



specularis
making the future of health clear

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WHY SPECULARIS?

According to the director of the US National Institute of Biomedical Imaging and Bioengineering, Roderic Pettigrew,

“We are entering the age of precision medicine.”

The evidence for this is everywhere, apparent to those both in and outside the healthcare field. Between wellness trends that emphasize individuality (like elimination diets that seek to help people discover their unique food sensitivities) and biomedical technologies that can target specific cells of the body (Gwynn, 2013).

In new technologies like personal fitness trackers, health logging apps, and GPS monitoring devices, people are building their own personal databases and using them to promote health.

“One of the problems we all have...is that we wait until we are sick or have a health problem to get data about ourselves. Then our doctors compare us to the

general population. But that's a worthless comparison. I think the smartest thing I do for my health...is to take ongoing assessments so we have a baseline for each individual that we can monitor for any abnormalities”
- Mark Cuban

This idea of a personal database is gaining rapid ground in elite athletics especially, where health issues and injuries cost the industry around \$16 billion per year (Kinch, 2014). And data collection and use is no longer concentrated on injury rehabilitation, it's focused on injury prevention.

Devices like RunScribe, and Catapult, small wearable sensors worn by elite athletes to collect information like heart rate, acceleration, and pronation velocity are becoming wildly popular with athletes, coaches, and athletic health professionals.

Again and again, prevention and attention to overall athlete health is proving to be the most time and cost effective way to deal with injuries.

“Before we implemented our holistically-based chiropractic approach, we had so many injuries we needed about 35 players in the team. Today, we only require 22,”

- Dr. Jean-Pierre Meerrssmen, of AC Milan

We at Specularis believe in this proven power of prevention, and seek to take it a step further. We envision a world in which preventative medicine is the norm, especially for those in the extremely physically taxing role of elite athlete. Data collection will be easier, more accessible, and clearer than ever before, and understandable in real time - delivering invaluable insights into the state of the body like nothing the industry has seen before.

the COST of INJURIES in PROFESSIONAL SPORTS

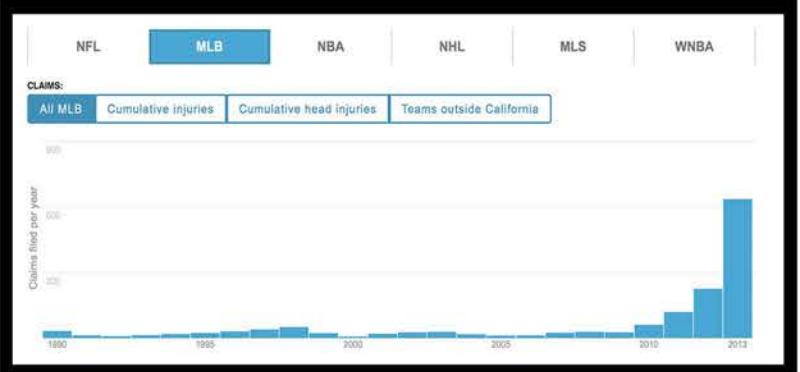
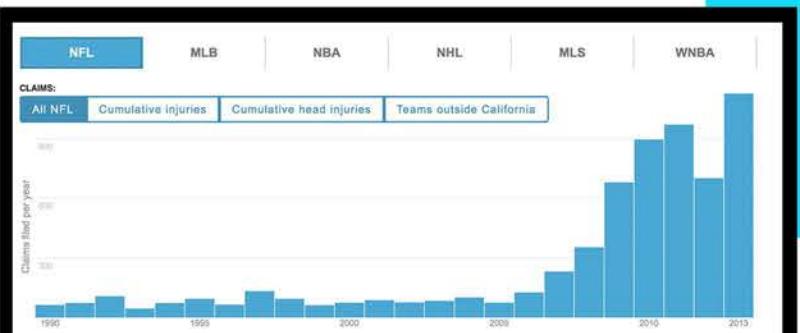
As of October 7, 2013
**113 Major League
Baseball Athletes**
were injured

Which amounted to **\$396 million
dollars** in salaries for injured athletes

while the cost of injuries for professional
soccer teams in 2015 was an average of

\$12.4 million a team

Teams lose an
estimated 10%-30% of
payroll to injured athletes



applications for compensation
claims in injured athletes has
only increased as shown here
in California NFL and MLB
courtesy of LATimes

What we envision for our product is the very embodiment of transparency - of the human body, of health issues, and of the doctor-patient relationship.

