

Selena Scola |

Robot Axiology

*Robot Axiology is the staging name, project title TBD

IDENTITY:

Robot Axiology is a resource for additional PTSD support, available 24/7, with an Internet connection and a smartdevice.

PROBLEM:

Clients are displeased with the lack of options and the quality of service provided when seeking assistance for symptoms associated with psychological and neurological trauma.

SOLUTION:

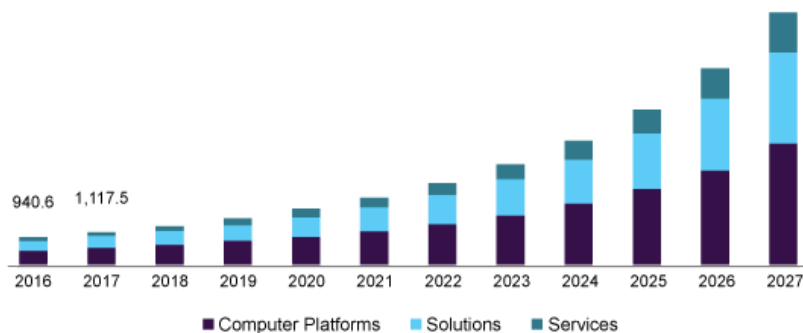
Using the IBM platform, neural networks (NN), machine learning (ML), artificial intelligence (AI), and natural language processing (NLP) Robot Axiology will develop a system that understands, learns, and answers complex questions associated with the psychological and neurological issues that may abound from trauma.

*Robot Axiology will contribute and collaborate with experts and researchers in the field to develop case studies for evidence-based reports and clinical trials on a global scale. (*See Platform Concerns & Considerations)

MARKET RESEARCH:

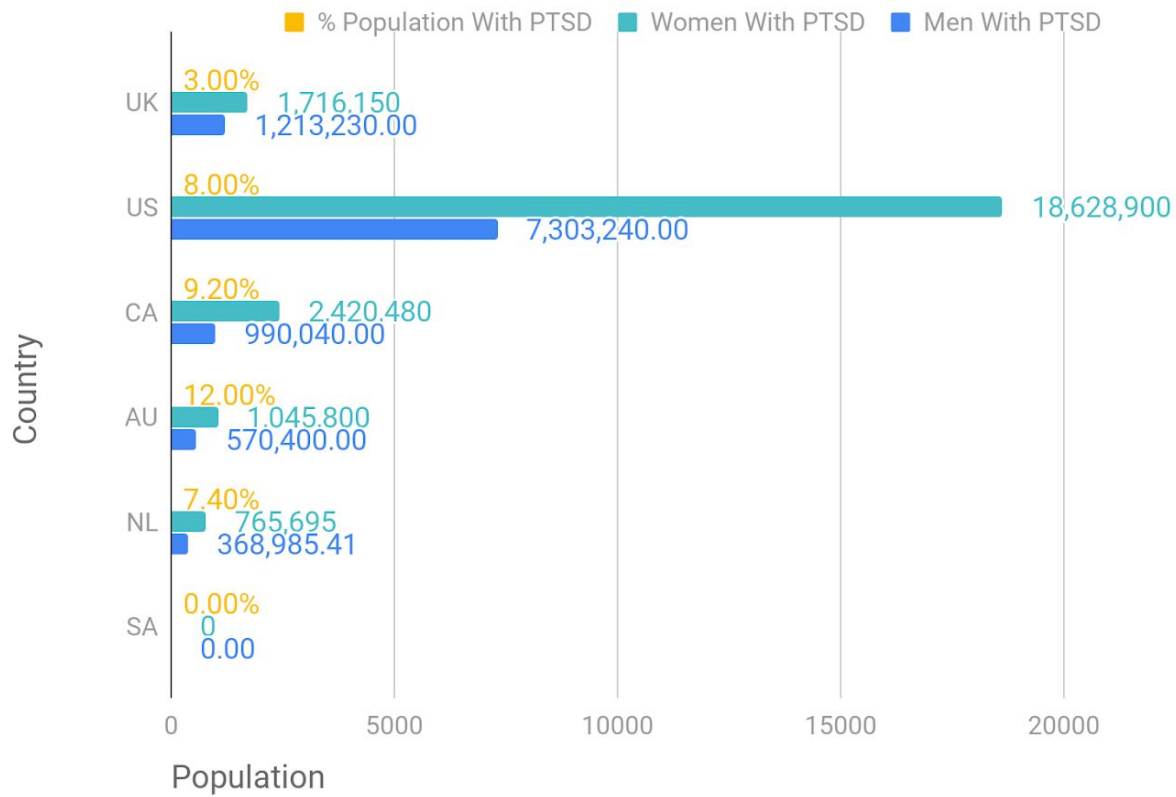
The global conversational systems market size was valued at USD 5.94 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 26.3% from 2020 to 2027. *University of Edinburgh

U.S. conversational systems market size, by component, 2016 - 2027 (USD Million)



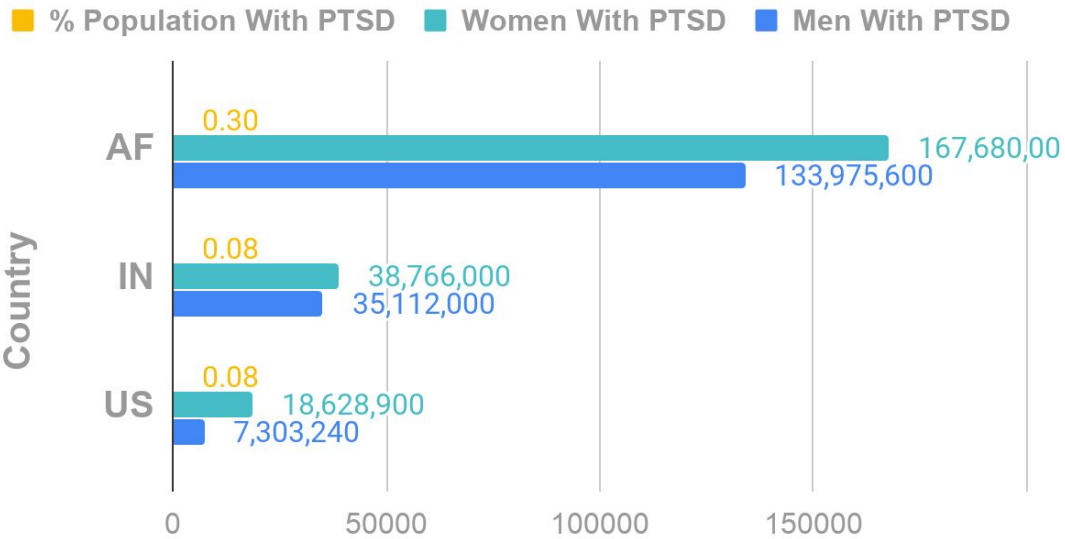
Source: www.grandviewresearch.com

Population PTSD Stats From 2017 -2020



Country	Total Population 2020	Population With PTSD	% Women with PTSD	% Men with PTSD
UK	67,886,011	2,036,580	5.1%	3.7%
US	368,698,458	29,495,876	10.0%	4.0%
CA	37,742,154	3,472,278	12.8%	5.3%
AU	25,499,884	3,059,986	8.3%	4.6%
NL	17,134,872	1,267,980	8.8%	4.3%
SA	610,003,437	na	na	na

