



# Nexstim

Targeting a paradigm  
shift in stroke rehabilitation

**Nexstim PLC Annual Report and Accounts 2014**





# Improving quality of life

Nexstim is a medical technology company focusing on improving rehabilitation for stroke patients through the use of noninvasive brain stimulation. Nexstim has pioneered the technology for brain diagnostics with its Navigated Brain Stimulation (NBS System) as the first and only FDA cleared and CE marked navigated transcranial magnetic stimulation (nTMS) device for presurgical mapping (PSM) of the motor and speech cortices. Based on the same technology platform Nexstim has developed a device for stroke therapy called Navigated Brain Therapy (NBT<sup>®</sup> System).



## Highlights of the year:

2014 has been a pivotal year for Nexstim, with significant clinical, operational and financial progress.

We successfully listed the Company on Nasdaq First North Finland and Nasdaq First North Sweden, increasing our international profile and raising vital funds to support the future growth of the business.

We initiated a Phase III clinical trial in 12 of the leading US rehabilitation centres on the therapeutic effects of Nexstim's Navigational Brain Therapy® for stroke rehabilitation following highly encouraging Phase II results.

We began the commercial roll out of Nexstim's Navigational Brain Stimulation® system, NBS 5, for non-invasive pre-surgical mapping prior to clinical neurosurgery.

# €15.3m

raised in initial public offering

# 12 US

rehabilitation sites

# 120 NBS SYSTEMS

validates the technology

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# Who we are

Nexstim's Systems are used in over 100 facilities worldwide for research, therapy and neurosurgical planning purposes.

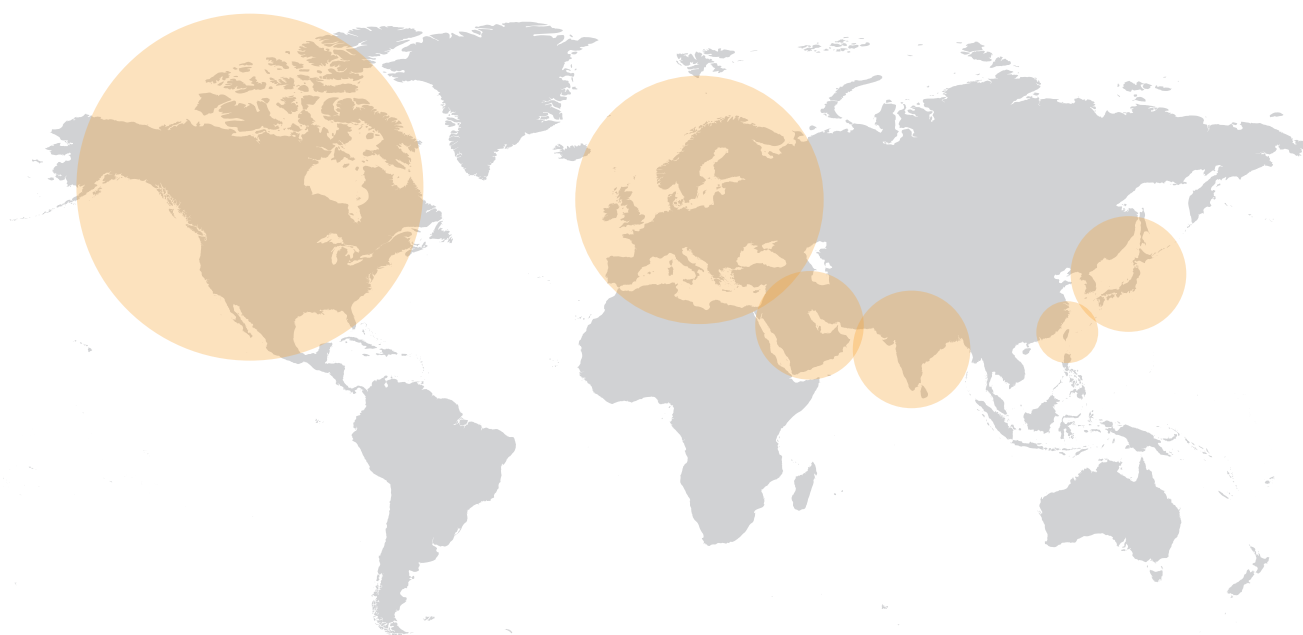
Nexstim was established in 2000 as the result of a spin off from the Helsinki University of Technology (currently part of Aalto University) following various research projects that were carried out at the BioMag laboratory of the Helsinki University Central Hospital in 1994-1999.

The purpose of Nexstim was to commercialise the opportunities discovered through the addition of navigation to existing transcranial magnetic stimulation (TMS) technology. Nexstim believed navigation to be the crucial aspect for the emerging TMS technology to become a clinical tool for patient treatment.

To materialise the full potential of navigated TMS, Nexstim first set out to develop the navigation aspect of the technology by developing and launching a diagnostics tool. By proving the safety, accuracy and reliability of the

NBS System through diagnostics established a regulatory base and market foundation for the use of the same device in other more commercially profitable markets, such as the stroke therapy market. Nexstim's NBS System has been successful in receiving positive research attention and utilisation by key opinion leaders (KOLs) in addition to being fully CE marked and FDA cleared, paving the way for use in stroke therapy.

With safety and reliability proven through the diagnostic utilisation of the NBS System, application of Nexstim's NBT® System in stroke rehabilitation now requires proof of efficacy through Phase III studies, which aims to prove the repeatability of earlier Phase II results on a larger patient base in order to receive FDA clearance.



31

Number of employees

120+

NBS sold to over 120 universities and teaching hospitals



# The difference is accuracy

The accuracy of our E-field navigation technology is based on our core algorithms and integrated hardware and software. This gives us a unique differentiator and competing edge to anything on our target clinical applications.

## Navigated Brain Therapy (NBT<sup>®</sup>) System

The Navigated Brain Therapy (NBT<sup>®</sup>) System is a device that uses navigated transcranial magnetic stimulation (nTMS) for use in stroke rehabilitation. Navigation is achieved by visualising the electric field (e-field) generated by the TMS coil in a 3D image rendered from the patient's MRI scan.

Stimulation intensity is calculated from the accurate measurement of brain excitability and the personal resting motor threshold (MT) of each patient. The proven accuracy confirms optimal treatment location for the individual patient, and ensures that stimulation treatment is always repeated at the same location, every time and for every session.



## Navigated Brain Stimulation (NBS)

Navigated Brain Stimulation (NBS) by Nexstim, is the only CE marked and FDA cleared non-invasive solution to presurgical mapping of the motor cortex. The NBS System 5 adds navigation to transcranial magnetic stimulation (nTMS), creating a precise map of the eloquent cortex superimposed on a patient specific MRI.

