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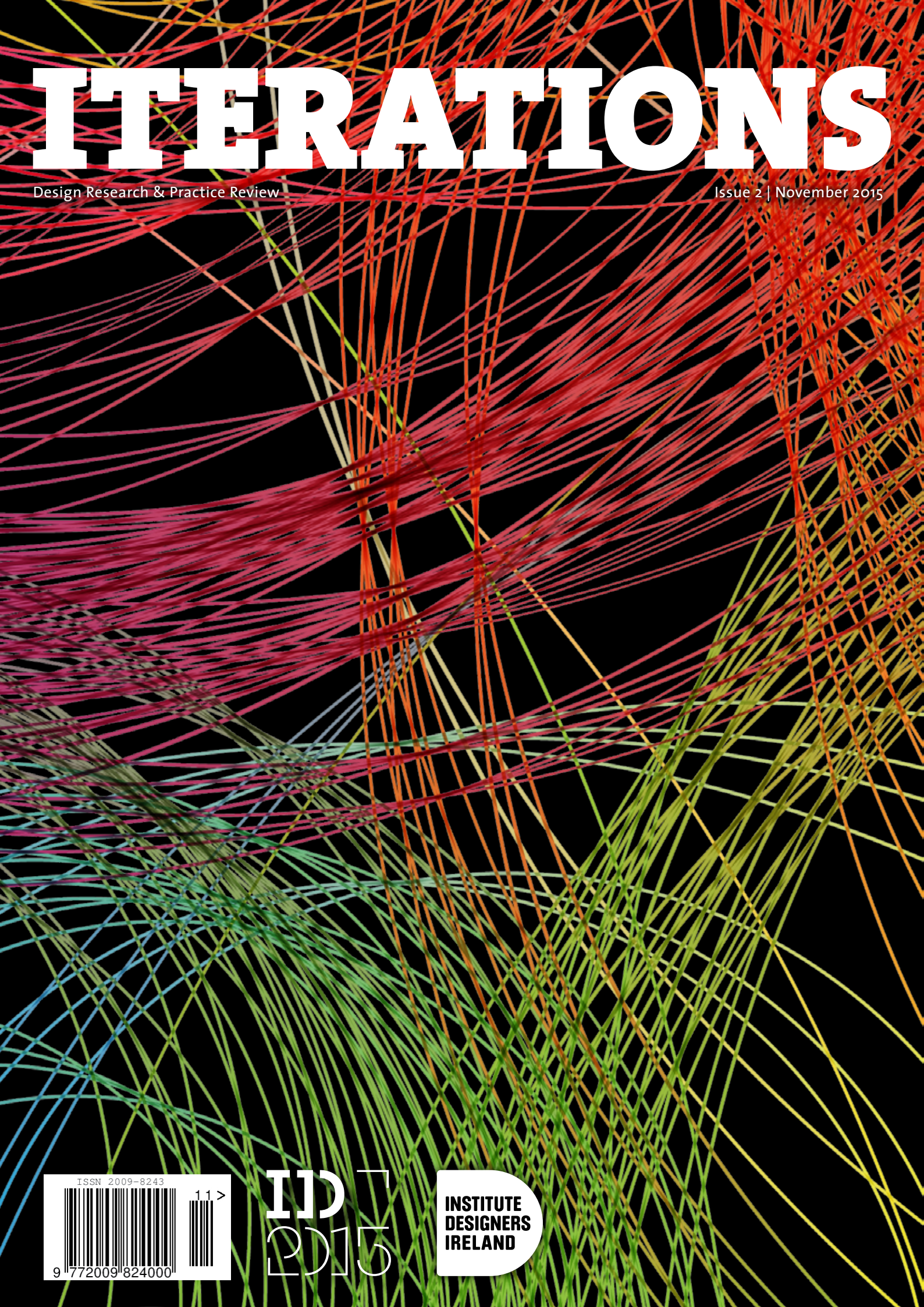

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Scriba

Design, iteration and a start-up journey

A Pocket of Ideas. The idea for Scriba was borne out of a practical and personal need that was not being satisfied by existing digital styli on the market. A love of well-designed products and technology harboured since a teenager (coupled with a career in architecture) sparked the vision of exploring a new opportunity and of making this idea a reality. The idea became a sketch, the sketch became a model, the model became a 3D print which I carried around in my pocket for six months. This crude 3D print became an ever-present, physical reminder to obtain user feedback for Scriba as a concept (and the potential it represented) everywhere I went. So I set myself a goal; I would build a prototype, launch it on Kickstarter and give it a year! Eighteen months later and with a team of twelve we have just completed a successful Kickstarter launch of Scriba—the flagship product of a new consumer electronics business.