Population PTSD 2017 - 2020



Country	Total Population 2020	Population With PTSD	% Women with PTSD	% Men with PTSD
AF	1,337,735,919	401,320,776	25%	20%
IN	1,378,977,362	104,112,791	8%	7%
US	368,698,458	29,495,877	10%	4%

India (IN)

- 7.55% of adults have been diagnosed with a form of PTSD between 2017 and 2020
 - 7.8% women
 - 6.6% men

Africa (AF)

- 30% of adults have been diagnosed with a form of PTSD between 2017 and 2020 (wartorn countries have significantly higher amounts of PTSD per capita)
 - 25% women
 - 20% men

U.S.

- 8% of the US population will have PTSD at some point in their lives.
- About 8 million adults have PTSD during a given year.
 - 10% women
 - 4% men

U.K.

- 3 out of every 100 adults experiences a PTSD at least once in their lives

- 5.1% women
- 3.7% men

Canada (CA)

- 9.2% of the Canadian population develops PTSD at least once in their lives.
 - 12.8% women
 - 5.3% men

The Netherlands (NL)

- 7.4% of adults experiences a PTSD at least once in their lives
 - 8.8% women
 - 4.3% men

Australia (AU)

- 12% of adults experiences a PTSD at least once in their lives
 - 1.3 % of Australian adults developed PTSD during 2018
 - limited data available at this time or data is pushed down due to keyword search terms.
 - limited data available at this time or data is pushed down due to keyword search terms.

South and Central America (SA)

- limited data available at this time or data is pushed down due to keyword search terms.

*PTSD stats by groups to add later: LMC pop stats, refugees, and PTSD by industry

COMPETITION:

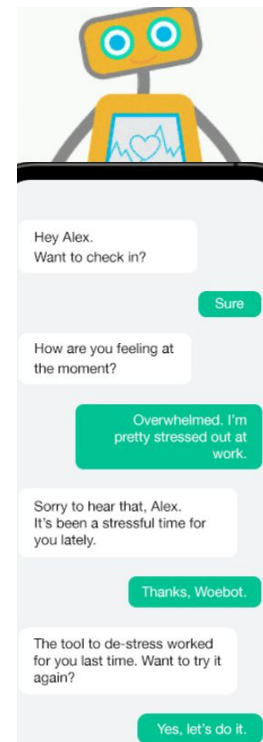
U.S.

- **Care.coach** - care.coachTM ([Gerijoy](http://Gerijoy.com)TM is the consumer brand and service line of care.coach) is a San Francisco Bay Area tech company funded by private investors, awards from NIH and Congress, and happy customers. We employ compassionate people and friendly technology to improve healthcare. Our digital avatars are powered by a unique fusion of artificial+human intelligence, enabling them to build strong relationships with complex patients, coach risk-mitigating behaviors, and help coordinate care.
 - We currently serve hospitals and health plans across the country. In the hospital, we reduce falls and delirium by 80%+, and at home, we



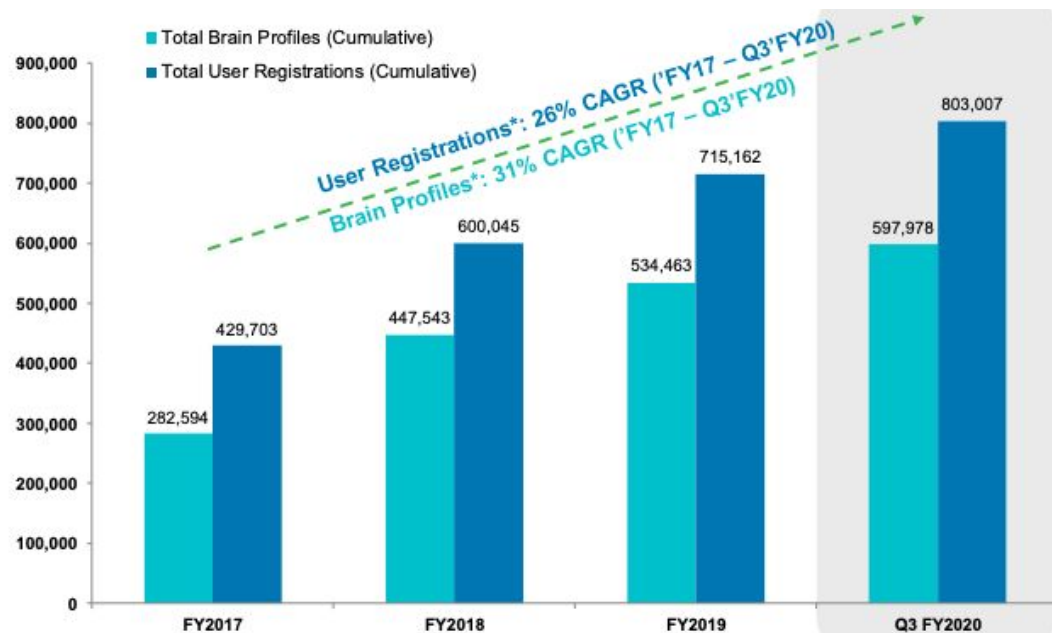
encourage self-management of multiple chronic conditions to avoid (re)admissions to the hospital and provide psychosocial support and coaching to avoid unnecessary emergency department visits and inefficient use of home care resources.

