

Wearable device that improves the lives of those with complex neurological conditions

PITCH VIDEO INVESTOR PANEL



PROTXX



protxx.com Menlo Park CA

Software Hardware Technology Artificial Intelligence SaaS

OVERVIEW DETAILS UPDATES 4 WHAT PEOPLE SAY 12 ASK A QUESTION 2

Highlights

- 1 Invented 1 minute non-invasive test that identifies and quantifies neuromotor and neurosensory impairments
- 2 PAAS model enhances management and treatment of concussions, stroke, Parkinson's, multiple sclerosis
- 3 Our solution is commercially available with over 20 customers and pilots in U.S., Canada, U.K., Japan
- 4 We reduce time, travel, and costs for patients through remote patient monitoring
- 5 Institute of Health Economics set value-based pricing of \$5,000 per patient per month for PROTXX
- 6 Partnered with machine learning and neurophysiology leaders to develop predictive diagnostics

Our Team



John Ralston CEO and Founder

2016 "Pioneer in Healthcare Technology Innovations Award" CEO, Sales & Marketing, R&D at 8 previous Silicon Valley companies (2 IPOs, 8 M&A exits) MIT BSc, Cornell PhD, MIT Sloan MBA/MOT

I founded PROTXX to address the challenges encountered by clinical neurology and sports medicine providers treating young athletes with sports-related neurological disruptions, after my youngest daughter was forced to stop playing soccer following 2 severe concussions. Related clinical applications now include stroke, MS, and Parkinson's disease.



James Walker Chief Financial Officer

Has led 4 previous Silicon Valley companies thru IPOs



Joshua Roper Vice President, Operations

GM, Product Executive, and Technology Leader experienced in Software, Hardware, Networking, Security, and IoT with more than 27M networked devices deployed and well over \$2B in revenue

Pitch

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Transforming the lives of tens of millions of people with complex neurological conditions

Parkinson's musculoskeletal genetics
 peripheral neuropathy phenotype
 concussion vestibular neurosurgery
 CTE neurodegeneration ALS
 Huntington's Turbidity visual system
 pharmaceutical treatment Alzheimer's
 somatosensory tremor
 balance stroke
 rehab brain TBI

- Injuries
- Disease, Aging
- Genetic disorders

John Ralston, PhD
CEO & Founder
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<https://protxx.com>

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Forward-Looking Statements

This presentation contains "forward-looking information", including "future-oriented financial information" and "financial outlook", under applicable securities laws (collectively referred to herein as forward-looking statements). Except for statements of historical fact, the information contained herein constitutes forward-looking statements and includes, but is not limited to, the (i) projected financial performance of the Company; (ii) completion of, and the use of proceeds from, the sale of the shares being offered hereunder; (iii) the expected development of the Company's business, projects, and joint ventures; (iv) execution of the Company's vision and growth strategy, including with respect to future M&A activity and global growth; (v) sources and availability of third-party financing for the Company's projects; (vi) completion of the Company's projects that are currently underway, in development or otherwise under consideration; (vii) renewal of the Company's current customer, supplier and other material agreements; and (viii) future liquidity, working capital, and capital requirements. Forward-looking statements are provided to allow potential investors the opportunity to understand management's beliefs and opinions in respect of the future so that they may use such beliefs and opinions as one factor in evaluating an investment.

These statements are not guarantees of future performance and undue reliance should not be placed on them. Such forward-looking statements necessarily involve known and unknown risks and uncertainties, which may cause actual performance and financial results in future periods to differ materially from any projections of future performance or result expressed or implied by such forward-looking statements.

Although forward-looking statements contained in this presentation are based upon what management of the Company believes are reasonable assumptions, there can be no assurance that forward-looking statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. The Company undertakes no obligation to update forward-looking statements if circumstances or management's estimates or opinions should change except as required by applicable securities laws. The reader is cautioned not to place undue reliance on forward-looking statements.