Starting

What happened in the interim now seems like a blur, both in terms of the amount we attempted and achieved and the intensity of the experience—in stark contrast to the simplistic promise I had made myself the previous year.

Dublin is a very good place to start a business. Though small, it is very well connected. It is easy to network, to make valuable international contacts and to access world-class expertise. Gathering information on what supports were available for setting up a new businesses was relatively easy though wading through it and making sense of all the noise was less so.

A multitude of enterprise and start-up events provided a great hunting ground for meeting people who would later play a key role in the story of Scriba, though explaining a stylus with unique functionality proved less easy at the time!

I wrote out the first of many business plans focused on funding the project and was accepted onto the DIT New Frontiers programme, got a mentor, and *'nailed down'* some key concepts and ideas that provided a platform for moving forward.

I then discovered the Dublin hacker community, one of the many groups that have become a theme of our development, testing and marketing to date.

Sharing

Barriers to entry in the electronics industry are high, which most likely explains why the number of hardware start-ups are few and far between. However, a new group of hardware companies is emerging thanks, in no small part, to more accessible tools as well as hardware meetups and hackathons. These events are luring budding designers, inventors and hobbyist engineers from box rooms, garden sheds and garages all over the country.

These collaborative enterprise-focused events are now actively promoting the development of great new hardware ideas—and new companies—in the areas of internet-of-things [IoT], wearables and new ways of human-machine interaction and interfacing. They also offer the designer an opportunity to interact with engineers and technologists from the outset of a project in a way that is often missing in industry.

Through the hacker community we met Kickstarter-veteran Mike whose extensive skills in micro-electronics and firmware proved invaluable in realising our product. His tardis-like garden shed in Marino where Scriba's PCBs were designed proved a humorous contrast to the ultra hi-tech PCH Lime labs we were to later visit in San Francisco.

Scriba was developed on a budget and we used what we could get our hands on to make it happen. We chose the free, open-source Blender 3D software for creating mock-ups as its sculptural and modelling

tools were the most appropriate for this type of design. Though unashamedly hard to pick up, Blender incorporates an extensive international community of enthusiasts across multiple creative disciplines that includes artists, designers, scientists, students, VFX experts, animators and game developers. Without Blender and the support of this community we would not have been able to constantly tweak, test and refine the design as we gained greater understanding of the ergonomic and physical requirements of this product.