- Seed unknown
- **Talkspace** - an Online therapy startup that offers confidential therapy with a network of licensed therapists.
 - Investors - La MaisonITF, Revolution, Norwest Venture Partners, Compound, Spark Capital, Qumra Capital, SoftBank, and more.
 - Series D \$50,000,000 May 29, 2019
 - Series C \$31,000,000 Sept 6, 2017
 - Seed \$1,000,000 Dec 16, 2014
 - Seed \$200,000 Jul12, 2012
 - 23,479 [Talkspace](#) OnlineTherapy monthly downloads via iTunes Connect
 - 371 Talkspace Counseling & Therapy monthly downloads via GooglePlay
- **Woebot** - (depression CBT app) venture-backed startup, a chatbot that helps people regulate moods and learn powerful techniques to challenge distorted and negative thinking. Our bot uses scientifically proven techniques from CBT (cognitive behavioral therapy) and is based on 10 years of cutting edge research at Stanford University. <https://woebot.io/>
 - Mar 1, 2018 Woebot Labs raised \$8MM / Series A from AI Fund and New Enterprise Associates (NEA)
 - \$39 per month (2018- 2 million messages per week to users in 135 countries across the globe with an estimated few hundred thousand monthly active users. It seems reasonable to assume they have grown well beyond those number in 2020
 - <https://www.technologyreview.com/2020/05/20/1001964/how-to-stay-sane-when-the-worlds-going-mad/> - Mentioned in MIT Tech review 05/2020
- **Total Brain & GRIT**
 - <https://newsroom.ibm.com/2019-08-28-IBM-unveils-GRIT-a-digital-solution-developed-in-partnership-with-the-Department-of-Veterans-Affairs-to-help-veterans-in-transition>
 - **Total Brain** ([Total Brain Inc.](#)) (formerly MyBrainSolutions) - Total Brain Mental Health and Wellness platform that trains brain capacities and manages physical health. It is a San Francisco- and Sydney-based



mental health and fitness platform, powered by the largest standardized neuroscientific database in the world. The SaaS platform helps its 600,000 registered users manage their mental health while lowering healthcare costs and increasing productivity for employers and payers across the United States.

- Louis Gagnon is the CEO of Total Brain, he is Advisor to TPG Capital, a top-tier US private equity firm who named him CEO of Ride, a portfolio company that he restructured. As a corporate executive, Louis held dual Chief Product Officer and Chief Marketing Officer roles at Audible/Amazon, Yodle and Monster Worldwide. As an entrepreneur, Louis created and led 5 business and social enterprises on four continents, many of which were in the field of reproductive health. He received a Bachelor of Business Administration from Laval University in Quebec City and a Masters of Science in Marketing from HEC-Montreal. His career has been awarded by his alma maters and his work has been featured in a number of management books and magazines including The Economist.



*Represents cumulative actual figures through the quarter ended 31 March 2020. User Registration figures exclude employer-pre-registered users. Brain Profiles figures include multiple assessments taken by same user.

- <https://www.intelligentinvestor.com.au/shares/asx-ttb/total-brain-limited/financials>
- Annual, Interim, and Quarterly Reports - <https://kye5t1jymxdseiry36l9xvpx-wpengine.netdna-ssl.com/wp-content/uploads/2020/05/Total-Brain-4C-Release-March-2020.pdf>

- <https://www.totalbrain.com/investors/>
- **GRIT** - (Goal-directed Resilience Intervention Training) A Biopsychosocial Model of Self-Regulation, Executive Functions, and Personal Growth (Eudaimonia) in Evocative Contexts of PTSD, Obesity, and Chronic Pain
 - <https://www.ibm.com/industries/federal/grit-veterans>
 - <https://newsroom.ibm.com/2019-08-28-IBM-unveils-GRIT-a-digital-solution-developed-in-partnership-with-the-Department-of-Veterans-Affairs-to-help-veterans-in-transition>
 - <https://clinicaltrials.gov/ct2/show/NCT03890029>

EU

- **HYGGii** - chatbot with an artificial intelligence engine that connects you to a variety of therapeutic games and exercises.
 - Their main investor died suddenly in 2019 and they had to pay back money to his heirs. They plan to apply for the H2020 EU SME Accelerator Grant and have [HYGGii](#) up and running by the end of 2020.
 - Founded: Zurich, Switzerland (2016) Raised: €50,000 from the European Innovation Council.
 - More than 100 clients were treated.
 - SaaS for mental health clinics: virtual reality (VR) therapy against anxiety, EEG-neurofeedback, demonstration workshops for health care professionals and corporates about therapeutic games.
- **Psylaris** - Virtual reality (VR) therapy service for Phobias, Trauma, Addiction, Depression, Pain, and Anxiety.
 - Products - EMDR-VR and Relaxation therapy.
 - Investor - Y Combinator - Seed \$120K Jun 01, 2018
 - <https://www.psylaris.com/en/>

OUR PRODUCT

UNDERSTANDING & ANIMATED

A purpose-driven, strategic, and animated design built to engage, motivate and help people change behaviors by improving mental health and well-being.

UNDERSTANDING

What Is PTSD?

Posttraumatic stress disorder (PTSD) is a psychiatric disorder that can occur in people who have experienced or witnessed a terrifying or traumatic event such as a natural disaster, a serious accident, a terrorist act, war/combat, rape or other violent personal

assault. PTSD has been known by many names in the past, such as “shell shock” during the years of World War I and “combat fatigue” after World War II.

Symptoms

Re-experiencing symptoms may cause problems in a person’s daily life from thoughts, feelings, words, objects, or situations that are reminders of the event.

- Flashbacks—reliving the trauma over and over.
- Night terrors.
- Frightening and debilitating thoughts.
- Tinnitus - the perception of ringing or buzzing in the ears, or other sounds, when there is no external sound.
- Formication from anxiety - feelings of itchiness, tingling, pins and needles, burning, or even pain on or under the skin.
- Avoidance - staying away from places, events, or objects that are reminders of the experience which may impact how a person navigates daily life.
- Enhanced reactivity - easily startled, being tense or “on edge,” angry outbursts.
- Disruption in ability to focus or concentrate.
- Difficulty accomplishing daily tasks such eating, exercising, holding a job.
- Distorted feelings of guilt, blame, or negative thoughts about oneself and or the world.
- Loss of interest in activities, life, suicidal thoughts, and or suicide.
- Isolation - Feeling alienated or detached from friends and or family members.
- Other physical symptoms include panic attacks, increased blood pressure and heart rate, rapid breathing, muscle tension, sweating, shaking, nausea, vomiting, stomach ulcers, gastroesophageal reflux, and or diarrhea.
- Memory loss
- Insomnia
- Depression

Moving on to less dismal things... (scroll to next page; this space is here to preserve formatting of gifs)

& ANIMATED

Meet Your Animated Emotional Support Mental Health and Wellbeing Champion!