SPECULARIS IS...

CLEAN | SLEEK | MINIMAL | FRIENDLY | PEACEFUL |
CALMING | SAFE | OPEN | SPACIOUS | EFFECTIVE

With the design of our product and its promotion, we felt it was important to strike a balance between the new and the familiar. We wanted a look that was fresh, bright, and intriguing, but one that would instill a sense of comfort and reliability, not threatening to either doctor or patient. Specularis needs to feel safe, intelligent, and friendly in order for users to be attracted to it.

THE SPECULARIS LOGO

Our logo is composed of a clean, rounded sans-serif font which conveys the clean, modern and sleek aesthetic which is the Specularis signature.

The circle in the middle of the letter “c” is meant to represent the pupil of an eye, referencing the act of seeing that is so foundational to our product.

specularis

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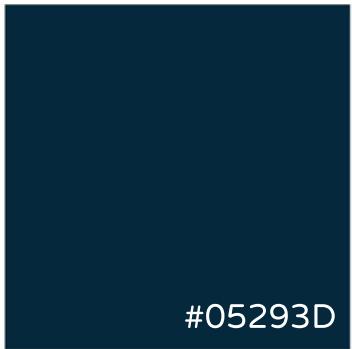
LOGO VARIATIONS:

While the full version of the logo should be used whenever possible, evidently there are also situations that arise where the logo would become illegible if made to fit the available space and/or its integrity would be compromised. If such a situation were to emerge one of the following three variations may be employed

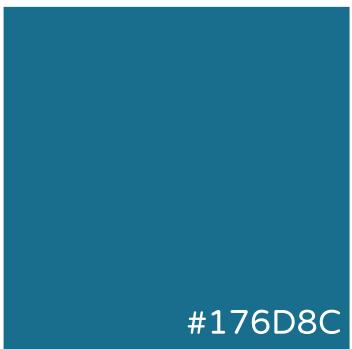
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COLOR PALETTE



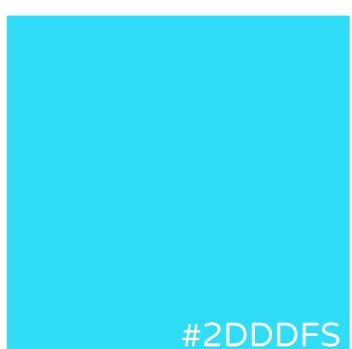
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#176D8C



#23A08F



#2DDDFS

Our color palette draws upon the calm, refreshing effect of blues and the impactful contrast of white against them.

Color theory backs our decision as well: “Blue is also used extensively to represent calmness and responsibility. Light blues can be refreshing and friendly. Dark blues are more strong and reliable. Blue is also associated with peace, and has spiritual and religious connotations in many cultures and traditions” (Chapman, 2010).

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ABCDEFGHIJKLMNPQRSTUVWXYZ

1234567890

Verela Round.

