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Data sharing – remotely

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As the Covid-19 pandemic swept the globe in 2020, remote working emerged for many as the 'new' normal', with every industry forced to adapt to the significant changes to working life. For many in non-scientific industries, it might be simple enough to carry on working with the addition of *Zoom* and *Google Docs* to keep workflows running smoothy, however, for those in scientific, evidence-based industries, where the collection, structuring and sharing of data is vital, the impact has been more complex and challenging, highlighting concerns about the long-term viability of our industry in its current state.

The changes brought about by Covid-19 have been wide reaching and varied. Social distancing requirements have imposed limits on the number of people allowed on site, with new shift arrangements or reduced working hours put in place to ensure staff safety. In March 2020, occupancy of industrial labs fell from 100% down to just 30% and while we have subsequently seen a steady climb back up, attendance is affected by scheduling and shifting measures, which often result in disjointed working patterns, without nearly the same level of interaction with colleagues.

In practical terms, the strict rules on admittance to labs mean things like *ad hoc* departures to make telephone calls are forbidden, and restrictions on travel have made it impossible to visit colleagues at other locations. Meanwhile, the majority of teaching and non-industrial labs continue to be closed.

As a result, productivity in labs has decreased and an increasing level of data and information remains dormant or siloed.

Perhaps just as worryingly, it has highlighted an additional issue. Historically, face-to-face communication in the lab has enabled not only the sharing of information within teams, but importantly, the sharing of knowledge from more experienced scientists to those new to the profession. If close proximity working within teams in the lab is reduced for a considerable length of time, which now looks increasingly likely, how will the next generation of scientists learn?

In short, in an industry with evidence collection at its heart, the natural networks through which evidence was collected and information shared have been seriously impaired and, in some cases, broken.

It is this area, the collection, structuring and sharing of data is where I believe technology has the greatest role to play in bringing chemistry forward – allowing us to digitally impart our knowledge and hands-on experiences in the lab to another person, without the requirement physical close proximity.

The global response to the pandemic has shown us the potential for rapid technological advancement in times of crisis. Even by April 2020, with the initial effects of the pandemic only just setting in across many continents, Microsoft CEO Satya Nadella described having seen two years' worth of digital transformation in just two months. And, of course, the development and rollout of several Covid-19 vaccines within less than 12 months represents a triumph of scientific and technological innovation in pharma, enabled in part through the provision of open data access and cross-border collaboration.

What lessons can this successful harnessing of technology and remote data sharing teach the remainder of the scientific industry?

While cloud-based data collection platforms are commonplace across many industries, they are still only nascent in ours. And yet, having the ability to access and share your organisation's chemistry data in real time with colleagues will be a vital component of that transformation to more efficient working practices, significantly increasing yield and accuracy of chemistry, but also the ability to embed knowledge into the process, such that any other scientist wherever they may be may learn from you.

DeepMatter's *DigitalGlassware*, for example, is a cloud-based digital platform that allows instant and secure sharing of reaction methods, processes and results across your organisation, anywhere in the world.

Since the beginning of the pandemic, we are also seeing automated chemistry moving up the priority list for many companies. With completely automated synthesis, chemists sitting at home could program a robot to keep the lab working. These two elements alone: automated chemistry and digital data collection, structuring and sharing, have the potential to transform our industry, not only increasing productivity, but serving to ensure knowledge and experience can be imparted to the next generation, under whatever circumstances the 'next normal' may throw at our industry.

Science thrives on teamwork and the seamless sharing of information, which may seem hard to achieve when you can no longer work face-to-face with your team members. But it also relies on innovation: finding new and more efficient ways to reach a goal. Just as we have rapidly become used to conducting meetings over video calls, we now need to look to technology to bring chemistry into the remote working age.