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The Story Behind the Company

Neurophysiological injury in young athletes

PROTXX CEO & Founder John Ralston with daughter

Non-invasive wearable solution to quantify

- Neurophysiological disruptions
- Response to treatment and rehabilitation

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Our Focus Today

Wearable neurophysiological sensors

Machine learning engine

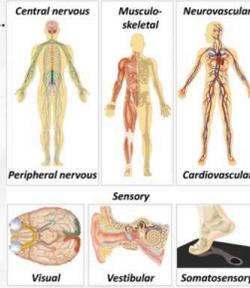
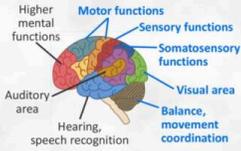
17 million patients (U.S.)
 \$286 billion annual healthcare costs
 \$12 billion revenue opportunity

Concussion
 Multiple sclerosis
 Stroke
 Parkinson's disease

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Problem: Neurophysiological Conditions **PROTXX**

- Disruptions widespread throughout brain
- Impairments to **multiple physiological systems**
 - Highly individual impairment profiles, fluctuating symptoms

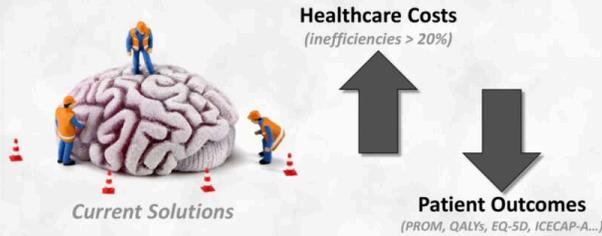


- Current solutions: (i) multiple time-consuming tests, multiple clinical specialists, expensive equipment; (ii) subjective observations, patient self-reporting.

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Clear Unmet Clinical Need

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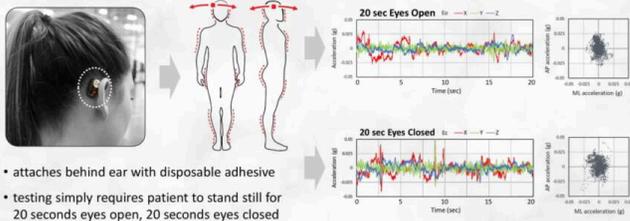
- Better tools needed to classify, quantify, and manage conditions with impairments to multiple neurophysiological systems.

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Technology (1/2): Phyrbrata Wearable Sensor

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**phybrata = physiological vibration acceleration*



- attaches behind ear with disposable adhesive
- testing simply requires patient to stand still for 20 seconds eyes open, 20 seconds eyes closed

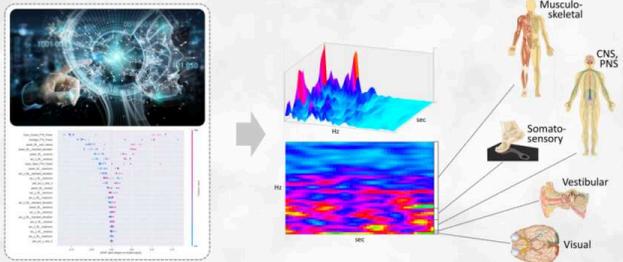
- Detects microscopic involuntary motions of the body, normal and pathological.

*Rollston JD, Raina A, Benson BW, Peters RM, Roper JM, Rollston AB. "Physiological Vibration Acceleration (Phyrbrata) Sensor Assessment of Multi-System Physiological Impairments and Sensory Reweighting Following Concussion". Medical Devices: Evidence and Research. 2020; 13: 411-438.

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Technology (2/2): Phyrbrata Machine Learning Engine*

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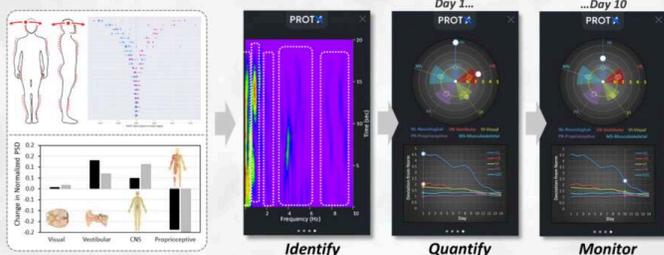
- Identifies, analyzes contributions of each physiological system to biomechanical stabilization of head and eyes as body's reference for balance and movement.

