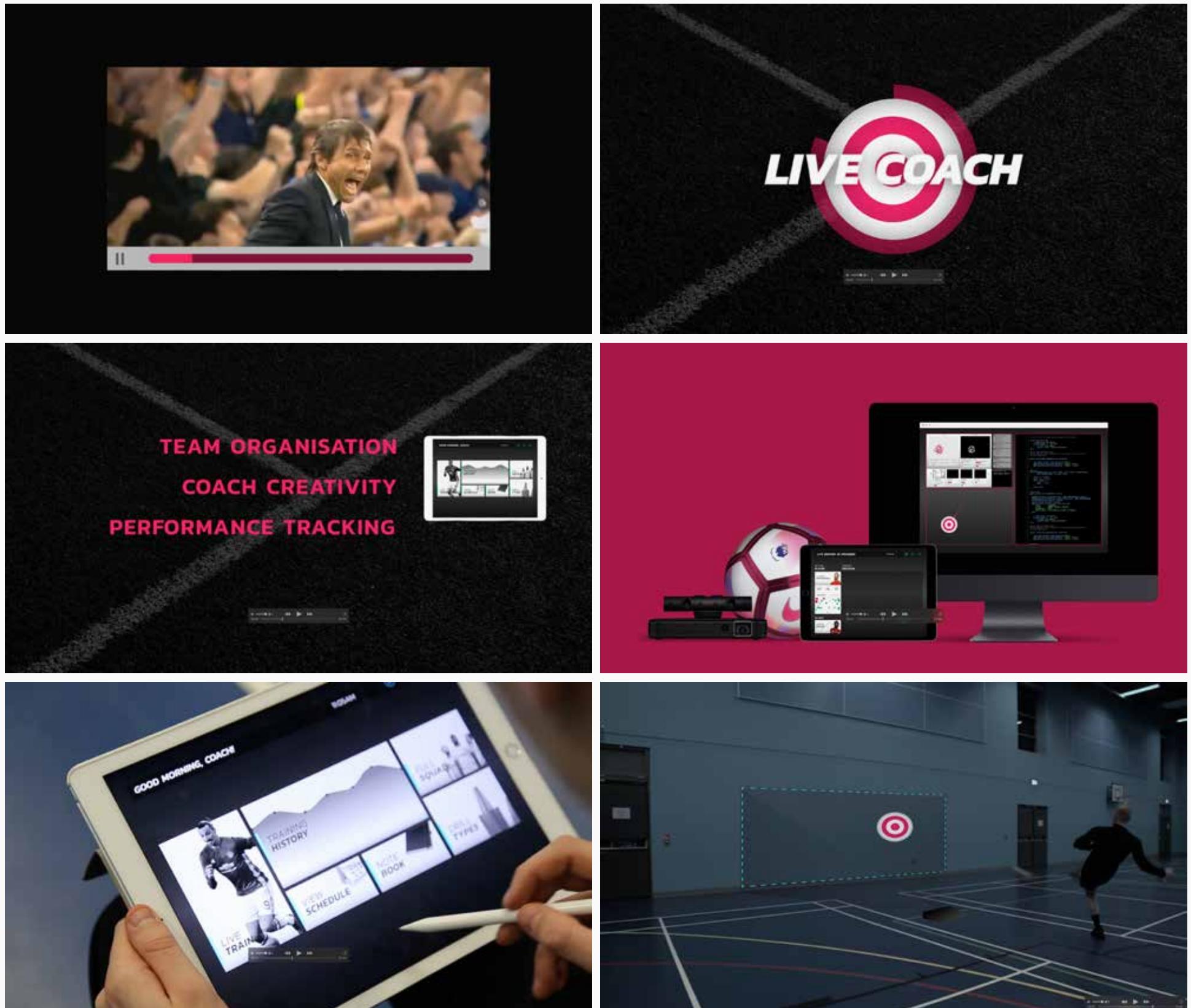
It is also worth mentioning that I added some effects to the raw footage. The sports hall lights were very yellow, and gave me yellow shots. I added a slight blue hue to the footage, and turned the brightness down, giving me the slick shots ready for the animation.

FINAL DEMO

The demo video really showcases the simplicity and the power behind my application concept.

I introduce the problems and issues coaches face in a humorous way, before introducing the project and its USP.

