Genomic Sequencing and Analysis with Aviti in a High-Throughput, Multi-user Environment: Introducing AvitiOS 2.0 and Elembio Cloud

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Element Biosciences introduces new software tools that work together to facilitate the management and operation of the AVITI instrument in high throughput, multi-user environments. Onboard FPGA completes primary analysis, including onboard demultiplexing for upfront indexing assignment metrics. Additional real-time metrics include %Q40, average Q-score, base composition, and a thumbnail view of the flow cell. The intuitive and purposeful AvitiOS user interface is designed to promote swift and error free run setup, with manifest and reagent validation before sequencing. Using the flexible start, AvitiOS can leverage each side of the instrument independently, leading to faster run turnaround time and greater instrument utilization capability.

Elembio Cloud allows users to integrate, verify, and manage a connected AVITI fleet, including remote run configuration, real-time remote run monitoring with QC statistics, analysis flows, and account management. Using the rich desktop and mobile friendly interface, users can in track in real-time a greater range of QC statistics to monitor run execution and quality. A complete record of historical run data is maintained, enabling timeseries analysis trends or auditing. The Bring-Your-Own-Bucket (BYOB) capable AvitiOS streams bases directly to leading cloud providers AWS and Google storage buckets. Data are owned in customer preferred locations, preventing the need to shuffle data off-instrument after sequencing and streamlining entry into secondary analysis. Using analysis flows to integrate with compute providers, Elembio Cloud initiates analyses on the users' behalf through secure role-based permission. The AWS Omics platform, an early partner, features a federated bases2fastq workflow execution that automatically launches on run completion, generating FASTQ files roughly an hour after run completion. Bases2Fastq supports key features including UMIs, index FASTQs, and 0-performance cost adapter trimming sensitive to indels and short adapters. Accounts can be configured with the customer preferred identity provider bases on OAuth2 and OIDC compliant Single-Sign-On (SSO).