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R/GA

the colophon

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prologue

After four years of enrolling into Communication and Multimedia Design, I would've never thought I was able to deliver a research thesis of based on my own interest and initiative. Now I look back to the last year, I would've never thought all this would've happen in the Big Apple, New York city. I never thought that I would pursue my dream to work in the Design Capital and even combine it with writing this thesis.

The journey to get to this point wasn't always as easy as the way that it started. Being contacted by a recruiter to work in this capitol was the easiest thing to agree on, even all the paperwork to get there was quite easy, in contrary to getting a suitable subject, making up my mind, unleashing the chaos and starting on this thesis and the graduation.

I don't want to say that I didn't look forward to graduating and finalizing my college degree, but when I started at the end of March at a new company in a new city, it all struck me, that the start in the real world would approach quickly.

While doing research I really enjoyed the gathering of knowledge, gaining insights on my target group and design with the support of many very talented people at R/GA. But to get my mind straight and keep order to all the ideas, the steps and the progress was a real challenge. Especially for someone like me, a real lover of chaos. Therefore I want to thank my colleagues and counselors, Pablo, Greg and Xavier for the support the last five months and for guiding me through the process.

Especially since I wasn't around, I want to thank the people at home, my family and friends for the great support they gave me at the other side of the ocean, about 1000000 miles away. It didn't matter what kind of situation there would occur, I could always contact them for help, support or just some little chit chat.

Last, but not least I want to thank my girl, Julie, for the amazing support I got from her the time I was in New York city. Even though I was so far from home, she introduced me to the city, comforted me and made it feel like home. Even when times weren't that sunny, she always supported me and helped me with the craziest tests, readings or whatever crazy situation occurred. This really helped me to focus on this research.

The summary

In this thesis, research is done to the subject how motivation can be used to improve the individual sport performance in team sports. This is executed by designing an interactive mobile product. To get the necessary answers, the subjects of motivation, drive, data and wearable technology has been research

In the recent developments of activity tracking and the adoption of the Quantified self, the phenomena of the wearable electronics is increasing in popularity. More wearable devices are being released and used by consumers. These devices are usually being used to track sports performances and to collect big data. Due to the usage of these devices it is becoming to get more common to collect these personal data to analyze your daily activities.

An experience can be defined as something which you've already encountered, or as your environment of your surrounding in the moments you are engaged in

Motivation is driven by the theory of reasoned action, which is an indication of the actual behavior. It is a very important factor in sports for the simple reason since that is what makes you do what you do. These kinds of motivation are split up in three categories. Intrinsic motivation, extrinsic motivation and a-motivation.

The possibilities to augment the sport experience can be split up into three different sections; The hardware possibilities, the software possibilities and the behavioral possibilities. In general to augment the possibilities of the sport experience, a lot of data tracking will be involved, introducing to the quantified self.

For the athletes, most of their insights come from the situation itself, not in particular from the data.

The results of the research were processed and used to create an interactive product The Nike Team Journal is a social journal which bridges the cap between the sport activities and the data.

De samenvatting

Dit onderzoek is gedaan naar hoe motivatie gebruikt kan worden om de individuele teamsport prestatie te verbeteren. Hiervoor is gekeken naar de volgende onderwerpen: motivatie, overtuigingskracht, data tracking en wearable devices.

In recente ontwikkelingen is de populariteit van de Quantified Self en het gebruik van het fenomeen, wearable devices sterk gegroeid. Steeds meer wearable devices worden er op de markt gebracht en steeds vaker worden deze apparaten gebruikt om de sport prestaties vast te leggen. Hierdoor wordt het steeds normaler om de dagelijkse activiteiten te analyseren en de data te verzamelen

Een ervaring of experience kan vastgesteld worden als een moment wat je al eerder hebt mee gemaakt of wat je momenteel meemaakt.

Motivatie wordt opgebouwd uit ervaringen en is onderdeel van de theory of reasoned action. Dit is een indicator van het gedrag. Motivatie is een erg belangrijke factor in sport, vanwege het feit dat motivatie de kracht is achter het geen waar je voor staat en wat je doet. Motivatie is opgebouwd uit drie categorien; Intrinsieke motivatie, Extrinsieke motivatie en demotivatie.

De mogelijkheden om de sport ervaring the verbeteren zijn enorm, daarom zijn ze in dit onderzoek opgedeeld in drie categorien, hardware mogelijkheden, software mogelijkheden, en gedrags gebaseerde mogelijkheden. Om dit te bewerkstelligen zijn in deze situatie veel verschillende soorten data nodig, die verzameld kunnen worden door self tracking.

Athleten krijgen in het algemeen, buiten self tracking om, de meeste inzichten van zichzelf, niet direct van de toegankelijkheid van data.

Het resultaat van dit onderzoek is gebruikt om als basis te dienen van het interactieve product de Nike Team (Challenge). Wat fungeert als een social sport dagboek, welke de brug legt tussen sport activiteiten, de context erom heen en de verzamelde data.

A short introduction

As a sport athlete I've experienced the process of improvement by playing in a team sport. This process is a combination of internal and external factors like training days, personal motivation and contact with teammates. These factors are already being used as a core to increase the players performance but by using wearable devices, like the Nike+ program, in a team process the performances could be improved and augmented.

Recent developments of activity tracking and the adoption of the Quantified Self, the phenomena of the wearable electronics is increasing in popularity. More wearable devices are being released and used by consumers. (Manus, 2014) These devices are usually being used to track sports performances and to collect big data. Due to the usage of these devices, it is becoming more common to collect personal data to analyses your daily activities. Good examples of this phenomenon are the popular FitBit lineup, the Jawbone bracelet and the Nike+ program. These three examples are just a small portion of the widely expanding market of wearable devices (Manus, 2014). All of these concepts focus on collecting data of the user in terms of performance and activities during sport moments and try to give the user insights in their performance. Some of these products are solely used during sport moments, while other products as the three examples I have mentioned, are positioned to be used the entire day.

The FitBit lineup focuses on a core of wearables devices supported by an online platform. The FitBit and Jawbone lineup uses the user to motivate by its individual performance. On the other hand is the Nike+ platform. This is a platform of multiple applications and wearable devices supported by an online platform. The Nike+ platform tries to motivate the user to improve itself by using social media as an motivation.

Not only software platforms are getting more popular, also the amount of wearable devices with unique USPs is increasing steadily. For example the Misfit shine (Misfit, 2014), a wearable pendant which can be used under water, or devices using Googles Android Wear software, and Google glass can provide possibilities to augment the team sport experience.

First survey	Second survey
Number of respondents	**Number of respondents**
60	15
Demographic	**Demographic**
All athletes, no filter on age or background	Performance focused athletes performing in team sports
Subjects	**Subjects**
Wearable technology Motivation and Drive Team interactions Sport habits	Motivation and Drive Sport habits Useful data Ideal sport experience

To state the problem

It has been estimated that between 2013 and 2018, wearable device connections will increase by more than 700 percent, reaching nearly 177 million consumers worldwide (Manus, 2014). The category that currently has the most growth and adoption is health and fitness, with activity tracker devices such as Nike Fuelband, Fitbit and Jawbone Up24 leading the pack.

In contrary to the increasing popularity of (health) tracking apps and hardware, users still tend to lose interest in using wearable devices and health apps in long term use, as concluded from the results of the first survey. This survey had a reply rate up to 60 respondents [Appendix A]. This survey was based on a global image of the market by examining sport habits, environment and use of technological equipment. This survey was submitted by athletes of various ages and with various backgrounds. As an example, this situation of users losing interest, manifests itself in the recent developments where Nike announced to stop with the production of physique wearable devices in favor for integrated software (Cnet,2014).

In terms of mobile applications, almost every application focuses on delivering context-less information and data. Also, social interaction isn't the main priority of most mobile tracking applications, while this is the primary motivational factor of the user.

All the fitness apps focus on tracking on the individual but they are not doing a good job of helping teams, as concluded from market research and exploration of the products. This manifests in the social interactions of the application.

Currently most activity data gathering and sport apps work from the same principle. They gather the data of the user and display it in a (for the user) more convenient way, regularly adding motivational features as social media integration and set goals. With the recent announcement of Apples Healthkit and companion app Health in iOS8, all this data will be stored on a central platform, making most applications based on just displaying the activity or performance obsolete (Apple, 2014).

At the other side of the users activities, athletes tend to lose motivation over the course of the sport season and aren't always motivated enough to trigger themselves to stay in shape or to improve themselves. This can effect the collective performance of the sports team.

In the frame of the sports team and management, and as an outcome of held interviews with several sport coaches, in amateur sports, choices are still mostly made by intuition and emotion. Management choices by coaches are not made by rational data or deep analysis. By combining these different frames and outcomes, a solution based product can be developed.

Goal and challenges

Goal

Conceptualizing and designing a mobile solution t to help individual players in team sports to improve their sport performance. The sport performance can be approached as a physical value and also as a emotional value. The solution will help these players to get better insights in their activities and help them making performance tangible, thus engaging both physical and emotional values.

Challenges

The main challenge will be to examine and discover the main motives and motivation of the players to perform and engage into sport. The second challenge is to use these motives and motivation in a product to help the players of team sports to increase performance.

The solution should be executed as a non obstructive, easy and fast to use product. All of the interactions have to be as efficient as possible, and should need to be organized into a logical and clear flow, leading to a fluid experience where the user won't be distracted by the solution.

Design Goal / Vision

Area of knowledge

For this thesis, I will research the motivation, that affects the athlete in making choices and engaging in action. This will focus on what the several forms of motivation are, what the interaction between the players is and what the role of the coach is. This will focus on how these factors affect the motivation of the player. Because of the influence of the coach on the motivation of the player, I will also research of what the characteristics of a sports coach are and what the actual influence of the coach is.

To get to the core of the interaction, of the interface and between the players, it is needed to know what affects the players in general. Therefore I will also research about what kind of different player behaviors exist, what the interaction is and what would trigger these players to use the solution.

As final subject I will research the current technological possibilities in terms of wearable technology to stimulate and augment the performance of the players.

Experience Design

As an experience designer, there is the task to gain insights about the target group, and analyses the process and activities of this target group. It's the experience designers task to be the link between the users behavior and the designed product. Since this thesis is based on motivation and behavior it would suit me and this research best to take on the role as an experience designer.

Sport

To gain knowledge about the athletes and the world around the experience of sport and of sport performance, I need to gain knowledge about what sport is about and use my personal experiences to expand this area of knowledge.

Wearable Devices

Wearable devices are used by a large amount of athletes as a source of data and a tool to convert the relative perception of performance towards an absolute metric. To get to know how this can be used as a tool in this thesis and to get insights about how to track performance, the subject of wearable devices will be researched.

Persuasive Design

Motivating people to certain behavior or making choices is known as persuasive design. These decisions are all made subconsciously, by using the knowledge of persuasive design and researching the possibilities to expand this knowledge. Choices can be rationalized and motivation can be influenced to use the resulting product.

Quantified self

The quantified self, as a groundbreaking movement in tracking personal activities and vital. The knowledge gained by this movement can be used to get to know the potential user better and can be used to get to know how these users get triggered and motivated.

The tools and toolkits provided can be used as a way to expand my knowledge in terms of devices, software and behavioral solutions.

The relevance

R/GA

R/GA, formerly R/Greenberg Associates, was founded in 1977, by two brothers, Richard and Bob Greenberg. Richard was the designer, while Bob was the producer and cameraman. R/GA restructures its business model every nine years due to the Bobs belief that every nine years the market has changed so much, that reforming the company to observe it through a new frame could keep the company innovative. Resulting that the company has morphed from a computer-assisted film-making company, to a digital studio, to an interactive advertising agency, an advertising agency with a digital focus and product innovation and consulting.
R/GA was founded as a design company that focused on motion graphics, live-action film, and video production. By incorporating computers into the film-making process, R/GA created the first integrated computer-assisted production process. This process became known for creating the opening title sequence for Superman in 1978.
After several reorganization cycles, R/GA started changing its business model to account for the changing business needs of its clients in the digital age. It expanded globally, and built a more diverse offering including mobile, social, digital advertising, and brand development. R/GA also created digital marketing options for its clients and developed for example the Nike+ platform.

Linking Nike and R/GA

Nike and R/GA have a long history of working together and challenging each other in terms of creative problem solving. This cooperation started in 2003 with the development of the original Nike+ iPod sensor and in 10 years this cooperation has grown to a level of cooperation that R/GA is now responsible for almost every digital Nike product. Such as the Nike Fuelband and Nike+ platform, Nike retail stores and Nike.com.

Since Nike is one of the most progressive and innovative sports companies to develop new technologies to augment and improve the general sports experience. It's a great opportunity to work with a company of such a large caliber and with such an amount of resources.

Increasing popularity of the quantified self lifestyle

Founded in 2007, the quantified self is a movement of which the members focuses on tracking their activities and vitals. In the last seven years a lot has changed regarding to the quantified self. Such as the way of tracking and recording. It has evolved from manually editing large spreadsheets of data towards a market of ubiquitous hard - and software systems who unobtrusively track and record all of your activities (quantified self, 2014).
The founders of the quantified self movement, Kevin Kelly and Gary Wolf, came up with the idea due to a mutual friend who started a fully organic diet. Being curious about the influence of this diet on his body, they started searching for solutions on tracking this behavior. Which eventually resulted in so much attention that they started to organize meetings for other self trackers. This started in 2007. Currently, the quantified self movement is still growing and has over several thousands of members all around the globe.

It has been estimated that between 2013 and 2018, wearable device connections will increase by more than 700 percent, reaching nearly 177 million consumers worldwide. Which means that the market for wearable devices will be steadily growing, mostly due to the increasing number of products and decreasing costs.

Key and subquestions

Subquestions

#1 How does the sport experience look like?
What is an experience?
How does an experience make sense?
What is the meaning of an experience?

#2 What kind of athlete can be identified and what influences them?
What defines an athlete?
What kinds of athletes can be defined?
What are the stakeholders?

#3 What is motivation and what motivates athletes?
What drives motivation?
What is motivation?
How does motivation evolve?

#4 What are the possibilities to augment the sport performance?
What is the quantified self?
What are the layers of interaction?
What are the current behavioral solutions?
What are the current hardware solutions?
What are the current software solutions?
What are the ways to make the data semantic?
What kind of data can be measured?

How can the performance of individual athletes in sport teams be improved by using cutting edge (wearable) technology?

Key-question

Research methods

Desk Research

To start getting familiar with the subject, I started doing desk research by exploring the web and reading papers about motivation, about sports and about the competitors. This gave me already some very broad insights about the stated problem and gave me some direction to set up the surveys.

Desk research was used because this was a method that was relatively easy to use to gain broad insights about the subject in a small amount of time.

Surveys

For the surveys I've tried to tackle three different subjects. The motivation and drive about engaging into sports or working out, the use of wearable technology and the interaction between the athlete and peers or friends during the sport moments. After doing desk research, the surveys were used to get more details and confirmation about the assumptions made while doing desk research. The surveys were an easy way to reach a broad audience and refine the broad insights gained during the desk research.

Interviews

For this thesis, I've interviewed several stakeholders who are directly involved with the experience of team sports. These stakeholders contain coaches, players and members of the management. I've interviewed them about the possibilities to augment the sport experience and about their motivation to engage into sports. The interviews were the most suited solutions for this situation to refine the insights further, after the surveys. It was key to get to know the emotional values of the audience. By interviewing this audience about the three subjects used for the surveys it was possible to get to know the emotional values about what drives the users to the answers they gave in the surveys.

Use of Tracking Devices

During my research I've used several tracking solutions as Nike+ Move, Moves and Fjuul, so I could widen my vision about the perks of using these solutions. This usage was done during the total time of the research. During this period the use of these apps was alternated so I could focus my full attention on one solution at a time.

Observational Research

To get personal insights about the sport experience, I've participated in a sport team playing on a competitive level. As a goalie in a hockey team and as a striker in a soccer team I was able to observe the other athletes through two different frames. By observing the situations and their behavior during the training moments and match days, I was able to get new insights about how to trigger the players. The observational research was a logical continuation of the interviews. By blending in with a team it was possible to see how the values the athletes stated are being applied in real situations.

User Testing

To get personal insights about the product and to refine the product in terms of flow and interaction, I've performed several different kinds of tests on users, varying from simple paper prototype tests to high fidelity tests focusing on micro interactions. This way I could observe how the user interacts with the product and if there were situations which they didn't understand or just simply get feedback by the user.

Customer Journeys

To get to know the target group better and to define what screens were needed for the product to become a MVP, Customer journeys were created. These customer journeys follow the user during the week and were created as a reflection of the current weekly activities of the user. These insights were gained after the interviews and observational research.

Personas

Personas were created as a model which would represent the average user and would be used as a guidance when designing the customer journeys and eventual as guidance for the product. These personas were modeled by the characteristics of the respondents of the surveys and interviews.

Methods used

#1 How does the sport experience look like?
Desk research, fly on the wall, interview with athletes

#2 What kind of athlete can be identified and what influences them?
Desk research, observational research, personal use of wearable devices, interview with athletes, interview with coaches

#3 What is motivation and what motivates athletes?
Desk research, fly on the wall, personal use of wearable devices, interview with athletes, interview with coaches

#4 What are the possibilities to augment the sport performance?
Desk research, personal use of wearable devices, interview with athletes, interview with coaches, customer Journeys, case studies

Terminology

Augmented reality
is a live view of a real-world environment whose elements are augmented using technology, for example the Google Glass.

Gamification
The phenomena of adding game like metrics to common activities, for example adding awards and levels to learning grammar.

Guilds
Groups of people participating and working together in activities, generally achieve a common goal.

Perks
Attributed or artefact's which can be used to augment an experience, also seen as benefits

Quantified Self
is a movement to incorporate technology into data acquisition to provide them with personal insights

Seamless
An interaction which doesn't need a manual input

Stakeholders
The different kinds of parties involved in the interaction

Syncing
Transferring data between multiple devices to update files and information

Self-Tracking
Keeping track of your data by quantifying it.

Wearable technology
Mobile technology which the user can wear on their body. For example smart watches, smart fabric, sport tracking devices.

How does the (sport) experience look?

Introduction

In general, to improve the sport experience, it's important to know what an experience is.. Since we want to improve the performance of individuals in sport teams it is crucial to know what the link is between the athlete, the coach and the data.

As proof that we have to define a clear definition of the term experience for our research, the term experience is broad and is perceived differently by different sources.

The Oxford English Dictionary would define **'experience'** as:

ex | peri | ence

1: The knowledge or skill acquired by a period of practical experience of something, especially that gained in a particular profession
2: An event or occurrence which leaves an impression on someone
3: Practical contact with and observation of facts or events

In contrary to the Oxford English Dictionary, Weick states that an experience is the perception one can perceive of the situation it encounters. This experience can be perceived positive or negative as a result of the outcomes of the meaning and sense this experience made to the user (Weick, 1995).

An experience is built of two phenomena; sense making and Meaning. Sense making is the process where one analyses the situation and environment around him and try to know, understand, explain this situation. While meaning is the result of the process where the situation is being perceived as a positive or negative outcome. These two phenomena together create an experience.

To improve the experience and performance of athletes in team sports it is important to get a clear view of what an experience is, how it looks for the athletes and how we can augment this.

The experience

An experience can be 'something what you've already done before', but could also be defined as know-how. It refers to the nature of the events someone or something has undergone. Experience is what is happening to us all the time. Experiences form the basis of all types of human relationships. With people, environments, brands, our employers, our banks, the football teams we follow. Our view on the world is entirely shaped by the personal positive and negatives experiences we encounter throughout our life. The more experiences we have, the broader, stronger and better informed our opinions. (Erlich, 2003)

Hui-Jen Yang en Yun-Long Lay describe it as the following:

An experience can be physical, but also emotional. A physical experience occurs when an object or the environment in which we are participating, changes (Popper, 1977). An emotional experience can occur when we get emotional while mourning or when we're in love

John Dewey (Dewey, 1934) differentiates three kinds of experiences;

1. Continuously experiences

2. Specific, identifiable experiences
3. Ongoing experiences

As addition he also states four requirements that help to define an experience:

1. An experience is the result of an interaction between a living organism and a (living) object in a specific environment

2. An experience has got a definable form which is tangible

3. An experience has got an beginning and an end

4. During an experience a person engages into action with the object.

His definition of an experience is:

"The result, the sign and the reward of that interaction between organism and environment which, when it is carried to the full, is a transformation of interaction into participation and communication. (Dewey, 1934)"

The actions you engage in, can have consequences for future actions. If the initial action results into a negative experience, there's a chance that you won't do that same action in future experiences.

This explanation can be related to sports and athletes. If their experience with an action is positive they can be motivated to continue doing this action or to value the experience. For this research the definition of Dewey is the most relevant of the definitions because of the way he defines the boundaries of time and interaction during this experience.

Sense making

The world is an unknowable and unpredictable stream of experiences that people are driven to try to know and understand (Weick, Sutcliffe, & Obstfeld, 2005). Unfortunately, people have limits to their sense organs and brain functioning, so they cannot attend to all possible environmental stimuli. Therefore, people have to place this stimuli into some kind of framework that helps them know, understand, explain, and extrapolate (Dunbar, 1981; Goleman, 1985; Starbuck & Milliken, 1988). For example, a "frame of reference" is a generalized point of view that helps people interpret their experience (Cantril, 1941).
Based on the actions we engage into and the feedback we receive from it, we try to make sense from this connection. Eventually to anticipate on this situation. This process is called sense making (Gary Klein, 2006)

For example: As a kid, if you have you first encounter with fire (action) and you burn your finger (feedback), you create a connection with fire, heat and the pain of burning your finger. (sense making)

The sense making process is based on three categories: (1) frames, (2) cues, and (3) the linking together of cues and frames (Weick, 1995). Frames are created from past moments of interaction, where cues are created from current moments of experience. Frames are structures based on knowledge that include rules and values and serve as a guide to understanding. Cues are information from your current surroundings; they are the trigger to make sense of the situation. When people create a relation between frames and cues, they create meaning. The frame alone and the cue alone do not make sense. What makes sense is a cue inside a frame (Weick, 1995).

(Cashmore,2010)

Making meaning

During their interaction, users actively construct meanings about the products during its interaction. This emergence of meaning depends on both what the product provides and what the users input to the interaction is. Taking this phenomenon in mind, we conceptualize an user' s experience with an interactive product as the meanings the user perceives about the system. These meanings are not dependent only on the skills, knowledge and cultural background of the user but also the affordances of the product.

Figure 1 shows the conceptual framework – *Experience As Meaning* – Experience As Meaning is a model for understanding the experience phenomenon and applying this into design. It is build of the three properties of an interactive system: function, interaction and appearance; and four forms of users' experience: sensual, practical, cognitive and emotional

The framework is explained in three following steps;

1. Experience occurs during the interaction between the user(s) and the interactive system(s) in the lived environment.

2. Designers convey meanings (consciously or unconsciously) through the appearance, interaction and function of the system.

3. User(s) constructs a coherent whole that is a combination of Sensual, Cognitive, Emotional and Practical forms of experience.

Function, interaction and appearance are the three key aspects of any interactive system. It is very important from a designer's point of view that his product conveys the different functions it offers. Designers have to choose what objects are required to execute those functions and how they are structured or related and what actions can be done on them (van Welie 2001). Interaction represents the language by which the users can express themselves with the product. Appearance (or form) is concerned with how the product is presented to the user and how the user can identify itself with it.

During their interaction with the product, users construct a coherent whole using their interpretation and sense making skills that is a combination of the sensual, practical, cognitive and emotional forms of experience. The sensual form reflects the sensations and the visceral level (Norman 2004) reactions initiated by the sensory information (e.g. look and feel) of the system.
After sense making, we try to give meaning to the action and feedback (Vyas, 2005)

In the example for sense making, if the meaning is negative, the action isn't valuable to us, which

can result in avoiding this action. But if this action was valuable to us we tend to do this action more often. These actions can be controlled, so when you're able to influence this behavior, you can design and augment the experience.

Blythe states:

"Experience design becomes intimately concerned with the construction of meaning. But experience is not limited to sense making. Experience ties together motivation, action, emotion and sense making" (Mark Blythe, 2009).

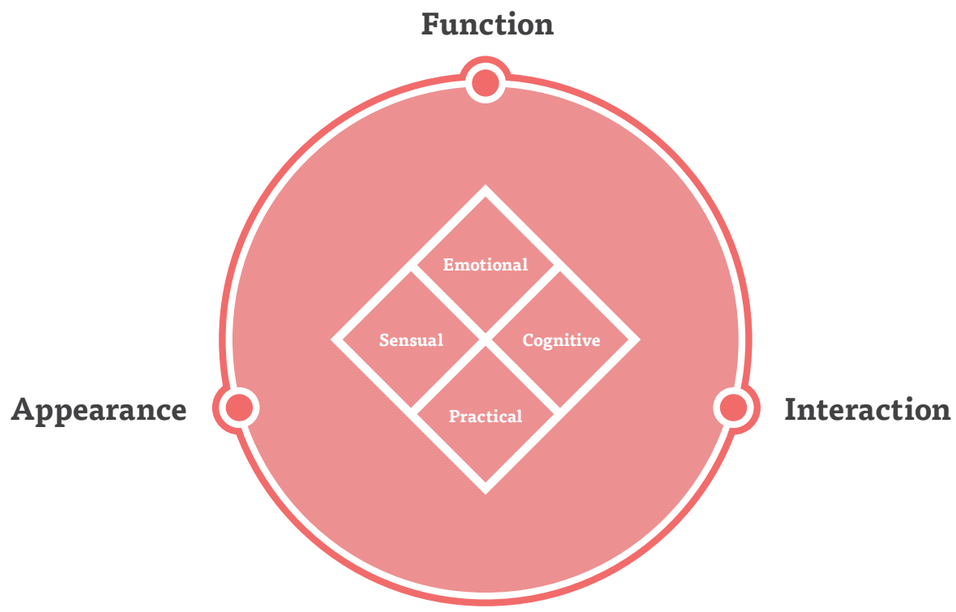


Figure 1: Experience as meaning

The conclusion

In this chapter we've concluded what an experience is and how an experience is created, what sense making is and how meaning is created.

An experience can be defined as something which you've already encountered, or as your environment of your surrounding in the moments you are engaged in. An experience can physical and emotional. In general, an experience can be experienced in three different ways, as a continuing experience, as an specific identifiable experience, or as an ongoing experience.

For an experience to be defined, It has to meet the following four requirements: An experience is the result of an interaction between a living organism and a (living) object in a specific environment, an experience has got a definable form which is tangible, an experience has got an beginning and an end and during an experience a person engages into action with the object.
For an experience to be valuable, it has to make sense to the context you're experiencing it in. This is called sense making, sense making is the process by which people give meaning to experience. After making sense, we try to give meaning to the action and feedback.

Design criteria

The product has to meet the following criteria, based on the results of defining the (sport) experience:

Making sense to the affordance

The product has to fit the (sport) experience, since almost every experience is different, the product don't have to be tailored to one specific experience. What is important is that the product makes sense to the user in the situation where it wants to use it. This means that the product needs to follow the affordances of the users experience. As stated by the users, the product needs to be unobtrusive and not distracting while working out.

What kind of athlete can be identified and what influences them?

Introduction

Now we know what defines a (sport) experience, we want to know what kind of athletes can be defined and what influences these athletes. To get a clear image of these groups, an initial survey was held with about 60 respondents, who all engage in sports in a certain way. For this survey it didn't matter what kind of sport they engage in, or what their schedule was. For this survey a broad audience was preferred to get a array of answers. The questions were set with a focus on the motives of the athletes, what the activities are and what the stake holders are in these interaction. Afterwards a second survey was held with athletes in sport teams and several interviews were held with these athletes and with several coaches, this was done to determine what kinds of motivation triggers the most athletes and how we can interact with that.

As a result of these interviews and surveys, different stakeholders could be defined. These stakeholders help us on identifying the influential triggers on the players and can be used as a base to rationalize the different kinds of motivation in the next chapter.

An athlete can be divided into nine different categories split up into two different groups. The first group is based on the drive of the athlete and exist out of three different groups; The athlete who sports for the fun and social gathering, The athlete who sports to get or stay fit and the athlete who sports for the chance of winning.

The second group is based on the intensity and amount of sport moments. This group also exists out of three groups; the occasional athlete, the regular playing athlete and the structured athlete.

In terms of stakeholders, we can define three levels; The player, who is directly involved at the performance level. The coach, who guides the players, but isn't directly involved in the performance, although he is an big influence. And the manager, who isn't directly involved into the game, but as an assistant to the coach, can be an influence on the team.

What defines an athlete?

To start determining what kind of athletes could be defined, I've first asked 60 athletes in a broad survey about their drives, why they start working out or engage into sports and on which regular base they do that. This resulted in a wide array of clear answers, leading to a number of different categories. This would identify the drive and motivation of these athletes. In general this question lead to three different outcomes why they engage into sports:

For the fun and social gathering

As resulted out of the initial survey, approximately **21%** of the respondents engage into sports for the fun and the social gathering. They mainly engage into sports to maintain their social cues and have fun while interacting with their peers. For them the light social pressure of interacting with their friends, persuasively lead them to better performance. This improvement doesn't have to be in physical sense, but can also be in terms of an increase in mood.

To get or stay fit

As a result out of the initial survey, about **54%** states that they engage into sports to get or to stay fit. They are focused on the results and get driven by the goal they've set for themselves. This goal varies by person since the context for engaging in sports can widely vary. There are respondents who engage to get a *"summer fit body"*, but also respondents who want to get fit to recover from an injury.

For the chance of winning

Eventually approximately **24%** stated that they engage into sports for the joy of winning. For them it doesn't matter if it's about winning on a personal leader board, getting challenged by peers or winning in the wider sense of winning actual games. These respondents are very competitive minded and prepare themselves during the week towards the match day, or competitive focus point. They want to get feedback according to their performance

"I join a race every now and then, here I want a trainer who says you are doing really well, or gives feedback how to do better, go faster, get stronger"

Rens Dijkxhoorn

What kinds of athletes can be defined?

Out of the outcome of the first survey, three kinds of athletes could be defined, but since these kinds were still very wide I held a second survey with 15 athletes with questions based on how they would react on different set situations. All of the question were subtracted from the insights about drive from the research of R. Vallerant (2004) , the respondents were asked how they would characterize their selves in terms of the frequency of sport moments and drive behind it as well the interval and intensity of these sport moments. As a result three different athlete groups could be defined. These athlete groups are closely related to the three main motives.

Occasional athletes

These athletes engage in sports less than two times a week and normally are motivated by fun and social gathering. Performance is a minor motivational factor.

Regular playing athlete

These athletes engage in sports more than two times a week, but not on a structural base. These athletes focus on staying getting or staying fit, which results in a more performance based training regime. But in contrary to the athletes in team sports, these athletes got a clear goal to work towards.

Structured athlete

These athletes engage in sports more than two times a week, and on a structural base. They depend on their peers to perform and to reflect against. In general these players focus on the chance of winning, while the social gathering helps them to stay motivated. Due to the lack of a clear short term goal, it's a challenge to keep them motivated on the long term.

"Getting feedback helps me. Setting goals helps me too, but I need consequences, what happens if I don't reach a goal? Being challenged by friends helps too, I always want to be better!"

Jasper Oomen

What are the stakeholders?

By participating as a athlete in a field hockey team using the fly on the wall technique, and talking to different parties related to the sport experience, I've been able to identify three major stakeholders who are directly involved in the interaction. Directly involved means that the stakeholders are in direct interaction with each other and with the potential product. Indirectly involved means that the party is not directly involved with the interaction but can be an influencer for the directly involved stakeholders.
As concluded from my observations, the several stakeholders all have different influence on the performance of the player and of the team. Also all of the parties have different ways to achieve these result.

The Player

The player is the first level of stakeholders, he or she is the main subject which is directly involved with the interaction between the product, but also with his or her peers. It's interaction with his peers drives him or her and his or her peers. This interaction is the core to the challenge they engage in and to the influence they have to each other. Most players see their peers as their friend, but mostly as their *"competitor"*. They don't want to fall behind on the performance of their peers, or challenge each other to better performance.

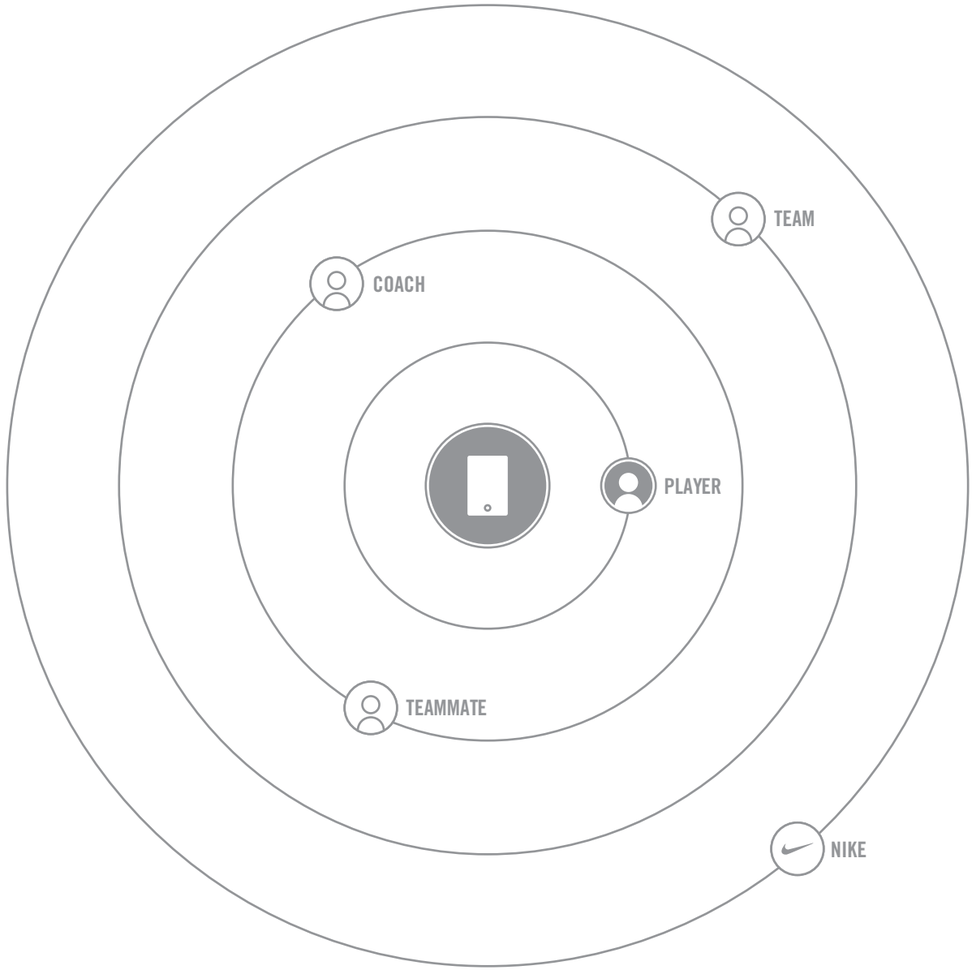
The Coach

The Coach is the second level of stakeholders, since the coach isn't directly involved with the interaction of the product and between the players themselves, the coach can't be called a first level stakeholder. Because he or she can get access to the performance data of the player and is able to give them advice and guide them, he is directly involved with the first level of stakeholders. The coach can guide the players through his objective vision and to his or her insights he or she collects from analyzing the game.