“People will want artificial pets with emotional responses and intelligence that are similar to those of animals. If they are made like animals, they will lack conversational abilities.” - Patrick Lin, Robot Ethics 2.0: From Autonomous Cars to Artificial Intelligence



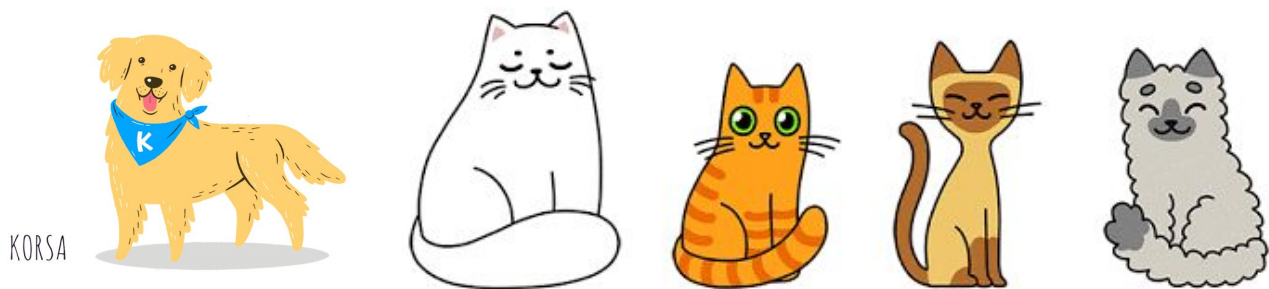
Need more convincing about your animated emotional support mental health and wellbeing champions? Recommended reading:

- [Engaged: Designing for Behavior Change, Amy Bucher - March 3, 2020](#)
- [ETHICALLY ALIGNED DESIGN](#)

Why Animated Animals?

Animals and cartoons bring people comfort. This style of digital companionship (*See [Platform Concerns & Considerations](#)) will help clients forget the clinical nature of their illness, thus allowing them to relax, open up, and share freely. (wellbeing champions, behavior change buddies, support buddies)

- <https://www.wired.com/story/covid-19-robot-companions>
 - There's No Cure for Covid-19 Loneliness, but Robots Can Help. It's hard to replace human contact. But during a pandemic, robots can help



patients
fight off feelings of isolation and despair.

Ideally one would be able to take a photo of an animal and upload it to the platform. The photo would load into an animation generator, and replicate the photo as a cartoon, and the client would be able to name their digital companion. The digital companion would be **backed by a lot of technology.**

*I do have concerns with allowing images to be uploaded to the platform as we would either need a robust AI highly trained on image recognition to ensure that people do not upload 'offensive' or 'inappropriate' material. A middle ground solution would be to start with a few popular and culturally appropriate animals per market segment and allow for new character requests. (*See [Platform Concerns & Considerations](#))

Backed By A Lot Of Technology

- **IBM Cloud™:** EU and HIPAA supported.
- **IBM Watson:** access to a connected ecosystem of health experts, data, partners with datasets that have been cleansed and normalized, and AI analytics.
- **IBM iX@:** co-creates transformational experiences using technologies like XR, 5G and hybrid cloud to guarantee our clients a secure end-to-end mobile vision for Robot Axiology.
- **IBM Blockchain:** Verify Identity document credentials and global payments.
- **IBM Guardium Data Protection** - vulnerability assessment - automatically discovers and classifies sensitive data, identifies data at risk and fetches remediation recommendations, monitors access and protect data, simplifies security and compliance reporting, encrypts data across environments, uses contextual insights and analytics, generates business perspective of data at risk.
- Neural networks (NN), machine learning (ML), artificial intelligence (AI), and natural language processing (NLP) housed in a cloud-based system that understands, learns, and answers complex questions associated with the psychological and neurological issues that may abound from trauma.
- Facial Recognition? (IBM will no longer be working on [FR](#) advancements)
 - Emotion displayed by Animated Wellbeing Champion to express empathy
 - Collect client movement data?

Benefits of an Animated Wellbeing Champion

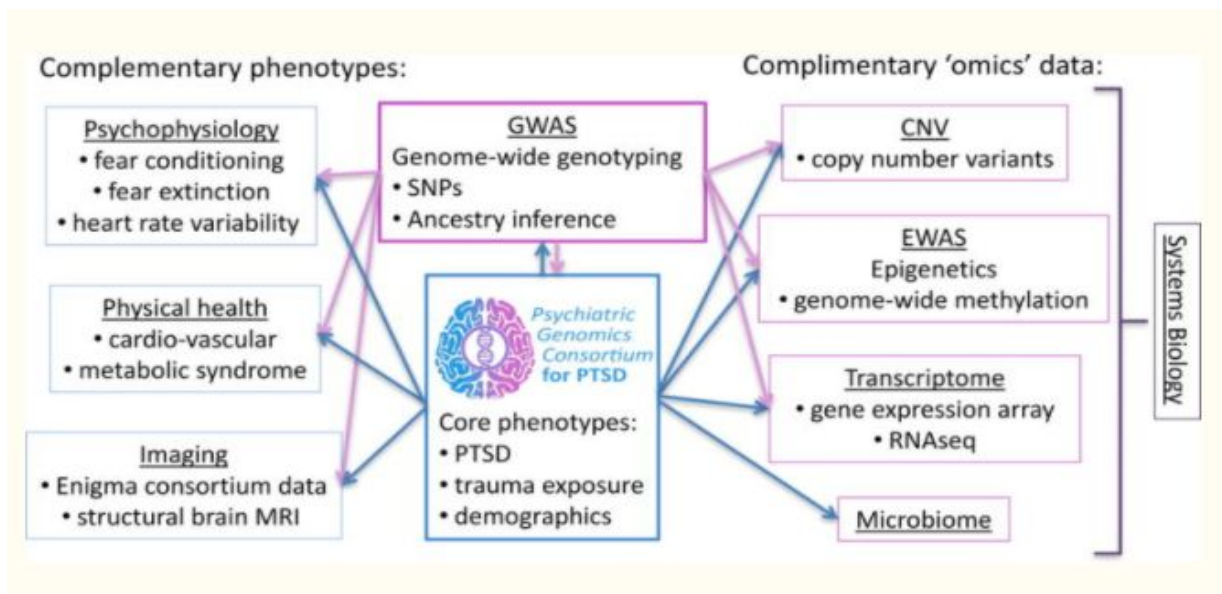
- Has an unlimited amount of time to listen to your concerns 24/7.
- Will not judge you.
 - Enables a stronger chance of receiving honest and accurate data from the client
- Offers unlimited emotional support, understanding, patience, and encouragement.
 - Can rewind and repeat anything that you want to hear again or have forgotten.
 - Can give encouragement (that with time and treatment you can get better).
 - Encourages you to be mindful of your eating habits, body motion, supporting general wellness, exercise habits, keeping doctors appointments, taking medication, managing stressful situations, and working on life goals.
 - Enhances self-determination

