Customer Story

## Challenge

To help pharmaceutical companies establish more effective, less expensive development and manufacturing processes.

# Design of experiments consolidates steps and saves money

Arlenda helps its clients take the fastest, safest route to success in the pharmaceutical industry

Arlenda is a Belgium-based company of 24 statisticians and scientists who provide consulting in applied statistics and modeling for the life sciences industry, primarily for pharmaceutical clients. Arlenda assists in every aspect of its clients' operations, from the discovery stage of a product through its manufacture. This involves the development of processes, assessment of stability, optimization and much more.

It's all very complicated, of course, and Arlenda's task is to simplify the process – to provide scientists with models that make sense and tools they can use to work independently with their data.

"Sometimes we write complex equations," says Bruno Boulanger, Arlenda's co-founder and Chief Scientific Officer. "But our clients don't want to see complex equations. They want to say, 'What's the consequence if I do this? What will my decision be based on this?'"

That, Boulanger says, is where "JMP comes into the loop." Using JMP® statistical discovery software from SAS, Boulanger and his colleagues communicate the outcomes of complex models in a manner that those with little or no background in statistics can understand. "They can visualize the outputs," Boulanger says. "And that's very important."

## Design of experiments brings order to the research cycle

Boulanger has been a JMP user since the late 1990s, and one of his first initiatives upon launching Arlenda was to introduce his team to the benefits of using JMP for design of experiments (DOE). Today, he says, "We promote JMP whenever possible."

Arlenda's consultants now use a number of JMP tools regularly, and Boulanger calls the software's DOE and modeling capabilities fundamental to Arlenda's mission. Pharmaceutical companies are committed to investigating ways to conduct more reliable experiments, and Arlenda uses JMP to do that. It's all in keeping with what they refer to as a "lifecycle vision" of an experiment: Define your objective, determine your analytical approach, design your experiment, perform your experiment, gather your results, assert your conclusion.

"Research is a cycle," Boulanger says, "and you need to encapsulate everything." DOE brings order to that cycle, and JMP offers a full arsenal of tested classical DOE designs. The custom design tool

jmp® Statistical Discovery.™ From SAS.

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>
> Bruno Boulanger, co-founder and Chief Scientific Officer

allows users to answer specific questions without wasting resources. Then, the data having been collected, it's easy to model, see patterns of response, identify active factors and optimize responses.

## Screening designs streamlines processes, saves money

An area in which Arlenda regularly uses DOE tools in JMP is with vaccine manufacturers. The production of a vaccine understandably involves a number of complex processes requiring a great many materials. Each experiment is extremely expensive to conduct. Arlenda therefore often uses screening designs in the early stages of these experiments to identify those factors that have the greatest potential to effect desirable outcomes.

## Designed for ease of use

"With design of experiments, you can better determine the most informative, and the cheapest, experiment to conduct," Boulanger says. "Scientists really like that."

What scientists also very much like is that JMP presents their data in a format that allows them to visualize its nuanced patterns and test relationships between variables themselves. "They don't want us to develop a model and then assure them that it will work," Boulanger explains. Researchers want to see the thinking behind the development of that process; they want to be knowledgeable. They can then take it from there. Simply put, JMP is easy to use. "It's been conceived from the user's point of view," Boulanger says.

## Clients keep coming back

Boulanger contends that there is both an immediate and a long-term benefit in using JMP. The immediate benefit is that JMP allows you to perform fewer experiments to reach a conclusion, making it easier to predict how many experiments you'll need to perform. The long-term benefit is that it dramatically reduces the risk of failure in the future. "Because once you optimize a process using a design of experiments strategy," he says, "you then minimize the risk of producing a batch that's out of specification."

Although Boulanger isn't privy to information on how much his clients save as a result of using the service and support Arlenda provides, he's confident that those savings are substantial. "My metrics are that every company we've made our recommendations to has come back to us," he says. "And all the scientists and departments we introduce to JMP DOE and modeling continue to use it. They're convinced it works."

### Solution

In the course of its consultancy, Arlenda deploys a full suite of JMP® features. Among the most frequently used, and enthusiastically received, are JMP design of experiments, modeling and graphic capabilities.

### Results

Arlenda's consultants provide scientists with an analytical toolkit based on JMP that can be adapted independently to future experiments and processes. As a result, Arlenda's clients keep coming back.

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