

## Optimization Experiment

If you need to run a simulation and observe system behavior under certain conditions, as well as improve system performance, for example, by making decisions about system parameters and/or structure, you can use the optimization capability of AnyLogic. Optimization is the process of finding the optimal combination of conditions resulting in the best possible solution. Optimization can help you find, for example, the optimal performance of a server or the best method for processing bills.

AnyLogic optimization is built on top of the OptQuest Optimization Engine, one of the most flexible and user-friendly optimization tools on the market. The OptQuest Engine automatically finds the best parameters of a model, with respect to certain constraints. AnyLogic provides a convenient graphical user interface to set up and control the optimization.

OptQuest is a registered trademark of OptTek Systems, Inc. For advanced information about the OptQuest Engine, please visit OptTek's web site [www.opttek.com](http://www.opttek.com).

AnyLogic enables exporting models with optimization experiments as [standalone applications](#).

The optimization process consists of repetitive simulations of a model with different parameters. Using sophisticated algorithms, the OptQuest Engine varies controllable parameters from simulation to simulation to find the optimal parameters for solving a problem.

You can control the Optimization experiment with Java code. Refer to the [Optimization experiment functions](#) section for details.

### To optimize your model

1. Create new optimization experiment.
2. Define [optimization parameters](#) (parameters to be varied).
3. Create [experiment UI](#).
4. Specify the function to be minimized or maximized (the [objective function](#)).
5. Define [constraints and requirements](#) to be met (optional).
6. Specify the [simulation stop condition](#).
7. Specify the [optimization stop condition](#).
8. [Run the optimization](#).

The [last step](#) of [System dynamics tutorial](#) explains how to create and run optimization step-by-step.

### To create an optimization experiment

1. In the **Projects** view, right-click (Mac OS: Ctrl+click) the model item and choose **New > Experiment** from the popup menu. The **New Experiment** dialog box is displayed.
2. Choose **Optimization** option from the **Experiment Type** list.
3. Type the experiment name in the **Name** edit box.
4. Choose the top-level agent of the experiment from the **Top-level agent** drop-down list.
5. If you want to apply model time settings from another experiment, leave the **Copy model time settings from** check box selected and choose the experiment in the drop-down list to the right.
6. Click **Finish**.

## Properties

General

Parameters

Model time

Constraints

Requirements

Randomness

Replications

**Window**

**Java actions**

**Advanced Java**

**Advanced**