Product Details/Features

- Aggregates all data given by the client to create a digital representation of self and creates a profile to:
 - Offer insights and support and measure progress - People need to be reassured that their efforts will build up to something meaningful.
 - Encourages the client to be mindful of eating habits, body motion, supporting general wellness, exercise habits, keeping doctors appointments, taking medication, managing stressful situations, and working on life goals.
 - Nudged to update self assessment surveys
 - Keep a record of activities completed
 - Assess accomplishments and areas of improvement
 - Indicators of progress are important.
 - Timed support nudges
 - Either written by the client or supplied by product, though make sure to Remove prompts and cues from unwanted old habits
 - Encourage the client to make physical changes to their environment to support their new behaviors
 - What is the reward for not doing x?
 - Structure and Map obtainable goals
 - Display areas of obtainable improvement
 - Evidence-based assessments (behavior categorization, why a person does or does not do x)
 - Selfcontrol
 - Emotions
 - Feelings
 - Capability
 - Opportunity
 - Motivation
 - Milestone markers for Increased resiliency
 - Offer choice - different paths to the same end goals
- Client centered and tailored brain training programs that help to improve focus, concentration, reduce triggering ANS
 - Mobile games
 - Exercises
 - Meditation* is not for everyone with PTSD

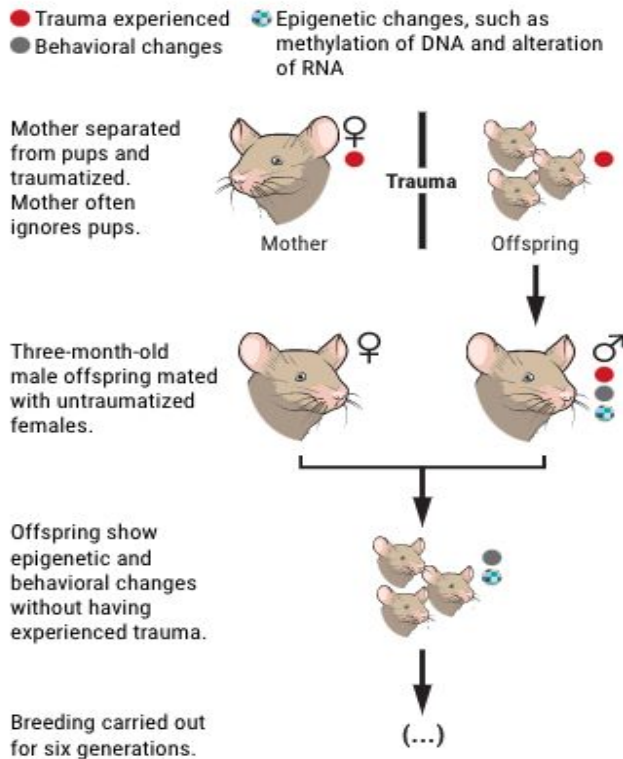
- App link to clients city for weather and safety updates to give more encouragement during weather or other changes that may impact their local environment (opt-in)
- Multiple choice or written session review
 - Likes
 - Dislikes
 - Could be improved upon
 - Wanted features
- Daily Activity Log - for screening, overall mental and physical state of health, and insights to develop a client-centered well-being strategy
 - How likely are you to log your daily activity?(*See Platform Concerns & Considerations)
 - a) If you had to write it?
 - b) Multiple choice list of words plus endless other options explain selection. (NLP)
 - Digital audio journals(*See Platform Concerns & Considerations)
 - Voice analysis(*See Platform Concerns & Considerations)
 - Digital handwriting
 - Writing analysis
 - Keyboard Typing(*See Platform Concerns & Considerations)
 - accelerometer for keystroke speed measurements
 - Client can list their goals and values
 - For thinking aloud and hearing one's thoughts in a safe and relaxing environment.
- Grief Assessment
 - Anxiety and grief go hand-in-hand
- Financial goal assistances
 - self-medicating emotional pain from trauma by shopping and overspending for temporarily relieve
- Decision support system (DSS) - example ([DST User Guide May 2020](#) [Department of Veterans Affairs Office of Information and Technology \(OIT\)](#))
 - Clinical decision support tool (CDS)
- Historical performance - coaching clients on how to beat their past and best performance
 - Remind the client why their goals matter and why they matter to them
 - Remind them that their progress will help improve x in their life
- Genome Sequencing available to clients for in depth look to develop client focused well-being strategy - for an in depth look into the clients PTSD

- [The Microbiome in Posttraumatic Stress Disorder and Trauma-Exposed Controls: An Exploratory Study](#)
- Psychiatric Genomics Consortium PTSD group ([PGC-PTSD](#))
- [International meta-analysis of PTSD genome-wide association studies identifies sex- and ancestry-specific genetic risk loci](#)
- [Genetic basis for re-experiencing symptoms in PTSD -Analysis included more than 165,000 military veterans](#)
- [Parents' emotional trauma may change their children's biology. Studies in mice show how](#)



Troubled offspring

To explore how trauma affects generations of mice, researchers stressed mother mice. Their pups then exhibited both molecular and behavioral changes, such as taking more risks on an elevated maze. These changes persisted for up to five generations.



Future Products

Physical world robot wellness companion

- Teacup to small midsize



- <https://www.wired.com/story/covid-19-robot-companions>
 - There's No Cure for Covid-19 Loneliness, but Robots Can Help - It's hard to replace human contact. But during a pandemic, robots can help patients fight off feelings of isolation and despair.
- General public consumer

- Hospitals
- Clinics
- Boston Dynamic spot sized
 - For Veterans
 - Those with physical disabilities

Misc Tech II

Wenxi Guo (has some interesting biotech to look into for future bio-robots)

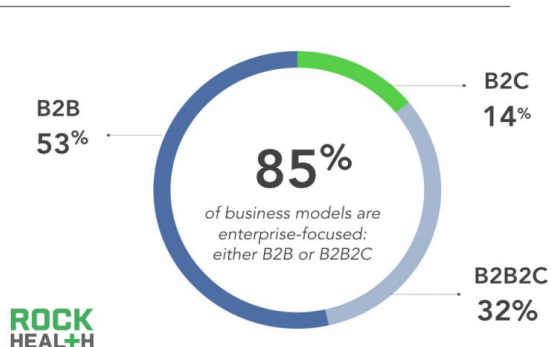
- Research Area <https://cpst.xmu.edu.cn/en/info/1088/1067.htm>
 - wxguo@xmu.edu.cn
 - Fabrication and construction of 1-D nanomaterials (such as ZnO, TiO₂ and CoS) on flexible substrates.
 - Flexible energy conversion devices, such as flexible TCO-free transparent conducting films, fiber and planar-shaped dye/quantum dot sensitized, perovskite solar cells and electrochromic devices.
 - Design and fabrication of hybrid nanosystems for wireless sensing.

