



# Supply Chain

## User Guide

2.1.7



Copyright 2022 Cosmo Tech. All rights reserved.

This document and all information contained herein shall remain confidential and is the exclusive property - including all intellectual property rights pertaining thereto - of Cosmo Tech. Any use, reproduction, translation, broadcasting, transmission, distribution, etc., to any person is prohibited unless it has been previously and specifically authorized by written means by Cosmo Tech. Cosmo Tech will use any legal mean at its disposal to put an end to any illicit or prohibited act and obtain full compensation.

Cosmo Tech  
5 Passage du Vercors  
69007 LYON  
04 37 66 71 57

# CONTENTS

1. Getting Started	1
Target Audience .....	1
About Cosmo Tech .....	2
Interface Overview .....	3
2. Scenarios	4
Creating a Scenario .....	6
Run Types .....	8
Configuring and executing a scenario .....	11
Financial Calculations .....	16
3. Dashboards	21
Scorecard .....	23
Cross KPIs Analysis .....	24
Service Levels .....	25
Stocks .....	26
Shortages .....	27
Production .....	28
Costs .....	29
Demand .....	30
Bottlenecks Identification .....	31
Input Data .....	32
Uncertainty Analysis .....	33
Modify Existing PowerBI reports .....	35
Prerequisites .....	36
Default Reports .....	37
Modify a Report .....	39
4. Scenario Manager	42



# 1. Getting Started

Target Audience .....	1
About Cosmo Tech .....	2
Interface Overview .....	3

## Target Audience

This guide is designed for the final users of the Cosmo Tech Supply Chain solution in order to help them get started with digital twins.

# About Cosmo Tech

## Who We Are

Cosmo Tech designs 360° Simulation Digital Twins software to solve the most complex industrial problems and lead enterprise decision making.

## Our Simulation Digital Twin solutions

This next-gen hybrid AI technology provides holistic and dynamic digital twin simulation to predict the evolution of organizations in uncertain environments and to optimize all levels of enterprise planning and decision making.

With a 360° view of their organization, decision makers can run unlimited scenarios to better understand the current behavior of their complex organization, anticipate all possible situations even under conditions that have never occurred before.

## Supply Chain's Digital Twin

The Simulation Digital Twin of Cosmo Tech, dedicated to Supply Chain, is designed to help with the resolution of complex problems encountered during the design and management of supply chains. It allows to cover a wide range of use cases from strategic problems to real-time monitoring of the supply chain through tactical and operational planning.

Its modular architecture enables multiple experiments types and projections of the Digital Twin (simulation, different optimization methods, Monte-Carlo simulation, sensitivity analysis...).

The physical perimeters covered (geographical areas, factories, suppliers, production resources, warehouses, transports, etc.) as well as the temporality (horizon and time links) are entirely configurable.

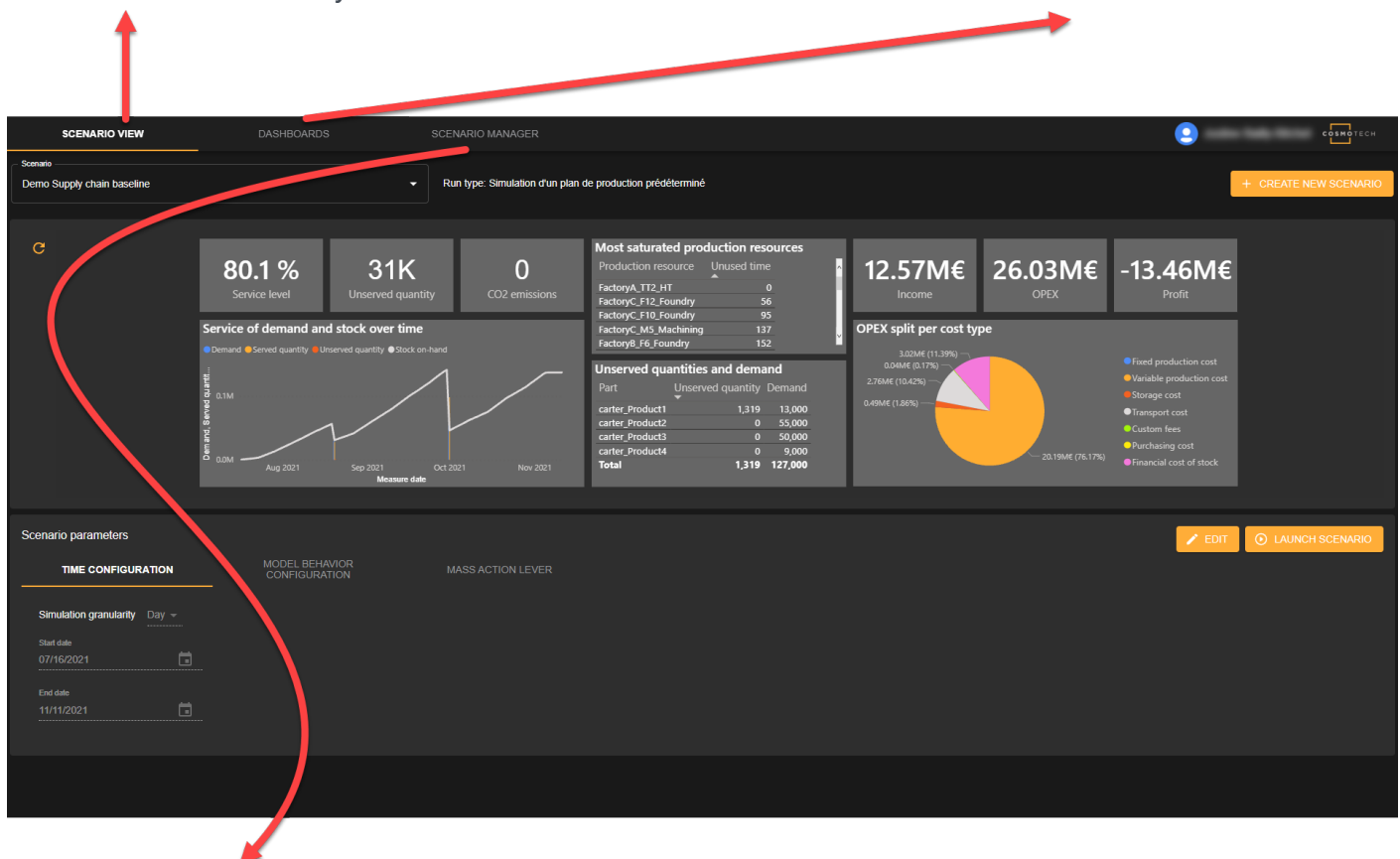


# Interface Overview

The interface of the solution contains two tabs: Scenario View and Dashboards.

The **Scenario View** tab allows the user to create scenarios, to adjust their parameters, to launch simulations and to visualize the first key results.

The **Dashboards** tab gathers the detailed results of all scenarios in the form of charts.



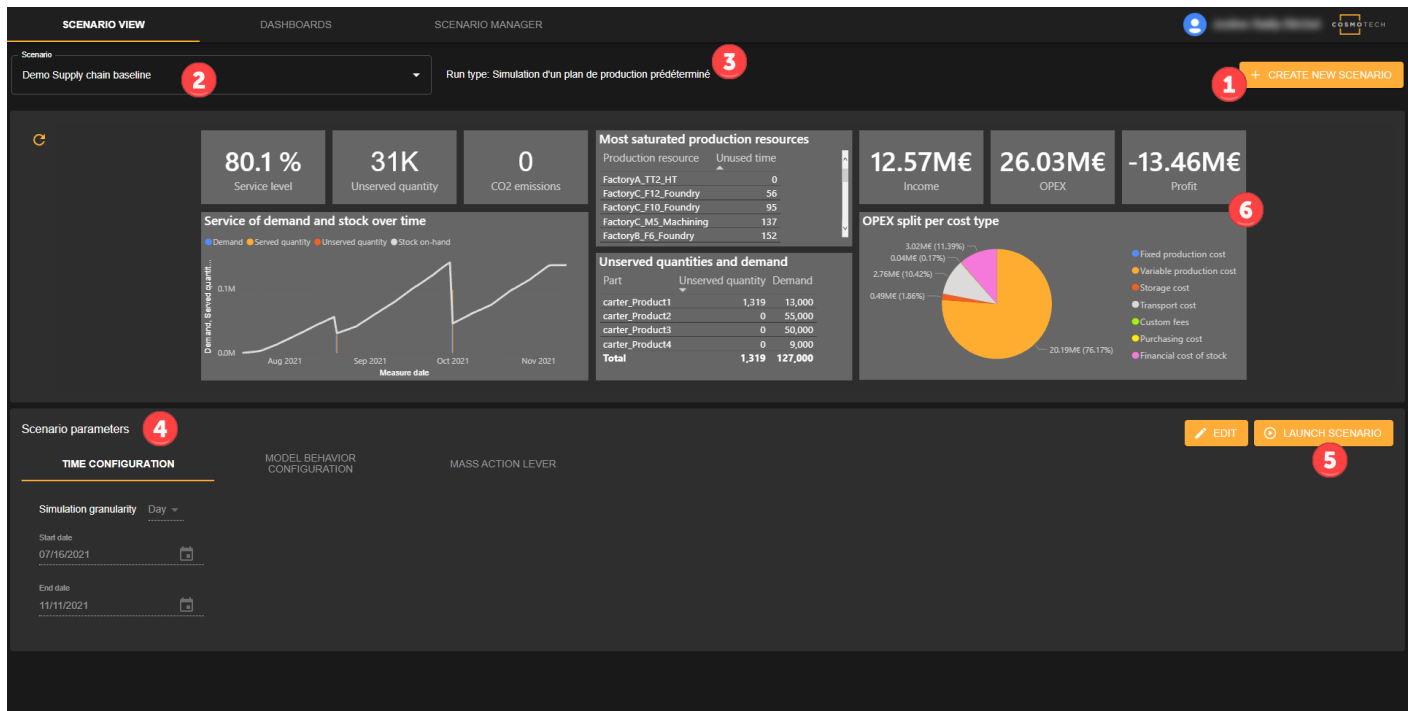
The **Scenario Manager** tab helps the user to visualize with ease the parent-child scenarios' relationships and displays the essential information of each scenario created.

The standard usage process of the solution is the following:

1. Scenario creation
2. Results visualization
3. Alternative child scenario creation
4. Scenarios comparison

## 2. Scenarios

The Scenario View displays the list of scenarios you have access to. These scenarios can both be created by you and other users.