The coach can influence the players on a more objective way and can give the players better insights than the individual would perceive by itself. The objective frame of the coach can be used to drive the players and to lead them to better performance. For example the use of tailored tactics, or tailored feedback and training methods can drive the player to stay motivated

Nike

As a third party, Nike functions as an expert and supplier for the players since most of the players or use Nike sportswear of use one of the mobile sports applications. This gives Nike a small level of influence on the team.



"Overall I feel respectful to them, sometimes rivalry by wanting a position in the field."

Floor van Beek

The conclusion

As concluded in this chapter, athletes can be defined in three different categories in terms of the kinds of motives to start engaging into sports, The athlete who sports for the fun and social gathering, the athlete who sports to get or stay fit and the group who sports for the chance of winning.

The athlete can also be identified in three different groups which are driven by the intensity and amount of sport moments, the occasional athlete, the regular playing athlete and the structured athlete. This can lead to nine possible kinds of athletes who all have different ways to get motivated. These kinds of motivation will be explained and defined in the next chapter.

There are three kinds of stake holders influencing the sport experience who can be defined. These are the athlete his or herself, the coach and the manager/ management. All these parties have different influence on the sport experience of the athlete. The player has the most influential role on itself and on his peers. Due to the interaction between these parties, the level of influence to the player and performance is the most intense. The coach got the second intense influence to the players due to his objective frame of the game and the players. In general, the coach uses this objective frame to drive the players to stay motivated and to keep performing.

Design criteria

The product has to meet the following criteria, based on the results of defining the kind of athletes.

Set, perform, and reach the goal

Based on the different kinds of users, most of them wanted to be able to set or be perceived in setting (adaptive) goals. This means that the user has a virtual finish line to work towards. The goal can be reached by the individual itself, but also being set by peers, or towards peers. Most of the athletes, engage into sports for an amount of new social interactions with his peers. By giving the players to option to engage into these social interactions can prolong the use of the product. When working towards a goal, users tend to wish to receive feedback or tips from an expert party. This could be the coach, but for example also a independent third party.

What is motivation and what motivates athletes?

Introduction

Athletes have different motivators to start engaging in sportive activities. There is a difference in wanting or planning to do something and actually start doing something. What is the origin of this behavior and what is the role of motivation?

Behavior is based onto three factors; Motivation, Ability, and triggers. (Fogg, 2014). These three factors can be influenced but the drives to make the athlete engage into action can very widely regarding to the person.

Motivation itself is based on two factors as stated by Fishbein & Ajzen (1980). They state that one's attitudes and perceived social norms toward a situation can influence the motivation towards it. The attitudes are the sum of beliefs about a particular behavior compared against the evaluations of these beliefs. While the perceived social norms are ones look at the influence of the environment

For the research on motivation, the theory of Fogg was used as a guidance. Since this theory is based on practical action in stead of the persuasion of the audience, this theory could be better implemented as a guide for the product. To refine this theory it is expounded against the theory of Fishbein and Ajzen, which focuses more on the physiological approach of motivation. Combining these two theories resulted in the behavioral motivation model.

The outcome of motivation can be identified as seven distinct kinds, split up in three categories. These categories are based on the way the person is being triggered. If the person is being triggered by his or her own will and his or her internal drive, it is called intrinsic motivation. Intrinsic motivation to know, intrinsic motivation towards accomplishment and intrinsic motivation to experience stimulation can all be qualified as intrinsic motivation.

If the person is being triggered into action by external factors, it is called extrinsic motivation. External regulation, introjected regulation, identified regulation, integrated regulation are all qualified as types of extrinsic motivation Wang states in her research that these factors can be translated to different occurrences, trigger and events in the sport experience (2003). For example the way athletes set goals for them selves, how they perform, the way they are persistence enough not to drop out and the way athletes want to leave an impression on different parties influence this.

What drives motivation?

To affect the behavior and activate the athlete in this case, BJ Fogg states that there are three influences: motivation, ability, and triggers. (Fogg, 2014).

Ability

In order for someone to perform an action or to achieve modified behavior. The person must have the ability to perform it. Following B.J Fogg (2014) there are two paths to increase this level of ability. The person can be trained to provide them with a higher skill level, so he will have more ability to perform the action. Or make the action or target behavior easier to perform. He calls this Simplicity. According to B.J. Fogg, simplicity is the best trigger to increase the ability of the user. He states that by focusing on simplicity of the behavior you increase ability.

For example, if the user had 10 minutes to spend and the action requires 10 minutes, it is hard and not simple to do. If this same action would require only 5 minutes to perform, it is simpler and easier to do.

Triggers

According to Fogg, triggers are the third element of behavior. He states that there are two ways to trigger, intrinsic and extrinsic. A extrinsic triggers islike an alarm sounding or social interaction. While intrinsic triggers could come from our daily routine.

Besides the two ways to trigger, Fogg also states that there are three types of triggers: **Facilitator, Signal and Spark.** These three triggers match to different user context which combines motivation and ability.

Fogg states that an effective trigger for a small behavior can lead people to perform harder behaviors.

For example, if someone is triggered to walk for 10 minutes a day, that person may then buy some walking shoes without any external triggering or intervention. That's elegant persuasion because the walker doesn't feel like she's being persuaded to buy shoes. It's a natural chain of events that an effective trigger puts into motion.

Facilitator:

↑ High motivation

↓ Low ability

Signal:

↑ High Ability

↑ High Motivation

Spark:

↑ High Ability

↓ Low motivation

Fishbein & Ajzen (1980) state in their Theory of Reasoned Action how the intention of specific behavior can be a great indicator of the actual behavior itself.

They state that two factors are influencing the intention, the trigger which causes motivation, these are the attitude and the perceived social norms. Attitudes are the behavior and opinions of the person while the perceived social norms are the social standards the user values and perceives. The way the individual thinks how others think he/she should behave.

Attitudes

Attitudes are the sum of beliefs about a particular behavior compared against the evaluations of these beliefs
Attitudes are being influenced by two factors:
Beliefs about the expected outcomes of the behavior and Evaluation of the expected outcomes of behavior. The beliefs about the expected outcomes are about the faith you have in the expected outcome of the behavior while with the evaluation you define the value of the outcome and how important this is for you

Perceived social norms

The perceived social norms look at the influence of the environment on his intentions; the beliefs of people, compared to the importance his attributes to each of their opinions, will influence one's behavioral intention

Just as the attitudes, Perceived social norms are also influenced by two factors:

The first is **normative beliefs**: This is experienced as the factor of what needs to be done. The second factor is the **motivation to comply**: This is the bar of which someone is willing to adapt to the current perceived standard

By having intentions to do something, it doesn't automatically means that you're going to do it. This is the Intentional-behavior gap. This phenomena exists since behavior is dependent on more factors than just intention or motivation

As Wang(2003) stated in her research on the role of motivation of sport ability beliefs that some motives are a part of sports:

Goals

Goals are something that we set to achieve targets, for example big goals such as, getting a gold medal in the Olympic power lifting, or something smaller such as improving your 400m running time by 1second. Goals can be either big ones or as small as little improvements.

Performance

Performance is the big one that comes with being an elite level athlete because one mistake may cost you big. If an athlete has a bad performance in the game before this can be used as a motive to get motivated and improve for the next time they perform.

Persistence

Persistence is also a big part of achieving goals and is often something that we lack because of low motivation levels. If we haven't got persistence in our training sessions then we wont get the results that we want which will lead to low motivation levels.

Impression

If an athlete's performance is good then this will leave a good impression with coaches, fans and possibly other clubs or organizations. Some athletes get motivation by the support of fans and people around them so leaving a good impression is a very important part of motivation.

In the research of Cashmore (2010), she states that these normative beliefs and situations present in sport (as been defined by Wang) have been present in our human cultures which extends far beyond the Industrial Revolutions of the late nineteenth centuries which was a conventional starting point for studies of sport. Even though the structure of this distinguishes, it is possible to trace this sport behavior further back to primitive matter of survival. For example ,the perception of persistence can be related to ancestors chase of prey and their attempt to survive with primitive knowledge and tools.

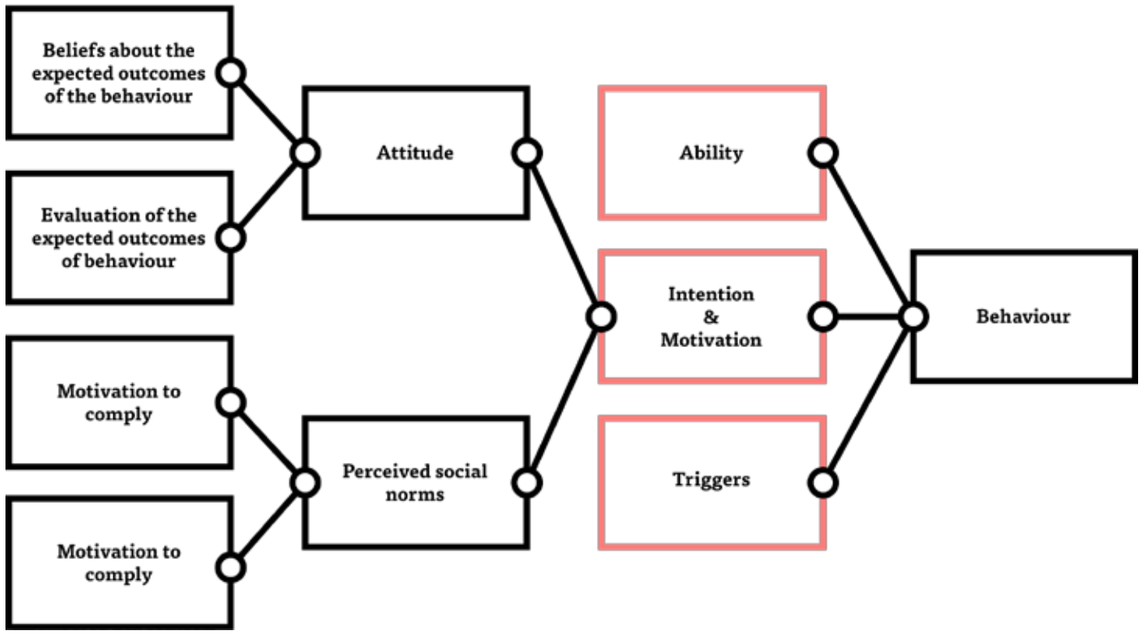


Figure 2: The combined theory of Reasoned action & behavior model

What is motivation?

Motivation can be described as an individual's inner will and dedication to achieve a goal they have set for themselves. Motivation is a very important factor in sports for the simple reason since that is "what makes you do what you do", if you're not motivated to be a top level athlete then you have a chance of not being the best you can be and falling short of your goals. Motivation is started and caused by a motive which is a reason to do things that will require motivation.

Kinds of motivation

Over the years psychologists have come to realize the existence of the different types of motivation as stated in figure 3. These kinds of motivation were tested in the second survey where the respondents were asked which kinds of motivation they could relate with.

Two broad types that have been studied extensively are intrinsic motivation and extrinsic motivation.

Intrinsic motivation O⟶

Intrinsic motivation refers to engaging in an activity for itself or for the pleasure and satisfaction they get from participating. Someone who is intrinsically motivated doesn't require much external motivation from fans, money and expectations of others. They are focused on their own inner goals that they want to achieve and their personal reasons for being in the sporting situation they are in at that moment.

The intrinsic motivation could be split up in at least three types:

1. Intrinsic motivation to know (engaging in the activity for the pleasure of learning)

2. Intrinsic motivation towards accomplishment (engaging in the activity for the pleasure of trying to surpass oneself)

3. Intrinsic motivation to experience stimulation (engaging in the activity out of sensory and aesthetic pleasure)

The surveys showed me that almost 33% of the subjects are intrinsic motivated by stimulation

People who are intrinsically motivated still want to receive rewards but these rewards are not what keeps the athlete motivated to persevere through the hard times that comes with being an athlete. Intrinsic motivation is a long term reason to get involved in sports because it will take a long time for this form of motivation to die down.

Extrinsic motivation ⟵O

When extrinsically motivated, individuals do not engage in the activity out of pleasure but rather do so to receive some kind of reward that is external to the activity itself.
Someone who is extrinsically motivated doesn't require much internal motivation from personal pride, achieving goals and enjoyment they are only focused on the rewards that come with being an athlete such as money and fame.

Someone who is extrinsically motivated doesn't require much internal motivation from personal pride, achieving goals and enjoyment they are only focused on the rewards that come with being an athlete such as money and fame. One of the main extrinsically motivated motives is fame, being

in the eye of millions of people will leave great fame upon your shoulders and is one of the main reasons people want to be professional athletes.

People who are extrinsically motivated still do it for intrinsic reasons such as improving certain skill sets and becoming a better athlete on the pitch because you are motivated to become better because the better you are the better quality the extrinsic factors become.

Deci and Ryan (1985) states the existence of a number of types of extrinsic motivation that can vary in terms of their inherent levels of self determination. From the lowest level to the highest level these types are:

External Regulation

External regulation refers to behavior that is regulated through external means such as receiving rewards or avoiding constraints.

Introjected Regulation
With introjected regulation, the individual has started to internalize the reasons for their action. The external source is then replaced with an internal one such as guilt or anxiety. The surveys showed me that almost 47% of the subjects are introjected regulated

Identified regulation

With identified regulation the behavior is valued and judged as important by the individual. Eventually this is perceived as chosen and identified behavior.

Integrated regulation

With integrated regulation, the individual involves engaging in an activity from an extrinsic perspective in a choiceful manner.

A-motivation

When a-motivated the athletes experience feelings of incompetence and expectancies or uncontrollability and an important loss of motivation. They are not motivated.

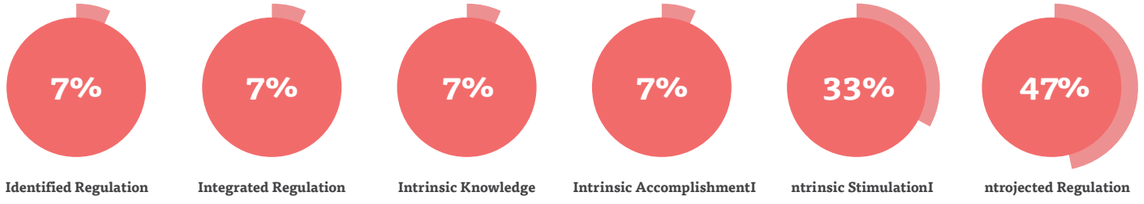


Figure 3: Kinds of motivation

How does motivation evolve?

In general, in most of the set motivational categories the control of the motivation is involved in goal pursuit. The feedback loop exists out of four sub functions (an input, a reference value, a comparison, and an output). The reference value D is a goal, the bar, or standard, or alternately, it is an undesired state that one wants to avoid and move away from as far as possible (Goetz, 2011).

The input A can be compared to the trigger as stated by Fogg(2012) – they tell you how far you are from achieving your goal or avoiding the reference value. The Output B is the output of the activity or action, this could result in a way such that one moves closer to the goal/ farther from the reference value. The comparator C is intrinsic in nature and may be a conscious or unconscious though as to whether and how near you are to the goal;

The error signal that results from the comparison function, has been linked by Carver, Scheier and Higgins as reflecting the emotion that someone feels when someone is either making progress towards the goal (positive emotion), or not making progress (negative emotion) to achieve the goal, as stated as Attitude in the theory of reasoned action There can be two types of feedback loops. One is where the reference value is a desired end-state or goal and where the behavior is adjusted so that distance between observation (input) and preferred value (goal) is being reduced. This is called the discrepancy reducing feedback loops.

The other kinds of loops are discrepancy-enhancing loops. Here reference value is an undesired end-state that one wants to avoid at all costs and where behavior is adjusted so that the distance between the observation (input) and undesired anti-goal is being increased. These involve anti-goals, or undesired end-sates that need to be avoided. The underlying motivation here pushes away from things.

Based on the interviews with Mark and Robin, where was asked how they prepare themselves on the training and match days, athletes are more likely to be motivated by discrepancy reducing feedback. Feedback loops, where they have a goal where they can work towards, than the be in a situation where they want to avoid a set end-state, as stated in the discrepancy-enhancing loop.

Eyal and Hoover (2014) break down the thoughts behind the most addictive products to explain what's made them so appealing to so many people. The Hook Canvas is the model they've created to explain this cycle.

The Hook Canvas exists out of four phases which create a continuous loop:
Internal & External trigger – An external stimulation that links with the internal need of the user to motivate towards an action

Action – The simplest action in anticipation of a reward. Taking this action creates the expectation of a variable reward. Performance is motivated in part of social perceived norms, or rather acceptance by your peers who also play the game (BJ Fogg). No-one wants to be looking less good in comparison to their friends

Variable Reward – A reward, the expectation to this rewards leads to investment

Investment – The opportunity to increase the potential benefits of triggering the Action again. Investment is what happens when users are asked to do something in expectation of future benefits.

It serves two functions in the Hook Canvas:

The Hook

Figure 4: The Hook Canvas

They load the trigger to begin the next Hook cycle, and add more value to the product, increasing the motivation to proceed with every new cycle.

This is the mechanism that raises the stakes and creates the escalating need to continually use the product. The more they use the product, the higher the stakes become.

The theory says that these four stages of the Hook form a continuous and escalating loop of user engagement.

Conclusion

Motivation is driven by the theory of reasoned action, which is an indication of the actual behavior. This theory is based on two factors, the Attitude and the perceived social norms. Attitudes are the sum of beliefs about a particular behavior compared against the evaluations of these beliefs while the perceived social norms look at the influence of the environment on his intentions

Motivation is a very important factor in sports for the simple reason since that is what makes you do what you do. But since every individual is different and reacts different on the situation, there are multiple kinds of motivation. These kinds of motivation are split up in three categories, intrinsic motivation, extrinsic motivation and a-motivation. To motivate the players B.J. Fogg states that there are three factors which influences this, these are the triggers, the initial motivation and the ability of this individual. Each of these factors work in a feedback loop, after activities, the user intrinsically recaps on these activities to see what the results and consequences are.

Feedback loops exist in two states, the goal focused discrepancy reducing feedback loop and the reference avoiding discrepancy-enhancing loops, while discrepancy reducing feedback loop are more efficient to use on athletes driving them towards their goals.

Besides the motivation of the individual, the individual can also be part of the motivation of the crowd. In this situation the individual can react differently and could engage into action in other ways. Therefore other factors come into play. For these factors seven initial motivators can be identified.

Design criteria

The motivations behind sport are closely tied to humans urge to survive. The competitive element is bound to this behavior. As stated by Cashmore sport and motivation are closely related to the intrinsic motivation and to the five kinds of ability beliefs stated by Wang. This gives us opportunities to switch from data driven tracking products to social and emotion driven tracking products

Therefore the product has to meet the following criteria, based on the research on motivation.

Intrinsic triggers and social pressure

Athletes are most likely to be motivated using Intrinsic motivation based on experience stimulation, therefore the product needs to focus on the internal drive of the user. This can be executed by using social norms and social pressure between the user and his peers. To increase the level of triggers, the ability level can be lowered by simplifying the use of the product. For the athlete to be driven towards better performance it's recommended to use discrepancy reducing feedback loops to drive the athlete towards their goals. Using social norms can help to increase the impact of the triggers.

What are the possibilities to augment the sport performance?

Introduction

As in 2014, We live in a world in which most digital devices are connected (Forbes, 2014). A world of big data and connectivity. A world in which everything we do, each action we engage into is recorded, by our selves or by third parties. For example, the GPS sensor in our smartphones keep track of our location, using Twitter, Instagram or Facebook we share all our activities, from emotions and even the food we consume. This is a trend which is growing for years, but especially in the last few years the focus is moving more towards our feelings and motives. Based on this phenomenon of gathering data we try to change our behavior. The resulting movement of this is called the Quantified Self

The quantified self is an American movement of fans and enthusiasts who track all of their activities and vitals from weight to steps made, their nutritions and even their sleep patterns. They are quantifying their own body, as stated by Muller and Braun (2012). In the beginning of the QS it was done by writing it down on a daily set moment, but nowadays there are a lot more digital solutions as accelerometers, gyroscopes, GPS chips, heartbeat monitors and more (Goetz, 2011).

The founders of the Quantified self movement, Kevin Kelly and Gary Wolf, came up with the idea due to a mutual friend who started a fully organic diet. Being curious about the influence of this diet on his body, they started searching for solutions on tracking this behavior. Which eventually resulted on such an amount of attention that they started to organize meetings for other self trackers. This started in 2007 and currently the Quantified self movement is still growing and has over several thousands of members all around the globe.

The impact of everyday interaction with connected devices is giving consumers new power to track and modify their physical and mental well-being. This trend is frequently described as a gateway to personal adoption of the Internet of Things. As sensors get increasingly smaller and cheaper, they will be deeply embedded in the things we carry with us day to day, and ultimately embedded in ourselves. And with more consumers than ever before managing their health by collecting personal data, “changing behavior” is replacing “engagement”

In the next paragraphs I will explain more about the quantified self, what the different kinds of wearable devices are what the possibilities of supporting software are and what the possibilities of behavioral solutions are.

Wearable devices exist in different kinds of form factors and can serve different kinds of purposes. For example the **activity tracking devices** are mostly used to track sport activity, good examples of this category are the Nike Fuelband, and the Jawbone Up.

Sleep tracking devices are being used to track and display sleep patterns. In general these devices are fit in a smaller form factor as the FitBit one, but can also work ubiquitous as an independent application, for example as Sleepcycle.

Food tracking devices are being used to track your food and eating patterns. Most of these solutions use activity trackers to measure the burned calories but a few of these solutions use proprietary wearable devices, as for example the HapiFork, a smart fork, measuring your food while you eat. And the features in the Jawbone application, where you can easily track your food,next to your activities

Besides regular tracking devices, wearable devices can also be used as a visualizing media to expand and augment the sport experience.

The increasing popularity of the quantified self lifestyle

Founded in 2007, the quantified self is a movement of which the members focuses on tracking their activities and vitals. In the last seven years a lot has changed regarding to the quantified self. Such as the way of tracking and recording. It has evolved from manually editing large spreadsheets of data towards a market of ubiquitous hard - and software systems who unobtrusively track and record all of your activities (Quantified Self, 2014).

The founders of the Quantified self movement, Kevin Kelly and Gary Wolf, started this concept because a mutual friend of them started to eat only organic food. They were curious about the effects of this new food pattern on the vitals of the human body. The track this, they searched for solutions and equipment to track this. While searching for these equipment, they started talking to several people around them about this initiative and due to increasing popularity of their initiative, they eventually decided to organize meetings for people who were also interested in self tracking. In the last years the QS movement grew to over thousands of members and meetings are being organized on regular base around the globe. Their slogan is 'self knowledge through numbers' (Wolf, 2012).

It has been estimated that between 2013 and 2018, wearable device connections will increase by more than 700 percent, reaching nearly 177 million consumers worldwide. Which means that the market for wearable devices will be steadily growing, mostly due to the increasing number of products and decreasing costs (Symantec, 2014).

What are the layers of interaction?

While observing the interactions of the players during the training and match days, different insights and patterns were concluded. Before and after the sport moments, the players tend to use their devices intensely. They use it to communicate but some of them also use it to sync their tracking bracelets after the training moments. Some of them used sport cameras, like the GoPro during training to capture the situation.

Before and after the sport moments, different kinds of interaction between the players was identified. While the players are polite and kind to each other before and after the sport moments, during these moments they seem to see each other as competitors and use each other as a drive to leverage themselves. This was identified in a physical but also in a psychological way. In the physical sense as in, physical contact and taunts. In the psychological way it was identified as a drive to keep up with the rest and using their peers as a performance bar.

During the training and match days a clear barrier between the team and the management was noticeable. By the observations it was clear that the interactions, player wise, were different towards the coach than towards his peers. Even as a team collective, the interactions were more formal and calculated than towards the peers.
During match days these interactions were slightly different. In this case the focus was switched towards the competing team. The competitive urges between the peers seem to disappear and got replaced by the competitive drive towards the opposite team. This drive bonded the team together. These insights resulted in four different layers of interaction.

Player and device interaction

The first level of interaction is the interaction between the player and the device. This device can be used in the widest sense. In a way that the devices could be identified as a directly used as a tool to perform the sport such as a ball, a stick or shoes. But also in a way that it could be used as a support, these devices could be wearable devices, white board, cones etc. This first interaction is done solely, and doesn't require social interaction between other entities.

Inter-player interaction

The inter player interaction is the second level of interaction. This kind of interaction focuses it on the social interaction between the player and it's peers. As observed, this interaction is the largest influence for the player to be persuaded or influenced by external factors.

Team and management interaction

The team and management interaction is the third level of interaction. This kind of interaction is based on the different functions and activities between the players and management. Due to the difference in interaction between the management and the players, this kind of interaction is very suited to be used to transmit information between the two parties.

Team and environment interaction (inter team interaction)

This is the widest form of interaction, the inter team interaction is based on the interaction between different teams. These teams could be split up from the original team in for example a practice training match, but also about the interaction between the local and visiting teams.

"A partner to participate with who pushes me and who holds me accountable. Someone I can rely on to always participate"

Meredith Elzea

What are the current behavioral solutions?

The value of Gamification

Gartner recently predicted that, "by 2014, 80 percent of current gamified applications will fail to create a connection with the user, due to poor design."The reason: 80 percent of gamified products are using superficial game mechanics, as opposed to "more subtle and more important game design elements."

When done right, applying game elements to non-game contexts can be extremely powerful. In 2011, Jane McGonigal wrote and gave a TED talk about the power of bringing game elements into the real world – sharing stories about using game elements to help people overcome severe depression and deal with terminal diagnoses.
She stated that we should forget about meaningless badges and scoreboards (for now), and focus instead on more "subtle" and "important" game elements, like:

- Storytelling and rich character narratives
- Player/user/customer autonomy and self-guided discovery
- Puzzles, challenges and mastery of skills
- Guilds and community

Sportive Leader boards

Observing the interactions and environment of the athlete as part of a sport team , A local hockey team was used to observe their behavior, techniques and exercises. During the training days, the team was observed while they were engaging into exercises and after the training moments to see what their behavior is, on and off the pitch.

During these observations, several insights were made. One of the most mind-blowing insights was the use of a real life, real-time leader board. After each training exercise the players were graded by their performance, motivation, progress, their presence and eventually the end score of this training. This data would then be converted into a leader board. This resulted to a situation where the players' drive would be heavily boosted since they didn't want to end up below their (real life) main competitors or even at the bottom of the leader board.

An experience was simply using a leader board the players were creating their own sub leader boards and goals. For example the defenders made a kind of imaginative sub leader board since they were constantly checking on each other.

Perks, rewards and penalties

The actual implementation of this leader board was to create a fair way to split up the tasks and chores which have to be maintained on a weekly base. Normally the players with the least experience would've received these tasks, but this was unmotivating the new and younger players. With the implementation of this new leader board no one was secured of having a task or chore. Eventually leading up to a system which is driven by External Regulation and Introjected Regulation.

While talking with the coach, he opted to expand this system with perks and rewards for the top part of the leader board instead only penalties. He also stated that his version of a cumulative leader board isn't perfect and that the exploration of other ways to populate the leader board could be very useful.

Social pressure and peer rankings

A new form of social data that harnesses the power of peer pressure is emerging as a potentially powerful way to change behavior and spur the growth of new categories of products. It works because peer pressure data goes beyond demonstrating the functions of a product to satisfy deeply powerful emotional or social needs we may not even realize we have. Presented in the right way, peer data can also be effective in changing consumer financial habits, such as encouraging a higher savings rate.

And consider what happened the first time consumers who'd bought a FitBit to track how much they exercised and slept saw the "friends" tab on their app. Suddenly, users were invited to take part in a friendly competition to rank themselves against their friends and colleagues in weekly step counts.

Competing wearables offer a variety of peer data, differentiating themselves from the mechanical activity trackers and pedometers that have long been on the market. Taken together, the power of all that peer data has helped transform a small, sleepy category into a hot product segment (Bolton, 2014).

What are the current hardware solutions?

The growth of the number of people who quantifies themselves is mainly caused by the increasingly ease of engaging to it. The number of easy to use tools and solutions has increased in the last year and the price of these devices dropped heavily (Goetz, 2011).

Wearable Devices

Wearable devices are going to impact the market nearly as drastically as the personal computer did in the 1980s and the introduction of smartphones in the early 2000s. Thanks to Moore's Law (1970), the next generation of smaller, more powerful computers will be wearable. Thus far, smart watches and fitness-tracking wristbands have led the wearable revolution, bridging the technology between smartphone and smart wearable device.

In the Annual Internet Trends report, Mary Meeker (2014) highlights major technology trends of the past 60 years, noting how technology trends have tended to last a decade. But wearable computing promises to disrupt this trend, because the pace of technological innovation is moving at a much faster pace thanks to lower costs and increased integration.

Nearly every major technology company is working on, or rumored to be working on, a wearable device. Sports enthusiasts have long been obsessed with stats—whether tracking a favorite team or their own athletic pursuits. It's no surprise, then, that according to ABI Research, 61 percent of the wearable technologies market in 2013 is currently devoted to sports and fitness trackers.

What are the different kinds of wearable tracking devices?

Wearable devices exist in different kinds of form factors and can serve different kinds of purposes. After doing extensive market research, where different kinds of wearable devices, applications and other solutions were examined on user flow, usability and features. Three kinds of tracking devices could be defined.

1. Activity Tracking Devices

Activity tracking devices track the track (sport) activity, intensity and amount of steps of the user, mostly measured on a daily base. This is done by measuring the fluctuation of movement measured by an accelerometer. The measured data of these devices is visualized by accompanying proprietary apps. Good examples of this category are the Nike Fuelband, the Polar Loop, Fitbit and the Jawbone Up. These devices are poised to be used mostly during sport activities and are the most popular of the three categories to be used in sport.

In addition to these wearable activity trackers are the recently released smart watches as the Moto 360 (Motorola, 2014) and Apple Watch (Figure 4). These watches utilize an extensive app market, but also the hardware to track the activity of the user. This activity tracking exceeds the current wearable devices, since they can also measure heartbeat, intensity and social interaction. This can be widely expanded due to the availability of app stores and an open to use SDK. In terms of usefulness during sport moments, the Apple watch is the most promising, since this watch will be released as a lightweight, durable sport edition. (Apple, 2014)

Figure 5: The Apple Watch

Figure 6: The Fitbit One

2. Sleep Tracking Devices

Sleep tracking devices are being used to track and display sleep patterns. In general these devices are fit in a smaller form factor as the FitBit one (Figure 5) , but can also work ubiquitous as an independent application, for example as Sleepcycle. In general these devices are more used to track passive behavior instead of being used during active sport moments. They can also be used to gain insights about your sleep patterns and resulting energy levels and behavior

Figure 7: The Jawbone Up 24

3. Food Tracking Devices

Food tracking devices are used to track your food and eating patterns. Most of these solutions use activity trackers to measure the burned calories but a few of these solutions use proprietary wearable devices. For example the Jawbone up (Figure 6), a wearable activity tracker, the hardware device itself isn't unique in terms of functionality, but it's software is able to track the users food patterns using 3rd party application. By combining this with the activity data it can accurately track your nutritional behavior

Augmented reality

Devices are disappearing and a new pattern of computing is emerging where interactions with technology are more natural. Head-mounted displays leverage natural user interfaces like touch, voice, and gesture control, making interactions with technology more intuitive. These mounted displays present an entirely new paradigm for society, putting privacy advocates and technology champions at odds with each other.
Head-mounted displays make receiving information even more seamless, negating the need to pick up a phone or other gadget, or even look away from a current engagement. These devices essentially free data from computers and mobile devices and display it in precisely the right time and place.

Google Glass

Google Glass (Figure 7) is leading the competition in delivering a consumer-facing head-mounted display. Google Glass essentially combines the best of Google's functionalities in an all-in-one device. The device is simultaneously a GPS, camera, computer, and headphone set, allowing wearers to search, navigate, hang out, translate, take pictures, read, send messages, listen to audio, and make phone calls. Wearers can use voice or touch to control the device.

Even in sports the Google Glass is used more often, for example multiple premiere league soccer teams use the Google Glass to provide the management with a live feed of the game metrics (okglass, 2014) or to use it to provide the players with personal training drills during private trainings, the latter was used to prepare the Dutch soccer team for the 2014 World Cup. (Factor Tech, 2014)

Figure 8: Google Glass

What are the current software solutions?

In the case of software solution we can identify two different groups, the individual health tracking applications and the health tracking ecosystems. The mobile individual applications normally focus on one expertise and a select amount of functions supporting this expertise, while the new released HealthKit and Google Fit, focus on delivering a complete mobile experience, where health tracking is being pushed to the background to a more unobtrusive experience.

Tracking applications

The applications can be split up into two categories, active and passive tracking applications. The active applications requests the user to engage into action and actively use the application. For example, applications as Nike Running, Strava and Nike Golf ask the user to have direct interaction with the application for the conversion to succeed.

The second category are the passive tracking applications. These applications work on the background and track the users activity and vitals while being engaged in other activities than using the application. For example, applications as Moves (Figure 8), Steps and the Nike Fuelband app, work on the background and track the users activity while the user is engaged in other activities. Most of these application solely work in cooperation with a hardware device as the Nike Fuelband.

Wearable Ecosystems.

2014 was the year of the new wearable ecosystems. Google first launched it new Google Fit and Google Wear platform, and Apple announced his new Apple Watch and HealthKit as part of iOS 8. Both Google fit and Apple' HealthKit executes the same way. They utilize the different third party hardware and collect their data into one central hub. This hub is used to quickly visualize the data (without any context)

Besides the health tracking ecosystems, the two largest parties of mobile technology released new ecosystems based on creating wearable devices. Google released his Google Wear, and Apple released his next iteration of iOS, this time designed for the small screen of a watch.

In general both systems work the same way. They utilize watch faces to give the user quick insights about their current situation and use a card-like layout to visualize larger amounts of data.

What is the difference between HealthKit and Google Fit?

In general both executions serve the same purpose and goal, but in detail level both services are different from each other. While Apple Health(Kit) focuses on health and a more medical approach, Google tries to position its Google Fit to be a more daily used sport minded approach.
In terms of functionality both services only differs on the partners and execution of their own applications. Hardware wise, the functionalities don't differ.

Figure 9: **MOVES TRACKING APPLICATION**

what are the ways to make the data purposeful?

Since data is just, plain data. It could be a distraction for some of the athletes, as states by Meredith Elzea, one of the athletes participating in the survey,

"I used to use equipment - one of the main ones being the Nike running app, but I realize I don't really like it. I don't really care to get continuous data while I'm working out. When I participate in sport, I often get into a meditation mode. I zone out, I concentrate on breathing, I don't like having equipment bothering me, whether that's my head phones falling out or a woman robot voice updating me on my mileage while running."

She states that a continues flow of data doesn't add to the simple experience of sport. Therefore she would rather have as little as distraction as possible, but still wants to see her progress. This is a good example of the desire to get purposeful data. In this chapter, we will research what purposeful data is and how to suit this to the desires of the user.

