Exemplar LIMS and PacBio RS

Introduction

Pacific Biosciences' third generation DNA sequencing system: the PacBio *RS* incorporates a novel, single molecule sequencing techniques and advanced analytics to reveal more biology in real time called SMRT™ (Single Molecule Real Time). The PacBio *RS* conducts, monitors and analyzes biochemical reactions at the individual molecule level, according to your specific protocol and experiment design. Long readlengths, intuitive operation and absolute throughput flexibility combine to deliver the data you need, faster than previously possible.

Pacific Biosciences presents industry best instrument and software interfaces that enable high levels of integration with third party software solutions. Exemplar LIMS is able to take advantage of this with its workflow driven architecture and plugin framework so that joint customers can automate key portions of the *RS* pipeline from sample preparation through sequencing and analysis. This means that Exemplar LIMS is the ideal application not only for managing samples, but for managing the *RS* workflows and integrating with the RS instrument.

Library Preparation and Sequencing

Exemplar has pre-built workflows for step by step tracking of *RS* library preparation and sequencing. These workflows are typically configured to meet each client's individual data tracking and SOP requirements. The workflows guide the user through each processing step and include intelligent branching that adapts the workflow process as required when sample preparation steps vary depending on details like Target Shear Size.

Exemplar has been integrated with the RS device and does all of the following operations:

- Auto-create and upload sample sheets to the RS device
- Retriev Job Status information
- Retriev Reagent Mixing Job Status
- Retrieve Primary Analysis Job Status

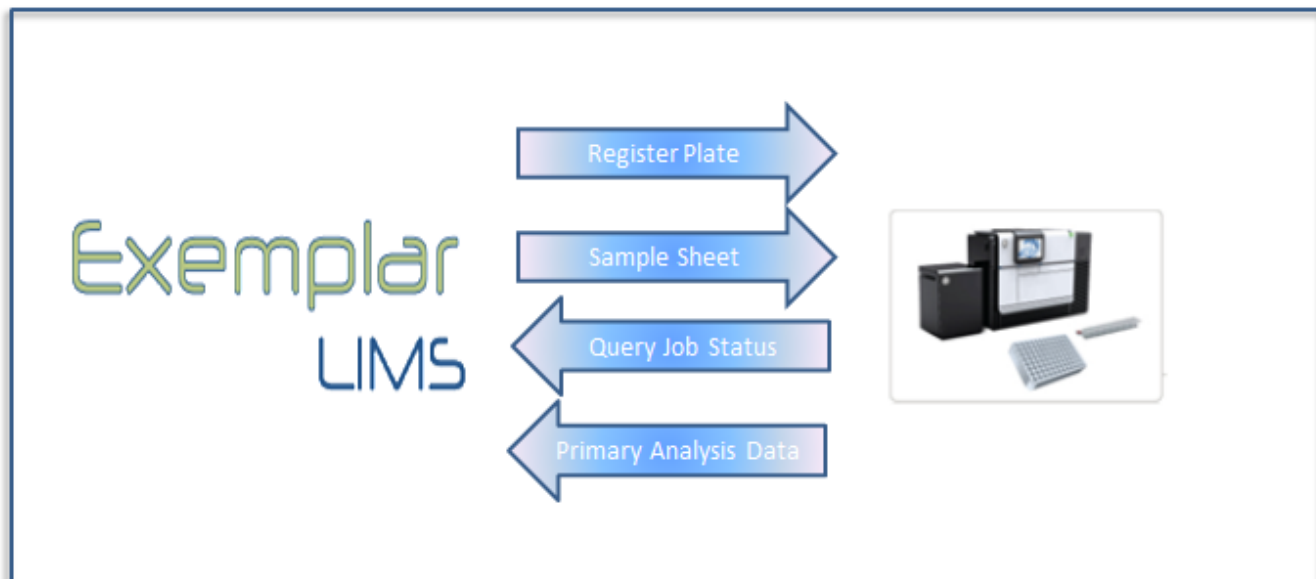- Obtain information about a Primary Analysis Job

Figure 1 - Exemplar LIMS and *RS* Integration

The Analysis Pipeline

The RS device includes built in tools to perform secondary analysis tailored to work with the RS output. Exemplar LIMS is able to control and monitor these processes through the programmatic interfaces exposed from the *RS*. This enables Sapio to do all of the following:

- Manage reference sequences
- Manage user accounts and passwords
- Manage groups of users
- Manage instrument output (SMRT® Cell data)
- Manage secondary analysis jobs
- Manage protocols

For more information or a product demonstration email Sapio at: sales@sapiosciences.com .

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