

FIG. 1

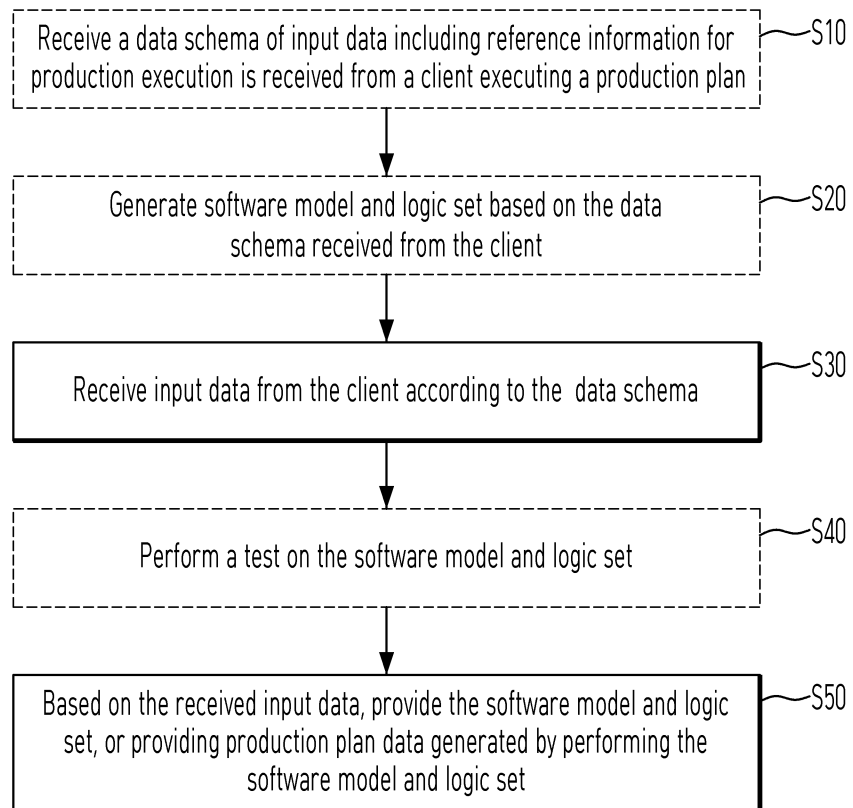


FIG. 2

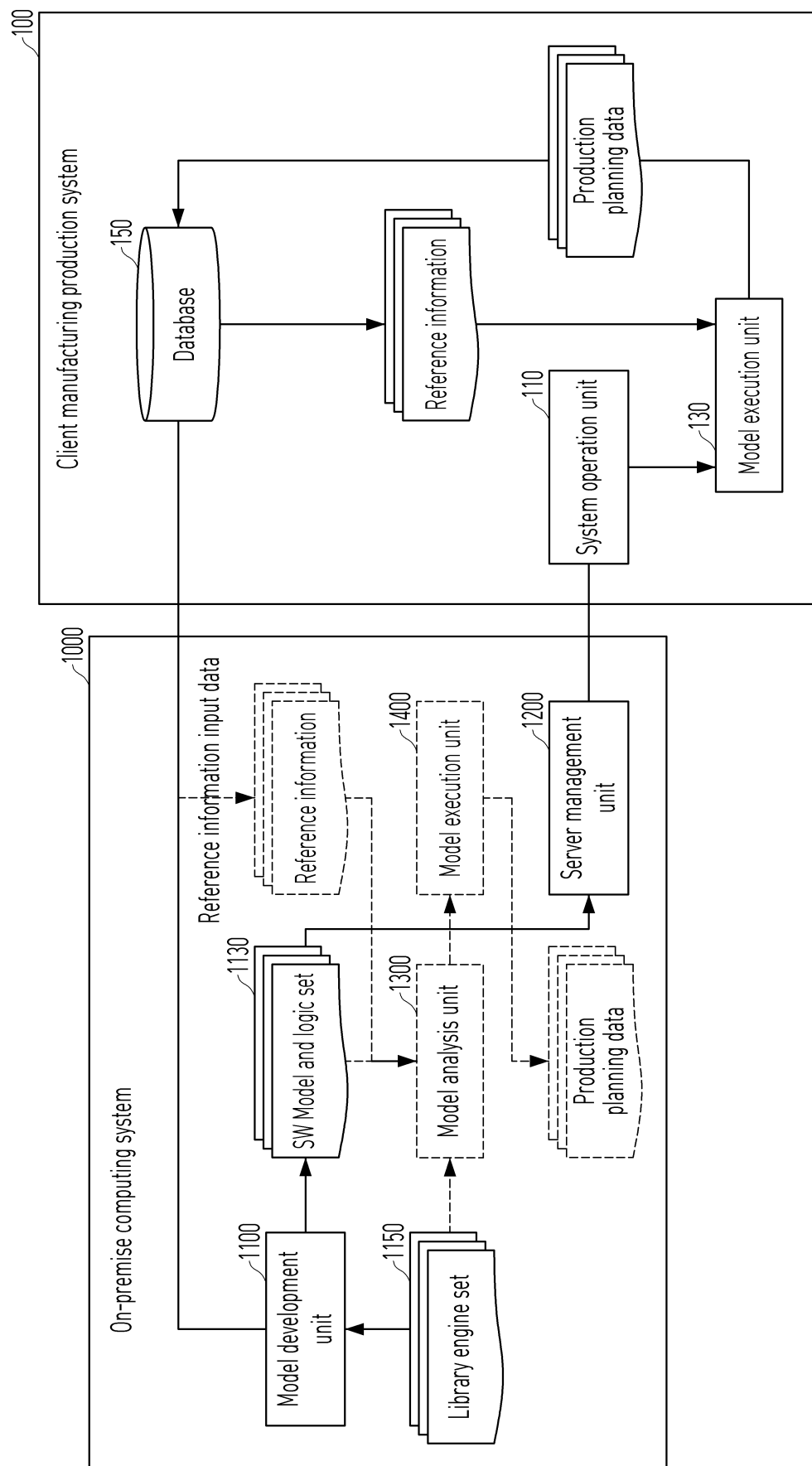


FIG. 3

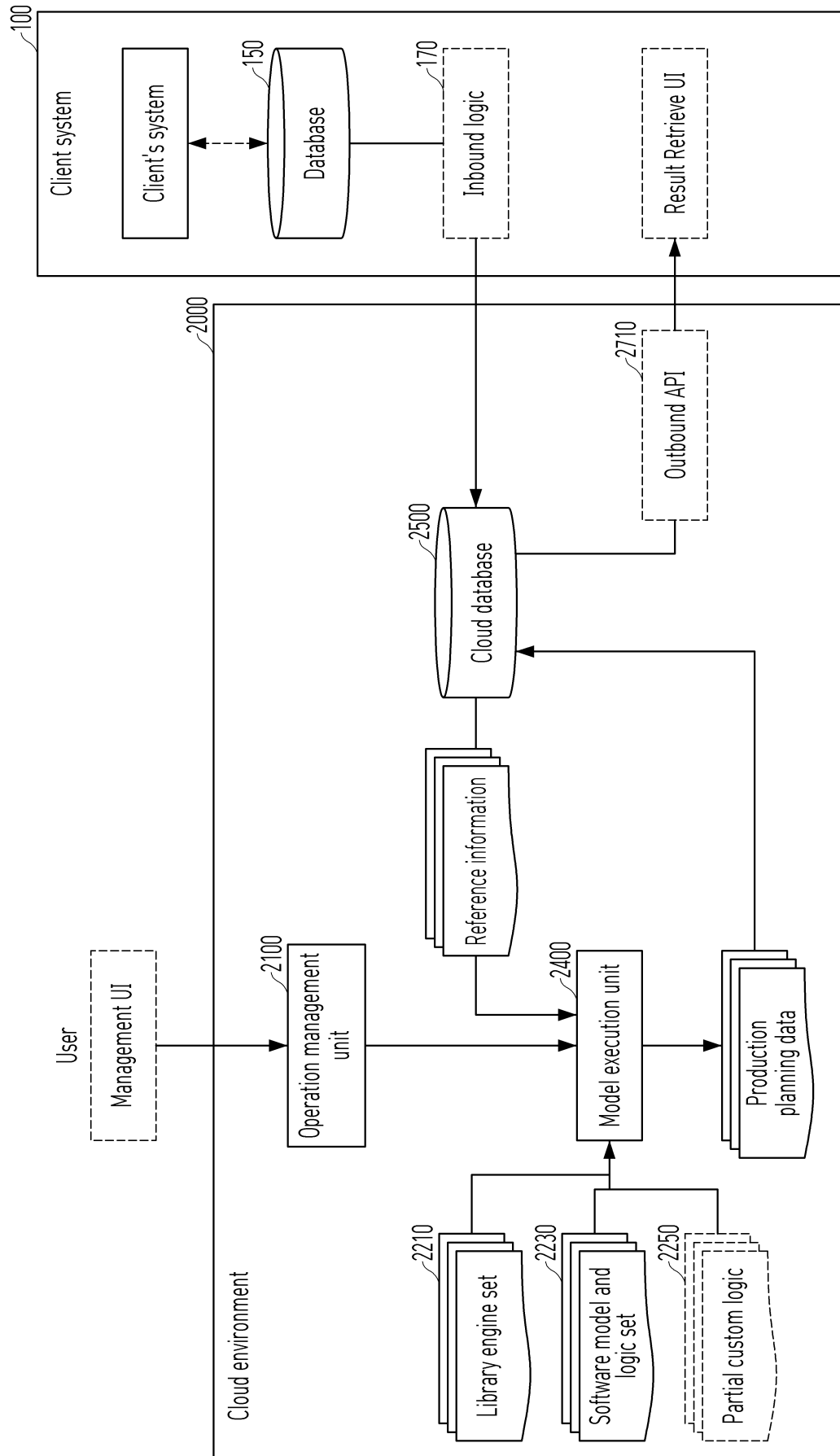


FIG. 4

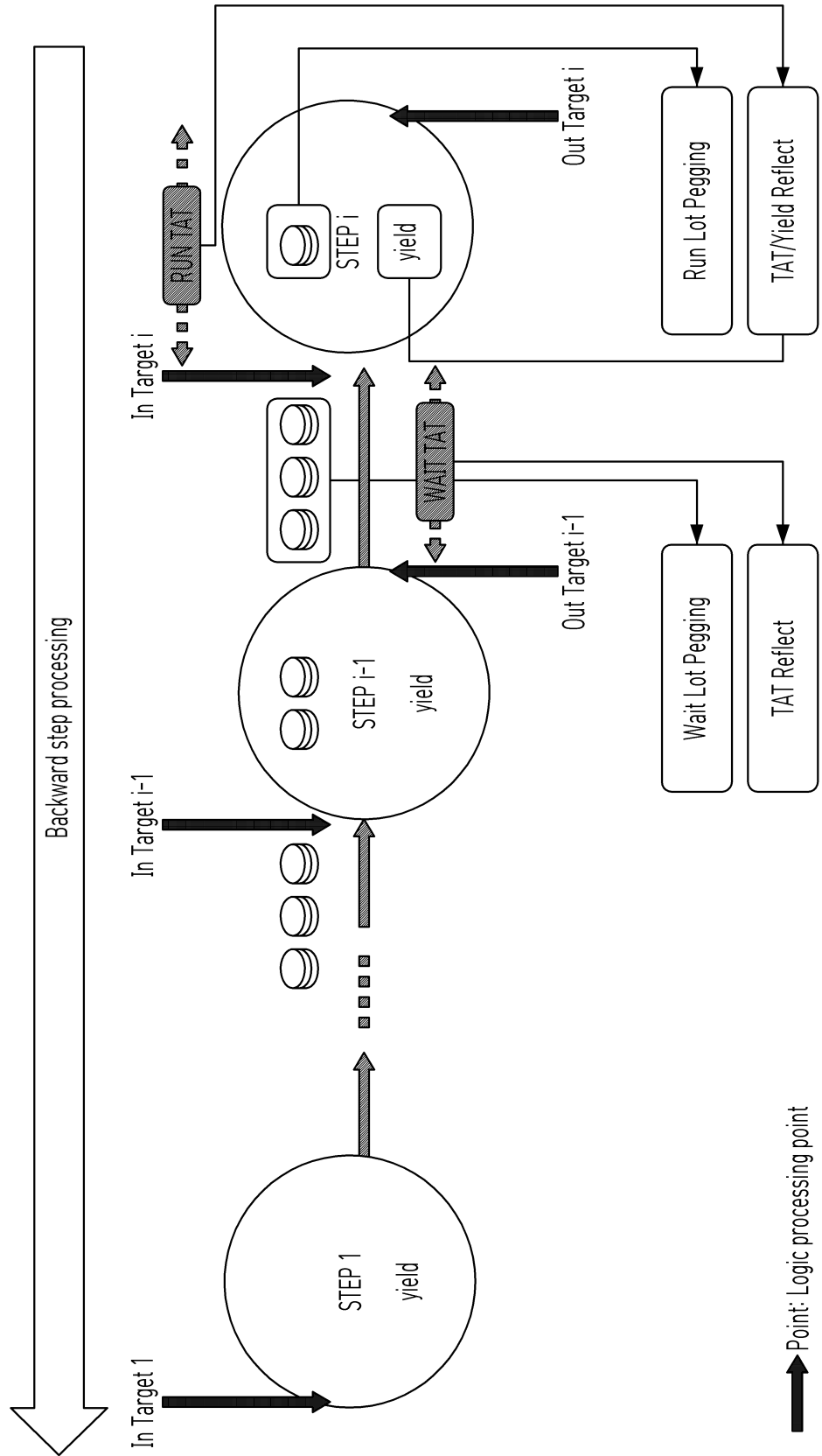


FIG. 5

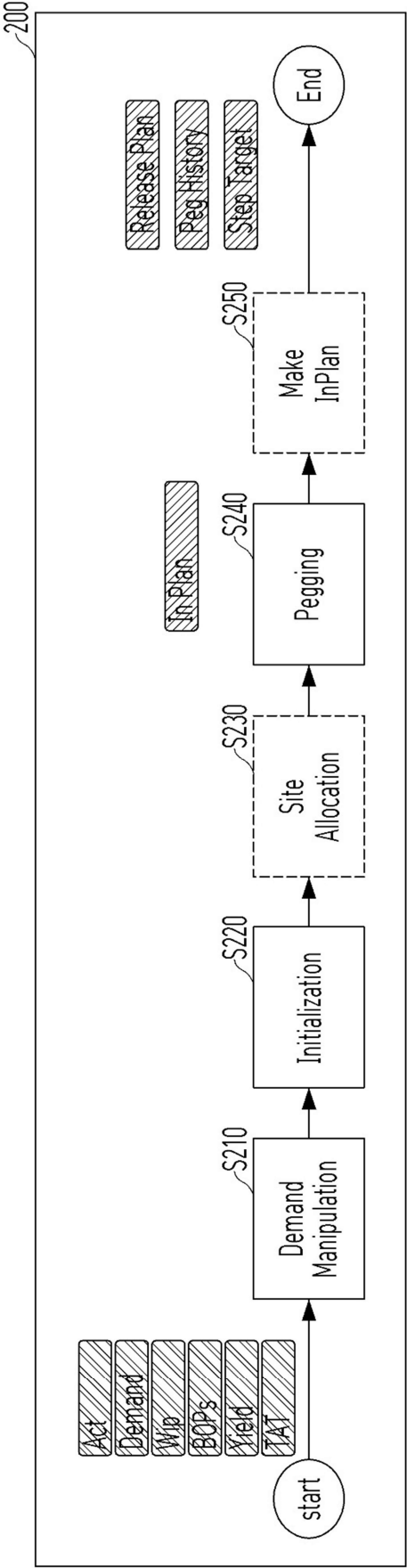


FIG. 6

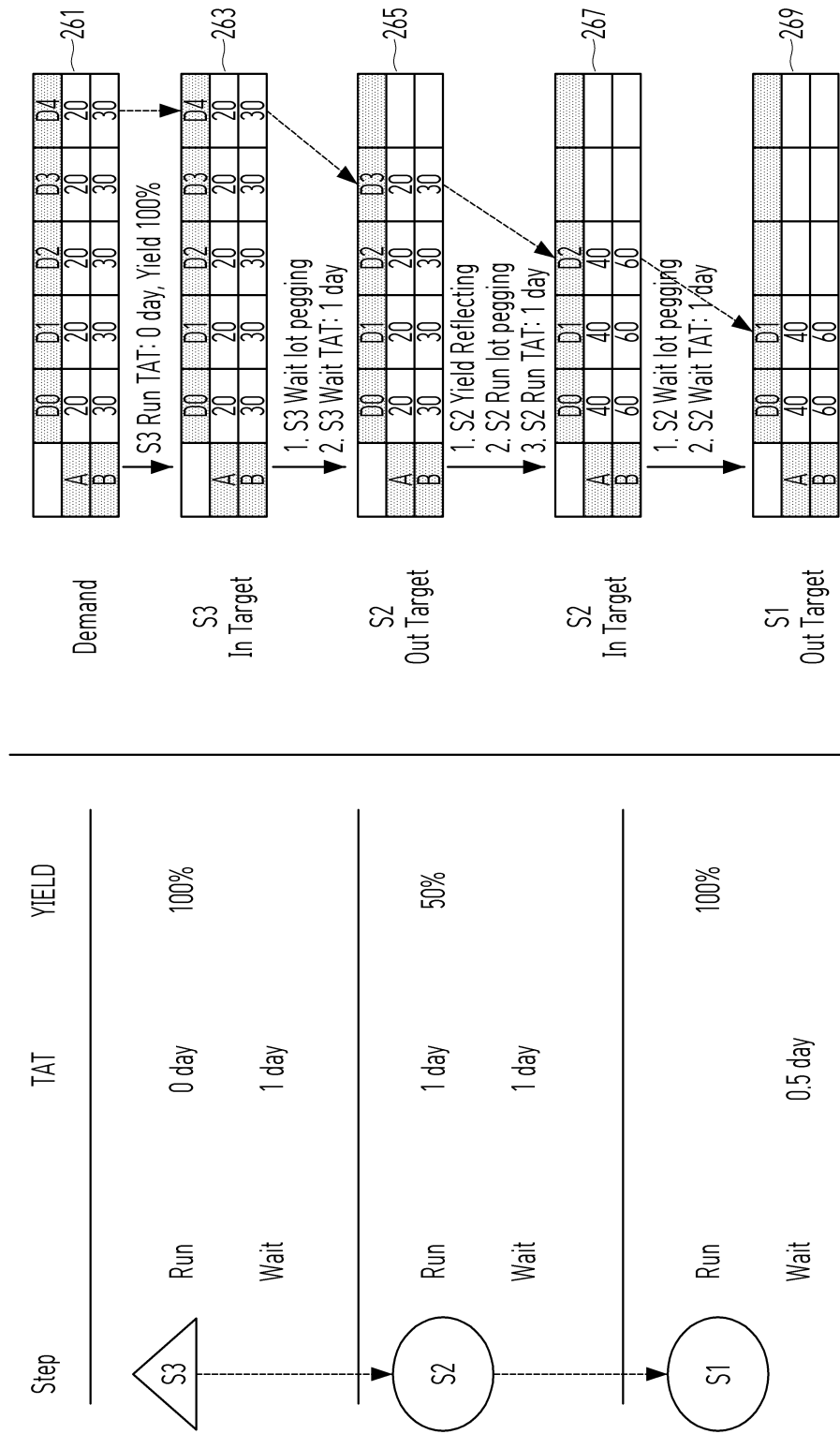


FIG. 7

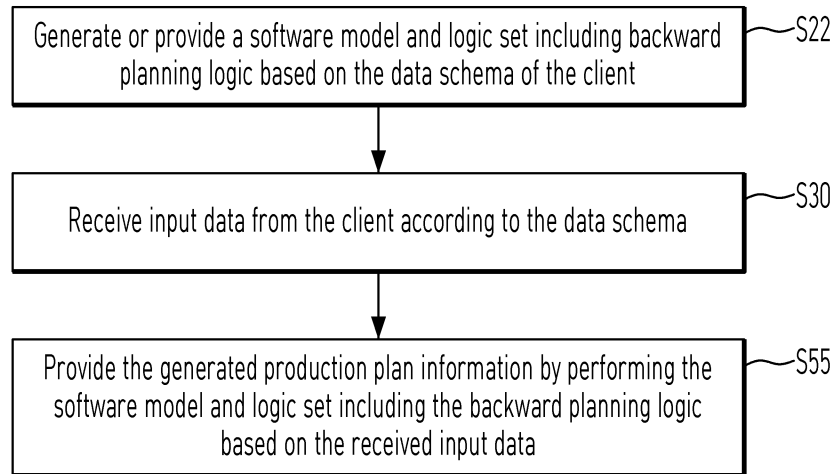


FIG. 8

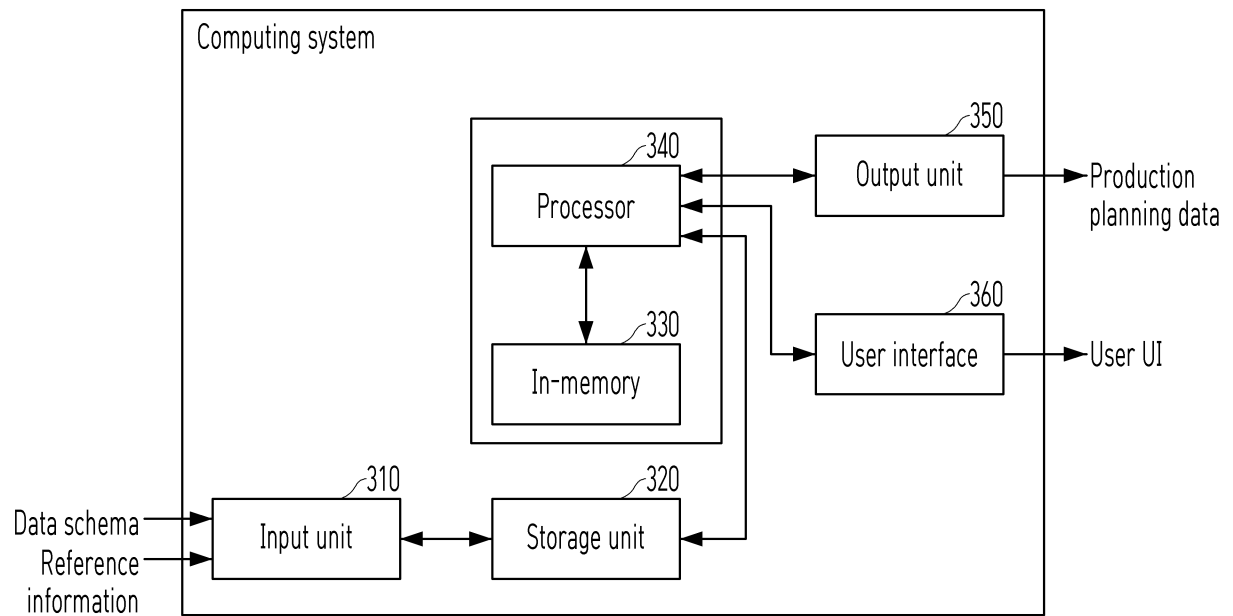


FIG. 9

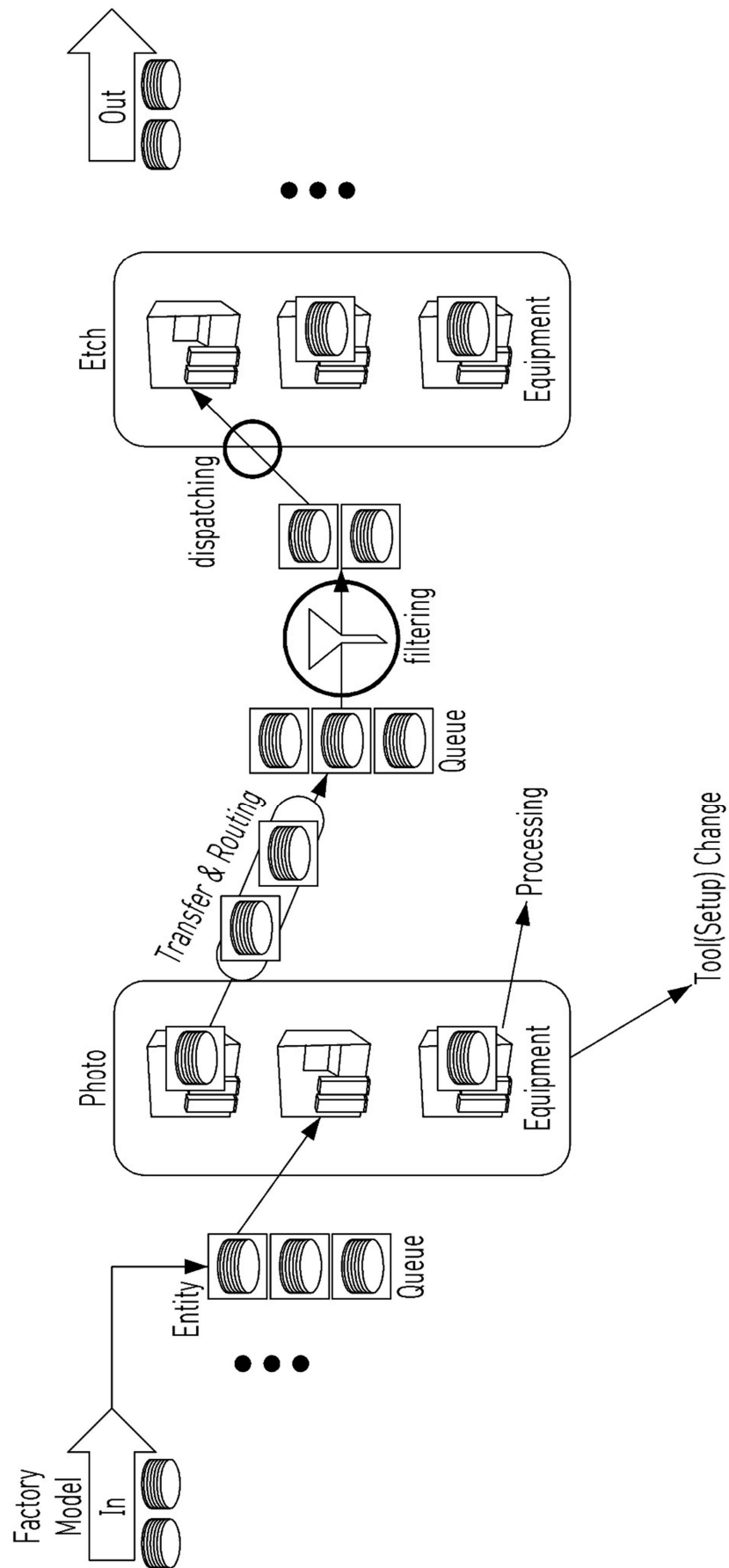


FIG. 10

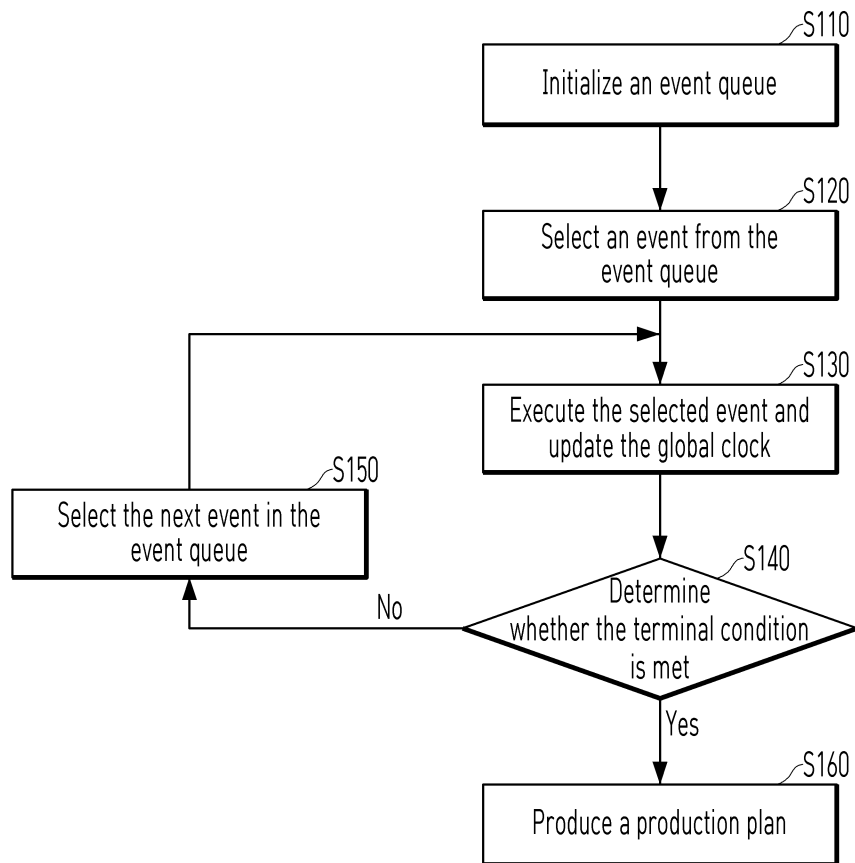


FIG. 11

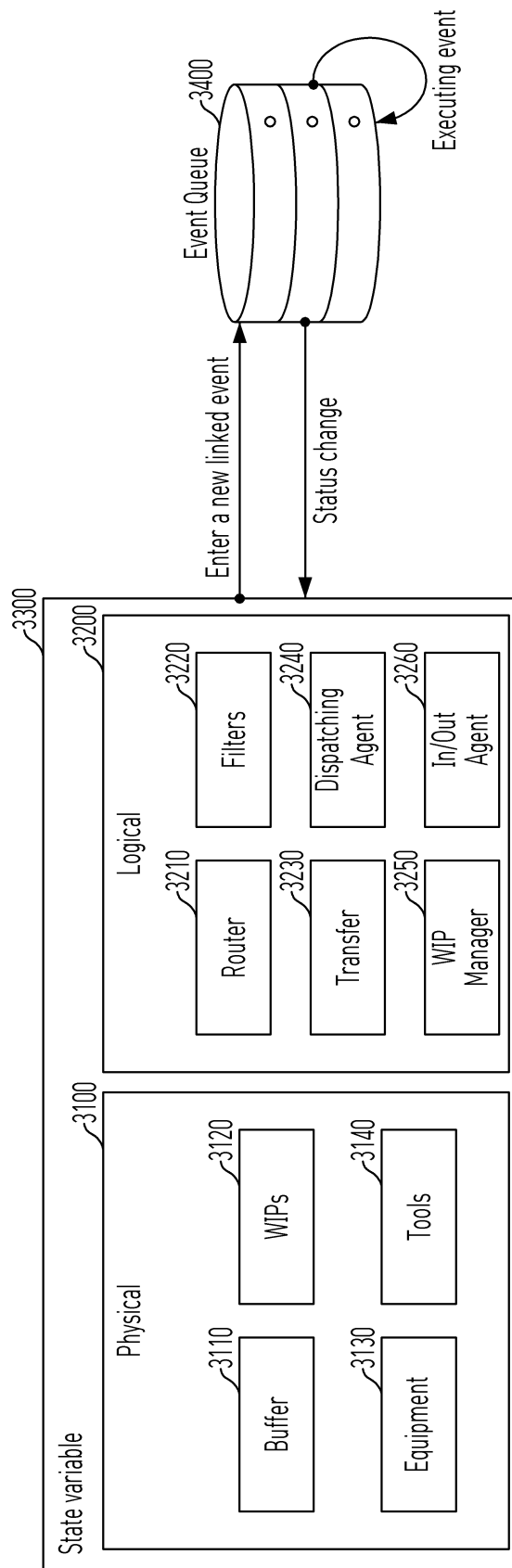


FIG. 12

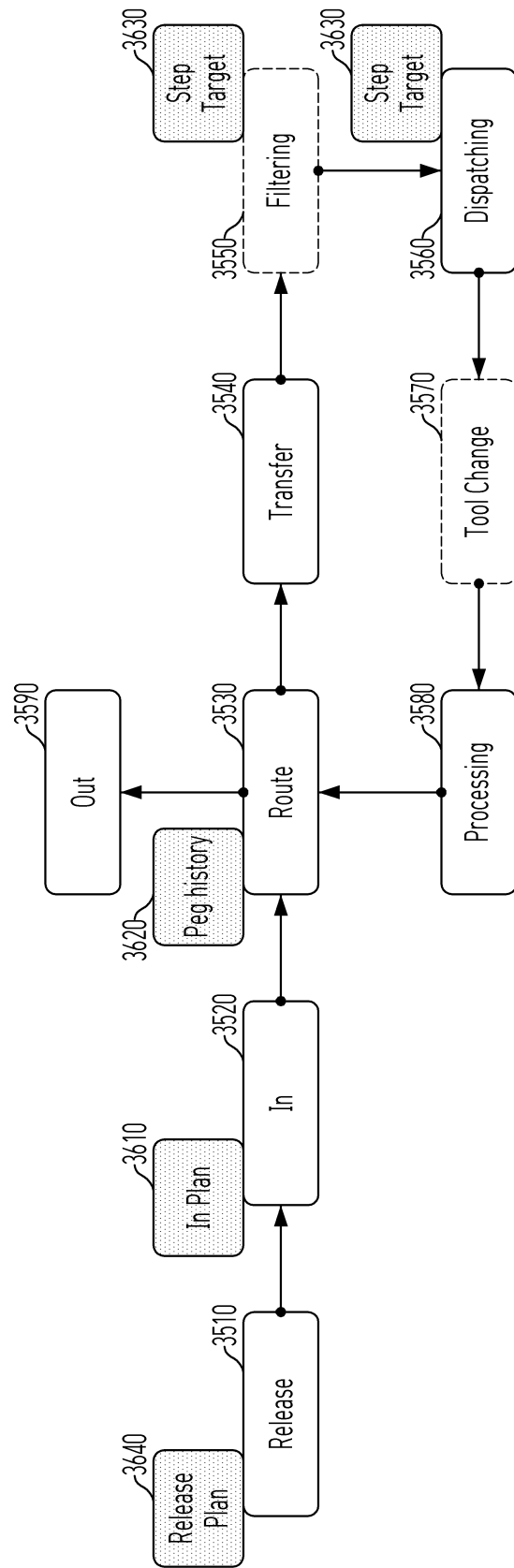


FIG. 13

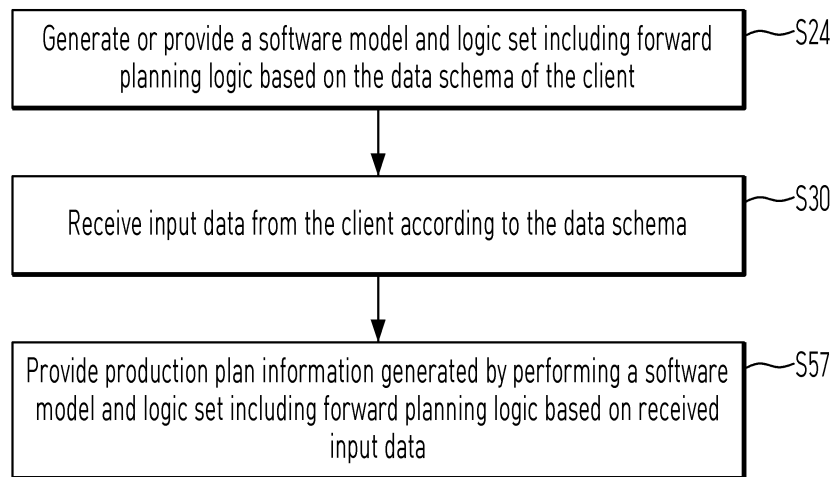


FIG. 14

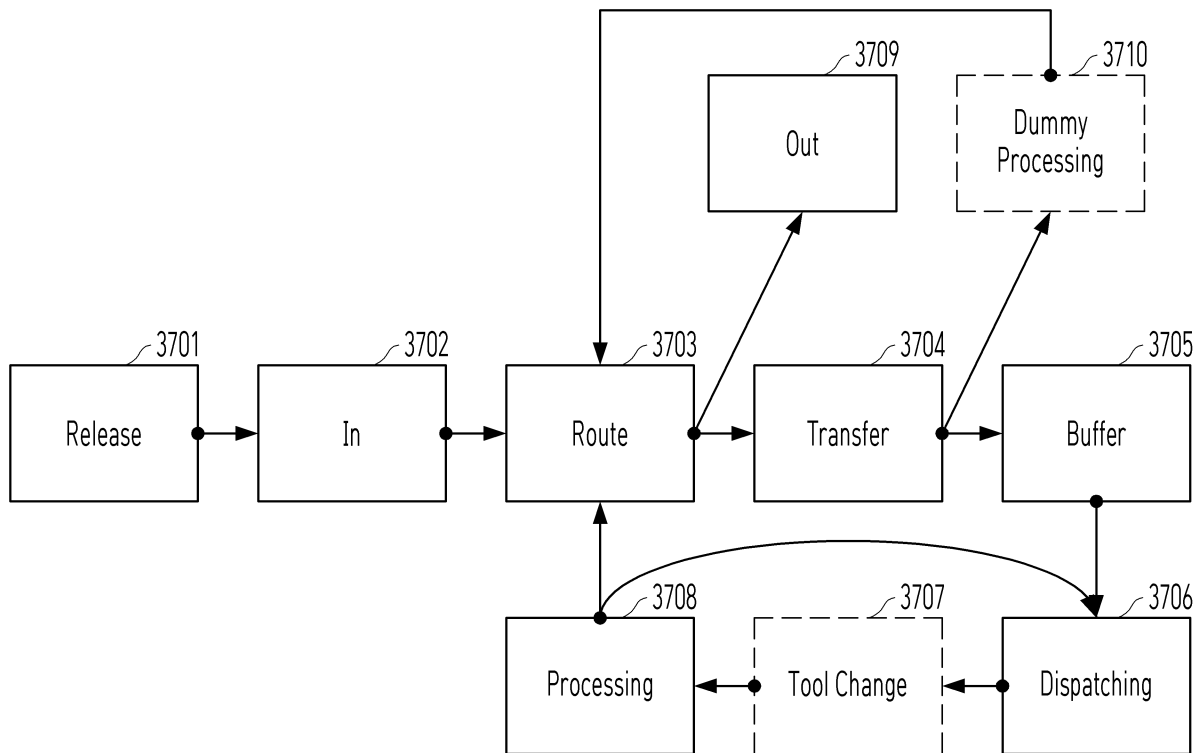


FIG. 15

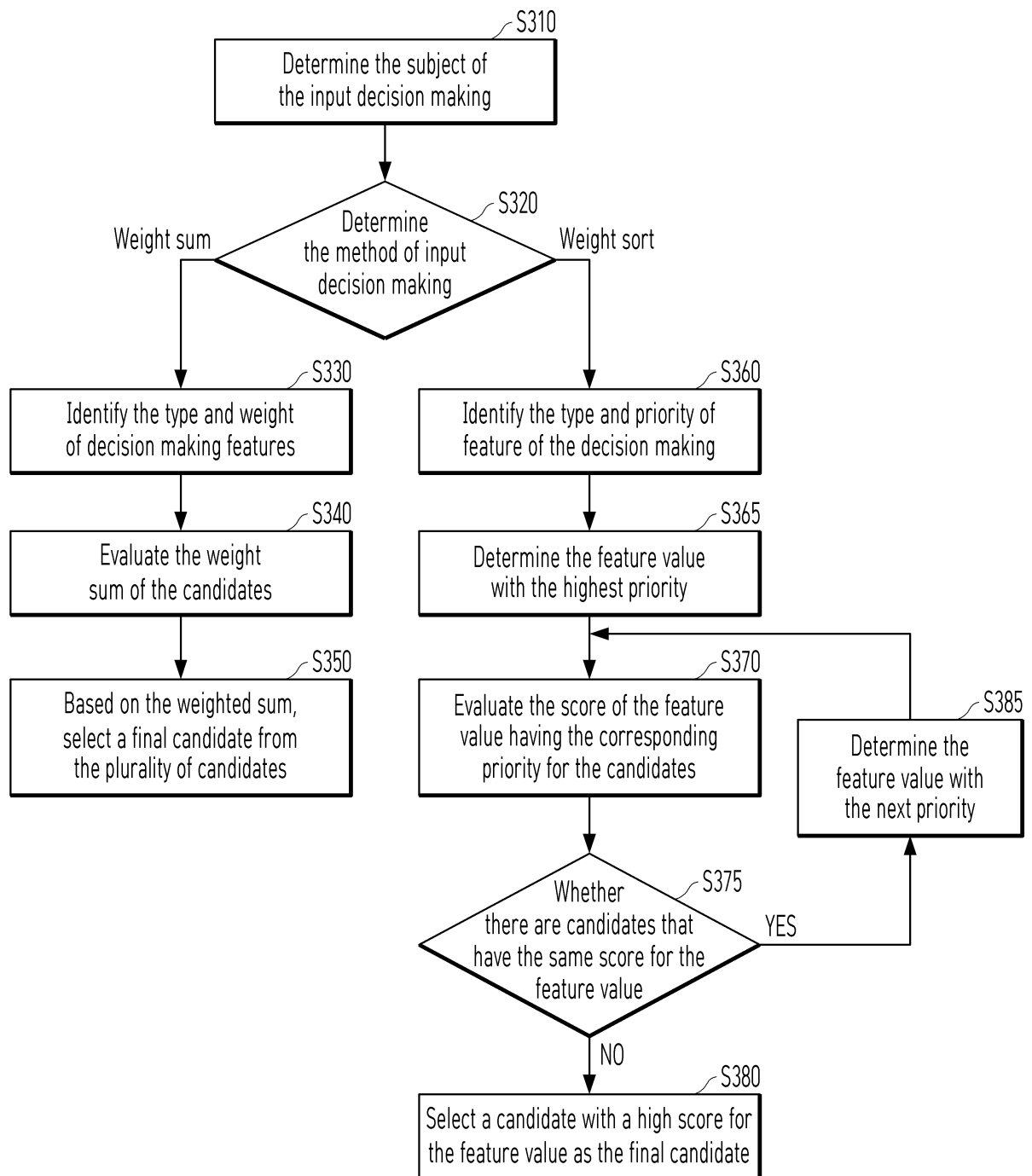


FIG. 16

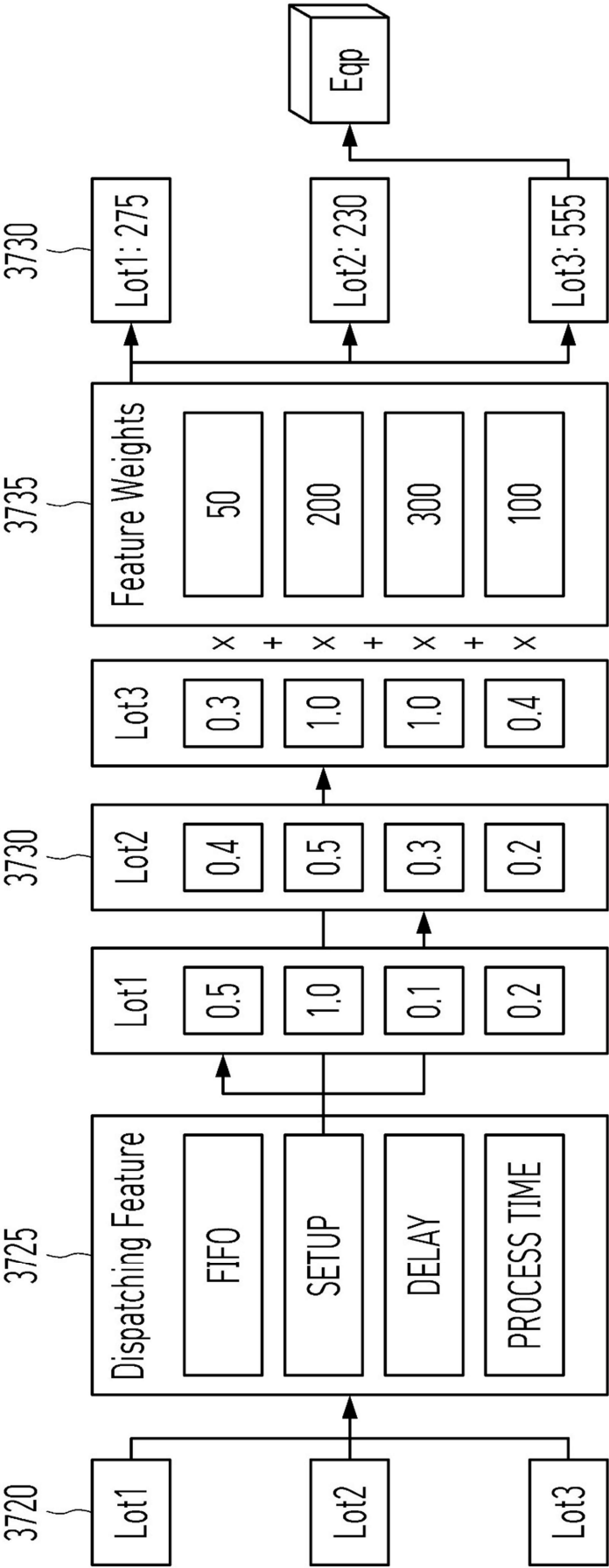


FIG. 17

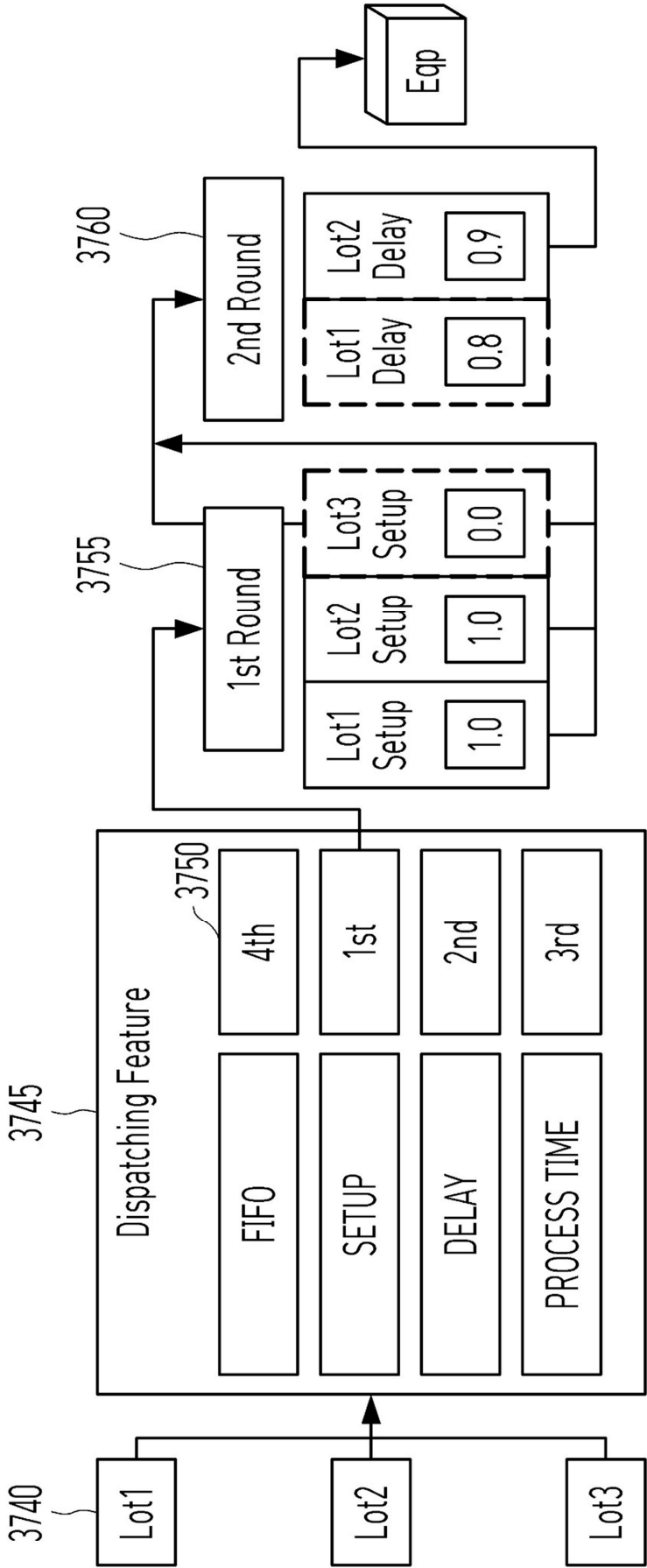


FIG. 18

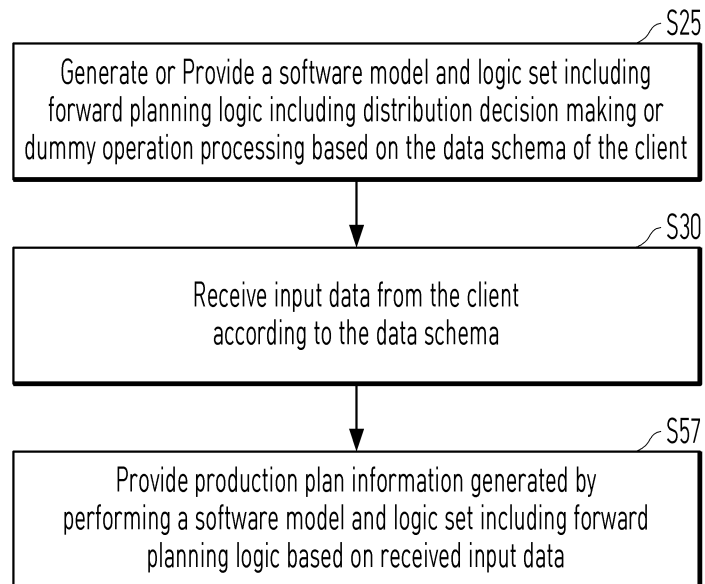


FIG. 19

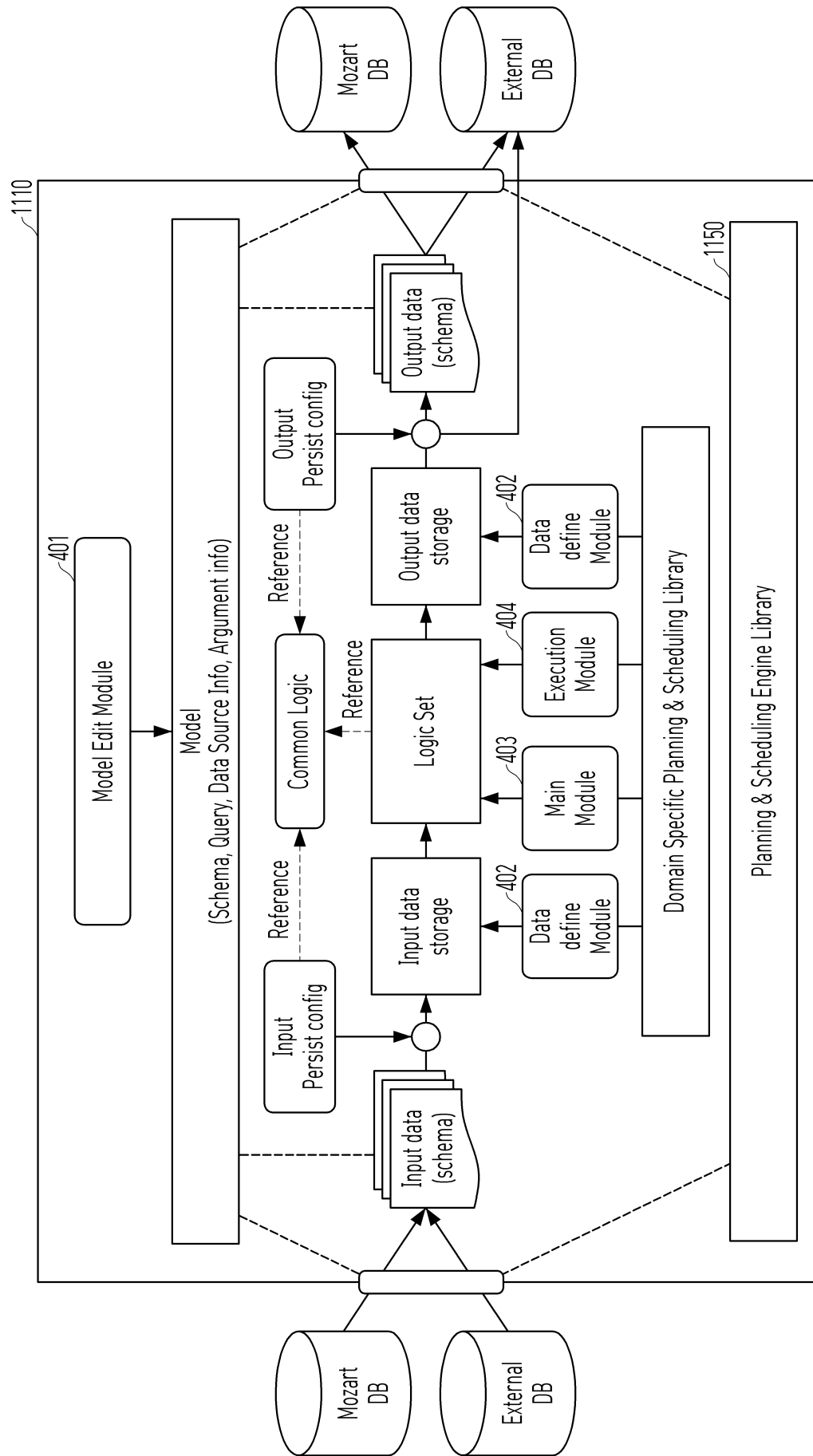


FIG. 20

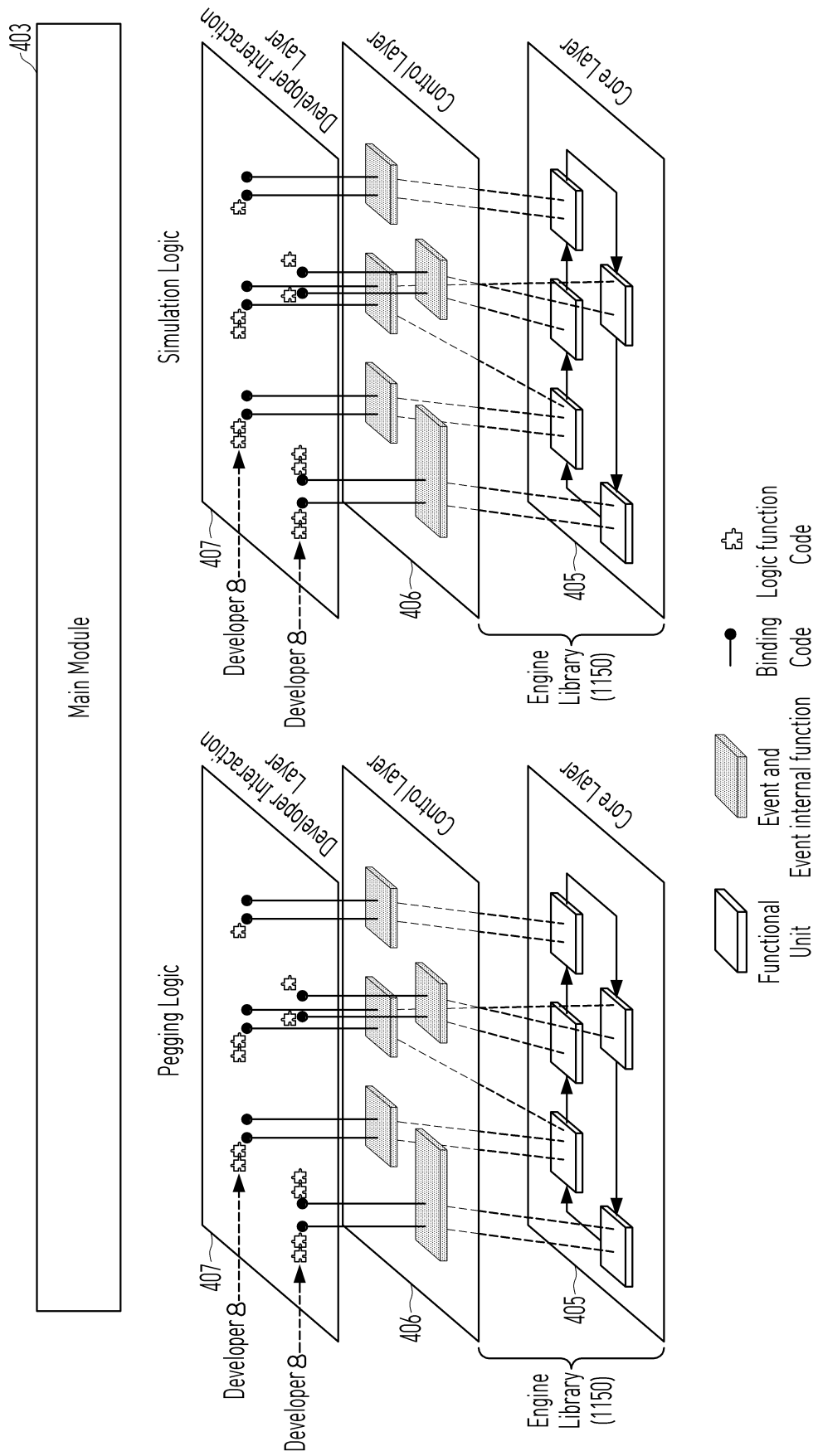


FIG. 21

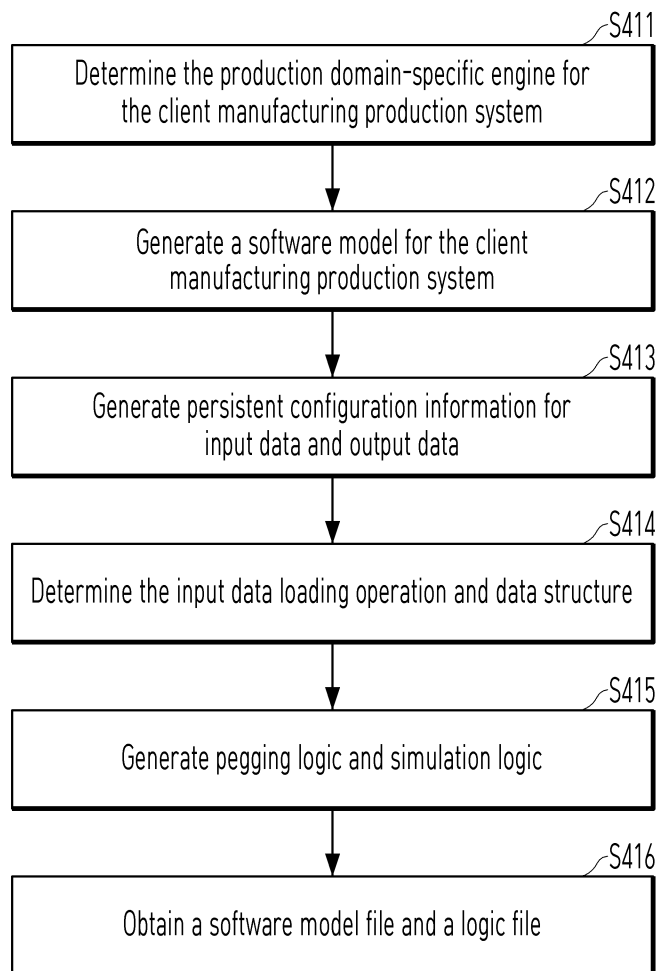


FIG. 22

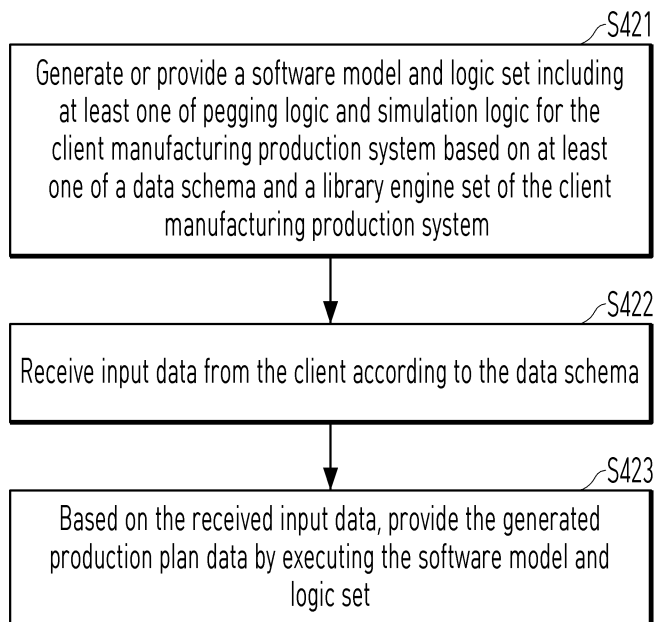


FIG. 23

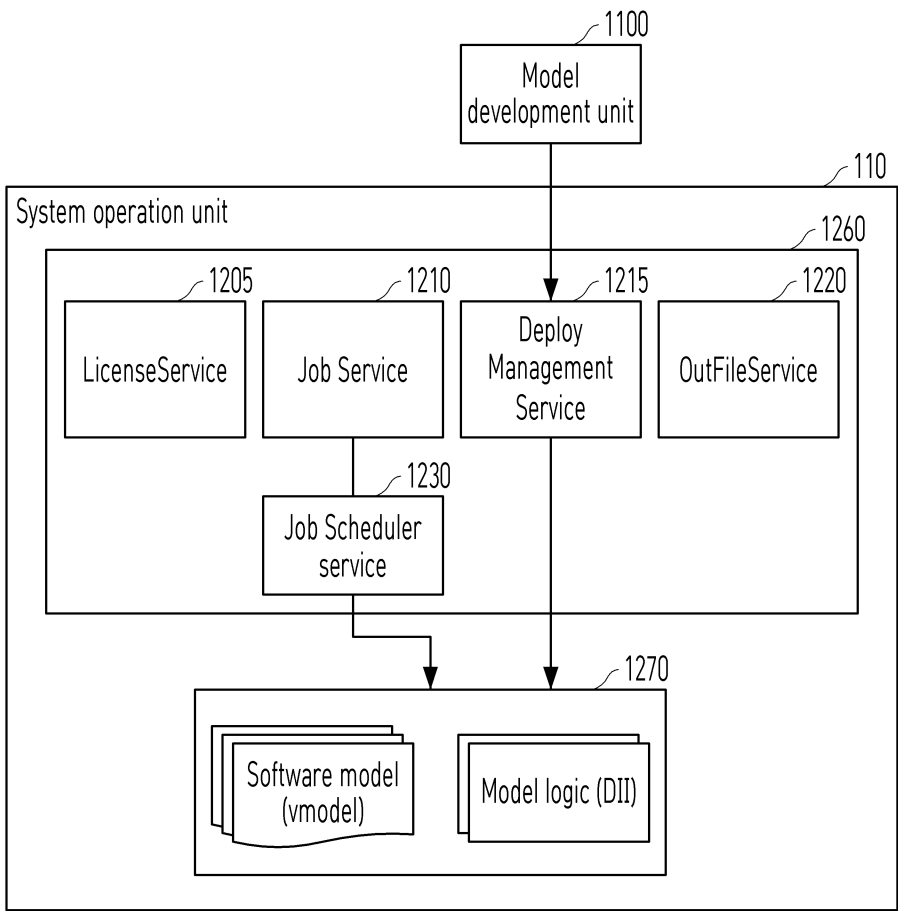


FIG. 24

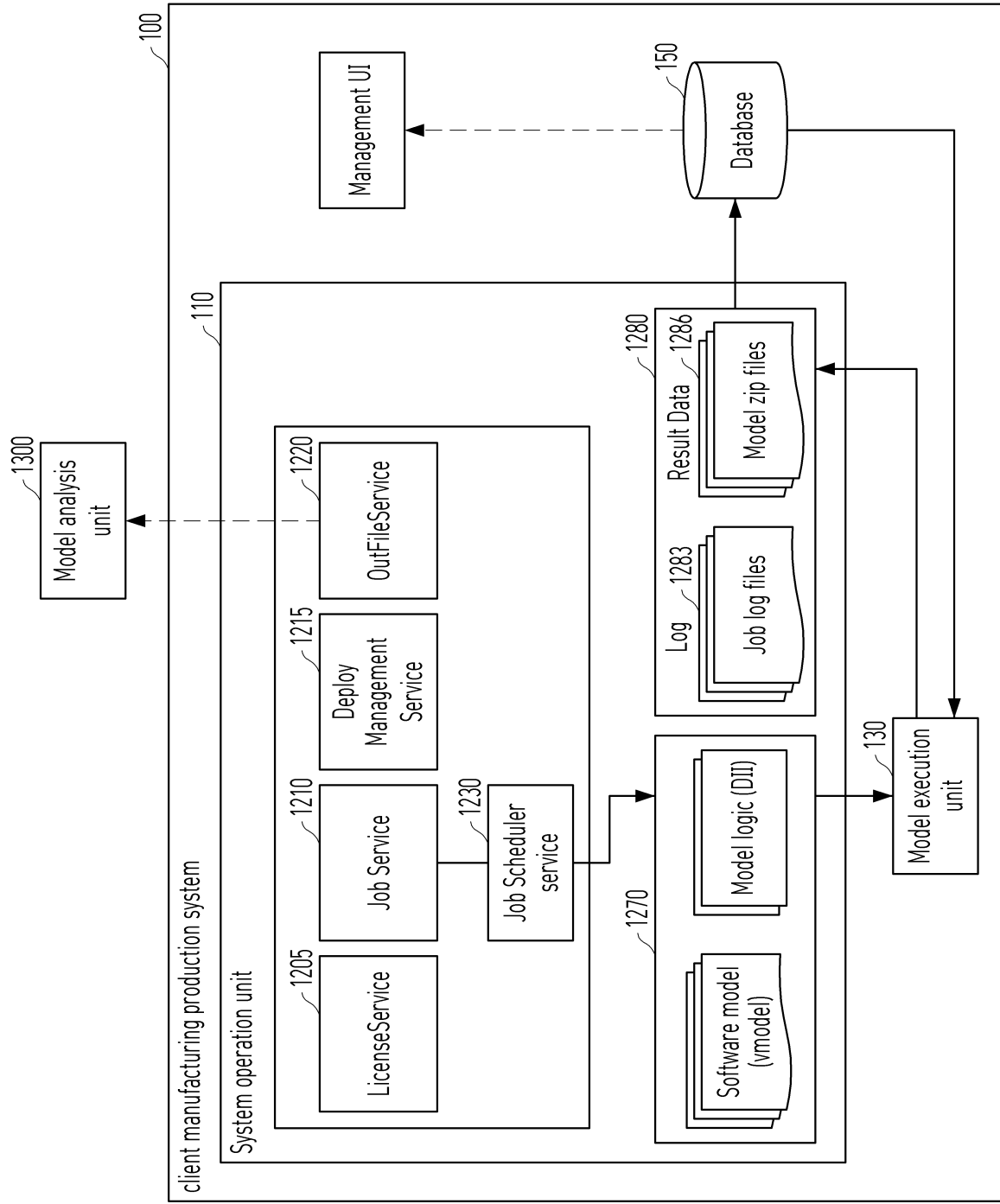


FIG. 25

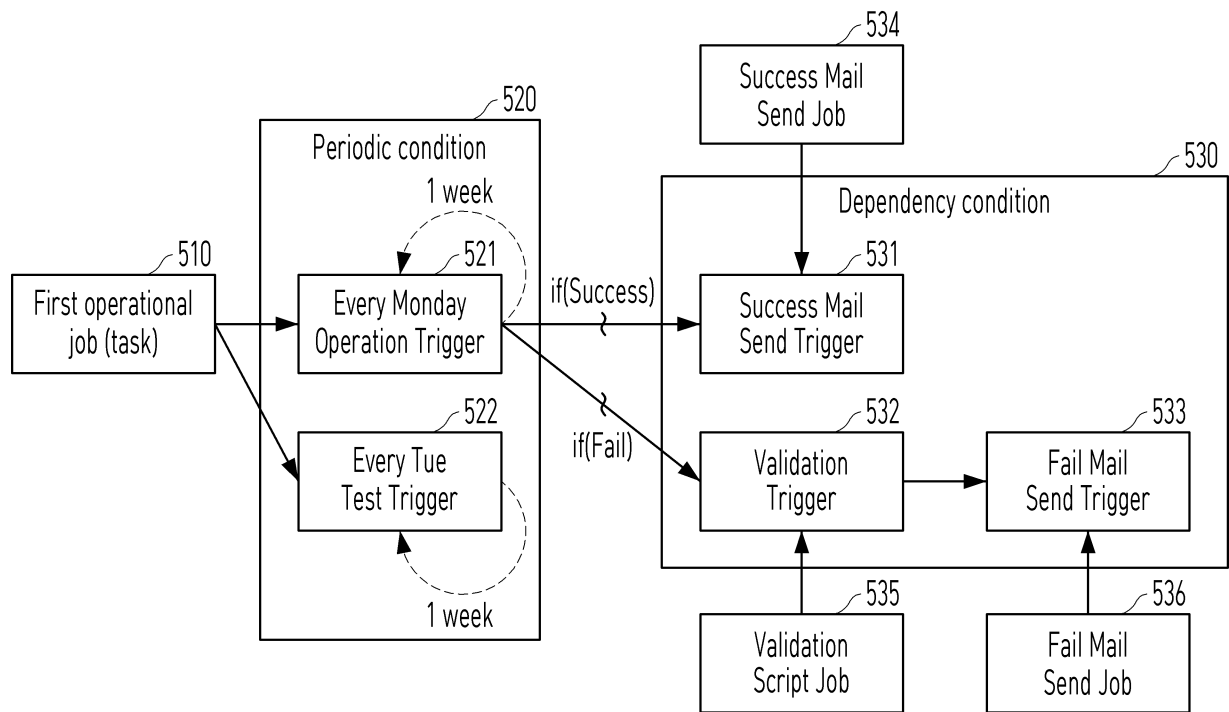


FIG. 26

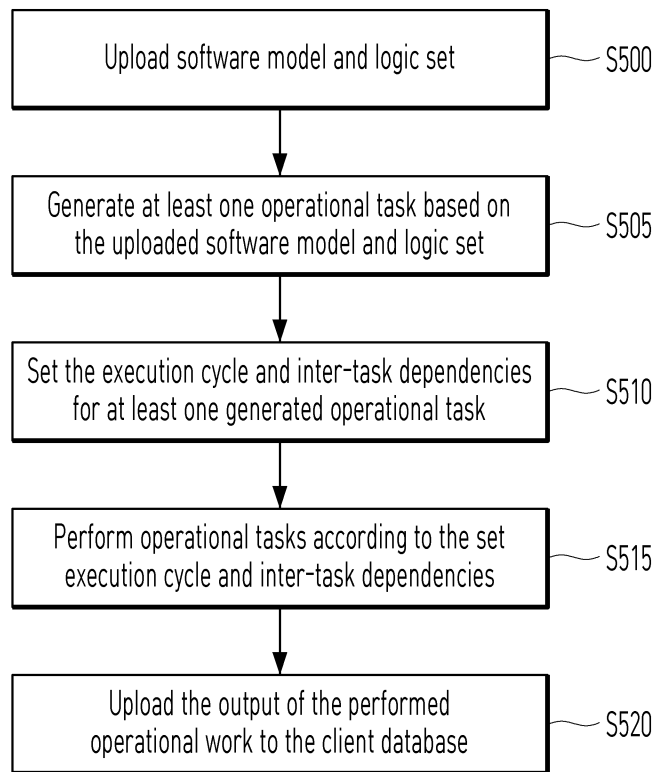


FIG. 27

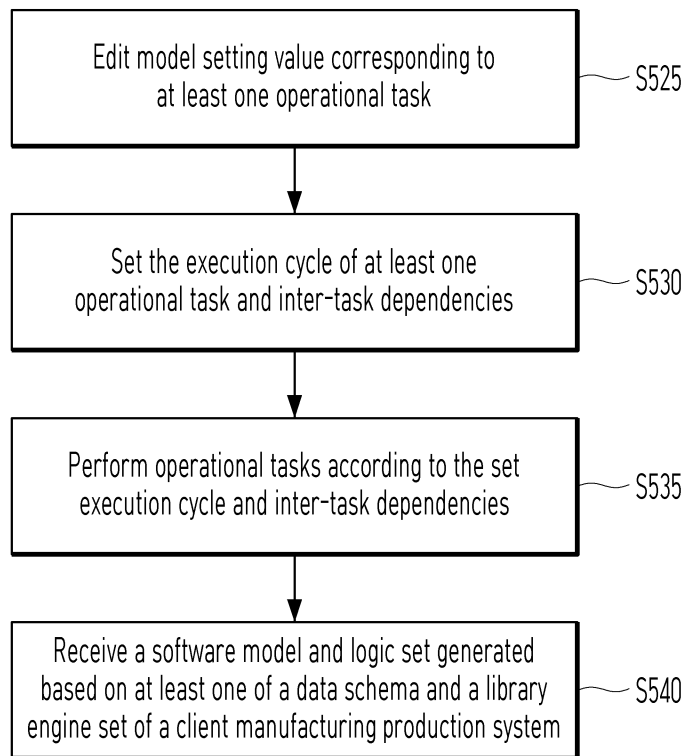


FIG. 28

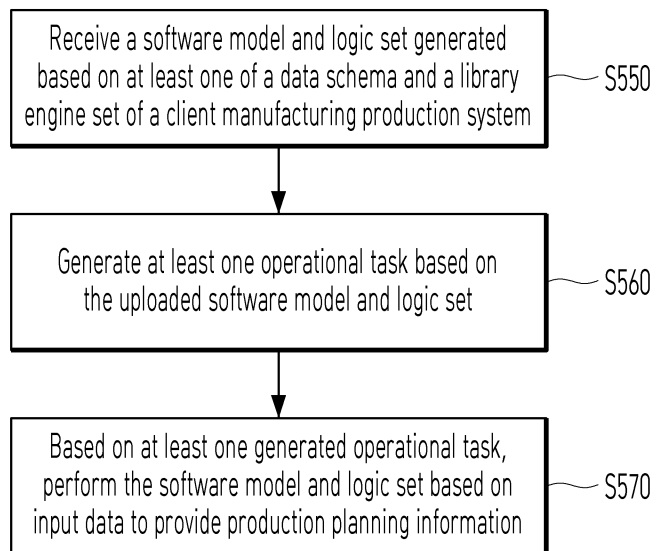


FIG. 29

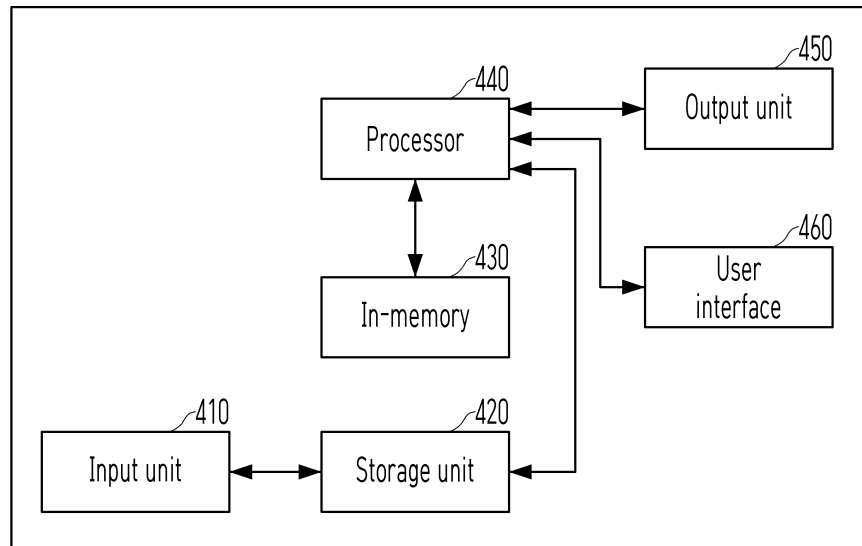


FIG. 30

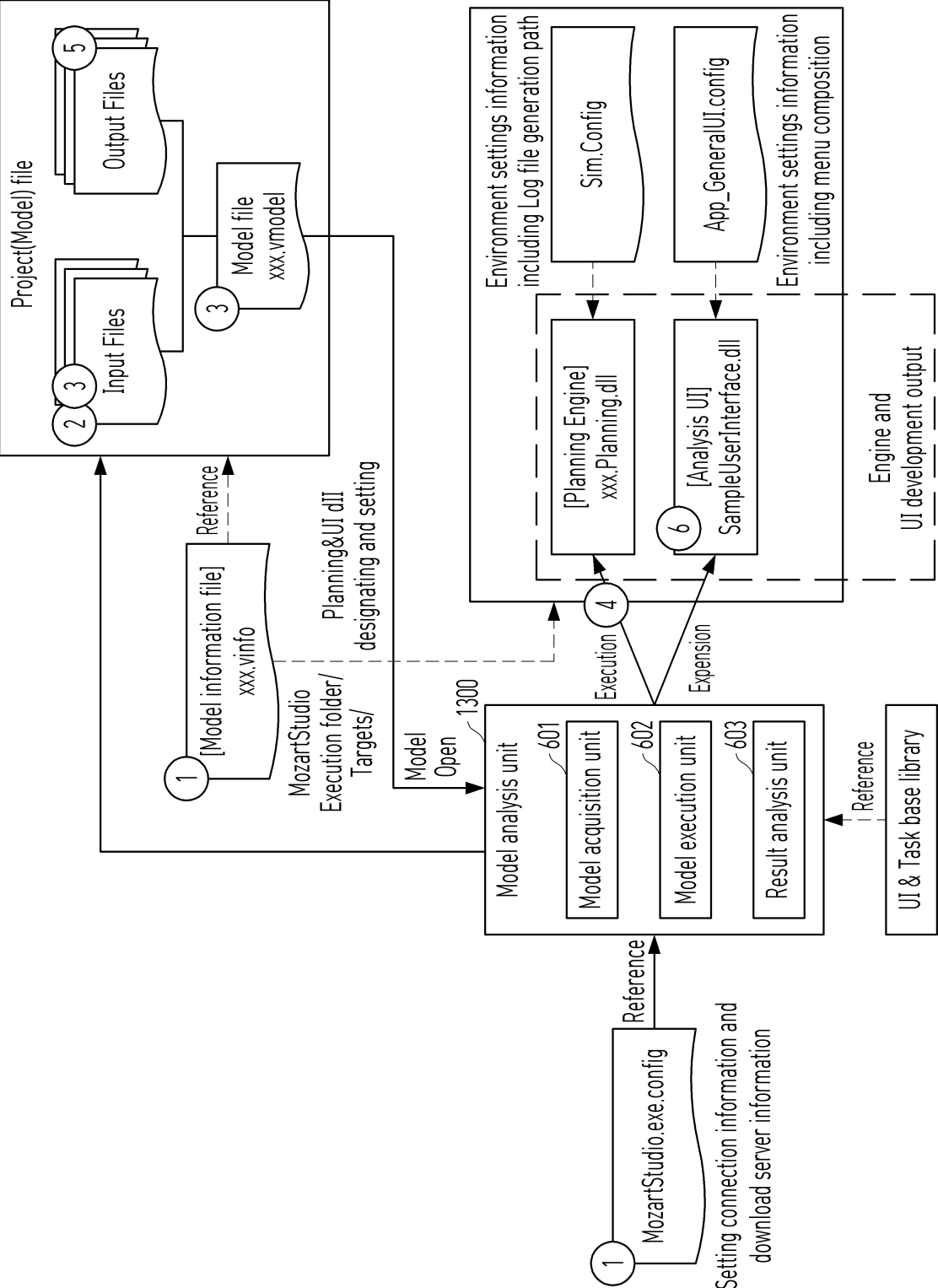


FIG. 31

Experiment 1/Result 0/SchedOut/EquipPlan

×

Fix Data

Manage View ▼ Grid Style

Description

drag a column header here to group by that column

EQP_ID	LOT_ID	PRODUCT_ID	PROCESS_ID	STEP_ID	LOT_QTY	DISPATCH_IN_TIME	START_TIME	END_TIME	TOOL_ID
EQP04	LOT03	PROD01	PROC01	STEP02	25	2016-10-19 06:53:00	2016-10-19 06:53:00	2016-10-19 07:09:40	ABC
	LOT01	PROD01	PROC01	STEP02	25	2016-10-19 06:00:00	2016-10-19 06:00:00		
	LOT02	PROD01	PROC01	STEP02	25				
EQP05	LOT04	PROD01	PROC01	STEP06	25				
EQP06	LOT01	PROD01	PROC01	STEP03	25				
	LOT04	PROD01	PROC01	STEP07	25				
EQP06	LOT02	PROD01	PROC01	STEP03	25				
EQP05	LOT01	PROD01	PROC01	STEP06	25				
	LOT01	PROD01	PROC01	STEP07	25				
EQP06	LOT03	PROD01	PROC01	STEP03	25				
EQP05	LOT02	PROD01	PROC01	STEP06	25				
	LOT02	PROD01	PROC01	STEP07	25				
EQP05	LOT03	PROD01	PROC01	STEP06	25				
	LOT03	PROD01	PROC01	STEP07	25				
EQP01	LOT05	PROD01	PROC01	STEP01	25				