To get a clear image of what solutions would make the data semantic to athletes several athletes were questioned by holding a survey to see what their global complaints were in terms of the analysis of the data. Most of those complaints involved the lack of context around the data.
Others wanted to see the performance of their peers. Afterwards a selection of these athletes were asked to participate in an interview to determine ways to organize the data and to make it more valuable and semantic correct for the athletes. Out of this survey and interview came three clear ways to do this:

20% By making it tangible

33% By comparing it to peers

67% By relating to situation

After the survey I've held interviews with several athletes to ask about their preferences in how they would see the data. Most of them wanted to get it delivered in bit size chunks and wanted to be able to get a quick brief overview, but also being able when they're interested in their performance to analyze it deeply. For them, the best way to measure their performance and for the data to become meaningful, they would rather compare it to peers, than to a raw number or graph.

"Be more encouraging and provide more helpful feedback as opposed to just data."
- Semmi Needham

For the athlete, raw data can become purposeful by putting it into context. In my interviews with Robert, Robin and Mark, all three athletes

participating in team sports. They all state on the question how the apps can become purposeful that for them the data becomes useful when it gives them explanations about the activities they've done.

For them getting insights about their performance isn't all about the data, but also about what their perception of the moment itself was. For them it's about the data in combination with the emotion and moment. They want the data to encourage them to keep on going, to keep improving themselves. In general, the interaction would have to be very intuitive and quick to input data, or see the performance

"To track my progress to help determine trends when I run my best i.e. after a certain meal, before/after work, warm/cold weather, etc. "
- Robin Kwa

As stated in the behavioral solutions, data can be used to engage the user in terms of creating a social environment around the data. But when evaluating whether peer data can be harnessed to change the behavior of your team, you would do well to apply these three principles:

Know what behavior you want to change.

For example the pharmaceutical company Walgreens, which has widened its mission from operating pharmacies to improving people's overall wellness, would want people to get more exercise and live healthier. So employing peer data to encourage consumers to get more exercise would certainly be desirable.

Identify all the functional, social and emotional activities that might motivate someone to change that behavior.

The best way to find those activities is to spend time observing the habits of your key audience. For example, Walgreens, knows that its customers are motivated by discounts. That why last year, it created the Steps program, which lets FitBit and Up users synch their devices to the Walgreens app, offering 20 rewards points for every mile walked To gather their data, the apps let you invite Steps members that you know into your league via Twitter and Facebook.
(Christensen, 2007)

In selecting which data to use, striking a balance between people's need for privacy and their desire to share things in public is necessary. Walgreens customers can share their step counts, but not their calorie counts. Sometimes the best approach is to make all the data anonymous. Other times, it might be more effective to give people control over what they share, as FitBit does.

Finally, make the data actionable. Suppose you know, for instance, that your teammate performed better than you did.

Even if that guides you to the data you want to conserve, you'd still need to know how to do it. As you motivate people, you must also consider how you will follow through with steps to improve, or help their friends reach their level. Walgreens made sure that as part of its Steps program, the app and website would suggest additional ways to stay well.

In general just presenting peer data is not enough. The social network Fitocracy goes further, assigning a human coach who creates a tailored exercise and diet program for you.

What kind of data can be measured?

As concluded in the previous chapter about the augmenting solutions, there are almost infinite options to gather the data. If it is through measuring your vitals, getting location or even emotions. Nowadays the possibilities are almost infinite. For practical use, most devices focuses on the same metrics. Activity (steps), location(gps), heartbeat(IR light) and intensity(accelerometer). (Nike,2012, Apple, 2014)

Since for this research the main client is Nike, these metrics can be converted to their proprietary metric NikeFuel. In general, out of calculations done by comparing the Nike Fuelbands metric with the Fitbit Forces metric, after consulting the calculations of Anthony Ball(2012). It could be defined that it's possible to convert calories into NikeFuel, 2.79381443 of NikeFuel would convert into 1 calorie.

Other data as location, heartbeat and intensity can be used to support the NikeFuel as triggers for the overall performance.

In June 2014, Apple introduced Healthkit, a global data repository for iOS devices. With this new data "bucket", applications can sync their data regarding fitness and health, collectively to one central hub. This hub can be used as a link between the hardware devices and third party software applications. The results of this are that applications can use a bigger variety of data to analyze the activity of the user

For example, as stated by Apple,

"The Nike+ apps using NikeFuel will be able to pull in other key HealthKit metrics such as sleep and nutrition to build a custom user profile and improve athletic performance."

During the interviews with several coaches, they were asked how they retrieve, organize and use data to get a clear image of their players . They defined several ways they currently use to get a tangible image of the performance of their players. Even though all three of them use different kinds of tools, one tool they had in common was the use of video analysis after match days. During the match the assistant or manager captures the entire match on video. Afterwards this video is being analyzed to capture key moments of the team's performance. According to Eelko (one of the coaches), this is a very useful way to analyze the tactics and flaws on a team scale. Besides occasional use of time tracking solutions during endurance exercises, this is the only tool he uses.

The other coaches were more progressive in using new technologies and solutions to enhance their way of data tracking. They stated that in preseason they use heart rate monitors to track the players

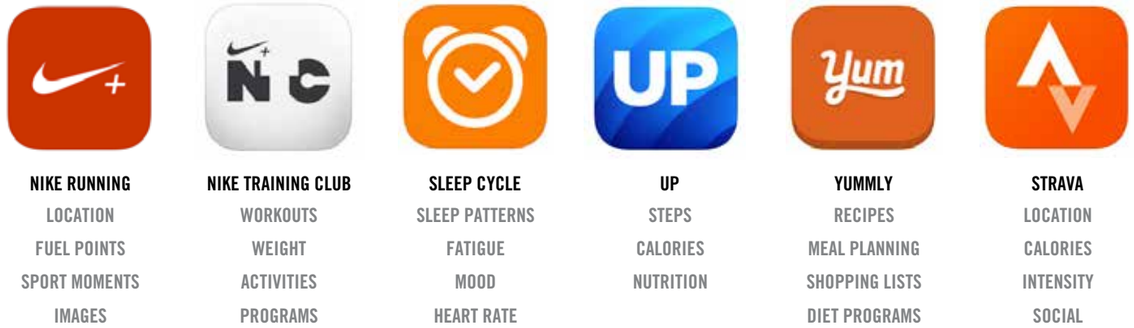


Figure 10: Examples of tracking apps and their metrics

fatigue and that they are experimenting with the use of new radar technologies to track the top speed of the players. Rutger (a coach, coaching team of various ages) stated that he started using applications to create basic player profiles at the beginning of this season, but that he missed possibilities to add real time data.

The conclusion

The possibilities to augment the sport experience can be split up into three different sections; The hardware possibilities, the software possibilities and the behavioral possibilities. In general to augment the possibilities of the sport experience, a lot of data tracking will be involved, introducing to the quantified self. A movement focused on tracking their personal vitals.

Especially since the growth of the popularity of this movement a lot of new products and product categories have entered the market. This is an result of the increase of the adaption of (ever more efficient and powerful getting) smart phones and the creation of several software ecosystems.

In terms of hardware solutions, a increase in popularity of wearable devices had brought possibilities to improve the sport experience, due to the analytical core of this interaction and product. Just as the increase of wearable devices augmented reality has also got his introduction with the Google glass as it's best example.

In terms of software solutions as a result of the development of new wearable solutions, two major software categories has been introduced. The category of tracking applications. Which are ubiquitous applications working independent of the wearable hardware. These applications are mostly designed on fulfilling one specific goal. And the category of wearable ecosystems. This category can be compared to the mobile and desktop operating systems. Combining the wearable hardware with a fluid software interface. These ecosystems are designed to combine several user goals into one product.

In terms of behavioral solutions, several different solutions have been defined. As a cornerstone of the modern engagement of applications, gamification has been the main trigger for app developers to trigger the user to stay engaged with their product. This was in general poorly executed, therefore McGonigal has set a few guidelines to a better engagement.

In a more practical light, two different kinds of executions of behavioral solutions have been defined; Sportive leader boards and Settings perks, rewards and penalties. Out of observations, it became clear that giving the athletes personal perks, goals and penalties, combined with an easy and clear leader board, could lead to better insights and closer engagement.

This engagement of the athlete can be split up into four different levels of interaction. Each of these levels of interaction requires a different approach and involves different stakeholders and entities. The defined levels of interaction varies from very close human device interaction, towards inter player interaction, interactions between the players and their management and eventually, the most wide interaction, the Team and environmental interaction which can be extended to inter team interaction.

For the athletes, most of their insights come from the situation itself, not in particular from the data. Out of the research and interview it was concluded that getting insights by relating the data in combination to the situation could be themes effective way for the user to get new insights. To filter this data Bizer, Boncz, Brodie and Erling (2011) have created several guidelines container multiple steps to filter and analyze the data, so it can suit the demand of the stated goal and problem.

design criteria

In terms of engagement and gamification the product could meet the following criteria. Based on the behavioral solutions and the research of gamification, the following two criteria were mentioned:

Social challenge is key

Challenges or mastery of skills. The player will need to be able to challenge himself and his peers. This can be visualized as a mastery of skill. To present this, several options can be used, for example the link between the players, but also as a competitive element by linking it to perks and rewards or to a leader board. Using the inter player interaction.

The player will need to be able to have interaction between one and his peers. This could be directly, but also indirect ways as using leader boards can be used to create the interaction. Focusing on the first and second interaction the user interacts directly with the device as a mastery of skill and with his peers to get challenged.

Keep the data small and organized

Based on the results on the research about how data can become meaningful data, the following criteria could be used to improve the data visualization towards the user

For the data to be purposeful for the athletes, it has to be organized into simple small bite size chunks, this data has to be presented in a quick and easy to understand way. For the athletes to give purpose to the data and their performance, they want to be able to compare it to a bar, to a set level. For them the most challenging way to do that, is to compare it to the data and performance of their peers. This can be related to the situation, the moment and even the match. The athletes stated that they want to receive feedback regarding to their performance.

Research conclusions

An experience can be defined as something which you've already encountered, or as your environment of your surrounding in the moments you are engaged in. An experience can be either physical, but also emotional. In general, an experience can be experienced in three different ways, as a continuing experience, as an specific identifiable experience and as an ongoing experience. Sense-making is the process by which people give meaning to experience. After making sense, we try to give meaning to the action and feedback.

The athlete can be identified in three different groups which are driven by the intensity and amount of sport moments, the occasional athlete, the regular playing athlete and the structured athlete. This can lead to nine possible kinds of athletes who all have different ways to get motivated.

In terms of the stake holders there are three kinds of stake holders influencing the sport experience who could be defined. These are the athletes themselves, the coach and the manager/management. All these parties have different influence on the sport experience of the athlete. The player got the most influential role on itself and on his peers. The coach has the second intense influence to the players due to his objective frame of the game and the players. In general, the coach uses this objective frame to drive the players to stay motivated and to keep performing.
Motivation is driven by the theory of reasoned action, which is an indication of the actual behavior. This theory is based on two factors, the Attitude and the perceived social norms. Attitudes are the sum of beliefs about a particular behavior compared against the evaluations of these beliefs while the perceived social norms look at the influence of the environment on his intentions

Motivation is split up in three categories. Intrinsic motivation, extrinsic motivation and a-motivation.

To motivate the players B.J. Fogg states that there are three factors which influences this, these are the triggers, the initial motivation and the ability of this individual. Each of these factors work in a feedback loop, after activities, the user intrinsically recaps on these activities to see what the results and consequences are.

The possibilities to augment the sport experience can be split up into three different sections: the hardware possibilities, the software possibilities and the behavioral possibilities.

In terms of hardware solutions, a increase in popularity of wearable devices had brought possibilities to improve the sport experience, due to the analytical core of this interaction and product.

In terms of software solutions as a result of the development of new wearable solutions, two major software categories has been introduced. The category of tracking applications. Which are ubiquitous applications working independent of the wearable hardware. These applications are mostly designed on fulfilling one specific goal.

The category of wearable ecosystems. This category can be compared to the mobile and desktop operating systems. Combining the wearable hardware with a fluid software interface. These ecosystems are designed to combine several user goals into one product.

For the athletes, most of their insights come from the situation itself, not in particular from the data. Out of the research and interviews it was concluded that getting insights by relating the data in combination to the situation could be themes effective way for the user to get new insights.

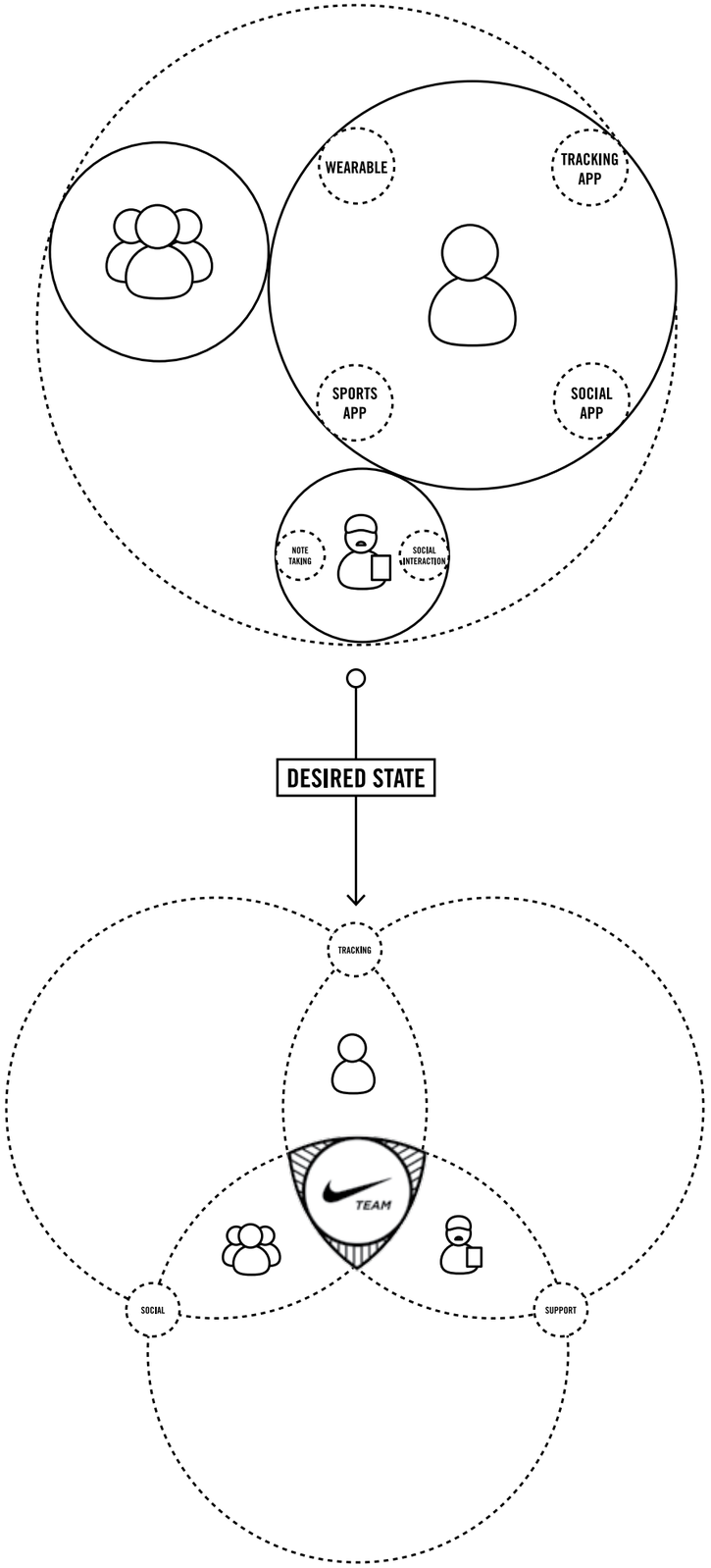
Conceptual model

The conceptual model is a visual representation of the research and study of teams ports and motivation of the individual. This model is based on a iterating circle of the user, the experience, the artifact and is initiated at the start of the activity. The activity is the moment where the user engages into (team) sport. This is also the moment where the user initiates into social interaction with is peers or team mates.

This interaction can, next to the athlete's own performance, influence the sport experience. Due to the perceived social norms the experience can be influenced positively or negatively. This can lead to improved or decreased motivation, drive and performance. The experience will also be reactivated after the sport moment when the user recaps on his training or when he prepares himself for the next sport moment.

As result of the research, it is concluded that the artifact has to be unobtrusive during the sport moments but is allowed to need attention afterwards. The artifact can be valuable and purposeful if the data is suiting to the player and if it fits the context.

The interactive product that will be designed, helps the player with rationalizing his performance and sport moment in a tangible artifact and will combine the raw data with the context around the athlete. The interactive product will be tailored to the personal experience of the user. By tailoring this process to the needs of the athlete, it will be more attractive to the athlete to do extra effort to perform. This will result in a higher level of motivation and drive, which will benefit the athlete. The design criteria are based on the research of the key-aspects of this process.



The design criteria

Making sense to the affordance

The product has to fit the sport experience, since almost every experience is different, the product doesn't have to be tailored to one specific experience. What is important is that the product makes sense to the user in the situation where it wants to use it. This means that the product needs to follow the affordances of the user's experience. As stated by the users, the product needs to be unobtrusive and not distracting while working out.

Set, perform, and reach the goal

Based on the different kinds of users, most of them wanted to be able to set or be perceived in setting (adaptive) goals. This means that the user has a virtual finish line to work towards. The goal can be reached by the individual itself, but also being set by peers, or towards peers. Most of the athletes, engage into sports for an amount of new social interactions with his peers.

By giving the players the option to engage into these social interactions can prolong the use of the product. When working towards a goal, users tend to wish to receive feedback or tips from an expert party. This could be the coach, but for example also a independent third party.

Intrinsic triggers and social pressure

Athletes are most likely to be motivated using Intrinsic motivation based on experience stimulation, therefore the product needs to focus on the internal drive of the user. This can be executed by using social norms and social pressure between the user and his peers. To increase the level of triggers, the ability level can be lowered by simplifying the use of the product. For the athlete to be driven towards better performance it's recommended to use discrepancy reducing feedback loops to drive the athlete towards their goals. Using social norms can help to increase the impact of the triggers.

Social challenge is key

Challenges or mastery of skills. The player will need to be able to challenge himself and his peers. This can be visualized as a mastery of skill, using the inter player interaction. The player will need to be able to have interaction between one and his peers. This could be directly, but also indirect ways as using leader boards can be used to create the interaction. Focusing on the first and second interaction the user interacts directly with the device as a mastery of skill and with his peers to get challenged.

Keep the data small and organized

For the data to be purposeful for the athletes, it has to be organized into simple small bite size chunks, this data has to be presented in a quick and easy to understand way. For the athletes to give purpose to the data and their performance, they want to be able to compare it to a bar, to a set level. For them the most challenging way to do that, is to compare it to the data and performance of their peers. This could be related to the situation, the moment and even the match. The athletes stated that they want to receive feedback regarding to their performance.

THE DAYS OF TRAINING
ALONE ARE OVER

The concept

A TEAM BASED TOOL THAT TRACKS THE PERFORMANCE OF THE PLAYERS, PROVIDES THEM WITH BETTER INSIGHTS AND MOTIVATES THEM TO BRING IT TO THE NEXT LEVEL

The summary

Summarized problem statement

All the fitness apps are focusing on tracking on the individual but they are not doing a good job of helping teams. Also social interaction and getting insights aren't the main priorities of most mobile tracking applications, while for the user they are the primary motivational factors.

The athletes functionality

The application focuses on analyzing the players current performance, the growth of these performance and puts this into context in an interactive social platform. During training moments, the activity will be measured and analyzed. After these moments, the players will be provided with notifications and triggers to keep them motivated while sharing their achievements on a social team platform. This platform is the foundation of the content. This data will be used to create a social team player journal and to give the coach the right information when needed to improve their training days and to stay up to date with the status of the player

The progress made at these training moments can be compared to peers. This will create a competitive drive since perks or tasks can be linked to the progress.

Since the application gathers detailed information about the player during physical training moments, it gives either Nike or the Coach the possibility to provide the player with a tailored training program.

The application will focus on delivering a simple, fast experience.

Calibration and data gathering

To get a clear level of the performance of the players, a calibration time is needed. This could be incorporated in an amount of physical workouts at preseason preparations and with a small kind of survey at the on boarding part of the application. This way a threshold can be created, enabling the application to provide the player with an realistic goal and workload.

The magic

Actions and participation

While using the application, users engage into action in two different ways:

The first way is after the user has worked out or has finished ones training or match. The user will sync his wearable device(s) with his phone the same way he usually does (by using the regular application which is normally bundled with the device). The data provided by these devices will be synced from the specific applications towards healthkit, which will sync the data to this app. This data, in combination with calibration trainings will be used to determine the base level of the user and will be used to define the performance, tiers and achievements.

The second way the user can engage with the application is when the user engages into the social part of the application, the journal. In this section the user can track the performance of his peers. See the activities of the team and can get more wider insights about the team and about himself. The journal is also the part of the application where the coach can interact with the players and give them better insights through personal/team messages.
The more the player uses the application, the better he will be motivated due to the social triggers he will receive.

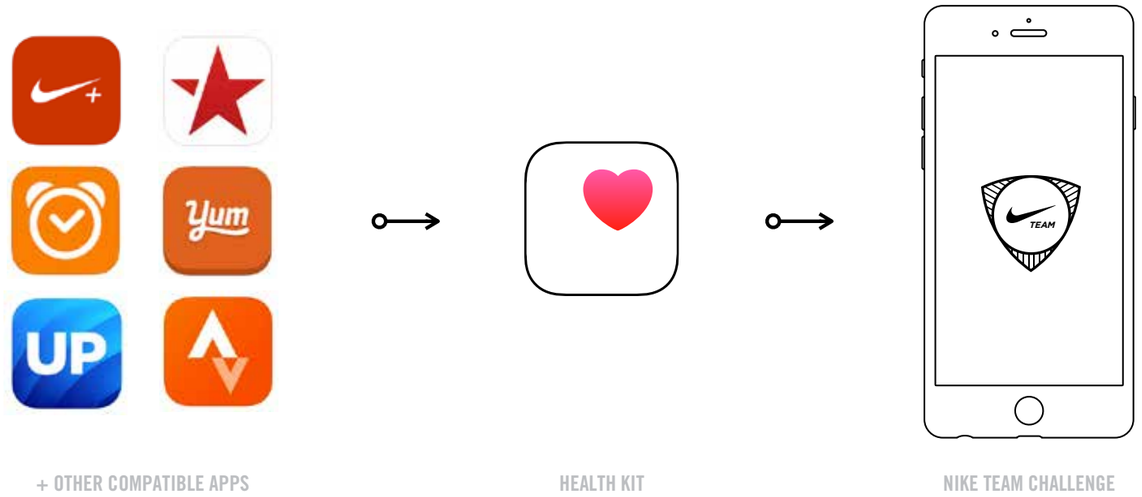
Gathering data using healthkit

In June 2014, Apple introduced Healthkit, a global data repository for iOS devices. With this new data "bucket", applications can sync their data regarding fitness and health, collectively to one central hub. This hub can be used as a link between the hardware devices and third party software applications. The results of this, is that applications can use a bigger variety of data to analyses the activity of the user

For example, as stated by Apple,

> *"the Nike+ apps using NikeFuel will be able to pull in other key HealthKit metrics such as sleep and nutrition to build a custom user profile and improve athletic performance,"*

For this product the same platform will be used to gather the data. By connecting to healthkit the application can retrieve Burned Calories, location, intensity, sleep patterns, steps made etc.
This way the user can still use his favorite application for the activity he engages in. For example using Strava for cycling, runkeeper/ Nike Running for running exercises, or the Moov



app for swimming, but also for example using Sleep Cycle to track his sleep patterns or using the Jawbone app to log his nutrition.

Explanation performance categories

Since the performance depends on different kinds of variables, all these variables are consolidated into three different categories. Engagement, Participation and Performance. These categories are based on the three types of athletes and focus on the different interactions and results of the activities of the user.

Engagement
Engagement is based on the (social) interactions the user has in the application, for example the amount of usage on a monthly base, the contribution to the team/ journal, the visits of team material or sharing articles of performance on social media or on the journal.

Participation
Participation is based on the quantitative amount/ volume of the activities, for example the amount of training days, the amount of fuel gathered, the amount of earned challenges.

Performance
Performance is based on the actual progress of the user. For example the increase of his average performance on training/match days, the intake of nutrition or the won challenges against peers and teammates, or Earning badges or achievements.

Explanation performance system

Performance points
Points are earned by engaging into sport activities. The value of these points depends on the level of performance. For example beating your personal best on a "kick ass" training will earn more points than just being present at this training.

This performance is measured by different metrics; Endurance, intensity, Fuel and Time

Endurance
Endurance is measured by combining the cumulative amount of FuelPoints gained during the training(time metric) and compare this to the average amount of FuelPoints defined by the calibration training. The endurance is measured in percentages.

Intensity
Intensity is measured by comparing the cumulative amount of FuelPoints by the length of the workout. The more points gained per minute, the higher the intensity was.

Fuel
FuelPoints are the proprietary metric of activity defined by Nike. In general the amount of burned calories and the amount of steps can be converted to FuelPoints

Time
Time is measured from the moment the sport activity begins until the moment it's ended. This can be set in two ways; The first way is by constantly measuring the intensity using wearable devices. The moment the user starts a workout the intensity will rise, which will act as a trigger to start the timer.

The second way is to use the challenges and the sport moments defined by the coach. These moments give a clear time indication, which can also act as a trigger to record the time.

Points decay
The identification of the performance is measured over time, this is done by comparing the gathered data and the earned points over a fixed set amount of time. This timespan is set on 30 days. In these 30 days, the performance is set during the sport moments, and an average of this performance is defined. After this calibration date, the fluctuation of the performance (the progress) is set as an increase or decrease, which can influence the level or tier of the user.

> *To ensure that the data is relevant and contextual to the users actions, the user points will expire after 30 days.*

Adding the events
For both the application and interaction it's critical to signal when the user has engaged into a sport moment, and to identify what kind of sport moment the user engaged in. The Coach can add training dates, and match days. This allows the application to match the gathered data to the sport moments and anticipate on this behavior. Also by using the data from for example the Nike running app, activities as runs, work outs and individual sport events can be defined. For the journal it's also convenient, since editorial items and moments of storytelling can easily be matched to sport moments.

The feedback system

Based on the performance and engagement of the user, the application can trigger the user or give feedback to the user in two distinct ways:

Application based feedback
Depending on the behavior of the user, the application sends the user different notifications and feedback. For example when the user reaches a specific tier, the application will provide the user with suiting notifications, but for example when the user is under-performing for an extended period of time, the application can give the user global tips and feedback.

Coach based feedback
The coach can give feedback and tips depending to the behavior of the user. For example when the team is over performing he can change up his training days, or when a player is under performing, the coach can give him more specific tips than the app could do.

Tiers, and Ranks

Tiers
The user can reach different tier based on his performance, each of these tiers are defined based on the amount of points the user has gathered and can unlock different personal perks, or personal rewards. The tiers are not time based, which means that the user will gain new tiers even if he has been inactive for a period of time

Ranks
The Rank is the position of which the player is situated on the team. In contrary to the tiers, Ranks are more competitive and can fluctuate over time. This means that the user can descend down the leader board after each training day or after each day he wasn't active.

The output; Types of cards

Achievement
The achievement cards are based on the behavior of the user and his peers. Depending on the behavior of the user and the teammates, the cards displays call to actions to cheer-up a player, congratulate him, or to set the achievement as the users own goal.

Workout
When the user or one of his teammates use one of the supported apps to engage into a sport activity, as for example starting/finishing a run, do a Fitstar/NTC Workout, start a cycling training with Strava or finished his daily steps goal with the Fuelband. Cards are created to highlight these achievements. The user can use these cards to join his run, invite the teammates for his own runs, comment on it or cheer for them.

Coach
The coach can broadcast messages through different events and moment. This way the coach is able to motivate the players. As for example giving personal tips to players, set up reminders, provide the team with match and training facts or congratulate them with their achievements and performances.
Together with the coach cards these cards are generated by using the data provided by the several 3rd party apps and use Nike's expertise. These cards give the user suggestions about how they can improve their performance. For example doing specific workouts if their physique is low, or giving them nutrition tips after intensive trainings.

The suggestion cards can also link players with other players by comparing their complementary stats. As a CTA these cards can suggest activities or trigger for the user to engage in.

Commerce
The Commerce cards display adds from Nike, tailored to the moment and motivation of the user.

The cards

Achievement

Depending on the behavior of the user and the teammates, the cards displays call to actions to cheer-up a player, congratulate him, or to set the achievement as the users own goal

Workout

When the user or one of his teammates use one of the supported apps to engage into a sport activity, cards are created to highlight these achievements

Challenge + Coach

Together with the coach cards these cards are generated by using the data provided by the several 3rd party apps and use Nike's expertise

Suggestion + Product

The Commerce cards display adds from Nike, tailored to the moment and motivation of the user. The suggestion cards can also link players with other players by comparing their complementary stats. As a CTA these cards can suggest activities or trigger for the user to engage in.

The innovation

WITH THIS PRODUCT PIONEERS ON CREATING A HUB THAT GATHERS ALL TYPES OF ACTIVITY DATA AND SOCIAL INTERACTIONS. USING THIS DATA IT WILL PROVIDE THE TEAM WITH THE RIGHT INSIGHTS FOR BOTH THE PLAYERS AND THE COACHES.

The Innovation

Team sports are about multiple types of activities and social interactions. Therefore, we will create a hub that gathers all types of activity data and social interactions. Using this data we will provide the team with the right insights for both the players and the coaches.

Team is key
This concept is one of the first concepts focusing on the team experience and performance in stead of just tracking the individual performance. Inspired by the major applications from Nike, Jawbone and Fitbit, combined with a little exploration towards video games. This product focuses on the social interactions between the players and the collective drive this produces.

Open platform
A Nike first, this product is Nike's first attempt to open up his Fuel platform to widen his market and to help their athletes by giving them the opportunity to use their own preferred sports gear. As a second perk, the implementation of the use of third party hardware gives Nike the possibility to use a wider spectrum of metrics which could be used to tailor the support of the athletes. The athlete could be better informed of their performance, or could be supplied with better suiting gear in the physical stores.

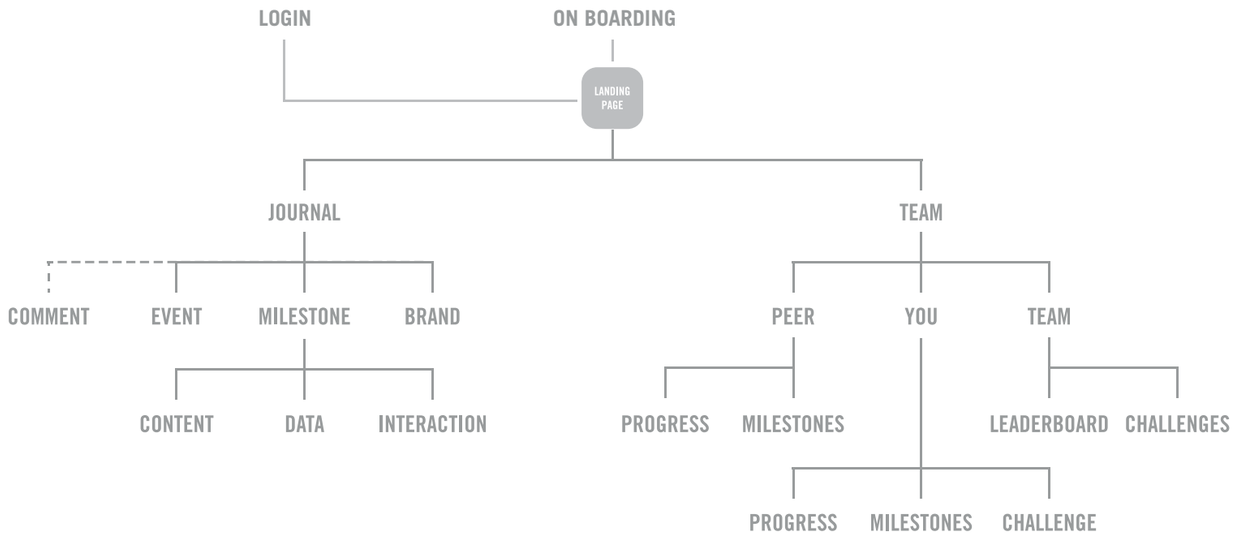
The structure

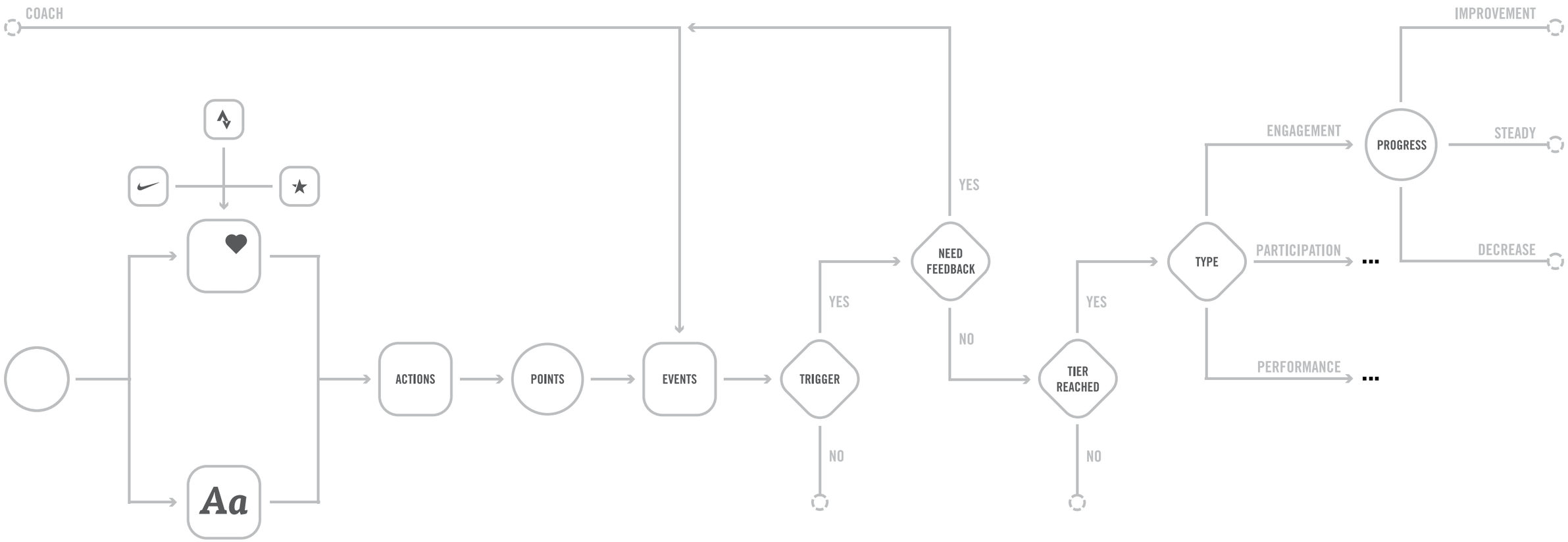
The structure of the application is split up in two major sections which both interact with each other. The first section is the journal. This is the social part of the application. The journal part is being populated by the different kinds of content cards based on the activities of the team. Each of the kind of cards have their own kind of information and interaction. For example the workout cards are meant to trigger the player while the coach cards and suggestion cards are meant to inform the player.

