MYANT

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Aether
TECHNOLOGIES

PROJECT DEFINITION

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Project Overview

Our highest-level goal with this project proposal is to synergize Myant's wearable haptic technology and industry offerings with the gains of promoting physical development via learning through play. With strategic partnerships with companies that provide highly refined augmented reality technology, we believe that Myant can make a significant impact on the landscape of remote immersive experiences mediated by a convergence of these technologies.

Current State of Myant's Offerings

Myant's current focus is on development as a provider of e-textiles and on perfecting e-textile technology. The primary utility of these products is connectivity between their embedded sensors and other technologies, and their abilities to sense biometric data and make use of it. There has been remarkable success with providing applications within the health and wellness, fitness and leisure, workplace safety, automotive and aerospace, connected environments and home textile industries.

However, the team at Aether Technologies has found that there are numerous opportunities to scale Myant's offerings into a greater market segment through strategic partnerships with providers of augmented reality technology, rehabilitation centres, athletic organizations, and potentially more. A product that provides immersive physical learning and training through both haptics and remote, accessible visuals could lead Myant and its partners to new heights.

Case Study

Within the scope of the health and wellness industry, there is a relevant example of a potential user of Aether Technologies' proposed offerings: Robert Wickens, a professional race car driver who was severely injured in a crash during an Indycar race. He defied his prognosis, having regained significant mobility only 13 months after the accident, when he was originally told he would not be able to walk again.

One of the primary barriers to Robert's recovery was muscle atrophy. By the time his body had recovered enough from injury to begin rehab, the weakness of his body had been compounded by muscle loss from months in a hospital bed. Robert overcame very low odds for rehabilitation, and it is still unclear if he will ever make a full recovery. He seeks to recover completely as quickly as possible, so he can return to having a normal life, and race again in the future.

When it came to committing to his recovery, Robert had many things few trauma patients enjoy; the mindset, work ethic, and finances of a professional athlete. Many other people in similar situations do not recover completely, often times because of the sheer effort required. Consequently, we are proposing a way to help people facing this challenge beat the odds much more often, and with more comfortable demands.

Aether Tech's Story

To capitalize on this opportunity, we have assembled a team of senior OCAD University students with an appropriate variety of skills. We intend to deliver on a process oriented around strategic foresight within the relevant industries and their most prominent trends, design research to generate an appropriate knowledge base, business development to connect partners and customers with needed resources and channels, and interaction design to appropriately shape the behaviour of a system creating the bridge between haptic and AR interfaces based on our insights.

The six of us are passionate about augmenting peoples' learning capabilities physically, but through accessible means in order to break down boundaries preventing the people who would most benefit from physically learning and training their bodies. Thus, we believe a union between advanced haptic technology and AR will lead to this ideal becoming realized.

Client and User Gains

On Myant's part, there are productive partnerships to be made to advance their products' capabilities: they can begin to provide the necessary compliment to augmented reality experiences for immersion within users' everyday environments, in order to effectively train, rehabilitate and teach physical skills.

The products can be modular haptic equipment, sold to interested partners such as rehabilitation clinics and professional sports organizations, who could then provide the products to their customers within a Shared Economy model, reducing costs for those who have infrequent, but significant needs to use the products, and producing financial gains for the partners through this new service offering.

A crucial benefit for the users of these products is the chance to more effectively receive visual and tactile guidance for recovery and learning, compared to the indirect descriptions they currently rely on. Power users, such as professional athletes and fitness enthusiasts, who would prefer full ownership of the products, will be able to improve their skills faster, in the proper context, and free of unreasonable disruptions of their life to gain access.