From this view, you can access to:

### 1. Creation of a Master or Child scenario



- A **Master scenario** is a root scenario based on the digital twin data
- A **Child scenario** created from another scenario, based on the same data to which the user applies some changes via actions on the scenario parameters

### 2. List of the created scenarios

### 3. Reminder of the run type displayed


### 4. Scenario parameters

### 5. Simulation launch

### 6. Display of the key results of the selected scenario



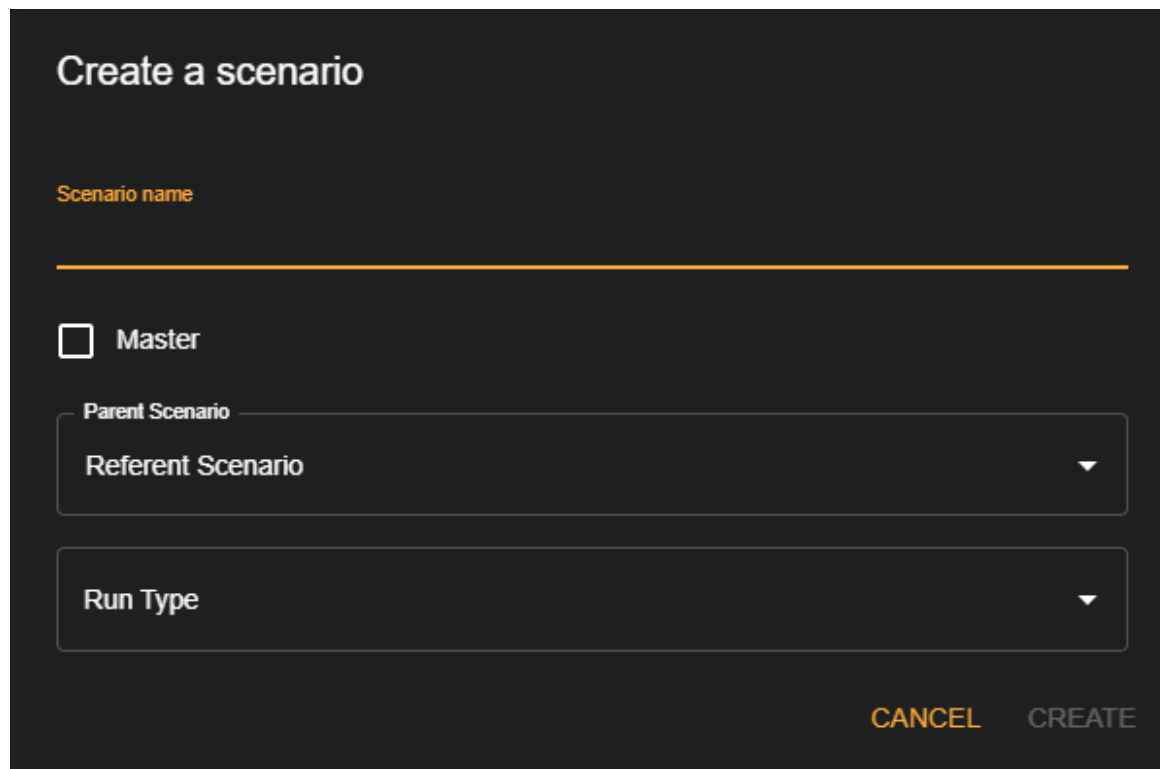


A **Refresh**  button enables to refresh the dashboards of the view. After every refresh, the button is disabled for 15 seconds.

# Creating a Scenario

To create a new scenario in the Scenario View:

1. Click .



2. Enter the desired name for the scenario.



The field **Scenario name** cannot be empty. It must also start with a letter and contain only letters, numbers, spaces, underscores and hyphens. Accents and other symbols are not allowed.

Name duplicates are not allowed.

3. Two types of scenarios are available:
  - a. Master
    - i. Check **Master**.
    - ii. Select the dataset to use among the digital twins already loaded and available.
    - iii. Select the run type.



For more information on the different existing run types, see *"Run Types"* (page 8).

b. Child scenario

- i. Select the parent scenario.
- ii. Select the run type.

4. Click **Create**.

# Run Types

Different run types exist for the creation of a scenario:

- Predetermined production tactic simulation ;
- Optimization via linear programming ;
- Uncertainties analysis.

## Predetermined production tactic simulation

This run type enables to:

- Simulate a given production plan, without optimization, in order to predict its future performance.



The simulation will respect the predetermined production plan whatever happens, even if this implies a use beyond their capacity of production resources or that it requires more stock than available and generates shortages and negative stocks (these alerts will of course be visible in the output indicators).

- Simulate management policies for flows and stocks, still without optimization, in order to predict the performance of the system according to these rules.



Unlike the previous mode, this type of simulation is constrained by the stocks and capacities available.

## Optimization via linear programming

This run type is a solver automatically finds the best production configuration to maximize the defined goal. This goal can be:

- Service level maximization ;
- Profit maximization.

## Uncertainties analysis

This run type enables to launch automatically a bundle of 1 001 simulations:

- 1 000 simulations using the uncertainties' data provided in the input, enabling to generate statistical indicators of the distribution of results. To each simulation corresponds a random draw of all the values affected by an uncertainty data. The model then simulates the customary dynamic of the supply chain over time.

- 1 final simulation without uncertainties, enabling to generate the customary indicators of the "simple" simulations.

Thus, for a scenario of type "Uncertainties analysis", the dashboard to check in priority is the one named "Uncertainties analysis". It enables to show what the impact of an uncertainty or a combination of uncertainties will be on the final indicators for a representative number of simulations.

It enables to identify the scenarios which are the most robust to uncertainties. According to the important indicators, a trustworthy indicator can be combined to each scenario.

For a scenario of type "Uncertainties analysis", all other dashboards show the results of one final simulation run (without uncertainties).

Some uncertainties can be provided in the input of the digital twin over several fields:

- The demand level ;
- The production capacities via the operational performance ratio.

For each of these fields, the user defines a fixed value and a coefficient of variation upwards and downwards in the digital twin, enabling to define a variation span around the fixed base value.



For more information, see the detailed documentation on the input data.

- For each line of demand (a product, a time step, a quantity requested), a random value is drawn (with respect to the uncertainty span and the distribution law) for each of 1 001 simulations.
- For each ratio of operational performance (a ratio by production operation), a random value (with respect to the uncertainty span and the distribution law) is drawn at each time step during each of the 1 001 simulations.

The user then chooses in the web app a distribution law which applies to all the fields ("Scenario parameters" → "Uncertainty analysis" → "Uncertainties probability distribution law").


During the uncertainties analysis, a huge number of simulation results data is generated. For obvious performance reasons, the solution does not store the whole of the results detailed by time step for the 1 001 simulations launched at each uncertainties analysis. It only stores the following data:

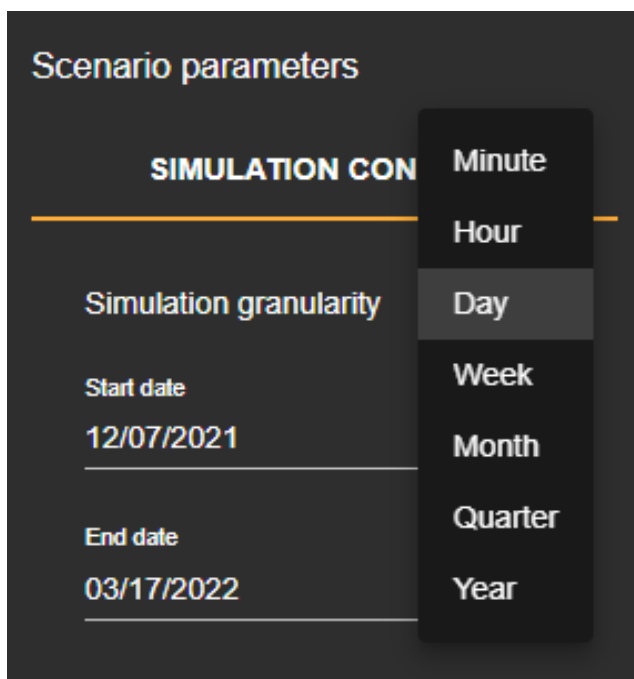
- For each StockID (product granularity), detail by time step of the statistical results (mean, median, percentiles, standard error) of the 1 001 simulations of the following fields:
  - Demand ;
  - Served quantities ;
  - Missed demands (unserved quantities) ;
  - Quantities left in the stock.

- For each key indicator (all indicators of the PerformanceIndicators table), final result of each of the 1 001 simulations (1 value per simulation and per indicator, thus 1 001 values per indicator for each scenario of type "Uncertainties analysis").

# Configuring and executing a scenario

To configure a scenario in the View Scenario tab:

1. Click .
2. In Simulation Control:
  - a. Choose the desired time step (minute, hour, day, week, month, quarter, year).



Scenario parameters

**SIMULATION CONTROL**

Simulation granularity: **Day**

Start date: 12/07/2021

End date: 03/17/2022

- b. Define the start and end dates.



The start date of the simulation must be set before the end date.

3. In Model Behavior Configuration:

## Scenario parameters

### TIME CONFIGURATION

### MODEL BEHAVIOR CONFIGURATION

### MASS ACTION LEVER

Batch size ⓘ

0

Financial cost of stock ⓘ

0

Track and serve backlog orders ⓘ



Automatic obsolete stock deletion ⓘ



Intermediary stock dispatch policy ⓘ

Dispatch all quantities downstream ▼

- a. Define the batch size, the multiple to be observed at the end of production operation before being able to move on to the next operation.



The default value is 0 which means no batch size constraint. The batch size is applied to all production operations.

- b. Define the financial cost of stock due to inventory.



Currently there is only one single input rate for the entire dataset which represents a cost per time step. This rate must be between 0 and 1. For example, if the rate is 0,001, it means that at every time step, 0,1% of the total value in stock, transport and WIP will be added as a financial cost of stock.

For more information about financial calculations, see "[Financial Calculations](#)" (page 16).

- c. Activate/Deactivate the track and serve backlog orders in order to keep in memory or not the quantities not served in full on time and to serve them as soon as possible.
- d. Activate/Deactivate the automatic obsolete stock deletion to automatically delete or not stocks during simulation when no further demand exists.
- e. Select the intermediary stock dispatch policy.



By default, at each time step, intermediate stocks dispatch their available quantity to downstream operations. This parameter is used to add a share to this dispatch. This part corresponds to a quantity that the stock can reserve to retain it.





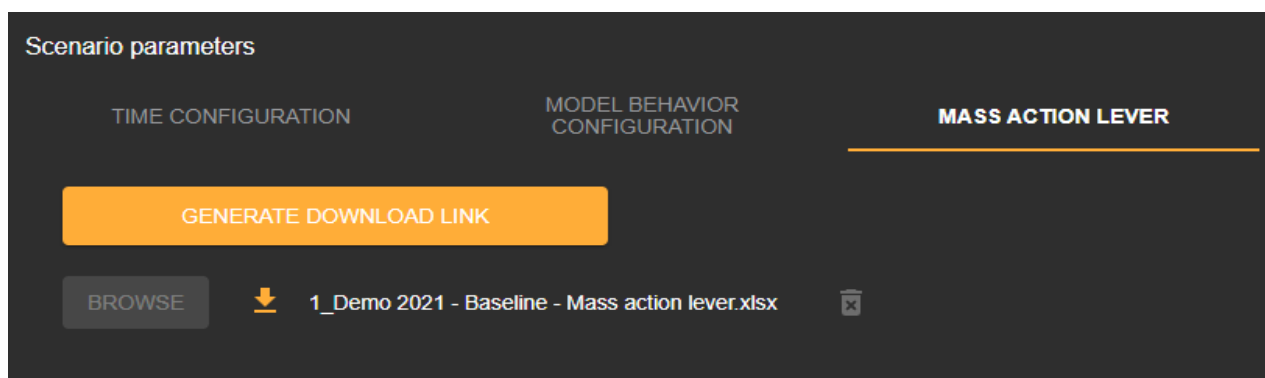
If the scenario uses an optimization, it leaves more possibilities to the optimization. It can thus decide to keep a quantity in stock that is not necessary at the given moment, to send it later only where it is useful. The service level or the profit can then be increased (in the case of downstream stocks costing more than upstream stocks).