After each major sport moment(for example training and match days), as part of the journal, the player is provided with a recap of this moment. This recap can provide the user with insights about his performance, but also with tips how to improve it.

The other major sections is the (team) profile. This section is based on the fact that the players want to compare their stats with those of their team mates. This is the main feature of the team profile. Besides the team profile, the user also got his own profile where he can track his activities and where he can get Nike Pro tips and coach tips regarding to his personal performance.

The data for these two sections is being generated by the linked apps. These apps and the team will be all configured during the on-boarding flow of the first time use.





From data
to performance

To convert raw data into insightful cards, a system has been defined. This system uses the data gathered by the different kinds of third party apps and converts this into actions. These actions are then split up into the four different kinds of metrics defined to measure performance.

Each of these metrics has their own specific weight in terms of performance points. As defined in engagement, participation and performance.

Combining these points with optional editorial content as tips, feedback but also notes written by the players will create the events which populate the application and will be the triggers for the players.
These events can trigger different kinds of behaviors as well for the players themselves as for the application. When the player reaches a certain threshold or tier the application is triggered and the user will be provided with feedback in the way of notifications, awards or editorial messages.

The events can also trigger the coach, for example when a player is under performing for a certain amount of time. The coach can also receive notifications, tips or messages about this player.
This way the raw data the players gather can be converted into purposeful, valuable content.

Personas

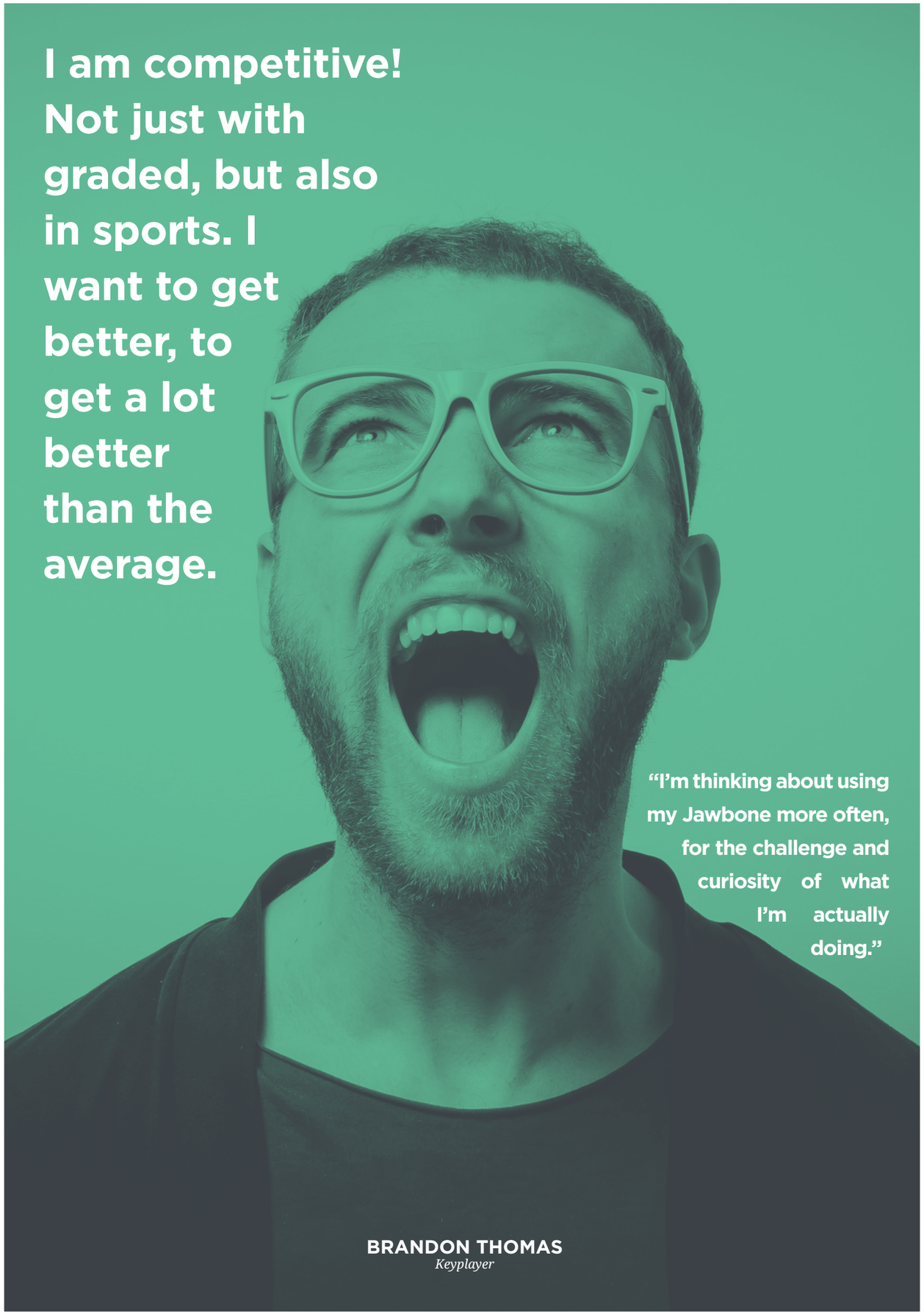
KNOW ME
TO SERVE ME

The personas are created by using the insights gathered from the several interviews and the first survey to create two distinct characters which illustrate the needs and wants of the key audience.

To give shape to the personas, a structure of their personality was created based on the motivation and drive filtered from the replies of the survey. The rest of their personality was based on the respondents of the interviews. Since the majority of these respondents is housed in Europe the persona's were tailored to the audience in the United States. The difference in this audience isn't about their motivation or their drives to start engaging into sport. It's about the demographics of this audience. In general it's about the way the sport teams are organized in the United States. In the United States sport team are generally organized through the educational institutions or through pick-up sessions where the players gather on a amateur base.

The moment athletes engage into sports through the educational institutions, it's on a semi-performance base. This differs from the way it's organized in Europe, where athletes can enroll into sport organizations where the athlete also can play on a more fun based approach.

Both the personality and technical background are filtered from the personalities of the respondents.



Drive:
The thoughts of being better than my former self

Basic info:
Brandon is a 23 year old Student. He plays defense at his school's soccer team, He's not the best player but also not the worst, he wants to improve his performance on the team (and the team's performance as a whole) before the end of his final season.

Personality:
Brandon is a player who engages in sports because he wants to improve himself and getting challenged(by the game and by his teammates) Getting feedback helps him. Setting goals will support him, but he needs consequences, what happens if he doesn't reach a goal?

Quote:
"I'm thinking about using my Jawbone more often, for the challenge and curiosity of what I'm actually doing."

Technical background:
He is not really tech savvy, but is open minded in using devices during sports, He mainly used the Strava or Runkeeper App to keep track of his progress and to stay connected. Recently he has bought a Jawbone UP3 to track his performance.

Drive:
Having fun with other people while doing sports, staying healthy and feeling good.

Basic info:
Alexander is a 22 year old striker, studying at Columbia. He likes being with friends and is a tech native.

Personality:
Alexander is a player who engages in sports because he likes to exercise, and for his health. He plays soccer because it is a moment to be social with teammates and because it helps his to get energized and to break the weekly pattern

Quote:
Love data, man. Kind of a movie and tv addict, so I like to track that. Also check my game stats regularly.

Technical background:
He always got his phone with him, which he also uses to track his behavior. Besides his phone, he also uses a Fitbit Flex to track his movement and challenge his friends.

The Journey

the background

Background

The players season is divided into three sections, the pre-season part. This part takes place before the season and focuses mainly on getting fit enough for the start of the season. The Active season part. This is the actual sport season and for the player it's important to stay in shape and to be careful not to push himself over the limit. During the season the player normally trains towards the match day.

In general, the players stated that the training days weren't their favorite moments of the sport experience. They were mostly motivated to go to the training moments due to the consequences of showing up and participating.

For the season-break (which is mostly halfway the season) it's important for the player to stay motivated and keep on track of the schedule.

Journey

Pre-season
The pre-season is about getting fit in a short amount of time, or maintaining this level of fitness while and staying motivated. In general the player will have a higher sport activity rate and will be active in a higher interval. While engaging in exercises focused on a high stamina, the player likes to see their progress and external motivation. It's important for the player to get reminded of their activities, to set personal goals and to be triggered to start working out.

"As a player I want to keep track of the progress of my friends (team mates) because I don't want to stay behind"

Active season

During the season the interval of sport moments is lower than in the pre-season. the focus during the season is based more on the short term preparations towards the next opponent or to reach a certain level of fitness and maintaining that level of fitness. For the player it's important to get personal attention of the coach and have a personal schedule, and the social pressure to keep challenging himself.

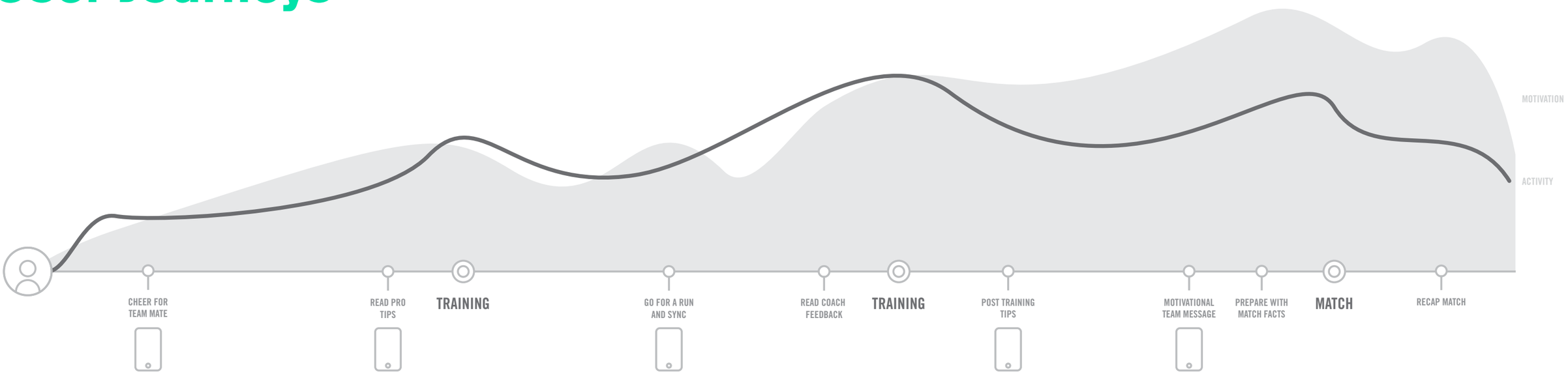
"As a player I want to have a tangible image of my performance, so I can put this in perspective and in context compared to my peers."

Season-break

During the season break, it's important for the player to stay in shape while the intensity of the exercises lowers. In this stadium it's not about the intensity of the training, but about staying motivated to keep on working out. Even when the weather isn't optimal and if there are other triggers distracting from the workout.

"A partner to participate with who pushes me and who holds me accountable. Someone I can rely on to always participate."

The User Journeys



The customer journey was created by taking the interviews with the several athletes as a reference. Using their statements as a guide to set out the levels of activity and motivation and to define the amount of sport moments.
In general the athletes participating in this research engaged 3 to 4 times in sport on a weekly base. Of which one moment is a match day and at least one moment is a training. Since multiple respondents stated that they trained at least two times a week, individually or in a group, this customer journey includes two group training moments, and an individual run.

In terms of the activity, this rises throughout the week. The respondents stated that they work towards the match day in the weekend and build up the intensity of the training towards this moment.

The motivation is related to the activity and sport moments. It increases towards a training moment and decreases a bit afterwards. In terms of the match day, the motivation peaks a second time, right after the match. This is the result of the outcome of the match. If the team loses the players are still full of adrenaline so they're still motivated to do better next time. While if the team wins they're psyched and still motivated towards the next match

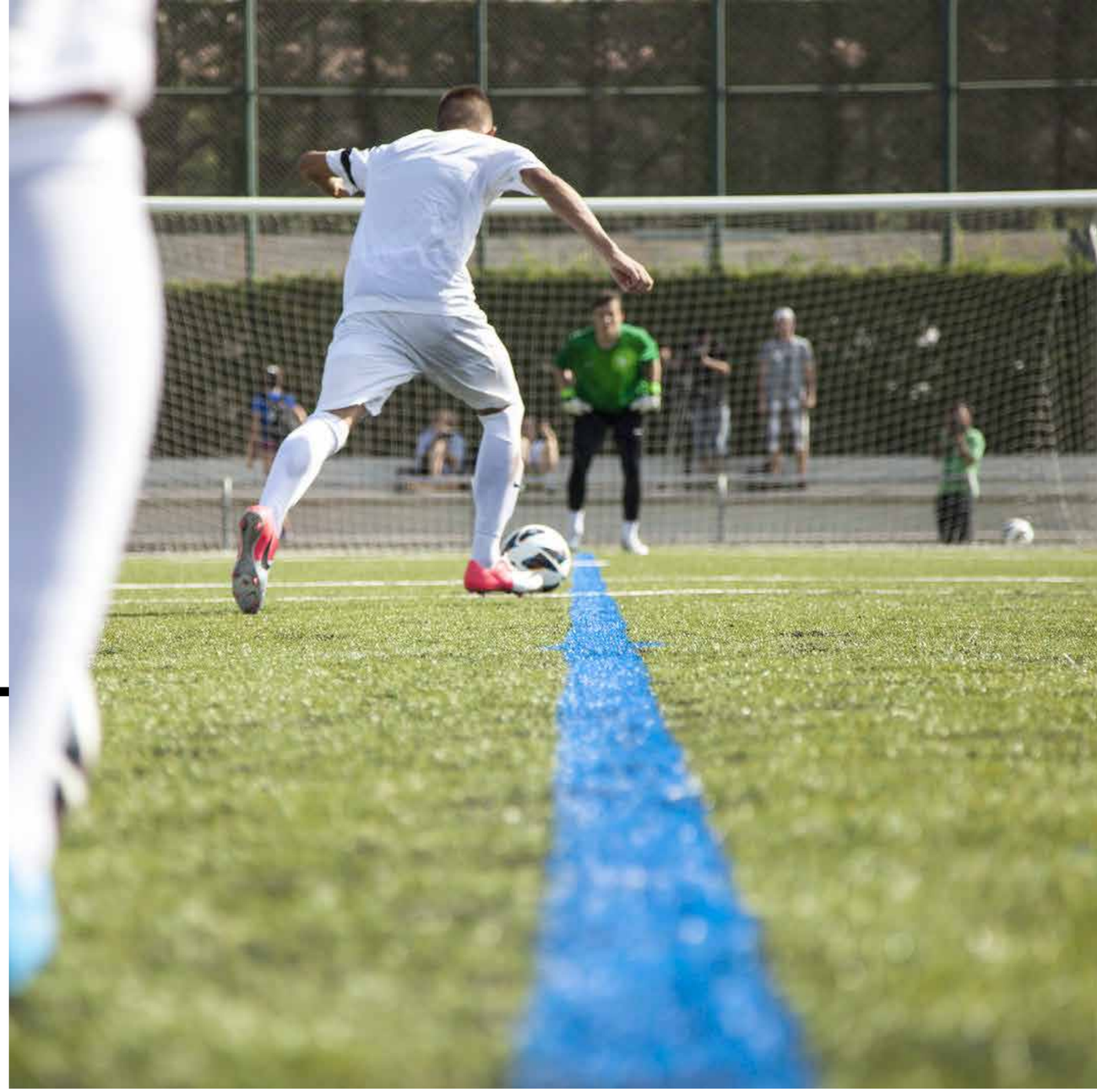
In this journey the user is tracked throughout the week using the product. During the week the user uses the product before and after the sport moments. Since it will sync with HealthKit, the product doesn't obstruct during the sport moments.
Throughout the week the user is able to cheer on team mates who receive achievements and reach goals, read tips from the coach and from Nike experts , see their performance and join team members with their work outs, for example going for a run midweek. And even recap their match/ week to see what he did well and on what points he can improve himself.

The highlighted moments correspond with the specific cards explained in the Magic chapter.

The Scenario

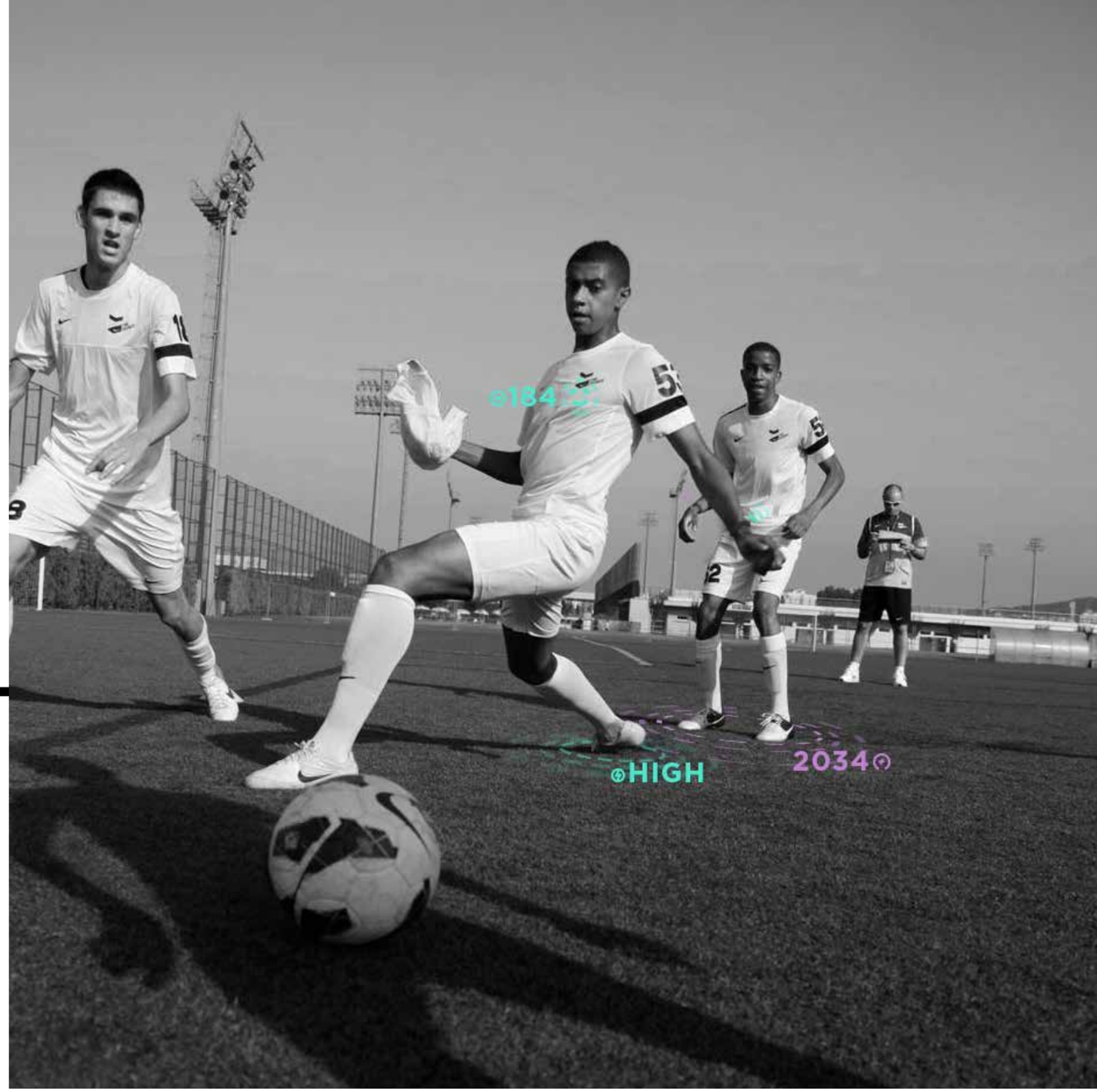
A week in the life of Brandon

GOING OUT FOR TRAINING



Brandon goes to the training. During the course of the season both Brandon as the team have set specific goals for them selves. Each week Brandon tries to reach those goals or set new ones.

MEASURING PERFORMANCE

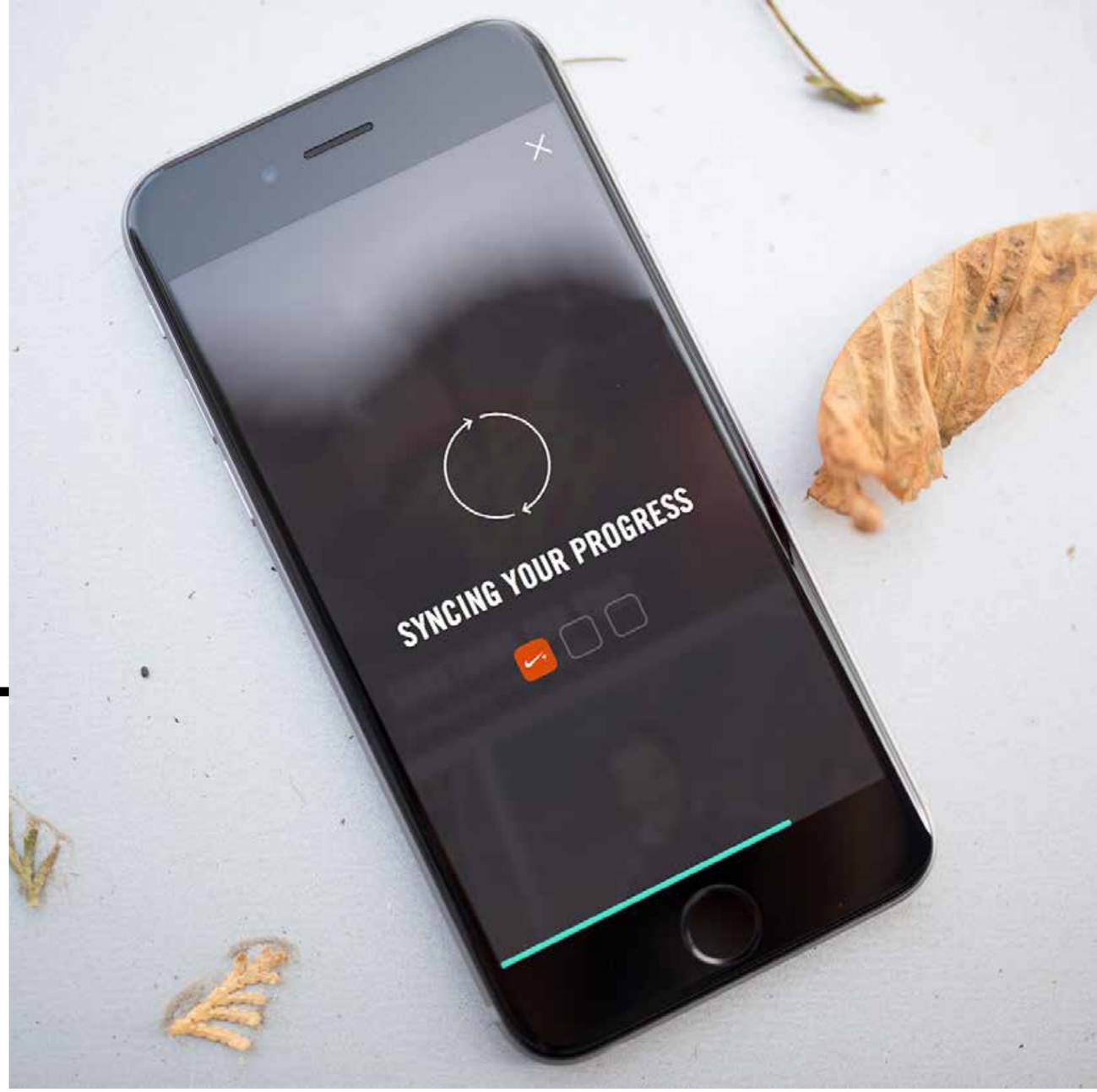


During the training Brandon uses a Jawbone UP3 to track his performance. With this wearable wristband he can track his steps (NikeFuel), Heart rate, intensity, fatigue and stress level.

SEAMLESS SYNCING HIS PERFORMANCE

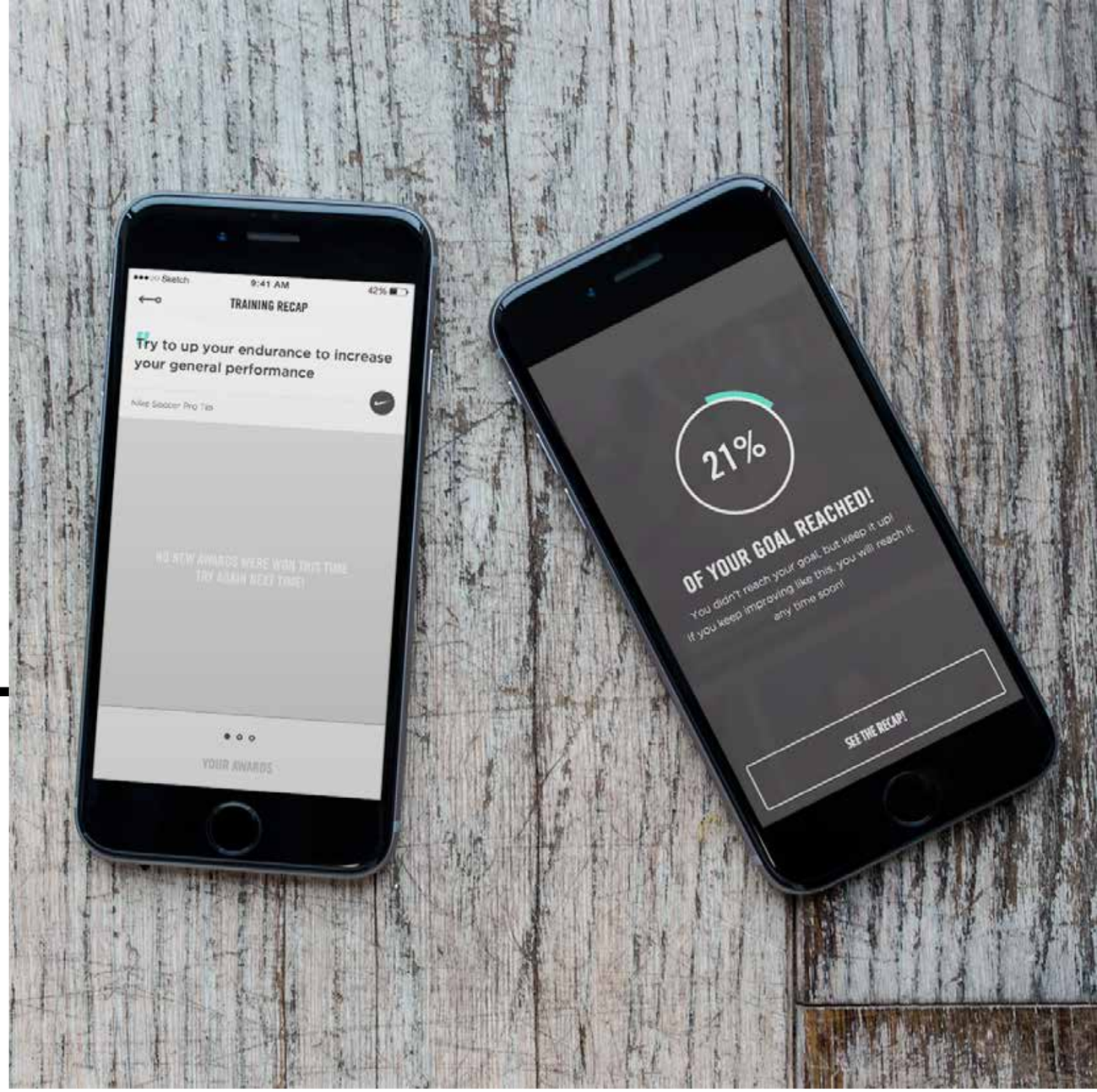
After the training the JAWBONE UP3 is synced with the JAWBONE UP application. The Jawbone application is supported by Healthkit and will communicate with the Nike Team application through this Healthkit API

OPENING THE NIKE TEAM APPLICATION



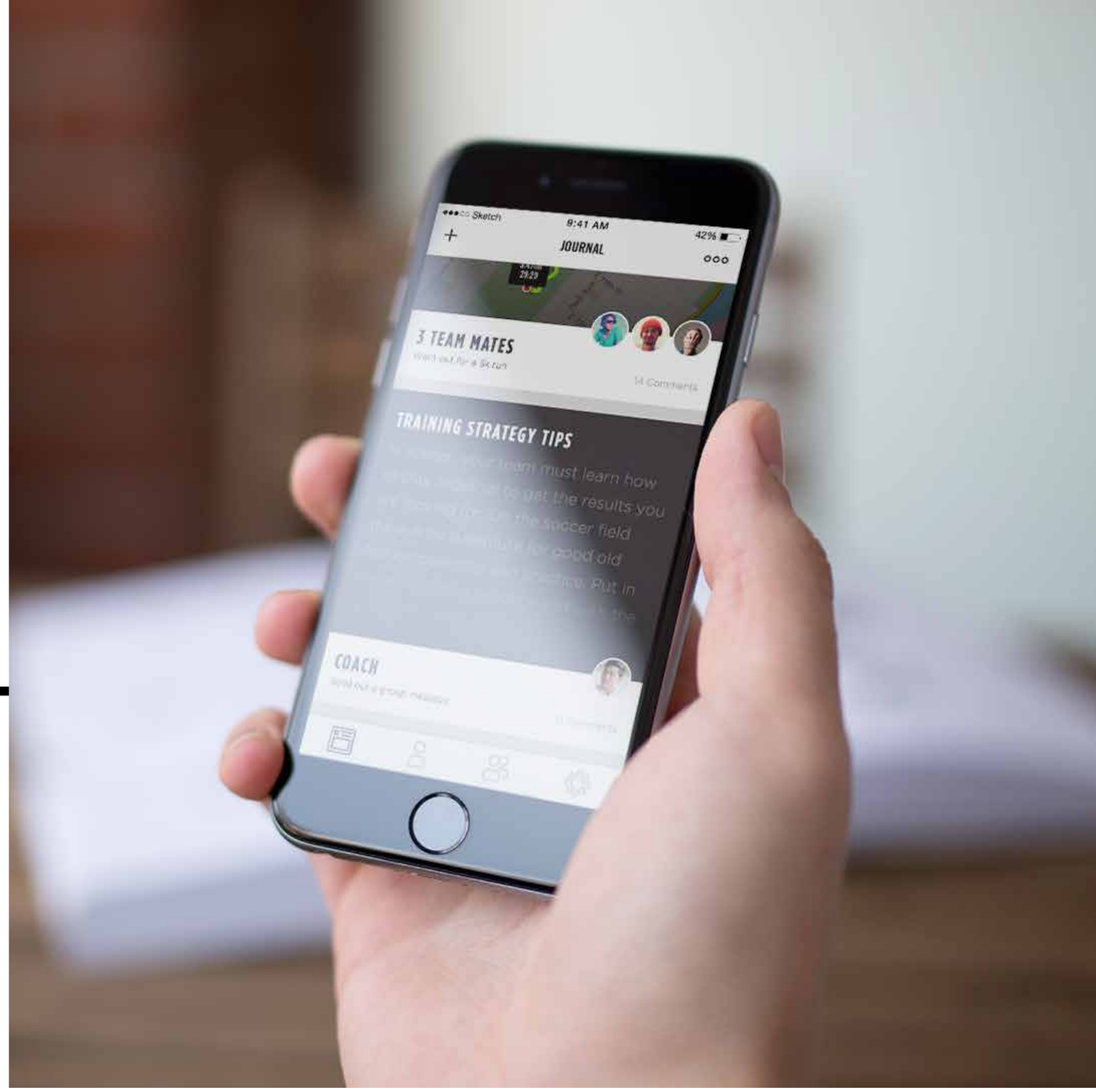
The moment Brandon opens the application, all of his activities and performance are seamlessly synced from the linked third party applications

RECEIVING TRAINING RECAP



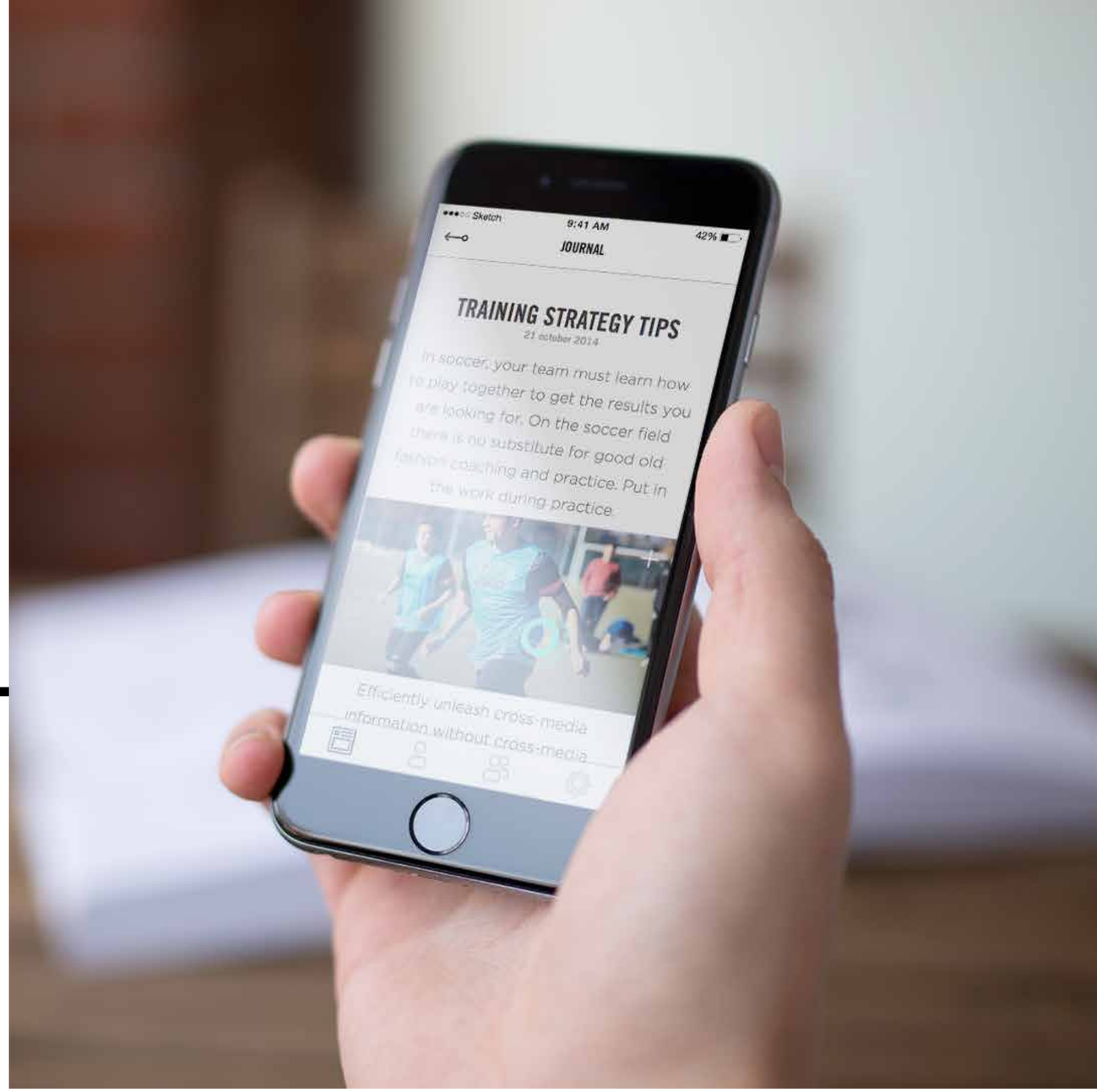
After the training, Brandon opens the application and is provided a recap of the training. This recap shows Brandon that he didn't reach his goal. By swiping horizontally, Brandon navigates through the different cards to see how his team performed and to get a brief overview of the training

RECEIVING COACH CARD



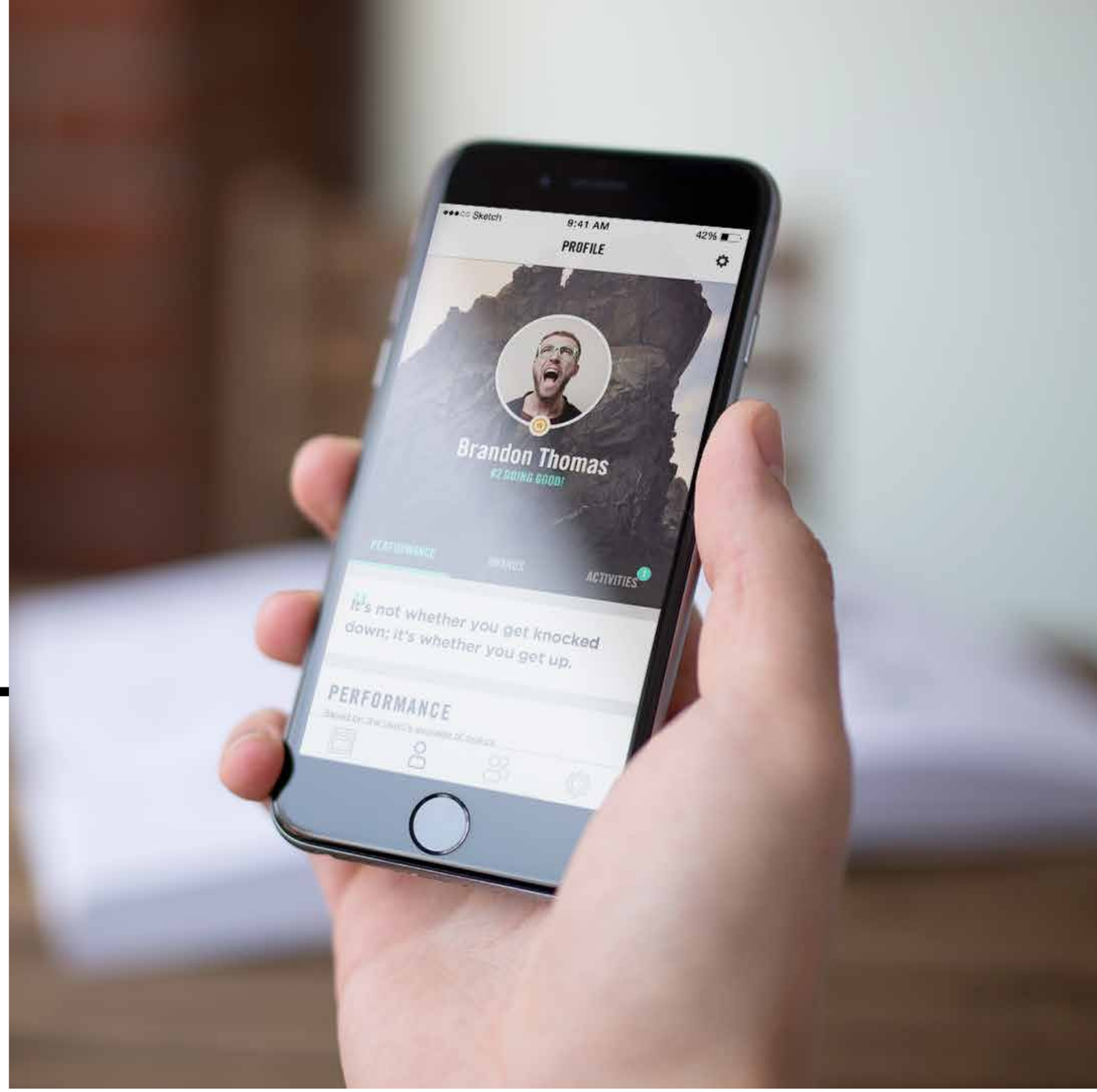
While browsing the journal, Brandon sees that the coach has posted a team message regarding last training. Since he didn't reach his personal goal during the training, he's motivated to get more insights.

