

INTERVIEW

In this exclusive interview with ONdrugDelivery's Guy Furness, Dean Minnock, PhD, of Innovation Zed discusses the company's unique origin story and digital connectivity add-on for injection pens. He dives into the value of digital ecosystems in the drug delivery industry, both for patients and for payers, as well as sharing a look towards the future as the company prepares to launch its third-generation add-on technology – DOSE.



DEAN MINNOCK,
INNOVATION ZED

Dean Minnock, PhD, has been Chief Executive Officer at Innovation Zed since 2020, leading market development, research and integration of Innovation Zed's range of connected devices. Dr Minnock has spent over 10 years working across commercial and research settings in the medical device industry. As an advocate of digital healthcare and the use of digital technology to improve health outcomes, Dr Minnock has spearheaded Innovation Zed's transition and growth towards providing an end-to-end digital health service for both pharma and medtech.

Q Where did Innovation Zed begin and how did you get into connected drug delivery technology?

A Innovation Zed was officially formed in late 2009. We are an Irish company based in Dublin, founded by John Hughes and William Cillo. John, a serial entrepreneur and a person living with Type 1 diabetes (T1D), had a software company in Dublin and William was one of his senior software engineers. While on a business trip in the US, John double-injected while moving between meetings, which sent him into a severe hypoglycaemic event that required hospitalisation.

It was a very difficult and scary period for John. Upon his return to Dublin, he realised that these cheap and cheerful disposable injection pens didn't offer a lot of value, and that he couldn't be the only person struggling with this. He discussed them over a cup of coffee with William, who then started drawing ideas on a napkin in the restaurant. This eventually led to a portfolio of products that we have now taken to market, which was born out of a need and first-hand experience.

I've been with the company since 2015. Depending on how you look at it, I was either employee number one or number three, but William and John were not treating this as their day job. When I joined, I was a physiologist by trade, in the middle of my PhD, researching the molecular regulation of skeletal muscle in people with diabetes, particularly Type 1.

My research exposed me to several clinical trials and I'd had interactions with a lot of people living with diabetes. Someone on campus suggested that, since I was doing novel research, I should connect with this start-up company also based on the university campus at University College Dublin (Ireland) that was doing something with technology for people with diabetes. So, I met John for coffee. From the get-go,

I saw what the team was working towards – building a solution to empower and enhance the otherwise basic injection pen. Having worked with the diabetes community for several years, I knew it was a significant and dangerous pain point. I was immediately intrigued.

I've had the opportunity to grow with the company, seeing various aspects in engineering, development, marketing and business development. I've watched both the technology and the sector of smart and connected insulin pens grow in parallel. It's been a fun ride.

Within the diabetes community, people are highly involved with their treatment on a very detailed level, and it has to be that way – T1D is a lifelong condition. So, there's a drive to get the device and delivery right. In many ways, diabetes is a proving ground and inspiration for a wide variety of drug delivery systems and technologies.

We see the degree of innovation and desire for new and advanced solutions in the diabetes space time and again. It drives the field along. We've seen it with patch pumps, automated insulin delivery (AID) systems and now with continuous glucose monitors (CGMs) moving into Type 2 diabetes (T2D). The drive to support the diabetes community often becomes the starting point for technology that can be applied to multiple therapies and patient groups. A lot of this comes down to the overall camaraderie and community spirit of people living with diabetes, as well as those working in its treatment. It's unrivalled in pushing the boundaries of what can be done with technology to improve lives in these areas.

Q Many readers will be familiar with Innovation Zed already but, for those who aren't, could you give an overview of the company, what you do and a rundown of your product portfolio?

A As I mentioned before, the company was founded to deliver technology that supports injection pen users, initially

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Figure 1: Innovation Zed's DOSE technology add-on device for adding performance tracking, data capture and connectivity features to injection pens.

in diabetes but with potential for use across many therapies. Our mission – which we still uphold – is to empower all pen users and not leave anyone behind. We aim to provide pen users with the same technology resources and support as those using pumps and AID systems.

We are an add-on device company, offering a retrofitted device for injection pens. Unlike many competitors who offer pen cap solutions, we went with something different. We kept the user in mind throughout, building our solution to work with all pens as a platform product, regardless of region or caregiver system. We went with an add-on approach rather than a fully connected pen to ensure access and flexibility of choice.

From 2010 to 2014, we focused on building our first-generation product – InsulCheck CLASSIC, which we released in the diabetes market. We learned about running a med-tech business and getting our product into the hands of those who needed it most. Initially, we adopted a business-to-consumer approach, advertising InsulCheck CLASSIC in consumer-facing articles and publications and selling it from our online store and a few select retailers.