Concept Art
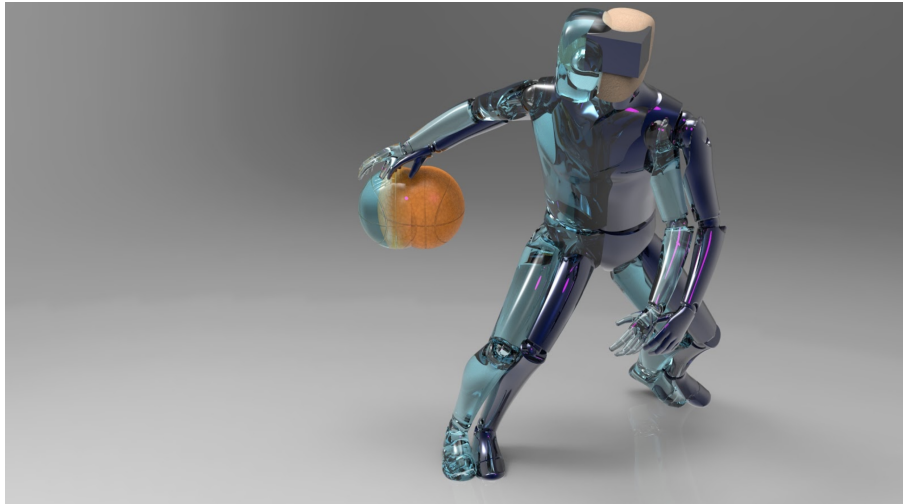
# Renderings: POV Coaching System
What is it?

Shooting a basketball requires you to picture the ball going in the hoop for a more successful shot. The same ideology can be applied to any physical movement. We are using AR technology to simulate this through a digital avatar that performs from the user's POV. The user must follow the movement of the avatar, with haptic feedback to tell the user how in sync they are. We are calling this a "POV coaching system".

> Gamified
> Progression >
> System

Rehabilitation and Basic Skill Learning

- More effectively receive visual and tactile guidance for recovery and learning
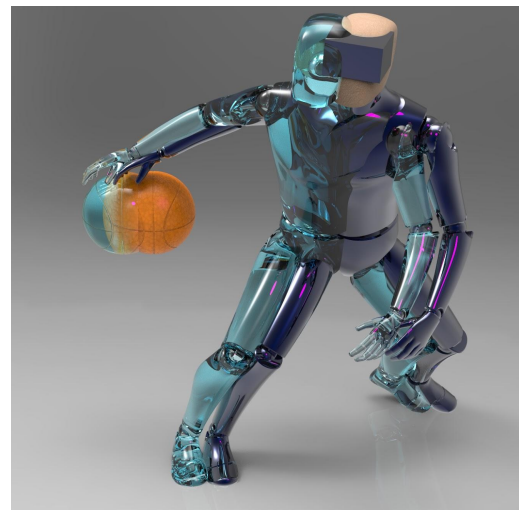
Sports and Advanced Skill Learning

- For power users who would prefer full ownership of the products, will be able to improve their skills faster in a complete immersive experience.

Project Size and Scope

- **Teslasuit** – "full-body AR/VR suit and software suite accelerates the improvement of movement, reflexes and instincts, allowing faster, better improvement of the human mind and body."

  The full body Suit uses haptic feedback, motion capture, and biometrics to communicate to and gain user insights.

  Teslasuit provides a variety of learning programs that include public safety, athletics, enterprise training, and rehabilitation.

  - 'Pioneer' version, $1500
  - 'Prodigy' version, $2750

- **BHaptics** – "Tactsuit brings 'sense of touch' to virtual reality more closely than ever before imaginable. Most elaborate haptic feedback brings gaming, entertainment and other interactive content to the next level by bringing most profound emotional connections between the artificial world and users."

  BHaptics have focused their technology to improve PC gaming market, VR, and music/movie experiences.

  - bHaptics' TactSuit is $549

Market size

According to Stratistics MRC, the Global Haptics Technology Market expected to reach $42.36 billion by 2026

Global Augmented & Virtual Reality Industry is further estimated to grow at a CAGR of 54.91% from 2018 to reach USD 409.99 Billion by the year 2025.

The global smart textile market size is expected to reach USD 5.55 billion by 2025, registering a CAGR of 30.4% over the forecast period

Global Physiotherapy Services Market is Estimated to Reach $165.73 Billion by 2023 at a CAGR of 5.34%

IDTechEx predicts that the wearables market's size will reach about $150bn in 2026. Revenues are forecasted to grow rapidly by 23% from 2018 until 2023 and to compose over $110bn by 2023.

According to IDC Mobile Device Trackers, the share of smart clothing will increase up to 9.4% and shipments will reach 22.3 million garments in 2021. The compound annual growth rate will compose 76.6% from 2016 to 2021.

AETHER TECH'S VALUE PROPOSITION

Our fully immersive learning tools **help** people (e.g. athletes, patients, students, workers) develop physical skills by **learning through play** in a designed environment. We call this "Augmented-Physical Learning".