READING COACH CARD



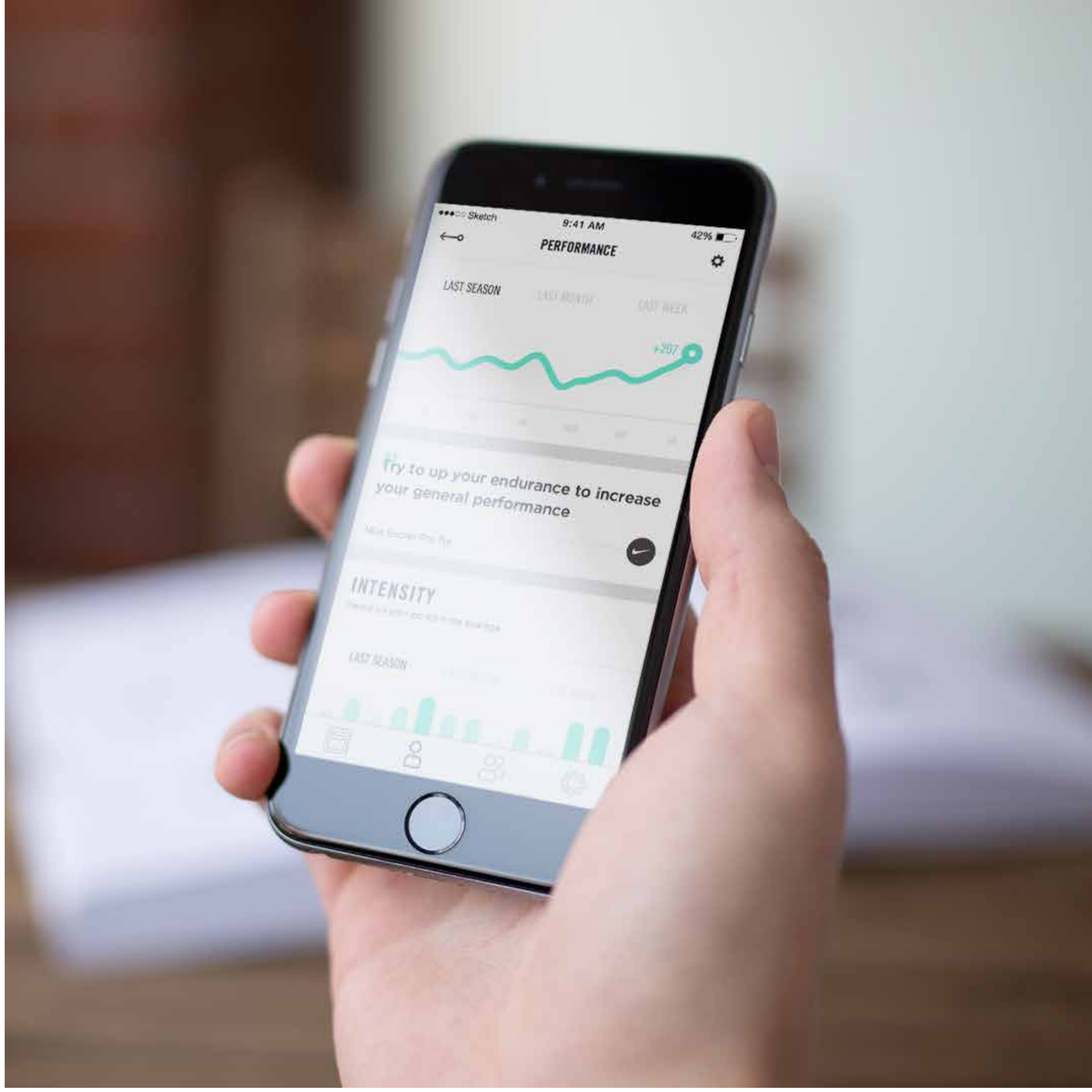
The post is about the way how everything has consequences on the players performance, This makes him motivated to get to know more about his own progression

CHECKING HIS PERFORMANCE



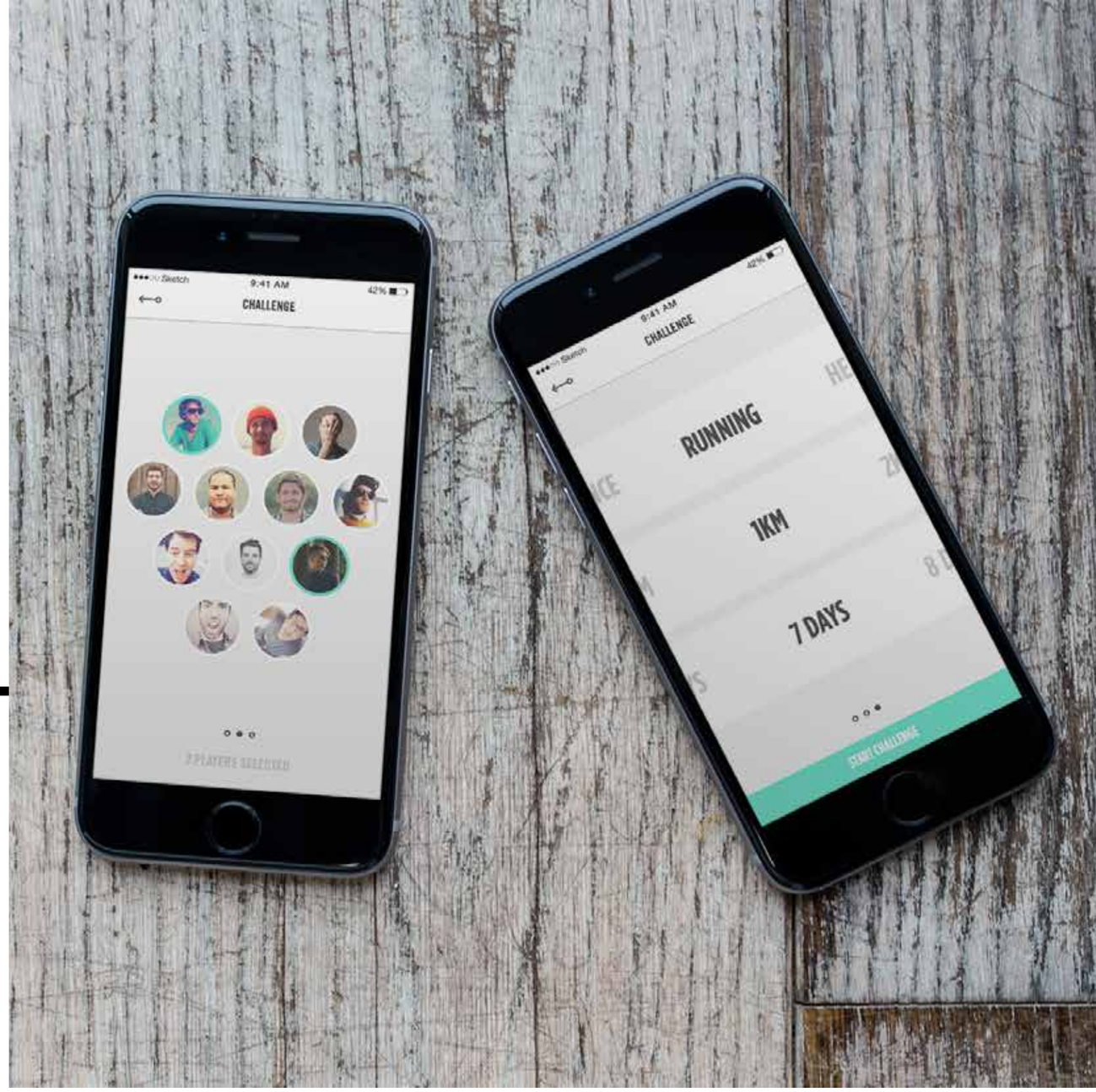
He follows through to his profile to see his global performance statistics. Since he wants to get more detailed insights he deep-dives into the performance details

DETAILED PERFORMANCE



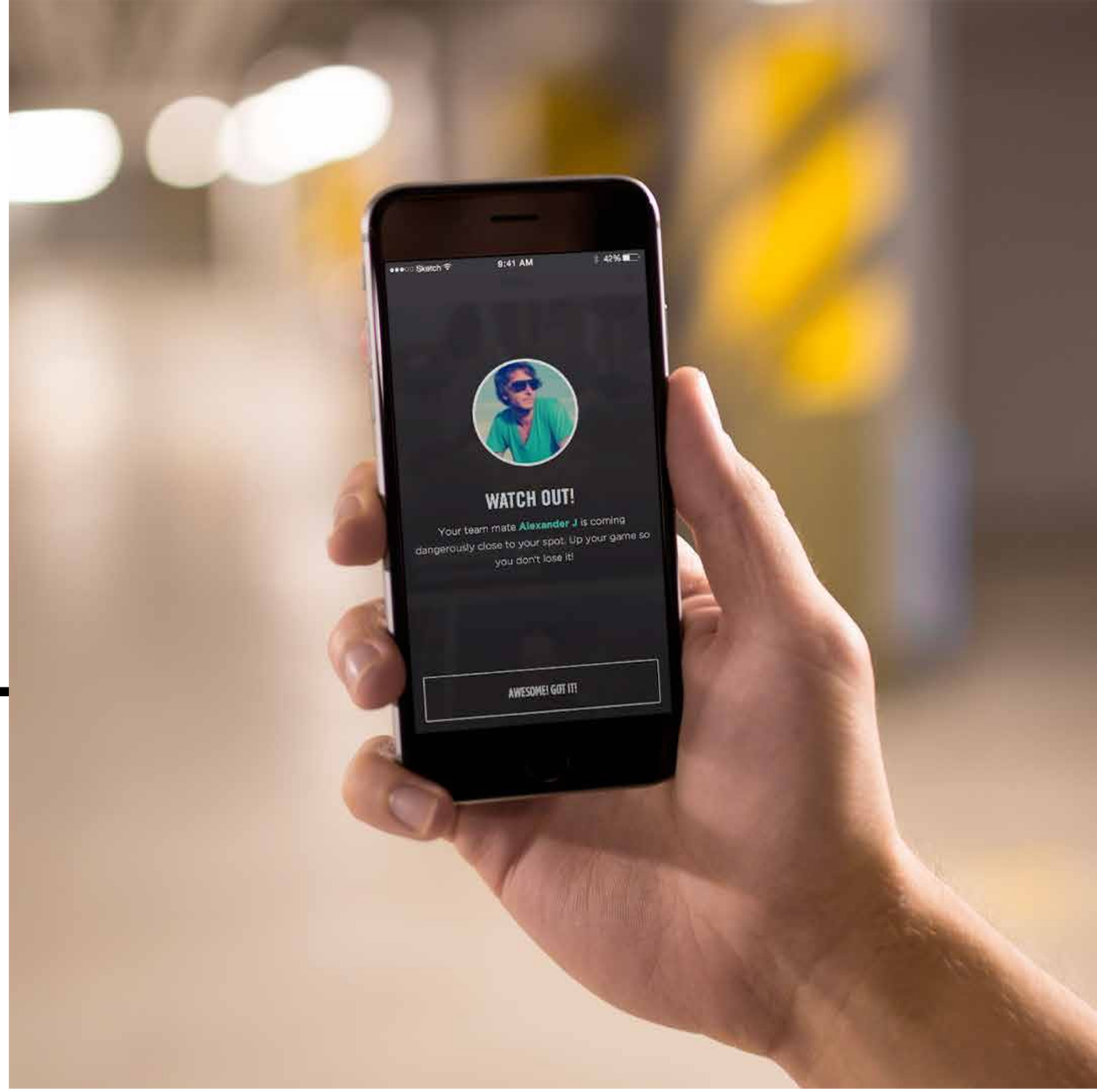
He follows through to the performance details. Here he can review his performance split up in the different kinds of metrics used by the linked applications. For example NikeFuel, Heart rate, sleep etc. Brandon can also get specific tailored tips from Nike Pro Athletes on the detail page.

SETTING UP THE CHALLENGE



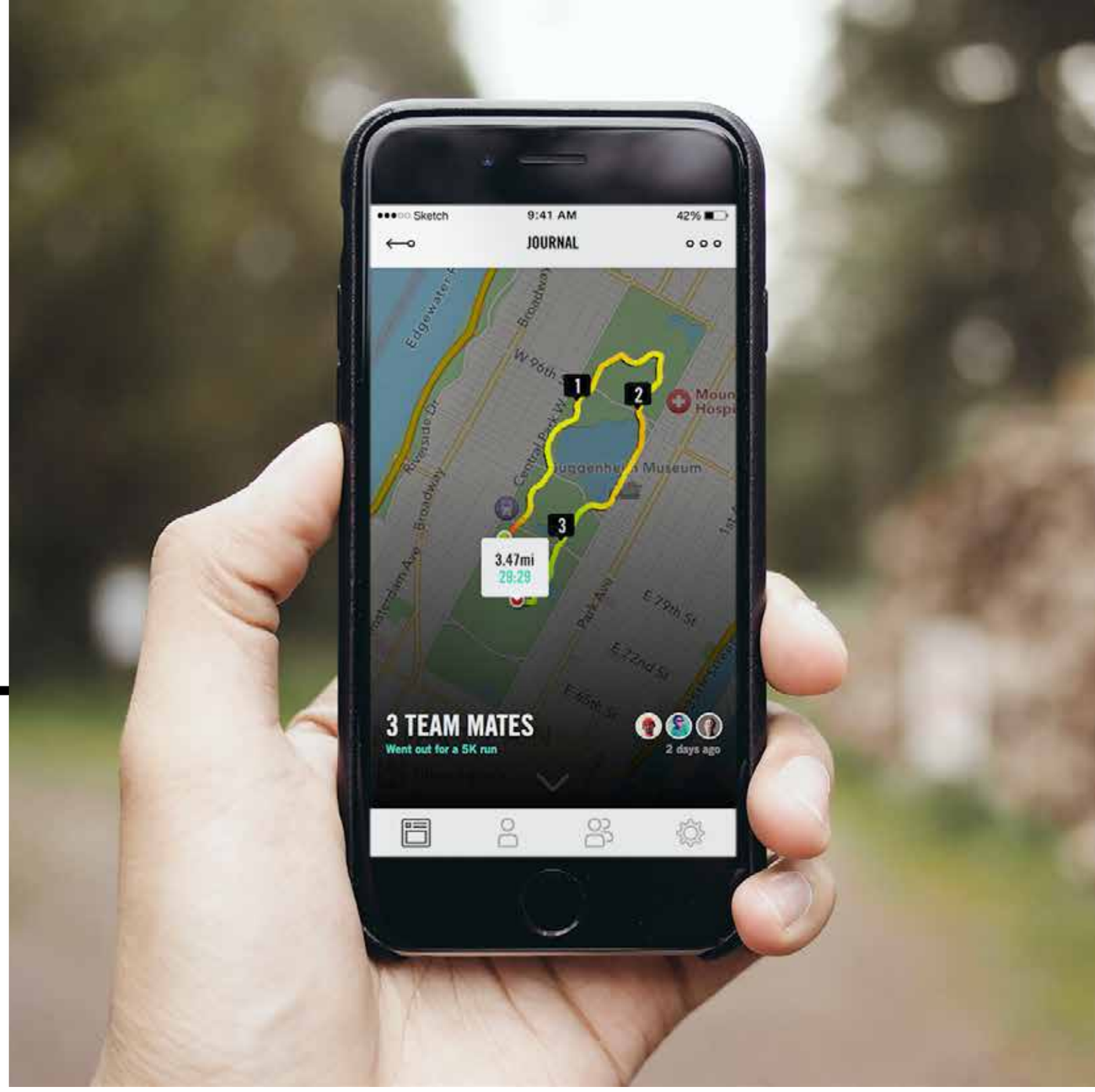
To give the team a little boost and something to work for. Brandon picks his team mates for a running endurance training.

CHALLENGE KICKS OFF



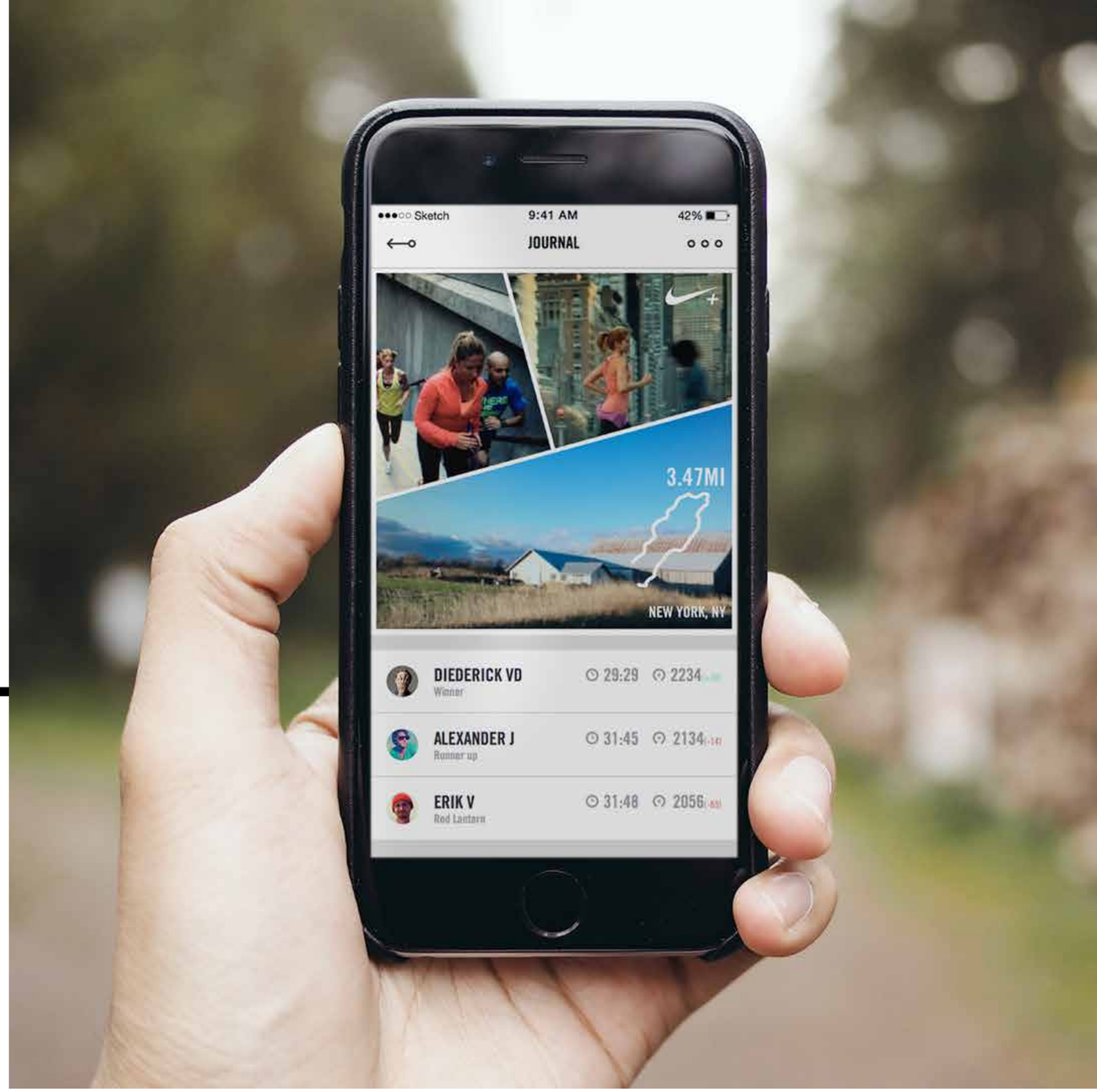
The moment when his teammate Alexander has finished his run, Brandon gets a message that he is getting closer to Brandon's position

GOING OUT FOR A RUN



That's the trigger for Brandon to open the journal and check up on Alexander's run. He discovers that not only Alexander, but three of his teammates accepted the challenge and went out for a run.

GOING OUT FOR A RUN

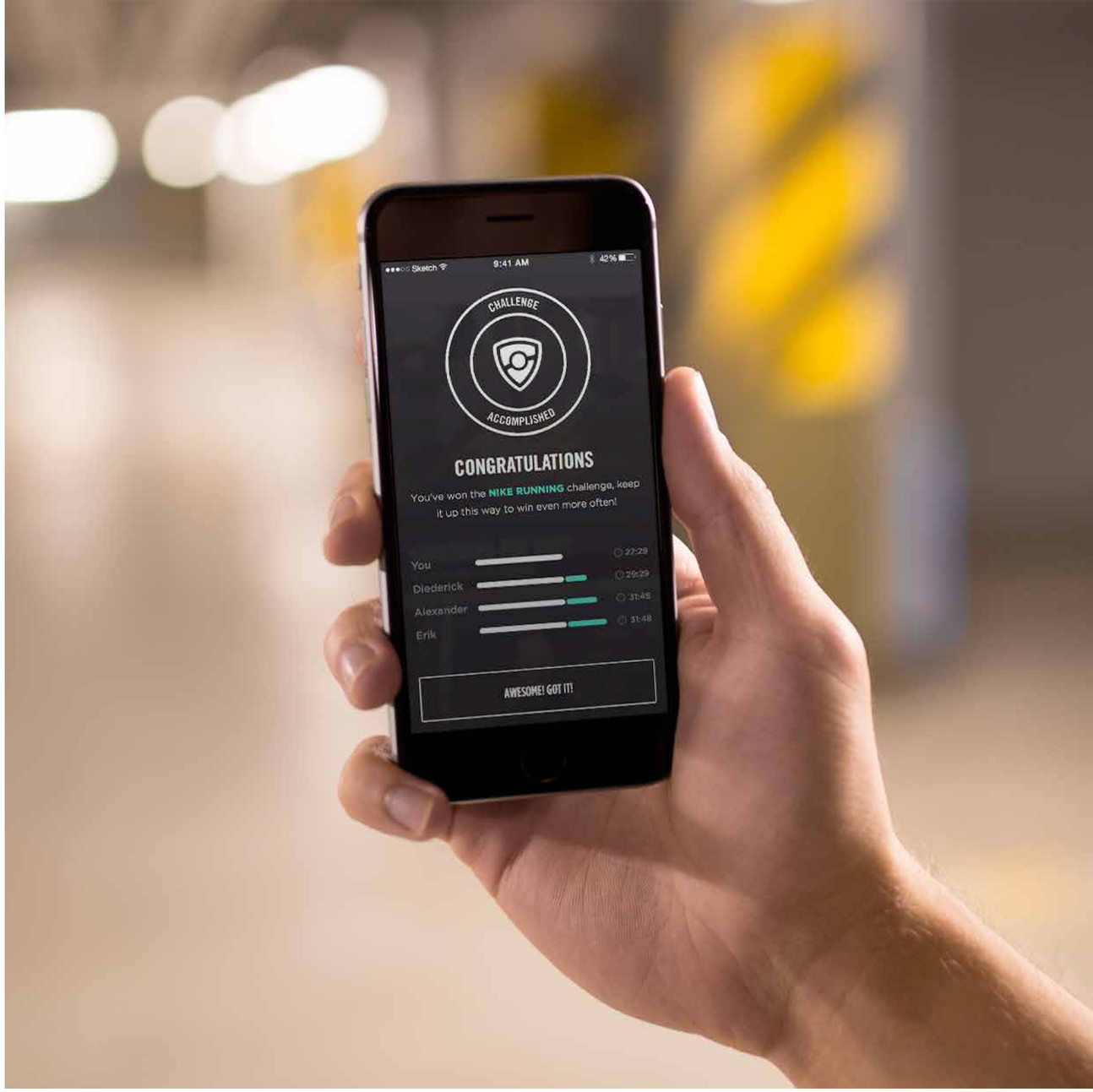


After seeing their performance, Brandon decides to go out for a run to keep his position on the player ranking board and take a shot to win the challenge

GOING OUT FOR A RUN

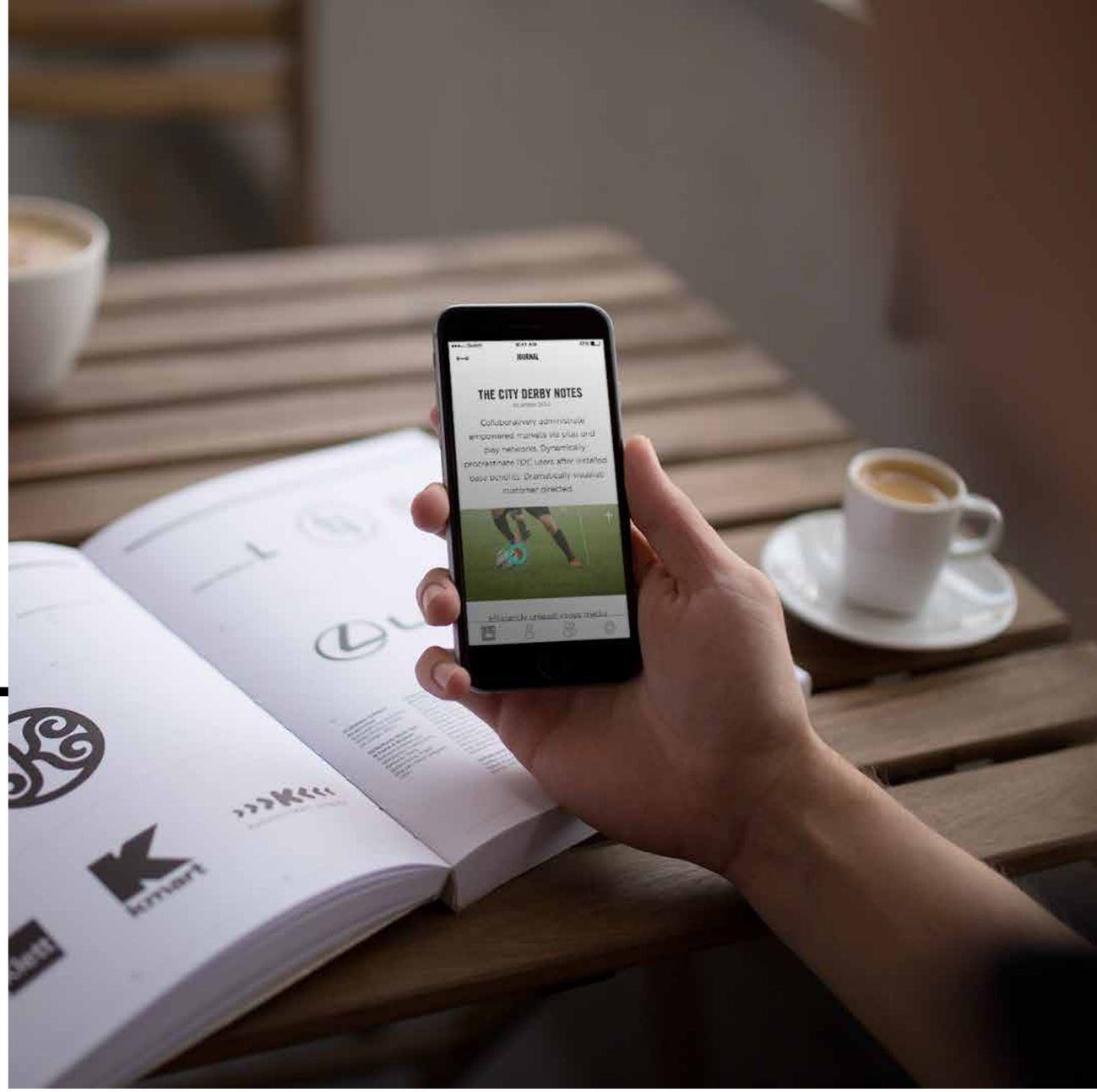
Brandon tracks his own run using the Nike+ Running application. Afterwards the application will sync with the Nike Team application

CHALLENGE ACCOMPLISHED



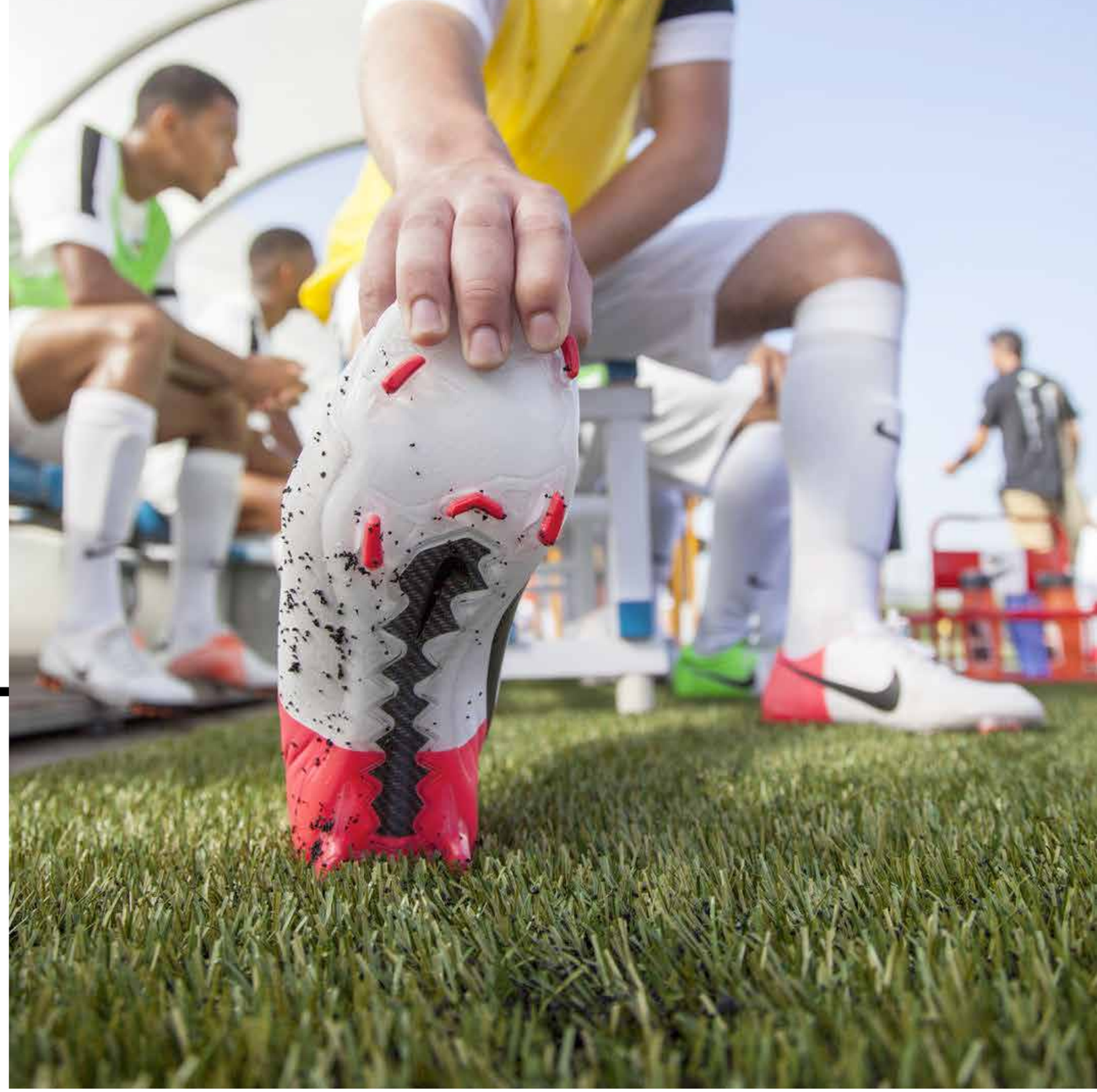
At the end of the week Brandon is being messaged that he won the challenge since his time was the fastest time set by all of the joined team members

RECEIVING MESSAGE



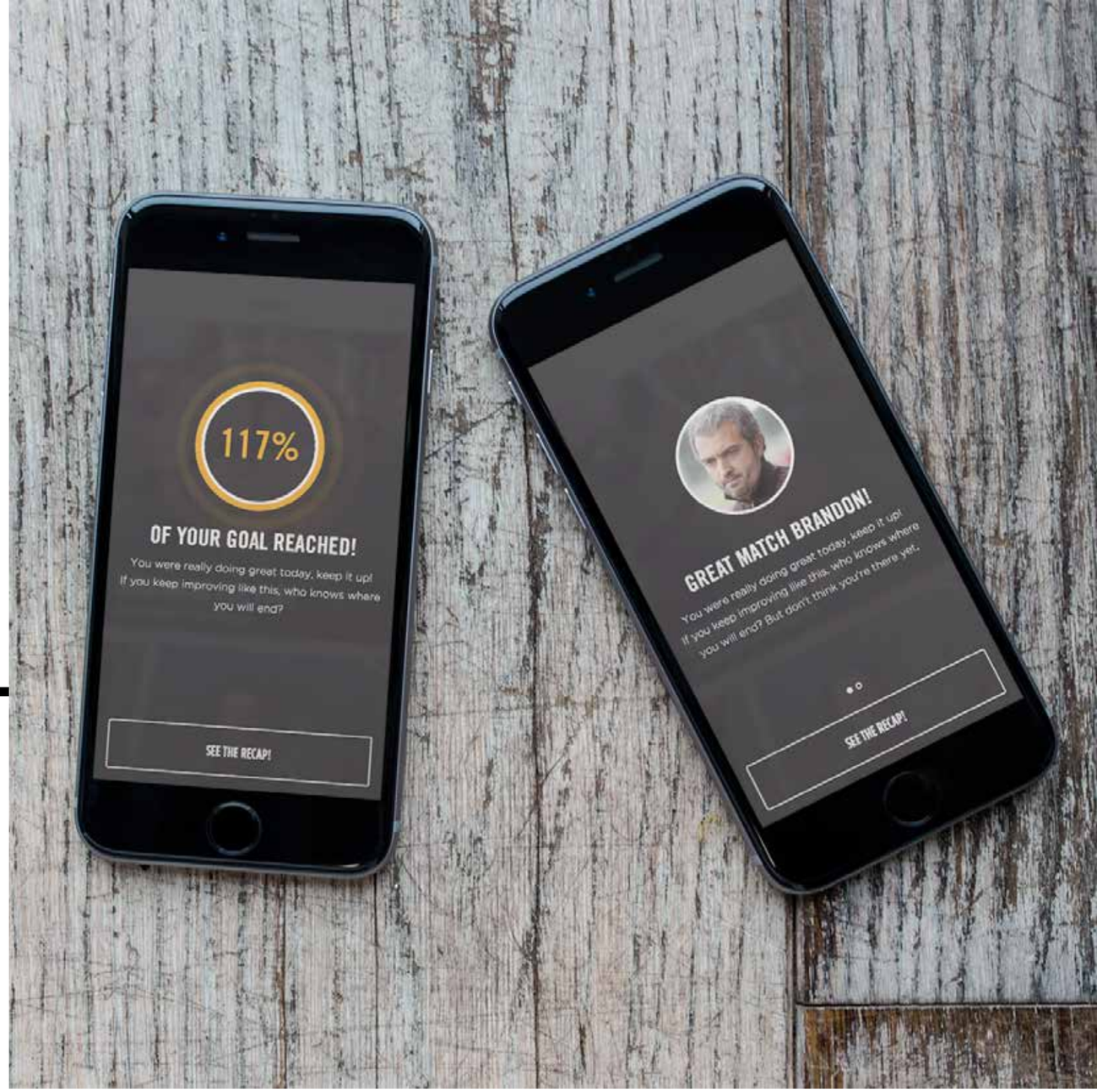
The evening before the match, the coach sends out a motivational message to boost up the spirit of the team

GAME ON!