	LOT05	PROD01	PROC01	STEP02	25				
EQP06	LOT05	PROD01	PROC01	STEP03	25				
EQP05	LOT05	PROD01	PROC01	STEP06	25				
	LOT05	PROD01	PROC01	STEP07	25				

Experiment 1/Result 0/SchedOut/EquipPlan

×

Fix Data

Manage View ▼ Grid Style

Description

dragging columns for grouping

EQP_ID	LOT_ID	PRODUCT_ID	PROCESS_ID	STEP_ID	LOT_QTY	DISPATCH_IN_TIME	START_TIME	END_TIME	TOOL_ID
EQP04	LOT03	PROD01	PROC01	STEP02	25	2016-10-19 06:53:00	2016-10-19 06:53:00	2016-10-19 07:09:40	ABC
	LOT01	PROD01	PROC01	STEP02	25	2016-10-19 06:00:00	2016-10-19 06:00:00		
	LOT02	PROD01	PROC01	STEP02	25				
EQP05	LOT04	PROD01	PROC01	STEP06	25				
EQP06	LOT01	PROD01	PROC01	STEP03	25				
	LOT04	PROD01	PROC01	STEP07	25				
EQP06	LOT02	PROD01	PROC01	STEP03	25				
EQP05	LOT01	PROD01	PROC01	STEP06	25				
	LOT01	PROD01	PROC01	STEP07	25				
EQP06	LOT03	PROD01	PROC01	STEP03	25				
EQP05	LOT02	PROD01	PROC01	STEP06	25				
	LOT02	PROD01	PROC01	STEP07	25				
EQP05	LOT03	PROD01	PROC01	STEP06	25				
	LOT03	PROD01	PROC01	STEP07	25				
EQP01	LOT05	PROD01	PROC01	STEP01	25				
	LOT05	PROD01	PROC01	STEP02	25				
EQP06	LOT05	PROD01	PROC01	STEP03	25				
EQP05	LOT05	PROD01	PROC01	STEP06	25				
	LOT05	PROD01	PROC01	STEP07	25				

Group Summary Editor

Items

Order

☒ Count
☐ DISPATCH_IN_TIME
☐ END_TIME
☐ EQP_ID
☐ LOT_ID
☐ LOT_QTY
☐ PROCESS_ID
☐ PRODUCT_ID

☐ Max
☐ Min
☐ Average
☐ Sum

Display setting through the Group Summary Editor for the grouped column after Grouping

OK

Cancel

FIG. 32

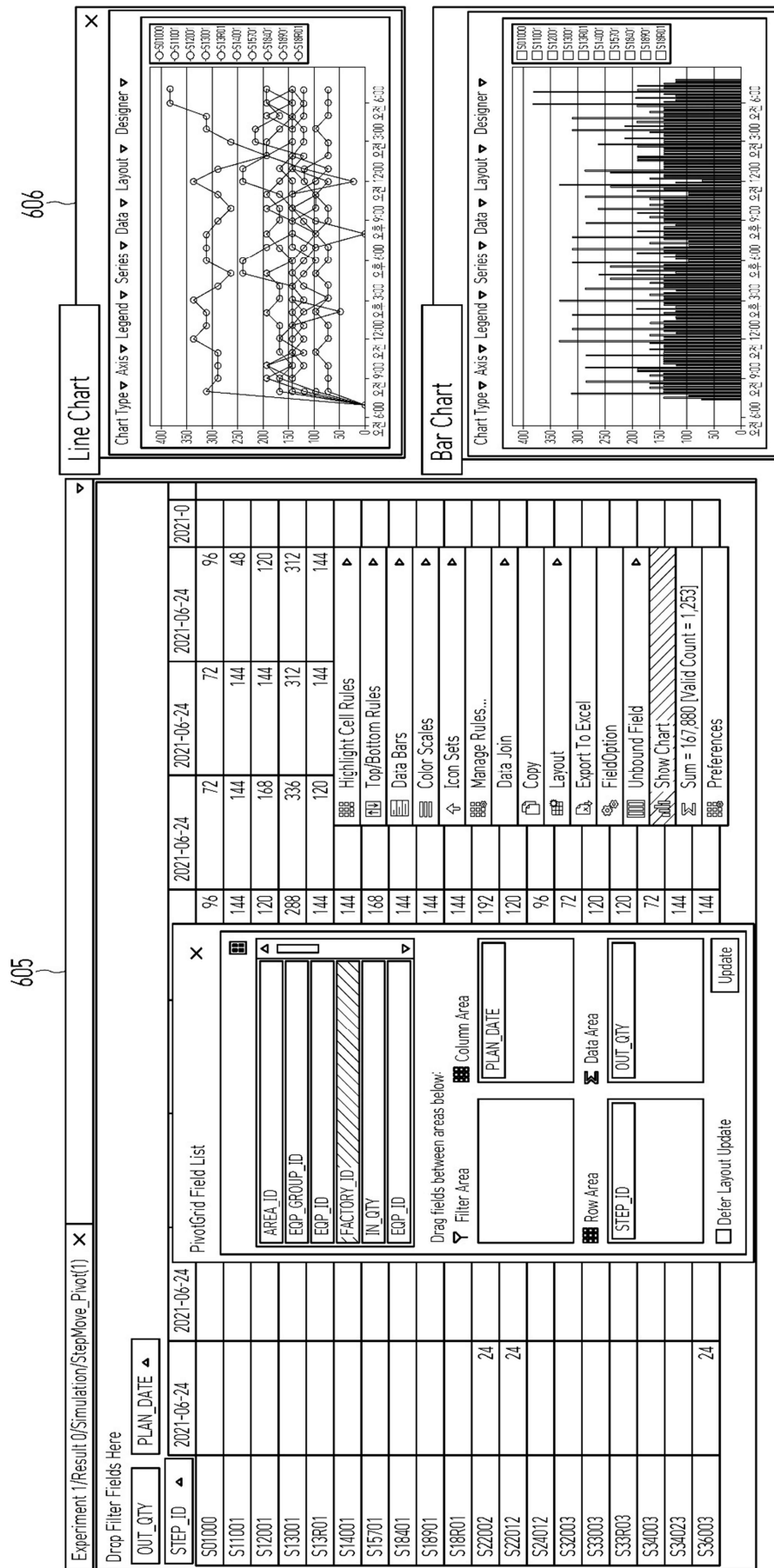


FIG. 33

607

Experiment 1/Result 0/SchedOut/EqpPlan ×

Fix Data Manage View ▾ Grid Style

⌵ Description

Drag a column header here to group by that column

Designate the column across all tables shown as filtering results and Edit the column to a desired value

LINE_ID	EQP_ID	EQP_GROUP	SIM_TYPE	DISPATCHER_TYPE	PRESET_ID	STATUS	STATUS_CHANGE_TIME
A% _C	A% _C	A% _C	= TABLE	Values			A% _C
LINE_01	EQP01	EG01	TABLE	Text Filters			016-10-19 05:00:00
LINE_01	EQP04	EG03	TABLE	Enter text to search...			016-10-19 05:00:00
LINE_01	EQP05	EG03	TABLE	☒ (All) ☐ INLINE ☒ TABLE			016-10-19 05:00:00
LINE_01	EQP06	EG03	TABLE				016-10-19 05:00:00

FIG. 34

608

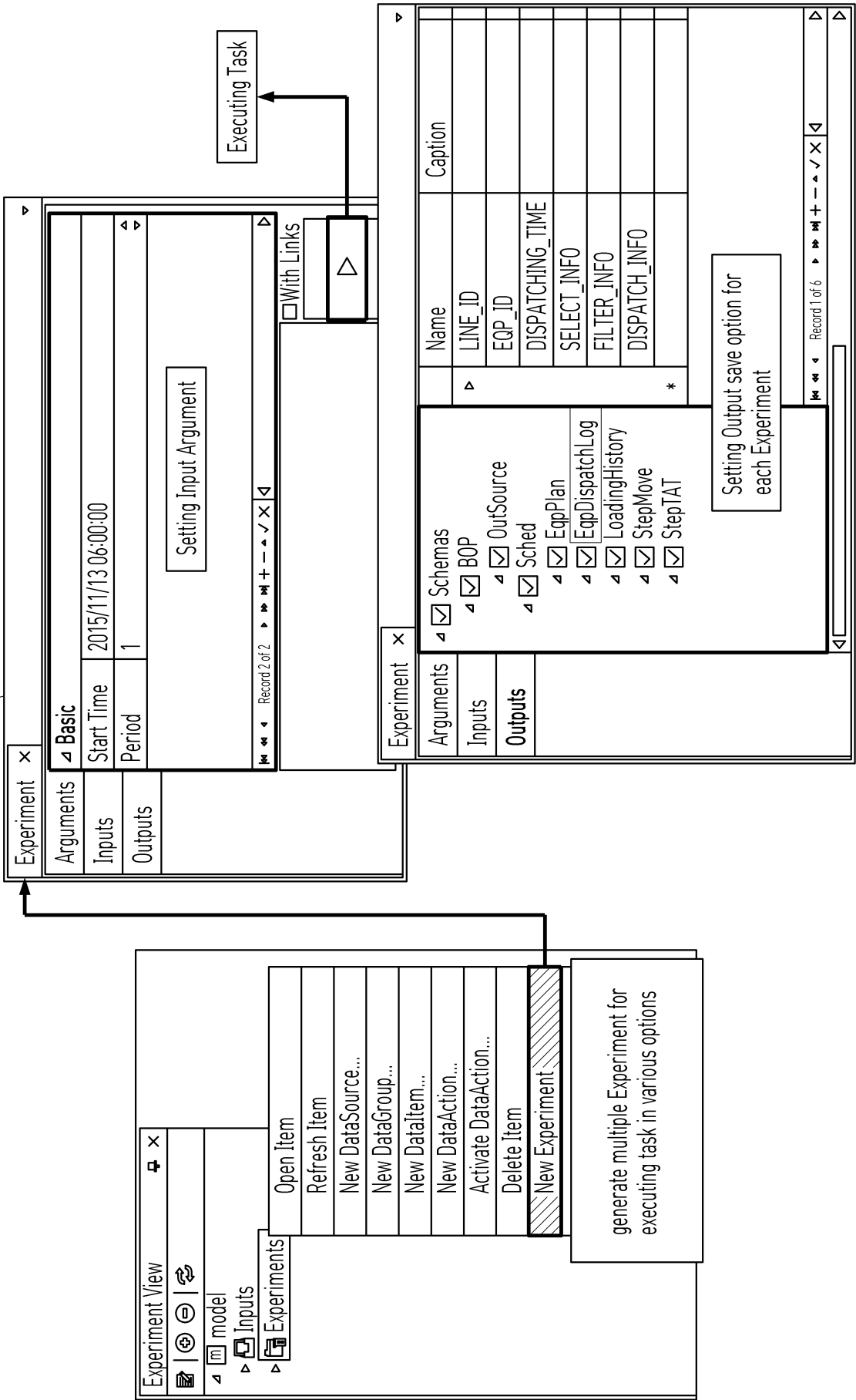


FIG. 35

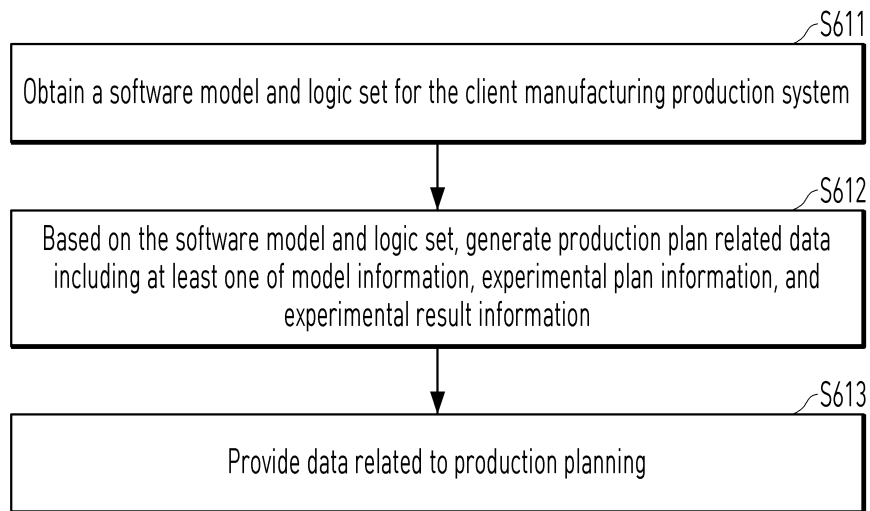
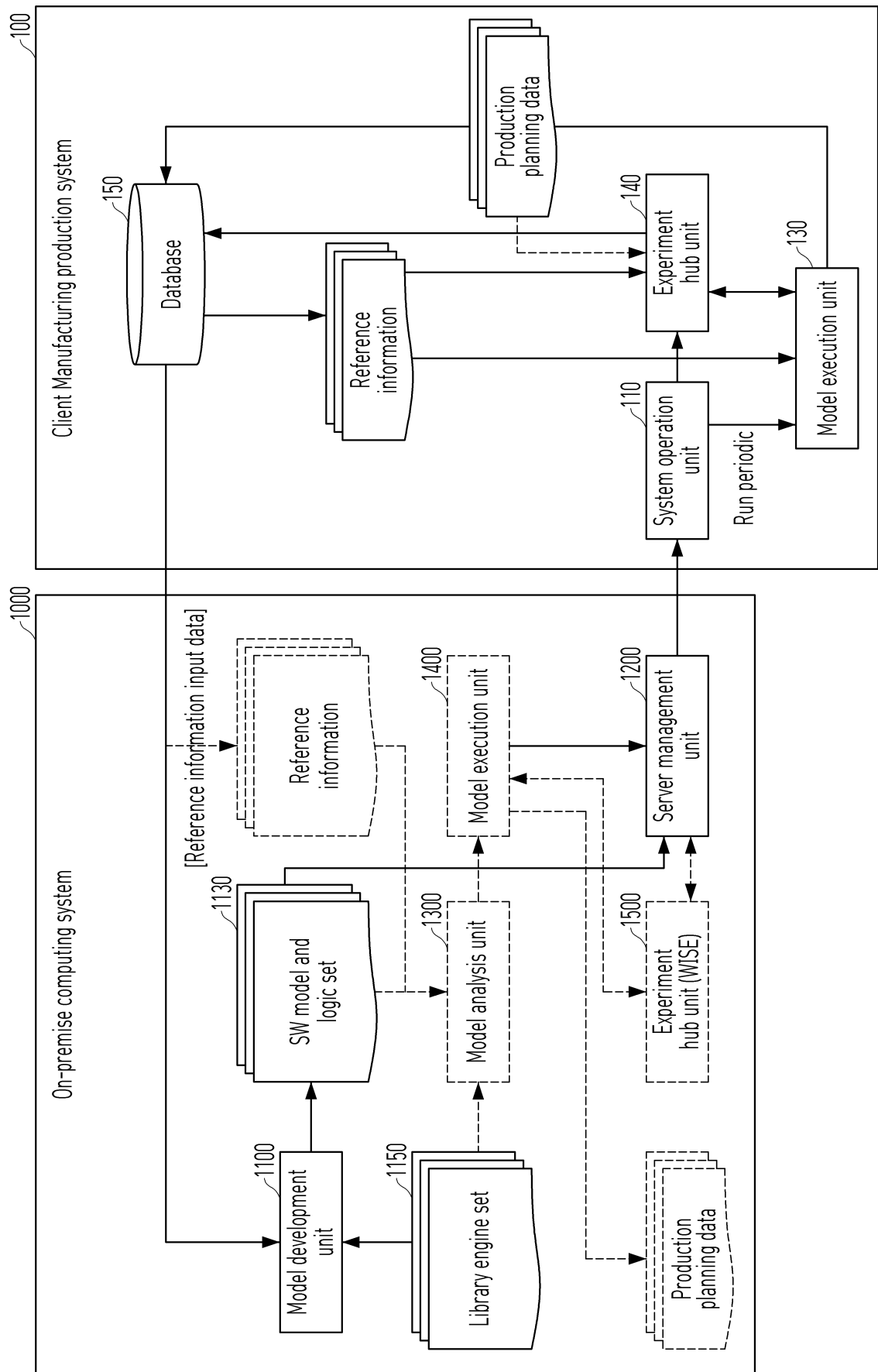


FIG. 36



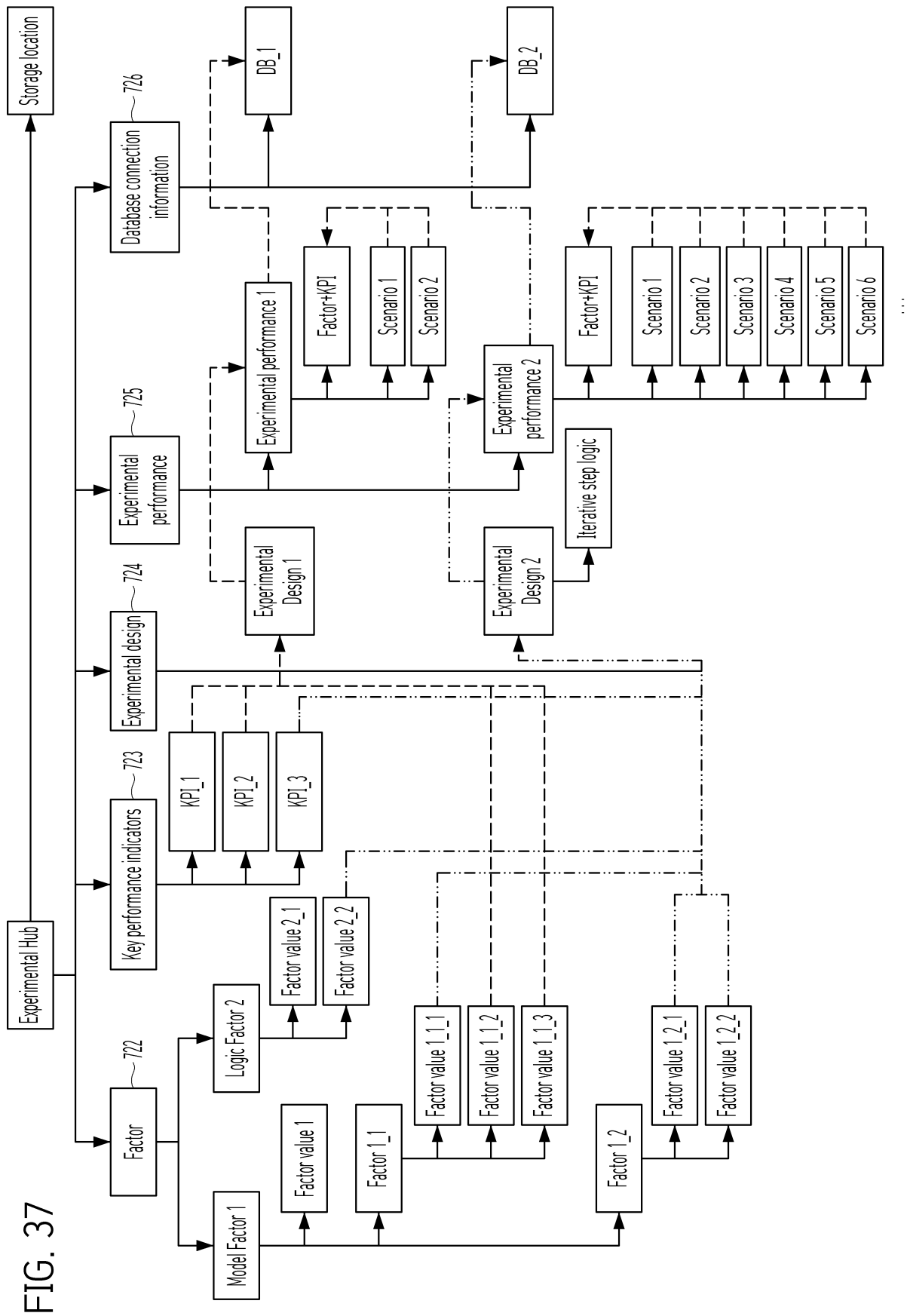


FIG. 38

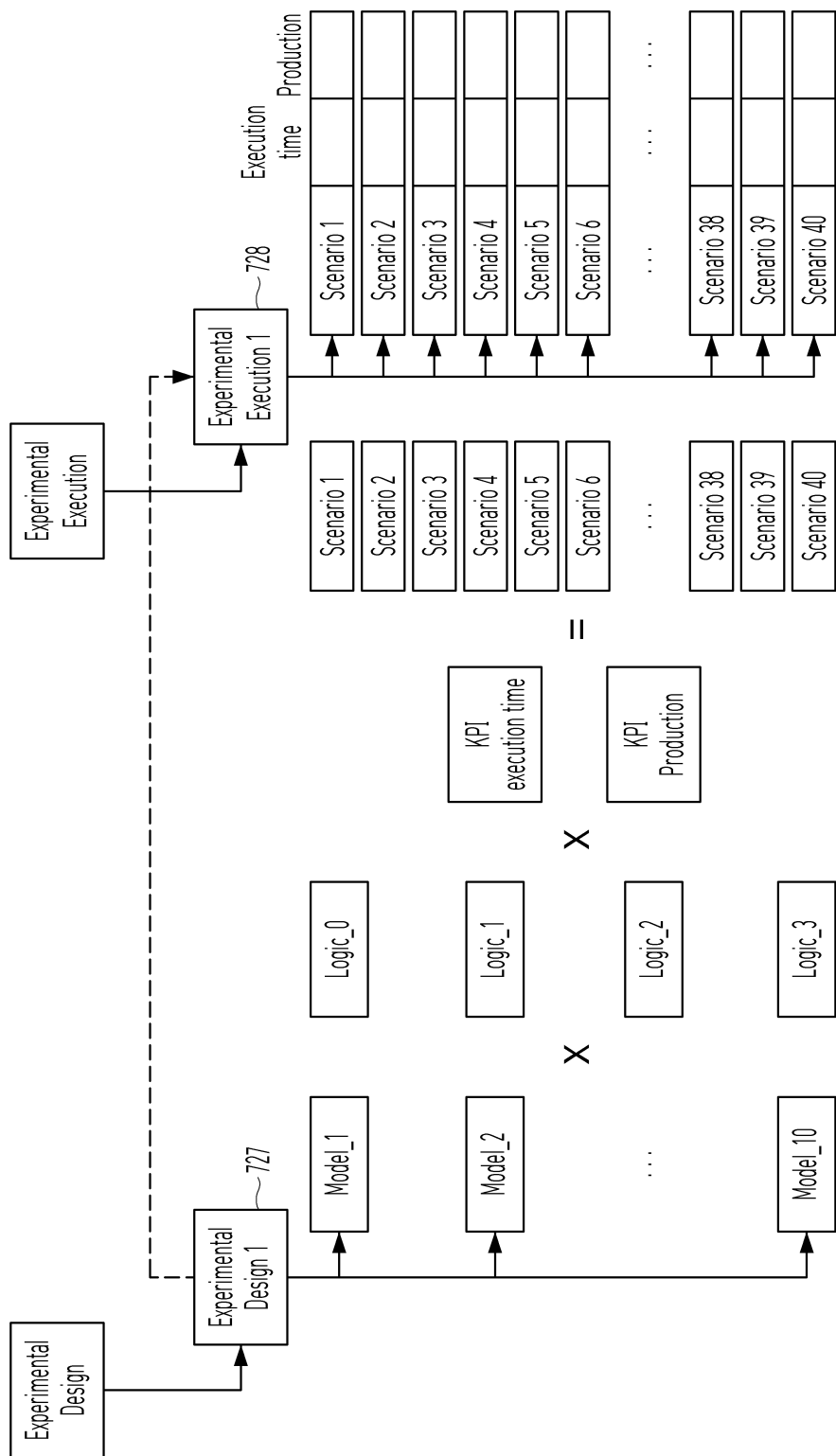
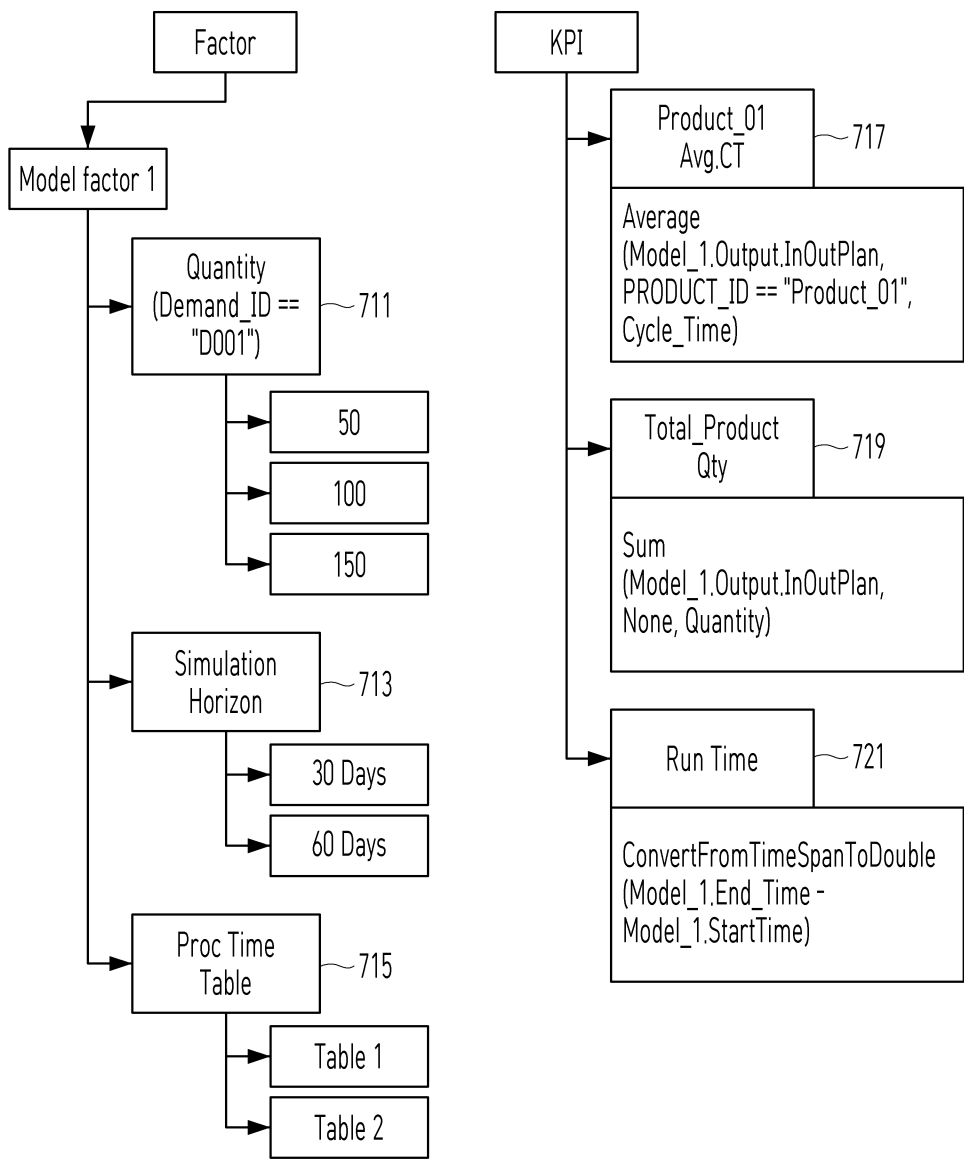


