

CLAIMS

I claim:

5 1. In a computerized environment, a computerized method of creating a variable spatial framework for use in designing and manufacturing an architectural component, the method comprising:

 receiving input for a variable spatial framework for use in designing and manufacturing one or more architectural components, the variable spatial framework both
10 comprising an independent cell corresponding to at least one architectural component and defining a three-dimensional space having a plurality of boundaries; and

 receiving input to divide the independent cell corresponding to at least one architectural component, the independent cell dividing input changing the independent cell into multiple independent cells, each independent cell corresponding to at least one
15 architectural component;

 wherein:

 each independent cell comprises an independently executable software object, the independently executable software objects allowing each cell of the architectural component to be independently updated and changed irrespective of
20 changes made to other cells, each given newly created independent cell inheriting one or more characteristics from an independent cell from which the given newly created independent cell was created; and

 the plurality of boundaries of the spatial framework are automatically adjustable upon receiving an input defining a manufacturing constraint.

25 2. The method as recited in claim 1, further comprising:

 accessing a data file containing manufacturer specific information;

 wherein the manufacturer specific information comprises information relating to the manufacturing configuration of a specific manufacturer; and

30 automatically adjusting the variable spatial framework to account for the manufacturing configuration of the specific manufacturer.

3. The method as recited in claim 1, further comprising:
accessing a data file containing manufacturer specific information;
wherein the manufacturer specific information comprises information relating to
the manufacturing configuration of a specific manufacturer; and
5 automatically adjusting a computer numerical control code to account for the
manufacturing configuration of the specific manufacturer.

4. The method as recited in claim 1, wherein the independently executable software
object comprises another spatial framework.

10 5. The method as recited in claim 4, further comprising:
displaying to a designer a library of frameworks representing pre-designed
architectural components;
receiving an indication from the user selecting a particular framework
15 representing a particular pre-designed architectural component; and
associating the particular framework representing the particular pre-designed
architectural component with a cell within the variable spatial framework.

20 6. The method as recited in claim 1, further comprising:
receiving at least one manufacturing constraint;
wherein the at least one manufacturing constraint defines at least one physical
characteristic of an object that will be manufactured based upon the spatial framework.

25 7. The method as recited in claim 6, wherein the manufacturing constraint comprises
a material type that will be used to construct the object.

8. The method as recited in claim 6, wherein the manufacturing constraint comprises
a size measurement of the object that will be manufactured.

9. The method as recited in claim 6, wherein the manufacturing constraint comprises a thickness of a material that will be used to construct the object.

10. The method as recited in claim 1, further comprising:

5 identifying one or more distinct surfaces associated with one or more distinct portions of the spatial framework, wherein the one or more distinct surfaces are representative of physical surfaces in the architectural component;

determining that a first surface of the one or more distinct surfaces and a second surface of the one or more distinct surfaces communicate with each other through a
10 joining means;

identifying that the joining means comprises a particular connection interface;

determining that the particular connection interface creates an anomaly within at least one joining means associated with any of the one or more distinct surfaces; and

15 automatically adjusting one or more connection interfaces associated with one or more joining means to eliminate the anomaly.

11. The method as recited in claim 10, further comprising:

automatically creating a gap surrounding at least one surface;

20 wherein the gap provides sufficient space between the at least one surface and any adjacent surfaces that the at least one surface can freely be removed from the architectural component.

12. The method as recited in claim 1, further comprising:

25 identifying a surface associated with a portion of the spatial framework, wherein the surface is representative of a physical surface in the architectural component; and

receiving input to divide the surface, the surface dividing input changing the surface into multiple independent surfaces.

13. The method as recited in claim 12, wherein the surface comprises a thickness that
30 is also divided by the dividing input.

14. The method as recited in claim 12, wherein:

the surface dividing input comprises a surface dividing line extending from a first boundary to a second boundary; and

a location of the surface dividing line within the spatial framework is determined with respect of a location of an intersection of the surface dividing line with the first boundary and an intersection of the surface dividing line with the second boundary.

15. The method as recited in claim 14, wherein the location of the intersection of the surface dividing line and the first boundary is a specific distance from a first end of the first boundary.

16. The method as recited in claim 14, wherein the location of the intersection of the surface dividing line and the first boundary is a measured proportional distance from a first end of the first boundary.

17. A computer-based system comprising one or more processors configured to execute computer-executable instructions for a method of creating a variable spatial framework for use in designing and manufacturing an architectural component, the method comprising:

5 receiving input for a spatial framework for use in designing and manufacturing one or more architectural components, the spatial framework both comprising an independent cell corresponding to at least one architectural component and defining a three-dimensional space having a plurality of boundaries;

10 receiving input to divide the independent cell corresponding to at least one architectural component, the independent cell dividing input changing the independent cell into multiple independent cells, each independent cell corresponding to at least one architectural component, wherein each independent cell is associated with a distinct independently executable software object, the independently executable software objects allowing each cell of the architectural component to be independently updated and
15 changed irrespective of changes made to other cells, each given newly created independent cell inheriting one or more characteristics from an independent cell from which the given newly created independent cell was created;

20 receiving at least one manufacturing constraint that defines at least one physical characteristic of an object that will be manufactured based upon the spatial framework; and

 automatically adjusting at least a portion of the spatial framework to incorporate the received manufacturing constraint.

18. The system as recited in claim 17, further comprising:

identifying a connection interface within the spatial framework, wherein the connection interface corresponds with a region within the architectural component that will require a joining means;

5 determining that the joining means comprises a particular type of connection;

determining that the particular type of connection creates an anomaly within at least one joining means within the architectural component; and

10 automatically adjusting one or more connection interfaces associated with one or more joining means to allow for the particular connection interface and to eliminate the anomaly.

19. The system as recited in claim 17, further comprising: identifying a surface associated with a portion of the spatial framework, wherein the surface is representative of a physical surface in the architectural component; receiving input to divide the surface, the surface dividing input comprising a surface dividing line extending from a first boundary to a second boundary; and determining a location of the surface dividing line within the spatial framework with respect to a location of an intersection of the surface dividing line with the first boundary and an intersection of the surface dividing line with the second boundary.

20. A computer program product for use at a computer system, the computer program product for creating a variable spatial framework for use in designing and manufacturing an architectural component, the computer program product comprising one or more computer storage media having stored thereon computer-executable instructions that, when executed at a processor, cause the computer system to perform a method comprising:

receiving input for a variable spatial framework for use in designing and manufacturing one or more architectural components, the variable spatial framework both comprising an independent cell corresponding to at least one architectural component and defining a three-dimensional space having a plurality of boundaries; and

receiving input to divide the independent cell corresponding to at least one architectural component, the independent cell dividing input changing the independent cell into multiple independent cells, each independent cell corresponding to at least one architectural component;

wherein:

each independent cell comprises an independently executable software object, the independently executable software objects allowing each cell of the architectural component to be independently updated and changed irrespective of changes made to other cells, each given newly created independent cell inheriting one or more characteristics from an independent cell from which the given newly created independent cell was created; and

a plurality of boundaries of the spatial framework are automatically adjustable upon receiving an input defining a manufacturing constraint.