If the scenario uses the predetermined production tactic simulation, if the option is set to "Can retain quantities" then regardless of the chosen dispatch policy, an additional part is taken into account in order to keep a quantity in the stock if demands remain on this intermediate stock. It should be noted that the stock policy has no effect on the dispatch (only on the upstream orders).

#### 4. In Mass action lever:

- a. Click **Generate Download Link** then "Download Dataset from ADT" to retrieve an example of a file filled with the data present in the digital twin (ADT) loaded in the solution. It takes about 30 seconds after clicking on "Generate Download Link" for the button to turn into "Download Dataset from ADT" (do not leave the page during this action or you will have to do it again).
- b. Click **Browse** to select and download a locally stored modification file.



This action lever enables to modify, via the loading of an Excel file, all or a section of a dataset to create alternative scenarios.

The format of the Excel file must respect the format of the dataset retrieved from ADT via the button **Generate Download Link**.

Once the dataset is loaded onto the platform, you can:

- Download it
- Delete it

#### 5. In Optimization Settings:

a. Select the optimization objective of your scenario:

- Service level maximization,
- Profit maximization.

Scenario parameters

SIMULATION CONTROL	MASS ACTION LEVER	<b>OPTIMIZATION</b>
--------------------	-------------------	---------------------

Optimization objective ⓘ Service level maximization ▼



The optimization settings are visible when the selected run type is the linear programming optimization.

6. In Flows Management Policies:

- Select the stock policy to apply to all stocks.
- Select the sourcing policy to apply to all stocks, a rule to apply in case of multi-sources to a stock.
- Select the stock dispatch policy to apply to all stocks, a rule to apply in case of multi-destinations from a stock.
- Select the production policy to apply to all production resources, a rule to apply in case of multi-operations for a production resource.

Scenario parameters

TIME CONFIGURATION	MODEL BEHAVIOR CONFIGURATION	MASS ACTION LEVER	<b>FLows MANAGEMENT POLICIES</b>
--------------------	------------------------------	-------------------	----------------------------------

Stock policy ⓘ Order point, fixed quantity ▼  
Sourcing policy ⓘ Equidistribution ▼  
Stock dispatch policy ⓘ Equidistribution ▼  
Production policy ⓘ Equidistribution ▼



The flows management policies settings are visible when the selected run type is the predetermined production tactics simulation.

7. In Uncertainty analysis, select the type of probability distribution used for uncertainties:

- Gaussian,

- Uniform.

#### Scenario parameters

SIMULATION CONTROL

MASS ACTION LEVER

FLOWS MANAGEMENT POLICIES

MODEL BEHAVIOR

**UNCERTAINTY ANALYSIS**

Uncertainties probability distribution law ⓘ

Gaussian ▼



The uncertainty analysis settings are visible when the selected run type is the uncertainty analysis.

8. Click

 **UPDATE AND LAUNCH SCENARIO**

to save the new parameters and launch the simulation.



You can discard your modifications by clicking

**DISCARD MODIFICATIONS**

# Financial Calculations

Here is a detailed description of each type of costs and incomes.

## Purchasing cost

For a considered stock (product granularity), at the considered time step, total quantity taken out of stock multiplied by the unit purchase cost.

$$\text{Total purchasing cost for a stock} = \text{PurchasingUnitCost} * \sum_{t=0}^{\text{Last timestep}} (\text{QuantityTakenOutOfStock}_t)$$

Currently, purchasing cost cannot be differentiated over time for a stock.

## Storage cost

Quantity in the stock considered (product granularity), at the time step considered, multiplied by the unit storage cost.

$$\text{Total storage cost for a stock} = \sum_{t=0}^{\text{Last timestep}} (\text{StorageUnitCosts}_t * \text{QuantityInStock}_t)$$

## Fixed production cost

Fixed cost of the considered production resource (amount per timestep, independent of quantities produced).

$$\text{Total fixed production cost for a production resource} = \sum_{t=0}^{\text{Last timestep}} (\text{FixedProductionCosts}_t)$$

## Variable production cost

Quantity produced by the production operation considered (product granularity), at the time step considered, multiplied by the unit production cost.

$$\text{Total variable production cost for a production operation} = \sum_{t=0}^{\text{Last timestep}} (\text{ProductionUnitCosts}_t * \text{QuantityProduced}_t)$$

## Production investment cost

Investment cost represents the financial effort which is necessary to make a new production operation available for a production resource. This cost is said fixed because it does not depend on the amount of units produced and it is not time dependent. It is a one time cost for the whole simulation. The default value if there is no investment cost input for a production operation is 0.

Investment costs are applied at the time step when the production operation is producing its first unit.

Total production investment cost for a production operation = If total produced quantity over the whole simulation > 0, then investment cost, else 0

## Transport cost

Quantity loaded in the transport operation considered (product granularity), at the time step considered, multiplied by the unit transport cost.

$$\text{Total transport cost for a transport operation} = \sum_{t=0}^{\text{Last timestep}} (\text{TransportUnitCosts}_t * \text{QuantityLoadedInTransport}_t)$$

Both transport costs and custom fees are applied only once at the time step when the quantities are loaded into the transport.

## Custom fees

Quantity loaded in the transport operation considered (product granularity), at the time step considered, multiplied by the unit custom fees.

$$\text{Total custom fees for a transport operation} = \sum_{t=0}^{\text{Last timestep}} (\text{CustomFees}_t * \text{QuantityLoadedInTransport}_t)$$

Both transport costs and custom fees are applied only once at the time step when the quantities are loaded into the transport.

## Financial cost of stock

Financial cost of the immobilized value in:

- Stock
- Transport
- Work-in-progress in production operations

Value in the stock, production or transport operation considered (product granularity), at the time step considered, multiplied by the rate of the financial cost of stock.

FinancialCostOfStock: currently there is only one single input rate for the entire dataset which represents a cost per time step. This rate must be between 0 and 1. For example, if the rate is 0,001, it means that at every timestep, 0,1% of the total value in stock, transport and WIP will be added as a financial cost of stock.

$$\text{Total financial cost of stock} = \text{FinancialCostOfStock} * \sum_{t=0}^{\text{Last timestep}} (\text{ValueInStock}_t, \text{ValueInTransport}_t, \text{ValueInWIP}_t)$$

## Stock, transport and WIP value

### Stock value

- An initial stock value can be set into input data for every stocks

- Value entering a stock: every time a quantity arrives into a stock from an operation (production operation or transport operation), this quantity is valuated based on the value of the upstream stock when the quantity left it.
- Value leaving a stock: every time a quantity leaves a stock, its value per unit is the value of the stock at the considered timestep divided by the total quantity in the stock.
- The purchasing cost is added to the value of leaving stocks.
- The storage costs are not added to the value of the stocks.

### **Transport value**

- An initial stock value can be set into input data for every transport
- For quantities in transport, stock value is based on upstream stock (departing stock).
- The transport cost and custom fees are added to the value of the stock when quantities are loaded into the transport (beginning of the transport operation).

### **Work-In-Progress value**

- For quantities in work-in-progress in a production operation, stock value is based on upstream stock (departing stock).
- The variable production cost is added to the value of the stock only at the end of the production operation.
- The fixed production costs are not added to the value of the stocks.
- The production investment costs are not added to the value of the stocks.

The financial cost of stock is not added to the value of the stocks (the value does not increase on its own over time).

## **OPEX**

Sum of all costs over the entire simulation period (except Production investment costs).

$$\text{Total OPEX} = \sum(\text{Purchasing costs}) + \sum(\text{Storage costs}) + \sum(\text{Fixed production costs}) + \sum(\text{Variable production costs}) + \sum(\text{Transport costs}) + \sum(\text{Custom fees}) + \sum(\text{Financial costs of stocks})$$

## Income

Revenue linked to the service of the demand, i.e. quantity served (on time and late) at the last time step for the stock considered (product granularity), at the time step considered, multiplied by the unit income.

$$\text{Total income for a stock} = \sum_{t=0}^{\text{Last timestep}} (\text{UnitIncome}_t * \text{QuantityServed}_t)$$

## Profit

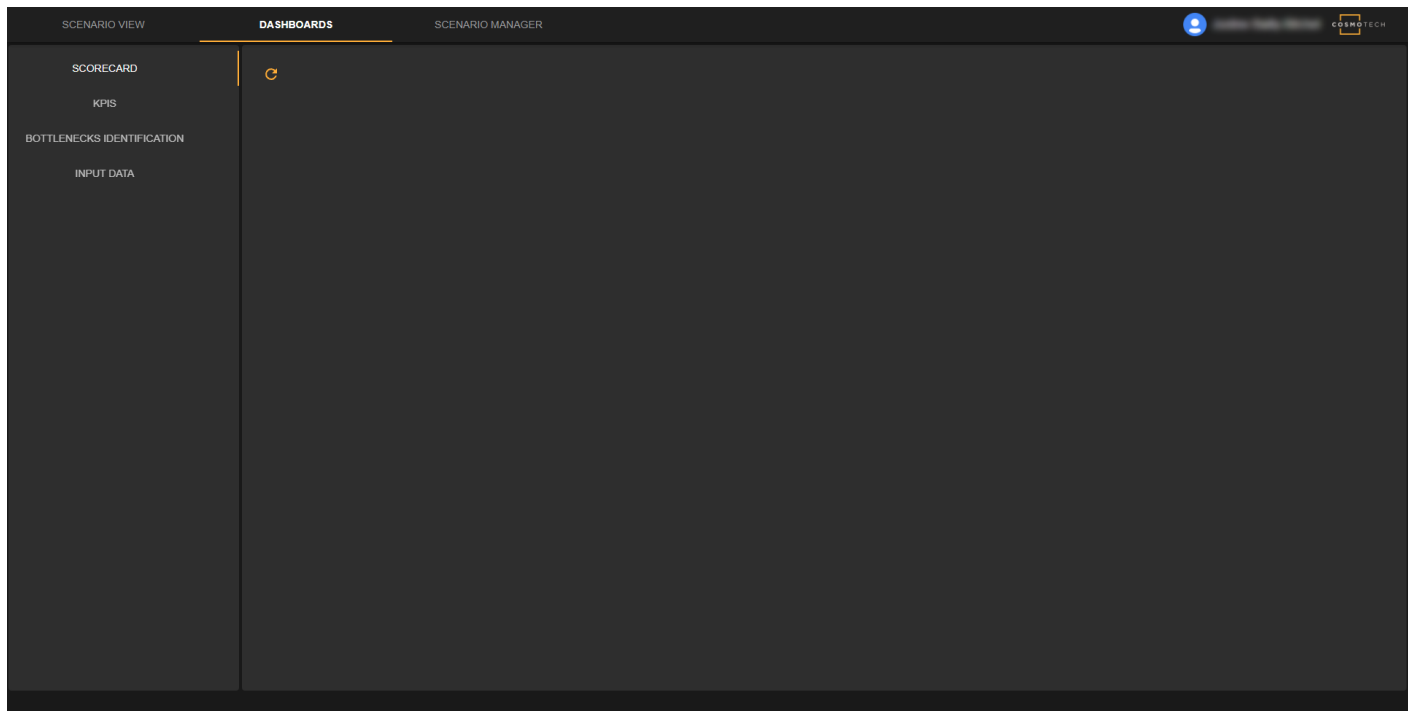
Difference between total revenue and total operating costs over the entire simulation period.


$$\text{Total profit} = \sum(\text{Incomes}) - \text{Total OPEX} - \sum(\text{Production investment costs})$$



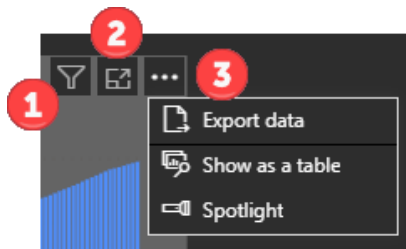
# 3. Dashboards

Once the scenario is configured and launched, you can execute it and then look up all the associated results in the **Dashboards** tab.