NBS accurately locates the stimulating electric field (E-field) in the cortex, with the proven accuracy of direct cortical stimulation (DCS). The stereotactic camera provides visualization of the induced E-field, which is displayed in a 3D rendering of the individual patient's MRI. Placing surface electrodes on the desired muscles, the 6-channel EMG records motor evoked potentials (MEPs) amplitudes and latencies. As the TMS coil is moved over the patient's head, the operator can see, in real-time, the E-field location, strength and direction in the 3-D intracranial rendering, creating a map of the cortical somatotopy.



# Nexstim's unique NBT technology provides distinct benefits

"Research is focusing on minimizing the effects of whatever disabling disease they have by using the best science we have available today"

**Richard L. Harvey, M.D.**

Medical Director, Center for Stroke Rehabilitation,  
Rehabilitation Institute of Chicago (RIC)





## Problem post-stroke:

Overactive inhibition from the non-damaged side interferes when the patient tries to move partially paralyzed upper limb.

## Nexstim's solution:

Repeated inhibitory stimulation to non-damaged side restores balance, removing barriers for improvement.

## Distinct benefits:

### Navigation and integration of technology

- TMS-navigation integration: Nexstim combines non-invasive transcranial magnetic stimulation (TMS) with unique proprietary electric field modeling-based navigational capabilities
- Navigation is the key differentiator

### Several distinct benefits

- Improved accuracy: Accurate localization of the target muscle representation area on the cortex
- Dosing precision: Optimized and personalised stimulating electric field location, direction and dose for each patient
- Repeatability: Accurate and repeatable stimulation
- Non-invasive procedure

### Enhanced limb function

- Substantially improved hand function after treatment demonstrated in Nexstim's Phase II trial

# FDA & KOL

Establishing efficacy in Phase III trials to obtain FDA clearance and KOL support

# 2.1m

Strokes each year in the US and Europe

# \$8.5bn

While current standard treatment of physical and occupational therapy is not very effective it is still a \$8.5bn market

# \$1.8bn

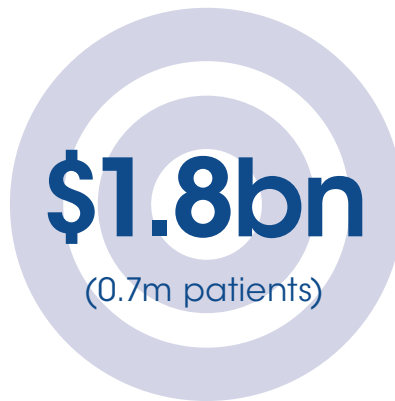
Estimate value of Nexstim's target market

# Developing potential

Total direct stroke-related costs (US and Europe p.a.)

Nexstim's target market (US and Europe p.a.)

Opportunity: Chronic patients (US and Europe – population, not p.a.)



Geo split: US: 34–38% / Europe: 62–66% (varies by chart)

## Annual direct stroke-related healthcare costs are estimated at:

- US: \$21bn (2010).<sup>(1)</sup>
- Europe: \$55bn (2010).<sup>(2)</sup>
- Total annual stroke-related healthcare costs are estimated to double by 2030.<sup>(3)</sup>
- 2.1m strokes annually in US and Europe.
- 34%<sup>(4)</sup> of stroke victims are estimated to be treatable with Nexstim's solution – 0.7m patients p.a. in Europe and US.
- \$8.5bn<sup>(5)</sup> spent on post-acute stroke rehab in US alone on not very effective treatment.
- \$1.8bn is estimated target market potential.
- 9m chronic patients in Europe and US representing an estimated market potential of \$23bn (not annually recurring).
- Increasing evidence suggests rehabilitation can be effective for chronic patients.

## Stroke prevalence and costs to rise sharply going forward



Prevalence:  
Up ~20% by 2030<sup>(1)</sup>

Stroke costs:  
Double by 2030<sup>(1)</sup>

American Heart Association forecasts that number of Americans having strokes may increase 20% by 2030...

...and total US stroke-related costs to more than double by 2030

Mainly driven by

(1) Go AS, Mozaffarian D, Roger VL, Benjamin EJ, Berry JD, Blaha MJ, et al. Heart disease and stroke statistics—2014 update: a report from the American Heart Association. *Circulation*. 2014 ;128

(2) J. Olesen: The economic cost of brain disorders in Europe (2012)

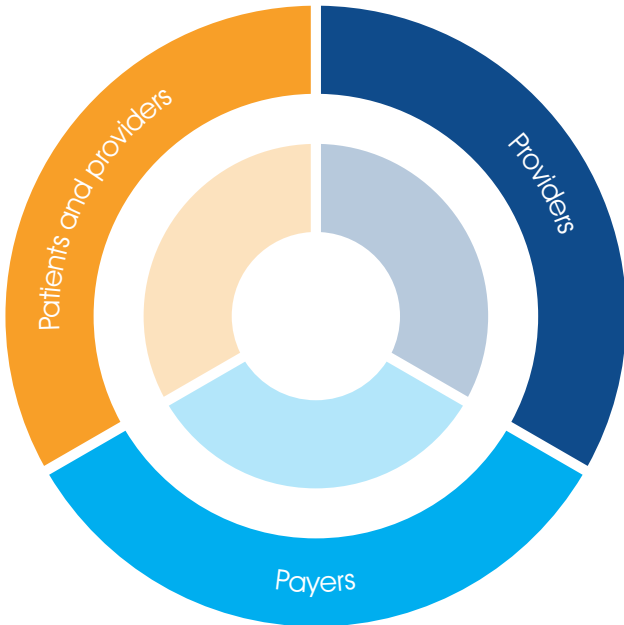
(3) <http://stroke.ahajournals.org/content/44/8/2361.long>

(4) 34% = 85% mortality in acute phase \* 40% proportion of survivors with upper-limb motor function disabilities (Company estimate)

(5) Clearstate: Post acute stroke rehabilitation, 2014



# Reaching stakeholders



## Initial demand

Clinical evidence drives the demand from patients and physicians.

## Early adoption

Providers pick up new technology if it provides clinical efficacy, higher quality of care and shows demand from users.

## Expansion

Payers adopt policies based on patient demand and efficacy in addition to health economic benefits for payers. First Private Insurers, then followed by Medicare.

Roll out to full commercialisation is driven by steps and each step is required, until the cycle starts reinforcing the speed of commercial adoption in high volumes.

## Outcome data

(from Phase III clinical trial)

Facilitates adoption of NBT® by providers and reimbursement coverage attainment.

## FDA clearance

Dependent on Phase III clinical trial data – Necessary for marketing NBT® in US.

## KOL support

Facilitates early adoption of NBT® by providers and reimbursement negotiations.

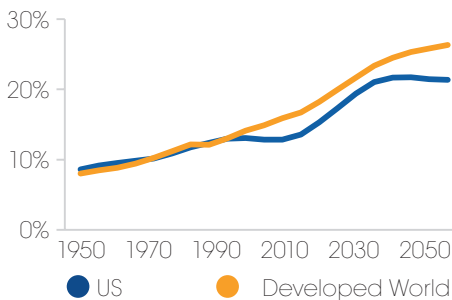
## Health economics model

Demonstrates how Nexstim's NBT® Systems would impact payers' revenues costs.

