



Yorkshire
& Humber
AHSN

**Transforming Lives
Through Innovation**



Propel@YH
Programme Impact
Report 2020-21

Website: www.propel-yh.com
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LinkedIn: [propel-yh](https://www.linkedin.com/company/propel-yh)

Introduction

Stimulating innovation and economic growth is a central element of Yorkshire and Humber Academic Health Science Network's (Yorkshire & Humber AHSN) role in the region. To assist inward investment projects and the industry which supports the health sector we commissioned Propel@YH, a six-month digital health accelerator programme targeted at SMEs with digital health innovations for the Yorkshire and Humber region.

Propel@YH provided its 2020 cohort of business with access to a structured course of support and advice aimed at helping them navigate the NHS, whilst enabling accelerated company growth and increased market presence.

The programme was delivered in partnership with Leeds City Council, Nexus at the University of Leeds, Barclays Eagle Labs, and Hill Dickinson solicitors along with content delivery from mHabitat and other subject matter experts.

The programme was open to SMEs that could demonstrate innovative digital solutions and either had an existing presence in the Yorkshire and Humber region, or were willing to establish one. The 2020 programme also asked for solutions that would help the health and care systems in the wake of COVID-19.

In October 2020, 10 SMEs were selected to take part in the six-month programme of masterclasses and digital innovator surgeries focused on getting to know the NHS, human-centred design, clinical safety and regulation and building an evidence base.





2020 Programme Impact



Over 42 hours of high-quality support provided virtually to 10 companies over 6 months



12 months co-working space provided to 10 companies



1 company relocated from London to Nexus in Leeds



15 collaborations facilitated



3 new jobs created



Active engagement generated from 2 investors and 3 NHS Trusts



Programme shortlisted for 2 awards at Leeds Digital Festival



- Vastmindz secured \$120k in cloud funding from Microsoft
- SeeAI secured a £25k grant
- Cyberliver's Innovate UK project extended

Alongside funding from Yorkshire & Humber AHSN, financial contributions or benefits-in-kind were provided from our partners:



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Programme Impact

The programme generated significant commercial engagement between the companies and programme partners, either through the consumption of their services or, in the case of Leeds City Council, support in meeting their economic growth aims for the region. This funding also contributed to the provision of a dedicated Digital Navigator to manage the accelerator appointed and managed by Yorkshire & Humber AHSN, along with a broad range of collaborators who benefitted directly from the investment.

- mHabitat
- Leeds and York Partnership NHS Foundation Trust
- KC Communications
- Nexus at the University of Leeds
- Ethos
- Future-Health Innovations
- Communicate Advisors 2020



Programme Activities

In October 2020, all 10 companies were presented at the Propel@YH virtual launch event where they had the opportunity to present their innovations to a curated audience alongside the programme partners. They also presented to investors a Virtual Demo Day at the end of the programme in March 2021.

Over the course of 6 months, 16 structured group sessions were delivered virtually covering:

- How the NHS works – an introduction to the health system, including procurement, in England.
- Understanding and managing complexity – using tools e.g., NASSS-CAT complexity tool to reduce and manage complexity.
- Clinical safety by design – how to design in clinical safety throughout the digital development process.
- Building the evidence base – why evidence and evaluation is important and how to go about building a framework.
- Inclusive digital design – how to implement an inclusive, human-centred design approach to developing digital products and services.
- Round up – Panel round-up of the Masterclasses Expert Digital Health Innovators sharing stories of success and practical insights.
- Environment Sustainability workshop with Yorkshire & Humber AHSN.
- Workfinder support day with Barclays Eagle Labs.
- Barclays High Grow and Entrepreneurs – Beyond Banking Session.
- Nexus/University of Leeds introductory workshop and onboarding.
- Data protection, Patient confidentiality and Medical devices with Hill Dickinson.
- Leeds City Region Enterprise Partnership Workshop.
- Legal basics and Intellectual Property Rights with Hill Dickinson.
- Corporate structure, Company formation and Employment law with Hill Dickinson.
- Session with Dr Nina Wilson, Clinical Specialist Advisor, AI & Digital Tech, NHSX
- Understanding HealthTech Commercialisation and Scaling a Successful Business with Kam Pooni, CJBS Mentor and CEO of Glyconics, facilitated by Barclays Eagle Labs

In addition to the structured sessions monthly one-to-ones and group action learning sessions took place to work on individual requirements along with networking and signposting activities.





