Automatic Generation of Simulation Business Processe

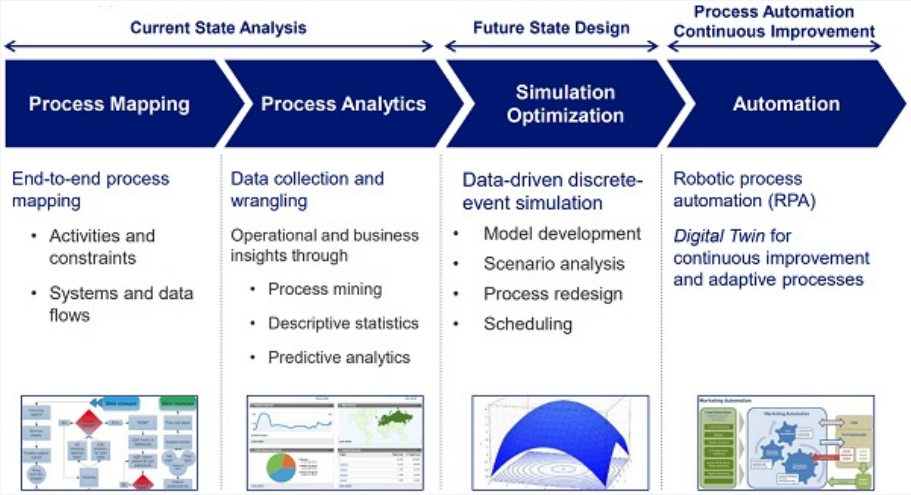
Business Processes

Problem

Simulation can be difficult, often requiring a lot of training, therefore AIG sought to make this process easier. They resolved that someone without any skills should be able to utilize discrete-event simulation and build good models.

Solution

continuous improvement.



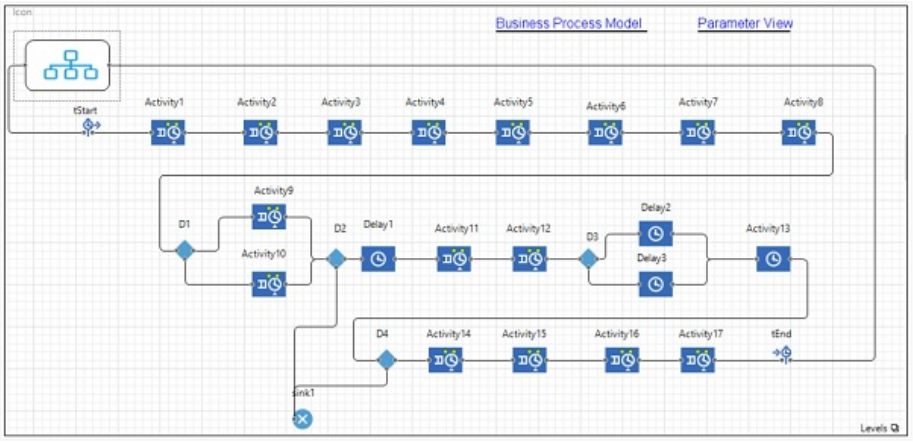
The Process Wind Tunnel created by AIG (click to enlarge)

Current state analysis includes an important element called process mining, which looks at event logs that are generated by the business process. This historical data can be analyzed statistically to gain insights into the business process.

Once there is a baseline for this process, it is necessary to improve it. This can be done in the future state design. Here, AnyLogic simulation is used because it has many powerful features including the ability to integrate with other tools through the Java programming capability. AIG uses AnyLogic to build data driven discrete-simulation models. AIG builds the model, does the scenario analysis, looks at new design options and comes up with an optimized or improved design.