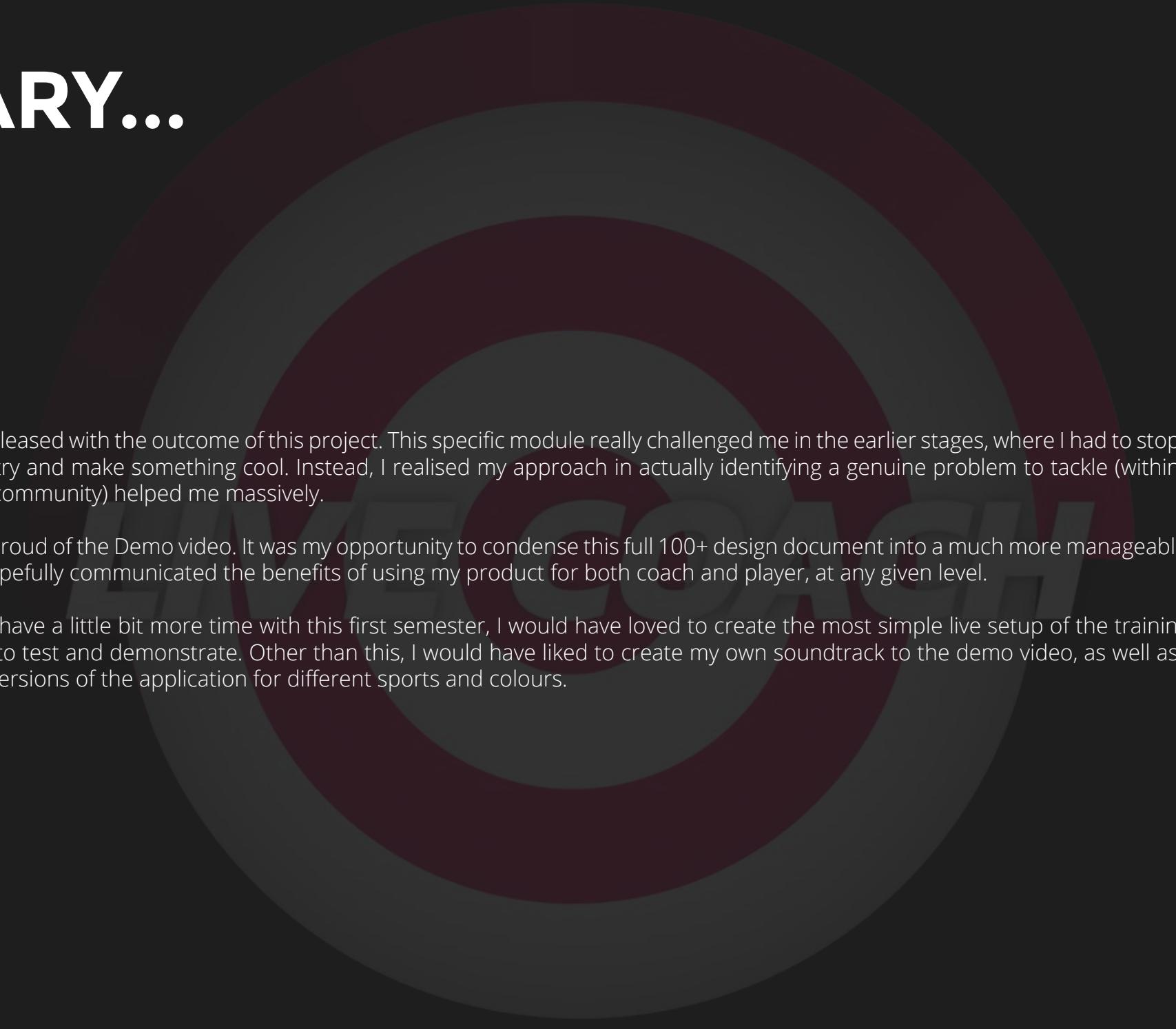
I break down the really complex technology to the most simple form, and provide realistic demos of both the application and smart area.





EVALUATION

IN SUMMARY...