A **Refresh**  button enables to refresh the dashboards of the view. After every refresh, the button is disabled for 15 seconds.

Dashboards can be filtered:



1. List of filters and slicers affecting the visual
2. Focus mode to display on a bigger scale only the considered graph
3. Other options:
  - a. Export data

- b. Show the data as a table
- c. Gray other graphs out to bring out only one

Scorecard .....	23
Cross KPIs Analysis .....	24
Service Levels .....	25
Stocks .....	26
Shortages .....	27
Production .....	28
Costs .....	29
Demand .....	30
Bottlenecks Identification .....	31
Input Data .....	32
Uncertainty Analysis .....	33
Modify Existing PowerBI reports .....	35
Prerequisites .....	36
Default Reports .....	37
Modify a Report .....	39

# Scorecard

The **Scorecard** dashboard enables to compare all created scenarios regarding the kept key performance indicators.

SCENARIO VIEW

DASHBOARDS

SCENARIO MANAGER

SCORECARD

KPIs

BOTTLENECKS IDENTIFICATION

INPUT DATA

UNCERTAINTY ANALYSIS

Scenario name

Service level

Unserved quantity

Average stock value

Profit

Income

OPEX

CO2

11638287-c69d-4c97-a35a-b594eb286953

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

427000a9-1ceb-4819-81b1-a0b103e50927

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

4370e7cf-1635-4042-94af-fdd51f5d3e1d

1,0%

48 743

OK €

-0,64M€

0,05M€

0,69M€

455747ab-2cd8-41a7-b6c6-28aceede3cd8

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

4bc23f78-a13f-40a5-9b8a-6daa79b4284c

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

5448f1bd-6743-4a8f-8db5-e5bb0d51ec11

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

6477504e-0bbc-49c5-a838-ad55e2e3ef79

3,8%

12 439

OK €

-0,12M€

0,05M€

0,17M€

74e129c7-d068-4b72-b04a-07875d0baeeb

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

7ec38bf9-4bff-410f-9162-d9cf9fb1f73c

98,4%

803

101K €

3,40M€

4,84M€

1,45M€

85402543-cd3d-469b-8ba3-0e1ae3851c60

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

88bea236-a89d-462b-81e5-625ea072b17c

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

AFOS - Test configurationless

86,9%

3 220

28K €

1,78M€

2,13M€

0,36M€

AFOS - Test local

OK €

-3,81M€

4,11M€

AFOS Test download

4,0%

11 945

OK €

-0,04M€

0,05M€

0,09M€

b81eaa3d-5a68-4a5f-ae0c-5bd8472229d5

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

b9328ebe-5530-49db-9234-c42a06e9b831

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

cd910b91-3126-4f70-aa67-0aa045a993cb

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

db57c944-26b9-4cb4-b9e6-a71ac4a50cd1

3,8%

12 439

OK €

-0,05M€

0,05M€

0,10M€

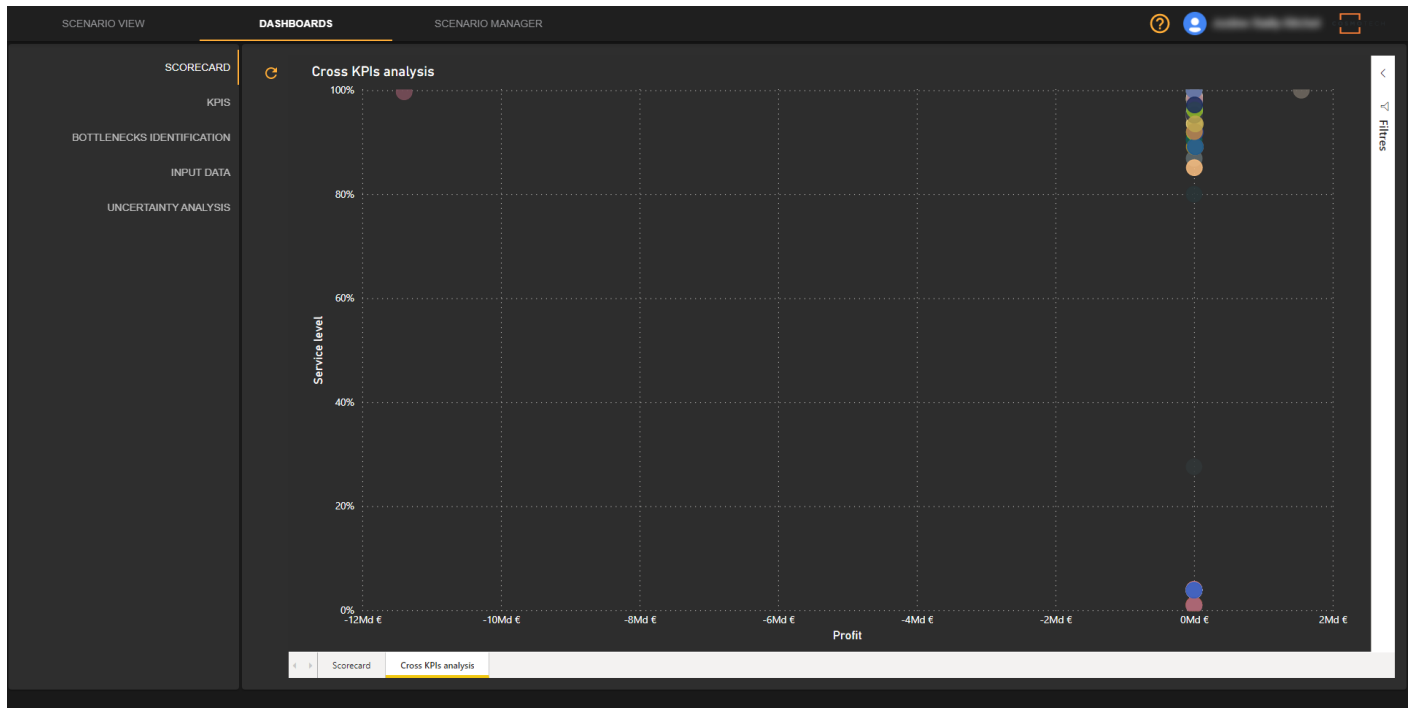
Scorecard

Cross KPIs analysis

Filters

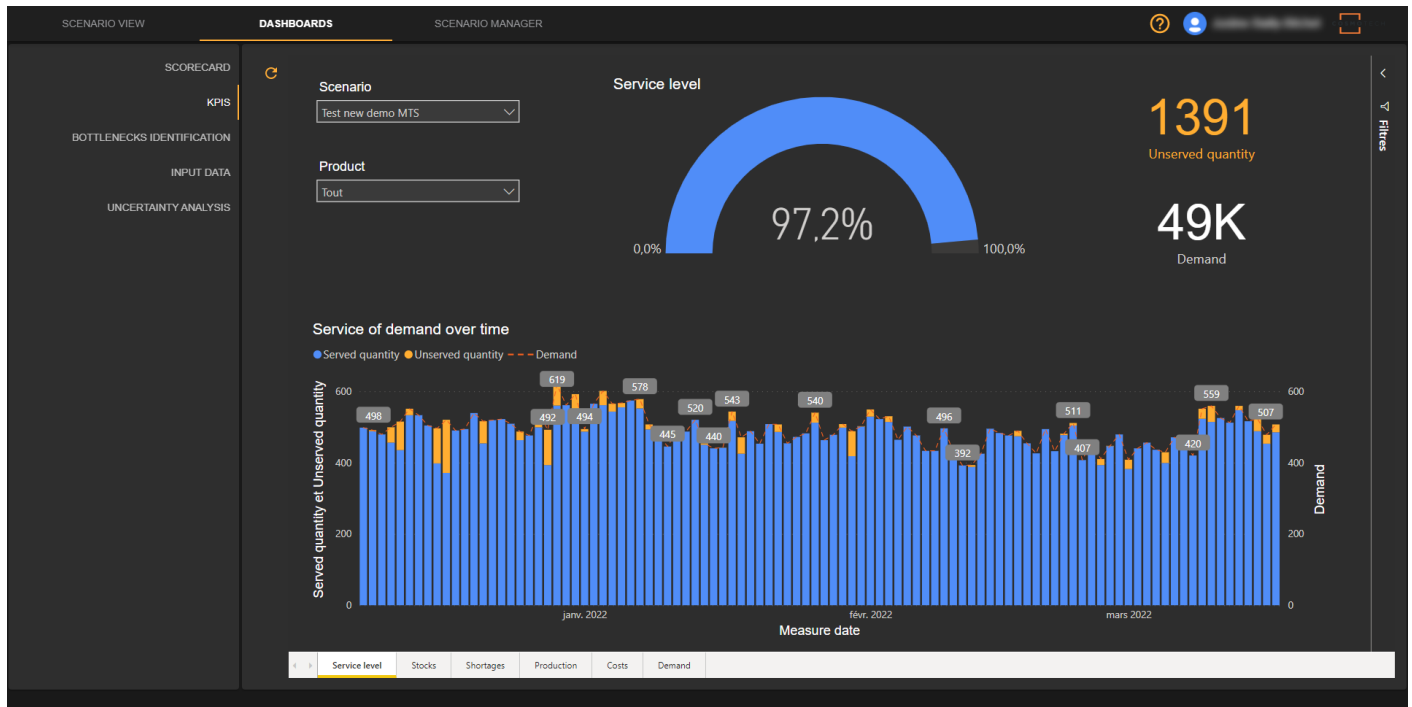
# Cross KPIs Analysis

The **Cross KPIs Analysis** dashboard enables to do a multi-scenarios analysis by crossing 2 indicators shared between 2 different axes. It enables to visually place the scenarios in relation to 2 KPIs in order to shine a light on eventual goal correlations or contradictions.



