SCIENTIFIC COMPUTING WORLD

breakthroughs

Digital transformation in the lab, and the role of cloud technology

Quinton Classen and Thomas Schmidt, Agilent

Agilent's Quinton Claassen and Thomas Schmidt discuss how cloud technology can help accelerate the path towards digital transformation

Can you tell us about yourself and your expertise in this area?

Quinton Claassen: I joined Agilent in 2012, initially as a field service engineer, having worked in the pharmaceutical industry previous to that, I then moved into the informatics area, mainly focusing on large-scale implementations of informatics solutions, both on-site and in the cloud. More recently, I've moved into the digital lab solutions role – my main focus is on cloud solutions and how we can utilise the cloud.

Thomas Schmidt: I am the Marketing Director of Agilent's software informatics solution and I'm responsible for digital solutions. I have previously been responsible for the product management of the Open Lab portfolio and have spent my whole career in this area, responsible for developing and promoting several management systems, instrument control and laboratory execution systems.

How does cloud technology fit into the larger picture of digital transformation?

TS: Before we define digital transformation, we must define what we ultimately want to achieve with a digital transformation. Of course, the ultimate goal is the digital lab. However, the digital lab should not be a goal but a means to an end. The purpose of digital transformation is operational excellence. The paradigms of a digital lab will help us to get there. The two major paradigms are a high degree of automation and an authentic digital user experience.

Even operational excellence has multiple dimensions. On the one hand, it's really about optimising the laboratory operation by improving sample turnaround time, ensuring the quality and results, and potentially reducing costs or operational margins, because labs are a business. That is where a cloud system can contribute.

QC: There is also a dependency on internet connectivity. Cloud-based solutions rely heavily on a fast internet. So, in case of outages, there's a risk of impacting business operations. Users need to ensure that they've got backup solutions in place to mitigate these sorts of risks. When they want to move to the cloud, users should analyse the different cloud providers and the pros and cons of each one because, once they adopt a cloud-based provider, it can be both complex and costly if they want to move from one cloud provider to the other.

How can an organisation start evaluating or adopting cloud technology?

QC: They need to understand clearly why it wants to move to the cloud: can its current workflows and processes move to the cloud? These are all the kinds of things that it needs to investigate and thoroughly look at before jumping to the cloud. Very often, the motivating factor when moving to the cloud is cost – the capital expenditure on infrastructure. The organisation needs to evaluate all aspects, not just cost. The most important thing when it decides to move to a cloud is to look at it from the end user's perspective, because the end user will be using the solution every day; they are involved in the workflow on a day-to-day basis. It's the end-user perspective that's very important and sometimes that's forgotten. An organisation is evaluating costs and looking at different aspects as well, but it forgets about the end-user experience, which is the most important thing because the end user will tell you as soon as something's not working.

Data volumes are getting bigger and bigger so, if you're looking from an infrastructure perspective, data storage would be one area that can benefit from cloud technology. Purchasing large storage devices and having them on-premises can be very expensive. It is challenging to predict the growth of data storage requirements. Whereas, if you move your data storage initially to the cloud, it's a pay-for-what-you-use in the cloud. So, the organisation will only be paying for what it uses, and the cost will increase as the data storage increases. It can slowly start transitioning, such as its on-site infrastructure and large servers, which start being outdated from an operating-system perspective. So, when Windows becomes obsolete or moves out of support, instead of purchasing new hardware, it could also start moving those sorts of applications into the cloud. It's a step-by-step process, not a big-bang approach. These are the kinds of things that it can start slowly migrating over to the cloud.

TS: We must consider that a digital lab is a connected lab. Cloud infrastructure enables more labs, specifically smaller and mid-size labs, to go on to the digital transformation journey with the opportunity to focus more on the actual lab operation, rather than establishing advanced IT operations. I think the other aspect is that the ultimate goal is a complete Software as a Service (SaaS) system. We already talked about consumption models, but I'm talking specifically about browser-based applications. When talking about a SaaS ecosystem, it eliminates local deployments and reduces validation costs. There are also some secondary aspects of going to such an ecosystem.

What are the barriers to the development of digital transformation?

TS: There are a few aspects. First, is, of course, a pure project aspect. Digital transformation is not something the lab manager should do on top of their daily work or lab duties. Digitalisation is also a very disruptive change for the people at the bench, so you have to take your lab staff along on this transformation in terms of user acceptance.

I also think digital transformation is more than turning paper into pixels. You also have to rethink how the workflows are conducted and not just take what you have now and try converting it into electronic processes. This is the reason why, for example, digital transformation for an existing laboratory is more complex than if you start over. For example, a lot of pharma companies have started digitalisation. They have hundreds of products, and hundreds of analytical methods and this is a huge undertaking. When you start from scratch with digital paradigms, this can be much easier.

Quinton Claassen is a Digital Lab Solutions Manager with 24 years experience in the pharmaceutical industry with particular expertise in bioanalytics, clinical pharmacology, CDS systems and informatics, IT infrastructure and cloud technologies. Thomas Schmidt is Digital Laboratory Ambassador and Marketing Director for Digital Solutions at Agilent.