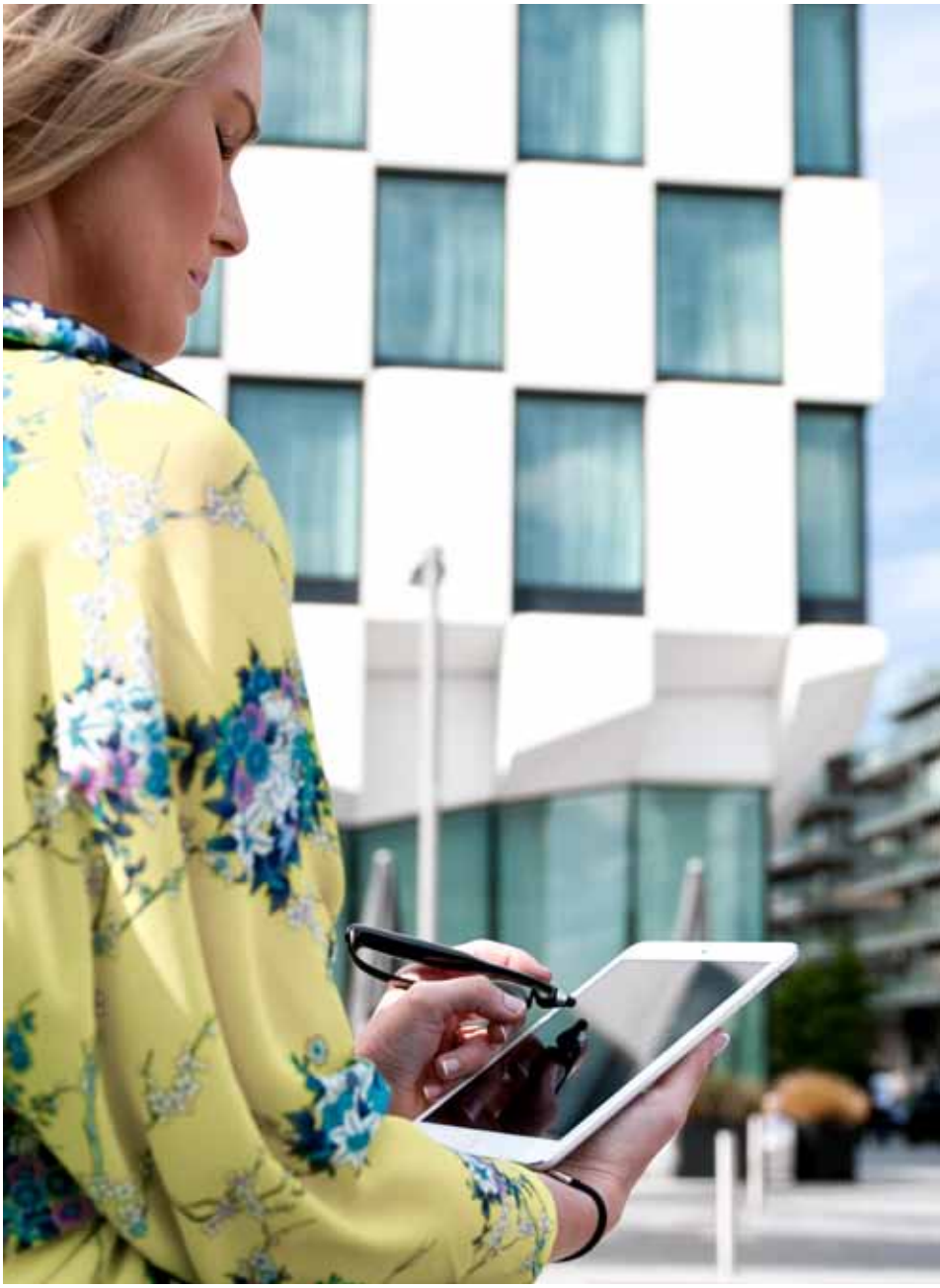
Designing

We recognised at an early stage the importance of the fact that we were designing a product for people, and we kept that insight at the forefront of all our operations.

We wanted to make a stylus that was comfortable to use, and so, rather than just reinventing the pen, we took a step back and examined the hand—how we hold things and how we physically interact with objects and interfaces. Scriba developed in response to the natural movements of the hand, capturing the intuitive, physical gestures that are inherent in using such tools. Scriba is not merely a digital equivalent of a traditional pen. In a digital environment, the design of such a tool is no longer constrained by the need to contain ink or pencil lead and so there is a greater opportunity to design around the user's experience instead.

Maintaining simplicity was important for many reasons, including cost. Getting rid of complexity in the user experience, by removing the buttons for instance, was crucial in making something that even a child could understand and use. We designed Scriba to be truly intuitive. Our unique *"squeeze-motion"* technology captures the natural hand movements of drawing, and engages the user in a way that maximises the benefits of digital design.

The opportunity of adding functionality to this new form opened up a range of possibilities that led to a set of novel features, that in turn became Scriba's USPs. This was one of our Eureka moments. What makes Scriba unique is the highly-responsive squeeze motion. It changes the way the user interacts with their mobile device when compared to



the motion involved with a button-controlled stylus. Scriba's squeeze-motion can be programmed to provide instant access to a whole range of tablet-based, creative software functions without changing settings or having to fumble with options.

Testing

We are not a large corporation with a limitless R&D budget, but that doesn't mean that we can't and shouldn't test, test, test! *'Getting it right'* is still crucially important. An object as tactile and personal as a stylus really needs to be tested as a physical prototype. Viewing digital designs on a

computer screen is not enough. How it feels really matters and that's why we didn't want to leave anything to chance.

Access to relatively cheap 3D printing combined with twenty years of experience in modelling complex 3D geometries proved an enormous advantage and enabled us to quickly mock up, test, evaluate and refine the nuances of the design and to evolve it with real efficiency.

We have made over 100 3D-printed prototypes. These have been produced to iteratively test all aspects of the design including ergonomics, weight, integration with electronic components and manufacturability—all at low cost and using in-house skills and equipment.