Creating a system that connects the visual to physical for the purpose of learning can allow Myant's business to scale for immediate revenue and faster expansion by applying their technology to new, innovative product and experience opportunities.

Delivering process

- **Required components to create the product**

1. We must use the capabilities of Myant's textile computing system as the first of two main interface components. The position of limbs in 3 dimensions, the contraction of muscle groups, and other data must be collected and fed into the digital interface in real time. The system should also provide haptic feedback so that the interface can feed corrective cues.
2. The capabilities Myant brings to generate a useful physical interface must be integrated with a visual interface provided by the AR system. Input data from the Myant hardware will be translated into visual output in the AR space. The system will also provide output in the form of haptic feedback to complement the information fed to the user.
3. Our design depends on combining the physical with the digital and the tactile with the visual. We must create both hardware and software designed to integrate the physical and virtual elements of input and output in order to create a cohesive experience.
4. To accommodate a diverse spectrum of needs, the user experience must be highly adaptable. The system should be able to benefit both a recovering trauma patient barely capable of movement, and the professional athlete looking to refine technique, with mostly the same hardware usable for all situations. Interface changes to accommodate varying ability levels should be software only.
5. A "settings menu" for the benefit of the end user and/or agent providing service to the user will also be part of our design. This should enable the user to adjust the levels of feedback and assistance provided by the interface.
6. We believe that the immersiveness of our AR experience is what promotes motor cortical engagement, which our research shows enhances recovery. Our development paradigm is therefore to increase immersion wherever possible to the user's benefit. To that end, the experience of a real-time interface integrating visual display and haptic feedback is paramount to product performance.

Partners

-E-textile and hardware components: Myant

Myant is the primary stakeholder in this system of technologies as they are providing the central components for the system to work.

-Local AR development company: VR Visions

VR Visions is a Toronto based AR/VR development company that creates solutions and works with companies to develop virtual products.

-Designers/Strategists: Aether Tech

Student run consultancy specializing in systems and interface design. Primary role is creating the interface which ties together these many parts.

-Medical Experts: Toronto General Hospital

Local hospital which offers research services. Partnerships will allow benefits for both hospitals, users and our company.

-Kinesiology Experts: University of Toronto

University research lab which works with global partners and supports student innovation. Industry professionals that require less paying private labs.

-Software Development Company: Intelliware

Toronto based software development company that will play the role of applying our designed virtual interface to reality while working with Myant and VR Visions.

-Sports Partners: Nike

Large scale opportunity for brand advertising by product-sponsorships and celebrity endorsement.

-Investors: Accenture, Government of Canada

Venture capital investment opportunity. Government grants available to social benefiting businesses.

Initiation Strategy

Discovery
Phase 1.0: *Consult with medical/kinesiology experts*: To understand industry practices and latest technology.
Phase 1.1: *Consult with target demographic*: Empathize with the audience that will be using our product and understand user specific needs.
Phase 1.2: *Market Analysis and Positioning*: Competitor analysis, segmentation, technology purposes for strategy on Myant differentiation.

Synthesis
Phase 2.0: *Product Research:* Technology capability assessment, current hardware availability, Software capabilities.
Phase 2.1: *User Experience Research*: Target demographic analysis to create optimal interface intuitive to user.
Phase 2.2: *User Journey Mapping*: Analysing different case scenarios to optimize the experience for each purpose the user seeks in our product.

Concept Design
Phase 3.0: *Detailed Concept Art and Renderings of Project Vision:* Visualization process starting from sketches which are developed to high detailed virtual environment models.
Phase 3.1: *Co-Design Workshop with Myant, (AR Company), Aether Tech*: Presenting concept art to our client Myant for feedback and re-iteration with feasability feedback from AR professionals.

Refine
Phase 4.0: *Co-Design Workshop with Users, (Kinesiology Expert), and (Software Developer)*: After designing the interface and platform for the product, the contents are filled by industry leaders and professionals.
Phase 4.1: *Athletic Brand and Celebrity Partnerships:* Pitching the capabilities of our designed system that will benefit all parties and provides a huge opportunity for user-brand recognition and brand-system sponsorships.
Phase 4.2: *Product Testing:* Testing with target demographic to make refinements and tweaks before launch.

