



# Symphony Genomics Workflow Management System

Managing, Integrating, and Delivering Your NGS Data and Results



**Personalis**<sup>®</sup>

Precision Genomics for Immuno-Oncology



## Simplifying genomics and bioinformatics operations

Genomics laboratories mainly rely on manual review and updates of their laboratory information management systems (LIMS) and other independent systems to track samples, workflows, and pipeline versions. These data silos and fragmented processes can result in delays and data quality issues. What if there was a way to monitor and manage all of these tasks from a single software system?

The Symphony Genomics Workflow Management System, developed by Personalis, is a flexible, scalable system designed to manage the unique complexity and challenges of genomic laboratories. Symphony integrates LIMS and bioinformatics systems, to connect lab operations with downstream data analysis. Symphony orchestrates all operational activities from the lab, to pipeline runs, to reporting and data delivery.



**Customized workflows  
and reports**



**Precision visibility  
and control**



**Locks down all  
components, including  
pipeline versions**



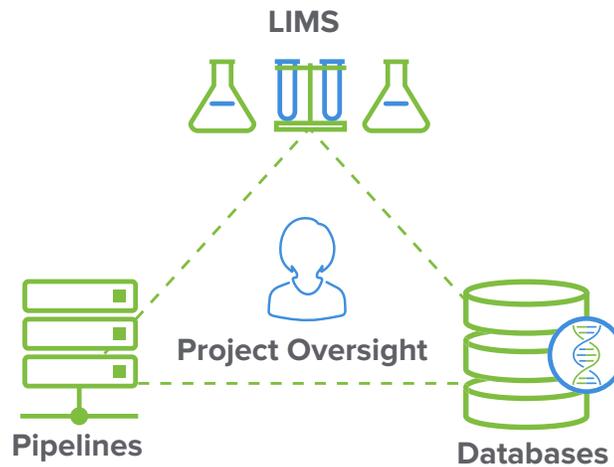
**Provides full traceability  
for compliance**



**Scales to massive  
volumes**

## Improved project performance

Symphony is an enterprise-grade unified platform that connects LIMS, pipelines, databases, and other software systems in one place so your Personalis project manager can monitor every aspect of your project from a single system.



## Monitoring and execution

In the Jobs dashboard below, intuitive color-coding makes it easy to identify the job status, and to quickly troubleshoot and resolve any issues such as pipeline run failure.

<b>Job 383</b> DNA Cancer Panel  Project Manager Tumor only	All Samples <b>1</b>	Feb 21, 2017 12:58:50  lab Feb 21, 2017 13:02:51	Feb 21, 2017 13:01:07  pipeline Feb 21, 2017 12:02:36	Feb 21, 2017 07:04:47  reporting Feb 22, 2017 13:34:19	Feb 22, 2017 13:34:19  data_delivery Feb 22, 2017 13:34:19
<b>Job 382</b> Neoantigen  Project Manager Tumor Normal	All Samples <b>2</b>	Feb 21, 2017 12:58:49  lab Feb 21, 2017 13:02:50	Feb 21, 2017 13:01:05  pipeline Feb 22, 2017 17:09:57	Feb 22, 2017 04:00:13  reporting Feb 22, 2017 17:16:32	Feb 22, 2017 17:16:32  data_delivery Feb 22, 2017 17:16:33
<b>Job 381</b> Neoantigen  Project Manager Tumor Normal	All Samples <b>2</b>	Feb 21, 2017 12:58:49  lab Feb 21, 2017 13:02:49	Feb 21, 2017 13:01:12  pipeline Feb 22, 2017 22:19:53	Feb 22, 2017 07:32:02  reporting Feb 22, 2017 22:27:46	Feb 22, 2017 22:27:47  data_delivery Feb 22, 2017 22:27:47

The Jobs dashboard allows for easy visualization of all jobs at a glance. Color coding makes it easy to monitor job status. In the example above, the samples have all completed sequencing, pipeline runs, and reporting successfully. When in progress, the boxes appear orange, and if failure occurs the boxes appear red. This color coded visualization makes it easy for project managers to prioritize and resolve issues correctly to keep all jobs on track.