*Houenstein A, Roper JM, Rollston AB, Rollston JD. "Signal classification of wearable inertial motion sensor data using a convolutional neural network". Proc IEEE-EMBS 2019 Intnl Conf Biomed & Health Informatics, May 19-22, Chicago, IL.

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Integrated Phyrbrata Solution

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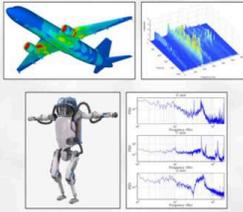


- Identifies, quantifies, and monitors impairments using unique biomechanical vibrational signature of each physiological systems.
- Presents simple, intuitive test summary for clinician and patient.

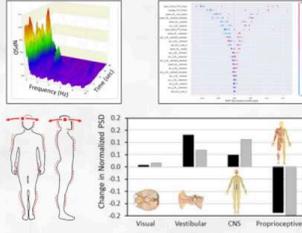
Industrial Origins of Phybrata Solution*

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- **Industrial origins:** detection, analysis of vibrational signatures for system design, remote monitoring, fault detection



- **Phybrata solution:** extends capabilities to precision healthcare → phybrata signatures enable digital biomarkers for human physiological impairments



*Rabston JD, Rasna A, Benson BW, Peters RM, Roper JM, Rabston AB. "Physiological Vibration Acceleration (Phybrata) Sensor Assessment of Multi-System Physiological Impairments and Sensory Reweighting Following Concussion". Medical Devices: Evidence and Research. 2020; 13: 411-436.

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Validated and Protected

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21 patent applications



Peer-reviewed research publications

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Product: B2B Platform-as-a-Service (PaaS)

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Sensors, charging case



Mobile app



Cloud data services



BLE

Cellular, WiFi

- **B2B solution, 3 revenue streams:** (i) annual PaaS license (ii) duration-based Remote Patient Monitoring (RPM) fees (iii) custom data subscriptions
- **COGS = 8%** of annual PaaS license fee

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Customers

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Healthcare systems deploying branded PROTXX app



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Value Proposition

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...or just this.

All of this...

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Enabling Precision Patient Care

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Concussions



Stroke



Multiple sclerosis



Parkinson's disease

Phybrata sensor/biomarkers enable personalized planning/management of treatments, medications, and rehabilitation therapies.

- Adjust rehab therapies and medications more precisely and more frequently
- Reduce incidence, severity, duration of longer-term physical disabilities, cognitive impairments
- Accelerate return to functional independence (stroke, concussion)
- Slow progression of physical and cognitive impairments (MS, Parkinson's)

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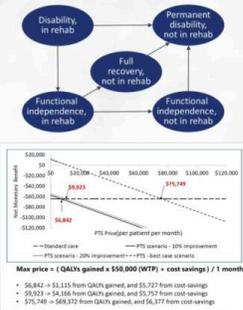
Value-Based Pricing Validation

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Economic Assessment Report
July 2020

"For stroke rehabilitation, the PROTXX solution can be priced in the range \$C[6,800 - 76,000] per patient per month and meet the cost-effectiveness criteria for the Canadian healthcare system."



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Addressable Market (U.S.) > \$12B

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Medical Condition	Incidence	Prevalence	Avg Annual Cost per Patient (\$)	Total Annual Costs (\$B)	PROTXX Addressable Patients	PROTXX Value-Based \$/patient/yr	Revenue Opportunity (\$B/yr)
Concussions	4.3 M	5 M	12,000 (24,000 for extended rehab)	60	645,000 (15% inc in extended rehab)	2,400 (10% of ext rehab cost)	1.5
Stroke	800,000	9.8M	13,000 (29,000 1 st yr, indep rehab, \$8,000 1 st yr, dependent care)	127	440,000 (55% inc in post-acute rehab)	5,300 (IHE study, 06/2020)	2.3
Multiple sclerosis	22,000	920K	51,000	47	782,000 (85% Prev with RIMS)	5,100 (10% of avg patient cost)	4.0
Parkinson's disease	60,000	1M	52,000	52	850,000 (85% Prev in physical therapy)	5,200 (10% of avg patient cost)	4.4
		17M		\$286B			\$12.2B

