Ireland
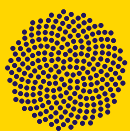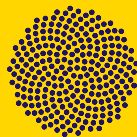# Where Digital Health Thrives
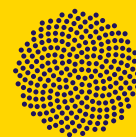
Irish Medtech Association
Ibec

biopharmachem Ireland
Ibec

Technology Ireland
Ibec

Creating knowledge from data

Brian Caulfield, Professor of Physiotherapy and Director of the Science Foundation Ireland (SFI) Insight Centre for Data Analytics at University College Dublin, on how connected health can help those at risk better manage their conditions.

"My research is focused on how we can understand and improve human performance and behaviour in health and sport, using data-driven methods, wearables and mobile technologies," says Brian Caulfield, who has an extensive background in physiotherapy. "This could be related to an older person who is at risk of falling as they move throughout their home, or understanding how an athlete is recovering from an injury like a concussion or a sprain."

The SFI Insight Centre for Data Analytics at UCD, of which Brian is Director, is one of Europe's largest data analytics research organisations with over 450 researchers. The Centre also has more than 100 partner companies, to help develop new data-analytic technologies in many application domains, including health and sport.

For example, the Centre has worked with Irish medical device company Kinesis Health Technologies on their development and validation of digital biomarkers based on sensor data collected from people performing simple clinical tests, such as walking and rising from a chair. "We use the data to understand whether or not these people are at risk of falling. By identifying people who are at an increased risk of falling, you can implement preventative measures to stop them from falling in the first place."

The SFI Insight Centre for Data Analytics has seen the successful spin out of Output Sports by two of its PhD graduates. Output Sports have brought laboratory grade sports performance to the field setting using a combination of machine learning, mobile and wearable sensor technologies. Their platform tests various aspects of athletic performance, and helps coaches to track and optimise their athletes' performance.

"We've also been working with the Irish Rugby Football Union (IRFU) to research and digitally measure risk of and recovery from concussion. We have been able to use data from wearable sensors to identify players who are at increased risk of sustaining concussion, and have been able to track recovery using the same methods."

"

We use the data to understand whether or not these people are at risk of falling. By identifying people who are at an increased risk of falling, you can implement preventative measures to stop them from falling in the first place.

"

Actionable information

Brian says connected health is beneficial in that it is moving healthcare from the hospital and clinic into the day-to-day lives of patients.

"Digital health is about having a new paradigm for managing people's health throughout their lifespan. This is by means of connecting the stakeholders in the system and making sure that they all have the right information in the right place, at the right time, to enable them to make the best decisions.

"Today, we have the capability of providing somebody with a powerful computer in their pocket or a wearable sensor on their body, and they can move throughout their daily lives or play sport as normal. We are then able to digitise their behaviour and performance, and try to understand how the information can be used to alert them to the risk of something bad happening," says Brian. "Or, remind them to take their medication."

However, Brian says there are challenges when it comes to turning the data collected into actionable information relevant to different stakeholders. "It's easy for us to capture digital information, be that through using devices like Fitbit, for example."

But capturing data is just the beginning of the process. "We do a significant amount of research to turn that data into actionable information that is relevant for industry and clinicians/coaches. It's not just a simple process of dropping a solution into the ecosystem and healthcare professionals start using it tomorrow. There's an organisational and personal behavioural change element that's required in the health system."

Sense of collaboration

Brian says one great thing about Ireland is that it's a small country with big ambition, "Being a small country means different parts of the ecosystem are accessible to each other. We have a strong sense of collaboration across sectors, different disciplines and even across our academic institutions. I think that's a huge positive."

He adds, "Ireland has been behind the rest of the world in terms of digitising our public health system. But there's a lot you can learn sometimes by not being first; we can learn from the mistakes of others. "And I think we can build a really connected system here if we have a combination of political will, open collaboration and open innovation."

"

We do a significant amount of research to turn that data into actionable information that is relevant for industry and clinicians/ coaches. It's not just a simple process of dropping a solution into the ecosystem and healthcare professionals start using it tomorrow. There's an organisational and personal behavioural change element that's required in the health system.

"

Ibec
For Irish Business

Ibec Head Office
84/86 Lower Baggot Street,
Dublin 2.
T: + 353 1 605 1500
E: membership@Ibec.ie
www.Ibec.ie/membership

Galway
Ross House,
Victoria Place,
Galway.
T: + 353 91 561109
E: galway@Ibec.ie
www.Ibec.ie/west

Cork
Knockrea House,
Douglas Road,
Cork.
T: + 353 21 4295511
E: cork@Ibec.ie
www.Ibec.ie/cork

Limerick
Gardner House Bank Place,
Charlotte Quay,
Limerick.
T: + 353 61 410411
E: midwest@Ibec.ie
www.Ibec.ie/midwest

Donegal
3rd Floor,
Pier One Quay Street,
Donegal Town, Donegal.
T: + 353 74 9722474
E: northwest@Ibec.ie
www.Ibec.ie/northwest

Waterford
Waterford Business Park
Cork Road
Waterford
T: + 353 51 331260
E: southeast@Ibec.ie
www.Ibec.ie/southeast

Brussels
Avenue de Cortenbergh, 89,
Box 2,
B-1000 Brussels,
Belgium.
T: + 32 (0)2 512.33.33
E: europe@Ibec.ie
www.Ibec.ie/europe