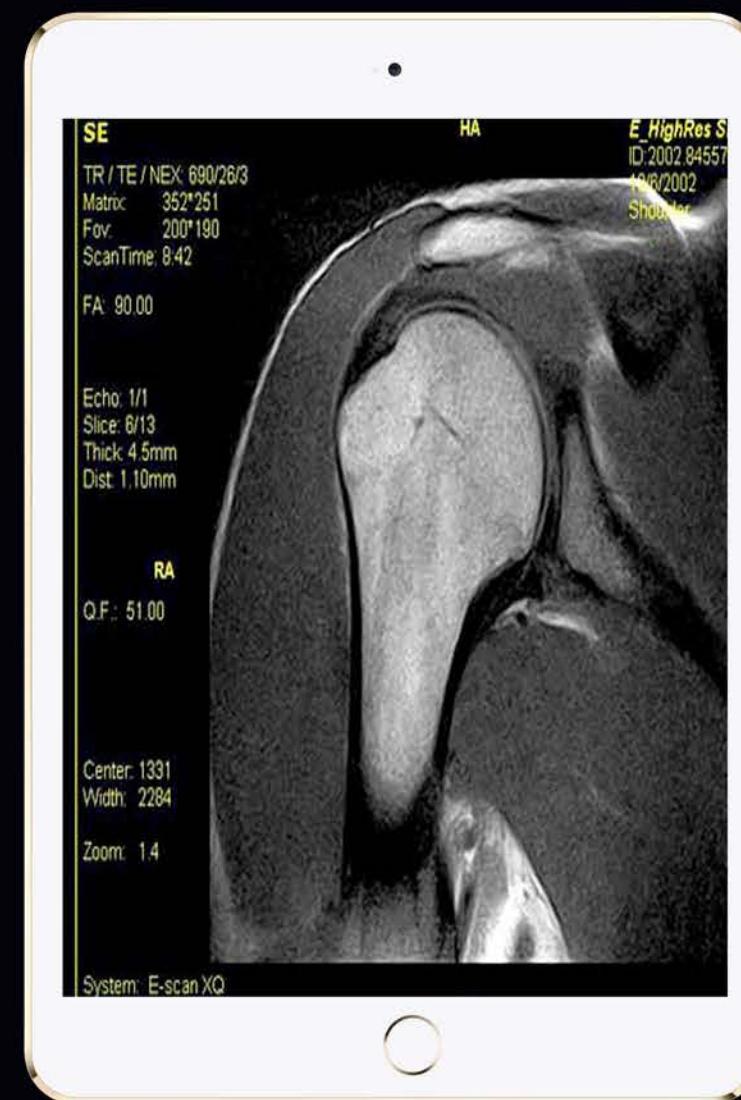
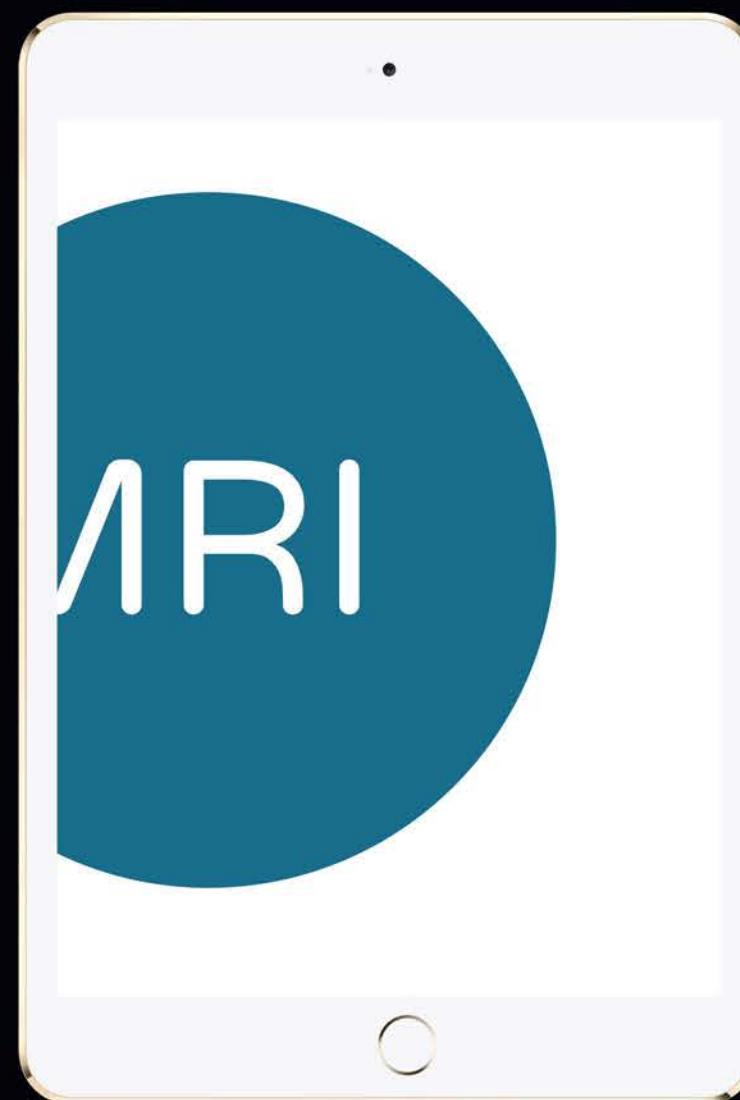
