M&T BUSINESS PROPOSAL DOCUMENT

RecoVR

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Team 54

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Executive Summary

For the unabridged version of all summary sections, please visit our original business proposal.

Occupational therapy (OT) plays a crucial role in helping individuals regain independence and improve their quality of life following injury, illness, or disability. However, traditional OT methods include limitations. Currently, most therapy exercises are prescribed using paper-based instructions, which lack engagement and fail to provide real-time feedback. These limitations contribute to therapy exercise adherence rates dropping below 40%, creating inefficiencies and prolonging recovery timelines (Ley & Putz, 2024). Moreover, in-person sessions are often inaccessible due to geographic barriers, high costs, and a shortage of occupational therapists—vacancy rates exceed 15% in many areas (APTA Vacancy Report, 2023).

Our project introduces a gamified Virtual Reality (VR) platform tailored to occupational therapy. Unlike the state-of-the-art OT methods that rely heavily on paper instructions or isolated in-clinic visits, our solution transforms therapy into an engaging, interactive, and measurable experience. By using immersive VR environments, real-time feedback, and progress tracking, patients can perform exercises at home effectively. This approach addresses the critical barriers to adherence and access, offering a scalable solution to meet the needs of modern healthcare. Positioned within the rapidly expanding $170 billion digital health market (Statista, 2023), our platform has the potential to reshape occupational therapy delivery while improving patient outcomes and reducing long-term healthcare costs.

Insurance providers and healthcare institutions stand to benefit significantly from this solution. By reducing the need for frequent in-person visits, our platform lowers the overall cost of therapy programs. Furthermore, insurers can improve recovery outcomes for policyholders, which translates to fewer claims over time. Our platform also integrates seamlessly with telehealth ecosystems, making it an attractive option for healthcare providers seeking digital innovations. With its ability to enhance patient engagement and generate data-driven insights, this solution is poised to redefine occupational therapy in underserved markets.

Value Proposition: Our VR-based occupational therapy (OT) platform tackles three major challenges in traditional OT: 1) lack of engagement, 2) limited accessibility, and 3) minimal outcome tracking. By transforming repetitive exercises into interactive games and offering rewards, it boosts patient motivation and adherence. Its portable design enables therapy at home, addressing geographic barriers and serving underserved communities. Finally, the platform's real-time data analytics allow therapists to monitor progress remotely, adjust treatments dynamically, and improve outcomes. Rather than offering fixed exercises, the system empowers therapists to create or customize activities for a growing patient base, making it a scalable solution for modern OT.

Stakeholders: Our VR platform benefits a wide range of stakeholders by improving the quality and reach of occupational therapy. Patients enjoy more engaging, gamified exercises that boost motivation and adherence, leading to better rehabilitation outcomes. Occupational therapists gain from real-time feedback and analytics, allowing for personalized, adaptive care plans. Healthcare providers can efficiently scale their services without significant additional costs, addressing

capacity challenges. Finally, insurers benefit from the platform's data-driven outcomes, which reduce long-term costs by encouraging higher adherence rates and better overall recovery for policyholders.

Market Research: Extensive market research highlights several key challenges and opportunities in the occupational therapy industry, presenting a compelling case for RecoVR.

Research shows occupational therapy faces major challenges in patient adherence and therapist availability, especially in underserved areas. Over 60% of patients fail to complete prescribed exercises due to monotony, lack of feedback, and logistical barriers, driving up healthcare costs. Additionally, high vacancy rates for occupational therapists exceed 15% in many regions, limiting patient access and overburdening current practitioners. Virtual reality (VR) has proven effective in boosting engagement, with 85% of patients reporting higher motivation. This aligns with the fast-growing digital health sector, projected to reach a value of $170 billion by 2025. RecoVR addresses these needs through gamified VR therapy, offering accessible, engaging, and data-driven care. By expanding the market and enhancing the quality of occupational therapy, RecoVR stands poised for widespread adoption.

