Robotic Process Automation: A Novel Method in Streamlining Digital Pathology Validation

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Background:

There has been significant momentum in the adoption of digital pathology, since Philips's announcement of FDA clearance for use of its technologies in primary diagnosis in 2017. Clinical validation is a key component of the preparation for this transition, and CAP guidelines recommend a minimum of 60 cases be evaluated using the digital platform. RPA (Robotic Process Automation) is an application of technology, governed by structured inputs, aimed at automating processes such as data entry. In this study, we attempt to introduce a novel method for streamlining the validation process, using RPA technology. We selected UiPath Studio (New York, NY) to design automated case accessioning processes visually, through diagrams and flowcharts, and optimized our digital pathology validation workflow.

Methods:

The validation process can be a daunting and labor-intensive task. Most institutions use paper sheets or excel files to distribute the required case information to pathologists, and to document glass slides and corresponding diagnoses. All cases were accessioned in the LIS test environment, which was interfaced with the Philips scanner. We automated the accessioning process by recording a sample case accession in UiPath and then modifying the recorded diagrams and logic to further customize the process for automation across a variety of use cases. We selected 69 archived cases and extracted the required data for accessioning in excel format using a customized SQL report as structured input to feed the RPA logic.

Results:

Using the UiPath RPA, we decreased the accessioning time of a validation set from 2 hours and 22 minutes to only 20 minutes. We also noticed that automation increased staff satisfaction and eliminated human errors in data entry. Accessioning the cases in the LIS using UiPath Studio allowed pathologists to experience improvements in workflow, made possible by implementing digital pathology, early on during the validation process. This accelerated the learning curve for participants and provided opportunities to further evaluate and improve the future workflow process.

Conclusion:

RPA is an emerging technology practice applied by companies to streamline enterprise operations and reduce costs. Integrating RPA into digital pathology validation will enable pathology labs to include a more substantial number of cases without increasing human resource requirements and risk of errors.