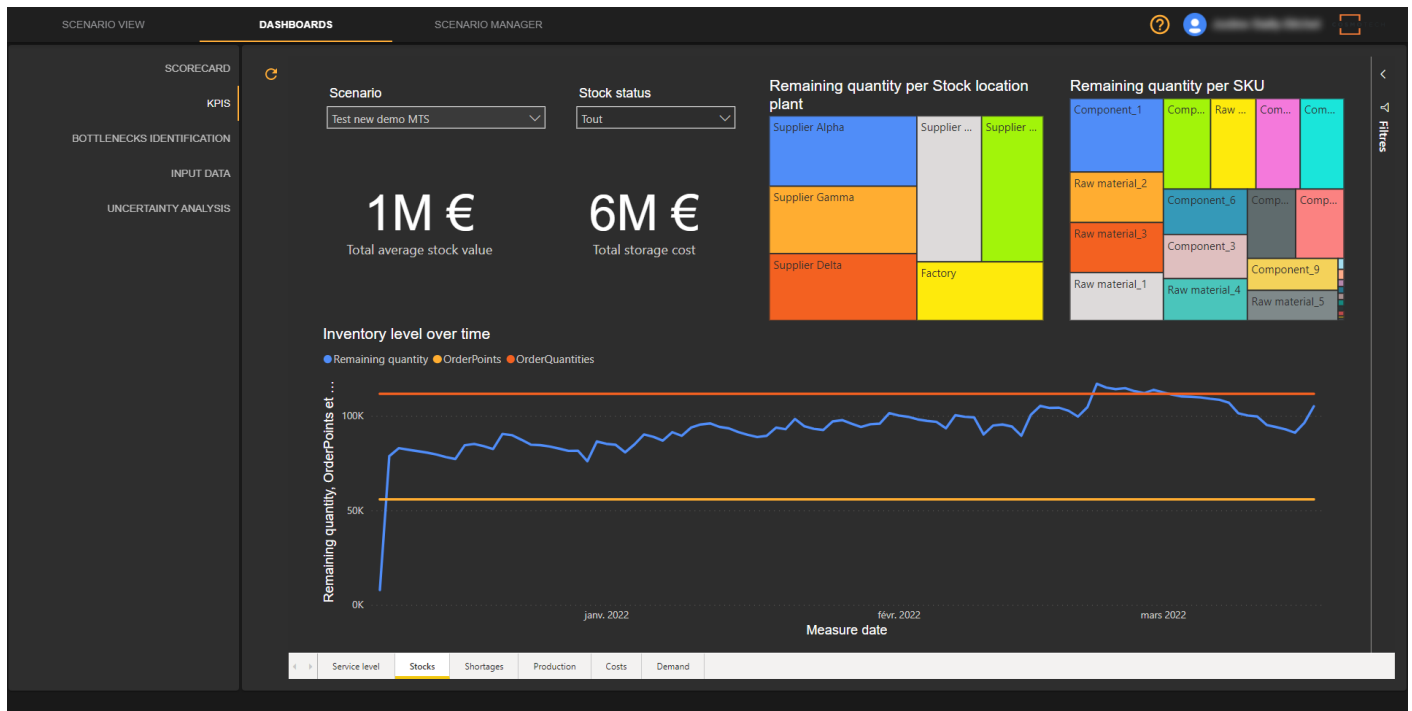
# Service Levels

The **Service Levels** dashboard gathers all the indicators linked to the demand service level.

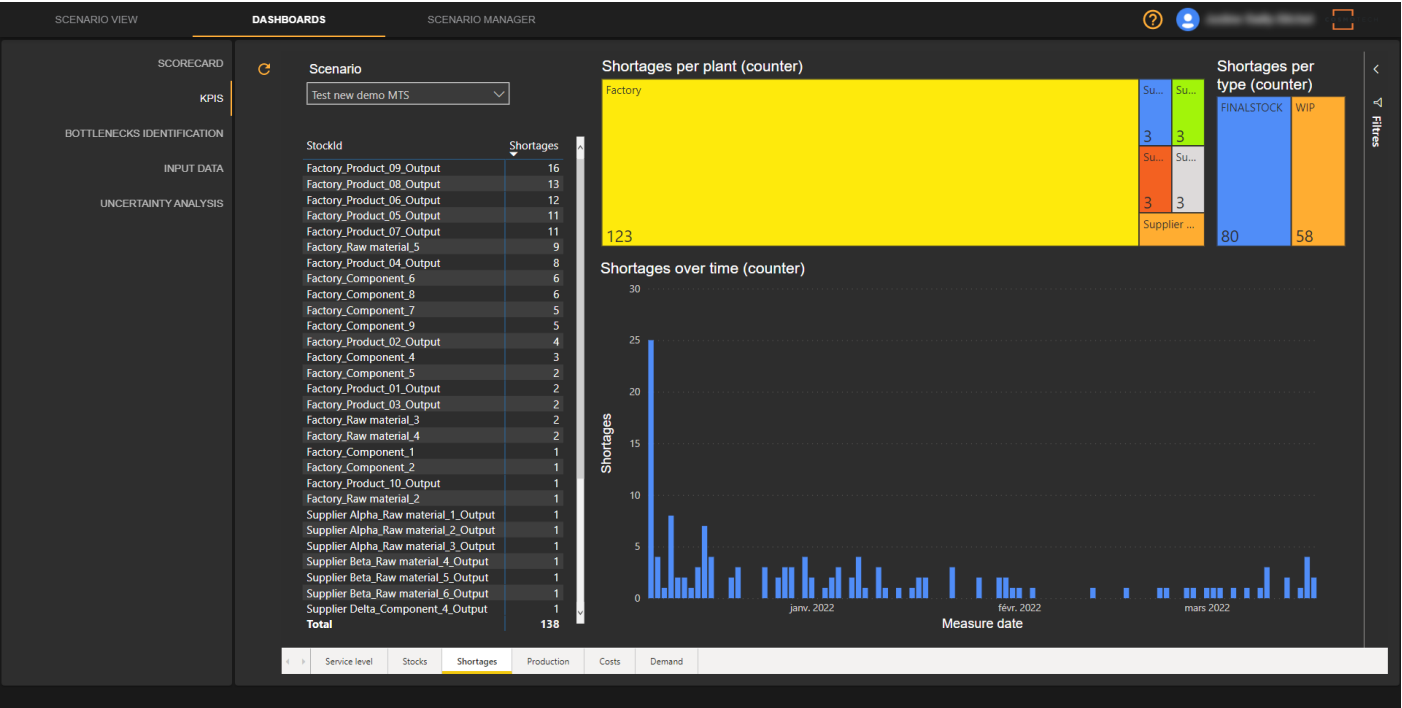


# Stocks

The **Stocks** dashboard represents the stock level over time and allows users to assess the accumulation of stocks.

