



## Uncountable Doubles Material Development Efficiency for Cooper Standard

### Overview

Uncountable is working with Cooper Standard's Innovation team to improve their compound development process. Cooper Standard (a Fortune 1000 manufacturer) has a varied product line with parts that must meet an assortment of strict testing requirements.

They employ a large team of scientists across multiple laboratories to formulate compounds that can withstand these requirements. As a result, Cooper Standard sets aside a significant budget to support the employees and materials used in these labs.

### The Challenge

Material development is an iterative and time-consuming process. First, the lab receives a set of specifications or objectives detailing the properties that a new material must have. Second, the scientists propose a set of recipes or formulations that might achieve the objectives. Third, they test a selection of the proposals. Finally, they evaluate the results and propose a new set of recipes for testing.

The development of a single compound might require months of testing and evaluation. The time intensive nature of the process requires that each recipe be chosen precisely to make the most progress towards finding the optimal recipe. The scientists must figure out how to alter current recipes to improve deficient properties while not adversely affecting the many other compound properties. Artificial intelligence algorithms can evaluate these complex relationships and ensure that the best recipes are tested.

## Highlights

### Industry

- Manufacturing

### Business Application

- R&D
- Material Development

### Technology

- Artificial Intelligence
- High-dimensional Learning

### Results

- 50% Reduction in Development Trials
- Discovery of Novel Compound Formulations

Uncountable's software platform helps manufacturers develop better compounds — and in less time — by optimizing how the candidate recipes are prioritized and tested.

## The Solution

Uncountable uses high-dimensional modeling techniques and artificial intelligence algorithms to propose material formulations that match the customer's specifications.

Now, rather than iteratively developing through incremental changes on single ingredients, Cooper Standard's scientists can rely on Uncountable's software to propose recipes for their next line of testing.

Uncountable's model integrates information about the manufacturer's successful formulations and learns how different combinations of ingredients work together. For this project, the software takes a list of thirty different possible ingredients and selects approximately eight ingredients at various concentrations that will best achieve the manufacturer's desired properties.

After receiving Uncountable's recommended batch of six recipes, the scientists can test the recipes and feed the test results back into the software. Initial results are used to improve the model and develop new recommendations that will improve upon previous formulations.

Uncountable has built a platform to deliver this model as an easy-to-use, interactive website. The interface provides a record of all test results generated during development and allows for the algorithms to learn from the company's complete research and development history.

## Results

In just two months, Cooper Standard's Innovation team has already benefited from the software solution with remarkable results.

In the initial testing phase, Uncountable was able to cut the number of trials required in half. And, in further testing, once a list of ingredients and usable ranges was provided to the model, Uncountable was able to reach peak material performance in a quarter of the trials originally needed.

Uncountable helped develop new materials more than twice as quickly and with less than half the labor. Moreover, Uncountable's system is able to suggest formulations that perform better in unexpected ways, providing a new avenue for discovering innovative materials and competitive advantages for manufacturers.

## About Uncountable

Uncountable aggregates your company's myriad sources of data and runs it through advanced predictive algorithms to produce clear, actionable recommendations that impact your bottom line. We specialize in extracting patterns from nontraditional sources —geospatial, sensor-driven, and computer vision — and present our findings in a clean, intuitive web interface. Our goal at Uncountable is to empower your company with data from the physical world.

Learn more:

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