## Reimbursement coverage

Required for successful commercialisation – Outcome data, KOL support and health economics model for payers aids reimbursement negotiations.

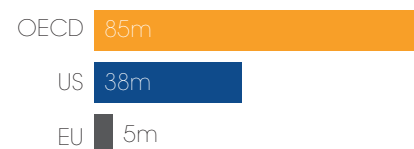
Proportion of population ≥65 y/o



Risk of stroke doubles each decade after age 55 (US)<sup>(2)</sup>

Proportion of population ≥65 y/o estimated to increase by 40% in US and 45% in developed world from 2015 to 2050<sup>(3)</sup>

Population growth



Estimated population growth 2014–2030<sup>(4)</sup>

High blood pressure ▲

Type 2 diabetes ▲

Obesity and cholesterol ▲

(1) <http://stroke.ahajournals.org/content/44/8/2361.long>

(2) <http://www.uhnj.org/stroke/stats.htm>

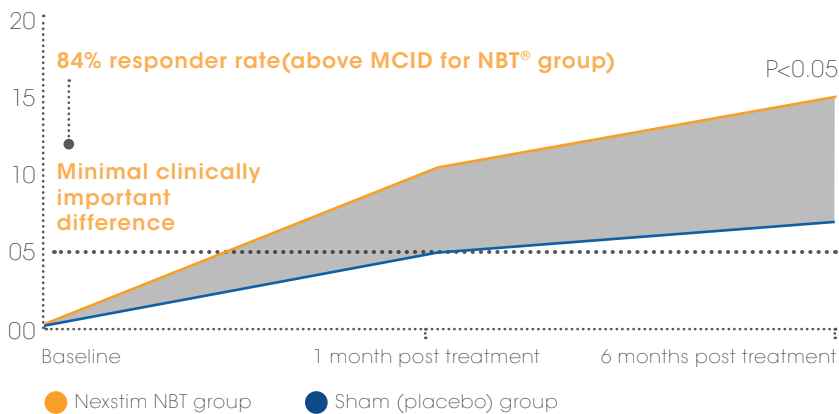
(3) United Nations, Department of Economic and Social Affairs, World Population Prospects 2012. Revision, June 2013

(4) [http://esa.un.org/wpp/unpp/panel\\_population.htm](http://esa.un.org/wpp/unpp/panel_population.htm)

# Demonstrating efficacy

## Phase II trials

### Change in upper extremity Fugl-Meyer score from baseline



### Trial outcome:

Absolute average improvement of 13.8 Fugl-Meyer scores

**Difference of "holding an object" and "buttoning a shirt"**

### The Phase II clinical trial in brief:

Single centre at Rehabilitation Institute of Chicago (#1 rehabilitation hospital in US for 24 consecutive years)

29 patients of which 19 (10) in treatment (sham) group

End-point = 6 months post treatment

## Phase III trials – Laying the groundwork for commercialisation

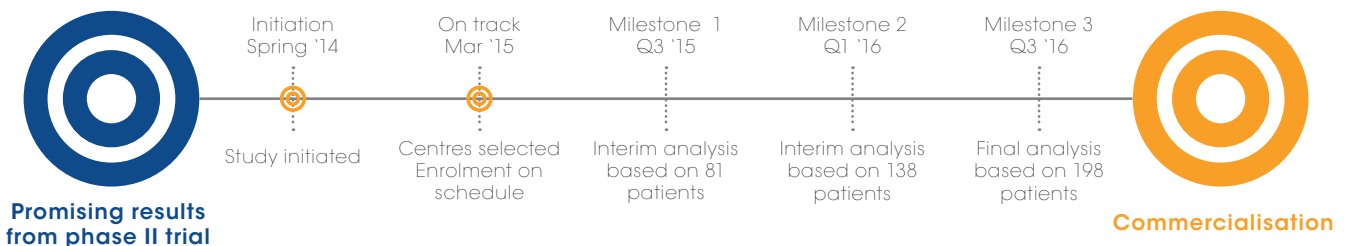
### Study in brief

- Establish clinical efficacy of NBT® in upper-limb motor rehabilitation
- Up to 198 patients
- 12 top US rehab sites – RIC is central site (#1 US rehabilitation hospital for 24 years)
- Dr. Richard L. Harvey lead investigator – one of the top experts in the field
- FDA reviewed protocol

### Study goals

**Outcome data**  
**FDA clearance**  
**KOL support**

- Document effects/efficacy of NBT® on upper-limb motor rehabilitation
- Obtain FDA De Novo 510(k) clearance for right to market and sell NBT® in US
- Build support from key opinion leaders (KOLs) to support commercialisation



# Committed to care

## New Stroke Therapy produced significant gains in Motor Function Post-Stroke

### Rehabilitation Institute of Chicago International Stroke Conference 2014:

Currently only one in every two stroke survivors on average recover full use of their arm. A study conducted by the Rehabilitation Institute of Chicago (RIC) approached stroke rehabilitation through a combination of non-invasive navigated transcranial stimulation (nTMS) and occupational therapy, demonstrating significantly greater gains in stroke patients' motor function six months after. The study by RIC, the U.S.' top ranked provider of nTMS treatment therapy, comprehensive physical medicine and rehabilitation care to patients, was presented at the American Heart Association (AHA) and the American Stroke Association's (ASA) International Stroke Conference in San Diego, California, in February 2014.

Dr. Richard Harvey and his team at RIC presented results of the trial, The Contrastim Stroke Study: Improving Hand and Arm Function After Stroke with Combined Non-Invasive Brain Stimulation and Task-Oriented Therapy, which showed improved outcomes for patients three to nine months after a stroke. Treatment consisted of 20 minutes of pre-functional occupational therapy, 17 minutes of nTMS, followed by 60 minutes of upper limb task-oriented occupational therapy. Patients received treatment during three visits a week for six weeks, the standard of care in the US. They then returned for follow up visits at one week, one month, and six months. The study found that Nexstim's non-invasive Navigated Brain Stimulation System used as an adjunct to therapy promoted lasting improvements in patients' motor function.

**"Best science available today!  
We are actually able to modulate  
healing, and I think this is the way of  
the future"**

Richard L. Harvey, M.D.  
Medical Director,  
Center for Stroke Rehabilitation,  
Rehabilitation Institute of Chicago (RIC)

### Ohio State University Wexner Medical Center:

Ohio State is one of 12 top rehabilitation sites nationwide participating in the multicentre clinical trial that will enroll up to 200 patients during the next two years. Nexstim has launched the double-blinded, randomized, and sham-controlled trial to determine the therapeutic effects of navigated rTMS (repetitive transcranial magnetic stimulation) for stroke rehabilitation. This stroke therapy combines occupational therapy with navigated repetitive transcranial magnetic stimulation (n-rTMS).