FIG. 39



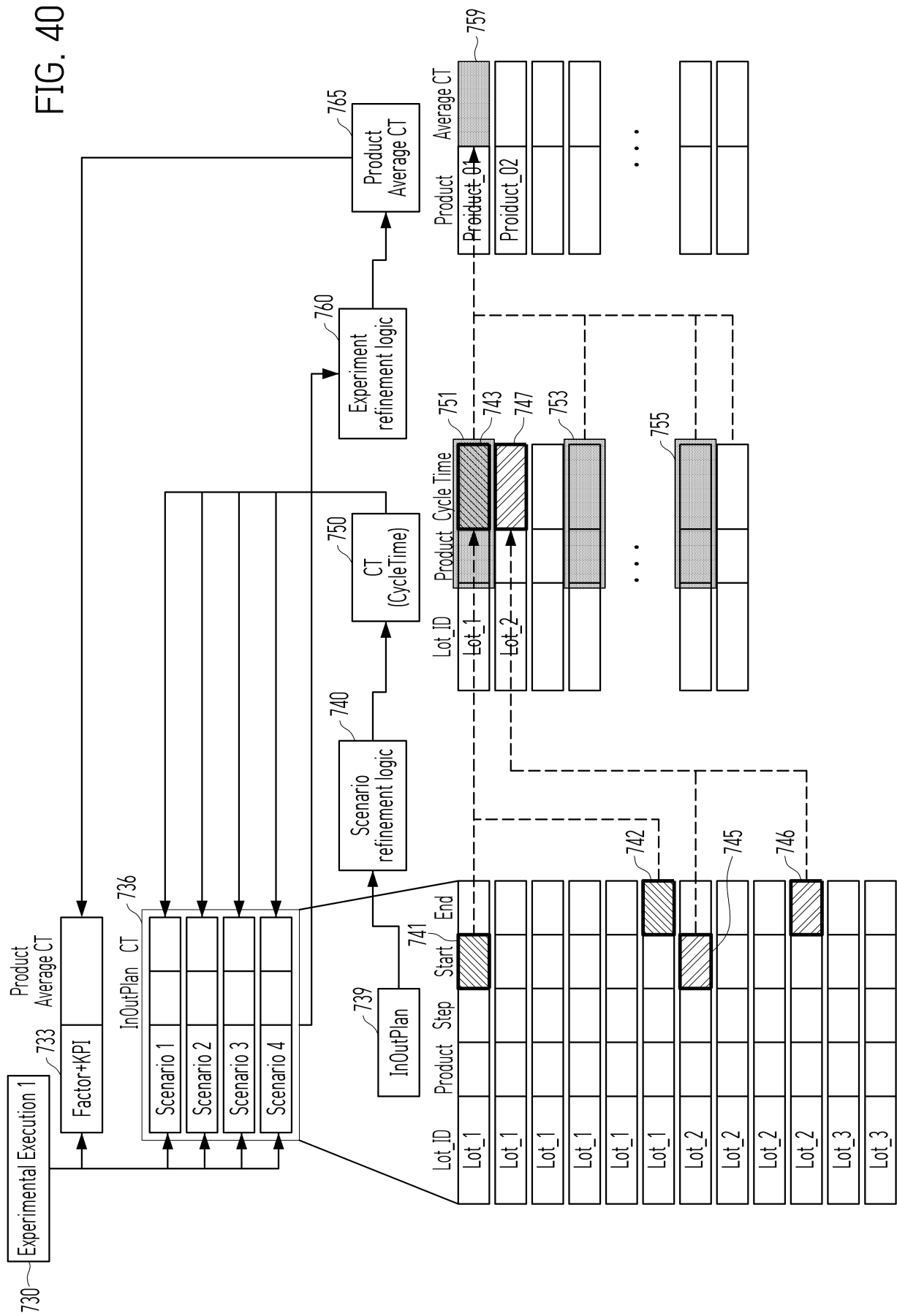


FIG. 41

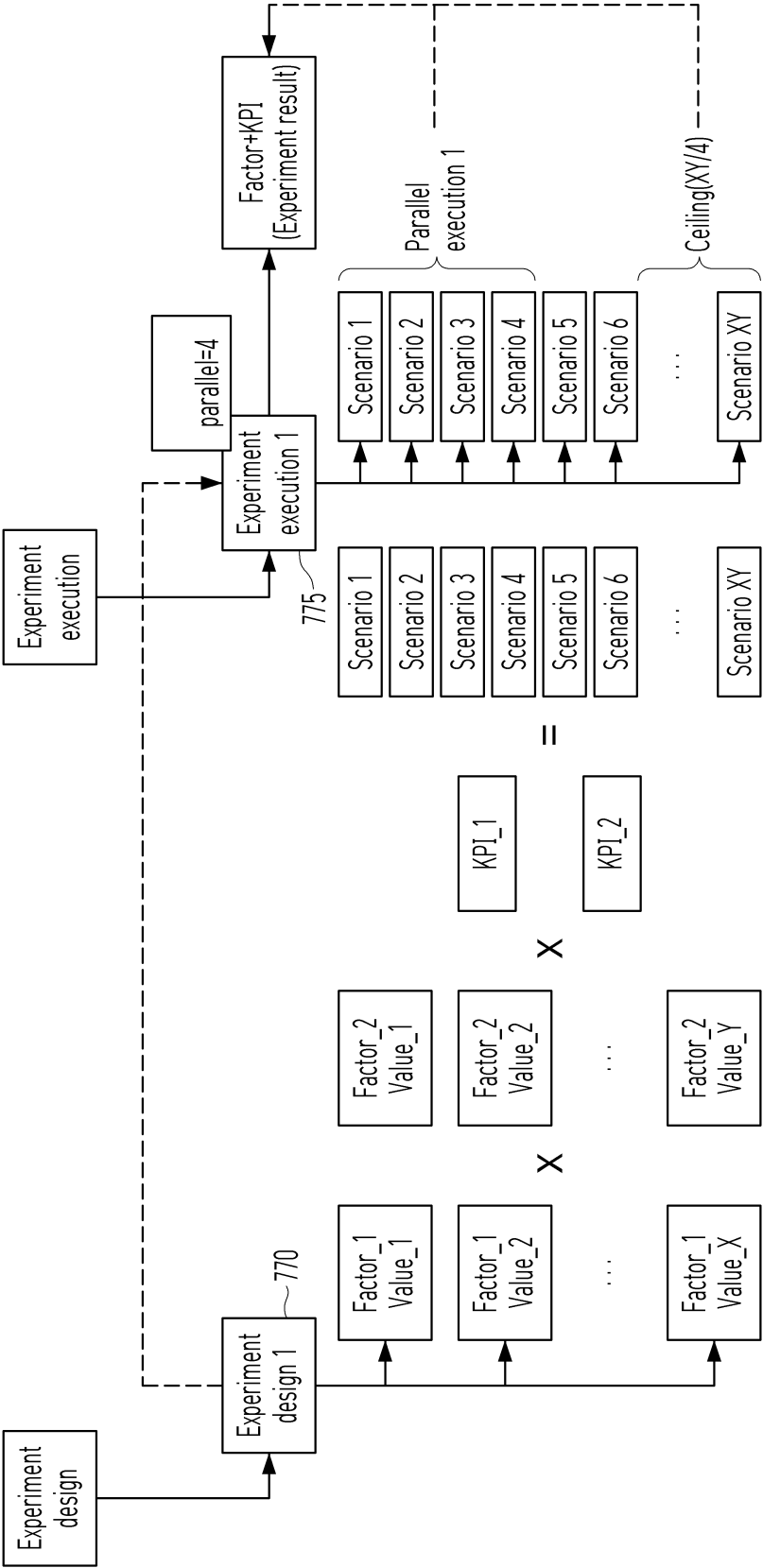


FIG. 42

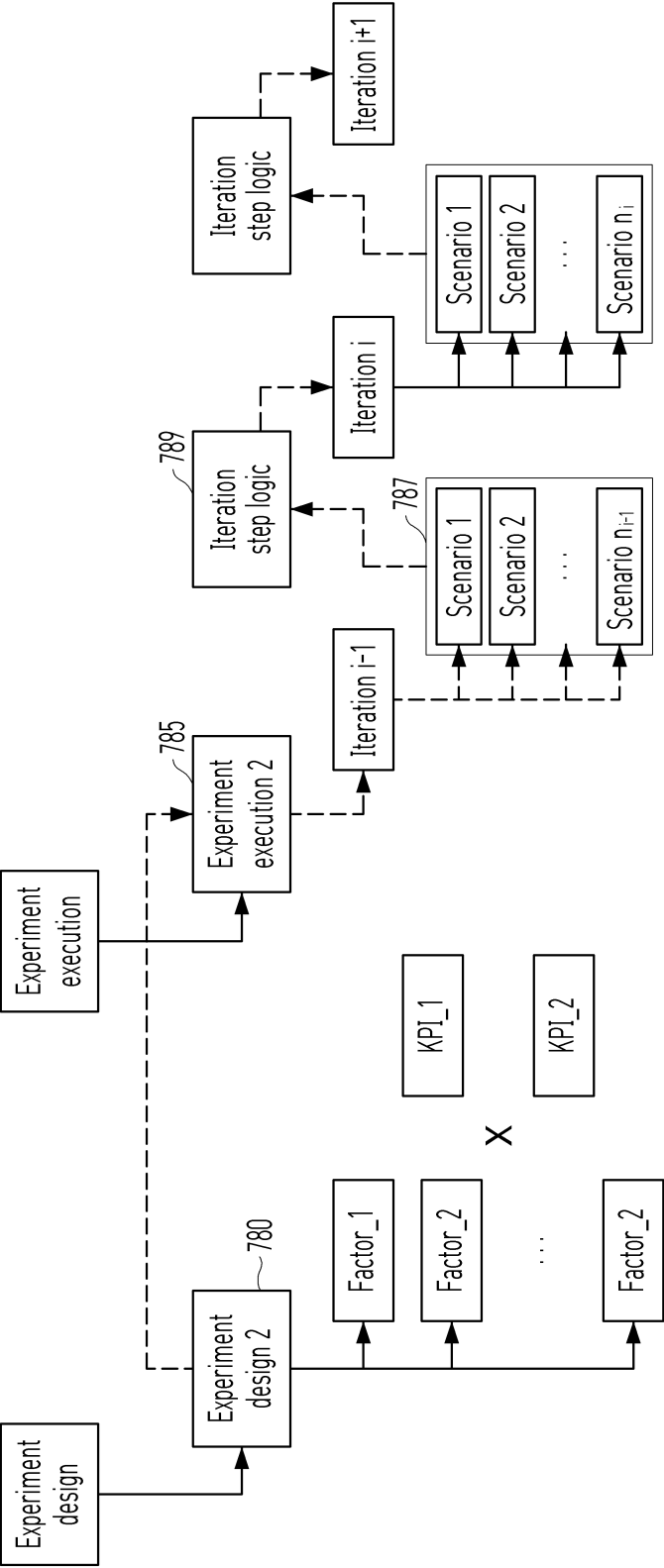


FIG. 43

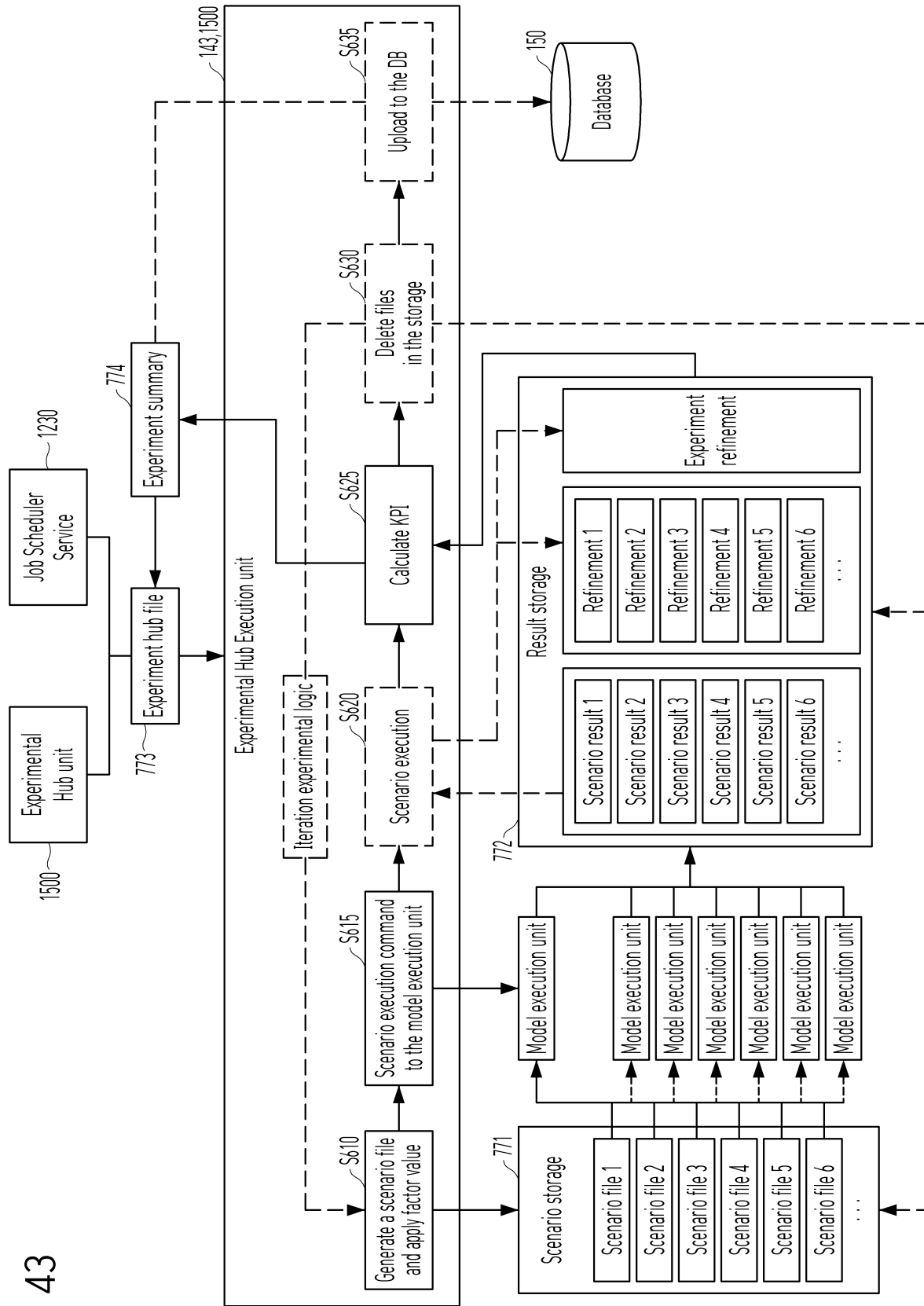


FIG. 44

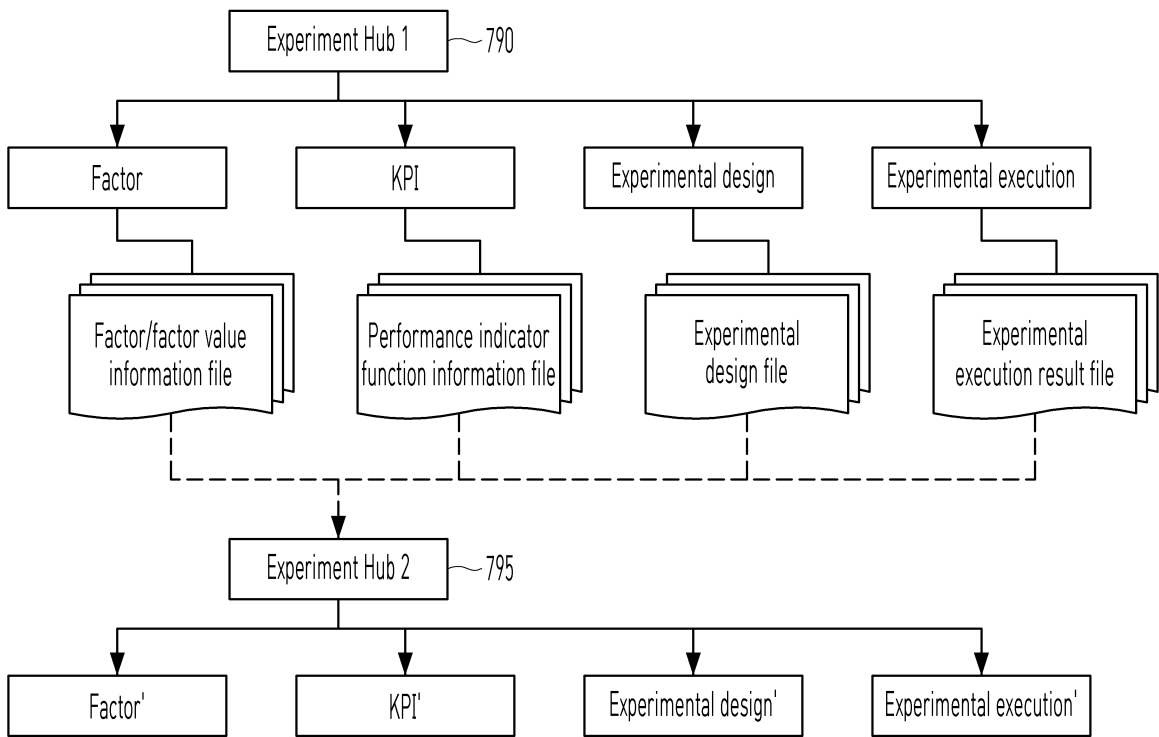


FIG. 45

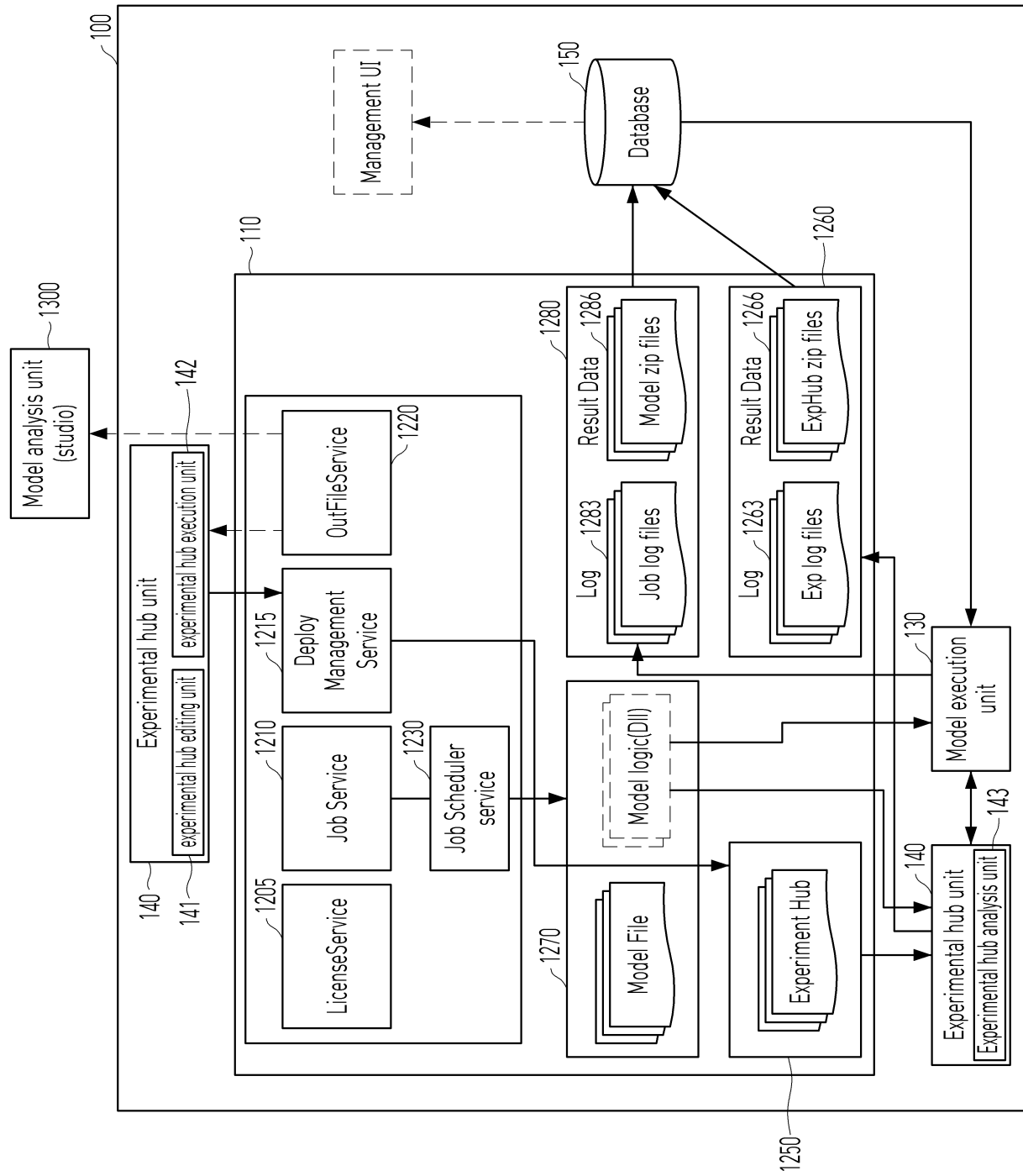


FIG. 46

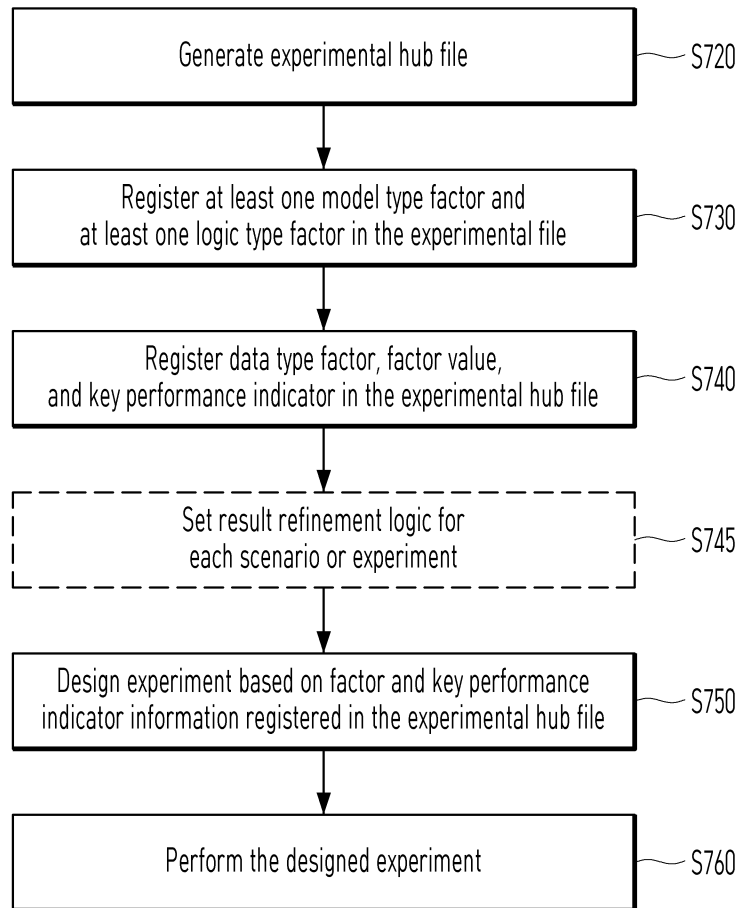


FIG. 47

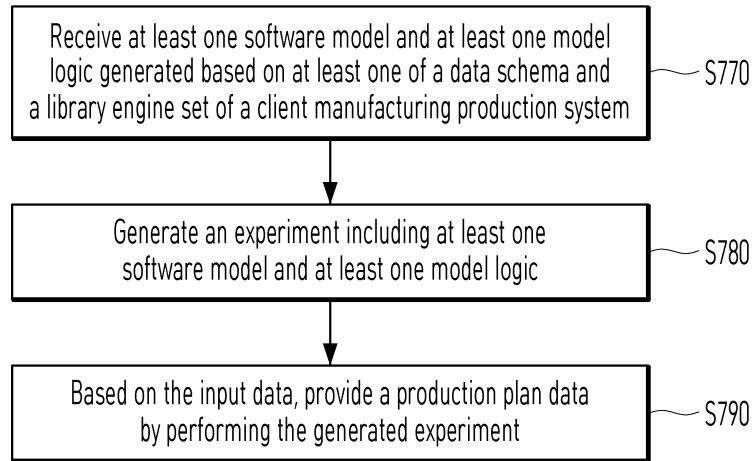


FIG. 48

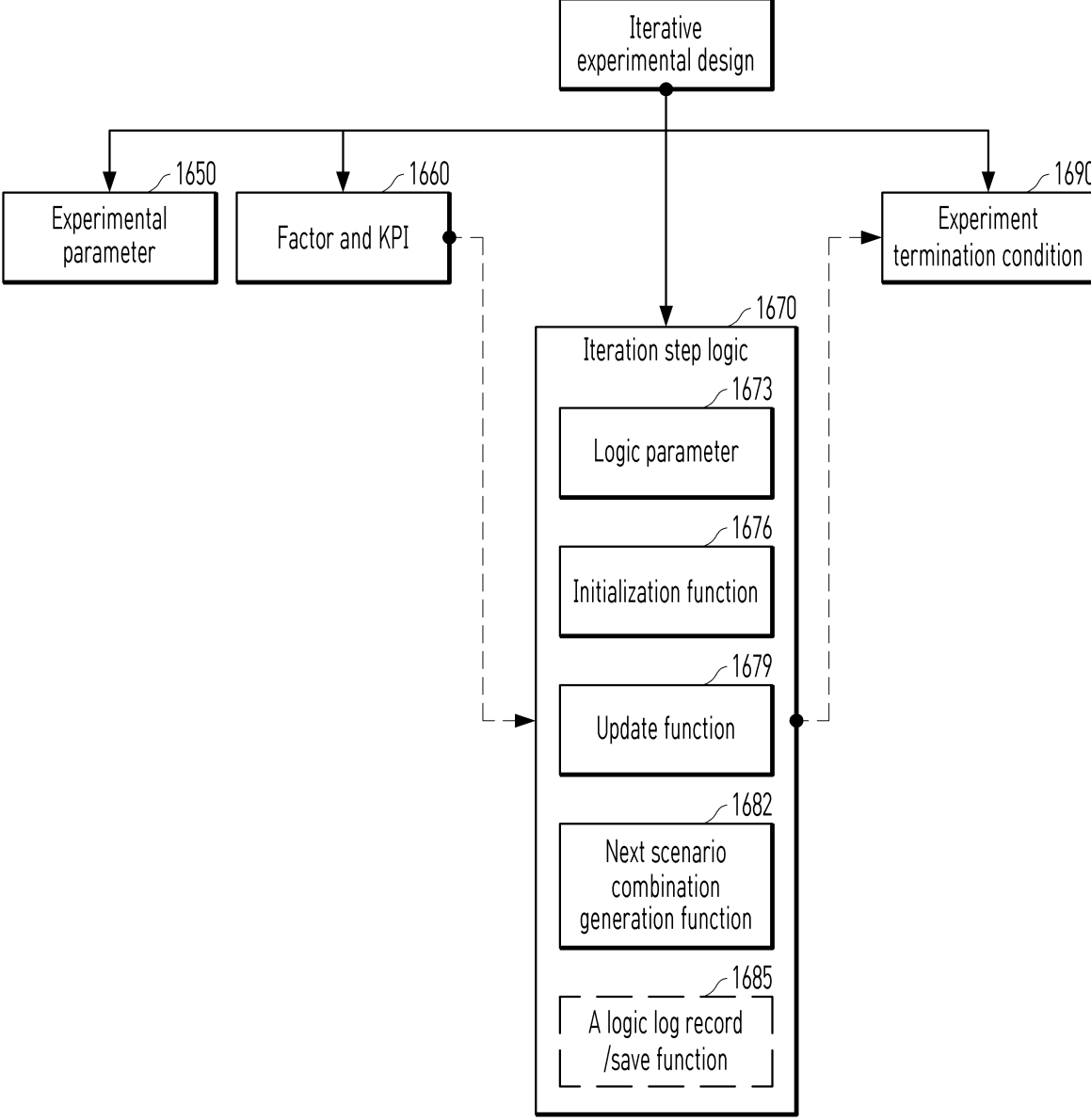


FIG. 49

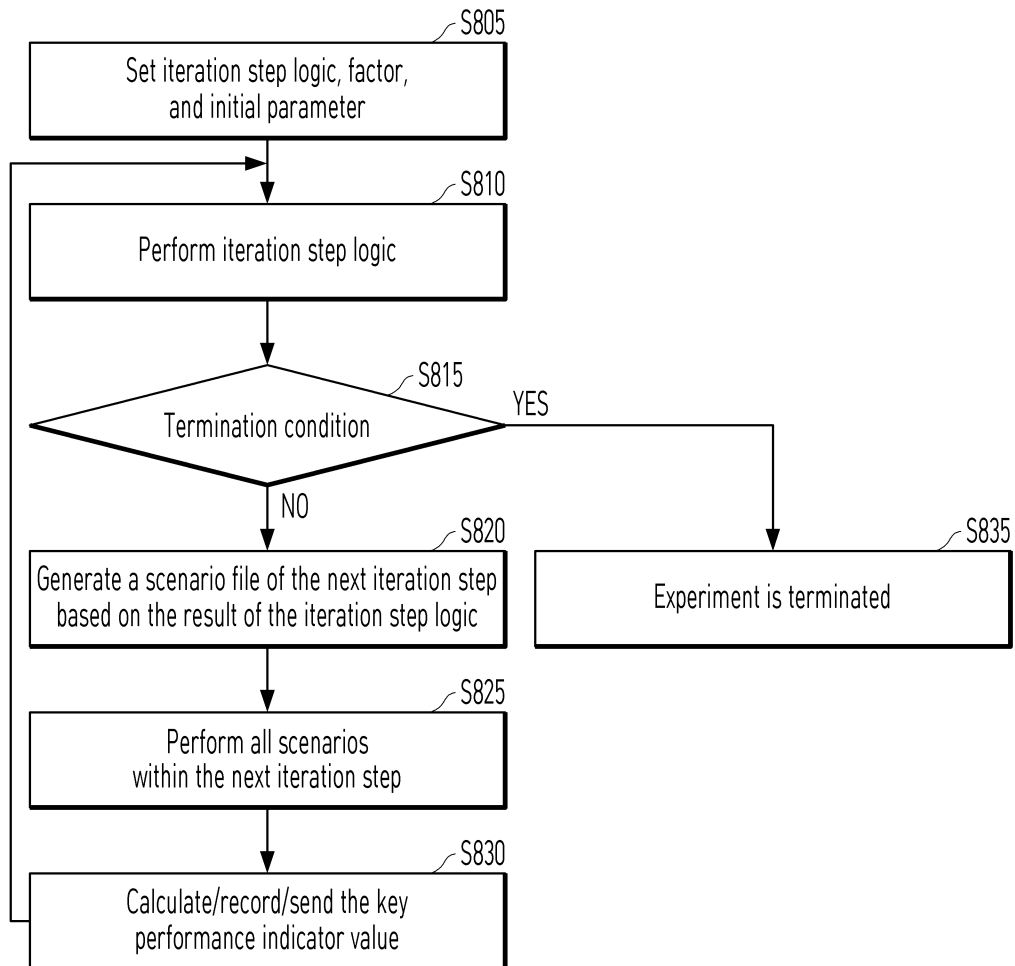


FIG. 50

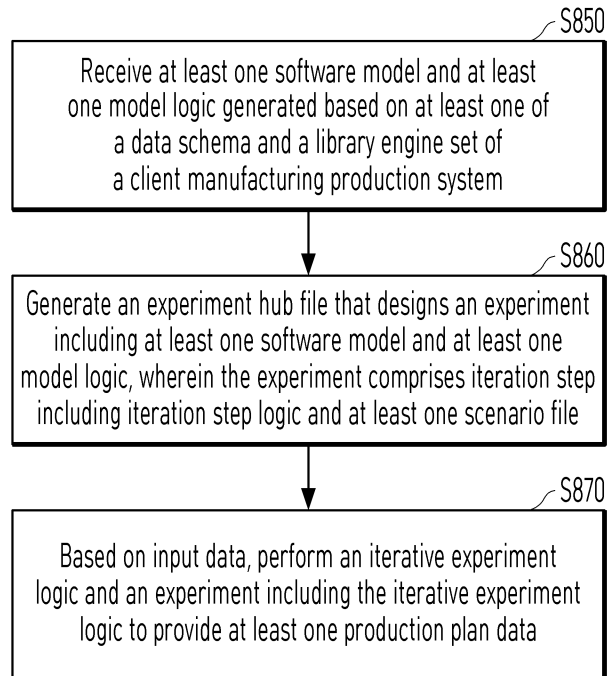


FIG. 51

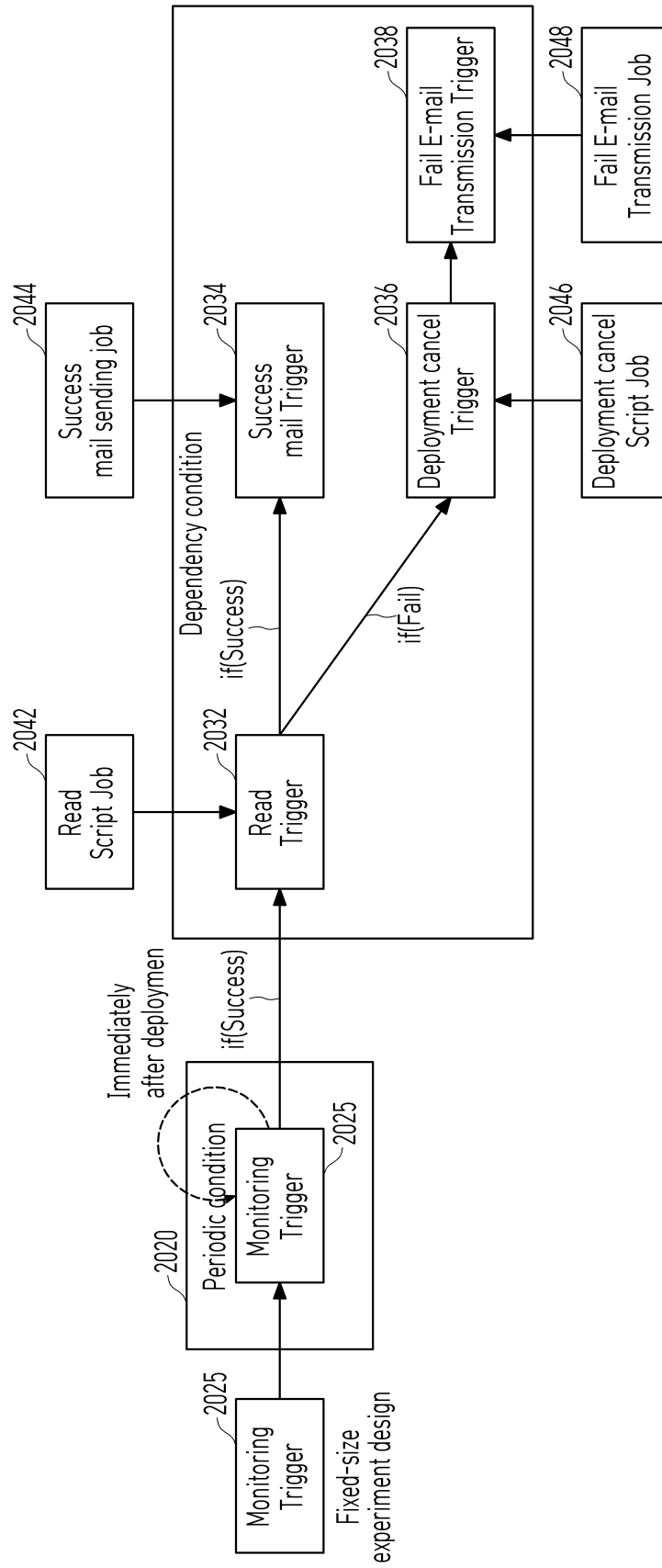


FIG. 52

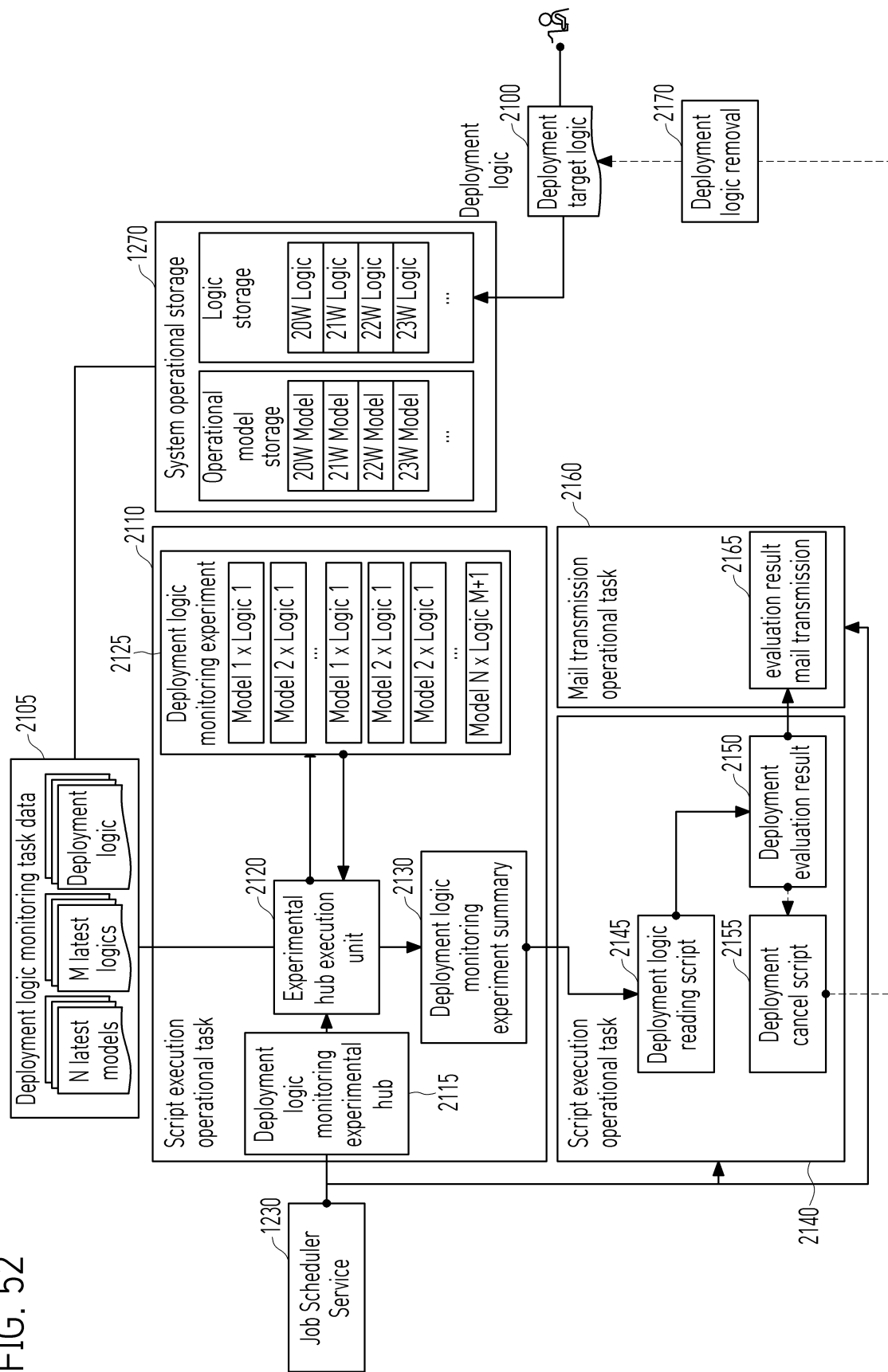


FIG. 53

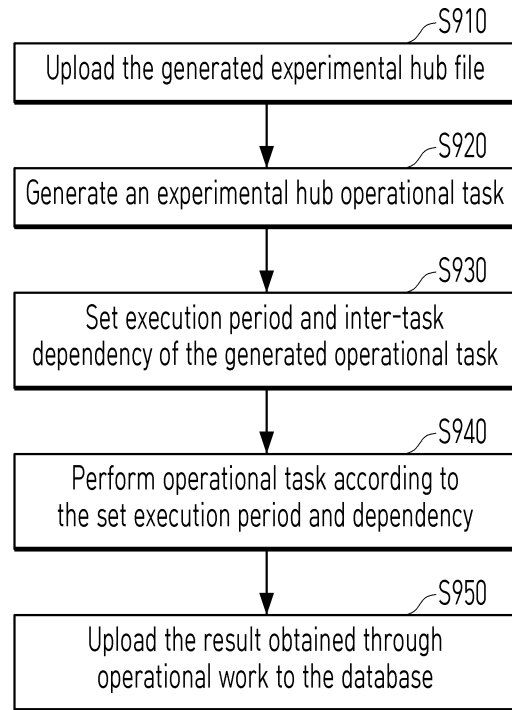


FIG. 54

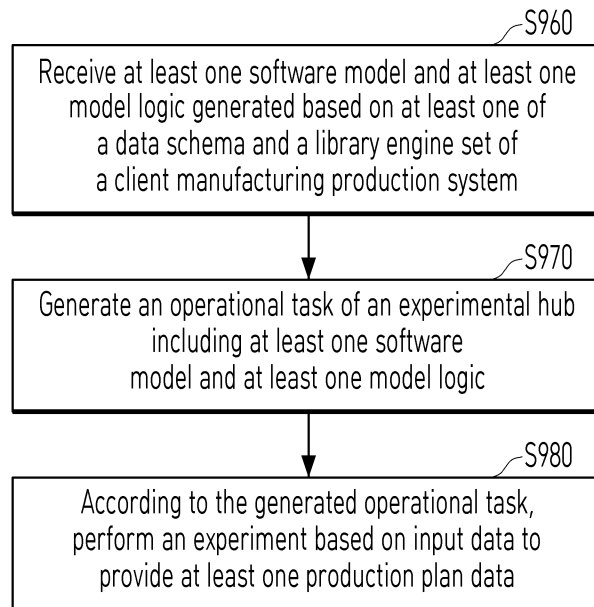


FIG. 55

3110

File Data View Plug-Ins Tool Window Help

Scenario View

Exhibit

Model

Configuration/Variables

Factors

RunOutputs

RPLs

ExecutionOutputs

ExperimentDesigns

Executions

3112

Design/Model/Inputs/08_RULE/RULE_FACTOR ×

Query & Save to file Fix Data

Description

Drag a column header here to group by that column

RULE_ID	FACTOR_ID	FACTOR_SEQ	FACTOR_WEIGHT	FACTOR_VALUE
4B0C lotgroupsum 4B0C		=		4B0C
lotGroupSum0...	MoreDelayedLotGrpFirst	0		0
lotGroupSum0...	LessPrecededLotGrpFirst	0		100
lotGroupSum0...	NoSetupLotGrpFirst	0		0

3116

Record 0 of 3

0

100

Edit Filter

× [RULE_ID] Contains [lotgroupsum]

3118

Output

Select Output: General

Line:1 Column:1 Chart:1

FIG.56

3120

New Scenario

ExpHub Name:

ExpHub_Name

ExpHub Directory:

../ExpHub_Dir

Browse

☒ Base Model:

../Model_Dir/Model_01.vmodel

Browse ▼

☒ Model Private Path:

../ExpHub_01/dlls

Browse

☒ Model UI Assembly:

Model_UI.dll

Browse

☒ Model UI Config:

Model_UI.Config

Browse

OK

Cancel

FIG. 57

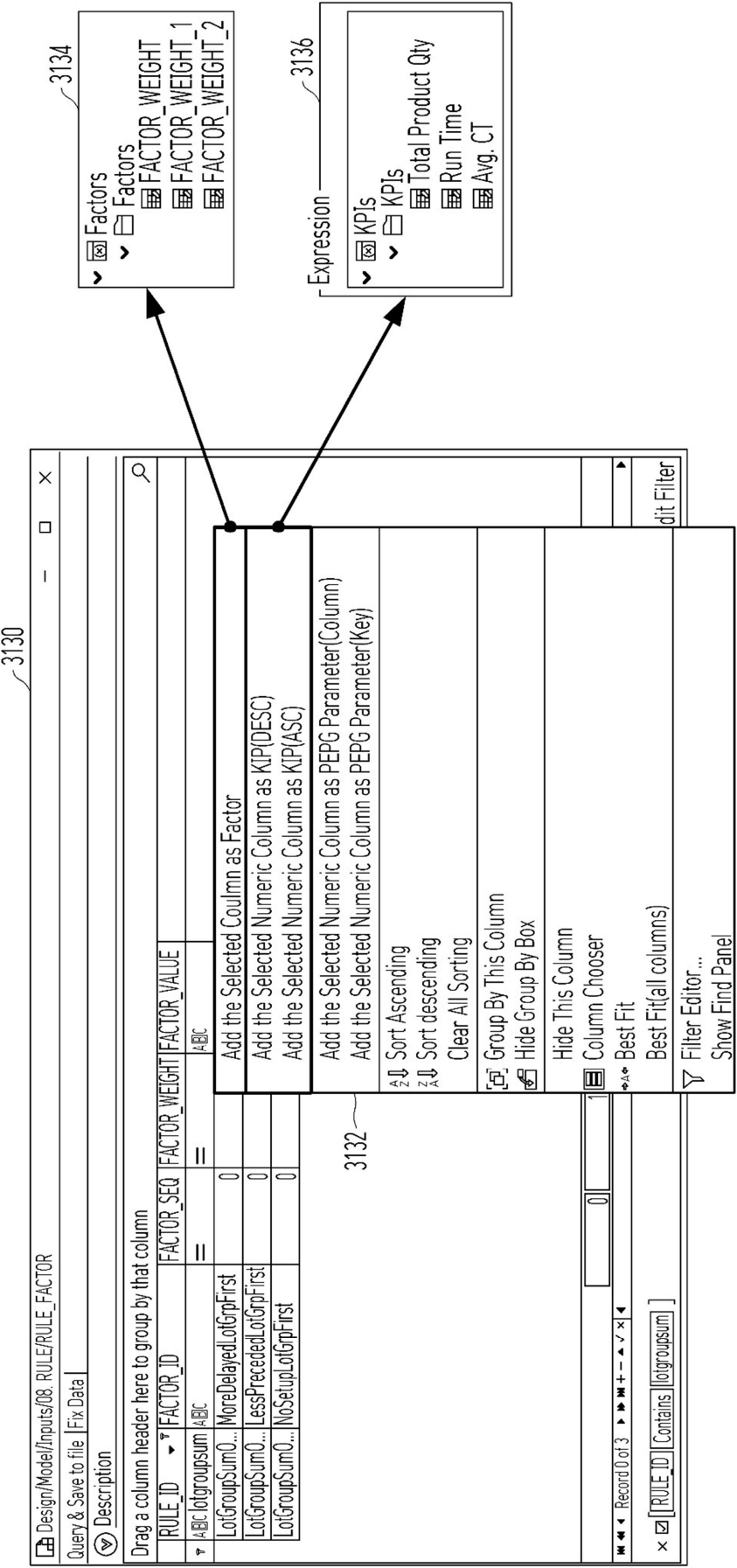


FIG. 58

3140

Create New Factor

Enter the name of the Factor

Factor_01

Select the type of the Factor

Data

OK Cancel

3142

Data

Data

DataSet

Argument

ArgumentSet

Model

Dlls

3150

3157

FIG. 60

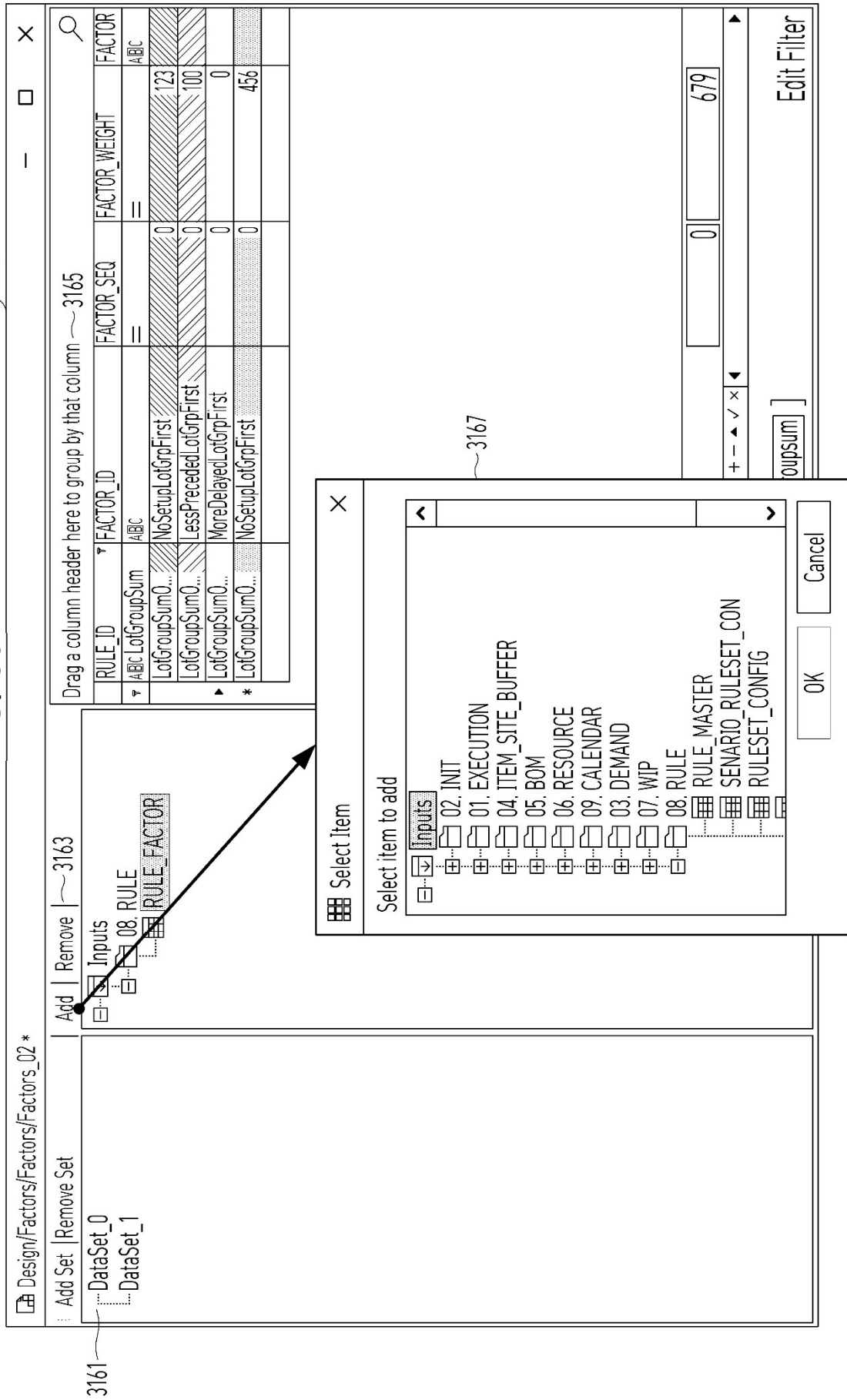


FIG. 61

3172

Design\Factors\Factors_03*

Target Argument

period

Int23

Argument Type

Factor Levels

Generator Type List

10, 20, 30, 40

Levels Type

Levels

10
20
30
40

start-time

period

PlanScenario

ProjectID

PlanCycleID

TenantID

ProjectName

TenantName

PartitionKey

RollingPeriod

#datasource-set-file

#datasource-overwrite-connections

1 Local

IsLocal

Replace

Append

Returns an array of the specified values.
Ex) 1, 2, 3, 4

Total Levels Count

4

3170

Design\Factors\Factors_04*

Results default

0 Basic

ArgumentSet_0

ArgumentSet_1

start-time

period

PlanScenario

ProjectID

PlanCycleID

TenantID

ProjectName

TenantName

PartitionKey

RollingPeriod

#datasource-set-file

#datasource-overwrite-connections

1 Local

IsLocal

Record 1 of 9

3184

All
Selected

FIG. 62

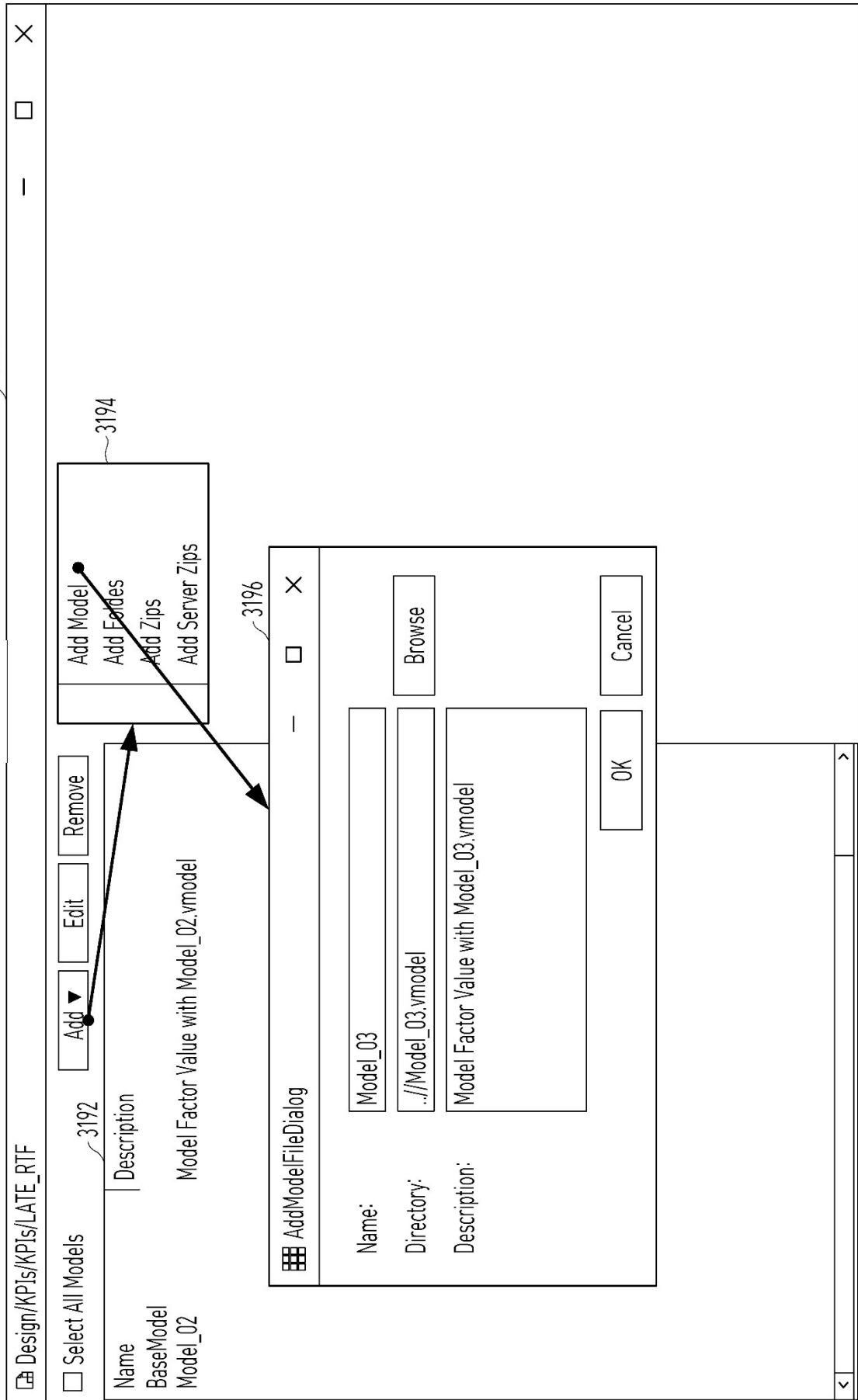


FIG. 63

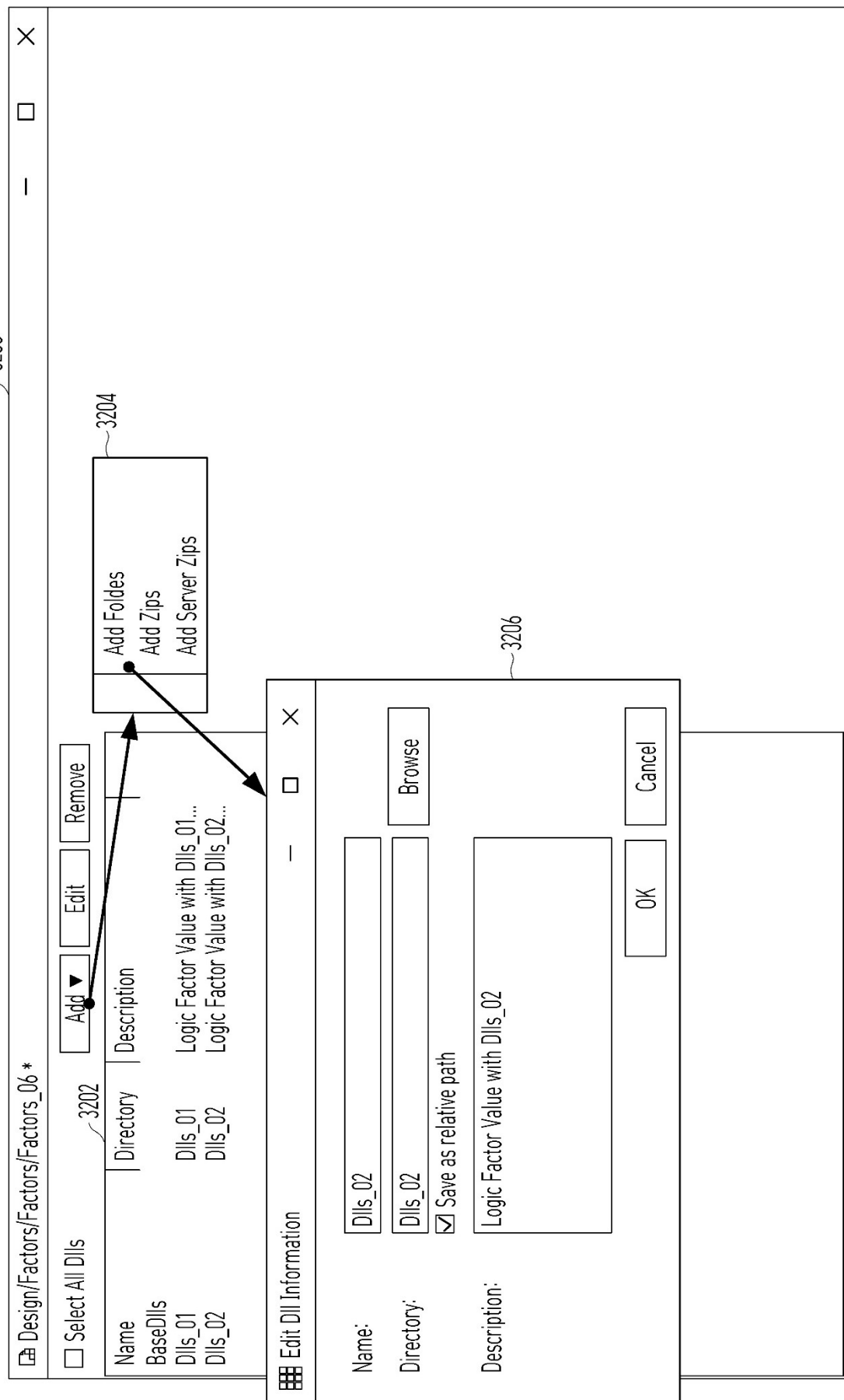


FIG. 64

Design/KPIs/KPIs/LATE_RTf

Expression

Sum(Outputs.PLAN_INDEX, a.INDEX_NAME == "TOTAL_PROD_QTY" && a.MODULE_ID == "MODULE_PBF", "PLAN_VALUE") * 0.000001

Function Details

Function name : Sum

Target Table(a) : [Outputs.PlanIndex]
Filter : [a.INDEX_NAME == "TOTAL_PROD_QTY" &&
a.MODULE_ID == "MODULE_PBF"]
Value Column : ["PLAN_INDEX"]

Functions

Math
Date and Time
Text
Conversion
Logical
Local Date and Time
Table Aggregation
Table
Script

RunIndex
LoopIndex
Start Time
End Time
Inputs
InArgs
Configuration Variables
Factors
Outputs
CustomRunOutputs
Kpis
Properties
Default
BaseRun
PrevRun
CustomExecutionOutputs

FIG. 65

Command Line Interface

3220

Command Prompt

Microsoft Windows [Version 10.0.19042.1052]
(c) Microsoft Corporation. All rights reserved.
C:\Wmozartsilent.exe "C:\WVmsModel.vmodel" -arg: "C:\WSampleArgs.txt"
Begin ...2021-07-12 14:39:34
Startup ...2021-07-12 14:39:34
Pre Loading ...
Data Loading ...
Input loading
ProcStep Loaded. 00:00:00.0621769
Process Loaded. 00:00:00.1370889
Product Loaded. 00:00:00.1603551
Equipment Loaded. 00:00:00.0581419
EqpArrange Loaded. 00:00:00.0690688
StepTime Loaded. 00:00:00.0820895
Wip Loaded. 00:00:00.1126359
PresetInfo Loaded. 00:00:00.1262078
InPlanLot Loaded. 00:00:00.1388084
StepTat Loaded. 00:00:00.1573134
ArrConstraint Loaded. 00:00:00.1690497
ToolInfo Loaded. 00:00:00.1776530
ToolArrange Loaded. 00:00:00.1881219
Elapsed Time = 00:00:00.3858734
Sim Start.
Simulation-Init...2021-07-12 14:39:34
Begin Initialize at 10/19/2016 6:00:00 AM/7/12/2021 2:39:34 PM
EQP01, TABLE
EQP04, TABLE
EQP05, TABLE
EQP06, TABLE
EqpID = EQP01, simm/dispatcher/preset = Table/Fifo/PRESET01
EqpID = EQP04, simm/dispatcher/preset = Table/Fifo/PRESET01
EqpID = EQP05, simm/dispatcher/preset = Table/Fifo/PRESET01

FIG. 66

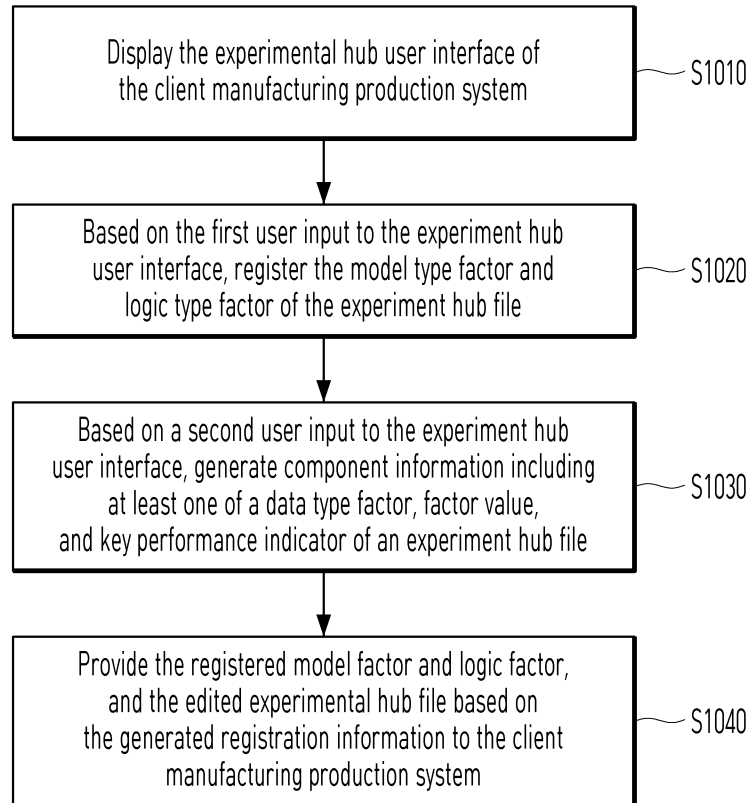


FIG. 67

RunOutputs

RunCustomOutput

RunCustom_01

Design/RunOutputs/RunCustomOutput/RunCustom_01*

Change Sequence

Local Filter [Enter filter expression for local data table...]