- Eliminate cost inefficiencies
- Remote patient management
- Improve patient outcomes

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Development Pipeline, Regulatory Roadmap

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	2017-2019	2020	2021	2022	2023
Wellness Device	MVP development, pilot testing, peer-reviewed publication Transfer to manufacture Commercial release	*This non-medical device is not intended for diagnostic or preventative use. It measures physiological metrics and reports them to users or caregivers who then take the responsibility of making care decisions for the person being monitored.* Direct sales International distributors			
Balance Diagnostics	Discovery	Analytical validation	Clinical validation	FDA 510(k), HC MDEL	Commercial release
Concussion	Discovery	Analytical validation	Clinical validation	FDA 510(k), HC MDEL	Commercial release
Multiple Sclerosis		Discovery	Analytical validation	Clinical validation	FDA, HC, EU Commercial release
Stroke		Discovery	Analytical validation	Clinical validation	FDA, HC, EU Commercial release
Parkinson's Disease		Discovery	Analytical validation	Clinical validation	FDA, HC, EU Commercial release

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Global Distribution

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LOK Corporation and PROTXX Announce Global Distribution Partnership

October 2, 2020 - <https://lok-corporation.com/protxx-announcement/>

"We believe that PROTXX will be a game-changer in both neurology and sports medicine, two growing medical segments that we strongly believe in and that will be part of the core of our business in 2021."

Daniel Cloutier, CEO of LOK Corporation.

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Clinical & Commercial Validation



	Paid Engagements	Data Pilots
Concussion	BCI, CONCLUSION, UNIVERSITY OF STIRLING, NeuroScience Foundation, CEPP, Durham University, Dignity Health, 天津南共济病院	UCSB, VIBANTCARE, UNIVERSITY OF CALGARY, ARRIORS, Mount Sinai, AltaML
Multiple Sclerosis	UNIVERSITY OF ALBERTA, GRRIT, Mitacs Accelerate	Dignity Health, AltaML
Parkinson's Disease	ESCAPE BIO, Dignity Health	HOTCHKISS BRAIN INSTITUTE, Sutter Health
Stroke	UNIVERSITY OF CALGARY, Dignity Health, ALBERTA INNOVATES, HOTCHKISS BRAIN INSTITUTE	IHE INSTITUTE OF HEALTH ECONOMICS, Alberta Health Services, AltaML
Other*	UNIVERSITY OF CALGARY, Mitacs Accelerate, RFPSSM	Sutter Health, Sun City, SECURITY RURAL UNIVERSITY, Stanford MEDICINE

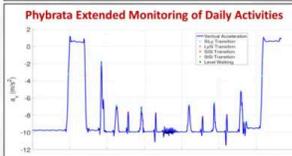
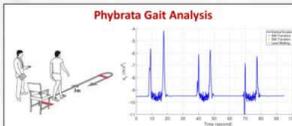
* Aging in Place, Peripheral Neuropathies, Chronic Pain, Neurosurgeries

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2021: New Remote Patient Monitoring Capabilities PROTXX

COVID-19 has accelerated demand for remote patient monitoring

BioWorld MedTech In wake of COVID-19 funding, PROTXX and Canadian university press for wearable MS monitoring device
MULTIPLE SCLEROSIS SOCIETY PROTXX, University of Alberta collaborate to develop remote healthcare platform for MS