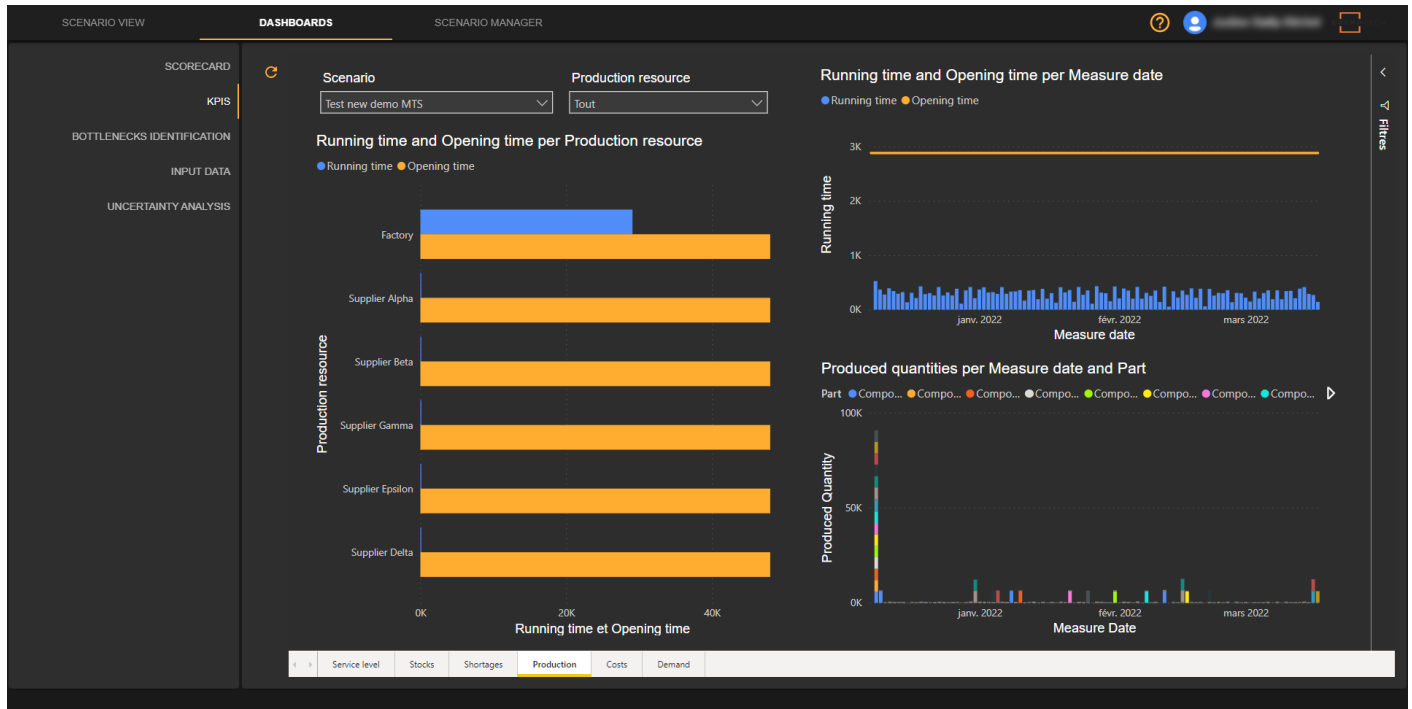


# Shortages



# Production

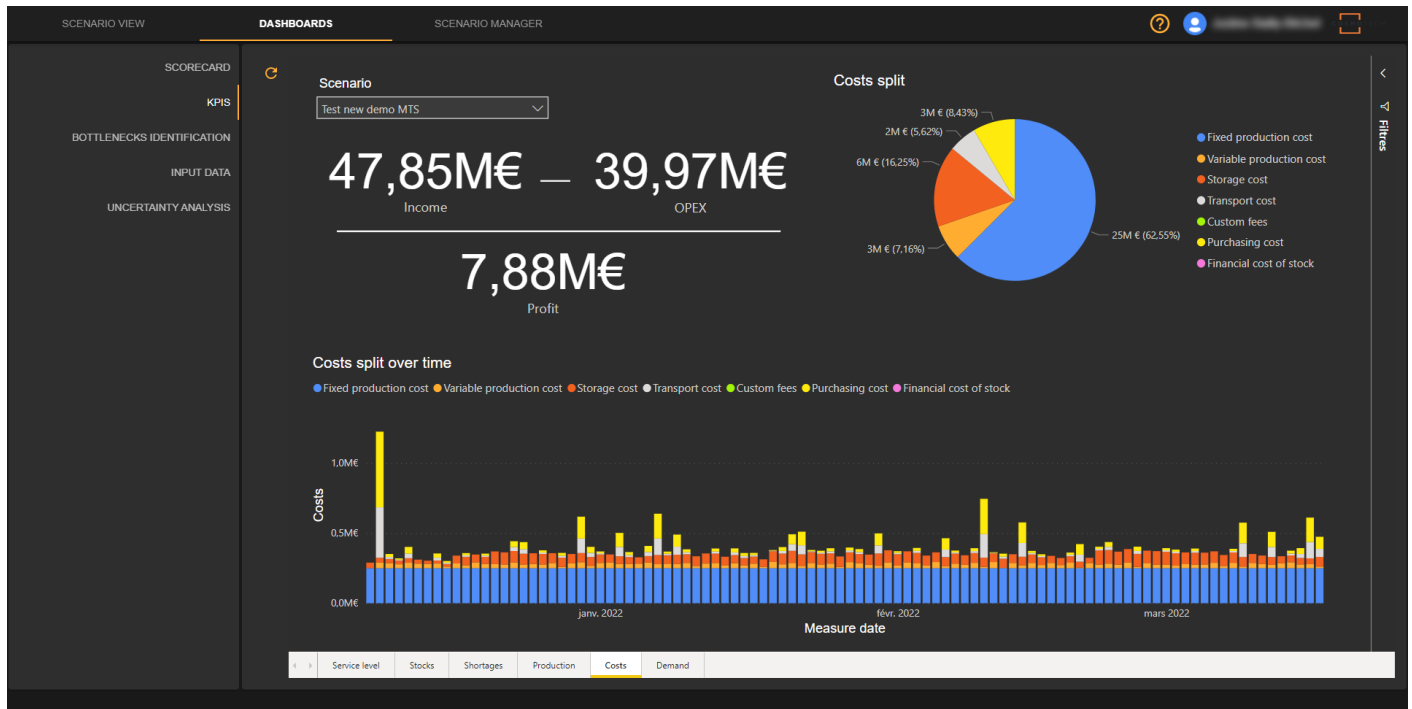
The **Production** dashboard gathers all indicators linked to the production resources utilization and their efficiency.





# Costs

The **Costs** dashboard gathers all financial indicators.



# Demand

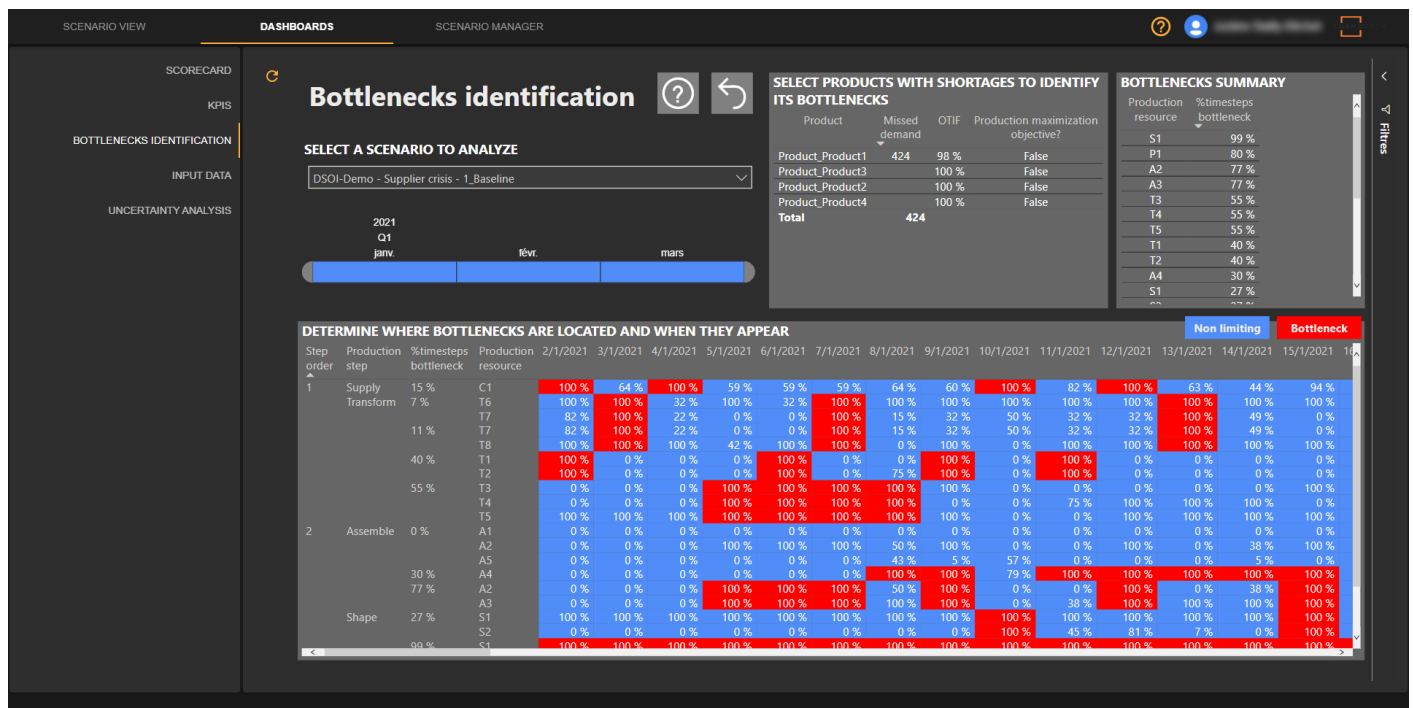


# Bottlenecks Identification

The **Bottlenecks Identification** dashboard enables to analyze the bottlenecks and the missed production of the supply chain by time step and product.



The table 3 can display the same production resource over several rows if the table 2 is not filtered by one product.



# Input Data

The **Input Data** dashboard enables to visualize in the form of data tables a reminder of the input data of the selected scenario.

SCENARIO VIEW

DASHBOARDS

SCENARIO MANAGER

SCORECARD

KPIS

BOTTLENECKS IDENTIFICATION

INPUT DATA

UNCERTAINTY ANALYSIS

Scenario

Make-to-stock - Optimized strategy

Production resource	Time step	Opening times	Fixed production costs
Factory	0	480	250000
Factory	1	480	250000
Factory	2	480	250000
Factory	3	480	250000
Factory	4	480	250000
Factory	5	480	250000
Factory	6	480	250000
Factory	7	480	250000
Factory	8	480	250000
Factory	9	480	250000
Factory	10	480	250000
Factory	11	480	250000
Factory	12	480	250000
Factory	13	480	250000
Factory	14	480	250000
Factory	15	480	250000
Factory	16	480	250000
Factory	17	480	250000
Factory	18	480	250000
Factory	19	480	250000
Factory	20	480	250000
Factory	21	480	250000
Factory	22	480	250000
Factory	23	480	250000
Factory	24	480	250000
Factory	25	480	250000
Factory	26	480	250000
Factory	27	480	250000

