Savonix
Company Profile

Cognitive function and brain health
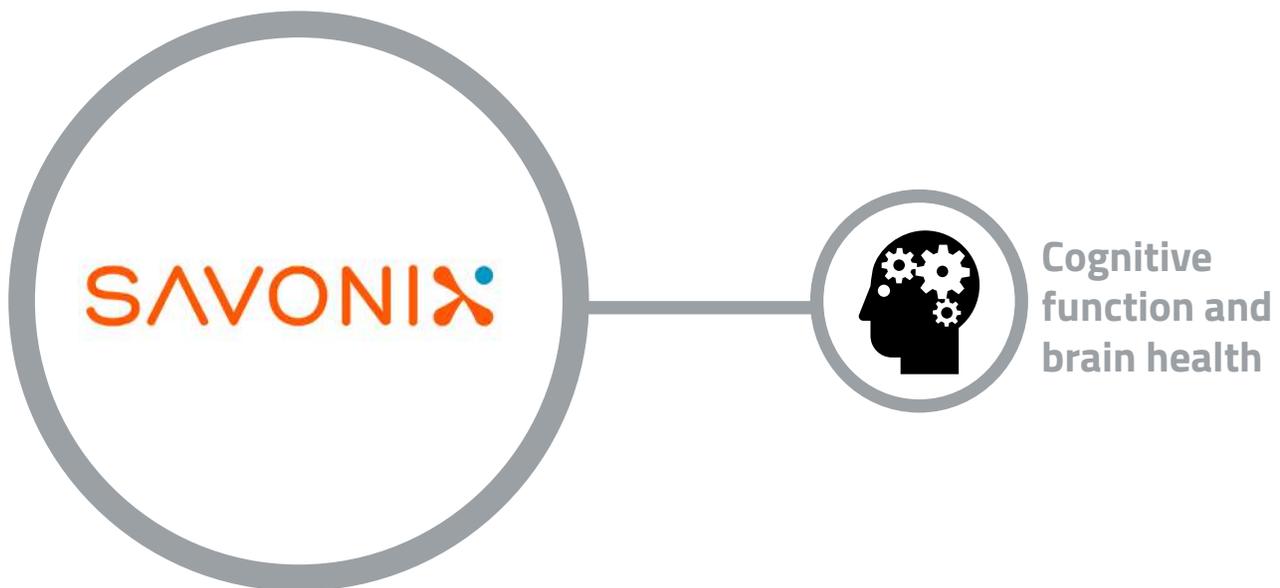
Savonix believes in a world without dementia, pioneering a cognitive assessment that delivers gold standard neuropsychological tests straight from a mobile device. Savonix has produced an accessible system that identifies cognitive impairment risks before symptoms appear, as well as tracking progression of mild cognitive impairment, allowing for intervention and to slow the progression of the disease. Savonix has created a digital cognitive assessment that is reliable, validated and sensitive to MCI (mild cognitive impairment) and Alzheimer's disease.

The founding executive team, led by CEO Pin Chin Kwok and Chief Science Officer, Simon Collinson, expanded the early Savonix vision from democratising cognitive testing, to democratise brain health, leveraging AI to detect and predict risk and outcomes to ultimately provide preventative measures for dementia.

With high accessibility and clinical validity, Savonix is able to provide large-scale, cost-efficient, and accurate cognitive profiling This puts Savonix in a unique position to bring about positive impacts on under-detected populations affected by MCI and dementia. The company, as a pioneer and thought leader in this space, has implemented composite risk scoring. Complex risk states like MCI require more data than just

cognitive test scores to be accurately assessed. The platform uses cognitive performance from testing, as well as lifestyle and medical history to deliver a more holistic view of one's cognitive health, including the type of impairment if one is already impaired, and if not impaired, the risk of impairment in the future.

Savonix seeks the successful engagement of at-risk people, pushing for the early detection of degenerative conditions to provide appropriate therapies, programs and even trials to those in need.

Savonix also provides rich population risk profiling, including a predictive analysis and interventions outcomes measurement. Savonix uses this information to provide key insights and recommendations for particular groups. In addition, it can provide insights on a population with a granular breakdown of sociodemographic and lifestyle risk factors.

Further, when Savonix's data is used with other products and interventions, "real world evidence" can be provided to other businesses in the sector to aid product planning, research and development, and healthcare product marketing enhancement.

Longevity Potential: Savonix cognitive function predictor and support platform

Savonix's mobile app incorporates its cutting-edge cognitive assessment software in a user-friendly package. With test bundles customised to screening use or clinical need, users can complete and view their cognitive assessment result with ease. Within 12 minutes a user can browse through their cognition, lifestyle and metabolic health readings alongside a comprehensive overview of their cognitive health. The support platform provides access to resources, giving the user content related to their results, receiving intervention programs and appointment scheduling with appropriate health care professionals if necessary.

Savonix software is supporting anyone with memory and brain health concerns to combat a population wide fear of cognitive degeneration, enabling early detection of cognitive risk, empowering individuals and their families to take steps early and allowing them to make appropriate preventative plans. The app's educational content and connections to locally available resources support early intervention, which has been shown to give individuals the best chance to extend healthy life years. By enabling easy access to neuropsychologists, and or other specialists, who typically have wait times of several months, Savonix is driving healthcare accessibility for those most at risk of cognitive decline.