Researchers are using stereotactic MRI-guided repetitive transcranial magnetic stimulation (rTMS) to non-invasively modulate precise areas of the motor cortex. The system's targeting tool allows the therapist to accurately locate the patient's exact stimulation target using technology similar to mapping the globe with a GPS. The n-rTMS is used to stimulate the patient's non-injured brain hemisphere at a low frequency, said co-investigator Stephen Page, associate professor of Health and Rehabilitation Sciences at Ohio State.

This results in down-regulation of the excitability of the healthy side and restoration of the balance between the lesioned and healthy sides, allowing the lesioned side to regain function. Adding navigation to TMS is the key to finding the exact location and orientation of the motor area that should be inhibited by stimulation. The stimulation is then accurately repeated in every session, assuring the dose is applied to the correct place, said co-investigator Lise Worthen-Chaudhari, assistant professor of Physical Medicine and Rehabilitation at Ohio State.

Source: <http://wexnermedical.osu.edu/mediaroom/pressreleaselisting/Repetitive-Transcranial-Magnetic-Stimulation-Studied-For-Stroke-Rehab>

**"It's not a technology that's limited to  
just motor recovery after stroke, it has a  
potential to affect many of the brain  
circuits that are injured in stroke."**

Dr. Marcia Bockbrader  
Assistant Professor of Physical Medicine  
and Rehabilitation at Ohio State.

# Studies show NBS Systems significantly improve treatment and outcomes in brain tumour surgery

NBS Makes the Difference:

Presurgical mapping with Navigated Brain Stimulation gives surgeons the assurance to achieve more radical resections.

Navigated Brain Stimulation based presurgical mapping led to more complete resection resulting in a seven month (45%) extension in progression free survival in patients with low grade gliomas.





## Nexstim's method:

- Non-invasive
- Only 20–40 minutes
- Mapping possible days or weeks prior to surgery

## Current 'gold standard':

- Invasive
- Up to 2 hours
- Mapping during surgery

## How NBS pre-surgical motor mapping works:

- Map brain's motor area which is close to brain tumour
- Use motor map to plan surgery
- Perform brain tumour surgery

## Key benefits:

### Improved pre-surgical planning

- More efficient pre-surgical process
- Improved surgical outcome

Surgeon obtains motor maps days or weeks ahead of surgery, leading to better pre-surgical planning, a more cost-efficient process and improved surgical outcomes

### Improved decision making (when to operate)

- More beneficial surgeries performed

Surgeons may be able to proceed and surgically remove more tumours using the precise motor maps provided by the NBS system at low cost, effort and risk



**120+**

facilities worldwide

**FDA**

cleared

**CE**

marked

**KOL**

support

DCS – 42%

NBS + DCS – 59%

0 20 40 60 80 100

40% increase in Gross Total Resection Rate<sup>(1)</sup>

With NBS info surgeons can resect more of the tumour which benefits the patient

DCS – 57.4%

NBS + DCS – 78%

0 20 40 60 80 100

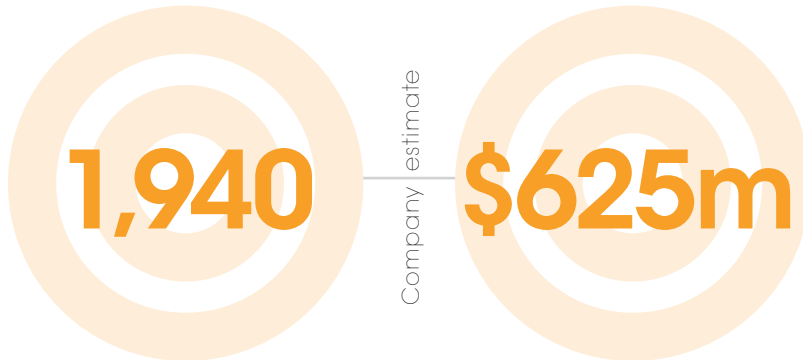
36% increase in Gross Total Resection Rate<sup>(2)</sup>

(1) Frey D, et al. Navigated transcranial magnetic stimulation improves the treatment outcome in patients with brain tumors in motor eloquent locations. Neuro-Oncol 2014

(2) Krieg S, et al. Preoperative motor mapping by navigated transcranial magnetic brain stimulation improves outcome for motor eloquent lesions. Neuro-Oncol 2014

# Looking to the future

## Market for NBS System (the device):



\$625m market opportunity for selling the NBS System to hospitals with compatible neurosurgery equipment

This estimated market size is recurring every 7 years (not annually) as the NBS System has a 7-year service agreement after which the device must be renewed

Hospitals with devices compatible with NBS System (US and Europe)

Europe: ~ 43%  
US: ~ 57%

## Market for consumables:



\$11m annual market for consumables required for each motor and speech mapping session

Annual brain surgeries could benefit from NBS mapping (US and Europe)

Europe: ~ 62%  
US: ~ 38%

## Market drivers:



# Targeting growth



## Key opinion leader support is being built

Initial sales are being targeted to KOL sites to influence opinions in the field, facilitating reimbursement negotiations and increasing early adopter interest.

## Outcome data is being gathered

Outcome data from Charité Berlin and TU Munchen showing greatly improved patient outcomes for use in the health economics model.

## Health economics model is coming together

Health economics model being built to demonstrate financial impact of purchasing the System to hospitals. Will demonstrate cost savings and revenue generation for hospitals.

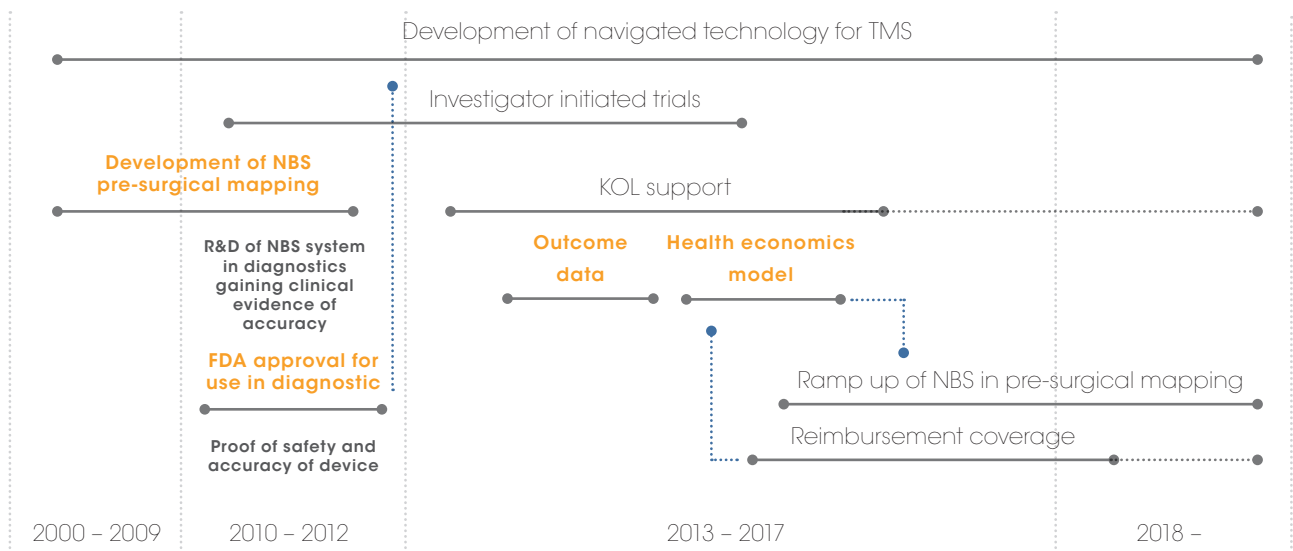
## Investigator initiated trials are being concluded

Two large investigator initiated trials completed in Charité Berlin and TU Munchen during 2014, which studied a total of 350 NBS patients.