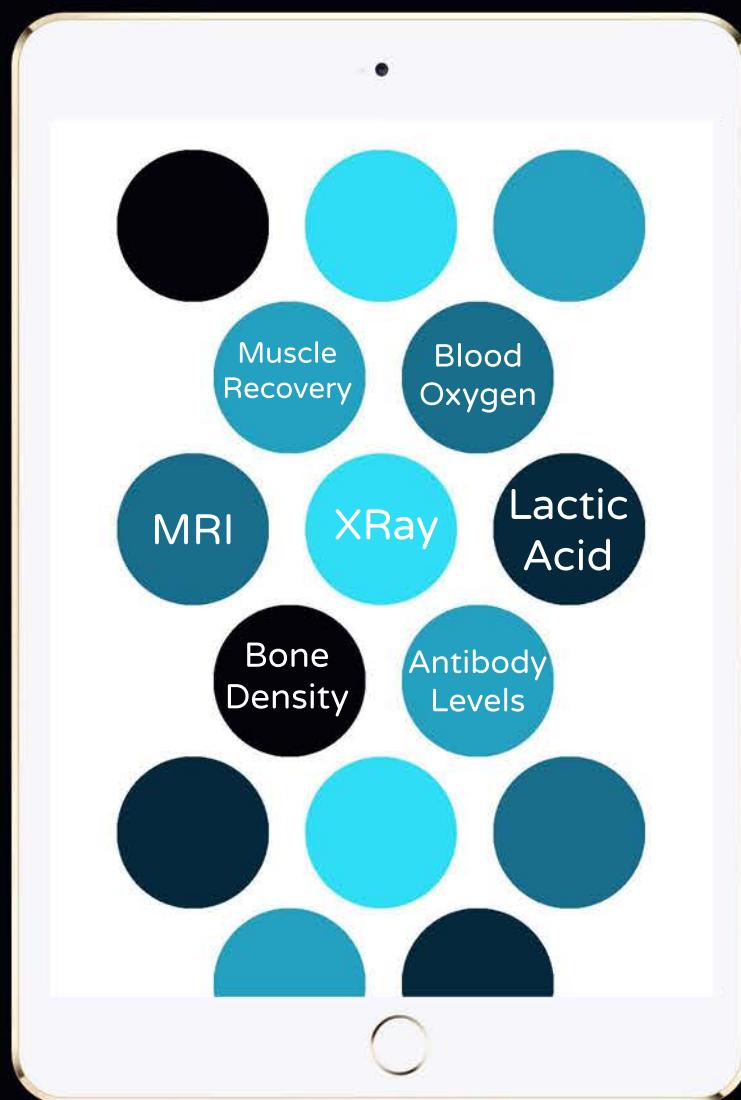
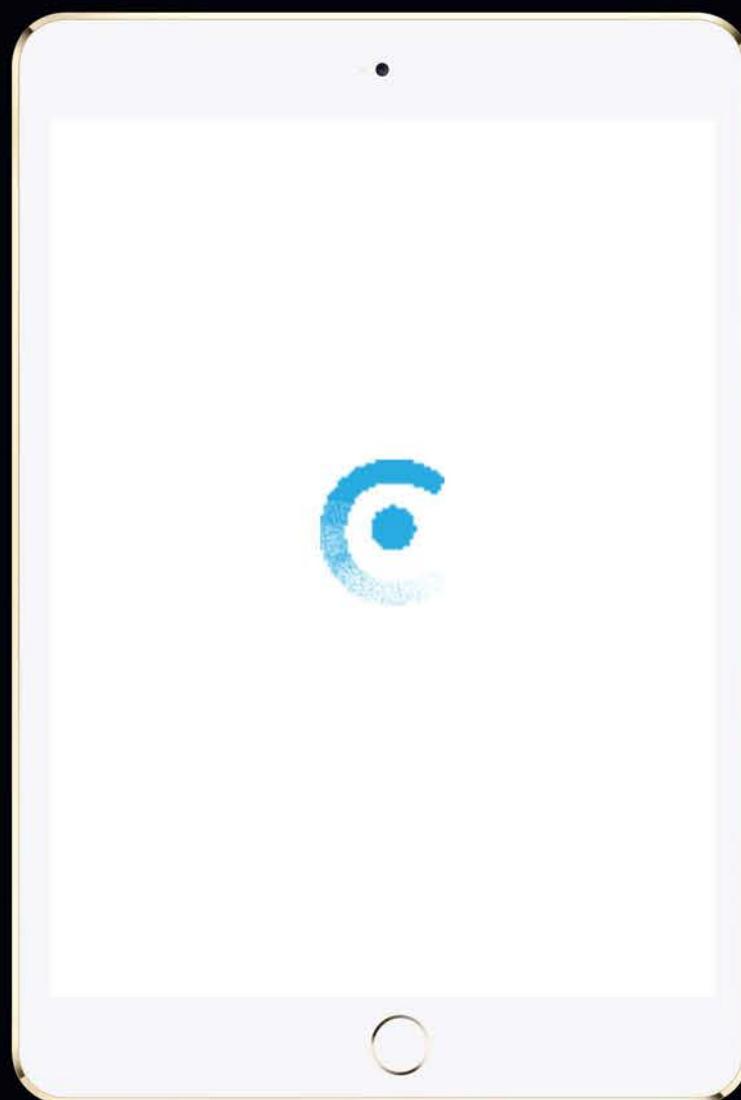
A rounded, evenly spaced sans serif, that provides a smooth, simple look to the text and logo that utilize it.