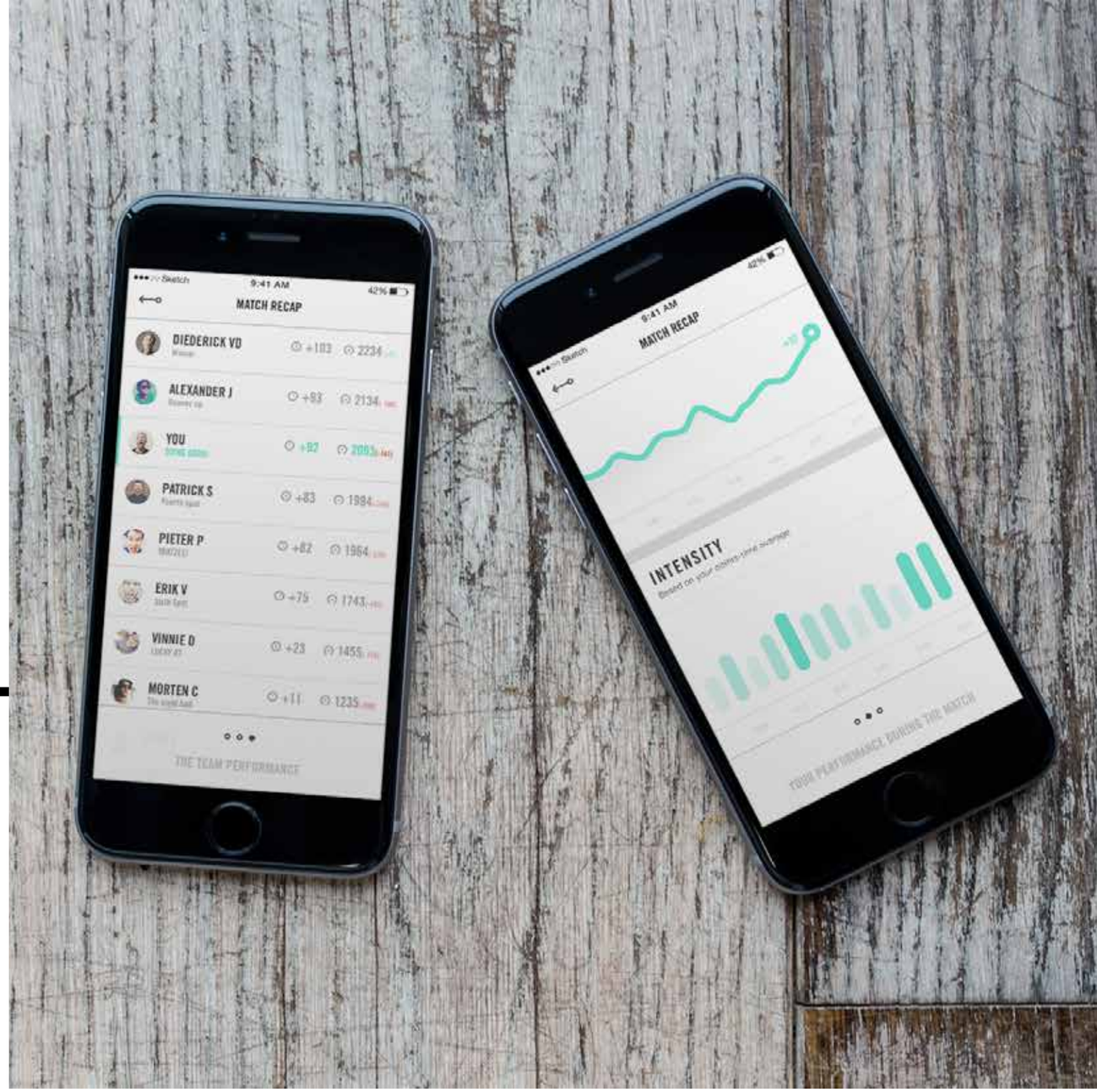
During the match day the team is psyched up to play. During the match Brandon's performance is also being tracked

RECEIVING POST-MATCH MESSAGE



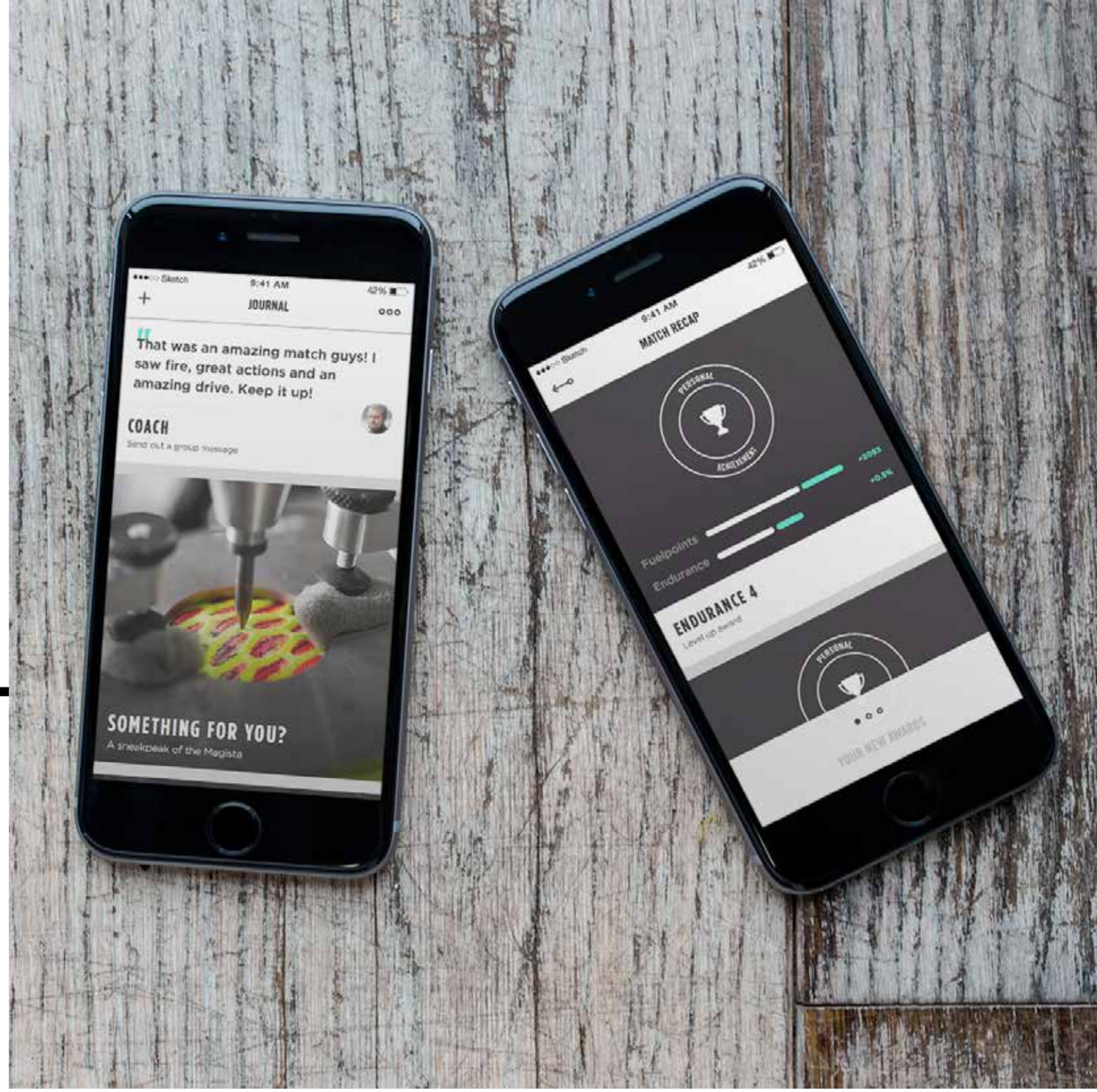
After the match Brandon opens the application and is provided with a motivational message from the coach. This gives him an automatic recap of the training. This recap exists out of his performance, his won awards and the global performance of the team. Brandon can swipe through each of the sections.

REVIEWING MATCH PERFORMANCE



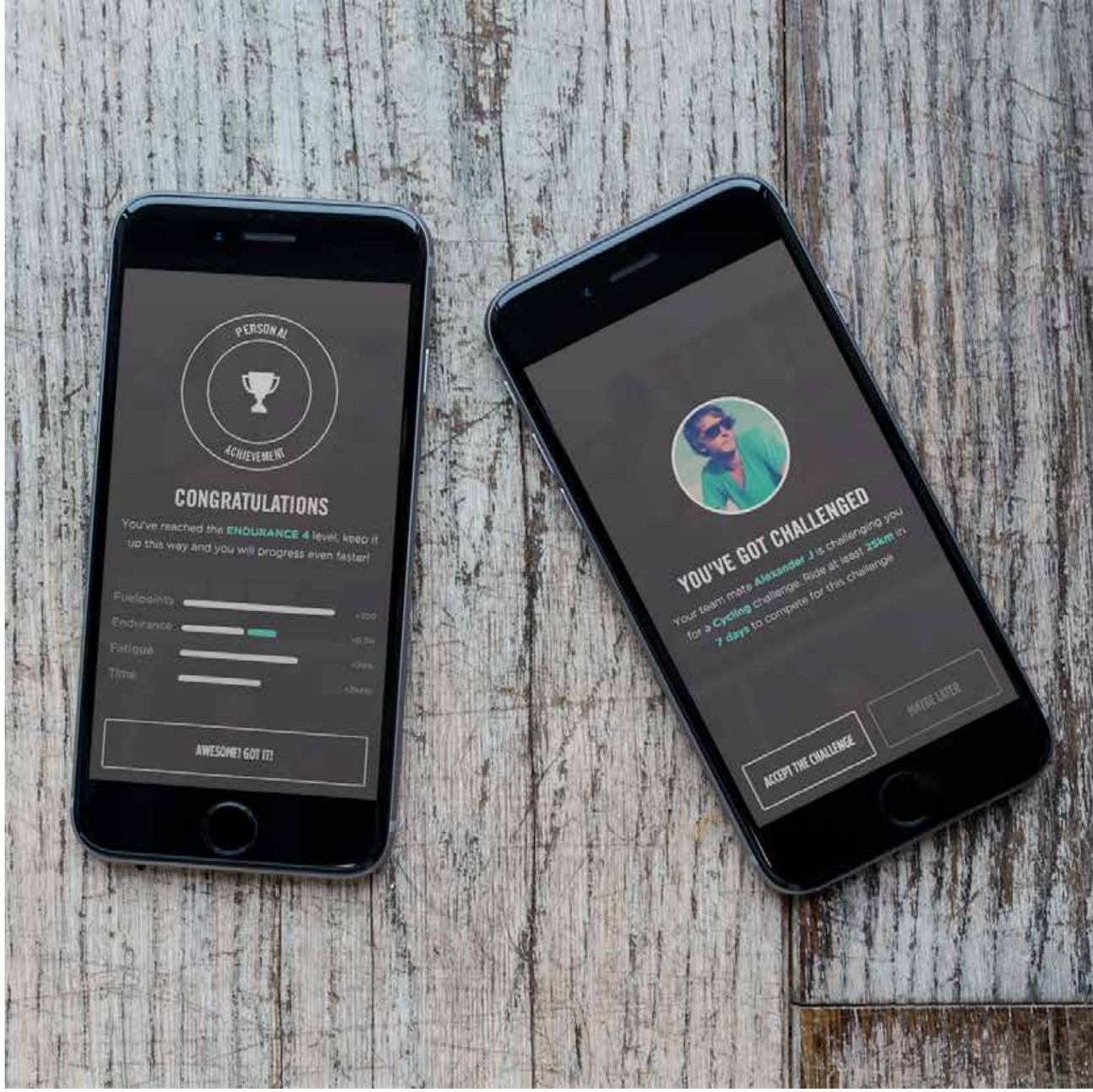
He recaps his performance. In a quick glance he can see how his general performance was over time, how intense he performed and how his amount of fuel was build up during the match. During this quick overview, Brandon concluded that the team reached their goals and performed better than before

RECEIVING MOTIVATIONAL COACH MESSAGE



After the training the coach had send out a motivational message to the team congratulating them with their improved performance and by reaching the team goal.

ENDLESS CHALLENGING



Since the team reached their goals, both Brandon and Alexander levelled up their endurance. Since Alexander wants to end up in the top 3 ranking, he challenges Brandon for the upcoming week.

The process

The research was started by reading a lot of literature regarding motivation, social interaction and ways to find the needs of the consumer. The effort of deep diving in these subjects resulted in great insights about why people get motivated and how these intentions are build.

To research these intentions, a survey was send out to an audience of about 200 athletes. About 60 athletes replied on this survey. The first phase of the research was dedicated to gain knowledge about the subject and the target group. During this research, the choice was made to create one prototype and iterate on the user tests and refine this prototype over time.

This prototype was created early in the research phase but was kept in a rough design, so it would lead to wide discussions and conversations with my counselor and with the target group. This prototype was created after receiving the insights from the first survey.

After receiving the insights from the second survey, other hardware solutions were examined. For example the possibilities of the use of Google Glass in sports or the implementation of smart watches during training. These options were briefly examined and were terminated before a minimum viable product could be produced.

The survey was a great tool to get to know the target audience better, but to get knowledge of the core motivations and intentions of the target group interviews and observational research were better suiting solution. Therefore several coaches and athletes were interviewed and observational research was done during training sessions. These interviews were the foundation of the design criteria, because of the clarity of the insights generated by these interviews.

The interviews also provided insights about a select amount of competitors of the Nike Fuelband and Fuel system. Besides these competitors, desk research resulted in a broader scope of the competitors. Using the Harris Profile, the strengths and weaknesses of these products were identified.

Using the results of these research methods new iterations of the prototype were made.

Design philosophy

Designing for mobile devices and in particular iOS, requires knowledge of the design guidelines used by the operating system. A design pattern is not a design which can directly be implemented into the product, but more a description of the interaction or a template of the global design. It explains the way how it could be implemented or how it could be used. By using patterns which have already proven itself, it was easier to connect to the users affordances, resulting in logical and efficient interactions.

For each different mobile operating system are different design patterns and guidelines. Even for various different devices running on the same operating system, other patterns can exist. For example the patterns of the Apple Watch differ from the iPhone and iPad. For the design of the application, three kinds of templates were defined and developed.

For the challenge and profile views, full page layouts were created, based on general profile patterns

For the team and challenge views, modified list layouts were created, to suit the presentation of the date.

For the posts and copy views, long-form layouts were created. These layouts were based on the article and blog patterns.

The general patterns were based on the database of patters gathered by Pttrns.com (2014) and Neil T. (2012) Mobile Design pattern Gallery. O'reilly Media book of guidelines

To suit the need of the user, all the screens were reviewed and iterated to work as quick and efficient as possible by minimizing the clutter and information visible on the screen. The consideration was made to shift the balance to a more gesture approach instead of congesting the information on the screen.

Designing for iOS 7/8 and Nike

The design of the interactive product is made using the guidelines of the Apple HIG guideline (Human Interface Guidelines), defined for the release of iOS7. This version of the operating system differs greatly of his predecessor and focuses it on a more simple and practical approach.

Apple asks his designers to focus on content and functionality. The look and feel is still important for the experience of the application, but isn't allowed to stand in the way or obstruct in the interaction. This can be achieved by using full height screens or shifting the focus to the most important elements

Adding gradients and drop shadows tended to conflict with the interaction and focus of the user towards the application. Apple states that the user interface can have a supportive role, instead of a leading role. By using recognizable colors for buttons and actions can lead to higher trigger value and a higher level of affordance.

These recommendations of the design guidelines, are used as a inspiration to base the interactive product on. This was taking in consideration together with the guidelines of the Nike brand. S

Since Nike is a very powerful brand in terms of recognizability, strong brand guidelines were created. To maintain this recognizability towards the application, also these brand guidelines were used as a inspiration for the typography and use of color

Interactive prototyping

Testing with the target group

Testing the interactive product is one of the most important aspects of rationalizing the choices made while designing on a functional or conceptual level. For this concept, three different kinds of tests were performed.

During the first test of the interactive product, it was clear very fast that it was difficult for the user to make sense of the different kinds of data used in the designs. For them it was a clutter of different values and numbers.

After iterating on these insights a second paper prototype and user flow was tested with several athletes. The outcomes of this test were different than the first one. During this test they state that now the data is defined in a more congest able format. The context was still missing. They do started to understand the meaning of the data, but they were missing the story around it. During this test, the respondents were also asked what for them a personal contextual experience would be like. This was defined by them as an experience where they could relate themselves towards their peers and to the situation.

During the micro interaction tests it was made clear that the users needed a minimal level of feed forward. Especially in terms of the iconography and meaning of these icons. After being explained what these icons meant. It was very clear for them what the affordances where and what they suppose to do.

This made me think about the purpose of these icons and if there was a way to redesign this interaction. This resulted in removing the second layer of interaction, the interaction of holding an item until the addition actions would pop up.

In the revised version the icons are given a more prominent and logical position on the screen.

The tests concluded that the users were easily unfamiliar the jargon and affordances of the application if they weren't introduced with it.

Based on these conclusions the tool tips were also removed, and the initial on-boarding flow/coach mark was refined.

In terms of social interactions, the availability of an event time line would trigger them to stay motivated about their performance in comparison to their peers. After testing the use of the time line and leader board, it was concluded that manifesting perks, chores, tiers and leader boards could further improve the motivation and curiosity in addition to just a time line.

Paper Prototyping

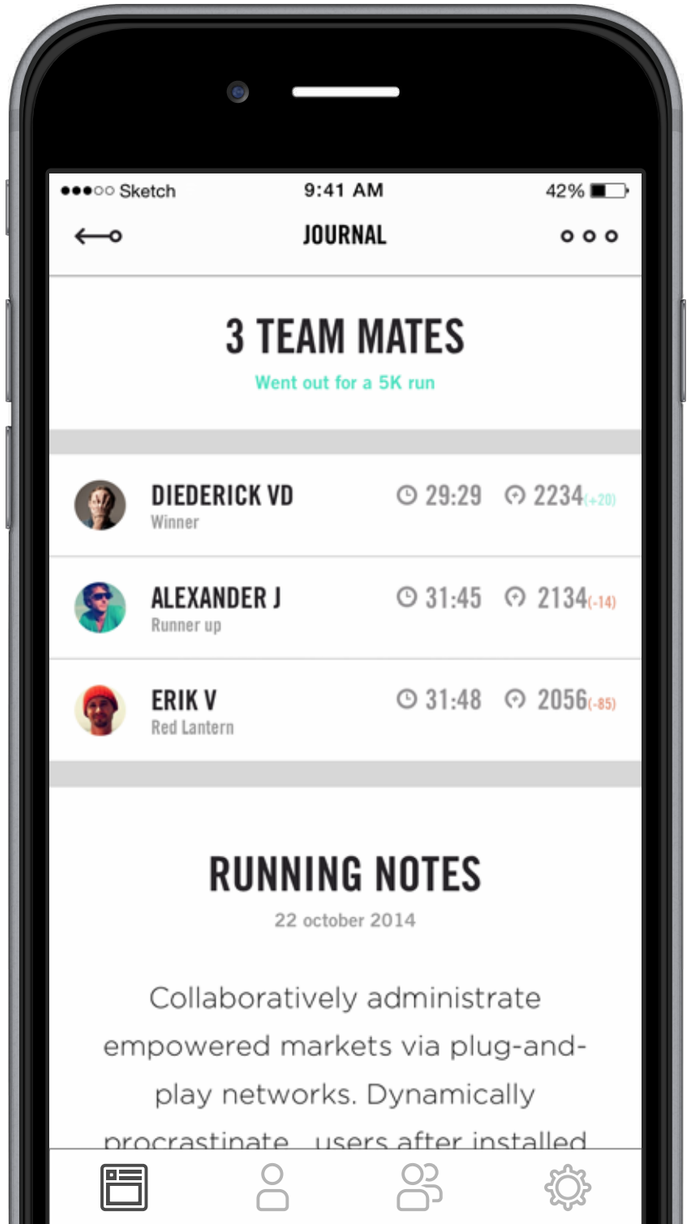
For the first iterations of the design, the choices were tested as paper prototypes. The designs were printed and laid out in a random order. The respondents were asked to review the individual screens and order them in, for them a logical order. Afterwards they were asked about the preferred option of the screen, if multiple screens were present.

User Flow Prototyping

By using Invision, a online prototyping tool, several user flows were developed, designed and tested with multiple respondents. The respondents were asked to perform different tasks regarding the different user flows. These flows varied from a simple sketched, on-boarding flow, to fully designed navigation patterns.

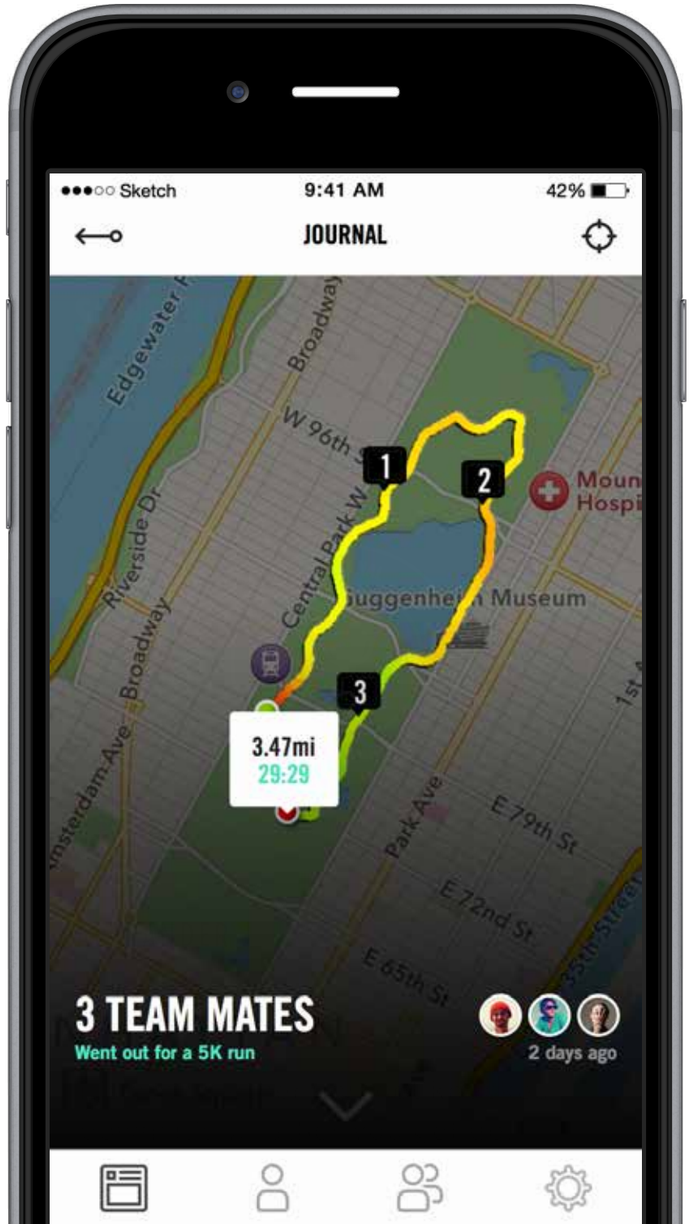
https://projects.invisionapp.com/d/main#/console/2084906/46431520/preview

As a result of the global flow tests using Invision, the user stated that instead of seeing the global data of their teammates they wanted to see the story around it. This manifested mainly in the workout cards. As an example, one of the cards used in the journey, three teammates went out for a run. In the initial design the users were directly provided with the performance of their teammates.



After the testing this card was redesigned to show the route they ran, and the photo's taken during this run. Besides that there is more space reserved for annotations and comments.

Other cards were reviewed and modified to suit these guidelines better



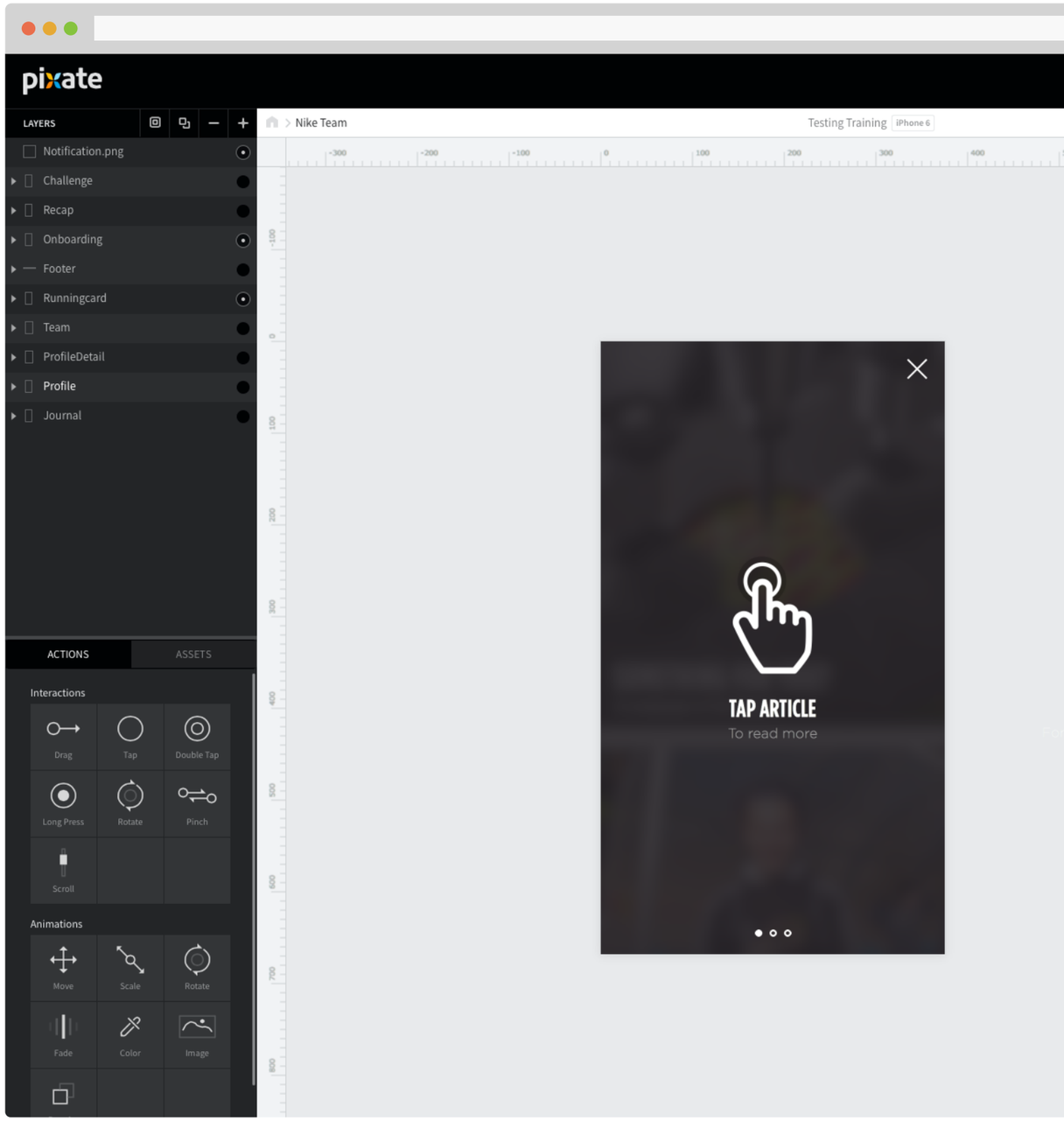
Prototyping Micro-interactions

After the initial navigational interactions were defined, the online prototyping tool Pixate was used to test different kinds of micro interaction. The respondents were asked to go through two user journeys.

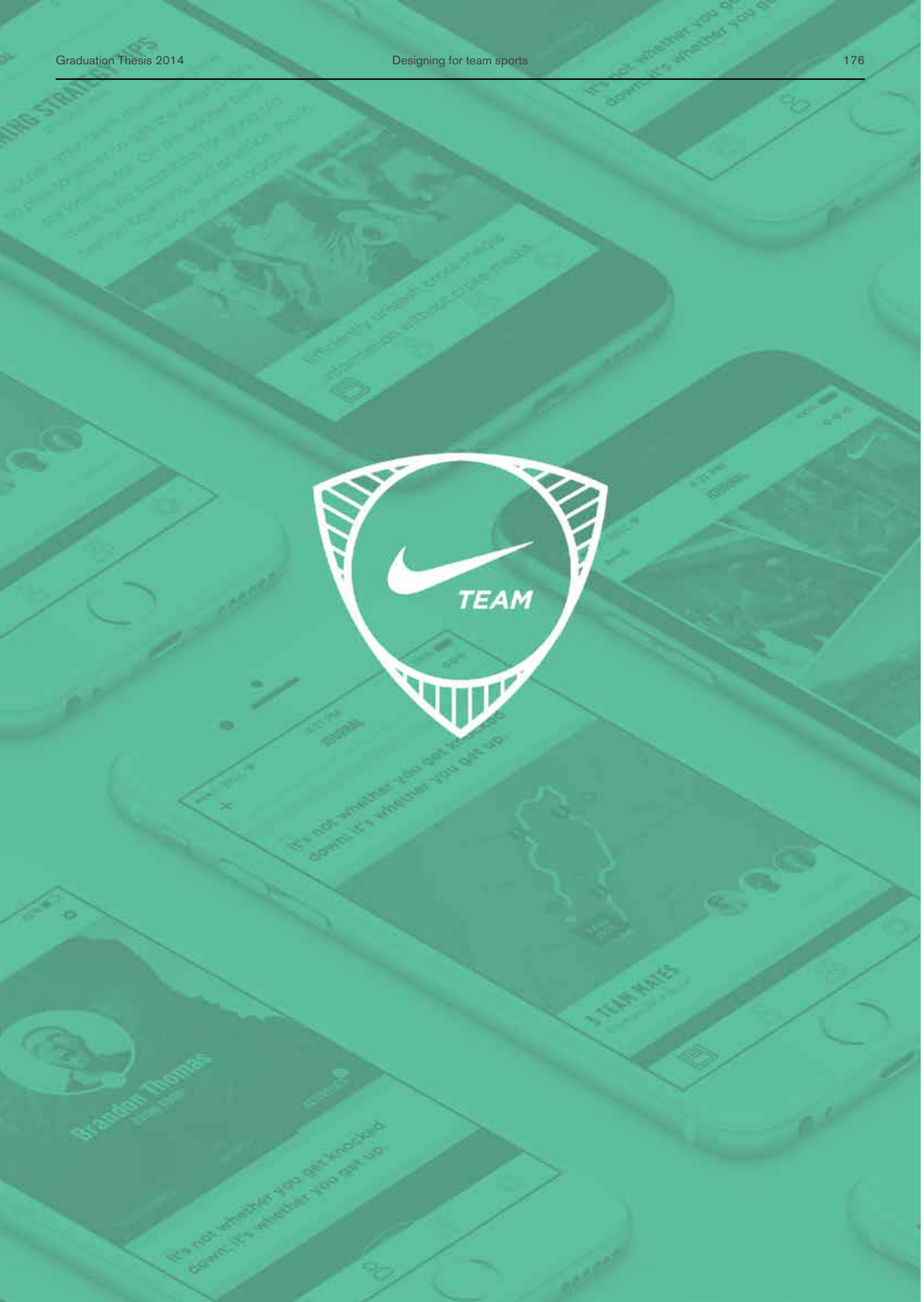
For the first user journey they were asked to imagine the situation when they just finished a workout and wanted to recap their performance. This first test resulted in giving insights about the way "performance" was visualized. In the initial designs performance was presented too detailed, while the users wanted a more broad initial overview.