## Reimbursement coverage negotiations are being initiated

Negotiations being initiated by hospitals in Germany with the support of Nexstim and a reimbursement consultant.

## Company's strategic timeline for the NBS System:



# Making a difference

## What Nexstim's NBS customers are saying

### Karolinska Institutet – Sweden

#### How long have you been using Nexstim's NBS?

We have been using Nexstim NBS at our clinic since December 2014, although we have previously used Nexstim data for pre-operative planning for a couple of patients at another clinic.

#### Describe the clinical significance using NBS in your practice?

As Karolinska is now starting up the awake surgery procedures Nexstim will play an important role in the pre-surgical workup and preparations, every awake speech patient will go through Nexstim examination as part of standardised protocol.

We primarily use it for pre-operative mapping of speech areas, as well as motor mapping and for the pre-surgical planning of operations in eloquent areas of the brain. We are also considering using it as a routine pre-surgical work-up for patients that are candidates for awake surgery on focal brain lesions in or near eloquent areas of the brain.

#### How has using NBS for pre-surgical mapping affected your treatment plans? Can you share some of your success stories using NBS?

We have had some positive experience of the NBS data from motor mapping when using it as a point of reference for fibre tracking. We have also used NBS data from speech mapping to feel more confident with the planning of resection of tumours in the vicinity of speech areas where awake surgery has not been a feasible option.

We had one acute case with a tumour in the region of Wernicke's speech area. The patient was not suitable for awake surgery. The patient was examined using NexSpeech and the outcome data was then transferred to the neuro navigator, making it possible for the surgeons to use the Nexstim NBS data as part of the decision-making process during surgery. The patient outcome was perfect, and no speech-related deficits were observed post-operatively.

#### How have patients reacted to NBS mapping?

All patients have accepted Nexstim examinations very well and have shown a high level of interest in the Nexstim system. When doing both motor and speech mapping we normally take a break in between the two examinations, offering the patients a cup of tea and a chance to stretch their legs. After completing the examination, we follow a checklist to gather patient feedback from the examination. This feedback is then archived as part of the patient's records.

**Margrét Jensdóttir, MD, and Mominul Islam, MD, PhD,**

Karolinska University Hospital, Stockholm, Sweden

### MD Anderson Cancer Center – USA

#### How long have you been using Nexstim's NBS?

We have been using NBS for approximately two years.

#### Describe the clinical significance using NBS in your practice?

The correlations with motor hand using DES are excellent and we have come to depend on it increasingly for lower extremity function. I have been very impressed with the results using it for speech function especially in the posterior temporo-parietal locations for receptive speech.

#### How has using NBS for presurgical mapping affected your treatment plans?

I have used NBS data increasingly for presurgical and intraoperative mapping. Provides excellent ROIs to generate DTI maps for both motor and speech function.

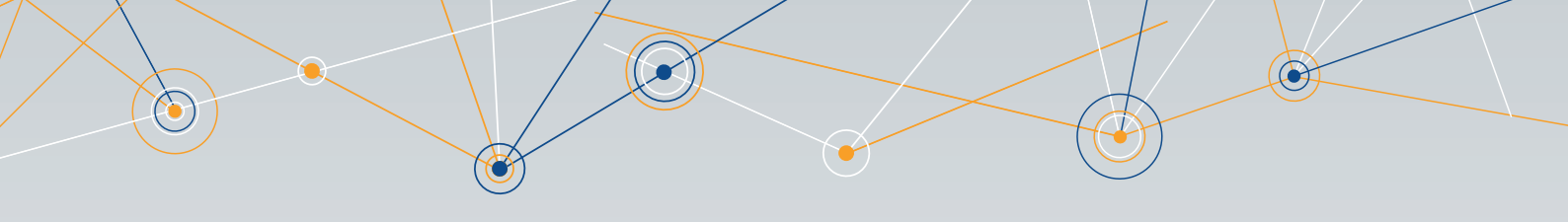
#### How have patients reacted to NBS mapping?

We have not had any untoward patient problems for motor mapping. With speech mapping once we came down on the frequency from 7 to 5 hz patient compliance has been excellent. Patients really appreciate having this close interaction with their doctors during the testing as they see the results unfolding.

**Dr. Prabhu S. Sujit, MD, FRCS (Ed)**

Professor, Department of Neurosurgery,  
MD Anderson Cancer Center





“What makes this so special is the ability for it to define very small, precise cortical regions on the surface of the brain, and define individual components of function which is something we never could do before.”

**Mitchel Berger, M.D.**

Chairman of the Department of Neurological Surgery,  
Director of the Brain Tumor Surgery Program,  
University of San Francisco



# Questions and answers with Janne Huhtala

“Nexstim is committed to improving the quality of life of patients. To achieve this, we are aiming to establish our non-invasive and Navigated Brain Stimulation platform as a leader in our field with clinical efficacy.”





### Why did you decide to list Nexstim on the stock market?

Our Board believed that this was the right time to widen the shareholder base by listing the Company's shares on First North Finland and First North Sweden. The success of the listing helps us to support Nexstim's growth and operational strategy and has already improved our international profile. Being a public company also gives us a platform to access additional capital to commercialise the NBT System if we obtain FDA clearance for marketing the device for stroke therapy.

### How are you using the funds from the IPO?

The additional finance we have raised will help to fund the ongoing Phase III, two-year multi-centre trial of the NBT System in stroke therapy and eventually help us to apply for regulatory approvals in the US and other key markets. We will also be able to support pre-commercial activities for the NBT System for post-acute stroke therapy and business development for the NBS System for diagnostic use, as well as exploring other potential indications such as pain and tinnitus.

### Why are you focusing so much of your time and effort on treatment of stroke?

Stroke is one of the leading causes of disability in the world. Every year approximately 15 million people have a stroke, and it is estimated that one in six people will suffer a stroke in their lifetime. Around 85% of stroke victims survive the initial stroke. In the US, healthcare services, medication and lost productivity relating to stroke cost the country an estimated \$36.5 billion every year. In Europe, direct health care costs relating to stroke were estimated to be €42.4 billion in 2010.