Used in lowercase and uppercase the Specularis font should be used to maintain and enhance the sleek, modern and clean feel of all Specularis branding material.

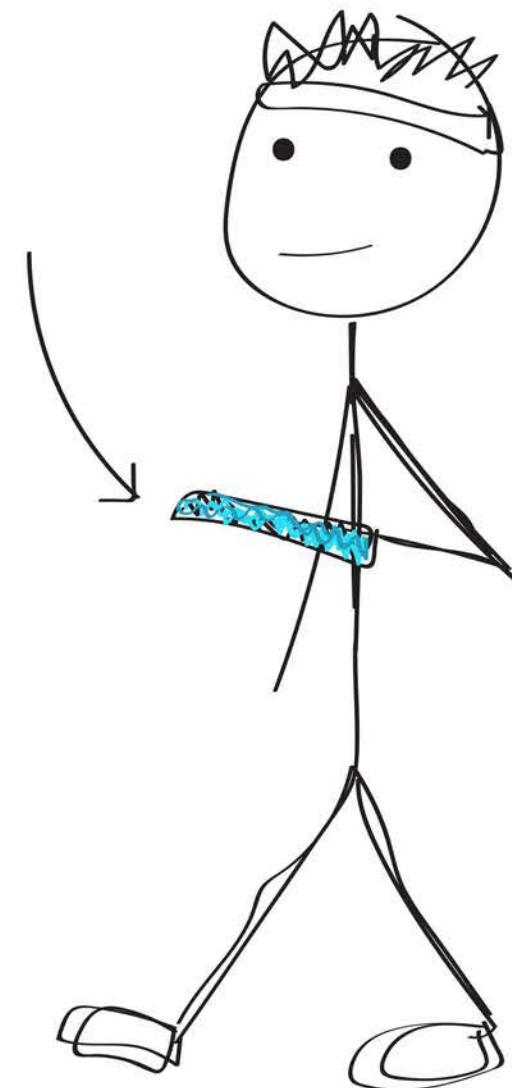
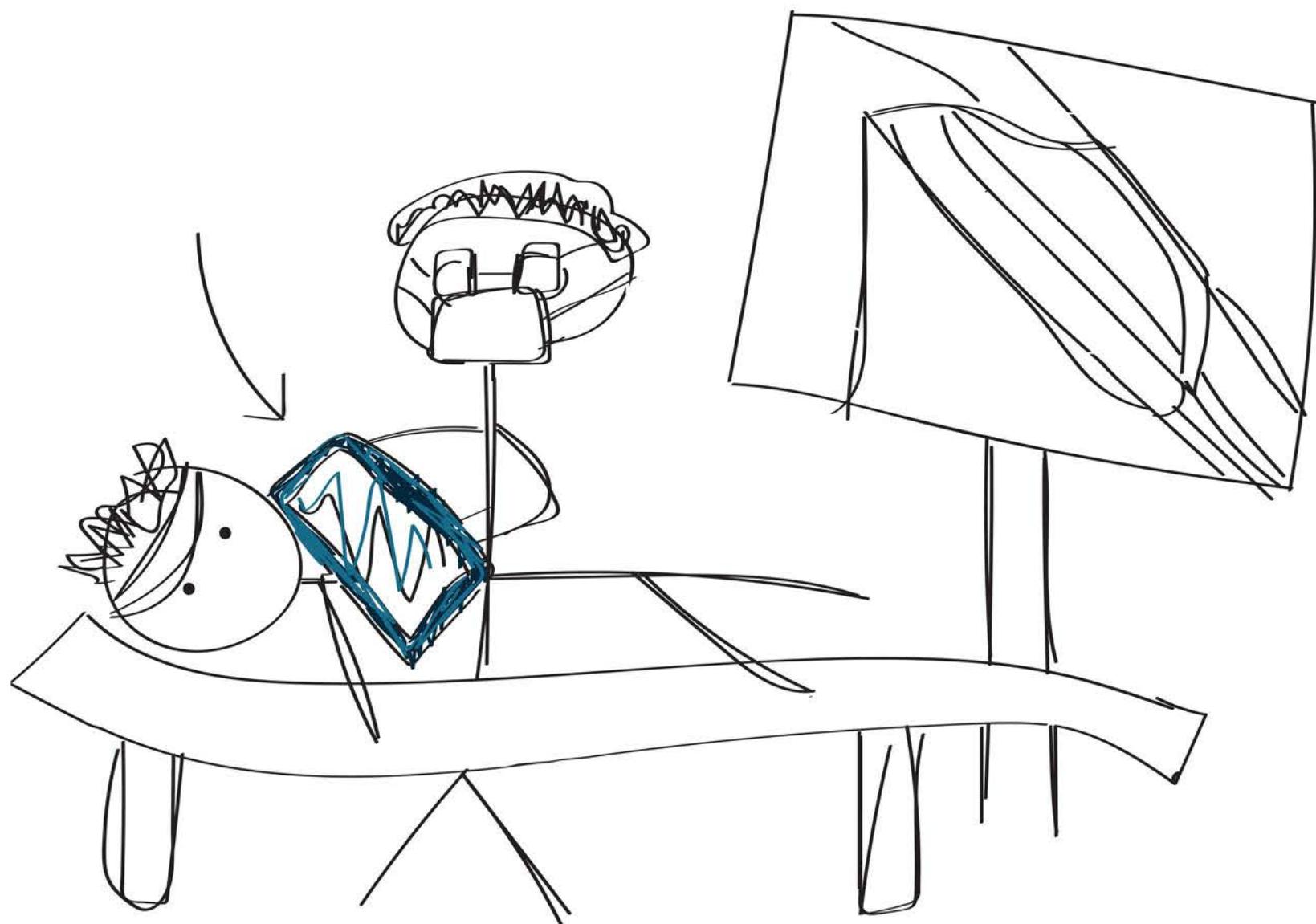
FONT