Description

Example of processing the result of a scenario run to record cycle_time as the difference between the first process start time and the last process end time by work

Name	Data Type	Default Value	Allow ...	Is Primary Key
LOT_ID	string		☒	☒
PRODUCT_ID	string		☒	☐
CYCLE_TIME	float		☒	☐
			☐	☒

Record 4 of 4

FIG. 68

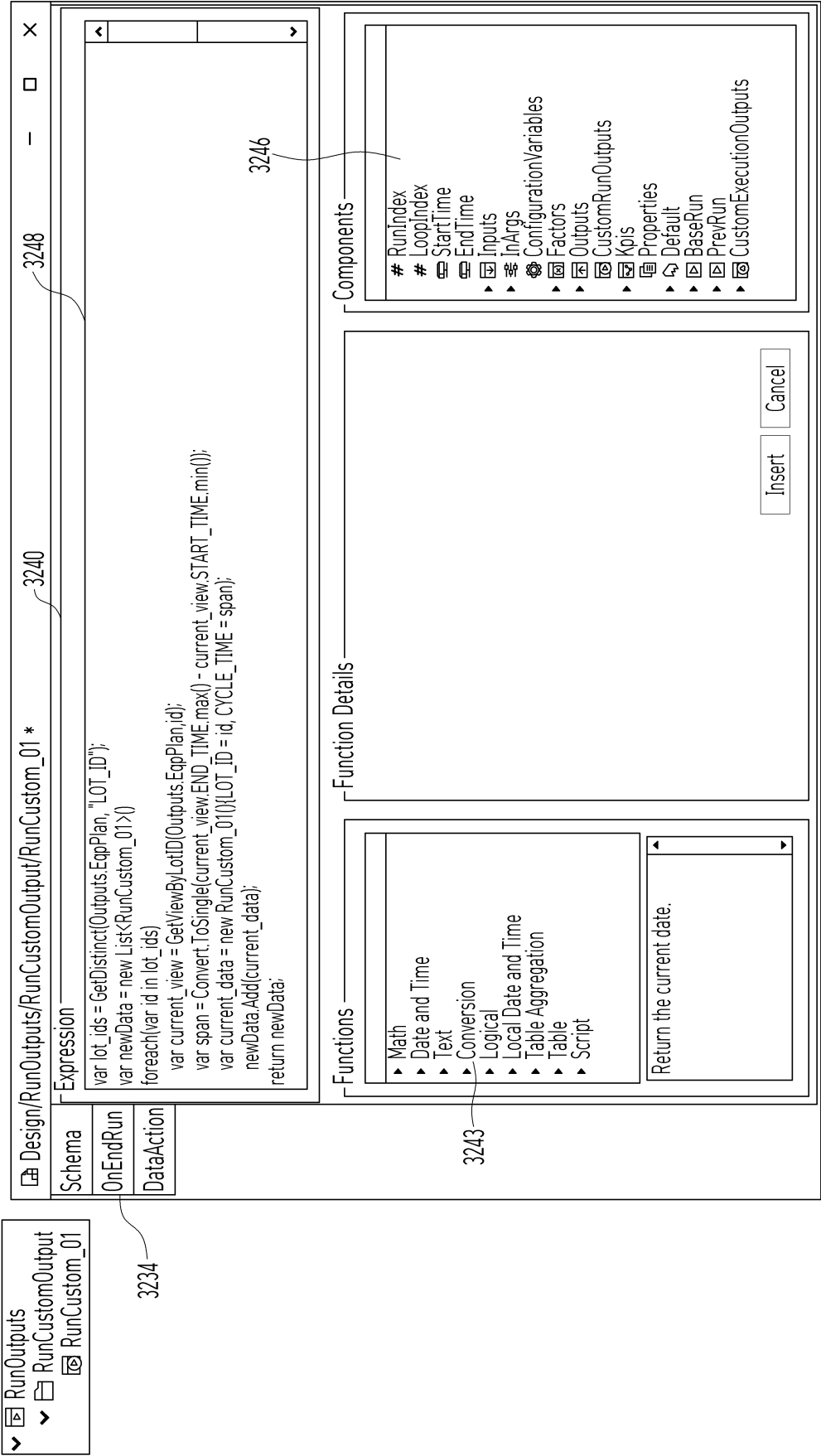


FIG. 69

ExecutionOutputs

ExecutionOutputs

(Default)

CYCLE_TIME

ExecutionCustom_01

Design/ExecutionOutputs/CYCLE_TIME/ExecutionCustom_01 *

Schema

OnEndRun

OnEndExecution

DataAction

Change Sequence

Local Filter (Enter filter expression for local data table...)

Description

An example of calculating the average CYCLE_TIME by each product type using the Custom experiment summary function at the termination of each experiment.

Name	Data Type	Default Value	Allow ...	Is Primary Key
PRODUCT_ID	string		☐	☒
AVG_CT	float		☒	☐
			☒	☒

Record 1 of 2

FIG. 70

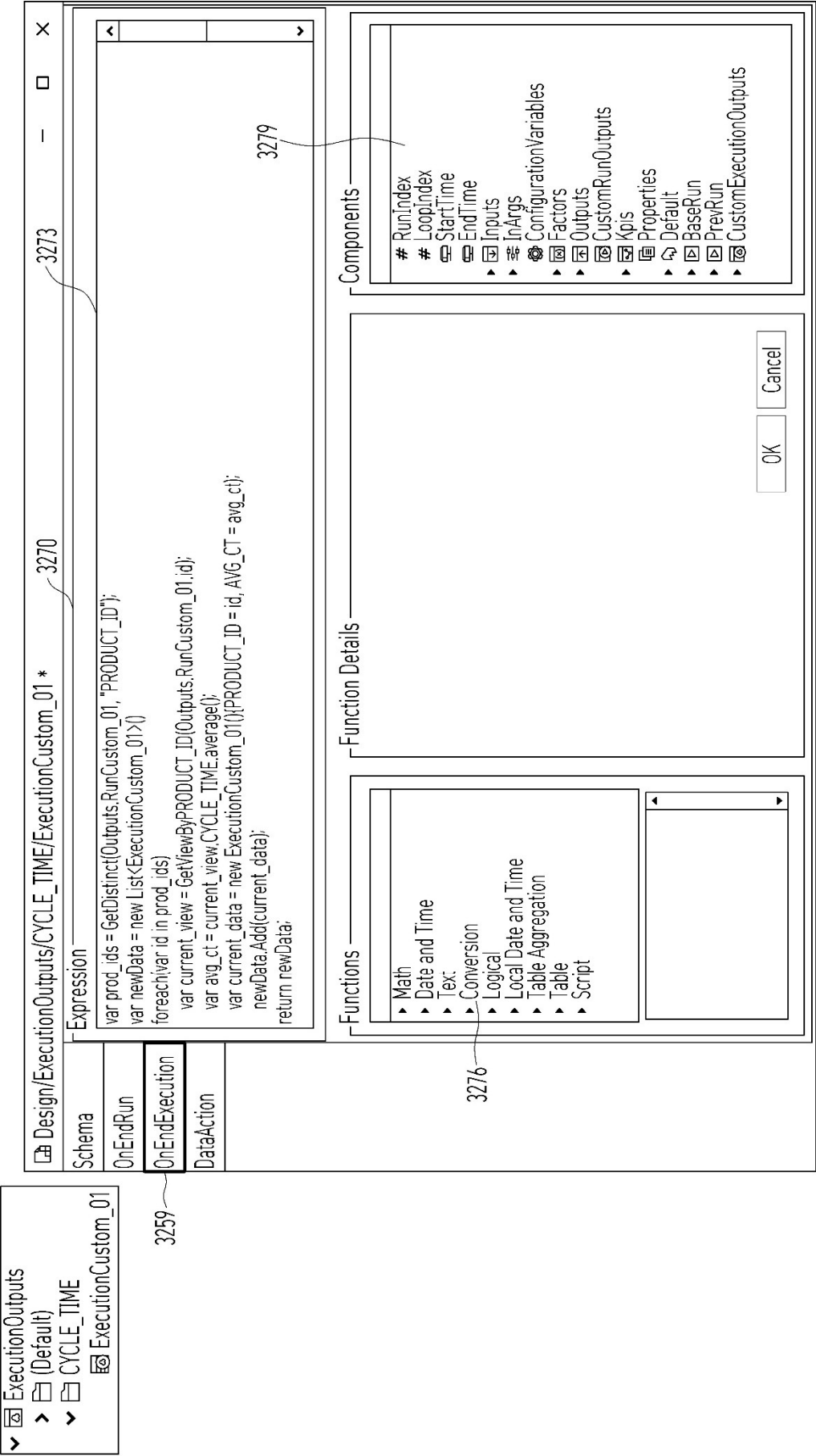


FIG. 71

ExperimentDesigns
ExpDesign_01

Design/ExperimentDesigns/ExpDesign_01 *
ExperimentDesign
Factor Design
Select All

3280

Design Result
Restore

3288

Select	Factor Name	Factor Type	Factor Initial Value	Levels
☒	Factor_06	Dlls	Base Dlls	3
☒	Factor_05	Model	Base Model	2
☐	Factor_04	ArgumentSet	Base Argument	0
☐	Factor_02	DataSet	Base Data	0
☐	Factor_WEIGHT_2	Data	0	0
☐	Factor_WEIGHT_1	Data	100	0
☐	Factor_WEIGHT	Data	0	0

Estimated Runs 6 Apply

3282

3284

Experiment KPI
Select All
☒ ON_RTF
☒ LATE_RTF
☒ Score

Description
Example of designing experiment with two model factor values and 3 logic factor values among the defined factors.

3286

Design Table
Factor_05 Factor_06
BaseModel BaseDlls
BaseModel Dlls_01
BaseModel Dlls_02
Model_02 BaseDlls
Model_02 Dlls_01
Model_02 Dlls_02

Record 1 of 6
Total Run Count 6

FIG. 72

Figure 3300 is a screenshot of a software interface for managing experiment designs. The main window is titled "ExperimentDesigns/ExpDesign_01". It features a "Design Result" section with a "Restore" button and a "Design Table" showing factors like "Factor_05" and "Factor_06". Below this is the "ExperimentDesign Factors Manager" with "Selected Factors" (Factor_06, Factor_05, Factor_04) and "Addable Factors" (Factor_02, Factor_WEIGHT_2, Factor_WEIGHT_1, Factor_WEIGHT). A "Total Run Count" of 6 is displayed. A "Factor Levels Editor" dialog is open, showing a table with columns for Factor Name, Type, Dlls, Model, and Argument. It lists factors like "Factor_06", "Factor_05", and "Factor_04" with their respective levels and arguments. The dialog also has tabs for "Factor Name", "Directory", and "Description".

3310

FIG. 74

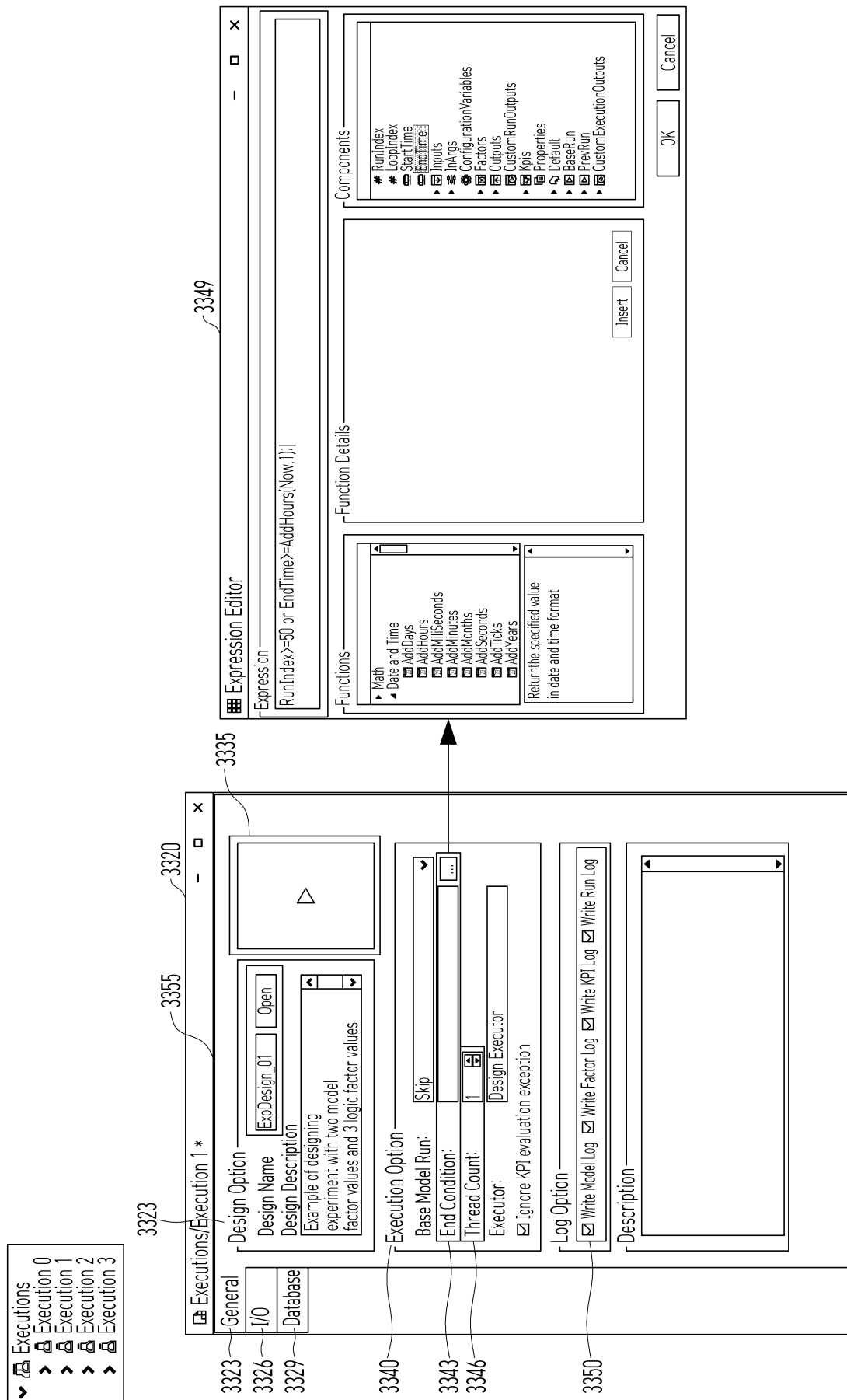


FIG. 75

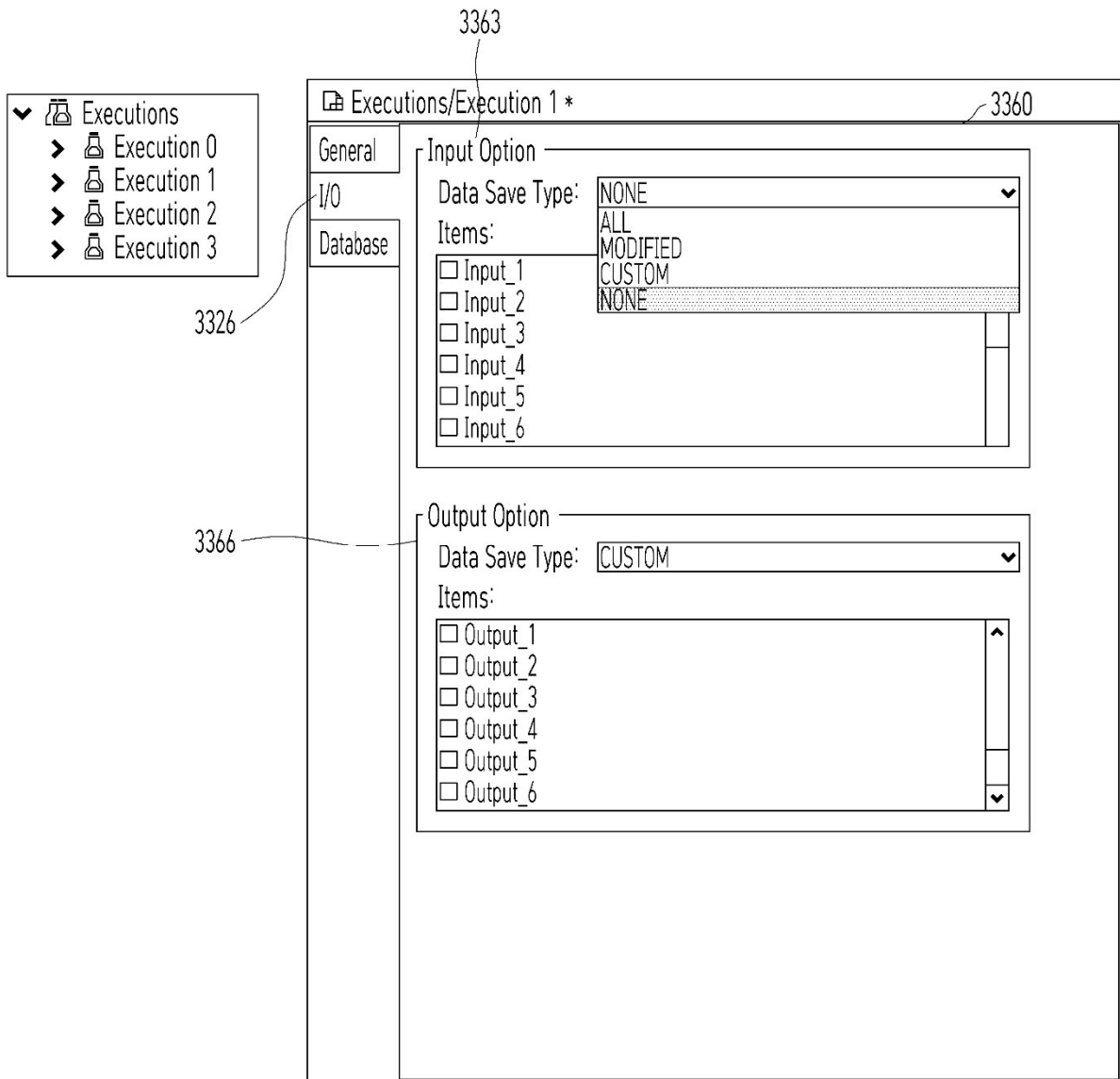


FIG. 76

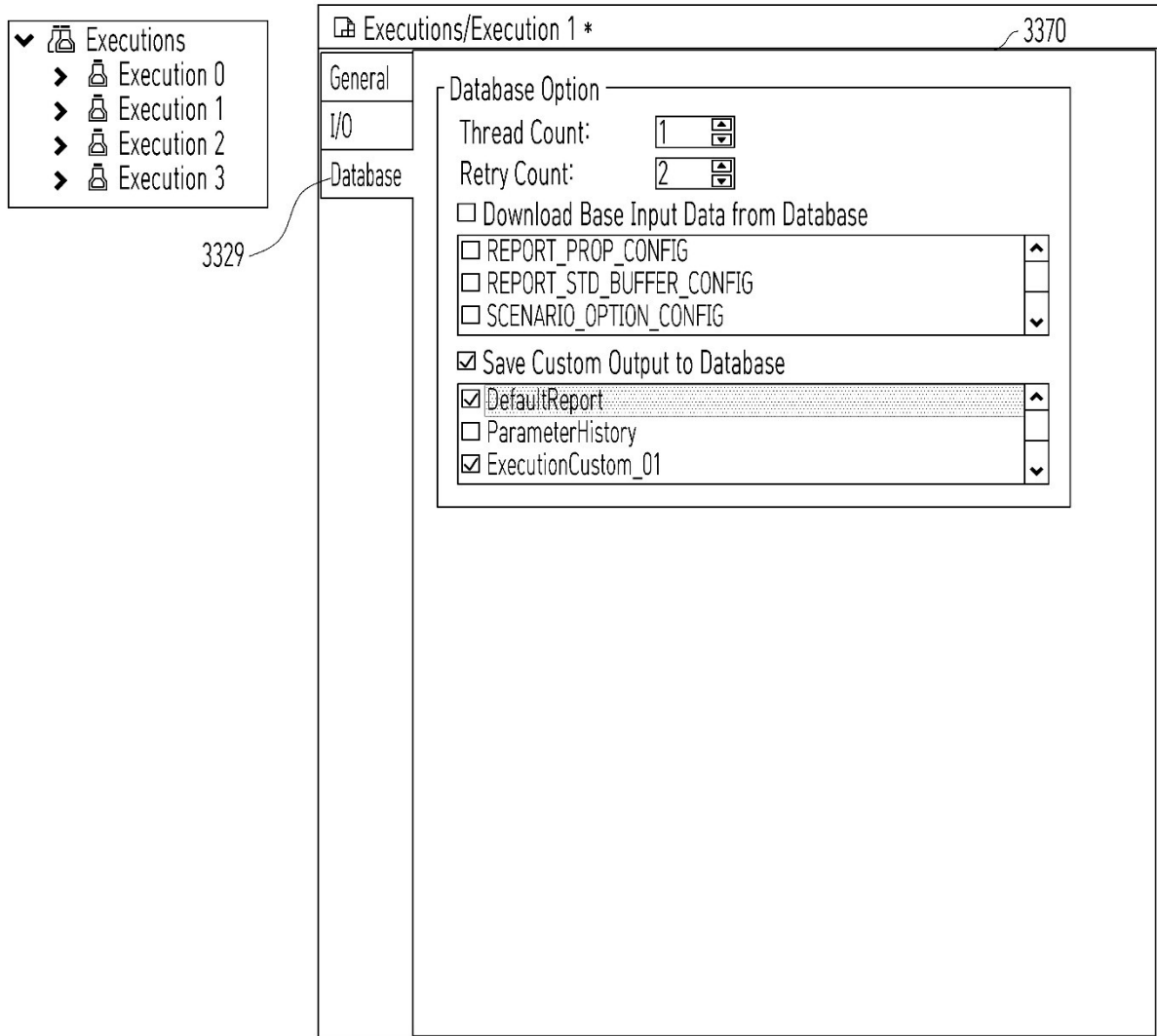


FIG. 77

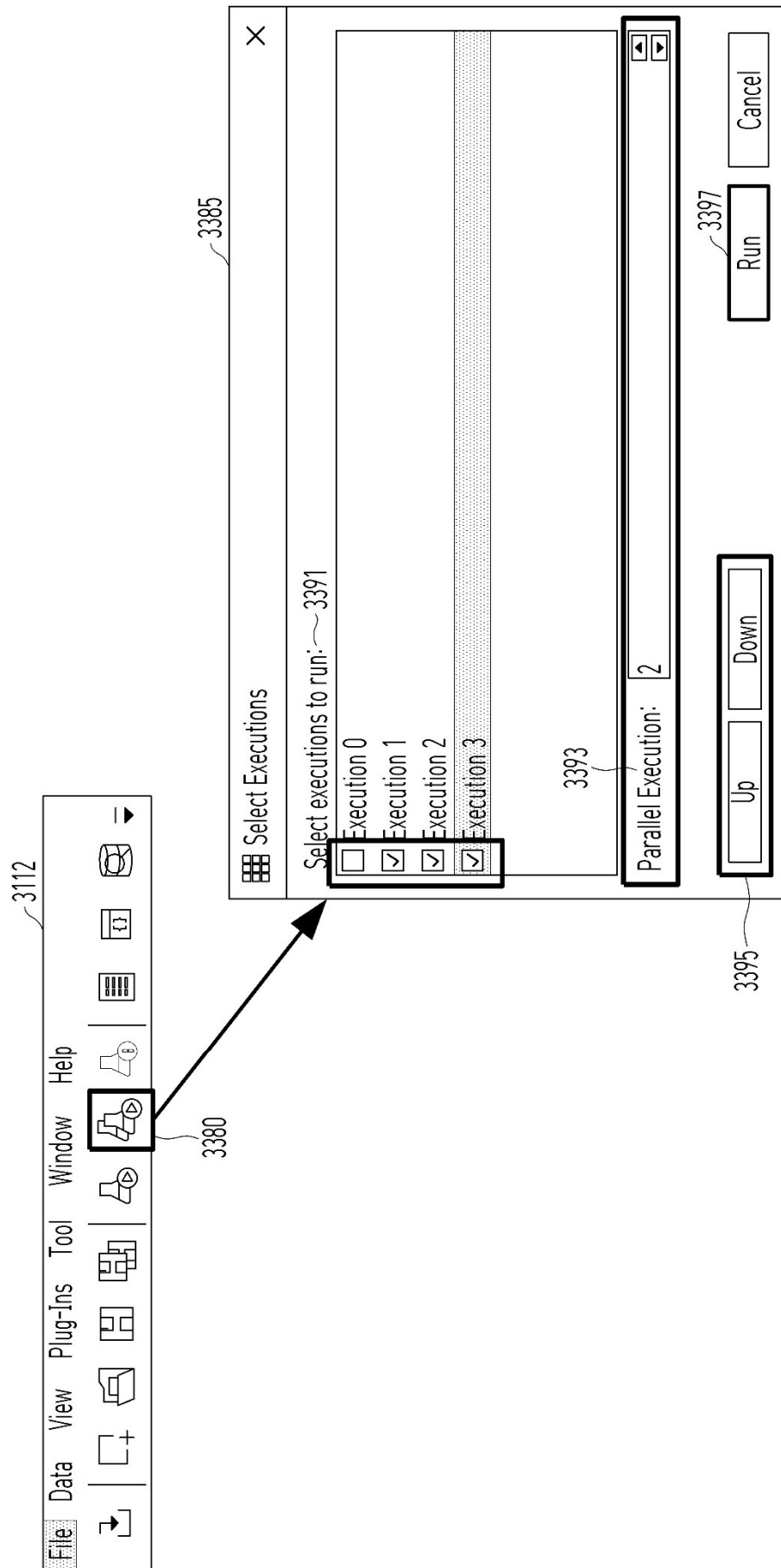


FIG. 78

Executions

Execution 0

Report

ExecutionOutputs

DefaultReport

PEPG

ParameterHistory

BaseRun

Run 1

Run 2

Run 3

Run 4

Run 5

Run 6

Run 7

Run 8

Run 9

Executions/Execution 0/Report

Auto Refresh Interval: Paused

Execution Analysis Report

Execution Start Time: 2024-07-09 13:27:12

Execution End Time: 2024-07-09 14:05:30

Estimated End Time: 2024-07-09 14:05:30

Execution Elapsed Time: 00:38:18

Execution State: -

Total Run Count: 496/496

Experiment Design: HasNotDesing

3403

3400

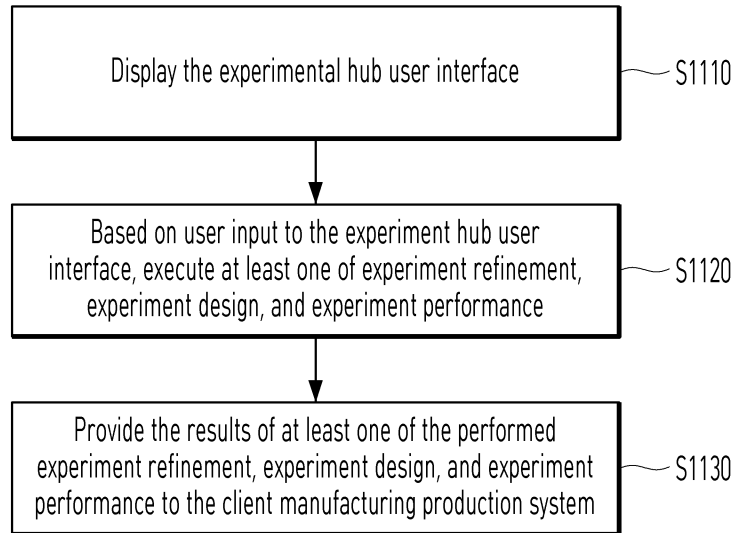
3406

3409

Execution		Parallel Run		Performance		KPIs		Factors									
Run In.	Run Name	Loop Intel	Selected	Start Time	End Time	Elapsed Time	Run Time	Engine Status	ON RTF	LATE RTF	Score	S0001	S0002	S0003	S0004	S0005	...
0	BaseRun	1	☒	2024-07-09 13:27:12	2024-07-09 13:27:17	00:00:04	Done	Success	8.365	10.764	19.159	7	7	7	7	7	...
1	Run 1	2	☒	2024-07-09 13:27:19	2024-07-09 13:27:23	00:00:04	Done	Success	7.894	10.687	18.981	7	7	7	7	7	...
2	Run 2	2	☐	2024-07-09 13:27:20	2024-07-09 13:27:26	00:00:06	Done	Success	7.996	10.588	18.584	7.741	3.827	5.388	7.722	6.149	...
3	Run 3	2	☐	2024-07-09 13:27:20	2024-07-09 13:27:27	00:00:06	Done	Success	7.375	10.552	17.897	6.259	10.173	8.612	6.78	7.851	...
4	Run 4	2	☐	2024-07-09 13:27:21	2024-07-09 13:27:28	00:00:06	Done	Success	8.543	10.86	19.403	3.437	5.953	7.081	6.043	4.737	...
5	Run 5	2	☐	2024-07-09 13:27:22	2024-07-09 13:27:29	00:00:07	Done	Success	7.967	10.818	18.785	10.563	8.047	6.919	7.957	9.263	...
6	Run 6	3	☒	2024-07-09 13:27:31	2024-07-09 13:27:38	00:00:06	Done	Success	7.847	10.48	18.527	4.994	5.809	6.763	6.465	5.492	...
7	Run 7	3	☐	2024-07-09 13:27:32	2024-07-09 13:27:38	00:00:06	Done	Success	8.324	10.767	19.091	3.853	5.173	9.388	7.515	1.908	...
8	Run 8	3	☐	2024-07-09 13:27:33	2024-07-09 13:27:40	00:00:06	Done	Success	7.552	10.556	18.108	6.134	6.446	4.139	5.414	9.075	...
9	Run 9	3	☐	2024-07-09 13:27:34	2024-07-09 13:27:41	00:00:06	Done	Success	7.87	10.893	18.763	7.063	4.031	5.089	2.557	4.437	...
10	Run 10	4	☐	2024-07-09 13:27:35	2024-07-09 13:27:42	00:00:06	Done	Success	7.507	10.479	17.986	2.924	7.387	8.437	10.372	6.547	...
11	Run 11	4	☒	2024-07-09 13:27:42	2024-07-09 13:27:49	00:00:06	Done	Success	7.671	10.684	18.355	5.044	5.173	7.347	5.964	3.937	...
12	Run 12	4	☐	2024-07-09 13:27:43	2024-07-09 13:27:50	00:00:06	Done	Success	7.594	10.706	18.3	9.571	1.072	5.632	5.875	4.316	...
13	Run 13	4	☐	2024-07-09 13:27:44	2024-07-09 13:27:51	00:00:06	Done	Success	7.776	10.693	18.469	0.516	9.774	9.082	6.054	3.558	...
14	Run 14	4	☐	2024-07-09 13:27:45	2024-07-09 13:27:52	00:00:06	Done	Success	7.678	10.486	18.144	4.676	5.45	8.052	5.085	4.889	...
15	Run 15	4	☐	2024-07-09 13:27:46	2024-07-09 13:27:53	00:00:06	Done	Success	7.775	10.648	18.423	5.411	4.896	6.642	6.844	2.986	...
16	Run 16	5	☒	2024-07-09 13:27:54	2024-07-09 13:28:00	00:00:06	Done	Success	8.079	10.74	18.819	4.844	5.358	7.383	6.031	3.852	...
17	Run 17	5	☐	2024-07-09 13:27:55	2024-07-09 13:28:01	00:00:06	Done	Success	7.763	10.602	18.365	2.708	6.313	8.362	4.501	0.901	...
18	Run 18	5	☐	2024-07-09 13:27:55	2024-07-09 13:28:03	00:00:07	Done	Success	7.792	10.718	18.51	6.98	4.402	6.404	7.56	6.802	...
19	Run 19	5	☐	2024-07-09 13:27:56	2024-07-09 13:28:04	00:00:07	Done	Success	7.2	10.495	17.695	3.639	3.192	10.65	7.905	3.015	...
20	Run 20	5	☐	2024-07-09 13:27:57	2024-07-09 13:28:05	00:00:07	Done	Success	7.794	10.784	18.578	6.05	7.523	4.116	4.156	4.156	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Record 1 of 496

FIG. 79



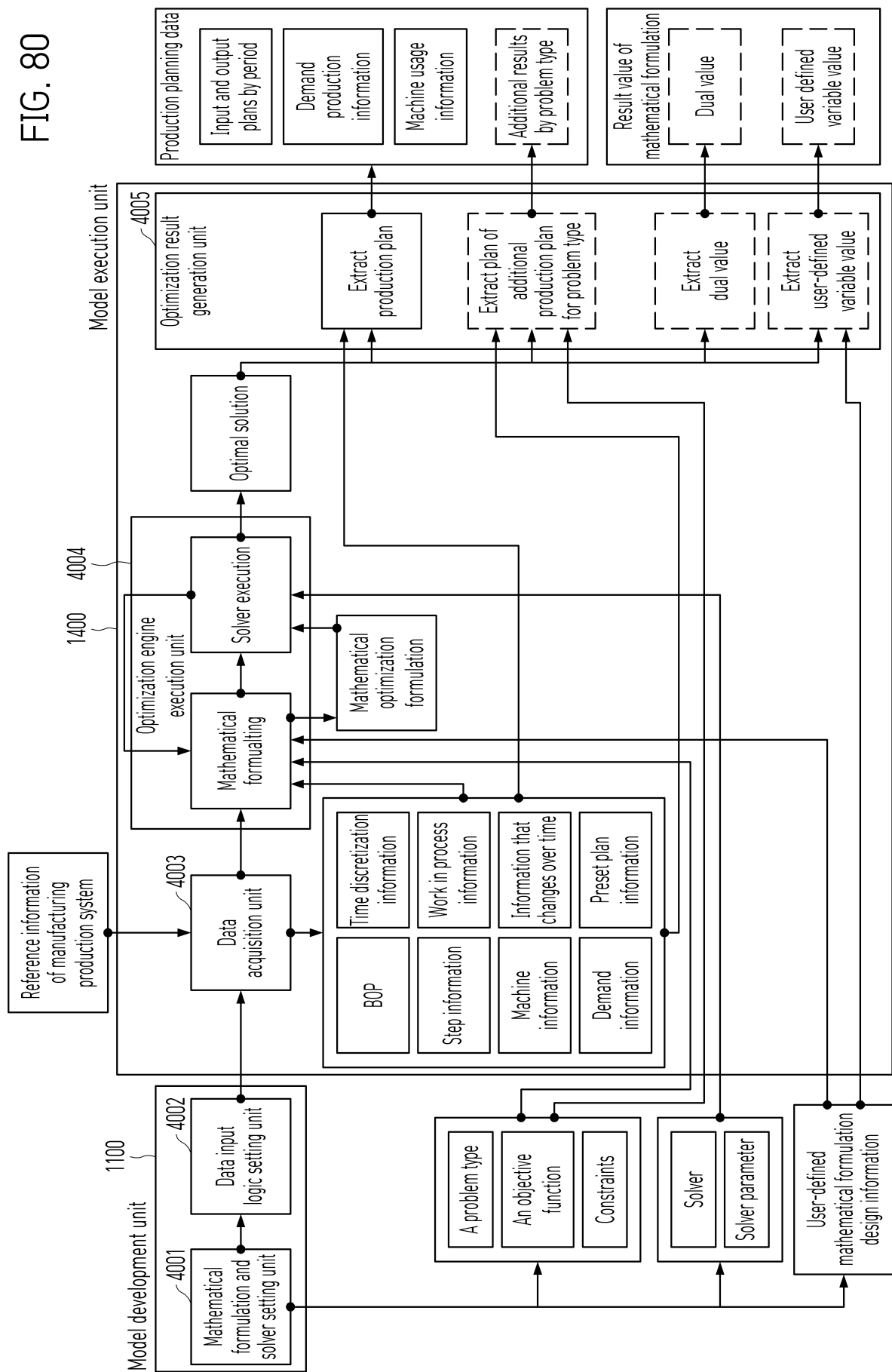


FIG. 80

FIG. 81

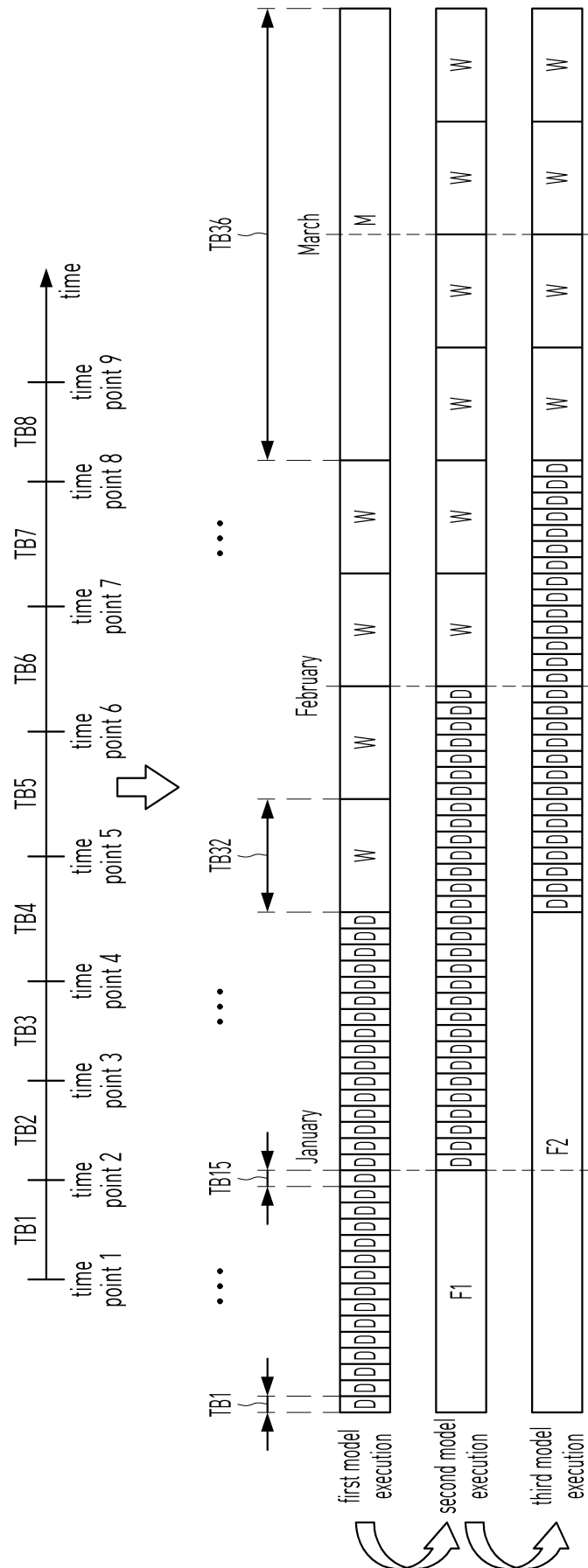


FIG. 82

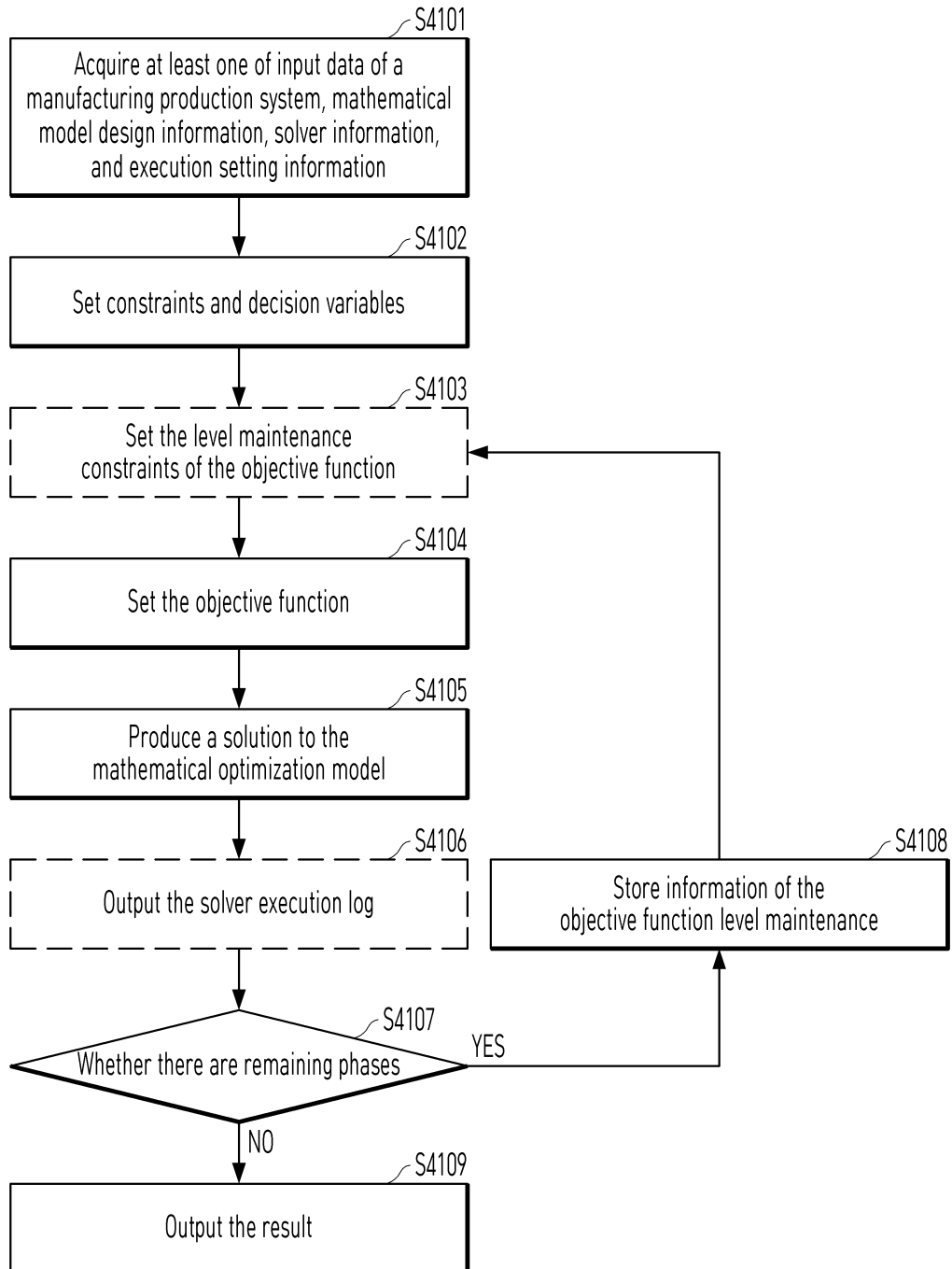


FIG. 83

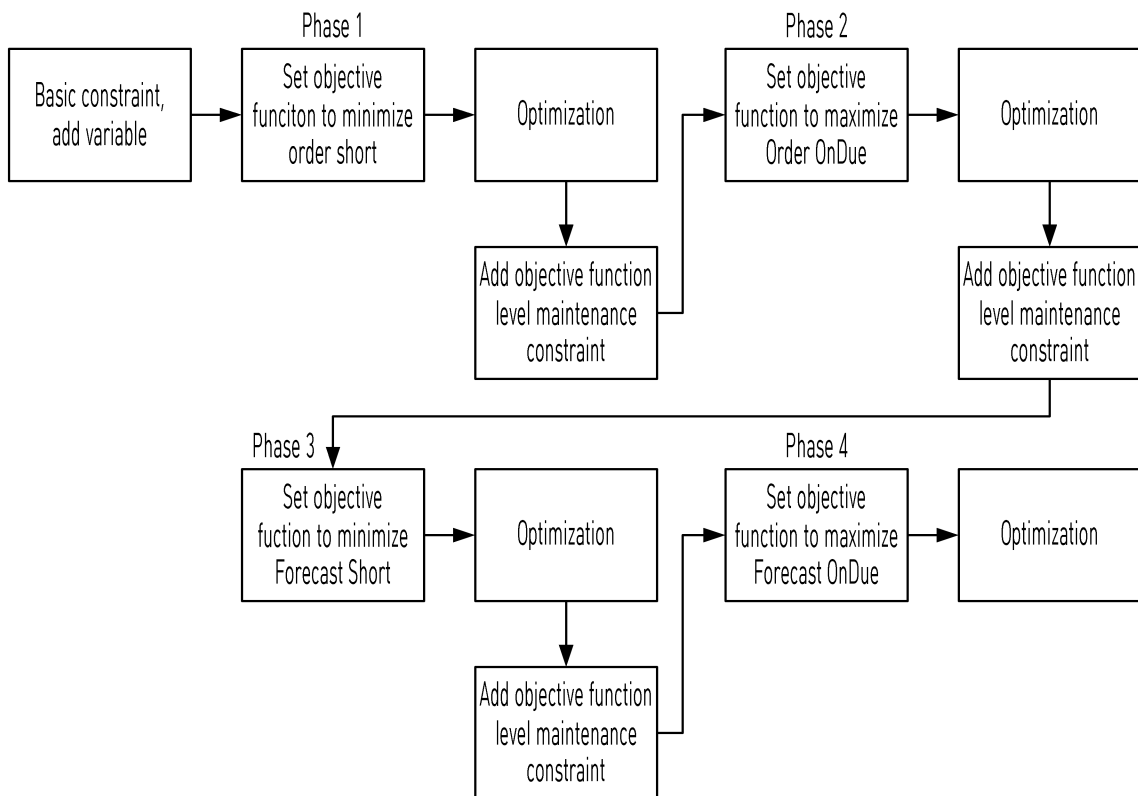
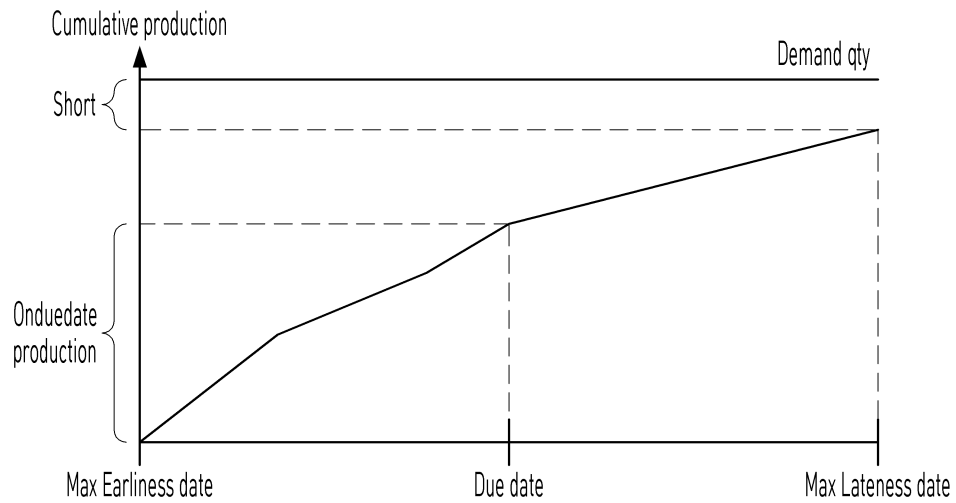


