"The most important skill in marriage is communication," my late father-in-law said as he told a story at my wedding that stole the show. We all thought he was joking, but no, it was much better than that. "I stayed in a Moscow hotel during the 1980s," he continued, "and one day one of the lifts was not working. They knew that Western guests expected a degree of customer service, so they put a sign on the lift reading: ‘Dear guests, we are sorry, but today you are unbearable’.

The lesson? Keep communicating, whatever the barriers or the news, but also try to make that communication relevant, timely and clear. Those words still ring in my ears after 20 years and have proven to have many parallels in our professional R&D lives.

People believe that certain individuals are natural communicators—doctors, lawyers, politicians and policemen—but R&D scientists? Science, the search for shared knowledge, is actually all about communication, and given the right environment, R&D folk are naturals.

When you think about where active communication really occurs, you may imagine it’s all about scientific conferences, great papers and media announcements of the next big thing. It’s not. That is just the tip of a massive ‘shareberg’. In 2010, the writer Steven Johnson reported at TED his research around where scientific innovation really takes place. He discovered that most real innovation occurred through social interaction in regular face-to-face lab meetings. It is here that ideas are shared, data challenged, and concepts rallied as hard as tennis balls on an ATP tour. When shared with others or added to existing concepts, ideas can become innovations.

The scientific process demands communication. Let’s think about the hypothesis “an idea based upon facts already known”. No communication, no facts, no starting point. Methods and materials are also vital shared assets. For example, Wiley’s Current Protocols, which form the basis of much biological experimentation, has been developed over years of communication, like pebbles knocking into one another in a stream, gradually being rounded and perfected. At the end of the scientific process, conclusions are constructed as a one-sided conversation with an imaginary colleague; anticipating questions, challenges and stimulating debate.

Cycles of experimentation gang together to build projects, departments, and even entire R&D organizations (Fig 1).

Together, scientists are naturally social creatures, however, if there is a stereotype or characteristic of R&D folk, it seems to be that they are very much better at communicating locally or personally than between groups or over distances. Scientific literature was the first attempt to overcome the scale and geography of this problem, but as we all know, its style and content is not interactive. Sadly, just a little separation, such as a move to another floor or building, can interrupt the interaction. The rich content of scientific dialogue is one of the first things to disappear. When you think about it that way, the collective loss of innovation is frightening, and despite the connectedness of the internet, there are more barriers being put up each day.

R&D organizations attempt to optimize and group multiple disciplines into logical structures to exploit each day their most clever people. Companies have tried grouping by discipline, region and small business units, however, there is probably not a winning model based on this alone. Organizational structures define barriers, therefore, the critical function of each part of the organization is really to understand how to work best across these interfaces and maintain the flow of ideas.

The rise and fall of the document

Hundreds of years of scientific literature have defined our perception of how science is formally communicated. This has been further adapted to the use of documents and reports as the container for R&D information sharing. Currently, CROs (and many internal teams) spend 25% of their time writing reports rather than talking science. This happens within organizations too. Apart from where regulators require structured documents, report creation is a waste of time and money. Data and reports should be available by query in real time. We now live and work in a data-centric age where even canned scientific journals are being challenged by immediate, crowd-reviewed data sharing.

Collaboration

Chris Thoens, MD of External Innovation and Knowledge Management at P&G said, "Only do what only you can do." Collaboration proves that even the largest companies should focus on what they do best. The rise of collaboration brings with it even higher barriers to ‘social science’. The purpose of the collaboration is to generate trusted data, either in a discrete, shared or open way. So, what happens to it?
thinking. This is great between a coffee in the canteen the clash of challenge upon hard fact to generate new data to stimulate discussion, debate and innovation; Concepts, ideas, protocols, perhaps? All of these. to the basics. What do scientists in R&D talk about? So, how do we overcome these barriers? Let’s go back Getting scientists social again PowerPoint™ rather than peer-to-peer. does today, collaboration will not be as fruitful as it could If socializing one’s science remains as tough to do as it network, so if we can enable this socializing, we will challenge or recommend to co-workers in a peer-to-peer and comments stimulated by that science are both shared and stored. We employ clever people for more than just algorithms. Everyone will have an opinion on what they see, like, -business and information properly and delivering it through software, but it is inspired by a desire for effective business change. It is driven by organizations deciding to break down the barriers that are stopping scientists from being scientists and by the understanding that the dialogue between colleagues is as important a piece of data as the data they are debating. If we are to maximize the chances that R&D scientists will actually make use of this social capability, then where should it sit? The rapid expansion of the environment of electronic notebooks provides the key. Nowadays, we have an increasingly digital, data-centric scientific world within R&D. Good notebooks are not just digital sticker books that replace paper with glass, they harness the power of computing and become enterprise information systems. Placing a social capability alongside the scientist’s day-to-day generation and storage of data is the best and most effective place for it to be used; separate systems just produce more barriers. Leading R&D information systems like IDBS’ E-Workbook now enable secure social tagging and conversations around experiments, and even the individual data within them. Telling your co-workers that they should look at the experiment or real-time report to check out this image, trace or graph is just what you’d do around the canteen table. Pointing out that of interaction is not just “Twitter-esque” noise, it is the brains of the organization doing their job: adding to the sum of knowledge. The concept of social interaction is not new to science, it is intrinsic to it. If we are to grasp the opportunity to improve social interaction and capture more of the knowledge of our brightest and best, then we need to a effective social tools within the digital scientific environment. Multidisciplinary enterprise information systems are able to perform this role inside and outside the firewall. Without grasping this opportunity, effective collaboration will remain ‘unbearable’. 1 The Innovation Playbook: A Revolution in Business Excellence, Nicholas J. Webb, Chris Thoen 1

Achieving this is actually all about managing data and information properly and delivering it through software, but it is inspired by a desire for effective business

Chris Molloy, VP Corporate Development, IDBS. Chris Molloy has an international career track record of innovation and positive business change in life sciences and high tech companies. Chris started his scientific career at Glaxo in 1990, leading multiple in-house and collaborative research projects. He was also a pioneer in the introduction of industrial IT, process and automation solutions to meet the needs of drug discovery, dramatically improving the productivity and quality of research efforts worldwide. Leaving Glaxo in 2004 Chris moved into biotech and to Asia as Chief Operating Officer of Medis Pharmaceuticals, a drug discovery biotechnology company headquartered in Singapore. Here he was responsible for business planning, partnering investor relations, fundraising/M&A. In 2007 Medis was a Scrip Award winning R&D biotech and part of Parex Biosciences’ Focus 37. Returning to the UK in 2010 Chris joined IDBS (www.idbs.com), a high-growth international software company focused on improving R&D and Healthcare organisations through data and process management. Since 2008 IDBS has enlarged its business across multiple R&D verticals and secured a strategic early-leader advantage in the Translational/Personalised Medicine arena. Chris has held number of Board, leadership, advisory and science roles and is currently a non-executive Director of IDBS (www.idbs.com) a specialist global life sciences and Healthcare executive search firm.