Growmeup.eu (GrowMeUp emotion detection/pal-robotics for future robots)

- GrowMeUp developed advanced algorithms so GrowMu can adapt to changes and behaviour of the elderly to capture their routine. This means the robot can detect situations that could be improved upon and act in the case of danger such as a call for appropriate help. Scenarios needing attention range from suggestions for new recipes to a warning that a step is likely to cause a fall.
- The robot that fits and adapts to your research, not the other way around.
 - <http://pal-robotics.com/robots/tiago/>
 - OPEN SOURCE - [TIAGo simulation model/tutorials](#)
 - [TIAGo-Datasheet.pdf](#)

Combination Revenue Models - B2B, D2C, SaaS, Whitelabel Product, iOS/watchOS/Android/Web App

BUSINESS MODELS OF DIGITAL HEALTH STARTUPS
The rumors are true: B2B business models dominate digital health



61%
 of B2C companies converted to B2B or B2B2C

A noteworthy trend: Over half of direct-to-consumer companies shifted to an enterprise model. Other categories did not see this level of pivoting.

We Target Multiple Revenue Models Simultaneously

[2017 digital health business models](#)

D2C - sell directly to consumers

61% of digital health companies that start with a D2C business model ultimately pivot to B2B or B2B2C.

- Enables early revenue opportunities, and gaining product traction and engagement data can make it easier to transition into B2B opportunities.
- Meditation apps such as Calm and Headspace have been very successful using a D2C model. These have largely been successful because they are non-medical.
 - It's difficult to find an in-network therapist (i.e. one that their insurance covers), and are therefore open to paying out of pocket for more affordable face-to-face therapy alternatives.
 - Long-term difficulties with D2C models - consumers expect their health care costs to be covered by insurance or their employer.
 - Consumers want their healthcare products to be prescribed by their providers and directly integrated into their existing healthcare services, making them resistant to products externally marketed to them.

Self-insured employer benefits

Greater willingness to try less proven solutions if ROI is visible.

- per member per month (PMPM)
 - Revenue received via employers - Ginger, Big Health, TalkSpace, Livongo, Omada, Lyra Health, and Modern Health.
- Employers may offer the service but employees have to use the service for the company to collect payments, thus requiring us to 'sell' to employees after integration.
 - Direct marketing (emailing employees, flyers, company advertisements, attending employee health and wellness fairs, online seminars.)

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Add Fee-for-service

Add Value-based Payments

Add Device-like Reimbursement

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- Premium Features (features TBD)
 - Ability to upload a photo of your pet to talk to
 - Additional PTSD management tools for clients and practitioners
 - Contact practitioners (practitioners to pay a registration fee for the opportunity to connect to potential clients that have opted-in)
- Sponsorships & In-app Purchases
 - In-app Purchases

- Interested brands (insurance companies, etc) offer their products or services to our user base
 - Opt-in or opt-out
 - Offer products or services to clients and or practitioners within scope of our ethical commitment to health and well-being
- Pay To Download
 - Client
 - Practitioners
- Data Monetization
 - Client opt-in anonymized data
 - Profit starts from 50,000 daily users
 - GDPR for UK and EU
 - [CCPA](#) (California Consumer Privacy Act as of 01-2020)
- Self-insured employer benefits

Components

- Workplace wellness initiatives
 - People will participate in screenings once a program is available
- Personal growth
 - People will participate in screenings once a program is available
- Convenience - economical compared to visiting a physician's office
 - Can help alleviate symptoms of anxiety or depression based on the client's availability versus practitioners availability
 - Practitioners cannot be available 24/7 for the client
 - More clients than there are practitioners available to help
 - difficult to find an in-network therapist
- Privacy - less stigma around seeking help
 - Little to no embarrassment for talking about mental health or physical problems associated with trauma
- Case studies - connecting clients and researchers

Prospects

- Private and public hospitals, and clinics
 - India
 - screening, education, self-monitoring, treatment
 - Africa
 - screening, education, self-monitoring, treatment
 - US
 - screening, education, self-monitoring, treatment
- Health Insurance Companies

- mental health support for clients
 - screening, education, self-monitoring, treatment
- Gov
 - Armed Forces, Veterans, UN employees
 - mental health support
 - screening, education, self-monitoring, treatment
 - Gov assisted programs for LMC and Disabled
 - mental health support
 - screening, education, self-monitoring, treatment
- First Responders (EMTs, ER workers, Police, Firefighters, etc)
 - mental health support
 - screening, education, self-monitoring, treatment
- General Public (PTSD is very common in the workplace and with trauma victims)
 - Apple app store
 - iOS
 - Web App
 - watchOS
 - Google Play
 - Android
 - Web App

**** (Unable to sell directly to companies in the US due to ERISA, as to my knowledge, (expert legal feedback needed) (US Fed Regulation - ERISA Compliance [FAQs](#): What is an ERISA Plan? To qualify as a voluntary plan under the DOL's safe harbor, the arrangement must satisfy the following requirements:**

- The program is funded by group (or group-type) insurance;
 - No contributions are made by the employer or employee organization;
 - Employee participation in the program is completely voluntary;
 - The sole functions of the employer (or employee organization) with respect to the program are, without endorsing the program, to permit the insurer to publicize the program to employees or members, to collect premiums through payroll deductions or dues check offs and to remit them to the insurer; and
 - The employer or employee organization receives no consideration in the form of cash or otherwise in connection with the program, other than reasonable compensation, excluding any profit, for administrative services actually rendered in connection with payroll deductions or dues checkoffs.)
- Google/Alphabet
 - YouTube
 - content processing mental health support
 - screening, education, self-monitoring, treatment

- Fitbit (backed by goo)
 - mental health support
 - education, self-monitoring, treatment
- One Medical
 - mental health support
 - screening, education, self-monitoring, treatment
- Facebook and Instagram
 - content processing mental health support
 - screening, education, self-monitoring, treatment
- Apple
 - content processing mental health support
 - screening, education, self-monitoring, treatment
- LinkedIn (Microsoft Corporation)
 - content processing mental health support
 - screening, education, self-monitoring, treatment
- Reddit (Advance Publications)
 - content processing mental health support
 - screening, education, self-monitoring, treatment
- Shapchat (Snap Inc)
 - content processing mental health support
 - screening, education, self-monitoring, treatment
- Pinterest (Bessemer Venture Partners)
 - content processing mental health support
 - screening, education, self-monitoring, treatment
- News Stations (for reporters in the field that may be at risk for developing PTSD)
 - mental health support for clients
 - screening, education, self-monitoring, treatment