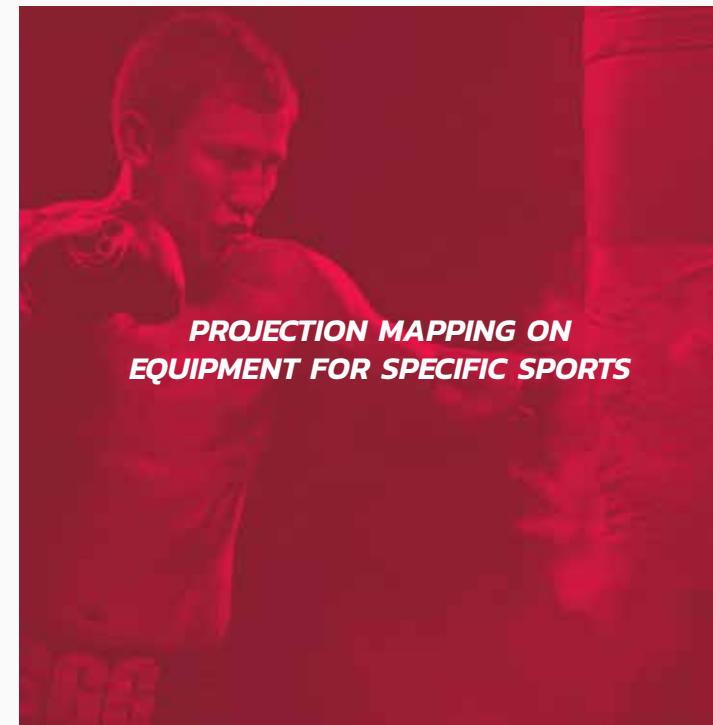
I'm really pleased with the outcome of this project. This specific module really challenged me in the earlier stages, where I had to stop designing simply to try and make something cool. Instead, I realised my approach in actually identifying a genuine problem to tackle (within the niche coaching community) helped me massively.

I'm really proud of the Demo video. It was my opportunity to condense this full 100+ design document into a much more manageable 3 minute video. I hopefully communicated the benefits of using my product for both coach and player, at any given level.

If I was to have a little bit more time with this first semester, I would have loved to create the most simple live setup of the training area, for my peers to test and demonstrate. Other than this, I would have liked to create my own soundtrack to the demo video, as well as designing different versions of the application for different sports and colours.



**EXPLORE USES IN EDUCATION,
THE GAME INDUSTRY AND
THE MILITARY**



**PROJECTION MAPPING ON
EQUIPMENT FOR SPECIFIC SPORTS**



**DIFFERENT DRILLS.
FLOOR PROJECTION COULD
PROVIDE NEW WAYS TO TRAIN
MOVEMENT AND SPEED**



**LIVE COACH COULD
BE REFINED AS AN
ART INSTALLATION**

THE FUTURE OF LIVE COACH

I tried to consider the future of my project, and what other turns to take if I revisit it at some point. I definitely think the next stage would be projection mapping onto different surfaces and objects.

I also think it could be re purposed for video games, teachers in schools and military training.

I would love to introduce new types of drills. I have covered accuracy, but what about speed for example? A projected floor would open up new possibilities.

BACK TO THE BRIEF

I feel like I have identified a need for a new type of app controlled environment based on current tools available for coaches. I used a combination of data driven design, projection, motion tracking and networking to create a system that has value to coaches and their teams.

I was asked to predict the future of the above technology. I think my concept is unlike any existing project, and takes the best of them to create a unique experience that competitors simply can't match.

My video demonstration and thorough technical research proves my idea is possible with a dedicated developing team.

The real life discussions with coaches and players have allowed my to design a useful target creation tool alongside other handy features in the app.

The huge amount of idea generation, refinements and development also prove that my final solution is well thought out.

A NEW APPROACH

I have learned to not just jump into ideas and get carried away designing.

I was struggling to create an idea to tackle a specific issue with a specific type of user. I simply wish I had talked to the people I had talked to earlier. The coaches gave me true insights into their struggles with players and training.

I was able to combine this demand with my research of existing installations to create a completely unique experience. This project was very heavy on the research side, but has informed every single design decision along the way, from music consideration to the size of my buttons!

NEXT SEMESTER...



I would love to see my concept brought to life, but I simply have no experience or time to learn how to write the necessary code for the application. I feel like I have rounded this project off nicely, as though it would be handed off to developers for creation.

Because of this limitation, I intend to pickup my backup idea from my idea generation stage and explore this. I want to do this because I haven't created many phone applications and would love some experience doing so. I also really want to explore AR and its potential.

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