FIG. 84

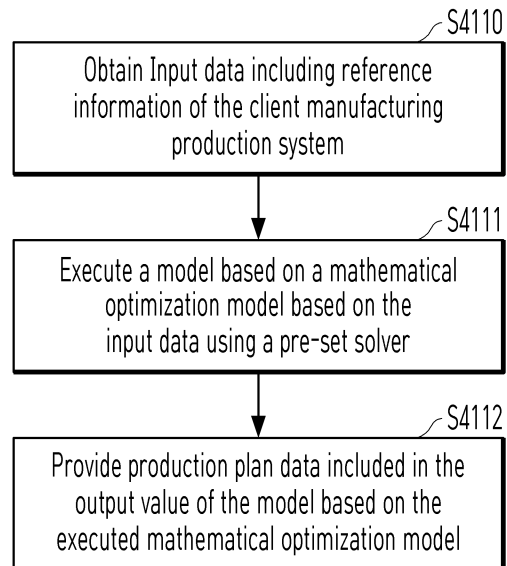


FIG. 85

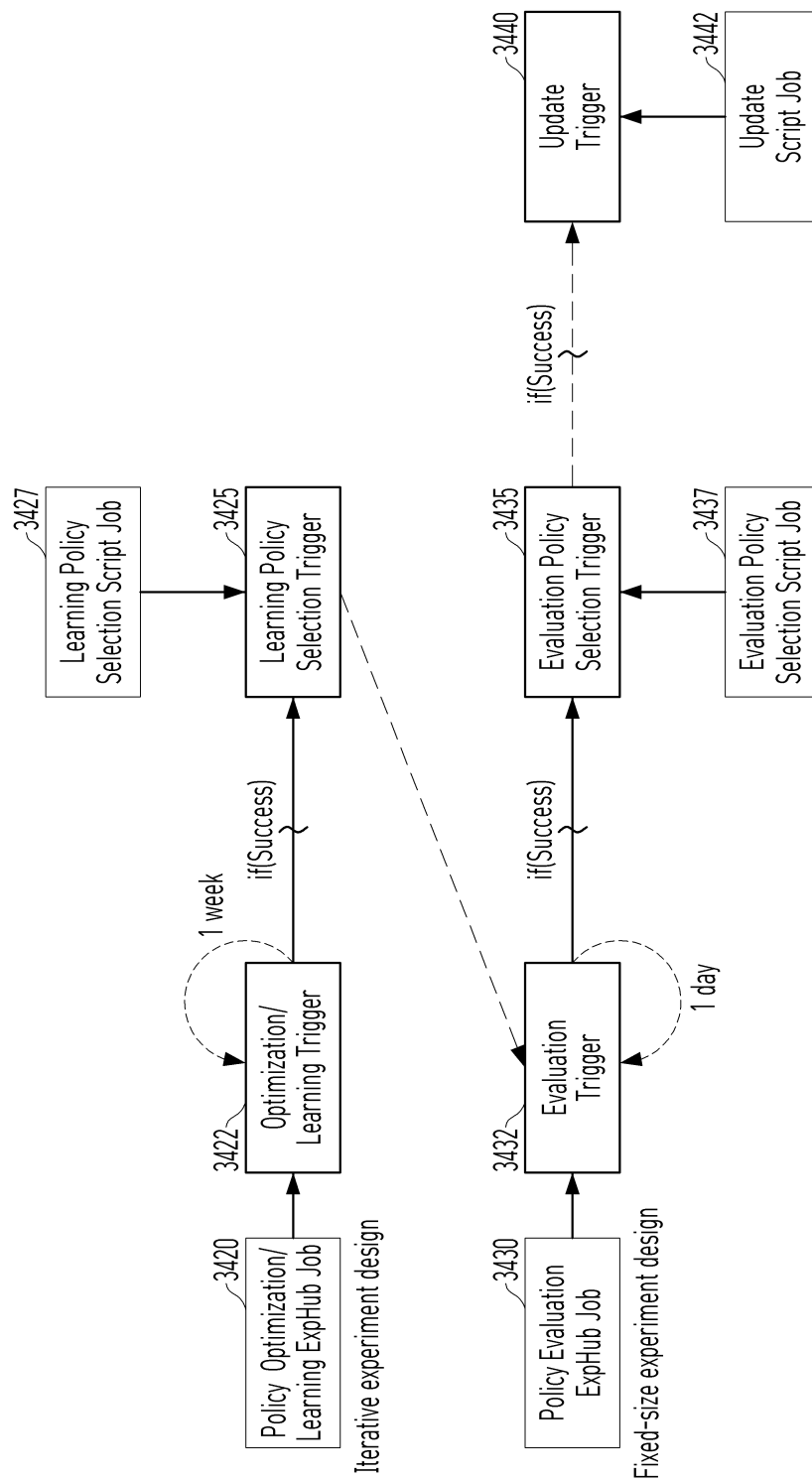


FIG. 86

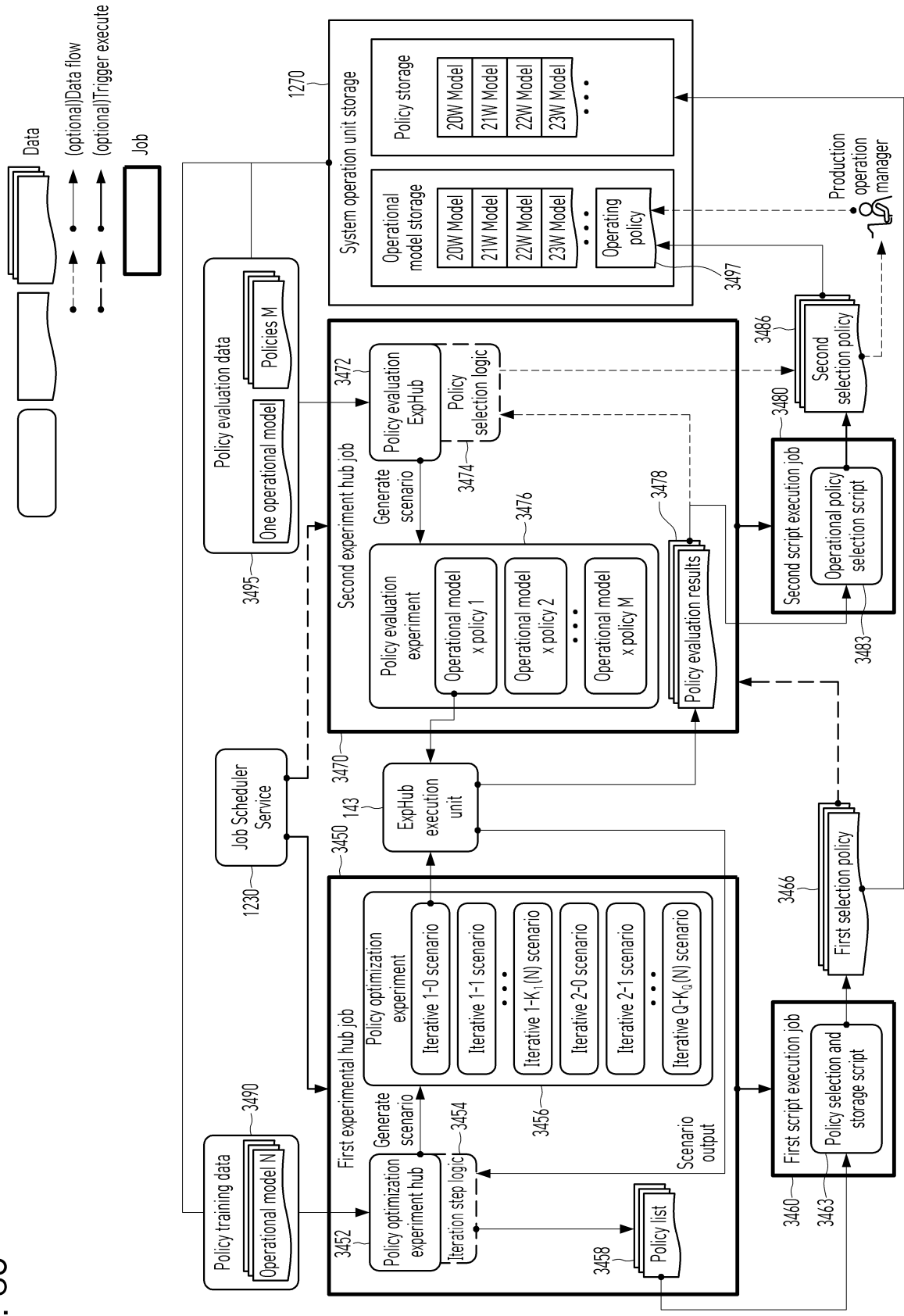


FIG. 87

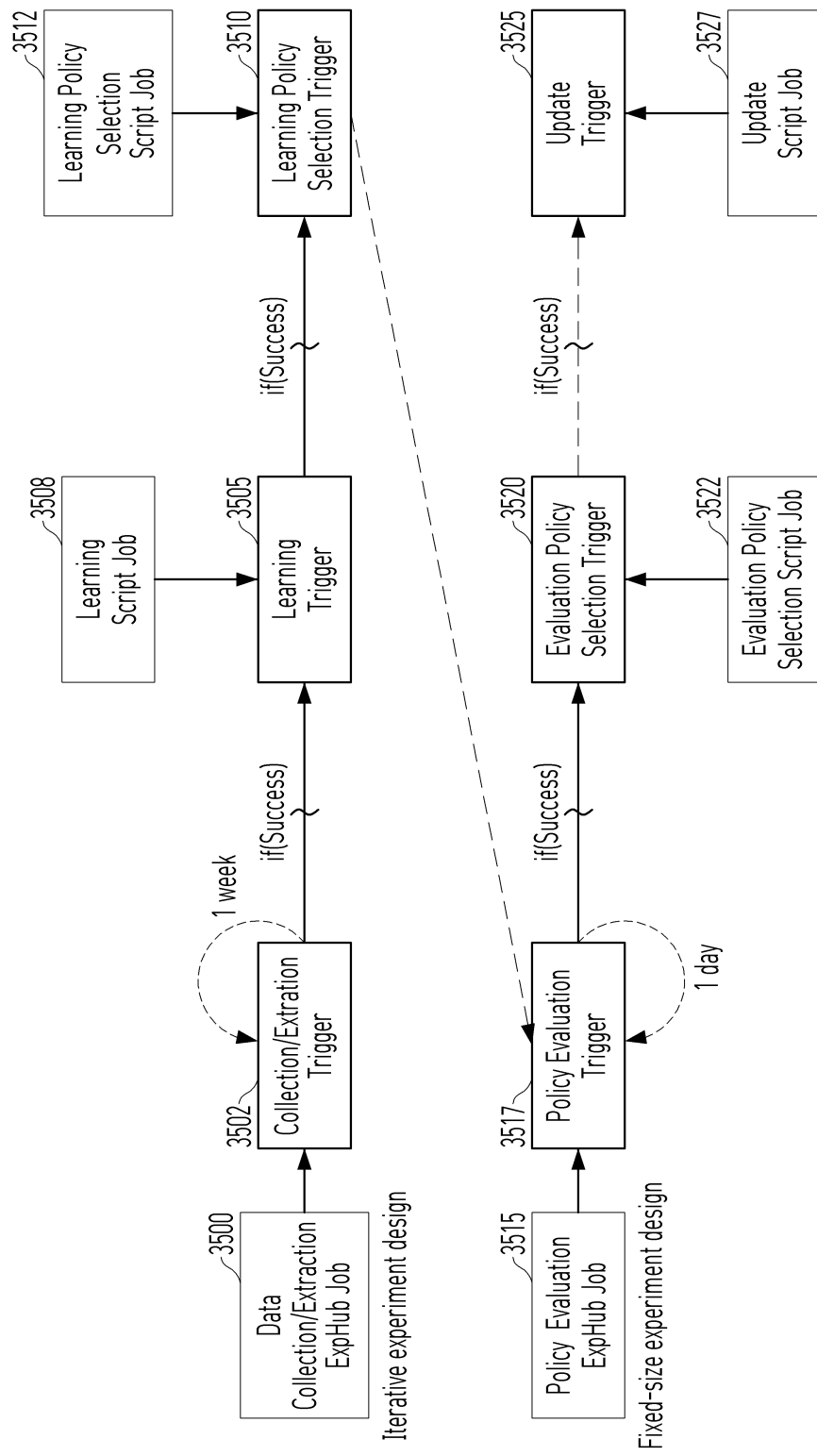


FIG. 88

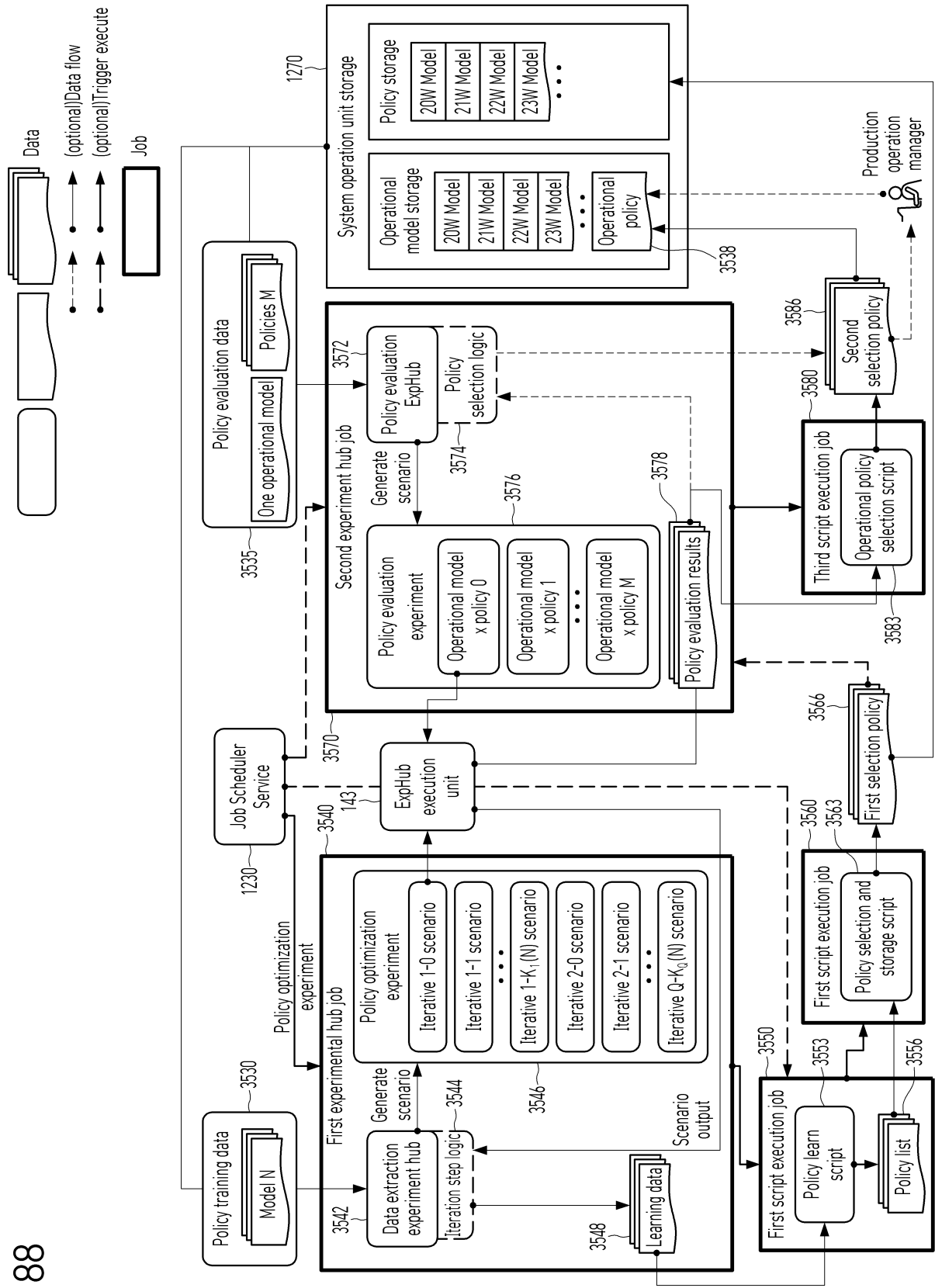


FIG. 89

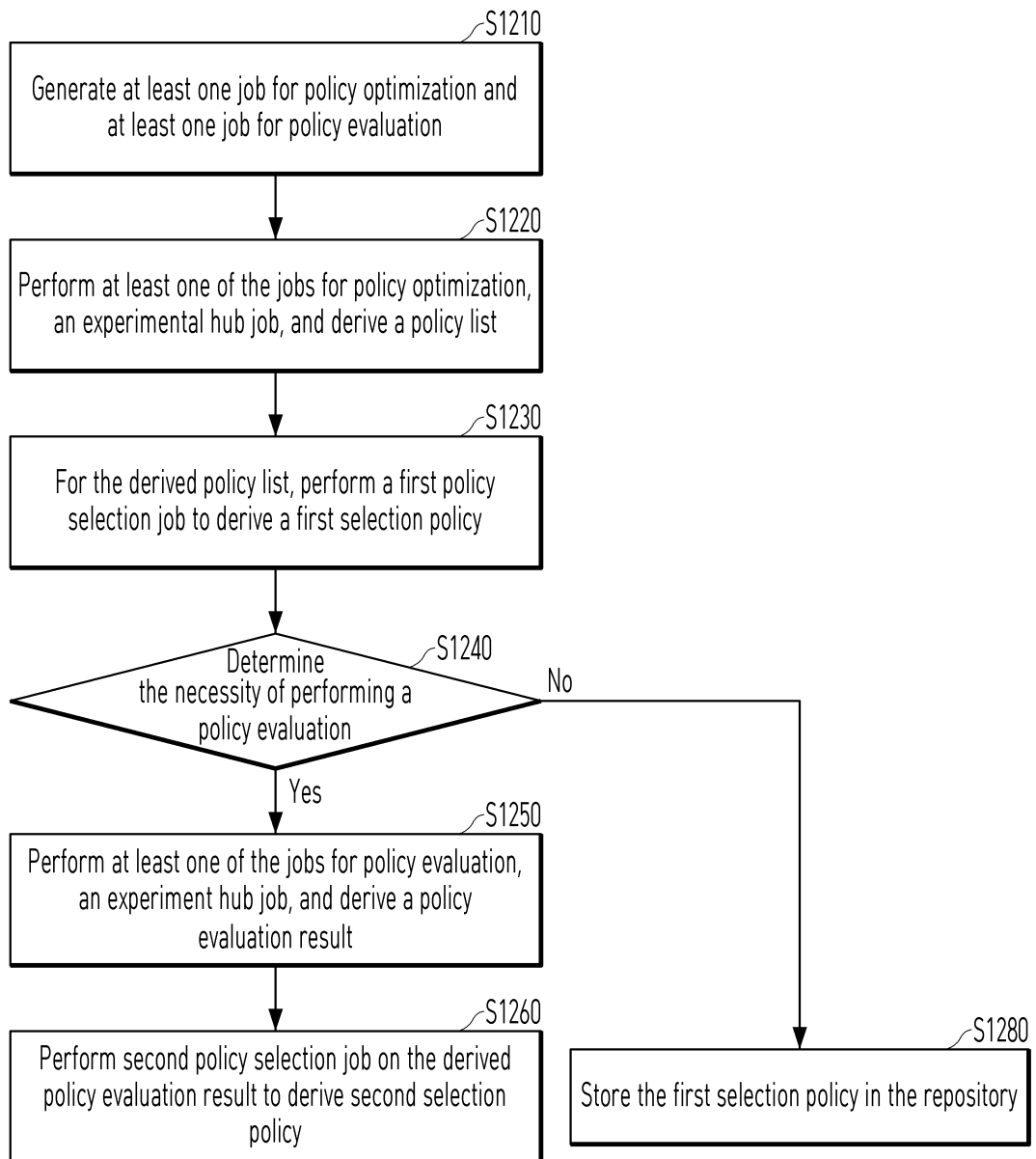


FIG. 90

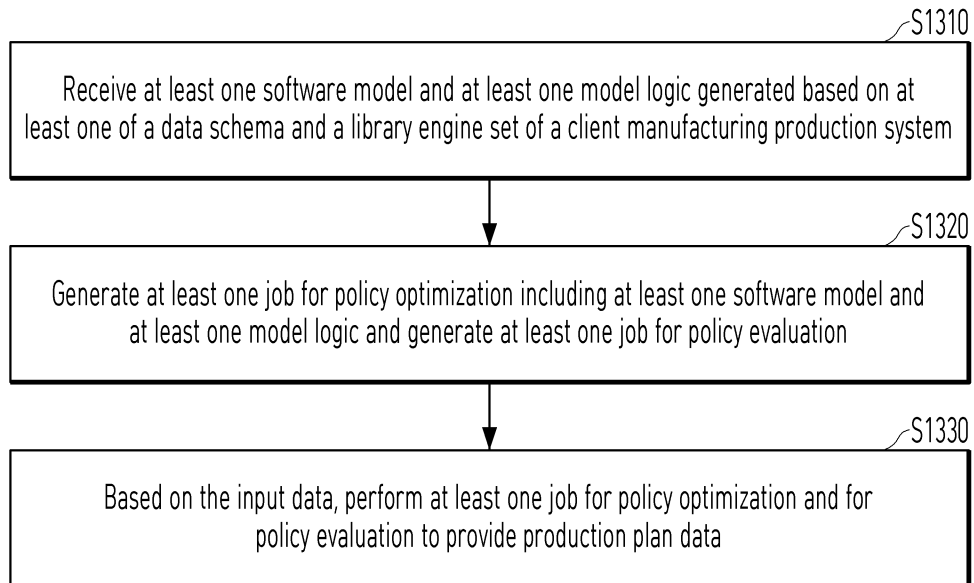
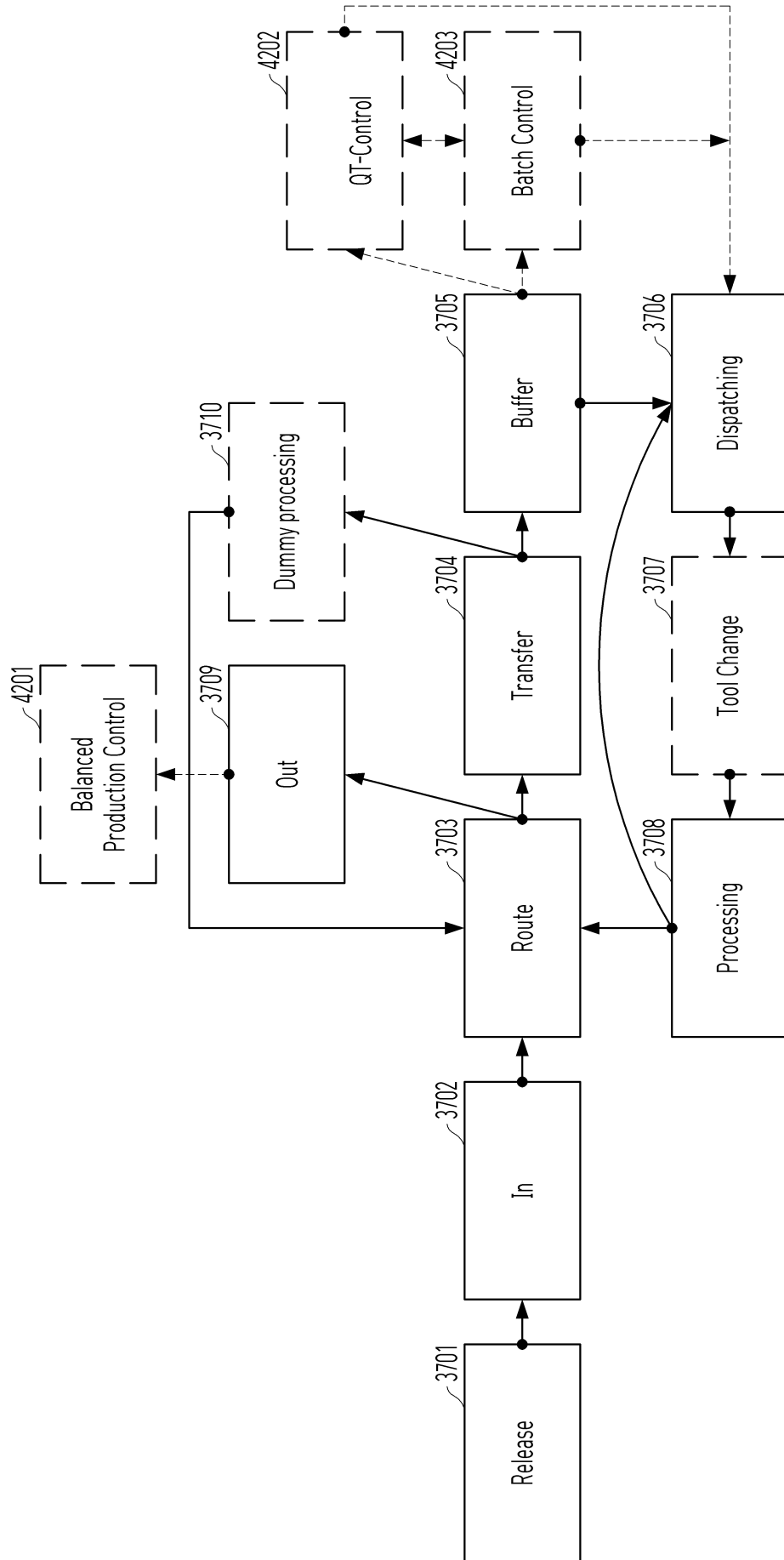