02 SPECULARIS: THE PRODUCT

TABLET INTERFACE



diagnostic table + tablet



wand

03 SPECULARIS: THE SCIENCE

Specularis will be implemented using a mix of different non-harmful radiation waves. Currently, Medical Infrared Thermography is a non-harmful and non-contact method of “analyzing physiological functions related to skin temperature” (An Overview of Recent Application of Medical Infrared Thermography in Sports Medicine in Austria.) By implementing this method into a transportable technological device for patients and doctors, it can be used to read changes in blood flow, which is a sign that an injury can be forming. For example, if a professional soccer players have the wand form of this device available, they could do their training and then, when they return home, easily send information to their trainer or coach by scanning over different areas of their bodyies using the wand. Over use injuries, among others, are known to “cause inflammation and a subsequent localized increase in skin temperature around the affected region.” (Use of thermal imaging in sports medicine research: A short report.) This is because when a muscle is injured, i.e. strained or torn, “it releases chemicals which cause increased heat”(Medical Thermography). There are already areas of medicine and technology that have this

functionality. For example, “specific software makes it possible to incorporate anatomical and physiological information by image fusion.” These technological tools can be assembled into an easier to access prototype (An Overview of Recent Application of Medical Infrared Thermography in Sports Medicine in Austria).

Infrared thermology also lends itself to our device because it relies on “real time information” so it “can be used as instant feedback for the patient or athlete”(An Overview of Recent Application of Medical Infrared Thermography in Sports Medicine in Austria). Similarly, light absorption can be used to detect increase in oxygen in the bloodstream in a particular area in an athlete. Pulse oximeters, which are used in hospitals, use two light wavelengths to detect arterial oxygen saturation. Through more research, a correlation between oxygen increase and injury could possibly be found.

In order to deter the negative physiological effects that result from excercise, like lactic acid and free radical buildup Specularis would require a highly advanced infared camera among other

innovative imaging technologies. This would allow doctors, athletes and patients to be more aware of their response to exercise and be aware of potential injuries forming, or the need for rest.

Specularis would also explore other radiation waves that are not harmful to humans in order to understand how they can further our understanding of the human body. For example, recently Stanford Engineering labs created a sensor that can determine pressure in a particular area of the body using radio waves. Thus far, this technology has been used to look at the pressure in the brain of lab mice with neurological disorders.

03 SPECULARIS: THE THEORY

The concept of the quantified self came into the lexicon circa 2007 courtesy of Wired Magazine. Fast-forward almost ten years and we are firmly planted in the age of wearable technology. From Fitbit to Misfit to the Apple Watch people are, more than ever, taking their lives into their own hands by monitoring and collecting data on their daily routines. While present in other spheres, electronic, data driven “life logging” has really taken off in the health world. People are increasingly wanting to take control of their movement, exercise, food and sleep, and are doing so through technology.

This is the culture we at Specularis embrace. We believe technology is a tool that can be used by people to improve their lives. Through more data, more visuals and more convenience, Specularis truly is the natural progression of the quantified self. No longer confined to merely working out algorithms based on heart rate or movement within a device, Specularis gives athletes, doctors and health conscious individuals the power to gather real time visual information to optimize recovery, strength training and muscle health. The power to not only see the movements of the body, but also receive ideas as to a diagnosis truly elevates the quantified self from a passive way to gather data into a dynamic and active system that not only displays the current reality but also offers meaningful, personalized paths of development to the user.

"By 'augmenting human intellect' we mean increasing the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs and to derive solutions to problems"

Here at Specularis augmenting the human experience is precisely what we aim to do. The problems facing mankind are increasing in number and complexity at a rate that far outpaces that of human evolutionary development. This is particularly true in the health sector. As the pressures facing athletes professionally and in college increase so does the monetary cost of injury and the strain on the body. Outside of athletics, we're placing new demands on our bodies with our lifestyle changes that are becoming increasingly sedentary punctuated with high

intensity bursts of activity. This all translates to more wear and tear and subsequently new and different injuries to the human body. Given these new demands, which are multiplied even more by the disproportionate aging of our population, our health system is in serious need of a revamp and redesign.

This is where Specularis steps in. Following Engelbart's ideas on the augmentation of human intelligence, Specularis is a device intended to improve the health system on a system wide basis rather than through the modification of individual components. One could modify the MRI technology; XRay capabilities or Doctors' training however, Specularis instead attempts to revolutionize the system and creates a new technology that provides a holistic overview. Thereby maximizing the potential of each of the individual parts of the system to create a greater unified whole that truly maximizes the human experience.

"Human beings face even more complex and urgent problems, and their effectiveness in dealing with these problems is a matter that is critical to the stability and continued progress of society. A human is effective not just because he applies to a problem a high degree of native intelligence or physical strength (with a full measure of motivation and purposefulness), but also because he makes use of efficient tools, methods, and strategies."

TECHNOLOGICAL DETERMINISM

Technological determinism is a theory that aims to explain progress in the societal and cultural spheres in a monistic way. Determinists view technology as the “sole or prime antecedent cause of change in society” and as the underlying condition for society’s form and function. While a clearly reductionist theory that attempts to distil the complexity of society into a simple billiards ball model, technological determinism is an important component of media theory and is critical when conceptualizing a device that will disrupt the health system as we know it.

We view Specularis as a natural and even inevitable progression of both society’s fascination with self-monitoring and the continued advancement of information technology. That being said, however, we believe that societal change at its core is not determined by technology. Rather, change is conceptualized by people who then create the technology that enables the progression of society. Fundamentally, we do not view technology as the cause, with linear societal advancement as the effect. Instead, Specularis is a device which demonstrates how people create tools to service and augment their own existence.