The Companies

Of the 40 applications received, 19 shortlisted companies were reviewed by an assessment panel and 10 were selected for the Propel@YH programme. To ensure the innovations selected met local health needs the companies were assessed by a panel with representatives from South Yorkshire and Bassetlaw Integrated Care System and West Yorkshire and Harrogate Health and Care Partnership along with patients, the programme partners, industry experts and investors.

Co-opts

A smart device for automated recording, transcription and summarisation of therapy sessions.

<http://co-opts.com/>

Cyberliver

Remote monitoring of at-risk cirrhosis patients using wearables and an app.

<http://www.cyberliver.com/>

IMME

A Virtual Reality experience created to support Williams syndrome, tackling isolation, rehab mobility and mental health.

<https://immemedia.wixsite.com/immemedia>

Liria

A technological solution addressing the health and wellbeing of perimenopausal, menopausal, and postmenopausal people.

<http://liriadigital.com/>



Myfood24

An online food diary system which automates the diet tracking and analysis process.

<https://www.myfood24.org/>

SeeAI

A platform that supports early fracture diagnosis through x-ray images.

<https://www.seeai.co.uk/>

Ufonia

An AI-enabled accessible clinical assistant called Dora that can conduct an intelligent clinical conversation via a regular voice telephone call.

<https://www.ufonia.co/>

Vastmindz

An AI face analysis app to measure real-time heart and respiration rates, oxygen saturation, stress level, blood pressure and atrial fibrillation risk.

<https://vastmindz.com/>

Warnerpatch

A non-invasive, wearable wireless (using 2G network) sensor that predicts tissue health disease evolution using AI for clinicians to give preventive care, improve patient outcome and save care costs.

<https://warnerpatch.com/>

Writtenmedicine

A pharmacy label and discharge summary translation system, that works across 11 different languages.

<https://www.writtenmedicine.com/>



Case Studies

IMME - Craig Chaytor

How was I.M.M.E created and what is the main challenge that the product is trying to solve?

The idea came from my daughter, Imogen. I.M.M.E which means 'Imagine Making Memories Everywhere' was named after Imogen because she is the one who inspired me, and I wanted her to be part of this forever.

She struggles in life with her disability called Williams Syndrome and showed an interest in Virtual Reality (VR) but could not use it as it was too much of a sensory overload for her. I could not find any other platform designed for children with a disability to help them in V.R.

I created I.M.M.E. to help children feel safe when they are in hospital and are feeling anxious and scared. If a doctor wants to do a medical procedure on a child, they can use my product to help calm them so the doctors can do their job. It can also help within education.

What have you learnt on the Propel@YH programme?

Propel@YH is an amazing programme to be on. I personally learnt a great deal from it. From a personal perspective, the programme provided me with confidence in myself to learn new skills that I needed to move my innovation forward.

The partners of Propel@YH have really given me the skills I need, from Hill Dickinson providing legal aid and regulations into medical products to mHabitat providing me with very useful information and research aspects I needed to think about.

How has the Propel@YH programme helped you?

The Propel@YH programme didn't just help me; it made me a better person. When I first applied back in 2020, I was not optimistic because I am a solo owner and did a lot of work myself with no team, which I thought would go against me – but I stuck to it and did my pitch to join the Propel@YH programme. I was very nervous, and it showed because my legs were shaking my laptop so badly that it made the panel laugh.



However, the panel saw something in me and my product and how it can help change a child's life, and we were accepted to be part of the Propel@YH programme.

I have connected to so many other establishments across the country, networked on a large scale, gained new friends – from the other companies that joined the programme to Jon Fordham at the AHSN and Dawn Carhart from Barclays Eagle labs, all of whom provided me with the valuable life skills I needed to move forward with I.M.M.E and offered continuous support. The Demo Day was the perfect opportunity to showcase our product and gave me the reassurance of continued support after the programme finished. I honestly can't thank them enough for believing in me and I.M.M.E and accepting me onto the programme.

"Anybody can do anything if you put your mind to it, never give up on what you believe because the reward at the end is only the beginning to more rewards."
– Craig Charter, innovator

Myfood24 – Lauren Gibson

What was the idea born out of/what is the main challenge that the product is trying to solve?

Within a healthcare setting health care professionals (HCPs) are still lacking the quick and easy-to-use tools they need to accurately monitor a patient's nutritional intake, which is key in preventing and managing diet-related conditions; the prevalence of which continue to grow at great speed costing the NHS and wider society billions of pounds every year.