Customer Segments: The rehabilitation market comprises diverse patient groups—such as those recovering from surgeries, managing chronic conditions, and spanning pediatric to geriatric populations—all of whom need engaging, accessible therapy programs to boost adherence and outcomes. Healthcare providers face therapist shortages and operational challenges, while insurers prioritize cost-effective solutions and quicker recoveries. Our scalable VR-based platform addresses these needs through gamified, low-impact therapy that maximizes engagement, reduces relapse rates, and shortens recovery timelines. By requiring minimal infrastructure, it also bridges the therapy gap in rural and underserved areas, ensuring broader and more equitable access to quality rehabilitation.

Competition: Existing VR rehab products generally focus on physical therapy (PT) or narrow niches (e.g., chronic pain, stroke recovery, or vision therapy) and often lack FDA clearance. Even the more established platforms, such as XRHealth and MindMaze, do not adequately address occupational therapy (OT)—particularly daily living tasks like cooking or dressing. Consequently, OT-specific solutions remain underdeveloped. Our platform fills this gap by integrating gamified, real-world simulations and real-time tracking specifically for OT. Unlike competitors, it allows therapists to tailor recovery plans to diverse patient needs, offering a data-driven approach that extends beyond typical PT-focused VR solutions.

Intellectual Property (IP): Our approach to intellectual property strategy centers on integrating proven technologies—such as open-source computer vision models and established VR/AR frameworks—into a customized, therapy-focused platform. By adapting existing pose detection tools for real-time motion tracking and designing gamified modules specifically for daily living and mobility exercises, RecoVR delivers precise feedback and high engagement. Additionally, the platform's tailored data analytics and reporting solutions empower therapists with actionable insights, refining treatment plans and enhancing outcomes. The true innovation lies in the proprietary methods by which these tools are combined and optimized for occupational therapy.

Revenue Model

RecoVR has a two-sided revenue approach, with the majority of our expected revenue coming from patient-side, and some premium add-on services for the physical therapist dashboards.

Patient-side costs with Insurance Reimbursement

Much like SwordHealth and other telehealth PT providers, RecoVR would seek reimbursement from insurance companies by providing data on the clinical efficacy of our VR-based therapies. Patients or caregivers could purchase or rent the VR therapy solution if their insurance does not cover it or if they prefer more personalized access.

To do this, we will identify existing insurance billing codes (CPT/HCPCS) that cover remote therapeutic monitoring and telehealth-based rehabilitation. We plan to build relationships for direct partnerships with both private insurers and government programs (e.g., Medicare/Medicaid) to negotiate coverage terms and pilot studies. Lastly, our platform provides real-time usage statistics and patient progress reports to strengthen our value proposition for payers.

For patients without insurance coverage, direct purchase or rental options will be available. Patients or caregivers can subscribe to RecoVR for a monthly fee, ensuring continued access to therapy. This approach reduces financial barriers and allows for broader adoption in both individual and institutional settings.

Seats-based Access to RecoVR Application

For a patient to get access to RecoVR, they will receive a code from the physical therapists, download the RecoVR app, and enter their user code to redeem the application. The code is also tied to the user such that they will get a customized regimen, and also prevent people from sharing licenses, a common standard B2C subscription services problem such as Netflix.

The physical therapists are in charge of purchasing RecoVR application licenses.

These licenses will be available in two models:

1. Single-seat licenses for individual patients.
2. Bulk institutional licenses (e.g., a fixed number of seats at a discounted price).

The latter is preferred because physical therapists already have a fixed number of patients, and also allows us to better accommodate hardware acquisition, which we will cover in the costs section.

Institutional Subscription Model: Dashboard

Hospitals, rehabilitation centers, and OT clinics pay a monthly or annual subscription for access to RecoVR's platform and data analytics dashboard. We will develop a centralized interface for therapists to track patient progress and adjust treatment plans. We will also add onboarding, educational materials, and priority customer service for institutions.

Premium Features & Gamification Add-Ons

To increase engagement and diversify revenue streams, RecoVR will offer premium features such as: Custom VR environments & therapy challenges, Advanced AI-driven therapy recommendations, or In-game rewards and patient personalization options. Examples are similar to Duolingo where you have streaks for exercising, in-game skins, and also social aspects in challenges.

This freemium model enables therapists and patients to access basic therapy features while offering upsells for more advanced tools and experiences. Nevertheless, all of the premium features are simply add-ons, and we plan to prioritize the app such that you can have a seamless, adless, and fluent experience even without having to pay extra.