We did not, however, have instant access to the expertise required to overcome many of the significant roadblocks we met along the way. So, if we needed a clearer understanding of complex datasheets or a steady hand to solder intricate components, Dublin's community of hackers and tinkerers at TOG [http://www.tog.ie]* were always on hand to provide the expertise that enabled us to progress. We are very grateful to them for their input and support.

Supporting

A big boost to the development of our project and the company as a whole, was being accepted on to the DIT-Enterprise Ireland Hothouse New Frontiers programme. It meant giving up the day job, but sometimes you have to take a leap and commit to something that you believe in. That decision is so much easier when you have the support of a mentoring programme which has continuously challenged and driven us forward. It has also given us a roof over our heads!

Enterprise Ireland's innovation vouchers have enabled us the benefit and support of third level research groups. Tyndall National Institute at University College Cork supported the specification of our micro-electronics while the Centre for Industrial Services and Design at Athlone Institute of Technology [AIT] are assisting with the Design for Manufacture [DFM] process including 3D CAD surface modelling. For the budding designer this type of research support can be crucial for testing the practicalities in developing a new product.

Researching

An early concept proposal was tabled with possible end users and became the starting point for discussing and identifying their requirements. Early input from these individuals helped shape and define a problem. What we learned during these conversations highlighted beyond anything the need to remain close, listen to and observe users and to be broad-minded in interpreting their actions. These people became stakeholders and a key source of innovative input.

Their many suggestions for additional functionality were a great temptation! It is very easy to become a victim of 'feature creep'. However, we strive to remain close to our core values of user experience and design rather than technological embellishment.

Twitter became our tool of choice for market research as it allowed us to conduct international research with our target markets and within our budget (free). Many stylus users are connected to each other through online communities and social media. We made contact with and took advice from over 600 designers, illustrators, architects, artists and general tablet device users who we have returned to on a number

**[TOG is a hackerspace based in the centre of Dublin, Ireland. It is a shared space where members have a place to be creative and work on their projects in an environment that is both inspiring and supportive of both new and old technologies. http://www.tog.ie]*

of occasions in order to further validate our assumptions.

Kickstarting

We chose Kickstarter as a platform on which to launch Scriba because, with a history of successfully crowdfunded stylus campaigns and a strong community of early adopters, it was the ideal platform for product validation among market influencers. For developers with a large budget it offers a relatively low-risk environment in which to launch and market test a product.

Although we put off the campaign a number of times—pending a satisfactorily completed version of our prototype—it still served as a milestone to work towards which was important for the team.

Despite all our research and contact with other Kickstarters, nothing really prepared us for the campaign. The run-up comprised of an exhausting round of press releases, contact lists and heated discussion over messaging. You enter the process exhausted and so maintaining momentum is challenging. Instead of sitting back and watching the numbers fly we found we had the opportunity to hone our sales skills!

We knew generating hype was paramount to the successful outcome of the campaign, and so we mailed and messaged every contact in our LinkedIn and leveraged all the relationships we had developed to-date. And what a job we did! Wallpaper*, ArchDaily, Creative Bloq, PMSK ... some of the biggest names in online publishing featured Scriba. With visits averaging 1,000 per day to our website we gained a strong foothold for our brand.
The campaign was a success and has provided valuable experience, learning and validation as we enter a new phase of the business that will see Scriba through manufacturing. It has also provided a strong platform for attracting further investment in the business.

Journeying

Over the past 18 months we've heard and used the expression *"hardware is hard"* many times; the wide range of inputs and outputs required in developing hardware means it is more like creating a group of businesses rather than just one. Hard work, dedication and resilience are par for the course. Bringing the required people, assets and skill-sets together requires architectural oversight and the ability to plan and manage a variety of major ongoing tasks concurrently.

Establishing a hardware business is also very daunting and exciting at the same time. It represents an opportunity to turn a seemingly simple idea into something that can be seen, used and enjoyed by millions of people.

Scriba was a journey - a journey from an idea that took shape first in my mind, which became an intriguing concept in other peoples as we discussed the possibilities, through prototypes to a physical functional object. The journey became a focus - and more than occasional obsession - and while the many ups and downs needed to be tempered by a strong vision, I am always looking to the future, always wondering *"what is the next idea that I would be carrying around in my pocket?"*