When I joined the company in 2015, the vision for the technology was huge. We aimed for connectivity, seamlessly sharing data to mobile phones, and sought significant funding. To that end, one of the first things I achieved was securing a partnership with SHL Medical (Zug, Switzerland) in early 2016, which was transformative. SHL provided us with the vast resources, such as engineering, manufacturing and legal resources, that we needed to support our vision and the market's shift towards connected health solutions.

We then developed our first connected device, InsulCheck CONNECT, which timestamps injection events and connects via Bluetooth Low Energy (BLE) to a paired

app. By 2020, we had our first business-to-business partnership with Menarini Diagnostics (Florence, Italy), securing distribution across 44 countries in Europe. Our goal was always to create a more powerful technology for end users.

Around the onset of covid-19, we embarked on our DOSE technology project, which represented a step up in connectivity performance, capturing not only the injection event data and but also the dial dosage value (Figure 1). This posed new challenges for us, but we kept to our principle of supporting all pen types. After three-and-a-half years of development, we are preparing for a commercial launch in 2025 in the diabetes space. This project has opened so many doors for us with respect to bespoke development of our platform across other therapy areas, allowing us to expand beyond the diabetes market. However, our focus remains firmly on the commercial launch of the DOSE technology for diabetes next year.

Q What were the key milestones on Innovation Zed's journey up to this point?

A The inception of the company was in 2009, which was ahead of the curve for this sort of technology. The initial investment and real momentum came around 2011, including moving to our first office in the start-up hub at University College Dublin. From there, the development and release of InsulCheck CLASSIC came in 2012. There was a period of searching for different business models and opportunities, but we were operating direct-to-end-user sales until 2015–2016.

Around that time, we'd surpassed just over a 100,000 sales of the original device. The business-to-consumer model required quite a lot of effort in packing and shipping, but reaching that number was a significant milestone for us. In 2016,

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the biggest milestone was our partnership with SHL Medical. That was our first opportunity to step up to become a much more robust and well-funded company. We were able to hire strategically and grew from there. We then set about building InsulCheck CONNECT, our first connected product, which we launched in 2020.

The next milestone came in 2023. As we drew to the end of developing our DOSE technology, we achieved our CE mark. This was a very big milestone because the regulatory landscape has been evolving, and we've had to grow and adapt to it.

Q Staying with the DOSE technology, could you go into more detail about possible expansions into other therapeutic areas beyond the diabetes launch in 2025?

A We've developed a technology approach based around an add-on device for injection pens that uses a multi-sensor approach for monitoring the pen characteristics and determining what those translate to in terms of dosage and injection events. Because of this generic platform approach, our technology is applicable to a wide variety of pens. To date, we've not found an injection pen that we can't support with our technology.

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Over the past 12 months and looking forwards, we’ve been putting a lot of energy into understanding different markets, therapies and disease areas that use similar injection devices to diabetes that require daily, multiple daily or weekly injections that could benefit from our technology. This has involved having multiple conversations with both medtech and pharma companies. Medtech organisations are interested because we can offer a connected solution for their injection devices without changing the functionality of the pen, which would require them to go through regulatory processes again.

Pharma companies, on the other hand, are very interested in ensuring that the molecule they are offering in these delivery devices is being provided with this type of data and connectivity solution. We are dealing with both, and the areas finding most traction at the moment include fertility treatment, human growth hormone (HGH) and weight management. These areas are very exciting for us.

Fertility treatment and HGH are neck and neck as our top two therapy areas outside of cardiometabolic therapies. However, weight management is also emerging as a strong area, especially with drugs such as glucagon-like peptide 1 (GLP-1) and their benefits for T2D. There is a huge drive and opportunity for us to support injection devices for GLP-1 use in T1D, T2D and weight management.

Q Considering connectivity in drug delivery more broadly, why do you think digital ecosystems are important and what’s Innovation Zed’s contribution to the ecosystem approach?

A That’s an excellent question, which could probably be a whole article on its own. Digital ecosystems are vital, and their importance has been

demonstrated time and time again through research and commercial launches with ecosystem-centric approaches. We’ve really seen their success in practice.

The key features of an ecosystem environment are its reduction in burden and increase in confidence for the most important person involved – the user. In drug delivery, of course, it’s the user who needs to use this particular drug or is on this particular therapy cycle for their own health purposes. Any reduction in burden and an increase in confidence, along with an overall improvement in mental state and quality of life, are the biggest benefits of a digital ecosystem.

