# Digital Transformation in Research Laboratories

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The COVID-19 crisis has amplified the discussion around digital transformation in many segments of our society, including laboratory documentation and communication.

Laboratories outside of Pharma GMP areas most often do not want to put in the effort required for equivalent workflow validation and documentation as it is perceived as making development processes slow, inflexible and more expensive than necessary.

On the other hand, reproducibility of scientific results is imperative. This is often hard to achieve, especially when reproducing results described in some of the older scientific papers.

Non-reproducibility may be the result of a non-calibrated analytical system, transcription errors, inadequate measurement uncertainty conditions or even fraud.

A feasible strategy to avoid these scenarios is utilizing the "technical controls" used for pharma processes to ensure compliant electronic records, but with reduced validation documentation effort. Such controls enforce calibrated measurements and seamless electronic workflows. They significantly reduce the amount of transcription errors and improve the data quality.

"Smart components" support seamless workflows and provide plug and play functionality. "Aware components" communicate their identity along with certificates and tolerances to the analytical instrument. The instrument is able to transfer this information along with the measurement results to a result record for full traceability and confidence in the results.

At METTLER TOLEDO, we have many scientists working to develop better tools for active scientists who need to invest their energy in efficient research and not in the administration of processes that can be automated.