FIG. 91



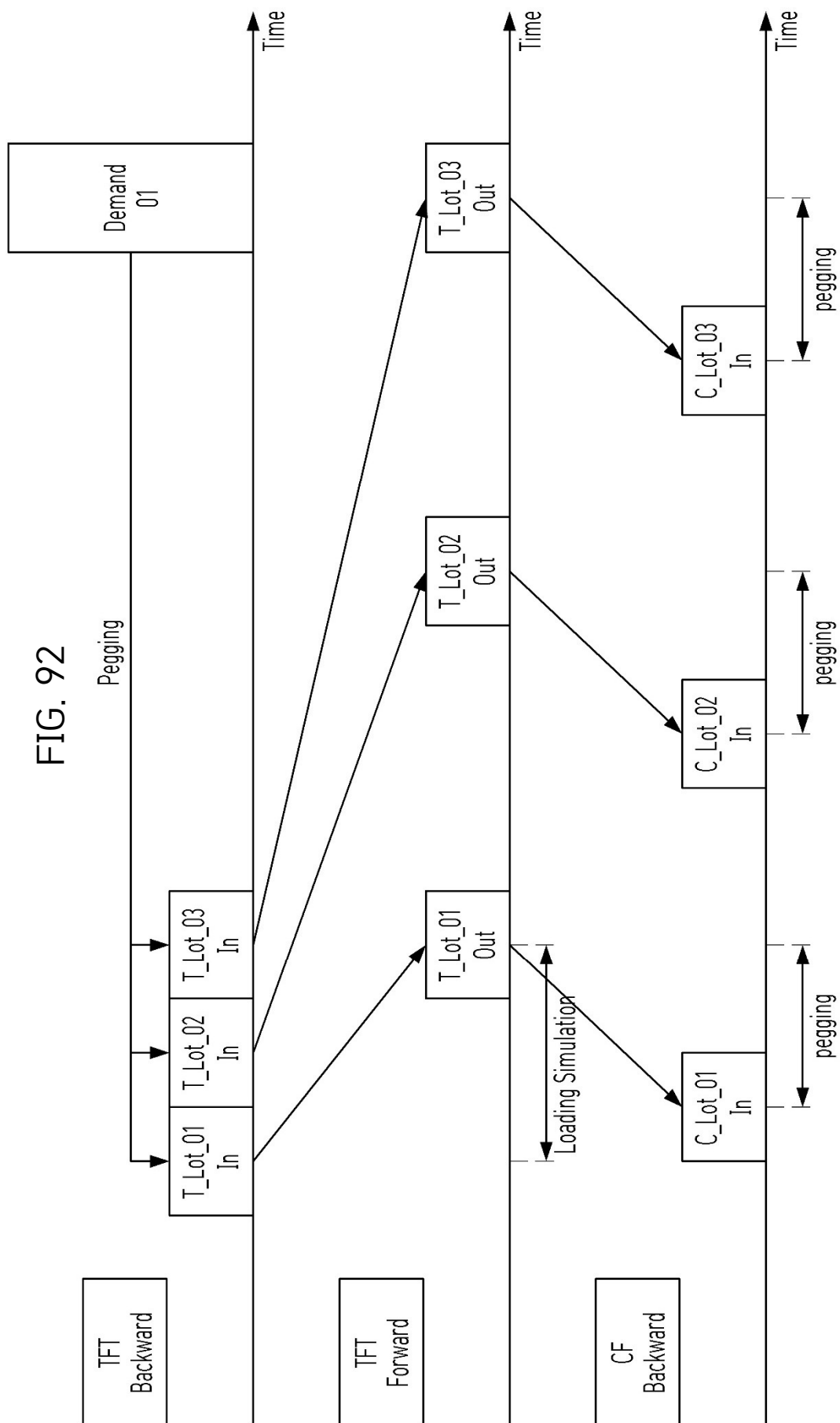


FIG. 93

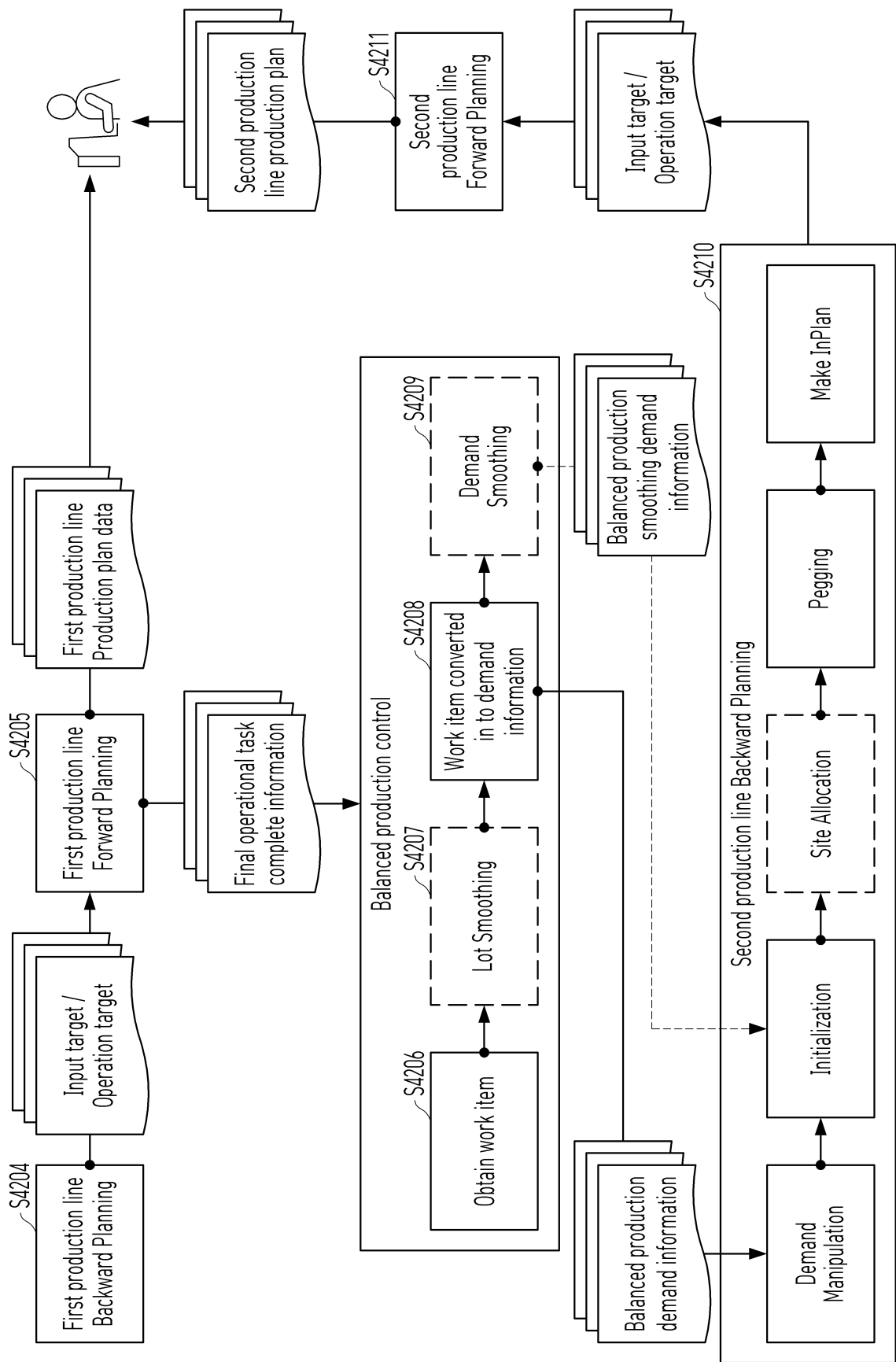


FIG. 94

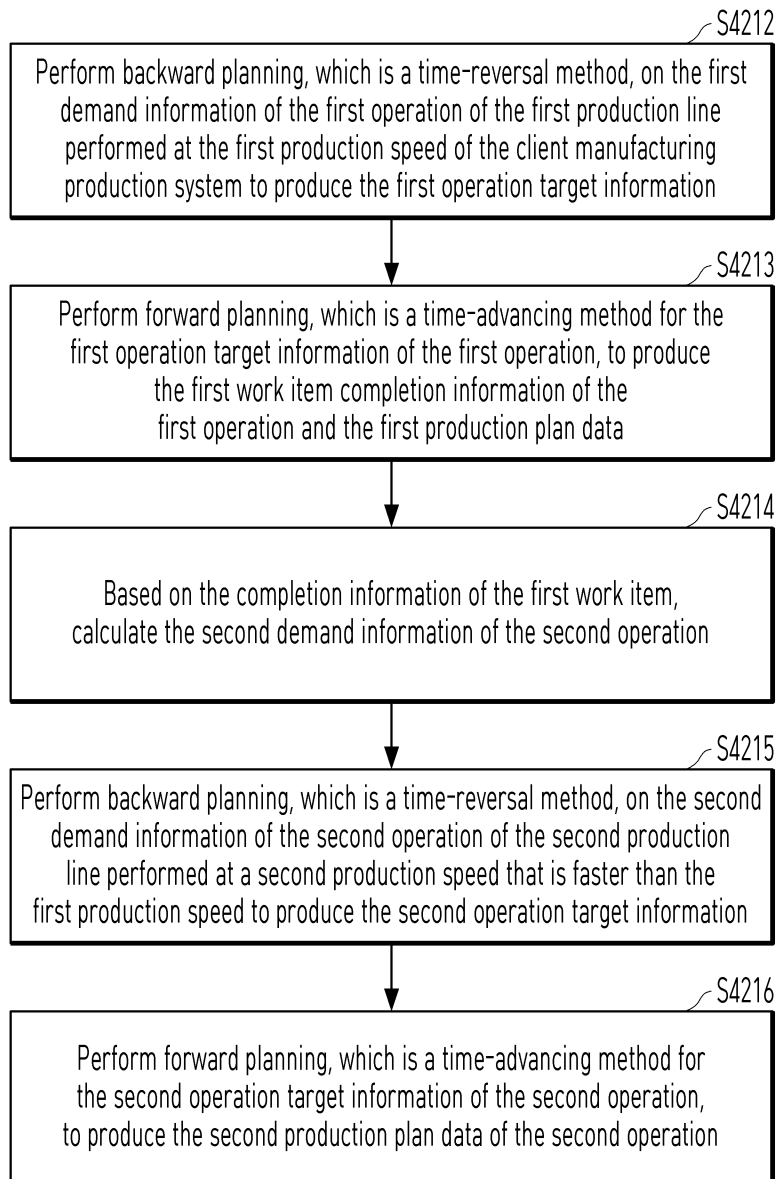


FIG. 95

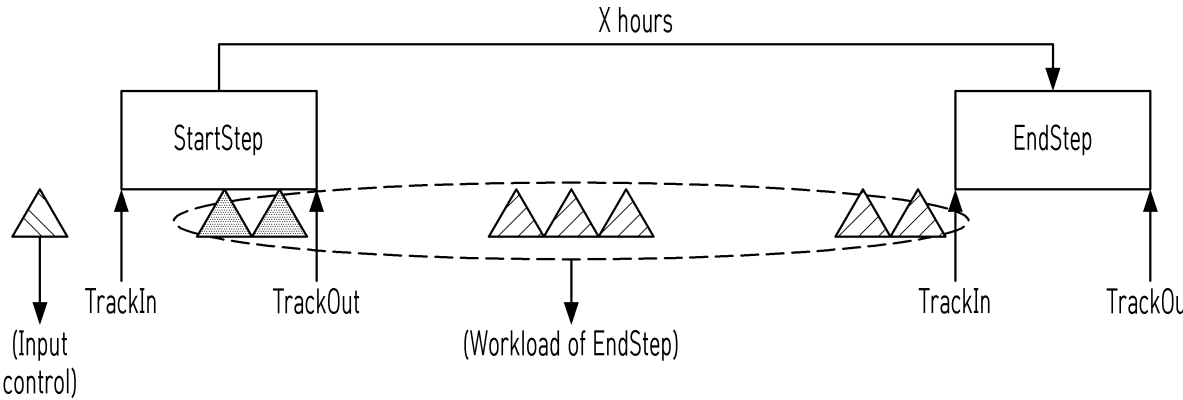


FIG. 96

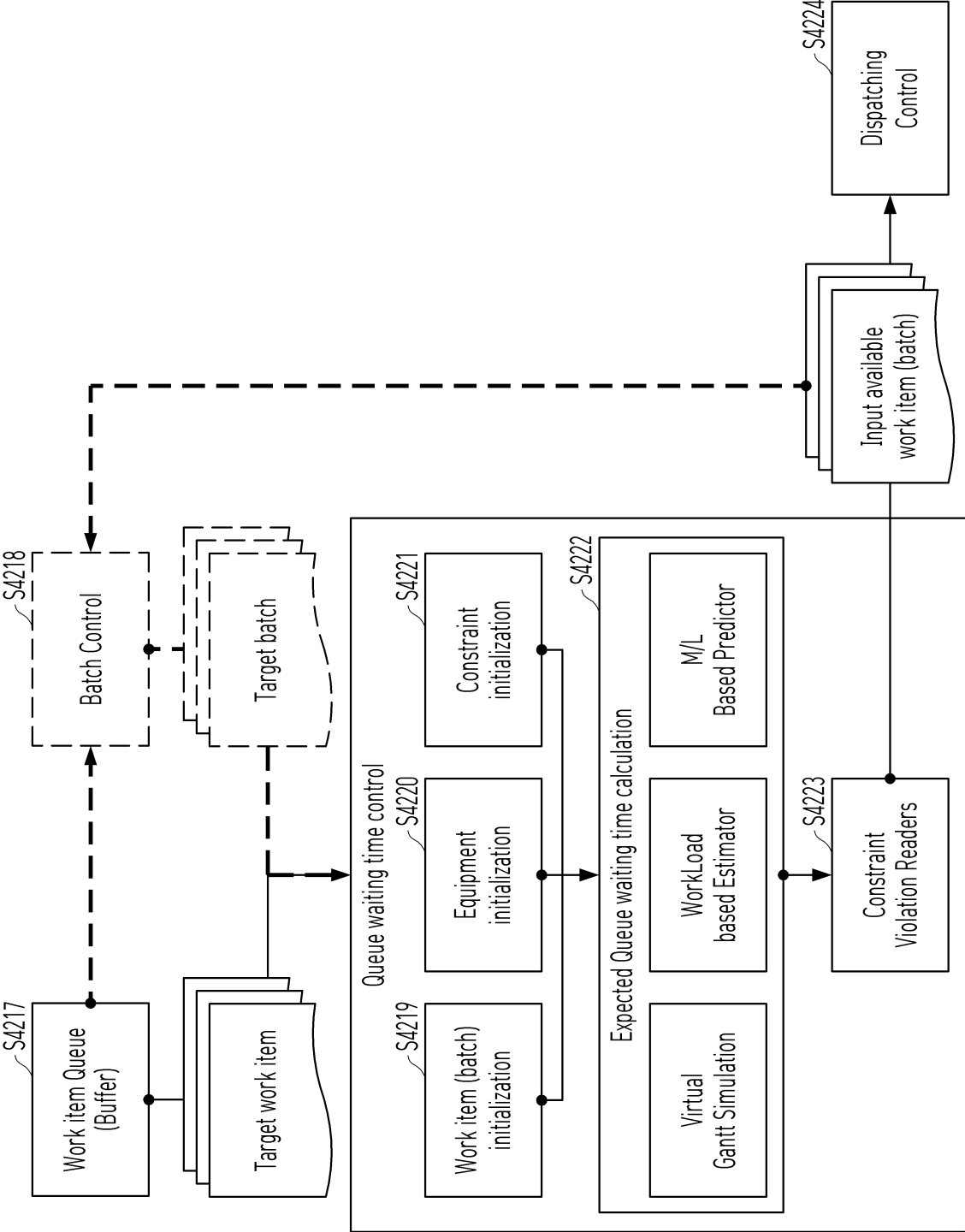


FIG. 97

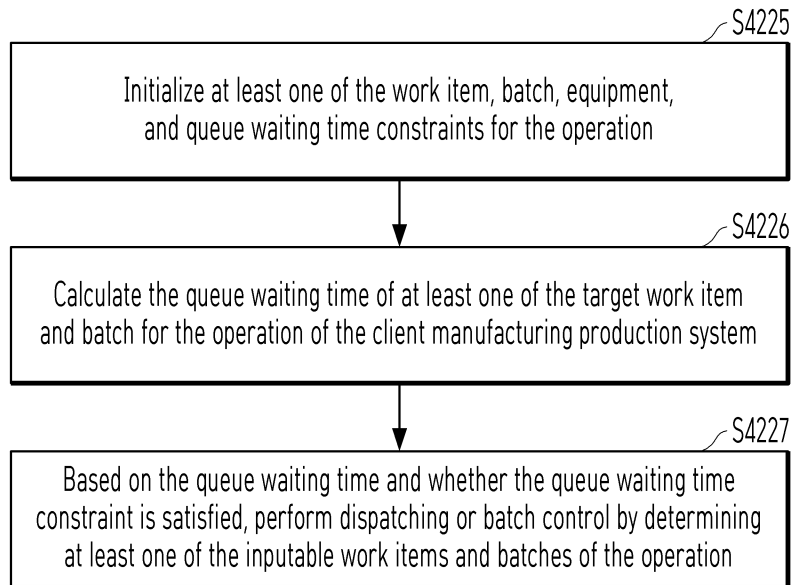


FIG. 98

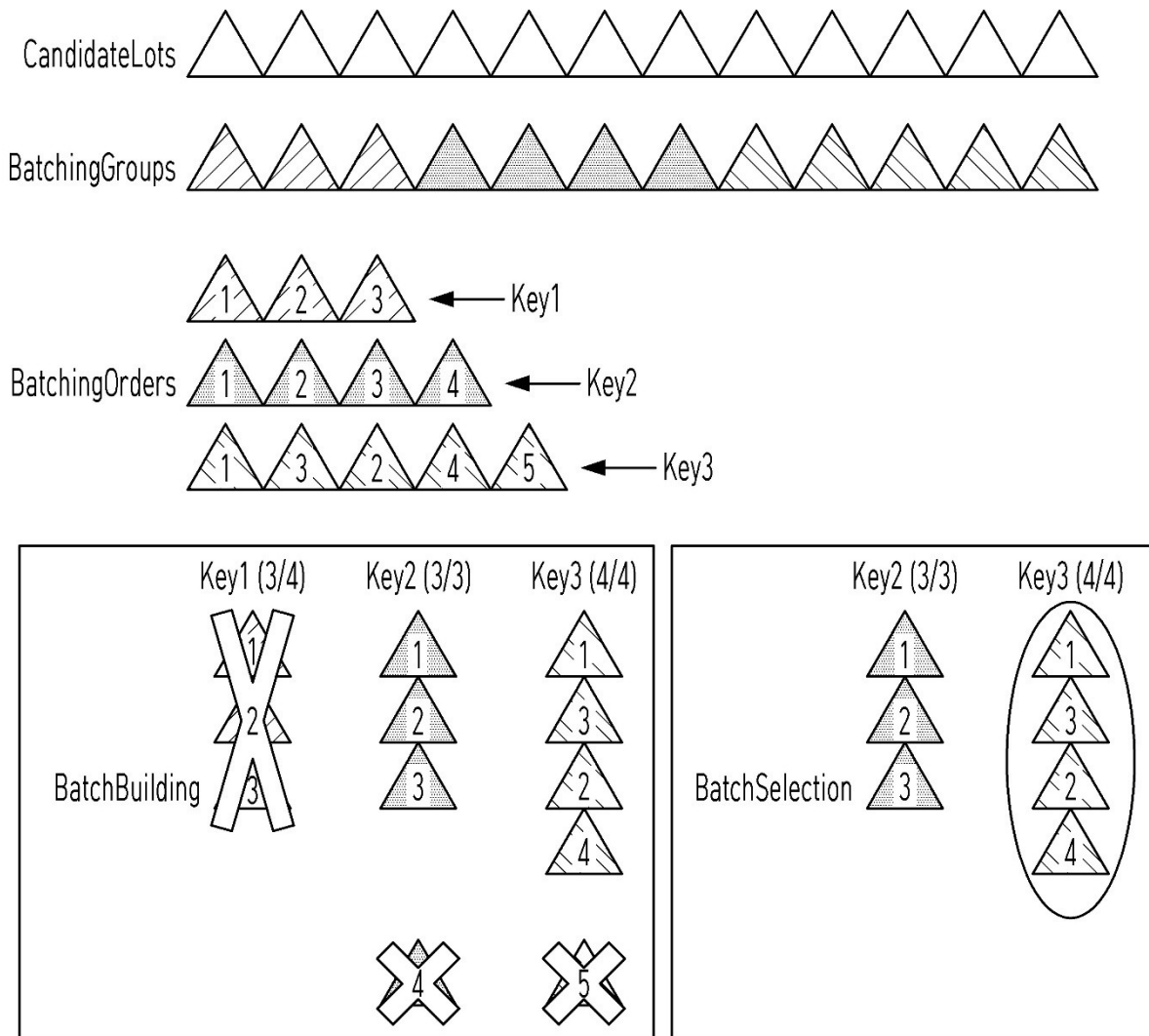


FIG. 99

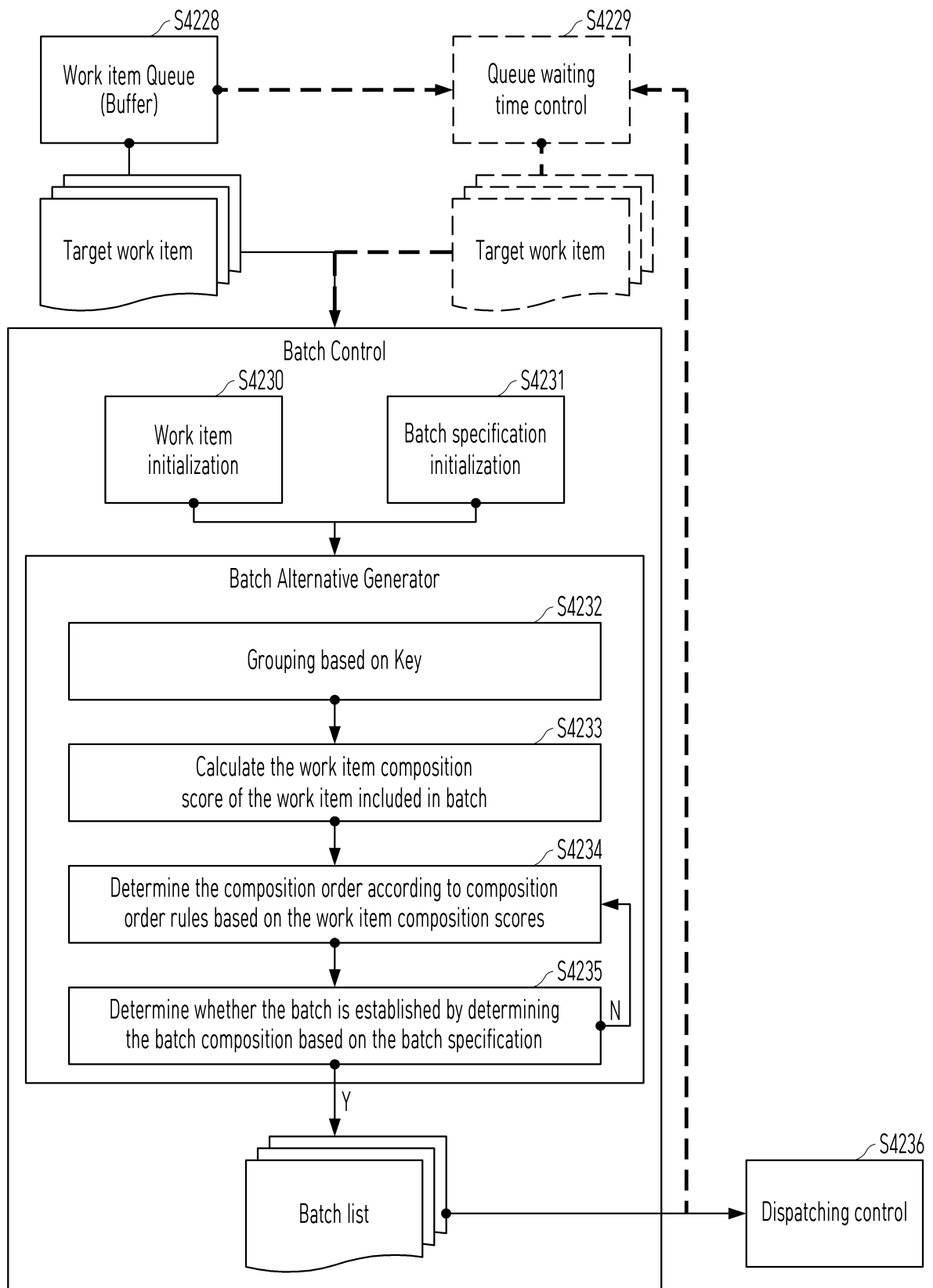


FIG. 100

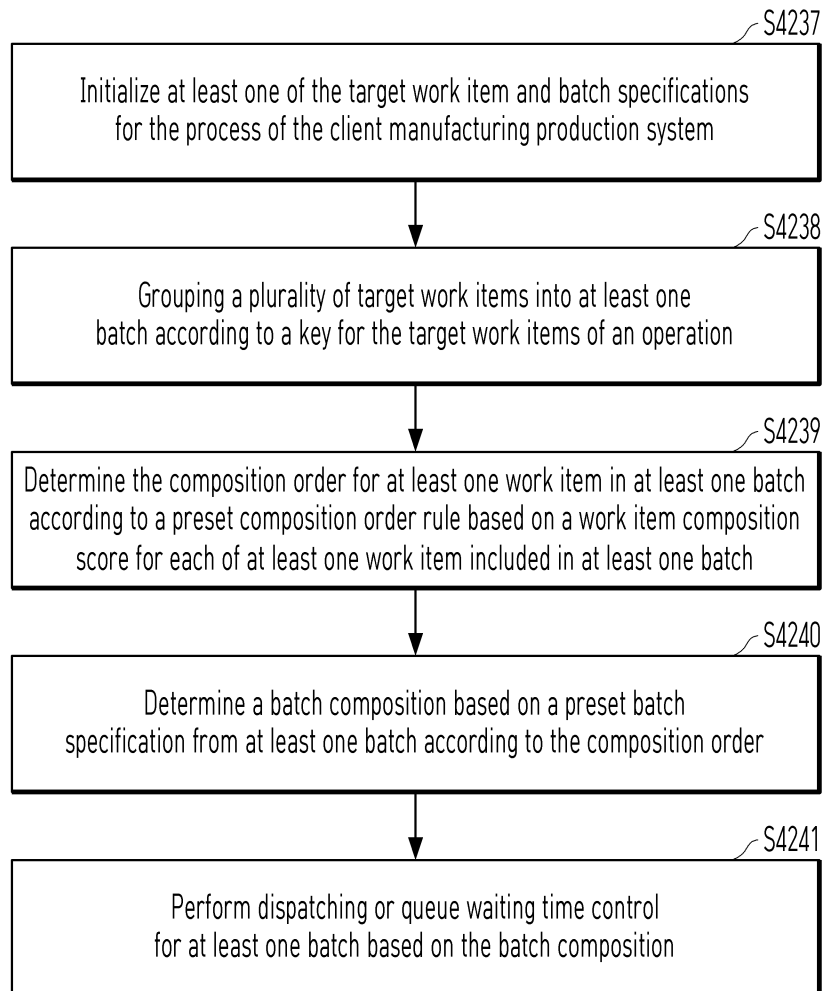


FIG. 101

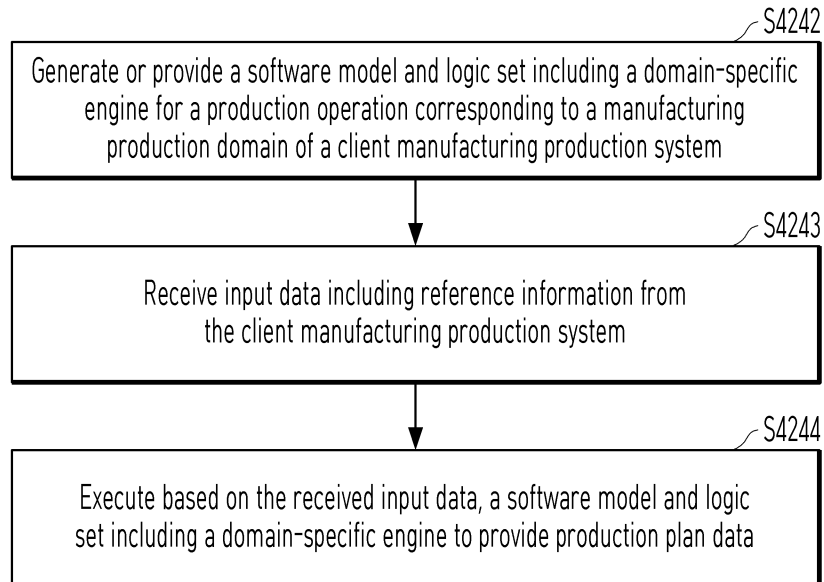


FIG. 102

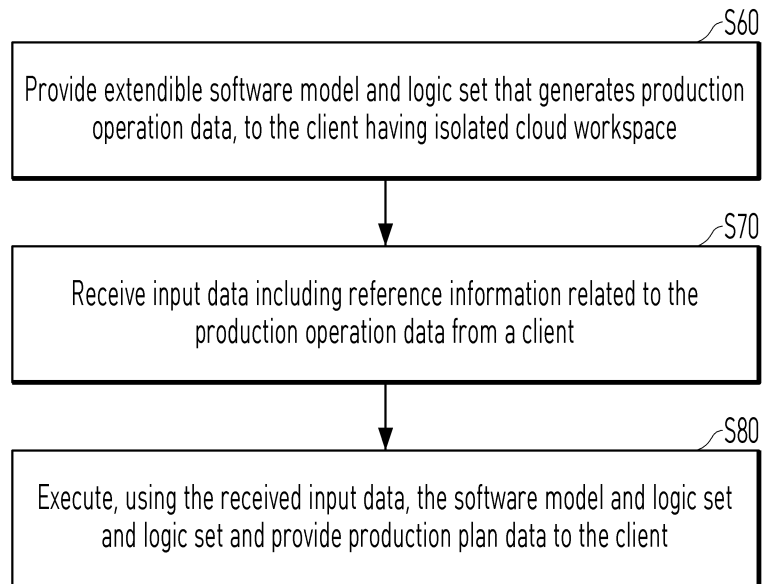


FIG. 103

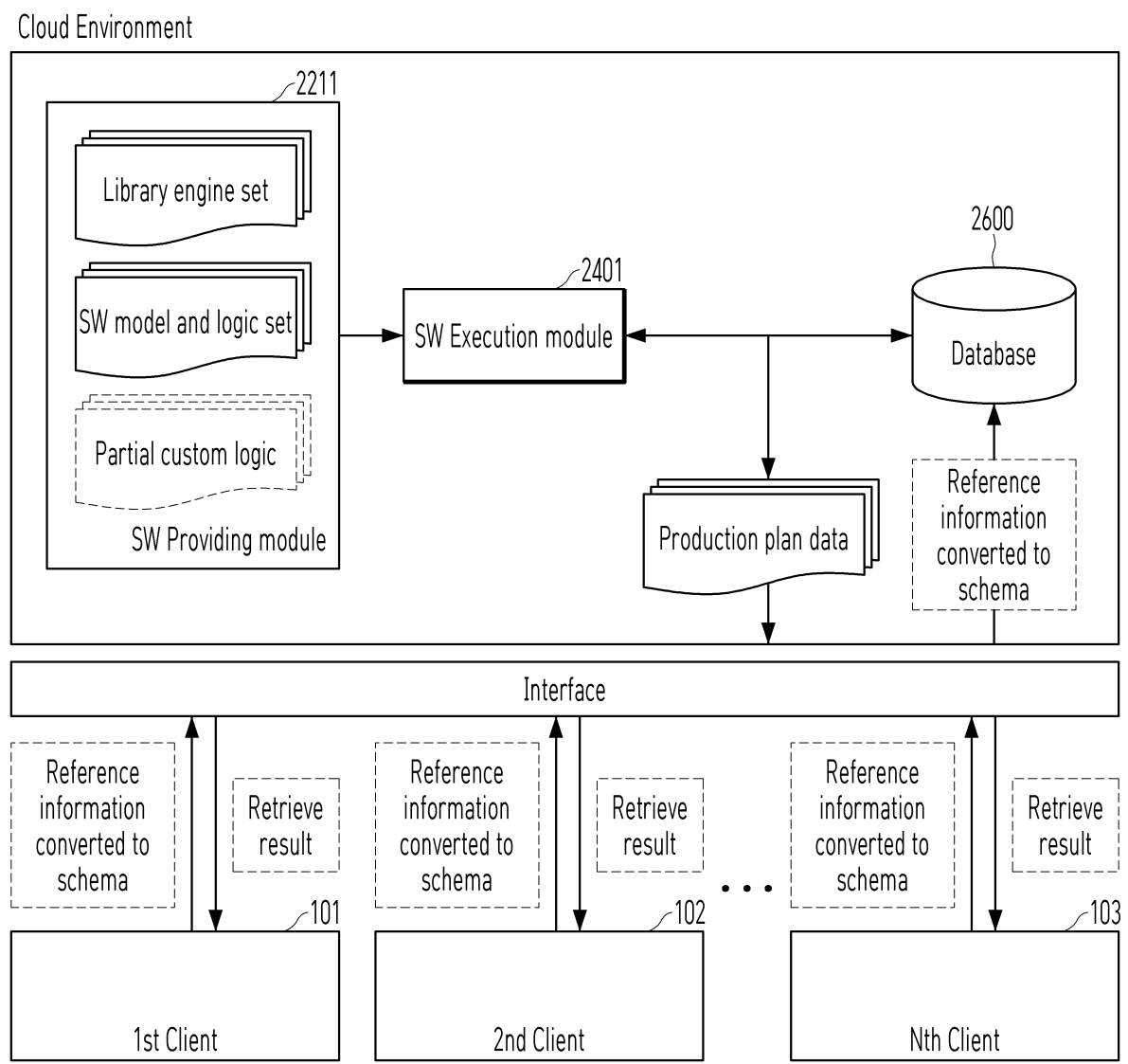


FIG. 104

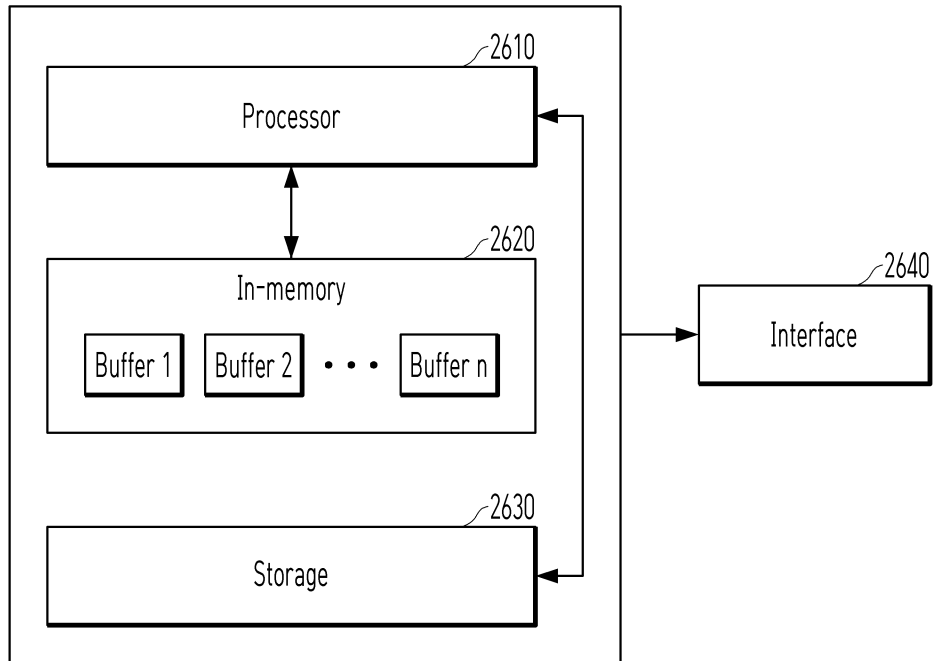


FIG. 105

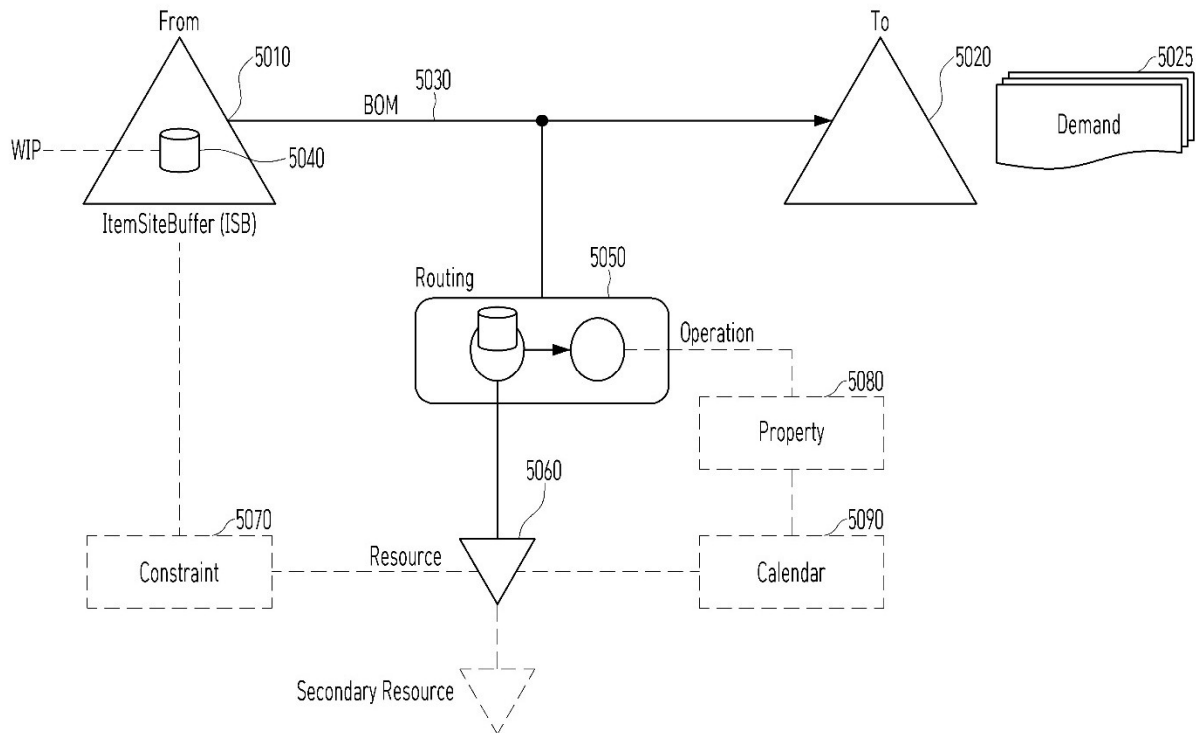


FIG. 106

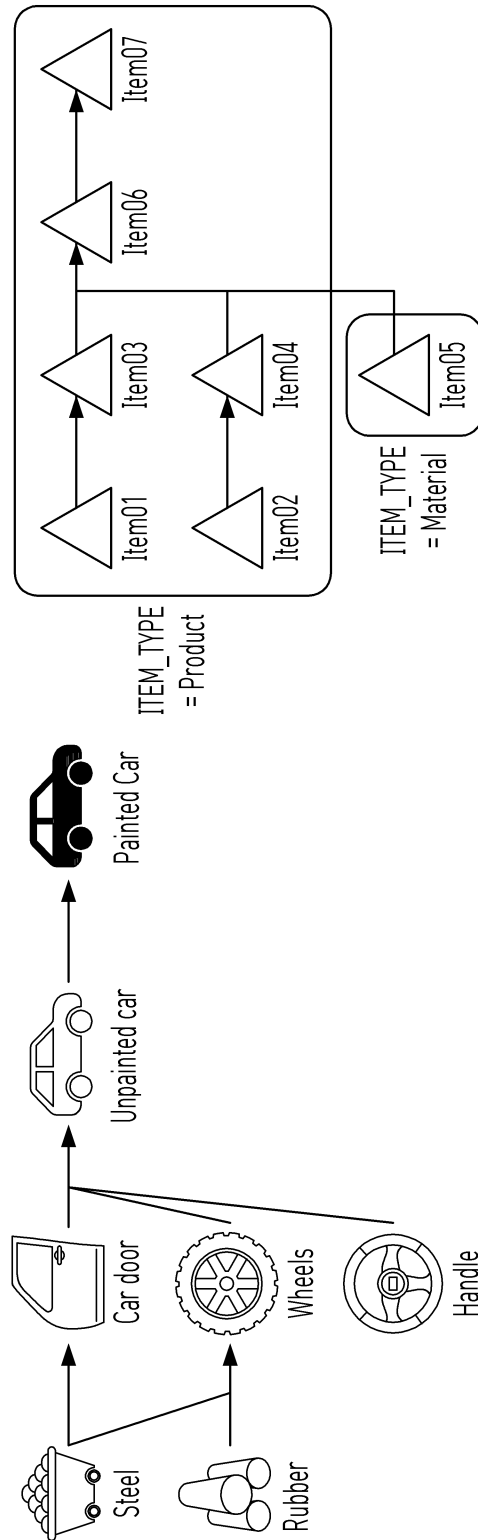


FIG. 107

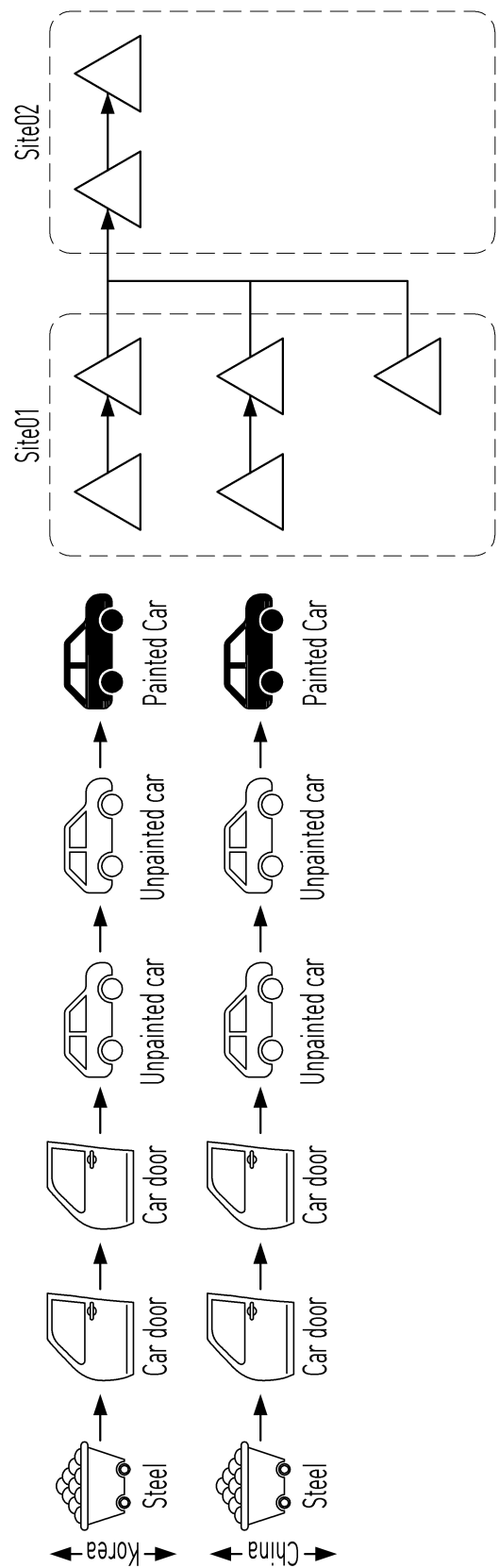


FIG. 108

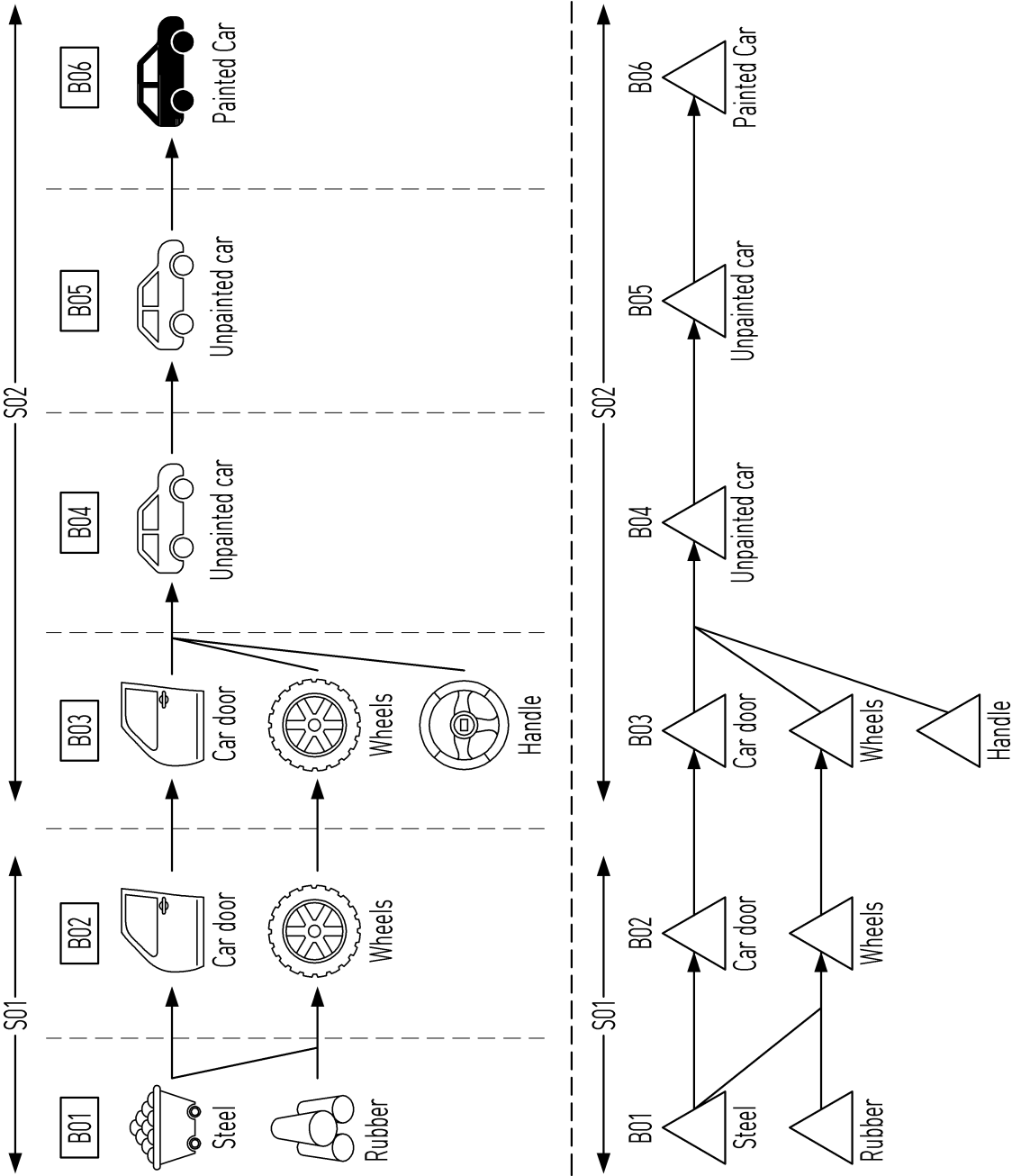


FIG. 109

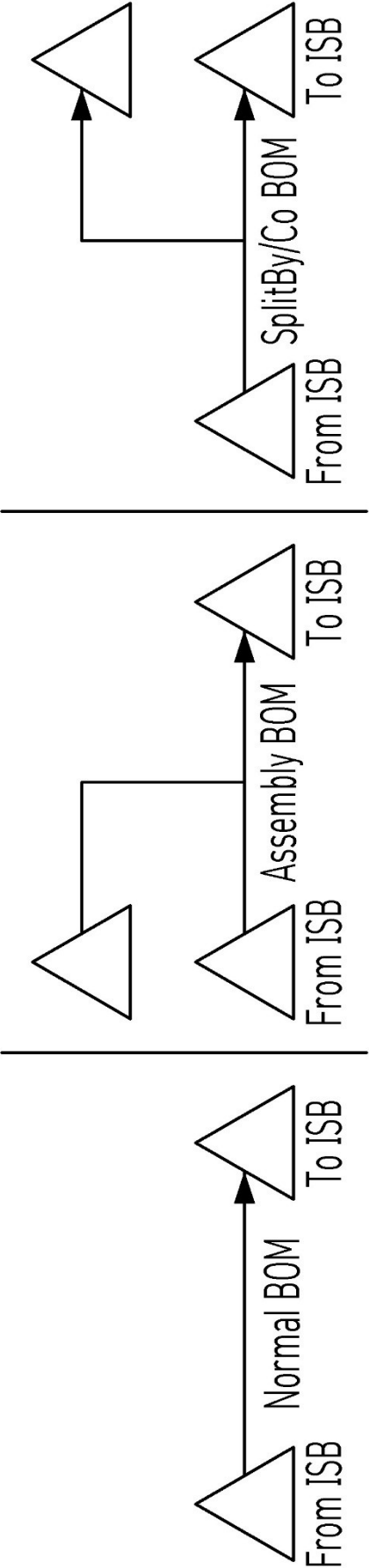


FIG. 110

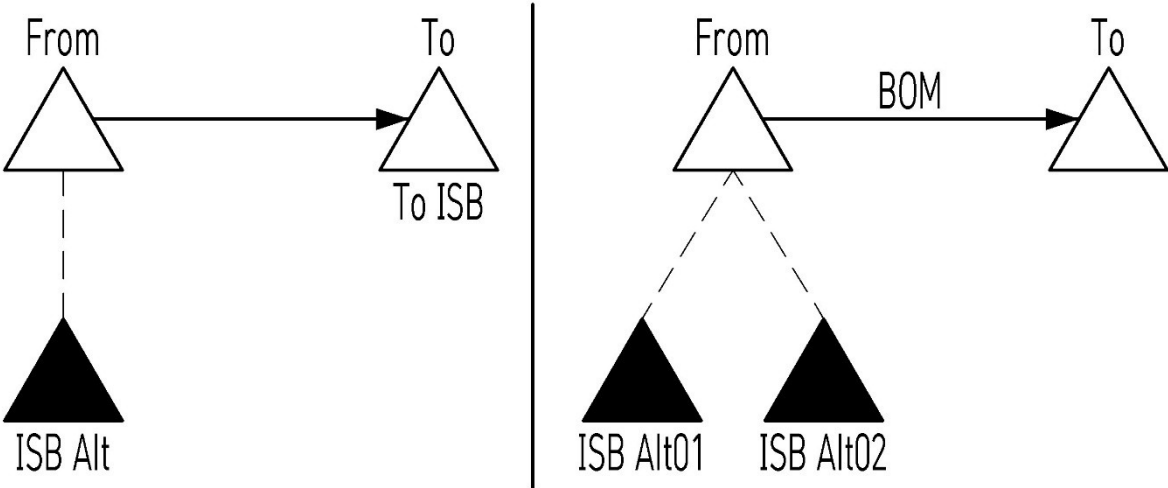


FIG. 111

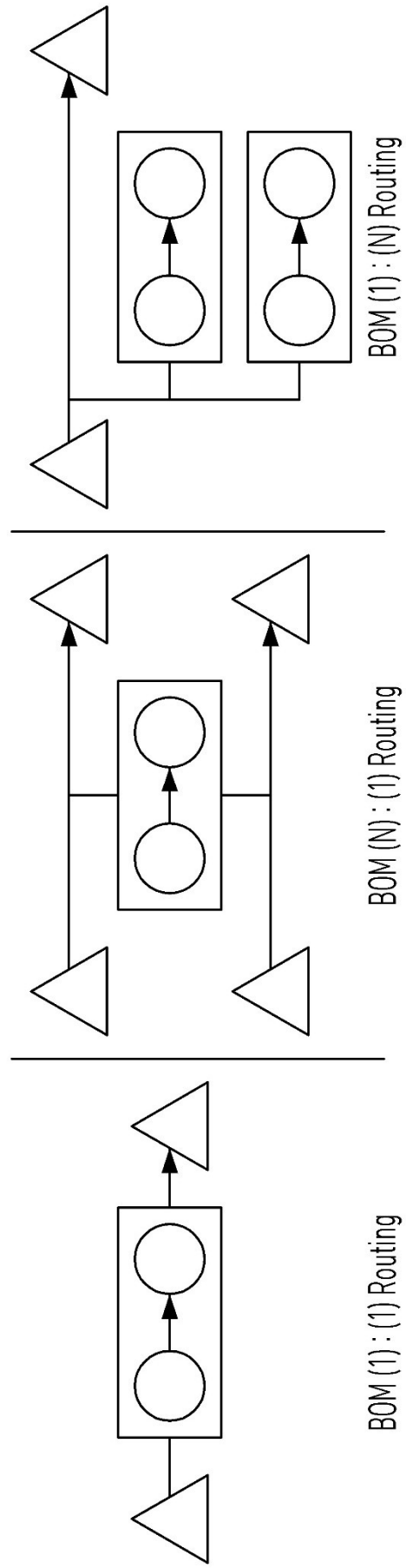


FIG. 112

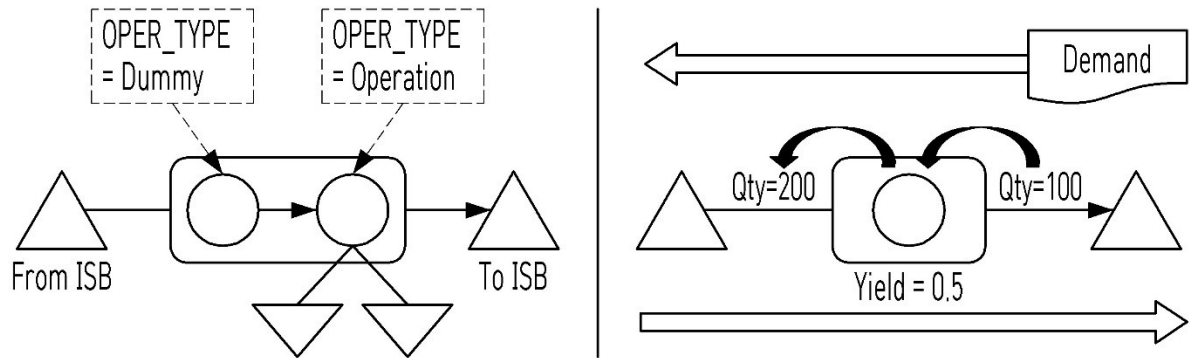


FIG. 113

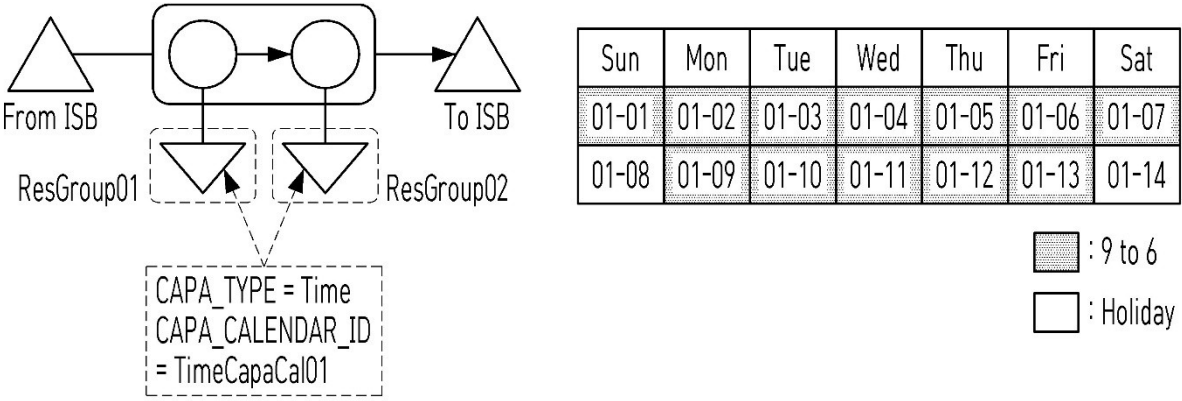


FIG. 114

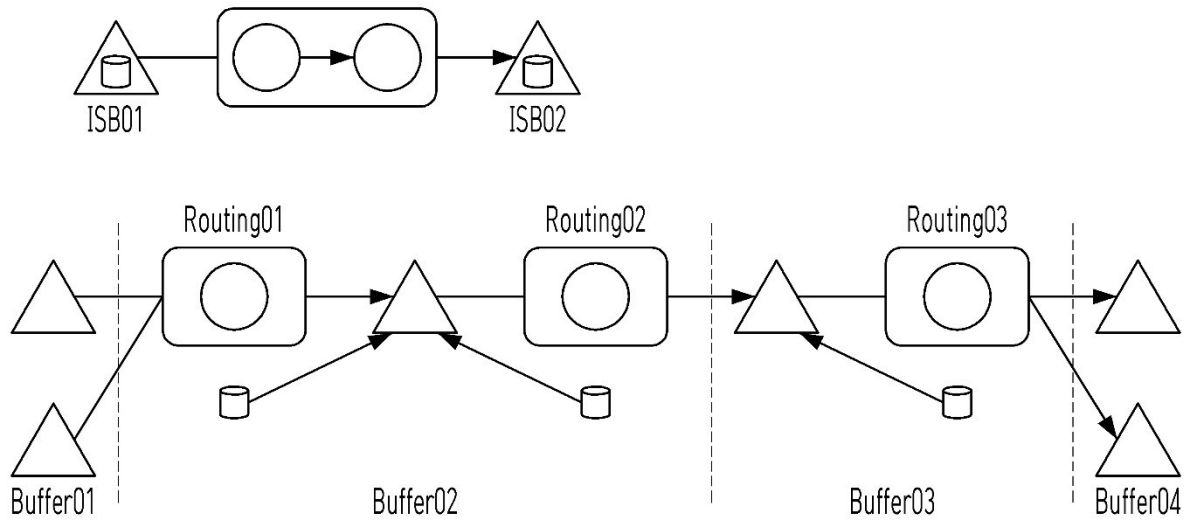


FIG. 115

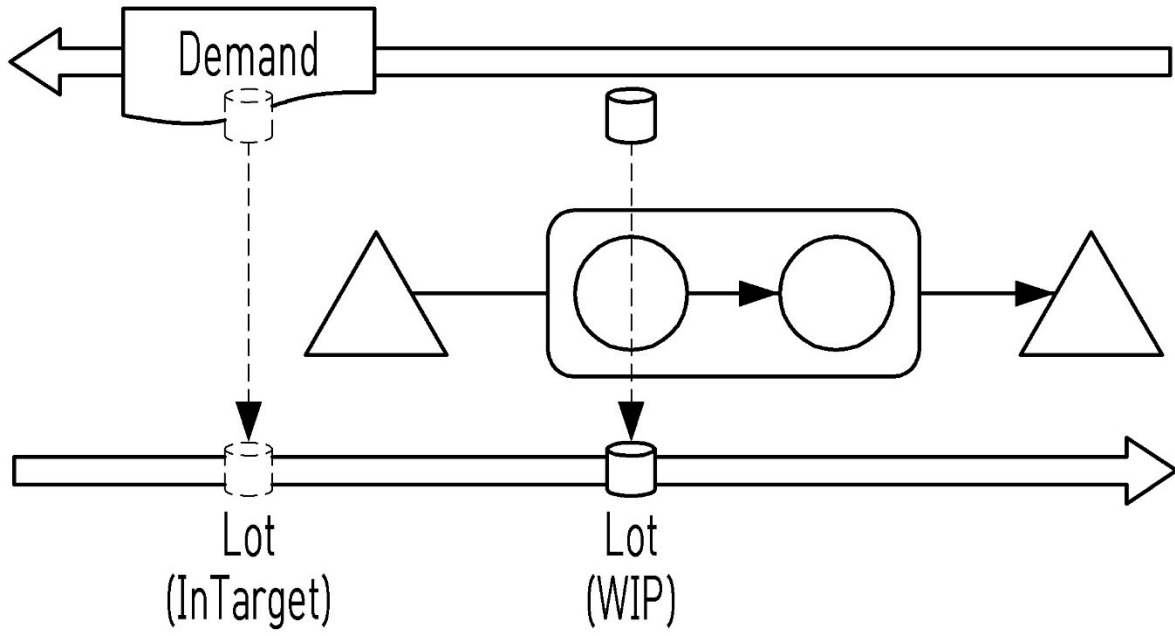


FIG. 116

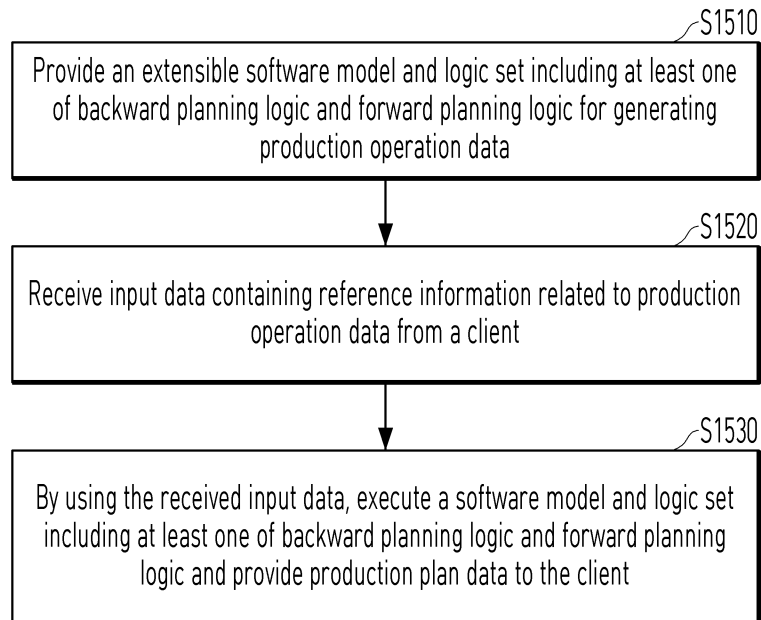


FIG. 117

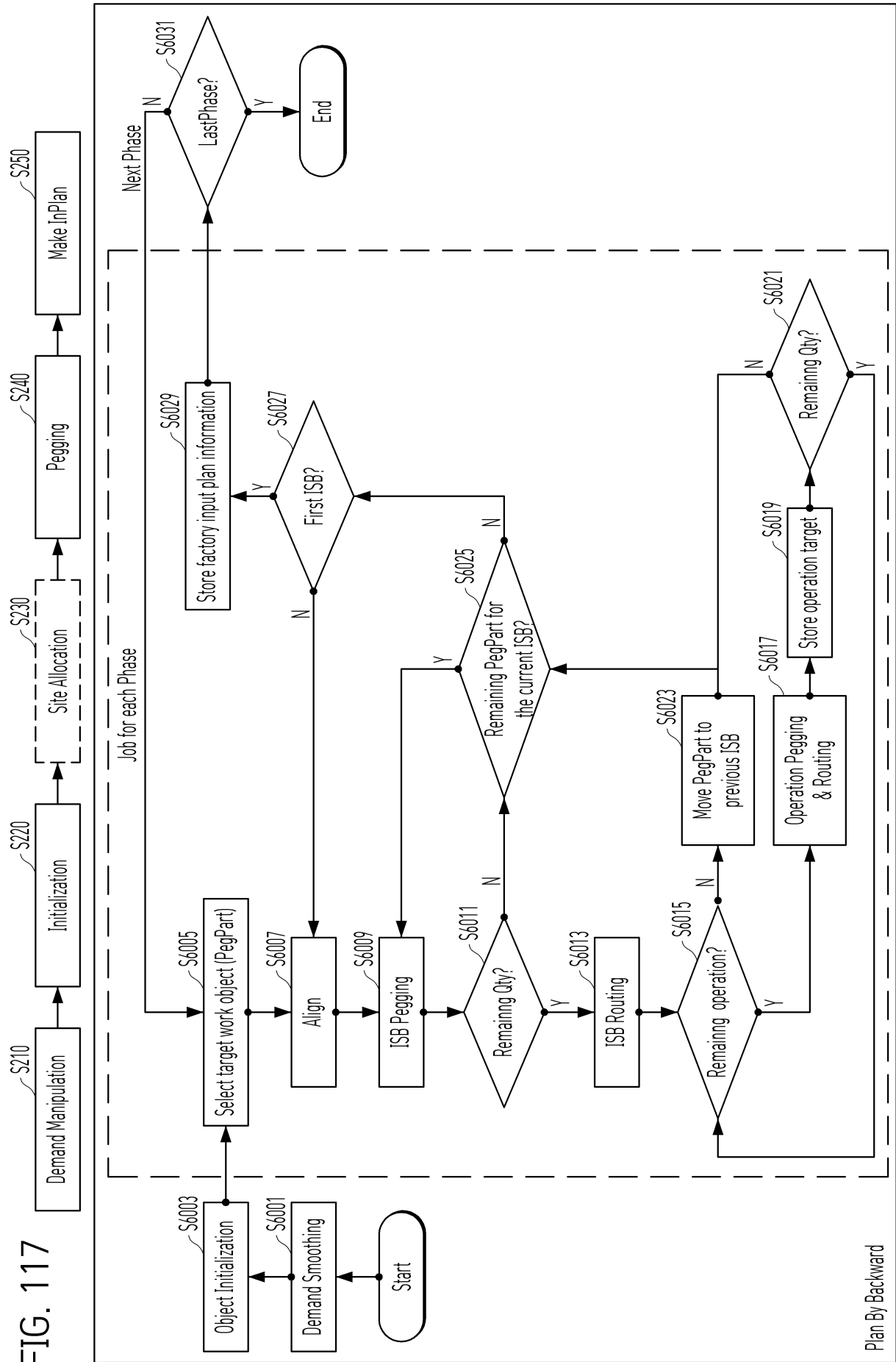


FIG. 118

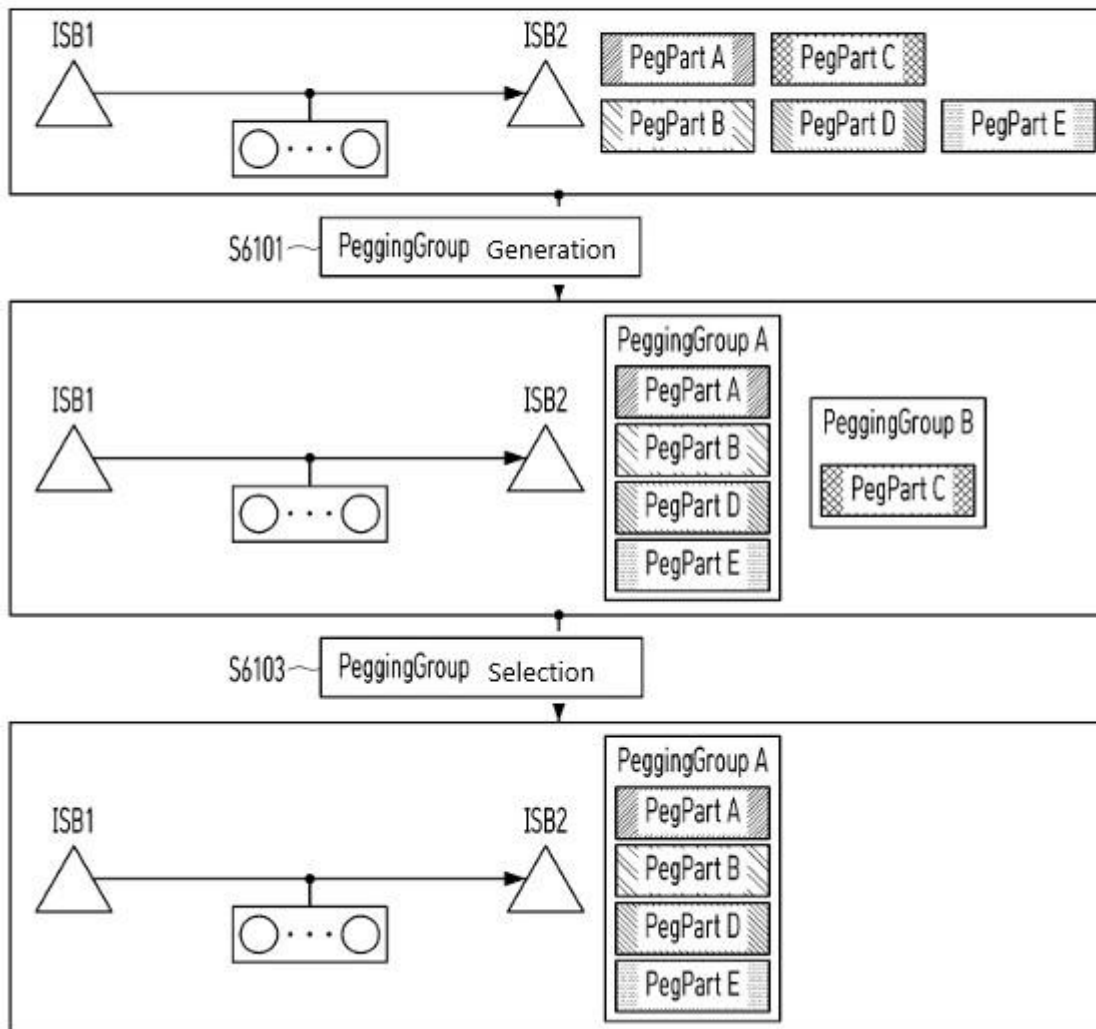


FIG. 119

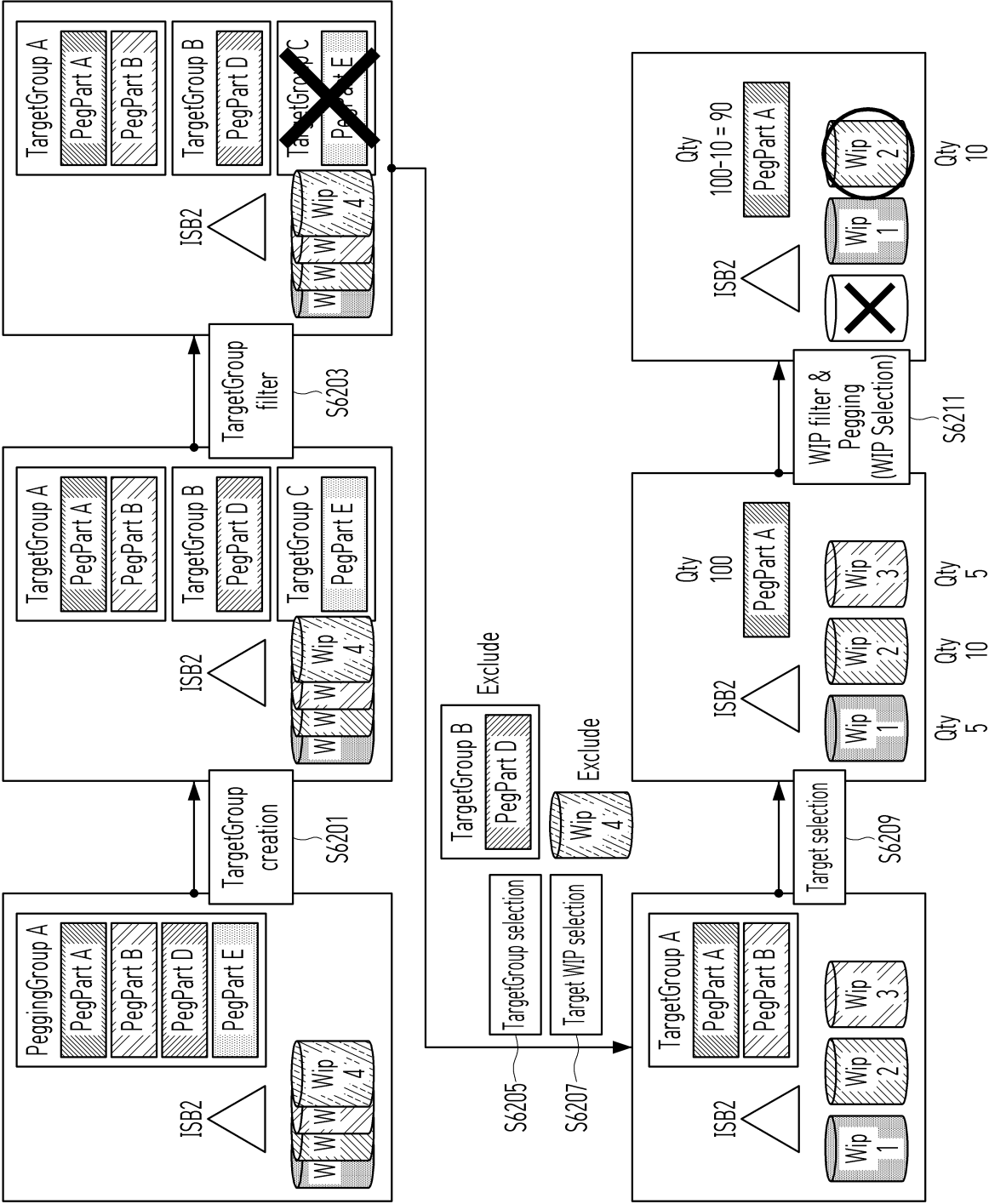


FIG. 120

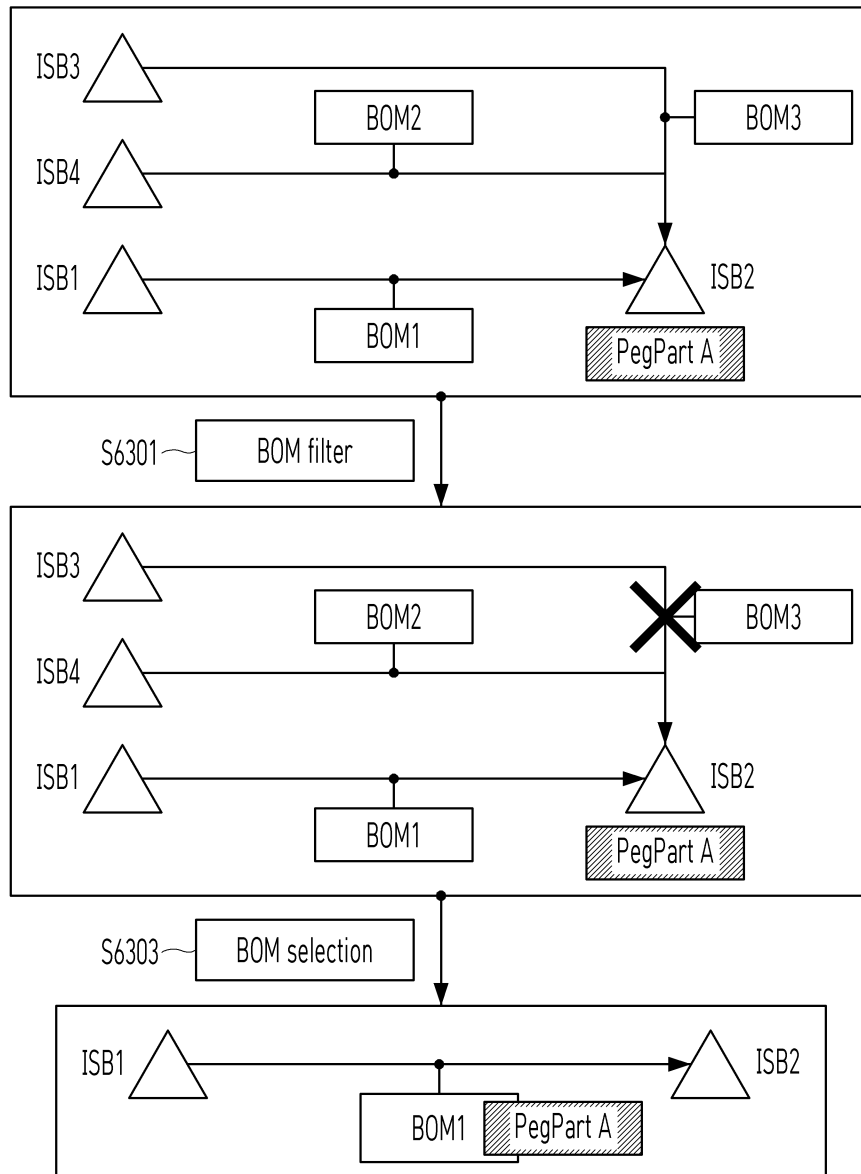


FIG. 121

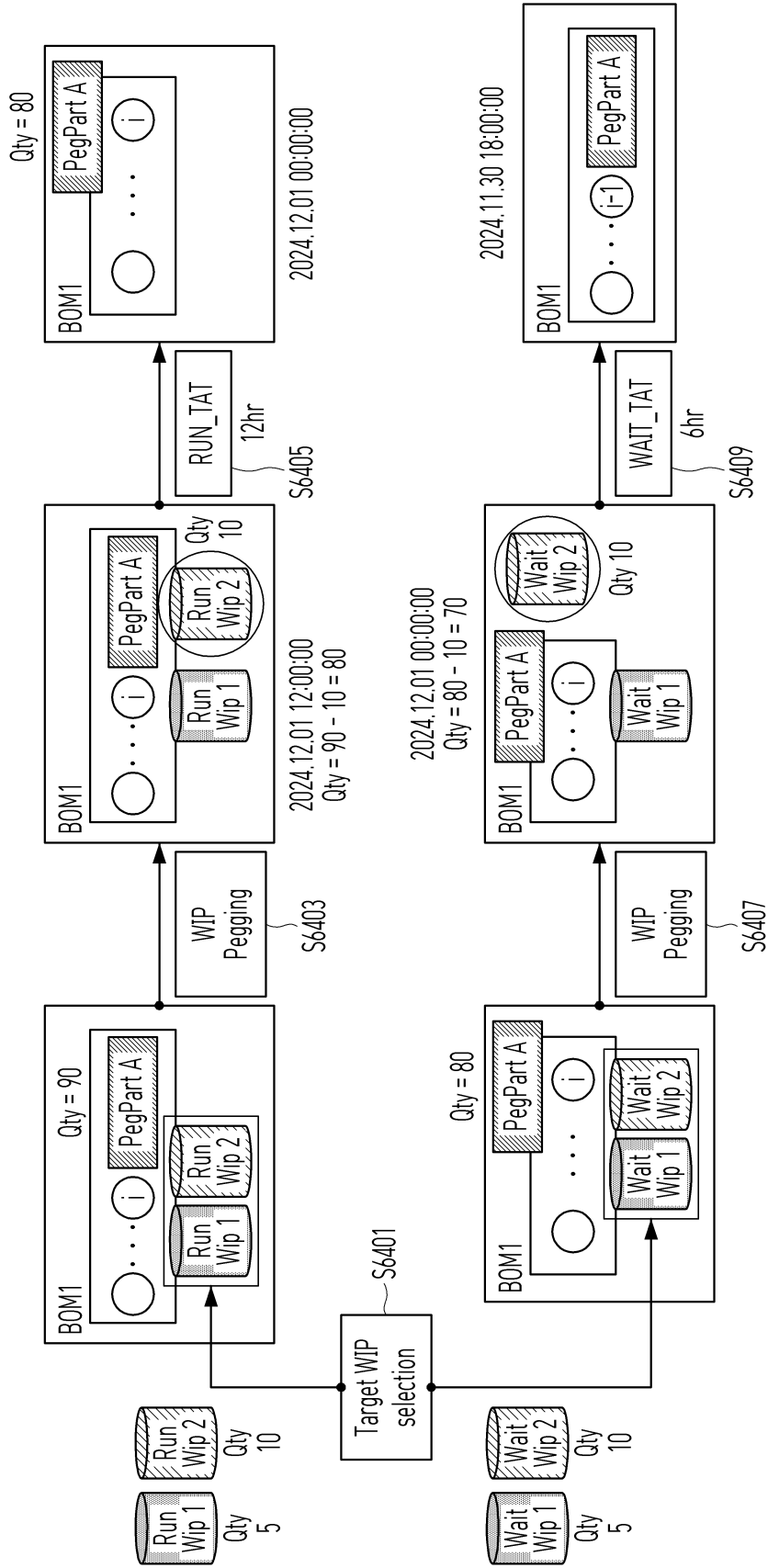


FIG. 122

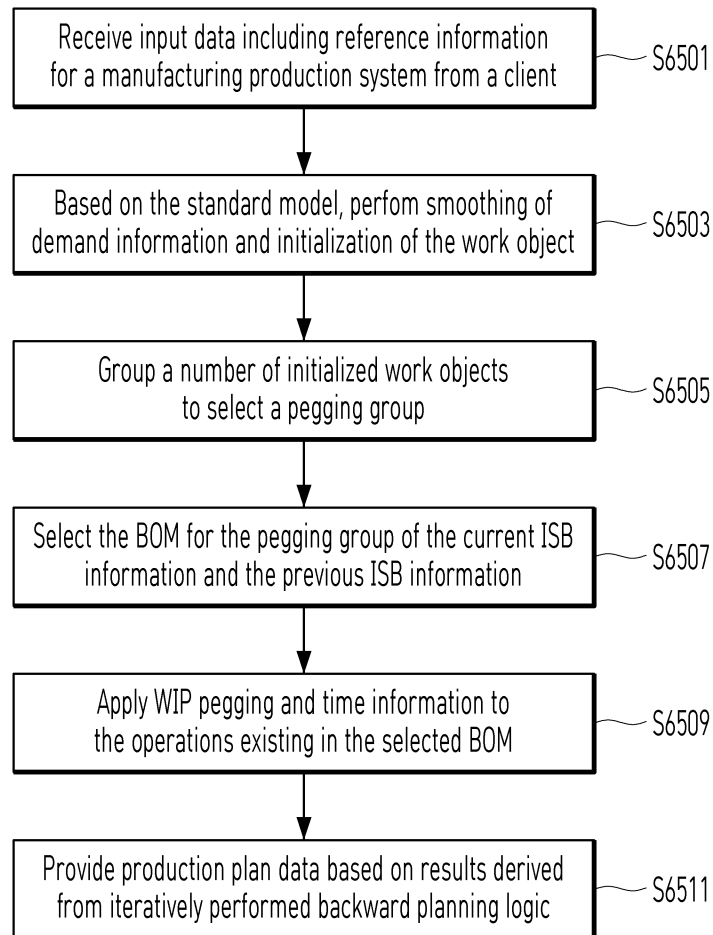


FIG. 123

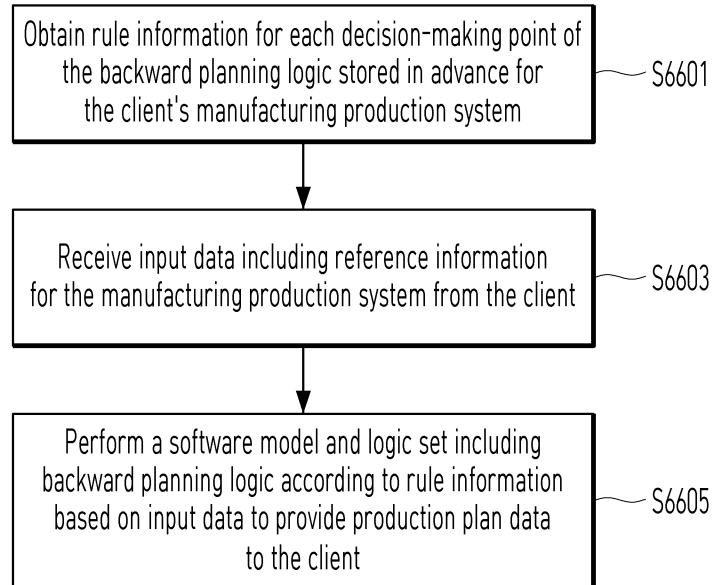
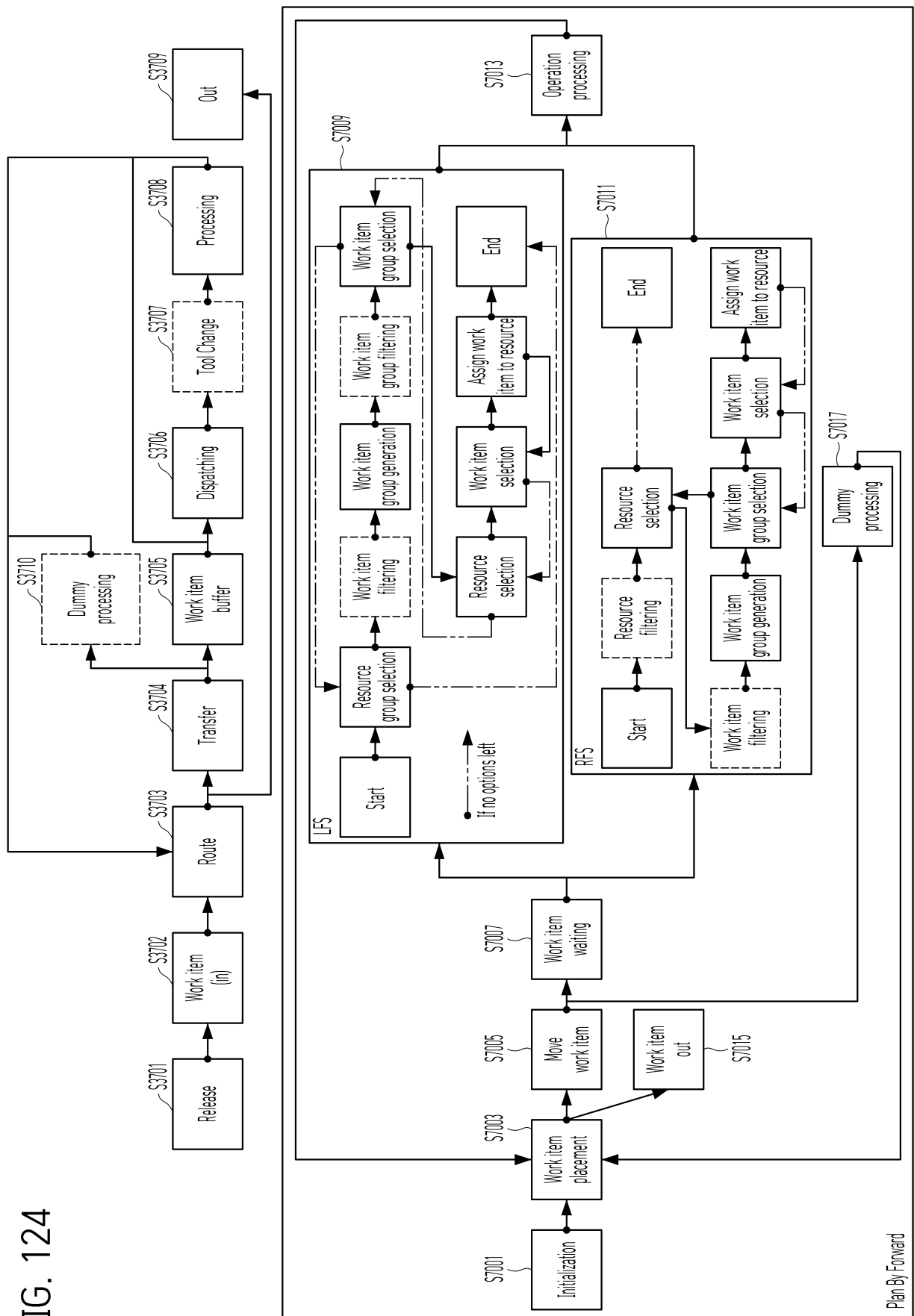