There are ripple effects that are equally important to their loved ones, such as the ability to have remote monitoring opportunities. For example, a parent can see that their child has taken their injection and how it balances with their CGM data versus their insulin.

From a healthcare point of view, the real value lies in the financial aspect. Physicians and caregivers can see how well their prescriptions or recommendations are working and can monitor and change them in almost real time, ensuring the best care at all times. Above that, the eventual payer, whether that’s insurance in the US or government-backed systems in Europe, can ensure that they are getting the most value for the system they have in place.

With a digital ecosystem, people can lead better, healthier and happier lives, with their treatment plans optimised for their needs. At the same time, this approach minimises the longer-term negative outcomes caused by poor health management. Financially, it’s very interesting and exciting for the payer as these costs are kept to a minimum, and the expense put into day-to-day treatment pays dividends down the line. I believe that, 10 years from now, we won’t be able to imagine going back to a situation where care doesn’t involve a digital ecosystem.

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How are we at Innovation Zed contributing to that? Our goal is to remain applicable and agnostic with our hardware and technology solutions so we can offer a plug-and-play solution for multiple ecosystems – we don’t have to be a bespoke solution for just one. If you have the capacity to connect via BLE, you can work with our product and collect beneficial drug and injection data into your ecosystem to maximise the benefits and outcomes.

We’ve seen that through our agnostic, platform-based, one-size-fits-all solution. It puts us in a very interesting position because we can have multiple relationships and collaborations with various vendors and ecosystems. Innovation Zed’s platform is completely interoperable.

In recent years, with the rising success and popularity of digital ecosystems, we’ve put more emphasis and focus on software and software builds. We’re looking at how we can leverage the ecosystem itself to maximise what we can get out of our technology. Instead of just saying, “Here is our device and the data it offers”, we’ve started to contribute a lot from our first-hand experience with users and ourselves. We’re now heavily investing in software creation to provide a software development kit to ecosystem providers around features and functionality that will enhance and maximise the offering of our hardware, adding significant value to the ecosystem overall.

The DOSE technology is a third-generation product for us, and it’s very reliant on software at multiple stages – from concept to development to maintenance. We’ve built a lot of software to support the product and, eventually, we realised that we needed to start offering that side of our expertise as well. Once we came to that realisation, it was a simple transition because we’ve already done a lot of the work. We’re servicing our future by enabling and backing up our hardware through our software expertise.

Q What’s the potential of Innovation Zed’s technology and what are your future plans?

A Innovation isn’t just in our name, it’s in everything we do. We view ourselves as a technology engineering team working on exciting technology solutions for injection delivery devices. We love working with this technology and we’re always learning. Even though

we've come to the conclusion of the DOSE technology's development, we're already well into the exploratory R&D phase of what a DOSE technology version two would look like.

Our focus is remaining squarely on injection devices for the moment, that's where our expertise lies and we're doubling down on that. So we don't have any plans to expand into inhalers or other types of drug delivery for now. We've built up over the years around connectivity and multiple-sensor approaches for reliable and robust solutions in tracking, monitoring and sharing data to optimise user outcomes – and that's where we're staying.

We have several new projects currently in the pipeline. It won't be too long until you hear about the next big thing we plan to bring to market. We like keeping our engineers busy and innovating all the time. We've got an exciting road map ahead.

Q Are there any final comments you'd like to add for our readers?

A One last thing is that we've found that an intermediary step in many relationships with pharma and medtech is that we can advance our activities to get a working version of our platform technology on these delivery devices much sooner in the development pipeline than they are expecting, making our device platform applicable for clinical studies, clinical data and usability projects. In so doing,

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we've unearthed a new market where we can quickly get our partner's injection devices connected, transforming them into a useful solution for clinical studies.

We can get a device connected in a matter of months, allowing medtech and pharma to leverage that opportunity in clinical research. We've found that this adds a lot of value as we've expanded to other therapy areas outside diabetes. We support the general life sciences and clinical research elements of projects. Our product can get devices connected almost in the blink of an eye to align with clinical and research needs. This is becoming another exciting part of what we do.

ABOUT THE COMPANY

Innovation Zed designs, develops and manufactures medical technologies – primarily connected and intelligent add-on devices for injection pens. The company is dedicated to helping multidose injection pen users. Understanding the challenges they face worldwide, Innovation Zed's focus is to support all injection pen

users regardless of their pen of choice. Its InsulCheck product range was developed to address the needs of users, caregivers and providers by simplifying and improving therapy management.

INNOVATION ZED

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