Instead, HCPs typically resort to handwritten food diaries (completed by the patient) which are then manually entered into often clunky nutritional analysis software, which lacks branded-level data, by the HCP – a process which is laborious and can lead to errors in interpretation. This also means that it tends to be the HCP who sees the corresponding nutritional information, making it hard for the patient to understand how their diet translates into nutrition content.

Some HCPs may instead refer patients to use consumer apps to record their diet, however their databases tend to be crowdsourced meaning their accuracy is questionable and they often have missing nutrient information as they typically focus on calories. In this case, it tends to only be the patient who sees the nutritional data leaving the HCP at a loss for the detailed nutritional information they are keen to see.



We wanted to create a robust, quick and easy to use system that was appropriate for use by HCPs and their patients to accurately assess and monitor nutritional intake to help identify those patients who may need more support, ultimately to improve health outcomes through better nutrition.

When did the idea first move into development?

It has always been Janet's vision for dietary assessments to form part of routine healthcare, but the idea first gathered traction when we secured an Innovate UK grant looking into the feasibility of such a tool. We engaged with key stakeholders including clinical teams and patients for this project and received such positive feedback, it was really encouraging. The output of the project was a set of requirements and use cases for myfood24 and we really started developing from there.

Who is the main target audience for the platform?

The myfood24 healthcare solution is aimed at patients with conditions where diet and nutrition can impact on their treatment, management and recovery. Patients have their own smartphone app to record their dietary intake and can monitor progress against their personalised nutrient targets set by their HCP. HCPs are able to access these results through a web portal and remotely monitor their patients progress and view these results prior to consultations to help tailor support plans.

Is the platform live? If not, where in the development stage is the project at?

Currently our research and education solution is live but our healthcare platform is in the final stage of development – we are hoping to launch this towards in late February/early March so watch this space!

We have a pilot study already lined up to test our solution within a clinical setting focusing on gastroenterology patients and Tier 3 Weight Management patients, and we are really excited to get this started and see the results.

How did you find the Propel@YH application process?

The application process ran very smoothly despite being interrupted by the COVID-19 pandemic. Jon Fordham and the team were not to be defeated. Jon was really helpful throughout, ensuring I was kept up to date with progress and was happy to answer any questions I had and provide guidance where necessary. Thanks, Jon!



What have you found the most insightful or useful part of the programme so far?

The programme has been great, every speaker has been extremely knowledgeable about their subject area and always willing to provide additional help and guidance. In particular, the Clinical Safety Masterclass run by Stuart Harrison (ETHOS Ltd) was very insightful and an area I was particularly keen to learn about as part of the programme. I was also looking forward to the Evidence and Evaluation Masterclass, another area I was keen to learn more about.

What advice would you give to yourself if you were to apply again?

Go for it.

SeeAI – Saile Villegas

Saile Villegas and Reo Ogusu are the founders of SeeAI, a technology company that develops solutions to solve the shortage of radiologists. They are interested in building technology that can help hospitals of any size and any location to provide an expert-level diagnosis. Saile and Reo have a strong background in computer science. They both hold an MSc in Computer Science from The University of Leeds. Reo has years of experience in image analysis and text analytics as a researcher and Saile has wide experience in health data analytics. They are both working towards helping hospitals provide an accurate and timely diagnosis to improve patient outcomes through AI-supported early fracture diagnosis.

What was the idea born out of/what is the main challenge that the product is trying to solve?

The idea was born when Saile was misdiagnosed by a non-specialist in the past, due to the limited availability of specialists for consultation. This situation is not uncommon, on a regular basis, important findings can be missed, and patients need to be recalled, informed, and correct treatment initiated.

We are trying to solve the problems caused by the shortage of radiologists. According to the Clinical Radiology Workforce Census Report 2019, the demand for x-rays has been increasing significantly and 99% of the UK NHS Trusts have not been able to meet their reporting requirement within their contracted hours.



Our technology aims to drive efficiency to relieve the pressure that has significantly increased due to a chronic shortage of radiologists and most recently due to COVID-19 from radiologists and other healthcare professionals.

Our AI solution can help solve the problem of supply and demand by reducing the workload of radiologists. It can speed up diagnostic times by providing an automatic analysis of the x-ray image and pre-filling a radiology report; allowing radiologists to redirect their freed-up time to other important areas.

When did the idea first move into development?