### How big is the opportunity for the NBT System in treating people who have suffered a stroke?

Around \$8.5 billion is being spent on rehabilitation for stroke patients every year in the U.S. alone. Current forms of treatment, which are mainly occupational and physical therapy, are expensive and have limited efficacy, meaning patients and payers get only marginal benefits. Nexstim has demonstrated in a single centre Phase II trial that when used in conjunction with occupational therapy, the NBT System can have a more than threefold increase in benefits compared to what is achieved using existing methods.

### How many people do you believe could potentially benefit from NBT therapy for stroke if you win regulatory approval?

Approximately 85% of people that survive the initial stroke are affected by the loss of use of one arm, known as upper limb hemiparesis. The first three months after a stroke are the most important in terms of getting a

complete recovery of upper limb function, and up to three quarters of stroke survivors still have upper arm impairment three to six months after the stroke. Nexstim estimates that around 270,000 people in the US and 442,000 in Europe could potentially benefit from treatment with NBT, and that number would grow in line with the increase in the population of people aged over 45 who are at risk of stroke.

There is also growing evidence that rehabilitation can be effective for chronic stroke patients. Based on our own estimates, this could represent an additional patient base of 3.1 million chronic stroke patients in the US and 5.9 million in Europe who might benefit from Nexstim's NBT therapy.

### How important is pre-surgical mapping to your future plans?

Clearly, stroke is a much bigger opportunity for us. However, the NBS System has served as a validation for the navigation technology used in the NBT System for stroke therapy. It has also proved the safety of the technology platform to regulators through FDA clearance and CE marking.

Pre-surgical mapping helps to minimise the risk of speech and motor impairment prior to surgery on the brain and Nexstim's system is a major improvement on current standard practice, leading to statistically significant reductions in residual tumours in difficult operations compared to a control group. Pre-operative NBS motor mapping has been shown to increase the progression free survival time in patients with low grade gliomas by 45%.

### What are the next steps in the clinical trial process for the NBT system in stroke?

Nexstim is running a multi-centre, Phase III trial on upper limb motor rehabilitation involving up to 198 patients. This study is being carried out at 12 of the leading rehabilitation centres in the US, including the prestigious Rehabilitation Institute of Chicago as a lead site in the trial.

We expect an interim analysis after 81 patients have reached primary outcome assessment at six months post-treatment, and that could happen in the second half of 2015. Another interim analysis will be done after 138 patients have reached primary outcome assessment, and the final analysis will take place after 198 patients have reached primary outcome assessment, which is expected to be done in the second half of 2016. However, based on the results, the trials can be concluded early.

# Experienced management



**Janne Huhtala** (1975)  
Chief Executive Officer



**Mikko Karvinen** (1976)  
Chief Financial Officer



**Jarmo Laine** (1965)  
Vice President, Medical Affairs



**John Hardin** (1954)  
Vice President, Global  
PSM Commercialisation



**Rainer Harjunpää** (1967)  
Vice President, Quality  
Assurance & Regulatory Affairs,  
After Sales & Services



**Gustaf Järnefelt** (1961)  
Vice President,  
Research & Development



**Petriina Puolakka** (1973)  
Vice President, Legal Affairs



**Henri Hannula** (1974)  
Vice President, Sales Europe





## Janne Huhtala

Janne Huhtala became CEO of Nexstim in 2013, and has been a member of the management team (CFO) of Nexstim from 2008. Before joining Nexstim, Mr. Huhtala worked for Gutta Oy, a provider of corporate financial consulting services, as CFO and CEO at Viola Systems Oy and as an investment Director at private equity and venture capital firm Fenno Management Oy. Mr. Huhtala holds a M.Sc. in economics from Turku School of Economics.

## John Hardin

John Hardin has been Vice President of Global PSM Commercialisation of Nexstim since 2014. Prior to joining the Company, Hardin served as vice president, global sales and marketing, of Mindframe Inc. Previously, Mr. Hardin worked for Ev3 as vice president of sales and global marketing at the neurovascular division, and at Medtronic, Inc. He has an MBA from William Woods University.

## Petriina Puolakka

Petriina Puolakka has been Vice President Legal Affairs since 2013 and has been a member of the management team since 2007. Ms. Puolakka has served in a number of positions including Director of Legal Affairs and HR. Ms. Puolakka was previously employed by Nexstim as legal counsel. She holds a Master of Law degree from University of Lapland.

## Mikko Karvinen

Mikko Karvinen was appointed CFO of Nexstim in 2014. Prior to joining Nexstim, he was CFO and deputy CEO of Innofactor Plc, CFO and deputy CEO of Tectia Oyj, later known as SSH Communications Security Oyj, and CFO of Automaster Oy. Mr. Karvinen previously worked at Vaisala Oyj in a number of roles, at Vaisala Inc. in the U.S. and at OP Bank Group Central Cooperative. Mr. Karvinen holds a M.Sc. in economics from Helsinki School of Economics in 2001.

## Rainer Harjunpää

Rainer Harjunpää was appointed Vice President of Quality Assurance and Regulatory Affairs, After Sales and Services in 2013 and joined the management team in 2010. He was previously Director of Quality and Regulatory Affairs, Operations at Nexstim. Prior to joining the Company, Mr. Harjunpää was at GE Healthcare Finland Oy and Instrumentarium Corp. Mr. Harjunpää is a member of the board of Directors of the Finnish Healthcare Technology Association. He holds a M.Sc. in biomedical engineering from Tampere University of Technology.

## Henri Hannula

Henri Hannula became Vice President, Sales Europe, of Nexstim in 2013 and has been a member of the management team since 2007. Mr. Hannula has held a variety of key leadership positions since joining Nexstim in 2001 including Director of Sales. Before joining Nexstim, he worked at Forschungszentrum Karlsruhe GmbH. Mr. Hannula has written several scientific articles published in medical journals. He holds a M.Sc. in technology from Helsinki University of Technology.

## Jarmo Laine

Jarmo Laine has been Vice President, Medical Affairs since 2013 and a member of the management team since 2008. He was Director of Clinical Operations from 2008 to 2013. Mr. Laine held several senior positions at the Finnish Red Cross Blood Service (FRCBS), was a Fellow in Paediatric Nephrology at HUCS/Hospital for Children and Adolescents in Helsinki, and a Post-Doctoral Research Fellow at Harvard Medical School. He has published more than 60 publications in international journals in the fields of organ/cell transplantation, paediatric nephrology, and cell biology and submitted several papers on the clinical application of Nexstim's technology. Mr. Laine served as an expert consultant to the Parliament of Finland to the Council of Europe. He was a member of the European Blood Alliance Working Group on tissues and cells. Mr. Laine holds an MBA from Helsinki University of Technology and a Doctor of Medical Science from University of Helsinki in 1995.