Filters

Production resources

Resources contains operations

Production operations

Operations inputs

Operations outputs

Demands

Stocks

Transports

Transports schedules

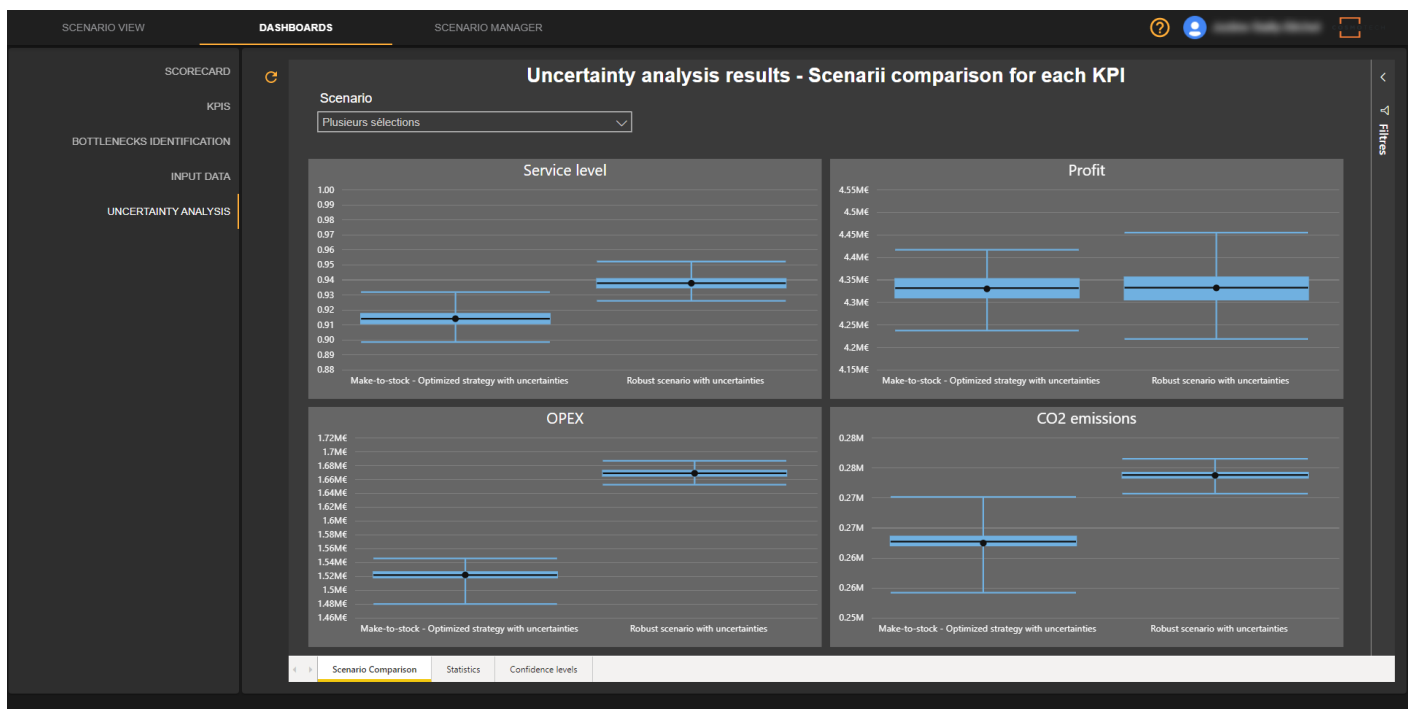
Initial transports

# Uncertainty Analysis

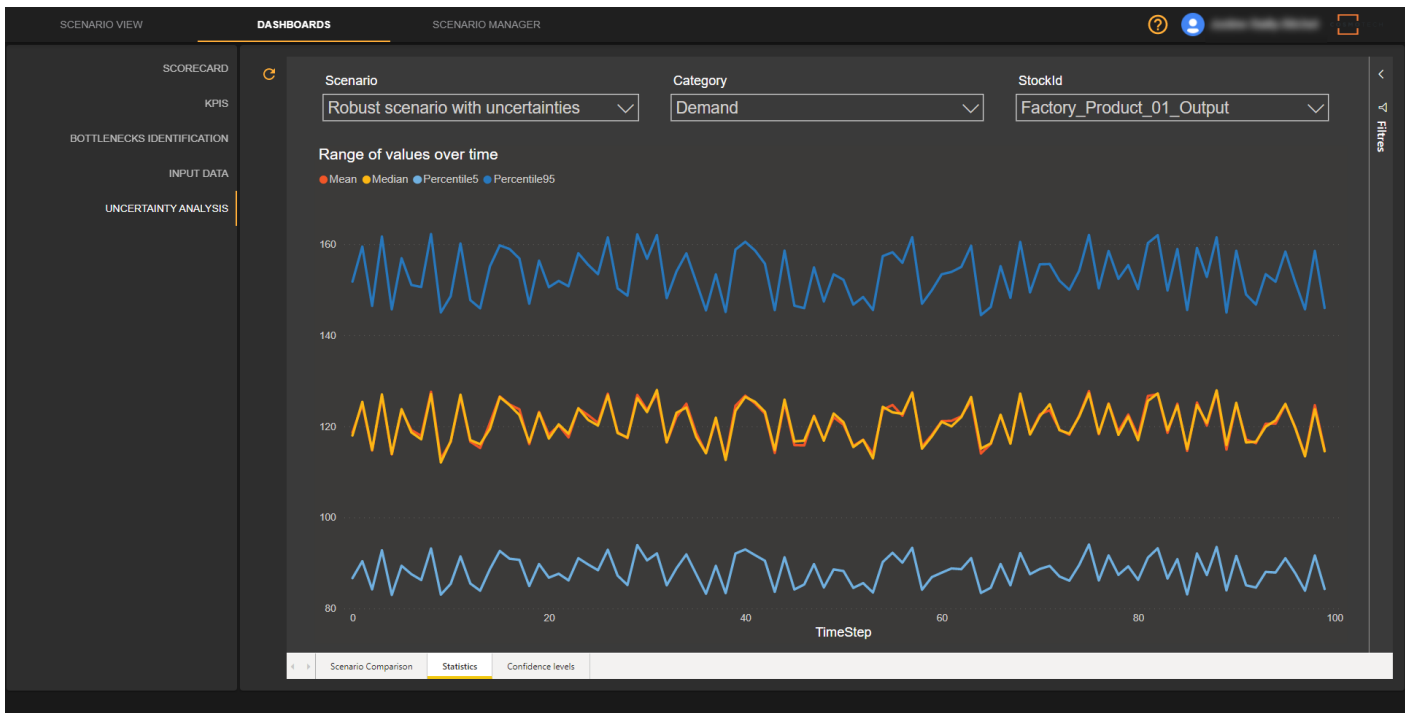


The dashboards displaying the result of one simulation, which means all dashboards except "uncertainty analysis", display the results of the only last simulation run (without uncertainty).

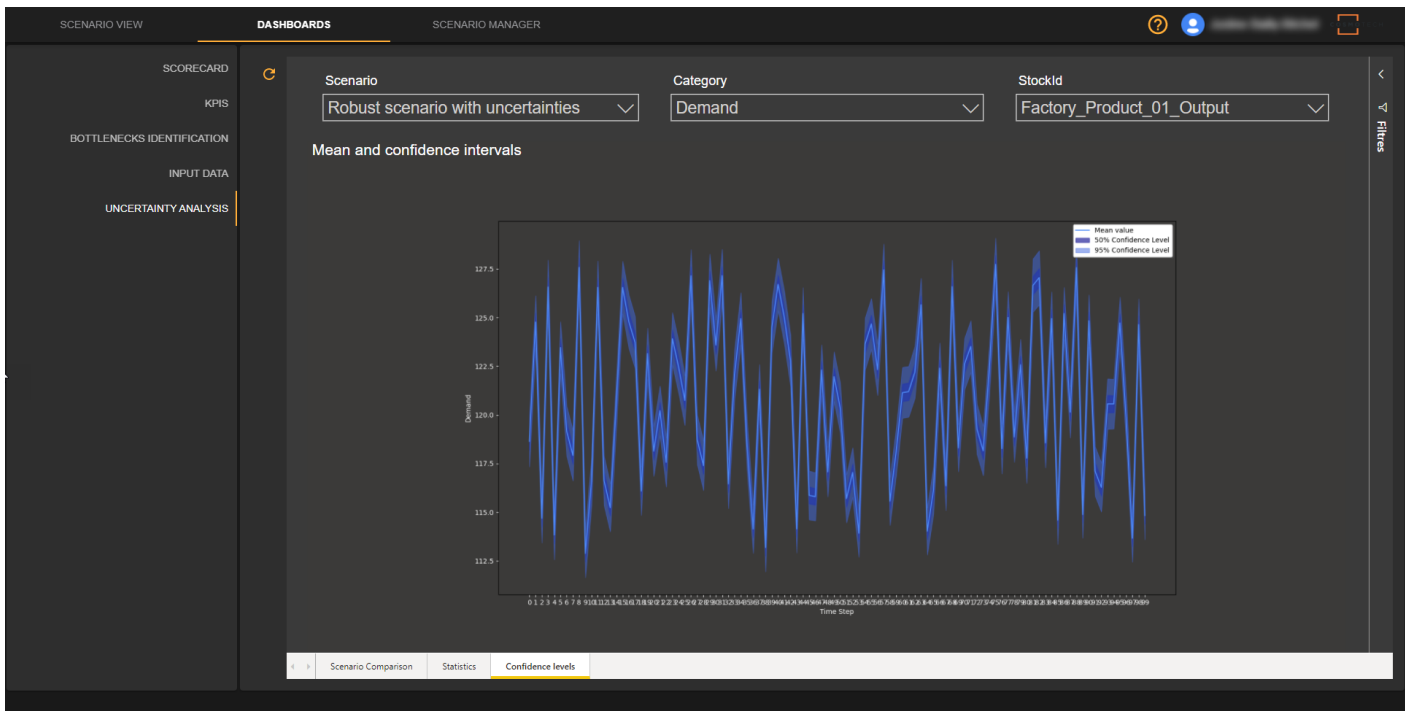
## Scenario Comparison



## Statistics



## Confidence Levels



# Modify Existing PowerBI reports

Once the reports are created and integrated into the web application, it is possible to modify them with PowerBI.

Prerequisites .....	36
Default Reports .....	37
Modify a Report .....	39

# Prerequisites

In order to modify existing PowerBI reports, you need:

- The "Contributor" access permission to the PowerBI workspace ;
- The "Viewer" access to ADX database.



Access to the web application is not mandatory to modify or create PowerBI reports which are available in the web application but is advised to be able to check new reports directly in the web application.



# Default Reports

By default, Cosmo Tech Supply Chain web application includes the following PowerBI reports:

PowerBI Report	Description	ADX Tables or queries used
Scenario view	<ul style="list-style-type: none"><li>• Visible in the <b>Scenario view</b> page of the web-application.</li><li>• It summarizes KPIs for the current scenario selected into the web application.</li><li>• This report can contain only one page.</li><li>• It is possible to modify the visuals of the existing page but not possible to add new pages.</li><li>• This report has a specific size in order to fit to the available space into "Scenario view" page of the web-app : 1580 pixels width x 400 pixels height.</li></ul>	<ul style="list-style-type: none"><li>• GetCostsAndIncome</li><li>• GetProductionResources</li><li>• GetStocks</li><li>• GetTransport</li><li>• GetPerformanceIndicators</li><li>• GetScenarios</li></ul>
Scorecard	<ul style="list-style-type: none"><li>• Visible in the <b>Dashboards</b> page of the web-application.</li><li>• Used for scenarios comparison (possibility to filter scenarios directly into PowerBI filters).</li><li>• This report can contain several pages.</li><li>• It is possible to modify the visuals of the existing pages and to add new pages with new visuals.</li></ul>	<ul style="list-style-type: none"><li>• GetCostsAndIncome</li><li>• GetStocks</li><li>• GetTransport</li><li>• GetPerformanceIndicators</li><li>• GetScenarios</li></ul>
KPIs	<ul style="list-style-type: none"><li>• Visible in the <b>Dashboards</b> page of the web-application.</li><li>• It displays detailed data for a selected scenario (selectors available in each page of the report as synchronized slicers).</li><li>• This report can contain several pages.</li><li>• It is possible to modify the visuals of the existing pages and to add new pages with new visuals.</li></ul>	<ul style="list-style-type: none"><li>• GetCostsAndIncome</li><li>• GetProductionResources</li><li>• GetProductionOperations</li><li>• GetStocks</li><li>• GetTransport</li></ul>

PowerBI Report	Description	ADX Tables or queries used
		<ul style="list-style-type: none"> <li>• GetPerformanceIndicators</li> <li>• GetScenarios</li> </ul>
Bottlenecks identification	<ul style="list-style-type: none"> <li>• Visible in the <b>Dashboards</b> page of the web-application.</li> <li>• Used for advanced bottleneck analysis for a selected scenario (selector available in the report).</li> <li>• This report can contain only one page.</li> <li>• It is possible to modify the visuals of the existing page but not possible to add new pages.</li> </ul>	<ul style="list-style-type: none"> <li>• GetOTIF</li> <li>• GetProductionResourceUtilization</li> <li>• GetScenarios</li> </ul>
Input data	<ul style="list-style-type: none"> <li>• Visible in the <b>Dashboards</b> page of the web-application.</li> <li>• Used to see the input data (from ADT and mass action lever) of a selected scenario (selectors available in each page of the report as synchronized slicers).</li> <li>• This report can contain several pages.</li> <li>• It is possible to modify the visuals of the existing pages and to add new pages with new visuals.</li> </ul>	<ul style="list-style-type: none"> <li>• Configuration</li> <li>• Contains</li> <li>• Input</li> <li>• Output</li> <li>• ProductionOperation</li> <li>• ProductionOperationSchedules</li> <li>• ProductionResource</li> <li>• ProductionResourceSchedules</li> <li>• Stock</li> <li>• StockSchedules</li> <li>• Transport</li> <li>• TransportSchedules</li> <li>• GetScenarios</li> </ul>