System Map
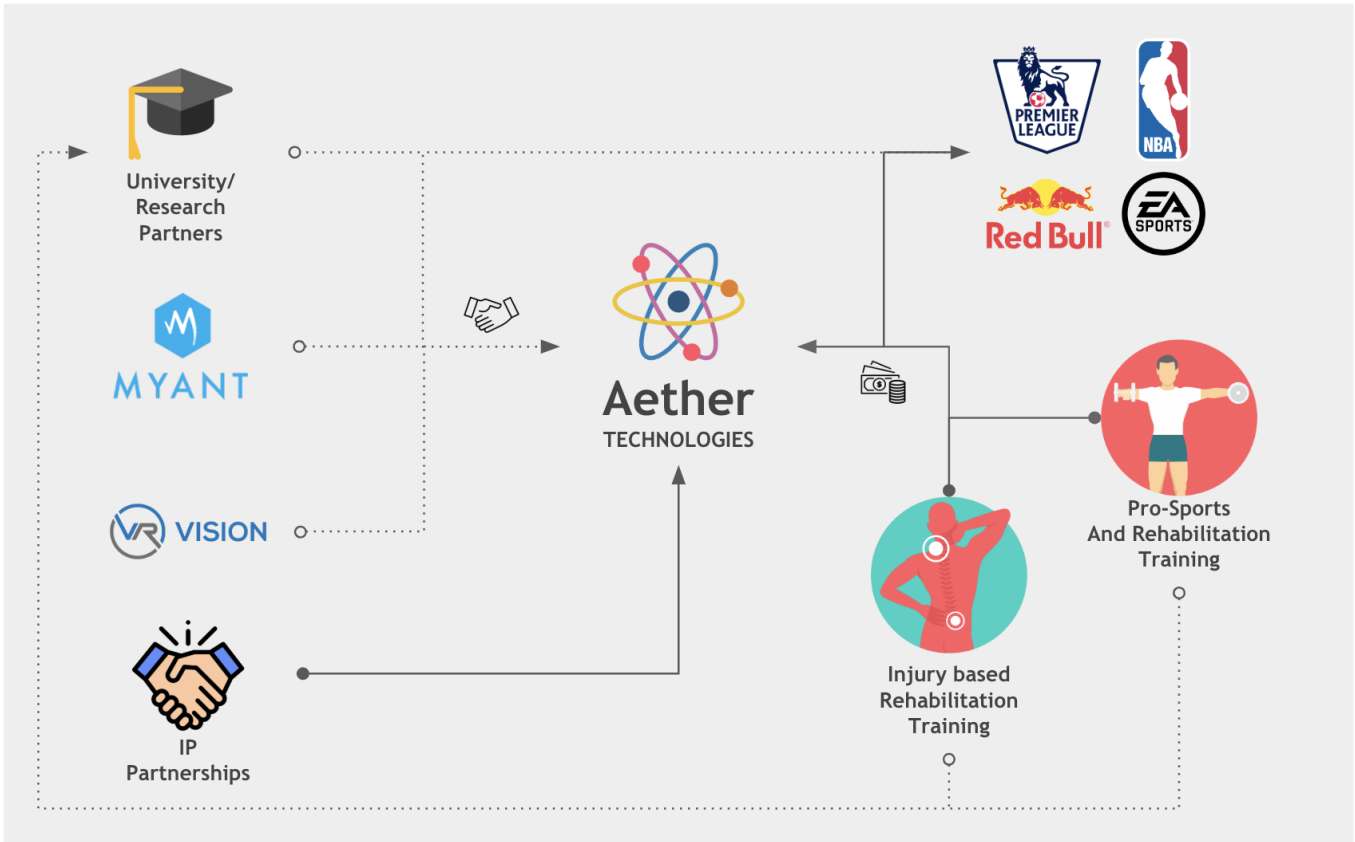
Cost of the Project

Beta Development --- $500 000 --- 18-24 Months
Software development --- $350 000
UI/UX --- $75 000
User testing --- $75 000

Partnerships/Licenses --- $100 000 --- 6-12 Months
IP Licenses --- $50 000
University/Corporate Research Partners --- $50 000

Clinical Trials/Medical Overview ---$100 000 --- 12-25 Months
Preliminary Clinical Trials --- $50 000
Medical Consultation --- $50 000

Marketing --- $50 000

$350,000 Software Development		$50,000 IP Licence	$50,000 University/Corporate Research Partners
		$100,000 Medical Consultation	
$75,000 UI/UX	$75,000 Beta Testing	$50,000 Marketing	