## Gustaf Järnefelt

Gustaf Järnefelt has been a member of the management team of Nexstim since 2008 and was formerly R&D Director. Mr. Järnefelt previously worked at GE Healthcare Finland Oy and Instrumentarium Corp. Mr. Järnefelt holds a M.Sc. in Technology from Helsinki University of Technology.

# Board of Directors



**Tim Irish** (1964)  
Chairman of the Board



**Olli Riikkala** (1951)  
Deputy Chairman of the Board



**Casper Breum** (1967)  
Partner, Lundbeckfond Ventures



**Johan Christenson** (1958)  
Partner/HealthCap



**Katya Smirnyagina** (1966)  
Partner/Capricorn Venture Partners



**René Kuijten** (1964)  
General Partner/Life Sciences Partners



**Juha Vapaavuori** (1952)  
Director/Sitra, The Finnish Innovation Fund



**Ken Charhut** (1958)  
President and CEO/  
Compellon Inc



## Tim Irish

Timothy Irish has been the Chairman of the Board of Directors since 2012. He is currently Chairman of the Board of Directors at Bioxydyn Ltd and a board member at Deltex Medical Group Plc. Mr. Irish has worked previously at Royal Philips, GE and GSK. Mr. Irish has an M.Sc. in diplomacy and international strategy from the LSE, an MA in PPE from University College, London, an M.Sc. in economics from Imperial College, London, an MBA from Durham University and a B.Sc. in biochemistry from Liverpool University.

## Olli Riikkala

Olli Riikkala has been a member of the Board of Directors since 2007 and deputy Chairman. Mr. Riikkala is a member of the Board of Directors of the following private healthcare companies: Cancer Hospital Docrates Oy, MediXine Oy, Mendor Oy, Optomeditech Oy and Biomedicum foundation. He has served 26 consecutive years in a publicly listed company Board of Directors including Oriola-KD Oyj as Chairman. Mr. Riikkala worked at Instrumentarium during years 1979 – 2003 in various executive positions of which last 6 years CEO. After that he served 3.5 years as President of GE Healthcare IT EMEA. Mr. Riikkala holds a M.Sc. in engineering from the Helsinki University of Technology, a M.Sc. in economics from Helsinki School of Economics and an MBA from Claremont Graduate University.

## Casper Breum

Casper Breum joined the Board of Directors in 2011. Mr. Breum is a partner at Lundbeckfond Ventures. He was previously CEO at ilochip A/S and worked at companies including H. Lundbeck A/S, Niels Clauson-Kaas A/S and Novo Nordisk A/S. He is a board member of Asante Solutions Inc, Dysis Medical Ltd and Atox Bio Inc and a former member of the supervisory Board of Lundbeckfonden and LFI A/S. Mr. Breum holds a M.Sc. and MBA from the Technical University of Denmark.

## Johan Christenson

Johan Christenson joined the Board of Directors in 2007. He is also a member of the board at Cerenis SA, Trimb AB, Oncopeptides AB, Oncos Therapeutics Oy, Ancilla AB and Benechill Inc. Christenson is a partner at HealthCap. Prior to joining Odlander Fredrikson, Mr. Christenson worked at SEB Företagsinvest, Astra and AstraZeneca. He has lectured in neuroscience and is the author of 17 scientific articles. Mr. Christenson was assistant dean at the Karolinska Institute Graduate School. He received his medical training at the Karolinska Institute and has a Ph.D. in neuroscience.

## Katya Smirnyagina

Ekaterina Smirnyagina joined the Board of Directors in 2013. Dr. Smirnyagina is a partner at the Capricorn Health-Tech Fund Venture Fund. Prior to this she was with Alta Partners, a US healthcare focus venture fund. Her current and past board memberships include Adocia (Euronext: ADOC.PA), iSTAR Medical SA, Ablynx (Euronext: ABLX.BE), Cerenis Therapeutics SA, Innate Pharma (Euronext: IPH.PA) and Kiadis Pharma NV. Previously Dr. Smirnyagina worked in business development at Genset S.A. and management consulting at the Mitchell Madison Group. She was a postdoctoral fellow in microbiology & immunology at the Stanford University School of Medicine and holds a Ph.D. in cellular & molecular biology from the University of Wisconsin-Madison and a B.Sc. in biochemistry from Moscow State University.

## René Kuijten

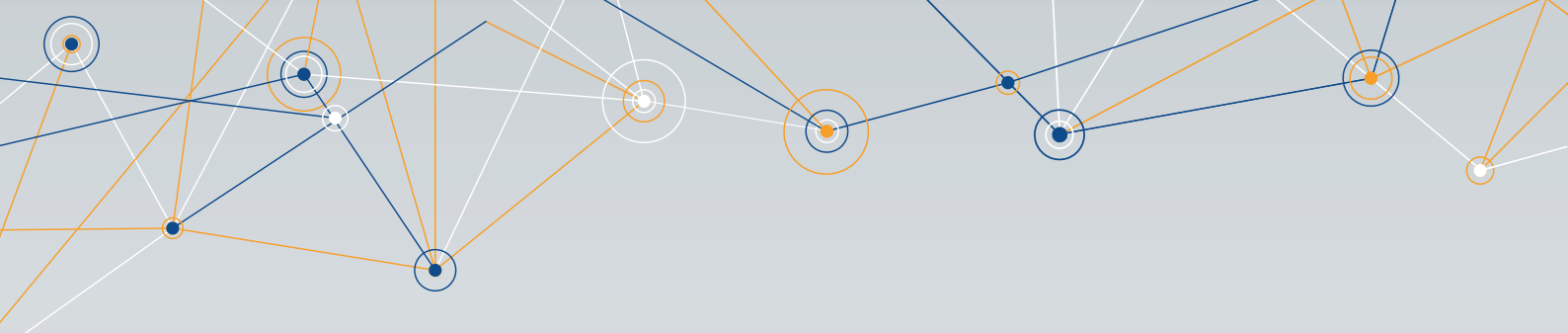
René Kuijten joined the Board of Directors in 2007. Mr. Kuijten is general partner and co-owner of Life Sciences Partners and has been a member of the board of several of its portfolio companies. Mr. Kuijten was previously Senior Engagement Manager at McKinsey & Co and leader of its European Health Care and Pharmaceuticals Practice. He is an advisory board member of Pivot Park, a member of Regiegroep Topsector Life Sciences & Health and a board member of the Dutch Venture Capital Association. Mr. Kuijten was a WHO research fellow at the University of Pennsylvania, and has a Ph.D. in medicine from the University of Amsterdam, an MBA from INSEAD, and an MD and M.Sc. in medicine from the University of Utrecht.

## Juha Vapaavuori

Juha Vapaavuori has been a member of the Board of Directors since 2006. Mr. Vapaavuori is Chairman of the Board of Directors of KC-Holding 3 Oy, a member of the Board of FIT Biotech Oy and Vivoxid Oy and is Senior Lead of corporate finance at the Finnish Innovation Fund Sitra. He previously served as a board member of Pharmatory Oy. Mr. Vapaavuori holds an M.A. from University of Helsinki.