Savonix's neuropsychological tests cover all cognitive domains and have been accessed for clinical validity, reliability, sensitivity and specificity. While comprehensive, Savonix can modularise testing into shorter sessions, across specified frequencies. For example, a 10-12 min test bundle is offered and is sensitive and specific to MCI. Beyond pure cognitive measures, Savonix also delivers a rich AI-driven composite cognitive risk score. The adaptive learning platform keeps up user engagement and ongoing monitoring and, at the same time, maps trends and trajectories as they respond to intervention.

This preventative intervention method is key in combating cognitive decline. This is because 40-60% of MCI is reversible if significant lifestyle changes are made. 1-3 lifestyle changes can include:

- Getting enough sleep

- Exercising more

- Increasing social interaction

- Incorporating a healthy diet

These are all changes Savonix provides advice upon, to create personalised care plans with the aim of improving individuals' cognitive health.

Flagship Product Deep Dive

Built on the Unity gaming platform Savonix tests are device-agnostic, accurate, and reliable. You can choose from a battery of tests to tailor to your needs. Micro-testing at frequent intervals takes up to three minutes, while a fully integrated test involving the 13 cognitive domains, such as focus and memory, requires up to 30 minutes.

The cognitive assessment uses adapted neuropsychological tests. Tests and tasks individuals are expected to complete are listed below, with more information available on the Savonix website.

- Verbal memory recognition task

- Go/No-go

- Verbal interference

- N-back

- Emotional identification

- Trail making task

- Maze task

- Complex figure copy task

- Digit span

These tests make up the comprehensive assessment Savonix offers, all in the form of a mobile app without intervention or visits to costly experts. The software has been designed with senior usability in mind with its highly contrasted interface and large fronts for the visually impaired, instructions can also be delivered in auditory. The Savonix assessment is one of a very few mobile-based tests that digitise with Unity 3D engine for an engaging and precise UI. Finally, the tests are not excessively long to keep individuals engaged throughout the process, with the inclusion of short 10-minute tests available that are sensitive to
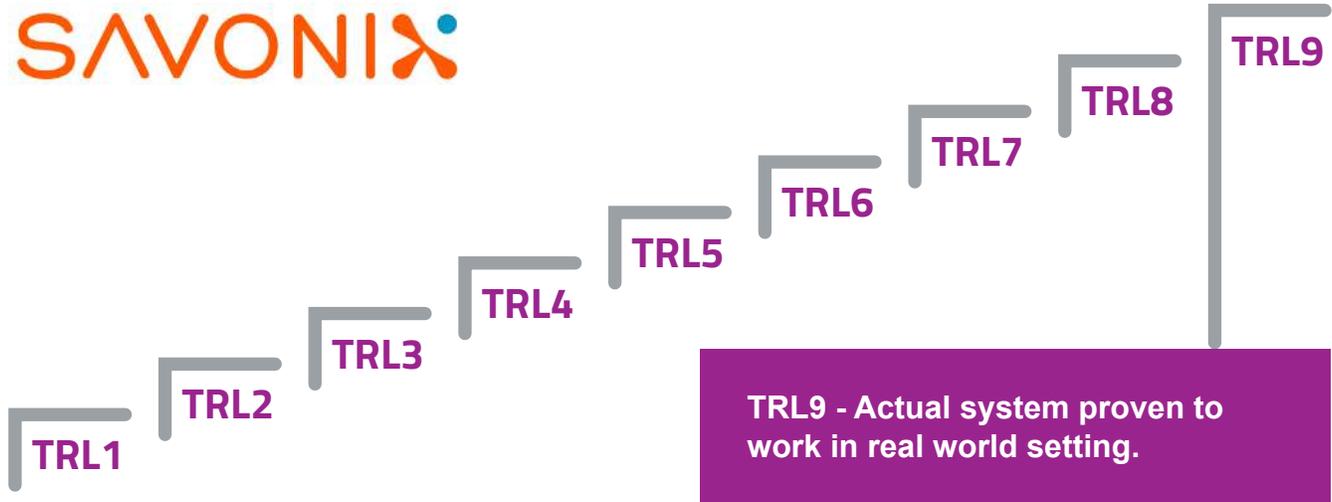
MCI, a common form of cognitive decline.

Savonix has been commercial for several years and so has been widely tested in its operational setting. The software has been used in different contexts where elderly individuals with MCI and even individuals with early Alzheimer's disease were able to complete the assessments thoroughly. The mobile app has been in the market since 2017 and since then has been used by specialists, academic research institutions, payers, medical foods and pharmaceutical companies. For these reasons the Savonix app is in line with technology readiness level 9 as its current form is at its most mature state.

"We chose Savonix as a partner because their company's cognitive assessment platform is not just a simple memory test, but a multi-domain cognitive assessment."

- Head of Research and Development, Consumer Health Division, Bayer

TRL1 TRL2 TRL3 TRL4 TRL5 TRL6 TRL7 TRL8 TRL9

TRL9 - Actual system proven to work in real world setting.