The idea started to get in shape during the second half of 2018 and moved into development in early 2019. Later that year, we received funding to develop the Proof-Of-Concept and in 2020 we received further funding to develop the working prototype of the technology.

Who is the main target audience for the platform?

Radiologists and healthcare professionals.

Is the platform live? If not, where in the development stage is the project at?

We are currently working with NHS Scotland on the development of our innovation for wrist and ankle, two of the most commonly misdiagnosed bones. We aim to start with clinical trials during the second half of 2021 and then head for commercialisation.

How did you find the Propel@YH application process?

The first stage of the application was very straightforward. We filled out an application form that included a brief overview about our company, our solution, and its expected benefits. The video brief that was part of the application form took a bit more work than we thought it would as it was something unusual for us. The interview after being shortlisted was a bit more challenging, as all the parties involved are very experienced in this field, and it felt a little intimidating at the start.

What have you found the most insightful or useful part of the programme so far?

The masterclasses have been the most insightful. Having knowledge on topics such as how the NHS works, how to go through the regulatory process, clinical safety by design, etc. is essential for companies in the healthcare industry.



However, it is hard to find concise and well-structured information in a single place. The masterclasses offered by Propel@YH have provided that knowledge and have been incredibly helpful.

What advice would you give to yourself if you were to apply again?

The assessment day is easier than you think because you know your product. There is no need to be nervous.

What were you most looking forward to learning about in the programme's masterclasses?

Since the next step of our development is to go through clinical trials, we wanted to learn how to design the clinical trials properly and what kind of evidence we needed to gather to go through regulatory approvals.

Co-opts – Kevin Flanagan

Kevin Flanagan is a hybrid technology and finance professional who has spent 25 years in finance and technology in roles as varied as lead programmer on the first networked bank systems in Ireland for a major Irish clearing bank and laterally as the first global head of Development at Barclays Capital. He is also serial technology entrepreneur with two exits from six start-ups and Co-Opts is his seventh company in three countries. He has worked as a trader, risk manager and restarted Barclays Capitals Investment Bank in Japan. Kevin has designed and built several global systems that have run for more than 25 years. He brings experience in building artificial intelligence (AI), machine learning (ML) and natural language programming (NLP) products and holds an MSc Intelligent Systems (AI) from UCL and an MBA from CASS. In his spare time, he snowboards, reads and enjoys walking in the mountains with his family.

What was the idea born out of/what is the main challenge that the product is trying to solve?

The product was born out of our experiences of the mental health systems whether as practitioners or as parents of patients. These were very unsatisfactory experiences and spurred us to investigate why that might be so for mental health. The research revealed some disturbing statistics. For example, for depression and anxiety-related disorders, the number needed to treat is seven but twice that number recover spontaneously. That represents two thirds of the 12m people who will have a mental health condition in the UK this year. NHS mental health services only gets to treat 2m of those people. An



additional 4m typically get medication and computerised CBT but it is difficult to successfully treat complex mental health conditions in 12 minutes!

From this it became clear that mental health services do not reach enough people and the services that do reach are not very efficient in terms of outcomes. We based this conclusion on our observation of a therapy called Open Dialogue which appears to be approximately four times better in terms of numbers needed to treat. There were subsidiary problems such as, clinicians in mental health are, in percentage terms, the most likely profession to use its own services and twice as likely to suffer burnout. In the NHS they suffer twice the sick leave rates and vacancy rates of any other clinical profession. That is the problem we decided to try and address.

When did the idea first move into development?

It took almost two and a half years of work to get to the point where we felt we had enough of a handle on the complexities of the problem that we could start to work on the technology. Preliminary work had revealed that the technology was not capable but a breakthrough in early 2020 lead us to start working on solving a specific problem which was being able to identify individual speakers in real time on a low powered edge computing device. By August 2020 we had solved this problem and then we applied for grant funding and were successful in getting an Innovate C-19 grant to build out a beta product.

Who is the main target audience for the platform?

Our main target for this is talking therapies, typically face to face but with the onset of C-19 we are developing a hybrid solution capable of interfacing to a video session and live speech from the therapist's side.

Is the platform live? If not, where in the development stage is the project at?

No our platform is not live yet as we are still building the beta version of the product which is scheduled for April 2021. A key feature of our product is customised language models for combinations of gender and accent. This is to lower the word error rate and this is one of the reasons why voice to text has not really gone mainstream yet because there is no such thing as an average accent.

How did you find the Propel@YH application process?