## Ken Charhut

Kenneth Charhut has been a member of the Board of Directors since 2013. Mr. Charhut is a board member of Reshape Medical and Foldax Inc; CEO and President of Compellon Inc; Director of Folda LLC; independent board member of Avencia LLC; and a board member of the NHS Investment Committee. Previously Mr. Charhut was CEO and President of MindFrame Inc and Orgis Medical. He spent 16 years at Baxter Healthcare Corporation, and is a former independent Director of Arges Medical and Micro Dexterity Systems. Mr. Charhut has served on a number of industry councils in the U.S. and Japan. He holds a B.Sc. in mechanical engineering from Cornell University and an MBA from the University of Chicago.





# Glossary

<b>CAGR</b>	Compound annual growth rate.
<b>DCS</b>	Direct cortical stimulation.
<b>E-field</b>	Electric field. In Navigated Brain Stimulation or Navigated Brain Therapy, the E-field is created by triggering a transcranial magnetic stimulation (TMS) coil.
<b>Electrodes</b>	A conductor used to establish electrical contact with nonmetallic part of a circuit. In Navigated Brain Stimulation and Navigated Brain Therapy, this is a small disc like piece of plastic with a gel centre that is placed on the muscle that is being tracked. The electrode works with the EMG to record muscle responses to the TMS.
<b>EMG</b>	Electromyography.
<b>FDA</b>	Food and Drug Administration. An agency in the US Department of Health and Human Services responsible for protecting and promoting public health through the regulation and supervision of e.g. medical devices.
<b>Fugl Meyer Scale</b>	One of the most widely used assessment tools of motor recovery after stroke. Evaluates and measures recovery in post stroke hemiplegic patients.
<b>KOL</b>	Key opinion leader.
<b>MR image or MRI</b>	Magnetic resonance imaging (or magnetic resonance image). A non-invasive diagnostic procedure that uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed sectional images of the internal structure of the body.
<b>MT</b>	Motor threshold. In Navigated Brain Stimulation and Navigated Brain Therapy, this is the amount of electrical energy needed for TMS to induce motor movement. The motor threshold varies widely between individuals. Once the patient's individual motor threshold has been determined, it will provided the appropriate level of intensity of TMS dosed to a patient during the mapping procedure.
<b>NBS</b>	Navigated brain stimulation.
<b>NBT</b>	Navigated brain therapy.
<b>PSM</b>	Pre-surgical mapping.
<b>rTMS</b>	Repetitive transcranial magnetic stimulation.
<b>SRS</b>	Stereotactic radiosurgery. A non-invasive treatment, not requiring a craniotomy, where numerous precisely focused radiation beams are used to treat tumours and other problems in the brain. It is a method that delivers high doses of radiation to the target area.
<b>Stereotactic Camera</b>	A 3D optical tracking unit, that acts like a camera to create precise navigation through the motion sensor trackers found on the glasses, coil, and digitising pen for the Navigated Brain Stimulation and Navigated Brain Therapy Systems.
<b>TMS</b>	Transcranial magnetic stimulation.



# Locations

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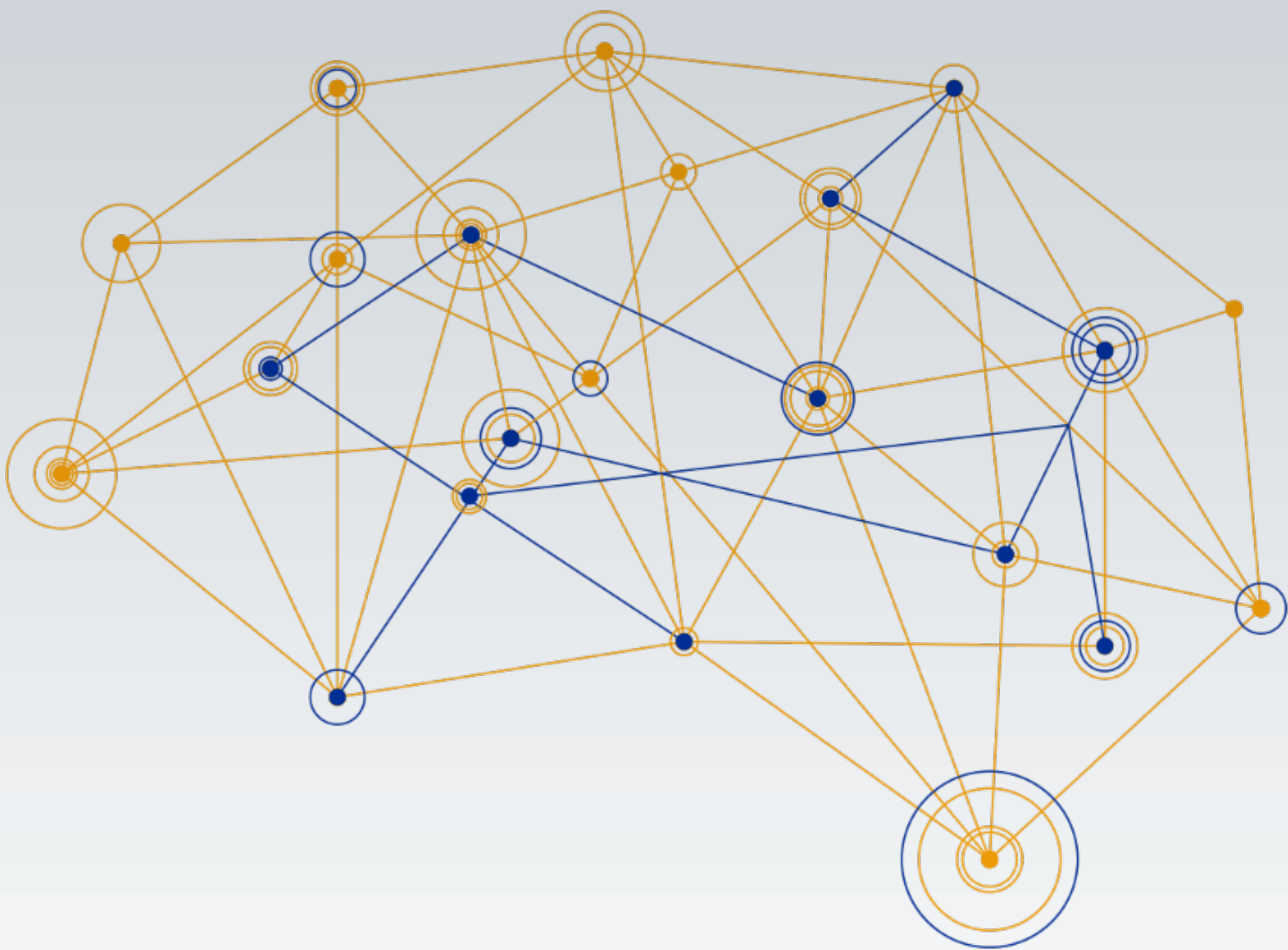
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