Savonix for care dependency

Savonix targets a wider issue associated with age related decline, by tackling cognitive dysfunction, care dependency can be drastically reduced amongst seniors. Early assessment tools are also an important asset to preventative medicine as memory impairment is not always the first symptom of dementia disorders. In a recent study, it was identified that a proportion of people diagnosed with Alzheimer's disease were given their diagnosis on average, 31 months after initial onset of symptoms, and these included MCI. One of the reasons behind this delay of detection is that around 60% of the caregivers do not recognise symptoms being displayed as those of Alzheimer's disease or MCI. 4 In contrast, a study has also shown that multidomain assessment can pick up a range of cognitive problems at an early stage and up to 60% of people who later develop dementia present with multidomain impairments at the MCI stage. 5 This highlights that if widely adopted, at-risk individuals can be identified earlier to make notable lifestyle changes before disease progression takes place. A study has also shown that detecting Alzheimer's disease earlier (i.e. during MCI) can save roughly 30% in total healthcare cost for AD patients.

6 By providing an effective means for detection and prevention of cognitive dysfunction, including MCI and dementia, Savonix is designed to modify the risk of developing cognitive dysfunction, an issue that drastically reduces quality of life. In turn, cognitive impairments can result in difficulties when completing the 6 activities of daily living. This becomes especially worrying when individuals are experiencing the late stages of dementia, they may no longer be able to remember to eat, wash or get dressed.

Interoperability

The Savonix mobile app is usable on iOS and Android devices, including integration with Apple Health. The app is downloadable from app stores and is intended to be used anywhere with a stable WIFI, 4G or 5G connection. Savonix software is cloud-based and HIPAA compliant. Data security is a top priority for Savonix as their software utilises data to provide reports and insights based on clients' requests for various commercial and academic needs such as: product R&D, employee assessments, university studies, &c. All information is saved and used at the approval of the individual users and sponsors.

Target market

Savonix targets those at-risk of cognitive impairment. This typically refers to those age 50 and above, but also includes younger individuals who may have chronic conditions or be living with high stress levels. The app can be used easily by the entire population; however, it is also specifically accessible to the older population by making it convenient, easy to use, private and secure. This includes using high-contrast screens, larger fonts and audio instructions on the app, adapting these features through the testing process involving populations of up to 92 years old. The app is currently available in three languages: English, Japanese and simplified Mandarin to gain international reach.

With composite scoring and recommendations, Savonix empowers a test-taker with knowledge to make changes in their lives and/or seek medical help, if necessary. With such high under-detection rates of MCI and dementia globally, the pathway towards the right interventions and professional care is accelerated. Due to the app's usability, convenience and privacy, Savonix also enables ongoing monitoring of brain health, something previously not achievable only with clinic-based testing.

Channels to market

Savonix operates mostly in a B2B2C model. Savonix's target market populations have been reached via many different channels, specifically payers, medical foods and consumer health companies, pharmaceutical companies and employee healthcare providers.

The Savonix mobile app is an easy-to-use cognitive assessment tool that is designed to be used directly by individuals seeking insights into their own health, but also by businesses and health care organisations who would benefit from more frequent, at-home, patient/client/customer assessment results to aid their service.

Individuals can take the assessment remotely on their mobile device to test their cognition and then the business or organisation will receive results after their tests are complete, allowing them to access and analyse real-time data to enhance their product.

Success Factors

Team and Reputation

- Savonix was founded and previously headed up by a US clinical neuropsychologist.

- Currently Savonix is led by a diverse executive team that have worked in prestigious academic institutions, globally recognised payers, providers and digital health start-ups in the US and Asia, between them they have made two big exits in previous business endeavours.

- The executive team currently consists of: Pin Chin Kwok, CEO, and Jillian Kwan-Jacobs, COO, both healthcare industry professionals experienced across ecosystem pillars such as payers, providers and MedTech.

- Dr Simon Collinson a highly experienced neuropsychologist, researcher and published author takes on the role as Chief Science Officer for Savonix.

- Daniel Kogan, Head of Technology, is a veteran digital health technologist.

- Savonix operates out of Singapore and is headquartered in the US.

- Savonix's first significant commercial client was a Fortune 50 insurance company in Japan.

- Since then, Savonix has had a number of global clients and partners including pharmaceutical companies, medical foods and consumer health companies, and payers. They operate primarily in Japan, Singapore and several countries in SE Asia.

- Savonix is also actively in use by universities, and academic institutions in Singapore, the US and China.

Intellectual Property

- Savonix is regularly evolving their platform, firstly with their AI-enable scoring, and secondly due to strong focus on the user experience.

- A major update in the pipeline is the launch of a new adaptive learning platform to be released at the end of 2021. This version adds several new features to the app and a 'provisional' patent has been acquired by Savonix for this new platform.

Funding

- Savonix does not charge individual users to download the app to their device, however Savonix requires sponsors, companies or institutions to pay for individual use.

- The company is constantly looking to expand sales and marketing activities. Current and previous commercial clients have mostly been in the US, Japan and Southeast Asia.

Savonix company profile references

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