# Modify a Report

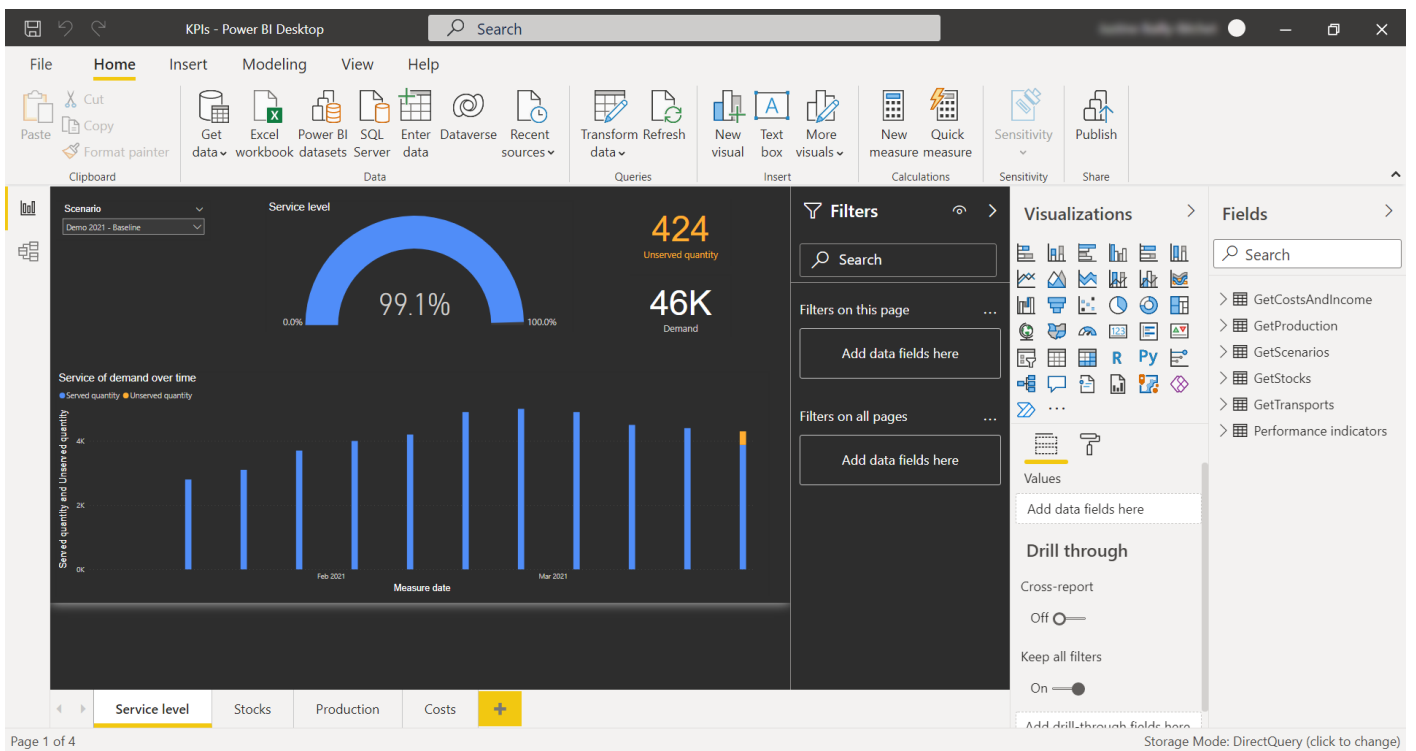
To modify a report in PowerBI:

1. Download the report from the corresponding PowerBI workspace.

The screenshot shows the Power BI web interface for a workspace named 'Supplychain\_dev'. A context menu is open over a table of workspace items. The menu options are: Analyze in Excel, Create report, Create paginated report, Delete, Quick insights, Security, Rename, Settings, Download the .pbix (highlighted with a red circle), Manage permissions, and View lineage. The table in the background lists various items including 'Input data', 'KPIs', and 'Mock-up\_Uncertainty analysis\_In progress'.

Name	Owner	Refreshed	Next refresh	Endorsement	Sensi
Input data	Supplychain_dev	30/09/21, 12:55:14	—	—	—
Input data	Supplychain_dev	30/09/21, 12:55:14	30/09/21, 13:55:14	—	—
KPIs	Supplychain_dev	30/09/21, 12:53:06	—	—	—
KPIs	Supplychain_dev	30/09/21, 12:53:06	30/09/21, 13:53:06	—	—
Mock-up_Uncertainty analysis_In progress	Supplychain_dev	07/09/21, 16:17:50	—	—	—
Mock-up_Uncertainty analysis_In progress	Supplychain_dev	07/09/21, 16:17:50	N/A	—	—

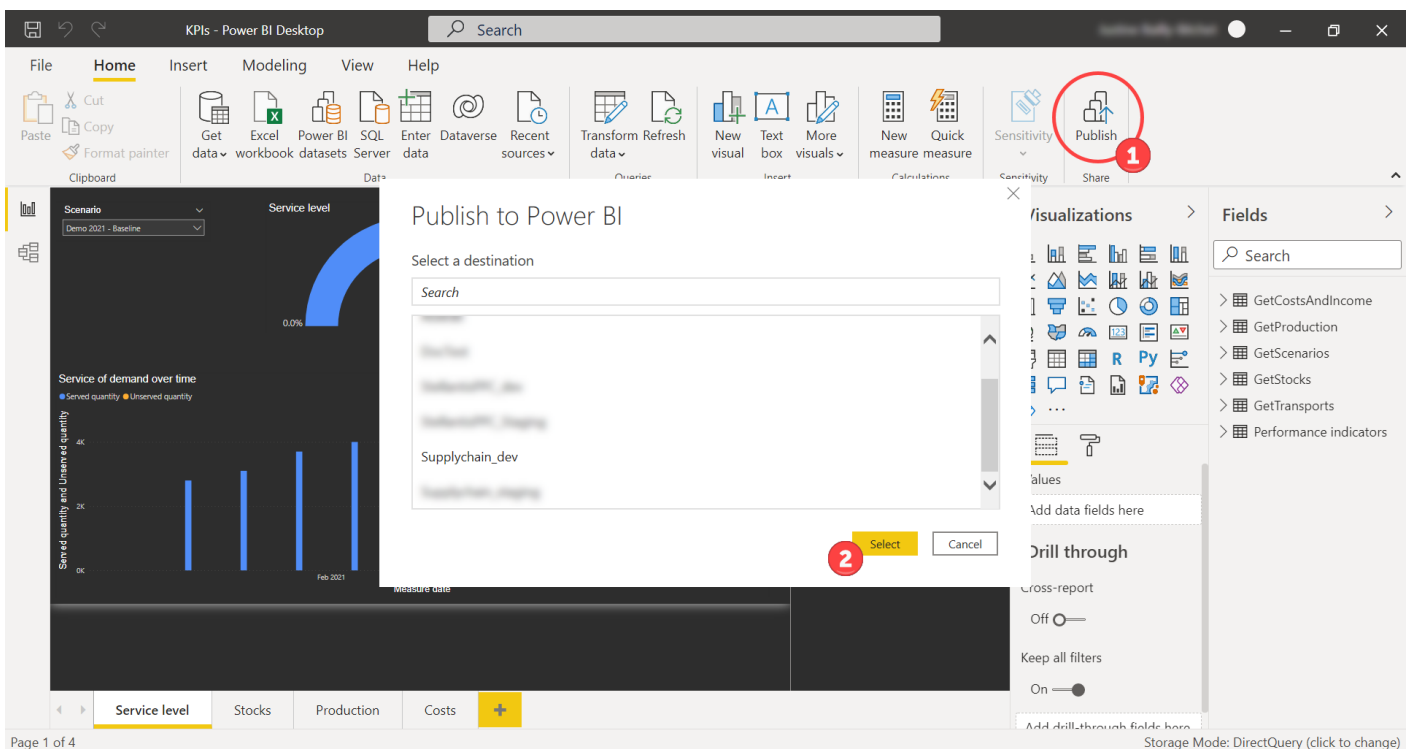
2. Edit the report with PowerBI Desktop.



3. Publish the report from PowerBI Desktop to the workspace to replace the original report.



Keep the same name to replace it.



We do not recommend you to take an existing report, to modify it and to publish it with the name of another existing report in order to replace it (for instance, modify "Scorecard" report and publish it with "KPIs" name).

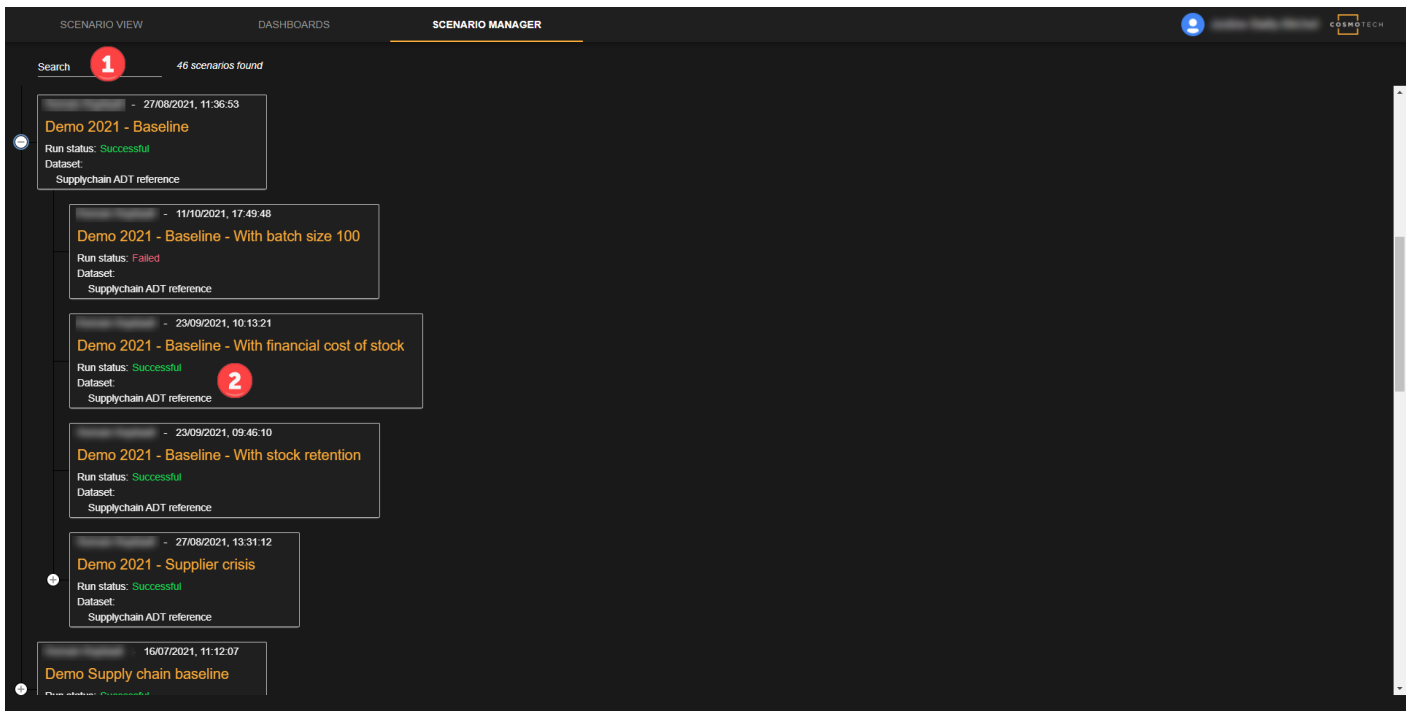
- ! If you do so, it will probably not work as you expect because each report contains a specific way of filtering ADX data for scenarios (only one scenario to be selected in the report for KPIs, all scenarios for "Scorecard", ...).



The **Scenario View** report size is of 1580 pixels (width) x 400 pixels (height) in order to fit into the **Scenario View** page of the web application. The standard size of the PowerBI reports is 16:9. It is possible to modify the report page sizes in PowerBI edit mode.

## 4. Scenario Manager

The **Scenario Manager** tab helps the user to visualize with ease the parent-child scenarios' relationships and displays the essential information of each scenario created.



1. Search bar to find a specific scenario

2. Essential information of the scenario:

- Name
- Creation date
- Creator user name
- Run status
- Dataset name



A scenario can be deleted from this view but by its creator only.