We found the overall process a fair bit of work. While the application asked for a lot of the same sort of information, they asked it from unusual perspectives. I am not sure we did as well with the video as we could have. Part of our problem is we are literally focused on filling a single field in a patient record. The implications of doing that well are potentially profound and perhaps even revolutionary. It is hard to get the balance between hyperbole and grounded realism while selling a vision.





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What have you found the most insightful or useful part of the programme so far?

The class on clinical safety by design has had a significant impact on us. Stuart Harrison has helped us focus on the critical aspects of our product's clinical safety in a field where the rules are still being created to some extent, the application of evolving AI models to healthcare. Given we are working in the mental health space it was fantastic to come across someone as knowledgeable and grounded and happy to advise us how to deal with navigating the regulatory and safety ecosystem around health.

What advice would you give to yourself if you were to apply again?

Having a rehearsed and canned video pitch would help a lot, good videos take an awful lot of work. Having a very clear value proposition is critical to tying all the elements of the application together. I do not think we did that as well as we could have so working more on that first would have helped make our case stronger.

What were you most looking forward to learning about in the programme's masterclasses?

None of us had ever designed a clinical study so the masterclasses around this is where we thought we would get the most out of the masterclasses.

"You guys are outstanding."

– Kevin Flanagan, innovator

Warnerpatch – Dr Melissa Berthelot

With an engineering background, Dr Melissa Berthelot, is a Fellow at the Enterprise Hub of the Royal Academy of Engineering. Particularly focusing on developing patient-centric tools for clinicians, she has experience in fast-tracked medical device prototypes development and conducting in-vivo clinical studies.

Melissa is the founder of WarnerPatch, a medical device start-up that focuses on the prediction of disease degradation using specifically designed sensing technology. Particularly focusing on peripheral vascular diseases (PVD), which include diabetic foot and wound care, WarnerPatch reduces the treatment cycle by improving patient management for clinicians and healthcare providers.



What was the idea borne out of/what is the main challenge that the product is trying to solve?

PVD has a long treatment cycle which can lead to sepsis, embolism, amputation, or death. Depending on the patient status, the disease often evolves either too fast or too slowly and clinicians do not have a clear overview of the disease evolution at the current clinical assessment frequency. It often leads to late recognition of disease degradation and advanced complications.

In the UK, there are 5,000 unnecessary amputations a year of PVD patients due to poor patient management and long treatment cycles: with 50% higher chances of death within a year. It costs another £1m to the NHS per amputee. WarnerPatch will reduce these numbers to zero.

When did the idea first move into development?

The idea first moved into development in 2019.

Who is the main target audience for the platform?

Healthcare providers and clinicians.

Is the platform live? If not, where in the development stage is the project at?

No, we are aiming to commercialise our product in early 2022.

How did you find the Propel@YH application process?

The interview with all relevant partners was very challenging, especially considering the time available.

What have you found the most insightful or useful part of the programme so far?

The discussions about real-life cases and clear applicable insights on how the NHS works and how our innovation could integrate within the clinical pathway and procurement process.

What advice would you give to yourself if you were to apply again?



Trust that you know your product and its users enough to outstand a crowd of experts.

What were you most looking forward to learning about in the programme's masterclasses?

To know more about how to integrate innovations within the different healthcare providers.

"The legal session blew my mind".

– Dr Melissa Berthelo, innovator

Written Medicine – Ghalib Khan

Having recently taken on Matthew Swindells, former deputy chief executive of NHS England in an advisor role, Written Medicine are currently focusing on their NHSx funded project with NHS Bradford District and Craven Clinical Commissioning Group, Bradford Teaching Hospitals NHS Foundation Trust and Bradford District Care NHS Foundation Trust.

Ufonia – Dr Nick de Pennington

Having taken on two new staff members since the start of the programme, Ufonia is currently working on projects with the University of York and Bradford Teaching Hospitals, are in discussion with the Chinese University of Hong Kong and a number of US healthcare institutions.

Vastmindz – Nikhil Sehgal

Having taken on two new staff since the start of the programme, Vastmindz are currently collaborating with the National Physical Laboratory and the University of Leeds. They have also leveraged \$120k in cloud funding from Microsoft and were selected as runners up in the Tech Trailblazers 2020 awards.

Cyberliver – Ravi Kumar

Having taken on two new staff since the start of the programme, Cyberliver have extended their collaboration with Innovate UK and have been assigned an innovation manager to work with as part of the project extension. They are also in the advanced stages of securing further investments and collaborations.