Economic Cost of Poor Mental Health //

PARTNERS

TBD

EXPENSES

(strictly average industry salaries listed below and not a reflection of actual cost for product development) (estimates in USD)

- Software developers (5-6 niche developers)
 - 60k-120k+ yr (niche developers up to 250k a year)

- (PhD candidates as paid interns?)
 - iOS
 - Web
 - watchOS
 - Android
- Data Scientist (x-x needed)
 - 90K - 220k yr
- Animation
 - 55k-75k yr
- Graphic designer
 - 55k-100k yr
- IBM SaaS Bundle
 - 10k+ a month - TBD, might be options for a significant discount on services and products. See OUTSOURCED SAAS TOOL KIT below.
- Contract Research Organization (CRO)
 - 160k-190k yr
 - Randomized control trials (RCT)
- Legal - (two versions, one in layman terms approved by legal and one in legal terms) - [Example](#) - (We collect information in a few different ways: 1. When you give it to us or give us permission to obtain it. When you sign up for or use Pinterest you voluntarily share certain information including your name, email address, phone number, photos, Pins, comments, and any other information you give us. You can also choose to share your precise location using your device settings or through photos. We will still use your IP address, which is used to approximate your location, even if you don't choose to share your precise location. You will also have the option to share other information about yourself such as your gender, age and preferred language.....)
 - Privacy, data, and security
 - IP, TM, Copywrite
 - Employee/contractors/Interns
- HR - when and how TBD
- Marketing - will not be top priority until much further down the line.

OUTSOURCED SAAS TOOL KIT:

Robot Axiology Is a Well Positioned Resource for Devices With Internet Access

- Our experience within emerging technology markets combined with IBM services enables us to produce validated, secure, and compliant cross-platform applications in a timely manner.
 - While access to IBM SaaS products accounts for the majority of our startup costs, it is less costly to use their available and secure tools than it is to develop these tools in house.

Why Watson:

IBM Cloud™: EU and HIPAA supported.

- **IBM Watson:** access to a connected ecosystem of health experts, data, partners with datasets that have been cleansed and normalized, and AI analytics.
 - [IBM Everyday Ethics for Artificial Intelligence](#)
 - **IBM iX@:** co-creates transformational experiences using technologies like XR, 5G and hybrid cloud to guarantee our clients a secure end-to-end mobile vision for Robot Axiology.
 - **IBM Blockchain:** Verify Identity document credentials and global payments.
 - **IBM [Guardium](#) Data Protection** - vulnerability assessment - automatically discovers and classifies sensitive data, identifies data at risk and fetches remediation recommendations, monitors access and protect data, simplifies security and compliance reporting, encrypts data across environments, uses contextual insights and analytics, generates business perspective of data at risk.
- Multiple team members have access to an interested and attentive global media outlet within scope of this project.
 - We have access to academic partners and industry leaders at MIT, Harvard, and Stanford.
 - We have industry professionals that we have worked with and known for years to collaborate with.

Misc Tech I

Mark Sagar (has some interesting tech to look into and a **sdk**)

- Double Academy Award winner Dr. Mark Sagar is the CEO and co-founder of Soul Machines and Director of the Laboratory for Animate Technologies at the Auckland Bioengineering Institute. Mark has a Ph.D. in Engineering from the University of Auckland, and was a postdoctoral fellow at M.I.T. He has previously worked as the Special Projects Supervisor at Weta Digital and Sony Pictures Imageworks and developed technology for the digital characters in blockbusters such as Avatar, King Kong, and Spider Man 2. His pioneering work in computer-generated faces was recognised with two consecutive Scientific and Engineering Oscars in 2010 and 2011, and Mark was elected as a Fellow of the Royal Society in 2019 in recognition of his world-leading research. Mark is responsible for driving the technology vision of Soul Machines and sits on the Board of Directors.

- Soul Machines - soulmachines.com
 - human-to-machine, and machine-to-human interaction - Frontline Health Service Agent. Digital Health Professionals. Wellness Coaches. Insurance Advisors.
 - SDK
 - <https://soulmachines-support.atlassian.net/wiki/spaces/SSAS/pages/2326529/Web+Development+Kit+Reference+Guide>
 - <https://www.ibm.com/watson/advantage-reports/future-of-artificial-intelligence/mark-sagar.html>
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DREAM TEAM

(Proposed Team and Titles)

(*I have not reached out to anyone yet for them to be a team member)

Creating Teams That Complement Each Other

Selena Scola Co-founder and Managing Director (Ethics Board...)

Olga Russakovsky (Ethics Board, Tech Co-founder)

Assistant Professor of Computer Science at Princeton University, Co-Founder and Board Member at AI4ALL, PhD in Computer Science at Stanford University, Postdoctoral Fellow in the Robotics Institute at Carnegie Mellon University.

Adam Miner PsyD, MS (AI psychologist, clinical psychologist)

Dr. Miner is an AI psychologist, who uses experimental and observational studies to improve the ability of conversational artificial intelligence (AI) to recognize and respond to health issues. He completed a postdoctoral fellowship at Stanford's Clinical Excellence Research Center (CERC) before joining the Department of Psychiatry as an Instructor and being awarded a Mentored Career Development Award (KL2) through Spectrum and the NIH. Dr. Miner is the Co-Director of the Virtual Reality & Immersive Technology Clinic, Dept of Psychiatry and Behavioral Sciences, where he provides treatment and supervision.

Amy Bucher (Behavior Change Design)

VP Behavior Change Design & Author of Engaged: Designing for Behavior Change, Senior Manager, Specialty Digital Strategy at CVS Health, Associate Director, Behavioral Science at Johnson & Johnson, Health & Wellness Solutions Behavioral Scientist, Solution Development at Wellness & Prevention a Johnson & Johnson company.

Safiya Umoja Noble, Ph.D. (Ethics Board, Platform adviser, equality for the socially and economically disadvantaged)

Associate Professor, Information Studies and African American Studies at UCLA Graduate School of Education and Information Studies, Assistant Professor, Media and Cinema Studies, Inst. for Comm. Research; African American Studs (Faculty Affiliate: National Center for Supercomputing Applications, Graduate School of Library & Information Science, Department of Gender & Women's Studies), Author of Algorithms of Oppression: How Search Engines Reinforce Racism.

