

## Product & Process Development (PD) Optimizer

Traditional Product Development (PD) and DoE methodologies limit their focus to determining suitable recipes that satisfy the QTPP. These methodologies often require numerous experiments, runs and raw materials; making the process time consuming, labor intensive and costly.

Machine Learning (ML) can be used to make the PD process efficient but traditional ML is not applicable as large data sets are not available in this stage. Quartic's PD optimization application uses a novel small-data ML that leverages the understanding of the process by subject matter experts to efficiently explore the design and operation space while continuously recommending experimental settings. This results in determining optimal recipes in far fewer automated runs.

Users can accelerate their design and testing by leveraging historical experiments to automatically determine experiment conditions that may lead to a desired target outcome or predicting what the outcome may be based on test process conditions. Effectively, instead of retesting the space for similar processes, users leverage the prior experiences.

Deployment is a simple process consisting of a cloud-based application configurable to align with your current level of data readiness, from simple manual data upload, or streaming connectivity to your lab equipment, data, and systems.

The PD Optimization application serves as an effective data and knowledge management tool by combining your process, quality, and PAT data to create a holistic view of your PD space and lifecycle of experiments and results.

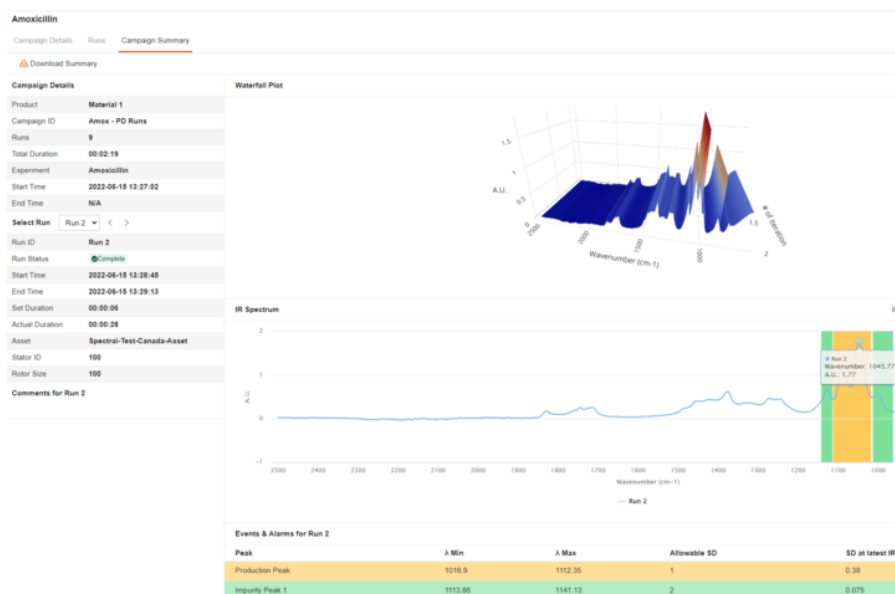
This can be leveraged to accelerate through tech transfer, scale up, and development of other similar molecules and modalities. This data foundation can be combined with ML to rapidly iterate through experimental runs and decrease your development time and costs.

## Benefits and Outcomes

- ✓ Reduce number of experiments
- ✓ Reduce raw materials usage during PD
- ✓ Implement data driven, efficient knowledge & tech transfer
- ✓ Transparency of integrated process, quality, and PAT data for CMC implementation

## Differentiators

- ✓ Small-data machine learning purpose built for PD
- ✓ Manage and “stack your DoEs” to optimize and predict your factor influence
- ✓ Explore a more comprehensive range of set points within the design space for a risk based, robust control strategy
- ✓ No coding, programming or data science required



Learn More at [Quartic.ai](https://quartic.ai)