For the second journey, the respondents were asked to reply on a challenge of a teammate, and browse the journal. This journey gave insights about the way the respondents reacted on the challenge. In the initial design a skip for later button was missing, which was quite confusing for the users.

http://pixt.io/p3k6ufo13hi



Prototyping the coach marks for the journal. This first iteration was used to test on the respondents. This resulted in the insights about the placing of the close button. According to their affordances it wasn't sticking out enough to be really valuable.



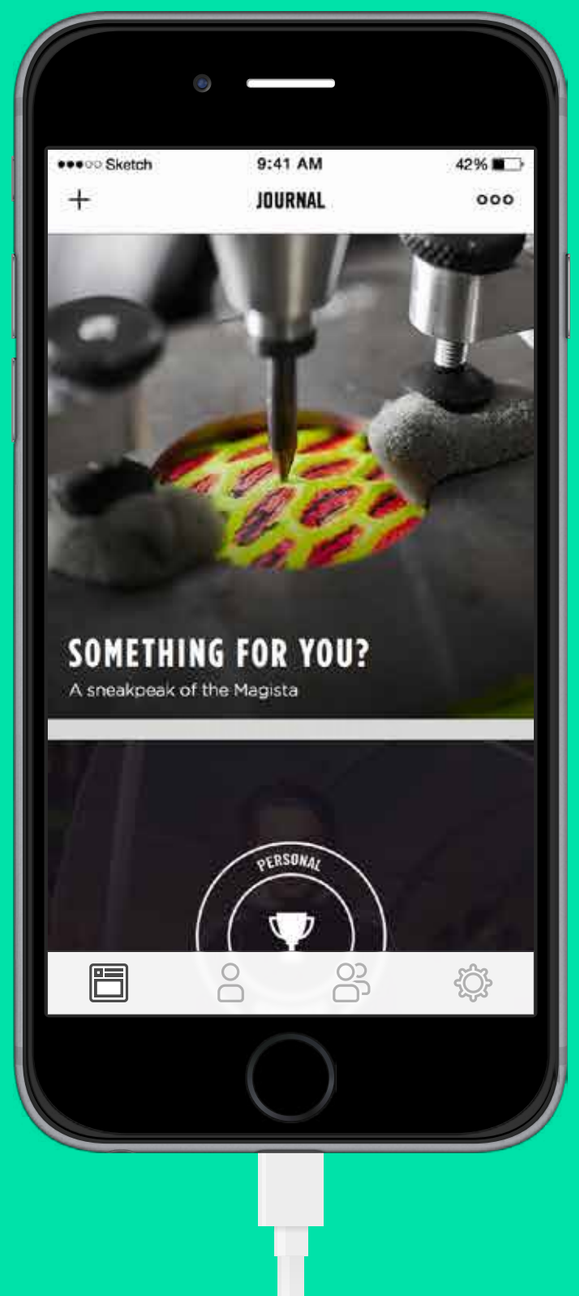
The designs

The end result is a finalized visual elaboration of a mobile application. The most important screens are displayed and explained and will show the global working of the application. The process will be explained by wire frames and final designs. User stories, persona's, scenarios and sketches are able to be consulted in the appendix.

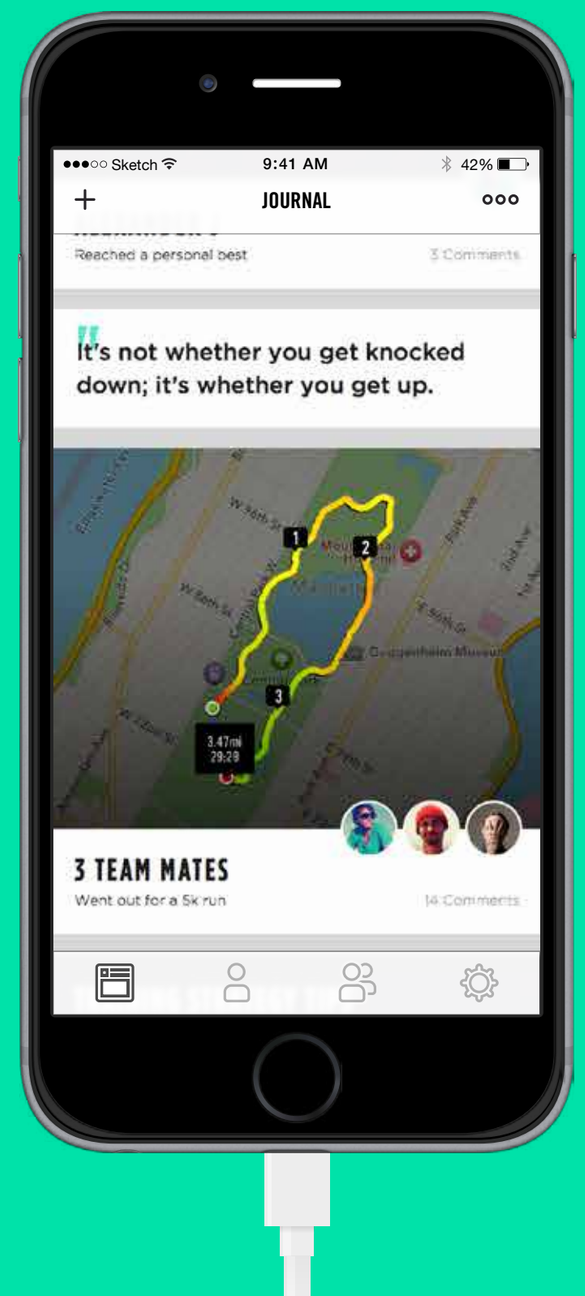
As a result of detailed tests and iterations, it seemed that the theories and research did not always fully suit the needs of the user. In initial iterations, all of the theories and design criteria were implemented into the designs of the application, but after testing it became clear that some of the design criterion weren't fully suiting the needs of the athletes.

Journal / Landing page

The Journal / Landing screen is the main hub of the application. All the activities, workouts, messages and events are displayed on this feed. As a result of the first testing round, this feed is kept very simple and straightforward. This was the main concern of the respondents while testing and suits with the guideline that the interactions have to suit the affordances of the users. This section of the application focuses mainly on triggering the user by utilizing intrinsic triggers using social perceived norms.

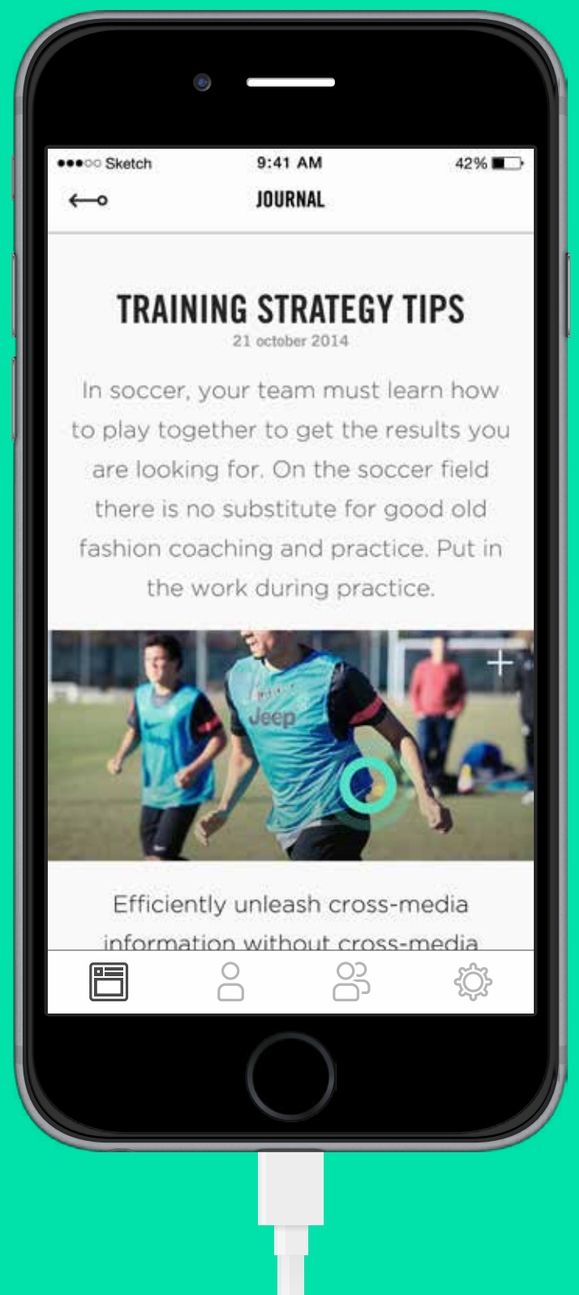


In general, the data and content displayed on the feed is kept as small and digestible as possible.



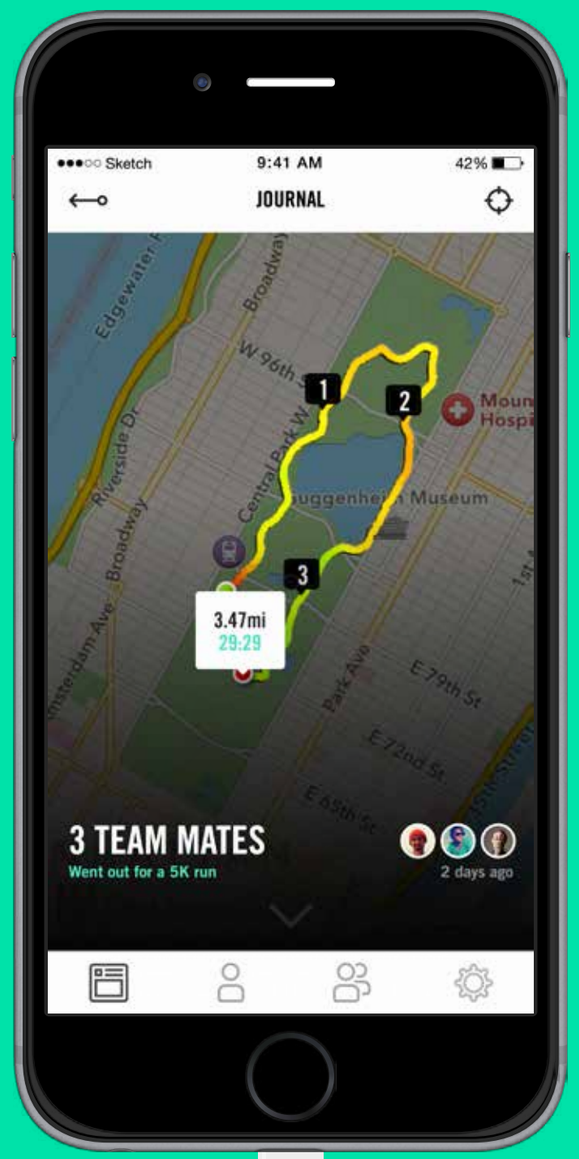
Coach card

The coach cards are content card specific designed to suit the behavior of the interaction between the coach and the players. For the coach cards a long form template was created to improve legibility and clarity towards the distribution of insights and feedback from the coach towards the team. The coach cards can contain tips, feedback, motivational messages and multimedia files. These multimedia files as videos and images can be annotated to highlight moments, or insights. These cards will be populated by using the existing Nike CRM/CMS



Work-out card

The work-out card is being used to provide the athletes with the insights and information about their or their peers' workouts. These workouts are automatically added when the user finishes a workout in one of the linked application. The workout cards contain two different sections. The so called "Summarized-intro", which gives the user a clear overview of the workout. And the "Detail-slide" which contains all the other content as imagery, the results and extra content as notes and copy. This section can be reached by swiping the intro in an upwards direction.

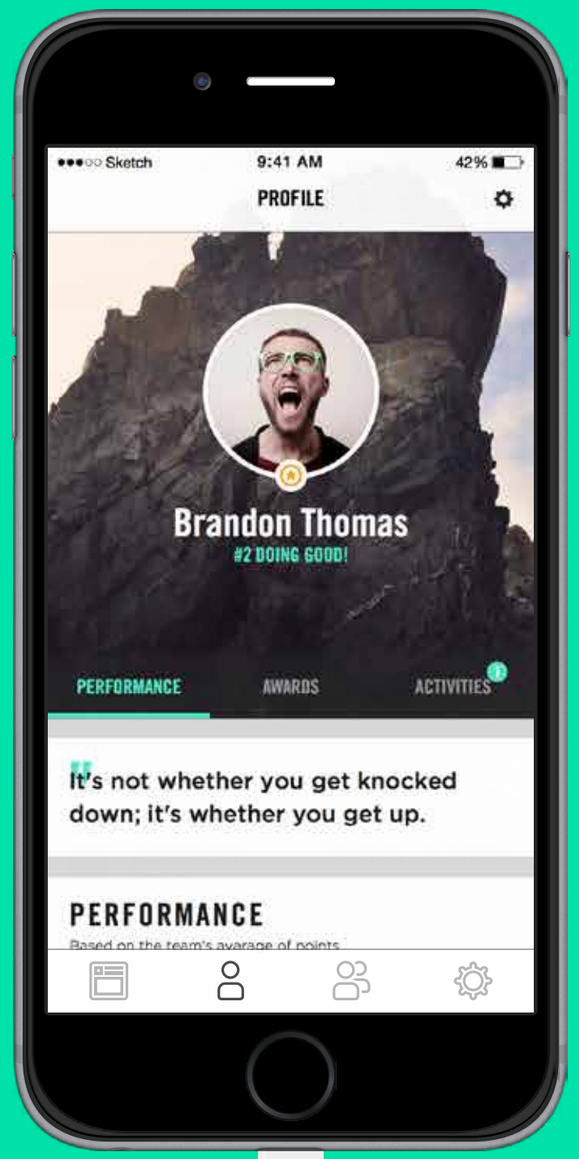


These cards focus mainly on, keeping the data in small and organized chunks, triggering the social challenges and the "set, perform and reach goal" design criteria.

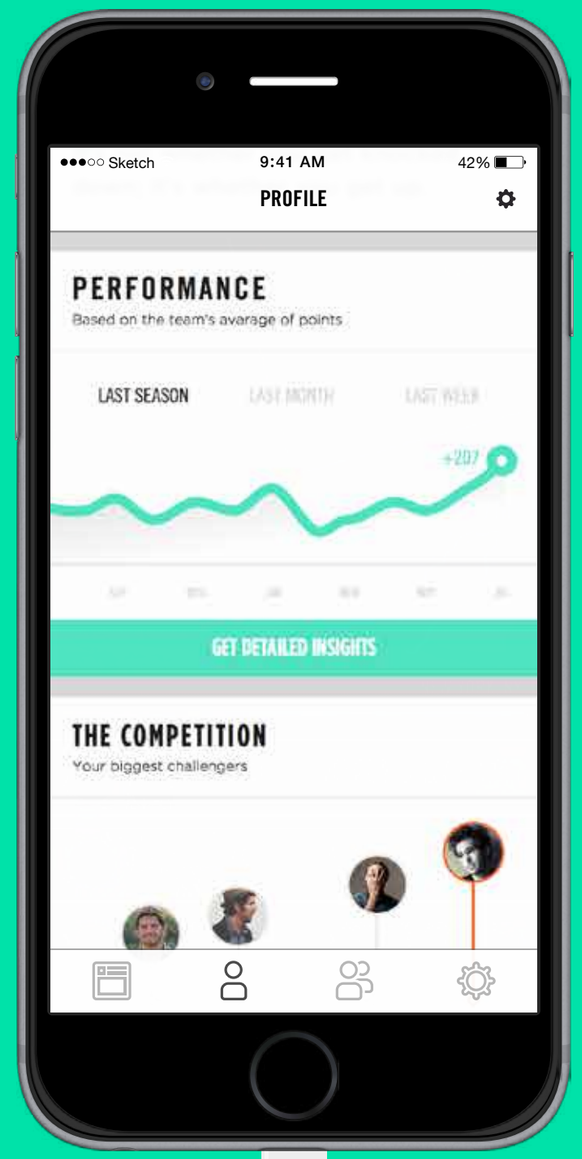
Profile / Performance

The profile visualizes the users collected activities and data. The content is split up into three sections; Performance, awards and activities.

The performance section displays an overview of the players performance and is based on the rules stated earlier this thesis. It also displays the competition, this module shows the current position of the player and triggers the user to go compare his performance with his peer and eventually challenge them or review his own performance

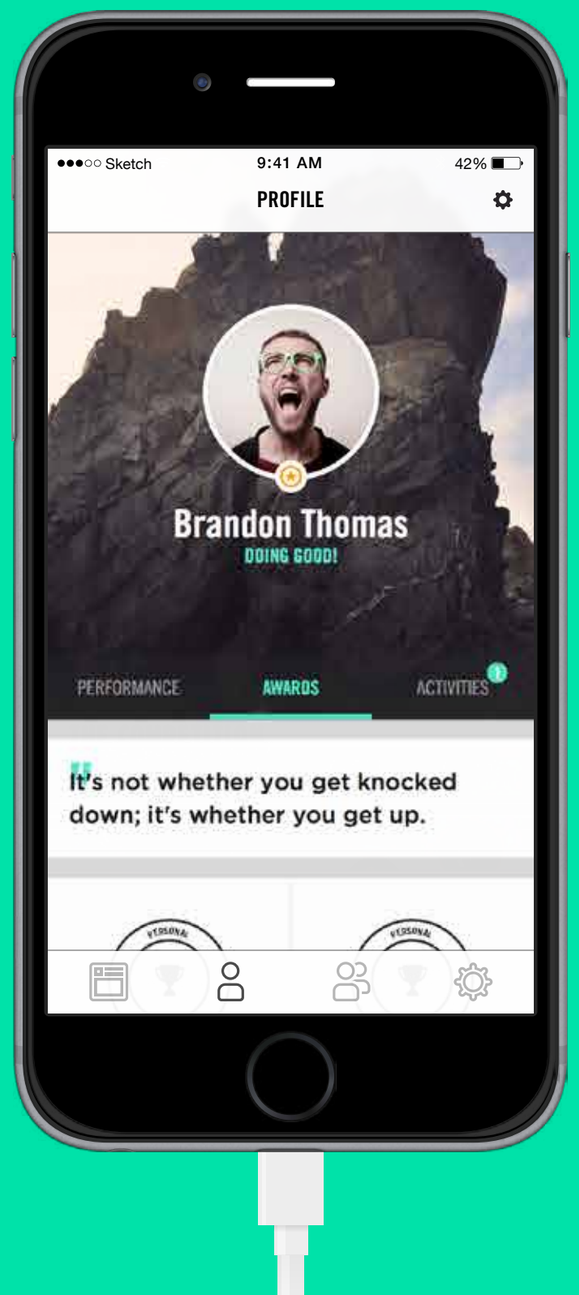


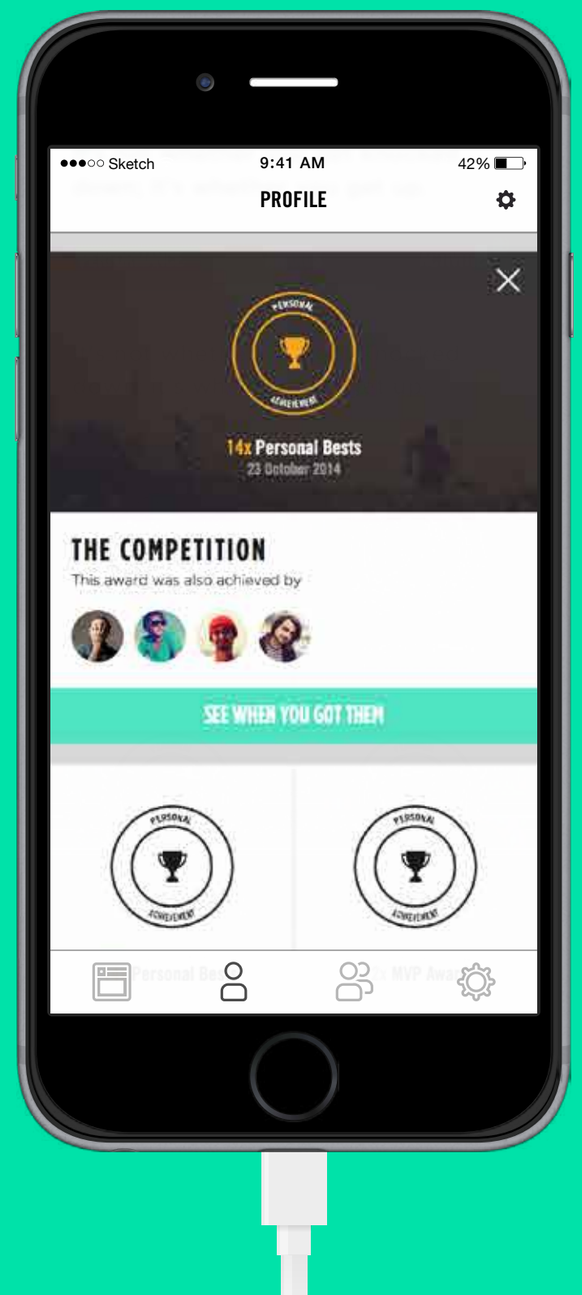
In terms of the design criteria, the profile is based on the criteria of intrinsic triggers and social perceived norms and keeping the data small and organized. By focusing on the intrinsic motivation in a social environment, this page supports the coherence between the data of the work-outs and the social function of the feed.



Profile / Awards

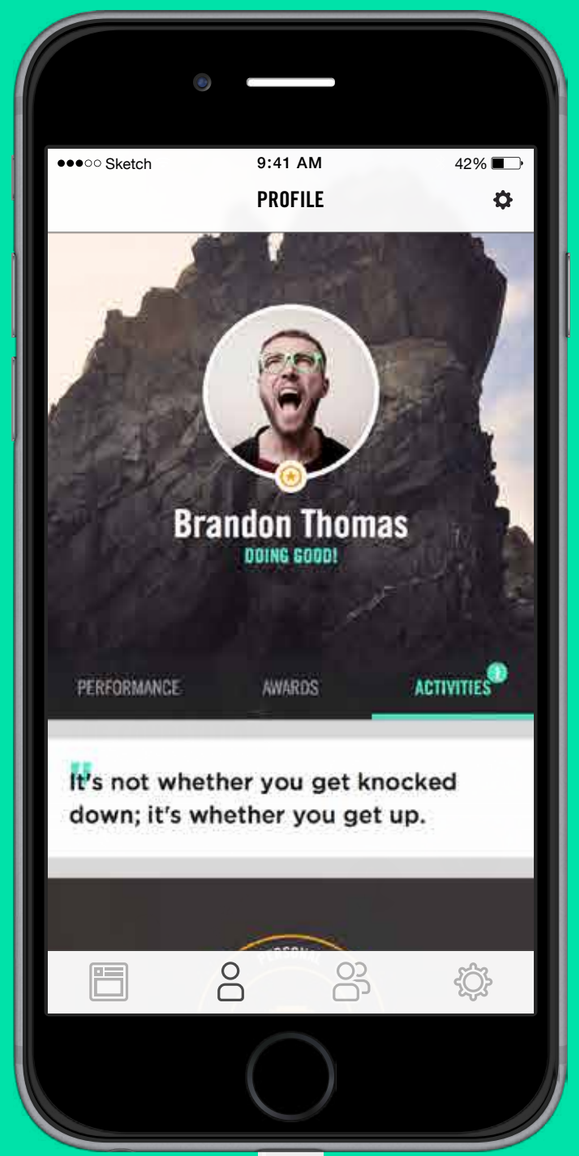
The award section focuses on displaying the current and upcoming awards, by expanding these awards on tap interaction the focus skews from setting, performing and reaching the goal towards social challenge and social perceived norms by introducing the player with the competitive element, by showing the player his achievement in combination with the achievements of his teammates. The content of these awards still needs to be determined, but due to the difference in sport and goal, will these awards be tailored by Nike to suit the look and feel of the sport.

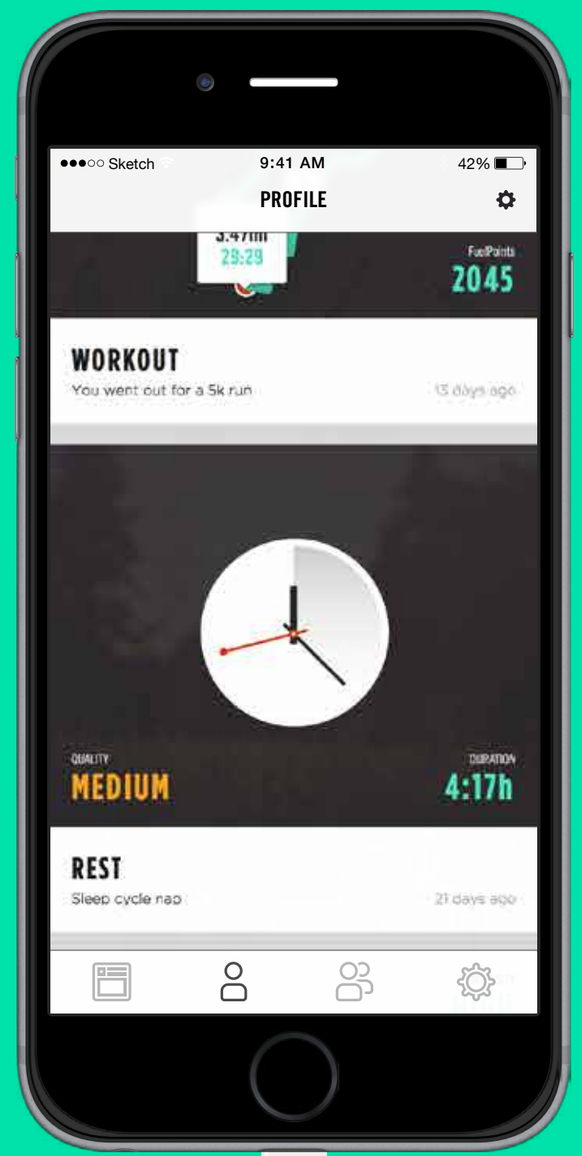




Profile / Activities

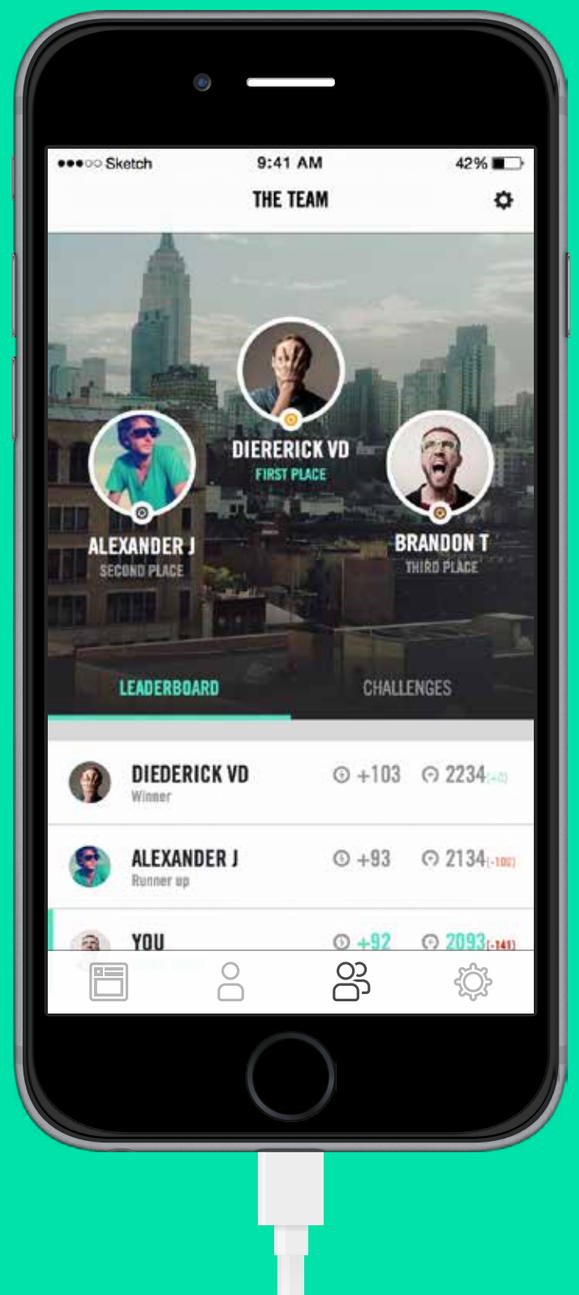
At the activities section all the data from the workouts and linked applications is being collected. All this data is visualized as separate cards. Each card consist a single application or workout and is filtered to visualize just the core of the content. For example a card of the application Sleep Cycle will show the time rested, the sleep quality and a clear visualization of this data. This section focuses mainly on keeping the data in small and organized packages.

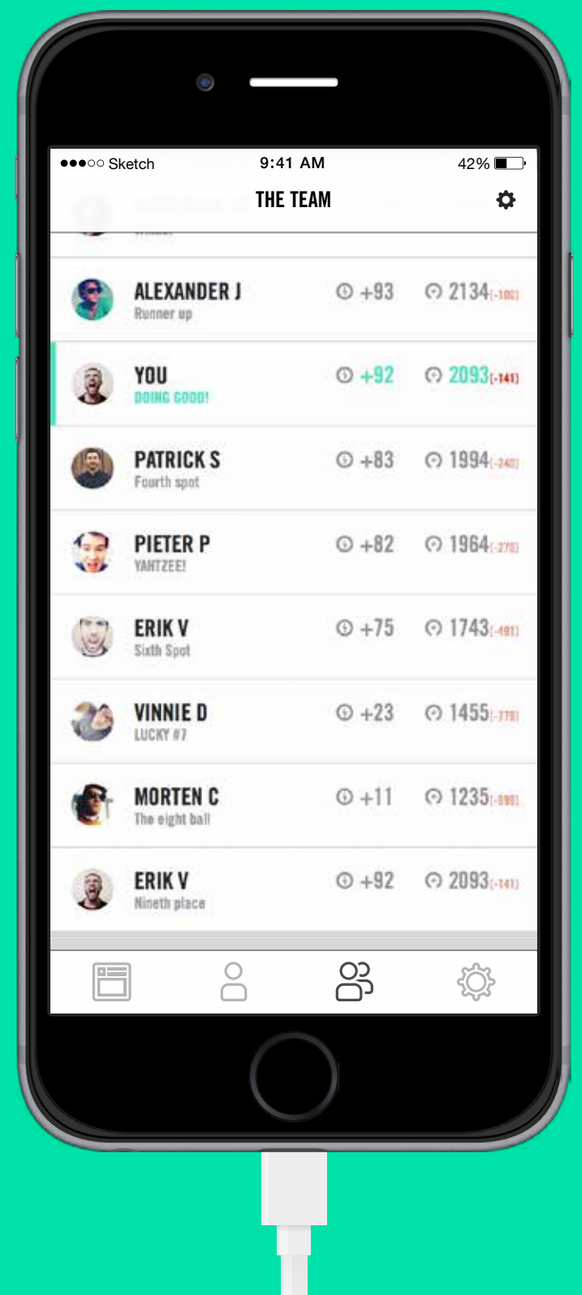




Team Leader board

The team section is split up into two distinct sections. The leader board and the challenges.
The leader board section focuses on the social challenges between the players by giving the players a direct comparison. The user can easily compare his statistics and performance by tapping on the name of one of his team mates.
This contributes to the design guideline of making sense to the affordance. These kinds of small, cleaver interactions suit the sense making of the key audience

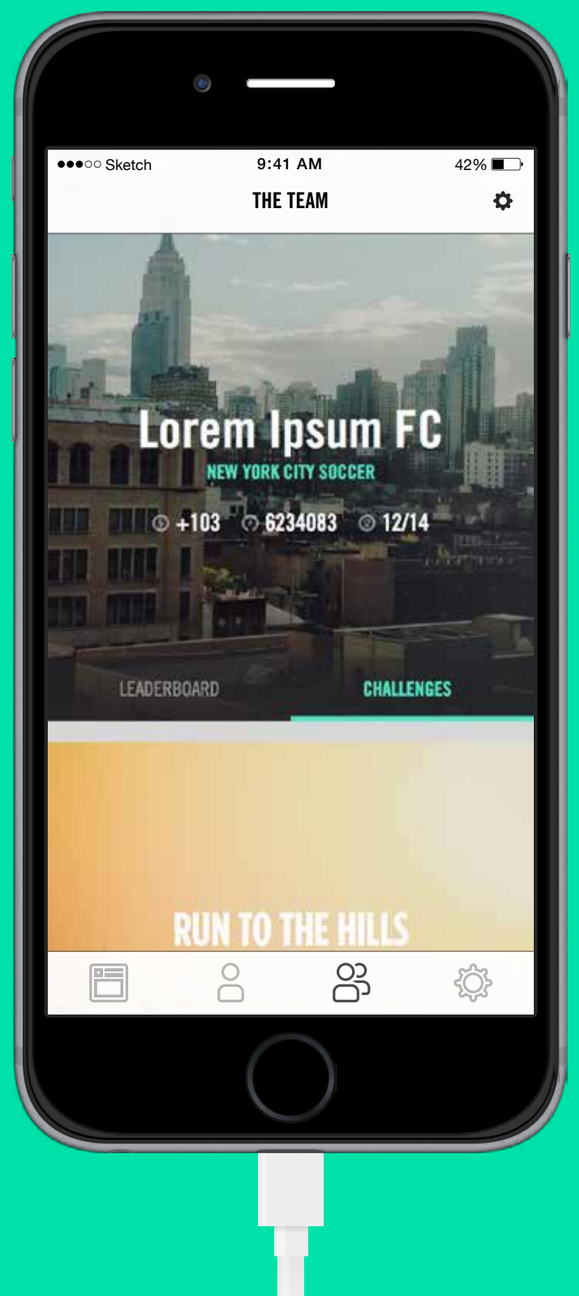


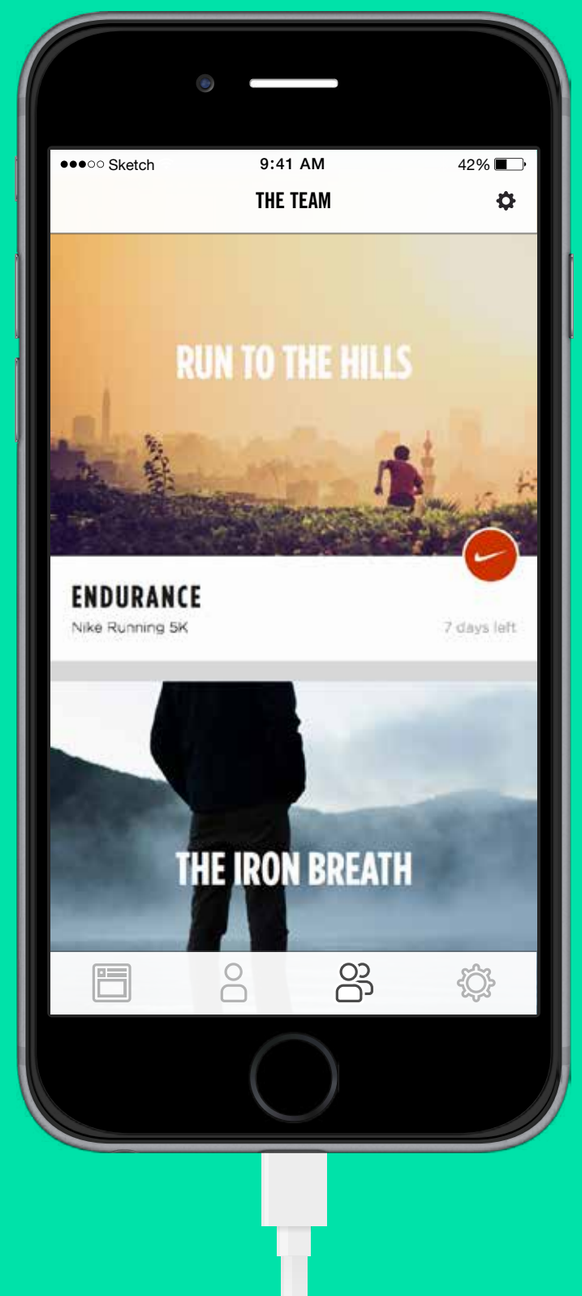


Team Challenges

The team challenge sections highlights the challenges created by the coach, Nike or by the players them selves. The player section also high lights the average performance of the team, the cumulative amount of FuelPoints and the amount of open challenge towards the amount of finished

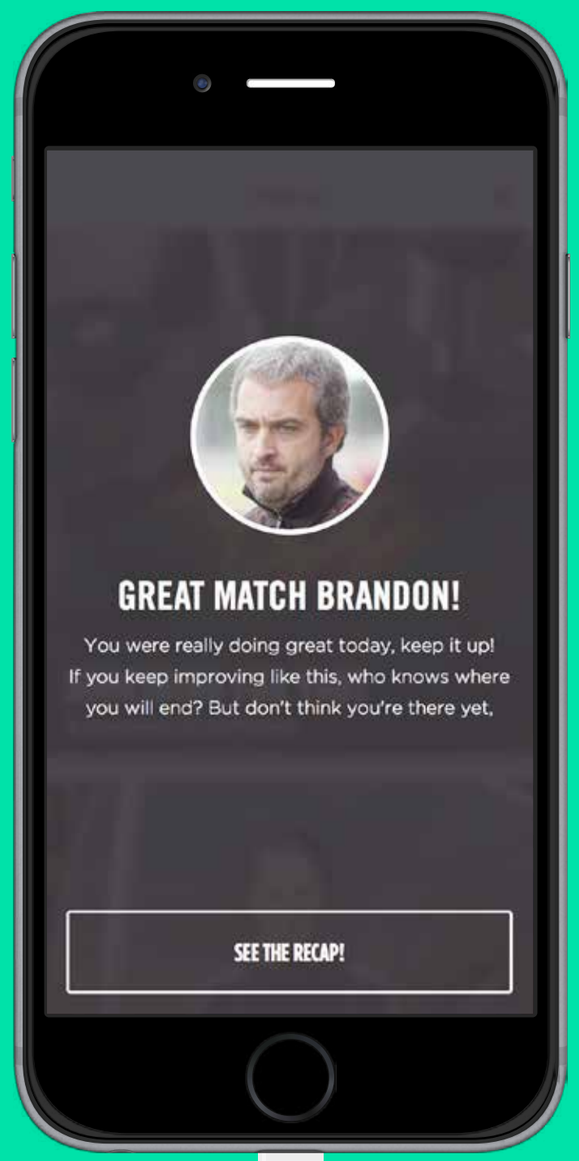
This section focuses mainly on the intrinsic motivation, setting and reaching your goal, and the social challenge.