Virginia Eubanks (Ethics Board, Platform adviser, equality for the socially and economically disadvantaged)

Associate Professor of Political Science at the University at Albany, SUNY. She is the author of Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor; Digital Dead End: Fighting for Social Justice in the Information Age; and co-editor, with Alethia Jones, of Ain't Gonna Let Nobody Turn Me Around: Forty Years of Movement Building with Barbara Smith. Her writing about technology and social justice has appeared in Scientific American, The Nation, Harper's, and Wired. For two decades, Eubanks has worked in community technology and economic justice movements. She was a founding member of the Our Data Bodies Project and a 2016-2017 Fellow at New America.

Internal Team/Design Notes

Digital Health Innovation

What is our story? What will we want our story to be once our product is on the market and helping x amount of people?

- Will we have an Institutional Review Board ([IRB](#)) for our product?
- Be sure that you are not building biases into the foundation of the product or design
 - Leverage proven ethical and science based product design techniques
 - Incorporate research and evidence-based models into the product design

- Build and design with care, understanding, and purpose
- Accessibility - make sure everyone can use the platform
- Be clear about what success is and what success is not
 - Define and track product success metrics
 - Who are you designing this for and what do they need?
 - How much active intervention is fit for each individual client?
 - What environment are people using our products in?
 - How will our products (change and grow) adapt to clients' needs as they grow, redefine, and develop healthy coping tools?
- Product must be accessible, relatable, and has impact in the physical world
 - Product (websites, apps, digital tools) will impact behavior
 - Product has an impact on users' lives
 - Product and services will change people's lives
 - What does an efficient and effective design look like?
 - Behaviors are visible, what are we designing for that is visible?
 - What behaviors are we Influencing?
 - What practices are clients doing more or less of, or doing differently?
 - What results are we aiming for?
 - How does the product work to support user outcomes?
 - List time required for each practice or module, example 5 to 10 minutes
 - Content structure, tone - Unconditional positive regard and character of breed of wellness champion
 - Allow for Client to request particular tone, kind and gentle, or more aggressive
 - Clearly define your target use a group:
 - What key characteristics does our target user group have?
 - Does our product save the client money and improve symptoms?
 - Does our product improve client efficiency?
 - What behaviors are we designing for?
 - If you are asking the client to do the same thing daily rephrase the question occasionally to prevent boredom.
 - What fuels individuals motivation?
 - Motivation tied to values, goals, and identity - resilience and commitment to making the desired behavioral change via choice built into the design
 - What behaviors are we modifying?
 - Increasing someone's confidence to do something

- Getting someone to have a new belief in themselves and their ability to heal
 - Making people feel happier
 - Skip to next question
 - Allow clients to skip anything they do not want to answer.
 - Prompt
 - Never ask for this info again
 - Log in a 'trash' allowing user to reinstall question
 - Ask again in x amount of time
 - Progress assessments
 - See all results now
 - Only see accomplishments
 - Only see areas of needed improvement
 - Ask again in x amount of time
- Physical world components
 - Device setup
 - Client onboarding
 - User acceptance testing (UAT)
 - Real-world testing
 - Randomized control trials (RCT)

* Platform Concerns & Considerations

Uploading Content

1. Concerns with allowing images to be uploaded to the platform as we would either need a robust AI highly trained on image recognition to ensure that people do not upload 'offensive' or 'inappropriate' material.
 - a. A middle ground solution would be to start with a few popular and culturally appropriate animals per market segment and allow for new character requests.
2. Securely adding medical records for client profile and background.

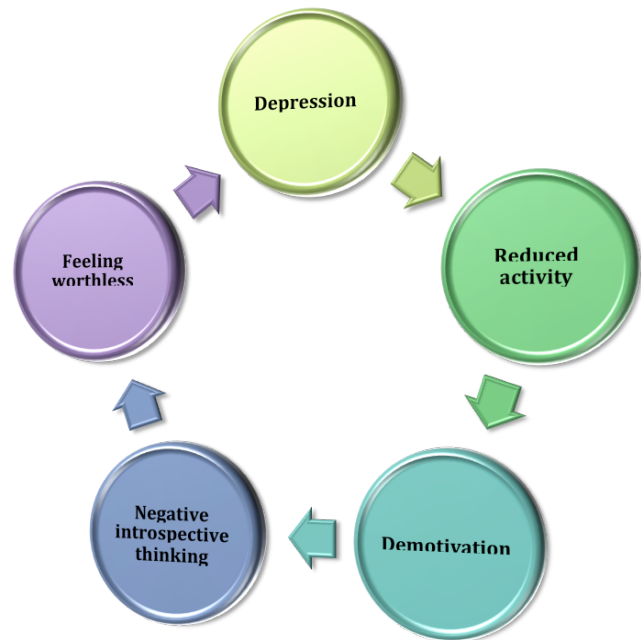
Client Activity On Platform

3. Suicide on the platform (while talking to your 'Animated Wellness Champion') and in general.
4. Confessions of crimes committed or knowledge of crimes committed on the platform.
5. Anything 'terrible' a human could do while on the platform.

- a. Humans are fantastic at finding ways to use platforms in inconceivable ways.

Data

- 6. Dual-use data, security, client safety and confidentiality?
 - a. pseudonymised data
- 7. Data processing (NLP) Etc
 - a. What other data can be gathered from one's daily activity log not limited to (see 3,4,5 above) Platform Concerns & Considerations)?
 - b. What client information may be extracted from our primary data for unintended secondary use?
 - c. What does the client want processed from their primary data?
 - i. Do they get to choose what we process from their primary data?
 - ii. Who owns client data?
 - iii. Who has access to client data ?
 - iv. What are the steps for clients to approve or revoke access to their data?
 - v. Do the investors own data?
 - d. How will client data be secured, stored and collected?
 - e. Who processes the data? (inhouse or 3rd party vendor, contractor)
 - f. What are you using to collect data?



Trust and Transparency

- 8. What does tech transparency client onboarding look like?
 - a. Digital audio journals
 - i. Voice analysis
 - b. Digital handwriting
 - i. Writing analysis
 - c. Keyboard Typing
 - i. accelerometer for keystroke measurements
 - d. Psychological Anthropomorphism

Client Researcher Relationships

9. Clinical trials
10. Randomized control trials (RCT)
11. Case studies

Problems we're helping people solve >

Physical World Robots

12. Overtrust
13. Deception of care from a non-salient being
14. Function in and outside of a medical facility
 - a. Design
 - b. Physical environment considerations
 - c.