FIG. 124



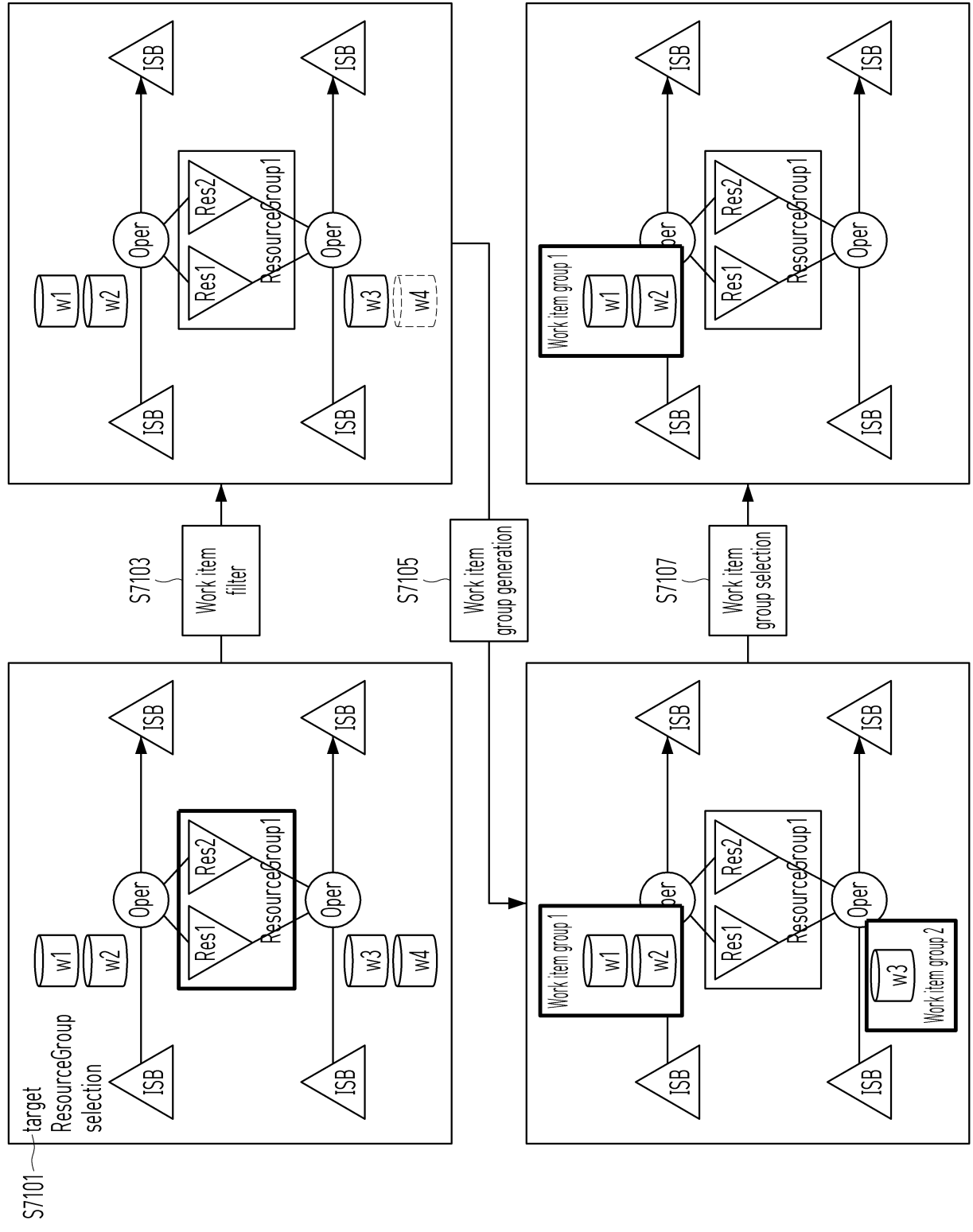


FIG. 125

FIG. 126

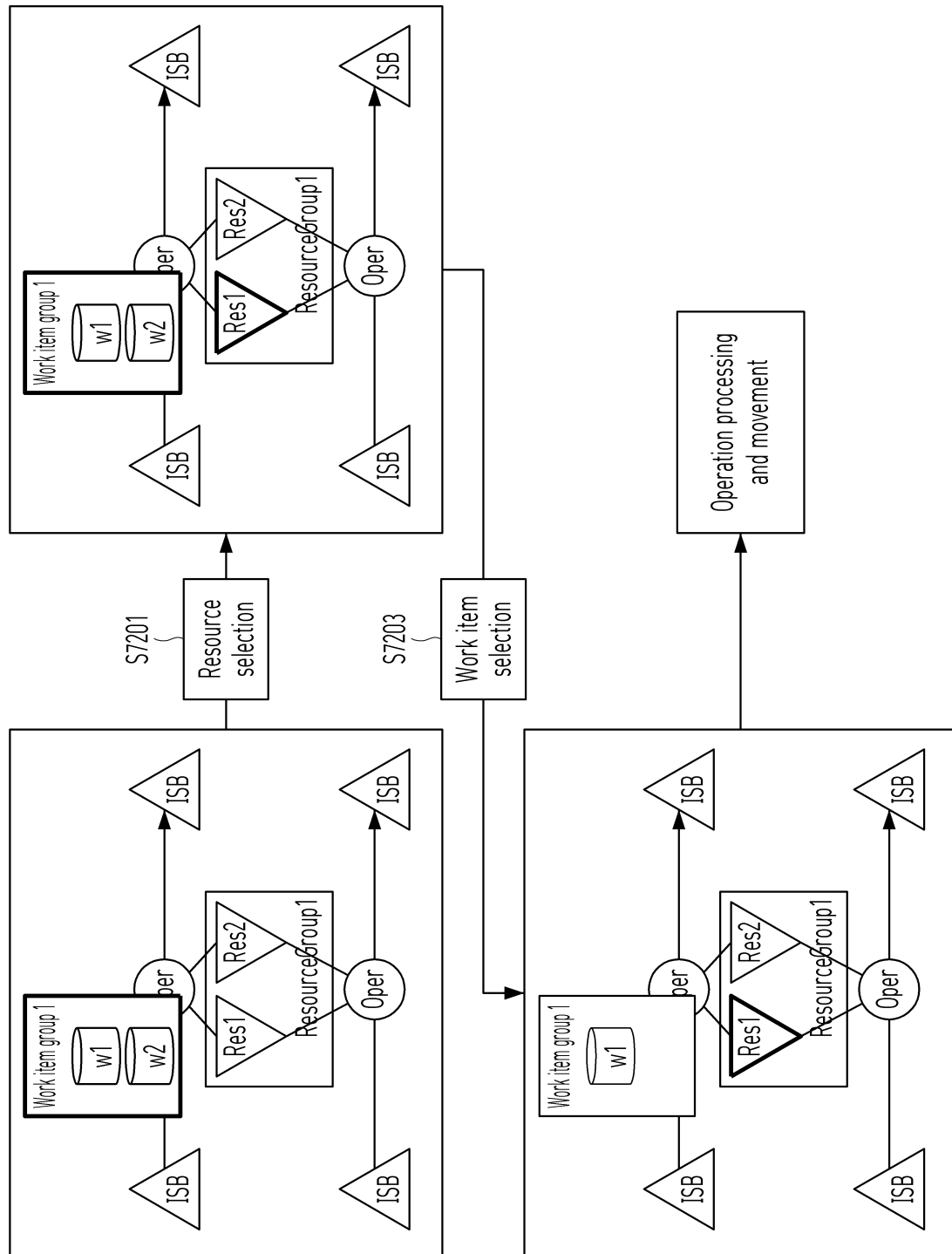


FIG. 127

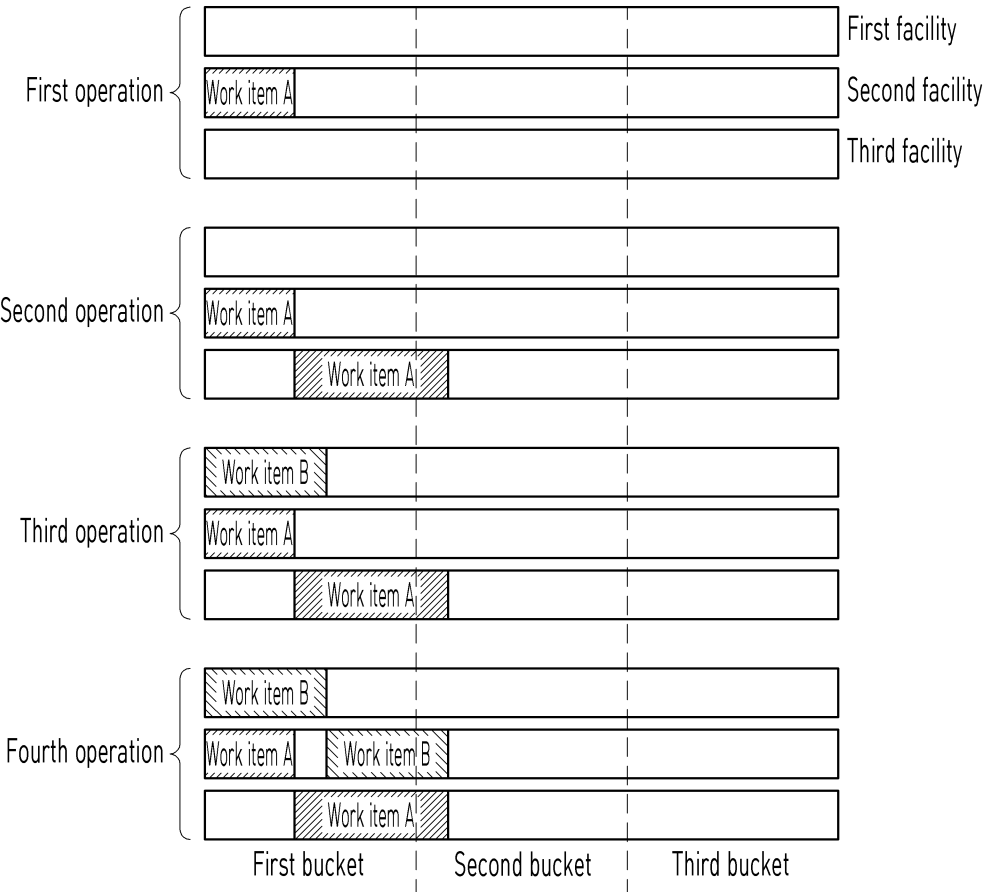


FIG. 128

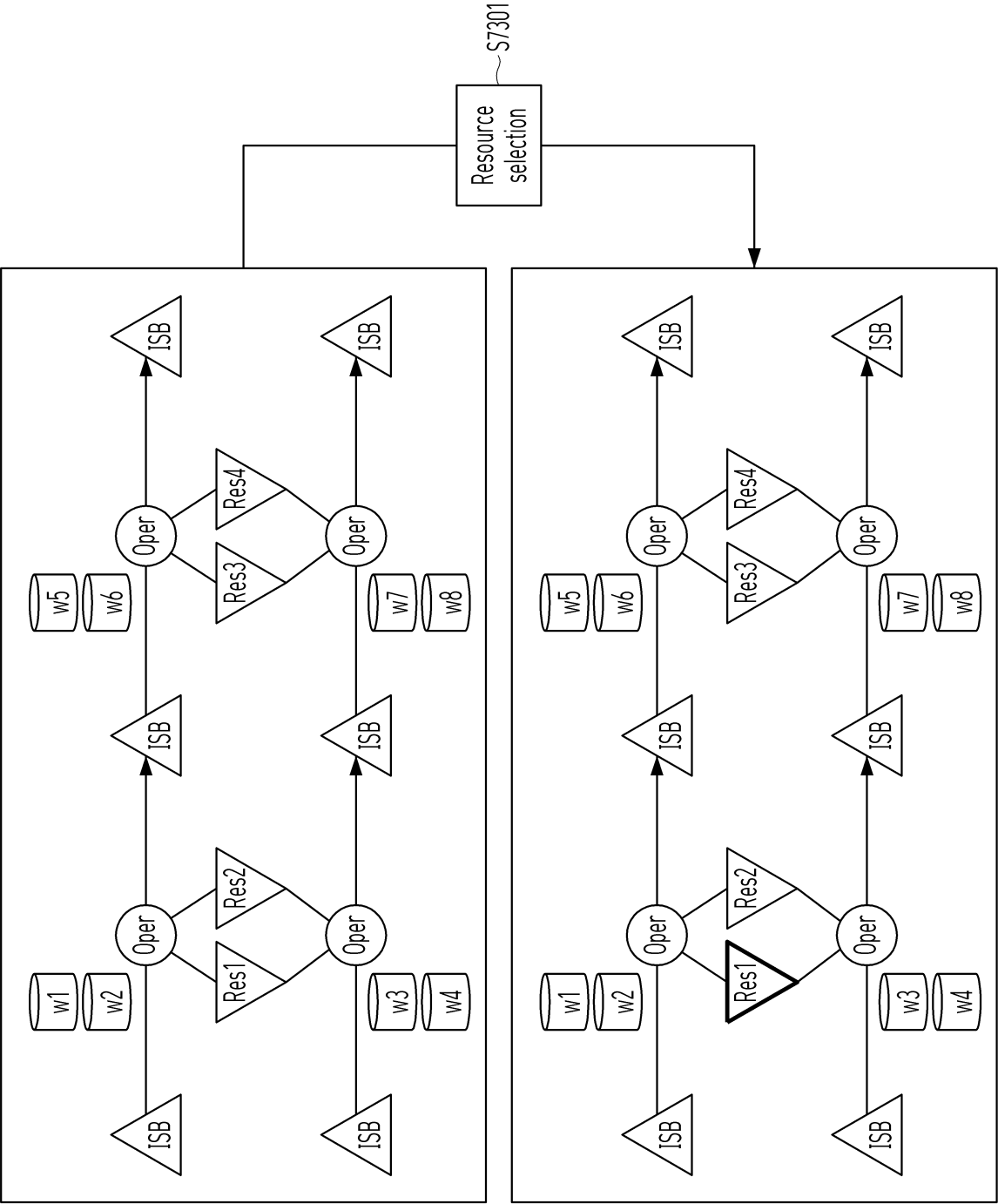


FIG. 129

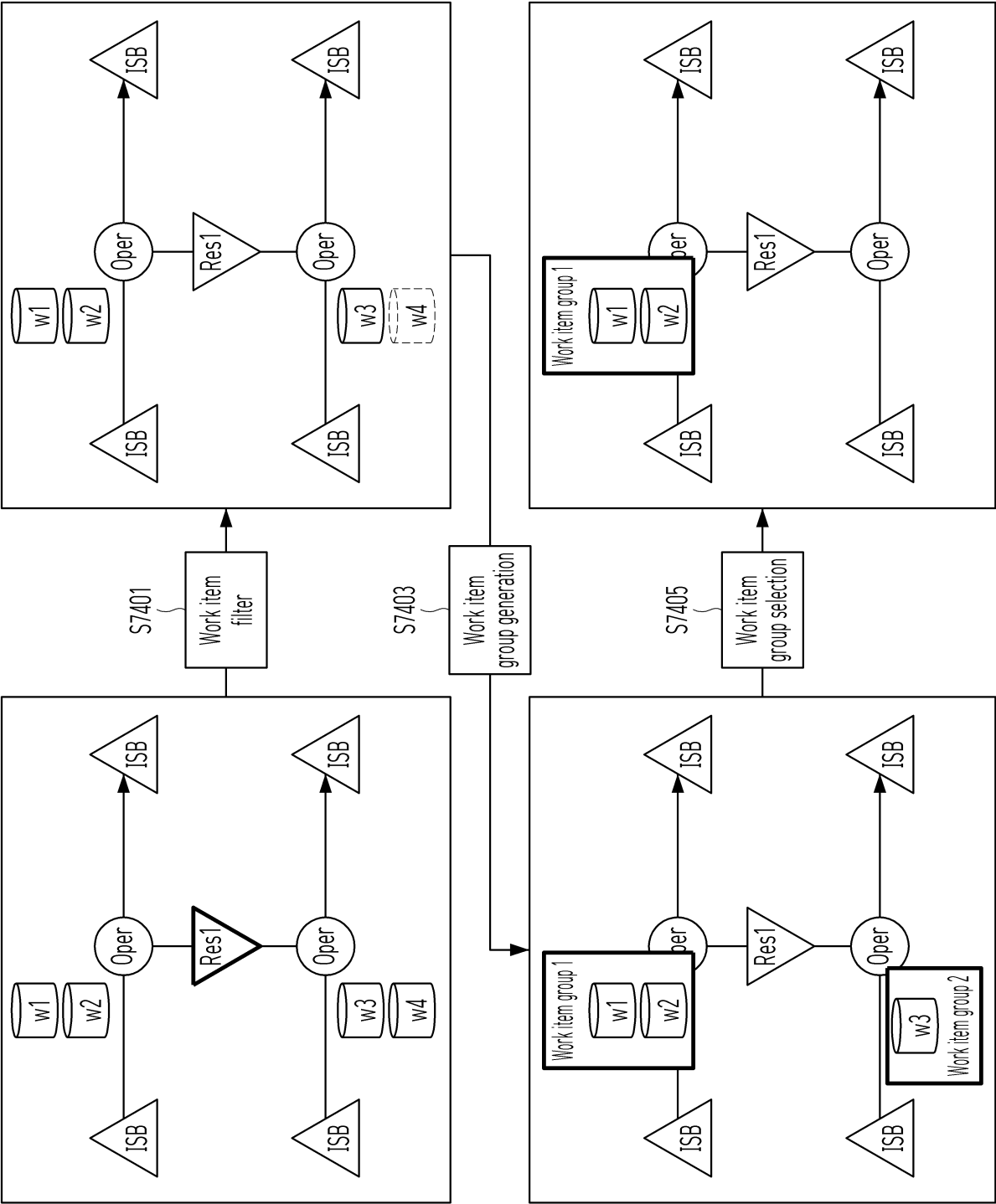


FIG. 130

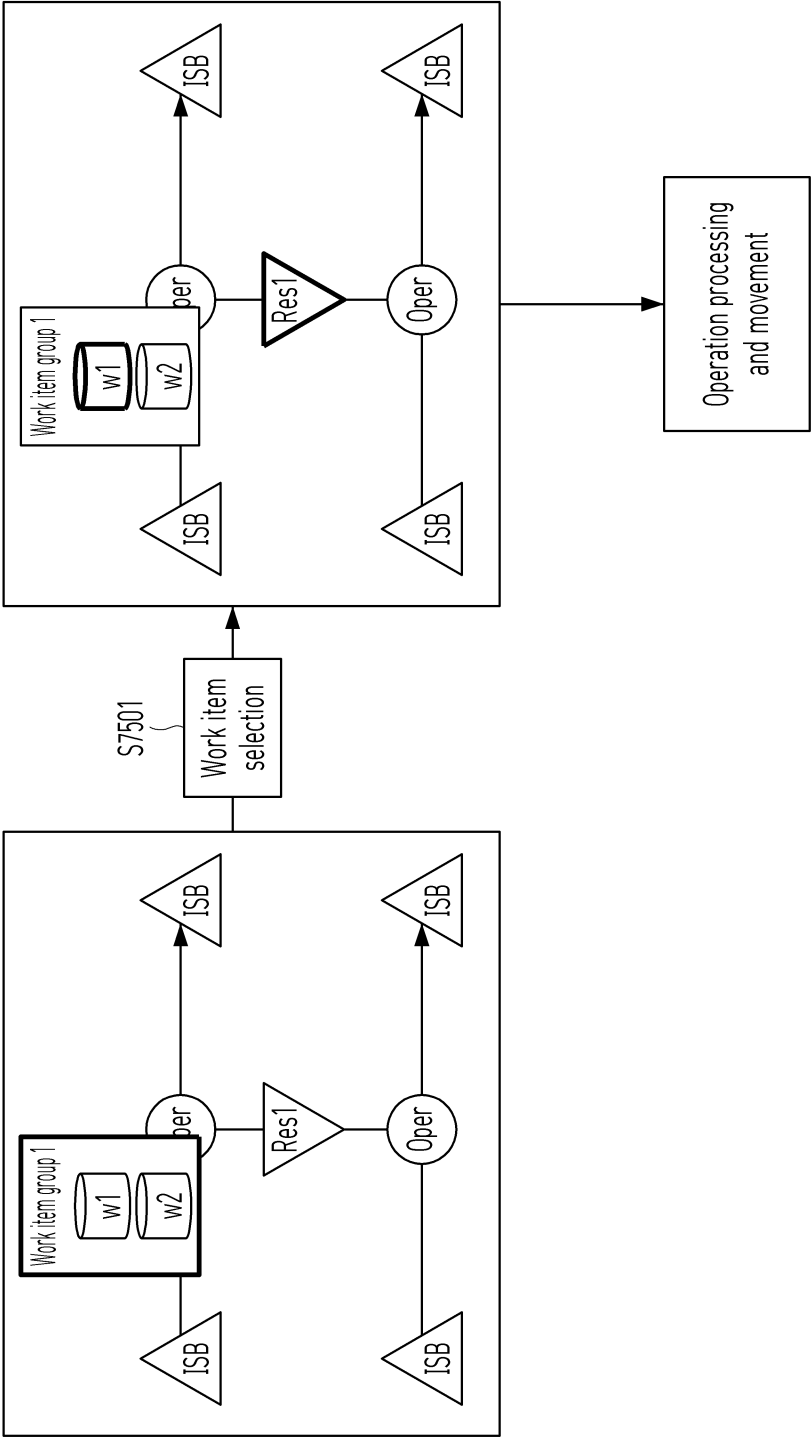


FIG. 131

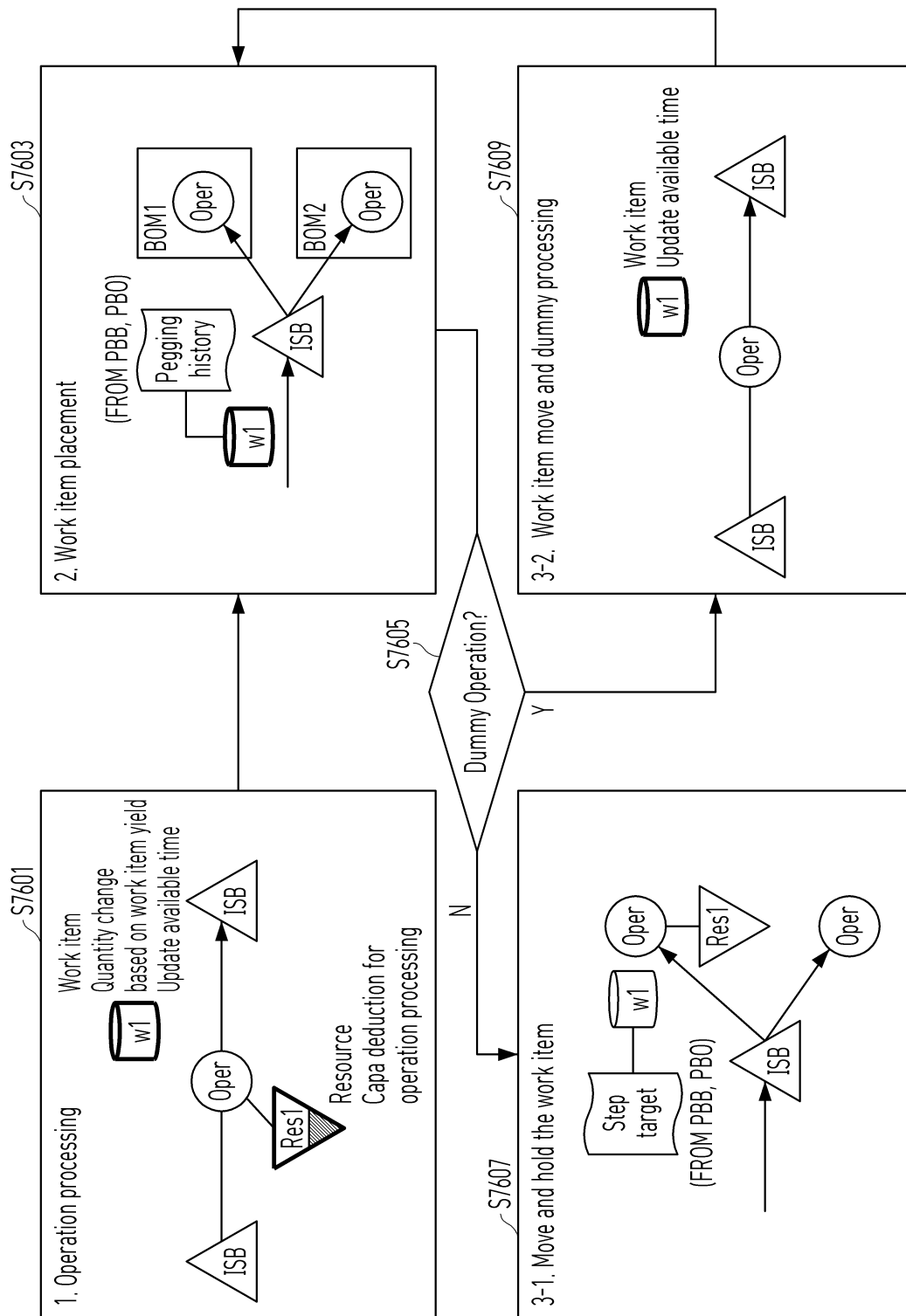


FIG. 132

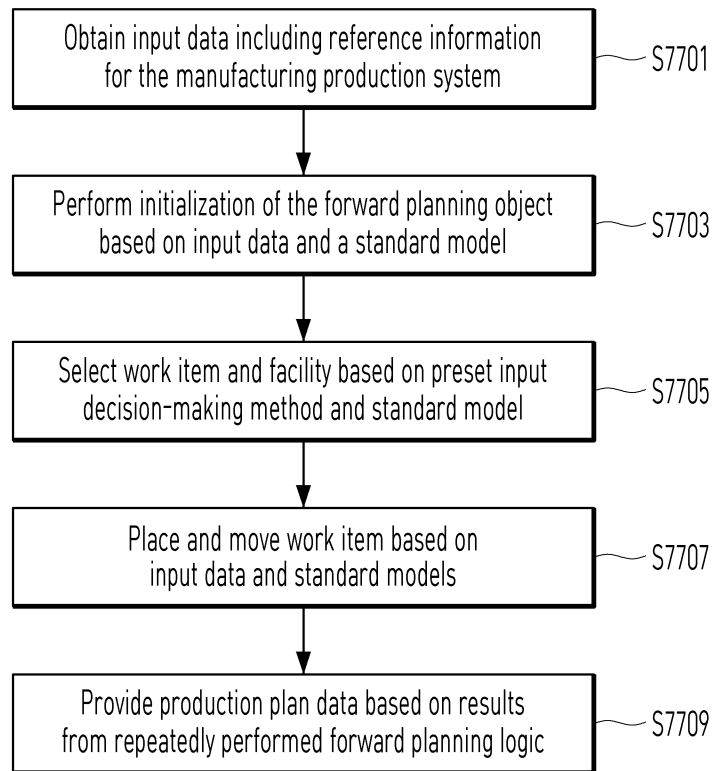


FIG. 133

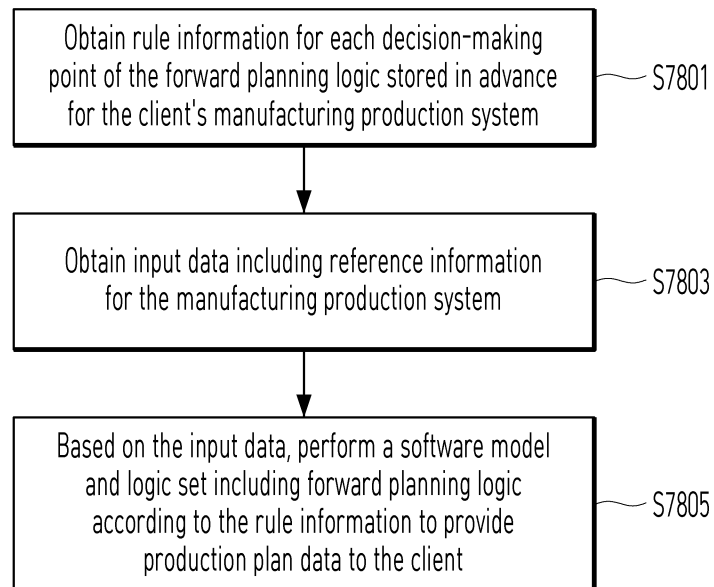


FIG. 134

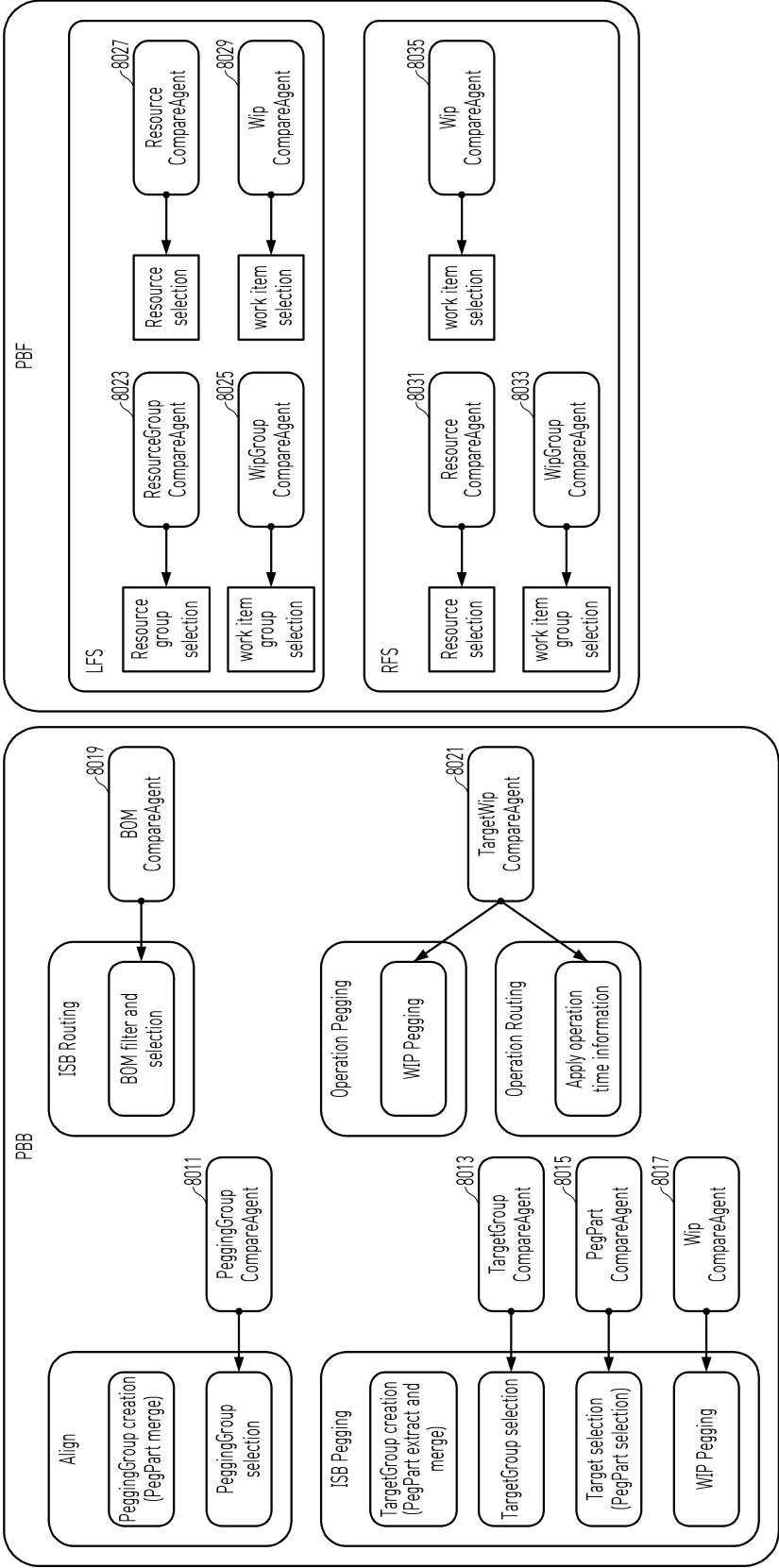


FIG. 135

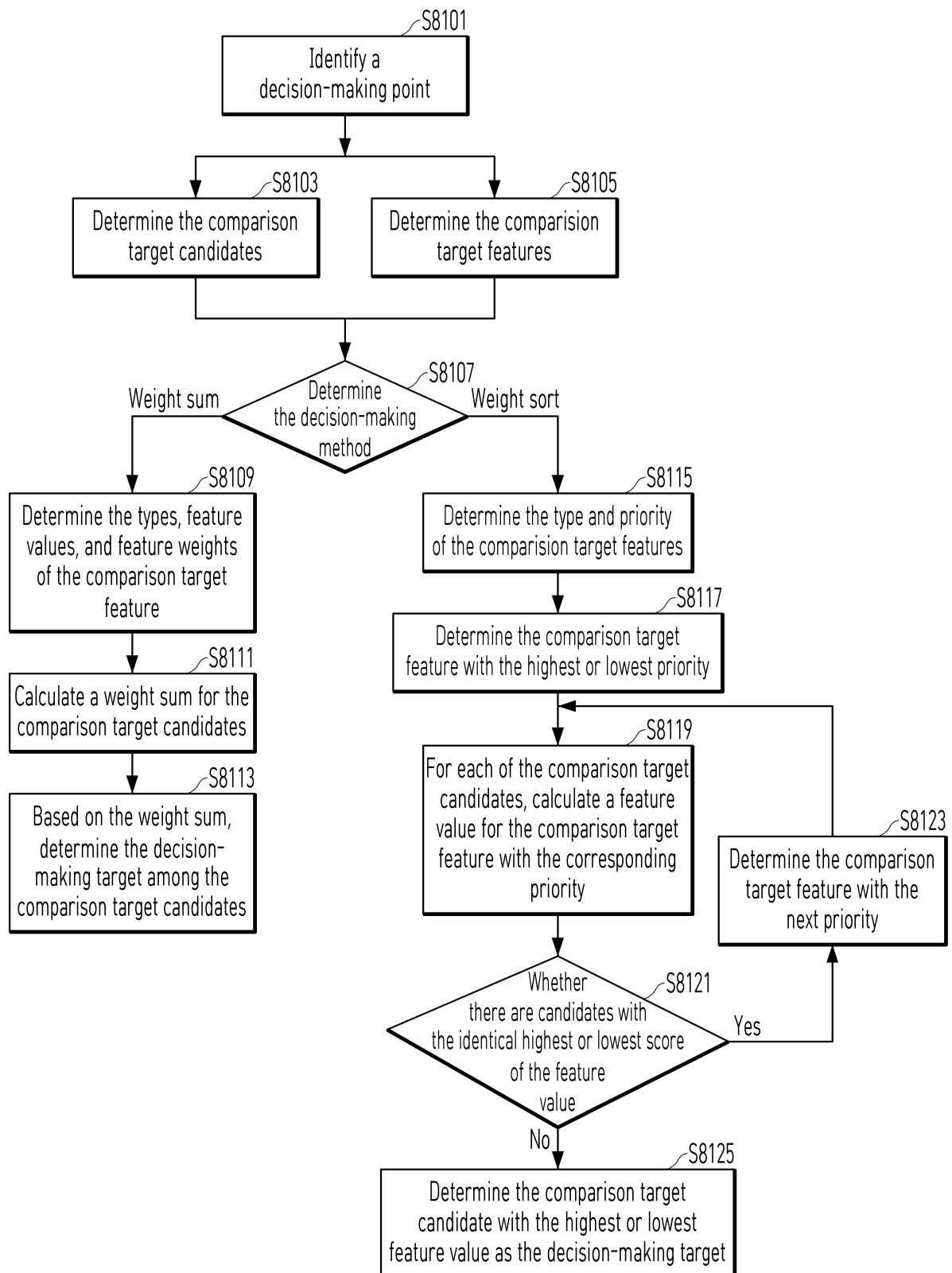


FIG. 136

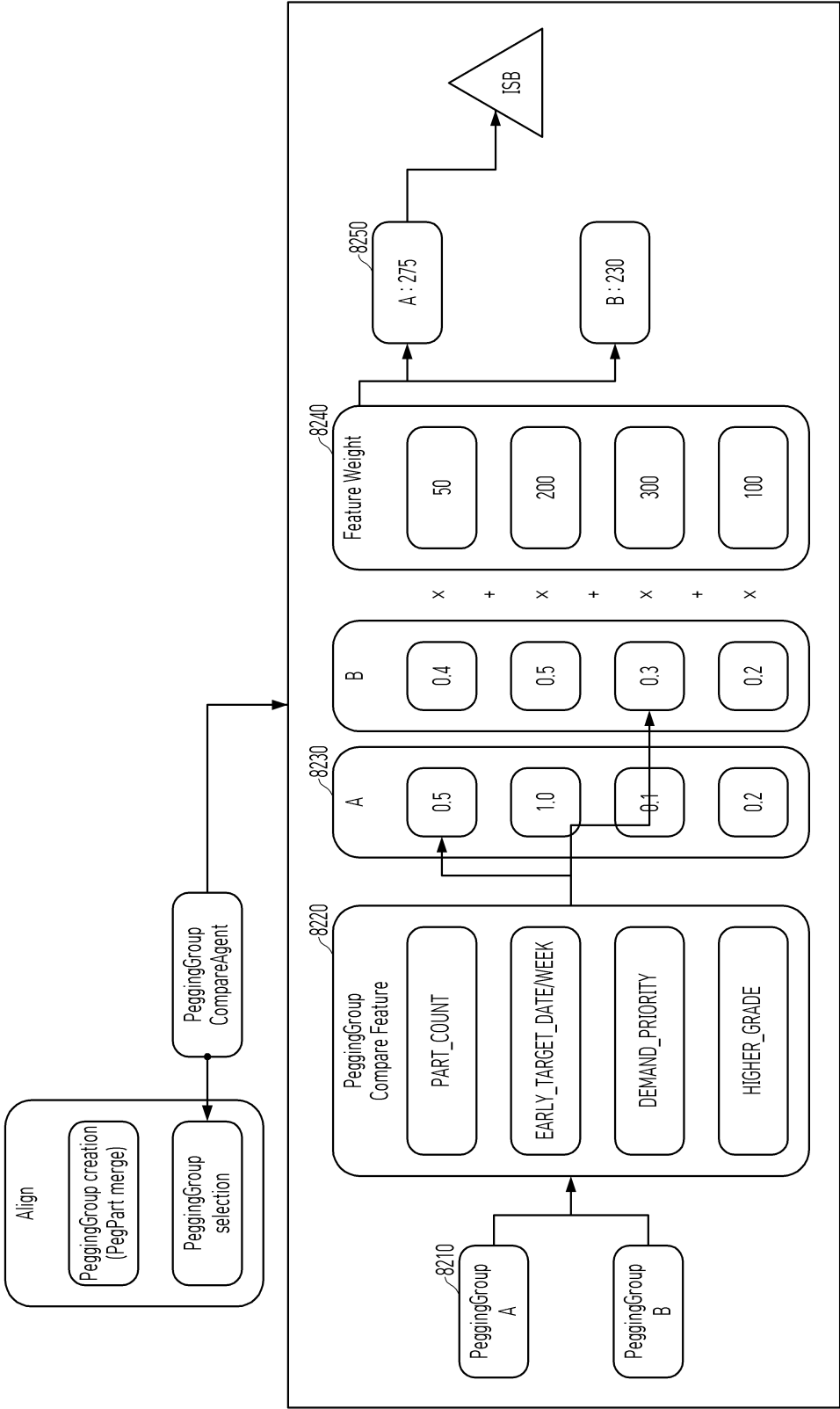


FIG. 137

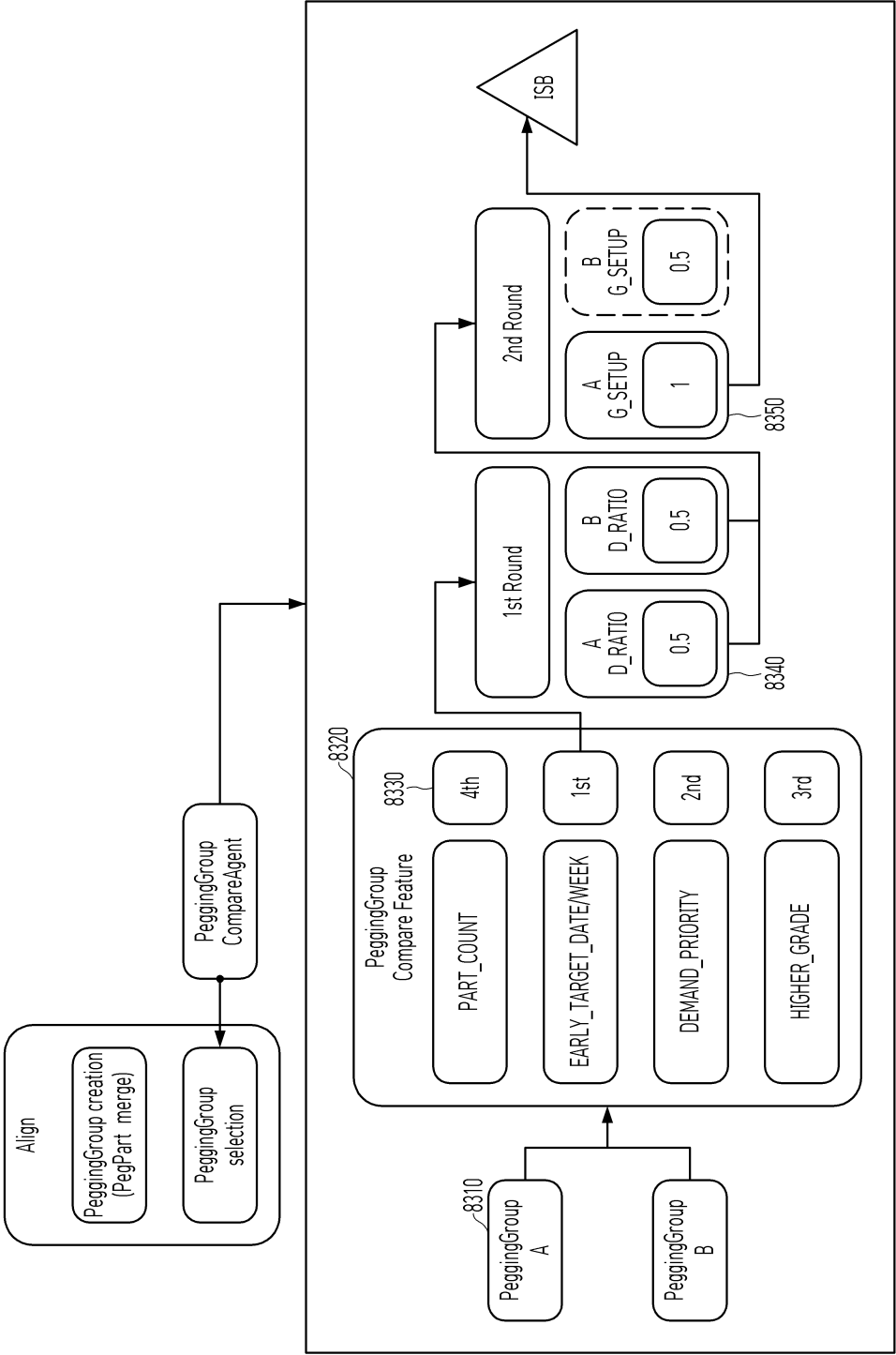


FIG. 138

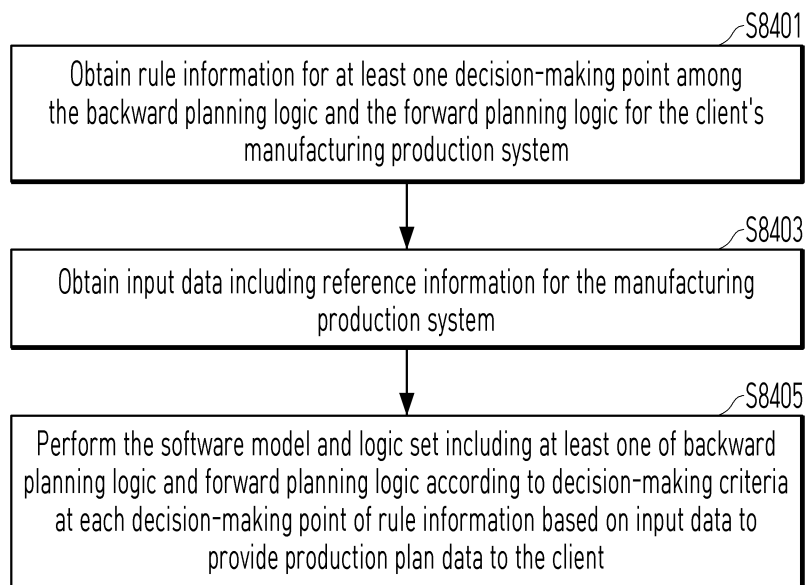


FIG. 139

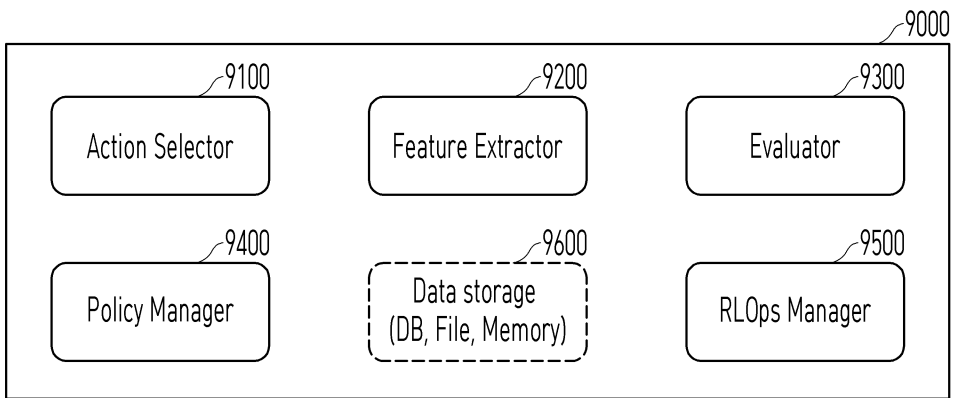


FIG. 140

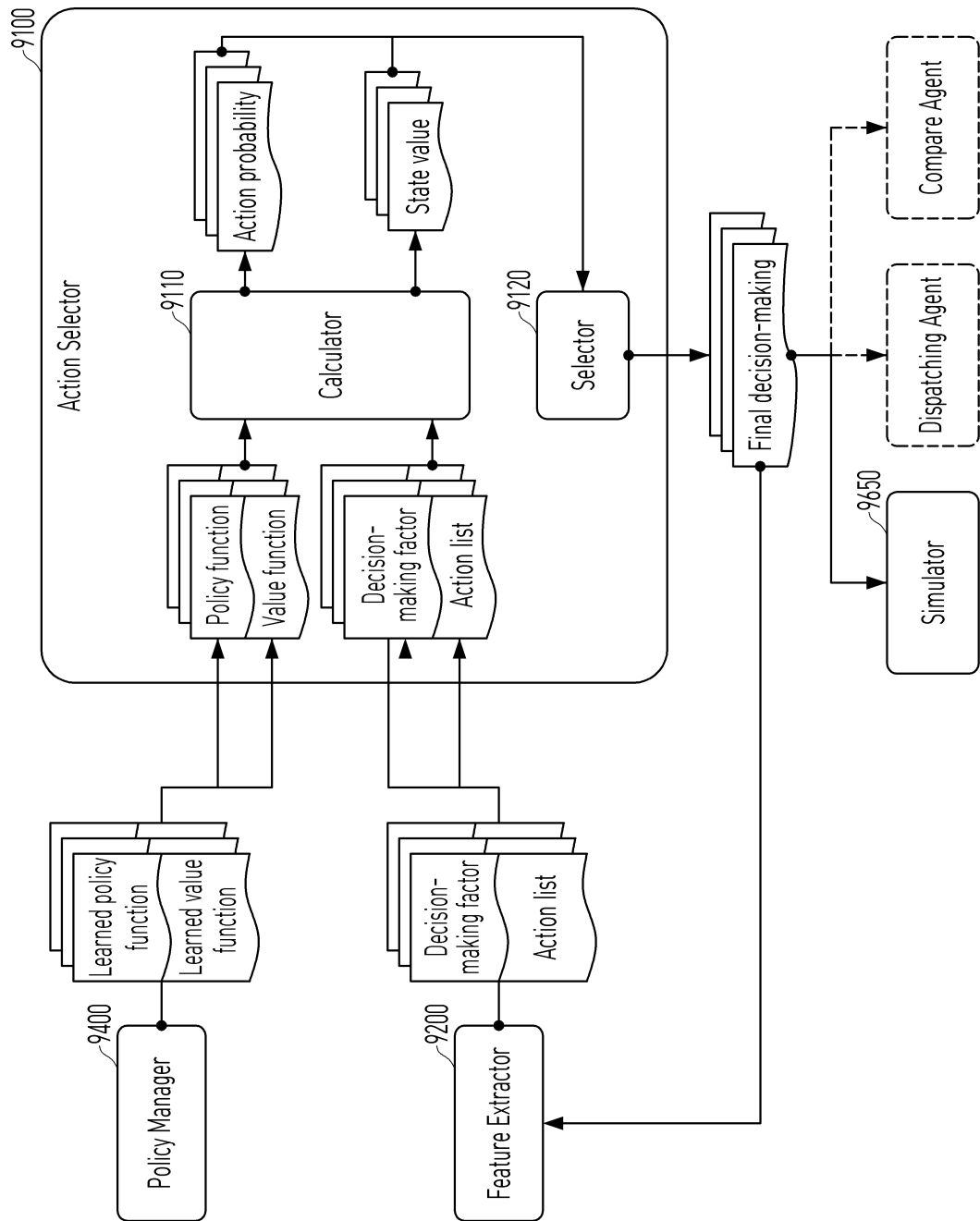


FIG. 141

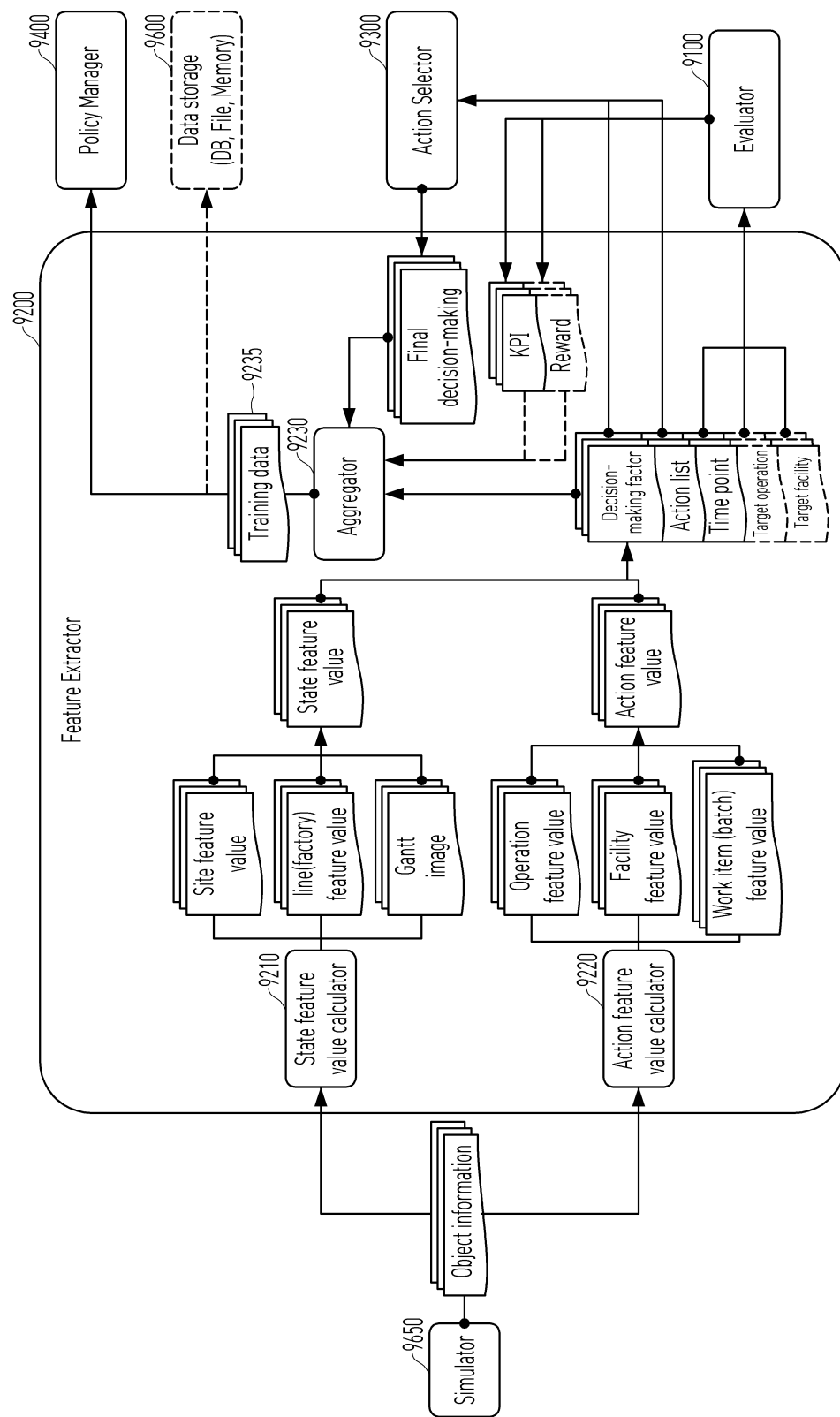


FIG. 142

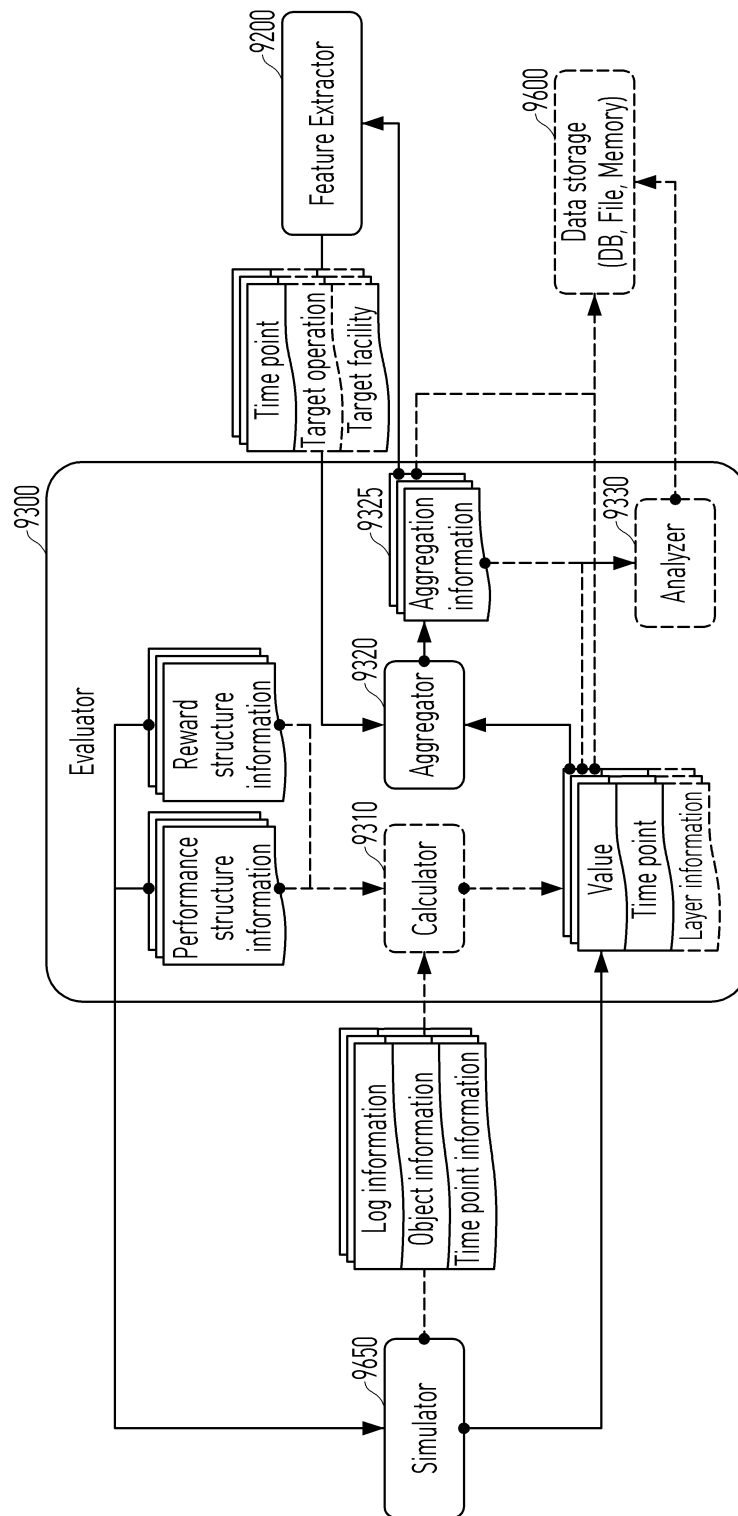


FIG. 143

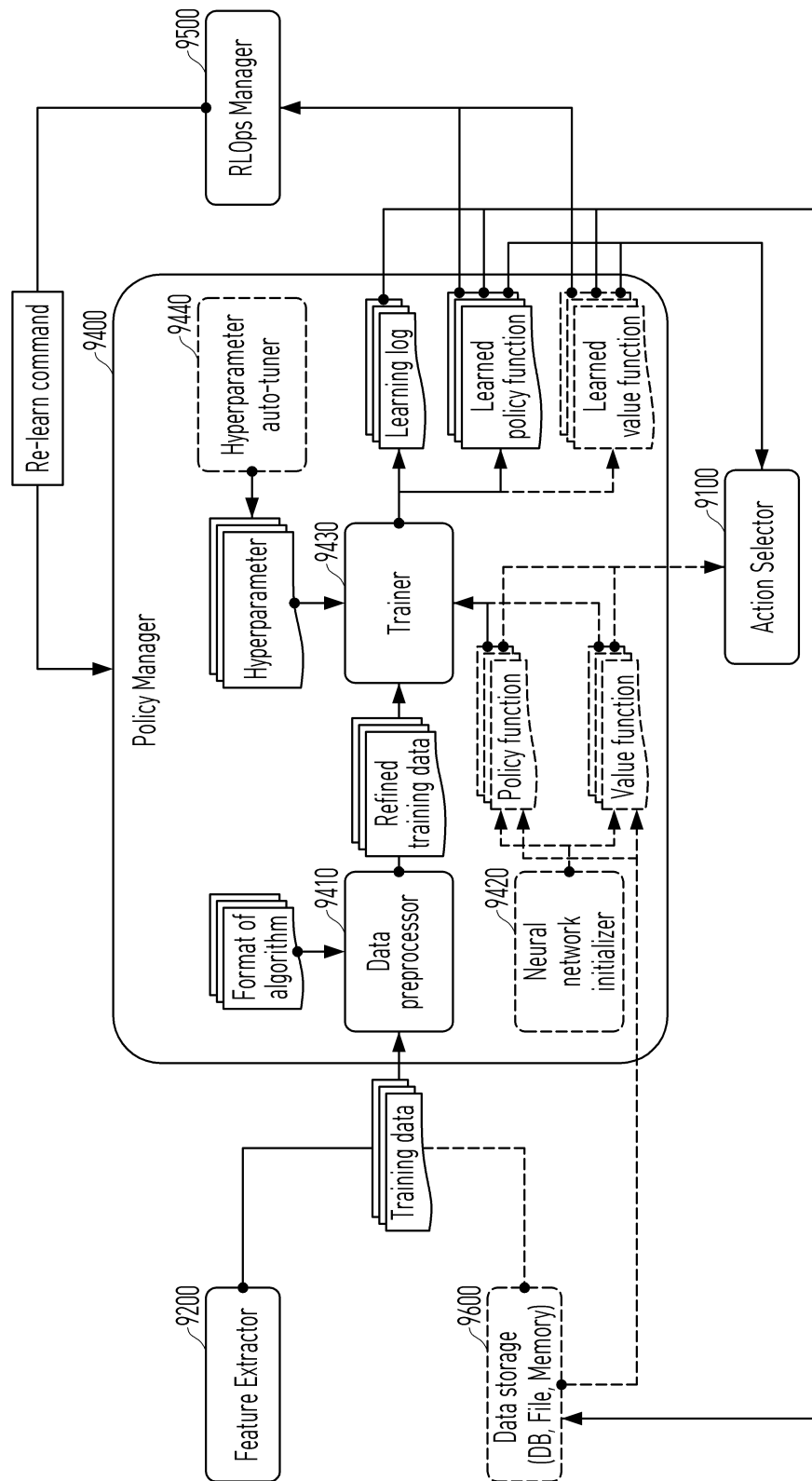


FIG. 144

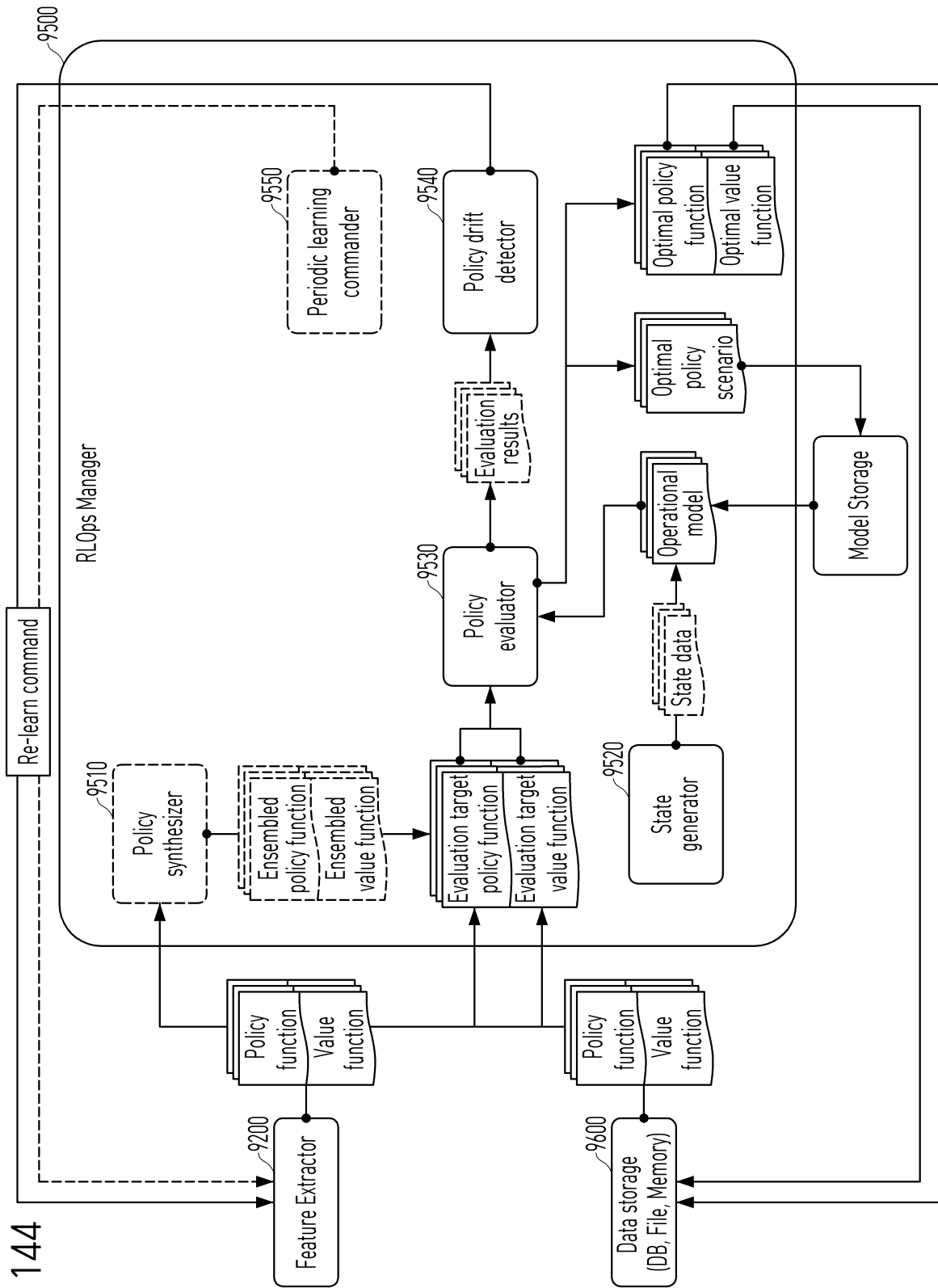