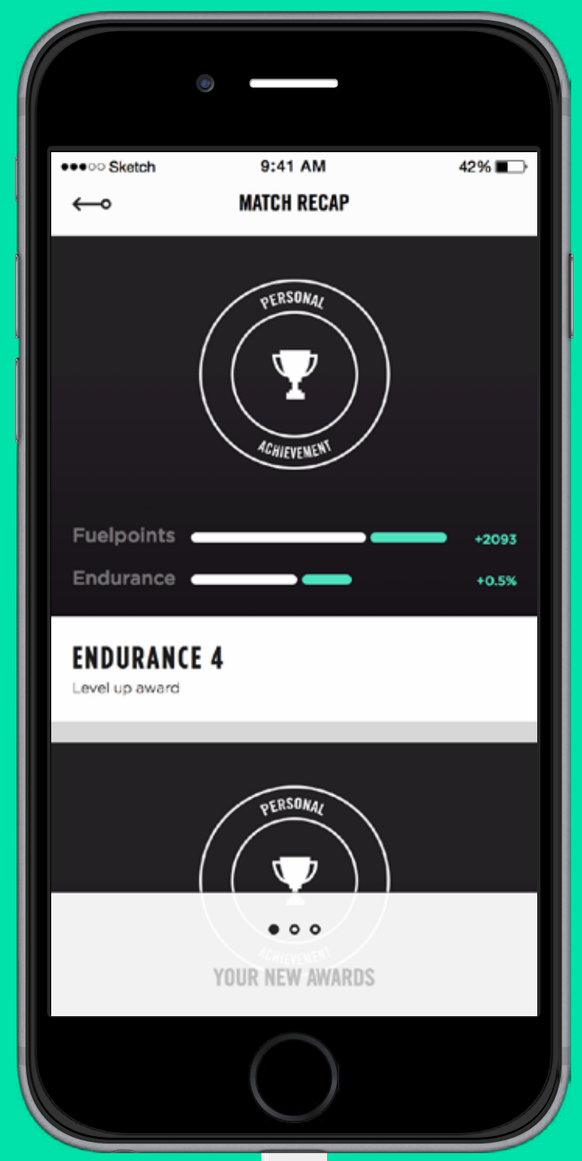
Post-activity Notifications

The post activity notifications motivate the players to keep their performance op to date and give them an overview of their own achievements and the achievements of the team. The Match / Training recap is shown after the player finishes a workout. This section is split up into three screens the user can swipe between; The personal achievements of the activity, The performance of the activity and the team performance. This section focuses on the social challenge by visualizing the teams performance, the intrinsic triggers by confronting the user



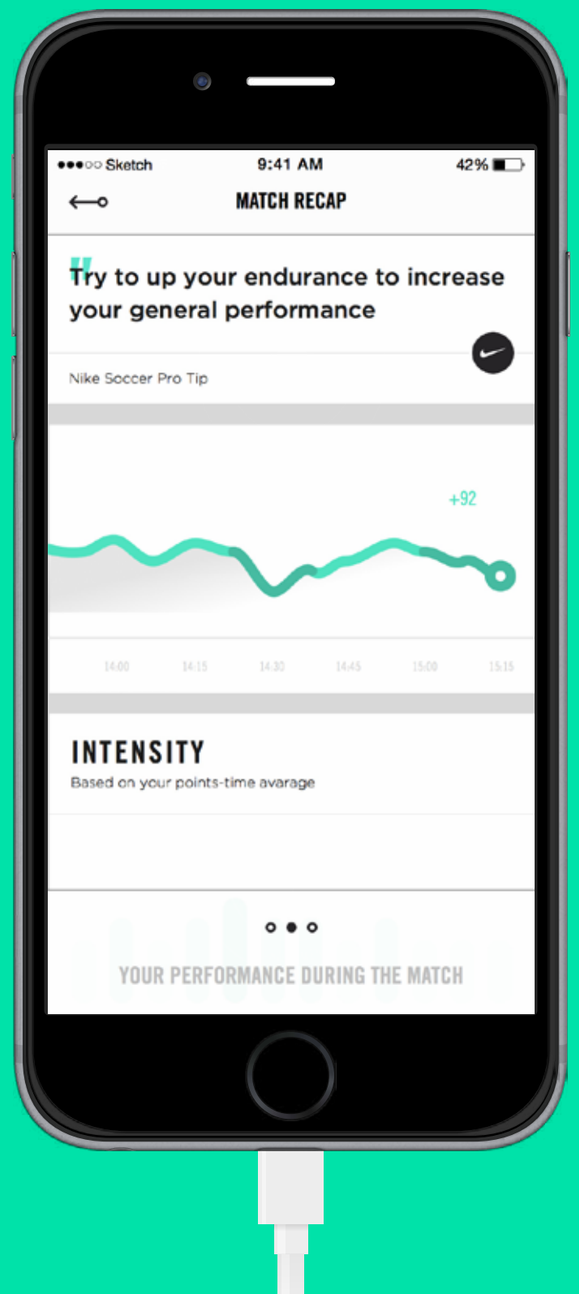
with his performance, and making sense to the affordance even though the interactions don't follow the Apple HIG guidelines, the interactions are tested to follow the users affordances and sense making

The awards pages shows the awards and achievements the user has accomplished during his sport activity.

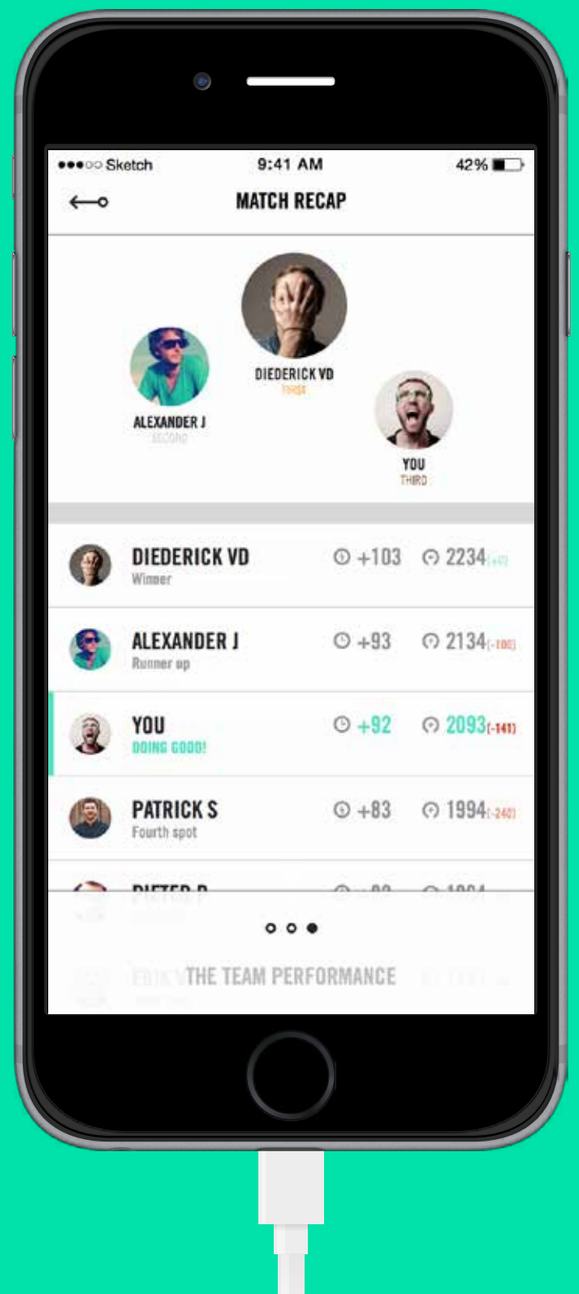


Post-activity Notifications

The sport performance page enables the user to get a quick overview of his performance in a glance. Besides the raw data, this page informs the user can gives the user feedback in terms of tips and recommendations.



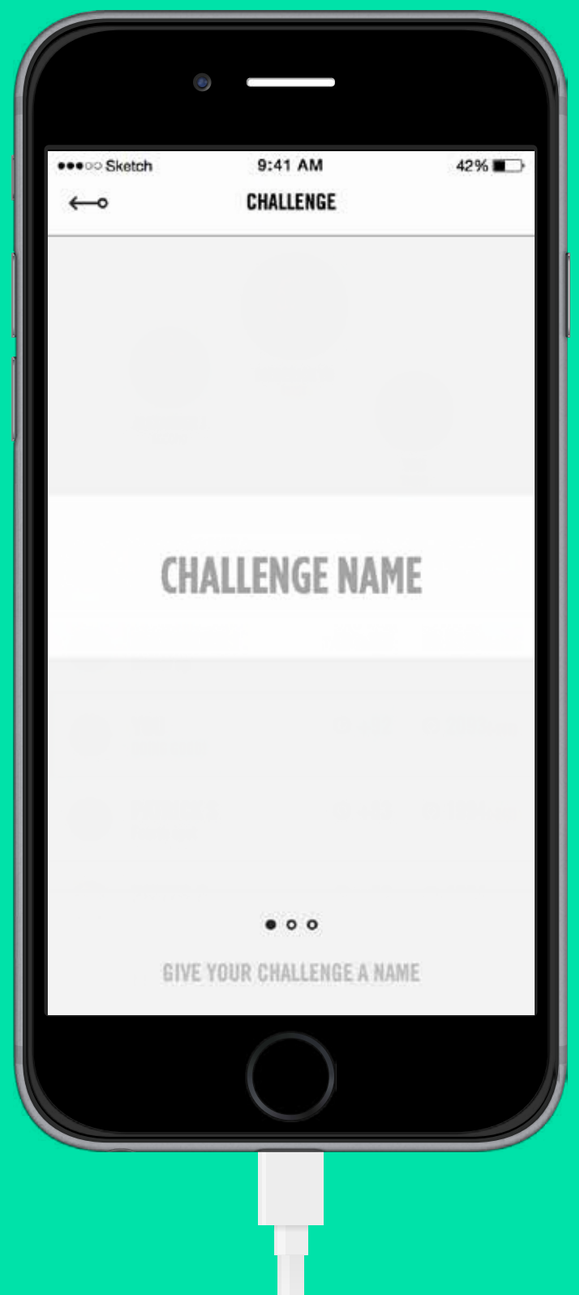
The team page shows the leader board of the performance of this specific sport moment. This triggers the intrinsic values of the user by engaging on his social perceived norms.



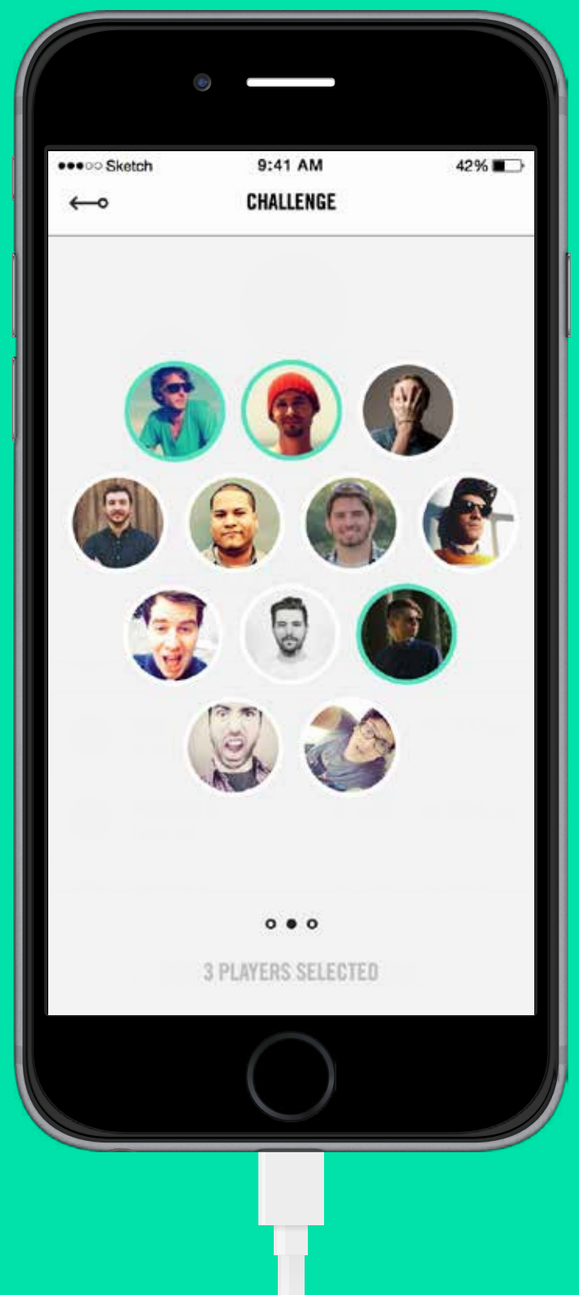
Setting up the challenge

The user can set up a challenge throughout the entire app by just tapping on the small plus icon on the top left side of the screen. The challenge flow is also split up intro three sections to keep the interaction short and easy to use for the athletes. By utilizing the same kinds of interactions throughout the app, the link between the sense making and the affordances can be maintained

After the user choses a name for the challenge he is able to pick his friends to invite to the

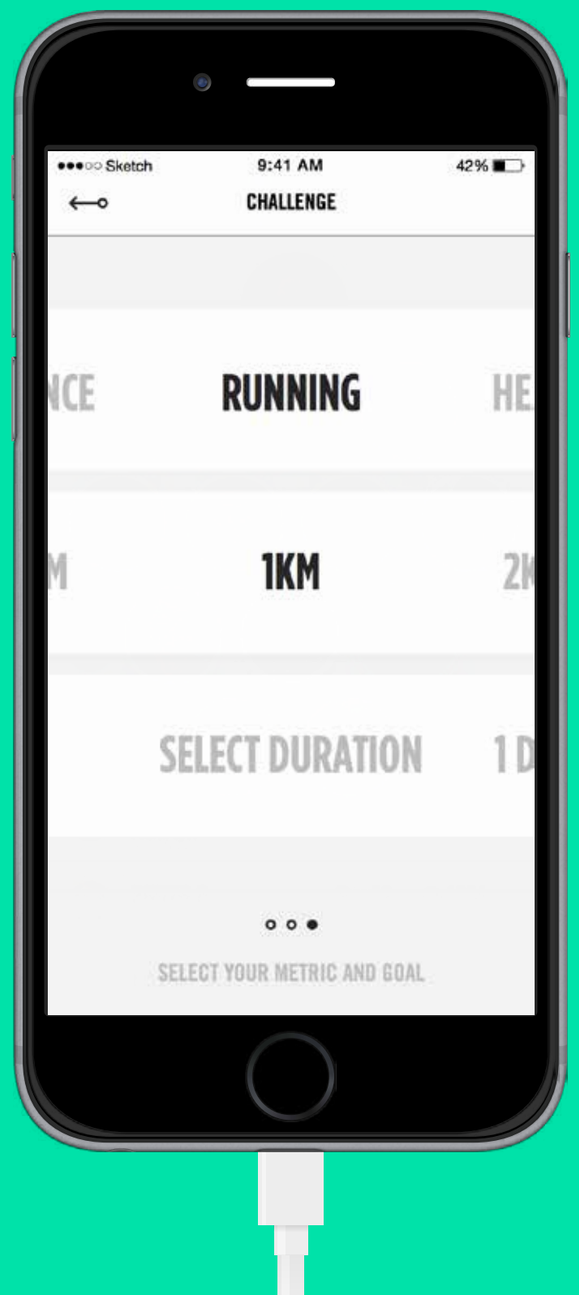


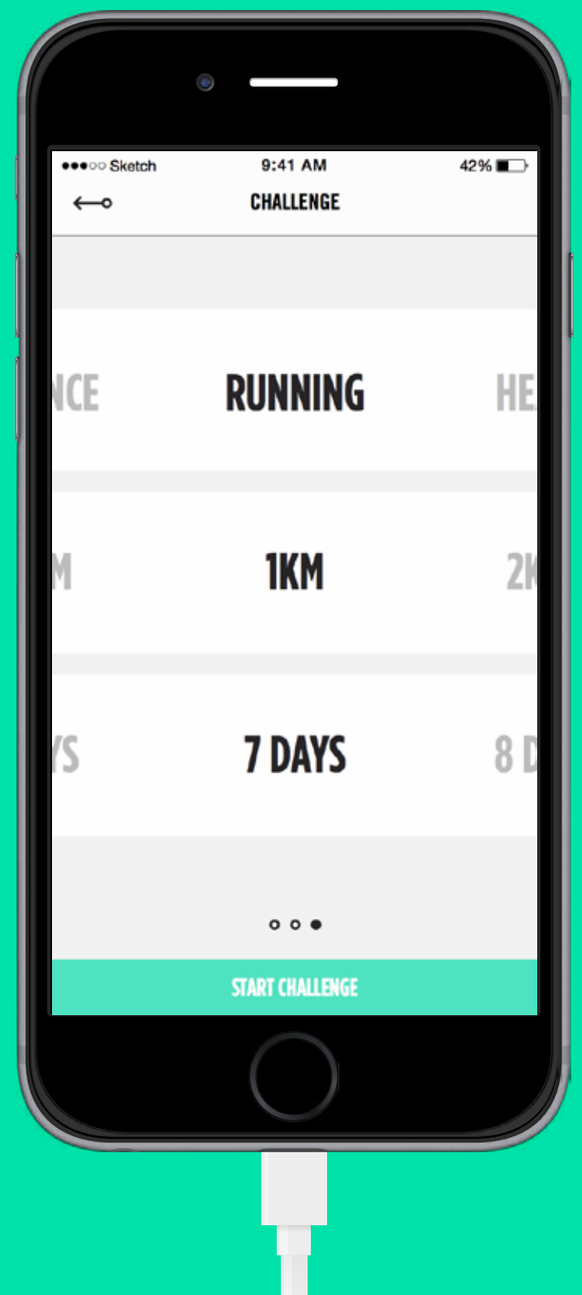
challenge. If the user challenges an event or workout card. The players who already joined that workout are automatically selected.



Setting up the challenge

After selecting his team mates the user can create the rules/ goal for the challenge, by swiping through three dialers. The content of these dialers depends on the applications the user has linked with this app.





Progress and awards

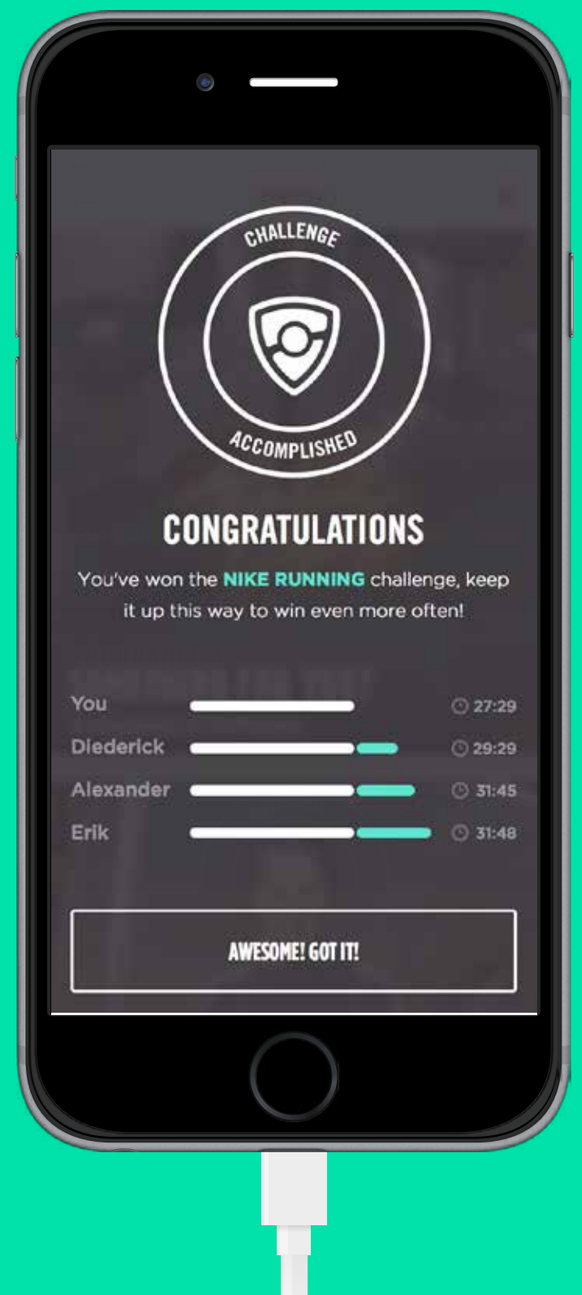
After the sport activity the user is presented with his progress in comparison with his goal. These goals can be set by the user, but adapts throughout the season by the performance of the player.

If the player reaches his goal he can get rewarded with awards and achievements. These achievements show the user a detailed overview of how this achievement is build up

Challenges

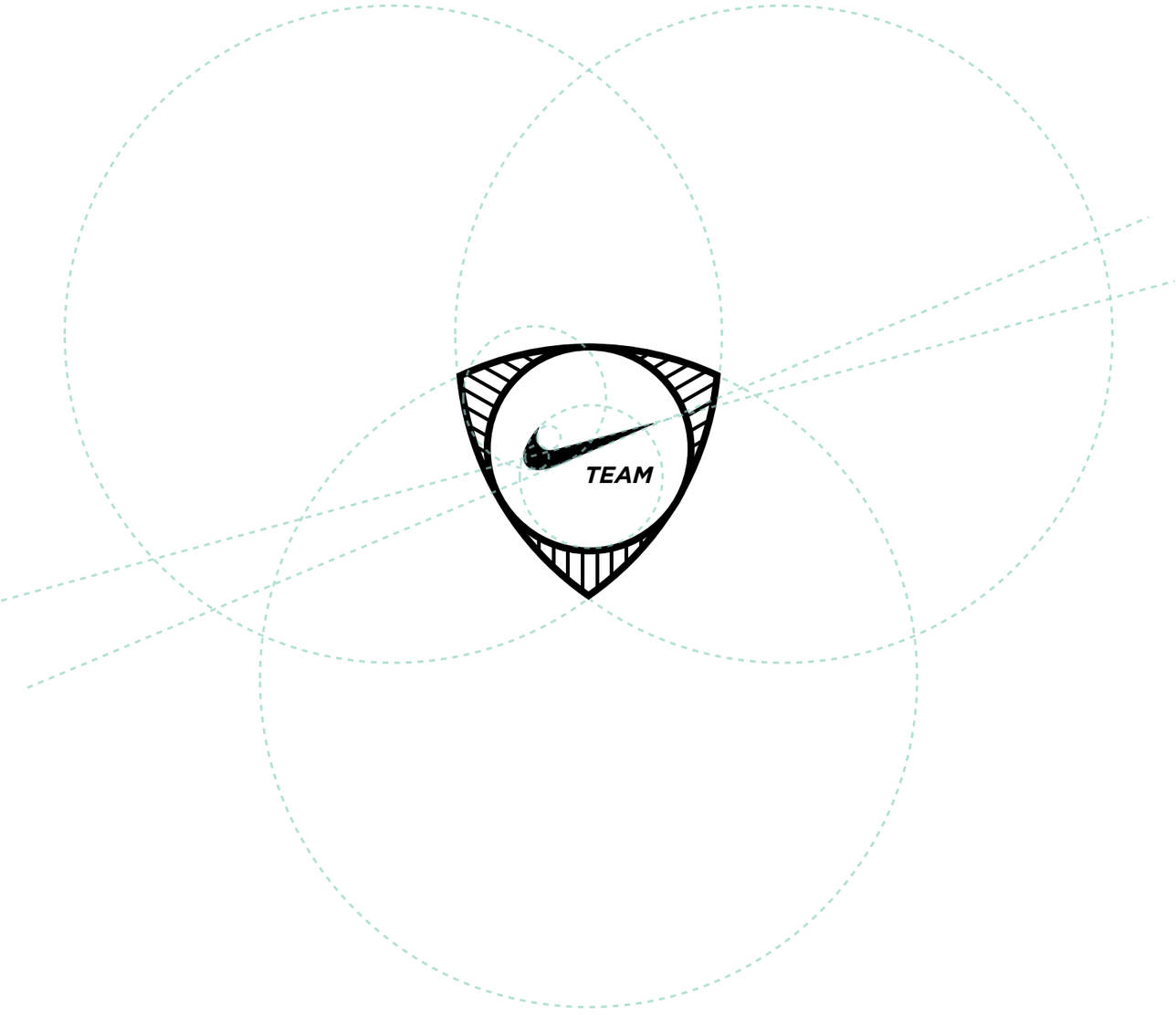
As part of the social interactions the players can challenge themselves. Besides just challenging his team mates, the user can also get challenged. If the user is being challenged, he will get a notification with the full details. This notification gives him the choice to accept or to decline it.

If the user wins the challenge, he is awarded with an achievement and an award. The achievement gives a brief overview of the performance. The detailed performance is able to be reviewed in the profile section.



Logo

The logo was built out of the intersection of the three circles portraying the three major stakeholders and the three levels of interactions using this application. The crest created by intersecting these three shapes resembles the look and feel of the authentic English soccer crests which extends the engagement between the team experience and the product. To maintain a balance between the size of the Nike Swoosh and the logo, both the shapes are build out of circles with the sizes matching the golden ratio.



Process of the concept

Nike Wearable Solution

At the initial start of this research I was exploring the possibilities to augment the sport experience by developing a new wearable sport device/solution which would track the team performance, but due to developments on Nike's side, which basically terminated the entire wearable hardware devision, this made me shift from the hardware aspect towards a software approach to resolve the problem.

Coach Companion

The first of these software concepts was the development of a so called Coach Companion, an application which would use wearable devices to track the performance of the team and could augment this performance through a coach platform which could be used during training days. This platform would augment the performance through insights using the app, but also through tactical feedback by the devices to the athletes.

But due to the constraints given by the current generation of wearable devices the coach app wouldn't be viable since it wouldn't add any value to the problem statement and the customer loyalty towards Nike

Team Training Tool

This made me shift towards a more passive team approach, of which the performance of the players would still be tracked through the tool, but would be used for the players to compare themselves with their peers and to compete in a global competition This seemed like a viable solution to the problem statement, but this eventually created too much open variables that the research would needed to be extended towards a too broad matter.

Nike Team challenge

Therefore the training tool concept was used as a guideline to create the current product. The Nike team challenge utilizes all the advantages of the previous concepts but is focused enough to resolve the problem statement and can be purposeful for Nike

Conclusion

How can the individual sport performance in sport teams be improved by using cutting edge (wearable) technology?

In this thesis, research is done to the subject how motivation can be used to improve the individual sport performance in team sports. This is executed by designing an interactive mobile product. To get the necessary answers, the subjects of motivation, drive, data and wearable technology has been research

An experience can be defined as something which you've already encountered, or as your environment of your surrounding in the moments you are engaged in. An experience can be either physical, but also emotional. In general, an experience can be experienced in three different ways, as a continuing experience, as an specific identifiable experience and as an ongoing experience. Sense-making is the process by which people give meaning to experience. After making sense, we try to give meaning to the action and feedback.

The athlete can be identified in three different groups which are driven by the intensity and amount of sport moments, the occasional athlete, the regular playing athlete and the structured athlete. This can lead to nine possible kinds of athletes who all have different ways to get motivated.

In terms of the stake holders there are three kinds of stake holders influencing the sport experience who could be defined. These are the athletes themselves, the coach and the manager/management. All these parties have different influence on the sport experience of the athlete. The player got the most influential role on itself and on his peers. The coach has the second intense influence to the players due to his objective frame of the game and the players. In general, the coach uses this objective frame to drive the players to stay motivated and to keep performing.

Motivation is driven by the theory of reasoned action, which is an indication of the actual behavior. This theory is based on two factors, the Attitude and the perceived social norms. Attitudes are the sum of beliefs about a particular behavior compared against the evaluations of these beliefs while the perceived social norms look at the influence of the environment on his intentions

Motivation is split up in three categories. Intrinsic motivation, extrinsic motivation and a-motivation.

To motivate the players B.J. Fogg states that there are three factors which influences this, these are the triggers, the initial motivation and the ability of this individual. Each of these factors work in a feedback loop, after activities, the user intrinsically recaps on these activities to see what the results and consequences are.

The possibilities to augment the sport experience can be split up into three different sections: the hardware possibilities, the software possibilities and the behavioral possibilities.

In terms of hardware solutions, a increase in popularity of wearable devices had brought possibilities to improve the sport experience, due to the analytical core of this interaction and product.

In terms of software solutions as a result of the development of new wearable solutions, two major software categories has been introduced. The category of tracking applications. Which are ubiquitous applications working independent of the wearable hardware. These applications are mostly designed on fulfilling one specific goal.

The category of wearable ecosystems. This category can be compared to the mobile and desktop operating systems. Combining the wearable hardware with a fluid software interface. These ecosystems are designed to combine several user goals into one product.

For the athletes, most of their insights come from the situation itself, not in particular from the data. Out of the research and interviews it was concluded that getting insights by relating the data in combination to the situation could be themes effective way for the user to get new insights.

The results of the research were processed and used to create an interactive product and are the answers on the key question of this thesis. The Nike Team Journal is an social journal which bridges the cap between the sport activities and the data. By utilizing social triggers and adding meaning to the data, the sport experience can be augmented.

Recommendations

6 months of doing research and designing a solution to the problem came to an end. While reflecting on the experience of writing this thesis I came to the realization that even though it wasn't easy, that I truly enjoyed the process of writing it. I used to dislike doing research for long periods of time, but during the course of writing the thesis, it made me realize that getting solid insights is the key to a meaningful product.

To keep focus on the research and on the sub questions I tried to skew to a more design-research-iterate kind of approach halfway during the research phase. This made it possible for me to explore different creative approaches and product while focusing on defining the sub questions.

During the research part of this thesis, different levels of interactions were defined. While brainstorming for the concept, it was hard to define a solid concept which suits all of the levels of interaction. Therefore, recommendations would be that when trying to define a concept after a long research false, try to focus on one level of interaction and if the concept is clear and solid. Try to expand this concept towards the other levels of interaction. Not distilling it from all levels towards a more focused approach.

In terms of the user research and user testing, recommendations would include the fact that user testing can be implemented as early as in the sketching phase. During this thesis, the user was included in a later phase, which resulted in major changes to the interaction on a later level. This has affected the scope of time.

In terms of the general deliverable of the interactive product. Recommendations would be the expansion of the social interaction towards a real time challenging system using more advanced wearable technology, or to expand the concept to a global team journal. Where the teams can connect with each other and challenge each other outside of the pitch.

Future vision

As solution this final concept is mainly a proof of concept which would give proof to the fact that there's a demand of a product which joins the individual players together and as a proof towards Nike that if they open up their ecosystem that they can help the sport community way more.

As a future vision I see a product which used the same artifacts and interactions as the current product, but expands this idea to a more insightful, commerce supported ecosystem ,rather than just an application.

This would mean that there are opportunities to create an insight providing application, fully focused on the coaches demands.

Team tailored tweaks to the current lineup of application, which would mean that the current lineup would include functions as direct challenging, sharing information or coach integration.

And last but not least the expansion towards a team competition, including the final remaining layer of interaction. This could be executed in a form of pickup games, or Nike organized sport competitions.

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