Medical Wearables 2020
 DECEMBER 8-10, 2020 ONLINE

FEATURED SPEAKER
John Ralston, PhD
 Founder and CEO
 PROTXX

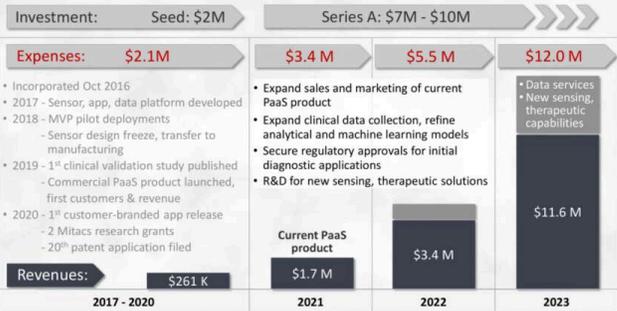
PRESENTATION TOPIC
 Wearable Technologies for the Management of Degenerative Neurological Conditions

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Competition	Quantify multiple impairments	Continuous & remote monitoring	Integrated diagnostics & therapeutics	Easy-to-use low-cost wearable
PROTXX (20 patent applications)	✓	✓	✓	✓
Existing alternatives: CDP, EMG, EVS, fMRI	✓	✗	✗	✗
Clinical balance/gait systems: Bertec, Biodex, BodiTrak, BTrackS, CSMJ, Korebalance, Tekscan	✓	✗	✓	✗
Video motion capture systems: BTS BioEngineering, Kinetisense	✓	✗	✗	✗
Wearable medical sensors: APDM, BIOPAC, BTS, Cerebrotech, Forest Devices, Jan Medical, NuroChek	✗	✓	✗	✓
Mobile apps: (Balance, movement, activity tracking) Sway Medical, C3 Logix, KD Balance	✗	✓	✗	✓

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Corporate Roadmap PROTXX



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Management Team & Advisory Board



John Ralston, PhD, MBA – CEO & Founder

- 2016 "Pioneer in Healthcare Technology Innovations Award"
- CEO, Sales & Marketing, R&D at 8 Silicon Valley companies (2 IPOs, 8 M&A exits)



Christy Lane, PhD – Advisory Board

- Founder and Co-CEO, Vivametrica
- Expertise in R&D and commercialization of wearable technology for digital health.



Jack Ross, MD, PhD – President

Seasoned IoT and SW engineer, product manager, business unit executive: Silver Spring Networks, SAP, Oracle, Portera, TXU

Andreas Hauenstein, PhD – Dir Platform Eng
 * 23 years experience in *advanced data analytics, mobile apps, SW platform development* for financial services, wearables, industrial drones.

Jim Walker – Chief Financial Officer
 * 25+ years experience as *Silicon Valley CFO, COO* developing, commercializing wide range of technologies and products (*4 IPOs*)

renovating medicine, and insurance.

Chris Wood, FACHE, MHA – Advisory Board
 * Vice President, Neuroscience and Orthopedics, Dignity Health
 * 20 years in *neurology, orthopedics, telemedicine, healthcare administration*

Ashutosh Raina, MD – Advisory Board
 * Medical Director, Ctr of Excellence *Pediatric Neurology*, Dignity Health, Sacramento.
 * Co-Founder, Concussion Medical Clinic.

IoT device and data platform engineers
 Clinical neurology practitioners and researchers
 Digital healthcare business professionals

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Company Information (<http://protxx.com>)

PROTX

- Founded: Oct 2016
- Locations: Menlo Park, CA; Calgary AB
- Well-established partner network: R&D, manufacturing, clinical pilots, distributors

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Why Invest

PROTX

- Innovative and proven precision healthcare solution
- Large underserved market, high margin business model
- Defensible IP
- Experienced team, efficient use of cash to develop/launch revenue-generating product
- Potential for exceptional ROI

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LEAD INVESTOR



Terry Hsiao Professor at Marymount University

Protxx focuses on the tele-health segment of digital health with significant tailwind during and post pandemics when people and healthcare providers leverage sensors and app to remotely diagnose and improve patient health. The team is led by John Ralston whom I have known for over 20 years and is a highly accomplished and versatile technology innovator and entrepreneur. The team has received recognition from startup competition and shown perseverance, the company has a differentiated product and service, the distribution channel via care clinics, revenue model is clear and ramping up. The future is bright and timing is right to capture this opportunity.

Invested \$1,000 this round & \$100,000 previously

[Learn about Lead Investors](#)