What is claimed is:

1. A multivariate business process modeling or management (BPM) optimization system to optimize a BPM system, the BPM optimization system comprising:

alogic layer to control operation of the BPM system;

a utility layerincluding software executed by a computer systemtoimplement a randomized experimental treatment based on a hypothesis; and

a persistence layer tocollect data from application of the randomized experimental treatment to theBPM system,

wherein the multivariate BPM optimization system optimizes the BPM system by computerized testing of the hypothesis and generation of results toadd, remove or modify a step or modifya point in a flow of the BPM systembased on the data collected from application of the randomized experimental treatment.

2. The multivariate BPM optimization system of claim 1, wherein the logic layer includes:

an experiment transmitter service to integrate the BPM optimization system with the BPM system or a BPM sub-system;

a delegator service toassociate the BPM system or theBPM sub-system with an experimental treatmentin the BPM optimization system; and

a segment manager service todefine experimental segments based on the data collected from application of the randomized experimental treatment.

3. The multivariate BPM optimization system of claim 1, wherein the utility layer includes:

a treatment provider serviceto create the randomized experimental treatment based on a particular attribute;

an identity provider service tomanage reference keys used by an instance cache service, a history archive service, or external BPM data systems to uniquely identify experimental test subjects; and

an outcome recorder servicetomanage delivery and storage of experimental outcomes.

4. The multivariate BPM optimization system of claim 1, wherein the persistence layer includes:

a log service to record events associated with theBPM system;

an instance cacheservice to storetreatment, identity and segmentation datafor accessibility; and

a historyserviceto storethe data collected from application of the randomized experimental treatment.

5. Themultivariate BPM optimization system of claim 1, wherein the logic, utility and persistence layers enablecustomization and adaptation of the multivariate BPM optimization system to the BPM system.

6. The multivariate BPM optimization system of claim 1, wherein the randomized experimental treatment includes an assignment of levels of attributes in a statistical experimental design.

7. The multivariate BPM optimization system of claim 1, wherein the randomized experimental treatment includes a variation in a process in the BPM system.

8. The multivariate BPM optimization system of claim 1, further comprising an adaptive process toindicateif therandomized experimental treatment is suboptimal prior to completion of a statistical experiment.

9. The multivariate BPM optimization system of claim 1, wherein the results are automatically generated statistically significant results for gain and loss predictions based on modification of the BPM system.

10. The multivariate BPM optimization system of claim 1, wherein the results are automatically generated statistically significant results for determination of significance of contribution of a particular attribute of the randomized experimental treatment.

11. The multivariate BPM optimization system of claim 1, wherein the results are automatically generated statistically significant results fordetermination of an interaction between different processes of an optimized BPM system or the BPM system.

12. A method for optimizing a business process modeling or management (BPM) system, the method comprising:

identifying a location in theBPM systemto test;

defining a randomized experimental treatment based on a hypothesis for the identified location, and applying the randomized experimental treatment to the BPM system;

optimizing the BPM system by computerized testing of the hypothesis and generating results; and

adding, removing or modifying a step or modifying a point in a flow of the BPM system based on data collected from application of the randomized experimental treatment.

13. The method of claim 12, further comprising defining attributes of the randomized experimental treatment and assigning levels of the attributes in a statistical experimental design.

14. The method of claim 12, further comprising modifying a process or relative flow of a process in the BPM system for the randomized experimental treatment.

15. The method of claim 12, further comprising automatically indicatingif a randomized experimental treatment is suboptimal prior to completion of a statistical experiment.

16. The method of claim 12, wherein the results are automatically generated statistically significant results for determining significance of contribution of a particular attribute of the randomized experimental treatment.

17. The method of claim 12, wherein the results are automatically generated statistically significant results for determiningan interaction between different processes of an optimized BPM system or the BPM system.

18. A non-transitory computer readable medium having stored thereon a computer executable program to optimize a business process modeling or management (BPM) system, the computer executable program when executed causes a computer system to:

identify a location in the BPM systemto test;

define a randomized experimental treatment based on a hypothesis for the identified location, and apply the randomized experimental treatment to the BPM system;

optimize the BPM system by testing the hypothesis and generating results; and

add, remove or modify a step or modify a point in a flow of the BPM system based on data collected from application of the randomized experimental treatment.

19. The computer readable medium of claim 18, further comprising defining attributes of the randomized experimental treatment and assigning levels of the attributes in a statistical experimental design.

20. The computer readable medium of claim 18, further comprising varying a process or relative flow of a process in the BPM system for the randomized experimental treatment.

CLAIMS

1. A multivariate business process modeling or management (BPM) optimization system to optimize a BPM system, the BPM optimization system including:

at least one processor to execute a logic layer, a utility layer and a persistence layer, wherein the utility layer controls operation of the BPM system;

the utility layer determining a defined randomized experiment based on at least one hypothesis for a location in the BPM system; and

applying the randomized experiment to the BPM system, wherein the applying of the randomized experiment includes:

determining attributes for the location from the defined randomized experiment;

randomly determining levels for each of the attributes;

determining randomized experimental treatments for the location from the randomly determined levels;

administering the randomized experimental treatments based on segment information provided for the defined randomized experiment;

determining if at least one of the randomized experimental treatments is suboptimal prior to completion of the randomized experiment based on analysis of outcomes of administering the at least one randomized experiment treatment during the experiment;

flagging the at least one randomized experimental treatment as suboptimal while the experiment is running if the at least one randomized experimental treatment is determined to be suboptimal; and

decreasing a number of times the flagged at least one randomized experimental treatment is administered during the experiment; and

the persistence layer collecting data from the application of the randomized experiment to the BPM system,

wherein the multivariate BPM optimization system adds, removes or modifies a step or modifies a point in a flow of the BPM system based on the data collected from application of the randomized experiment.