## Sample-level drill down

From the Jobs dashboard, project managers can click through jobs to view task progress down to the sample level

- Monitor progress at each phase
- View status across all tasks
- Track duration and dates by task

Job 501  
Research Exome  
Project Manager

Sample1

All Samples  
**1**

Mar 21, 2017 11:57:56  
lab

Mar 21, 2017 11:58:21  
pipeline

Mar 21, 2017 16:30:26  
reporting

Mar 21, 2017 17:03:04  
data\_delivery

All Runs: Run# 167681 Run# 167805

Id	Name	Phase	Status	Progress	Started	Updated	Duration
3941	Lab DNA	Lab	Successful	<div style="width: 100%;"></div>	Mar 21, 2017 11:57:56 AM	Mar 21, 2017 11:58:20 AM	a few seconds
3938	Core DNA	Pipeline	Successful	<div style="width: 100%;"></div>	Mar 21, 2017 11:58:21 AM	Mar 21, 2017 4:30:20 PM	5 hours
3939	Report DNA	Report	Successful	<div style="width: 100%;"></div>	Mar 21, 2017 4:30:26 PM	Mar 21, 2017 4:58:58 PM	29 minutes
3940	Report QC	Report	Successful	<div style="width: 100%;"></div>	Mar 21, 2017 4:58:58 PM	Mar 21, 2017 5:03:04 PM	4 minutes
3942	Data Delivery	Delivery	Successful	<div style="width: 100%;"></div>	Mar 21, 2017 5:03:05 PM	Mar 22, 2017 10:46:33 AM	18 hours

## Project management features



### Workflow automation

Eliminates typical time lags and quality issues introduced by manual processes, allowing us to deliver projects within the rapid turnaround required for clinical trials



### Real time view of lab operations

Allows our project team to quickly provide you with reliable status updates as well as assistance with ad hoc requests



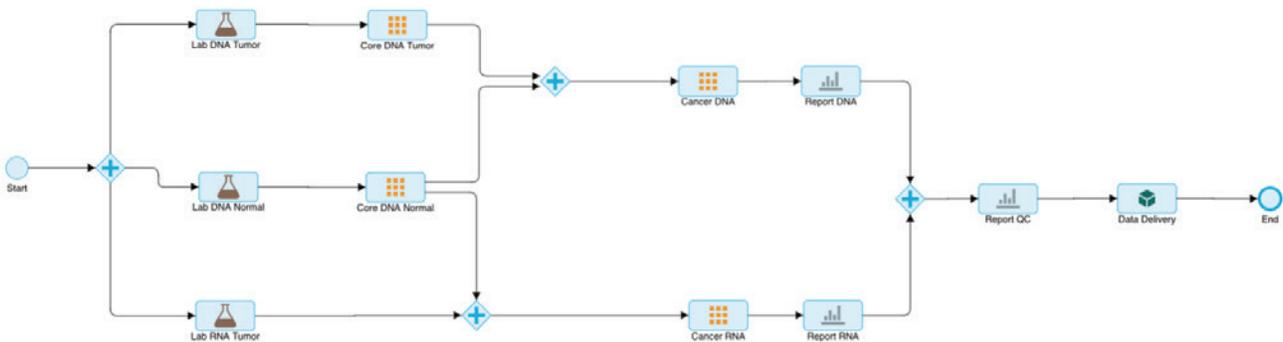
### Scale to massive volumes

With a system that ensures predictable, repeatable, and consistent execution

## Managing pipeline and reporting requirements

Genomic data is unique in its size and complexity, even at the patient-level. When scaled to the program-level, this complexity grows exponentially: running different clinical trials simultaneously, each with different NGS assays, different informatics pipeline needs, and different reporting needs—all of which need to be locked down for the life of each trial—exceeds the capabilities of most systems on the market today.

Symphony was developed with this complexity in mind. Symphony manages multiple data and reporting streams with transparent versioning and traceability. This infrastructure allows us to provide every customer with product definitions that are designed to meet their project and research needs.



In the Symphony product workflow pictured above, DNA and RNA sequencing is performed on paired tumor and normal samples. Sequencing data is analyzed on pre-built pipelines (Core DNA Tumor, Core DNA Normal, Cancer DNA, and Cancer RNA). The resulting reports are then QC'd, after which both data and reports are returned to the customer.

## Data analysis features

- 
**Customizable:** Product workflow, definition, and design, as well as outputs and files, are customized to meet your unique protocol requirements
- 
**Traceable:** Database edits are captured by application. Assay and pipeline versions are logged on our audit-ready system to ensure compliance
- 
**Transparent:** Symphony locks down and versions custom workflows, assays and pipelines for the life of a trial, while also giving you the flexibility to accommodate re-analysis of data with pipeline upgrades
- 
**Secure:** Data is encrypted at rest and at transfer

## Symphony At-a-Glance

- Customizable product workflow definition and design
- Notifications and reports configured for your study requirements
- Packaging of custom outputs and files based on your unique protocol requirements
- Automated product execution, error notification, recovery and reporting
- Application integration with laboratory information management systems (LIMS)
- Common user interface, workflow, security and logging



## Get in Touch

To learn more about how the Symphony Genomics Workflow Management System streamlines research and clinical development programs, contact us at [info@personalis.com](mailto:info@personalis.com).

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