FIG. 145

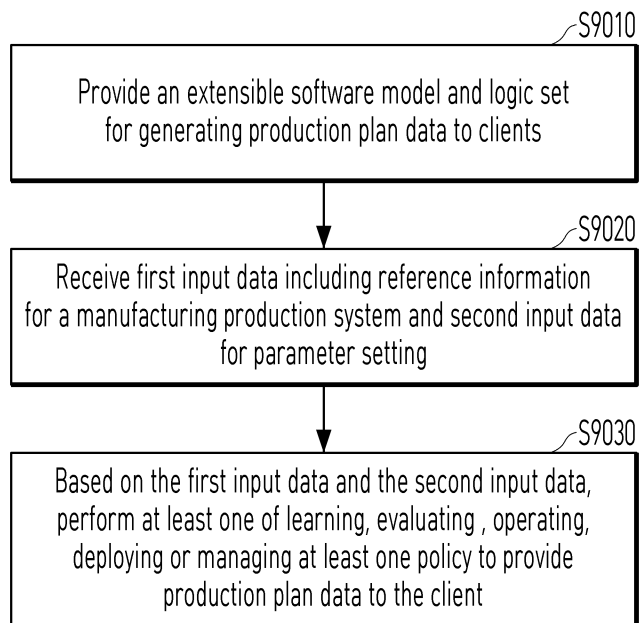


FIG. 146

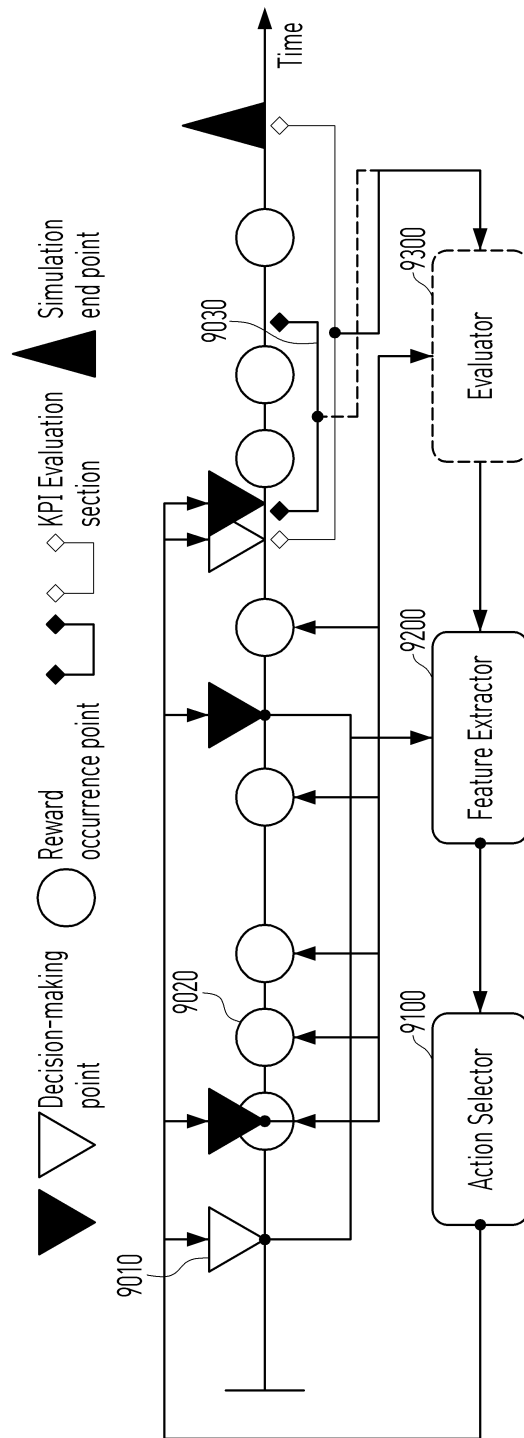


FIG. 147

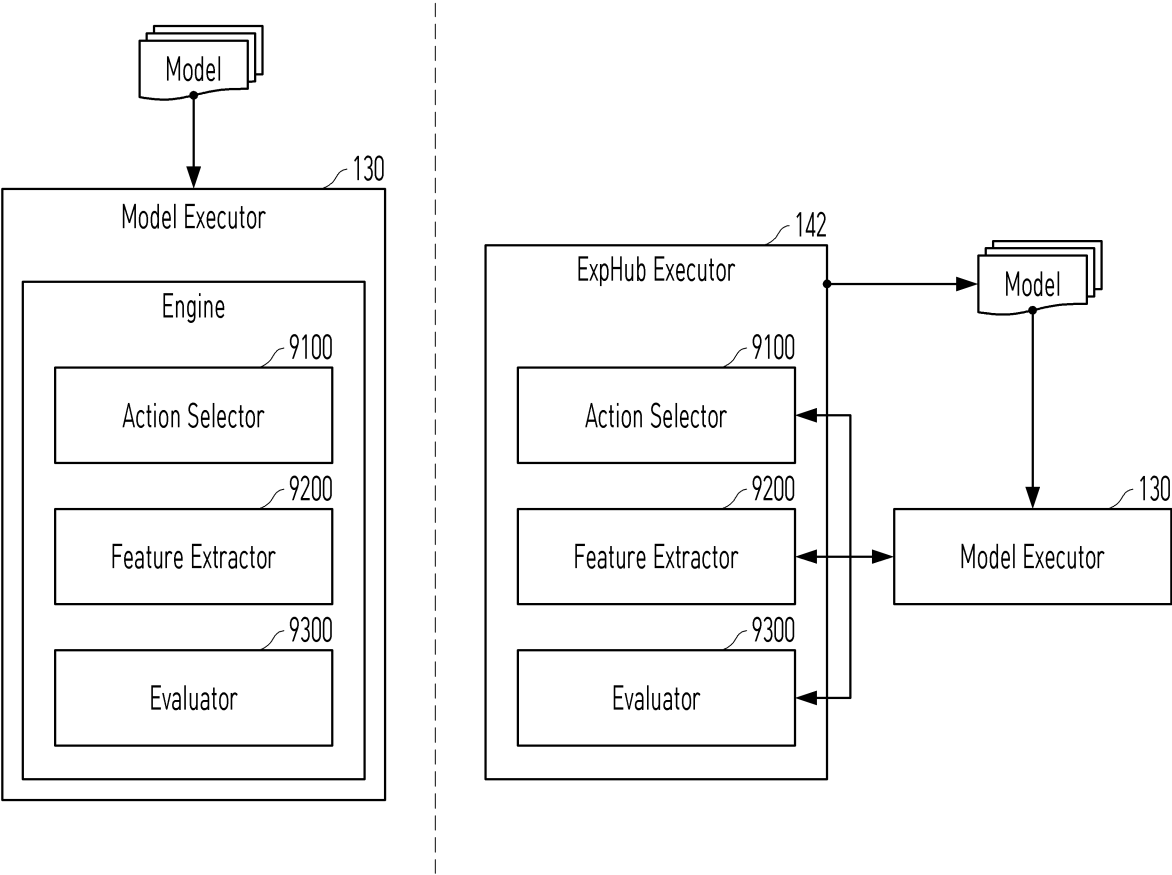


FIG. 148

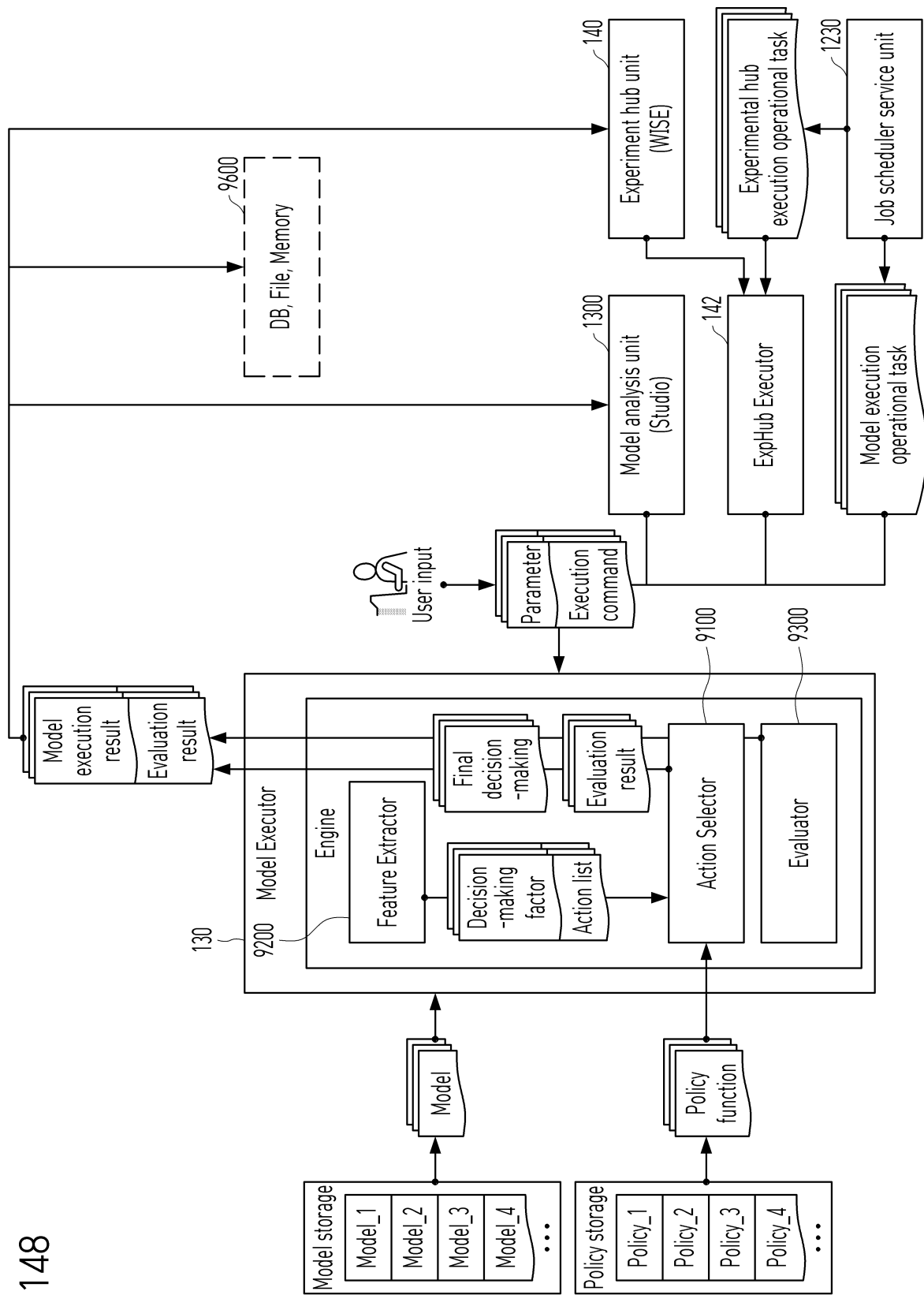


FIG. 149

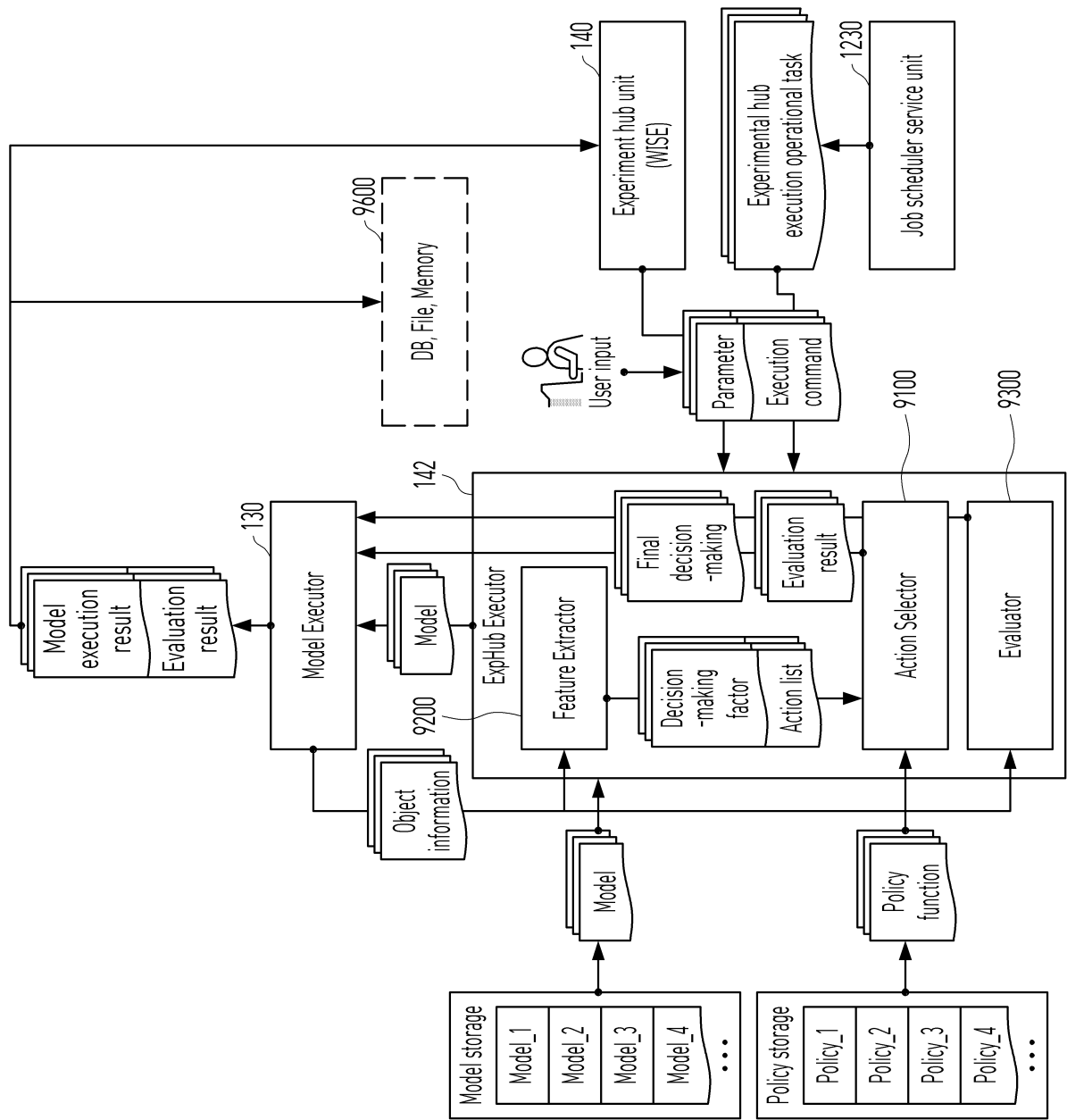


FIG. 150

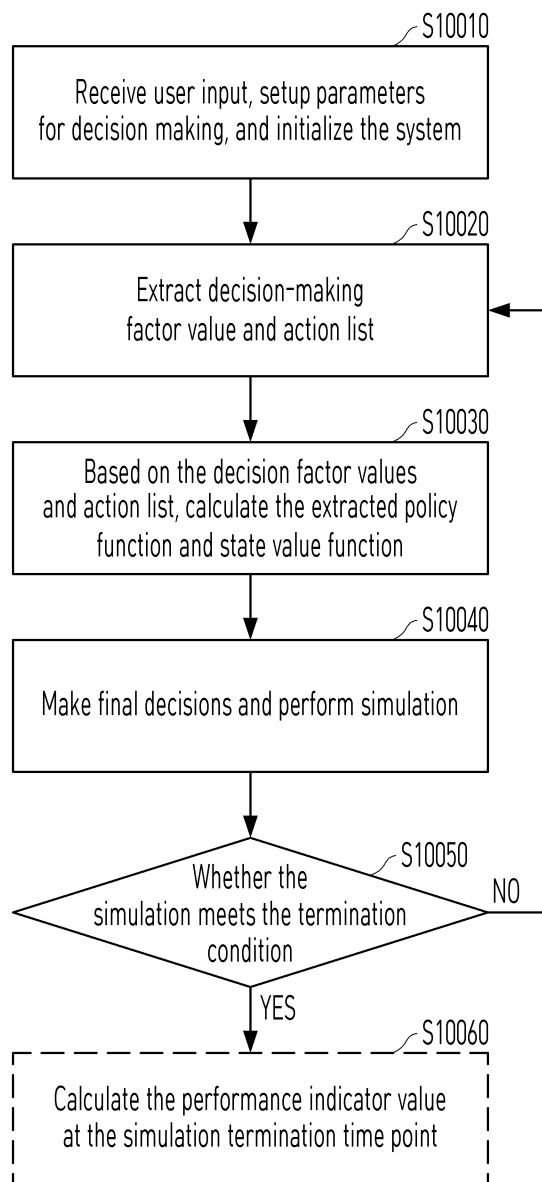


FIG. 151

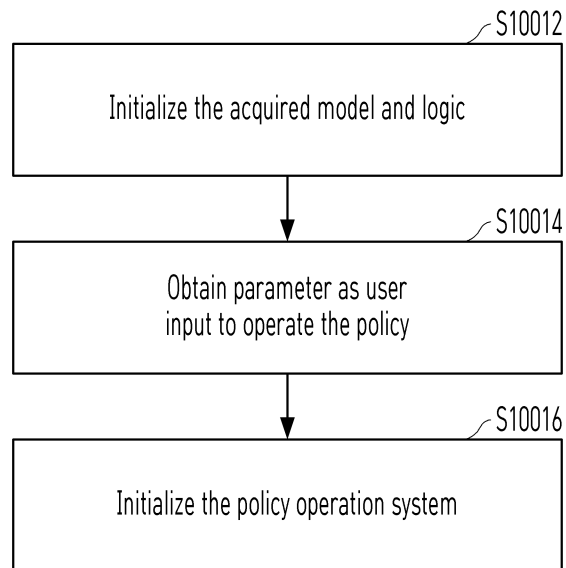


FIG. 152

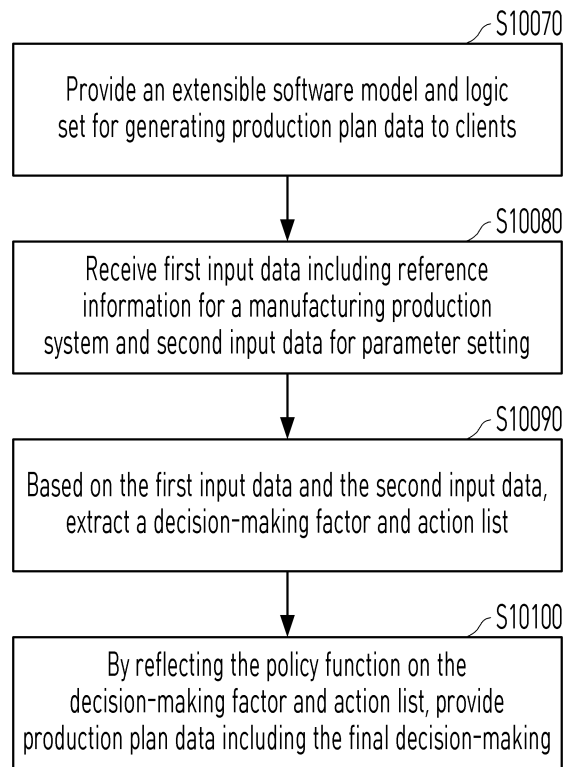


FIG. 153

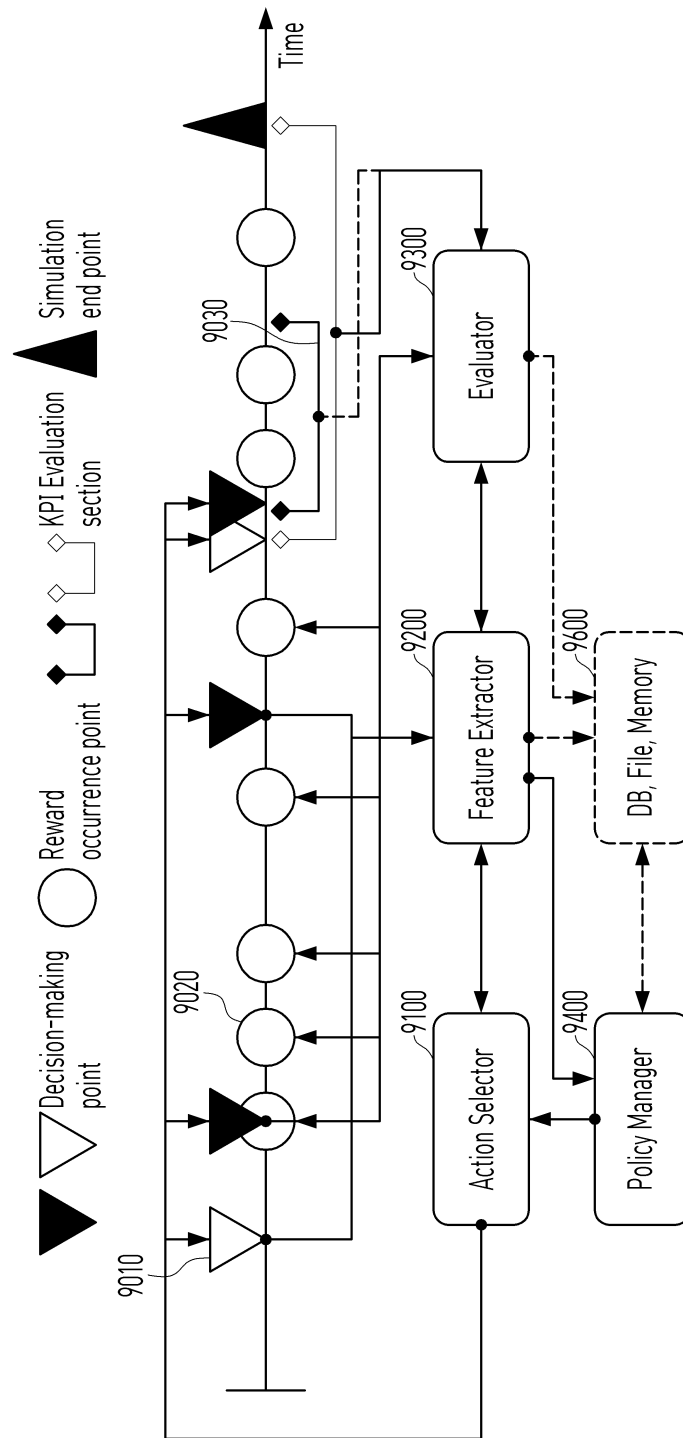


FIG. 154

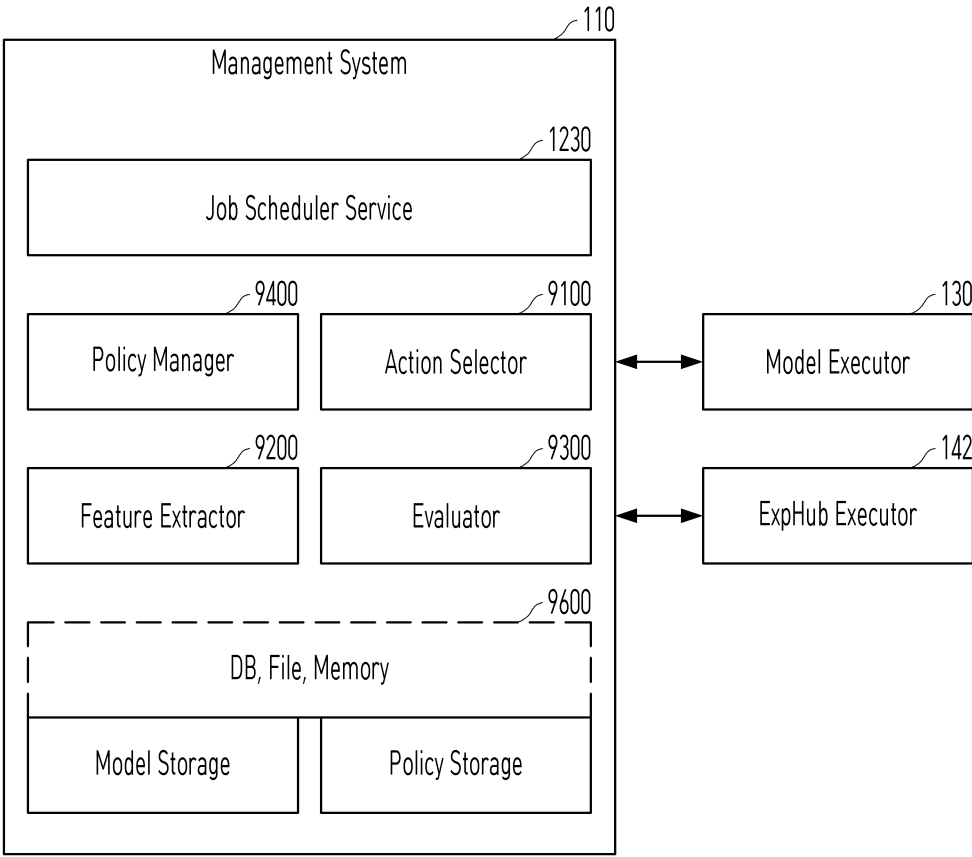


FIG. 155

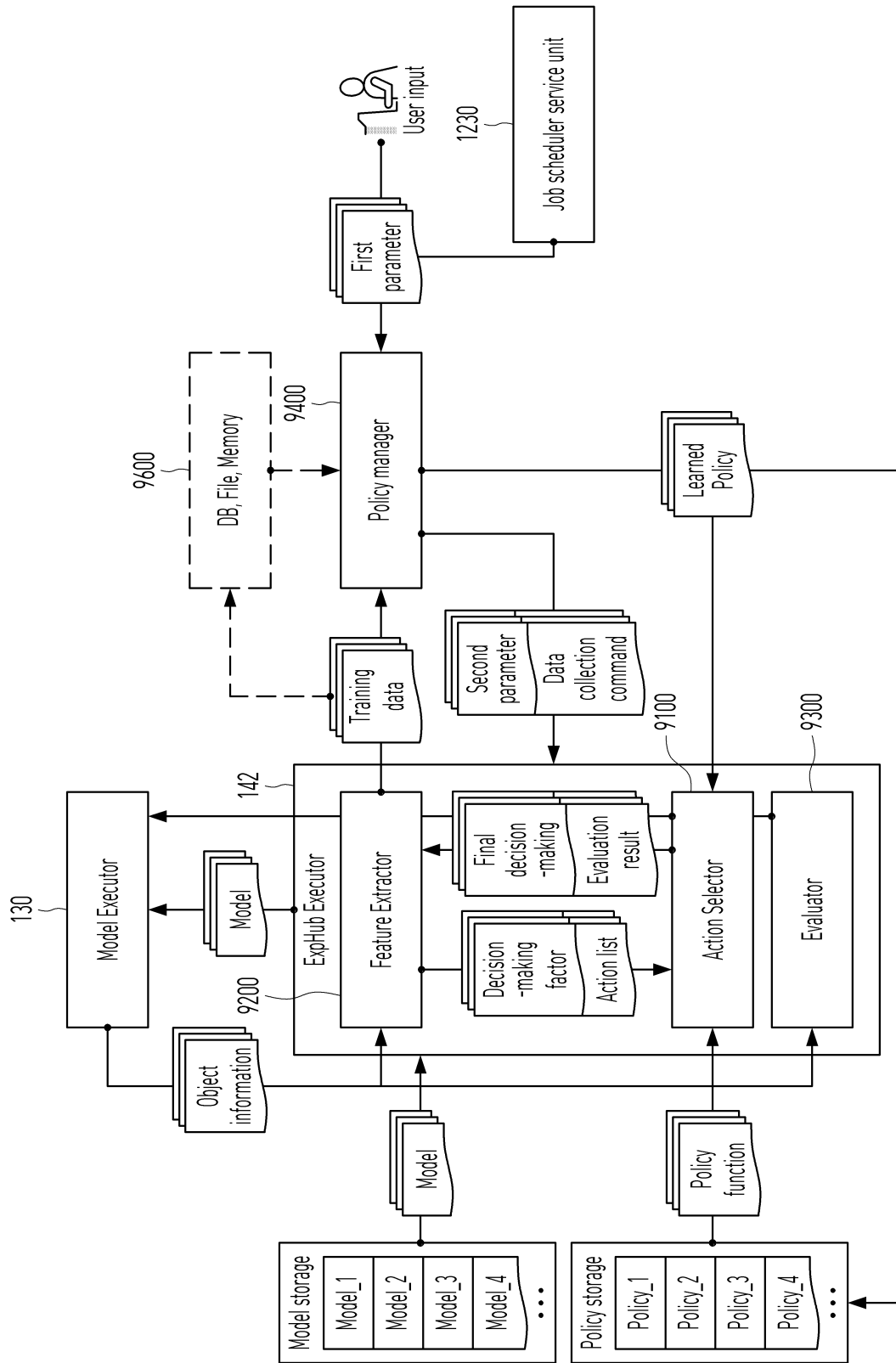


FIG. 156

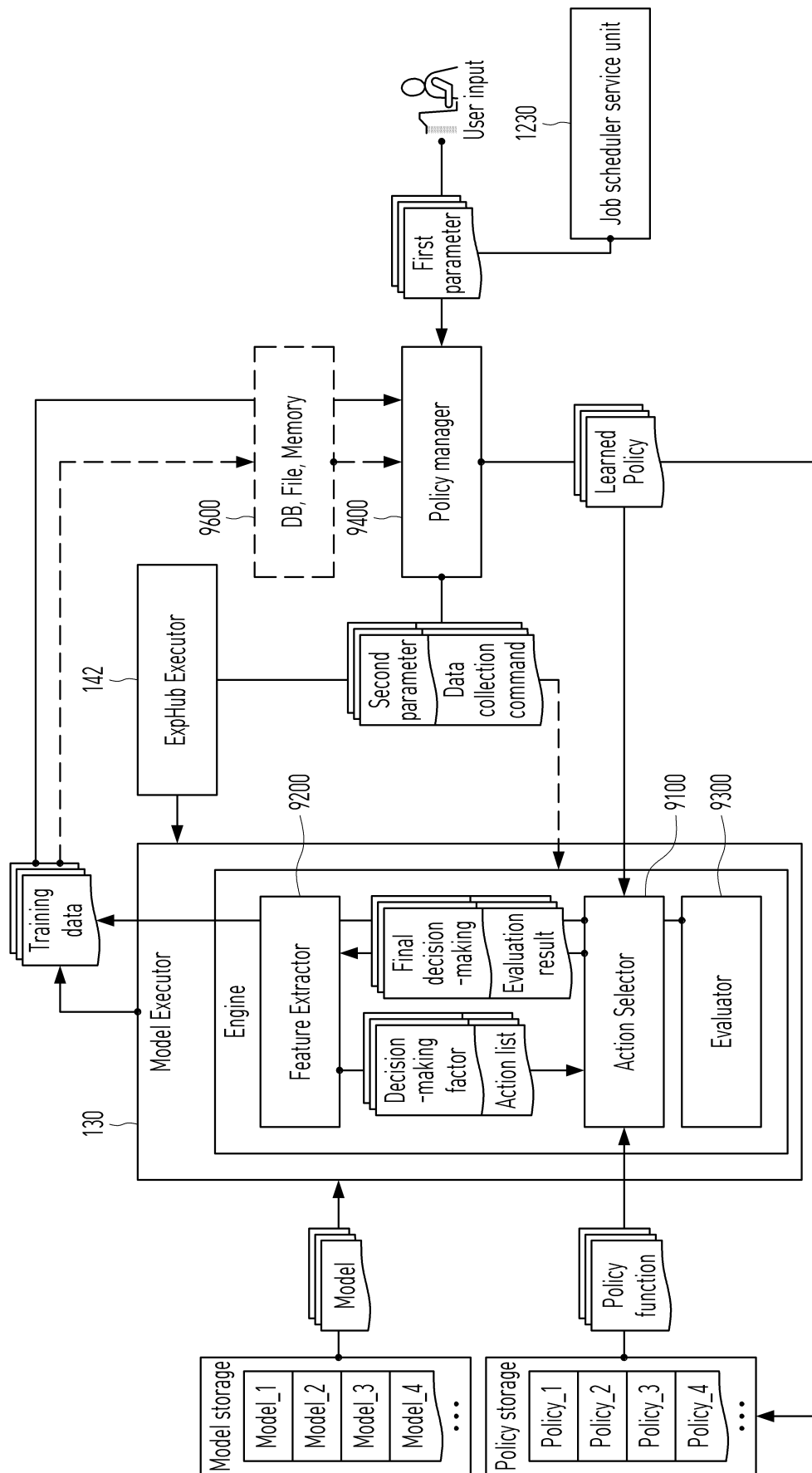


FIG. 157

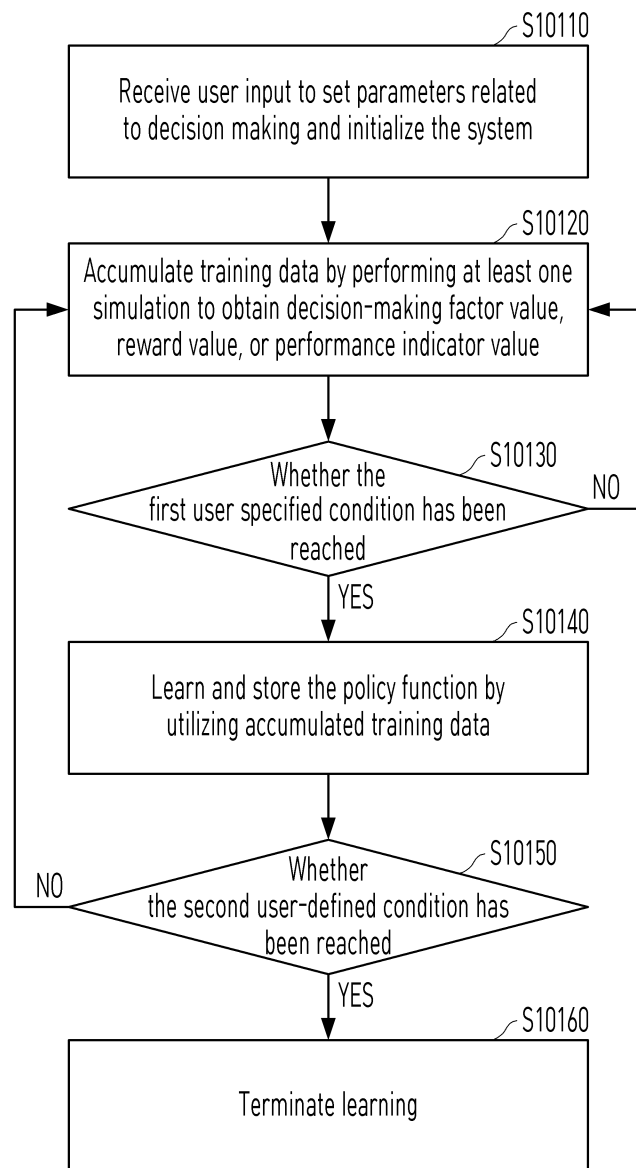


FIG. 158

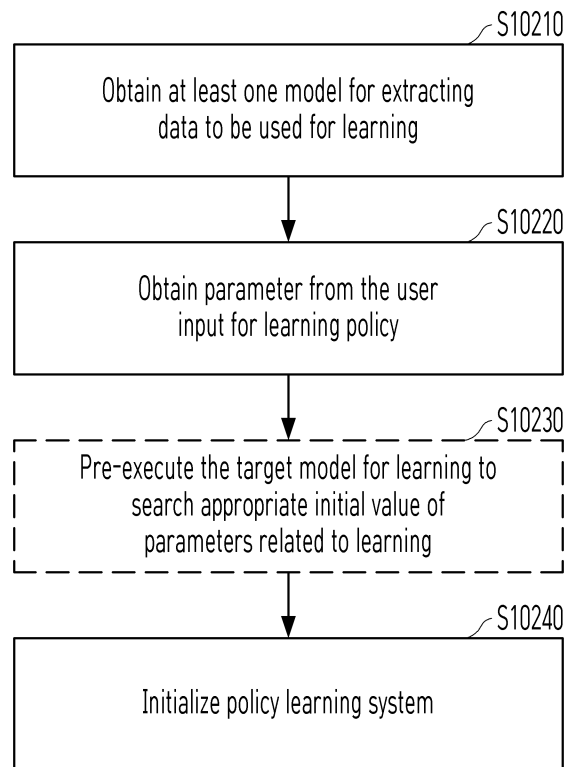


FIG. 159

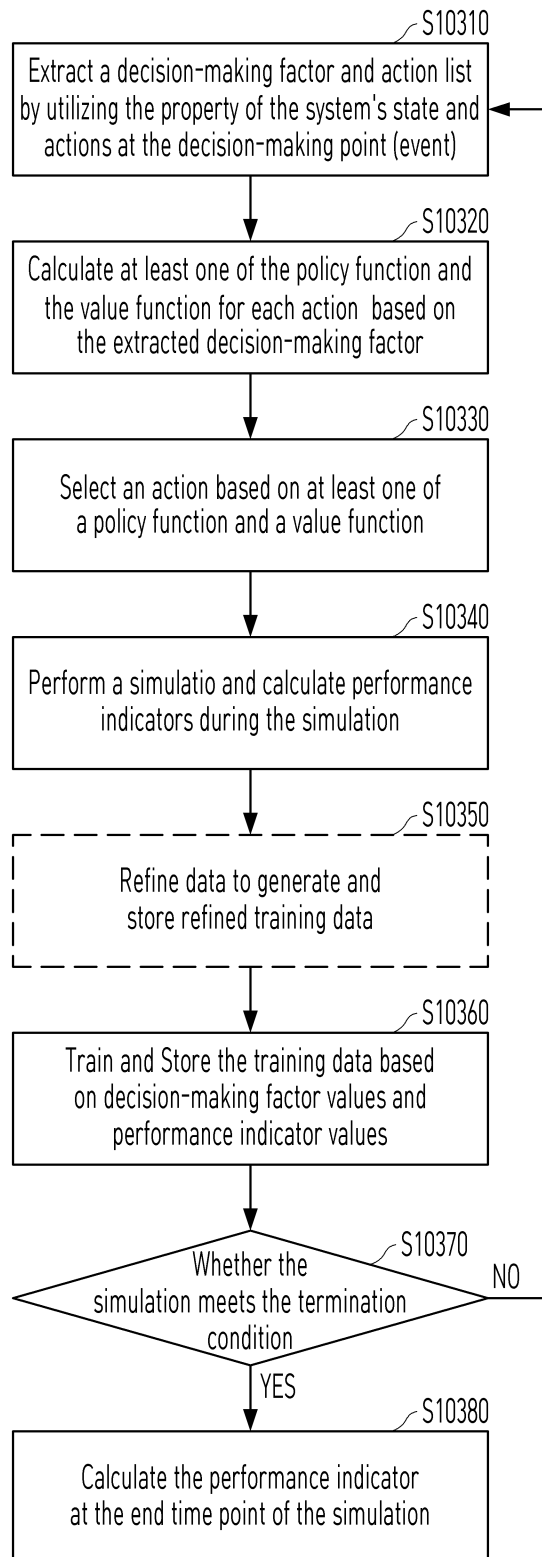


FIG. 160

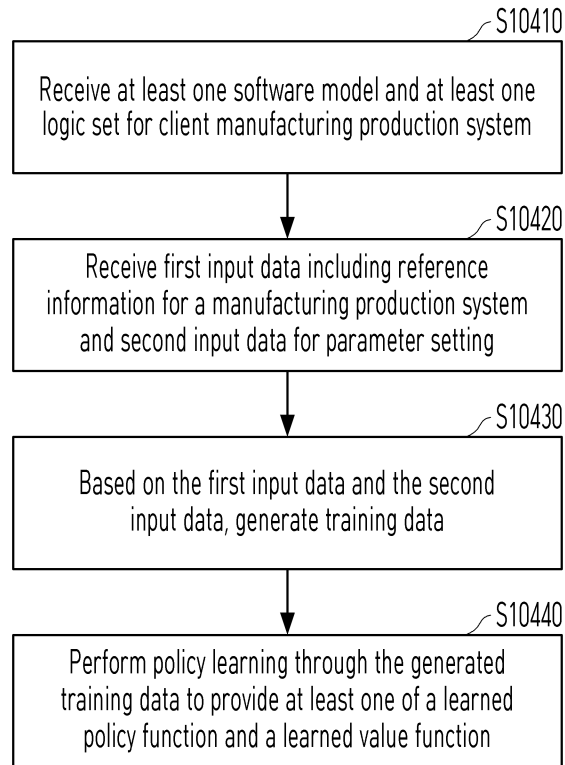


FIG. 161

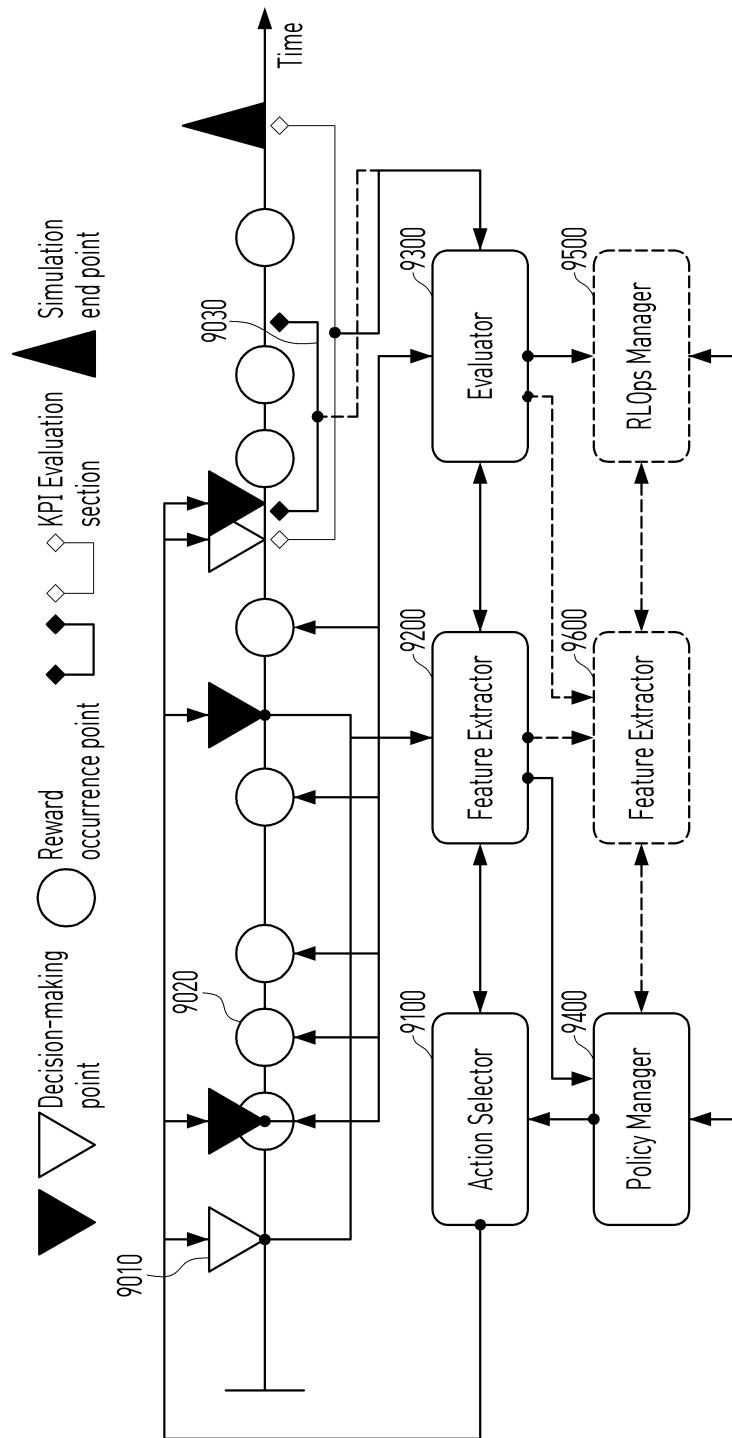


FIG. 162

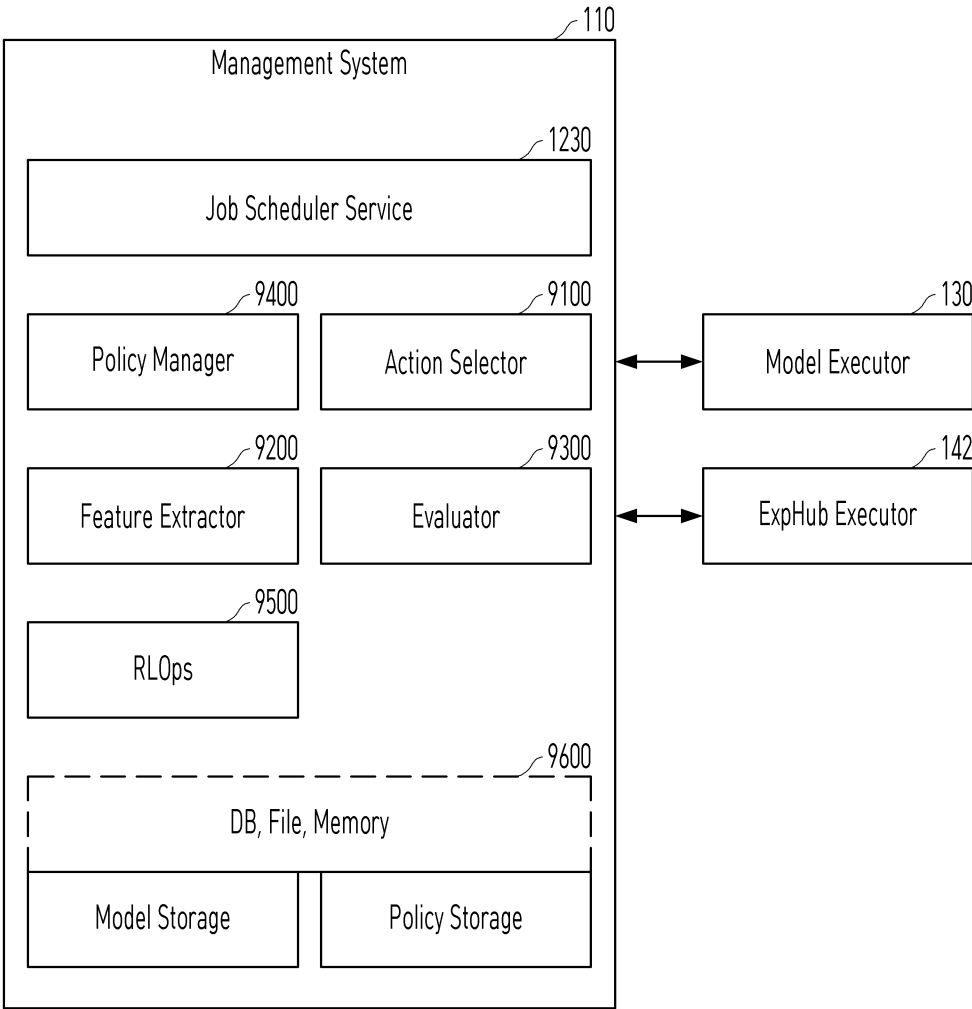


FIG. 163

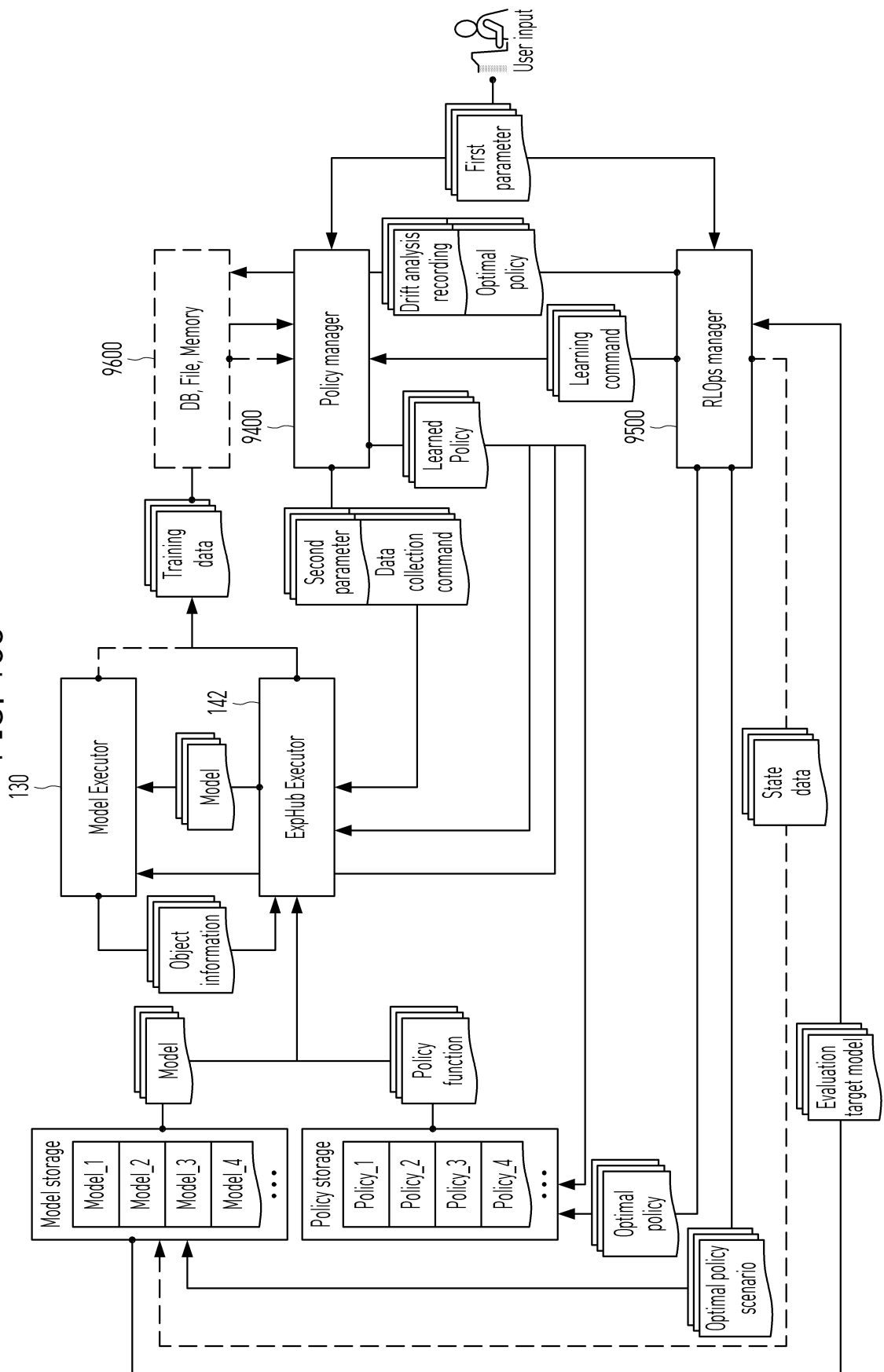


FIG. 164

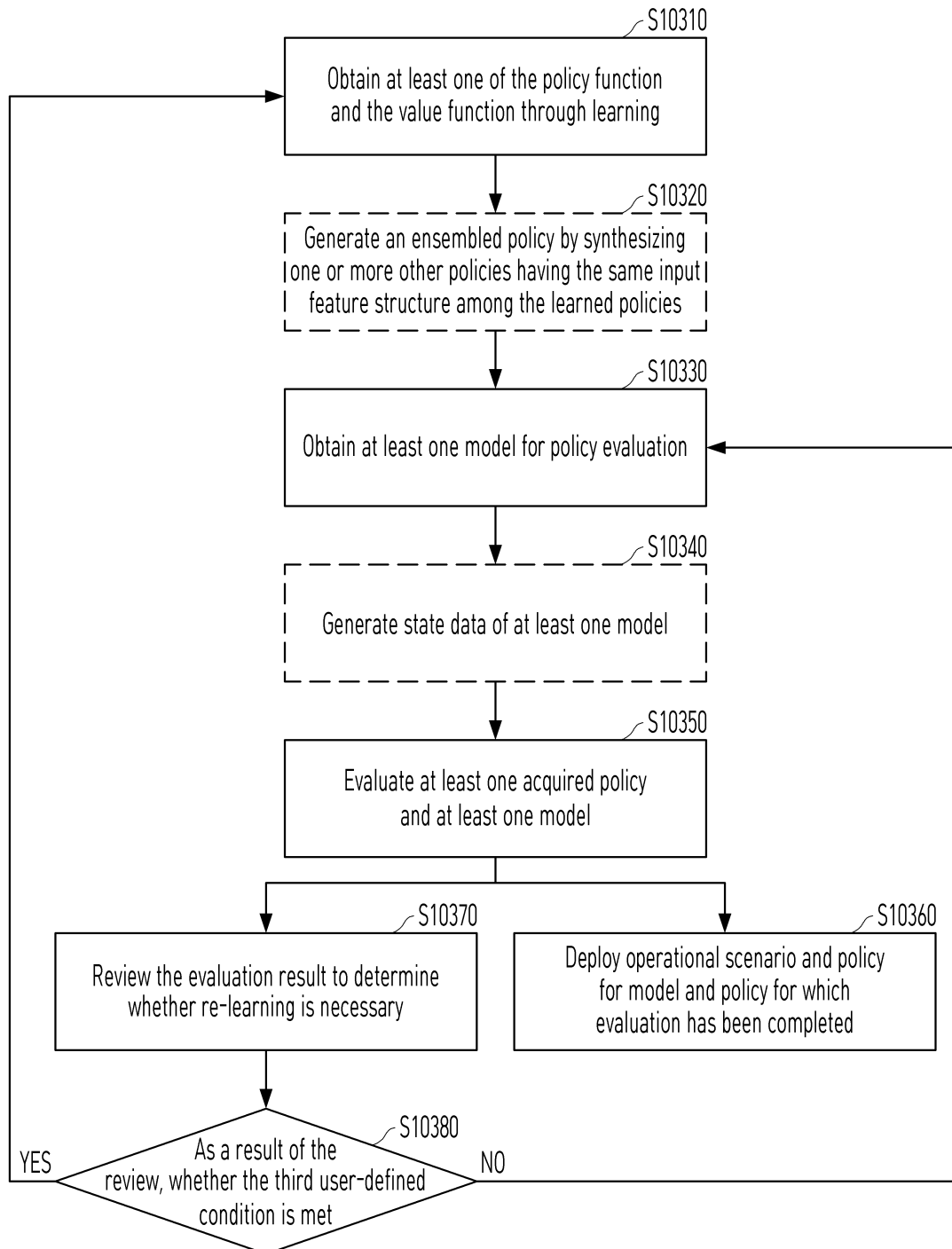


FIG. 165