2. A multivariate BPM optimization system according to claim 1, wherein the logic layer includes:

an experiment transmitter service to integrate the BPM optimization system with the BPM system or a BPM sub-system;

a delegator service to associate the BPM system or the BPM sub-system with the experimental treatments in the BPM optimization system; and

a segment manager service to define experimental segments based on the data collected from application of the randomized experimental treatment.

3. A multivariate BPM optimization system according to either claim 1 or claim 2, wherein the utility layer includes:

a treatment provider service to create the randomized experimental treatments;

an identity provider service to manage reference keys used by an instance cache service, a history archive service, or external BPM data systems to uniquely identify experimental test subjects; and

an outcome recorder service to manage delivery and storage of experimental outcomes.

4. A multivariate BPM optimization system according to any one of the preceding claims, wherein the persistence layer includes:

a log service to record events associated with the BPM system;

an instance cache service to store treatment, identity and segmentation data for accessibility; and

a history service to store the data collected from application of the randomized experiment.

5. A multivariate BPM optimization system according to any one of the preceding claims, wherein the logic, utility and persistence layers enable customization and adaptation of the multivariate BPM optimization system to the BPM system.

6. A multivariate BPM optimization system according to any one of the preceding claims, wherein the randomized experiment includes a variation in a process in the BPM system.

7. A multivariate BPM optimization system according to any one of the preceding claims, wherein the data collected includes automatically generated statistically significant results for gain and loss predictions based on modification of the BPM system.

8. A multivariate BPM optimization system according to any one of the preceding claims, wherein the data collected includes automatically generated statistically significant results for determination of significance of contribution of a particular attribute of the randomized experimental treatment.

9. A multivariate BPM optimization system according to any one of the preceding claims, wherein the results are automatically generated statistically significant results for determination of an interaction between different processes of an optimized BPM system or the BPM system.

10. A method for optimizing a business process modeling or management (BPM) system, the method including:

identifying a location in the BPM system to test;

determining a defined randomized experiment based on at least one hypothesis for the identified location;

applying the randomized experiment to the BPM system by at least one processor, wherein the applying of the randomized experiment includes

determining attributes for the location from the defined randomized experiment;

randomly determining levels for each of the attributes;

determining randomized experimental treatments for the location from the randomly determined levels;

administering the randomized experimental treatments based on segment information provided for the defined randomized experiment;

determining if at least one of the randomized experimental treatments is suboptimal prior to completion of the randomized experiment based on analysis of outcomes of administering the at least one randomized experiment treatment during the experiment;

flagging the at least one randomized experimental treatment as suboptimal while the experiment is running if the at least one randomized experimental treatment is determined to be suboptimal; and

decreasing a number of times the flagged at least one randomized experimental treatment is administered during the experiment; and

adding, removing or modifying a step or modifying a point in a flow of the BPM system for the location based on data collected from the application of the randomized experiment.

11. A method according to claim 10, further including modifying a process or relative flow of a process in the BPM system for the randomized experiment.

12. A method according to either claim 10 or claim 11, including determining significance of contribution of a particular attribute of the randomized experiment from the collected data to add, remove or modify the step or the point in a flow of the BPM system.

13. A method according to any one of claims 10 to12, including determining an interaction between different processes of an optimized BPM system or the BPM system from the collected data to add, remove or modify the step or the point in a flow of the BPM system.

14. A non-transitory computer readable medium having stored thereon a computer executable program to optimize a business process modeling or management (BPM) system, the computer executable program when executed causes a computer system to:

determine a defined location in the BPM system to test;

define a randomized experiment based on at least one hypothesis for the identified location;

apply the randomized experimental to the BPM system, wherein to apply the randomized experiment the computer executable program is to:

determine attributes for the location from the defined randomized experiment;

randomly determine levels for each of the attributes;

determine randomized experimental treatments for the location from the randomly determined levels;

administer the randomized experimental treatments based on segment information provided for the defined randomized experiment;

determine if at least one of the randomized experimental treatments is suboptimal prior to completion of the randomized experiment based on analysis of outcomes of administering the at least one randomized experiment treatment during the experiment;

flag the at least one randomized experimental treatment as suboptimal while the experiment is running if the at least one randomized experimental treatment is determined to be suboptimal; and

decrease a number of times the flagged at least one randomized experimental treatment is administered during the experiment; and

add, remove or modify a step or modify a point in a flow of the BPM system for the location based on data collected from the application of the randomized experiment

15. A computer readable medium according to claim 14, further including varying a process or relative flow of a process in the BPM system for the randomized experiment

16. A multivariate business process modeling or management (BPM) optimization system according to claim 1, or a method for optimizing a business process modeling or management

(BPM) system according to claim10, or a non-transitory computer readable medium according to claim14, substantially as hereinbefore described with reference to the accompanying Figures.