Cost

The expected costs from RecoVR are as follows:

Core Services Maintenance and Model Hosting

RecoVR hosts ML models that do pose detection upon user input. Additionally, we host our dashboard services and backend on AWS, which incurs regular cloud computing costs. These costs scales and flattens with more user usage, and can be modeled as follows:

Core Services Cost = Monthly Cloud Instances Cost + Model Hosting Cost

Monthly Cloud instances is a fixed cost because the majority of computation is done on user-side and headset side, requiring only the cost of a central lightweight server tracking metadata.

Model hosting incurs a fixed cost that grows logarithmically to usage.

Hardware Rental

For better accuracy and user engagement, a subset of the activities provided for RecoVR requires a user to have a metaquest. There are two ways this could be done: renting the hardware to users, and selling it to them. To avoid the inventory problem, RecoVR will act as a middle party to help connect physical therapists and facilities to acquiring VR headsets at a fee. Partners will, in addition to signing up for a certain number of seats annually at a discounted rate, also be provided that set number of VR headsets to purchase with a small intermediate fee. **As a result, we do not need to hold inventory and bear minimum risk.**

Sales and Outreach

Sales and marketing expenses will also be a necessary investment, as outreach to insurers, hospitals, and therapists will require a combination of pilot studies, industry conferences, and digital marketing campaigns to establish credibility and expand market share. This covers all of the following:

- Clinical pilot studies to validate therapy effectiveness.
- Outreach to hospitals, therapists, and insurance providers.
- Industry conferences and healthcare expos.
- Digital marketing campaigns targeting occupational therapy professionals.

Software Development & Platform Upgrades

While the initial platform development incurs high upfront costs, ongoing software maintenance and new feature development will require continuous investment. Because the main platform will be finished, all of the software development costs will be on a per-game basis. Fortunately, because there is a finite set of exercises, this is a linear cost but ultimately flattens out. Moreover, to reduce costs even further, our team plans to add a last option where we provide an api for

alternate game developers and physicians can drag and drop simple exercises and define them themselves in the long term. This last option will likely be a prototype and we do not have enough time to fully integrate it in our project by May, but the API to do so will be defined.

Customer Support

To ensure successful implementation and adoption, RecoVR will need dedicated support and training programs for therapists and patients. This includes:

- 24/7 technical support for therapists using the dashboard: done via an AI service
- In-app onboarding tutorials to reduce user friction: currently creating
- Live training webinars for new healthcare partners..
- Self-service documentation & FAQs to minimize support inquiries.
- Specialized support teams for insurance billing questions and reimbursement assistance.

Summary

Overall, RecoVR benefits from high-margin software revenue combined with low infrastructure costs, making it highly scalable. By partnering with insurance companies and healthcare providers, we reduce patient acquisition costs, ensuring a sustainable business model.

Our long-term goal is to establish RecoVR as the leading VR-based occupational therapy platform, revolutionizing rehabilitation with a cost-effective, engaging, and data-driven approach.

Miscellaneous

HIPAA Compliance and GDPR

Given the medical nature of occupational therapy, RecoVR may need to obtain FDA approval or equivalent regulatory clearance for certain use cases. Additionally, the platform must adhere to HIPAA (for patient data security) and GDPR (for international compliance) to ensure the ethical and secure handling of user information. HIPAA compliance is essential for protecting the health data of patients in the U.S., while GDPR compliance is crucial for future expansion into European markets.

Currently, our project ensures the following:

- **End-to-end encryption for all patient data in storage and transmission.** We are currently very mindful even in prototype planning of security when data is stored and transmitted. The AWS RDS access rules are very strict and we will do a thorough check before release
- **Role-based access control (RBAC) to limit data access to authorized personnel.** This is enforced via AWS IAM and can be released publicly via managing infrastructure with Terraform and open-sourcing our infrastructure configuration.
- **User consent mechanisms to ensure compliance with data-sharing agreements.** To give PTs access to user data, users must personally grant access in-app and also approve our terms of services.

Lastly, over time we also plan to have regular security audits and compliance reviews to detect vulnerabilities.