In process automation, the system is analyzed and to

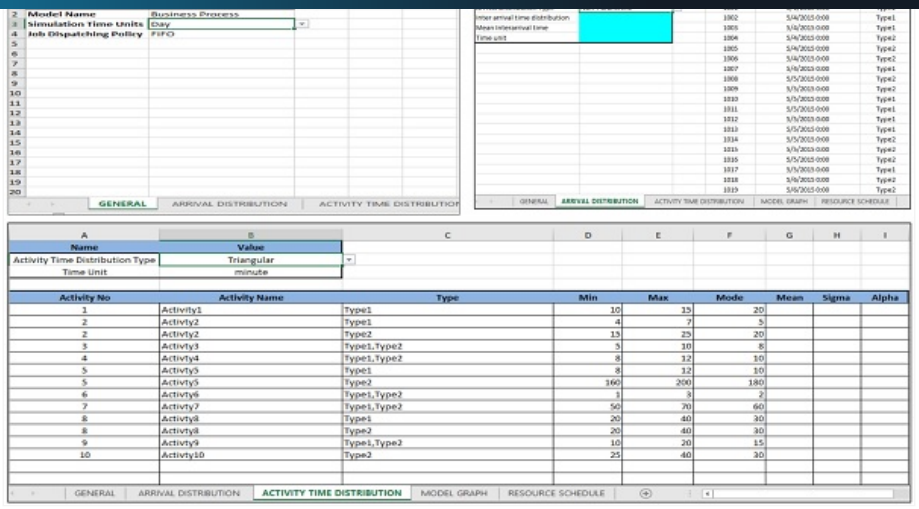
business process domain expert and a highly skilled simulation and analytics specialist. The former would collect historical data, while the latter would build the model in AnyLogic using this information. Once the model was built, the modeler and/or the business domain expert could utilize the simulation model to perform scenario analysis and optimization.



Business process model (click to enlarge)

Simulation modeling requires significant information gathering. The solution offered was to decouple the process of information gathering as it was time consuming. Instead, a predefined model template could be used, which would be dependent on the relevant business process. This template should have information that a businessperson could understand.

There is an example template below, created in an Excel spreadsheet, and this is what would be provided once it was developed and customized for a specific business application. A businessperson who has little



Example template created in an Excel spreadsheet (click to enlarge)

Once this template has been created, the modeler could choose different ways to build a simulation model. The first way would be to use the built-in Java functions to programmatically construct simulation models within the AnyLogic environment. The second way, which AIG chose, would be to use software modules written in Java outside of the AnyLogic environment and then import them into AnyLogic and let the power of AnyLogic do the further analysis.

So now the businessperson is only dealing with those Excel spreadsheets which have understandable modeling information and from there onwards the process of transforming that into a simulation model is done automatically.

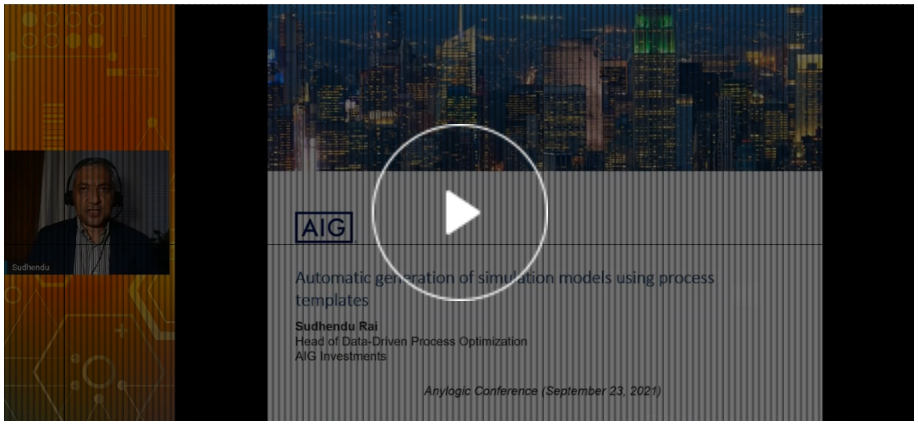
Excel template, and creates the AnyLogic simulation model automatically

Results

Using the methods described here, it is not necessary to build a model over and over again if you have multiple instances of a given process. The full scalability of the model can be enabled, from the business information to the actual modeling. The results can be interpreted by a businessperson and not an advanced AnyLogic modeler.

The case study was presented by Sudhendu Rai of AIG Investments, at the AnyLogic 2021 Conference.

The slides are available as a PDF.



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